**3GPP TSG-SA5 Meeting #155 *S5-243021***

**Jeju, South Korea, 27 - 31 May 2024**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **32.279** | **CR** | **0011** | **rev** | **1** | **Current version:** | **18.0.0** |  |
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| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)*** *on using this form: comprehensive instructions can be found at  <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 MBS Session Activity Status | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Mobile Com. Corporation | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBS\_CH | | | | |  | ***Date:*** | | | 2024-05-28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | In order to reduce unnecessary charging information reporting, MBS Session activity status change can be added as new trigger condition. As a consequence, the activity status of multicast MBS session can be involved in MBS Session Charging Information. | | | | | | | | |
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| ***Summary of change:*** | | Update the Table 5.2.1.2-1 and Table 5.2.1.2-2 with MBS Session activity status change.  Add MBS Session Activity Status in MBS Session Charging Information. | | | | | | | | |
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| ***Consequences if not approved:*** | | Charging implementation is incomplete. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.1.2, 6.2.1.2, 5.2.3.2.2, 5.2.3.2.3 | | | | | | | | |
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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 32.291 CR 0562  TS 32.298 CR 1009 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revision of S5-242706 | | | | | | | | |

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| **First change** |

#### 5.2.1.2 Applicable Triggers in the MB-SMF

When a charging event is issued towards the CHF, it includes details such as MBS charging identifier and also containers identifying the volume count, with charging condition change information.

Each trigger condition (i.e. chargeable event) defined for the 5G converged charging functionality with the associated behaviours when met is specified in the present document and the basic trigger mechanism is specified in the TS 32.290 [4].

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 MB-SMF towards the CHF in a Charging Data Request. New counts are started by the MB-SMF.

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

When a MBS session starts, and the converged charging is activated, the MB-SMF invokes a Charging Data Request [Initial] towards the CHF to get authorization to start based on the default triggers. The MB-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 MBS session is terminated.

Table 5.2.1.2-1 summarizes the set of default trigger conditions and their category which shall be supported by the MB-SMF. For "immediate report" category, the table also provides the corresponding Charging Data Request [Initial, Update, Termination] message sent from MB-SMF towards the CHF.

Table 5.2.1.2-1: Default Trigger conditions in MB-SMF

| Trigger Conditions | Trigger level | Converged Charging default category | CHF allowed to change category | CHF allowed to enable and disable | Message when "immediate reporting" category |
| --- | --- | --- | --- | --- | --- |
| Start of MBS Session | MBS session | Immediate | Not Applicable | Not Applicable | Charging Data Request [Initial] |
| **Change of Charging conditions** | | | | | Charging Data Request [Update] |
| Connection established with NG-RAN | MBS session | Deferred | Yes | Yes |
| Connection released with NG-RAN | MBS session | Deferred | Yes | Yes |
| Connection established with UPF | MBS session | Deferred | Yes | Yes |
| Tariff Time Change | MBS session | Deferred | No | No |
| Connection released with UPF | MBS session | Deferred | Yes | Yes |
| MBS Session activity status change to active | MBS session | Immediate | Yes | Yes |
| MBS Session activity status change to inactive | MBS session | Immediate | Yes | Yes |
| **Quota management** | | | | |
| Time threshold reached | RG | Immediate | No | Yes |
| Time quota exhausted | RG | Immediate | No | Yes |
| **Limit per MBS session** | | | | |
| Expiry of data time limit per MBS session | MBS session | Immediate | No | Yes |
| Expiry of data volume limit per MBS session | MBS session | Immediate | No | Yes |
| Expiry of limit of number of charging condition changes | MBS session | Immediate | No | Yes |
| End of MBS session | MBS session | Immediate | No | No | Charging Data Request [Termination] |

For converged charging, the following details of chargeable events and corresponding actions in the MB-SMF are defined in Table 5.2.1.2-2:

Table 5.2.1.2-2: Chargeable events and their related actions in MB-SMF

| Chargeable event | Conditions | MB-SMF action |
| --- | --- | --- |
| Start of MBS session |  | Charging Data Request [Initial]. |
| Connection established with NG-RAN | If the corresponding trigger is enabled | Close the counts and start new counts with time stamps |
| Connection released with NG-RAN | If the corresponding trigger is enabled | Close the counts and start new counts with time stamps |
| Connection established with UPF | If the corresponding trigger is enabled | Close the counts and start new counts with time stamps |
| Connection released with UPF | If the corresponding trigger is enabled | Close the counts and start new counts with time stamps |
| MBS Session activity status change to active | If the corresponding trigger is enabled | Charging Data Request [Update]  Start new counts with time stamps |
| MBS Session activity status change to inactive | If the corresponding trigger is enabled | Charging Data Request [Update]  Close the counts with time stamps |
| Time threshold reached | If the corresponding trigger is enabled | Charging Data Request [Update] with a possible request quota  Close the counts and start new counts with time stamps |
| Time quota exhausted | If the corresponding trigger is enabled | Charging Data Request [Update] with a possible request quota  Close the counts and start new counts with time stamps |
| Expiry of data volume limit per MBS session | If the corresponding trigger is enabled | Charging Data Request [Update]  Close the counts and start new counts with time stamps |
| Expiry of time limit per MBS session | If the corresponding trigger is enabled | Charging Data Request [Update]  Close the counts and start new counts with time stamps |
| Expiry of a limit of number of charging condition changes per MBS session | If the corresponding trigger is enabled | Charging Data Request [Update]  Close the counts and start new counts with time stamps |
| Tariff Time Change | If the corresponding trigger is enabled | Charging Data Request [Update] with a possible request quota  Close the counts and start new counts with time stamps |
| End of MBS session |  | Charging Data Request [Termination]  Close the counts with time stamps |

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| **Next change** |

#### 6.2.1.2 Definition of MBS session charging information

MBS specific charging information used for 5G data connectivity charging is provided within the MBS Session Charging Information.

The detailed structure of the MBS Session Charging Information can be found in table 6.2.1.2-1.

Table 6.2.1.2-1: Structure of MBS Session Charging Information

|  |  |  |
| --- | --- | --- |
| Information Element | Category | Description |
| MBS Session ID | M | This field holds identifier of MBS session. |
| MBS Service Type | M | This field holds the type of the MBS session. |
| MBS Service Area | OC | This field holds MBS Service Area served by the MBS session. |
| MBS Session Start Time | OC | This field holds the timestamp when MBS session starts. |
| MBS Session Stop Time | OC | This field holds the timestamp when MBS session terminates. |
| MBS Session Activity Status | OC | This field holds the session activity status (active or inactive).  May be provided if the "serviceType" attribute indicates a multicast MBS session. |
| Serving Network Function ID | OC | This field holds the identity of the serving network function. It may have multiple occurrences. |
| Serving Network Function Information | M | This field holds the Information of the serving network function:  - AMF for the MBS sessions being served by MB-SMF in non-roaming |
| AMF Identifier | OC | This field holds the AMF identifier. |

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| **Next change** |

##### 5.2.3.2.2 Triggers for CHF CDR charging information addition

When the CHF receives Charging Data Request[Update], with the change conditions identified in Table 5.2.3.2.2-1 the charging information shall be added in the MBS session charging CHF CDR, and the CDR shall remain open, as the default supported mechanism.

Table 5.2.3.2.2-1: Triggers for CHF CDR charging information addition

|  |
| --- |
| Trigger Conditions |
| Change of Charging conditions |
| Connection established with NG-RAN |
| Connection released with NG-RAN |
| Connection established with UPF |
| Connection released with UPF |
| Quota management triggers |
| Time threshold reached |
| Time quota exhausted |



In case the "Individual Partial record" mechanism is enabled, the Table 5.2.3.2.2-1 is not applicable. The charging information consists of a set of containers, which are added as "List of Multiple Unit Usage" parameter of the CHF CDR.

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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 MBS 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.

Table 5.2.3.2.3-1: Triggers for CHF CDR partial record closure

|  |
| --- |
| Trigger Conditions |
| Change of Charging conditions |
| MBS Session activity status change to active |
| MBS Session activity status change to inactive |
| Limit per MBS session |
| Expiry of data time limit per MBS session |
| Expiry of data volume limit per MBS 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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| **End of change** |