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**Source:** SA5 (Telecom Management)  
**Title:** Rel-4 CR 32.235 (Charging data description for application services) Corrections for consistency with 23.140 (MMS)  
**Document for:** Decision  
**Agenda Item:** 7.5.3

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Doc-1st-Level	Spec	CR	Phase	Subject	Ca t	Version - Current	Version -New	Doc-2nd- Level	Workite m
SP-020017	32.235	001	Rel-4	Corrections for consistency with 23.140 (MMS)	F	4.0.0	4.1.0	S5-020043	OAM-CH

## CHANGE REQUEST

⌘ **32.235** CR **001** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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 for consistency with 23.140 (MMS)		
<b>Source:</b>	⌘ SA5		
<b>Work item code:</b>	⌘ OAM-CH	<b>Date:</b>	⌘ 18/01/2002
<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 <a href="#">TR 21.900</a> .		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>	⌘ During the joint SA5/T2 meeting on MMS charging (SA5#24 in Cancun, 11/2001), it was noticed that there are some inconsistencies between T2's TS 23.140 on Multimedia Messaging Service and SA5's TS 32.235. This CR aims at resolving these inconsistencies.
<b>Summary of change:</b>	⌘ This CR provides the following corrections on the definition of 'Charge Type' and 'Content Type' parameters: - Charge Type : 'reverse charging' and 'third-party financed' are removed from the parameter description as well as from the ASN.1 description. - Content Type : a proper definition and a reference to 23.140 are provided.
<b>Consequences if not approved:</b>	⌘ Inconsistency with TS 23.140

<b>Clauses affected:</b>	⌘ 2, 5.2, 5.3 and 6.1		
<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>	⌘		

## 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".
- ~~[7] 3GPP TR 23.039: "Interface protocols for the connection of Short Message Service Centres (SSMCs) to Short Message Entities (SMEs)"~~
- [8] "The Unicode Standard", Version 2.0, Unicode Consortium, Addison-Wesley Dev. Press, 1996.
- [9] ANSI X3.4-1986: "Information Systems – Coded Character Sets – 7-Bit American National Standard Code for Information Interchange (7-Bit ASCII)".
- [10] ISO 8859-1 (1987): "Information technology – 8-bit single-byte coded graphic character sets; Part 1: Latin alphabet No. 1".
- [11] RFC 2279, "UTF-8, a transformation format of ISO-10646".
- [12] 3GPP TS 26.090: "Mandatory Speech Codec speech processing functions AMR Speech Codec Speech Transcoding Functions".
- [13] Internet draft "RTP payload format and file storage format for AMR and AMR-WB audio"; IETF URL: <http://search.ietf.org/internet-drafts/draft-ietf-avt-rtp-amr-07.txt>
- NOTE: ~~The reference is work in progress in IETF/AVT working group and to be replaced by the appropriate RFC number once the Internet draft is approved within the IETF (IESG approval is scheduled to spring/summer 2001).~~
- [14] MP3, MPEG1-Audio ISO/IEC 11172-3, MPEG2-Audio ISO/IEC 11172-3: "Information technology; Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s; Part 3: Audio".
- [15] MIDI SDS, International Midi Association, 5316 West 57th Street, Los Angeles, CA 90056, (415) 321-MIDI.
- [16] ISO/IEC TR 13818-5:1997/Amd 1: "1999 Advanced Audio Coding (AAC)".
- [17] ITU-T Recommendation T.81 | ISO/IEC 10918-1:1992, "Information Technology – Digital compression and coding of continuous-tone still images: requirements and guidelines".

- [18] Graphics Interchange Format (Version 89a), Comuserve, Inc., Columbus, Ohio, 1990.
- [19] 3GPP TS 26.234: "Packet-switched Streaming Service (PSS); Protocols and Codecs".
- [20] ISO/IEC 14496-2:1999/FDAM4, ISO/IEC JTC1/SC 29/WG11 N3904, Pisa, January, 2001
- [21] ITU-T Recommendation H.263 (1998): "Video coding for low bit rate communication".
- [22] International Standard ISO/IEC 14496-2 (1999): "Information Technology – Coding of Audio-Visual Objects – Part 2: Visual".
- [23] ITU-T Recommendation H.263: "Annex X, Profiles and Levels Definition"
- [825] 3GPP TS 32.205: "Charging Data Description for the Circuit Switched (CS) domain".
- [926] 3GPP TS 32.215: "Charging Data Description for the Packet Switched (PS) domain".
- [1027] GSM 12.01: "Digital cellular telecommunication system (Phase 2); Common aspects of GSM Network Management (NM)".
- [1128] IETF RFC 959: "File Transfer Protocol (FTP)"; October 1985.
- [1229] IETF RFC 783: "Trivial File Transfer Protocol (TFTP)"; revision 2.
- [30] ~~RFC 2045: "Multipurpose Internet Mail Extensions (MIME); Part One : Format of Internet Message Bodies".~~

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## 5 Parameter Description

### 5.1 Access Correlation

A unique identifier delivered by the used access network domain of the originated/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.

### 5.2 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
- Pre-paid

- Reply – a definition: .etc. 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. . The originator of an MM may also indicate to take over the charge for the reply MM. In such case the charge type is "reverse".

## 5.3 Content Type

~~Multiple media elements shall be combined into a composite single MM using MIME multipart format as defined in RFC 2046 [6]. The media type of a single MM element shall be identified by its appropriate MIME type whereas the media format shall be indicated by its appropriate MIME subtype.~~

~~The Content Type of the MM refers to the MIME type (i.e. text type, image type, audio type and video type) of the MM multimedia content as defined in RFC 2045 [739] and RFC 2046 [6].~~

~~For a complete description of media formats supported by MMS, refer to 3GPP TS 23.140 [4].~~

~~Content type maps directly since both are defined as being MIME content types.~~

~~The content type of the message from the external server should be mapped to an appropriate MIME type/subtype and attached to the MM. (e.g. SMS via 3GPP TR 23.039[7] -> MM with text/plain).~~

~~The media type of a single MM element shall be identified by its appropriate MIME type whereas the media format shall be indicated by its appropriate MIME subtype.~~

~~To ensure interoperability with formats widely used (e.g. in the internet community) and to guarantee a minimum support and compatibility between multimedia messaging capable terminals the support of the following formats or codecs is suggested:~~

### ~~1) Text types~~

~~Minimum supported set of:~~

- ~~— plain text. Any character encoding (charset) that contains a subset of the logical characters in Unicode [8] shall be used (e.g. US-ASCII [9], ISO-8859-1[10], UTF-8[11], Shift\_JIS, etc.).~~

~~Unrecognised subtypes of "text" shall be treated as subtype "plain" as long as the MIME implementation knows how to handle the charset.~~

### ~~2) Image type~~

~~Minimum supported set of:~~

~~Baseline JPEG [17].~~

~~Suggested format/codecs for media type Image:~~

- ~~— GIF 89a [18].~~

### ~~3) Audio types~~

~~Minimum supported set of:~~

- ~~— AMR [12]; organised in the Bitstream Syntax as proposed by the IETF [13].~~

~~Suggested formats/codecs for media type Audio:~~

- ~~— MP3 [14].~~
- ~~— MIDI [15].~~
- ~~— AAC [16].~~

### ~~4) Video types~~

~~Minimum supported set of:~~

- ~~— ITU T H.263 baseline [21].~~

~~Suggested formats/codecs:~~

- ~~— MPEG-4 Visual Simple Profile Level 0 [22] and [20].~~
- ~~— H.263 profile 3 level 10 [23].~~

To ensure interoperability for the transport of speech, audio and/or video media associated with an MM, the MP4 file format shall be supported. The usage of the MP4 file format shall follow the technical specifications and the implementation guidelines specified in 3GPP TS 26.234 [19].

~~NOTE:—The present document [19] specifies a mechanism for the registration of AMR and H.263 codestreams to be included in MP4 files.~~

~~5) Application type~~

~~Any other unrecognised subtype and unrecognised character set, which aren't handled as "text/plain" shall be treated as "application/octet-stream".~~

## 5.4 DeliveryAckRequest/Delivery Result

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.

## 5.5 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.

## 5.6 Delivery Type

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

## 5.7 Duration of Transmission/Storage

These fields contain 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 user agent and the MMS relay server; e.g. for streaming purposes. 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 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.

## 5.10 Message ID/Reply Message ID

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.

## 5.11 Message Class

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

## 5.12 Message Size

The message size includes the number of octets during the MM transmission.

## 5.13 Message Type

A type that consists of one of the following four choices: Notification, Message MM, Delivery Report, Read-Reply.

## 5.14 MMS Relay Address

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

## 5.15 Originator Address/Recipient Address

These fields 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 address.

## 5.16 Record Extension

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

## 5.17 Record Type

The field identifies the type of the record, e.g. MMSO-CDR and MMSR-CDR.

## 5.18 Sequence number

This field contains a running sequence number employed to link the partial records generated for a particular MM transfer over the air interface only.

## 5.19 Status Code

This field 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[25][8].
- cause for record closing, refer TS 32.215[26][9].

The status code is also extended by MMS specific information.

## 5.20 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.

## 5.21 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.

## 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[25][8] and TS 32.215 for PS domain[26][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[25][8]
```

```
ChargingID, IPAddress, GSNAddress
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[26][9]
```

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

```
MMSORRecord ::= 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
}
```

```
MMSRRRecord ::= 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),
  reverse (3),
  third party financed (4)
}
```

```
CircuitSwitchedAccess ::= SEQUENCE
```

```
{
  mSCIIdentifier [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[25][8] as 'CauseForTerm'
  -- (cause for termination) and cause code 16 to 20 are defined
  -- in TS 32.215 [26][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 [1027] and of the use of FTP see [1128] and TFTP see [1229].

