3GPP TSG SA WG5 Meeting 134-e TDoc S5-205123rev1

**electronic meeting, online, 16th - 25th November 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **32.275** | **CR** | **0075** | **rev** | **1** | **Current version:** | **16.x.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:*** | Add service based architecture for offline charging | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GSIMSCH | | | | |  | ***Date:*** | | | 2020-11-05 |
|  |  | | | |  | |  | | |  |
| ***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 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:*** | | Offline charging architecture for MMTel service based charging is missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding Offline charging architecture options for MMTel service based charging. | | | | | | | | |
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| ***Consequences if not approved:*** | | Offline charging architecture for MMTel service based charging architecture options won’t be specified. | | | | | | | | |
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| ***Clauses affected:*** | | 4.2, 5.2, | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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** |

## 4.2 MMTel offline charging architecture

Figure 4.2.1 depicts the MMTel offline charging architecture for Rf interface.



Figure 4.2.1: MMTel offline charging architecture for Rf interface.

This MMtel offline charging architecture is based on the IMS offline charging architecture described in TS 32.260 [20], with service CTFs supporting MMtel specific service charging, interfacing the CDF through the Rf reference point.

The CTFs considered in the MMTel offline charging architecture reside in the Application level network functionality providing MMTel service and supplementary services.

The CTFs related to charging for the IMS basic capabilities supporting MMTel service, are described in TS 32.260 [20], and reside in the set of IMS Nodes (S-CSCF, MRFC…) reflected in IMS offline architecture.

MMTel offline only charging architecture for service based interface are depicted in figure 4.2.x



Figure 4.2.x: MMTel offline only charging architecture for service based interface

This offline only charging architecture of MMTel for service based interface is based on the charging architecture of IMS for service based interface described in TS 32.260 [20], with service CTFs supporting MMTel specific service charging, using the offline only charging service.

The CTFs considered in the offline only charging architecture of MMTel for service based interface reside in the Application level network functionality providing MMTel service and supplementary services, other CTFs related to charging for the IMS basic capabilities (supporting MMTel service), are described in TS 32.260 [20].

The general architecture components can be found in TS 32.240 [1].

Ga is and Bi is described in TS 32.260 [1], and Nchf is described in TS 32.290 [57].

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| **Second change** |

## 5.2 MMTel offline charging scenarios

5.2.1 Basic principles

The MMTel offline charging functionality is based on the CTFs reporting accounting information, by sending Diameter *Charging Data Requests* Charging Data Request [start, interim, stop and event] to the CDF or sending Charging Data Request [Initial, Update, Termination, Event] to the offline only CHF using Nchf specified in TS 32.290 [57] and TS 32.291 [58].

The circumstances on which the Diameter client uses Charging Data Request[start, interim and stop], or Charging Data Request[Event] depend on the supplementary service type and is determined for each of them. Further details are specified in clause 5.2.2.

These Diameter Charging Data Request triggers may be configured in such a way several MMTel supplementary services can be regrouped. Providing this flexibility allows to improve situations where several MMTel supplementary services are handled within the same AS for complying with interactions requirements associated to these MMTel supplementary services.

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| **Third change** |

### 5.x Offline only charging service sceanrios

#### 5.x.1. Introduction

The flows described in the present document specify the charging interaction between offline only charging service with IMS NF (e.g. IMS AS) as the NF Consumer for different charging scenarios. The messages associated with these charging scenarios are shown primarily for information and to illustrate the charging triggers.   
They are not intended to be exhaustive of all the IMS message flows described in TS 24.228 [221].

Although each MMTel supplementary service is described by separated flows illustrating the dedicated trigger(s) for each MMTel supplementary service, the service may be combined with other MMTel supplementary services or IMS information.

Editor's note: The complete set of flows are FFS.

##### 5.x.2 Applicable Triggers for MMTel

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

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

Table 5.x.1.2.1 summarizes the set of default trigger conditions, including their category and if they are possible to change, which shall be supported by the MMTel AS. For "immediate report" category, the table also provides the corresponding Charging Data Request [Initial, Udate, Termination] message sent towards the CHF.

Table 5.x.2.1: Default Trigger conditions for MMTel

| Trigger Conditions | Trigger level | Default category | CHF allowed to change category | CHF allowed to enable and disable | Message when "immediate reporting" category |
| --- | --- | --- | --- | --- | --- |
| Originating Identification Presentation (OIP) | | | | | |
| Invite OK | - | Immediate | Not Applicable | Not Applicable |  |
| Originating Identification Restriction (OIR) | | | | | |
| Invite OK | - | Immediate | Not Applicable | Not Applicable |  |
| Terminating Identification Presentation (TIP) | | | | | |
| Invite OK | - | Immediate | Not Applicable | Not Applicable |  |
| Terminating Identification Restriction (TIR) | | | | | |
| Invite OK | - | Immediate | Not Applicable | Not Applicable |  |
| Communication Hold (HOLD) | | | | | |
| Update OK | - | Immediate | Not Applicable | Not Applicable |  |
| Communication Barring (CB) | | | | | |
| Invite | - | Immediate | Not Applicable | Not Applicable |  |
| Message Waiting Indication (MWI) | | | | | |
| Notify | - | Immediate | Not Applicable | Not Applicable |  |
| Conference (CONF) | | | | | |
| Invite | - | Immediate | Not Applicable | Not Applicable |  |
| Created | - | Immediate | Not Applicable | Not Applicable |  |
| User joining | - | Immediate | Not Applicable | Not Applicable |  |
| User leaving | - | Immediate | Not Applicable | Not Applicable |  |
| Bye | - | Immediate | Not Applicable | Not Applicable |  |
| Completion of Communication sessions to Busy Subscriber (CCBS) | | | | | |
| Notify | - | Immediate | Not Applicable | Not Applicable |  |
| Completion of Communications by No Reply (CCNR) | | | | | |
| Notify | - | Immediate | Not Applicable | Not Applicable |  |
| Communications Diversion (CDIV) | | | | | |
| Invite (OK) | - | Immediate | Not Applicable | Not Applicable |  |
| Answer | - | Immediate | Not Applicable | Not Applicable |  |
| Bye | - | Immediate | Not Applicable | Not Applicable |  |
| Communication Waiting (CW) | | | | | |
| Invite OK | - | Immediate | Not Applicable | Not Applicable |  |
| Explicit Communication Transfer (ECT) | | | | | |
| Refer | - | Immediate | Not Applicable | Not Applicable |  |
| Invite | - | Immediate | Not Applicable | Not Applicable |  |
| Answer | - | Immediate | Not Applicable | Not Applicable |  |
| Release | - | Immediate | Not Applicable | Not Applicable |  |
| Flexible Alerting (FA) | | | | | |
| Invite | - | Immediate | Not Applicable | Not Applicable |  |
| Answer/Cancel | - | Immediate | Not Applicable | Not Applicable |  |
| Bye | - | Immediate | Not Applicable | Not Applicable |  |
| Malicious Communication Identification (MCID) | | | | | |
| Store | - | Immediate | Not Applicable | Not Applicable |  |
| Customized Alerting Tone (CAT) | | | | | |
| Stop | - | Immediate | Not Applicable | Not Applicable |  |
| Closed User Group (CUG) | | | | | |
| Invite | - | Immediate | Not Applicable | Not Applicable |  |
| Answer | - | Immediate | Not Applicable | Not Applicable |  |
| Bye | - | Immediate | Not Applicable | Not Applicable |  |
| Personal Network Management (PNM) | | | | | |
| Invite | - | Immediate | Not Applicable | Not Applicable |  |
| Answer | - | Immediate | Not Applicable | Not Applicable |  |
| Bye | - | Immediate | Not Applicable | Not Applicable |  |
| Customized Ringing Signal (CRS) | | | | | |
| Stop | - | Immediate | Not Applicable | Not Applicable |  |

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| **Forth change** |

#### 5.x.3. Message flows - Successful cases and scenarios

##### 5.x.3.1 Introduction

Following message flows are defined in TS 32.260 [20], and can be re-used for charging the basic multimedia telephony capabilities:

- Session Establishment - IMS Origination;

- Session Establishment- IMS Termination;

- Mid-Session Procedures;

- Session Release - Mobile Initiated.

#### 5.x.3.2 Originating Identification Presentation (OIP) charging



Figure 5. 2.x.1.1: Originating Identification Presentation (OIP) service - PEC

#### 5.x.3.3 Originating Identification Restriction (OIR) charging



Figure 5.4.2.3.1: Originating Identification Restriction (OIR) service - PEC

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| **End of changes** |