**SA WG2 Meeting #143E S2-210xxxx**

**24 February - 09 March, 2021, Electronic, Elbonia**

**Source: Ericsson**

**Title: UUAA in PDU Session Establishment**

**Agenda item: 8.7**

**Document for: Approval**

**WorkItem/Release:** **ID\_UAS\_SA2**

*Abstract of the contribution: This contribution proposes a procedure for the UUAA in the PDU Session Establishment as agree in the study phase.*

# Discussion

*This solution is in comparable to Secondary AA is handled in the PDU Session Establishment in TS23.502. Depending on whether the procedure will have more generic parts these can be placed in TS23.501/TS23.502 and the UAS specific parts placed in TS23.256.*

*The same principles to be used in the Attach procedure for the interworking case.*

# Proposal

*It is proposed to add the following to TS 23.256 / TS 23.502*

*As the text is written below it was aimed for implementation in TS23.256 but it is open for discussion to also add generic parts in TE23.501 / TS23.502.*

\* \* \* First Change \* \* \* \*

#### 5.2.3.a USS UAV Authorization/Authentication (UUAA) during the PDU Session Establishment

The USS UAV Authorization/Authentication (UUAA) is triggered by the SMF during the PDU Session Establishment, specified in TS23.502 [?], clause 4.3.2.2. The UUAA is triggered by the SMF if the PDU session establishment request *is performed for an UAV indicated by the subscription as "Aerial UE function" and with the Request Type "initial request"*.



Figure 5.2.3.a -1: UUAA during PDU Session Establishment

The procedure assumes that the UE/UAV has already registered on the AMF.

0. Steps 1 - 4 performed as in TS23.502 figure 4.3.2.2.1-1.
The UAV includes the signed USS/UTM address and CAA-Level UAV ID, etc. in SM PDU DN Request Container provided by the UE in the PDU Session Establishment request

1. From SMF to NEF: Nnef\_Auth\_Request, including the CAA-level UAV ID, USS/UTM address, GPSI, PEI, "Aerial UE function", UAV IP Address, etc.

2. The NEF selects a USS/UTM from either CAA-Level UAV ID or the USS/UTM address.
The NEF checks if the subscription is "Aerial UE function".
From NEF to USS/UTM: T8\_Auth\_Request forwarding the received information from the SMF.

NOTE 1: The USS/UTM is assumed to be known and trusted by the 3GPP System.

3 [OPTIONAL] USS/UTM and the UAV may exchange multiple messages as required by the authentication/authorization method used.

4. The USS/UTM validates the request based on CAA-Level UAV ID and GPSI and optionally PEI. Upon successful authorization, the USS/UTM notifies the NEF on the authentication/authorization result, optional including security info to be used by the UAV to set up a secure connection to the USS/UTM using the PDU session.
From USS/UTM to NEF: T8\_Auth\_Response.

NOTE 2: The USS/UTM stores a mapping between CAA-Level UAV ID and the External Identifier. The External Identifier and/or UAV IP Address can be used at a later point by the USS/UTM for accessing various services exposed by 3GPP network e.g. location information retrieval, monitoring event configuration etc.
The External Identifier and/or UAV IP Address can be used at a later point by the USS/UTM for requesting dedicated policies for e.g. C2, etc.

5. From NEF to SMF: Nnef\_Auth\_Response including the information received from USS/UTM.

6. Steps 5 - 21 performed as in TS23.502 figure 4.3.2.2.1-1.
The UUAA result is transferred from SMF to the UAV/UE in a DN Response Container in step 5, 12 and 13 in TS23.502 figure 4.3.2.2.1-1.

NOTE 3: If C2 and pairing related information is available from UAV(C) and/or USS/UTM during the initial PDU Session Establishment procedure the SMF may interact with the PCF to set up PCC rule(s) for the C2 communication and/or UAV/UAVC pairing.

\* \* \* Second Change \* \* \* \*

#### 5.2.3.b USS UAV Authorization/Authentication (UUAA) during the Attach procedure

In the figure x.x.y-1 two alternativ options are shown for the performance of the UUAA. Option 1 can be used if the timing of the UUAA (i.e. step 1) is not seen as an issue to perform the Attach procedure. Option 2 has to be used if the timing for the UUAA (i.e. step 3) is seen as too long and will have negative effects on the Attach procedure e.g. the Attach procedre will time-out before response have been received from NEF.



Figure 5.2.3.b-1: UUAA during Attach procedure in EPS

0. Steps 1 - 13 in TS23.401 figure 5.3.2.1-1 and steps 1 - 2 in TS23.502 figure 4.11.1.5.2-1
UAV/UE sends Attach Request including including the signed USS/UTM address and CAA-Level UAV ID, etc. in the PCO to the SMF+PGW-C.
The MME determines the UAV has an aerial subscription and selects the Default APN for connectivity with the USS/UTM.

1. [OPTION 1] UUAA is performed as described in steps 1-5 in TS23.256 clause 5.2.3.a.

2. Steps 14 - 22 in TS23.401 figure 5.3.2.1-1 and steps 3 - 6 in TS23.502 figure 4.11.1.5.2-1.

3. [OPTION 2] UUAA is performed as described in steps 1-5 in TS23.256 clause 5.2.3.a.

4 Steps 23 - 24 in TS23.401 figure 5.3.2.1-1.

5 [OPTION 2] The PCO including the UUAA result is transferred from SMF+PGW-C to UAV/UE Update Bearer Request and Downlink NAS Transport (step 5a - 5c). The UAV/UE confirms the update in steps 5d - 5f.

\* \* \* End of Change \* \* \* \*