**3GPP TSG-SA3 Meeting #103-e *S3-212124-r8***

e-meeting, 17 - 28 May 2021

**Title: LS on Clarifications of Network slice selection during AMF Reallocation**

**Response to: N/A**

**Release: Rel. 17**

**Work Item: FS\_AMFREAL\_SEC**

**Source: Lenovo, Motorola Mobility to be SA3**

**To: SA2**

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**Attachments:** TR 33.864

# 1 Overall description

SA3 is currently working on the "Study on the security of Access and Mobility Management Function (AMF) re-allocation" in TR 33.864. The study is focusing on addressing the registration failure related to AMF re-allocation via RAN (option (B)) specified in TS 23.502 Clause 4.2.2.2.3.

The problem with the existing AMF reallocation and reroute via RAN procedure is the following. During the registration procedure, the initial AMF and the UE may need to activate and use NAS security before sending Requested S-NSSAIs, because according to 33.501, Requested S-NSSAIs contains private information and needs to be ciphered, and cannot be sent unprotected in the initial NAS message. After the initial AMF obtains the Requested S-NSSAIs and if it determines that "an AMF reallocation via RAN" is required, the registration request is rerouted to the target AMF via RAN. Since target AMF does not have any NAS security context for the UE, target AMF can only send unprotected NAS message(s). But these unprotected NAS messages will be discarded by the UE, as UE having security activated can only process protected NAS message.

## 1.2 Questions

To solve the above repeated registration failure issue, SA3 is discussing solutions 6 and 7 from the TR 33.864 that have the following points as their core principle, which changes SA2 call flows and need to be evaluated by SA2:

1. The initial AMF uses the Requested NSSAI (if available to the AMF) and subscribed NSSAI along with existing information/inputs for Network slice selection using Nnssf\_NSSelection\_Get service operation defined in TS 23.502.

2. If the Requested NSSAI is not available to Initial-AMF, the initial AMF does not performs NAS SMC to fetch Requested NSSAI (contained in, e.g. Full Registration Request), and performs Nnssf\_NSSelection\_Get service operation defined in TS 23.502 with subscribed NSSAI along with existing information/inputs for Network slice selection.

3. If the initial AMF determines that a reroute via RAN is required, the initial AMF skips NAS SMC with UE:

The CT1 TS 24.501, clause 5.4.1.2 "EAP based primary authentication and key agreement procedure, states the following: *If the authentication of the UE completes successfully and the serving AMF does not intend to initiate a security mode control procedure bringing into use the partial native 5G NAS security context created by the EAP based primary authentication and key agreement procedure, then the EAP-success message, and the ngKSI are transported from the network to the UE using the AUTHENTICATION RESULT message of the EAP result message transport procedure.*

*NOTE 1: The serving AMF will not initiate a security mode control procedure after the EAP based primary authentication and key agreement procedure e.g. in case of AMF relocation during registration procedure.*

Based on the above information SA3 would like to know the views of SA2 for the following questions respectively.

* **Question 1 to SA2:** Is it feasible for the initial AMF during registration procedure (example., in initial registration with SUCI) after successful ‘primary authentication’ and successful ‘slice selection subscription data’ retrieval from UDM to perform network slice selection using Nnssf\_NSSelection\_Get service operation without Requested NSSAI, but using all other existing IE as inputs (e.g., subscribed NSSAI etc.) ? What slice will be used in this case? Please be aware that Requested NSSAI is conditional IE for Nnssf\_NSSelection\_Get service operation, and only when requested NSSAI is included in the request may NSSF return target AMF info, according to 29.531.
* **Question 2 to SA2:** Can AMF skip NAS SMC for retrieving Full Registration Request containing Requested-NSSAI before performing Nnssf\_NSSelection\_Get service operation?
* **Question 3 to SA2:** Can the initial AMF determines NAS reroute is needed without requested S-NSSAI? If yes, how can the initial AMF obtain target AMF information without Requested S-NSSAI from NSSF? i.e. Does NSSF need Requested S-NSSAI to determine the target AMF info?
* **Question 4 to SA2**: How can target AMF obtains the requested S-NSSAI? After the target AMF receives Requested S-NSSAI, is it possible that AMF reallocation will occur?

# 2 Actions

**To SA2:**

**ACTION:** 3GPP TSG SA WG3 kindly asks SA2 to answer the above SA2 related questions.

# 3 Dates of next TSG SA WG 3 meetings

SA3#103Bis-e 5 - 9 ~July 2021 Electronic meeting (TBC)

SA3#104-e 16 - 27 August 2021 Electronic meeting