**3GPP TSG-SA5 Meeting #138-e *S5-214162rev2***

**e-meeting, 23 - 31 August 2021**

**Source: CATT**

**Title: pCR Add possilbe solution for ProSe UE-to-Network Relay**

**Document for: Approval**

**Agenda Item: 7.5.3**

# 1 Decision/action requested

***The group is asked to discuss and agree on the proposal.***

# 2 References

[1] 3GPP TR 32.846: “Study on charging aspects of Proximity-based Services in 5GS”.

# 3 Rationale

This contribution adds possible solutions for ProSe UE-to-Network Relay.

# 4 Detailed proposal

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| **1st Modified Section** |

### 6.2.2 Potential charging requirements

The following are potential high-level charging requirements for ProSe services in 5GS, derived from the requirements in TS 22.115 [9], and TS 23.303 [8].

**REQ-CH\_ PROSE \_5GS\_DC -01:** The 5GS should support converged charging and charging information reporting for ProSe Communication including:

- ProSe Broadcast modeDirect Communication;

- ProSe Groupcast mode Direct Communication;

- ProSe Unicast Direct Communication, including UE-to-Network Relay.

**REQ-CH\_ PROSE \_5GS\_DC - 02**: The 5GS should support identifying chargeable events and collecting charging information from UE.

**REQ-CH\_ PROSE \_5GS\_DC - 03**: The 5GS should support identifying chargeable events and collecting charging information via 5G ProSe service.

**REQ-CH\_ PROSE \_5GS\_DC - 04**: The 5GS should support charging for PDU Session types of IP, Ethernet and Unstructured.

**REQ-CH\_ PROSE \_5GS\_DC - 05**: In 5G ProSe UE-to-Network Relay scenario, the 5GS should support charging for both Layer-2 and Layer-3 UE-to-Network Relay.

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| **Next Modified Section** |

#### 6.2.4.x Solution #2.5: ProSe charging for ProSe Direct Communication via UE-to-Network Relay for Key issues #2.2

##### 6.2.4.x.1 Consideration for ProSe Direct Communication via UE-to-Network Relay charging

The 5G ProSe Layer-3 UE-to-Network Relay shall provide generic function that can relay any IP, Ethernet or Unstructured traffic, while the 5G ProSe Layer-2 UE-to-Network Relay provides forwarding functionality that can relay any type of traffic over the PC5 link.

Both Layer-2 and Layer-3 UE-to-Network Relay entity provides the relaying functionality to support connectivity to the network for Remote UEs. It can be used for both public safety services and commercial services (e.g. interactive service).

For ProSe Direct Communication via UE-to-Network Relay charging, the chargeable events could be:

- Received Direct Communication Usage Report which is triggered by CTF(ADF) receiving a usage information report from the ProSe UE-to-Network relay UE.

The 5GS may collect the following charging information in addition to the charging information described in Table 6.2.4.1.1-1:

- Identities of the transmitters in the direct communication via 5G ProSe UE-to-Network relay, e.g. Source L2 ID and IP address, ProSe UE-to-Network Relay UE L2 ID and IP address.

- List of non-zero amount of data relayed by UE, e.g. List of amount of data relayed by a ProSe UE-to-Network Relay at each location, with NCGI and the corresponding timestamps, and indicator of radio resources used and the radio frequency used;

- Application specific data, e.g. application specific session floor control information, Application layer User ID.

##### 6.2.4.x.2 Architecture Description

See clause 6.2.4.1.2.

##### 6.2.4.x.3 Flow Description

6.2.4.x.3.1 Message flow for ProSe Direct Communication via Layer-3 UE-to-Network Relay



Figure 6.2.4.x.3.1-1: Message flow for ProSe Direct Communication via Layer-3 UE-to-Network Relay

1-7. These steps are the same as message flow for ProSe UE-to-Network Direct Communication via Layer-3 procedures described in TS 23.304 [11] clause 6.5.1.1.

8. When the UE decides that reporting criteria are met, according to the pre-configuration, the UE creates the corresponding usage information report. UE triggers the usage reporting procedure.

9. The Remote UE sends the usage reporting to ProSe UE-to-Network Relay UE. Then Relay UE sends the usage information report to the CTF located in ProSe NF (e.g., 5G-DDNFM).

9ch-a. Upon reception of Direct Communication usage information report, the CTF(ADF) triggers the Charging Data Request [Event]. The CTF(ADF) sends Charging Data Request [Event] to CHF.

9ch-b. The 5G ProSe Direct communication via UE-to-Network Relay CDR is generated by CHF for the Remote UE.

9ch-c. The CHF acknowledges by sending Charging Data Response [Event] to the CTF(ADF).

10. 5G ProSe UE-to-Network Relay UE triggers the usage reporting procedure and creates the corresponding usage information report when the reporting criteria are met.

11. 5G ProSe UE-to-Network Relay UE sends the usage information report to the ProSe NF (CTF).

NOTE 1: Step 10 and Step 11 can occur before Step 8 and Step 9.

11ch-a. Upon reception of Direct Communication usage information report, the CTF(ADF) triggers the Charging Data Request [Event]. The CTF(ADF) sends Charging Data Request [Event] to CHF.

11ch-b. The 5G ProSe Direct communication via UE-to-Network Relay CDR is generated by CHF for the Relay UE.

11ch-c. The CHF acknowledges by sending Charging Data Response [Event] to the CTF(ADF).

NOTE 2: The procedure applies to UE1 to UE2 independently, i.e. each of the UE sends the respective usage information reports according to different reporting criteria.

6.2.4.x.3.2 Message flow for ProSe Direct Communication via Layer-2 UE-to-Network Relay



Figure 6.2.4.x.3.2-1: Message flow for ProSe Direct Communication via Layer-2 UE-to-Network Relay

1-8. These steps are the same as message flow for ProSe UE-to-Network Direct Communication via Layer-2 procedures described in TS 23.304 [11] clause 6.5.2.2.

9-11. These steps are the same as message flow for Layer-3 UE-to-Network Relay in figure 6.2.4.x.3.1-1.

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| **Next Modified Section** |