**SA WG2 Meeting #162 S2-2405523**

**15 – 19 April 2024, Changsha, China**

**Source: NTT DOCOMO, Samsung**

**Title: KI#2: Update Sol#4: provisioning of subscribers allowed to access CAG cell using CAG subscription update from AF**

**Document for: Approval**

**Agenda Item: 19.12**

**Work Item / Release: FS\_5G\_Femto / Rel-19**

*Abstract of the contribution: This contribution proposes a resolution for EN.*

# 1 Discussion

The following Editor's note needs to be resolved.

Editor's note: For the roaming scenario, how to AF provision CAG subscription is FFS.

A solution is that NEF utilizes the HTTP redirect feature and redirects the request from AF to an NEF in HPLMN of the roaming UE. (It cannot be always expected that AF by itself judges which NEF to interact.)

In addition, other ENs that come from the TR template are removed.

# 2 Proposal

It is proposed to update TR 23.700-45 according to the following text.

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

6.4 Solution #4: provisioning of subscribers allowed to access CAG cell using CAG subscription update from AF

6.4.1 Description

CAG owner or administrator may provision to 5GC subscribers allowed to access a CAG cell.

In principle provisioning CAG information to UDM is based on the clause 4.2.4.2 of TS 23.502 [3] and provisioning the updated CAG information is based on the clause 4.15.6.2 of TS 23.502 [3]:

- AF (CAG owner or administrator) provides UE ID (e.g. SUPI, MSISDN or GPSI), and allowed Cell information (e.g. cell ID(s), FEMTO device ID) or CAG information per PLMN ID, including Validity Time (for temporary users) per UE via Nnef\_ParameterProvision\_Create/Update/Delete procedures.

- NEF authorizes the request from AF, determines SUPI from GPSI/MSISDN if needed, may derive corresponding CAG information per UE and then provision into UDM.

- And UDM may provide CAG information to the corresponding UEs via UCU procedures via AMF.

- The result of UE provisioning can be reported to AF.

NOTE 1: When an AF in a visited PLMN wants to let the UE use the Femto service in the vPLMN, the AF should provision the CAG information to UDM as above.

NOTE 2: It is assumed that HPLMN of a target UE has a policy and an NEF for authorizing AF that does not have a pre-configured relation with the HPLMN to change CAG info of the target UE, e.g., by using a token-based scheme. Specification of the needed scheme is outside the SA2 remit. SA6 is studying the corresponding topic in Rel-19 under FS\_CAPIF\_Ph3 where CAPIF takes care of the authorization scheme at NEF. This means this solution has dependency to that study. Then, it is assumed that operator deploys a necessary authorization scheme at NEF following the outcome of that SA6 study and work.

6.4.2 Procedures

#### 6.4.2.1 General

The Figure 6.4.2.1-1 shows the procedure for how the AF provision CAG subscriptions allowed to access CAG cell:

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**Figure 6.4.2.1-1: Procedures for AF to provision CAG subscriptions allowed to access CAG cell**

The steps of Figure 6.4.2.1-1 are described as follows:

1. The AF provides UE ID (e.g. SUPI, MSISDN or GPSI), allowed Cell information (e.g. cell ID(s), FEMTO device ID) or CAG information including Validity Time (for temporary users) per UE via Nnef\_ParameterProvision\_Create/Update/Delete procedures.

2. NEF authorizes the request from AF, determines SUPI from GPSI/MSISDN if needed and, may derive corresponding CAG information or allowed Cell information per UE and then provisioned into UDM.

3/5. UDM is provisioned CAG information and can be updated to UDR also.

6. UDM sets the CAG information update indicator to confirm its update.

7-10. CAG information is provisioned.

11-12. CAG information update result is notified to the AF via NEF.

#### 6.4.2.2 AF request redirection

Figure 6.4.2.2-1 shows the procedure for how NEF redirects AF request:



**Figure 6.4.2.2-1: Procedure for AF request redirection**

The steps of Figure 6.4.2.2-1 are described as follows:

1. AF provides information to NEF in the Serving PLMN as in step 1 of Figure 6.4.2.1-1.

2. When the UE ID is for a roaming UE, NEF sends back to AF an HTTP response indicating redirection to an NEF in HPLMN of the UE.

3. AF provides information to NEF in HPLMN of the UE as in step 1 of Figure 6.4.2.1-1.

4. Step 2 and onwards of Figure 6.4.2.1-1 continue.

NOTE: It is assumed that HPLMN of a target UE and PLMN that 5G Femto serves have SLA to allow the redirection described in this clause.

6.4.3 Impacts on services, entities and interfaces

UDM:

- CAG information for UE(s) are provisioned from AF via NEF and notify the result of provisioning to NEF (step 11 of Figure 6.4.2.1-1).

NEF:

- To receive and authorize CAG owner or administrator's input (UE ID, allowed Cell information or CAG information) with assistance of CAPIF and, if required, change them into 5GS term (e.g. CAG information) and provide UDM.

- To receive notification of the result of provisioning from UDM and forward it to AF (step 12 of Figure 6.4.2.1-1)

- To redirect AF request to an NEF in HPLMN of a roaming UE.

AF:

- To provide UE ID and allowed Cell information or CAG information to 5GC.

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