**3GPP TSG-SA3 Meeting #105-e *S3-220426r1***

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

**Source: Lenovo, Motorola Mobility, Interdigital, Verizon, Cablelabs, Mavenir, Johns Hopkins University APL, LG Electronics, Telefonica, NEC, Telia Company, AT&T, Samsung, Broadcom, PCCW Global B.V, China Mobile**

**Title: Study on Zero Trust Security**

**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 on Zero Trust Security

Acronym: FS\_ZTS

Unique identifier: TBD

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

Potential target Release: Rel-18

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | x | 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 |

## 2.2 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 |
|  |  | {optional free text} |

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

# 3 Justification

Zero Trust enables a transition from network defense towards a more proactive in-advance security to be in place to combat the security threats if occur due to any malicious operations or compromised network functionalities. The core principle of Zero Trust [1] includes continuous trust validation (i.e., monitoring the state) and minimizing impacts if any security breach occurs due to external factors (example., botnet opportunities from end-devices) or by an insider (example., compromised or malicious NF). The existing 5G system security is built on certain key principles that include authentication, authorization, and secure connection establishment. But due to the heterogeneity and varied NF deployment options, the NF(s) may run into configuration issues, get exposed to insider threats, or face cyberattacks. So the trust over NF or AF cannot be assumed static and intact throughout its lifetime despite all security pre-configurations. Moreover, if any NF gets compromised in its lifetime, it may impact a large set of UEs service and may impact other connected NFs as well (i.e., through the lateral movement of attack). Also, a mere termination of the NF may still impact the ongoing service. The following articles consider and discuss threat vectors, monitoring, and detection [2, 3]. The adaptation of Zero Trust approach can allow advanced threat detection, prevent the lateral movement of the threat and further compromises, thereby limiting the threat’s impact and reach. The adaption of ‘Zero Trust’ approach for 5GS security can facilitate the realization of potential benefits for vertical service customers and business and ensure service reliability and safety of end-users. Therefore, it is proposed to analyse the existing 5G system to see if it can meet the principles of Zero Trust security. During the course of study, where required, the study will recommend the potential way(s) to ensure trust in the 5G system. The study may analyse the implications of NFs getting exposed to threats, methods to identify the NFs under such threats, and potential ways to ensure seamless service while also ensuring security for the ongoing services served by the impacted NF.

[1] NIST Special Publication 800-207, ‘Zero Trust Architecture’, August 2020.

[2] ETSI GS NFV-SEC 003, Network Functions Virtualisation (NFV); NFV Security; Security and Trust Guidance, December 2014.

[3] ETSI GS NFV-SEC 024, Network Functions Virtualisation (NFV); Security; Security Management, April 2021.

# 4 Objective

Analyse the scenarios that may benefit from a Zero Trust approach by introducing dynamic trust evaluation and identify the associated threats.

Analyse the suitable Zero Trust security approach to address the threats identified where potential security risk exists

Provide recommendations for Zero Trust security architecture, where such recommendations may include but are not limited to requirements, technical enhancements, architectural enhancements, and procedural fixes.

# 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 | 33.xxx | Study on Zero Trust Security | TSG#98 | TSG#99 | Sheeba Backia Mary B, Lenovo, Motorola Mobility, smary@lenovo.com |
|  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 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)

Sheeba Backia Mary B, Lenovo, Motorola Mobility, smary@lenovo.com

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Lenovo |
| Motorola Mobility |
| Interdigital |
| Verizon |
| Cablelabs |
| Mavenir |
| Johns Hopkins University APL |
| LG Electronics |
| Telefonica |
| NEC |
| Telia Company |
| AT&T |
| Samsung |
| Broadcom |
| PCCW Global B.V |
| China Mobile |
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