**3GPP TSG-SA5 Meeting #145-e *S5-225290***

**e-meeting, 15 - 24 August 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **32.270** | **CR** | **0033** | **rev** | **-** | **Current version:** | **17.0.0** |  |
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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:*** | Addition of converged charging scenarios | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson LM | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MMS\_CH\_SBI | | | | |  | ***Date:*** | | | 2022-08-04 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Support of converged charging architecture for MMS | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Addition of converged charging scenarios | | | | | | | | |
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| ***Consequences if not approved:*** | | MMS won’t be able to support converged charging | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.4 (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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** |

## 5.4 MMS converged online and offline charging scenarios

### 5.4.1 Basic principles

#### 5.4.1.1 General

Converged charging may be performed by the MMS Node interacting with CHF using Nchf specified in TS 32.290 [2] and TS 32.291 [3]. In order to provide the data required for the management activities outlined in TS 32.240 [1] (Credit-Control, accounting, billing, statistics etc.), the MMS Node shall be able to perform converged charging for each of the MMS transactions.

The MMS Node shall be able to perform convergent charging by interacting with CHF, for charging data related to MMS. The Charging Data Request and Charging Data Response are exchanged between the MMS Node and the CHF, based on PEC, IEC or ECUR scenarios specified in TS 32.290 [2]. The Charging Data Request is issued by the MMS Node towards the CHF when certain conditions (chargeable events) are met.

The contents and purpose of each charging event that triggers interaction with CHF, as well as the chargeable events that trigger them, are described in the following sub-clauses.

A detailed formal description of the converged charging parameters defined in the present document is to be found in TS 32.291 [3].

A detailed formal description of the CDR parameters defined in the present document is to be found in TS 32.298 [51].

The chargeable events or messages exchanged between the MMS Node and the other nodes are described with generic names (i.e., MMS submit, MMS retrieve), to reflect MMS sending or retrieval by/from the MMS Node, independently from the protocol conveying the MMS.

#### 5.4.1.2 Applicable Triggers in the MMS Node

##### 5.4.1.2.1 General

When a charging event is issued towards the CHF, it includes details such as Subscriber identifier (e.g., SUPI).

Each trigger condition (i.e., chargeable event) defined for the MMS converged charging functionality, is specified with the associated behaviour when they are met.

When an MMS IS sent or retrieved, and the converged charging is activated, the MMS Node a Charging Data Request [Initial] towards the CHF to get authorization to start in ECUR mode. In IEC mode, the Charging Data Request [Event] is sent towards the CHF.

Table 5.4.1.2.1 summarizes the set of default trigger conditions and their category which shall be supported by the MMS Node. For "immediate report" category, the table also provides the corresponding Charging Data Request [Initial, Event, Termination] message sent from MMS Node towards the CHF.

Table 5.4.1.2.1: Default Trigger conditions in MMS Node

| Trigger Conditions | Trigger level | Default category | CHF allowed to change category | CHF allowed to enable and disable | Message when "immediate reporting" category |
| --- | --- | --- | --- | --- | --- |
| MMS Submit request | - | Immediate | Not Applicable | Not Applicable | IEC: Charging Data Request [Event] |
| MMS Retrieve request | - | Immediate | Not Applicable | Not Applicable | IEC: Charging Data Request [Event]  ECUR: Charging Data Request [Initial] |
| MMS Retrieve acknowledge | - | Immediate | Not Applicable | Not Applicable | PEC: Charging Data Request [Event]  ECUR: Charging Data Request [Termination] |

For converged charging, the following details of chargeable events and corresponding actions in the MMS Node are defined in Table 5.4.1.2.2:

Table 5.4.1.2.2: Chargeable events and their related actions in MMS Node

| Chargeable event | Conditions | MMS Node action |
| --- | --- | --- |
| MMS Submit request |  | IEC: Charging Data Request [Event] |
| MMS Retrieve request |  | IEC: Charging Data Request [Event] ECUR: Charging Data Request [Initial] with a possible request quota for later use |
| MMS Retrieve acknowledge |  | PEC: Charging Data Request [Event]  ECUR: Charging Data Request [Termination], indicating that charging session is terminated |

The CDR generation mechanism processed by the CHF upon receiving Charging Data Request [Event, Initial, Termination] issued by the MMS Node for these chargeable events, is specified in clause 5.4.3.

#### 5.4.1.3 CHF selection

The CHF to be used by the MMS Node can be:

- Discovered via NRF.

- Locally provisioned.

The option depends on Operator's policies.

When CHF selection by MMS Node is performed via NRF based discovery, the CHF can be discovered based on the UE identifier.

### 5.4.2 Message flows

#### 5.4.2.1 Introduction

The different scenarios below focus on the different messages from/to the MMS Node and corresponding interaction with the CHF, based on scenarios specified in clause 5.3.2.

#### 5.4.2.2 MM submission

Figure 5.4.2.2.1 describes the scenario where an MMS is submitted to the to MMS Node for IEC mode



Figure 5.4.2.2.1: MMS submission to MMS Node for IEC

1. Initial procedures: see applicable flows.

2. The MMS Node receives "MMS Submit request" message from an originator MMS user agent.

2ch-a. The MMS Node sends Charging Data Request [Event] to CHF for the MMS submission.

2ch-b. The CHF creates a CDR for this MMS submission.

2ch-c. The CHF acknowledges by sending Charging Data Response [Event] to the MMS Node.

3. The MMS Node returns "MMS Submit response" with appropriate result.

The table 5.4.2.2.1 describes the correspondence between the message in this scenario, and the message in the different Network scenario for which it is applicable.

Table 5.4.2.2.1: Messages mapping

| Message | Message in Network scenario | Reference |
| --- | --- | --- |
| 2. MMS Submit request | MM1\_submit\_Req |  |
| 3. MMS Submit response | MM1\_submit\_Res |  |

#### 5.4.2.3 MM retrieval

Figure 5.4.2.3.1 describes the scenario where an MMS is retrieved from the MMS Node for IEC mode



Figure 5.4.2.3.1 MMS retrieval from MMS Node for IEC

1. Initial procedures: see applicable flows.

2. The MMS Node receives "MMS Retrieve request" message from a recipient MMS user agent

2ch-a. The MMS Node sends Charging Data Request [Event] to CHF for the MMS submission.

2ch-b. The CHF creates a CDR for this MMS retrieval.

2ch-c. The CHF acknowledges by sending Charging Data Response [Event] to the MMS Node.

3. The MMS Node returns "MMS Retrieve response" with appropriate result.

4. The MMS Node receives "MMS Retrieve acknowledge" with the result.

Figure 5.4.2.3.2 describes the scenario where an MMS is retrieved from the MMS Node for ECUR mode.



Figure 5.4.2.3.2: MMS retrieval from MMS Node for ECUR

1. Initial procedures: see applicable flows.

2. The MMS Node receives "MMS Retrieve request" message from a recipient MMS user agent.

2ch-a. The MMS Node sends Charging Data Request [Initial] to CHF for authorization.

2ch-b. The CHF opens CDR for this MMS retrieval.

2ch-c. The CHF acknowledges by sending Charging Data Response [Initial] to the MMS Node

3. The MMS Node returns "MMS Retrieve response" with appropriate result.

4. The MMS Node receives "MMS Retrieve acknowledge" with the result.

4ch-a. The MMS Node sends Charging Data Request [Termination] to the CHF for terminating the charging associated with MMS retrieval.

4ch-b. The CHF closes the CDR for this MMS retrieval.

4ch-c. The CHF acknowledges by sending Charging Data Response [Termination] to the MMS Node.

Figure 5.4.2.3.3 describes the scenario where an MMS is retrieved from the MMS Node for PEC mode7



Figure 5.4.2.3.3 MMS retrieval from MMS Node for PEC

1. Initial procedures: see applicable flows.

2. The MMS Node receives "MMS Retrieve request" message from a recipient MMS user agent

3. The MMS Node returns "MMS Retrieve response" with appropriate result.

4. The MMS Node receives "MMS Retrieve acknowledge" with the result.

4ch-a. The MMS Node sends Charging Data Request [Event] to CHF for the MMS submission.

4ch-b. The CHF creates a CDR for this MMS retrieval.

4ch-c. The CHF acknowledges by sending Charging Data Response [Event] to the MMS Node.

The table 5.4.2.3.1 describes the correspondence between the message in all scenarios, and the message in the different Network scenario for which it is applicable.

Table 5.4.2.3.1: Messages mapping

| Message | Message in Network scenario | Reference |
| --- | --- | --- |
| 2. MMS Retrieve request | MM1\_retrieve\_Req |  |
| 3. MMS Retrieve response | MM1\_retrieve\_Res |  |
| 4. MMS Retrieve acknowledge | MM1\_retrieve\_Ack |  |

### 5.4.3 CDR generation

#### 5.4.3.1 Introduction

The CHF CDRs for MMS charging are generated by the CHF to collect charging information.

The following clauses describe in detail the conditions for generating, opening and closing the CHF CDR, which shall be supported by the CHF.

#### 5.4.3.2 Triggers for CHF CDR

##### 5.4.3.2.1 General

A MMS charging CHF CDR is used to collect charging information related to MMS chargeable events for PEC, IEC and ECUR.

##### 5.4.3.2.2 Triggers for CHF CDR generation

A CHF CDR is generated by the CHF for each received Charging Data Request [Event].

##### 5.4.3.2.3 Triggers for CHF CDR opening

A CHF CDR shall be opened when the CHF receives Charging Data Request [Initial].

##### 5.4.3.2.4 Triggers for CHF CDR closure

The CHF CDR shall be closed when the CHF receives Charging Data Request [Termination].

### 5.4.4 Ga record transfer flows

Details of the Ga protocol application are specified in TS 32.295 [54].

### 5.4.5 Bm CDR file transfer

Details of the Bm protocol application are specified in TS 32.297 [52].

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| **End of changes** |