3GPP TSG SA WG5 Meeting 134-e TDoc S5-205122rev5

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

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **32.260** | **CR** | **0407** | **rev** | **1** | **Current version:** | **16.2.0** |  |
|  |
| *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 |
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| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | 5GSIMSCH |  | ***Date:*** | 2020-11-19 |
|  |  |  |  |  |
| ***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-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 IMS service based charging is missing. |
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| ***Summary of change:*** | Adding Offline charging architecture options for IMS service based charging. |
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| ***Consequences if not approved:*** | Offline charging architecture for IMS service based charging architecture options won’t be specified. |
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| ***Clauses affected:*** | 4.4, 5.4.3 |
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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 ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **First change** |

## 4.4 IMS converged charging architecture

The architectural options for IMS converged charging are depicted in figure 4.4.1.



Figure 4.4.1: IMS converged charging architecture

The IMS Nodes for which this architecture applies are the MRFC, IMS-GWF (connected to S-CSCF using ISC) and SIP AS, the architecture for MMTel AS is described in TS 32.275 [35].

The MRFC, IMS-GWF and SIP AS may support converged charging via Nchf interface. The MRFC and SIP AS may support offline only charging via Nchf interface.

Editor’note: whether other IMS Nodes use the Nchf interface is FFS.

The general architecture components can be found in TS 32.240 [2].

Ga is described in clause 5.4.y and Bi in clause 5.4.z of the present document, and Nchf is described in TS 32.290 [45].

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| **Next change** |

### 5.4.3 Applicable triggers for IMS charging

The IMS nodes for which SIP method a charging Data Request is sent shall be operator configurable. The tables below describe all possible Charging Data Requests that might be sent from IMS nodes.

The generation of a Charging Data Request message by the IMS nodes in response to a particular "triggering SIP method" shall be operator configurable (enable or disable).

Table 5.4.3.1: Default Trigger conditions in or MRFC

| Trigger Conditions | Trigger level | Converged Charging default category | Offline only charging default category | CHF allowed to change category | CHF allowed to enable and disable | Message when "immediate reporting" category |
| --- | --- | --- | --- | --- | --- | --- |
| SIP INVITE for initiating a multimedia ad hoc conferencing session | - | Immediate | Not Applicable | Not Applicable | Not Applicable | SCUR: Charging Data Request [Initial] |
| SIP 2xx acknowledging an SIP INVITE for initiating a multimedia ad hoc conferencing session, and no charging session exists. | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP ACK acknowledging a SIP INVITE to connect an UE to the conferencing session | - | Immediate | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Update] |
| SIP RE-INVITE or SIP UPDATE[e.g. change in media components] | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP BYE(NOTE 1) | - | Immediate | Immediate | Not Applicable | Not Applicable |
| Expiration of Interim  | - | Immediate | Immediate | Not Applicable | Not Applicable |
| Expiration of quota, Validity time expiry or other authorization triggers (quota threshold reached, …). | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP BYE message (both normal and abnormal session termination cases) (NOTE 2) | - | Immediate | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Termination] |
| SIP CANCEL | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP Final Response with error codes 4xx, 5xx or 6xx indicating termination of an ongoing session | - | Immediate | Immediate | Not Applicable | Not Applicable |
|  | NOTE 1: This trigger only applies to a user leaving an ongoing conferencing sessionNOTE 2: This trigger only applies if this causes the ongoing conferencing session to terminate |

Table 5.4.3.2: Default Trigger conditions in or IMS-GWF or AS

| Trigger Conditions | Trigger level | Converged Charging default category | Offline only charging default category | CHF allowed to change category | CHF allowed to enable and disable | Message when "immediate reporting" category |
| --- | --- | --- | --- | --- | --- | --- |
| SIP INVITE | - | Immediate | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Initial]ECUR: Charging Data Request [Initial] |
| SIP NOTIFY | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP MESSAGE | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP REGISTER | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP SUBSCRIBE | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP REFER | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP PUBLISH | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP 2xx acknowledging a SIP INVITE, RE-INVITE or SIP UPDATE [e.g. change in media components]  | - | Immediate | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Update] |
| RE-INVITE or SIP UPDATE [e.g. change in media components, terminating identity change]  | - | Immediate | Immediate | Not Applicable | Not Applicable |
| Expiration of quota, Validity time expiry or other authorization triggers (quota threshold reached, …). | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| Any SIP message (except those triggering a Debit / Reserve Units Request[Initial] or those not covered by the above triggers for Reserve Units Request[Update] conveying a SDP offer or its associated SDP answer before SIP session establishment  | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP 1xx provisional response, mid-dialog requests, mid-dialog responses and SIP INFO embedding RTTI XML body | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
|  |  |  |  |  |  |
| SIP BYE message (both normal and abnormal session termination cases)  | - | Immediate | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Termination] |
| SIP 2xx acknowledging a SIP BYE message (only when last user location information of originating/ terminating party is required by operator for legal purpose). | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful SIP session set-up procedure | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP 2xx acknowledging non-session related SIP messages | - | Immediate | Not Applicable | Not Applicable | Not Applicable | ECUR: Charging Data Request [Termination] |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful session-unrelated procedure | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| Aborting a SIP session set-up procedure, using an internal trigger, or a SIP CANCEL | - | Immediate | Not Applicable | Not Applicable | Not Applicable | ECUR: Charging Data Request [Termination]SCUR: Charging Data Request [Termination] |
| Deregistration  | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP Final/Redirection Response 3xx | - | Immediate | Not Applicable | Not Applicable | Not Applicable |
| SIP NOTIFY | - | Immediate | Immediate | Not Applicable | Not Applicable | IEC: Charging Data Request [Event] |
| SIP MESSAGE | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP REGISTER | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP SUBSCRIBE | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP REFER | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP PUBLISH | - | Immediate | Immediate | Not Applicable | Not Applicable |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful session-unrelated procedure | - | Immediate | Immediate | Not Applicable | Not Applicable |

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| **Next change** |

### 5.4.x CDR generation

#### 5.4.x.1 Introduction

The CHF CDRs for IMS charging are generated by the CHF to collect charging information that they subsequently transfer to the Charging Gateway Function (CGF).

The CHF shall support generating, opening updating and closing the CHF CDR as described in clause 5.4.x.2.

#### 5.4.x.2 Triggers for CHF CDR

##### 5.4.x.2.1 General

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

##### 5.4.x.2.2 Triggers for CHF CDR generation

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

##### 5.4.x.2.3 Triggers for CHF CDR opening

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

##### 5.4.x.2.4 Triggers for CHF CDR update

A CHF CDR shall be updated when the CHF receives Charging Data Request [Update].

##### 5.4.x.2.5 Triggers for CHF CDR closure

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

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| **Next change** | **Third change** |

### 5.4.y Ga record transfer flows

Details of the Ga protocol application are specified in TS 32.295 [6].

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| **Next change** | **Fourth change** |

### 5.4.z Bi CDR file transfer

Details of the Bi protocol application are specified in TS 32.297 [5].

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| **End of changes** |