**3GPP TSG-SA5 Meeting #142-e *S5-222445***

**e-meeting, 4 - 12 April 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **32.255** | **CR** | **draftCR** | **rev** | **-** | **Current version:** | **17.5.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | FBC and QBC when interaction with two CHFs |
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| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | S5 |
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| ***Work item code:*** | CHROAM |  | ***Date:*** | 2022-03-21 |
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| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | The trigger setting for QBC according to TS 32.255 [1] clause 5.2.1.7 can be handled thought the “roaming charging profile” in the case of roaming home routed. The roaming charging profile is intended to be the same in both VPLMN and HPLMN for a specific PDU session and set in the following order: 1 V-SMF setts initial triggers  2 V-CHF may set new triggers 3 H-SMF may set new triggers 4 H-CHF may set new triggersThis means that the H-CHF trigger settings will be the ones used if they are supplied. The V-CHF can be aware and record all triggers settings used in the V-SMF, because only QBC is applicable in the V-SMF and therefore only QBC triggers are applicable. For the case where the H-CHF and V-CHF shares the same SMF it would mean that all triggers, independent of FBC or QBC, should be known by both CHFs.All cases where there is no FBC to the H-CHF would not fulfil the requirement to allow quota management for the home network Since QBC is intended for interconnect to have it only used in H-CHF won’t fulfil the requirements. If the visited network want have knowledge about all triggers set and information sent from the V-SMF, when FBC is used to the H-CHF, then there is a requirement to have FBC to the V-CHF at the same time. Having QBC only allowed to the V-CHF when it may be controlled by the H-CHF could be seen as a strange limitation. This means that FBC to V-CHF and H-CHF with or without QBC to V-CHF and H-CHF as be the best alternative. This would then also mean extending the use of FBC in the V-SMF for the roaming home routed case.For the “Roaming charging profile” there is a need to explain how this is used. Since all information can be set and changed by any of the V-SMF, V-CHF, H-SMF, and H-CHF there isn’t any need to state which information that can be set or changed. It’s however important to state which order it can be set and when. There is also a bit of inconsistency since at one point it states that it can only be set or changed at PDU session establishment or PDU session transfer from a different VPLMN, but in the last paragraphs it is stated that it may be updated at each V-SMF change. Since the “Roaming charging profile” relies on roaming agreements between a VPLMN and HPLMN, it is not likely that it would change if the V-SMF is withing a PLMN.. |
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| ***Summary of change:*** | Addition of use of FBC at roaming. |
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| ***Consequences if not approved:*** | The use of FBC and QBC will be undefined for local breakout. |
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| ***Clauses affected:*** | 5.1.9.1, 5.2.1.7 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **First change** |

#### 5.1.9.1 General

All interaction between VPLMN and HPLMN is based on roaming agreements.

For each UE roaming in VPLMN in both roaming home routed and local breakout scenario:

- The SMF in VPLMN (V-SMF) shall be able to collect charging information per service data flow or per QoS flow within a PDU session, it may support both.

- The SMF in HPLMN (H-SMF) shall be able to collect charging information per service data flow within a PDU session, it may be able to collect charging information per QoS flow within a PDU session. Only applicable for the home routed roaming scenario.

In roaming home routed scenario, the main parameters, from charging perspective, exchanged between V-SMF and H-SMF are at PDU session:

- establishment: the Charging Id and optionally Roaming Charging Profile.

- handover from EPS to 5GS: the Home Provided Charging Id and optionally the Roaming Charging Profile.

- inter-PLMN V-SMF change: optionally the Roaming Charging Profile

The main parameters, from charging perspective, exchanged between old V-SMF and new V-SMF are at PDU session:

- intra-PLMN V-SMF change : the Charging Id, and optionally the Roaming Charging Profile and CHF address.

- inter-PLMN V-SMF change: the Charging Id.

- The "Roaming Charging Profile" is optionally exchanged between the new V-SMF and the H-SMF as for a PDU session establishment.

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| **Second change** |

#### 5.2.1.7 Roaming QoS flow Based charging (QBC)

When QoS flow Based Charging, clause 5.2.1.6, is used, a "Roaming charging profile" is defined to allow, if shared, QBC to be synchronized between both PLMNs.

The "Roaming charging profile" includes:

- The set of chargeable events as per Table 5.2.1.6.1 and associated category.

- The set of thresholds for chargeable events based on trigger thresholds.

- An indication on whether the "Default partial record" or the "Individual partial record" mechanism, clause 5.2.3, is used by CHF.

The default "Roaming charging profile" for the SMF is based on the “Charging characteristics”, which may be specific for QBC.

The “Roaming charging profile” may only be set or changed at PDU session establishment or PDU session transfer from a different VPLMN. It may at this point be set, changed, applied, and transferred in the following order:

1. Default set by V-SMF and transferred to V-CHF

2. Changed by V-CHF and transferred to V-SMF

3. Transferred from V-SMF to H-SMF

4. Transferred from H-SMF to H-CHF

5. Changed by H-CHF and transferred to H-SMF

6. Applied in H-SMF and transferred to V-SMF

7. Applied in V-SMF and transferred to V-CHF

In case of roaming local breakout scenario, the H-SMF will be replaced by V-SMF.

Support for “Roaming changing profile” exchange is done by transferring it i.e., an NF may only change the “Roaming charging profile” if it has received it. The "Roaming charging profile" resulting from the exchange between the VPLMN and HPLMN shall remain valid until it is replaced.

The "Roaming charging profile" overrides any triggers set or updated by the CHF for Roaming QBC.

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| **End of changes** |