**3GPP TSG SA Meeting #94E *SP-211554***

**E-meeting, December 14 - 20, 2021 (*revision of S2-2109263*)**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **23.502** | **CR** | **3281** | **rev** | **3** | **Current version:** | **17.2.1** |  |
|  |
| *For* ***HE******LP*** *on using this form: comprehensive instructions can be found at http://www.3gpp.org/Change-Requests.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  | 23.502 Update procedure of Registration with Onboarding SNPN |
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| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | Intel, Nokia, Nokia Shanghai Bell, Qualcomm Inc. |
|  |  |
| ***Work item code:*** | eNPN |  | ***Date:*** | 2021-11-05 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP TR 21.900. | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | Since there are two different Onboarding architectures which are DCS hosting AUSF/UDM and DCS hosting AAA server, the procedure of registration with Onboarding SNPN shall be updated correspondingly. |
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| ***Summary of change:*** | Update call flow for registration with Onboarding SNPN to cover two cases i.e. DCS with AAA server and DCS with AUSF/UDM.*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\**Changes in rev 2 to align with the approved S3-214446:- Addition of step 9-3 in Figure 4.2.2.2.4-1 to address the case where the DCS is not involved during primary authentication. |
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| ***Consequences if not approved:*** | The procedure of registration with Onboarding SNPN is not clear to incorporate two architecture of DCS |
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| ***Clauses affected:*** | 4.2.2.2.4 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* First change \* \* \* \*

##### 4.2.2.2.4 Registration with Onboarding SNPN

This clause specifies how a UE can register to an ON-SNPN for provisioning the UE with SO-SNPN credentials and other information to enable SNPN access as defined in clause 5.30.2.10 of TS 23.501 [2].

The Registration procedure for onboarding SNPN shall be supported as specified in clause 4.2.2.2.2 with the following changes compared to the steps in the call flow represented in Figure 4.2.2.2.2-1, covering two cases i.e. when DCS hosting AAA server and when DCS hosting AUSF/UDM as shown in Figure 4.2.2.2.4-1.



Figure 4.2.2.2.4-1: UE Registration with ON-SNPN

1. UE to NG-RAN: AN parameters shall include Onboarding indication if the UE is accessing 5GS for Onboarding. The registration type "SNPN Onboarding" indicates that the UE wants to perform SNPN Onboarding Registration (i.e. allows the UE to access an ON-SNPN for the purpose of provisioning the UE with SO-SNPN credentials). For SNPN Onboarding Registration, a SUCI generated from a SUPI derived from Default UE Credentials shall be included as described in clause 5.30.2.10.2.6 of TS 23.501 [2].

 If the UE has registered in the ON-SNPN for onboarding, it can perform a Mobility Registration Update, or a Periodic Registration Update as specified in clause 4.2.2.2.2. If the onboarding registered UE wants to perform a Mobility Registration Update the AN parameters shall also include an Onboarding indication that the UE is registered for onboarding.

NOTE: When the UE is performing Registration for Onboarding to an ON-SNPN, the UE does not include a Requested NSSAI as the UE is not pre-configured with a S-NSSAI for the purpose of UE onboarding in the ON-SNPN.

2. Based on the Onboarding indication in step 1, the NG-RAN selects an AMF as described in clause 6.3.5 of TS 23.501 [2].

3. NG-RAN to AMF: The N2 message contains the Registration Request as described in step 1.

4. [Conditional] new AMF to old AMF: Namf\_Communication\_UEContextTransfer (complete Registration Request).

5. [Conditional] old AMF to new AMF: Response to Namf\_Communication\_UEContextTransfer (SUPI, UE Context in AMF (as per Table 5.2.2.2.2-1)). Once the registration is completed successfully, the new AMF may start the implementation specific timer for when to deregister the onboarding registered UE if the UE context contains the indication that the UE is registered for onboarding.

6-7. Skipped.

8. When the AMF receives a NAS Registration Request with the 5GS Registration Type set to "SNPN Onboarding", the AMF applies locally configured AMF Configuration Data for Onboarding in order to restrict UE network usage to only onboarding and stores in the UE Context in AMF an indication that the UE is registered for onboarding. The AMF selects an AUSF as described in clause 5.30.2.10.2.6 of TS 23.501 [2]. Based on ON-SNPN policies, the AMF may start an implementation specific deregistration timer configured for UE Onboarding as described in TS 23.501 [2].

9. The authentication is performed as described in TS 33.501 [15].

For DCS hosting AAA server as shown in step 9-1, based on local configuration (e.g. using the realm part of the Onboarding SUCI), the AUSF sends the Onboarding SUCI and Default UE credentials received from the UE towards the DCS via the NSSAAF, which authenticates the UE based on received data from AUSF. During authentication procedure DCS may provide PVS FQDN or PVS IP address for the UE to the AUSF. AUSF provides PVS FQDN or PVS IP address to the AMF.

For DCS hosting AUSF/UDM as shown in step 9-2, the AUSF in DCS domain performs UDM selection. The AMF sends the Onboarding SUCI and Default UE credentials received from the UE towards the AUSF in DCS domain, which authenticates the UE based on received data from AMF. During authentication procedure, DCS may provide PVS FQDN or PVS IP address for the UE to the AUSF. AUSF provides PVS FQDN or PVS IP address to the AMF.

When DCS is not involved during primary authentication as shown in step 9-3, the AMF selects a local AUSF as defined in TS 23.501 [2] clause 6.3.4 and performs primary authentication towards the local AUSF using UE default credentials as described in TS 33.501 [15].

10. [Conditional] new AMF to old AMF: Namf\_Communication\_RegistrationStatusUpdate.

11. [Conditional] AMF to UE: Identity Request/Response (PEI).

 If the PEI was not provided by the UE, the Identity Request procedure is initiated by AMF sending an Identity Request message to the UE to retrieve the PEI.

12. Optionally the new AMF initiates ME identity check by invoking the N5g-eir\_EquipmentIdentityCheck\_Get service operation (see clause 5.2.4.2.2).

 The PEI check is performed as described in clause 4.7.

13-20. Skipped.

21. AMF to UE: The AMF sends a Registration Accept message to the UE indicating that the Registration Request for Onboarding SNPN has been accepted. The Allowed NSSAI containing the S-NSSAI from the AMF Onboarding Configuration Data is included in the N2 message to NG-RAN.

21b. Skipped.

22. UE to AMF: The UE sends a Registration Complete message to the AMF.

23-25. Skipped.

\* \* \* \* End of changes \* \* \* \*