|  |  |
| --- | --- |
| 3GPP TR 33.894 V0.2.0 (2022-08) | |
| Technical Specification|Report | |
| 3rd Generation Partnership Project;  Technical Specification Group Services and System Aspects;  Study on applicability of the Zero Trust Security principles in mobile networks  (Release 18) | |
|  | |
|  |  |
|  | |
| The present document has been developed within the 3rd Generation Partnership Project (3GPP TM) and may be further elaborated for the purposes of 3GPP. The present document has not been subject to any approval process by the 3GPPOrganizational Partners and shall not be implemented. This Specification is provided for future development work within 3GPPonly. The Organizational Partners accept no liability for any use of this Specification. Specifications and Reports for implementation of the 3GPP TM system should be obtained via the 3GPP Organizational Partners' Publications Offices. | |

|  |
| --- |
|  |
| ***3GPP***  Postal address  3GPP support office address  650 Route des Lucioles - Sophia Antipolis  Valbonne - FRANCE  Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16  Internet  http://www.3gpp.org |
| ***Copyright Notification***  No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.  © 2021, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).  All rights reserved.  UMTS™ is a Trade Mark of ETSI registered for the benefit of its members  3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners LTE™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners  GSM® and the GSM logo are registered and owned by the GSM Association |

Contents

Foreword 4

Introduction 5

1 Scope 6

2 References 6

3 Definitions of terms, symbols and abbreviations 6

3.1 Terms 6

3.2 Symbols 6

3.3 Abbreviations 7

4 Architectural and security assumptions 7

5 Key issues 7

5.X Key Issue #X: <Key Issue Name> 7

5.X.1 Key issue details 7

5.X.2 Security threats 7

5.X.3 Potential security requirements 7

6 Solutions 7

6.Y Solution #Y: <Solution Name> 7

6.Y.1 Introduction 7

6.Y.2 Solution details 7

6.Y.3 Evaluation 7

7 Conclusions 8

8 Evaluation of the current security mechanisms 8

8.Y Tenet #Y: <Tenet Name> 8

8.Y.1 Description 8

8.Y.2 Relevant security mechanisms 8

8.Y.3 Evaluation 8

Annex A (informative): Change history 9

# Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

**shall** indicates a mandatory requirement to do something

**shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

**should** indicates a recommendation to do something

**should not** indicates a recommendation not to do something

**may** indicates permission to do something

**need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

**can** indicates that something is possible

**cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

**will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

**might not** indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

**is** (or any other verb in the indicative mood) indicates a statement of fact

**is not** (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

# Introduction

Editor’s Note: This clause contains some background information for the study.

# 1 Scope

The present document studies some Zero Trust Security principles that can be applied to the 5G System core network. The document will further analyse potential threats, study necessary security enhancements, and document various decisions related to solutions as to be adopted or not adopted after evaluating the associated risks and the complexity. The document specifically covers the following aspects.

* Analyse the 3GPP 5GS security scenarios related to the 5G core network that may benefit from a Zero Trust principle and identify the associated threats.
* Analyse the suitable Zero Trust security mechanisms (i.e., for enabling trust evaluation and ensuring trust) to address the threats identified where potential security risk exists.
* Provide recommendations for support of additional Zero Trust principles in 5GS security architecture with suitable future normative work directions, where such recommendations may include 3GPP 5G security requirements, technical enhancements, and procedural enhancements.

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] NIST Special Publication 800-207 Zero Trust Architecture.

…

[x] <doctype> <#>[ ([up to and including]{yyyy[-mm]|V<a[.b[.c]]>}[onwards])]: "<Title>".

# 3 Definitions of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the terms given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

**example:** text used to clarify abstract rules by applying them literally.

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

<symbol> <Explanation>

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

<ABBREVIATION> <Expansion>

# 4 Architectural and security assumptions

This clause contains assumptions for the study. If there are no assumptions at the end of the study, the clause will be removed before sending for approval.

# 5 Key issues

Editor’s Note: This clause contains all the key issues identified during the study.

## 5.X Key Issue #X: <Key Issue Name>

### 5.X.1 Key issue details

### 5.X.2 Security threats

### 5.X.3 Potential security requirements

# 6 Solutions

Editor’s Note: This clause contains the proposed solutions addressing the identified key issues.

## 6.Y Solution #Y: <Solution Name>

### 6.Y.1 Introduction

Editor’s Note: Each solution should list the key issues being addressed.

### 6.Y.2 Solution details

### 6.Y.3 Evaluation

Editor’s Note: Each solution should motivate how the potential security requirements of the key issues being addressed are fulfilled.

# 7 Conclusions

Editor’s Note: This clause contains the agreed conclusions that will form the basis for any normative work.

# 8 Evaluation of the current security mechanisms

Editor's Note: This clause contains an evaluation of the current security mechanisms with respect to the zero trust security tenets described in [2].

## 8.Y Tenet #Y: <Tenet Name>

Editor's Note: This is the template for zero trust tenet analysis and for the evaluation of the relevant security mechanisms if any. This template is to be removed before the TR is sent for approval.

### 8.Y.1 Description

Editor's Note: This clause gives a short description of the tenet, any necessary details to put into the 5G System context and its relevance.

### 8.Y.2 Relevant security mechanisms

Editor's Note: This clause lists the relevant specified security mechanisms if any.

### 8.Y.3 Evaluation

Editor's Note: This clause gives an analysis and a stand point on the sufficiency of the relevant security mechanisms and identifies any potential gaps that would require a more thorough study.

Annex A (informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2022-07 | SA3#107e Adhoc | S3-221691 |  |  |  | Approved Skeleton (S3-221520) and Scope (S3-221588). | 0.1.0 |
| 2022-08 | SA3#108-e | S3-222423 |  |  |  | Addition of tenet evaluation clause ([S3-222057](https://apc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_SA%2FWG3_Security%2FTSGS3_108e%2FDocs%2FS3-222057.zip&data=05%7C01%7Csmary%40LENOVO.COM%7C193a24bb76134356318008da875dc98f%7C5c7d0b28bdf8410caa934df372b16203%7C0%7C0%7C637971134133650941%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=s9e6chkMyfSi5BW0IzzgVIp2XBjp6WS6x3ncX4MIWS8%3D&reserved=0)) | 0.2.0 |