**3GPP TSG-SA3 Meeting #108e *S3-221800r4***

**e-meeting, 22 - 26 August 2022**

**Source: Huawei, HiSilicon, Xiaomi, Lenovo, ZTE**

**Title: update to KI#1**

**Document for: Approval**

**Agenda Item: 5.12**

# 1 Decision/action requested

***Approve the new KI proposal to eNS3 TR33.886***

# 2 References

[1]

# 3 Rationale

The contribution proposes to update KI#1 with security threats and requirments.

# 4 Detailed proposal

pCR

\*\*\* BEGINNING OF 1st CHANGES \*\*\*

## 4.1 Key Issue #1: providing VPLMN slice information to roaming UE

### 4.1.1 Key issue details

The following requirement for a 5G network is specified in TS 22.261[2] in order to support a roaming UE activating network slice services

*For a roaming UE activating a service/application requiring a network slice not offered by the serving network but available in the area from other network(s), the* *HPLMN shall be able to provide the UE with prioritization information of the VPLMNs with which the UE may register for the network slice*

A related key issue is also being studied in TR 23.700-41 [3] for possible procedure changes to automatic PLMN selection for a roaming UE requiring a network slice not offered by the serving network but available in the area from other network(s). It is expected that the corresponding security procedure will be affected (e.g. Steering of Roaming in TS33.501 [4]) in order to support the HPLMN to provide a roaming UE the VPLMN slice information.

A new container (transparent for AMF) ~~may~~ is being considered in TR 23.700-41 [3] to be sent by ~~included in a 5GC Registration Request from~~ a roaming UE, containing ~~UE~~ information that is pertinent to ~~the request~~activating the HPLMN service providing the UE with prioritization information of the VPLMNs with which the UE may register for the network slice. Security aspects on protecting the ~~UE capabilities~~ container or information therein provided by the UE ~~with home network security information~~ need to be considered ~~and discussed~~.

In this key issue, the following aspects will be studied:

- Would security procedures be impacted? If so which security procedures are impacted in support of HPLMN proving a roaming UE with information about prioritization information of the VPLMNs with which the UE may register for the network slice?

- How to secure the procedures impacted.

- How the UE can securely send UE information (e.g. UE UPU/SoR capabilities, capability to handle Slice-Aware SoR information, UE location, Requested NSSAI, information on network slice not offered by the serving network) to the home network via the visited network when required.

- If the serving network does not offer the network slice ~~related to the service/application that need to be activated for~~ requested by the UE, how ~~does~~ the UE can securely report to the HPLMN ~~if this information is required~~. ~~Even if the VPLMN does a reporting, it is very essential that the respective UE being the subscriber need to securely notify to the HPLMN.~~

### 4.1.2 Security threats

Network-specific Steering of Roaming information sent to a UE has been integrity protected to prevent tampering from VPLMN as specified in TS33.501 [4]. If slice-specific information is not integrity protected, it may be tampered by the VPLMN ~~subject to forged information sent to the UE~~. In addition, slice-specific information should only be sent to an authorized UE instead of all UEs to avoid unauthorized access to slice-specific information.

On the other hand, if a roaming UE needs to transfer information to the HPLMN, The misbehaving AMF in the visisted network may remove, modify or sniffer sensitive UE information sent from the UE to HPLMN ~~home network~~.

The HPLMN will not be able to provision the UE with prioritized VPLMN information if the serving network hides the information about rejected services or services could not be offered by the VPLMN~~, which can further lead to service failure~~.

### 4.1.3 Potential security requirements

The 5G system shall secure procedures in support of HPLMN providing a roaming UE with information about slice availability and prioritization.

The ~~5G system shall provide a means to securely transfer UE information of a roaming UE (e.g. UE capabilities, UE location, Requested NSSAI) to HPLMN the home network via the visisted network for the home network to provide VPLMN network slice information.~~ roaming UE shall be able to securely report to the HPLMN (when reporting is required), such that the VPLMN is not able to change the content of the report.

The UE shall securely report to the HPLMN if a requested network slice is rejected by the VPLMN and if the UE needs to ~~be~~ report~~ed~~ to the HPLMN.

\*\*\* END OF 1st CHANGES \*\*\*