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S5-020191

## **Presentation of Technical Specification to TSG SA**

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**Presentation to:** TSG SA Meeting #15  
**Document for presentation:** TS 32.225, Version 1.0.0  
**Presented for:** Information

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**Abstract of document:** This is a draft Technical Specification on Charging Data Records (CDRs) for off-line charging in IMS (on-line is NOT yet included)  
**Changes since last presentation to TSG-SA Meeting #14:**  
New

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Work done against the WID contained in SP-010654 (Work Item ID: OAM-CH).

### **Outstanding Issues:**

- This early draft TS is based on two contributions that have been agreed upon in the IMS RG: the outline of IMS off-line data specifications, and the content of IMS CDRs.
- It is only focused on off-line charging since the on-line architecture was not available before this SA5 meeting.
- At present, only the **content** of the CDRs generated by IMS entities are specified. The **format** of the CDRs and the **transport protocols** are still under discussions.

### **Contentious Issues:**

None

# 3GPP TS 32.225 V1.0.0 (2002-03)

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*Technical Specification*

**3rd Generation Partnership Project;  
Technical Specification Group;  
Telecommunication Management;  
Charging Management;  
Charging Data Description for the IP Multimedia Subsystem;  
(Release 5)**

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Keywords

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IMS, charging

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## Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

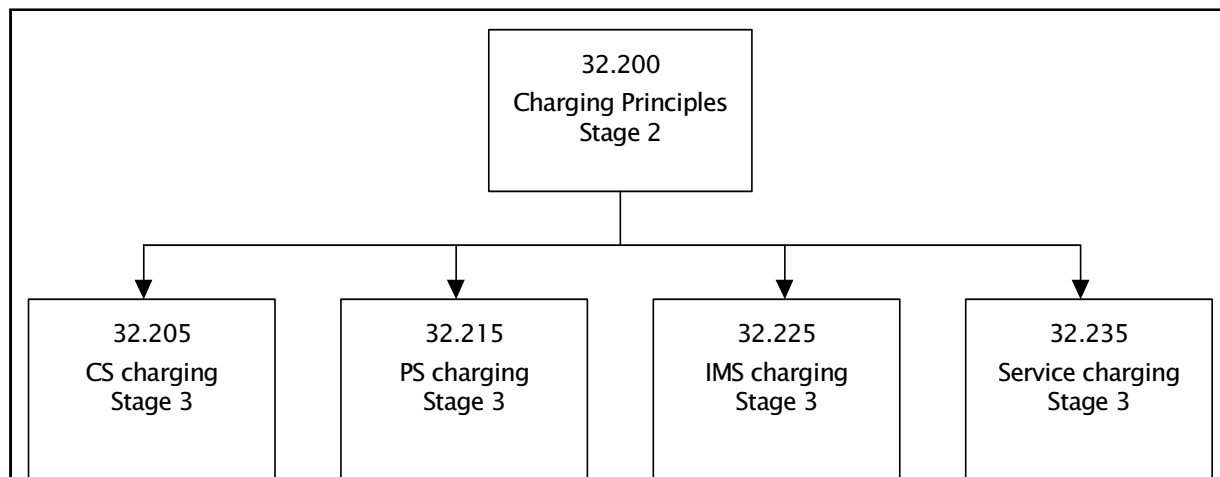
where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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# 1 Scope

The present document is part of a series of documents specifying charging functionality in UMTS network with application services. The UMTS core network charging principles are specified in document TS 32.200 [2], which provides an umbrella for other charging documents that specify the structure and content of the CDRs and the interface protocol that is used to transfer them to the collecting node. The document structure is defined in figure 1. The content of CDRs that are generated by IMS network elements and their transport within the IMS are described in the present document. The basic charging requirements for the IMS are described in TS 32.200. The stage 2 logical charging architecture and the charging implications of the IMS architecture are described in TR 23.815 [4], which is one of the main references for these specifications.



**Figure 1: Charging Document Structure**

All references, abbreviations, definitions, descriptions, principles and requirements that are common are defined in the 3GPP Vocabulary [1] and specialised to charging in UMTS domains or subsystems are provided in the umbrella document [2].

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# 2 References

The following documents contain provisions, which through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 32.200: "Telecommunication Management; Charging Management; Charging Principles".
- [3] 3GPP TS 32.215
- [4] 3GPP TR 23.815
- [5] 3GPP TS 23.228

[6]	RFC2486
[7]	TR 23.218
[8]	IETF RFC 1890
[9]	TS 23.207
[10]	TS 29.207
...	

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## 3 Definitions and abbreviations

### 3.1 Definitions

[Editor Note: All main charging definitions in 32.220]

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in 3GPP TR 21.905 [1], 3GPP TS 32.200 [2] and the following apply:

AS	Application Server
BGCF	Breakout Gateway Control Function
CCF	Charging Collection Function
CSCF	Call Session Control Function (I-Interrogating; P-Proxy; and S-Serving)
EM	Element Manager
IMS	IP Multimedia Subsystem
MGCR	Media Gateway Control Function
MRCF	Media Resource Control Function
MMS	Multimedia Messaging Service
OCF	Online Charging Function

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## 4 Record Description

### 4.1 CDR Fields

The following Standard CDR content and format are considered:

- S-CSCF-CDR generated by the S-CSCF
- I-CSCF-CDR generated by the I-CSCF
- P-CSCF-CDR generated by the P-CSCF
- BGCF-CDR generated by the BGCF
- MGCF-CDR generated by the MGCF
- MRCF-CDR generated by the MRCF

The content of CDRs associated with services from Application Servers are currently not specified in this document.

The content of each CDR type is defined in the tables that are part of this clause. For each CDR type the field definition includes the field name, description and category.

Equipment vendors shall be able to provide all of the fields listed in the CDR content table in order to claim compliance with the present document. However, since CDR processing and transport consume network resources, operators may opt to eliminate some of the fields that are not essential for their operation. This operator provisionable reduction is specified by the field category.

A field category can have one of two primary values:

- M** This field is **Mandatory** and shall always be present in the CDR.
- C** This field shall be present in the CDR only when certain Conditions are met. These Conditions are specified as part of the field definition.

All other fields are designated as Operator (**O**) provisionable. Note that previously the letter "O" represented the word "Optional". Using TMN management functions or specific tools provided by an equipment vendor, operators may choose if they wish to include or omit the field from the CDR. Once omitted, this field is not generated in a CDR. To avoid any potential ambiguity, a CDR generating element **MUST** be able to provide all these fields. Only an operator can choose whether or not these fields should be generated in their system.

Those fields that the operator wishes to be present are further divided into a mandatory and conditional categories:

- O<sub>M</sub>** This is a field that, if provisioned by the operator to be present, shall always be included in the CDRs. In other words, an O<sub>M</sub> parameter that is provisioned to be present is a mandatory parameter.
- O<sub>C</sub>** This is a field that, if provisioned by the operator to be present, shall be included in the CDRs when the required conditions are met. In other words, an O<sub>C</sub> parameter that is configured to be present is a conditional parameter.

The IMS Servers shall be able to provide the CDRs at the CCF interface in the format and encoding described in the present document. Additional CDR formats and contents may be available at the interface to the billing system to meet the requirements of the billing system.

#### 4.1.1 CDR Fields on the R<sub>f</sub> Interface

The tables in the subsequent parts of clause 4 specify the Mandatory (M), Conditional (C) and Operator optional (O<sub>M</sub> or O<sub>C</sub>) designations at R<sub>f</sub> interface. A CDR containing all Mandatory, Conditional and those optional fields provisioned by the operator (O<sub>M</sub> and O<sub>C</sub>) are considered to be a *Fully Qualified CDR*. The size of the CDRs could be optionally reduced by allowing a reduced format for *Partial CDRs*. During a long user session several *Partial CDRs* may be generated for the same session. In this case, some information can be eliminated rather than repeated in all the partial CDRs for that session. Only changes from one CDR to the next, in addition to mandatory information, can be reported. All the missing information can be reconstructed from fields in previous partial CDRs for the session.

Therefore, two formats are considered for Partial CDRs:

- a *Fully Qualified Partial CDR* that contains the Complete CDR Fields, and
- a *Reduced Partial CDR* that contains all the Mandatory fields (**M**) and **ONLY** the changes that occurred in any other field relative to the previous Partial CDR.

The first CDR generated when a session is opened shall be a Fully qualified Partial CDR. Subsequent partial CDRs may be *Reduced Partial CDRs*.

Thus, the convention is that when any non-mandatory field is missing from a Reduced Partial CDR, it should be interpreted that the same field as in the previous partial CDR could be used. Only Mandatory (**M**) and changed fields **MUST** always be included.

The IMS entities generating CDRs and the CCF from all vendors that comply with the present document shall always be able to generate or receive Fully Qualified Partial CDRs. Generation and reception of Reduced Partial CDRs on the R<sub>f</sub> interface is optional. However, if Reduced Partial CDRs are transmitted on the R<sub>f</sub> interface they must comply with the rules specified in this clause.

#### 4.1.2 CDR Fields on the CCF/Billing System Interface

The CCF must be able to provide complete CDRs at the CCF/Billing System (BS) interface in the format and encoding described in the present document. Reduced Partial CDRs can also be provided on this interface if it is supported by the billing system. Additional CDR formats and contents, generated by the CCF, may also be available at this interface to meet the BS requirements.



## 4.2 Charging Data principles

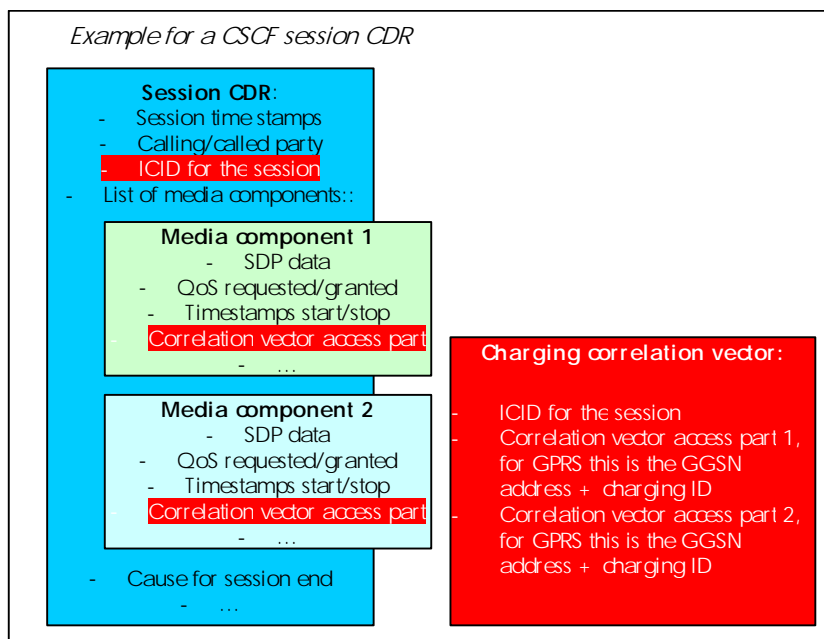
Reflecting the usage of multimedia sessions IMS CDRs shall be generated on a per session level. In the scope of this specification the term “session” refers always to a SIP session. The coherent media components are reflected inside the session CDR with a media component container comprising all the information necessary for a media component.

A session CDR shall be opened for a successful initiated SIP session once the 200 OK SIP message is received in the node generating the CDR. The 200 OK message shall be the one corresponding to the respective SIP INVITE message. If chargeable events already occur before the receipt of the SIP 200 OK message (e.g. obtained from the SIP INVITE message) this has to be reflected in the CDR as well. A session CDR shall be closed once the session is terminated. For a SIP session this is considered being the case once the SIP BYE message is received in the node generating the CDR. Partial session CDRs shall be able to be generated due to following circumstances/events:

- on a regular time basis (e.g. each 30 minutes)
- due to service change, e.g. change in a Media component related to this session (i.e. a component is added or removed respectively the QoS parameters changed for a component)

Charging data for media components associated with a session are handled inside the Session CDRs as follows:

A new media component container is added into a session CDR each time a media component is added to a session. A media component container is closed once the related media component is removed from a session. The following figure illustrates this principle:



**Figure 2: Charging Data Record Structure**

A media component container is added into the session CDR when the associated SIP 200 OK message (the one corresponding to the appropriate SIP INVITE message) is received in the node generating the CDR. An appropriate media component start time stamp shall reflect the start of this media component. A media component is supposed to be removed from a session once either the SIP BYE message or a SIP 200 OK message (corresponding to the SIP INVITE message removing a media) is received in the node generating the CDR. The removal of a media component (either due to session release or due to a SIP INVITE/200 OK message pair during a session) shall be reflected with an appropriate time stamp inside the media components. If a media component is removed from an ongoing session, the related media component container shall not be carried forward to subsequent partial CDRs (if any).

The charging correlation vector is composed in the way that the IMS generated part (ICID) is put into the “session part” of the CDR and the access generated part is associated with the coherent media components of a session. For GPRS being used to access IMS the access part of the correlation vector comprises the GPRS charging ID and the GGSN

address. For further information regarding the composition of the charging correlation vector refer to the appropriate section in TS 32.200.

To reflect chargeable events not directly related to a session the S-CSCF may generate CDR(s) at the registration respectively de-registration event as well as for events related to the subscription/invoke of services at CSCF level (Editor's note: further elaboration is required on this subject. Open Issues: Should CDRs that do not lead to a successful session be generated? Define the data items to charge a user that has a payload in their signalling.)

## 4.3 Charging Data in S-CSCF (S-CSCF-CDR)

**Table 1: S-CSCF Charging Data (S-CSCF-CDR)**

Field	Category	Description
Record Type	O <sub>M</sub>	Identifies the type of record: S-CSCF-CDR.
Event Type	O <sub>M</sub>	Reflects the type of chargeable telecommunication service/event for which the CDR is generated, such as: "session", "register", "subscribe".
Role of node	O <sub>M</sub>	Specifies the role of the CSCF if relevant for the chargeable telecommunication service/event, which is either: <ul style="list-style-type: none"> <li>• originating role (serving A)</li> <li>• terminating role (serving B)</li> </ul>
Node Address	O <sub>M</sub>	The address of the node providing the information for the CDR
Session ID	O <sub>M</sub>	The Session identification. For a SIP session the Session ID contains the SIP Call ID as defined in the Session Initiating Protocol.
Calling Party Address (Public User ID)	O <sub>M</sub>	The address of the party initiating a session (SIP URL, E.164 ...)
Called Party Address (Public User ID)	O <sub>M</sub>	The address of the party to whom a session is established (SIP URL, E.164 ...)
Private User ID (served party)	O <sub>M</sub>	Holds the used Network Access Identifier according to RFC2486.
Record opening time	O <sub>M</sub>	Time stamp reflecting either the start of a session when the Session is activated in the CSCF (If SIP is used this corresponds to the SIP 200 OK message received in the node generating the CDR) or the partial record opening time for subsequent partial records.
Record closure time	O <sub>M</sub>	Time stamp reflecting the stop of a session when the Session is released in the CSCF (last record) (If SIP is used this corresponds to the SIP Bye message received in the node generating the CDR) or record closure time for partial records.
Cause	O <sub>M</sub>	Cause for session disconnection
List of Application Servers involved	O <sub>C</sub>	Holds a list ASs comprising the IP address of the involved AS (if any) <i>(note: the format may be according to TS 23.218)</i>
Application provided Called Party Address	O <sub>C</sub>	Holds the called party number if it is determined by an application (SIP URL, E.164).
Inter Operator Identifier(s)	O <sub>C</sub>	Holds the identification of the network neighbours (incoming/outgoing) as exchanged via SIP signalling.

Field	Category	Description
Local Sequence Number	O <sub>M</sub>	Contains a unique record number created by this node.
Record Sequence Number	O <sub>C</sub>	Number of partial record if applicable.
Record Output Reason	O <sub>M</sub>	Identifies the reason for CDR output, such as: timeLimit, serviceChange (e.g. change in media components), networkInternalReasons, lastCDR, timeChange
Correlation Vector IMS part (ICID)	O <sub>M</sub>	Holds the ICID as either received via incoming SIP signalling or generated in the node generating the CDR
List of Media Components	O <sub>C</sub>	Media components are added/removed to/from this list as requested by the user
Start of a Media component	O <sub>C</sub>	Time stamp reflecting the start of a Media Component (If SIP is used this corresponds to the time stamp the respective 200 OK message is received). This data item is not carried forward into subsequent partial CDRs, it is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was installed.
Stop of a Media component	O <sub>C</sub>	Time stamp reflecting either the stop of a Media Component (If SIP is used this corresponds either to the time stamp the respective 200 OK message or the SIP Bye message is received in the node generating the CDR). This data item is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was removed from a session.
Media Component Initiator	O <sub>M</sub>	This item points to the user initiating the media component
Media Type	O <sub>M</sub>	Holds the SDP data for a media component in case of a SIP session, the SDP data comprises: <ul style="list-style-type: none"> <li>• codec description (refer to IETF RFC 1890)</li> </ul>
Correlation vector access part	O <sub>M</sub>	If GPRS is used to access IMS this item holds the GPRS charging ID and GGSN address for the associated PDP context
Record Extensions	O <sub>C</sub>	A set of operator/manufacture specific extensions to the record, conditioned upon existence of an extension.

#### 4.4 Charging Data in P-CSCF (P-CSCF-CDR)

**Table 2: P-CSCF Charging Data (P-CSCF-CDR)**

Field	Category	Description
Record Type	O <sub>M</sub>	Identifies the type of record: P-CSCF-CDR.
Event Type	O <sub>M</sub>	Reflects the type of chargeable telecommunication service/event for which the CDR is generated, such as: "session", "register/subscribe", ...

Field	Category	Description
Role of node	O <sub>M</sub>	Specifies the role of the CSCF if relevant for the chargeable telecommunication service/event, which is either: <ul style="list-style-type: none"> <li>• originating role (serving A)</li> <li>• terminating role (serving B)</li> </ul>
Node Address	O <sub>M</sub>	The address of the node providing the information for the CDR
Session ID	O <sub>M</sub>	The Session identification. For a SIP session the Session ID contains the SIP Call ID as defined in the Session Initiating Protocol.
Calling Party Address (Public User ID)	O <sub>M</sub>	The address of the party initiating a session (SIP URL, E.164 ...)
Called Party Address (Public User ID)	O <sub>M</sub>	The address of the party to whom a session is established (SIP URL, E.164 ...)
Served party IP Address	O <sub>M</sub>	Holds the IP address of either the calling or called party, depending on whether the proxy is in touch with the calling or the called party
Record opening time	O <sub>M</sub>	Time stamp reflecting either the start of a session when the Session is activated in the CSCF (If SIP is used this corresponds to the SIP 200 OK message received in the node generating the CDR) or the partial record opening time for subsequent partial records.
Record closure time	O <sub>M</sub>	Time stamp reflecting the stop of a session when the Session is released in the CSCF (last record) (If SIP is used this corresponds to the SIP Bye message received in the node generating the CDR) or record closure time for partial records.
Cause	O <sub>M</sub>	Cause for session disconnection
Inter Operator Identifier	O <sub>c</sub>	Holds the identification of the network neighbour (incoming or outgoing) as exchanged via SIP signalling.
Local Sequence Number	O <sub>M</sub>	Contains a unique record number created by this node.
Record Sequence Number	O <sub>c</sub>	Number of partial record if applicable.
Record Output Reason	O <sub>M</sub>	Identifies the reason for CDR output, such as: timeLimit, serviceChange (e.g. change in media components), networkInternalReasons, lastCDR, timeChange
Correlation Vector IMS part (ICID)	O <sub>M</sub>	Holds the ICID as either received via incoming SIP signalling or generated in the node generating the CDR
List of Media Components	O <sub>c</sub>	Media components are added/removed to/from this list as requested by the user
Start of a Media component	O <sub>c</sub>	Time stamp reflecting the start of a Media Component (If SIP is used this corresponds to the time stamp the respective 200 OK message is received). This data item is not carried forward into subsequent partial CDRs, it is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was installed.

Field	Category	Description
Stop of a Media component	O <sub>C</sub>	Time stamp reflecting either the stop of a Media Component (If SIP is used this corresponds either to the time stamp the respective 200 OK message or the SIP Bye message is received in the node generating the CDR). This data item is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was removed from a session.
Media Component Initiator	O <sub>M</sub>	This item points to the user initiating the media component
Media Type	O <sub>M</sub>	Holds the SDP data for a media component in case of a SIP session, the SDP data comprises: <ul style="list-style-type: none"> <li>• codec description (refer to IETF RFC 1890)</li> </ul>
Correlation vector access part	O <sub>M</sub>	If GPRS is used to access IMS this item holds the GPRS charging ID and GGSN address for the associated PDP context
Authorised QoS	O <sub>C</sub>	<i>Authorised QoS as defined in TS 23.207/TS 29.207 and applied via the Go interface</i>
Record Extensions	O <sub>C</sub>	A set of operator/manufacture specific extensions to the record, conditioned upon existence of an extension.

## 4.5 Charging Data in I-CSCF (I-CSCF-CDR)

**Table 3: I-CSCF Charging Data (I-CSCF-CDR)**

Field	Category	Description
Record Type	O <sub>M</sub>	Identifies the type of record: I-CSCF-CDR.
Event Type	O <sub>M</sub>	Reflects the type of chargeable telecommunication service/event for which the CDR is generated, such as: "session", "register/subscribe", ...
		•
Node Address	O <sub>M</sub>	The address of the node providing the information for the CDR
Session ID	O <sub>M</sub>	The Session identification. For a SIP session the Session ID contains the SIP Call ID as defined in the Session Initiating Protocol.
Calling Party Address (Public User ID)	O <sub>M</sub>	The address of the party initiating a session (SIP URL, E.164 ...)
Called Party Address (Public User ID)	O <sub>M</sub>	The address of the party to whom a session is established (SIP URL, E.164 ...)
Transaction time stamp	O <sub>M</sub>	Time stamp reflecting the time for transaction termination (Upon receiving/generating the final response for the SIP request)
Cause	O <sub>M</sub>	Cause for session disconnection

Field	Category	Description
Inter Operator Identifier	O <sub>c</sub>	Holds the identification of the network neighbour (incoming) as exchanged via SIP signalling.
Local Sequence Number	O <sub>M</sub>	Contains a unique record number created by this node.
S-CSCF information	O <sub>c</sub>	Information related to the serving CSCF, e.g. the S-CSCF capabilities upon registration event or the S-CSCF address upon the session establishment event.
Correlation Vector IMS part (ICID)	O <sub>M</sub>	Holds the ICID as either received via incoming SIP signalling or generated in the node generating the CDR
Record Extensions	O <sub>c</sub>	A set of operator/manufacture specific extensions to the record, conditioned upon existence of an extension.

## 4.6 Charging Data in MRFC (MRFC-CDR)

**Table 4: MRFC Charging Data (MRFC-CDR)**

Field	Category	Description
Record Type	O <sub>M</sub>	Identifies the type of record: MRFC-CDR.
Node Address	O <sub>M</sub>	The address of the node providing the information for the CDR
Session ID	O <sub>M</sub>	The Session identification. For a SIP session the Session ID contains the SIP Call ID as defined in the Session Initiating Protocol.
Service ID	O <sub>M</sub>	Identifies the service the MRFC is hosting. For conferences the conference ID is used here.
Calling Party Address (Public User ID)	O <sub>M</sub>	The address of the party initiating a session (SIP URL, E.164 ...)
Called Party Address (Public User ID)	O <sub>M</sub>	The address of the party to whom a session is established (SIP URL, E.164 ...)
Record opening time	O <sub>M</sub>	Time stamp reflecting either the start of a session when the Session is activated in the CSCF (If SIP is used this corresponds to the SIP 200 OK message received in the node generating the CDR) or the partial record opening time for subsequent partial records.
Record closure time	O <sub>M</sub>	Time stamp reflecting the stop of a session when the Session is released in the CSCF (last record) (If SIP is used this corresponds to the SIP Bye message received in the node generating the CDR) or record closure time for partial records.
Cause	O <sub>M</sub>	Cause for session disconnection
Inter Operator Identifier	O <sub>c</sub>	Holds the identification of the network neighbour (incoming or outgoing) as exchanged via SIP signalling.
Local Sequence Number	O <sub>M</sub>	Contains a unique record number created by this node.
Record Sequence Number	O <sub>c</sub>	Number of partial record if applicable.

Field	Category	Description
Record Output Reason	O <sub>M</sub>	Identifies the reason for CDR output, such as: timeLimit, serviceChange (e.g. change in media components), networkInternalReasons, lastCDR, timeChange
Correlation Vector IMS part (ICID)	O <sub>M</sub>	Holds the ICID as either received via incoming SIP signalling or generated in the node generating the CDR
List of Media Components	O <sub>C</sub>	Media components are added/removed to/from this list as requested by the user
Start of a Media component	O <sub>C</sub>	Time stamp reflecting the start of a Media Component (If SIP is used this corresponds to the time stamp the respective 200 OK message is received). This data item is not carried forward into subsequent partial CDRs, it is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was installed.
Stop of a Media component	O <sub>C</sub>	Time stamp reflecting either the stop of a Media Component (If SIP is used this corresponds either to the time stamp the respective 200 OK message or the SIP Bye message is received in the node generating the CDR). This data item is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was removed from a session.
Media Component Initiator	O <sub>M</sub>	This item points to the user initiating the media component
Media Type	O <sub>M</sub>	Holds the SDP data for a media component in case of a SIP session, the SDP data comprises: <ul style="list-style-type: none"> <li>• codec description (refer to IETF RFC 1890)</li> </ul>
Correlation vector access part	O <sub>M</sub>	If GPRS is used to access IMS this item holds a list of the GPRS charging IDs and GGSN addresses for the associated PDP contexts
Record Extensions	O <sub>C</sub>	A set of operator/manufacture specific extensions to the record, conditioned upon existence of an extension.

## 4.6 Charging Data in MGCF (MGCF-CDR)

**Table 5: MGCF Charging Data (MGCF-CDR)**

Field	Category	Description
Record Type	O <sub>M</sub>	Identifies the type of record: MGCF-CDR.
Role of node	O <sub>M</sub>	Specifies the role of the S-CSCF if relevant for the chargeable telecommunication service/event, which is either: <ul style="list-style-type: none"> <li>• originating role (serving A)</li> <li>• terminating role (serving B)</li> </ul>
Node Address	O <sub>M</sub>	The address of the node providing the information for the CDR
Session ID	O <sub>M</sub>	The Session identification. For a SIP session the Session ID contains the SIP Call ID as defined in the Session Initiating Protocol.

Field	Category	Description
Calling Party Address (Public User ID)	O <sub>M</sub>	The address of the party initiating a session (SIP URL, E.164 ...)
Called Party Address (Public User ID)	O <sub>M</sub>	The address of the party to whom a session is established (SIP URL, E.164 ...)
Record opening time	O <sub>M</sub>	Time stamp reflecting either the start of a session when the Session is activated in the CSCF (If SIP is used this corresponds to the SIP 200 OK message received in the node generating the CDR) or the partial record opening time for subsequent partial records.
Record closure time	O <sub>M</sub>	Time stamp reflecting the stop of a session when the Session is released in the CSCF (last record) (If SIP is used this corresponds to the SIP Bye message received in the node generating the CDR) or record closure time for partial records.
Cause	O <sub>M</sub>	Cause for session disconnection
Inter Operator Identifier	O <sub>c</sub>	Holds the identification of the network neighbour (incoming or outgoing) as exchanged via SIP signalling.
Local Sequence Number	O <sub>M</sub>	Contains a unique record number created by this node.
Record Sequence Number	O <sub>c</sub>	Number of partial record if applicable.
Record Output Reason	O <sub>M</sub>	Identifies the reason for CDR output, such as: timeLimit, serviceChange (e.g. change in media components), networkInternalReasons, lastCDR, timeChange
Correlation Vector IMS part (ICID)	O <sub>M</sub>	Holds the ICID as either received via incoming SIP signalling or generated in the node generating the CDR
List of Media Components	O <sub>c</sub>	Media components are added/removed to/from this list as requested by the user
Start of a Media component	O <sub>c</sub>	Time stamp reflecting the start of a Media Component (If SIP is used this corresponds to the time stamp the respective 200 OK message is received). This data item is not carried forward into subsequent partial CDRs, it is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was installed.
Stop of a Media component	O <sub>c</sub>	Time stamp reflecting either the stop of a Media Component (If SIP is used this corresponds either to the time stamp the respective 200 OK message or the SIP Bye message is received in the node generating the CDR). This data item is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was removed from a session.
Media Component Initiator	O <sub>M</sub>	This item points to the user initiating the media component
Media Type	O <sub>M</sub>	Holds the SDP data for a media component in case of a SIP session, the SDP data comprises: <ul style="list-style-type: none"> <li>• codec description (refer to IETF RFC 1890)</li> </ul>
Correlation vector access part	O <sub>M</sub>	If GPRS is used to access IMS this item holds the GPRS charging ID and GGSN address for the associated PDP context



Field	Category	Description
Record Extensions	O <sub>C</sub>	A set of operator/manufacture specific extensions to the record, conditioned upon existence of an extension.
TrunkGroup ID Incoming/Outgoing	O <sub>M</sub>	PSTN leg: Contains the outgoing trunkgroup ID for an outgoing session/call Contains the incoming trunkgroup ID for an incoming session/call
BearerService	O <sub>M</sub>	Holds the used bearer service for the PSTN leg

## 4.7 Charging Data in BGCF (BGCF-CDR)

**Table 6: BGCF Charging Data (BGCF-CDR)**

Field	Category	Description
Record Type	O <sub>M</sub>	Identifies the type of record: BGCF-CDR.
Node Address	O <sub>M</sub>	The address of the node providing the information for the CDR
Session ID	O <sub>M</sub>	The Session identification. For a SIP session the Session ID contains the SIP Call ID as defined in the Session Initiating Protocol.
Calling Party Address (Public User ID)	O <sub>M</sub>	The address of the party initiating a session (SIP URL, E.164 ...)
Called Party Address (Public User ID)	O <sub>M</sub>	The address of the party to whom a session is established (SIP URL, E.164 ...)
Record opening time	O <sub>M</sub>	Time stamp reflecting either the start of a session when the Session is activated in the CSCF (If SIP is used this corresponds to the SIP 200 OK message received in the node generating the CDR) or the partial record opening time for subsequent partial records.
Record closure time	O <sub>M</sub>	Time stamp reflecting the stop of a session when the Session is released in the CSCF (last record) (If SIP is used this corresponds to the SIP Bye message received in the node generating the CDR) or record closure time for partial records.
Cause	O <sub>M</sub>	Cause for session disconnection
Inter Operator Identifier	O <sub>C</sub>	Holds the identification of the network neighbour (outgoing) as exchanged via SIP signalling. This data item identifies the network where the breakout actually is performed
Local Sequence Number	O <sub>M</sub>	Contains a unique record number created by this node.
Record Sequence Number	O <sub>C</sub>	Number of partial record if applicable.
Record Output Reason	O <sub>M</sub>	Identifies the reason for CDR output, such as: timeLimit, serviceChange (e.g. change in media components), networkInternalReasons, lastCDR, timeChange
Correlation Vector IMS part (ICID)	O <sub>M</sub>	Holds the ICID as either received via incoming SIP signalling or generated in the node generating the CDR
List of Media Components	O <sub>C</sub>	Media components are added/removed to/from this list as requested by the user

Field	Category	Description
Start of a Media component	O <sub>C</sub>	Time stamp reflecting the start of a Media Component (If SIP is used this corresponds to the time stamp the respective 200 OK message is received). This data item is not carried forward into subsequent partial CDRs, it is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was installed.
Stop of a Media component	O <sub>C</sub>	Time stamp reflecting either the stop of a Media Component (If SIP is used this corresponds either to the time stamp the respective 200 OK message or the SIP Bye message is received in the node generating the CDR). This data item is only available in the partial CDR (if partial CDRs are generated) covering the time frame in which the media component was removed from a session.
Media Component Initiator	O <sub>M</sub>	This item points to the user initiating the media component
Media Type	O <sub>M</sub>	Holds the SDP data for a media component in case of a SIP session, the SDP data comprises: <ul style="list-style-type: none"> <li>• codec description (refer to IETF RFC 1890)</li> </ul>
Correlation vector access part	O <sub>M</sub>	If GPRS is used to access IMS this item holds the GPRS charging ID and GGSN address for the associated PDP context
Record Extensions	O <sub>C</sub>	A set of operator/manufacture specific extensions to the record, conditioned upon existence of an extension.

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## 5 Parameter Description

[Editor Note: This is a description of all the fields defined in the tables of section 4 in alphabetical order]

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## 6 Charging Data Record Structure

[Editor Note: This includes the format structure explanation]

### 6.1 Definitions for CDR information

[Editor Note: This includes the exact CDF format structure code]

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## 7 Charging Data Record Transfer

### 7.1 Interface and Protocol to the CCF

[Editor Note: this includes protocol identification and rules as applied to Rf interface and others, if any]

### 7.2 Interface and Protocol to the Billing System Domain

[Editor Note: this includes protocol(s) identification and rules from IMS to BS]

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## Annex A (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	