**3GPP TSG-SA3 Meeting #108-AdHoc *S3-222717-r3***

**e-meeting, 10th October – 14th October 2022**

**Source: Intel**

**Title: Updates to solution 9**

**Document for: Approval**

**Agenda Item: 5.7**

# 1 Decision/action requested

***This pCR updates solution #9 in TR 33.741, it is requested to approve this pCR.***

# 2 References

[1] 3GPP TS 33.501: “Security architecture and procedures for 5G system”

# 3 Rationale

pcR updates the solutions and removes EN to add EPC interworking usecase

# 4 Detailed proposal

SA3 is kindly requested to agree on the pCR below to TR 33.741

\*\*\*\*\*Start of Changes\*\*\*\*\*

## 5.9 Solution #9: AMF initiated primary authentication based on AUSF request

### 5.9.1 Introduction

This solution addresses KI#1. A new primary authentication may require for certain events at the network, resulting in refresh of the latest home key KAUSF. In such scenarios, an internal Network Function (AUSF) requests the AMF to trigger the re-authentication procedure. The AMF initiates re-authentication of the UE, if an internal NF requests (AUSF) to initiate re-authentication to refresh the UE specific home key (KAUSF).

### 5.9.2 Solution details



Figure 5.9.2-1: AMF initiated primary authentication

1.The primary authentication is performed as specified in TS 33.501 [3]. After successful authentication, KAUSF is derived at the AUSF and at the UE.

2. AUSF determines (for e.g., due to long time availability of same key, etc) the need of refreshing the KAUSF key.

Editor’s Note: The analysis of multiple AUSFs triggering at this step is FFS.

3. If the AUSF determines that there is a need to refresh the KAUSF, it decides to perform primary authentication to refresh the home key KAUSF. AUSF requests UDM to provide UE’s current AMF by sending Nudm\_UECM\_Get request.

4. Upon receiving the request for the details of the current serving AMF from the AUSF, UDM provides UE’s current AMF details in Nudm\_UECM\_Get response message.

5. The AUSF prepares to indicate re-authentication and requests the AMF to initiate primary authentication for the UE by invoking Namf\_UEAuthentication\_Authenticate service operation. Upon receiving the re-authentication message from UDM, the AMF acknowledges the request.

Editor’s Note: The details of Step 5 are FFS.

6. Upon receiving the request from the AUSF, the AMF (SEAF) initiates the primary authentication as described in clause 6.1.2 of TS 33.501 [3], resulting in generation of fresh key material in the UE and in the network as described in clause 6.2 of TS 33.501 [3], if the primary authentication is performed successfully.

### 5.9.2.X EPC interworking usecase

The security procedure for the case when the UE was already registered to the same PLMN via another System (E-UTRA/EPS) registers with VPLMN AMF is described below in figure 5.9.2.X-1:



Figure 5.9.2.X-1: Procedure for reauthentication during mobility registration update

1) The UE initiates registration by sending a Mobility Registration Update message to the VPLMN AMF.

2) The VPLMN AMF executes the mobility registration update procedure as defined in sub-clause 4.2.2.2.2 of 3GPP TS 23.502 [2] and retrieves a mapped security context as defined in TS 33.501[3] 8.1.

3) The VPLMN AMF invokes Nudm\_UECM\_Registrationservice operation message to the UDM to get, amongst other information, the Access and Mobility Subscription data for the UE (see step 14a in sub-clause 4.2.2.2.2 of 3GPP TS 23.502 [2]).

4-5) UDM sends a notification Nudm\_UECM\_Registration Response to the AMF with the " Reauthentication Required’ indication set to true.

6) Upon receipt of the Nudm\_UECM\_Registration Response notification in 5, the AMF shall initiate a Nausf\_UEAuthentication\_Authenticate service operation.

### 5.9.3 Solution Evaluation

Based on the local operator policy and annex A.1, solution provides reauthentication procedure for the case when the UE was already registered to the same PLMN via another System (E-UTRA/EPS) registers with VPLMN AMF

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