**3GPP TSG-SA3 Meeting #104-e *S3-212597***

**e-meeting, 16 - 27 August 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **33.501** | **CR** | **1158** | **rev** | **1** | **Current version:** | **17.2.1** |  |
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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:***  | Clairfication on AS key generation after runing NAS SMC |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | S3 |
|  |  |
| ***Work item code:*** | TEI17 |  | ***Date:*** | 2021-08-16 |
|  |  |  |  |  |
| ***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)* |
|  |  |
| ***Reason for change:*** | To store the Kausf at UE in 5G-AKA procedure, the NAS SMC is mandotary to run. NAS SMC is also used to take new partial native security context into use. Take new partial native security context into use may imply to the reader that both NAS and AS security needs to be refreshed. But according to the principle of TS 33.501, there is no strongly binding the refreshing the NAS security context and AS security context. So a clarification is added to make this clear. |
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| ***Summary of change:*** | Add a new sentenct in 5G-AKA to say the mandatory running NAS SMC does not have to refresh the AS security keys. |
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| ***Consequences if not approved:*** | Not clear |
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| ***Clauses affected:*** | 6.1.1.1,  |
|  |  |
|  | **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:*** |  |

\*\*\*\*\*\*\*\*\*\*\* Start of Change\*\*\*\*\*\*\*\*\*\*\*

## 6.1 Primary authentication and key agreement

### 6.1.1 Authentication framework

#### 6.1.1.1 General

The purpose of the primary authentication and key agreement procedures is to enable mutual authentication between the UE and the network and provide keying material that can be used between the UE and the serving network in subsequent security procedures. The keying material generated by the primary authentication and key agreement procedure results in an anchor key called the KSEAF provided by the AUSF of the home network to the SEAF of the serving network.

Keys for more than one security context can be derived from the KSEAF without the need of a new authentication run. A concrete example of this is that an authentication run over a 3GPP access network can also provide keys to establish security between the UE and a N3IWF used in untrusted non-3GPP access.

The anchor key KSEAF is derived from an intermediate key called the KAUSF. The KAUSF is established between the UE and HN resulting from the primary authentication procedure. The KAUSF may be securely stored in the AUSF based on the home operator's policy on using such key. e.g. if the control plane solution for Steering of Roaming (see clause 6.14) or UE Parameter Update procedures (see clause 6.15) or AKMA are supported by the HPLMN.

NOTE A: For standalone non-public networks when an authentication method other than 5G AKA or EAP-AKA' is used, Annex I.2 applies.

NOTE 1: This feature is an optimization that might be useful, for example, when a UE registers to different serving networks for 3GPP-defined access and untrusted non-3GPP access (this is possible according to TS 23.501 [2]). The details of this feature are operator-specific and not in scope of this document.

NOTE 2: A subsequent authentication based on the KAUSF stored in the AUSF gives somewhat weaker guarantees than an authentication directly involving the ARPF and the USIM. It is rather comparable to fast re-authentication in EAP-AKA'.

NOTE 2a: Void.

UE and serving network shall support EAP-AKA' and 5G AKA authentication methods.

NOTE 2b: It is the home operator's decision which authentication method is selected.

The USIM shall reside on a UICC. The UICC may be removable or non-removable.

NOTE 3: For non-3GPP access networks USIM applies in case of terminal with 3GPP access capabilities.

If the terminal supports 3GPP access capabilities, the credentials used with EAP-AKA' and 5G AKA for non-3GPP access networks shall reside on the UICC.

NOTE 4: EAP-AKA' and 5G AKA are the only authentication methods that are supported in UE and serving network, hence only they are described in sub-clause 6.1.3 of the present document. For a private network using the 5G system as specified in [7] an example of how additional authentication methods can be used with the EAP framework is given in the informative Annex B.

NOTE 5: For non-public network (NPN) security the Annex I of the present document provides details.

Upon successful completion of the 5G AKA primary authentication, the AMF shall initiate NAS security mode command procedure (see clause 6.7.2) with the UE.

NOTE 6: The reason to mandatory run the NAS SMC procedure after primary authentication is because the UE does not store the new derived KAUSF until receiving the NAS SMC message. The new partial native NAS security context is taken into use. It is specified in clause 6.9.4.4 whether AS key re-keying is performed.

\*\*\*\*\*\*\*\*\*\*\* End of Change\*\*\*\*\*\*\*\*\*\*\*