3GPP TSG SA WG5 Meeting 135-e S5-211260

electronic meeting, online, 25 January - 3 February 2021

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **32.260** | **CR** | **0411** | **rev** | **1** | **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:*** | Moving offline only to offline clause | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | S5 | | | | | | | | | |
| ***Source to TSG:*** | Ericsson LM | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GSIMSCH | | | | |  | ***Date:*** | | | 2021-01-15 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The offline only handles offline charging and should therefore be described in the clause for offline charging, the offline clause today handles CDR and Rf while online handles Ro | | | | | | | | |
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| ***Summary of change:*** | | Moving all offline reference points and interfaces to the offline clause | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Offline charging will be handled in two different clauses and the Nchf offline only may be thought of as a converged charging service | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 Basic principles

The offline charging functionality is based on the IMS network nodes reporting accounting information upon reception of various SIP methods or ISUP messages, as most of the accounting relevant information is contained in these messages. This reporting is achieved by sending Charging DataRequest [start, interim, stop and event] from the IMS Network Elements to the CDF or Charging Data Request [Initial, Update, Termination and Event] from the IMS Network Elements to the CHF.

The charging client uses Charging Data Request[start/Initial, interim/Update and stop/Termination] in procedures related to successful SIP sessions. It uses Charging Data Request[event]s for unsuccessful SIP sessions and for session unrelated procedures. Further details are specified in the tables below and in clause 5.2.2.

It is operator configurable in the nodes for which SIP method or ISUP messages a Charging Data Requestis sent. Table 5.2.1.1 describes all possible Charging Data Requests that might be sent from a P‑CSCF, I‑CSCF, S-CSCF, IBCF, MGCF or BGCF. A list of node specific Charging Data Requests, along with the AVPs to be included are detailed in TS  32.299 [50] or the API attributes to be included are detailed in TS 32.291 [46].

The Charging Data Requests to be sent from a MRFC are described in table 5.2.1.2 specific for reference point Rf or 5.2.1.4 specific for service based interface Nchf.

It is configurable for the operators to enable or disable the generation of a Charging Data Request message by the IMS node in response to a particular "triggering SIP method /ISUP message".

#### 5.2.1.1 Reference point Rf specifics

Table 5.2.1.1: Charging Data Request messages triggered by SIP methods or ISUP messages  
for all IMS nodes except for MRFC and AS

|  |  |
| --- | --- |
| Message | Triggering SIP method /ISUP message |
| Charging Data Request [Start] | SIP 2xx acknowledging an initial SIP INVITE |
| SIP ACK acknowledging an initial SIP INVITE |
| ISUP:ANM (applicable for the MGCF) |
| Charging Data Request [Interim] | SIP 2xx acknowledging a SIP RE-INVITE or SIP UPDATE [e.g. change in media components, terminating identity change] |
| SIP ACK acknowledging an initial SIP INVITE or a SIP RE-INVITE |
| Expiration of Interim Interval |
| SIP 1xx provisional response, mid-dialog requests, mid-dialog responses and SIP INFO embedding RTTI XML body (applicable for the S-CSCF and IBCF). |
| ISUP charging ASE (applicable for the MGCF). |
| SIP response (4xx, 5xx or 6xx), indicating an unsuccessful SIP RE-INVITE or SIP UPDATE |
| Charging Data Request [Stop] | SIP BYE message (both normal and abnormal session termination cases) |
| SIP 2xx acknowledging a SIP BYE message (only when last user location information of originating/ terminating party is required by operator for legal purpose) |
| ISUP:REL (applicable for the MGCF) |
| Charging Data Request [Event] | SIP 2xx acknowledging non-session related SIP messages, which are: |
| SIP NOTIFY |
| SIP MESSAGE |
| SIP REGISTER |
| SIP SUBSCRIBE |
| SIP PUBLISH |
| SIP REFER |
| SIP 2xx acknowledging an initial SIP INVITE (BGCF and I-CSCF only) |
| SIP Final/Redirection Response 3xx |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful SIP session set-up |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful session-unrelated procedure |
| SIP CANCEL, indicating abortion of a SIP session set-up |

Table 5.2.1.2: Charging Data Request messages triggered by SIP methods for the MRFC

|  |  |
| --- | --- |
| Message | Triggering SIP method |
| Charging Data Request [Start] | SIP 2xx acknowledging an SIP INVITE for initiating a multimedia ad hoc conferencing session |
| Charging Data Request [Interim] | SIP ACK acknowledging a SIP INVITE to connect an UE to the conferencing session |
| SIP RE-INVITE (see Note 1) |
| SIP BYE (see Note 2) |
| Expiration of Interim Interval |
| Charging Data Request [Stop] | SIP BYE message (see Note 3) |
| SIP CANCEL (see Note 3) |
| SIP Final Response with error codes 4xx, 5xx or 6xx indicating termination of an ongoing session (see Note 3) |
| NOTE 1: This trigger only applies to a user joining an ongoing conferencing session  NOTE 2: This trigger only applies to a user leaving an ongoing conferencing session  NOTE 3: This trigger only applies if this causes the ongoing conferencing session to terminate | |

#### 5.2.1.2 Service based interface Nchf specific

The Charging Data Request and Charging Data Response are exchanged between the IMS nodes and the CHF using Nchf, based on either PEC or SCUR scenarios specified in TS 32.290 [45].

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 this clause.

The CHF address can be selected from IMS signalling as per the TS 24.229 [204] or can be configured locally.

The CHF services may be selected by local configuration. IMS nodes (except IMS-GWF) may consume offline only charging service via Nchf interface.

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 5.2.1.3: Default Trigger conditions in IMS nodes (except MRFC and AS)

| Trigger Conditions | Trigger level | Offline only charging default category | CHF allowed to change category | CHF allowed to enable and disable | Message when "immediate reporting" category |
| --- | --- | --- | --- | --- | --- |
| SIP 2xx acknowledging a SIP INVITE | - | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Initial] |
| SIP ACK acknowledging a SIP INVITE |  | Immediate | Not Applicable | Not Applicable |
| ISUP: ANM |  | Immediate | Not Applicable | Not Applicable |
| SIP 2xx acknowledging a RE-INVITE or SIP UPDATE [e.g. change in media components terminating identity change] | - | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Update] |
| SIP ACK acknowledging an initial RE-INVITE or SIP UPDATE | - | Immediate | 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 |
| ISUP charging ASE |  | Immediate | Not Applicable | Not Applicable |
| SIP response (4xx, 5xx or 6xx), indicating an unsuccessful SIP RE-INVITE or SIP UPDATE |  | Immediate | Not Applicable | Not Applicable |
| SIP BYE message (both normal and abnormal session termination cases) | - | 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 | Not Applicable | Not Applicable |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful SIP session set-up procedure | - | Immediate | Not Applicable | Not Applicable |
| ISUP: REL |  | Immediate | Not Applicable | Not Applicable |
| Aborting a SIP session set-up procedure, using an internal trigger, or a SIP CANCEL | - | Immediate | Not Applicable | Not Applicable | PEC: Charging Data Request [Event] |
| Deregistration | - | Immediate | Not Applicable | Not Applicable |
| SIP Final/Redirection Response 3xx | - | Immediate | Not Applicable | Not Applicable |
| SIP NOTIFY | - | Immediate | Not Applicable | Not Applicable |
| SIP MESSAGE | - | Immediate | Not Applicable | Not Applicable |
| SIP REGISTER | - | Immediate | Not Applicable | Not Applicable |
| SIP SUBSCRIBE | - | Immediate | Not Applicable | Not Applicable |
| SIP REFER | - | Immediate | Not Applicable | Not Applicable |
| SIP PUBLISH | - | Immediate | Not Applicable | Not Applicable |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful session-unrelated procedure | - | Immediate | Not Applicable | Not Applicable |

Table 5.2.1.4: Default Trigger conditions in MRFC

| Trigger Conditions | Trigger level | 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 | - | 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 | Not Applicable | Not Applicable |
| SIP ACK acknowledging a SIP INVITE to connect an UE to the conferencing session | - | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Update] |
| SIP RE-INVITE or SIP UPDATE[e.g. change in media components] | - | Immediate | Not Applicable | Not Applicable |
| SIP BYE(NOTE 1) | - | Immediate | Not Applicable | Not Applicable |
| Expiration of Interim | - | Immediate | Not Applicable | Not Applicable |
| SIP BYE message (both normal and abnormal session termination cases) (NOTE 2) | - | Immediate | Not Applicable | Not Applicable | SCUR: Charging Data Request [Termination] |
| SIP CANCEL | - | Immediate | Not Applicable | Not Applicable |
| SIP Final Response with error codes 4xx, 5xx or 6xx indicating termination of an ongoing session | - | Immediate | Not Applicable | Not Applicable |
| NOTE 1: This trigger only applies to a user leaving an ongoing conferencing session  NOTE 2: This trigger only applies if this causes the ongoing conferencing session to terminate | | | | | |

For offline only charging, the following details of chargeable events and corresponding actions in the IMS nodes (except MRFC) are defined in Table 5.2.1.5:

Table 5.2.1.5: Chargeable events and their related actions in IMS nodes (except MRFC)

| Chargeable event | Conditions | IMS-GWF and AS action |
| --- | --- | --- |
| SIP 2xx acknowledging a SIP INVITE |  | Charging Data Request [Initial] |
| SIP ACK acknowledging a SIP INVITE |  | Charging Data Request [Initial] |
| ISUP: ANM |  | Charging Data Request [Initial] |
| SIP 2xx acknowledging a RE-INVITE or SIP UPDATE [e.g. change in media components terminating identity change] |  | Charging Data Request [Update] |
| SIP ACK acknowledging an initial RE-INVITE or SIP UPDATE |  | Charging Data Request [Update] |
| SIP 1xx provisional response, mid-dialog requests, mid-dialog responses and SIP INFO embedding RTTI XML body |  | Charging Data Request [Update] |
| ISUP charging ASE |  | Charging Data Request [Update] |
| SIP response (4xx, 5xx or 6xx), indicating an unsuccessful SIP RE-INVITE or SIP UPDATE |  | Charging Data Request [Update] |
| SIP BYE message (both normal and abnormal session termination cases) |  | Charging Data Request [Termination], indicating that charging session is terminated |
| SIP 2xx acknowledging a SIP BYE message (only when last user location information of originating/ terminating party is required by operator for legal purpose). |  | Charging Data Request [Termination], indicating that charging session is terminated |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful SIP session set-up procedure |  | Charging Data Request [Termination], indicating that charging session is terminated |
| ISUP: REL |  | Charging Data Request [Termination], indicating that charging session is terminated |
| Aborting a SIP session set-up procedure, using an internal trigger, or a SIP CANCEL |  | PEC: Charging Data Request [Event] |
| Deregistration |  | PEC: Charging Data Request [Event] |
| SIP Final/Redirection Response 3xx |  | PEC: Charging Data Request [Event] |
| SIP NOTIFY |  | PEC: Charging Data Request [Event] |
| SIP MESSAGE |  | PEC: Charging Data Request [Event] |
| SIP REGISTER |  | PEC: Charging Data Request [Event] |
| SIP SUBSCRIBE |  | PEC: Charging Data Request [Event] |
| SIP REFER |  | PEC: Charging Data Request [Event] |
| SIP PUBLISH |  | PEC: Charging Data Request [Event] |
| SIP Final Response (4xx, 5xx or 6xx), indicating an unsuccessful session-unrelated procedure |  | PEC: Charging Data Request [Event] |

For offline only charging, the following details of chargeable events and corresponding actions in the MRFC are defined in Table 5.2.1.6:

Table 5.2.1.6: Chargeable events and their related actions in MRFC

| Chargeable event | Conditions | MRFC action |
| --- | --- | --- |
| SIP 2xx acknowledging an SIP INVITE for initiating a multimedia ad hoc conferencing session, and no charging session exists. |  | Charging Data Request [Initial] |
| SIP ACK acknowledging a SIP INVITE to connect an UE to the conferencing session |  | Charging Data Request [Update] |
| SIP RE-INVITE or SIP UPDATE[e.g. change in media components] |  | Charging Data Request [Update] |
| SIP BYE(NOTE 1) |  | Charging Data Request [Update] |
| Expiration of Interim Interval |  | Charging Data Request [Update] |
| SIP BYE message (both normal and abnormal session termination cases) (NOTE 2) |  | Charging Data Request [Termination], indicating that charging session is terminated |
| SIP CANCEL |  | Charging Data Request [Termination], indicating that charging session is terminated |
| SIP Final Response with error codes 4xx, 5xx or 6xx indicating termination of an ongoing session |  | Charging Data Request [Termination], indicating that charging session is terminated |
| NOTE 1: This trigger only applies to a user leaving an ongoing conferencing session  NOTE 2: This trigger only applies if this causes the ongoing conferencing session to terminate | | |

Editor’note: The applicable triggers in the tables is ffs.

Editor’note: Whether the general table or individual tables for each IMS node is ffs.

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| **End of changes** |