**3GPP TSG-SA WG2 Meeting #150ES2-2202245r02**

**E-meeting, April 6-12 2022 (*revision of S2-22xxxxx*)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.256** | **CR** | **0059** | **rev** | **-** | **Current version:** | **17.2.0** |  |
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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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Correcting errors for UAV-C address | | | | | | | | | |
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| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | S2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ID-UAS | | | | |  | ***Date:*** | | | 2022-03-29 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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:*** | | Correcting errors, inconsistencies and incorrect references. | | | | | | | | |
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| ***Summary of change:*** | | Faulty references corrected in 5.2.5.3.  Aligning step 8 in clause 5.2.3.3 with e.g. 5.2.4.4 (UAV Re-authorization procedure in EPS) by referencing 23.401. | | | | | | | | |
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| ***Consequences if not approved:*** | | Potential mis-operations causing failure of procedures. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.3.3, 5.2.5.3.0, | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

*NEXT CHANGE*

#### 5.2.3.3 USS UAV Authorization/Authentication (UUAA) during default PDN connection at Attach

In the figure 5.2.3.3-1 the execution of the UUAA is specified.



Figure 5.2.3.3-1: UUAA during PDN connection establishment at Attach procedure in EPS

0. Steps 1 - 13 in TS 23.401 [6] figure 5.3.2.1-1 and steps 1 - 2 in TS 23.502 [3] figure 4.11.1.5.2-1 or clause 4.11.2.4.1 in TS 23.502 [3].

UE sends Attach Request including the Service Level Device Identity (i.e. the CAA-Level UAV ID of the UAV), and may include the Authentication Server Address (i.e. the USS address) and optionally Authentication Data (i.e. the UUAA Aviation Payload), etc. in the PCO to the SMF+PGW-C.

NOTE 1: The definition of the PCO field is for stage 3 to specify.

1. SMF+PGW-C configures an Access Control List (ACL) in UPF+PGW-U to stop any traffic over the default PDN Connection until the UUAA has been done and successful.

2. Steps 14 - 22 in figure 5.3.2.1-1 of TS 23.401 [6] and steps 3 - 6 in figure 4.11.1.5.2-1 of TS 23.502 [3] or clause 4.11.2.4.1 of TS 23.502 [3].

During the Attach procedure, at step 15 of Figure 5.3.2.1-1 in TS 23.401, the SMF+PGW-C includes, in PCO, an Indication to the UE that "UpLink Data NOT ALLOWED" on the PDN connection. The UE shall not send Uplink data to the network, until it receives an indication further from the network that "UpLink Data ALLOWED".

3. UUAA is invoked as described in steps 1 and 2 of figure 5.2.3.2-1.

4. [Conditional] Multiple round-trip messages as required by the authentication method used by USS. The PCO including the authentication message from the USS is transferred to the UE by the SMF+PGW-C in Update Bearer Request and Downlink NAS Transport (steps 4b - 4d). The response from the UE is transferred to the SMF+PGW-C in an Uplink NAS Transport and Update Bearer Response (steps 4e - 4g).

5. UUAA procedure continues as described in steps 4 & 5 of figure 5.2.3.2-1.

6. If the authentication/authorization is successful, the USS shall subscribe to the PDN Connection Status Event as described in steps 1-5 in figure 4.15.3.2.3-1 of TS 23.502 [3]. This step can be executed in parallel to step 5. The UAS NF/NEF determines the APN/DNN to subscribe to the PDN Connection Status Event notification as specified in clause 5.2.3.1.

7. If the UUAA is successful, the SMF+PGW-C contacts the PCF to update the PDN Connection. Then the SMF+PGW-C updates the Access Control List (ACL) and policies in the UPF+PGW-U to allow traffic over the default PDN Connection. If a DN Authorization Profile Index was received from the UAS NF/NEF SMF+PGW-C in previous step, the SMF+PGW C includes that when retrieving the ACL from the PCF. If the SMF receives the DN authorized Session AMBR in from the UAS NF/NEF, it sends the DN authorized Session AMBR within the Session AMBR to the PCF to retrieve the authorized Session AMBR (described in clause 6.4 of TS 23.503 [9]).

8. The SMF+PGW-C updates the UE by invoking the PDN GW initiated bearer modification without QoS update procedure (figure 5.4.3-1 of TS 23.401 [6]) initiated by sending an Update Bearer Request message to the SGW. The PCO includes an indication that "UpLink Data ALLOWED", the UUAA Aviation Payload i.e. the Authentication/Authorization result and the Authorization Data. The UE (for the UAV) confirms the update (see clause 5.4.3 of TS 23.401 [6]).

9. If the USS in step 6 subscribed to the PDN Connection Status Event the SMF+PGW-C will, as described in steps 6-7 in Figure 4.15.3.2.3-1 of TS 23.502 [3], detect when the PDN Connection is established and send the PDN Connection Establishment event report to the UAS NF/NEF by means of Nsmf\_EventExposure\_Notify message, including GPSI and the UE IP Address. Then, the UAS NF/NEF forwards the event message to the USS.

*NEXT CHANGE*

#### 5.2.5.3 Procedure for C2 authorization in EPS

##### 5.2.5.3.0 C2 Authorization request during UUAA-SM procedure in EPS

If C2 authorization is requested during the UUAA-SM procedure the procedure described in clause 5.2.3.3 takes place with the following additions:

- In step 0, the UE includes pairing information (if available) in a C2 Aviation Payload, which is forwarded further to the USS.

- Initially in step 5, the USS performs C2 authorization taking into account the included pairing information, the Service Level Device Identity/CAA-Level UAV ID and 3GPP UAV ID/GPSI. The USS includes the resulting C2 Authorization result in the Naf\_Auth\_Response returned to the UAS-NF/NEF and UAS NF/NEF forwards to the UAV/UE in step 8.

- The USS shall:

- in step 5 include a DN Authorization profile Index specifying a predefined set of PCC-rules in the PCF with initial restriction on the type of traffic allowed to pass on the PDN Connection. For example, only traffic exchanged with the USS might be allowed to pass.

Once the authentication is complete, after step 5, the USS subscribes to PDN Connectivity Status Events for the PDN Connection used for C2 communication, applicable for the GPSI received in step 2.

- when the USS in step 9 receives a PDN Connectivity Status Event Report indicating session start and including the PDN Connection IP address, the USS invokes the USS initiated pairing policy configuration procedure (see figure 5.2.5.4.2-1) with the received PDN Connection IP address and authorized paired UAV-C IP-address as input to request corresponding traffic to be allowed on the PDN Connection in the PGW-U.

*END CHANGE*