**3GPP TSG-SA5 Meeting #143-e *S5-223110***

e-meeting, 9 - 17 May 2022

**Source: Ericsson**

**Title: Correcting solution 1.3**

**Document for: Approval**

**Agenda Item: 7.5.3**

# 1 Decision/action requested

**Include the proposed changes in TR 28.827.**

# 2 References

[1] 3GPP TR 28.827: "Study on 5G charging for additional roaming scenarios and actors"

# 3 Rationale

Correcting the solution 1.3 with the addition of the correct flows.

# 4 Detailed proposal

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| **First change** |

#### 7.1.4.3 Solution #1.3: Nchf to VPLMN for wholesale of 5G data connectivity

##### 7.1.4.3.1 General

A possible solution for key issue #1a, wholesale charging for 5G data connectivity provided to the home MNO by the visited MNO, covering local breakout case. In this case there is also charging information generated in the home MNO for retail purposes.

##### 7.1.4.3.2 Reference architecture



Figure 7.1.4.3.2-1: Roaming 5G data connectivity scenario in service-based interface representation



Figure 7.1.4.3.2-2: Roaming 5G data connectivity scenario in reference point representation

##### 7.1.4.3.3 Message flows

The following figure 7.1.4.3.3-1 describes a PDU session establishment charging, based on figure 4.3.2.2.1-1 UE-requested PDU Session Establishment for non-roaming and roaming with local breakout TS 23.502 [202] description:



Figure 7.1.4.3.3-1: PDU session establishment

9ch-a. The UE is identified as a roamer (e.g., PLMN ID of the received SUPI is different from VPLMN PLMN ID), the V-CHF and optionally H-CHF are selected accordingly.

9ch-b1. The Charging Data Request [Initial] is sent to V-CHF, for the subscriber triggered by start of PDU session charging event.

9ch-c1. The V-CHF opens a CDR.

9ch-d1. The V-CHF acknowledges by sending Charging Data Response [Initial] to the V-SMF and optionally supplies a "Roaming Charging Profile" to the V-SMF (which overrides the default one).

9ch-b2. If a H-CHF was selected a Charging Data Request [Initial] is sent to H-CHF, with charging id and the "Roaming Charging Profile", and with or without quota management.

9ch-c2. The H-CHF opens a CDR.

9ch-d2. The H-CHF acknowledges by sending Charging Data Response [Initial] to the V-SMF and optionally supplies a "Roaming Charging Profile" to the V-SMF.

10ch-a1. The Charging Data Request [Update] is sent to V-CHF, when enabled triggers for QBC (and optionally FBC) are met, optionally including the new "Roaming Charging Profile"

10ch-b1. The V-CHF update the CDR.

10ch-c1. The V-CHF acknowledges by sending Charging Data Response [Update] to the V-SMF.

10ch-a2. If a H-CHF was selected a Charging Data Request [Update] is sent to H-CHF, when the enabled triggers for FBC, QBC or both are met, and may include a request for quota.

10ch-b2. The H-CHF update the CDR.

10ch-c2. The H-CHF acknowledges by sending Charging Data Response [Update] to the V-SMF.

The following figure 7.1.4.3.3-2 describes the PDU session modification charging, based on figure 4.3.3.2-1 UE or network requested PDU Session Modification (for non-roaming and roaming with local breakout) TS 23.502 [202] description:



Figure 7.1.4.3.3-2: PDU Session Modification

2ch-a1. The Charging Data Request [Update] is sent to V-CHF for reporting the charging information when enabled triggers for QBC (and optionally FBC) are met.

2ch-b1. The V-CHF update the CDR.

2ch-c1. The V-CHF acknowledges by sending Charging Data Response [Update] to the V-SMF.

2ch-a2. If a H-CHF was selected a Charging Data Request [Update] is sent to H-CHF, when the enabled triggers for FBC, QBC or both are met, and may include a request for quota.

2ch-b2. The H-CHF update a CDR.

2ch-c2. The H-CHF acknowledges by sending Charging Data Response [Update] to the V-SMF.

The following figure 7.1.4.3.3-3 describes the PDU session release charging, based on figure 4.3.4.2-1 UE or network requested PDU Session Release for non-roaming and roaming with local breakout TS 23.502 [202] description:



Figure 7.1.4.3.3-3: PDU Session Release

2ch-a1. The Charging Data Request [Termination] is sent to V-CHF.

2ch-b1. The V-CHF close the CDR.

2ch-c1. The V-CHF acknowledges by sending Charging Data Response [Termination] to the V-SMF.

2ch-a2. If a H-CHF was selected a Charging Data Request [Termination] is sent to H-CHF.

2ch-b2. The H-CHF close the CDR.

2ch-c2. The H-CHF acknowledges by sending Charging Data Response [Termination] to the V-SMF.

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| **End of changes** |