**3GPP TSG-SA3 Meeting #115 *S3-240970-r1***

**Athens, Greece, 26 February – 1 March 2024** (revision of S3-240552)

**Source: Huawei, Hisilicon**

**Title: New SID: Study on Security Aspects of Enhancement of Support for Edge Computing in 5GC — phase 3**

**Document for: Approval**

**Agenda Item: 6**

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 on Security Aspects of Enhancement of Support for Edge Computing in 5GC — phase 3

Acronym: FS\_EDGE\_Ph3

Unique identifier:

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

Potential target Release: Rel-19

# 1 Impacts

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

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

### 

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

**\* Other = e.g. testing**

## 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) |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

{List here other Work Items which relate to the proposed one, such as a Work Item in an earlier Release if further enhancing the feature from the previous Release)}

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 880002 | Study on Security Aspects of Enhancement of Support for Edge Computing in 5GC (FS\_enh\_EC\_SEC) | Rel-18 Stage 3 study on enhancement of support for Edge Computing |
| 1020004 | New SID on Enhancement of support for Edge Computing in 5G Core network — phase 3 (FS\_eEDGE\_5GC\_ph3) | Rel-19 Stage 2 study on enhancement of support for Edge Computation in 5GC |
|  | New WID on architecture for enabling Edge Applications Phase 3 (EDGEAPP\_Ph3) | Rel-19 Stage 6 normative technical specification for enabling EDGE Applications |

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

{This section is to be typically used to identify the IETF dependencies. Delete the header "Dependency on non-3GPP (draft) specification:" if no such dependency}

# 3 Justification

In order to support the typical services in 5G network, especially eMBB services and URLLC based services, the edge computing is acknowledged as one of the key technologies for meeting the demanding Key Performance Indicators (KPIs) of 5G network, e.g. low latency and bandwidth efficiency.

Currently, SA2 has already been initiating the study (FS\_eEDGE\_5GC\_ph3), which aims to study the following issues to complete the full support of Edge Computing in 5GS and defined three key issuesKI#1 - Enhancements for EAS (re)discovery and UPF (re)selection with reducing impact on central 5GC NFs, KI#2 - Enhancement of EAS and local UPF (re)selection, KI#3 - EC Traffic Routing between local part of DN and central part of DN. However, the security of the above issues has not been studied, such as the authentication, authorization, trust mode, and privacy.

Meanwhile, SA6 has already started to develop Phase 3 normative technical specification (EDGEAPP\_Ph3) for enabling edge application architecture and procedures based on 3GPP TS 23.558. Several issues need to be evaluated from the security point of view, such as 1. Enhancement to EEL to support additional scenarios for edge services via a common EAS, and 2. Enhancement to EEL to support additional functionalities for ENS scenarios. Besides, in Rel-18, security of several topics in SA6 Phase2 normative technical specification (EDGEAPP\_Ph2) have still not reached consensus, such as Authorization between EESes, EEC provided information verification, etc. Hence, security on those aspects shall be studied accordingly in SA3.

# 4 Objective

The objective of this study is to study the security threats of enabling edge computing in 5G, derive security requirements, and evaluate potential security solutions, including:

* Study the security aspects on the enhancements for EAS (re)discovery and UPF (re)selection with reducing impact on central 5GC NFs, enhancement of EAS and local UPF (re)selection, and EC Traffic Routing between local part of DN and central part of DN the Edge Hosting Environment information management.
* Study the security on the enhancements to Edge Enabler layer (EEL) to support additional scenarios for edge services.
* Study the authorization between EESes for both Application Context Relocation (ACR) and Edge Node Sharing (ENS) scenarios.
* Study the secure retrieval of 5G system UE Ids and privacy related information in the EDGE.
* Study new mechanisms of DNS security in the context of edge computing

The study shall be based on SA2 and SA6’s work. Further issues and scenarios can be studied as well if the necessary with the progress of SA2 and SA6’s work.

TU estimates and dependencies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Work Task ID | TU Estimate  (Study) | TU Estimate  (Normative) | RAN Dependency  (Yes/No/Maybe) | Inter Work Tasks Dependency |
| Objective #1 | 0.5TU | 0.25 TU | No | No |
| Objective #2 | 1 TU | 0.25 TU | No | No |
| Objective #3 | 1TUs | 0.5 TU | No | No |
| Objective #4 | 1.5TUs | 0.5TU | No | No |
| Objective #5? | 1 TU | 0.5TU | No | No |

## TU estimates and dependencies

Total TU estimates for the study phase: 5

Total TU estimates for the normative phase: 2

Total TU estimates: 7

# 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.xyz | Study on Security Aspects of Enhancement of Support for Edge Computing in 5GC — phase 3 | TSG#103 (MAR 2024) | TSG#103 (JUN 2024) | TBD |
|  |  |  |  |  |  |

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

# 6 Work item Rapporteur(s)

TBD

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

SA2 for system architecture,

SA6 for application enhancement.

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Huawei |
| Hisilicon |
| IDCC |
| Ericsson |
| Nokia |
| Nokia Shanghai Bell |
| Apple |
| Samsung |
|  |