**3GPP TSG-SA3 Meeting #99e *S3-201246-r1***

**e-meeting, 11 -15 May 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **0833** | **rev** |  | **Current version:** |  |  |
|  | | | | | | | | |
| *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 | **x** |

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| ***Title:*** | Security entities at the perimeter of the 5G Core network | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Juniper | | | | | | | | | |
| ***Source to TSG:*** | S3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | UPGF | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The 5G System architecture introduces security entities in the 5G Core network, but 2 are missing in the general section.  Further it needs to be clarified that SEPP is for protection of control plane messages and IPUPS for protection of user plane messages.  In addition, the NOTE in 4.2.2 including normative text is reformulated and the term “Inter PLMN” corrected. | | | | | | | | |
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| ***Summary of change:*** | | - Correct term to “Inter-PLMN”  - correction to general part of clause 4.2 including removal of hanging paragraph  - Clarification that SEPP is for protection of control plane messages and IPUPS is for protection of user plane messages.  - Adding SEPP and IPUPS. | | | | | | | | |
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| ***Consequences if not approved:*** | | Unclearity in spec. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.2, 4.2., 4.2.1, 4.2.2, 4.2.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 CHANGE**

## 3.2 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].

5GC 5G Core Network

5G-AN 5G Access Network

5G-RG 5G Residential Gateway

NG-RAN 5G Radio Access Network

5G AV 5G Authentication Vector

5G HE AV 5G Home Environment Authentication Vector

5G SE AV 5G Serving Environment Authentication Vector

ABBAAnti-Bidding down Between Architectures

AEAD Authenticated Encryption with Associated Data

AES Advanced Encryption Standard

AKA Authentication and Key Agreement

AMF Access and Mobility Management Function

AMF Authentication Management Field

NOTE: If necessary, the full word is spelled out to disambiguate the abbreviation.

ARPF Authentication credential Repository and Processing Function

AUSF Authentication Server Function

AUTN AUthentication TokeN

AV Authentication Vector

AV' transformed Authentication Vector

BAP Backhaul Adaptation Protocol

BH Backhaul

Cell-ID Cell Identity as used in TS 38.331 [22]

CHO Conditional Handover

cIPX consumer's IPX

CKSRVCC Cipher Key for Single Radio Voice Continuity

CP Control Plane

cSEPP consumer's SEPP

CTR Counter (mode)

CU Central Unit

DN Data Network

DNN Data Network Name

DU Distributed Unit

EAP Extensible Authentication Protocol

EMSK Extended Master Session Key

EPS Evolved Packet System

FN-RG Fixed Network RG

gNB NR Node B

GUTI Globally Unique Temporary UE Identity

HRES Hash RESponse

HXRES Hash eXpected RESponse

IAB Integrated Access and Backhaul

IKE Internet Key Exchange

IKSRVCC Integrity Key for Single Radio Voice Continuity

IPUPS Inter-PLMN UP Security

IPX IP exchange service

KSI Key Set Identifier

KSISRVCC Key Set Identifier for Single Radio Voice Continuity

LI Lawful Intercept

MN Master Node

MR-DC Multi-Radio Dual Connectivity

MSK Master Session Key

N3IWF Non-3GPP access InterWorking Function

NAI Network Access Identifier

NAS Non Access Stratum

NDS Network Domain Security

NEA Encryption Algorithm for 5G

NF Network Function

NG Next Generation

ng-eNB Next Generation Evolved Node-B

ngKSI Key Set Identifier in 5G

N5CW Non-5G-Capable over WLAN

N5GC Non-5G-Capable

NIA Integrity Algorithm for 5G

NR New Radio

NR-DC NR-NR Dual Connectivity

NSSAI Network Slice Selection Assistance Information

PDN Packet Data Network

PEI Permanent Equipment Identifier

pIPX producer's IPX

PRINS PRotocol for N32 INterconnect Security

pSEPP producer's SEPP

QoS Quality of Service

RES RESponse

SCG Secondary Cell Group

SEAF SEcurity Anchor Function

SECOP Service COmmunication Proxy

NOTE: This abbreviation is used for disambiguation. 3GPP TS 23.501 [2] uses the abbreviation SCP.SEG Security Gateway

SEPP Security Edge Protection Proxy

SIDF Subscription Identifier De-concealing Function

SMC Security Mode Command

SMF Session Management Function

SN Secondary Node

SN Id Serving Network Identifier

SUCI Subscription Concealed Identifier

SUPI Subscription Permanent Identifier

TLS Transport Layer Security

TNAN Trusted Non-3GPP Access Network

TNAP Trusted Non-3GPP Access Point

TNGF Trusted Non-3GPP Gateway Function

TWAP Trusted WLAN Access Point

TWIF Trusted WLAN Interworking Function

TSC Time Sensitive Communication

UE User Equipment

UEA UMTS Encryption Algorithm

UDM Unified Data Management

UDR Unified Data Repository

UIA UMTS Integrity Algorithm

ULR Update Location Request

UP User Plane

UPF User Plane Function

URLLC Ultra Reliable Low Latency Communication

USIM Universal Subscriber Identity Module

XRES eXpected RESponse

**\*\*\*\* NEXT CHANGE**

## 4.2 Security entities at the perimeter of the 5G Core network

### 4.2.1 Security Edge Protection Proxy (SEPP)

The 5G System architecture introduces a Security Edge Protection Proxy (SEPP) as an entity sitting at the perimeter of the PLMN for protecting control plane messages.

The SEPP enforces inter-PLMN security on the N32 interface.

### 4.2.2 Inter-PLMN UP Security (IPUPS)

The 5G System architecture introduces Inter-PLMN UP Security (IPUPS) at the perimeter of the PLMN for protecting user plane messages.

The IPUPS is a functionality of the UPF that enforces GTP-U security on the N9 interface between UPFs of the visited and home PLMNs.

NOTE: IPUPS can be activated with other functionality in a UPF or activated in a UPF that is dedicated to be used for IPUPS functionality (see also TS 23.501 [2], clause 5.8.2.14).

**\*\*\*\*\*\*\*\* NEXT CHANGE**

## 4.3 Security entities in the 5G Core network

The 5G System architecture introduces, in addition those mentioned in clause 4.2, the following security entities in the 5G Core network:

AUSF: AUthentication Server Function;

ARPF: Authentication credential Repository and Processing Function;

SIDF: Subscription Identifier De-concealing Function;

SEAF: SEcurity Anchor Function.

**\*\*\*\*\*\*\*\* END OF CHANGE**