**3GPP TSG-SA5 Meeting #131e *S5-203128rev3***

**e-meeting 25th May-3rd June 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **32.255** | **CR** | **0232** | **rev** | **1** | **Current version:** | **16.4.0** |  |
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| *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:*** | Add Trusted non-3GPP access related charging requirements | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5WWC | | | | |  | ***Date:*** | | | 2020-05-27 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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 charging requirement Trusted Non-3GPP access architecture is stated to be supported in TS 32.255. This contribution is to add relevant description in procedure of Non-3GPP access. | | | | | | | | |
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| ***Summary of change:*** | | Add description related to Trusted Non-3GPP access in procedure. | | | | | | | | |
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| ***Consequences if not approved:*** | | The use of procedure related to Trusted Non-3GPP access is not covered in TS 32.255. | | | | | | | | |
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| ***Clauses affected:*** | | 3.3, 5.2.2.13.1, 5.2.2.13.2.1 (new), 5.2.2.13.2.2 (new), 5.2.2.13.3.1 (new), 5.2.2.13.3.2 (new), 5.2.2.13.4.1 (new), 5.2.2.13.4.2 (new) | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |

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| **First change to TS 32.255** |

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [100] 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 [100].

5GC 5G Core Network

5GS 5G System

ABMF Account Balance Management Function

AF Application Function

AMF Access and Mobility Management Function

ATSSS Access Traffic Steering, Switching, Splitting

AUSF Authentication Server Function

BD Billing Domain

CCS Converged Charging System

CDF Charging Data Function

CGF Charging Gateway Function

CHF Charging Function

CP Control Plane

CTF Charging Trigger Function

DNN Data Network Name

FBC Flow Based Charging

GPSI Generic Public Subscription Identifier

GUAMI Globally Unique AMF Identifier

MA Multi-Access

MPTCP Multi-Path TCP Protocol

N3IWF Non-3GPP InterWorking Function

NE Network Element

NEF Network Exposure Function

NF Network Function

NRF Network Repository Function

NSSF Network Slice Selection Function

OCF Online Charging Function

OCS Online Charging System

PCC Policy and Charging Control

PCF Policy Control Function

PEI Permanent Equipment Identifier

QBC QoS flow Based Charging

QFI QoS Flow Identifier

SDF Service Data Flow

SMF Session Management Function

SSC Session and Service Continuity

SUPI Subscription Permanent Identifier

TNAN Trusted Non-3GPP Access Network

TNAP Trusted Non-3GPP Access Point

TNGF Trusted Non-3GPP Gateway Function

UDM Unified Data Management

UDR Unified Data Repository

UPF User Plane Function

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| **Second Change** |

##### 5.2.2.13.1 General

After UE registration to 5GC via a non-3GPP access network, a PDU session can be established via this non-3GPP access. For following sceanrios, the PDU session establishment via untrusted non-3GPP access network is specified in 4.12 TS 23.502 [201] and the PDU session establishment via trusted non-3GPP access network is specified in 4.12a TS 23.502 [201]:

- UE initiated PDU session establishment;

- Handover of a PDU Session from 3GPP access to untrusted non-3GPP access;

- Service Request procedures via Untrusted non-3GPP Access specified in clause 4.12.4.5 TS 23.502 [201];

- Service Request procedures via Trusted non-3GPP Access specified in clause 4.12.4a.5 TS 23.502 [201].

Handover procedure of a PDU Session between 3GPP access and non-3GPP access is achieved by PDU Session Establishment over source access followed by PDU Session Release over the target access for respective N2 Resources Release. The PDU Session ID, IP address/prefix, and SSC mode are maintained during the move.

PDU session over Untrusted non-3GPP Access release and Trusted non-3GPP Access release are specified in clause 4.12.7 and clause 4.12a.7 of TS 23.502 [201].

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| **Third Change** |

##### 5.2.2.13.2 PDU session establishment

5.2.2.13.2.1 PDU session establishment via an untrusted non-3GPP access network

The following figure 5.2.2.13.2.1 describes a PDU session charging establishment via an untrusted non-3GPP access network scenario based on figure 4.12.5.1 in TS 23.502 [201] description:

Figure 5.2.2.13.2.1: PDU Session establishment via untrusted non-3GPP access

[2ch-a to 2ch-c]. Two cases:

- In case of "Initial request" the same steps as steps 7ch-a to 7ch-c in figure 5.2.2.2.1 apply, for initial SMF interaction with CHF, with Charging Data Request [Initial].

- In case of "Existing PDU Session" the "radio access type change" trigger may apply for SMF interaction with CHF, with Charging Data Request [Update].

5.2.2.13.2.2 PDU session establishment via Trusted Non-3GPP access network

After the UE registers to 5GC via trusted non-3GPP access network, the UE may request a PDU Session establishment by using the same procedure as the one specified in clause 5.2.2.13.2.1 for untrusted non-3GPP access, with the following modifications:

* The N3IWF in Figure 5.2.2.13.2.1 should be substituted with a TNGF and the Untrusted non-3GPP access should be substituted with a Trusted non-3GPP Access Point (TNAP).
* Charging Data Request [Initial] and Charging Data Request [Update] contains radio access type and user location specifics to trusted non-3GPP.The TNGF may send a TNGF Identities parameter to AMF inside an N2 Uplink NAS Transport message. The TNGF Identities parameter contains a list of identifiers (i.e. FQDNs or IP addresses) of N3 terminations supported by the TNGF. If received by the AMF, it shall forward it to the SMF, which may use it as input to UPF selection.

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| **Forth Change** |

##### 5.2.2.13.3 PDU session modification

5.2.2.13.3.1 PDU session modification via an untrusted non-3GPP access network

The following figure 5.2.2.13.3.1 describes a PDU session charging modification via an untrusted non-3GPP access network scenario based on figure 4.12.16.1 in TS 23.502 [201] description:



Figure 5.2.2.13.3.1: PDU Session modification via untrusted non-3GPP access

[2ch-a to 2ch-c]: Interaction between SMF and CHF triggered by the modification applied to the PDU session (e.g. QoS handling).

##### 5.2.2.13.3.2 PDU session modification via Trusted Non-3GPP access network

The UE or network requested PDU Session Modification procedure via trusted non-3GPP access network is the same procedure as the one specified in clause 5.2.2.13.3.1 for untrusted non-3GPP access, with the following modifications:

- The N3IWF in Figure 5.2.2.13.3.1 should be substituted with a TNGF and the Untrusted non-3GPP access should be substituted with a Trusted non-3GPP Access Point (TNAP).

- Interaction between SMF and CHF triggered by the modification contains radio access type and user location specifics to trusted non-3GPP.

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| **Fifth Change** |

##### 5.2.2.13.4 PDU session release

5.2.2.13.4.1 PDU session release via an untrusted non-3GPP access network

The following figure 5.2.2.13.4.1 describes a PDU session charging release via an untrusted non-3GPP access network scenario based on figure 4.12.17.1 in TS 23.502 [201] description:

Figure 5.2.2.13.4.1: PDU Session release via untrusted non-3GPP access

[3cha-3chb]. Two cases:

- In case the PDU session needs to be released, SMF interaction with CHF for release, with Charging Data Request [Termination].

- In case of handover from non-3GPP access to 3GPP access, SMF may interacts with CHF, with Charging Data Request [Update].

NOTE 1: the "radio access type change" trigger, if enabled, applied during the PDU session establishment over the 3GPP access which was performed prior to this PDU session release over non-3GPP access.

##### 5.2.2.13.4.2 PDU session release via Trusted Non-3GPP access network

The UE or the network can release a PDU Session via a trusted non-3GPP access network as specified in clause 5.2.2.13.4.1 for the untrusted non-3GPP access with the following modifications:

- The untrusted non-3GPP access is substituted by a trusted non-3GPP access point (TNAP).

- The N3IWF is substituted by the TNGF.

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| **End of Change** |