**SA WG2 Meeting #S2-162 S2-240xxxx**

**15 - 19 April, 2024, Changsha, China (revision of S2-2403829)**

**Source: ZTE, ?**

**Title: KI#2, evaluation and conclusion**

**Document for: Approval**

**Agenda Item: 19.12**

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

*Abstract of the contribution: This paper proposes the evaluation and conclusion to Key issue #2*

# 1. Proposal

It is proposed to accept the change to 23.700-45.

>>>> Start of Change <<<<

7 Overall Evaluation

Editor's note: This clause provides evaluations of different solutions.

7.X Key Issue #2: Enabling provisioning of subscribers allowed to access CAG cell and managing access control by the CAG owner or an authorized administrator

Solution #1, #2, #3 and #4 are proposed to address Key Issue #2: Enabling provisioning of subscribers allowed to access CAG cell and managing access control by the CAG owner or an authorized administrator.

This key issue contains three parts:

1. How the CAG owner or an authorized administrator provision/update CAG information to the network
2. How the 5G Femto network perform the access control
3. How to provide the CAG information of 5G Femto network to UE

**For the aspect: “How the CAG owner or an authorized administrator provision/update CAG information to the network”**

Both Sol#1, #2 and #3 proposes that the AF (CAG owner or an authorized administrator) provision/update CAG information to the serving network via V-NEF.

* Sol#1 introduces a new NF, 5G-CAS (similar with 4G CSS). The AF invoke the enhanced Nnef\_ParameterProvision service to provision/update CAG information to the 5G-CAS in the serving network. It also can be configured by OAM.
* Sol#3 is similar with sol#1 in this aspect. It introduces a new NF, i.e. CMF.
* Sol#2 proposes a V-UDR in the serving network. The AF include visited allowed CAG list, GPSI and external location information to V-NEF, which store the CAG information to V-UDR. It also can be configured by OAM.

Sol#4 proposes that the AF (CAG owner or an authorized administrator) provision/update CAG information to the Home network via H-NEF. The AF invoke the enhanced Nnef\_ParameterProvision service to provision/update CAG information to the HPLMN UDM.

**For the aspect: “How the 5G Femto network perform the access control”**

In the Sol#1, the AMF get a flag from subscription data, it indicates that Serving PLMN-specific subscription data needs to be retrieved from 5G CAS. The AMF constructs the allowed CAG list according to the allowed CAG list from from 5G CAS and UDM. The AMF perform the access control according to 23.502 [3]

In the Sol#3, the UE indicates it is a visitor UE in the Registration message, the AMF retrieve the CAG information stored by CMF accordingly.

In the Sol#2, during registration, the UE provide capability indication to AMF whether it supports visited CAG information. Based on the enabled visited CAG allow indication of the UE and/or based on the indication from AMF that the UE is accessing via a visited CAG cell of 5G Femto, UDM provides the MSISDN of the UE to AMF. If Visited CAG allow indication is set to true, the AMF will get the visited CAG information for this UE. The AMF either:

* fetchs the CAG information of UE from V-UDR using MSISDN or
* retrieves the CAG information of UE from the notification obtained from V-UDR.

Sol#4 uses the existing mechanism to get the CAG information in subscription data from H-UDM.

In all the solutions, after obtaining the CAG list, the AMF perform the access control according to 23.502 [3]

**For the aspect: “How to provide the CAG information of 5G Femto network to UE”**

All the solutions use the existing mechanism to provide the CAG information of 5G Femto network to UE.

In Sol#1 and #4, the AMF uses the UCU procedure to provide the CAG information of 5G Femto network to UE according to 23.502 [3].

In the Sol#2, the AMF sends the registration reject message to the UE along with a list of allowed CAG IDs as per 23.501 [2].

A comparison of solutions on above aspect is shown in Table 7.X-1.

Table 7.X-1: Comparison of xxx

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 |
| Which network the CAG information is provisioned | Serving network | Serving network | Serving network | Home network |
| Which network Function the CAG information is stored | CAS, stores the Serving PLMN-specific CAG subscription data | V-UDR, stores visited CAG Information and visited allowed CAG list indication per subscriber. | CMF, store the CAG information based on the provisioned data. | UDM |
| UE impact | N/A | UE indicates it is a visitor UE in the Registration message. | UE provide capability indication to AMF whether it supports visited CAG information | N/A |
| AMF impact  (Note 1) | According to the flag in subscription data, AMF retrieves the CAG list from 5G CAS. | According to the allowed indication in subscription data and UE indication, the AMF retrieves the CAG info from V-UDR. | According to UE indication, the AMF retrieves the CAG info from CMF. |  |
| UDM subscription data | a flag in subscription data, indication Serving PLMN-specific subscription data needs to be retrieved | visited CAG allow indication and MSISDN in UE subscription data |  |  |
| NEF impact | V-NEF, enhance the PP procedure to provision the CAG to CAS | V-NEF receives the AF request, and store CAG information to V-UDR | Same with sol#1. | H-NEF, enhance the PP procedure to provision the CAG to UDM |
|  |  |  |  |  |
| Note 1: After obtaining the CAG list, the AMF perform the access control according to 23.502 [3] | | | | |

>>>> Next Change <<<<

8.X Key Issue #2: Enabling provisioning of subscribers allowed to access CAG cell and managing access control by the CAG owner or an authorized administrator

For conclusions, the following aspects will be considered:

- ?.

>>>> End of Change <<<<