**3GPP TSG-SA3 Meeting #103-e *S3-212124-r12***

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, 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.

* **Question 1:** The Initial AMF during registration procedure after successful ‘primary authentication’ does not initiate NAS SMC, and hence may not obtain the requested S-NSSAIs. 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 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?
* **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?
* **Question 6:** Can solutions 6 and 7 meet the SA2 working principles for the AMF re-allocation and reroute via RAN and related network slice selection principles for registration?

# 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