**3GPP TSG-SA WG2 Meeting #150ES2-2202158r01**

**E-meeting, April 06 - 12 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **23.501** | **CR** | **3589** | **rev** | **-** | **Current version:** | **17.4.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](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:***  | Network Slicing Support in SNPN |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | S2 |
|  |  |
| ***Work item code:*** | eNPN |  | ***Date:*** | 2022-03-29 |
|  |  |  |  |  |
| ***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](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *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:*** | In LS C1-215137, there is a question from CT1 regarding support for Network Slicing in SNPN.*CT1 kindly asks SA2 to confirm whether NSAC and NSSRG are applicable to SNPN in Rel-17 or not. In addition, CT1 would appreciate SA2’s feedback on NSSAA in an SNPN.Also, there is LS reply from SA1 S1-214234 adding requirement on performing authentication/authorization for UE accessing network slices of non-public network.*Support for NSSAA was already clarified in CR 3511. This CR clarifies the support of NSAC and NSSRG in SNPN. CR 3408 further clarified that when UE accesses SNPN with CH credentials, the LBO roaming information the AMF gets from UDM does not apply. It needs to be clear that the subscription data is retrieved from UDM. |
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| ***Summary of change:*** | Add clarification in credentials holder architecture figures, so that NSAC is supported for SNPN. NSACF is included in SNPN in figure 5.30.2.9.2-1 and in Figure 5.30.2.9.3-1.Add clarification that in credentials holder architecture using AUSF/UDM the AMF in SNPN receives slicing info (incl. NSSAA and NSSRG) from the UDM of the credentials holder. Clarified that AMF and SMF retrieves subscription data from UDM in CH using AUSF/UDM. |
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| ***Consequences if not approved:*** | NSAC can not be performed when UE is registered in SNPN using CH feature. Unclear how SNPN applies NSSRG when UE is registered in SNPN using CH feature. |
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| ***Clauses affected:*** | 5.30.2.9.2; 5.30.2.9.3 |
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|  | **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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

*FIRST CHANGE*

##### 5.30.2.9.2 Credentials Holder using AAA Server for primary authentication and authorization

The AUSF and the UDM in SNPN may support primary authentication and authorization of UEs using credentials from a AAA Server in a Credentials Holder (CH).

- If the UDM decides that the primary authentication is performed by AAA Server in CH based on the UE's SUPI and subscription data. The Home Network Identifier, is derived by UDM from the SUCI received from AUSF. The UDM then instructs the AUSF that primary authentication by a AAA Server in a CH is required, the AUSF shall discover and select the NSSAAF, and then forward EAP messages to the NSSAAF. The NSSAAF selects AAA Server based on the domain name corresponds to the realm part of the SUPI, relays EAP messages between AUSF and AAA Server (or AAA proxy) and performs related protocol conversion. The AAA Server acts as the EAP Server for the purpose of primary authentication.

Editor's note: It is FFS if only SUCI using null scheme with anonymised SUPI should be supported for this use case and will be decided by SA WG3.

NOTE: The UDM in SNPN, based on SLA between Credentials Holder and SNPN, is pre-configured with information indicating whether the UE needs primary authentication from AAA Server.

- The SUPI is used to identify the UE during primary authentication and authorization towards the AAA Server. SUPI privacy is achieved according to methods in clause I.5 of TS 33.501 [29].

- The AMF discovers and selects the AUSF as described in clause 6.3.4 using the Home Network Identifier (realm part) and Routing Indicator present in the SUCI provided by a UE configured as described in clause 5.30.2.3.

- The AMF and SMF shall retrieve the UE subscription data from UDM using SUPI.

Figure 5.30.2.9.2-1 depicts the 5G System architecture for SNPN with Credentials Holder using AAA Server for primary authentication and authorization.



Figure 5.30.2.9.2-1: 5G System architecture with access to SNPN using credentials from Credentials Holder using AAA Server

NOTE: The NSSAAF deployed in the SNPN can support primary authentication in the SNPN using credentials from Credentials Holder using a AAA Server (as depicted) and/or the NSSAAF can support Network Slice-Specific Authentication and Authorization with a Network Slice-Specific AAA Server (not depicted).

*SECOND CHANGE*

##### 5.30.2.9.3 Credentials Holder using AUSF and UDM for primary authentication and authorization

An SNPN may support primary authentication and authorization of UEs that use credentials from a Credentials Holder using AUSF and UDM. The Credentials Holder may be an SNPN or a PLMN.

Optionally, an SNPN may support network slicing (including Network Slice-Specific Authentication and Authorization, Network Slice Access Control and subscription-based restrictions to simultaneous registration of network slices) for UEs that use credentials from a Credentials Holder using AUSF and UDM. The SNPN retrieves NSSAA and NSSRG information from the UDM of the Credentials Holder.

Figure 5.30.2.9.3-1 depicts the 5G System architecture for SNPN with Credentials Holder using AUSF and UDM for primary authentication and authorization and network slicing.

NOTE: The architecture for SNPN and Credentials Holder using AUSF and UDM is depicted as a non-roaming reference architecture as the UE is not considered to be roaming, even though some of the roaming architecture reference points are also used e.g. for AMF and SMF in SNPN to register with and retrieve subscription data from UDM of the Credentials Holder.



Figure 5.30.2.9.3-1: 5G System architecture with access to SNPN using credentials from Credentials Holder using AUSF and UDM

*END CHANGE*