**3GPP TSG-SA3 Meeting #105-e *S3-22xxxx***

**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: xxx**

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 |  |
| No | X |  | X |  |  |
| Don't know |  | X |  |  |  |

# 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

The support of a home network triggered primary authentication procedure has been discussed in several meetings by now. In fact, there is a need to address several security issues, such as the SoR COUNT wrap around, and KAF refresh in AKMA. For the former issue, in case the SoR COUNT reaches its maximal value, then currently there is no mechanism to generate a new KAUSF. This would allow the COUNT to wrap around without leading to a key stream reuse. For the latter issue, there is currently no procedure to refresh the KAF leaving the whole AKMA feature dependent on the UA\* protocol capabilities. This a limiting factor rendering the whole feature as incomplete.

Therefore, a procedure for a home network triggered primary authentication would be beneficial especially to resolve the issues described above. Furthermore, such a procedure would also enable the home network to gain even better control over the authentication and the security of the UE and make the whole mechanism more future proof, should there be any need for new features.

On the other hand, such an enhancement may have impact on the visited network. Therefore a carefull analysis is required in order to study and assess any potential impact such as on access security and any other security mechanisms pertaining to the UE operations in the serving network.

# 4 Objective

The scope of this stduy includes:

1. Identifying which network function in the HN is better suitable to trigger the primary authentication, and corresponding procedures.
2. Investigating the related potential threats and the solutions for example when both the home and the visisted simluatiously trigger a primary authentication.
3. Studying the potential threats and the solutions in order to support that 3rd party AF can request to trigger a primary authentication.
4. Investigating and assessing the potential impact on existing procedures and especially the visited network.

# 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 home network 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 |
|  |
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