**3GPP TSG-SA3 Meeting #103-e *S3-212124-r13***

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**

**Cc:**

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**Attachments:** TR 33.864

# 1 Overall description

## 1.1 General

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 issue related to AMF re-allocation and indirect reroute via RAN (option (B)) specified in TS 23.502 Clause 4.2.2.2.3. TR 33.864 Key Issue #1 describes the registration failure scenario in detail.

To solve the above repeated registration failure issue, SA3 is discussing solutions 6 and 7 from the TR 33.864.

In the procedure of registration with AMF reallocation via RAN defined by SA2, the initial AMF may only be able to obtain Requested S-NSSAIs by one of two methods for different scenarios mentioned in 33.864 Clause 4.3, i.e., (method 1) Requested S-NSSAIs can be obtained after NAS SMC procedure, i.e. from the complete Registration Request message in NAS Security Mode Complete message (or) (ii) if the UE sends a protected registration request, then the initial AMF if it can fetch current 5G security context from the source/old AMF, then the initial AMF will be able to get the requested NSSAI without NAS SMC. For scenarios that require method-1, Solution 6, 7 in TR 33.864 however proposes not to run NAS SMC, just to fetch Requested NSSAI (which means that, the initial AMF may not have the Requested S-NSSAIs). Solution 6, and 7 have the following points as their core principle, which 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 clause 5.2.16.2.1.

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 clause 5.2.16.2.1 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.*

## 1.2 Questions

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

The Initial AMF during registration procedure after successful ‘primary authentication’ does not initiate NAS SMC, and hence may not obtain the Requested S-NSSAIs. In the case the Initial AMF does not have the Requested S-NSSAIs,

* **Question 1:** If the initial AMF successfully obtains ‘slice selection subscription data’ from the UDM with SUPI, is it feasible for the initial AMF to perform network slice selection using the Nnssf\_NSSelection\_Get service operation without Requested NSSAI, but using all other existing IEs as inputs (e.g., subscribed NSSAI etc. as in 23.502 clause 5.2.16.2.1)?
* **Question 2:** Is it feasible to use the TS 23.502 Clause 5.2.16.2.1 Nnssf\_NSSelection\_Get service operation for network slice selection related to AMF reallocation during registration procedure?
* **Question 3:** Can the AMF skip NAS SMC for retrieving the Full Registration Request containing Requested-NSSAI before performing the Nnssf\_NSSelection\_Get service operation?
* **Question 4:** Can the initial AMF determine that NAS reroute is needed without Requested NSSAI? If yes, what slice will be used and How is target AMF determined?
  + Kindly also consider the following information where relevant while providing the response:
    - TS 24.501 Clause 5.4.1.2.
    - TS 29.531 Clause 5.2.2.2.2, Clause 6.1.6.2.10 and Clause 6.1.6.2.2 respectively.
* **Question 5**: How can target AMF obtain the Requested NSSAI? After the target AMF receives the Requested 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 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