**3GPP TSG-SA5 Meeting #143-e *S5-223276rev1***

**e-meeting, 9th – 17th May 2022** Revision of S5-20xxxx

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **32.255** | **CR** | **0396** | **rev** | **1** | **Current version:** | **16.11.0** |  |
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| *For* [***HELP***](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:*** | Correction on the Trigger Conditions | | | | | | | | | |
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| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI16, 5GS\_Ph1-DCH | | | | |  | ***Date:*** | | | 2022-04-26 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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 can be 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 description for the multiple triggers armed at the same time is unclear.  From the standpoint of the SMF, there are 3 possible operation:  - Option 1: SMF may report each trigger with its own used unit container. All the containers have the same usage value.  - Option 2: SMF may report each trigger with the used unit container, but only one container has the usage value for one of the triggers, other containers have the zero usage value for the other triggers.  - Option 3: SMF may report the used unit container with the multiple triggers, which is already supported and specified in the TS 32.291 table 6.1.6.2.1.10.  From the standpoint of the CHF, for option 1, CHF may duplicatily handle the reported usage units. for option 2, CHF may mishandle based on the reported usage and triggers.  The description for the charging data request handling in SMF is unclear, if the SMF has not received the previous charging data response but the triggers for the same rating group is armed.  The session AMBR change is used as the triggers for FBC and QBC. | | | | | | | | |
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| ***Summary of change:*** | | Clarify the trigger mechanims.  Change the “DNN-AMBR change” to “Session AMBR change”. | | | | | | | | |
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| ***Consequences if not approved:*** | | The CHF CDRs are incorrect. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.1.2.1,5.2.3.2.3,5.2.3.3.3 | | | | | | | | |
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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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First change** |

##### 5.2.1.2.1 General

When a charging event is issued towards the CHF, it includes details such as Subscriber identifier (e.g. SUPI), Charging-id, etc. and also containers identifying the volume count (separated for uplink and downlink traffic), with charging condition change information.

Each trigger condition (i.e. chargeable event) defined for the 5G data connectivity converged charging functionality with the associated behaviours when met is specified in this document and the basic trigger mechanism is specified in the TS 32.290[57].

Two categories of chargeable events are identified:

- immediate report: chargeable events for which, when occurring, the current counts are closed and sent together with the charging data generated by the SMF towards the CHF in a Charging Data Request. New counts are started by the SMF.

- deferred report: chargeable events for which, when occurring, the current counts are closed and stored together with the charging data generated by the SMF. The stored counts will be sent to the CHF in next a Charging Data Request. New counts are started by the SMF.

When more than one trigger condition to be met at same time (i.e. time stamp of triggers is the same) for the same count in the SMF, the SMF reports the used unit container with these triggers.

When a PDU session starts, and the converged charging is activated, the SMF invokes a Charging Data Request [Initial] towards the CHF to get authorization to start based on the default triggers. The SMF is optionally provided in a Charging Data Response [Initial] to override the default triggers, with a set of chargeable event triggers to be enabled, and the associated category (i.e. immediate or deferred report).

The triggers remain active until they are updated or disabled by subsequent Charging Data Response [Update] from the CHF or the PDU session is terminated.

A set of chargeable events are based on trigger thresholds and default ones can be configured in Charging Characteristics which are described in Annex A.

The SMF is optionally provided in the Charging Data Response [Initial], with trigger thresholds which override the default ones configured in the Charging Characteristics selected by the SMF for the PDU session. They remain active until they are updated by subsequent Charging Data Response [Update] from the CHF or the PDU session is terminated.

When a trigger is enabled, the SMF needs to ensure that monitoring and subscriptions in UPF and RAN are setup so that SMF can report the charging information to the CHF if the trigger event occurs.

When a trigger is enabled, the SMF needs to ensure that monitoring in UPF and subscription from RAN are setup so that SMF can report the charging information to the CHF if the chargeable event occurs.

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| **Next change** |

##### 5.2.3.2.3 Triggers for CHF CDR partial record closure

When the CHF receives Charging Data Request [Update], with the change conditions identified in Table 5.2.3.2.3.1, the charging information shall be added in the PDU session charging CHF CDR, before the CDR is closed and a subsequent CHF CDR shall be opened with an incremented Sequence Number, as the default supported mechanism.

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Table 5.2.3.2.3.1: Triggers for CHF CDR partial record closure

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| --- |
| Trigger Conditions |
| Change of Charging conditions |
| UE time zone change |
| PLMN change |
| RAT type change |
| Session-AMBR change |
| Removal of UPF |
| Insertion\_of\_ISMF |
| Change\_of\_ISMF |
| Removal\_of\_ISMF |
| Handover complete |
| Management intervention |
| Addition of access |
| Removal of access |
| Limit per PDU session |
| Expiry of data time limit per PDU session |
| Expiry of data volume limit per PDU session |
| Expiry of data event limit per PDU session |
| Expiry of limit of number of charging condition changes |

In case the "Individual Partial record" mechanism is enabled, the Table 5.2.3.2.3.1 is not applicable.

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| **Next change** |

##### 5.2.3.3.3 Triggers for CHF CDR partial record closure for roaming QBC

When the CHF receives Charging Data Request [Update] with the change conditions identified in Table 5.2.3.3.3.1, the charging information shall be added in the CHF CDR, before the CDR is closed and a subsequent CHF CDR shall be opened with an incremented Sequence Number, as the default supported mechanism.

Table 5.2.3.3.3.1: Triggers for CHF CDR partial record closure for roaming QBC

|  |
| --- |
| Trigger Conditions |
| Change of Charging conditions |
| UE time zone change |
| PLMN change |
| RAT type change |
| Session-AMBR change |
| Removal of UPF |
| Management intervention |
| Limit per PDU session |
| Expiry of data time limit per PDU session |
| Expiry of data volume limit per PDU session |
| Expiry of data event limit per PDU session |
| Expiry of limit of number of charging condition changes |

In case the "Individual partial record" mechanism is enabled, the Table 5.2.3.3.3.1 is not relevant: instead, the charging information shall be added in the CHF CDR, before the CDR is closed and a subsequent CHF CDR shall be opened with an incremented Sequence Number for each Charging Data Request [Update] received by the CHF.

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| **End of change** |