**3GPP TSG-SA5 Meeting #144-e *S5-224200***

**e-meeting, 27 June - 1 July 2022**

**Source: Ericsson, Huawei**

**Title: Mapping requirement and issue in clause 7.2**

**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

The requirements covered for the solutions in clause 7.2 are missing, making it difficult to evaluate the solutions.

There are two solutions #2.2, changing clause 7.2.4.5 to solution #2.5.

Moving and clarifying the editor’s note regarding solution #2.1, since it’s applicable for the whole clause not just the flow.

Solutions #2.6 to #2.7 are moved from in clause 7.1 to 7.2 since they cover the requirements and key issues in the clause 7.2

# 4 Detailed proposal

|  |
| --- |
| **First change** |

#### 7.2.4.1 Solution #2.1: V-CHF communicating with H-CHF for retail charging of 5G

##### 7.2.4.1.1 General

A possible solution for key issues #2a, #2b, #2f, #2g, #2h and #2i covering requirements REQ-CH\_CVTOH-01, REQ-CH\_CVTOH-02, REQ-CH\_CVTOH-03, REQ-CH\_CVTOH-04, REQ-CH\_CVTOH-05, and REQ-CH\_CVTOH-06, retail charging for 5G data connectivity provided, 5G connection and mobility, and SMS usage to the home MNO’s users by the visited MNO, in the case of local breakout.

|  |
| --- |
| **Second change** |

#### 7.2.4.2 Solution #2.2: Visited SMF (CTF) communicating with both H-CHF and V-CHF

##### 7.2.4.2.1 General

A possible solution for key issues #2a and #2b covering requirements REQ-CH\_CVTOH-01, and REQ-CH\_CVTOH-02, retail charging for 5G data connectivity provided to the home MNO’s user by the visited MNO. Roaming 5G data connectivity scenario in service-based interface representation is the same with Figure 7.2.4.1.1-1.

The visited CHF does converged charging for interconnect, while the home CHF does converged charging for the subscriber.

|  |
| --- |
| **Third change** |

#### 7.2.4.4 Solution #2.4: Visited SMSF (CTF) communicating with both H-CHF and V-CHF

##### 7.2.4.4.1 General

A possible solution for key issues #2f and #2g covering requirements REQ-CH\_CVTOH-03, and REQ-CH\_CVTOH-04, charging for SMS provided to the home MNO’s users by the visited MNO, in roaming scenario.

The visited CHF performs converged charging for interconnect, while the home CHF performs converged charging for reconciliation.

|  |
| --- |
| **Fourth change** |

#### 7.2.4.5 Solution #2.5: Visited AMF (CTF) communicating with both H-CHF and V-CHF

##### 7.2.4.5.1 General

A possible solution for key issues #2h and #2i covering requirements REQ-CH\_CVTOH-05, and REQ-CH\_CVTOH-06, retail charging for 5G connection and mobility provided to the home MNO’s user by the visited MNO.

The visited CHF does converged charging for interconnect, while the home CHF does converged charging for the subscriber.

|  |
| --- |
| **Fifth change** |

#### 7.2.4.6 Solution #2.6: Reusing Nchf\_ConvergedCharging service API between CHFs

##### 7.2.4.6.1 General

A possible solution for key issue #2d covering requirements REQ-CH\_CVTOH-01, REQ-CH\_CVTOH-02, REQ-CH\_CVTOH-03, REQ-CH\_CVTOH-04, REQ-CH\_CVTOH-05, and REQ-CH\_CVTOH-06, service based interface to use between visited CHF and home CHF, would be to reuse the Nchf\_ConvergedCharging service API. This would mean that the V-CHF would proxy the request from the AMF, SMF or SMSF to the H-CHF, and the same with the response. The V-CHF could do some changes to message like: filter (e.g. trigger), enrich, or convert (e.g., rating groups).

##### 7.2.4.6.2 Reference architecture

The reference architecture would be the same as in solution #2.1 clause 7.2.4.1.

#### 7.2.4.7 Solution #2.7: New Nchf service API between CHFs

##### 7.2.4.7.1 General

A possible solution for key issue #2d covering requirements REQ-CH\_CVTOH-01, REQ-CH\_CVTOH-02, REQ-CH\_CVTOH-03, REQ-CH\_CVTOH-04, REQ-CH\_CVTOH-05, and REQ-CH\_CVTOH-06, service based interface to use between visited CHF and home CHF, would be to create a new service API. This would mean that the V-CHF would translate the request from the AMF, SMF or SMSF to the new service API towards the H-CHF. This would mean that the message could look completely different and even the triggers in the V-CHF for sending the message towards the H-CHF wouldn’t have to be related to the request from AMF, SMF or SMSF.

##### 7.2.4.7.2 Reference architecture

The reference architecture would be the same as in solution #2.1 clause 7.2.4.1.

#### 7.2.4.8 Solution #2.8: Using NRF to find H-CHF

##### 7.2.4.8.1 General

A possible solution for key issue #2c, finding the correct CHF for solutions #2.1 and #2.3 where V-CHF communicating with H-CHF.

Editor’s Note: The solution #2.1 where V-CHF communicate with H-CHF is FFS.

##### 7.2.4.8.2 Reference architecture

The reference architecture would be the same as in solution #2.1 clause 7.2.4.1 and #2.3 clause 7.2.4.3.

##### 7.2.4.8.3 Message flows

The V-CHF would in this case use the vNRF provided service to find the H-CHF, where the vNRF and hNRF may communicate according to TS 23.501 clause 6.2.6.

#### 7.2.4.9 Solution #2.9: Using SUPI to find H-CHF

##### 7.2.4.9.1 General

A possible solution for key issue #2c, finding the correct CHF for solutions #2.1 and #2.3 where V-CHF communicating with H-CHF.

Editor’s Note: The solution #2.1 where V-CHF communicate with H-CHF is FFS.

##### 7.2.4.9.2 Reference architecture

The reference architecture would be the same as in solution #2.1 clause 7.2.4.1 and #2.3 clause 7.2.4.3.

##### 7.2.4.9.3 Message flows

The V-CHF would in this case use the SUPI i.e., the IMSI number series, to find the V-CHF. In this case the H-CHF address would be pre-provisioned in the V-CHF and allocated to a IMSI series.

|  |
| --- |
| **End of changes** |