**3GPP TSG-SA3 Meeting #106e S3-220198**

**e-meeting, 14 - 25 February 2022**

**Source: LG Electronics, Interdigital**

**Title: Procedure for secondary re-authentication and revocation of Remote UE over L3 U2N Relay without N3IWF**

**Document for: Approval**

**Agenda Item: 4.13**

# 1 Decision/action requested

***This contribution proposes a text on secondary re-authentication and revocation for U2N relay in ProSe TS 33.503***

# 2 References

[1] TS 33.503 v.0.2.0 “Security Aspects of Proximity based Services (ProSe) in the 5G System (5GS) (Release 17)”

# 3 Rationale

This contribution proposes to add a content for Secondary Re-Authentication and Revocation of the Remote UE via L3 UE-to-network relay without N3IWF.

# 4 Detailed proposal

It is proposed that SA3 approve the below pCR for inclusion in [1].

**\*\*\*\*\* START OF CHANGES \*\*\*\*\***

###### 6.3.3.3.4.3 Re-Authentication of Remote UE via L3 UE-to-Network Relay UE without N3IWF

The Re-Authentication of Remote UE via L3 UE-to-Network Relay UE follows the steps described below on the Figure 6.4.3.3.4.3-1. The call flow is based on the call flow in TS 33.501 [3], Figure 11.1.3-1 with the main difference that the EAP messages for Re-authentication are exchanged between the Remote UE and DN-AAA using PC5 transport provided via the PC5 link with the UE-to-Network Relay UE.



Figure 6.3.3.3.4.3-1: EAP Re-Authentication of Remote UE via L3 UE-to-Network Relay UE with an external AAA server

* 1. Secondary Authentication for the 5G ProSe Remote UE via the 5G ProSe Layer-3 UE-to-Network Relay UE has been established according to the procedures specified in clause 6.3.3.3.4, PDU Session secondary authentication of the 5G ProSe Remote UE via the 5G ProSe Layer-3 UE-to-Network Relay UE.

Secondary Re-authentication may either be initiated by the SMF or the external DN-AAA server. If Re-authentication is initiated by the SMF, the procedure proceeds with step 4 (skipping steps 4a and 4b). If Re-authentication is initiated by the external DN/AAA server, the procedure proceeds with the alternative steps 4a and 4b.

4. The SMF decides to initiate Secondary Re-Authentication for the 5G ProSe Remote UE.

4a. The DN AAA server decides to initiate Secondary Re-Authentication for the 5G ProSe Remote UE.

4b. The DN AAA shall send a Secondary Re-Authentication request to UPF, and the UPF forwards it to the SMF. The Secondary Re-authentication request contains the GPSI, and the IP/MAC address of the UE allocated to the PDU Session and the MAC address if the PDU session is of Ethernet PDU type for the 5G ProSe Remote UE.

5. The SMF may send an EAP Request/Identity message to the 5G ProSe Layer-3 UE-to-Network Relay UE including 5GPRUK ID of the 5G ProSe Remote UE. In case the procedure is initiated by the DN AAA, the SMF retrieves the 5GPRUK ID that is mapped with the received GPSI.

6. The 5G ProSe Layer-3 UE-to-Network Relay UE forwards the EAP message to the 5G ProSe Remote UE via PC5 signalling.

7. The 5G ProSe Remote UE may respond with an EAP Response/Identity message to the 5G ProSe Layer-3 UE-to-Network Relay UE via PC5 signalling.

8. The 5G ProSe Layer-3 UE-to-Network Relay UE forwards the EAP Response/Identity to SMF.

9. SMF forwards the EAP Response/Identity to the UPF, selected during initial authentication, over N4 interface. Then, the UPF shall forward the EAP Response/Identity message to the DN AAA Server. This establishes an end-to-end connection between the SMF and the external DN-AAA server for EAP exchange.

10. The DN AAA server and the 5G ProSe Remote UE shall exchange EAP messages as required by the EAP method.

11. After the completion of the authentication procedure, DN AAA server either sends EAP Success or EAP Failure message to the SMF. This completes the Re-authentication procedure at the SMF.

12. If the authentication is successful, EAP-Success and 5GPRUK ID shall be sent to the 5G ProSe Layer-3 UE-to-Network Relay UE.

13. The 5G ProSe Layer-3 UE-to-Network Relay UE shall forward the EAP-Success to the corresponding 5G ProSe Remote UE via PC5 signalling.

14. If authentication is not successful, EAP-Failure and 5GPRUK ID shall be sent to the 5G ProSe Layer-3 UE-to-Network Relay UE

15. The 5G ProSe Layer-3 UE-to-Network Relay shall forward EAP-Failure to the corresponding 5G ProSe Remote UE via PC5 signalling and shall release the PC5 link with the 5G ProSe Remote UE.

16. The 5G ProSe Layer-3 UE-to-Network Relay shall send a Remote UE Report message indicating the 5G ProSe Remote UE is disconnected to the SMF.

17. The SMF may release the PDU session that was used for the relay service.

**\*\*\*\*\* NEXT CHANGES \*\*\*\*\***

###### 6.3.3.3.x.4 Secondary Authentication Revocation of Remote UE via L3 UE-to-Network Relay UE without N3IWF

At any time, a DN-AAA may revoke the authentication and authorization for a PDU Session and according to the request from the DN-AAA server, the SMF may request the 5G ProSe Layer-3 UE-to-Network Relay UE to release the PC5 link with the revoked 5G ProSe Remote UE, or release the PDU Session of the 5G ProSe Layer-3 UE-to-Network Relay UE as specified in sub-clause 4.3.4 of TS 23.502 [x] when it is not used by other 5G ProSe Remote UE(s).

**\*\*\*\*\* END OF CHANGES \*\*\*\*\***