**3GPP TSG-SA3 Meeting #105-e *S3-220170***

**e-meeting, 14 - 25 February 2022 (revision of S3-yyxxxx)**

**Source: Huawei, HiSilicon**

**Title: New WID on Study of Security aspect of home network triggered primary authentication**

**Document for: Approval**

**Agenda Item: 4.18**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>   
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Study of Security aspect of home network triggered primary authentication

Acronym: FS\_HN\_Auth

Unique identifier:

{A number to be provided by MCC at the plenary}

Potential target Release: Rel-18

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | X |  | X |  |
| No | X |  | X |  |  |
| Don't know |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a Study Item

{Tick one box. "**Feature** / **Building Block** / Work Task" form a hierarchical structure. E.g. no Building Block can be proposed without a corresponding parent Feature. The full structure of all existing Work Items is shown in the 3GPP Work Plan in <ftp://ftp.3gpp.org/Information/WORK_PLAN>}

|  |  |
| --- | --- |
|  | Feature |
|  | Building Block |
|  | *Work Task* |
| X | Study Item |

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| N/A | N/A | N/A | N/A |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| N/A | N/A | N/A |

**Dependency on non-3GPP (draft) specification:**

# 3 Justification

In SA3#104 meeting, Home network triggered primary authentication was discussed to address several issues, such as SoR COUNT wrap around, and Kaf refresh. If the SoR COUNT is wrap around and there is no mechanism to get a new Kausf, a replay attack may happen when UE is roaming if NAS security is not activated at the visited network, or a impersonate attack may happen by an attacker in the middle between the UE and the Home network. Kaf refresh is now binding with the capability of application layer, in case the protocol cannot refresh the Kaf, the AKMA scheme will only be used during when the Kaf is valid. This may become the bottleneck for the promotion of the AKMA.

Thus, a procedure of Home network triggered primary authentication is useful to reduce the shortcomings of those schemes, and it is also benefit to help the home network to gain more control of the UE to face the future architecture enhancement.

Meanwhile, Home network triggered primary authentication may impact on visited network, such as how to deal with the visited network and the home network triggered primary authentication at the same time? Is there a need to optimize the Handover procedure when Home network triggered primary authentication while the UE is performing handover. Not all cases can be seen currently which adds another value of a study.

# 4 Objective

The objective of this study includes: follows:

1. Study the threats and the security requirement that needs HN initiated primary authentication triggered by a network function. Identifying which network function in the HN is better suitable to trigger the primary authentication, and corresponding procedures, and the potential impacts on existing network.
2. Study and investigate the potential threats and the solutions to support that 3rd party AF can request a new KAF when AKMA is used by either triggering a primary authentication or by other means..

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| New specifications {One line per specification. Create/delete lines as needed} | | | | | |
| Type | TS/TR number | Title | For info  at TSG# | For approval at TSG# | Rapporteur |
| Internal TR | TR 33.8XX | Study of HN triggered primary authentication | TSG#96 | TSG#98 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
| N/A | N/A | N/A | N/A |
|  |  |  |  |

# 6 Work item Rapporteur(s)

He Li, Huawei, LIHE2@HUAWEI.COM

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

SA2

CT4

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Huawei |
| HiSilicon |
| OPPO |
| China Mobile |
| LG Electronics |
| Deutsche Telekom AG |
|  |