**3GPP TSG-SA3 Meeting #123 Draft S3-253029**

Goteborg, Sweden, 25 – 29 August 2025

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **33.513** | **CR** | **Draft CR** | **rev** | **-** | **Current version:** | **19.0.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network |  |

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| ***Title:*** | Corrections to 33.513 based on GSMA NESASG agreements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon, CAICT | | | | | | | | | |
| ***Source to TSG:*** | S3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2025-08-18 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-20 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | According to GSMA NESASG agreements, several corrections to 33.513 are needed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Complementing abbreviations not listed in TR 21.905. 2. Remove H-UPF from the simulated functions. 3. Editorial corrections. | | | | | | | | |
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| ***Consequences if not approved:*** | | Ambiguity for readers. Low quality of SCAS documents. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.3, 4.2.1, 4.2.2.3, 4.2.2.7 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* START of CHANGES\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## 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].

ESP Encapsulating Security Payload

gNB gNodeB

H-SMF Home-Session Management Function

H-UPF Home-User Plane Function

IKE Internet Key Exchange

IPUPS Inter-PLMN User Plane Security

SBA Service Based Architecture

SBI Service Based Interfaces

SEG Security Gateway

SMF Session Management Function

V-SMF Visited-Session Management Function

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* END of 1st CHANGE\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* START of 2nd CHANGE\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 4.2.1 Introduction

The security functional requirements and the related test cases specific for UPF are described in the following clause.

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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* START of 3rd CHANGE\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 4.2.2.3 Replay protection of user data transported over N3 interface

*Requirement Name:* Replay protection of user data transported over N3 interface

*Requirement Reference: TS 33.501 [2], Clause 9.3*

*Requirement Description:* The transported user data between gNB and UPF is replay protected as specified in TS 33.501, clause 9.3.

*Threat Reference*: TR 33.926 [7], Clause L.2.2, "No protection or weak protection for user plane data"

**TEST CASE:**

NOTE 1: Void.

**Test Name:** TC\_UP\_DATA\_REPLAY\_UPF

**Purpose:**

Verify that the transported user data between gNB and UPF are replay protected.

**Procedure and execution steps:**

**Pre-Condition:**

- UPF network product is connected in simulated/real network environment.

- The tunnel mode IPsec ESP and IKE certificate authentication is implemented.

- Tester shall have knowledge of the security parameters of tunnel for decrypting the ESP packets.

- Tester shall have access to the original user data transported via N3 reference point between gNB and UPF.

NOTE 2: This test case is only applicable to UPF supporting IPSec in N3 interface without the use of a SEG.

**Execution Steps:**

The requirement mentioned in this clause is tested in accordance with the procedure mentioned in clause 4.2.3.2.4 of TS 33.117 [3].

**Expected Results:**

The user data transported between UE and UPF is replay protected.

**Expected format of evidence:**

Evidence suitable for the interface, e.g., evidence can be presented in the form of screenshot/screen-capture.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* END of 3rd CHANGE\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* START of 4th CHANGE\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 4.2.2.7 IPUPS

*Requirement Name:* IPUPS packeting handling

*Requirement Reference: TS 33.501[2], clause 5.9.3.4*

*Requirement Description:*

The IPUPS only forwards GTP-U packets that contain an F-TEID that belongs to an active PDU session and discard all others as specified in TS 33.501 [2], clause 5.9.3.4.

*Threat Reference:* TR 33.926 [7], Clause L.2.5, "invalid user plane data forwarding"

**TEST CASE:**

NOTE 1: This test case is only applicable to UPF supporting IPUPS.

**Test Name:** TC\_IPUPS\_PACKET\_HANDLING

**Purpose:**

Verify that the packets not belonging to an active PDU session are discarded.

**Pre-Conditions:**

Test environment is set up with a V-SMF, an H-SMF, and a gNB which may be simulated.

**Execution Steps:**

1) The V-SMF requests the UPF with IPUPS functionality under test to establish an N4 session for a PDU session in home-routing roaming. The UPF with IPUPS functionality under test responds to the SMF with the F-TEID for the N9 tunnel towards the H-UPF, and the F-TEID for the N3 tunnel towards the gNB.

2) The V-SMF requests the H-SMF to establish a PDU session providing the received F-TEID for the N9 tunnel.

3) The H-SMF requests the H-UPF to establish an N4 session providing the received F-TEID for the N9 tunnel. H-UPF in the response provides its F-TEID for the N9 tunnel. The H-SMF provides the received F-TEID from the H-UPF to the V-SMF.

4) The V-SMF requests the gNB to allocate resource for the PDU session providing the F-TEID for the N3 tunnel received at step 1. The gNB replies with its F-TEID for the N3 tunnel to the V-SMF.

5) The V-SMF provides the UPF with IPUPS functionality under test with the received F-TEID assigned by the gNB for the N3 tunnel and the received F-TEID assigned by the H-UPF for the N9 tunnel.

6) The H-UPF is triggered to send GTP-U packets using the F-TEID assigned by the V-UPF for the N9 tunnel.

7) The H-UPF is triggered to send GTP-U packets using an F-TEID different than the one assigned by V-UPF for N9 tunnel.

**Expected Results:**

When the H-UPF is triggered to send GTP-U packets using the F-TEID assigned by the V-UPF for the N9 tunnel (step 6 in the execution steps), GTP-U packets are witnessed over the N3 tunnel.

When the H-UPF is triggered to send GTP-U packets using an F-TEID different than the one assigned by the V-UPF (step 7 in the execution steps), no GTP-U packets are witnessed over the N3 tunnel.

**Expected format of evidence:**

Files recording the GTP packets captured (e.g. pcap trace).

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