**3GPP TSG-CT WG1 Meeting #138-eC1-22**

**E-Meeting, 10th – 14th October 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.501** | **CR** | **4744** | **rev** | **1** | **Current version:** | **18.0.1** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **x** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Rename 5GPRUK ID and 5GPRUK in CP based solution and rename PRUK and PRUK ID in UP based solution | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Telecom, Ericsson，Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_ProSe | | | | |  | ***Date:*** | | | 2022-09-30 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In S3-222359, SA3 decided to change terminology as follows:  - 5GPRUK -> CP-PRUK;  - 5GPRUK ID -> CP-PRUK ID;  - PRUK -> UP-PRUK; and  - PRUK ID -> UP-PRUK ID.  To avoid confusion, CT1 TSs should be aligned with SA3 decision. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Terminology is aligned with SA3 terminology, i.e.:  - 5GPRUK -> CP-PRUK;  - 5GPRUK ID -> CP-PRUK ID;  - PRUK -> UP-PRUK; and  - PRUK ID -> UP-PRUK ID.  Backward compatibility analysis:  Backward compatible CR. What this CR states are about already existing features supported by the network. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | CT1 terminology is not aligned with SA3 terminology, resulting into confusing among UE developers and possible interoperability issues. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.2, 5.5.4.1, 5.5.4.3, 5.5.4.4, 6.6.2.2, 9.11.3.89, 9.11.3.90, 9.11.4.29 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\*\*\*\*\* 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].

4G-GUTI 4G-Globally Unique Temporary Identifier

5GCN 5G Core Network

5G-GUTI 5G-Globally Unique Temporary Identifier

5GMM 5GS Mobility Management

5G-RG 5G Residential Gateway

5G-BRG 5G Broadband Residential Gateway

5G-CRG 5G Cable Residential Gateway

5GS 5G System

5GSM 5GS Session Management

5G-S-TMSI 5G S-Temporary Mobile Subscription Identifier

5G-TMSI 5G Temporary Mobile Subscription Identifier

5QI 5G QoS Identifier

ACS Auto-Configuration Server

AKA Authentication and Key Agreement

AKMA Authentication and Key Management for Applications

A-KID AKMA Key Identifier

A-TID AKMA Temporary Identifier

AMBR Aggregate Maximum Bit Rate

AMF Access and Mobility Management Function

APN Access Point Name

AS Access stratum

ATSSS Access Traffic Steering, Switching and Splitting

AUSF Authentication Server Function

CAG Closed access group

CGI Cell Global Identity

CHAP Challenge Handshake Authentication Protocol

CP-PRUK Control Plane ProSe Remote User Key

DDX Downlink Data Expected

DL Downlink

DN Data Network

DNN Data Network Name

DNS Domain Name System

eDRX Extended DRX cycle

DS-TT Device-Side TSN Translator

EUI Extended Unique Identifier

E-UTRAN Evolved Universal Terrestrial Radio Access Network

EAC Early Admission Control

EAP-AKA' Improved Extensible Authentication Protocol method for 3rd generation Authentication and Key Agreement

EAS Edge Application Server

EASDF Edge Application Server Discovery Function

ECIES Elliptic Curve Integrated Encryption Scheme

ECS Edge Configuration Server

ECSP Edge Computing Service Provider

EDC Edge DNS Client

EEC Edge Enabler Client

EPD Extended Protocol Discriminator

EMM EPS Mobility Management

EPC Evolved Packet Core Network

EPS Evolved Packet System

EPS-UPIP User-plane integrity protection in EPS

ESM EPS Session Management

FN-RG Fixed Network RG

FN-BRG Fixed Network Broadband RG

FN-CRG Fixed Network Cable RG

Gbps Gigabits per second

GEO Geostationary Orbit

GFBR Guaranteed Flow Bit Rate

GUAMI Globally Unique AMF Identifier

IAB Integrated access and backhaul

IMEI International Mobile station Equipment Identity

IMEISV International Mobile station Equipment Identity and Software Version number

IMSI International Mobile Subscriber Identity

IP-CAN IP-Connectivity Access Network

KSI Key Set Identifier

LADN Local Area Data Network

LCS LoCation Services

LEO Low Earth Orbit

LMF Location Management Function

LPP LTE Positioning Protocol

MAC Message Authentication Code

MA PDU Multi-Access PDU

MBS Multicast/Broadcast Services

Mbps Megabits per second

MCS Mission Critical Service

MEO Medium Earth Orbit

MFBR Maximum Flow Bit Rate

MICO Mobile Initiated Connection Only

MINT Minimization of Service Interruption

MPS Multimedia Priority Service

MSK MBS Service Key

MTK MBS Traffic Key

MUSIM Multi-USIM

N3IWF Non-3GPP Inter-Working Function

N5CW Non-5G-Capable over WLAN

N5GC Non-5G Capable

NAI Network Access Identifier

NITZ Network Identity and Time Zone

ngKSI Key Set Identifier for Next Generation Radio Access Network

NPN Non-public network

NR New Radio

NSAC Network Slice Admission Control

NSACF Network Slice Admission Control Function

NSAG Network slice AS group

NSSAA Network slice-specific authentication and authorization

NSSAAF Network Slice-Specific and SNPN authentication and authorization Function

NSSAI Network Slice Selection Assistance Information

NSSRG Network Slice Simultaneous Registration Group

NSWO Non-Seamless WLAN Offload

ON-SNPN Onboarding Standalone Non-Public Network

OS Operating System

OS Id OS Identity

PAP Password Authentication Protocol

PCO Protocol Configuration Option

PEI Permanent Equipment Identifier

PEIPS Paging Early Indication with Paging Subgrouping

PNI-NPN Public Network Integrated Non-Public Network

ProSe Proximity based Services

ProSeP 5G ProSe policy

PTI Procedure Transaction Identity

PTP Precision Time Protocol

PVS Provisioning Server

QFI QoS Flow Identifier

QoS Quality of Service

QRI QoS Rule Identifier

RACS Radio Capability Signalling Optimisation

(R)AN (Radio) Access Network

RFSP RAT Frequency Selection Priority

RG Residential Gateway

RPLMN Registered PLMN

RQA Reflective QoS Attribute

RQI Reflective QoS Indication

RSC Relay Service Code

RSN Redundancy Sequence Number

RSNPN Registered SNPN

S-NSSAI Single NSSAI

SA Security Association

SDF Service Data Flow

SDT Small Data Transmission

SMF Session Management Function

SGC Service Gap Control

SNN Serving Network Name

SNPN Stand-alone Non-Public Network

SOR Steering of Roaming

SOR-CMCI Steering of Roaming Connected Mode Control Information

SUCI Subscription Concealed Identifier

SUPI Subscription Permanent Identifier

TA Tracking Area

TAC Tracking Area Code

TAI Tracking Area Identity

Tbps Terabits per second

TMGI Temporary Mobile Group Identity

TNGF Trusted Non-3GPP Gateway Function

TSC Time Sensitive Communication

TSCTSF Time Sensitive Communication and Time Synchronization Function

TWIF Trusted WLAN Interworking Function

TSN Time-Sensitive Networking

UAS Uncrewed Aerial System

UAV Uncrewed Aerial Vehicle

UDM Unified Data Management

UL Uplink

UPDS UE policy delivery service

UPF User Plane Function

UP-PRUK User Plane ProSe Remote User Key

UPSC UE Policy Section Code

UPSI UE Policy Section Identifier

URN Uniform Resource Name

URSP UE Route Selection Policy

USS UAS Service Supplier

UUAA USS UAV Authorization/Authentication

V2X Vehicle-to-Everything

V2XP V2X policy

W-AGF Wireline Access Gateway Function

WLAN Wireless Local Area Network

WUS Wake-up signal

\*\*\*\*\* change \*\*\*\*\*

#### 5.5.4.1 General

The purpose of the authentication and key agreement procedure for 5G ProSe UE-to-network relay is to perform the authentication for 5G ProSe remote UE initiated by the 5G ProSe UE-to-network relay and to agree on the KAUSF\_P and KNR\_ProSe when the security for 5G ProSe communication via 5G ProSe UE-to-network relay is performed over control plane as specified in 3GPP TS 33.503 [56].

The procedure as shown in figure 5.5.4.1.1 is initiated by the UE when the UE receives the ProSe direct link establishment request including the SUCI or the CP-PRUK ID of the 5G ProSe remote UE from the 5G ProSe remote UE, for establishing secure PC5 unicast link as specified in 3GPP TS 24.554 [19E].

If the network decides to process the relay key request message, the EAP based authentication and key agreement procedure is initiated and controlled by the network. The exchanges of EAP messages between the 5G ProSe remote UE and the network are relayed by the UE.



Figure 5.5.4.1.1: Authentication and key agreement procedure for 5G ProSe UE-to-network relay

\*\*\*\*\* change \*\*\*\*\*

#### 5.5.4.3 UE-initiated authentication and key agreement procedure initiation

Upon receiving a ProSe direct link establishment request from the 5G ProSe remote UE including the SUCI or the CP-PRUK ID of the 5G ProSe remote UE, for establishing a secure PC5 unicast link as specified in 3GPP TS 24.554 [19E] when the security for 5G ProSe communication via 5G ProSe UE-to-network relay is performed over control plane as specified in 3GPP TS 33.503 [56], the UE shall:

a) allocate a PRTI value as specified in clause 5.5.4.2;

b) create a RELAY KEY REQUEST message;

c) set the PRTI IE of the RELAY KEY REQUEST message to the allocated PRTI value;

d) set the relay key request parameters IE of the RELAY KEY REQUEST message with SUCI or the CP-PRUK ID, relay service code, and nonce\_1 received from the of the 5G ProSe remote UE;

e) send the RELAY KEY REQUEST message; and

f) start the timer T3527 upon sending the RELAY KEY REQUEST message.

\*\*\*\*\* change \*\*\*\*\*

#### 5.5.4.4 UE-initiated authentication and key agreement procedure accepted by the network

Upon receiving the RELAY KEY REQUEST message, the AMF processes the message and interacts with the AUSF as specified in 3GPP TS 33.503 [56]. If EAP-AKA' authentication for the 5G ProSe UE-to-network relay is initiated by the network, the AMF shall:

a) create a RELAY AUTHENTICATION REQUEST message;

b) set the PRTI IE of the RELAY AUTHENTICATION REQUEST message to the PRTI value of the received RELAY KEY REQUEST message;

c) set the EAP message IE of the RELAY AUTHENTICATION REQUEST message to EAP request message received from the AUSF; and

d) send the RELAY AUTHENTICATION REQUEST message to the UE.

Upon receiving the RELAY AUTHENTICATION REQUEST message, the UE stops the timer T3527 and forwards the EAP message to the 5G ProSe remote UE as specified in 3GPP TS 24.554 [19E].

Upon receiving the EAP response message from the 5G ProSe remote UE as specified in 3GPP TS 24.554 [19E], the UE shall:

a) create a RELAY AUTHENTICATION RESPONSE message;

b) set the PRTI IE of the RELAY AUTHENTICATION RESPONSE message to the PRTI value of the received RELAY AUTHENTICATION REQUEST message;

c) set the EAP message IE of the RELAY AUTHENTICATION RESPONSE message to EAP request message received from the 5G ProSe remote UE; and

d) start a timer T3527 upon sending the RELAY AUTHENTICATION RESPONSE message to the AMF.

After receiving the RELAY AUTHENTICATION RESPONSE message, the AMF may send a new RELAY AUTHENTICATION REQUEST message carrying EAP request message according to further handling of EAP-AKA' authentication from the AUSF as specified in 3GPP TS 33.503 [56]. The UE repeats the handling of the RELAY AUTHENTICATION REQUEST message as described above.

Upon receiving the message from the AUSF that the authentication is successful, the AMF shall:

a) create a RELAY KEY ACCEPT message;

b) set the PRTI IE of the RELAY KEY ACCEPT message to the PRTI value of the RELAY KEY REQUEST message;

c) include the EAP message IE of the RELAY KEY ACCEPT message set to EAP-success message received from the AUSF, if any;

d) include the relay key response parameters IE of the RELAY KEY ACCEPT message set to KNR\_ProSe and nonce\_2 received from AUSF; and

e) include the CP-PRUK ID, if provided by AUSF, in the relay key response parameters IE of the RELAY KEY ACCEPT message.

Upon receiving the RELAY KEY ACCEPT message, the UE shall forward the EAP-success message, if any, and nonce\_2 to the 5G ProSe remote UE as specified in 3GPP TS 24.554 [19E], and considers the authentication is completed successfully.

\*\*\*\*\* change \*\*\*\*\*

#### 6.6.2.2 Remote UE report procedure initiation

In order to initiate the 5G ProSe remote UE report procedure, the UE shall create a REMOTE UE REPORT message.

The UE shall include information of newly connected or disconnected 5G ProSe remote UEs to the network in the REMOTE UE REPORT message by setting the values of the Remote UE context connected IE or the Remote UE context disconnected IE to the 5G ProSe remote UE identities that are being connected or disconnected, respectively.

The UE shall set the Remote UE ID with:

a) the UP-PRUK ID of the 5G ProSe remote UE, if the security for 5G ProSe communication via 5G ProSe UE-to-network relay is performed over user plane as specified in 3GPP TS 33.503 [56]; or

b) the CP-PRUK ID of the 5G ProSe remote UE, if the security for 5G ProSe communication via 5G ProSe UE-to-network relay is performed over control plane as specified in 3GPP TS 33.503 [56].

If the UE sets the Remote UE ID with the UP-PRUK ID of the 5G ProSe remote UE and the UP-PRUK ID is in 64-bit string format, the UE shall include the HPLMN ID of the remote UE.

The UE shall set the PDU session ID IE to the value of the PDU session associated with the 5G ProSe remote UE connected to the 5G ProSe layer-3 UE-to-network relay UE or disconnected from the 5G ProSe layer-3 UE-to-network relay UE.

The UE shall allocate a PTI value currently not used and shall set the PTI IE of the REMOTE UE REPORT message to the allocated PTI value.

The UE shall transport the REMOTE UE REPORT message and the PDU session ID, using the NAS transport procedure as specified in subclause 5.4.5, and the UE shall start timer T3586 (see example in figure 6.6.2.2.1).



Figure 6.6.2.2.1: Remote UE report procedure

\*\*\*\*\* change \*\*\*\*\*

#### 9.11.3.89 Relay key request parameters

The purpose of the relay key request parameters information element is to transport the parameters of the key request for 5G ProSe UE-to-network relay as specified in 3GPP TS 33.503 [56].

The relay key request parameters information element is coded as shown in figure 9.11.3.89.1, figure 9.11.3.89.2 and table 9.11.3.89.1.

The relay key request parameters is a type 6 information element.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Relay key request parameters IEI | | | | | | | | octet 1 |
| Length of Relay key request parameters | | | | | | | | octet 2  octet 3 |
| Relay service code | | | | | | | | octet 4  octet 6 |
| Nonce\_1 | | | | | | | | octet 7  octet 22 |
| Remote UE identity | | | | | | | | octet 23  octet n |

Figure 9.11.3.89.1: Relay key request parameters information element

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | | 7 | | 6 | 5 | 4 | 3 | 2 | 1 |  | |
| 0  spare | 0  spare | 0  spare | | 0  spare | 0  spare | 0  spare | 0  spare | RUIT | | octet 23 | |
| Remote UE ID | | | | | | | | | | octet 23+1  octet n | |

Figure 9.11.3.89.2: Remote UE identity

Table 9.11.3.89.1: Relay key request parameters information element

|  |
| --- |
| Relay service code (octet 4 to 6)  The relay service code contains 24-bit relay service code as defined in 3GPP TS 24.554 [19E].  Nonce\_1 (octet 7 to 22)  Nonce\_1 is the 128-bit nonce value as defined in 3GPP TS 24.554 [19E].  Remote UE ID type (RUIT) (octet 23, bit 1)  Bit  **1**  0 SUCI  1 CP-PRUK ID  Remote UE ID (octet 23+1 to n)  Remote UE ID indicates the value of the 5G ProSe remote UE identity.  If the Remote UE ID type is set to SUCI, the Remote UE ID is coded as 5GS mobile identity IE starting from octet 2 with the Type of identity set to "SUCI" (see subclause 9.11.3.4).  If the Remote UE ID type is set to CP-PRUK ID, the Remote UE ID is coded as the CP-PRUK ID as defined in 3GPP TS 33.503 [56]. |

\*\*\*\*\* change \*\*\*\*\*

#### 9.11.3.90 Relay key response parameters

The purpose of the relay key response parameters information element is to transport the parameters of the key response for 5G ProSe UE-to-network relay as specified in 3GPP TS 33.503 [56].

The relay key response parameters information element is coded as shown in figure 9.11.3.90.1 and table 9.11.3.90.1.

The relay key response parameters is a type 6 information element.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | | 6 | 5 | 4 | 3 | | 2 | | 1 | |  |
| Relay key response parameters IEI | | | | | | | | | | | | octet 1 |
| Length of Relay key response parameters | | | | | | | | | | | | octet 2  octet 3 |
| 0  spare | 0  spare | 0  spare | | 0  spare | 0  spare | | 0  spare | | 0  spare | | 5GPII | octet 4 | |
| Key KNR\_ProSe | | | | | | | | | | | | octet 5  octet 36 |
| Nonce\_2 | | | | | | | | | | | | octet 37  octet 52 |
| CP-PRUK ID | | | | | | | | | | | | octet 53\*  octet m\* |

Figure 9.11.3.90.1: Relay key response parameters information element

Table 9.11.3.90.1: Relay key response parameters information element

|  |
| --- |
| CP-PRUK ID indication (5GPII) (octet 4, bit 1)  Bit  **1**  0 CP-PRUK ID not included  1 CP-PRUK ID included  Key KNR\_ProSe (octet 5 to 36)  Key KNR\_ProSe contains a 256-bit root key that is established between the two entities that communicating using NR PC5 unicast link as defined in 3GPP TS 33.503 [56].  Nonce\_2 (octet 37 to 52)  Nonce\_2 is the 128-bit nonce value as defined in 3GPP TS 24.554 [19E].  CP-PRUK ID (octet 53 to m)  The CP-PRUK ID is defined in 3GPP TS 33.503 [56]. |

\*\*\*\*\* change \*\*\*\*\*

#### 9.11.4.29 Remote UE context list

The purpose of the Remote UE context list information element is to provide identity and optionally IP address of a 5G ProSe remote UE connected to, or disconnected from, a UE acting as a 5G ProSe layer-3 UE-to-network relay.

The Remote UE context list information element is coded as shown in figure 9.11.4.29.1, figure 9.11.4.29.2, table 9.11.4.29.1 and table 9.11.4.29.2.

The Remote UE context list is a type 6 information element with a minimum length of 16 octets and a maximum length of 65538 octets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Remote UE context list IEI | | | | | | | | octet 1 |
| Length of remote UE context list contents | | | | | | | | octet 2 |
| octet 3 |
| Number of remote UE contexts | | | | | | | | octet 4 |
| Remote UE context 1 | | | | | | | | octet 5 |
|  |
| octet a |
| … | | | | | | | | octet a+1\*  octet b\* |
| Remote UE context k | | | | | | | | octet b+1\* |
|  |
| octet c\* |

Figure 9.11.4.29.1: Remote UE context list

Table 9.11.4.29.1: Remote UE context list

|  |
| --- |
| Remote UE context (octet 5 etc) |
|  |
| The contents of remote UE context are applicable for one individual UE and are coded as shown in figure 9.11.4.29.2 and table 9.11.4.29.2. |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of remote UE context | | | | | | | | octet 5 |
| 0  Spare | 0  Spare | 0  Spare | 0  Spare | Remote UE ID format | Remote UE ID type | | | octet 6 |
| Length of remote UE ID | | | | | | | | octet 7 |
| Remote UE ID | | | | | | | | octet 8 |
| octet q |
| Octet j\* |
| Spare | | | UPRI4I | TPRI4I | Protocol used by remote UE | | | octet j+1\* |
| Address information | | | | | | | | octet j+2\*  octet j+k\* |
| HPLMN ID | | | | | | | | octet (j+k+1)\*  octet (j+k+3)\* |

Figure 9.11.4.29.2: Remote UE context

Table 9.11.4.29.2: Remote UE context list information element

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Remote UE ID type (bits 1 to 3 of octet 6) | | | | | | |
| Bits | | | | | | |
| 3 | | 2 | | 1 |  |  |
| 0 | | 0 | | 1 |  | UP-PRUK ID |
| 0 | | 1 | | 0 |  | CP-PRUK ID |
| All other values are reserved. | | | | | | |
|  | | | | | | |
| Remote UE ID format (bit 4 of octet 6) (NOTE) | | | | | | |
| Bit | | | | | | |
| 4 | |  | |  |  |  |
| 0 | |  | |  |  | Network access identifier (NAI) |
| 1 | |  | |  |  | 64-bit string |
|  | | | | | | |
| Bits 5 to 8 of octet 6 are spare and shall be coded as zero. | | | | | | |
|  | | | | | | |
| Remote UE ID (octet 8 to octet j) | | | | | | |
| The UP-PRUK ID or the CP-PRUK ID of the 5G ProSe Remote UE. | | | | | | |
|  | | | | | | |
| Protocol used by remote UE (octet j+1, bits 1 to 3)  Bits | | | | | | |
| 3 | | 2 | | 1 |  |  |
| 0 | | 0 | | 0 |  | No IP info |
| 0 | | 0 | | 1 |  | IPv4 |
| 0 | | 1 | | 0 |  | IPv6 |
| 1 | | 0 | | 0 |  | Unstructured |
| 1 | | 0 | | 1 |  | Ethernet |
| All other values are reserved. | | | | | | |
|  | | | | | | |
| TCP port range for IPv4 indicator (TPRI4I) (octet j+1, bits 4) | | | | | | |
| Bit | | | | | | |
| **4** |  | |  | | | |
| 0 |  | | TCP port range for IPv4 absent | | | |
| 1 |  | | TCP port range for IPv4 present | | | |
|  | | | | | | |
| UDP port range for IPv4 indicator (UPRI4I) (octet j+1, bits 5) | | | | | | |
| Bit | | | | | | |
| **5** |  | |  | | | |
| 0 |  | | UDP port range for IPv4 absent | | | |
| 1 |  | | UDP port range for IPv4 present | | | |
|  | | | | | | |
| Bits 4 to 8 of octet j+1 are spare and shall be coded as zero. | | | | | | |
|  | | | | | | |
| If the Protocol used by remote UE indicates IPv4 and:  - TPRI4I bit indicates "TCP port range for IPv4 absent" and UPRI4I bit indicates "UDP port range for IPv4 absent", the Address information in octet j+2 to octet j+5 contains the IPv4 address.  - TPRI4I bit indicates "TCP port range for IPv4 present" and UPRI4I bit indicates "UDP port range for IPv4 absent", the Address information in octet j+2 to octet j+9 contains the IPv4 address followed by the TCP port range field.  - TPRI4I bit indicates "TCP port range for IPv4 absent" and UPRI4I bit indicates "UDP port range for IPv4 present", the Address information in octet j+2 to octet j+9 contains the IPv4 address followed by the UDP port range field.  - TPRI4I bit indicates "TCP port range for IPv4 present" and UPRI4I bit indicates "UDP port range for IPv4 present", the Address information in octet j+2 to octet j+13 contains the IPv4 address followed by the UDP port range field followed by the TCP port range field.  See NOTE.  The UDP port range field consists of the lowest UDP port number field followed by the highest UDP port number field, of the UDP port range assigned to the remote UE in the NAT function of 5G ProSe layer-3 UE-to-network relay.  The TCP port range field consists of the lowest TCP port number field followed by highest TCP port number field, of the TCP port range assigned to the remote UE in the NAT function of 5G ProSe layer-3 UE-to-network relay.  Each port number field is two octets long and bit 8 of first octet of the port number field represents the most significant bit of the port number and bit 1 of second octet of the port number field the least significant bit.  If the Protocol used by remote UE indicates IPv6, the Address information in octet j+2 to octet j+9 contains the /64 IPv6 prefix of a remote UE. Bit 8 of octet j+2 represents the most significant bit of the /64 IPv6 prefix and bit 1 of octet j+9 the least significant bit.  If the Protocol used by remote UE indicates Ethernet, the Address information in octet j+2 to octet j+7 contains the remote UE MAC address. Bit 8 of octet j+2 represents the most significant bit of the MAC address and bit 1 of octet j+7 the least significant bit.  If the Protocol used by remote UE indicates Unstructured, the Address information octets are not included.  If the Protocol used by remote UE indicates No IP info, the Address information octets are not included | | | | | | |
| If the Remote UE ID type field indicates "UP-PRUK ID" and the Remote UE ID format field indicates "64-bit string", then the HPLMN ID field is present otherwise the HPLMN ID field is absent. The HPLMN ID field indicates HPLMN ID of the 5G ProSe remote UE and is coded as value part of the PLMN ID information element as specified in 3GPP TS 24.554 [19E] subclause 11.3.33 starting with the second octet. | | | | | | |
| NOTE: In the present release of the specification, providing information for IP protocols other than UDP or TCP is not specified | | | | | | |