

**Source:** SA5 (Telecom Management)  
**Title:** 6 Rel-4 & Rel-5 CRs 32.200, 32.205, 32.215 and 32.235  
**Document for:** Approval  
**Agenda Item:** 7.5.3

**A**

Doc-1 <sup>st</sup> -Level	Spec	CR	R	Phase	Subject	Cat	Ver Cur	Ver New	Doc-2 <sup>nd</sup> -Level	Workite m
SP-020285	32.200	013	-	Rel-4	Align 32.200 (Charging Principles) with 32.235 (Service Charging) on MMS Charging Scenarios - <b>Parent CR</b>	F	4.1.0	4.2.0	S5-024162	OAM-CH
SP-020285	32.235	002	-	Rel-4	Align 32.200 (Charging Principles) with 32.235 (Service Charging) on MMS CDRs and parameter definitions for Charging Scenarios - <b>Child CR</b>	F	4.1.0	4.2.0	S5-024154	OAM-CH

**B**

Doc-1 <sup>st</sup> -Level	Spec	CR	R	Phase	Subject	Cat	Ver Cur	Ver New	Doc-2 <sup>nd</sup> -Level	Workite m
SP-020285	32.215	015	-	Rel-4	Alignment with 23.271 (LCS stage 2) of CDR definition for LCS in PS domain	F	4.2.1	4.3.0	S5-024167	OAM-CH
SP-020285	32.215	016	-	Rel-5	Alignment with 23.271 (LCS stage 2) of CDR definition for LCS in PS domain	A	5.0.0	5.1.0	S5-024168	OAM-CH

**C**

**If A and B are Approved then also C can be Approved**

Doc-1 <sup>st</sup> -Level	Spec	CR	R	Phase	Subject	Cat	Ver Cur	Ver New	Doc-2 <sup>nd</sup> -Level	Workite m
SP-020285	32.205	004	-	Rel-4	Corrections of parameter CallEventRecord	F	4.2.0	4.3.0	S5-024173	OAM-CH
SP-020285	32.205	005	-	Rel-5	Corrections of parameter CallEventRecord	A	5.0.0	5.1.0	S5-024174	OAM-CH

## CHANGE REQUEST

⌘ **32.200 CR 013** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘	Align 32.200 (Charging Principles) with 32.235 (Service Charging) on MMS Charging Scenarios	
<b>Source:</b>	⌘	SA5	
<b>Work item code:</b>	⌘	OAM-CH	<b>Date:</b> ⌘ 24/05/2002
<b>Category:</b>	⌘	<b>F</b>	<b>Release:</b> ⌘ <b>REL-4</b>
		Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> 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)

<b>Reason for change:</b>	⌘	The current description of the MMS charging scenarios is not in line with TS 32.235
<b>Summary of change:</b>	⌘	The content of section 7.1.2 Charging Scenarios is replaced with a new definition of MMS CDRs introduced by CR S5-024154
<b>Consequences if not approved:</b>	⌘	The description of the MMS charging scenarios will be inconsistent with TS 32.235. In particular, the current CDR types are no longer used.

<b>Clauses affected:</b>	⌘	7.1.2															
<b>Other specs affected:</b>	⌘	<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;"><input type="checkbox"/></td> <td>Other core specifications</td> <td style="width: 30%;"></td> <td style="width: 10%;"></td> <td style="width: 30%;"></td> </tr> <tr> <td><input type="checkbox"/></td> <td>Test specifications</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>O&amp;M Specifications</td> <td></td> <td></td> <td></td> </tr> </table> If this CR is approved, than also its attached Child 32.235CR002 can be approved.	<input type="checkbox"/>	Other core specifications				<input type="checkbox"/>	Test specifications				<input checked="" type="checkbox"/>	O&M Specifications			
<input type="checkbox"/>	Other core specifications																
<input type="checkbox"/>	Test specifications																
<input checked="" type="checkbox"/>	O&M Specifications																
<b>Other comments:</b>	⌘																

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## 7 Application Services

Applications/services such as MMS and LCS are provided to the 3G subscribers via service nodes (which are outside the scope of the 3G core network). These servers (service nodes) responsible for the provision of an application services to a subscriber, can generate a service related CDR to record the details of the service transaction provided. The specific CDRs are defined in the specification TS 32.235 "Charging data description for application services" [17].

### 7.1 Multimedia Messaging Service

The Multimedia Messaging Service (MMS) charging description is based on the interface description in TS 23.140 "Multimedia Messaging Service, Functional description, Stage 2 [19]. These MMS-CDRs are delivered by the MMS Relay/Server when receiving or delivering multimedia messages to the MMS User Agent or to another Multimedia Messaging Service Environment (MMSE).

#### 7.1.1 Charging Principles

##### 7.1.1.1 Charging Information

Charging information for the usage of Multimedia Messaging Service is collected for each MS by the Multimedia Messaging Relay/Server (MMS R/S), which is serving that MMS User Agent. The information that the operator uses to generate an invoice to the subscriber is operator-specific. Billing aspects, e.g. a regular fee for a fixed period, are outside the scope of the present document.

The MMS R/S collects charging information for each MS related with value-added service and the usage of MMS specific network resources.

The MMS R/S shall collect the following charging information:

- usage of the MMS resources: the charging information shall describe the amount of data transmitted in MO and MT directions for the transfer of MM;
- storage duration: the storage duration of MM is counted as either (1) the time interval from the beginning of storage of the message until forwarding to another MMS R/S or as (2) the time interval from the beginning of storage until reception of the MM by an MMS User Agent. This is the time interval when a MM is saved on a non-volatile memory media;
- usage of the general Packet-Switched domain resources: the charging information shall describe the usage of other Packet-Switched domain-related resources;
- destination and source: the charging information shall provide the actual destination and source addresses used by the subscriber;
- usage of the external data networks: the charging information shall describe the amount of data sent and received to and from the external data network;
- the MMS R/S address: this provides the highest accuracy location information available.

#### 7.1.2 Charging scenarios

This clause contains an example scenario illustrating the purpose and practical usage of the various types of records defined in the interface description [19].

The events triggering the generation of CDRs are events at the MM1 reference point and/or events at the MM4 reference point.

**Originator and Recipient MMS Relay Server are the same**

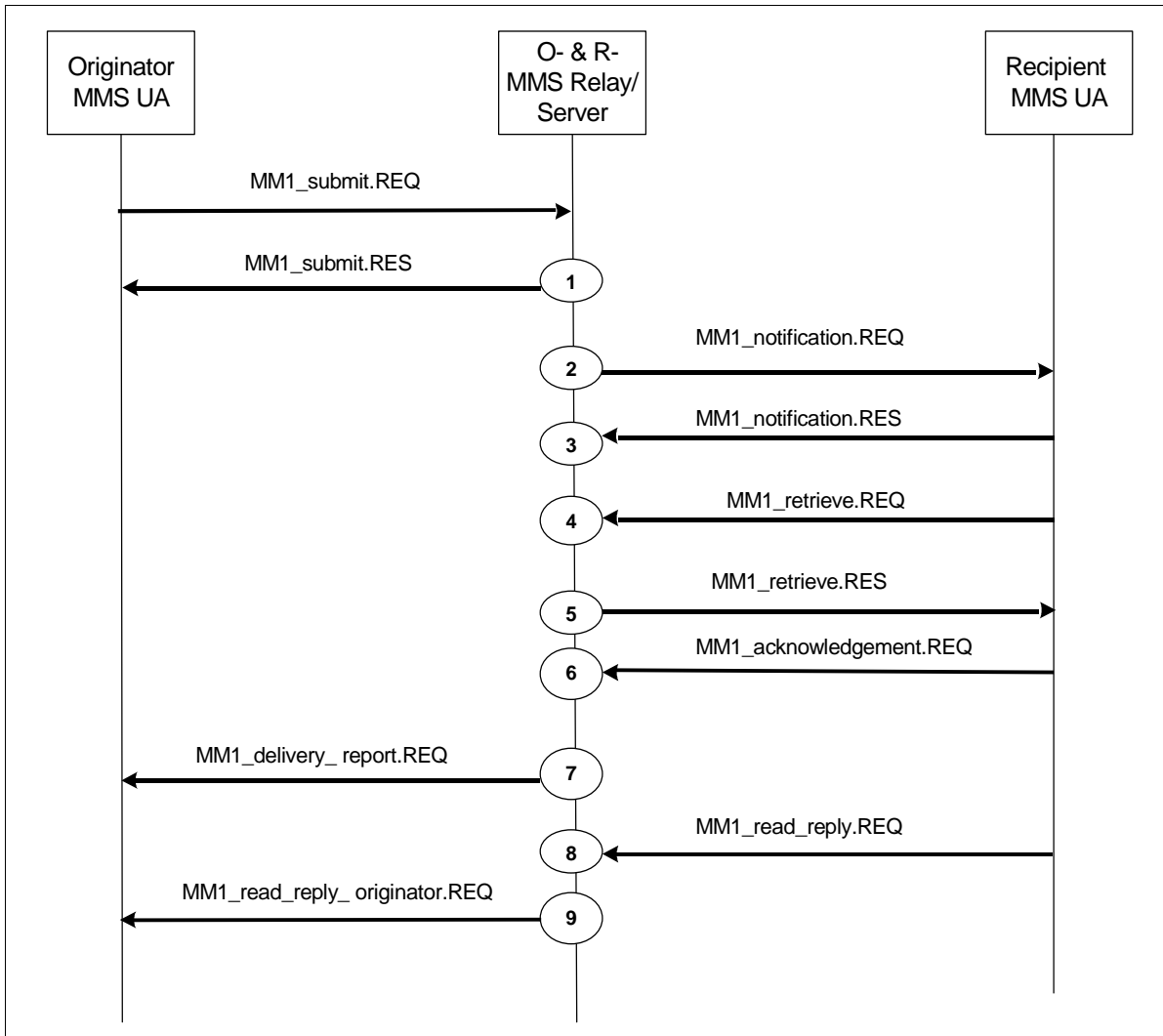


Figure 31: Record trigger overview for combined case

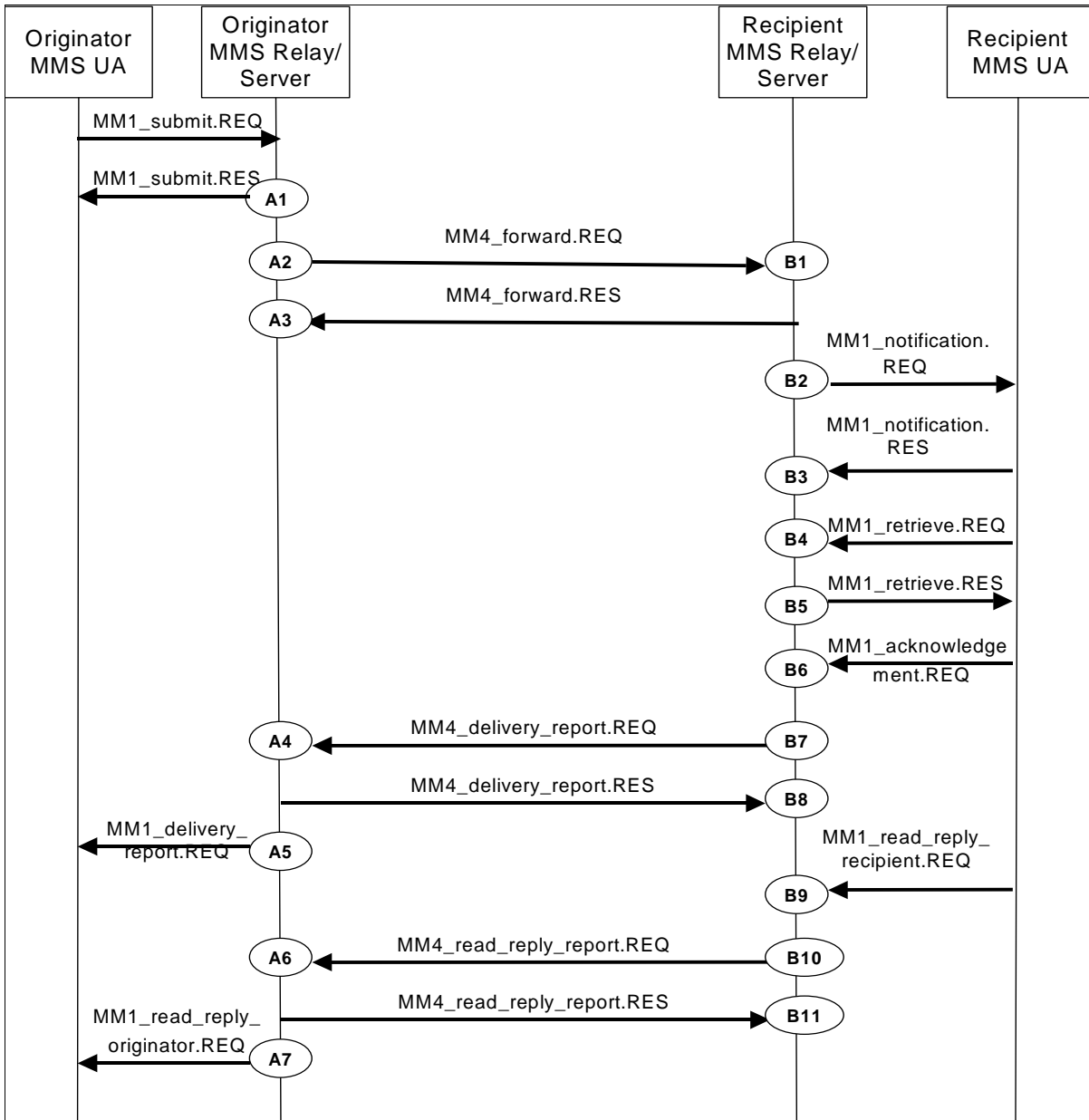
<u>Trigger point</u>	<u>Trigger name</u>
<u>1</u>	<u>Originator MM1 Submission</u>
<u>2</u>	<u>Recipient MM1 Notification Request</u>
<u>3</u>	<u>Recipient MM1 Notification Response</u>
<u>4</u>	<u>Recipient MM1 Retrieve Request</u>
<u>5</u>	<u>Recipient MM1 Retrieve Response</u>
<u>6</u>	<u>Recipient MM1 Acknowledgement</u>
<u>7</u>	<u>Originator MM1 Delivery report</u>
<u>8</u>	<u>Recipient MM1 Read reply Recipient</u>
<u>9</u>	<u>Originator MM4 Read reply originator</u>

<u>Any time between 1..9*</u>	<u>Originator MM Deletion</u>
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Table 15: Record type overview for combined MMS Relay/Server

Note: No CDR will be generated by receiving of the MM1\_submit.REQ

**Originator and Recipient MMS Relay Server are not the same**



<u>Trigger point</u>	<u>Trigger name</u>
<u>A1</u>	<u>Originator MM1 Submission</u>
<u>A2</u>	<u>Originator MM4 Forward Request</u>
<u>A3</u>	<u>Originator MM4 Forward Response</u>
<u>A4</u>	<u>Originator MM4 Delivery report</u>
<u>A5</u>	<u>Originator MM1 Delivery report</u>
<u>A6</u>	<u>Originator MM4 Read reply report</u>
<u>A7</u>	<u>Originator MM1 Read reply originator</u>
<u>Any time between A1.. A7</u>	<u>Originator MM Deletion</u>

Table 16: Trigger type overview for the Originator MMS Relay/Server

<u>Trigger point</u>	<u>Trigger name</u>
<u>B1</u>	<u>Recipient MM4 Forward</u>
<u>B2</u>	<u>Recipient MM1 Notification Request</u>
<u>B3</u>	<u>Recipient MM1 Notification Response</u>
<u>B4</u>	<u>Recipient MM1 Retrieve Request</u>
<u>B5</u>	<u>Recipient MM1 Retrieve Response</u>
<u>B6</u>	<u>Recipient MM1 Acknowledgement</u>
<u>B7</u>	<u>Recipient MM4 Delivery report Request</u>
<u>B8</u>	<u>Recipient MM4 Delivery report Response</u>
<u>B9</u>	<u>Recipient MM1 Read reply Recipient</u>
<u>B10</u>	<u>Recipient MM4 Read reply report Request</u>
<u>B11</u>	<u>Recipient MM4 Read reply report Response</u>
<u>Anyttime after B1</u>	<u>Recipient MM Deletion</u>

Table 17: Trigger type overview for the Recipient MMS Relay/Server

~~The MM submission in the MMS Relay/Server is routed in MMSO and MMSR direction. The Originator MMS Relay/Server and the Recipient MMS Relay/Server shall create the MMSO-CDR and the MMSR-CDR for the originator and recipient User Agent (UA).~~

~~For the purpose of this example the following assumptions have been made:~~

~~— originator MMS UA party is "A" and recipient MMS UA is party "B";~~

~~— ...~~

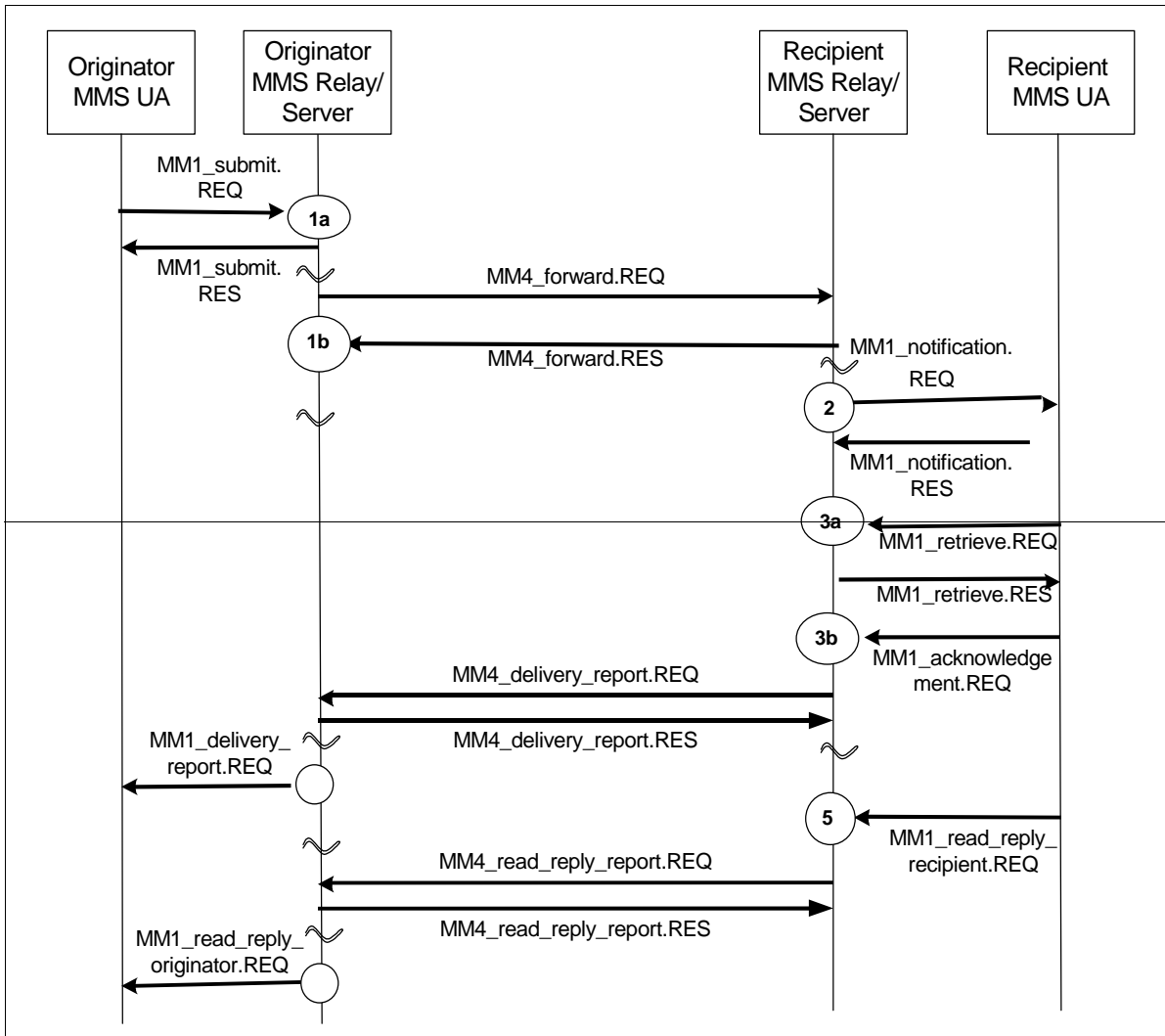


Figure 31: Example Abstract Message Flow

The records are generated in the MMS Relay/Server in this call scenario are shown in the following tables:

Table 15: Submission of MM from Originator MMS UA to Originator MMS Relay/Server (Trigger Point 1a and 1b)

Record Parameter	Content
Record Type	MMSO-CDR
Message Type	Message-MM
Originator Address	E-mail address /MSISDN of A/IP address
Recipient Address	List of E-mail address/MSISDN of B1 ... Bn
Submission Time	Timestamp of MM1_submit_REQ arrived at O-R/S
Duration of Transmission	Time between receipt of MM1_submit_REQ and MM1_submit_RES
Duration of Storage	Time between MM1_submit_RES and MM4_forward_RES
Sequence Number	1a and 1b

Table 16: MM Notification from Recipient MMS Relay/Server to Recipient MMS UA (Trigger Point 2)

Record Parameter	Content
Record Type	MMSR-CDR
Message Type	Notification
Originator Address	E-mail-address /MSISDN of A/IP-address
Recipient Address	E-mail-address/MSISDN of B
Delivery Time	Timestamp at MM1_notification_REQ at R-R/S
Duration of Transmission	Not Applicable
Duration of Storage	Not Available
Sequence Number	Not Applicable

Table 17: Acknowledgement of MM retrieval from Recipient MMS UA to Recipient MMS Relay/Server (Trigger Points 3a and 3b)

Record Parameter	Content
Record Type	MMSR-CDR
Message Type	Message-MM
Originator Address	E-mail-address /MSISDN of A/IP-address
Recipient Address	E-mail-address/MSISDN of B
Delivery Time	Timestamp of MM1_retrieve_REQ arrived at O-R/S
Duration of Transmission	Time between receipt of MM1_submit_REQ and MM1_acknowledgement_REQ, only applicable if acknowledgement was requested
Duration of Storage	Time between MM4_forward_RES and MM1_retrieve_RES
Sequence Number	3a and 3b

Table 18: Delivery Report to Originator MMS UA (Trigger Point 4)

Record Parameter	Content
Record Type	MMSR-CDR
Message Type	Delivery Report
Originator Address	E-mail-address /MSISDN of B/IP-address
Recipient Address	E-mail-address/MSISDN of A
Delivery Time	Timestamp of MM1_delivery_report_REQ at O-R/S
Duration of Transmission	Not Available
Duration of Storage	Not Available
Sequence Number	Not Applicable



Table 19: Read Reply Information from Recipient MMS UA to Recipient MMS Relay/Server (Trigger Point 5)

Record Parameter	Content
Record Type	MMSO-CDR
Message Type	Read-reply
Originator Address	E-mail-address /MSISDN of B/IP address
Recipient Address	E-mail-address/MSISDN of A
Submission Time	Timestamp of MM1_read_reply_recipient_REQ arrived at R-R/S
Duration of Transmission	Not Available
Duration of Storage	Not Available
Sequence Number	Not Applicable

Table 20: Read Reply Report to Originator MMS UA (Trigger Point 6)

Record Parameter	Content
Record Type	MMSR-CDR
Message Type	Read-reply
Originator Address	E-mail-address /MSISDN of B/IP address
Recipient Address	E-mail-address/MSISDN of A
Delivery Time	Timestamp of MM1_read_reply_originator_REQ at O-R/S
Duration of Transmission	Not Available
Duration of Storage	Not Available
Sequence Number	Not Applicable

## CHANGE REQUEST

⌘ **32.235 CR 002** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘	Align 32.200 (Charging Principles) with 32.235 (Service Charging) on MMS CDRs and parameter definitions for Charging Scenarios	
<b>Source:</b>	⌘	SA5	
<b>Work item code:</b>	⌘	OAM-CH	<b>Date:</b> ⌘ 25/04/2002
<b>Category:</b>	⌘	<b>F</b>	<b>Release:</b> ⌘ REL-4
		Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> of the following releases: <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘	Following the analysis in GSMA BARG (CPWP), it was found that the current MMS CDR and parameter definitions cannot be used for commercial service deployment as they do not fulfil operator requirements particularly in inter-operator scenarios.
<b>Summary of change:</b>	⌘	The contents of the sections are updated with new MMS CDR definitions and parameters implementing the requirements forwarded to SA5 from GSMA BARG.
<b>Consequences if not approved:</b>	⌘	The 3GPP TS for MMS charging cannot be used for commercial service deployment.

<b>Clauses affected:</b>	⌘	2., 3., 4., 5 and 6						
<b>Other specs affected:</b>	⌘	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Other core specifications</td> <td style="width: 50%;">⌘</td> </tr> <tr> <td><input type="checkbox"/> Test specifications</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> O&amp;M Specifications</td> <td>Parent 32.200CR013 needs approval first</td> </tr> </table>	<input type="checkbox"/> Other core specifications	⌘	<input type="checkbox"/> Test specifications		<input checked="" type="checkbox"/> O&M Specifications	Parent 32.200CR013 needs approval first
<input type="checkbox"/> Other core specifications	⌘							
<input type="checkbox"/> Test specifications								
<input checked="" type="checkbox"/> O&M Specifications	Parent 32.200CR013 needs approval first							
<b>Other comments:</b>	⌘							

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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 22.140: "Service aspects; Stage 1; Multimedia Messaging Service".
- [4] 3GPP TS 23 140: "Multimedia Messaging Service (MMS), Functional Description, Stage 2".
- [5] STD 11 (RFC 822): "Standard for the format of ARPA Internet text messages".
- [6] RFC 2046: "Multipurpose Internet Mail Extensions (MIME); Part Two: Media Types".
- [7] RFC 2045: "Multipurpose Internet Mail Extensions (MIME); Part One : Format of Internet Message Bodies".
- [8] 3GPP TS 32.205: "Charging Data Description for the Circuit Switched (CS) domain".
- [9] 3GPP TS 32.215: "Charging Data Description for the Packet Switched (PS) domain".
- [10] GSM 12.01: "Digital cellular telecommunication system (Phase 2); Common aspects of GSM Network Management (NM)".
- [11] IETF RFC 959: "File Transfer Protocol (FTP)"; October 1985.
- [12] IETF RFC 783: "Trivial File Transfer Protocol (TFTP)"; revision 2.
- [13] [IETF RFC 2045 and IANA:ftp://ftp.isi.edu/in-notes/iana/assignments/media-types/media-types](http://ftp.isi.edu/in-notes/iana/assignments/media-types/media-types)

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply in addition to those defined in 3GPP TR 21.905 [1] and 3GPP TS 23.140 [43]:

**Delivery Report:** feedback information provided to an originator MMS User Agent by an MMS Relay/Server about the status of the delivery of an MM.

**Forwarded MM:** An MM originally sent from a sender to an intended recipient which is then forwarded to other recipient(s) and to which a delivery report and/or read-reply report may refer and which may be subject to further forwarding.

**Forwarding MMS User Agent:** MMS User Agent that is the intended recipient of an MM and that requests forwarding of the MM for delivery to other recipient(s) without having to first download the MM.

**Message ID:** a unique identifier for an MM

**MMSE:** a collection of MMS-specific elements under the control of a single administration

**MMS Relay/Server:** an MMS-specific network entity/application that is under the control of an MMS service provider. An MMS Relay/Server transfers messages, provides operations of the MMS that are specific to or required by the mobile environment and provides (temporary and/or persistent) storage services to the MMS

**MMS User Agent:** an application residing on a User Equipment, an Mobile Station or an external device that performs MMS-specific operations on a user's behalf. An MMS User Agent is not considered part of an MMSE.

**Original MM:** (initial) MM sent from a sender to a recipient and to which a delivery report and/or a read-reply report and/or a reply-MM may refer and/or which may be subject to being forwarded

**Originator MMS User Agent:** an MMS User Agent associated with the sender of an MM

**Read-Reply Report:** feedback information to an originator MMS User Agent by a recipient MMS User Agent about the status of handling/rendering of an original MM in a recipient MMS User Agent

**Recipient MMS User Agent:** an MMS User Agent associated with the recipient of an MM

**Reply-MM:** In case of reply-charging the first reply accepted by the recipient MMS Relay/Server (after checking the reply charging limitations, such as the latest time of submission) is called a reply-MM.

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## 4 Message Flow and CDR Definitions

### 4.1 Basic MMS Message Flow

The MMS Relay/Servers generate CDRs when receiving MMs from or when delivering MMs to the User Agent or another MMS Relay/Server. The label in the message flows identifies the CDR generation trigger.

The events triggering the generation of CDRs are events at the MM1 reference point and/or events at the MM4 reference point.

#### 4.1.1 Originator and Recipient MMS Relay Server are the same

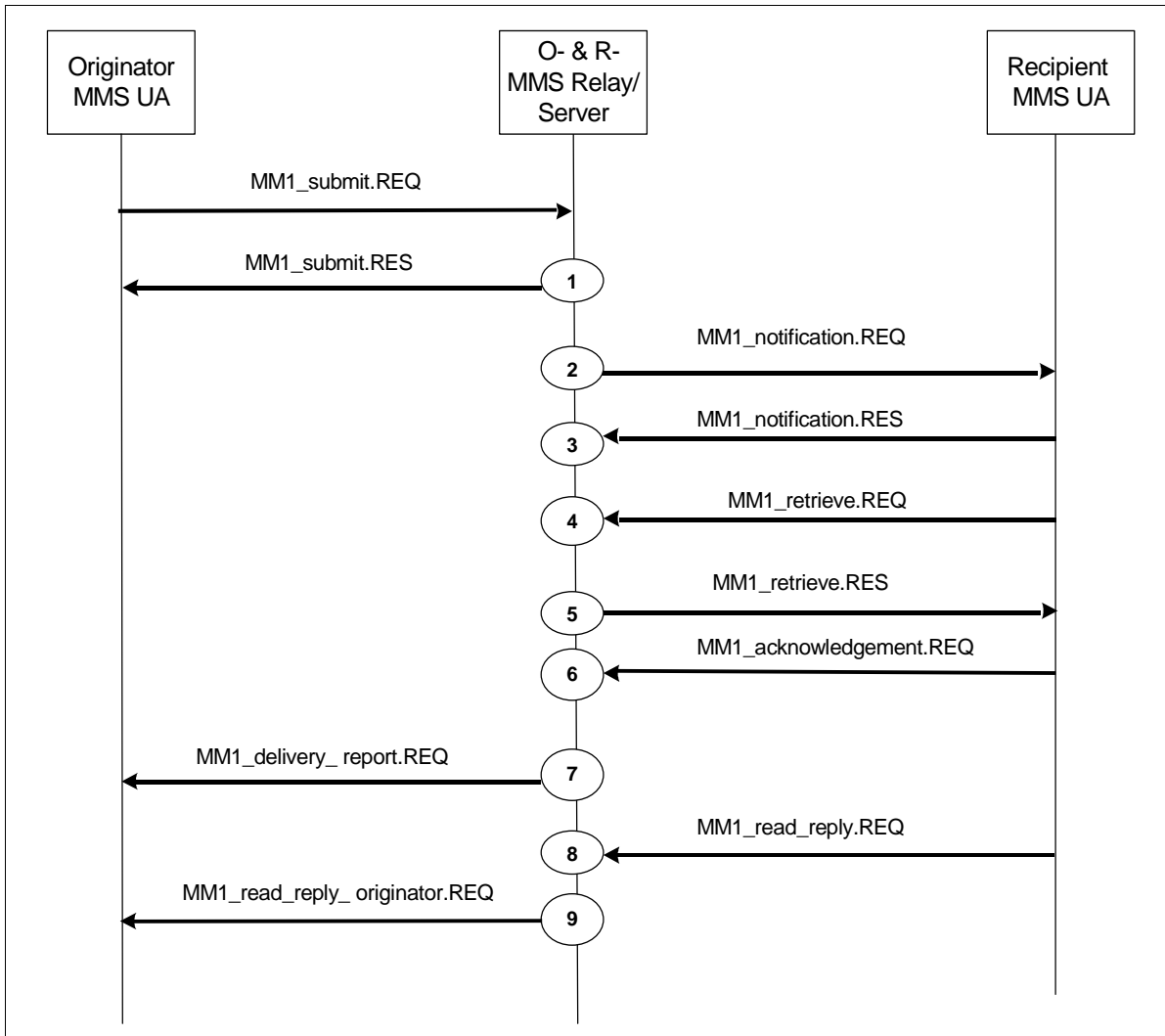


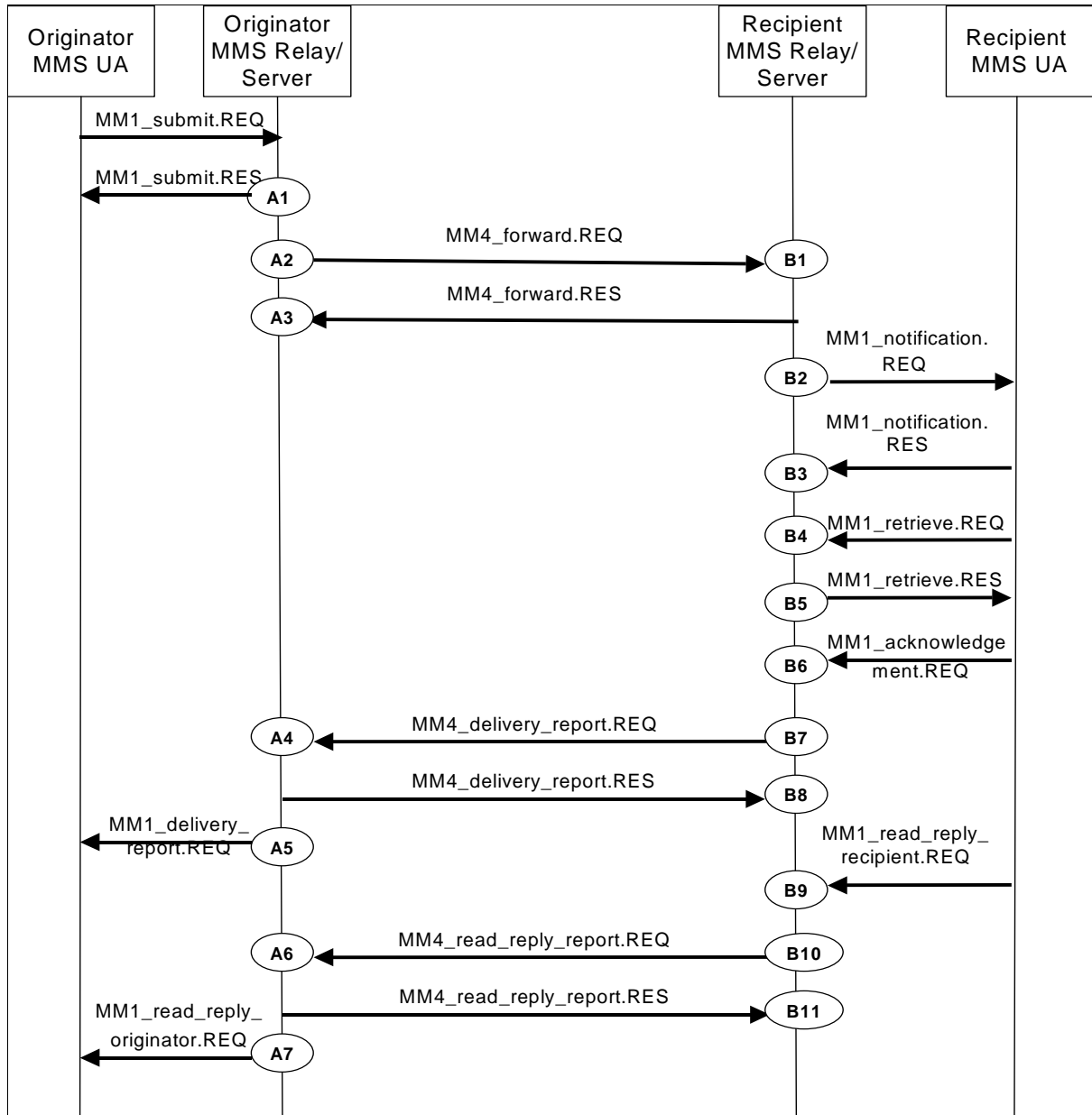
Figure 1: Record trigger overview for combined case

<b>Record numer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>Any time between 1.. 9*</b>
<b>Record type</b>	<b>OIS</b>	<b>R1NRq</b>	<b>R1NRs</b>	<b>R1RtRq</b>	<b>R1RtRs</b>	<b>R1A</b>	<b>O1D</b>	<b>R1RR</b>	<b>O1R</b>	<b>OMD</b>

Table 1: Record type overview for combined MMS Relay/Server

Note: No CDR will be generate by receiving of the MM1\_submit.REQ

**4.1.2 Originator and Recipient MMS Relay Server are not the same**



<u>Record numer</u>	<u>A1</u>	<u>A2</u>	<u>A3</u>	<u>A4</u>	<u>A5</u>	<u>A6</u>	<u>A7</u>	<u>Any time between A1.. A7</u>
<u>Recordtype</u>	<u>O1S</u>	<u>O4FRq</u>	<u>O4FRs</u>	<u>O4D</u>	<u>O1D</u>	<u>O4R</u>	<u>O1R</u>	<u>OMD</u>

Table 2: Record type overview for the Originator MMS Relay/Server

<u>Record numer</u>	<u>B1</u>	<u>B2</u>	<u>B3</u>	<u>B4</u>	<u>B5</u>	<u>B6</u>
<u>Recordtype</u>	<u>R4F</u>	<u>R1NRq</u>	<u>R1NRs</u>	<u>R1RtRq</u>	<u>R1RtRs</u>	<u>R1A</u>

<u>Record numer</u>	<u>B7</u>	<u>B8</u>	<u>B9</u>	<u>B10</u>	<u>B11</u>	<u>Anytime after B1</u>
<u>Recordtype</u>	<u>R4DRq</u>	<u>R4DRs</u>	<u>R1RR</u>	<u>R4RRq</u>	<u>R4RRs</u>	<u>RMD</u>

Table 3: Record type overview for the Recipient MMS Relay/Server

## 4.2 Record Description

~~Two Dedicated~~ types of CDRs can be generated in the service domain for MMS by the MMS Relay/Servers. As described in TS32.200 [2], these types are: ~~MMSO-CDR and MMSR-CDR~~. The content of each CDR type is defined in one of the ~~two~~ tables that are part of this clause. For each CDR type the field definition includes the field name, description and category.

~~The events triggering the generation of CDRs are events at the MM1 reference point and/or events at the MM4 reference point.~~

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.

~~Some of these is~~ 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 may configure wishes to be present or absent are further qualified with the 'Operator provisionable' indicator as follows divided into a mandatory and conditional categories:~~

- MoO<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 **MoO<sub>M</sub>** parameter that is provisioned to be present is a mandatory parameter.
- CoO<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 **CoO<sub>C</sub>** parameter that is configured to be present is a conditional parameter.

The MMS Relay/Server shall be able to provide the CDRs at the Billing System interface in the format and encoding described in the present document. Additional CDR formats and contents, generated by the MMS Relay/Server, may be available at the interface to the billing system to meet the requirements of the billing system, these are outside of the scope of 3GPP standardisation.

### 4.2 Service records for originating MMS Relay/Server (MMSO-CDR)

The following subsections specify CDRs created in the originator MMS Relay/Server based on messages flowing over the MM1 and MM4 reference points. The CDRs referring to MM4 messages (Originator MM4 \*\*\* CDR) are created only if the originator and recipient MMS Relay/Servers communicate over the MM4 interface (i.e. the originator MMS Relay/Server is not also the recipient MMS Relay/Server). The CDRs referring to MM1 messages (Originator MM1 \*\*\* CDR) are created regardless of whether the originator MMS Relay/Server is also the recipient MMS Relay/Server or not. Unless otherwise specified the CDR parameters are copied from the corresponding MM1 or MM4 message parameters as applicable.

#### 4.2.1 Originator MM1 Submission CDR

If enabled, an MMSO-CDR mobile-originated MMS record shall be produced for each originating MM sent by a mobile user agent via the MMS Relay/Server. If enabled, an Originator MM1 Submission Charging Data Record (OIS-CDR) shall be produced in the originator MMS Relay/Server for each MM submitted in an MM1\_submit.REQ by an originator MMS User Agent to the originator MMS Relay/Server if and when the originator MMS Relay/Server responds with an MM1\_submit.RES. The operator can configure whether this

CDR, if enabled, shall only be created for MM1\_submit.RES -indicating acceptance of the submitted MM, or also for the unsuccessful submissions.

Notes: (1) This includes the case where the MM is a reply-MM to an original MM. In this case the MMS User Agent sending the reply-MM is called the originator MMS User Agent of this reply-MM and the MMS Relay/Server receiving the reply-MM in an MM1\_submit.REQ is called the originator MMS Relay/Server for this reply-MM.

(2) The case of an MMS Relay/Server receiving an MM1\_forward.REQ is treated in section 4.4.



**Table 1: Mobile originated MMS record (MMSO-CDR)****Table 1: Originator MM1 Submission CDR (OIS-CDR)**

Field	Category	Description
Record Type	M	Mobile Originated MMS Originator MM1 Submission record.
Originator MMS Relay/Server Address	M	The IP address of the MMS Relay/Server of the originated MM. IP address or domain name of originator MMS Relay/Server.
Message ID	M	The MM identification provided by the originator MMS Relay/Server.
Reply-Charging ID	C	This field is present in the CDR only if the MM is a reply-MM to an original MM. The Reply-Charging ID is the Message ID of the original MM. The reference MM identification provided by the MMS Relay/Server to correlate to the original MM in case of a Reply-Charging (See "Charge Information" parameter description.).
Originator address	M	The address of the originator MMS User Agent (i.e., of the MMS User Agent that has sent the MM1_submit.REQ) of the original MM, i.e. the recipient of the read-reply report.
Recipient(s) address list	M	The address(es) of the recipient(s) MMS User Agent(s) of the original MM, i.e. the originator of the read-reply report. Multiple addresses are possible if the MM is not a reply MM. Note: a multiple group may be addressed.
Access Correlation	MO <sub>oM</sub>	A unique identifier delivered by the used access network domain of the originating originator MMS User Agent.
Content type	M	The content type of the MM content.
MM component list	Mo	The list of media components with volume size.
Message size	M	The total size of the MM content.
Message type	M	The category of the MM.
Forwarded Message Indicator	C	If present, this field shall indicate that the original MM was forwarded.
Message class	C <sub>oM</sub>	The class selection such as personal, advertisement, information service if specified in the MM1_submit_REQ.
Charge Information	C <sub>Mo</sub>	The charge indication and charge type.
Submission Time	MC <sub>o</sub>	The time at which the MM was submitted from the originator MMS User Agent if specified in the MM1_submit_REQ.
Time of Expiry	C <sub>oC</sub>	The desired date of expiry or duration of time prior to of-expiry for the MM or reply-MM if specified by the originator MMS User Agent.
Earliest Time Of Delivery	C <sub>oC</sub>	This field contains either the earliest time to deliver the MM message or the number of seconds to wait before delivering the message MM as specified by the originator MMS User Agent.
Duration Of Transmission	MO <sub>oM</sub>	The time used for transmission of the MM between the User Agent and the MMS Relay/Server.
Duration Of Storage	OM	The storage time of the MM in the MMS Relay/Server.
Request Status Code	OM <sub>Mo</sub>	The status code of the MM as received in the MM1_submit_REQ. delivered MM at the time when the CDR is generated.
Delivery Report Requested Result	Mo <sub>C</sub>	This field indicates whether a delivery report has been requested by the originator MMS User Agent or not. The status of the delivered MM if requested.
Reply Charging	C <sub>o</sub>	A request for reply-charging if as specified by the originator MMS User Agent.
Reply Deadline	C <sub>o</sub>	In case of reply-charging the latest time of submission of replies granted to the recipient(s) as specified by the originator MMS User Agent.
Reply Charging Size	C <sub>o</sub>	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s) as specified by the originator MMS User Agent.
Priority	C <sub>o</sub>	The priority (importance) of the message if as specified by the originator MMS User Agent.
Sender visibility	Mo <sub>o</sub>	A request to show or hide the sender's identity when the message is delivered to the recipient as specified by the originator MMS User Agent.
Read reply requested	Mo <sub>o</sub>	A request for read reply report as specified in the MM1_submit_REQ.
Status Text Code	OC <sub>Mo</sub>	This field includes a more detailed technical status of delivering the message at the point in time when the CDR is generated. This field is only present if the MM submission is rejected.
Sequence Number	OM <sub>C</sub>	Number of partial record if applicable Record number.
Record Time Stamp	OM <sub>Mo</sub>	Time of generation of the CDR.
Local Record Sequence Number	Mo	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	C <sub>o</sub> OC <sub>e</sub>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

## 4.2.2 Originator MM4 Forward Request CDR (O4FRq-CDR)

If enabled, an Originator MM4 Forward Request Charging Data Record (O4FRq-CDR) shall be produced in the originator MMS Relay/Server if and when the originator MMS Relay Server has sent an MM4\_forward.REQ to the recipient MMS Relay/Server, regardless of whether or not a MM4\_forward.RES is received from the recipient. That is, the CDR is created upon completion of transmission of the MM4\_forward.REQ.

The MM4\_forward.REQ may be generated as a reaction to an incoming MM1\_forward.REQ. In this case, the *Originator address* field specifies the address of the originator MMS User Agent of the original MM, whereas the address of the forwarding MMS User Agent is contained in the *Forwarding address* field.

**Table 2: Originator MM4 Forward Request record (O4FRq-CDR)**

<u>Field</u>	<u>Cate gory</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	Originator MM4 Forward Request record.
<u>Originator MMS Relay/Server Address</u>	<u>M</u>	IP address or domain name of the originator MMS Relay/Server.
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	IP address or domain name of the recipient MMS Relay/Server.
<u>Message ID</u>	<u>M</u>	The MM identification provided by the originator MMS Relay/Server.
<u>3GPP MMS Version</u>	<u>M<sub>o</sub></u>	The MMS version of the originator MMS Relay/Server.
<u>Originator address</u>	<u>M</u>	The address of the originator MMS User Agent of the MM. (If the MM4_forward.REQ is generated as a reaction to an incoming MM1_forward.REQ, this is the address of the originator MMS User agent of the original MM.)
<u>Recipients address list</u>	<u>M</u>	The address(es) of the recipient MMS User Agent(s) of the MM as specified in the MM4_forward.REQ that triggered the CDR.
<u>Content type</u>	<u>M</u>	The content type of the MM content.
<u>MM component list</u>	<u>M<sub>o</sub></u>	The list of media components with volume size.
<u>Message size</u>	<u>M</u>	The total size of the MM content.
<u>Message class</u>	<u>C</u>	The class of the MM (e.g., personal, advertisement, information service) if specified by the originator MMS User Agent
<u>Submission Time</u>	<u>M</u>	The time at which the MM was submitted or forwarded as specified in the correspondsing MM1_submit.REQ or MM1_forwarding.REQ.
<u>Time of Expiry</u>	<u>C</u>	The desired date of expiry or duration of time prior to expiry for the MM if specified by the originator MMS User Agent.
<u>Delivery Report Requested</u>	<u>M</u>	This field indicates whether a delivery report has been requested by the originator MMS User Agent or not.
<u>Priority</u>	<u>C</u>	The priority (importance) of the message if specified by the originator MMS User Agent.
<u>Sender visibility</u>	<u>M</u>	A request to show or hide the sender's identity when the message is delivered to the MM recipient if the originator MMS User Agent has requested her address to be hidden from the recipient.
<u>Read reply requested</u>	<u>M</u>	A request for read reply report if the originator MMS User Agent has requested a read-reply report for the MM.
<u>Acknowledgement Request</u>	<u>M</u>	Request for MM4_forward.RES
<u>Forward-counter</u>	<u>C</u>	A counter indicating the number of times the particular MM was forwarded.
<u>Forwarding address</u>	<u>C</u>	The address(es) of the forwarding MMS User Agent(s). Multiple addresses are possible. In the multiple address case this is a sequential list of the address(es) of the forwarding MMS User Agents who forwarded the same MM.
<u>Record Time Stamp</u>	<u>M</u>	Time of generation of the CDR.
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
<u>Record extensions</u>	<u>C<sub>o</sub></u>	A set of network/manufacturer specific extensions to the record. Conditioned upon the existence of an extension.

## 4.2.3 Originator MM4 Forward Response CDR (O4FRs-CDR)

If enabled, an Originator MM4 Forward Response Charging Data Record (O4FRs-CDR) shall be produced in the originator MMS Relay/Server if and when, after an MM has been forwarded with an MM4\_forward.REQ to the recipient MMS Relay/Server, the originator MMS Relay/Server receives a corresponding MM4\_forward.RES from the recipient MMS Relay/Server.

**Table 3: Originator MM4 Forward Response record (O4FRs-CDR)**

<b>Field</b>	<b>Category</b>	<b>Description</b>
Record Type	M	Originator MM4 Forward Response record.
Originator MMS Relay/Server Address	M <sub>o</sub>	IP address or domain name of the originator MMS Relay/Server.
Recipient MMS Relay/Server Address	M	IP address or domain name of the recipient MMS Relay/Server.
Message ID	M	The MM identification provided by the originator MMS Relay/Server.
3GPP MMS Version	M <sub>o</sub>	The MMS version of the recipient MMS Relay/Server.
Request Status Code	M <sub>o</sub>	The status code of the request to route forward the MM MM-as received in the MM4_forward.RES.
Status Text	C <sub>o</sub>	This field includes the status text as received in the MM4_forward.RES corresponding to the Request Status Code. Present only if provided in the MM4_forward.RES.
Record Time Stamp	M <sub>o</sub>	Time of generation of the CDR.
Local Record Sequence Number	M <sub>o</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	C <sub>o</sub>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

#### 4.2.4 Originator MM4 Delivery report CDR (O4D-CDR)

If enabled, a Originator MM4 Delivery report Charging Data Record (O4D-CDR) shall be produced in the originator MMS Relay/Server if and when the originator MMS Relay/Server receives an MM4\_delivery\_report.REQ from the recipient MMS Relay/Server.

**Table 4: Originator MM4 Delivery report record (O4D-CDR)**

<b>Field</b>	<b>Category</b>	<b>Description</b>
Record Type	M	Originator MM4 Delivery report record.
Recipient MMS Relay/Server Address	M <sub>o</sub>	IP address or domain name of the recipient MMS Relay/Server.
Originator MMS Relay/Server Address	M <sub>o</sub>	IP address or domain name of the originator MMS Relay/Server.
Message ID	M	The MM identification provided by the originator MMS Relay/Server.
3GPP MMS Version	M <sub>o</sub>	The MMS version of the recipient MMS Relay/Server.
Originator address	M <sub>o</sub>	The address of the originator MMS User Agent of the MM.
Recipient address	M	The address of the MM recipient of the MM.
MM Date and time	M	Date and time the MM was handled (retrieved, expired, rejected, etc.) as specified in the MM4_delivery_report.
Acknowledgement Request	M	Request for MM4_delivery_report.RES
MM Status Code	M <sub>o</sub>	The status code of the delivered MM as received in the MM4_delivery_report.REQ.
Status Text	C <sub>o</sub>	This field includes the status text as received in the MM4_delivery_report.REQ corresponding to the MM Status Code. Present only if provided in the MM4_delivery_report.REQ.
Record Time Stamp	M <sub>o</sub>	Time of generation of the CDR
Local Record Sequence Number	M <sub>o</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	C <sub>o</sub>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

#### 4.2.5 Originator MM1 Delivery report CDR (O1D-CDR)

If enabled, an Originator MM1 Delivery report Charging Data Record (O1DR4DRs-CDR) shall be produced in the originator MMS Relay/Server if and when the originator MMS Relay/Server sends an MM1\_delivery\_report.REQ to the originator MMS User Agent.

**Table 5: Originator MM1 Delivery report record (O1D-CDR)**

Field	Category	Description
Record Type	M	Originator MM1 Delivery report record.
Recipient MMS Relay/Server Address	M <sub>o</sub>	IP address or domain name of the recipient MMS Relay/Server.
Originator MMS Relay/Server Address	M <sub>o</sub>	IP address or domain name of the originator MMS Relay/Server.
Access Correlation	M <sub>o</sub>	A unique identifier delivered by the used access network domain of the originator MMS User Agent.
Message ID	M	The MM identification provided by the originator MMS Relay/Server.
3GPP MMS Version	M <sub>o</sub>	The MMS version of the originator MMS Relay/Server.
Originator address	M <sub>o</sub>	The address of the originator MMS User Agent of the MM.
Recipient address	M	The address of the MM recipient of the MM.
MM Status Code	M <sub>o</sub>	The status code of the MM as sent in the MM Status information element in the MM1_delivery_report.REQ.
Record Time Stamp	M <sub>o</sub>	Time of generation of the CDR
Local Record Sequence Number	M <sub>o</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	C <sub>o</sub>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

#### 4.2.6 Originator MM4 Read reply report CDR (O4R-CDR)

If enabled, a Originator MM4 Read reply report Charging Data Record (O4R-CDR) shall be produced in the originator MMS Relay/Server if and when the originator MMS Relay/Server receives an MM4\_read\_reply\_report.REQ from the recipient MMS Relay/Server.

**Table 6: Originator MM4 Read reply report record (O4R-CDR)**

Field	Category	Description
Record Type	M	Originator MM4 Read reply report record.
Recipient MMS Relay/Server Address	M <sub>o</sub>	IP address or domain name of the recipient MMS Relay/Server.
Originator MMS Relay/Server Address	M <sub>o</sub>	IP address or domain name of the originator MMS Relay/Server.
Message ID	M	The MM identification provided by the originator MMS Relay/Server.
3GPP MMS Version	M <sub>o</sub>	The MMS version of the recipient MMS Relay/Server.
Originator address	M <sub>o</sub>	The address of the originator MMS User Agent of the MM.
Recipient address	M <sub>o</sub>	The address of the MM recipient of the MM.
MM Date and time	M <sub>o</sub>	Date and time the MM was handled (retrieved, expired, rejected, etc.).
Acknowledgement Request	M	Request for MM4 read reply report.RES
Read Status	M <sub>o</sub>	The status of the MM as received in the MM4_read_reply_report.REQ.
Status Text	C <sub>o</sub>	This field includes the status text if as received in the MM4_read_reply_report.REQ corresponding to the Read Status. Present only if provided in the MM4_read_reply_report.REQ.
Record Time Stamp	M <sub>o</sub>	Time of generation of the CDR
Local Record Sequence Number	M <sub>o</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	C <sub>o</sub>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

#### 4.2.7 Originator MM1 Read reply originator CDR (O1R-CDR)

If enabled, an Originator MM1 Read reply originator Charging Data Record (O1R-CDR) shall be produced in the originator MMS Relay/Server if and when the originator MMS Relay/Server sends an MM1\_read\_reply\_originator.REQ to the originator MMS User Agent.

**Table 7: Originator MM1 Read reply originator record (OID-CDR)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>Originator MM1 Read reply originator record.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>M<sub>o</sub></u>	<u>IP address or domain name of the recipient MMS Relay/Server.</u>
<u>Originator MMS Relay/Server Address</u>	<u>M<sub>o</sub></u>	<u>IP address or domain name of the originator MMS Relay/Server.</u>
<u>Access Correlation</u>	<u>M<sub>o</sub></u>	<u>A unique identifier delivered by the used access network domain of the originator MMS User Agent.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>3GPP MMS Version</u>	<u>M<sub>o</sub></u>	<u>The MMS version of the originator MMS Relay/Server.</u>
<u>Originator address</u>	<u>M<sub>o</sub></u>	<u>The address of the originator MMS User Agent of the MM.</u>
<u>Recipient address</u>	<u>M<sub>o</sub></u>	<u>The address of the MM recipient of the MM.</u>
<u>Read Status</u>	<u>M<sub>o</sub></u>	<u>The status of the MM as sent in the MM1 read reply originator.REQ.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

#### 4.2.8 Originator MM Deletion CDR (OMD-CDR)

If enabled, an Originator MM Deletion Charging Data Record (OMD-CDR) shall be produced in the originator MMS Relay/Server, after sending an MM1 submit.RES to the originator MMS User Agent, if and when:

- the originator MMS Relay/Server decides to abandon processing of the MM at any point after receiving the corresponding MM1 submit.REQ; or,
- the originator MMS Relay/Server decides to delete the MM because of expiry of storage time, which may either be indicated in the submit request or governed by operator procedure (e.g. after successful MM delivery).

Abandoning the processing of the MM, or deleting the MM, implies that there remains no knowledge of the MM in the originator MMS Relay/Server.

The status code indicates the precise reason for abandoning or deleting the MM with respect to the MMS transactions specified in [4].

This CDR is created regardless of whether the originator MMS Relay/Server is also the recipient MMS Relay/Server or not.

**Table 8: Originator MM Deletion record (OMD-CDR)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>Originator MM Deletion record.</u>
<u>Originator MMS Relay/Server Address</u>	<u>M<sub>o</sub></u>	<u>IP address or domain name of the originator MMS Relay/Server.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>C</u>	<u>IP address or domain name of the recipient MMS Relay/Server. This field is present, if such an address is known.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>Message size</u>	<u>M<sub>o</sub></u>	<u>The total size of the MM content.</u>
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	<u>The delivery status code of the MM at the time when the CDR is generated.</u>
<u>Status TextCode</u>	<u>M<sub>o</sub></u>	<u>This field includes a more detailed technical status of the message at the point in time when the CDR is generated.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR.</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

### 4.3 Service records for recipient MMS Relay/server~~(MMSR-CDR)~~

The following subsections specify CDRs created in the recipient MMS Relay/Server based on messages flowing over the MM1 and MM4 interfaces. The CDRs referring to MM4 messages (Recipient MM4 \*\*\* CDR) are created only if the originator and recipient MMS Relay Servers communicate over the MM4 interface (i.e. the recipient MMS Relay/Server is not also the originator MMS Relay/Server). The CDRs referring to MM1 messages (Recipient MM1 \*\*\* CDR) are created regardless of whether the recipient MMS Relay/Server is also the originator MMS Relay/Server or not. Unless otherwise specified the CDR parameters are copied from the corresponding MM1 or MM4 message parameters as applicable.

#### 4.3.1 Recipient MM4 Forward CDR (R4F-CDR)

If enabled, a Recipient MM4 Forward CDR Charging Data Record (R4F-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives an MM4\_forward.REQ from the originator MMS Relay/Server.

If enabled, an MMSR-CDR mobile recipient MMS record shall be produced for each terminating MM sent by a mobile user agent via the MMS Relay/Server.

**Table 2: Mobile recipient MMS record (MMSR-CDR)**

**Table 9: Recipient MM4 Forward record (R4F-CDR)**

Field	Category	Description
Record Type	M	Recipient MM4 Forward record_Mobile Recipient MMS.
Recipient MMS Relay/Server Address	M	The IP address of the current MMS Relay/Server of the recipient Mm IP address or domain name of the recipient MMS Relay/Server.
Originator MMS Relay/Server Address	M	IP address or domain name of the originator MMS Relay/Server.
Message ID	M	The MM identification delivered provided by the originator MMS Relay/Server.
3GPP MMS Version	M <sub>o</sub>	The MMS version of the originator MMS Relay/Server.
Originator address	M	The address of the originator MMS uUser aAgent of the original-MM, i.e. the recipient of the read-reply report.
Recipients address list	M	The address(es) of the recipient MMS uUser aAgent(s) of the original-MM, i.e. the originator of the read-reply report. Note: a multiple group may be addressed.
Content type	M	The content type of the MM content.
MM component list	M <sub>o</sub>	The list of media components with volume size.
Message size	M	The total size of the MM content.
Message type	M	The category of the MM.
Message class	CM	The class selection such as personal, advertisement, information service.
Submission Time	M	The time at which the MM was submitted or forwarded as specified in the MM4 forward.REQ.
Delivery Time	M	The time at which the MM was received by the recipient MMS user agent.
Time of Expiry	CO <sub>e</sub>	The desired date of expiry or duration of time prior to expiry for the reply-MM if specified by the originator MMS uUser aAgent.
Duration Of Storage	OM	The storage time of the MM in the MMS Relay/Server.
Delivery Report RequestedAck-Request	CM	This field indicates whether a delivery report has been requested by the originator MMS User Agent or not.The indication for the delivery request
Priority	C	The priority (importance) of the message if specified by the originator MMS User Agent.
Sender visibility	M	A request to show or hide the sender's identity when the message is delivered to the MM recipient if the originator MMS User Agent has requested her address to be hidden from the recipient.
Read reply Requested	M	A request for read reply report if the originator MMS User Agent has requested a read-reply report for the MM.
Request status code	M	The status of the request to route forward the MM. If the MM4 forward.REQ is responded by an MM4 forward.RES, this shall be the same information as specified in the Request Status Code information element in the MM4 forward.RES.
Status Text	C	This field includes a more detailed technical status of the message at the point in time when the CDR is generated. If the MM4 forward.REQ is responded by an MM4 forward.RES, this shall be the same information as specified in the Status Text information element in the MM4 forward.RES corresponding to the Request Status Code.
Acknowledgement Request	M	Request for MM4 forward.RES
Forward counter	C	A counter indicating the number of times the particular MM was forwarded.
Forwarding address	C	The address(es) of the forwarding MMS User Agent(s). Multiple addresses are possible. In the multiple address case this is a Sequential list of the address(es) of the forwarding MMS User Agents who forwarded the same MM.
Record Time stamp	M	Time of generation of the CDR
Local Record Sequence Number	M <sub>o</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	C <sub>o</sub> Θ <sub>e</sub>	A set of network/manufacturer specific extensions to the record. Conditioned upon the existence of an extension.

### 4.3.2 Recipient MM1 Notification Request CDR (R1NRq-CDR)

If enabled, a Recipient MM1 Notification Request Charging Data Record (R1NRq-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server sends an MM1\_notification.REQ to the recipient MMS User Agent.

**Table 10: Recipient MM1 Notification Request record (R1NRq -CDR)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	Recipient MM1 Notification Request record.
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	IP address or domain name of the recipient MMS Relay/Server.
<u>Message ID</u>	<u>M</u>	The MM identification provided by the originator MMS Relay/Server.
<u>Reply Charging ID</u>	<u>C</u>	This field is present in the CDR only if the MM is a reply-MM to an original MM. The Reply-Charging ID is the Message ID of the original MM.
<u>Sender address</u>	<u>M</u>	The address of the MMS User Agent as used in the MM1_notification.REQ. This parameter is present in the CDR regardless of address hiding.
<u>Recipient address</u>	<u>M</u>	The address of the MM recipient of the MM.
<u>Access Correlation</u>	<u>M<sub>o</sub></u>	A unique identifier delivered by the used access network domain of the recipient MMS User Agent.
<u>Message class</u>	<u>M</u>	The class selection such as personal, advertisement, information service; default = personal.
<u>MM component list</u>	<u>M<sub>o</sub></u>	The list of media components with volume size.
<u>Message size</u>	<u>M<sub>o</sub></u>	The total size of the MM content.
<u>Time of Expiry</u>	<u>M<sub>o</sub></u>	The date of expiry or duration of time prior to expiry for the MM.
<u>Message Reference</u>	<u>M</u>	Aa reference, e.g., URI, for the MM
<u>Delivery Report Requested</u>	<u>M<sub>o</sub></u>	This field indicates whether a delivery report is requested or not as specified in the MM1_notification.REQ.
<u>Reply Charging</u>	<u>C<sub>o</sub></u>	Information that a reply to this particular original MM is free of charge as specified in the MM1_notification.REQ.
<u>Reply Deadline</u>	<u>C<sub>o</sub></u>	In case of reply-charging the latest time of submission of a reply granted to the recipient as specified in the MM1_notification.REQ.
<u>Reply Charging-Size</u>	<u>C<sub>o</sub></u>	In case of reply-charging the maximum size of a reply-MM granted to the recipient as specified in the MM1_notification.REQ.
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	The status code of the MM at the time when the CDR is generated.
<u>Status Text</u>	<u>M<sub>o</sub></u>	This field includes a more detailed technical status of the message at the point in time when the CDR is generated.
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	Time of generation of the CDR
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
<u>Record extensions</u>	<u>C<sub>o</sub></u>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

### 4.3.3 Recipient MM1 Notification Response CDR (R1NRs-CDR)

If enabled, a Recipient MM1 Notification Response Charging Data Record (R1NRs-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server has-received an MM1\_notification.RES from the recipient MMS User Agent.



**Table 11: Recipient MM1 Notification Response record (RINRs-CDR)**

<u>Field</u>	<u>Cate gory</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>Recipient MM1 Notification Response record.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the recipient MMS Relay/Server.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>Recipient address</u>	<u>M</u>	<u>The address of the MM recipient of the MM.</u>
<u>Access Correlation</u>	<u>M<sub>o</sub></u>	<u>A unique identifier delivered by the used access network domain of the recipient MMS User Agent.</u>
<u>Report allowed</u>	<u>C</u>	<u>Request to allow or disallow the sending of a delivery report to the MM originator if specified in the MM1_notification_RES.</u>
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	<u>The status code of the MM at the time when the CDR is generated.</u>
<u>Status Text</u>	<u>M<sub>o</sub></u>	<u>This field includes a more detailed technical status of the message at the point in time when the CDR is generated.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

#### 4.3.4 Recipient MM1 Retrieve Request CDR (R1RtRq-CDR)

If enabled, a Recipient MM1 Retrieve Request Charging Data Record (R1RtRq-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives an MM1\_retrieve.REQ from the recipient MMS User Agent.

**Table 12: Recipient MM1 Retrieve Request record (R1RtRq-CDR)**

<u>Field</u>	<u>Cate gory</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>Recipient MM1 Retrieve Request record.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the recipient MMS Relay/Server.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>Originator address</u>	<u>M</u>	<u>The address of the originator MMS User Agent of the MM.</u>
<u>Recipient address</u>	<u>M</u>	<u>The address of the MM recipient of the MM.</u>
<u>Access Correlation</u>	<u>M<sub>o</sub></u>	<u>A unique identifier delivered by the used access network domain of the recipient MMS User Agent.</u>
<u>Message reference</u>	<u>M</u>	<u>Location of the content of the MM to be retrieved as specified in the MM1_retrieve.REQ.</u>
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	<u>The status code of the MM at the time when the CDR is generated.</u>
<u>Status Text</u>	<u>M<sub>o</sub></u>	<u>This field includes a more detailed technical status of the message at the point in time when the CDR is generated.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

#### 4.3.5 Recipient MM1 Retrieve Response CDR (R1RtRs-CDR)

If enabled, a Recipient MM1 Retrieve Response Charging Data Record (R1RtRs-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server has sent a MM1\_retrieve.RES to the recipient MMS User Agent. That is, the CDR is created upon completion of transmission of the MM1\_retrieve.RES.

**Table 13: Recipient MM1 Retrieve Response record (R1RtRs-CDR)**

<u>Field</u>	<u>Cate gory</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	Recipient MM1 Retrieve Response record.
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	IP address or domain name of the recipient MMS Relay/Server.
<u>Message ID</u>	<u>M</u>	The MM identification provided by the originator MMS Relay/Server.
<u>Reply Charging ID</u>	<u>C</u>	This field is present in the CDR only if the MM is a reply-MM to an original MM. The Reply-Charging ID is the Message ID of the original MM.
<u>Sender address</u>	<u>C</u>	The address of the MMS User Agent as used in the MM1 retrieve.RES. This parameter is present in the CDR regardless of address hiding.
<u>Recipient address</u>	<u>M</u>	The address of the recipient MM User Agent of the MM.
<u>Access Correlation</u>	<u>M<sub>o</sub></u>	A unique identifier delivered by the used access network domain of the originator MMS User Agent.
<u>Content type</u>	<u>M</u>	The content type of the MM's content.
<u>MM component list</u>	<u>M<sub>o</sub></u>	The list of media components with volume size.
<u>Message class</u>	<u>C<sub>o</sub></u>	The class of the message (e.g., personal, advertisement, information service) if specified in the MM1 retrieve.RES.
<u>Submission Time</u>	<u>M</u>	The time at which the MM was submitted or forwarded as specified in the MM1 retrieve.RES.
<u>Message size</u>	<u>M<sub>o</sub></u>	The total size of the MM content.
<u>Delivery report Requested</u>	<u>M<sub>o</sub></u>	A request for delivery report as specified in the Delivery Report information element in the MM1 retrieve.RES.
<u>Priority</u>	<u>C<sub>o</sub></u>	The priority (importance) of the message if specified by the originator MMS User Agent if specified in the MM1 retrieve.RES.
<u>Read reply Requested</u>	<u>C<sub>o</sub></u>	A request for read-reply report if specified in the Read Reply information element in the MM1 retrieve.RES.
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	The status code of the MM at the time when the CDR is generated.
<u>Status TextCode</u>	<u>M<sub>o</sub></u>	This field includes a more detailed technical status of the message at the point in time when the CDR is generated.
<u>Reply Deadline</u>	<u>C<sub>o</sub></u>	In case of reply-charging the latest time of submission of a reply granted to the recipient as specified in the MM1 retrieve.RES.
<u>Reply Charging-Size</u>	<u>C<sub>o</sub></u>	In case of reply-charging the maximum size of a reply-MM granted to the recipient as specified in the MM1 retrieve.RES.
<u>Duration Of Transmission</u>	<u>M<sub>o</sub></u>	The time used for transmission of the MM between the User Agent and the MMS Rrelay/S-server.
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	Time of generation of the CDR
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
<u>Record extensions</u>	<u>C<sub>o</sub></u>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

**4.3.6 Acknowledgement CDR (R1A-CDR)**

If enabled, a Recipient MM1 Acknowledgement Charging Data Record (R1RtRs-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives an MM1 acknowledgement.REQ from the recipient MMS User Agent.

**Table 14: Recipient MM1 Acknowledgement record (R1A-CDR)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>Recipient MM1 Acknowledgement record.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the recipient MMS Relay/Server.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>Recipient address</u>	<u>M</u>	<u>The address of the recipient MM User Agent of the MM.</u>
<u>Access Correlation</u>	<u>M<sub>o</sub></u>	<u>A unique identifier delivered by the used access network domain of the originator MMS User Agent.</u>
<u>Report allowed</u>	<u>C</u>	<u>Request to allow or disallow the sending of a delivery report to the MM originator if specified in the MM1 acknowledgement.RES.</u>
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	<u>The status code of the MM at the time when the CDR is generated.</u>
<u>Status Text</u>	<u>M<sub>o</sub></u>	<u>This field includes a more detailed technical status of the message at the point in time when the CDR is generated.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

**4.3.7 Recipient MM4 Delivery report Request CDR (R4DRq-CDR)**

If enabled, a Recipient MM4 Delivery report Request Charging Data Record (R4DRq-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server sends an MM4\_delivery\_report.REQ to the originator MMS Relay/Server.

**Table 15: Recipient MM4 Delivery report Request record (R4DRq-CDR)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>Recipient MM4 Delivery report Request record.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the recipient MMS Relay/Server.</u>
<u>Originator MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the originator MMS Relay/Server.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>3GPP MMS Version</u>	<u>M<sub>o</sub></u>	<u>The MMS version of the recipient MMS Relay/Server.</u>
<u>Originator address</u>	<u>M</u>	<u>The address of the originator MMS User Agent of the MM.</u>
<u>Recipient address</u>	<u>M</u>	<u>The address of the MM recipient of the MM.</u>
<u>MM Date and time</u>	<u>M<sub>o</sub></u>	<u>Date and time the MM was handled (retrieved, expired, rejected, etc.).</u>
<u>Acknowledgement Request</u>	<u>M</u>	<u>Request for MM4_delivery_report.RES</u>
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	<u>The status code of the MM as sent in the MM4_delivery_report.REQ.</u>
<u>Status TextCode</u>	<u>C<sub>o</sub></u>	<u>This field includes the status text as sent in the MM4_delivery_report.REQ corresponding to the MM Status Code.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

**4.3.8 Recipient MM4 Delivery report Response CDR (R4DRs-CDR)**

If enabled, an Recipient MM4 Delivery report Response Charging Data Record (R4DRs-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives an MM4\_delivery\_report.RES from the originator MMS Relay/Server.

**Table 16: Recipient MM4 Delivery report Response record (R4DRs-CDR)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>Recipient MM4 Delivery report Response record.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the recipient MMS Relay/Server.</u>
<u>Originator MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the originator MMS Relay/Server.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>3GPP MMS Version</u>	<u>M<sub>o</sub></u>	<u>The MMS version of the originator MMS Relay/Server.</u>
<u>Request Status Code</u>	<u>M<sub>o</sub></u>	<u>The status code of the MM as received in the MM4_delivery_report.RES.</u>
<u>Status TextCode</u>	<u>C<sub>o</sub></u>	<u>This field includes the status text as received in the MM4_delivery_report.RES corresponding to the Request Status Code.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

**4.3.9 Recipient MM1 Read reply Recipient CDR (R1RR-CDR)**

If enabled, a Recipient MM1 Read reply Recipient Charging Data Record (R1RR-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives an MM1\_read\_reply\_recipient.REQ from the recipient MMS User Agent.

**Table 17: Recipient MM1 Read reply Recipient record (R1RR-CDR)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>Recipient MM1 Read reply Recipient record.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the recipient MMS Relay/Server.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>Recipient address</u>	<u>M</u>	<u>The address of the recipient MM User Agent of the MM.</u>
<u>Originator address</u>	<u>M</u>	<u>The address of the MM originator of the original MM, i.e. the recipient of the read-reply report.</u>
<u>Access Correlation</u>	<u>M<sub>o</sub></u>	<u>A unique identifier delivered by the used access network domain of the originator MMS User Agent.</u>
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	<u>The status code of the MM at the time when the CDR is generated.</u>
<u>Status TextCode</u>	<u>M<sub>o</sub></u>	<u>This field includes a more detailed technical status of the message at the point in time when the CDR is generated.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

**4.3.10 Recipient MM4 Read reply report Request CDR (R4RRq-CDR)**

If enabled, a Recipient MM4 Read reply report Request Charging Data Record (R4RRq-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server sends an MM4\_read\_reply\_report.REQ to the originator MMS Relay/Server.

**Table 18: Recipient MM4 Read reply report Request (R4RRq-CDR)**

<b>Field</b>	<b>Category</b>	<b>Description</b>
Record Type	M	Recipient MM4 read reply report Request record.
Recipient MMS Relay/Server Address	M	IP address or domain name of the recipient MMS Relay/Server.
Originator MMS Relay/Server Address	M	IP address or domain name of the originator MMS Relay/Server.
Message ID	M	The MM identification provided by the originator MMS Relay/Server.
3GPP MMS Version	M <sub>o</sub>	The MMS version of the recipient MMS Relay/Server.
Originator address	M	The address of the originator MMS User Agent of the MM.
Recipient address	M	The address of the MM recipient of the MM.
MM Date and time	M <sub>o</sub>	Date and time the MM was handled (retrieved, expired, rejected, etc.).
Acknowledgement Request	M	Request for MM4 read reply report.RES
MM Status Code	M <sub>o</sub>	The status code of the MM at the time when the CDR is generated.
Status Text	M <sub>o</sub>	This field includes a more detailed technical status of the message at the point in time when the CDR is generated.
Record Time Stamp	M <sub>o</sub>	Time of generation of the CDR
Local Record Sequence Number	M <sub>o</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	C <sub>o</sub>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

#### 4.3.11 Recipient MM4 Read reply report Response CDR (R4RRs-CDR)

If enabled, an Recipient MM4 Read reply report Response Charging Data Record (R4RRs-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives an MM4 read\_reply\_report.RES from the originator MMS Relay/Server.

**Table 19: Recipient MM4 DeliveryRead reply report Response record (R4DRRs-CDR)**

<b>Field</b>	<b>Category</b>	<b>Description</b>
Record Type	M	Recipient MM4 Read reply report Response record.
Recipient MMS Relay/Server Address	M	IP address or domain name of the recipient MMS Relay/Server.
Originator MMS Relay/Server Address	M	IP address or domain name of the originator MMS Relay/Server.
Message ID	M	The MM identification provided by the originator MMS Relay/Server.
3GPP MMS Version	M <sub>o</sub>	The MMS version of the originator MMS Relay/Server.
Request Status Code	M <sub>o</sub>	The status code of the MM as received in the MM4 read_reply_report.RES.
Status Text	C <sub>o</sub>	This field includes a more detailed technical status if received in the MM4 read_reply_report.RES corresponding to the Request Status Code.
Record Time Stamp	M <sub>o</sub>	Time of generation of the CDR
Local Record Sequence Number	M <sub>o</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	C <sub>o</sub>	A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

#### 4.3.12 Recipient MM Deletion CDR (RMD-CDR)

If enabled, a Recipient MM Deletion Charging Data Record (RMD-CDR) shall be produced in the recipient MMS Relay/Server if and when:

- the recipient MMS Relay/Server decides to abandon processing of the MM at any point after receiving the corresponding MM4 forward.REQ; or,
- the recipient MMS Relay/Server decides to delete the MM because of expiry of storage time, which may either be indicated in the submit request or governed by operator procedure(e.g. after successful MM delivery).

Abandoning the processing of the MM implies that there remains no knowledge of the MM in the recipient MMS Relay/Server.

The status code indicates the precise reason for abandoning or deleting the MM with respect to the MMS transactions specified in [4].

A special case is where the recipient MMS Relay/Server is also the forwarding MMS Relay/Server. In this case only the Originator MM Deletion CDR specified in subsection 4.2.8 is required.

**Table 20: Recipient MM Deletion record (RMD-CDR)**

<b><u>Field</u></b>	<b><u>Categor</u></b>	<b><u>Description</u></b>
<u>Record Type</u>	<u>M</u>	<u>Recipient MM Deletion record.</u>
<u>Originator MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the originator MMS Relay/Server.</u>
<u>Recipient MMS Relay/Server Address</u>	<u>M<sub>o</sub></u>	<u>IP address or domain name of the recipient MMS Relay/Server.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>Message size</u>	<u>M<sub>o</sub></u>	<u>The total size of the MM content.</u>
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	<u>The status code of the MM at the time when the CDR is generated.</u>
<u>Status Text</u>	<u>M<sub>o</sub></u>	<u>This field includes a more detailed technical status of delivering the message.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR.</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

## 4.4 Service records for forwarding MMS Relay/Server

### 4.3.1 Forwarding CDR

If enabled, a Forwarding Charging Data Record (F-CDR) shall be produced in the forwarding MMS Relay/Server on receipt of an MM1\_forward.REQ if and when the forwarding MMS Relay/Server responds with an MM1\_forward.RES indicating acceptance.

**Table 21: MM Forwarding CDR (F-CDR)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	<u>MM Forwarding record.</u>
<u>Forwarding MMS Relay/Server Address</u>	<u>M</u>	<u>IP address or domain name of the forwarding MMS Relay/Server.</u>
<u>Message ID</u>	<u>M</u>	<u>The MM identification provided by the originator MMS Relay/Server.</u>
<u>Forwarding address</u>	<u>M</u>	<u>One or more addresses of the forwarding MMS User Agent (i.e., of the MMS User Agent that has sent the MM1_forward.REQ).</u>
<u>Recipients address list</u>	<u>M</u>	<u>The address(es) of the recipient MMS User Agent(s) of the forwarded MM. Multiple addresses are possible.</u>
<u>Charge Information</u>	<u>M<sub>o</sub></u>	<u>The charge indication and charge type.</u>
<u>Time of Expiry</u>	<u>C<sub>o</sub></u>	<u>The desired date of expiry or duration of time prior to expiry for the MM if specified by the forwarding MMS User Agent.</u>
<u>Earliest Time Of Delivery</u>	<u>C<sub>o</sub></u>	<u>This field contains either the earliest time to deliver the MM or the number of seconds to wait before delivering the MM.</u>
<u>Delivery Report Requested</u>	<u>M<sub>o</sub></u>	<u>This field indicates whether a delivery report has been requested by the forwarding MMS User Agent or not.</u>
<u>Read reply requested</u>	<u>M<sub>o</sub></u>	<u>A request for read reply report as specified in the MM1_forward.REQ.</u>
<u>Message reference</u>	<u>M</u>	<u>A reference, e.g., URI, for the MM as specified in the MM1_forward.REQ.</u>
<u>MM Status Code</u>	<u>M<sub>o</sub></u>	<u>The status code of the MM at the time when the CDR is generated.</u>
<u>Status Text</u>	<u>M<sub>o</sub></u>	<u>This field includes a more detailed technical status of the message at the point in time when the CDR is generated.</u>
<u>Record Time Stamp</u>	<u>M<sub>o</sub></u>	<u>Time of generation of the CDR.</u>
<u>Local Record Sequence Number</u>	<u>M<sub>o</sub></u>	<u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u>
<u>Record extensions</u>	<u>C<sub>o</sub></u>	<u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u>

## 5 Parameter Description

### 5.1 3GPP MMS Version

The MMS version of the originator MMS Relay/Server as defined in TS 23.140[4].

### 5.2 Access Correlation

If the parameter is provided and is not an empty string, it is a unique identifier delivered by the used access network domain of the originator/sending or recipient/receiving MMS User Agent. It may be used for correlation of the MMS CDRs with the corresponding MSC server CDRs in CS domain or GSN CDRs in PS domain. It is an empty string if the parameter is not delivered by the access network.

### 5.3 Acknowledgement Request

This boolean value indicates whether (value TRUE) or not (value FALSE) a response has been requested in a request at the MM4 reference point.

### 5.4 Charge Information

This field consists of two parts, the charge indicator and the charge type. The charge indicator (charge/no charge) should be defined by the MMS Relay/Server.

The charge types are as follows:

- Normal
- Prepaid

- Reply: An originator of the MMS may be take over the charge for the sending of a reply-MM to their submitted MM from the recipient(s). Therefore the originator MMS Relay/Server should mark the MM as no charge (reply-charged). The originator's MMSE could either accept the user's settings for charge type "reply" or not and should be able to convey feedback to the originator.

## 5.5 Content Type

The Content Type of the MM as defined in [TS 23.140\[4\]](#).

## 5.6 ~~Delivery Report AckRequested/Delivery Result~~

~~This is an indication of type boolean whether (value TRUE) or not (value FALSE) the originator/forwarding MMS User Agent has requested a delivery report in the MM1\_submit.REQ/MM1\_forward.REQ.~~

~~This is the indication in the MMSR-CDR of the recipient MMS User Agent that a delivery report has been requested by the originator MMS User Agent. This field in the MMSO\_CDR contains the result of the MM delivery to the recipient.~~

## ~~5.6 Delivery Time~~

~~The delivery time field contains the time stamp relevant for the handling of the MM by the recipient MMS Relay/Server (read, deleted without being read, etc.). The time stamp includes at a minimum: date, hour, minute and second.~~

## ~~5.7 Delivery Type~~

~~This field contains an appropriate status value to the delivered MM.~~

## ~~5.7 Duration of Transmission/Storage~~

~~Thise fields contains the relevant time in seconds. The Duration of Transmission is the time from the beginning to the end of the MM transfer between the MMS uUser aAgent and the MMS Rrelay/S-server; e.g. for streaming purposes.~~

~~Note: The CDRs purposely do not contain any information about the duration of storage on the MMS Relay/Server. If such information is required it can be calculated by post-processing systems from the CDR timestamps. For instance, the total duration of storage on the originator MMS Relay/Server could be calculated by taking the difference between the 'Record Time Stamp' of the OIS-CDR and the 'Record Time Stamp' of the OMD-CDR.~~

## ~~5.9 Duration of Storage~~

~~These fields contain the relevant time in seconds. The Duration of storage is the time interval while the message is temporarily and/or persistently stored in the MMS Relay/Server.~~

## 5.8 Earliest Time of Delivery

This field contains either the earliest time to deliver message or the number of seconds to wait before delivering the message.

## 5.9 Forward Counter

A Counter indicating the number of times the particular MM was forwarded as defined in [TS 23.140\[4\]](#).

## 5.10 Forwarding Address

This field contains a forwarding MMS User Agent address. The MMS supports the use of E-Mail addresses (RFC 822) [5], MSISDN (E.164) or IP addresses.



## ~~Forwarded Message Indicator~~

~~This field shall indicate that the original MM was forwarded. If this field is missing the message shall be treated as a regular message.~~

### 5.11 Forwarding MMS Relay/Server Address

This field contains one or more addresses of the forwarding MMS Relay/Server. The address is either an IP address or a domain name.

### 5.12 Local Record Sequence Number

This field includes a unique record number created by this node. The number is allocated sequentially including all CDR types. The number is unique within one node, which is identified either by field Node ID or by record-dependent MMS Relay/Server.

The field can be used e.g. to identify missing records in post processing system.

### 5.13 Message Class

A class of message such as personal, advertisement, information service etc. For more information see TS 23.140[4].

### 5.14 Message ID/Reply Message ID

This field specifies the MM Message ID of the MM as defined in TS 23.140[4]. The concrete syntax of this MM Message ID is given by the body of the field introduced by the string "X-Mms-Message-ID:" in the concrete syntax of the message MM4 Forward.REQ. All CDRs pertaining to the same MM must employ the same value of this parameter, i.e. the value initially assigned by the originator MMS Relay/Server upon submission of the MM by the Originator MMS User Agent. The MMS Relay/Server shall provide an identification for a message, which it routed forward or has accepted for delivery. The MM Message ID is mapped to a corresponding STD-11 [5] "Message-ID" header. Each MM message must have a globally unique messageID, which is carried in the "Message-ID" header. If a Forwarded Message Indicator is present the Message ID from the original MM must be preserved.

### ~~5.13 Message Class~~

~~A class of message such as personal, advertisement, information service etc. For more information see TS 23.140[4].~~

### ~~5.15.15 Message Reference~~

~~A reference as specified in TS 23.140[4], e.g. URI, for the MM that can be used for retrieving the MM from the recipient MMS Relay/Server.~~

### 5.16 Message Size

The message size includes the number of octets of the subject information element and of all media components of the transmitted MM except the presentation description component.

Editor's Note: To be aligned with the pending CR T2-020564 during the MM transmission.

## ~~Message Type~~

~~A type that consists of one of the following four choices: Notification, Message MM, Delivery Report, Read-Reply. An indication of a message type of TS 23.140[4].~~

## 5.14 MMS Relay Address

This field contains the IP address of the MMS Relay/Server, which has generated the CDR.

## 5.17 MM component list

The MM component list is a set of subject and media components from type of media formats including the size of all elements in octets. For a complete description of media formats that may be supported by MMS, refer to IANA[13].

## 5.18 MM Date and Time

The date and time field contains the time stamp relevant for the handling of the MM by the recipient MMS Relay/Server (read, deleted without being read, etc.). The time-stamp includes at a minimum: date, hour, minute and second.

## 5.19 MM Status Code

This field contains an appropriate status value of the delivered MM, e.g. retrieved, rejected, ...

## 5.20 Originator Address/Recipient Address

This field contains the originator/recipient or forwarding/forwarded MMS User Agent address. The MMS supports the use of E-Mail addresses (RFC 822) [5], MSISDN (E.164) or IP addresses.

## 5.21 Originator MMS Relay/Server Address

This field contains an address of the originator MMS Relay/Server. This address is composed of a mandatory IP address and/or an optional domain name.

## 5.215.22 Priority

The priority (importance) of the message, see TS 23.140[4].

## 5.225.23 Read Reply Requested

A boolean value indicating whether the originator MMS User Agent has requested a read-reply report (value TRUE) or not (value FALSE).

## 5.235.24 Read Status

See TS 23.140[4]; Status of the MM, e.g. Read, Deleted without being read.

## Read Reply Type

This field contains an appropriate status value to the MM

## 5.245.25 Recipient Address

This field contains a recipient MMS User Agent address. The MMS supports the use of E-Mail addresses (RFC 822) [5], MSISDN (E.164) or IP addresses.

### 5.255.26 Recipient MMS Relay/Server Address

This field contains an address of the recipient MMS Relay/Server. This address is composed of a mandatory IP address and/or an optional domain name.

### 5.265.27 Recipients Address List

This field contains a list of recipient MMS User Agent addresses.

### 5.275.28 Record Extensions

The field enables network operators and/or manufacturers to add their own extensions to the standard record definitions.

### 5.285.29 Record Time Stamp

This field indicates the date and time when the CDR was produced.

### 5.295.30 Record Type

The field identifies the type of the record, see TS 32.205[8]. e.g. ~~MMSOS-CDR, MMSOF-CDR, MMSOD-CDR, MMSRR-CDR and MMSRD-CDR.~~

### 5.305.31 Reply Charging

In the Originator MM1 Submission CDR (OIS-CDR) this parameter indicates whether the originator MMS User Agent has requested reply-charging (value TRUE) or not (value FALSE).

Editor's Note: Check if this contains the same information as the 'Charge Information'.

In the Recipient MM1 Notification Request record (R1NRq -CDR) it indicates whether a reply to this particular original MM is free of charge (value TRUE) or not (value FALSE).

### 5.32 Reply Charging ID

This field is present in the CDR only if the MM is a reply-MM to an original MM. The Reply Charging -ID is the Message ID of the original MM.

Editor's Note: Check this is a duplicate parameter as the Message ID.

### 5.325.33 Reply Charging Size

In the Originator MM1 Submission CDR (OIS-CDR), in case of reply-charging, this field indicates the maximum size for reply-MM(s) granted to the recipient(s) as specified by the originator MMS User Agent.

In the Recipient MM1 Notification Request CDR (R1NRq-CDR), in case of reply-charging, this field indicates the maximum size of a reply-MM granted to the recipient as specified in the MM1\_notification.REQ.

### 5.335.34 Reply Deadline

In the Originator MM1 Submission CDR (OIS-CDR), in case of reply-charging, this field indicates the latest time of submission of replies granted to the recipient(s) as specified by the originator MMS User Agent.

In the Recipient MM1 Notification Request CDR (R1NRq-CDR), in case of reply-charging, this field indicates the latest time of submission of a reply granted to the recipient as specified in the MM1\_notification.REQ.

### 5.34 Reply Message ID

This field is present in the CDR if and only if only if the MM is a reply-MM to an original MM. The Reply Message ID is the Message ID of the original MM.

### 5.35 Report allowed

A boolean value indicating, if present whether sending of a delivery report is permitted (value TRUE) or not (value FALSE).

### 5.36 Request Status code

The status of the MM as reflected in the corresponding MM4 message (e.g. error service denied, error network problem, error unsupported message...). For further details see TS 23.140[4].

### 5.375.36 Sender Address

The address of the MMS User Agent as used in the MM1\_notification\_REQ/MM1\_retrieve.RES. This parameter is present in the CDR even if address hiding was requested, resulting in the sender address is not being included in the above messages.

### 5.385.37 Sender Visibility

This boolean value indicates whether the the originator MMS User Agent has requested her address to be hidden from the recipient (value TRUE) or not (value FALSE).

### 5.18 Sequence number

This field includes a unique record number created by this node. The number is allocated sequentially including all CDR types. The field can be used e.g. to identify missing records in post processing system. This field contains a running sequence number employed to link the partial records generated for a particular MM transfer over the air interface only.

### 5.395.38 Status Text Code

This field includes a more detailed technical status of the message at the point in time when the CDR is generated. includes a more detailed technical status for delivery of the message and may contain one of the following causes:

- cause for termination, refer TS 32.205[8].
- cause for record closing, refer TS 32.215[9].

The status code is also extended by MMS specific information.

### 5.405.39 Submission Time

The submission time field contains the time stamps relevant for the submission of the MM. The time-stamp includes a minimum of date, hour, minute and second.

## 5.415.40 Time of Expiry

This field contains the desired date or the number of seconds to expiry of the MM, if specified by the originator MMS User Agent. ~~In case of reply charging, the time of expiry is the latest time of submission of a reply MM.~~

## ~~5.xx Time Stamp Record Time Stamp~~

~~This field indicates the date and time when the CDR was produced.~~

# 6 Charging Data Record Structure

## 6.1 ASN.1 definitions for CDR information

The ASN.1 definitions are based on the charging specific data types within the current 3GPP 32-series, the TS 32.205 for CS domain[8] and TS 32.215 for PS domain[9].

TS32235-DataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0) umts-Operation-Maintenance (3) ts-32-235 (235) informationModel (0) asn1Module (2) version1 (1)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

-- EXPORTS everything

IMPORTS

CallEventRecord, CallEventRecordType, ChargeIndicator, CallDuration, TimeStamp, MSISDN, CallReference, MscNo, ManagementExtensions  
FROM TS32205-DataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0) umts-Operation-Maintenance (3) ts-32-205 (205) informationModel (0) asn1Module (2) version1 (1)}

--  
-- see TS 32.205[8]  
--

ChargingID, IPAddress, GSNAddress, LocalSequenceNumber

FROM TS32215-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-Operation-Maintenance (3) ts-32-215 (215) informationModel (0) asn1Module (2) version1 (1)}

--  
-- see TS 32.215[9]  
--

-----  
--  
-- CALL AND EVENT RECORDS  
--  
-----

MMO1SRecord ::= SET

<u>recordType</u>	[0] <u>CallEventRecordType</u> .
<u>originatorMmsRSAddress</u>	[1] <u>MMSRSAddress</u> .
<u>messageID</u>	[2] <u>OCTET STRING</u> .
<u>replyChargingID</u>	[3] <u>OCTET STRING OPTIONAL</u> .
<u>originatorAddress</u>	[4] <u>MMSAgentAddress</u> .
<u>recipientAddresses</u>	[5] <u>MMSAgentAddresses</u> .
<u>accessCorrelation</u>	[6] <u>AccessCorrelation OPTIONAL</u> .
<u>contentType</u>	[7] <u>ContentType</u> .
<u>mmComponentType</u>	[8] <u>MMComponentType OPTIONAL</u> .
<u>messageSize</u>	[9] <u>Data Volume</u> .
<u>messageClass</u>	[10] <u>MessageClass OPTIONAL</u> .
<u>chargeInformation</u>	[11] <u>ChargeInformation OPTIONAL</u> .
<u>submissionTime</u>	[12] <u>TimeStamp OPTIONAL</u> .
<u>timeOfExpiry</u>	[13] <u>WaitTime OPTIONAL</u> .

<u>earliestTimeOfDelivery</u>	[14] <u>WaitTime OPTIONAL</u> .
<u>durationOfTransmission</u>	[15] <u>INTEGER OPTIONAL</u> .
<u>requestStatusCode</u>	[16] <u>RequestStatusCodeType OPTIONAL</u> .
<u>deliveryReportRequested</u>	[17] <u>BOOLEAN OPTIONAL</u> .
<u>replyCharging</u>	[18] <u>BOOLEAN OPTIONAL</u> .
<u>replyDeadline</u>	[19] <u>WaitTime OPTIONAL</u> .
<u>replyChargingSize</u>	[20] <u>DataVolume OPTIONAL</u> .
<u>priority</u>	[21] <u>PriorityType OPTIONAL</u> .
<u>senderVisibility</u>	[22] <u>BOOLEAN OPTIONAL</u> .
<u>readReplyRequested</u>	[23] <u>BOOLEAN OPTIONAL</u> .
<u>statusText</u>	[24] <u>StatusTextType</u> .
<u>recordTimeStamp</u>	[25] <u>TimeStamp</u> .
<u>localSequenceNumber</u>	[26] <u>LocalSequenceNumber OPTIONAL</u> .
<u>recordExtensions</u>	[27] <u>ManagementExtensions OPTIONAL</u> .

}

MMO4FRqRecord ::= SET

{

<u>recordType</u>	[0] <u>CallEventRecordType</u> .
<u>originatorMmsRSAddress</u>	[1] <u>MMSRSAddress</u> .
<u>recipientMmsRSAddress</u>	[2] <u>MMSRSAddress</u> .
<u>messageID</u>	[3] <u>OCTET STRING</u> .
<u>3GPPVersion</u>	[4] <u>OCTET STRING OPTIONAL</u> .
<u>originatorAddress</u>	[5] <u>MMSAgentAddress</u> .
<u>recipientAddresses</u>	[6] <u>MMSAgentAddresses</u> .
<u>contentType</u>	[7] <u>ContentType</u> .
<u>mmComponentType</u>	[8] <u>MMComponentType OPTIONAL</u> .
<u>messageSize</u>	[9] <u>DataVolume</u> .
<u>messageClass</u>	[10] <u>MessageClass OPTIONAL</u> .
<u>submissionTime</u>	[11] <u>TimeStamp</u> .
<u>timeOfExpiry</u>	[12] <u>WaitTime OPTIONAL</u> .
<u>deliveryReportRequested</u>	[13] <u>BOOLEAN</u> .
<u>priority</u>	[14] <u>PriorityType OPTIONAL</u> .
<u>senderVisibility</u>	[15] <u>BOOLEAN</u> .
<u>readReplyRequested</u>	[16] <u>BOOLEAN</u> .
<u>acknowledgementRequest</u>	[17] <u>BOOLEAN</u> .
<u>forwardCounter</u>	[18] <u>INTEGER OPTIONAL</u> .
<u>forwardingAddress</u>	[19] <u>MMSAgentAddresses OPTIONAL</u> .
<u>recordTimeStamp</u>	[20] <u>TimeStamp</u> .
<u>localSequenceNumber</u>	[21] <u>LocalSequenceNumber OPTIONAL</u> .
<u>recordExtensions</u>	[22] <u>ManagementExtensions OPTIONAL</u> .

}

MMO4FRsRecord ::= SET

{

<u>recordType</u>	[0] <u>CallEventRecordType</u> .
<u>originatorMmsRSAddress</u>	[1] <u>MMSRSAddress OPTIONAL</u> .
<u>recipientMmsRSAddress</u>	[2] <u>MMSRSAddress</u> .
<u>messageID</u>	[3] <u>OCTET STRING</u> .
<u>3GPPVersion</u>	[4] <u>OCTET STRING OPTIONAL</u> .
<u>requestStatusCode</u>	[5] <u>RequestStatusCodeType OPTIONAL</u> .
<u>statusText</u>	[6] <u>StatusTextType OPTIONAL</u> .
<u>recordTimeStamp</u>	[7] <u>TimeStamp OPTIONAL</u> .
<u>localSequenceNumber</u>	[8] <u>LocalSequenceNumber OPTIONAL</u> .
<u>recordExtensions</u>	[9] <u>ManagementExtensions OPTIONAL</u> .

}

MMO4DRecord ::= SET

{

<u>recordType</u>	[0] <u>CallEventRecordType</u> .
<u>recipientMmsRSAddress</u>	[1] <u>MMSRSAddress OPTIONAL</u> .
<u>originatorMmsRSAddress</u>	[2] <u>MMSRSAddress OPTIONAL</u> .
<u>messageID</u>	[3] <u>OCTET STRING</u> .
<u>3GPPVersion</u>	[4] <u>OCTET STRING OPTIONAL</u> .
<u>originatorAddress</u>	[5] <u>MMSAgentAddress OPTIONAL</u> .
<u>recipientAddress</u>	[6] <u>MMSAgentAddress</u> .
<u>mmDateAndTime</u>	[7] <u>TimeStamp</u> .
<u>mmStatusCode</u>	[8] <u>MMStatusCodeType</u> .
<u>statusText</u>	[9] <u>StatusTextType OPTIONAL</u> .
<u>recordTimeStamp</u>	[10] <u>TimeStamp OPTIONAL</u> .
<u>localSequenceNumber</u>	[11] <u>LocalSequenceNumber OPTIONAL</u> .
<u>recordExtensions</u>	[12] <u>ManagementExtensions OPTIONAL</u> .

}

MMO1DRecord ::= SET

{

<u>recordType</u>	[0] <u>CallEventRecordType</u> .
<u>recipientMmsRSAddress</u>	[1] <u>MMSRSAddress OPTIONAL</u> .

<u>originatorMmsRSAddress</u>	[2] MMSRSAddress OPTIONAL,
<u>accessCorrelation</u>	[3] AccessCorrelation OPTIONAL,
<u>messageID</u>	[4] OCTET STRING,
<u>3GPPVersion</u>	[5] OCTET STRING OPTIONAL,
<u>originatorAddress</u>	[6] MMSAgentAddress OPTIONAL,
<u>recipientAddress</u>	[7] MMSAgentAddress,
<u>mmStatusCode</u>	[8] MMSStatusCodeType OPTIONAL,
<u>statusText</u>	[9] StatusTextType OPTIONAL,
<u>recordTimeStamp</u>	[10] TimeStamp OPTIONAL,
<u>localSequenceNumber</u>	[11] LocalSequenceNumber OPTIONAL,
<u>recordExtensions</u>	[12] ManagementExtensions OPTIONAL

}

MMO4RRecord ::= SET

<u>recordType</u>	[0] CallEventRecordType,
<u>recipientMmsRSAddress</u>	[1] MMSRSAddress OPTIONAL,
<u>originatorMmsRSAddress</u>	[2] MMSRSAddress OPTIONAL,
<u>messageID</u>	[3] OCTET STRING,
<u>3GPPVersion</u>	[4] OCTET STRING OPTIONAL,
<u>originatorAddress</u>	[5] MMSAgentAddress OPTIONAL,
<u>recipientAddresses</u>	[6] MMSAgentAddresses OPTIONAL,
<u>mmDateAndTime</u>	[7] TimeStamp OPTIONAL,
<u>acknowledgementRequest</u>	[8] BOOLEAN,
<u>readStatus</u>	[9] MMSStatusCodeType OPTIONAL,
<u>statusText</u>	[10] StatusTextType OPTIONAL,
<u>recordTimeStamp</u>	[11] TimeStamp OPTIONAL,
<u>localSequenceNumber</u>	[12] LocalSequenceNumber OPTIONAL,
<u>recordExtensions</u>	[13] ManagementExtensions OPTIONAL

}

MMO1Rrecord ::= SET

<u>recordType</u>	[0] CallEventRecordType,
<u>recipientMmsRSAddress</u>	[1] MMSRSAddress OPTIONAL,
<u>originatorMmsRSAddress</u>	[2] MMSRSAddress OPTIONAL,
<u>accessCorrelation</u>	[3] AccessCorrelation OPTIONAL,
<u>messageID</u>	[4] OCTET STRING,
<u>3GPPVersion</u>	[5] OCTET STRING OPTIONAL,
<u>originatorAddress</u>	[6] MMSAgentAddress OPTIONAL,
<u>recipientAddress</u>	[7] MMSAgentAddress OPTIONAL,
<u>readStatus</u>	[8] MMSStatusCodeType OPTIONAL,
<u>recordTimeStamp</u>	[9] TimeStamp OPTIONAL,
<u>localSequenceNumber</u>	[10] LocalSequenceNumber OPTIONAL,
<u>recordExtensions</u>	[11] ManagementExtensions OPTIONAL

}

MMOMDRecord ::= SET

<u>recordType</u>	[0] CallEventRecordType,
<u>originatorMmsRSAddress</u>	[1] MMSRSAddress OPTIONAL,
<u>recipientMmsRSAddress</u>	[2] MMSRSAddress OPTIONAL,
<u>messageID</u>	[3] OCTET STRING,
<u>messageSize</u>	[4] DataVolume OPTIONAL,
<u>mmStatusCode</u>	[5] MMSStatusCodeType OPTIONAL,
<u>statusText</u>	[6] StatusTextType OPTIONAL,
<u>recordTimeStamp</u>	[7] TimeStamp OPTIONAL,
<u>localSequenceNumber</u>	[8] LocalSequenceNumber OPTIONAL,
<u>recordExtensions</u>	[9] ManagementExtensions OPTIONAL

}

MMR4FRecord ::= SET

<u>recordType</u>	[0] CallEventRecordType,
<u>recipientMmsRSAddress</u>	[1] MMSRSAddress,
<u>originatorMmsRSAddress</u>	[2] MMSRSAddress,
<u>messageID</u>	[3] OCTET STRING,
<u>3GPPVersion</u>	[4] OCTET STRING OPTIONAL,
<u>originatorAddress</u>	[5] MMSAgentAddress,
<u>recipientAddresses</u>	[6] MMSAgentAddresses,
<u>contentType</u>	[7] ContentType,
<u>mmComponentType</u>	[8] MMComponentType OPTIONAL,
<u>messageSize</u>	[9] DataVolume,
<u>messageClass</u>	[10] MessageClass OPTIONAL,
<u>submissionTime</u>	[11] TimeStamp,
<u>timeOfExpiry</u>	[12] WaitTime OPTIONAL,

<u>deliveryReportRequested</u>	[13] BOOLEAN
<u>priority</u>	[14] PriorityType OPTIONAL
<u>senderVisibility</u>	[15] BOOLEAN
<u>readReplyRequested</u>	[16] BOOLEAN
<u>requestStatusCode</u>	[17] RequestStatusCodeType
<u>statusText</u>	[18] StatusTextType
<u>acknowledgementRequest</u>	[19] BOOLEAN
<u>forwardCounter</u>	[20] INTEGER OPTIONAL
<u>forwardingAddress</u>	[21] MMSAgentAddresses OPTIONAL
<u>recordTimeStamp</u>	[22] TimeStamp
<u>localSequenceNumber</u>	[23] LocalSequenceNumber OPTIONAL
<u>recordExtensions</u>	[24] ManagementExtensions OPTIONAL

}

MMR1NrqRecord ::= SET

<u>recordType</u>	[0] CallEventRecordType
<u>recipientMmsRSAddress</u>	[1] MMSRSAddress
<u>messageID</u>	[2] OCTET STRING
<u>replyChargingID</u>	[3] OCTET STRING OPTIONAL
<u>senderAddress</u>	[4] MMSAgentAddress
<u>recipientAddress</u>	[5] MMSAgentAddress
<u>accessCorrelation</u>	[6] AccessCorrelation OPTIONAL
<u>messageClass</u>	[7] MessageClass OPTIONAL
<u>mmComponentType</u>	[8] MMComponentType OPTIONAL
<u>messageSize</u>	[9] Data Volume
<u>timeOfExpiry</u>	[10] WaitTime OPTIONAL
<u>messageReference</u>	[11] OCTET STRING
<u>deliveryReportRequested</u>	[12] BOOLEAN OPTIONAL
<u>replyCharging</u>	[13] BOOLEAN OPTIONAL
<u>replyDeadline</u>	[14] WaitTime OPTIONAL
<u>replyChargingSize</u>	[15] Data Volume OPTIONAL
<u>mmStatusCode</u>	[16] MMStatusCodeType OPTIONAL
<u>statusText</u>	[17] StatusTextType OPTIONAL
<u>recordTimeStamp</u>	[18] TimeStamp OPTIONAL
<u>localSequenceNumber</u>	[19] LocalSequenceNumber OPTIONAL
<u>recordExtensions</u>	[20] ManagementExtensions OPTIONAL

}

MMR1NRsRecord ::= SET

<u>recordType</u>	[0] CallEventRecordType
<u>recipientMmsRSAddress</u>	[1] MMSRSAddress
<u>messageID</u>	[2] OCTET STRING
<u>recipientAddress</u>	[3] MMSAgentAddress
<u>accessCorrelation</u>	[4] AccessCorrelation OPTIONAL
<u>reportAllowed</u>	[5] BOOLEAN OPTIONAL
<u>mmStatusCode</u>	[6] MMStatusCodeType OPTIONAL
<u>statusText</u>	[7] StatusTextType OPTIONAL
<u>recordTimeStamp</u>	[8] TimeStamp OPTIONAL
<u>localSequenceNumber</u>	[9] LocalSequenceNumber OPTIONAL
<u>recordExtensions</u>	[10] ManagementExtensions OPTIONAL

}

MMR1RtRqRecord ::= SET

<u>recordType</u>	[0] CallEventRecordType
<u>recipientMmsRSAddress</u>	[1] MMSRSAddress
<u>messageID</u>	[2] OCTET STRING
<u>originatorAddress</u>	[3] MMSAgentAddress
<u>recipientAddress</u>	[4] MMSAgentAddress
<u>accessCorrelation</u>	[5] AccessCorrelation OPTIONAL
<u>messageReference</u>	[6] OCTET STRING
<u>mmStatusCode</u>	[7] MMStatusCodeType OPTIONAL
<u>statusText</u>	[8] StatusTextType OPTIONAL
<u>recordTimeStamp</u>	[9] TimeStamp OPTIONAL
<u>localSequenceNumber</u>	[10] LocalSequenceNumber OPTIONAL
<u>recordExtensions</u>	[11] ManagementExtensions OPTIONAL

}

MMR1RtRsRecord ::= SET

<u>recordType</u>	[0] CallEventRecordType
<u>recipientMmsRSAddress</u>	[1] MMSRSAddress
<u>messageID</u>	[2] OCTET STRING
<u>replyChargingID</u>	[3] OCTET STRING OPTIONAL
<u>senderAddress</u>	[4] MMSAgentAddress OPTIONAL



```

recipientAddress [5] MMSAgentAddress,
accessCorrelation [6] AccessCorrelation OPTIONAL,
contentType [7] ContentType,
mmComponentType [8] MMComponentType OPTIONAL,
messageClass [9] MessageClass OPTIONAL,
submissionTime [10] TimeStamp,
messageSize [11] DataVolume OPTIONAL,
deliveryReportRequested [12] BOOLEAN OPTIONAL,
priority [13] PriorityType OPTIONAL,
readReplyRequested [14] BOOLEAN OPTIONAL,
mmStatusCode [15] MMStatusCodeType OPTIONAL,
statusText [16] StatusTextType OPTIONAL,
replyDeadline [17] WaitTime OPTIONAL,
replyChargingSize [18] DataVolume OPTIONAL,
durationOfTransmission [19] INTEGER OPTIONAL,
timeOfExpiry [20] WaitTime OPTIONAL,
recordTimeStamp [21] TimeStamp OPTIONAL,
localSequenceNumber [22] LocalSequenceNumber OPTIONAL,
recordExtensions [23] ManagementExtensions OPTIONAL
}

MMR1ARecord ::= SET
{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress,
messageID [2] OCTET STRING,
recipientAddress [3] MMSAgentAddress,
accessCorrelation [4] AccessCorrelation OPTIONAL,
reportAllowed [5] BOOLEAN OPTIONAL,
mmStatusCode [6] MMStatusCodeType OPTIONAL,
statusText [7] StatusTextType OPTIONAL,
recordTimeStamp [8] TimeStamp OPTIONAL,
localSequenceNumber [9] LocalSequenceNumber OPTIONAL,
recordExtensions [10] ManagementExtensions OPTIONAL
}

MMR4DRqRecord ::= SET
{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress,
originatorMmsRSAddress [2] MMSRSAddress,
messageID [3] OCTET STRING,
3GPPVersion [4] OCTET STRING OPTIONAL,
originatorAddress [5] MMSAgentAddress,
recipientAddress [6] MMSAgentAddress,
mmDateAndTime [7] TimeStamp OPTIONAL,
acknowledgementRequest [8] BOOLEAN,
mmStatusCode [9] MMStatusCodeType OPTIONAL,
statusText [10] StatusTextType OPTIONAL,
recordTimeStamp [11] TimeStamp OPTIONAL,
localSequenceNumber [12] LocalSequenceNumber OPTIONAL,
recordExtensions [13] ManagementExtensions OPTIONAL
}

MMR4DRsRecord ::= SET
{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress,
originatorMmsRSAddress [3] MMSRSAddress,
messageID [4] OCTET STRING,
3GPPVersion [5] OCTET STRING OPTIONAL,
requestStatusCode [6] RequestStatusCodeType OPTIONAL,
statusText [7] StatusTextType OPTIONAL,
recordTimeStamp [8] TimeStamp OPTIONAL,
localSequenceNumber [9] LocalSequenceNumber OPTIONAL,
recordExtensions [10] ManagementExtensions OPTIONAL
}

MMR1RRRecord ::= SET
{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress,
messageID [3] OCTET STRING,
recipientAddress [4] MMSAgentAddress,
originatorAddress [5] MMSAgentAddress,
accessCorrelation [6] AccessCorrelation OPTIONAL,
mmStatusCode [7] MMStatusCodeType OPTIONAL,

```

```

statusText [8] StatusTextType OPTIONAL,
recordTimeStamp [9] TimeStamp OPTIONAL,
localSequenceNumber [10] LocalSequenceNumber OPTIONAL,
recordExtensions [11] ManagementExtensions OPTIONAL
}

```

MMR4RRqRecord ::= SET

```

{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress,
originatorMmsRSAddress [2] MMSRSAddress,
messageID [3] OCTET STRING,
3GPPVersion [4] OCTET STRING OPTIONAL,
originatorAddress [5] MMSAgentAddress,
recipientAddress [6] MMSAgentAddress,
mmDateAndTime [7] TimeStamp OPTIONAL,
acknowledgementRequest [8] BOOLEAN,
mmStatusCode [9] MMStatusCodeType OPTIONAL,
statusText [10] StatusTextType OPTIONAL,
recordTimeStamp [11] TimeStamp OPTIONAL,
localSequenceNumber [12] LocalSequenceNumber OPTIONAL,
recordExtensions [13] ManagementExtensions OPTIONAL
}

```

MMR4RRsRecord ::= SET

```

{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress,
originatorMmsRSAddress [2] MMSRSAddress,
messageID [3] OCTET STRING,
3GPPVersion [4] OCTET STRING OPTIONAL,
requestStatusCode [5] RequestStatusCodeType OPTIONAL,
statusText [6] StatusTextType OPTIONAL,
recordTimeStamp [7] TimeStamp OPTIONAL,
localSequenceNumber [8] LocalSequenceNumber OPTIONAL,
recordExtensions [9] ManagementExtensions OPTIONAL
}

```

MMRMDRecord ::= SET

```

{
recordType [0] CallEventRecordType,
originatorMmsRSAddress [1] MMSRSAddress,
recipientMmsRSAddress [2] MMSRSAddress OPTIONAL,
messageID [3] OCTET STRING,
messageSize [4] Data Volume,
mmStatusCode [5] MMStatusCodeType OPTIONAL,
statusText [6] StatusTextType OPTIONAL,
recordTimeStamp [7] TimeStamp OPTIONAL,
localSequenceNumber [8] LocalSequenceNumber OPTIONAL,
recordExtensions [9] ManagementExtensions OPTIONAL
}

```

MMFRecord ::= SET

```

{
recordType [0] CallEventRecordType,
forwardingMmsRSAddress [1] MMSRSAddress,
messageID [2] OCTET STRING,
forwardingAddress [3] MMSAgentAddress,
recipientAddresses [4] MMSAgentAddresses,
chargeInformation [5] ChargeInformation OPTIONAL,
timeOfExpiry [6] WaitTime OPTIONAL,
earliestTimeOfDelivery [7] WaitTime OPTIONAL,
deliveryReportRequested [8] BOOLEAN OPTIONAL,
readReplyRequested [9] BOOLEAN OPTIONAL,
messageReference [10] OCTET STRING,
mmStatusCode [11] MMStatusCodeType OPTIONAL,
statusText [12] StatusTextType OPTIONAL,
recordTimeStamp [13] TimeStamp OPTIONAL,
localSequenceNumber [14] LocalSequenceNumber OPTIONAL,
recordExtensions [15] ManagementExtensions OPTIONAL
}

```

```

-----
--
-- COMMON DATA TYPES
--
-----

```

AccessCorrelation ::= CHOICE

```
{
  circuitSwitched [0] CircuitSwitchedAccess,
  packetSwitched [1] PacketSwitchedAccess
}
```

ChargeInformation ::= SEQUENCE

```
{
  chargeindication [0] ChargeIndicator,
  chargetype [1] ChargeType
}
```

ChargeType ::= ENUMERATED

```
{
  normal (0),
  pre-paid (1),
  reply (2)
}
```

CircuitSwitchedAccess ::= SEQUENCE

```
{
  mSCIdentifier [0] MscNo,
  callReferenceNumber [1] CallReference
}
```

ContentType ::= OCTET STRING

MMComponentType ::= SEQUENCE

```
{
  subject [0] SubjectComponent,
  media [1] MediaComponents
}
```

DataVolume ::= INTEGER

```
--
-- The volume of data transferred in octets.
--
```

MMStatusCodeType ::= ENUMERATED

```
{
  retrieved (0),
  forwarded (1),
  expired (2),
  rejected (3),
  deferred (4),
  unrecognised (5)
}
```

DeltaSeconds ::= OCTET STRING[8]

MediaComponent = SEQUENCE

```
{
  mediaType [0] OCTET STRING,
  mediaSize [1] DataVolume
}
```

MediaComponents = Set of MediaComponent

MessageType ::= ENUMERATED

```
{
  notification (0),
  message-MM (1),
  delivery-report (2),
  read-reply (3)
}
```

MessageClass ::= ENUMERATED

```
{
  personal (0),
  advertisement (1),
  information-service (2)
}
```

MMSAgentAddress ::= SEQUENCE-- usage of SEQUENCE instead of CHOICE allows several address types to be present at the same time

```
{
  eMail-address [0] OCTET STRING,
  mSISDN [1] MSISDN OPTIONAL,
}
```

```

    ipAddress [2] IPADDRESS OPTIONAL
  }

MMSAgentAddresses ::= SET OF MMSAgentAddress

MMSRSAddress ::= SEQUENCE -- usage of SEQUENCE instead of CHOICE allows both address types to be present at the same time
{
  domainName [0] OCTET STRING OPTIONAL,
  ipAddress [2] IPADDRESS OPTIONAL
}

PacketSwitchedAccess ::= SEQUENCE
{
  gSNAddress [0] GSNADDRESS,
  chargingID [1] CHARGINGID
}

PriorityType ::= ENUMERATED
{
  low (0),
  normal (1),
  high (2)
}

RequestStatusCodeType ::= OCTET STRING

StatusCode ::= INTEGER
{
  --
  -- cause codes 0 to 15 are defined in TS 32.205[8] as 'CauseForTerm'
  -- (cause for termination) and cause code 16 to 20 are defined
  -- in TS 32.215 [9] as 'CauseForRecClosing'
  --
  normalRelease (0), -- ok
  abnormalRelease (4), -- error unspecified
  serviceDenied (30),
  messageFormatCorrupt (31),
  sendingAddressUnresolved (32),
  messageNotFound (33),
  networkProblem (34),
  contentNotAccepted (35),
  unsupportedMessage (36)
}

StatusTextType ::= OCTET STRING

SubjectComponent ::= SEQUENCE
{
  subjectType [0] OCTET STRING,
  subjectSize [1] DATAVOLUME
}

WaitTime ::= CHOICE
{
  http-date [0] TIMESTAMP,
  delta-seconds [1] DELTASECONDS
}

END

MMSRecord ::= SET
{
  recordType [0] CalLEventRecordType,
  mmsRelayAddress [1] IPADDRESS,
  messageID [2] OCTET STRING,
  replyMessageID [3] OCTET STRING,
  originatorAddress [4] MMSAgentAddress,
  recipientAddress [5] MMSAgentAddresses,
  accessCorrelation [6] AccessCorrelation OPTIONAL,
  contentType [7] ContentType,
  messageSize [8] DATAVOLUME,
  messageType [9] MessageType,
  forwardedMessageIndicator [10] BOOLEAN OPTIONAL,
  messageClass [11] MessageClass,
  chargeInformation [12] ChargeInformation OPTIONAL,
  submissionTime [13] TIMESTAMP,
  timeOfExpiry [14] WaitTime OPTIONAL,
}

```

```

earliestTimeOfDelivery [15] WaitTime OPTIONAL,
durationOfTransmission [16] INTEGER OPTIONAL,
durationOfStorage [17] DeltaSeconds OPTIONAL,
deliveryType [18] DeliveryType OPTIONAL,
deliveryResult [19] BOOLEAN OPTIONAL,
statusCode [20] StatusCode,
sequenceNumber [21] INTEGER OPTIONAL,
recordExtensions [22] ManagementExtensions OPTIONAL
}

```

MMSRRecord ::= SET

```

{
recordType [0] CallEventRecordType,
mmsRelayAddress [1] IPAddress,
messageID [2] OCTET STRING,
originatorAddress [3] MMSAgentAddress,
recipientAddress [4] MMSAgentAddress,
accessCorrelation [5] AccessCorrelation OPTIONAL,
contentType [6] ContentType,
messageSize [7] DataVolume,
messageType [8] MessageType,
messageClass [9] MessageClass,
chargeInformation [10] ChargeInformation OPTIONAL,
deliveryTime [11] TimeStamp,
timeOfExpiry [12] WaitTime OPTIONAL,
durationOfTransmission [13] INTEGER OPTIONAL,
durationOfStorage [14] WaitTime OPTIONAL,
deliveryAckRequest [15] BOOLEAN OPTIONAL,
sequenceNumber [16] INTEGER OPTIONAL,
recordExtensions [17] ManagementExtensions OPTIONAL
}

```

---

COMMON DATA TYPES

---

AccessCorrelation ::= CHOICE

```

{
circuitSwitched [0] CircuitSwitchedAccess,
packetSwitched [1] PacketSwitchedAccess
}

```

ApplicationType ::= ENUMERATED

```

{
octetstream (0)
--
-- Any other unrecognised subtype and unrecognised charset
-- shall be treated as "application/octet-stream".
}

```

AudioType ::= ENUMERATED

```

{
amr (0), AMR; organised in the Bitstream Syntax
mp3 (1), MP3
midi (2), MIDI
aac (3) -- AAC
}

```

ChargeInformation ::= SEQUENCE

```

{
chargeIndication [0] ChargeIndicator,
chargeType [1] ChargeType
}

```

ChargeType ::= ENUMERATED

```

{
normal (0),
pre-paid (1),
reply (2)
}

```

CircuitSwitchedAccess ::= SEQUENCE

```

{

```

```

----- mSCIdentifier ----- [0] MscNo,
----- callReferenceNumber ----- [1] CallReference
}

ContentType ::= SEQUENCE
{
  text_plain [0] TextType,
  image [1] ImageType,
  audio [2] AudioType,
  video [3] VideoType,
  application [4] ApplicationType
}

DataVolume ::= INTEGER
-----
----- The volume of data transfered in octets.
-----

DeliveryType ::= ENUMERATED
{
  retrieved (0),
  forwarded (1),
  expired (2),
  rejected (3),
  deferred (4),
  unrecognised (5)
}

DeltaSeconds ::= OCTET STRING[8]

ImageType ::= ENUMERATED
{
  jpeg (0), ----- Baseline JPEG
  gif (1) ----- GIF 89a
}

MessageType ::= ENUMERATED
{
  notification (0),
  message-MM (1),
  delivery report (2),
  read reply (3)
}

MessageClass ::= ENUMERATED
{
  personal (0),
  advertisement (1),
  information service (2)
}

MMSAgentAddress ::= SEQUENCE
{
  eMail_address [0] OCTET STRING,
  mSISDN [1] MSISDN OPTIONAL,
  iPAddress [2] IPAddress OPTIONAL
}

MMSAgentAddresses ::= SET-OF MMSAgentAddress
PacketSwitchedAccess ::= SEQUENCE
{
  gSNAddress [0] GSNAddress,
  chargingID [1] ChargingID
}

StatusCode ::= INTEGER
{
  -----
  ----- cause codes 0 to 15 are defined in TS 32.205[8] as 'CauseForTerm'
  ----- (cause for termination) and cause code 16 to 20 are defined
  ----- in TS 32.215 [9] as 'CauseForRecClosing'
  -----
  normalRelease (0), ----- ok
  abnormalRelease (4), ----- error unspecified
  serviceDenied (30),
  messageFormatCorrupt (31),
  sendingAddressUnresolved (32),
  messageNotFound (33),
}

```

```

networkProblem (34),
contentNotAccepted (35),
unsupportedMessage (36)
}

TextType ::= ENUMERATED
{
plaintext (0)
}
--
Any character encoding (charset) that contains a subset of the logical characters
in Unicode shall be used (e.g. US ASCII, ISO 8859 1, UTF 8, Shift_JIS, etc.).
}

VideoType ::= ENUMERATED
{
mp4 (0), MP4 file format used
mpeg4 (1), MPEG 4 (Visual Simple Profile, Level 0)
h263base (2), ITU T H.263 baseline
h263prof (3) H.263 profile 3 level 10
}

WaitTime ::= CHOICE
{
http_date [0] TimeStamp,
delta_seconds [1] DeltaSeconds
}

END

```

---

## 7 Charging Data Record Transfer

The generated MMS-CDR in the MMS Relay/Server shall be transferred to the Billing System by the use of FTAM protocol on X.25 or TCP/IP, or FTP or TFTP over TCP/IP. For further details of the use of FTAM see GSM 12.01 [10] and of the use of FTP see [11] and TFTP see [12].

## CHANGE REQUEST

⌘ **32.215 CR 016** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Alignment with 23.271 (LCS stage 2) of CDR definition for LCS in PS domain		
<b>Source:</b>	⌘ SA5		
<b>Work item code:</b>	⌘ OAM-CH	<b>Date:</b>	⌘ 24/05/2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> 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)

<b>Reason for change:</b>	⌘ Introduction of the CDR definitions for LCS
<b>Summary of change:</b>	⌘ In the context of service related charging for LCS the CDRs generated within the SGSN in 2G and 3G configuration are defined within this Tdoc based on the stage 2 service description of LCS in TS 23.271.  There are three situations of LCS to be distinguished: <ol style="list-style-type: none"> <li>1) Mobile Terminated Location request (MT-LR)                      In this case the LR is triggered by an external client. The request is completed with routing info etc. by the GMLC and sent to the SGSN. For privacy reasons there might be a user notification necessary, before the LR is performed. Depending on the capabilities of RAN and MS and the requested accuracy the proper position method is chosen. The result is sent back to SGSN and via GMLC forwarded to the external LCS client.</li> <li>2) Mobile Originated Location Request (MO-LR)                      The MO-LR is initially induced by the MS. This LR may be performed with involvement of an external client, however it is also possible that the location information is not transferred to an GMLC or external LCS client. In both situations there is service-related data that may be collected in the SGSN for allowing the operator billing of this service.</li> <li>3) Network Induced Location Request (NI-LR)                      The network induces this LR, e.g. in case of emergency call. Other applications are possible. When the NI-LR is performed, again specific data is generated which might be collected for billing purpose.</li> </ol> Since the generated data in all of the three cases is not only slightly different it is proposed to introduce three separate kinds of charging records. The service related charging information may be collected and allow the operator more flexibility for billing.
<b>Consequences if not approved:</b>	⌘ No charging for the location service in the packet domain would be possible.



<b>Clauses affected:</b>	⌘	2, 3.2, 4, 5, 6
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘	Correspondent changes are made in the scope of REL-4 in TS 32.215.

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.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.

---

## 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 TS 22.060: "General Packet Radio Service (GPRS); Service description; Stage 1".
- [2] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [3] 3GPP TS 32.200: "Telecommunication management; Charging management; Charging principles".
- [4] 3GPP TS 32.205: "Telecommunication management; Charging management; 3G charging data description for the Circuit Switched (CS) domain".
- [5] 3GPP TS 32.235: "Telecommunication management; Charging management; charging data description for application services".
- [6] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [7] 3GPP TS 23.003: "Numbering, addressing and identification".
- [8] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".
- [9] 3GPP TS 29.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL); CAMEL Application Part (CAP) specification - Phase 3".
- [10] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network protocols - Stage 3".
- [11] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".
- [12] 3GPP TS 32.015: "Telecommunications Management; Charging and billing; 3G call and event data for the Packet Switched (PS) domain".
- [13] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [14] ITU-T Q.767: "Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".
- [15] 3GPP TS 23.040: "Technical realisation of the Short Message Service (SMS)".
- [16] ITU-T X.721: "Information Technology; Open Systems Interconnection; Structure Of Management Information: Definition of management information".
- [17] ISO8824 (90)/X.208 (88): "Information technology; Open System Interconnection; Specification of Abstract Syntax Notation One (ASN.1)".
- [18] ISO8824-1 (94)/X.680 (94): "Information technology; Abstract Syntax Notation One (ASN.1): Specification of Basic Notation".
- [19] IETF RFC 768 (1980): "User Datagram Protocol" (STD 6).
- [20] IETF RFC 793 (1981): "Transmission Control Protocol" (STD 7).
- [21] IETF RFC 791 (1981): "Internet Protocol" (STD 5).

- [22] IETF RFC 792 (1981): "Internet Control Message Protocol" (STD 5).
- [23] 3GPP TS 49.031: "Location Services (LCS); Base Station System Application Part, LCS Extension (BSSAP-LE)".
- [24] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification; Formats and coding".

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in 3GPP TS 21.905 [6] and the following apply:

APN	Access Point Name
BMD	Billing Mediation Device
BS	Billing System
CAMEL	Customised Applications for Mobile network Enhanced Logic
CDR	Charging Data Record (replaces the previous definition of Call Detail Record)
CG	Charging Gateway
CGF	Charging Gateway Function
CI	Cell Identity
CS	Circuit Switched
CSE	CAMEL Service Environment
DRP	Data Record Packet
EM	Element Management
FCI	Furnish Charging Information
FQPC	Fully qualified Partial CDR
G-CDR	GGSN generated- CDR
GGSN	Gateway GPRS Support Node
GPRS	General Packet Radio Service
GSN	GPRS Support Node (either SGSN or GGSN)
GTP	GPRS Tunnelling Protocol
IE	Information Element
IHOSS:OSP	Internet Hosted Octet Stream Service: Octet Stream Protocol
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
LAC	Location Area Code
<u>LR</u>	<u>Location Request</u>
M-CDR	Mobility Management generated-Charging Data Record
MCC	Mobile Country Code (part of IMSI)
ME	Mobile Equipment
<u>MLC</u>	<u>Mobile Location Center</u>
MNC	Mobile Network Code (part of IMSI)
<u>MO-LR</u>	<u>Mobile Originated Location Request</u>
MS	Mobile Station
MSISDN	Mobile Station ISDN number
<u>MT-LR</u>	<u>Mobile Terminated Location Request</u>
<u>NA-ESRD</u>	<u>North American Emergency Service Routing Digits</u>
<u>NA-ESRK</u>	<u>North American Emergency Service Routing Key</u>
NE	Network Element
NI	Network Identifier (part of the APN)
<u>NI-LR</u>	<u>Network Induced Location Request</u>
OI	Operator Identifier (part of the APN)
PDP	Packet Data Protocol, e.g. IP
PDU	Packet Data Unit
PLMN	Public Land Mobile Network

PPP	Point-to-Point Protocol
PS	Packet Switched
PT	Protocol Type (Field in GTP' header)
RAB	Radio Access Bearer
RAC	Routing Area Code
RPC	Reduced Partial CDR
S-CDR	SGSN (PDP context) generated – CDR
SAC	Service Area Code
SGSN	Serving GPRS Support Node
S-SMO-CDR	SGSN delivered Short message Mobile Originated – CDR
S-SMT-CDR	SGSN delivered Short message Mobile Terminated – CDR
TID	Tunnel Identifier
TLV	Type, Length, Value (GTP header format)
TV	Type, Value
UMTS	Universal Mobile Telecommunications System
URA	UTRAN Registration Area
USIM	Universal Subscriber Identity Module
UTRAN	UMTS Terrestrial Radio Access Network

## 4 Record types and contents

<...unmodified text...>

### 4.7 Mobile terminated location request (LCS-MT-CDR)

If enabled, an SGSN Mobile terminated LCS record shall be produced for each mobile a terminated location request is performed via the SGSN. The fields in the record are specified in Table 6. The table provides a brief description of each field. A more elaborate definition of the fields, sorted by the field name in alphabetical order, is provided in Clause 5.

**Table 6: SGSN Mobile terminated LCS record (SGSN-LCS-MT)**

Field	Category	Description
Record Type	M	SGSN Mobile Terminated LCS.
Recording Entity	M	The E.164 number of the SGSN.
LCS Client Type	M	The type of the LCS client that invoked the LR.
LCS Client Identity	M	Further identification of the LCS client.
Served IMSI	M	The IMSI of the subscriber.
Served MSISDN	O <sub>M</sub>	The primary MSISDN of the subscriber.
SGSN Address	O <sub>M</sub>	The IP address of the current SGSN.
Location Type	M	The type of the estimated location.
LCS QoS	C	QoS of the LR, if available.
LCS Priority	C	Priority of the LR, if available
MLC Number	M	The E.164 address of the requesting GMLC
Event Time stamp	M	The time at which the Perform Location Request is sent by the SGSN.
Measurement Duration	O <sub>M</sub>	The duration of proceeding the location request.
Notification To MS User	C	The privacy notification to MS user that was applicable when the LR was invoked, if available.
Privacy Override	C	This parameter indicates the override MS privacy by the LCS client, if available.
Location	O <sub>M</sub>	The LAC and CI when the LR is received.
Routing Area Code	O <sub>M</sub>	The Routing Area Code to which the LCS terminated.
Location Estimate	O <sub>C</sub>	The location estimate for the subscriber if contained in geographic position and the LR was successful.
Positioning Data	C	The positioning method used or attempted, if available.
LCS Cause	C	The result of the LR if any failure or partial success happened.
Diagnostics	C	A more detailed information about the LCS cause if any failure or partial success happened.

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Node ID</u>	<u>O<sub>M</sub></u>	Name of the recording entity.
<u>Local Record Sequence Number</u>	<u>O<sub>M</sub></u>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
<u>Charging Characteristics</u>	<u>M</u>	The Charging Characteristics used by the SGSN. (always use the subscribed CC)
<u>Charging Characteristics Selection Mode</u>	<u>O<sub>M</sub></u>	Holds information about how Charging Characteristics were selected. (only subscribed/home default/visited default)
<u>System Type</u>	<u>O<sub>C</sub></u>	Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface.
<u>Record Extensions</u>	<u>O<sub>C</sub></u>	A set of network operator/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

## 4.8 Mobile originated location request (LCS-MO-CDR)

If enabled, an SGSN Mobile originated LCS record shall be produced for each mobile a originated location request is performed via the SGSN. The fields in the record are specified in Table 7. The table provides a brief description of each field. A more elaborate definition of the fields, sorted by the field name in alphabetical order, is provided in Clause 5.

**Table 7: SGSN Mobile originated LCS record (SGSN-LCS-MO)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	SGSN Mobile Originated LCS.
<u>Recording Entity</u>	<u>M</u>	The E.164 number of the SGSN.
<u>LCS Client Type</u>	<u>C</u>	The type of the LCS client that invoked the LR, if available.
<u>LCS Client Identity</u>	<u>C</u>	Further identification of the LCS client, if available.
<u>Served IMSI</u>	<u>M</u>	The IMSI of the subscriber.
<u>Served MSISDN</u>	<u>O<sub>M</sub></u>	The primary MSISDN of the subscriber.
<u>SGSN Address</u>	<u>O<sub>M</sub></u>	The IP address of the current SGSN.
<u>Location Method</u>	<u>M</u>	The type of the location request.
<u>LCS QoS</u>	<u>C</u>	QoS of the LR, if available.
<u>LCS Priority</u>	<u>O<sub>C</sub></u>	Priority of the LR, if available
<u>MLC Number</u>	<u>C</u>	The E.164 address of the involved GMLC, if applicable.
<u>Event Time stamp</u>	<u>M</u>	The time at which the Perform Location Request is sent by the SGSN.
<u>Measurement Duration</u>	<u>O<sub>M</sub></u>	The duration of proceeding the location request.
<u>Location</u>	<u>O<sub>M</sub></u>	The LAC and CI when the LR is received.
<u>Routing Area Code</u>	<u>O<sub>M</sub></u>	The Routing Area Code from which the LCS originated.
<u>Location Estimate</u>	<u>O<sub>C</sub></u>	The location estimate for the subscriber if contained in geographic position and the LR was successful.
<u>Positioning Data</u>	<u>C</u>	The positioning method used or attempted, if available.
<u>LCS Cause</u>	<u>C</u>	The result of the LR if any failure or partial success happened.
<u>Diagnostics</u>	<u>C</u>	A more detailed information about the LCS cause if any failure or partial success happened.
<u>Node ID</u>	<u>O<sub>M</sub></u>	Name of the recording entity.
<u>Local Record Sequence Number</u>	<u>O<sub>M</sub></u>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
<u>Charging Characteristics</u>	<u>M</u>	The Charging Characteristics flag set used by the SGSN.
<u>Charging Characteristics Selection Mode</u>	<u>O<sub>M</sub></u>	Holds information about how Charging Characteristics were selected.
<u>System Type</u>	<u>O<sub>C</sub></u>	Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface.
<u>Record Extensions</u>	<u>O<sub>C</sub></u>	A set of network operator/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

## 4.9 Network induced location request (LCS-NI-CDR)

If enabled, an SGSN Network induced LCS record shall be produced for each mobile a network induced location request is performed via the SGSN. The fields in the record are specified in Table 8. The table provides a brief description of each field. A more elaborate definition of the fields, sorted by the field name in alphabetical order, is provided in Clause 5.

**Table 8: SGSN Network induced LCS record (SGSN-LCS-NI)**

Field	Category	Description
Record Type	M	SGSN Network Induced LCS.
Recording Entity	M	The E.164 number of the SGSN.
LCS Client Type	C	The type of the LCS client that invoked the LR, if available.
LCS Client Identity	C	Further identification of the LCS client, if available.
Served IMSI	C	The IMSI of the subscriber if supplied.
Served MSISDN	C	The primary MSISDN of the subscriber if supplied.
SGSN Address	O <sub>M</sub>	The IP address of the current SGSN.
Served IMEI	O <sub>C</sub>	The IMEI of the ME, if available.
LCS QoS	C	QoS of the LR, if available.
LCS Priority	C	Priority of the LR, if available.
MLC Number	C	The E.164 address of the involved GMLC, if applicable.
Event Time stamp	M	The time at which the Perform_Location_Request is sent by the SGSN.
Measurement Duration	O <sub>M</sub>	The duration of proceeding the location request.
Location	O <sub>M</sub>	The LAC and CI when the LR is received.
Routing Area Code	O <sub>M</sub>	The Routing Area Code from which the LCS originated.
Location Estimate	O <sub>C</sub>	The location estimate for the subscriber if contained in geographic position and the LR was successful.
Positioning Data	C	The positioning method used or attempted, if available.
LCS Cause	C	The result of the LR if any failure or partial success happened.
Diagnostics	C	A more detailed information about the LCS cause if any failure or partial success happened.
Node ID	O <sub>M</sub>	Name of the recording entity.
Local Record Sequence Number	O <sub>M</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Charging Characteristics	M	The Charging Characteristics flag set used by the SGSN.
Charging Characteristics Selection Mode	O <sub>M</sub>	Holds information about how Charging Characteristics were selected.
System Type	O <sub>C</sub>	Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface.
Record Extensions	O <sub>C</sub>	A set of network operator/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

## 5 Description of Record Fields

This clause contains a brief description of each field of the CDRs described in the previous clause. The fields are listed in alphabetical order according to the field name as specified in one of the five tables above.

<... unmodified text ... >

### 5.10 Diagnostics

This field includes a more detailed technical reason for the releases of the connection refer TS 32.205[4], and may contain one of the following:

— a MAP error from 3GPP TS 29.002 [13]; or

- a Cause from 3GPP TS 29.078 [9]; or
- a Cause from 3GPP TS 24.008 [10]; or
- a Cause from ISUP Q.767 [14].

<... unmodified text ... >

## 5.15 LCS Cause

The LCS Cause parameter provides the reason for an unsuccessful location request according TS 49.031 [23].

## 5.16 LCS Client Identity

This field contains further information on the LCS Client identity:

- Client External ID,
- Client Dialed by MS ID,
- Client Internal ID.

## 5.17 LCS Client Type

This field contains the type of the LCS Client as defined in TS 29.002 [5].

## 5.18 LCS Priority

This parameter gives the priority of the location request as defined in TS 49.031 [23].

## 5.19 LCS QoS

This information element defines the Quality of Service for a location request as defined in TS 49.031 [23].

## 5.2015 List of Traffic Data Volumes

This list includes one or more containers, each includes the following fields:

**Data Volume Uplink, Data Volume Downlink, Change Condition and Change Time.**

**Data Volume, Uplink** and/or **Downlink**, includes the number of octets transmitted during the use of the packet data services in the uplink and/or downlink direction, respectively.

**Change Condition** defines the reason for closing the container (see TS 32.200 [3] Clause 6), such as tariff time change, QoS change or closing of the CDR.

**Change Time** is a time stamp, which defines the moment when the new volume counts are started or the CDR is closed. All the active PDP contexts do not need to have exactly the same time stamp e.g. due to same tariff time change (variance of the time stamps is implementation and traffic load dependent, and is out of the scope of standardisation).

First container includes following optional fields: QoS Requested (not in G-CDR) and QoS Negotiated. In following containers QoS Negotiated is present if previous change condition is "QoS change". In addition to the QoS Negotiated parameter the QoS Requested parameter is present in following containers if the change condition is "QoS change" and the QoS change was initiated by the MS via a PDP context modification procedure.

Table 6 illustrates an example of a list, which has three containers (sets of volume counts) caused by one QoS change and one tariff time change.

**Table 6: Example list of traffic data volumes**

QoS Requested = QoS1 QoS Negotiated = QoS1 Data Volume Uplink = 1 Data Volume Downlink = 2 Change Condition = QoS change Time Stamp = TIME1	QoS Requested = QoS2 (if requested by the MS) QoS Negotiated = QoS2 Data Volume Uplink = 5 Data Volume Downlink = 6 Change Condition = Tariff change Time Stamp = TIME2	Data Volume Uplink = 3 Data Volume Downlink = 4 Change Condition = Record closed Time Stamp = TIME3
--	--	--

First container includes initial QoS values and corresponding volume counts. Second container includes new QoS values and corresponding volume counts before tariff time change. Last container includes volume counts after the tariff time change. The total volume counts can be itemised as shown in Table 7 (tariff1 is used before and tariff2 after the tariff time change):

**Table 7: Itemised list of total volume count corresponding to Table 6**

		Container
QoS1+Tariff1	uplink = 1, downlink = 2	1
QoS2+Tariff1	uplink = 5, downlink = 6	2
QoS2+Tariff2	uplink = 3, downlink = 4	3
QoS1	uplink = 1, downlink = 2	1
QoS2	uplink = 8, downlink = 10	2+3
Tariff1	uplink = 6, downlink = 8	1+2
Tariff2	uplink = 3, downlink = 4	3

The amount of data counted in the GGSN shall be the payload of the GTP-U protocol at the Gn interface. Therefore the data counted already includes the IP PDP bearer protocols i.e. IP or PPP.

The data volume counted in the SGSN is dependent on the system. For GSM SGSN the data volume is the payload of the SDCP PDUs at the Gb interface. For UMTS-SGSN it is the GTP-U PDUs at the Iu-PS interface. Therefore, in both systems, the data counted already includes the overheads of any PDP bearer protocols.

In GSM, in order to avoid that downstream packets transmitted from the old SGSN to the new SGSN at inter SGSN RA update induce the increase of the PDP CDR downstream volume counters in both SGSN the following rules must be followed:

- For PDP contexts using LLC in unacknowledged mode: an SGSN shall update the PDP CDR when the packet has been sent by the SGSN towards the MS;

For PDP contexts using LLC in acknowledged mode, a GSM-SGSN shall only update the PDP CDR at the reception of the acknowledgement by the MS of the correct reception of a downstream packet. In other words, for inter SGSN RA update, the new SGSN shall update the PDP CDR record when a downstream packet sent by the old SGSN is received by the MS and acknowledged by the MS towards the new SGSN through the RA update complete message.

In UMTS, the not transferred downlink data can be accounted for in the S-CDR with "RNC Unsent Downlink Volume" field, which is the data that the RNC has either discarded or forwarded during handover. Data volumes retransmitted (by RLC or LLC) due to poor radio link conditions shall not be counted.

## 5.2116 Local Record Sequence Number

This field includes a unique record number created by this node. The number is allocated sequentially including all CDR types. The number is unique within one node, which is identified either by field Node ID or by record-dependent node address (SGSN address, GGSN address, Recording Entity).

The field can be used e.g. to identify missing records in post processing system.



## 5.22 Location Estimate

The Location Estimate field is providing an estimate of a geographic location of a target MS according to 3GPP TS 29.002 [5].

## 5.23 Location Method

The Location Method identifier refers to the argument of LCS-MOLR that was invoked as defined in 24.080 [24].

## 5.24 Location Type

This field contains the type of the location as defined in TS 29.002 [5].

## 5.25 Measurement Duration

This field contains the duration for the section of the location measurement corresponding to the Perform Location Request and Perform Location Response by the SGSN.

## 5.2617 Message reference

This field contains a unique message reference number allocated by the Mobile Station (MS) when transmitting a short message to the service centre. This field corresponds to the TP-Message-Reference element of the SMS\_SUBMIT PDU defined in 3GPP TS 23.040 [15].

## 5.27 MLC Number

This parameter refers to the ISDN (E.164) number of an GMLC.

## 5.2818 MS Network Capability

This MS Network Capability field contains the MS network capability value of the MS network capability information element of the served MS on PDP context activation or on GPRS attachment as defined in 3GPP TS 24.008 [10].

## 5.2919 Network Initiated PDP Context

This field indicates that PDP context is network initiated. The field is missing in case of mobile activated PDP context.

## 5.3020 Node ID

This field contains an optional, operator configurable, identifier string for the node that had generated the CDR. The Node ID may or may not be the DNS host name of the node.

## 5.31 Notification to MS user

This field contains the privacy notification to MS user that was applicable when the LR was invoked as defined in TS 29.002 [5].

## 5.3221 PDP Type

This field defines the PDP type, e.g. IP, PPP, or IHOSS:OSP (see 3GPP TS 29.060 [8] for exact format).

## 5.33 Positioning Data

This information element is providing positioning data associated with a successful or unsuccessful location attempt for a target MS according TS 49.031 [23].

## 5.34 Privacy Override

This parameter indicates if the LCS client overrides MS privacy when the GMLC and VMSC/SGSN for an MT-LR are in the same country as defined in TS 29.002 [5].

< ... unmodified text ... >

## 5.29 Routing Area Code/Location/Cell Identifier/Change of location

The location information contains a combination of the Routing Area Code (RAC) and an optional Cell Identifier of the routing area and cell in which the served party is currently located. In GSM the Cell Identifier is defined by the Cell Identity (CI) and in UMTS by the Service Area Code (SAC). Any change of location (i.e. Routing Area change) may be recorded in the change of location field including the time at which the change took place.

The location field contains a combination of the location area code (LAC) and cell identity (CI) of the cell in which the served party is currently located.

The change of location field is optional and not required if partial records are generated when the location changes.

The RAC and (optionally) CI are coded according to 3G TS 24.008 [10] and the SAC according 3GPP TS 25.413 [11].

< ... unmodified text ... >

---

# 6 Charging Data Record Structure

## 6.1 ASN.1 definitions for CDR information

The ASN.1 definitions are based on ISO8824 (90)/X.208 (88) [17], which has been superseded by ISO8824-1 (94)/X.680 (94)[18]. This newer version not only includes new features but also removes some that were present in ISO8824 (90)/X.208 (88) [17]. Where possible, the GPRS work would be based on those ASN.1 features to both. However, where necessary, the new features in ISO8824-1 (94)/X.680 (94) [18] be used in some places. ISO8824 (90)/X.208 (88) [17] features that are no longer in ISO8824-1 (94)/X.680 (94) [18] will not be used.

```
TS32215-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-Operation-
Maintenance (3) ts-32-215 (215) informationModel (0) asnlModule (2) version1 (1)}
```

```
DEFINITIONS IMPLICIT TAGS ::=
```

```
BEGIN
```

```
-- EXPORTS everything
```

```
IMPORTS
```

```
CallEventRecordType, CellId, Diagnostics, CallDuration, LCSCause, LCSClientIdentity, LCSQoSInfo,
ManagementExtensions, TimeStamp, MSISDN, LocationAreaCode, MessageReference, PositioningData,
RecordingEntity, SMSResult, LevelOfCAMELService, CalledNumber, CallingNumber, CallEventRecord,
LocationAreaAndCell
```

```
FROM TS32205-DataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0)
umts-Operation-Maintenance (3) ts-32-205 (205) informationModel (0) asnlModule (2) version1 (1)}
```

```
IMSI, IMEI, ISDN-AddressString, LCSClientExternalID, LCSClientInternalID
```

```
FROM MAP-CommonDataTypes { ccitt identified-organization (4) etsi(0) mobileDomain (0) gsm-Network
(1) modules (3) map-CommonDataTypes (18) version6 (6) }
```

```
DefaultGPRS-Handling, DefaultSMS-Handling, NotificationToMSUser, ServiceKey
FROM MAP-MS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-MS-DataTypes (11) version6 (6) }
```

```
CallReferenceNumber
FROM MAP-CH-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-network(1) modules(3) map-CH-DataTypes(13) version6(6)}
```

```
LocationMethod
FROM SS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2)
modules (3) ss-DataTypes (2) version7 (7)}
```

```
Ext-GeographicalInformation, LCSCClientType, LCS-Priority, LocationType
FROM MAP-LCS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-LCS-DataTypes (25) version7 (7)}
```

```
ManagementExtension
FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2 (2) asn1Module(2) 1}
;
```

```
-----
--
-- CALL AND EVENT RECORDS
--
-----
```

```
SGSNMTLCSRecord ::= SET
{
  recordType [0] CallEventRecordType,
  recordingEntity [1] RecordingEntity,
  lcsClientType [2] LCSCClientType,
  lcsClientIdentity [3] LCSCClientIdentity,
  servedIMSI [4] IMSI,
  servedMSISDN [5] MSISDN OPTIONAL,
  sgsnAddress [6] GSNAddress OPTIONAL,
  locationType [7] LocationType,
  lcsQos [8] LCSQoSInfo OPTIONAL,
  lcsPriority [9] LCS-Priority OPTIONAL,
  mlcNumber [10] ISDN-AddressString,
  eventTimeStamp [11] TimeStamp,
  measurementDuration [12] CallDuration OPTIONAL,
  notificationToMSUser [13] NotificationToMSUser OPTIONAL,
  privacyOverride [14] NULL OPTIONAL,
  location [15] LocationAreaAndCell OPTIONAL,
  routingArea [16] RoutingAreaCode OPTIONAL,
  locationEstimate [17] Ext-GeographicalInformation OPTIONAL,
  positioningData [18] PositioningData OPTIONAL,
  lcsCause [19] LCSCause OPTIONAL,
  diagnostics [20] Diagnostics OPTIONAL,
  nodeID [21] NodeID OPTIONAL,
  localSequenceNumber [22] LocalSequenceNumber OPTIONAL,
  chargingCharacteristics [23] ChargingCharacteristics,
  chChSelectionMode [24] ChChSelectionMode OPTIONAL,
  systemType [25] SystemType OPTIONAL,
  recordExtensions [26] ManagementExtensions OPTIONAL
}
```

```
SGSNMOLCSRecord ::= SET
{
  recordType [0] CallEventRecordType,
  recordingEntity [1] RecordingEntity,
  lcsClientType [2] LCSCClientType OPTIONAL,
  lcsClientIdentity [3] LCSCClientIdentity OPTIONAL,
  servedIMSI [4] IMSI,
  servedMSISDN [5] MSISDN OPTIONAL,
  sgsnAddress [6] GSNAddress OPTIONAL,
  locationMethod [7] LocationMethod,
  lcsQos [8] LCSQoSInfo OPTIONAL OPTIONAL,
  lcsPriority [9] LCS-Priority OPTIONAL,
  mlcNumber [10] ISDN-AddressString OPTIONAL,
  eventTimeStamp [11] TimeStamp,
  measurementDuration [12] CallDuration OPTIONAL,
  location [13] LocationAreaAndCell OPTIONAL,
```

```

routingArea [14] RoutingAreaCode OPTIONAL,
locationEstimate [15] Ext-GeographicalInformation OPTIONAL,
positioningData [16] PositioningData OPTIONAL,
lcsCause [17] LCSCause OPTIONAL,
diagnostics [18] Diagnostics OPTIONAL,
nodeID [19] NodeID OPTIONAL,
localSequenceNumber [20] LocalSequenceNumber OPTIONAL,
chargingCharacteristics [21] ChargingCharacteristics,
chChSelectionMode [22] ChChSelectionMode OPTIONAL,
systemType [23] SystemType OPTIONAL,
recordExtensions [24] ManagementExtensions OPTIONAL
}

```

```
SGSNILCSRecord ::= SET
```

```

{
recordType [0] CallEventRecordType,
recordingEntity [1] RecordingEntity,
lcsClientType [2] LCSClientType OPTIONAL,
lcsClientIdentity [3] LCSClientIdentity OPTIONAL,
servedIMSI [4] IMSI OPTIONAL,
servedMSISDN [5] MSISDN OPTIONAL,
sgsnAddress [6] GSNAddress OPTIONAL,
servedIMEI [7] IMEI OPTIONAL,
lcsQos [8] LCSQoSInfo OPTIONAL,
lcsPriority [9] LCS-Priority OPTIONAL,
mlcNumber [10] ISDN-AddressString OPTIONAL,
eventTimeStamp [11] TimeStamp,
measurementDuration [12] CallDuration OPTIONAL,
location [13] LocationAreaAndCell OPTIONAL,
routingArea [14] RoutingAreaCode OPTIONAL,
locationEstimate [15] Ext-GeographicalInformation OPTIONAL,
positioningData [16] PositioningData OPTIONAL,
lcsCause [17] LCSCause OPTIONAL,
diagnostics [18] Diagnostics OPTIONAL,
nodeID [19] NodeID OPTIONAL,
localSequenceNumber [20] LocalSequenceNumber OPTIONAL,
chargingCharacteristics [21] ChargingCharacteristics,
chChSelectionMode [22] ChChSelectionMode OPTIONAL,
systemType [23] SystemType OPTIONAL,
recordExtensions [24] ManagementExtensions OPTIONAL
}

```

```

-----
--
-- COMMON DATA TYPES
--
-----

```

## CHANGE REQUEST

⌘ **32.215 CR 015** ⌘ rev - ⌘ Current version: **4.2.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

**Title:** ⌘ Alignment with 23.271 (LCS stage 2) of CDR definition for LCS in PS domain

**Source:** ⌘ SA5

**Work item code:** ⌘ OAM-CH

**Date:** ⌘ 24/05/2002

**Category:** ⌘ **C**

**Release:** ⌘ REL-4

Use one of the following categories:

Use one of the following releases:

**F** (correction)

2 (GSM Phase 2)

**A** (corresponds to a correction in an earlier release)

R96 (Release 1996)

**B** (addition of feature),

R97 (Release 1997)

**C** (functional modification of feature)

R98 (Release 1998)

**D** (editorial modification)

R99 (Release 1999)

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

REL-4 (Release 4)

REL-5 (Release 5)

**Reason for change:** ⌘ Introduction of the CDR definitions for LCS

**Summary of change:** ⌘ In the context of service related charging for LCS the CDRs generated within the SGSN in 2G and 3G configuration are defined within this Tdoc based on the stage 2 service description of LCS in TS 23.271.

There are three situations of LCS to be distinguished:

- 1) Mobile Terminated Location request (MT-LR)  
In this case the LR is triggered by an external client. The request is completed with routing info etc. by the GMLC and sent to the SGSN. For privacy reasons there might be a user notification necessary, before the LR is performed. Depending on the capabilities of RAN and MS and the requested accuracy the proper position method is chosen. The result is sent back to SGSN and via GMLC forwarded to the external LCS client.
- 2) Mobile Originated Location Request (MO-LR)  
The MO-LR is initially induced by the MS. This LR may be performed with involvement of an external client, however it is also possible that the location information is not transferred to an GMLC or external LCS client. In both situations there is service-related data that may be collected in the SGSN for allowing the operator billing of this service.
- 3) Network Induced Location Request (NI-LR)  
The network induces this LR, e.g. in case of emergency call. Other applications are possible. When the NI-LR is performed, again specific data is generated which might be collected for billing purpose.

Since the generated data in all of the three cases is not only slightly different it is proposed to introduce three separate kinds of charging records. The service related charging information may be collected and allow the operator more flexibility for billing.

**Consequences if not approved:** ⌘ No charging for the location service in the packet domain would be possible.

<b>Clauses affected:</b>	⌘	2, 3.2, 4, 5, 6
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘	Correspondent changes are made in the scope of REL-5 in TS 32.215.

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.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.

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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 TS 22.060: "General Packet Radio Service (GPRS); Service description; Stage 1".
- [2] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [3] 3GPP TS 32.200: "Telecommunication management; Charging management; Charging principles".
- [4] 3GPP TS 32.205: "Telecommunication management; Charging management; 3G charging data description for the Circuit Switched (CS) domain".
- [5] 3GPP TS 32.235: "Telecommunication management; Charging management; charging data description for application services".
- [6] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [7] 3GPP TS 23.003: "Numbering, addressing and identification".
- [8] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".
- [9] 3GPP TS 29.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL); CAMEL Application Part (CAP) specification - Phase 3".
- [10] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network protocols - Stage 3".
- [11] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".
- [12] 3GPP TS 32.015: "Telecommunications Management; Charging and billing; 3G call and event data for the Packet Switched (PS) domain".
- [13] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [14] ITU-T Q.767: "Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".
- [15] 3GPP TS 23.040: "Technical realisation of the Short Message Service (SMS)".
- [16] ITU-T X.721: "Information Technology; Open Systems Interconnection; Structure Of Management Information: Definition of management information".
- [17] ISO8824 (90)/X.208 (88): "Information technology; Open System Interconnection; Specification of Abstract Syntax Notation One (ASN.1)".
- [18] ISO8824-1 (94)/X.680 (94): "Information technology; Abstract Syntax Notation One (ASN.1): Specification of Basic Notation".
- [19] IETF RFC 768 (1980): "User Datagram Protocol" (STD 6).
- [20] IETF RFC 793 (1981): "Transmission Control Protocol" (STD 7).
- [21] IETF RFC 791 (1981): "Internet Protocol" (STD 5).

- [22] IETF RFC 792 (1981): "Internet Control Message Protocol" (STD 5).
- [23] 3GPP TS 49.031: "Location Services (LCS); Base Station System Application Part, LCS Extension (BSSAP-LE)".
- [24] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification; Formats and coding".

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in 3GPP TS 21.905 [6] and the following apply:

APN	Access Point Name
BMD	Billing Mediation Device
BS	Billing System
CAMEL	Customised Applications for Mobile network Enhanced Logic
CDR	Charging Data Record (replaces the previous definition of Call Detail Record)
CG	Charging Gateway
CGF	Charging Gateway Function
CI	Cell Identity
CS	Circuit Switched
CSE	CAMEL Service Environment
DRP	Data Record Packet
EM	Element Management
FCI	Furnish Charging Information
FQPC	Fully qualified Partial CDR
G-CDR	GGSN generated- CDR
GGSN	Gateway GPRS Support Node
GPRS	General Packet Radio Service
GSN	GPRS Support Node (either SGSN or GGSN)
GTP	GPRS Tunnelling Protocol
IE	Information Element
IHOSS:OSP	Internet Hosted Octet Stream Service: Octet Stream Protocol
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
LAC	Location Area Code
<u>LR</u>	<u>Location Request</u>
M-CDR	Mobility Management generated-Charging Data Record
MCC	Mobile Country Code (part of IMSI)
ME	Mobile Equipment
<u>MLC</u>	<u>Mobile Location Center</u>
MNC	Mobile Network Code (part of IMSI)
<u>MO-LR</u>	<u>Mobile Originated Location Request</u>
MS	Mobile Station
MSISDN	Mobile Station ISDN number
<u>MT-LR</u>	<u>Mobile Terminated Location Request</u>
<u>NA-ESRD</u>	<u>North American Emergency Service Routing Digits</u>
<u>NA-ESRK</u>	<u>North American Emergency Service Routing Key</u>
NE	Network Element
NI	Network Identifier (part of the APN)
<u>NI-LR</u>	<u>Network Induced Location Request</u>
OI	Operator Identifier (part of the APN)
PDP	Packet Data Protocol, e.g. IP
PDU	Packet Data Unit
PLMN	Public Land Mobile Network



PPP	Point-to-Point Protocol
PS	Packet Switched
PT	Protocol Type (Field in GTP' header)
RAB	Radio Access Bearer
RAC	Routing Area Code
RPC	Reduced Partial CDR
S-CDR	SGSN (PDP context) generated – CDR
SAC	Service Area Code
SGSN	Serving GPRS Support Node
S-SMO-CDR	SGSN delivered Short message Mobile Originated – CDR
S-SMT-CDR	SGSN delivered Short message Mobile Terminated – CDR
TID	Tunnel Identifier
TLV	Type, Length, Value (GTP header format)
TV	Type, Value
UMTS	Universal Mobile Telecommunications System
URA	UTRAN Registration Area
USIM	Universal Subscriber Identity Module
UTRAN	UMTS Terrestrial Radio Access Network

## 4 Record types and contents

<...unmodified text...>

### 4.7 Mobile terminated location request (LCS-MT-CDR)

If enabled, an SGSN Mobile terminated LCS record shall be produced for each mobile a terminated location request is performed via the SGSN. The fields in the record are specified in Table 6. The table provides a brief description of each field. A more elaborate definition of the fields, sorted by the field name in alphabetical order, is provided in Clause 5.

**Table 6: SGSN Mobile terminated LCS record (SGSN-LCS-MT)**

Field	Category	Description
Record Type	M	SGSN Mobile Terminated LCS.
Recording Entity	M	The E.164 number of the SGSN.
LCS Client Type	M	The type of the LCS client that invoked the LR.
LCS Client Identity	M	Further identification of the LCS client.
Served IMSI	M	The IMSI of the subscriber.
Served MSISDN	O <sub>M</sub>	The primary MSISDN of the subscriber.
SGSN Address	O <sub>M</sub>	The IP address of the current SGSN.
Location Type	M	The type of the estimated location.
LCS QoS	C	QoS of the LR, if available.
LCS Priority	C	Priority of the LR, if available
MLC Number	M	The E.164 address of the requesting GMLC
Event Time stamp	M	The time at which the Perform Location Request is sent by the SGSN.
Measurement Duration	O <sub>M</sub>	The duration of proceeding the location request.
Notification To MS User	C	The privacy notification to MS user that was applicable when the LR was invoked, if available.
Privacy Override	C	This parameter indicates the override MS privacy by the LCS client, if available.
Location	O <sub>M</sub>	The LAC and CI when the LR is received.
Routing Area Code	O <sub>M</sub>	The Routing Area Code to which the LCS terminated.
Location Estimate	O <sub>C</sub>	The location estimate for the subscriber if contained in geographic position and the LR was successful.
Positioning Data	C	The positioning method used or attempted, if available.
LCS Cause	C	The result of the LR if any failure or partial success happened.
Diagnostics	C	A more detailed information about the LCS cause if any failure or partial success happened.

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Node ID</u>	<u>O<sub>M</sub></u>	Name of the recording entity.
<u>Local Record Sequence Number</u>	<u>O<sub>M</sub></u>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
<u>Charging Characteristics</u>	<u>M</u>	The Charging Characteristics used by the SGSN. (always use the subscribed CC)
<u>Charging Characteristics Selection Mode</u>	<u>O<sub>M</sub></u>	Holds information about how Charging Characteristics were selected. (only subscribed/home default/visited default)
<u>System Type</u>	<u>O<sub>C</sub></u>	Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface.
<u>Record Extensions</u>	<u>O<sub>C</sub></u>	A set of network operator/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

## 4.8 Mobile originated location request (LCS-MO-CDR)

If enabled, an SGSN Mobile originated LCS record shall be produced for each mobile a originated location request is performed via the SGSN. The fields in the record are specified in Table 7. The table provides a brief description of each field. A more elaborate definition of the fields, sorted by the field name in alphabetical order, is provided in Clause 5.

**Table 7: SGSN Mobile originated LCS record (SGSN-LCS-MO)**

<u>Field</u>	<u>Category</u>	<u>Description</u>
<u>Record Type</u>	<u>M</u>	SGSN Mobile Originated LCS.
<u>Recording Entity</u>	<u>M</u>	The E.164 number of the SGSN.
<u>LCS Client Type</u>	<u>C</u>	The type of the LCS client that invoked the LR, if available.
<u>LCS Client Identity</u>	<u>C</u>	Further identification of the LCS client, if available.
<u>Served IMSI</u>	<u>M</u>	The IMSI of the subscriber.
<u>Served MSISDN</u>	<u>O<sub>M</sub></u>	The primary MSISDN of the subscriber.
<u>SGSN Address</u>	<u>O<sub>M</sub></u>	The IP address of the current SGSN.
<u>Location Method</u>	<u>M</u>	The type of the location request.
<u>LCS QoS</u>	<u>C</u>	QoS of the LR, if available.
<u>LCS Priority</u>	<u>O<sub>C</sub></u>	Priority of the LR, if available
<u>MLC Number</u>	<u>C</u>	The E.164 address of the involved GMLC, if applicable.
<u>Event Time stamp</u>	<u>M</u>	The time at which the Perform Location Request is sent by the SGSN.
<u>Measurement Duration</u>	<u>O<sub>M</sub></u>	The duration of proceeding the location request.
<u>Location</u>	<u>O<sub>M</sub></u>	The LAC and CI when the LR is received.
<u>Routing Area Code</u>	<u>O<sub>M</sub></u>	The Routing Area Code from which the LCS originated.
<u>Location Estimate</u>	<u>O<sub>C</sub></u>	The location estimate for the subscriber if contained in geographic position and the LR was successful.
<u>Positioning Data</u>	<u>C</u>	The positioning method used or attempted, if available.
<u>LCS Cause</u>	<u>C</u>	The result of the LR if any failure or partial success happened.
<u>Diagnostics</u>	<u>C</u>	A more detailed information about the LCS cause if any failure or partial success happened.
<u>Node ID</u>	<u>O<sub>M</sub></u>	Name of the recording entity.
<u>Local Record Sequence Number</u>	<u>O<sub>M</sub></u>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
<u>Charging Characteristics</u>	<u>M</u>	The Charging Characteristics flag set used by the SGSN.
<u>Charging Characteristics Selection Mode</u>	<u>O<sub>M</sub></u>	Holds information about how Charging Characteristics were selected.
<u>System Type</u>	<u>O<sub>C</sub></u>	Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface.
<u>Record Extensions</u>	<u>O<sub>C</sub></u>	A set of network operator/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

## 4.9 Network induced location request (LCS-NI-CDR)

If enabled, an SGSN Network induced LCS record shall be produced for each mobile a network induced location request is performed via the SGSN. The fields in the record are specified in Table 8. The table provides a brief description of each field. A more elaborate definition of the fields, sorted by the field name in alphabetical order, is provided in Clause 5.

**Table 8: SGSN Network induced LCS record (SGSN-LCS-NI)**

Field	Category	Description
Record Type	M	SGSN Network Induced LCS.
Recording Entity	M	The E.164 number of the SGSN.
LCS Client Type	C	The type of the LCS client that invoked the LR, if available.
LCS Client Identity	C	Further identification of the LCS client, if available.
Served IMSI	C	The IMSI of the subscriber if supplied.
Served MSISDN	C	The primary MSISDN of the subscriber if supplied.
SGSN Address	O <sub>M</sub>	The IP address of the current SGSN.
Served IMEI	O <sub>C</sub>	The IMEI of the ME, if available.
LCS QoS	C	QoS of the LR, if available.
LCS Priority	C	Priority of the LR, if available.
MLC Number	C	The E.164 address of the involved GMLC, if applicable.
Event Time stamp	M	The time at which the Perform_Location_Request is sent by the SGSN.
Measurement Duration	O <sub>M</sub>	The duration of proceeding the location request.
Location	O <sub>M</sub>	The LAC and CI when the LR is received.
Routing Area Code	O <sub>M</sub>	The Routing Area Code from which the LCS originated.
Location Estimate	O <sub>C</sub>	The location estimate for the subscriber if contained in geographic position and the LR was successful.
Positioning Data	C	The positioning method used or attempted, if available.
LCS Cause	C	The result of the LR if any failure or partial success happened.
Diagnostics	C	A more detailed information about the LCS cause if any failure or partial success happened.
Node ID	O <sub>M</sub>	Name of the recording entity.
Local Record Sequence Number	O <sub>M</sub>	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Charging Characteristics	M	The Charging Characteristics flag set used by the SGSN.
Charging Characteristics Selection Mode	O <sub>M</sub>	Holds information about how Charging Characteristics were selected.
System Type	O <sub>C</sub>	Indicates the type of air interface used, e.g. UTRAN. This field is present when either the UTRAN or GERAN air-interface is used. It is omitted when the service is provided by a GSM air interface.
Record Extensions	O <sub>C</sub>	A set of network operator/manufacture specific extensions to the record. Conditioned upon the existence of an extension.

## 5 Description of Record Fields

This clause contains a brief description of each field of the CDRs described in the previous clause. The fields are listed in alphabetical order according to the field name as specified in one of the five tables above.

<... unmodified text ... >

### 5.10 Diagnostics

This field includes a more detailed technical reason for the releases of the connection refer TS 32.205[4], and may contain one of the following:

— a MAP error from 3GPP TS 29.002 [13]; or

- a Cause from 3GPP TS 29.078 [9]; or
- a Cause from 3GPP TS 24.008 [10]; or
- a Cause from ISUP Q.767 [14].

<... unmodified text ... >

## 5.15 LCS Cause

The LCS Cause parameter provides the reason for an unsuccessful location request according TS 49.031 [23].

## 5.16 LCS Client Identity

This field contains further information on the LCS Client identity:

- Client External ID,
- Client Dialed by MS ID,
- Client Internal ID.

## 5.17 LCS Client Type

This field contains the type of the LCS Client as defined in TS 29.002 [5].

## 5.18 LCS Priority

This parameter gives the priority of the location request as defined in TS 49.031 [23].

## 5.19 LCS QoS

This information element defines the Quality of Service for a location request as defined in TS 49.031 [23].

## 5.2015 List of Traffic Data Volumes

This list includes one or more containers, each includes the following fields:

**Data Volume Uplink, Data Volume Downlink, Change Condition and Change Time.**

**Data Volume, Uplink** and/or **Downlink**, includes the number of octets transmitted during the use of the packet data services in the uplink and/or downlink direction, respectively.

**Change Condition** defines the reason for closing the container (see TS 32.200 [3] Clause 6), such as tariff time change, QoS change or closing of the CDR.

**Change Time** is a time stamp, which defines the moment when the new volume counts are started or the CDR is closed. All the active PDP contexts do not need to have exactly the same time stamp e.g. due to same tariff time change (variance of the time stamps is implementation and traffic load dependent, and is out of the scope of standardisation).

First container includes following optional fields: QoS Requested (not in G-CDR) and QoS Negotiated. In following containers QoS Negotiated is present if previous change condition is "QoS change". In addition to the QoS Negotiated parameter the QoS Requested parameter is present in following containers if the change condition is "QoS change" and the QoS change was initiated by the MS via a PDP context modification procedure.

Table 6 illustrates an example of a list, which has three containers (sets of volume counts) caused by one QoS change and one tariff time change.

**Table 6: Example list of traffic data volumes**

QoS Requested = QoS1 QoS Negotiated = QoS1 Data Volume Uplink = 1 Data Volume Downlink = 2 Change Condition = QoS change Time Stamp = TIME1	QoS Requested = QoS2 (if requested by the MS) QoS Negotiated = QoS2 Data Volume Uplink = 5 Data Volume Downlink = 6 Change Condition = Tariff change Time Stamp = TIME2	Data Volume Uplink = 3 Data Volume Downlink = 4 Change Condition = Record closed Time Stamp = TIME3
--	--	--

First container includes initial QoS values and corresponding volume counts. Second container includes new QoS values and corresponding volume counts before tariff time change. Last container includes volume counts after the tariff time change. The total volume counts can be itemised as shown in Table 7 (tariff1 is used before and tariff2 after the tariff time change):

**Table 7: Itemised list of total volume count corresponding to Table 6**

		Container
QoS1+Tariff1	uplink = 1, downlink = 2	1
QoS2+Tariff1	uplink = 5, downlink = 6	2
QoS2+Tariff2	uplink = 3, downlink = 4	3
QoS1	uplink = 1, downlink = 2	1
QoS2	uplink = 8, downlink = 10	2+3
Tariff1	uplink = 6, downlink = 8	1+2
Tariff2	uplink = 3, downlink = 4	3

The amount of data counted in the GGSN shall be the payload of the GTP-U protocol at the Gn interface. Therefore the data counted already includes the IP PDP bearer protocols i.e. IP or PPP.

The data volume counted in the SGSN is dependent on the system. For GSM SGSN the data volume is the payload of the SNDCP PDUs at the Gb interface. For UMTS-SGSN it is the GTP-U PDUs at the Iu-PS interface. Therefore, in both systems, the data counted already includes the overheads of any PDP bearer protocols.

In GSM, in order to avoid that downstream packets transmitted from the old SGSN to the new SGSN at inter SGSN RA update induce the increase of the PDP CDR downstream volume counters in both SGSN the following rules must be followed:

- For PDP contexts using LLC in unacknowledged mode: an SGSN shall update the PDP CDR when the packet has been sent by the SGSN towards the MS;

For PDP contexts using LLC in acknowledged mode, a GSM-SGSN shall only update the PDP CDR at the reception of the acknowledgement by the MS of the correct reception of a downstream packet. In other words, for inter SGSN RA update, the new SGSN shall update the PDP CDR record when a downstream packet sent by the old SGSN is received by the MS and acknowledged by the MS towards the new SGSN through the RA update complete message.

In UMTS, the not transferred downlink data can be accounted for in the S-CDR with "RNC Unsent Downlink Volume" field, which is the data that the RNC has either discarded or forwarded during handover. Data volumes retransmitted (by RLC or LLC) due to poor radio link conditions shall not be counted.

## 5.2116 Local Record Sequence Number

This field includes a unique record number created by this node. The number is allocated sequentially including all CDR types. The number is unique within one node, which is identified either by field Node ID or by record-dependent node address (SGSN address, GGSN address, Recording Entity).

The field can be used e.g. to identify missing records in post processing system.

## 5.22 Location Estimate

The Location Estimate field is providing an estimate of a geographic location of a target MS according to 3GPP TS 29.002 [5].

## 5.23 Location Method

The Location Method identifier refers to the argument of LCS-MOLR that was invoked as defined in 24.080 [24].

## 5.24 Location Type

This field contains the type of the location as defined in TS 29.002 [5].

## 5.25 Measurement Duration

This field contains the duration for the section of the location measurement corresponding to the Perform Location Request and Perform Location Response by the SGSN.

## 5.2617 Message reference

This field contains a unique message reference number allocated by the Mobile Station (MS) when transmitting a short message to the service centre. This field corresponds to the TP-Message-Reference element of the SMS\_SUBMIT PDU defined in 3GPP TS 23.040 [15].

## 5.27 MLC Number

This parameter refers to the ISDN (E.164) number of an GMLC.

## 5.2818 MS Network Capability

This MS Network Capability field contains the MS network capability value of the MS network capability information element of the served MS on PDP context activation or on GPRS attachment as defined in 3GPP TS 24.008 [10].

## 5.2919 Network Initiated PDP Context

This field indicates that PDP context is network initiated. The field is missing in case of mobile activated PDP context.

## 5.3020 Node ID

This field contains an optional, operator configurable, identifier string for the node that had generated the CDR. The Node ID may or may not be the DNS host name of the node.

## 5.31 Notification to MS user

This field contains the privacy notification to MS user that was applicable when the LR was invoked as defined in TS 29.002 [5].

## 5.3221 PDP Type

This field defines the PDP type, e.g. IP, PPP, or IHOSS:OSP (see 3GPP TS 29.060 [8] for exact format).

## 5.33 Positioning Data

This information element is providing positioning data associated with a successful or unsuccessful location attempt for a target MS according TS 49.031 [23].

## 5.34 Privacy Override

This parameter indicates if the LCS client overrides MS privacy when the GMLC and VMSC/SGSN for an MT-LR are in the same country as defined in TS 29.002 [5].

< ... unmodified text ... >

## 5.29 Routing Area Code/Location/Cell Identifier/Change of location

The location information contains a combination of the Routing Area Code (RAC) and an optional Cell Identifier of the routing area and cell in which the served party is currently located. In GSM the Cell Identifier is defined by the Cell Identity (CI) and in UMTS by the Service Area Code (SAC). Any change of location (i.e. Routing Area change) may be recorded in the change of location field including the time at which the change took place.

The location field contains a combination of the location area code (LAC) and cell identity (CI) of the cell in which the served party is currently located.

The change of location field is optional and not required if partial records are generated when the location changes.

The RAC and (optionally) CI are coded according to 3G TS 24.008 [10] and the SAC according 3GPP TS 25.413 [11].

< ... unmodified text ... >

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# 6 Charging Data Record Structure

## 6.1 ASN.1 definitions for CDR information

The ASN.1 definitions are based on ISO8824 (90)/X.208 (88) [17], which has been superseded by ISO8824-1 (94)/X.680 (94)[18]. This newer version not only includes new features but also removes some that were present in ISO8824 (90)/X.208 (88) [17]. Where possible, the GPRS work would be based on those ASN.1 features to both. However, where necessary, the new features in ISO8824-1 (94)/X.680 (94) [18] be used in some places. ISO8824 (90)/X.208 (88) [17] features that are no longer in ISO8824-1 (94)/X.680 (94) [18] will not be used.

```
TS32215-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-Operation-
Maintenance (3) ts-32-215 (215) informationModel (0) asn1Module (2) version1 (1)}
```

```
DEFINITIONS IMPLICIT TAGS ::=
```

```
BEGIN
```

```
-- EXPORTS everything
```

```
IMPORTS
```

```
CallEventRecordType, CellId, Diagnostics, CallDuration, LCSCause, LCSClientIdentity, LCSQoSInfo,
ManagementExtensions, TimeStamp, MSISDN, LocationAreaCode, MessageReference, PositioningData,
RecordingEntity, SMSResult, LevelOfCAMELService, CalledNumber, CallingNumber, CallEventRecord,
LocationAreaAndCell
```

```
FROM TS32205-DataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0)
umts-Operation-Maintenance (3) ts-32-205 (205) informationModel (0) asn1Module (2) version1 (1)}
```

```
IMSI, IMEI, ISDN-AddressString, LCSClientExternalID, LCSClientInternalID
```

```
FROM MAP-CommonDataTypes { ccitt identified-organization (4) etsi(0) mobileDomain (0) gsm-Network
(1) modules (3) map-CommonDataTypes (18) version6 (6) }
```

```
DefaultGPRS-Handling, DefaultSMS-Handling, NotificationToMSUser, ServiceKey
FROM MAP-MS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-MS-DataTypes (11) version6 (6) }
```

```
CallReferenceNumber
FROM MAP-CH-DataTypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-network(1) modules(3) map-CH-DataTypes(13) version6(6)}
```

```
locationMethod
FROM SS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2)
modules (3) ss-DataTypes (2) version7 (7)}
```

```
Ext-GeographicalInformation, LCSCliientType, LCS-Priority, LocationType
FROM MAP-LCS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-LCS-DataTypes (25) version7 (7)}
```

```
ManagementExtension
FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2 (2) asn1Module(2) 1}
;
```

```
-----
--
-- CALL AND EVENT RECORDS
--
-----
```

```
SGSNMTLCSRecord ::= SET
{
  recordType [0] CallEventRecordType,
  recordingEntity [1] RecordingEntity,
  lcsClientType [2] LCSCliientType,
  lcsClientIdentity [3] LCSCliientIdentity,
  servedIMSI [4] IMSI,
  servedMSISDN [5] MSISDN OPTIONAL,
  sgsnAddress [6] GSNAddress OPTIONAL,
  locationType [7] LocationType,
  lcsQos [8] LCSQoSInfo OPTIONAL,
  lcsPriority [9] LCS-Priority OPTIONAL,
  mlcNumber [10] ISDN-AddressString,
  eventTimeStamp [11] TimeStamp,
  measurementDuration [12] CallDuration OPTIONAL,
  notificationToMSUser [13] NotificationToMSUser OPTIONAL,
  privacyOverride [14] NULL OPTIONAL,
  location [15] LocationAreaAndCell OPTIONAL,
  routingArea [16] RoutingAreaCode OPTIONAL,
  locationEstimate [17] Ext-GeographicalInformation OPTIONAL,
  positioningData [18] PositioningData OPTIONAL,
  lcsCause [19] LCSCause OPTIONAL,
  diagnostics [20] Diagnostics OPTIONAL,
  nodeID [21] NodeID OPTIONAL,
  localSequenceNumber [22] LocalSequenceNumber OPTIONAL,
  chargingCharacteristics [23] ChargingCharacteristics,
  chChSelectionMode [24] ChChSelectionMode OPTIONAL,
  systemType [25] SystemType OPTIONAL,
  recordExtensions [26] ManagementExtensions OPTIONAL
}
```

```
SGSNMOLCSRecord ::= SET
{
  recordType [0] CallEventRecordType,
  recordingEntity [1] RecordingEntity,
  lcsClientType [2] LCSCliientType OPTIONAL,
  lcsClientIdentity [3] LCSCliientIdentity OPTIONAL,
  servedIMSI [4] IMSI,
  servedMSISDN [5] MSISDN OPTIONAL,
  sgsnAddress [6] GSNAddress OPTIONAL,
  locationMethod [7] LocationMethod,
  lcsQos [8] LCSQoSInfo OPTIONAL OPTIONAL,
  lcsPriority [9] LCS-Priority OPTIONAL,
  mlcNumber [10] ISDN-AddressString OPTIONAL,
  eventTimeStamp [11] TimeStamp,
  measurementDuration [12] CallDuration OPTIONAL,
  location [13] LocationAreaAndCell OPTIONAL,
```



```

routingArea          [14] RoutingAreaCode OPTIONAL,
locationEstimate     [15] Ext-GeographicalInformation OPTIONAL,
positioningData      [16] PositioningData OPTIONAL,
lcsCause             [17] LCSCause OPTIONAL,
diagnostics          [18] Diagnostics OPTIONAL,
nodeID               [19] NodeID OPTIONAL,
localSequenceNumber [20] LocalSequenceNumber OPTIONAL,
chargingCharacteristics [21] ChargingCharacteristics,
chChSelectionMode   [22] ChChSelectionMode OPTIONAL,
systemType           [23] SystemType OPTIONAL,
recordExtensions     [24] ManagementExtensions OPTIONAL
}

```

```
SGSNILCSRecord ::= SET
```

```

{
  recordType          [0] CallEventRecordType,
  recordingEntity     [1] RecordingEntity,
  lcsClientType       [2] LCSClientType OPTIONAL,
  lcsClientIdentity   [3] LCSClientIdentity OPTIONAL,
  servedIMSI          [4] IMSI OPTIONAL,
  servedMSISDN        [5] MSISDN OPTIONAL,
  sgsnAddress         [6] GSNAddress OPTIONAL,
  servedIMEI          [7] IMEI OPTIONAL,
  lcsQos              [8] LCSQoSInfo OPTIONAL,
  lcsPriority          [9] LCS-Priority OPTIONAL,
  mlcNumber           [10] ISDN-AddressString OPTIONAL,
  eventTimeStamp      [11] TimeStamp,
  measurementDuration [12] CallDuration OPTIONAL,
  location            [13] LocationAreaAndCell OPTIONAL,
  routingArea         [14] RoutingAreaCode OPTIONAL,
  locationEstimate    [15] Ext-GeographicalInformation OPTIONAL,
  positioningData     [16] PositioningData OPTIONAL,
  lcsCause            [17] LCSCause OPTIONAL,
  diagnostics         [18] Diagnostics OPTIONAL,
  nodeID              [19] NodeID OPTIONAL,
  localSequenceNumber [20] LocalSequenceNumber OPTIONAL,
  chargingCharacteristics [21] ChargingCharacteristics,
  chChSelectionMode   [22] ChChSelectionMode OPTIONAL,
  systemType          [23] SystemType OPTIONAL,
  recordExtensions    [24] ManagementExtensions OPTIONAL
}

```

```

-----
--
-- COMMON DATA TYPES
--
-----

```

## CHANGE REQUEST

⌘ **32.205 CR 005** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Corrections of parameter CallEventRecord		
<b>Source:</b>	⌘ SA5		
<b>Work item code:</b>	⌘ OAM-CH	<b>Date:</b>	⌘ 24/05/2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ Additional CallEventRecord parameters are needed in the ASN.1 reference object module due to the specification of new CDR types for MMS and LCS.
<b>Summary of change:</b>	⌘ The CallEventRecord parameters needed for MMS and LCS record parameter definitions are added.
<b>Consequences if not approved:</b>	⌘ Error in the Billing system due to missing Record type identifier.

<b>Clauses affected:</b>	⌘ 6
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘ This CR can be approved assuming the approval of 32.235CR002 on MMS CDRs and 32.215CR016 on LCS CDRs.

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.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.

## 6 Charging Data Record Structure

### 6.1 ASN.1 definitions for CDR information

Within the current 3GPP TS 32-series of specifications the ASN.1 definitions are based on ITU-T Recommendation X.208 [8] which has been superseded by ITU-T Recommendation X.680. This newer version not only includes new features but also removes some that were present in ITU-T Recommendation X.208. It was agreed that where possible, the GPRS work would be based on those ASN.1 features that were common to both. However, where necessary, the new features in ITU-T Recommendation X.680 [7] be used in some places. ITU-T Recommendation X.208 [8] feature that are no longer in ITU-T Recommendation X.680 [7] will not be used.

```
TS32205-DataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0) umts-Operation-
Maintenance (3) ts-32-205 (205) informationModel (0) asn1Module (2) version1 (1)}
```

```
DEFINITIONS IMPLICIT TAGS ::=
```

```
BEGIN
```

```
-- EXPORTS everything
```

```
IMPORTS
```

```
NumberOfForwarding, CallReferenceNumber
```

```
FROM MAP-CH-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-CH-DataTypes (13) version6 (6) }
```

```
AddressString, ISDN-AddressString, BasicServiceCode, IMSI, IMEI, LCSClientExternalID,
LCSClientInternalID
```

```
FROM MAP-CommonDataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network
(1) modules (3) map-CommonDataTypes (18) version6 (6) }
```

```
DestinationRoutingAddress
```

```
FROM CAP-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) cap-datatypes (52) version1 (0) }
```

```
ServiceKey, DefaultCallHandling, DefaultSMS-Handling, NotificationToMSUser
```

```
FROM MAP-MS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-MS-DataTypes (11) version6 (6) }
```

```
MOLR-Type
```

```
FROM SS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2)
modules (3) ss-DataTypes (2) version7 (7) }
```

```
BearerServiceCode
```

```
FROM MAP-BS-Code { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-BS-Code (20) version6 (6) }
```

```
TeleserviceCode
```

```
FROM MAP-TS-Code { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-TS-Code (19) version2 (2) }
```

```
SS-Code
```

```
FROM MAP-SS-Code { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-SS-Code (15) version6 (6) }
```

```
Ext-GeographicalInformation, LCSClientType, LCS-Priority, LocationType
```

```
FROM MAP-LCS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-LCS-DataTypes (25) version7 (7) }
```

```
PositionMethodFailure-Diagnostic
```

```
FROM MAP-ER-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-ER-DataTypes (17) version7 (7) }
```

```
BasicService
```

```
FROM Basic-Service-Elements { ccitt identified-organization (4) etsi (0)
196 basic-service-elements (8) }
```

```
--
```

```
-- See "Digital Subscriber Signalling System No. one (DSS1) protocol"
```

```
-- ETS 300 196
```

```
--
```

```

ObjectInstance
FROM CMIP-1 {joint-iso-ccitt ms (9) cmip (1) version1 (1) protocol (3)}

ManagementExtension
FROM Attribute-ASN1Module {joint-iso-ccitt ms (9) smi (3) part2 (2) asn1Module (2) 1}

SystemType
FROM TS32215-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-
Operation-Maintenance (3) ts-32-215 (215) informationModel (0) asn1Module (2) version1 (1)}

SGSNPDPPRecord, GGSNPDPPRecord, SGSNMMRecord, SGSNSMORRecord, SGSNSMTRRecord, SGSNMTLCSRecord,
SGSNMOLCSRecord, SGSNNILCSRecord
FROM TS32215-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-
Operation-Maintenance (3) ts-32-215 (215) informationModel (0) asn1Module (2) version1 (1)}

MMSORRecord, MMSTRRecord
MMO1SRecord, MMO4FRqRecord, MMO4FRsRecord, MMO4DRecord, MMO1DRecord, MMO4RRecord, MMO1RRecord,
MMOMDRecord, MMR4FRqRecord, MMR1NRqRecord, MMR1NRsRecord, MMR1RtRqRecord, MMR1RtRsRecord, MMR1RRecord,
MMR4DRqRecord, MMR4DRsRecord, MMR1RRRecord, MMR4RRqRecord, MMR4RRsRecord, MMRMDRecord, MMFRecord
FROM TS32235-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-
Operation-Maintenance (3) ts-32-235 (235) informationModel (0) asn1Module (2) version1 (1)}

AE-title
FROM ACSE-1 {joint-iso-ccitt association-control (2) abstract-syntax (1) apdus (0) version (1) };
--
-- Note that the syntax of AE-title to be used is from
-- CCITT Rec. X.227 / ISO 8650 corrigendum and not "ANY"
-----
--
-- CALL AND EVENT RECORDS
--
-----

CallEventRecord ::= CHOICE
--
-- Record values 0..19 are 3G curcuit switch specific
--          20..27 are 3G packet switch specific
--          30..50 are application specific
--
{
    moCallRecord          [0] MOCallRecord,
    mtCallRecord          [1] MTCallRecord,
    roamingRecord         [2] RoamingRecord,
    incGatewayRecord      [3] IncGatewayRecord,
    outGatewayRecord      [4] OutGatewayRecord,
    transitRecord         [5] TransitCallRecord,
    moSMSRecord           [6] MOSMSRecord,
    mtSMSRecord           [7] MTSMSRecord,
    moSMSIWRecord         [8] MOSMSIWRecord,
    mtSMSGWRecord         [9] MTSMSGWRecord,
    ssActionRecord        [10] SSActionRecord,
    hlrIntRecord          [11] HLRIntRecord,
    locUpdateHLRRecord    [12] LocUpdateHLRRecord,
    locUpdateVLRRecord    [13] LocUpdateVLRRecord,
    commonEquipRecord     [14] CommonEquipRecord,
    recTypeExtensions     [15] ManagementExtensions,
    termCAMELRecord       [16] TermCAMELRecord,
    mtLCSRecord           [17] MTLCSRecord,
    moLCSRecord           [18] MOLCSRecord,
    niLCSRecord           [19] NILCSRecord,

    sgsnPDPRecord        [20] SGSNPDPPRecord,
    ggsnPDPRecord        [21] GGSNPDPPRecord,
    sgsnMMRecord          [22] SGSNMMRecord,
    sgsnSMORRecord        [23] SGSNSMORRecord,
    sgsnSMTRRecord        [24] SGSNSMTRRecord,
    sgsnLCTRecord         [25] SGSNLCTRecord,
    sgsnLCORRecord        [26] SGSNLCORRecord,
    sgsnLCNRRecord        [27] SGSNLCNRRecord,

    mmsORRecord           [30] MMSORRecord,
    mmsTRRecord           [31] MMSTRRecord,
    mmO1SRecord           [30] MMO1SRecord,
    mmO4FRqRecord         [31] MMO4FRqRecord,
    mmO4FRsRecord         [32] MMO4FRsRecord,
    mmO4DRecord           [33] MMO4DRecord,
    mmO1DRecord           [34] MMO1DRecord,

```

<u>mmO4RRecord</u>	[ 35 ]	<u>MMO4RRecord,</u>
<u>mmO1RRecord</u>	[ 36 ]	<u>MMO1RRecord,</u>
<u>mmOMDRecord</u>	[ 37 ]	<u>MMOMDRecord,</u>
<u>mmR4FRecord</u>	[ 38 ]	<u>MMR4FRecord,</u>
<u>mmR1NRqRecord</u>	[ 38 ]	<u>MMR1NRqRecord,</u>
<u>mmR1NRsRecord</u>	[ 40 ]	<u>MMR1NRsRecord,</u>
<u>mmR1RtRqRecord</u>	[ 41 ]	<u>MMR1RtRqRecord,</u>
<u>mmR1RtRsRecord</u>	[ 42 ]	<u>MMR1RtRsRecord,</u>
<u>mmR1AFRecord</u>	[ 43 ]	<u>MMR1ARecord,</u>
<u>mmR4DRqRecord</u>	[ 44 ]	<u>MMR4DRqRecord,</u>
<u>mmR4DRsRecord</u>	[ 45 ]	<u>MMR4DRsRecord,</u>
<u>mmR1RRRecord</u>	[ 46 ]	<u>MMR1RRRecord,</u>
<u>mmR4RRqRecord</u>	[ 47 ]	<u>MMR4RRqRecord,</u>
<u>mmR4RRsRecord</u>	[ 48 ]	<u>MMR4RRsRecord,</u>
<u>mmRMDRecord</u>	[ 49 ]	<u>MMRMDRecord,</u>
<u>mmFRecord</u>	[ 50 ]	<u>MMFRecord</u>

}

## CHANGE REQUEST

⌘ **32.205 CR 004** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Corrections of parameter CallEventRecord		
<b>Source:</b>	⌘ SA5		
<b>Work item code:</b>	⌘ OAM-CH	<b>Date:</b>	⌘ 24/05/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> 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)

<b>Reason for change:</b>	⌘ Additional CallEventRecord parameters are needed in the ASN.1 reference object module due to the specification of new CDR types for MMS and LCS.
<b>Summary of change:</b>	⌘ The CallEventRecord parameters needed for MMS and LCS record parameter definitions are added.
<b>Consequences if not approved:</b>	⌘ Error in the Billing system due to missing Record type identifier.

<b>Clauses affected:</b>	⌘ 6
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘ This CR can be approved assuming the approval of 32.235CR002 on MMS CDRs and 32.215CR015 on LCS CDRs.

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

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- 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.

## 6 Charging Data Record Structure

### 6.1 ASN.1 definitions for CDR information

Within the current 3GPP TS 32-series of specifications the ASN.1 definitions are based on ITU-T Recommendation X.208 [8] which has been superseded by ITU-T Recommendation X.680. This newer version not only includes new features but also removes some that were present in ITU-T Recommendation X.208. It was agreed that where possible, the GPRS work would be based on those ASN.1 features that were common to both. However, where necessary, the new features in ITU-T Recommendation X.680 [7] be used in some places. ITU-T Recommendation X.208 [8] feature that are no longer in ITU-T Recommendation X.680 [7] will not be used.

```
TS32205-DataTypes {itu-t (0) identified-organization (4) etsi(0) mobileDomain (0) umts-Operation-
Maintenance (3) ts-32-205 (205) informationModel (0) asn1Module (2) version1 (1)}
```

```
DEFINITIONS IMPLICIT TAGS ::=
```

```
BEGIN
```

```
-- EXPORTS everything
```

```
IMPORTS
```

```
NumberOfForwarding, CallReferenceNumber
```

```
FROM MAP-CH-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-CH-DataTypes (13) version6 (6) }
```

```
AddressString, ISDN-AddressString, BasicServiceCode, IMSI, IMEI, LCSClientExternalID,
LCSClientInternalID
```

```
FROM MAP-CommonDataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network
(1) modules (3) map-CommonDataTypes (18) version6 (6) }
```

```
DestinationRoutingAddress
```

```
FROM CAP-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) cap-datatypes (52) version1 (0) }
```

```
ServiceKey, DefaultCallHandling, DefaultSMS-Handling, NotificationToMSUser
```

```
FROM MAP-MS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-MS-DataTypes (11) version6 (6) }
```

```
MOLR-Type
```

```
FROM SS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Access (2)
modules (3) ss-DataTypes (2) version7 (7) }
```

```
BearerServiceCode
```

```
FROM MAP-BS-Code { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-BS-Code (20) version6 (6) }
```

```
TeleserviceCode
```

```
FROM MAP-TS-Code { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-TS-Code (19) version2 (2) }
```

```
SS-Code
```

```
FROM MAP-SS-Code { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-SS-Code (15) version6 (6) }
```

```
Ext-GeographicalInformation, LCSClientType, LCS-Priority, LocationType
```

```
FROM MAP-LCS-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-LCS-DataTypes (25) version7 (7) }
```

```
PositionMethodFailure-Diagnostic
```

```
FROM MAP-ER-DataTypes { ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1)
modules (3) map-ER-DataTypes (17) version7 (7) }
```

```
BasicService
```

```
FROM Basic-Service-Elements { ccitt identified-organization (4) etsi (0)
196 basic-service-elements (8) }
```

```
--
```

```
-- See "Digital Subscriber Signalling System No. one (DSS1) protocol"
```

```
-- ETS 300 196
```

```
--
```

```

ObjectInstance
FROM CMIP-1 {joint-iso-ccitt ms (9) cmip (1) version1 (1) protocol (3)}

ManagementExtension
FROM Attribute-ASN1Module {joint-iso-ccitt ms (9) smi (3) part2 (2) asn1Module (2) 1}

SystemType
FROM TS32215-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-
Operation-Maintenance (3) ts-32-215 (215) informationModel (0) asn1Module (2) version1 (1)}

SGSNPDPPRecord, GGSNPDPPRecord, SGSNMMRecord, SGSNSMORRecord, SGSNSMTRRecord, SGSNMTLCSRecord,
SGSNMOLCSRecord, SGSNNILCSRecord
FROM TS32215-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-
Operation-Maintenance (3) ts-32-215 (215) informationModel (0) asn1Module (2) version1 (1)}

MMSORRecord, MMSTRRecord
MMO1SRecord, MMO4FRqRecord, MMO4FRsRecord, MMO4DRecord, MMO1DRecord, MMO4RRecord, MMO1RRecord,
MMOMDRecord, MMR4FRqRecord, MMR4FRsRecord, MMR1NRqRecord, MMR1NRsRecord, MMR1RtRqRecord, MMR1RtRsRecord, MMR1RRecord,
MMR4DRqRecord, MMR4DRsRecord, MMR1RRRecord, MMR4RRqRecord, MMR4RRsRecord, MMRMDRecord, MMFRecord
FROM TS32235-DataTypes {itu-t (0) identified-organization (4) etsi (0) mobileDomain (0) umts-
Operation-Maintenance (3) ts-32-235 (235) informationModel (0) asn1Module (2) version1 (1)}

AE-title
FROM ACSE-1 {joint-iso-ccitt association-control (2) abstract-syntax (1) apdus (0) version (1) };
--
-- Note that the syntax of AE-title to be used is from
-- CCITT Rec. X.227 / ISO 8650 corrigendum and not "ANY"
-----
--
-- CALL AND EVENT RECORDS
--
-----

CallEventRecord ::= CHOICE
--
-- Record values 0..19 are 3G circuit switch specific
--          20..27 are 3G packet switch specific
--          30..50 are application specific
--
{
    moCallRecord          [0] MOCallRecord,
    mtCallRecord          [1] MTCallRecord,
    roamingRecord         [2] RoamingRecord,
    incGatewayRecord      [3] IncGatewayRecord,
    outGatewayRecord      [4] OutGatewayRecord,
    transitRecord         [5] TransitCallRecord,
    moSMSRecord           [6] MOSMSRecord,
    mtSMSRecord           [7] MTSMSRecord,
    moSMSIWRecord         [8] MOSMSIWRecord,
    mtSMSGWRecord         [9] MTSMSGWRecord,
    ssActionRecord        [10] SSActionRecord,
    hlrIntRecord          [11] HLRIntRecord,
    locUpdateHLRRecord    [12] LocUpdateHLRRecord,
    locUpdateVLRRecord    [13] LocUpdateVLRRecord,
    commonEquipRecord     [14] CommonEquipRecord,
    recTypeExtensions     [15] ManagementExtensions,
    termCAMELRecord       [16] TermCAMELRecord,
    mtLCSRecord           [17] MTLCSRecord,
    moLCSRecord           [18] MOLCSRecord,
    niLCSRecord           [19] NILCSRecord,

    sgsnPDPRecord        [20] SGSNPDPPRecord,
    ggsnPDPRecord        [21] GGSNPDPPRecord,
    sgsnMMRecord         [22] SGSNMMRecord,
    sgsnSMORRecord       [23] SGSNSMORRecord,
    sgsnSMTRRecord       [24] SGSNSMTRRecord,
    sgsnLCTRecord        [25] SGSNLCTRecord,
    sgsnLCORRecord       [26] SGSNLCORRecord,
    sgsnLCNRRecord       [27] SGSNLCNRRecord,

    mmsORRecord          [30] MMSORRecord,
    mmsTRRecord          [31] MMSTRRecord,
    mmO1SRecord          [30] MMO1SRecord,
    mmO4FRqRecord        [31] MMO4FRqRecord,
    mmO4FRsRecord        [32] MMO4FRsRecord,
    mmO4DRecord          [33] MMO4DRecord,
    mmO1DRecord          [34] MMO1DRecord,

```



<u>mmO4RRecord</u>	[ 35 ]	<u>MMO4RRecord,</u>
<u>mmO1RRecord</u>	[ 36 ]	<u>MMO1RRecord,</u>
<u>mmOMDRecord</u>	[ 37 ]	<u>MMOMDRecord,</u>
<u>mmR4FRecord</u>	[ 38 ]	<u>MMR4FRecord,</u>
<u>mmR1NRqRecord</u>	[ 38 ]	<u>MMR1NRqRecord,</u>
<u>mmR1NRsRecord</u>	[ 40 ]	<u>MMR1NRsRecord,</u>
<u>mmR1RtRqRecord</u>	[ 41 ]	<u>MMR1RtRqRecord,</u>
<u>mmR1RtRsRecord</u>	[ 42 ]	<u>MMR1RtRsRecord,</u>
<u>mmR1AFRecord</u>	[ 43 ]	<u>MMR1ARecord,</u>
<u>mmR4DRqRecord</u>	[ 44 ]	<u>MMR4DRqRecord,</u>
<u>mmR4DRsRecord</u>	[ 45 ]	<u>MMR4DRsRecord,</u>
<u>mmR1RRRecord</u>	[ 46 ]	<u>MMR1RRRecord,</u>
<u>mmR4RRqRecord</u>	[ 47 ]	<u>MMR4RRqRecord,</u>
<u>mmR4RRsRecord</u>	[ 48 ]	<u>MMR4RRsRecord,</u>
<u>mmRMDRecord</u>	[ 49 ]	<u>MMRMDRecord,</u>
<u>mmFRecord</u>	[ 50 ]	<u>MMFRecord</u>

}