**Source:** **SA5 (Telecom Management)**

**Title:** **3 Rel-5 CR 32.225 (Charging data description for the IMS) : Various Corrections**

**Document for:** **Decision**

**Agenda Item:** **7.5.3**

| Doc-1st-Level | Spec | CR | Ph | Subject | Cat | Ver-Cur | Doc-2nd-Level | WI |
|---|---|---|---|---|---|---|---|---|
| SP-030622 | 32.225 | 020 | Rel-5 | Correction of MRFC-CDR content definition for multi-party-call establishment | F | 5.3.0 | S5-034650 | OAM-CH |
| SP-030622 | 32.225 | 021 | Rel-5 | Correction on ICID definition | F | 5.3.0 | S5-034766 | OAM-CH |
| SP-030622 | 32.225 | 022 | Rel-5 | Removal of ASR and ASA | F | 5.3.0 | S5-034767 | OAM-CH |

CR-Form-v7

# CHANGE REQUEST

⌘ 32.225 CR 020 ⌘rev - ⌘ Current version: 5.3.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☐

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Correction of MRFC-CDR content definition for multi-party-call establishment |
| ***Source:*** | ⌘ | SA5 (Harry.Rau@alcatel.de) |
| ***Work item code:*** | ⌘ | OAM-CH |
| ***Date:*** | ⌘ | 10/10/2003 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-5 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*
*2 (GSM Phase 2)*
*R96 (Release 1996)*
*R97 (Release 1997)*
*R98 (Release 1998)*
*R99 (Release 1999)*
*Rel-4 (Release 4)*
*Rel-5 (Release 5)*
*Rel-6 (Release 6)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | Generation of a MRFC-CDR is not inline with MRFC-CDR definition. |
| ***Summary of change:*** | ⌘ | The sequence chart for CDR generation criteria on multi-party call establishment is clarified and extended (sect. 5.1.2.1.4.1).<br>Include CDR field 'Application Servers Information' as conditional parameter inside the MRFC-CDR and change field 'Called Party Address' from mandatory to conditional (sect 5.1.3.3 and sect. 5.2.3). |
| ***Consequences if not approved:*** | ⌘ | MRFC-CDR generation triggers and CDR content description of TS 32.225 remains inconsistent. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 5.1.2.1.4.1, 5.1.3.3 and 5.2.3 |

| ***Other specs affected:*** ⌘ | Y | N | | ⌘ |
|---|---|---|---|---|
| | | X | Other core specifications | |
| | | X | Test specifications | |
| | | X | O&M Specifications | |

***Other comments:*** ⌘

**How to create CRs using this form:**
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

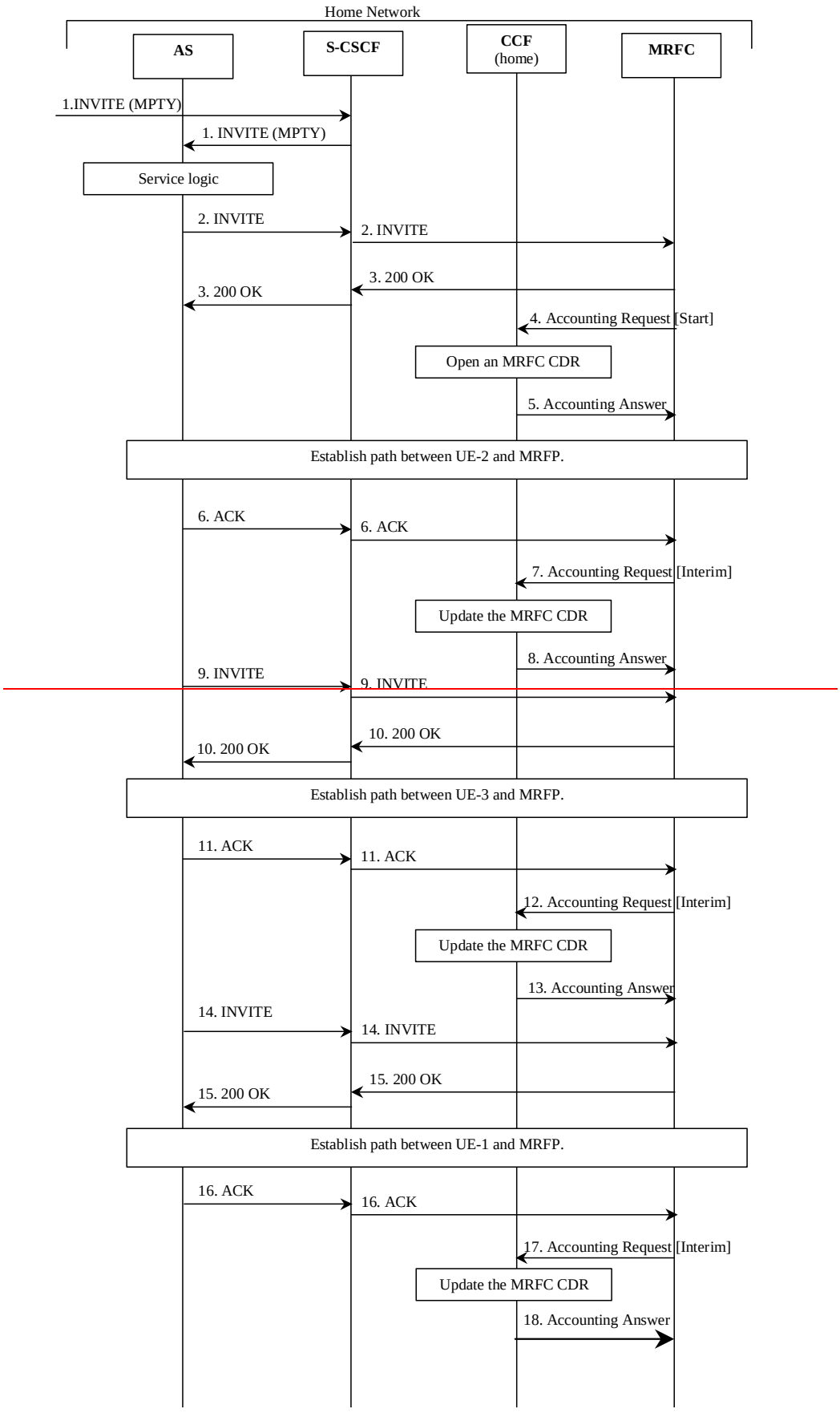
KEEP the History box of the TS to be changed (see end of the present document)

## Change in Clause 5.1.2.1.4.1

#### 5.1.2.1.4.1 Multi-Party Call

Figure 5.11 shows the establishment of an ad hoc conference (multiparty call). An AS (acting as B2BUA) performs third party call control with the MRFC, where the S-CSCF is in the signalling path. The Application Server that is in control of the ad hoc conference is aware of the MRFC capabilities.

NOTE: Only accounting information sent from the MRFC is shown in detail in the figure. The SIP messages are for illustrative purpose only.


Home Network
AS
S-CSCF
CCF (home)
MRFC
1.INVITE (MPTY)
1. INVITE (MPTY)
Service logic
2. INVITE
2. INVITE
3. 200 OK
3. 200 OK
4. Accounting Request [Start]
Open an MRFC CDR
5. Accounting Answer
Establish path between UE-2 and MRFP.
6. ACK
6. ACK
7. Accounting Request [Interim]
Update the MRFC CDR
8. Accounting Answer
9. INVITE
9. INVITE
10. 200 OK
10. 200 OK
Establish path between UE-3 and MRFP.
11. ACK
11. ACK
12. Accounting Request [Interim]
Update the MRFC CDR
13. Accounting Answer
14. INVITE
14. INVITE
15. 200 OK
15. 200 OK
Establish path between UE-1 and MRFP.
16. ACK
16. ACK
17. Accounting Request [Interim]
Update the MRFC CDR
18. Accounting Answer

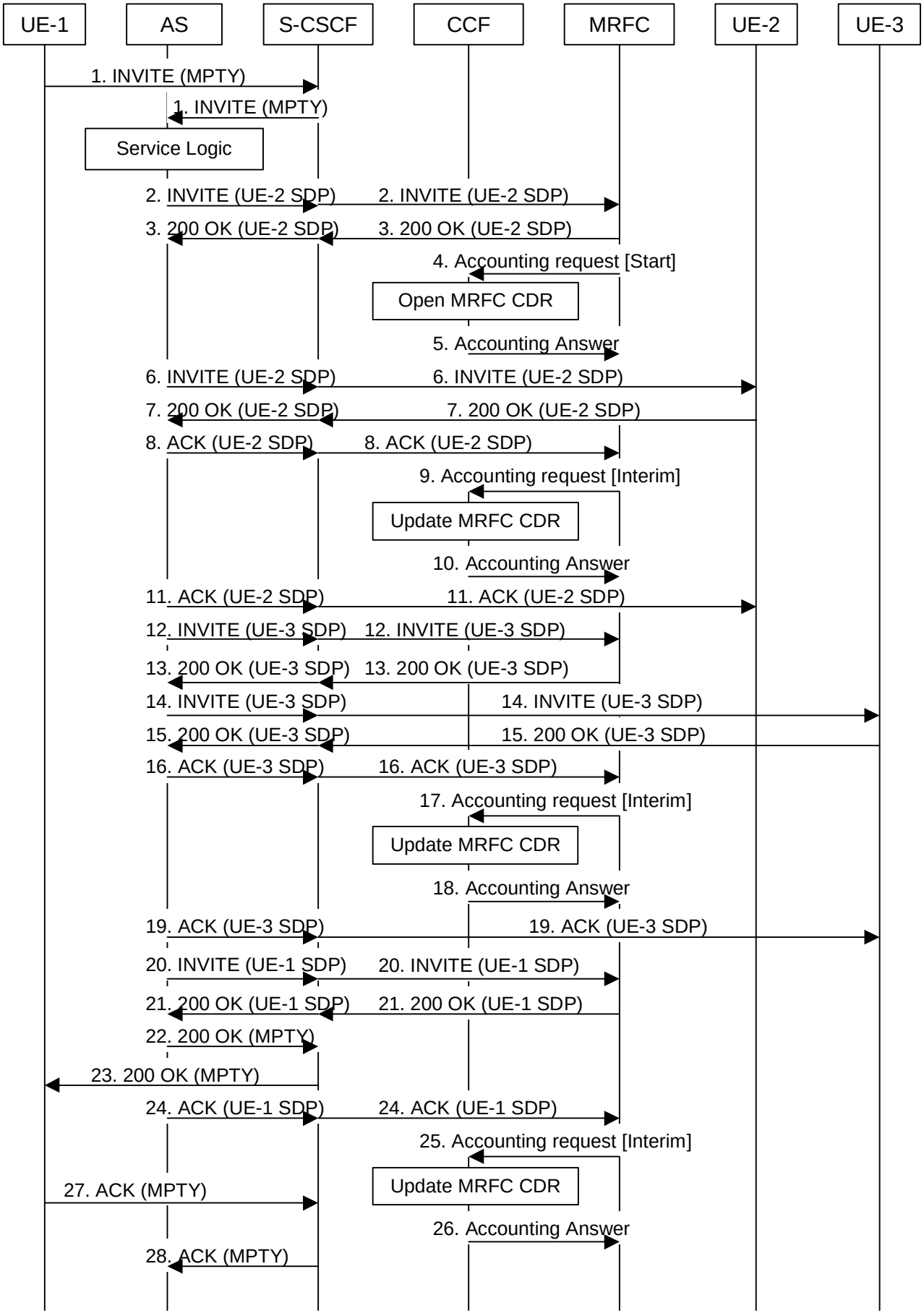



**Figure 5.11: Message Sequence Chart for Multi-Party Call Establishment in MRFC**

1. Sessions exist between UE-1 and UE-2, and between UE-1 and UE-3. A request is received from UE-1for putting all parties together to a multi-party call.

2. - 3. Request and acknowledgement to initiate a multi-party call. MRFC assigns a conference-ID that is used by the AS in subsequent interactions with the MRFC in INVITE messages connecting other endpoints (see TS 23.228 [18]). Path establishment between AS and MRFC for UE-2.

4. At start of session establishment the MRFC sends an *Accounting-Request* with *Accounting-Record-Type* indicating START_RECORD to record start of a multi-party call in the MRFC CDR.

5. The CCF acknowledges the reception of the data and creates the MRFC CDR. 'Calling Party Address', 'Service Request Time Stamp', 'Service ID' (holding the conference-ID) etc. are included in the MRFC CDR

6. ~~Dialog between UE-2 and MRFP has been established.~~ - 7. Path establishment between UE-2 and AS. Same ICID is used as for the path between AS and MRFC for UE-2 (step 2. - 3.).

8. Acknowledgement of path between AS and MRFC for UE-2.

~~7~~9. The MRFC may send an *Accounting-Request* with *Accounting-Record-Type* indicating INTERIM_RECORD to report that UE-2 has been connected to the multi-party call.

~~8~~10. The CCF acknowledges the reception of the data and ~~updates~~ includes UE-2 in the field 'Application Provided Called Parties' of the MRFC CDR.

11. Acknowledgement of path between AS and UE-2.
Now a path between UE-2 and MRFP via AS is established

~~9~~12. - 13. ~~New r~~Request ~~sent to MRFC~~ and acknowledgement to ~~prepare dialog for~~establish path between AS and MRFC for UE-3.

~~10. Request acknowledged.~~

14. -15. Path establishment between UE-3 and AS. Same ICID is used as for the path between AS and MRFC for UE-3 (step 12. - 13.).

16. Acknowledgement of path between AS and MRFC for UE-3.

~~11. Dialog between UE-3 and MRFP has been established.~~

~~12~~17. The MRFC may send an *Accounting-Request* with *Accounting-Record-Type* indicating INTERIM_RECORD to report that UE-3 has been connected to the multi-party call.

~~13~~18. The CCF acknowledges the reception of the data and ~~updates~~ includes UE-3 in a new field 'Application Provided Called Parties' of the MRFC CDR.

19. Acknowledgement of path between AS and UE-3.
Now a path between UE-3 and MRFP via AS is established.

~~14~~20 -21. ~~New r~~Request ~~sent to MRFC~~ and acknowledgement to ~~prepare dialog~~ establish path between AS and MRFC for UE-1. Same ICID is used as for the path between UE-1 and AS (step 1.).

~~15~~22. -23. Request for multi-party conference with UE-2 and UE-3 is acknowledged to UE-1.
Implicit acknowledgement of path UE-1 to AS.

~~16~~24. Acknowledgement of path between AS and MRFC for UE-1.~~Dialog between UE-1 and MRFP has been established.~~
Now a path between UE-1 and MRFP via AS is established

~~17~~25. The MRFC may send an *Accounting-Request* with *Accounting-Record-Type* indicating INTERIM_RECORD to report that UE-1 has been connected to the multi-party call.

~~18~~26. The CCF acknowledges the reception of the data and ~~updates~~ includes the field 'Service Delivery Start Time Stamp' into the MRFC CDR.

27. - 28. UE-1 acknowledges the multi-party call session establishment.

Note: It is in the responsibility of the AS to terminate the sessions existing at the beginning of the multi-party call establishment between UE-1 and UE-2 and between UE-1 and UE-3 (see step 1.) in case of successful multi-party call establishment. This is not shown in the diagram above.

**End of Change in Clause 5.1.2.1.4.1**

**Change in Clause 5.1.3.3**

### 5.1.3.3 Detailed Message Formats

Following the base protocol specification, the following "types" of accounting data may be sent:

- Start session accounting data.
- Interim session accounting data.
- Stop session accounting data.
- Event accounting data.

ACR types Start, Interim and Stop are used for accounting data related to successful SIP sessions. In contrast, Event accounting data is unrelated accounting data, such as a simple registration or interrogation and successful service event triggered by an AS. In addition, Event accounting data are also used for unsuccessful SIP session establishment attempts.

The following table specifies per ACR type the accounting data that are sent by each of the IMS network elements:

- S-CSCF
- P-CSCF
- I-CSCF
- MRFC
- MGCF
- BGCF
- AS

The ACR types in the table are listed in the following order: S (start)/I (interim)/S (stop)/E (event). Therefore, when all ACR types are possible it is marked as SISE. If only some ACR types are allowed for a node, only the appropriate letters are used (i.e. SIS or E) as indicated in the table heading. The omission of an ACR type for a particular AVP is marked with "-" (i.e. SI-E). Also, when an entire AVP is not allowed in a node the entire cell is marked as "-".

Note that not for all Grouped AVPs the individual AVP members are listed in the table. See clause 7 for a detailed list of the AVP group members and for the description of the AVPs.

For the ACA the same details listed in table 5.8 applies with the addition that *Error-Reporting-Host* AVP is supported in all ACAs in a similar manner as most other base protocol AVPs (e.g. in the same manner as *Origin-State-Id* AVP).

**Table 5.8: Detailed Diameter ACR Message Contents for Offline Charging**

| AVP name | Node Type | S-CSCF | P-CSCF | I-CSCF | MRFC | MGCF | BGCF | AS |
|---|---|---|---|---|---|---|---|---|
| | Supported ACRs | S/I/S/E | S/I/S/E | E | S/I/S | S/I/S/E | S/I/S/E | S/I/S/E |
| **AVPs from the Diameter base protocol** | | | | | | | | |
| <Session-Id> | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| {Origin-Host} | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| {Origin-Realm} | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| {Destination-Realm} | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| {Accounting-Record-Type} | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| {Accounting-Record-Number} | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [Vendor-Specific-Application-Id] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [Acct-Application-Id] | | - | - | - | - | - | - | - |
| [User-Name] (see note 1) | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [Accounting-Sub-Session-Id] | | - | - | - | - | - | - | - |
| [Accounting-RADIUS-Session-Id] | | - | - | - | - | - | - | - |
| [Acct-Multi-Session-Id] | | - | - | - | - | - | - | - |
| [Acct-Interim-Interval] | | SIS- | SIS- | - | SIS- | SIS- | SIS- | SIS- |
| [Accounting-Realtime-Required] | | - | - | - | - | - | - | - |
| [Origin-State-Id] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [Event-Timestamp] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| *[Proxy-Info] | | - | - | - | - | - | - | - |
| *[Route-Record] | | - | - | - | - | - | - | - |
| *[AVP] | | - | - | - | - | - | - | - |
| **Diameter Credit Control AVP** | | | | | | | | |
| [Subscription-Id] | | - | - | - | - | - | - | - |
| [Requested-Action] | | - | - | - | - | - | - | - |

| AVP name | Node Type | S-CSCF | P-CSCF | I-CSCF | MRFC | MGCF | BGCF | AS |
|---|---|---|---|---|---|---|---|---|
| | Supported ACRs | S/I/S/E | S/I/S/E | E | S/I/S | S/I/S/E | S/I/S/E | S/I/S/E |
| *[Requested-Service-Unit] | | - | - | - | - | - | - | - |
| *[Used-Service-Unit] | | - | - | - | - | - | - | - |
| *[Service-Parameter-Info] | | - | - | - | - | - | - | - |
| [Abnormal-Termination-Reason] | | - | - | - | - | - | - | - |
| *[Accounting-Correlation-Id] | | - | - | - | - | - | - | - |
| [Credit-Control-Failure-Handling] | | - | - | - | - | - | - | - |
| [Direct-Debiting-Failure-Handling] | | - | - | - | - | - | - | - |
| **3GPP Diameter accounting AVPs** | | | | | | | | |
| [Event-Type] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [Role-of-Node] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [User-Session-Id] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [Calling-Party-Address] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [Called-Party-Address] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [Time-stamps] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| *[Application-server] (see note 1) | | SISE | - | - | SIS- | - | - | - |
| *[Application-Provided-Called-Party-Address] (see note 1) | | SISE | - | - | SIS- | - | - | - |
| [Inter-Operator-Identifiers] (see note 1) | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| [IMS-Charging-Identifier] | | SISE | SISE | E | SIS | SISE | SISE | SISE |
| *[SDP-Session-Description] (see note 2) | | SI-E | SI-E | - | SI- | SI-E | SI-E | SI-E |
| *[SDP-Media-component] (see note 2) | | SI-E | SI-E | | SI- | SI-E | SI-E | SI-E |
| [GGSN-Address] | | SI-E | SI-E | | SI- | SI-E | SI-E | SI-E |
| [Served-Party-IP-Address] (see note 1) | | - | SISE | - | - | - | - | - |
| [Authorized-QoS] (see note 1) | | - | SISE | - | - | - | - | - |
| [Server-Capabilities] | | - | - | E | - | - | - | - |
| [Trunk-Group-ID] | | - | - | - | - | SISE | - | - |
| [Bearer-Service] | | - | - | - | - | SISE | - | - |
| [Service-Id] | | - | - | - | SIS | - | - | - |
| [UUS-Data] (see note 3) | | SISE | SISE | | | | | SISE |
| [Cause] | | --SE | --SE | E | --S | --SE | --SE | --SE |

NOTE 1: Only present if available in the IMS node.
NOTE 2: Present in Interim and Event ACRs only if the SIP transactions that triggered the ACR contained SDP.
NOTE 3: Present only if user-to-user data is included in the SIP message that triggered the ACR.

## End of Change in Clause 5.1.3.3

## Change in Clause 5.2.3

## 5.2.3 CDR Content

Table 5.9 specifies the content of each CDR type. For each column describing the CDR type, the field name and its category are specified. The detailed description of the field is provided in section 5.2.1. Diagonal shading of a cell indicates, that the particular CDR field is not included in the particular CDR type.

**Table 5.9: Charging Data of IMS CDR Types**

| Field | CDR Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | S-CSCF-CDR | P-CSCF-CDR | I-CSCF-CDR | MRFC-CDR | MGCF-CDR | BGCF-CDR | AS-CDR |
| Record Type | M | M | M | M | M | M | M |
| Retransmission | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| SIP Method | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| Role of Node | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Node Address | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Session ID | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Service ID | | | | $M_O$ | | | |
| Calling Party Address | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Called Party Address | $M_O$ | $M_O$ | $M_O$ | ~~$M_O$~~$C_O$ | $M_O$ | $M_O$ | $M_O$ |
| Private User ID | $M_O$ | | | | | | |
| Served Party IP Address | | $M_O$ | | | | | |
| Service Request Time Stamp | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Service Delivery Start Time Stamp | $M_O$ | $M_O$ | | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Service Delivery End Time Stamp | $C_O$ | $C_O$ | | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| Record Opening Time | $C_O$ | $C_O$ | | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| Record Closure Time | $M_O$ | $M_O$ | | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Application Servers Information | $C_O$ | | | $C_O$ | | | |
| Application Servers Involved | $C_O$ | | | $C_O$ | | | |
| Application Provided Called Parties | $C_O$ | | | $C_O$ | | | |
| Inter Operator Identifiers | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| originating IOI | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| terminating IOI | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| Local Record Sequence Number | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Record Sequence Number | $C_O$ | $C_O$ | | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| Cause For Record Closing | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Incomplete CDR Indication | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| S-CSCF Information | | | $C_O$ | | | | |
| IMS Charging Identifier | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| SDP Session Description | Co | Co | | Co | Co | Co | Co |
| List of SDP Media Components | $C_O$ | $C_O$ | | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| SIP Request Timestamp | $M_O$ | $M_O$ | | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| SIP Response Timestamp | $M_O$ | $M_O$ | | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| SDP Media Components | $M_O$ | $M_O$ | | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| SDP Media Name | $M_O$ | $M_O$ | | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| SDP Media Description | $M_O$ | $M_O$ | | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| GPRS Charging ID | $M_O$ | $M_O$ | | $M_O$ | $M_O$ | $M_O$ | $M_O$ |
| Media Initiator Flag | $C_O$ | $C_O$ | | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| Authorised QoS | | $C_O$ | | | | | |
| GGSN Address | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| Service Delivery Failure Reason | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |
| Service Specific Data | | | | | | | $C_O$ |
| List of Message Bodies | $C_O$ | $C_O$ | | | | | $C_O$ |
| Content-Type | $C_O$ | $C_O$ | | | | | $C_O$ |
| Content-Disposition | $C_O$ | $C_O$ | | | | | $C_O$ |
| Content-Length | $C_O$ | $C_O$ | | | | | $C_O$ |
| Originator | $C_O$ | $C_O$ | | | | | $C_O$ |
| Trunk Group ID Incoming/Outgoing | | | | | $M_O$ | | |
| Bearer Service | | | | | $M_O$ | | |
| Record Extensions | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ | $C_O$ |

**End of Change in Clause 5.2.3**

# Annex B (informative): Change history

| Change history | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Date** | **TSG #** | **TSG Doc.** | **CR** | **Rev** | **Subject/Comment** | **Old** | **New** |
| Mar 2002 | S_15 | SP-020033 | -- | -- | Submitted to TSG SA #15 for Information | 1.0.0 | |
| Jun 2002 | S_16 | SP-020327 | -- | -- | Submitted to TSG SA #16 for the 2nd time for Information | 1.5.0 | |
| Sep 2002 | S_17 | SP-020453 | -- | -- | Submitted to TSG SA #17 for Approval | 2.0.0 | 5.0.0 |
| Dec 2002 | S_18 | SP-020739 | 001 | -- | Remove ambiguity of the CCF Session State | 5.0.0 | 5.1.0 |
| Dec 2002 | S_18 | SP-020739 | 002 | -- | Addition of Application Server (AS) acting as a Voice Mail Server | 5.0.0 | 5.1.0 |
| Dec 2002 | S_18 | SP-020739 | 003 | -- | Corrections of definitions and ambiguity | 5.0.0 | 5.1.0 |
| Mar 2003 | S_19 | SP-030057 | 004 | -- | Alignment of Immediate Event Charging (IEC) description with the latest draft IEFT Credit-Control specification | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 005 | -- | Correction of the IMS Charging Identifier (ICID) definition | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 006 | -- | Correction of IMS-CDR definitions | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 007 | -- | Inclusion of IETF draft 'Hakala-diameter-credit-control' specification version 05 | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 008 | -- | Removal of Re-Transmission Attribute Value Pair (AVP) in order to align duplicate detection procedure with the Diameter Base protocol | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 009 | -- | Correction of the accounting session supervision (Offline) - alignment with the Diameter Base protocol | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 010 | -- | Correction of the accounting session supervision (Online) - alignment with the Diameter Base protocol | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 011 | -- | Correction of the support of local file storage and use of FTP for transfer of Accounting Information | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 012 | -- | Correction of abnormal session termination procedure | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 013 | -- | Correction of network initiated session release procedure - alignment with SIP (IETF RFC 3261) | 5.1.0 | 5.2.0 |
| Mar 2003 | S_19 | SP-030057 | 014 | -- | Correction of media modification procedures - add the UPDATE SIP method | 5.1.0 | 5.2.0 |
| Jun 2003 | S_20 | SP-030271 | 015 | -- | Corrections to align “Event Charging with Unit Reservation” (ECUR) with IETF Credit Control Application | 5.2.0 | 5.3.0 |
| Jun 2003 | S_20 | SP-030271 | 016 | -- | Correction of usage of Application-Provided-Called-Party-Address AVP | 5.2.0 | 5.3.0 |
| Jun 2003 | S_20 | SP-030271 | 017 | -- | Correction of “Cause” and “Service-ID”AVP | 5.2.0 | 5.3.0 |
| Jun 2003 | S_20 | SP-030271 | 018 | -- | Correction to some AVP definitions | 5.2.0 | 5.3.0 |
| Jun 2003 | S_20 | SP-030271 | 019 | -- | Correction on ICID definition | 5.2.0 | 5.3.0 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**End of Document**

**3GPP TSG-SA5 (Telecom Management)** **S5-034766**
**Meeting #36, Shanghai, CHINA, 17 - 21 Nov 2003**

CR-Form-v7

# CHANGE REQUEST

⌘ **32.225** **CR** **021** ⌘ **rev** **-** ⌘ Current version: **5.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Correction on ICID definition |
| ***Source:*** | ⌘ | SA5 (kawanami@cj.jp.nec.com) |
| ***Work item code:*** | ⌘ | OAM-CH |
| ***Date:*** | ⌘ | 21/11/2003 |
| ***Category:*** | ⌘ | **F** |
| ***Release:*** | ⌘ | Rel-5 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*
*2 (GSM Phase 2)*
*R96 (Release 1996)*
*R97 (Release 1997)*
*R98 (Release 1998)*
*R99 (Release 1999)*
*Rel-4 (Release 4)*
*Rel-5 (Release 5)*
*Rel-6 (Release 6)*

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | The validity of the ICIDs for session unrelated cases is not clearly described and conditions for generation of ICIDs are not correct. |
| ***Summary of change:*** | ⌘ | The validity of the ICIDs for session unrelated cases is clearly described and conditions for generation of ICIDs are corrected. |
| ***Consequences if not approved:*** | ⌘ | Causing forward compatibility problems and resulting in complex procedures for IMS entities. Correlation of CDRs from session unrelated SIP messages is not possible. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 5.2.4.14 |

| | | Y | N | | |
|---|---|---|---|---|---|
| ***Other specs affected:*** | ⌘ | | X | Other core specifications | ⌘ |
| | | | X | Test specifications | |
| | | | X | O&M Specifications | |

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

**How to create CRs using this form:**
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

## Change in Clause 5.2.4.14

### 5.2.4.14 IMS Charging Identifier

This parameter holds the IMS charging identifier (ICID) as generated by the IMS node for the SIP session. The value of the ICID parameter is identical with the 'icid-value' parameter defined in [15]. The 'icid-value' is a mandatory part of the P-Charging-Vector and coded as a text-based UTF-8 charset (as are all SIP messages). For further information regarding the composition and usage of the P-Charging-Vector refer to TS 32.200 [2], TS 24.229 [14] and [15].
The ICID value is globally unique across all 3GPP IMS networks for a time period of at least one month, implying that neither the node that generated this ICID nor any other IMS node reuse this value before the uniqueness period expires. The one month minimum uniqueness period counts from the time of release of the ICID, i.e. the ICID value no longer being used. This can be achieved by using node specific information, e.g. high-granularity time information and / or topology / location information. The exact method how to achieve the uniqueness requirement is an implementation issue.
An ICID is generated by the P-CSCF during the initial IMS registration procedure for a Private User ID. ~~This ICID is valid for all Public User IDs registered for that Private User ID until the user (Private User ID) is deregistered. All subsequent SIP session unrelated methods (e.g., REGISTER, NOTIFY, MESSAGE etc.) must use this ICID value regardless of whether the same Public User ID is used or not.~~ At each SIP session unrelated method (e.g., REGISTER, NOTIFY, MESSAGE etc.), a new, session unrelated specific ICID is generated at the first IMS network element that processes the method.
At each SIP session establishment a new, session specific ICID is generated at the first IMS network element that processes the session-initiating SIP INVITE message. This ICID is then used in all subsequent SIP messages for that session (e.g., 200 OK, (re-)INVITE, BYE etc.) until the session is terminated.

## End of Change in Clause 5.2.4.14
## End of Document

CR-Form-v7

# CHANGE REQUEST

⌘ 32.225 CR 022 ⌘rev - ⌘ Current version: 5.3.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Removal of ASR and ASA |
| ***Source:*** | ⌘ | SA5 (benni.alexander@nokia.com) |
| ***Work item code:*** | ⌘ | OAM-CH |
| ***Date:*** | ⌘ | 21/11/2003 |
| ***Category:*** | ⌘ | F |
| ***Release:*** | ⌘ | Rel-5 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction 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.

*Use one of the following releases:*

| | |
|---|---|
| *2* | *(GSM Phase 2)* |
| *R96* | *(Release 1996)* |
| *R97* | *(Release 1997)* |
| *R98* | *(Release 1998)* |
| *R99* | *(Release 1999)* |
| *Rel-4* | *(Release 4)* |
| *Rel-5* | *(Release 5)* |
| *Rel-6* | *(Release 6)* |

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | Currently, TS 32.225 mandates the use of the ASR/ASA messages. However, these messages are unknown to the Accounting Session State Machine that is used for IMS offline charging. |
| ***Summary of change:*** | ⌘ | The ASR/ASA references are removed. |
| ***Consequences if not approved:*** | ⌘ | The IMS Diameter charging client would violate the IETF Diameter Base Protocol. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 3.3, 4.2.2.1, 5.1.2.1.1.5, 5.1.3.1, 5.1.3.2, 5.1.3.2.3, 5.1.3.2.4 and 7.1 |

| | Y | N | | |
|---|---|---|---|---|
| ***Other specs affected:*** ⌘ | | X | Other core specifications | ⌘ |
| | | X | Test specifications | |
| | | X | O&M Specifications | |

***Other comments:*** ⌘

**How to create CRs using this form:**
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

KEEP the History box of the TS to be changed (see end of the present document), please

**Change in Clause 3.3**

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations defined in TR 21.905 [1], TS 32.200 [2] and the following apply:

| | |
|---|---|
| ABNF | Augmented Backus-Naur Form |
| ACA | Accounting Answer |
| ACR | Accounting Request |
| AS | Application Server |
| ~~ASA~~ | ~~Abort Session Answer~~ |
| ~~ASR~~ | ~~Abort Session Request~~ |
| AVP | Attribute Value Pair |
| B2BUA | Back-to-Back User Agent |
| BGCF | Breakout Gateway Control Function |
| BS | Billing System |
| CCF | Charging Collection Function |
| CDR | Charging Data Record |
| CPCF | Content Provider Charging Function |
| ECF | Event Charging Function |
| ECUR | Event Charging with Unit Reservation |
| CSCF | Call Session Control Function (I-Interrogating; P-Proxy; and S-Serving) |
| IEC | Immediate Event Charging |
| IMS | IP Multimedia Subsystem |
| ISC | IMS Service Control |
| MGCF | Media Gateway Control Function |
| MRFC | Media Resource Function Controller |
| MRFP | Multimedia Resource Function Processor |
| OCS | Online Charging System |
| SCCF | Subscriber Content Charging Function |
| SDP | Session Description Protocol |
| SIP | Session Initiation Protocol |
| UA | User Agent |
| UE | User Equipment |

**End of Change in Clause 3.3**

**Change in Clause 4.2.2.1**

### 4.2.2.1 Offline Specific Base Protocol Requirements

~~In order to support the offline charging principles described in the present document, the Diameter client and server must implement at least the following Diameter options listed in [3]:~~

- ~~To send/receive Abort-Session-Request.~~
- ~~To send/receive Abort-Session-Answer.~~

~~All other options of the Diameter Base Protocol are beyond the scope of the present document.~~

A configurable timer is supported in the CCF to supervise the reception of the ACR [Interim] and/or ACR [Stop]. An instance of the 'Timer' is started at the beginning of the accounting session, reset on the receipt of an ACR [Interim] and stopped at the reception of the ACR [Stop]. Upon expiration of the timer, the CCF stops the accounting session with the appropriate error indication.

For offline charging, the client implements the state machine described in [3]. The server (CCF) implements the STATELESS ACCOUNTING state machine as specified in [3], i.e. there is no order in which the server expects to receive the accounting information.

## End of Change in Clause 4.2.2.1

## Change in Clause 5.1.2.1.1.5

### 5.1.2.1.1.5 Session Release - Network Initiated

In the case of network initiated session release the IMS node sends a SIP BYE message which is replied to by the UE with a SIP 200 OK message. The charging message flow for this case is identical to the mobile initiated session release described in subclause 5.1.2.1.1.4. 5.1.2.1.1.6 Session Release - CCF initiated

The IMS operator may request the release of SIP session(s) upon certain trigger conditions being met, for example as soon as a fraud is detected. ~~The communication between CCF and external functions that convey that request to the CCF is not in the scope of the present document.~~

Figure 5.5 shows the Diameter transactions that are required ~~between CCF and S-CSCF~~ in order to release an ongoing SIP session.

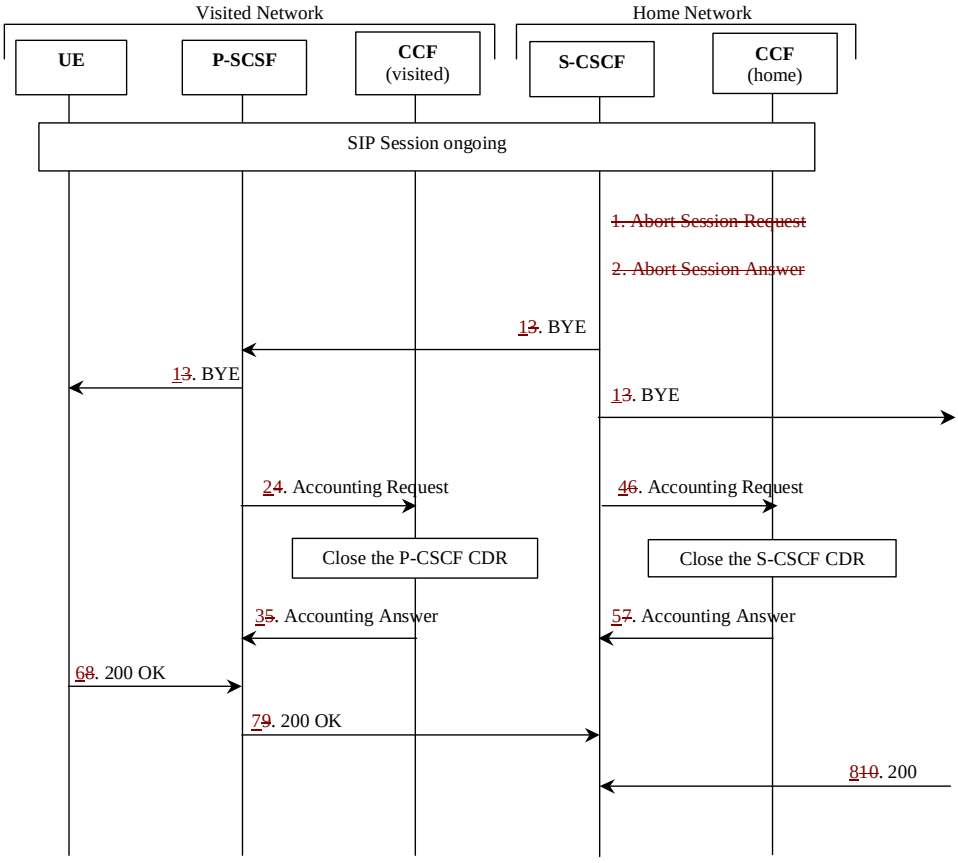



**Figure 5.5: Message Sequence Chart for Network~~CCF~~ Initiated Session Release**

~~1~~. ~~The CCF may initiate the SIP session release by sending an *Abort-Session-Request* message to the S-CSCF.~~

~~2. The S-CSCF acknowledges the *Abort-Session-Request* by sending an *Abort-Session-Answer* message to the CCF. Upon receiving the *Abort-Session-Answer*, the CCF closes the CDR. The record closure time in the CDR is the time when the *Abort-Session-Answer* message has been received.~~

1~~3~~. The S-CSCF initiates the SIP session release by sending SIP BYE request to both the originating and the terminating parties, as specified in TS 23.218 [5].

2~~4~~. At session termination the P-CSCF sends *Accounting-Request* with *Accounting-Record-Type* indicating STOP_RECORD to record stop of a session and stop of a media component in the P-CSCF CDR.

3~~5~~. The CCF acknowledges the reception of the data and closes the P-CSCF CDR.

4~~6~~. Same as 2~~4~~, but for S-CSCF.

5~~7~~. Same as 3~~5~~, but for S-CSCF CDR.

6~~8~~. - 8~~10~~. The S-CSCF receives the 200 OK responses from originating and terminating parties.

~~The S-CSCF should not be restricted to receiving *Abort Session Requests* only from a CCF, since such requests may be sent to an S-CSCF from other (i.e. non-IMS) sources, e.g. an operator's fraud detection system.~~

**End of Change in Clause 5.1.2.1.1.5**

**Change in Clause 5.1.3.1**

## 5.1.3.1 Summary of Offline Charging Message Formats

The IMS nodes generate accounting information that can be transferred from the nodes to the CCF. For this purpose, the IMS Charging application employs the *Accounting-Request* and *Accounting-Answer* messages from the base Diameter protocol.

~~The CCF may send an unsolicited message indicating to the S-CSCF to release the ongoing SIP session due for example to fraud detection. For this purpose the IMS Charging application employs the *Abort-Session-Request* and *Abort-Session-Answer* messages from the base Diameter protocol.~~

Table 5.3 describes the use of these messages for offline charging.

**Table 5.3: Offline Charging Messages Reference Table**

| Command-Name | Source | Destination | Abbreviation |
|---|---|---|---|
| Accounting-Request | S-CSCF, I-CSCF, P-CSCF, MRFC, MGCF, BGCF, AS | CCF | ACR |
| Accounting-Answer | CCF | S-CSCF, I-CSCF, P-CSCF, MRFC, MGCF, BGCF, AS | ACA |
| ~~Abort-Session-Request~~ | ~~CCF~~ | ~~S-CSCF~~ | ~~ASR~~ |
| ~~Abort-Session-Answer~~ | ~~S-CSCF~~ | ~~CCF~~ | ~~ASA~~ |

~~The S-CSCF should not be restricted to receiving *Abort Session Requests* only from a CCF, since such requests may be sent to an S-CSCF from other (i.e. non-IMS) sources, e.g. an operator's fraud detection system.~~

**End of Change in Clause 5.1.3.1**

**Change in Clause 5.1.3.2**

### 5.1.3.2 Structure for the Accounting ~~- and Abort-Session~~ Message Formats

The following is the basic structure shared by all offline charging messages. This is based directly on the format of the *Accounting-Request* and~~,~~ *Accounting-Answer*~~, *Abort-Session-Request* and *Abort-Session-Answer*~~ messages defined in the base Diameter protocol specification [3]. Detailed description of the AVPs and their use for offline and online charging are provided in clause 7.

Those Diameter AVPs that are used for offline charging are marked "Yes" in tables 5.4 to 5.7. Those Diameter AVPs that are not used for offline charging are marked "No" in tables 5.4 to 5.7. This implies that their content can (Yes) or can not (No) be used by the CCF to construct CDRs.

The following symbols (adopted from [3]) are used in the tables:

- <AVP> indicates a mandatory AVP with a fixed position in the message.
- {AVP} indicates a mandatory AVP in the message.
- [AVP] indicates an optional AVP in the message.
- *AVP indicates that multiple occurrences of an AVP are possible.

## End of Change in Clause 5.1.3.2

## Change in Clause 5.1.3.2.3

~~5.1.3.2.3 Abort-Session-Request~~

~~Table 5.6 illustrates the basic structure of a Diameter *Abort-Session-Request* message as used for IMS charging.~~

~~**Table 5.6: Abort Session Request (ASR) Message Contents**~~

| ~~Diameter base protocol AVPs~~ | |
|---|---|
| ~~AVP~~ | ~~Used in ASR~~ |
| ~~<Diameter Header: 274,REQ, PXY>~~ | ~~Yes~~ |
| ~~<Session-Id> -- Diameter Session Id~~ | ~~Yes~~ |
| ~~{Origin-Host}~~ | ~~Yes~~ |
| ~~{Origin-Realm}~~ | ~~Yes~~ |
| ~~{Destination-Realm}~~ | ~~Yes~~ |
| ~~{Destination-Host}~~ | ~~Yes~~ |
| ~~{Auth-Application-Id}~~ | ~~Yes~~ |
| ~~[User-Name]~~ | ~~Yes~~ |
| ~~[Origin-State-Id]~~ | ~~No~~ |
| ~~*[Proxy-Info]~~ | ~~No~~ |
| ~~*[Route-Record]~~ | ~~No~~ |
| ~~*[AVP]~~ | ~~No~~ |

## End of Change in Clause 5.1.3.2.3

## Change in Clause 5.1.3.2.4

~~5.1.3.2.4 Abort-Session-Answer~~

~~Table 5.7 illustrate the basic structure of a Diameter *Abort Session Answer* message as used for IMS charging.~~

**~~Table 5.7: Abort Session Answer (ASA) Message Contents~~**

| ~~Diameter base protocol AVPs~~ | |
|---|---|
| ~~AVP~~ | ~~Used in ASA~~ |
| ~~<Diameter Header: 274, PXY>~~ | ~~Yes~~ |
| ~~<Session-Id>~~ | ~~Yes~~ |
| ~~{Result-Code}~~ | ~~Yes~~ |
| ~~{Origin-Host}~~ | ~~Yes~~ |
| ~~{Origin-Realm}~~ | ~~Yes~~ |
| ~~[User-Name]~~ | ~~Yes~~ |
| ~~[Origin-State-Id]~~ | ~~No~~ |
| ~~[Error-Message]~~ | ~~Yes~~ |
| ~~[Error-Reporting-Host]~~ | ~~No~~ |
| ~~*[Failed-AVP]~~ | ~~No~~ |
| ~~*[Redirected-Host]~~ | ~~No~~ |
| ~~[Redirected-Host-Usage]~~ | ~~No~~ |
| ~~[Redirected-Max-Cache-Time]~~ | ~~No~~ |
| ~~*[Proxy-Info]~~ | ~~No~~ |
| ~~*[AVP]~~ | ~~No~~ |

**End of Change in Clause 5.1.3.2.4**

**Change in Clause 7.1**

# 7.1 Diameter Base Protocol AVPs

The use of the Attribute Value Pairs (AVPs) that are defined in the Diameter Base Protocol [3] is specified in subclause 5.1.3 for offline charging and in subclause 6.1.3 for online charging. The information is summarized in table 7.1 with the base protocol AVPs listed in alphabetical order. Detailed specification of these AVPs is available in the base protocol specifications.

The 3GPP IMS Charging Application uses the value 10415 (3GPP) as *Vendor-Id.*

Those Diameter AVPs that are used for IMS charging are marked "Yes" in table 7.1. Those Diameter AVPs that are not used for IMS charging are marked "No" in table 7.1. This implies that their content can (Yes) or can not (No) be used by the CCF or ECF for charging purposes.

The following symbols (adopted from [3]) are used in the tables:

- <AVP> indicates a mandatory AVP with a fixed position in the message.
- {AVP} indicates a mandatory AVP in the message.
- [AVP] indicates an optional AVP in the message.
- *AVP indicates that multiple occurrences of an AVP are possible.

**Table 7.1: Use Of Diameter Base Protocol AVPs in IMS**

| AVP name | Mechanism | Offline | | | | Online | |
|---|---|---|---|---|---|---|---|
| | Type | ACR | ACA | ~~ASR~~ | ~~ASA~~ | ACR | ACA |
| | Table # | 5.4 | 5.5 | ~~5.6~~ | ~~5.7~~ | 6.2 | 6.3 |
| [Accounting-Multi-Session-Id] | | No | No | ~~-~~ | ~~-~~ | No | No |
| [Accounting-RADIUS-Session-Id] | | No | No | ~~-~~ | ~~-~~ | No | No |
| [Accounting-Realtime-Required] | | No | No | ~~-~~ | ~~-~~ | No | No |
| {Accounting-Record-Number} | | Yes | Yes | ~~-~~ | ~~-~~ | Yes | Yes |
| {Accounting-Record-Type} | | Yes | Yes | ~~-~~ | ~~-~~ | Yes | Yes |
| [Accounting-Sub-Session-Id] | | No | No | ~~-~~ | ~~-~~ | No | No |
| [Acct-Application-Id] | | No | No | ~~-~~ | ~~-~~ | No | No |
| [Acct-Interim-Interval] | | Yes | Yes | ~~-~~ | ~~-~~ | Yes | Yes |
| {Auth-Application-Id} | | - | - | ~~Yes~~ | ~~-~~ | - | - |
| <Diameter-Header:271,REQ,PXY> | | Yes | Yes | ~~Yes~~ | ~~Yes~~ | Yes | Yes |
| {Destination-Host} | | - | - | ~~Yes~~ | ~~Yes~~ | - | - |
| {Destination-Realm} | | Yes | - | ~~Yes~~ | ~~Yes~~ | Yes | - |
| [Error-Message] | | - | - | ~~-~~ | ~~Yes~~ | - | - |
| [Error-Reporting-Host] | | - | No | ~~-~~ | ~~No~~ | - | No |
| [Event-Timestamp] | | Yes | Yes | ~~-~~ | ~~-~~ | Yes | Yes |
| *[Failed-AVP] | | - | - | ~~-~~ | ~~No~~ | - | - |
| *[Proxy-Info] | | No | No | ~~No~~ | ~~No~~ | No | No |
| {Origin-Host} | | Yes | Yes | ~~Yes~~ | ~~Yes~~ | Yes | Yes |
| {Origin-Realm} | | Yes | Yes | ~~Yes~~ | ~~Yes~~ | Yes | Yes |
| [Origin-State-Id] | | Yes | Yes | ~~No~~ | ~~No~~ | Yes | Yes |
| *[Redirected-Host] | | - | - | ~~-~~ | ~~No~~ | - | - |
| [Redirected-Host-Usage] | | - | - | ~~-~~ | ~~No~~ | - | - |
| [Redirected-Max-Cache-Time] | | - | - | ~~-~~ | ~~No~~ | - | - |
| {Result-Code} | | - | Yes | ~~-~~ | ~~Yes~~ | - | Yes |
| *[Route-Record] | | No | - | ~~No~~ | ~~-~~ | No | - |
| <Session-Id> | | Yes | Yes | ~~Yes~~ | ~~Yes~~ | Yes | Yes |
| [User-Name] | | Yes | Yes | ~~Yes~~ | ~~Yes~~ | Yes | Yes |
| [Vendor-Specific-Application-Id] | | Yes | Yes | ~~-~~ | ~~-~~ | Yes | Yes |

NOTE: *Result-Code* AVP is defined in Diameter Base Protocol [3]. However new values are used in IMS charging applications. These additional values are defined below.

**End of Change in Clause 7.1**
**End of Document**