**3GPP TSG-SA3 Meeting #100e *S3-201968-r1***

**e-meeting, 17 -28 August 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **0030** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 | **X** | Core Network | **x** |

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|  | | | | | | | | | | |
| ***Title:*** | Support for AKMA context Deregistration option in AKMA | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung | | | | | | | | | |
| ***Source to TSG:*** | S3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | AKMA | | | | |  | ***Date:*** | | | 2020-07-30 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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 can be 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Since KAF is stored in the ME, a malicious ME can continue to use the KAF long after UE deregistration, and thus continue to access the application it is not authorized to use. Even if KAF expires in AF, it can request a key refresh from AAnF. Since AAnF has no information as to whether UE has been purged from the network, it will allow refresh.  Refresh of keys by 3gpp network gives an impression to third party application provider that UE is still present in the network and is authorized to use the application. This not only results in billing issues, but also diminishes the credibility of the AKMA framework. Same issue happens when UE’s authentication fails, or SMC failure happens leading to removal of the UE from the network. The same issue is applicable when AKMA subscription is withdrawn for the user. Hence there is a need for AKMA to support the AKMA key deregistration procedure.  Based on the deregistration procedure, clause 7.1 need to be updated with new service provided by AAnF | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This CR proposes the following changes;   1. To add a new clause 6.X to capture the procedure for AKMA key deregistration/ AKMA context removal support in AKMA. 2. To add a new service support for the AKMA Key derigistration under clause 7.1 i.e. Naanf\_AKMA\_AnchorKey\_deregister used by the AUSF to request the AAnF to delete an AKMA context. | | | | | | | | |
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| ***Consequences if not approved:*** | | Lack of proposed procedure/services leads to the misuse of AKMA services | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6, 7.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 1st change\*\*\*

## 6.X AKMA Key Deregistration procedure

This procedure allows NF Consumers (e.g. AUSF, UDM) request deletion of AKMA Key Material in AAnF after the UE has been purged in the network. This helps prevent misuse of AKMA Key Material by Malacious MEs after UE deregistration or after AKMA subscription is withdrawn.



Figure 6.X-1: AKMA context removal procedure

1. .

AKMA subscription of the UE is withdrawn or UE is purged from the network.

1. UDM initiates Nausf\_UEAuthentication\_Deregister service operation with SUPI and AKMA indication to request the AUSF to delete AKMA context in AAnF. Presence of AKMA indication indicates to AUSF that the request is to initiate deletion AKMA context in AAnF.
2. AUSF initiates Naanf\_AKMA\_AnchorKey\_deregister service operation to request AAnF to clear AKMA context for the given SUPI.
3. AAnF deletes AKMA Context (e.g. A-KID, KAKMA) from its local database.
4. AAnF responds back with success/failure response to AUSF.
5. AUSF responds back with success/failure response to UDM.

From this point onwards, any request to refresh KAF by the AF/NEF fails and UEs can no longer access the application.

\*\*\* End of 1st change\*\*\*

\*\*\* Start of 2nd change\*\*\*

## 7.1 Services Provided by AAnF

### 7.1.1 General

The AAnF provides AKMA Application Key derivation service to the requester NF by Naanf\_AKMA\_KeyRegistration.

### 7.1.2 Naanf\_AKMA\_KeyRegistration

**Service operation name:** Naanf\_AKMA\_KeyRegistration.

**Description:** The NF consumer requests the AAnf to provide AF related key material.

**Input, Required:** A-KID, AF ID

**Input, Optional:** None.

**Output, Required:** KAF, lifetime.

**Output, Optional:** None.

### 7.1.X Naanf\_AKMA\_AnchorKey\_Deregister

**Service operation name:** Naanf\_AKMA\_AnchorKey\_deregister.

**Description:** The NF consumer (e.g. AUSF, UDM) requests the AAnF to delete an AKMA context.

**Input, Required:** SUPI

**Input, Optional:** None.

**Output, Required:** None

**Output, Optional:** None.

\*\*\* End of 2nd change\*\*\*