**d3GPP TSG-SA3 Meeting #104-e *S3-212582r7***

**e-meeting, 16 - 27 August 2021** Merger of 2582 and 2836

**Source: Huawei, HiSilicon, Qualcomm, InterDigital**

**Title: UAA overall procedures in 5GS**

**Document for: Approval**

**Agenda Item: 4.20 ID\_UAS**

# 1 Decision/action requested

***Approve the proposed pCR as normative text***

# 2 References

[1]

# 3 Rationale

This contribution proposes the overall UAA procedures based on the agreed principle in the study. It is in-line with SA2’s procedure as well.

# 4 Detailed proposal

pCR

\*\*\* BEGINNING OF 1st CHANGES (all text are new) \*\*\*

### X.x.1 UUAA in 5GS

#### X.x.x.1 General

The UAV USS authentication and authorization (UUAA) is the procedure to ensure that the UAV can be authenticated and authorised by a USS before the connectivity for UAS services is enabled. This clause specifies the relationship between primary authentication (as described in Clause 6.1 in TS 33.501 [x1]) and UUAA. An UAV is allowed to perform UUAA with the USS/UTM only after the UAV (UE) has completed successfully primary authentication.

It may be triggered by the AMF when UAV is registering with 5GS or triggered by the SMF during the PDU session establishment procedure. The UUAA procedure may also be triggered by a USS for re-authentication if the USS had authenticated the UAV. Network support for UUAA during registration is optional while it is mandatory during the PDU Session establishment. UE Support for UUAA during registration and during the PDU Session establishment is mandatory.The AMF or SMF triggers the UUAA procedure if the UAV has an Aerial UE subscription and the UAV requests access to UAS services by providing the CAA-Level UAV ID of the UAV in the Registration Request or PDU Session Establishement Request.

The UUAA is performed between the UAV and the USS. The UAV is authenticated based on the CAA-Level UAV ID and credentials associated to the CAA-Level UAV ID. The authentication messages are included in a transparent container and conveyed between the UAV and the USS via a 3GPP UAS NF. NOTE: The provision of CAA-Level UAV ID, credentials, and the actual authentication methods and information that needs to be sent to perform the UUAA are out of scope of the 3GPP specifications.

On successful completion of a UUAA, the USS can send UAS security information in the UUAA Authorization Payload to the UAV. The contents of that security information are out of scope of the 3GPP specifications.

The UUAA procedure at registration in 5G is described in the clause X.x.x.2 and the UUAA procedure during PDU session establishment procedure is described in the clause X.x.x.3.

At any time after the initial registration, the USS or the AMF (when the networking supports UUAA during registration) may initiate the Re-authentication procedure for the UAV. The AMF initiated Re-authentication procedure is described in the clause X.x.x.2, whereas the USS initiated Re-authentication procedure is described in the clause X.x.x.4.

Editor's note: It is ffs whether AMF can initiate Re-authentication.

Figure X.x.1-1 provides an example of how UUAA fits into the 5GS procedures. The complete description of this flow is given in TS 23.256 [aa].



Figure X.x.x.1-1: UUAA in 5GS

1. The UE sends a Registration Request message to the AMF. The UE may provide a CAA-Level UAV ID, and optionally a USS address/IP address, to indicate the request is registering for UAS services. In case the CAA-Level UAV ID and/or USS address/IP address is configured not to be sent in plain text, e.g. the USS address or an IP address not to be exposed in public, the CAA-Level UAV ID, and USS/IP address if available, shall be sent after the NAS security is established
2. AMF completes security set up including primary authentication as needed.
3. After successful Primary authentication, AMF determines whether UUAA is required for the UE. UUAA shall only be triggered if the UE has provided a CAA-Level UAV ID and has a valid Aerial UE subscription. AMF may skip UUAA if the UE has completed UUAA successfully before.

NOTE: AMF shall not skip UUAA if the UE has been revoked after a successful UUAA

4a. AMF shall return a Registration Accept message to the UE and indicate that UAAUUAA is pending.

4b. UE may send a Registration Complete message to acknowledge the AMF.Registration procedure completes.

5. AMF triggers the UUAA procedure if determined needed in step 3 as described in Clause X.x.x.2.

The following procedure is for UUAA during PDU session establishment:

6. The UE sends a PDU Session Establishment Request message to the SMFincluding a CAA-Level UAV ID to indicate the request is for UAS services.

7. The SMF determines whether UUAA is required for the UE. UUAA shall only be triggered if the UE has provided a CAA-Level UAV ID and has a valid Aerial UE subscription. SMF may skip UUAA if the UE has completed UUAA succussfully successfully with the same USS/DN before, i.e., in previous PDU Session Establishement procedures or at registration as in step 5.

8. The SMF triggers the UUAA procedure if determined needed at step 7 as described in Clause X.x.x.3.

\*\*\* END OF 1st CHANGES \*\*\*

**\*\*\*\* START OF 2nd CHANGES \*\*\*\***

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[x1] 3GPP TS 33.501: “Security architecture and procedures for 5G system”

[aa] 3GPP TS 33.256: "Support of Uncrewed Aerial Systems (UAS) connectivity, identification and tracking; Stage 2".

**\*\*\*\* END of 2nd CHANGE \*\*\*\***