**3GPP TSG-SA5 Meeting #129e *S5-201157rev1***

**e-meeting, 24 February – 4 March 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **32.255** | **CR** |  | **rev** | **1** | **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:*** | Introduction of ATSSS flows | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ATSSS | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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)* | |
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| ***Reason for change:*** | | Access Traffic Steering, Switching, Splitting (ATSSS) functionality has been introduced in Rel-16, and the corresponding flows for charging needs to be introduced. | | | | | | | | |
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| ***Summary of change:*** | | Introduce flows for ATSSS. | | | | | | | | |
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| ***Consequences if not approved:*** | | MA PDU session charging cannot be supported. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.2.x(New) | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First change** |

#### 5.2.2.x PDU session charging from SMF - ATSSS

##### 5.2.2.x.1 General

This clause specifies PDU session charging for a MA PDU session as defined in TS 23.501 [200].

The flows are based on message flows specified in clause 4.22 TS 23.502 [201],

##### 5.2.2.x.2 UE requested MA PDU session establishment

The following figure 5.2.2.x.2.1 describes charging procedure for MA PDU Session establishment requested by UE, based on figure 5.2.2.2.2.1 description with the following differences identified in clause 4.22.2.1 TS 23.502 [202]:



Figure 5.2.2.x.2.1: UE Requested MA PDU session establishment

- The UE is registered in both 3GPP access and non-3GPP access, and UE PDU Session Establishment Request message is sent over the 3GPP access.

1. PDU Session Establishment Request is indicated with "MA PDU Request" and ATSSS Capability (e.g. an "MPTCP Capability" and/or an "ATSSS-LL Capability").

2-3. The AMF informs the SMF that the request is for a MA PDU Session and indicates the UE is registered over both accesses.

7a-b. PCC Rules supplied by PCF contain ATSSS policy control information, optionally with a dedicated non-3GPP access rating group. From these PCC Rules, the SMF derives ATSSS rules for uplink and N4 rules for downlink for controlling the traffic steering, switching and splitting.

9ch-a. The SMF sends Charging Data Request [initial] indicating "MA PDU session requested by UE" to CHF for authorization for the subscriber to start the MA PDU session.

9ch-b. The CHF opens CDR for this MA PDU session.

9ch-c. The CHF acknowledges by sending Charging Data Response [Initial] to the SMF.

10-13. Procedure based on ATSSS policy and SMF derived both N4 Rules and ATSSS rules to UE.

16ch-a. This step may occur in case "start of service data flow" over 3GPP needs quota from CHF for appropriate rating group, the SMF sends Charging Data Request [Update] for requesting quota.

16ch-b. The CHF updates CDR for this MA PDU session.

16ch-c. The CHF acknowledges by sending Charging Data Response [Update] to the SMF.

After step 18 in figure 5.2.2.2.2.1, if the SMF was informed in step 2 that the UE is registered over both accesses, the SMF initiates the establishment of user-plane resources over non-3GPP access via AMF. After the user plane is established with the non-3GPP access:

Xch-a. The SMF sends Charging Data Request [Update]. This step may occur in case following chargeable events need quota from CHF for appropriate rating group, or if required by "immediate reporting" category:

- "start of SDF additional access" over non-3GPP.

- "start of service data flow" over non-3GPP or 3GPP.

Xch-b. The CHF updates CDR for this MA PDU session.

Xch-c. The CHF acknowledges by sending Charging Data Response [Update] to the SMF.

In the scenario where the PDU Session Establishment Request message for the MA PDU session is sent over the non-3GPP access, and the user plane over the non-3GPP access is established before the user plane over 3GPP:

16ch-a. This step may occur in case "start of service data flow" over non-3GPP needs quota from CHF for appropriate rating group, or if required by "immediate reporting" category

Xch-a. This step may occur in case following chargeable events need quota from CHF for appropriate rating group, or if required by "immediate reporting" category:

- "start of SDF additional access" over 3GPP.

- "start of service data flow" over non-3GPP or 3GPP.

##### 5.2.2.x.3 UE requested PDU session establishment with Network Modification to MA PDU Session

The following flow describes the charging procedure for a single access PDU session establishment by ATSSS-capable UE and the 5GC network decides to convert to a Multi-Access PDU (MA PDU) Session, based on figure 5.2.2.2.2.1 description with the following differences identified in clause 4.22.3 TS 23.502 [202]:

- The UE is registered in both 3GPP access and non-3GPP access and sends a PDU Session Establishment Request message over the 3GPP access.

1. PDU Session Establishment Request may include "MA PDU Network-Upgrade Allowed" indication and its ATSSS Capability.7. The single-access PDU Session requested by the UE is converted into a MA PDU Session by SMF based on "MA PDU Network-Upgrade Allowed" indication, and PCC Rules are supplied by PCF containing ATSSS policy control information optionally with a dedicated non-3GPP access rating group.

9ch-a. The SMF sends Charging Data Request [initial] indicating "MA PDU session requested by Network modification" to CHF.

9ch-b. The CHF opens CDR for this MA PDU session.

9ch-c. The CHF acknowledges by sending Charging Data Response [Initial] to the SMF.

Steps after step 10 in clause 5.2.2.x.2 apply.

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| **End of changes** |