
Source: SA5 (Telecom Management)
Title: Rel-5 CR 32.235 (Service Charging): "Add support of VASP in MMS Charging - alignment with T2's 23.140"
Document for: Approval
Agenda Item: 7.5.3

| Doc-1st-Level | Spec | CR | Rev | Phase | Subject | Cat | Version-Current | Doc-2nd-Level | Workitem |
|---------------|--------|-----|-----|-------|---|-----|-----------------|---------------|----------|
| SP-030060 | 32.235 | 013 | - | Rel-5 | Add support of VASP in MMS Charging - alignment with T2's 23.140 | B | 5.1.0 | S5-034159 | OAM-CH |

CHANGE REQUEST

⌘ **32.235 CR 013** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

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

Proposed change affects: UICC apps ME Radio Access Network Core Network

| | | | |
|------------------------|---|-----------------|---|
| Title: | ⌘ Add support of VASP in MMS Charging - alignment with T2's 23.140 | | |
| Source: | ⌘ S5 | | |
| Work item code: | ⌘ OAM-CH | Date: | ⌘ 28/02/2003 |
| Category: | ⌘ B | Release: | ⌘ Rel-5 |
| | Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 . | | Use <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) Rel-6 (Release 6) |

| | |
|--------------------------------------|--|
| Reason for change: | ⌘ A new interface (called MM7) between the MMS Relay/Server and MMS VAS applications was added to TS 23.140 for Release 5. This CR introduces dedicated CDRs in order to provide charging functionality of the MMS VASP. |
| Summary of change: | ⌘ The following "VASP" related CDRs are introduced : 1) MM7 Submission CDR (MM7S-CDR) 2) MM7 Deliver Request CDR (MM7DRq-CDR) 3) MM7 Deliver Response CDR (MM7DRs-CDR) 4) MM7 Cancel CDR (MM7C-CDR) 5) MM7 Replace CDR (MM7R-CDR) 6) MM7 Delivery Report Request CDR (MM7DRRq-CDR) 7) MM7 Delivery Report Response CDR (MM7DRRs-CDR) 8) MM7 Read reply report Request CDR (MM7RRq-CDR) 9) MM7 Read reply report Response CDR (MM7RRs-CDR) |
| Consequences if not approved: | ⌘ It will not be possible for operators to charge MMS VASP for the MMS usage. |

| | | | | | | | | | | | |
|------------------------------|--|---|---|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|--|---|
| Clauses affected: | ⌘ 3.2, 4.2, 5 and 6 | | | | | | | | | | |
| Other specs affected: | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> | Y | N | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Other core specifications Test specifications O&M Specifications | ⌘ |
| Y | N | | | | | | | | | | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | |
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| <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | | | | | | | | |
| Other comments: | ⌘ | | | | | | | | | | |

How to create CRs using this form:

Change in Clause 3.2

3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in 3GPP TR 21.905 [1], 3GPP TS 32.200 [2] and 3GPP TS 23.140 [4] and the following apply:

| | |
|----------------------|---|
| EM | Element Manager |
| MIME | Multipurpose Internet Mail Extensions |
| MM | Multimedia Message |
| MMS | Multimedia Messaging Service |
| MMSE | Multimedia Messaging Service Element (can also be Multimedia Messaging Service Environment in other technical specifications) |
| MMSO | Multimedia Messaging Service Originator |
| MMSR | Multimedia Messaging Service Recipient |
| VAS | Value Added Service |
| VASP | Value Added Service Provider |

End of Change in Clause 3.2

Change in Clause 4.2.5

[4.2.5 MMS records for MMS VAS applications](#)

[The following subclauses specify CDRs created in the originator MMS Relay/Server based on messages flowing over the MM7 reference point. Unless otherwise specified, the CDR parameters are copied from the corresponding MM7 message parameters as applicable.](#)

[4.2.5.1 MM7 Submission CDR \(MM7S-CDR\)](#)

[If enabled, an MM7 Submission Charging Data Record \(MM7S-CDR\) shall be produced in the originator MMS Relay/Server for each MM submitted in an MM7_submit.REQ by a VASP to the originator MMS Relay/Server if and when the originator MMS Relay/Server responds with an MM7_submit.RES. The operator can configure whether this CDR, if enabled, shall only be created for MM7_submit.RES indicating acceptance of the submitted MM, or also for the unsuccessful submissions.](#)

Table 4.28: MM7 Submission CDR (MM7S-CDR)

| <u>Field</u> | <u>Category</u> | <u>Description</u> |
|--|-----------------|---|
| <u>Record Type</u> | M | MM7 Submission record. |
| <u>Originator MMS Relay/Server Address</u> | M | .IP address or domain name of originator MMS Relay/Server. |
| <u>Linked ID</u> | C | This field is present in the CDR only if the MM defines a correspondence to a previous message that was delivered by the MMS Relay/Server. The MM identification provided by the originator MMS Relay/Server. |
| <u>VASP ID</u> | M | Identifier of the VASP for this MMS Relay/Server |
| <u>VAS ID</u> | M | Identifier of the originating application. |
| <u>Message ID</u> | M | The MM identification provided by the originator MMS Relay/Server. |
| <u>Originator Address</u> | M | The address of the MM originator. |
| <u>Recipients address list</u> | M | The address(es) of the recipient MMS User Agent(s) of the MM. Multiple addresses are possible if the MM is not a reply MM. |
| <u>Service code</u> | C _o | Charging related information that is used directly for billing purposes |
| <u>Content type</u> | M | The content type of the MM content. |
| <u>MM component list</u> | M _o | The list of media components with volume size. |
| <u>Message size</u> | M | The total size of the MM content. |
| <u>Message class</u> | C _o | The class selection such as personal, advertisement, information service if specified in the MM7_submit_REQ. |
| <u>Charge Information</u> | M _o | The charge indication and charge type. |
| <u>Submission Time</u> | C _o | The time at which the MM was submitted from the VASP if specified in the MM7_submit_REQ. |
| <u>Time of Expiry</u> | C _o | The desired date of expiry or duration of time prior to expiry for the MM if specified by the VASP |
| <u>Earliest Time Of Delivery</u> | C | This field contains either the earliest time to deliver the MM or the number of seconds to wait before delivering the MM if specified by the VASP |
| <u>Delivery Report Requested</u> | M _o | This field indicates whether a delivery report has been requested by the VASP or not. |
| <u>Reply Charging</u> | C _o | A request for reply-charging if specified by the VASP |
| <u>Read reply requested</u> | M _o | A request for read reply report as specified in the MM7_submit.REQ. |
| <u>Reply Deadline</u> | C _o | In case of reply-charging the latest time of submission of replies granted to the recipient(s) as specified by the VASP |
| <u>Reply Charging Size</u> | C _o | In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s) as specified by the VASP |
| <u>Priority</u> | C _o | The priority (importance) of the message if specified by the VASP |
| <u>Message Distribution Indicator</u> | C _o | This field is present if specified in the MM7_submit.REQ If set to "false" the VASP has indicated that content of the MM is not intended for redistribution. If set to "true" the VASP has indicated that content of the MM can be redistributed. |
| <u>Request Status Code</u> | M _o | The status code of the associated MM7_submit_REQ |
| <u>Status Text</u> | C _o | This field includes a more detailed technical status of the message at the point in time when the CDR is generated. This field is only present if the MM submission is rejected. |
| <u>Record Time Stamp</u> | M _o | Time of generation of the CDR. |
| <u>Local Record Sequence Number</u> | M _o | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| <u>Record extensions</u> | C _o | A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension. |

4.2.5.2 MM7 Deliver Request CDR (MM7DRq-CDR)

If enabled, a MM7 Deliver Request Charging Data Record (MM7DRq-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server sends an MM7_deliver.REQ to the recipient MMS VASP

Table 4.29: MM7 Deliver Request record (MM7DRq -CDR)

| <u>Field</u> | <u>Category</u> | <u>Description</u> |
|---|----------------------|--|
| <u>Record Type</u> | <u>M</u> | <u>MM7 Deliver 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>Linked ID</u> | <u>C</u> | <u>This field is present in the CDR only if the MM defines a correspondence to a previous message that was delivered by the MMS Relay/Server. The MM identification provided by the originator MMS Relay/Server.</u> |
| <u>Reply Charging ID</u> | <u>C</u> | <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> |
| <u>Originator address</u> | <u>M</u> | <u>The address of the MMS User Agent as used in the MM7_deliver_REQ.</u> |
| <u>Recipient address</u> | <u>M</u> | <u>The address of the MM recipient of the MM.</u> |
| <u>MM component list</u> | <u>M₀</u> | <u>The list of media components with volume size.</u> |
| <u>Message size</u> | <u>M₀</u> | <u>The total size of the MM content.</u> |
| <u>Content type</u> | <u>M</u> | <u>The content type of the MM content.</u> |
| <u>Priority</u> | <u>C₀</u> | <u>The priority (importance) of the message if specified by the VASP</u> |
| <u>Record Time Stamp</u> | <u>M₀</u> | <u>Time of generation of the CDR</u> |
| <u>Local Record Sequence Number</u> | <u>M₀</u> | <u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u> |
| <u>Record extensions</u> | <u>C₀</u> | <u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u> |

4.2.5.3 MM7 Deliver Response CDR (MM7DRs-CDR)

If enabled, a MM7 Deliver Response Charging Data Record (MM7DRs-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives an MM7_deliver.RES from the recipient MMS VASP

Table 4.30: MM7 Deliver Response record (MM7DRs-CDR)

| <u>Field</u> | <u>Category</u> | <u>Description</u> |
|---|----------------------|--|
| <u>Record Type</u> | <u>M</u> | <u>MM7 Deliver 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>Service code</u> | <u>C₀</u> | <u>Charging related information that is used directly for billing purposes</u> |
| <u>Request Status Code</u> | <u>M₀</u> | <u>The status code of the associated MM7_deliver_REQ</u> |
| <u>Status Text</u> | <u>M₀</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>M₀</u> | <u>Time of generation of the CDR</u> |
| <u>Local Record Sequence Number</u> | <u>M₀</u> | <u>Consecutive record number created by this node. The number is allocated sequentially including all CDR types.</u> |
| <u>Record extensions</u> | <u>C₀</u> | <u>A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension.</u> |

4.2.5.4 MM7 Cancel CDR (MM7C-CDR)

If enabled, an MM7 Cancel Charging Data Record (MM7C-CDR) shall be produced in the MMS Relay/Server if and when the MMS Relay/Server has sent an MM7_cancel.RES to the MMS VASP.

Table 4.31: MM7 Cancel record (MM7C-CDR)

| <u>Field</u> | <u>Category</u> | <u>Description</u> |
|--|-----------------|---|
| <u>Record Type</u> | M | MM7 Cancel record |
| <u>Originator MMS Relay/Server Address</u> | M | .IP address or domain name of originator MMS Relay/Server. |
| <u>VASP ID</u> | M | Identifier of the VASP for this MMS Relay/Server |
| <u>VAS ID</u> | M | Identifier of the originating application. |
| <u>Message ID</u> | M | The MM identification provided by the originator MMS Relay/Server. |
| <u>Originator Address</u> | M | The address of the MM originator. |
| <u>Request Status Code</u> | M _o | The status code of the associated MM7_cancel.REQ. |
| <u>Status Text</u> | C _o | This field includes the status text as received in the MM7_cancel.RES corresponding to the Request Status Code. Present only if provided in the MM7_cancel.RES. |
| <u>Sequence Number</u> | M _o | Record number. |
| <u>Time Stamp</u> | M _o | Time of generation of the CDR. |
| <u>Record extensions</u> | C _o | A set of network/manufacture specific extensions to the record. |

4.2.5.54 MM7 Replace CDR (MM7R-CDR)

If enabled, an MM7 Replace Charging Data Record (MM7R-CDR) shall be produced in the MMS Relay/Server if and when the MMS Relay/Server has sent an MM7_replace.RES to the MMS VASP.

Table 4.32: MM7 Replace record (MM7R-CDR)

| <u>Field</u> | <u>Category</u> | <u>Description</u> |
|--|-----------------|---|
| <u>Record Type</u> | M | MM7 Replace record |
| <u>Originator MMS Relay/Server Address</u> | M | .IP address or domain name of originator MMS Relay/Server. |
| <u>VASP ID</u> | M | Identifier of the VASP for this MMS Relay/Server |
| <u>VAS ID</u> | M | Identifier of the originating application. |
| <u>Message ID</u> | M | The MM identification provided by the originator MMS Relay/Server. |
| <u>Originator Address</u> | M | The address of the MM originator. |
| <u>Service code</u> | C _o | Charging related information that is used directly for billing purposes |
| <u>Content type</u> | M | The content type of the MM content. |
| <u>Submission time</u> | C _o | The time at which the MM was submitted from the VASP if specified in the MM7_replace_REQ. |
| <u>Time of Expiry</u> | C _o | The desired date of expiry or duration of time prior to expiry for the MM if specified by the VASP |
| <u>Earliest Time Of Delivery</u> | C _o | This field contains either the earliest time to deliver the MM or the number of seconds to wait before delivering the MM if specified by the VASP |
| <u>Request Status Code</u> | M _o | The status code of associated MM7_replace.REQ. |
| <u>Status Text</u> | C _o | This field includes the status text as received in the MM7_replace.RES corresponding to the Request Status Code. Present only if provided in the MM7_replace.RES. |
| <u>Sequence Number</u> | M _o | Record number |
| <u>Time Stamp</u> | M _o | Time of generation of the CDR. |
| <u>Record extensions</u> | C _o | A set of network/manufacture specific extensions to the record. |

4.2.5.65 MM7 Delivery Report Request CDR (MM7DRRq-CDR)

If enabled, a MM7 Delivery Report Request Charging Data Record (MM7DRRq-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server sends a MM7_delivery_report.REQ to the MMS VASP

Table 4.33: MM7 Delivery Report Request record (MM7DRRq-CDR)

| Field | Category | Description |
|------------------------------------|----------------|--|
| Record Type | M | MM7 Delivery Report Request record. |
| Recipient MMS Relay/Server Address | M _o | IP address or domain name of the recipient MMS Relay/Server. |
| Message ID | M | The MM identification provided by the originator MMS Relay/Server. |
| Originator address | M _o | The address of the VAS that submitted the original 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 MM7_delivery_report.REQ. |
| MM Status Code | M | The status code of the delivered MM as received in the MM7_delivery_report.RES. |
| MM Status Text | C _o | This field includes the status text as received in the MM7_delivery_report.RES corresponding to the MM Status Code. Present only if provided in the MM7_delivery_report.RES. |
| Record Time Stamp | M _o | Time of generation of the CDR |
| Local Record Sequence Number | M _o | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| Record extensions | C _o | A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension. |

4.2.5.76 MM7 Delivery Report Response CDR (MM7DRRs-CDR)

If enabled, an MM7 Delivery Report Response Charging Data Record (MM7DRRs-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives a MM7_delivery_report.RES from the MMS VASP.

Table 4.34: MM7 Delivery Report Response record (MM7DRRs-CDR)

| Field | Category | Description |
|------------------------------------|----------------|---|
| Record Type | M | MM7 Delivery Report Response record. |
| Recipient MMS Relay/Server Address | M _o | IP address or domain name of the recipient MMS Relay/Server. |
| Message ID | M | The MM identification provided by the originator MMS Relay/Server. |
| Originator address | M _o | The address of the VAS that submitted the original MM. |
| Recipient address | M | The address of the MM recipient of the MM. |
| Request Status Code | M _o | The status code of the associated MM7_delivery_report.REQ. |
| Status Text | C _o | This field includes the status text as received in the MM7_delivery_report.RES corresponding to the Request Status Code. Present only if provided in the MM7_delivery_report.RES. |
| Record Time Stamp | M _o | Time of generation of the CDR |
| Local Record Sequence Number | M _o | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| Record extensions | C _o | A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension. |

4.2.5.87 MM7 Read reply report Request CDR (MM7RRq-CDR)

If enabled, a MM7 Read reply report Request Charging Data Record (MM7RRq-CDR) shall be produced in the originator MMS Relay/Server if and when the recipient MMS Relay/Server sends a MM7_read_reply_report.REQ to the recipient MMS Relay/Server.

Table 4.35: MM7 Read reply report Request record (MM7RRq-CDR)

| Field | Category | Description |
|------------------------------------|----------------|---|
| Record Type | M | MM7 Read reply report Request record. |
| Recipient MMS Relay/Server Address | M _o | IP address or domain name of the recipient MMS Relay/Server. |
| Message ID | M | The MM identification provided by the originator MMS Relay/Server. |
| Originator address | M _o | The address of the VAS that submitted the original 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 MM7 Read reply report.REQ. |
| Read Status | M | The status of the MM (e.g. Read, deleted without being read, etc.) as sent in the MM7 read reply report.REQ. |
| MM Status Text | C _o | This field includes the status text as received in the MM7 read reply report.RES corresponding to the Read Status. Present only if provided in the MM7 read reply report.REQ. |
| Record Time Stamp | M _o | Time of generation of the CDR |
| Local Record Sequence Number | M _o | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| Record extensions | C _o | A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension. |

4.2.5.8 MM7 Read reply report Response CDR (MM7RRs-CDR)

If enabled, an MM7 Read reply report Response Charging Data Record (MM7RRs-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server receives a MM7 Read reply report.RES from the originator MMS VASP.

Table 4.36: MM7 Read reply report Response record (MM7RRs-CDR)

| Field | Category | Description |
|------------------------------------|----------------|---|
| Record Type | M | MM7 Read reply report Response record. |
| Recipient MMS Relay/Server Address | M _o | IP address or domain name of the recipient MMS Relay/Server. |
| Message ID | M | The MM identification provided by the originator MMS Relay/Server. |
| Originator address | M _o | The address of the VAS that submitted the original MM. |
| Recipient address | M | The address of the MM recipient of the MM. |
| Request Status Code | M _o | The status code of the associated MM7 read reply report.REQ. |
| Status Text | C _o | This field includes the status text as received in the MM7 read reply report.RES corresponding to the Request Status Code. Present only if provided in the MM7 read reply report.RES. |
| Record Time Stamp | M _o | Time of generation of the CDR |
| Local Record Sequence Number | M _o | Consecutive record number created by this node. The number is allocated sequentially including all CDR types. |
| Record extensions | C _o | A set of network/manufacture specific extensions to the record. Conditioned upon the existence of an extension. |

End of Change in Clause 4.2.5

Change in Clause 5

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 or recipient 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 Attributes List

This field contains a list of information element names that are used in the MM1_mmbox_view.REQ, which request corresponding information elements from the MMs to be conveyed in the MM1_mmbox_view.RES. The list of known information element names are those currently defined for the MM1_retrieve.RES and MM1_notification.REQ. In the absence of the Attributes list information element, the MMS Relay/Server shall, by default and if available, select these information elements from each viewed MM: Message ID, Date and time, Sender address, Subject, Message size, MM State, and MM Flags.

5.5 Charge Information

This field consists of two parts, the charged ~~indicator~~ party and the charge type.

The Charged Party is an indication on which party is expected to be charged for an MM e.g. the sending, receiving, both parties or neither. This indicator ~~is~~ is only applicable to MM7 CDRs (for VASP-originated MMs). ~~It (charge/no charge) is may be provided by the VASP when submitting an MM. but it is up to the operator to take this indication into account or to override it, should be defined by the MMS Relay/Server~~

The Charge Type indicates the type of subscription (i.e. postpaid or prepaid). This indicator is derived from the subscription parameters and is only applicable to MM1 CDRs (for MMS User Agent originated MMs).

The Charged Parties are as follows:

- Sender: This indicates the sending party is expected to be charged ('normal' charging model)
- Recipient: This indicates the receiving party is expected to be charged ('reverse' charging model). This model implies there is ~~there is~~ a commercial agreement between the Recipient and the VASP.
- Both: This indicates both the sending and the receiving parties are expected to be charged ('shared' charging model)
- Neither: This indicates neither the sending nor the receiving parties are expected to be charged ('free of charge' charging model)

The Charge types are as follows:

- ~~Normal~~ Postpaid
- Prepaid

~~—Reply: An originator of the MMS may 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.~~

5.6 Content Type

The Content Type of the MM as defined in TS 23.140 [4].

5.7 Delivery Report Requested

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.

5.8 Duration of Transmission

This field 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 User Agent and the MMS Relay/Server; e.g. for streaming purposes.

Note that 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 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.

5.10 Forward Counter

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

5.11 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.

5.12 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.

5.13 Limit

This field contains a number that may be provided in the MM1_mmbox_view.REQ to specify a limit for the number of MMs the information elements to which shall be returned in the MM1_mmbox_view.RES.

5.14 Linked ID

[This field identifies a correspondance to a previous valid message delivered to the VASP](#)

5.4415 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.

5.4516 Managing Address

This field contains the managing MMS User Agent address i.e. the MMS User Agent that sends and receives transactions related to the MMS management. The MMS supports the use of E-Mail addresses (RFC 822) [5], MSISDN (E.164) or IP address.

5.4617 Message Class

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

5.18 Message Distribution Indicator

[This is an indication of type Boolean whether \(value TRUE\) or not \(value FALSE\) the VASP has indicated the content of the MM is intended for redistribution.](#)

5.4719 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.

5.4820 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.

5.4921 Message selection

Messages which are to be viewed may be selected by a list of Message References or by a selection based on MM State and/or MM Flags keywords.

5.2022 Message Size

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

The message size in a CDR is calculated from the event ("abstract message") on the MM1 reference point or on the MM4 reference point that triggered the creation of this CDR, as specified in table 4.1 - 4.3. E.g. for the O1S-CDR this is the MM1_submit_RES, and for the O4FRq-CDR it is the MM4_forward_REQ.

5.2123 MMS Storage Information

This field includes following storage information elements for the MMS containing the MM State, MM Flags, Store Status, Store Status Text and Stored Message Reference.

- MM State

This field contains the state of the MM.

- MM Flags

This field contains the keyword flags of the MM

- Store Status

This field contains an appropriate status value of the stored MM, e.g. stored, error-transient-mailbox-full,...

- Store Status Text

This field includes a more detailed technical description of the store status at the point in time when the CDR is generated

- Stored Message Reference

A reference of the newly stored MM.

5.2224 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].

5.2325 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.

5.2426 MM Listing

This field contains a list of information elements from the MMs returned within the MM1_mmbox_view.RES. The listing shall consist of the following information elements, separately grouped for each MM returned in the list:

- Message reference: a unique reference to an MM
- Information elements corresponding to those requested in the Message Selection information element on the MM1_mmbox_view.REQ;

5.2527 MM Status Code

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

5.2628 Originator Address

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

5.2729 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.

5.2830 Priority

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

5.2931 Quotas

The quotas of the MMBBox in messages and/or octets identified with Messages or Octets

5.3032 Quotas requested

This is an indication that the Managing User Agent has requested the current message and/or size quotas.

5.3133 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).

5.3234 Read Status

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

5.3335 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.

5.3436 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.

5.3537 Recipients Address List

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

5.3638 Record Extensions

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

5.3739 Record Time Stamp

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

5.3840 Record Type

The field identifies the type of the record, see TS 32.205 [8].

5.3941 Reply Charging

This field indicates whether the ~~the~~ originator of the MM is willing to take over the charge for the sending of a reply-MM to their submitted MM from the recipient(s). ~~Therefore~~In this case the originator MMS Relay/Server ~~should~~ marks

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.

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).

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).

In the MM7 Submission CDR (7S-CDR) this parameter indicates whether the originator MMS VASP has requested reply-charging (value TRUE) or not (value FALSE).

5.4042 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.

5.4143 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.

In the MM7 Submission CDR (7S-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 VASP.

5.4244 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.

In the MM7 Submission CDR (7S-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 VASP.

5.4345 Report allowed

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

5.4446 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, etc.). For further details see TS 23.140 [4].

5.4547 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.

5.4748 Sender Visibility

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

5.4849 Service code

This field contains charging information provided by the VASP to the MMS R/S for use by the billing system to properly bill the user for the service being supplied. The usage of the “service code” is, in the release, open to any usage envisioned by the operators, service providers or MMS Relay/Server vendors. In this release only the format, but not the content of the “service code” field is defined.

5.4950 Start

This field contains a number that may be used in the MM1_mmbbox_view.REQ to index the first MM to be viewed, relative to the selected set of MMs, allowing partial views to be requested

5.4851 Status Text

This field includes a more detailed technical status of the message at the point in time when the CDR is generated..

5.4952 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.

5.5053 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.

5.5154 Totals

The total number of messages and/or octets for the MMBox, identified with Messages or Octets

5.5255 Totals requested

This is an indication that the Managing User Agent has requested the current total number of messages and/or size contained by the MMBox.

5.5356 Upload Time

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

5.5657 VAS ID

This field specifies the identification of the VASP as defined in TS 23.140 [4]

5.5758 VASP ID

[This field specifies the identification of the originating application as defined in TS 23.140 \[4\]](#)

End of Change in Clause 5

Change in Clause 6

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
{
  recordType                [0] CallEventRecordType,
  originatorMmsRSAddress    [1] MMSRSAddress,
  messageID                 [2] OCTET STRING,
  replyChargingID           [3] OCTET STRING OPTIONAL,
  originatorAddress         [4] MMSAgentAddress,
  recipientAddresses        [5] MMSAgentAddresses,
  accessCorrelation         [6] AccessCorrelation OPTIONAL,
  contentType               [7] ContentType,
  mmComponentType          [8] MMComponentType OPTIONAL,
  messageSize               [9] DataVolume,
  messageClass              [10] MessageClass OPTIONAL,
  chargeInformation         [11] ChargeInformation OPTIONAL,
  submissionTime            [12] TimeStamp OPTIONAL,
  timeOfExpiry              [13] WaitTime OPTIONAL,
  earliestTimeOfDelivery    [14] WaitTime OPTIONAL,
  durationOfTransmission    [15] INTEGER OPTIONAL,
  requestStatusCode         [16] RequestStatusCodeType OPTIONAL,
  deliveryReportRequested   [17] BOOLEAN OPTIONAL,
  replyCharging             [18] BOOLEAN OPTIONAL,
  replyDeadline             [19] WaitTime OPTIONAL,
  replyChargingSize         [20] DataVolume OPTIONAL,
  priority                  [21] PriorityType OPTIONAL,
  senderVisibility          [22] BOOLEAN OPTIONAL,
  readReplyRequested        [23] BOOLEAN OPTIONAL,
  statusText                [24] StatusTextType,
  recordTimeStamp           [25] TimeStamp,
  localSequenceNumber       [26] LocalSequenceNumber OPTIONAL,
  recordExtensions          [27] ManagementExtensions OPTIONAL,
  mMBoxStorageInformation   [28] MMBoxStorageInformation OPTIONAL
}
```

```

MMO4FRqRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    originatorMmsRSAddress    [1] MMSRSAddress,
    recipientMmsRSAddress     [2] MMSRSAddress,
    messageID                 [3] OCTET STRING,
    3GPPVersion              [4] OCTET STRING OPTIONAL,
    originatorAddress         [5] MMSAgentAddress,
    recipientAddresses        [6] MMSAgentAddresses,
    contentType               [7] ContentType,
    mmComponentType           [8] MMComponentType OPTIONAL,
    messageSize               [9] DataVolume,
    messageClass              [10] MessageClass OPTIONAL,
    submissionTime            [11] TimeStamp,
    timeOfExpiry              [12] WaitTime OPTIONAL,
    deliveryReportRequested   [13] BOOLEAN,
    priority                  [14] PriorityType OPTIONAL,
    senderVisibility          [15] BOOLEAN,
    readReplyRequested        [16] BOOLEAN,
    acknowledgementRequest    [17] BOOLEAN,
    forwardCounter            [18] INTEGER OPTIONAL,
    forwardingAddress         [19] MMSAgentAddresses OPTIONAL,
    recordTimeStamp           [20] TimeStamp,
    localSequenceNumber       [21] LocalSequenceNumber OPTIONAL,
    recordExtensions          [22] ManagementExtensions OPTIONAL
}

MMO4FRsRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    originatorMmsRSAddress    [1] MMSRSAddress OPTIONAL,
    recipientMmsRSAddress     [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
}

MMO4DRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    recipientMmsRSAddress     [1] MMSRSAddress OPTIONAL,
    originatorMmsRSAddress    [2] MMSRSAddress OPTIONAL,
    messageID                 [3] OCTET STRING,
    3GPPVersion              [4] OCTET STRING OPTIONAL,
    originatorAddress         [5] MMSAgentAddress OPTIONAL,
    recipientAddress          [6] MMSAgentAddress,
    mmDateAndTime             [7] TimeStamp,
    acknowledgementRequest    [8] BOOLEAN,
    mmStatusCode              [9] MMStatusCodeType,
    statusText                [10] StatusTextType OPTIONAL,
    recordTimeStamp           [11] TimeStamp OPTIONAL,
    localSequenceNumber       [12] LocalSequenceNumber OPTIONAL,
    recordExtensions          [13] ManagementExtensions OPTIONAL
}

MMO1DRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    recipientMmsRSAddress     [1] MMSRSAddress OPTIONAL,
    originatorMmsRSAddress    [2] MMSRSAddress OPTIONAL,
    accessCorrelation         [3] AccessCorrelation OPTIONAL,
    messageID                 [4] OCTET STRING,
    3GPPVersion              [5] OCTET STRING OPTIONAL,
    originatorAddress         [6] MMSAgentAddress OPTIONAL,
    recipientAddress          [7] MMSAgentAddress,
    mmStatusCode              [8] MMStatusCodeType OPTIONAL,
    recordTimeStamp           [9] TimeStamp OPTIONAL,
    localSequenceNumber       [10] LocalSequenceNumber OPTIONAL,
    recordExtensions          [11] ManagementExtensions OPTIONAL
}

```

```

MMO4RRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    recipientMmsRSAddress     [1] MMSRSAddress OPTIONAL,
    originatorMmsRSAddress    [2] MMSRSAddress OPTIONAL,
    messageID                 [3] OCTET STRING,
    3GPPVersion               [4] OCTET STRING OPTIONAL,
    originatorAddress         [5] MMSAgentAddress OPTIONAL,
    recipientAddresses        [6] MMSAgentAddresses OPTIONAL,
    mmDateAndTime             [7] TimeStamp OPTIONAL,
    acknowledgementRequest    [8] BOOLEAN,
    readStatus                 [9] MMSStatusCodeType OPTIONAL,
    statusText                 [10] StatusTextType OPTIONAL,
    recordTimeStamp           [11] TimeStamp OPTIONAL,
    localSequenceNumber       [12] LocalSequenceNumber OPTIONAL,
    recordExtensions          [13] ManagementExtensions OPTIONAL
}

MMO1RRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    recipientMmsRSAddress     [1] MMSRSAddress OPTIONAL,
    originatorMmsRSAddress    [2] MMSRSAddress OPTIONAL,
    accessCorrelation         [3] AccessCorrelation OPTIONAL,
    messageID                 [4] OCTET STRING,
    3GPPVersion               [5] OCTET STRING OPTIONAL,
    originatorAddress         [6] MMSAgentAddress OPTIONAL,
    recipientAddress          [7] MMSAgentAddress OPTIONAL,
    readStatus                 [8] MMSStatusCodeType OPTIONAL,
    recordTimeStamp           [9] TimeStamp OPTIONAL,
    localSequenceNumber       [10] LocalSequenceNumber OPTIONAL,
    recordExtensions          [11] ManagementExtensions OPTIONAL
}

MMOMDRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    originatorMmsRSAddress    [1] MMSRSAddress OPTIONAL,
    recipientMmsRSAddress     [2] MMSRSAddress OPTIONAL,
    messageID                 [3] OCTET STRING,
    messageSize               [4] DataVolume OPTIONAL,
    mmStatusCode              [5] MMSStatusCodeType OPTIONAL,
    statusText                 [6] StatusTextType OPTIONAL,
    recordTimeStamp           [7] TimeStamp OPTIONAL,
    localSequenceNumber       [8] LocalSequenceNumber OPTIONAL,
    recordExtensions          [9] ManagementExtensions OPTIONAL
}

MMR4FRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    recipientMmsRSAddress     [1] MMSRSAddress,
    originatorMmsRSAddress    [2] MMSRSAddress,
    messageID                 [3] OCTET STRING,
    3GPPVersion               [4] OCTET STRING OPTIONAL,
    originatorAddress         [5] MMSAgentAddress,
    recipientAddresses        [6] MMSAgentAddresses,
    contentType               [7] ContentType,
    mmComponentType           [8] MMComponentType OPTIONAL,
    messageSize               [9] DataVolume,
    messageClass              [10] MessageClass OPTIONAL,
    submissionTime            [11] TimeStamp,
    timeOfExpiry              [12] WaitTime OPTIONAL,
    deliveryReportRequested    [13] BOOLEAN,
    priority                   [14] PriorityType OPTIONAL,
    senderVisibility           [15] BOOLEAN,
    readReplyRequested        [16] BOOLEAN,
    requestStatusCode         [17] RequestStatusCodeType,
    statusText                 [18] StatusTextType,
    acknowledgementRequest    [19] BOOLEAN,
    forwardCounter            [20] INTEGER OPTIONAL,
    forwardingAddress          [21] MMSAgentAddresses OPTIONAL,
    recordTimeStamp           [22] TimeStamp,
    localSequenceNumber       [23] LocalSequenceNumber OPTIONAL,
    recordExtensions          [24] ManagementExtensions OPTIONAL
}

```

```

MMR1NrQRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    recipientMmsRSAddress     [1] MMSRSAddress,
    messageID                 [2] OCTET STRING,
    replyChargingID           [3] OCTET STRING OPTIONAL,
    senderAddress             [4] MMSAgentAddress,
    recipientAddress          [5] MMSAgentAddress,
    accessCorrelation         [6] AccessCorrelation OPTIONAL,
    messageClass              [7] MessageClass OPTIONAL,
    mmComponentType           [8] MMComponentType OPTIONAL,
    messageSize               [9] DataVolume,
    timeOfExpiry              [10] WaitTime OPTIONAL,
    messageReference          [11] OCTET STRING,
    deliveryReportRequested   [12] BOOLEAN OPTIONAL,
    replyCharging             [13] BOOLEAN OPTIONAL,
    replyDeadline             [14] WaitTime OPTIONAL,
    replyChargingSize         [15] DataVolume OPTIONAL,
    mmStatusCode              [16] MMStatusCodeType OPTIONAL,
    statusText                [17] StatusTextType OPTIONAL,
    recordTimeStamp           [18] TimeStamp OPTIONAL,
    localSequenceNumber       [19] LocalSequenceNumber OPTIONAL,
    recordExtensions          [20] ManagementExtensions OPTIONAL
}

```

```

MMR1NRSRecord ::= 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
}

```

```

MMR1RtRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    recipientMmsRSAddress     [1] MMSRSAddress,
    messageID                 [2] OCTET STRING,
    replyChargingID           [3] OCTET STRING OPTIONAL,
    senderAddress             [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,
    messageReference          [24] OCTET STRING,
}

```

```

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    [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
}

MMR1RRRecord ::= SET
{
    recordType                [0] CallEventRecordType,
    recipientMmsRSAddress     [1] MMSRSAddress,
    messageID                  [2] OCTET STRING,
    recipientAddress           [3] MMSAgentAddress,
    originatorAddress          [4] MMSAgentAddress,
    accessCorrelation          [5] AccessCorrelation OPTIONAL,
    mmStatusCode               [6] MMStatusCodeType OPTIONAL,
    statusText                 [7] StatusTextType OPTIONAL,
    recordTimeStamp            [8] TimeStamp OPTIONAL,
    localSequenceNumber        [9] LocalSequenceNumber OPTIONAL,
    recordExtensions           [10] 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] DataVolume,
    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,
    mMBoxStorageInformation     [16] MMBoxStorageInformation OPTIONAL
}

MMBx1SRecord ::= SET
{
    recordType                  [0] CallEventRecordType,
    mmsRelayAddress             [1] IPAddress,
    managingAddress             [2] MMSAgentAddress,
    accessCorrelation           [3] AccessCorrelation OPTIONAL,
    contentType                 [4] ContentType OPTIONAL,
    messageSize                 [5] DataVolume OPTIONAL,
    messageReference            [6] OCTET STRING OPTIONAL,
    mmState                     [7] OCTET STRING OPTIONAL,
    mmFlags                     [8] OCTET STRING OPTIONAL,
    storeStatus                 [9] StoreStatus OPTIONAL,
    storeStatusText             [10] StatusTextType OPTIONAL,
    sequenceNumber              [11] INTEGER OPTIONAL,
    timeStamp                   [12] TimeStamp OPTIONAL,
    recordExtensions            [13] ManagementExtensions OPTIONAL
}

MMBx1VRecord ::= SET
{
    recordType                  [0] CallEventRecordType,
    mmsRelayAddress             [1] IPAddress,
    managingAddress             [2] MMSAgentAddress,
    accessCorrelation           [3] AccessCorrelation OPTIONAL,
    attributesList              [4] AttributesList OPTIONAL,
    messageSelection            [5] MessageSelection OPTIONAL,
    start                       [6] INTEGER OPTIONAL,
    limit                       [7] INTEGER OPTIONAL,
    totalsRequested             [8] BOOLEAN OPTIONAL,
    quotasRequested             [9] BOOLEAN OPTIONAL,
    mmListing                   [10] AttributesList OPTIONAL,
    requestStatusCode           [11] RequestStatusCodeType OPTIONAL,

```

```

statusText          [12] StatusTextType OPTIONAL,
totals              [13] Totals OPTIONAL,
quotas             [14] Quotas OPTIONAL,
sequenceNumber     [15] INTEGER OPTIONAL,
timeStamp          [16] TimeStamp OPTIONAL,
recordExtensions   [17] ManagementExtensions OPTIONAL
}

```

MMBxIURecord ::= SET

```

{
  recordType          [0] CallEventRecordType,
  mmsRelayAddress     [1] IPAddress,
  managingAddress     [2] MMSAgentAddress,
  accessCorrelation   [3] AccessCorrelation OPTIONAL,
  recipientsAddressList [4] MMSAgentAddresses,
  messageClass        [5] MessageClass OPTIONAL,
  uploadTime          [6] TimeStamp OPTIONAL,
  timeOfExpiry        [7] WaitTime OPTIONAL,
  earliestTimeOfDelivery [8] WaitTime OPTIONAL,
  priority            [9] Priority OPTIONAL,
  mmState             [10] OCTET STRING OPTIONAL,
  mmFlags             [11] OCTET STRING OPTIONAL,
  contentType         [12] ContentType OPTIONAL,
  messageSize         [13] DataVolume OPTIONAL,
  messageReference    [14] OCTET STRING OPTIONAL,
  requestStatusCode   [15] RequestStatusCodeType OPTIONAL,
  statusText          [16] StatusTextType OPTIONAL,
  sequenceNumber      [17] INTEGER OPTIONAL,
  timeStamp           [18] TimeStamp OPTIONAL,
  recordExtensions   [19] ManagementExtensions OPTIONAL
}

```

MMBxIDRecord ::= SET

```

{
  recordType          [0] CallEventRecordType,
  mmsRelayAddress     [1] IPAddress,
  managingAddress     [2] MMSAgentAddress,
  accessCorrelation   [3] AccessCorrelation OPTIONAL,
  messageReference    [4] OCTET STRING OPTIONAL,
  requestStatusCode   [5] RequestStatusCodeType OPTIONAL,
  statusText          [6] StatusTextType OPTIONAL,
  sequenceNumber      [7] INTEGER OPTIONAL,
  timeStamp           [8] TimeStamp OPTIONAL,
  recordExtensions   [9] ManagementExtensions OPTIONAL
}

```

MM7SRecord ::= SET

```

{
  recordType          [0] CallEventRecordType,
  originatorMmsRSAddress [1] MMSRSAddress,
  linkedID            [2] OCTET STRING OPTIONAL,
  vaspID              [3] OCTET STRING,
  vasID               [4] OCTET STRING,
  messageID           [5] OCTET STRING,
  originatorAddress   [6] MMSAgentAddress,
  recipientAddresses  [7] MMSAgentAddresses,
  serviceCode         [8] OCTET STRING OPTIONAL,
  contentType         [9] ContentType,
  mmComponentType     [10] MMComponentType OPTIONAL,
  messageSize         [11] DataVolume,
  messageClass        [12] MessageClass OPTIONAL,
  chargeInformation   [13] ChargeInformation OPTIONAL,
  submissionTime      [14] TimeStamp OPTIONAL,
  timeOfExpiry        [15] WaitTime OPTIONAL,
  earliestTimeOfDelivery [16] WaitTime OPTIONAL,
  deliveryReportRequested [17] BOOLEAN OPTIONAL,
  readReplyRequested  [18] BOOLEAN OPTIONAL,
  replyCharging       [19] BOOLEAN OPTIONAL,
  replyDeadline       [20] WaitTime OPTIONAL,
  replyChargingSize   [21] DataVolume OPTIONAL,
  priority            [22] PriorityType OPTIONAL,
  messageDistributionIndicator [23] BOOLEAN OPTIONAL,
  requestStatusCode   [24] RequestStatusCodeType OPTIONAL,
  statusText          [25] StatusTextType OPTIONAL,
  recordTimeStamp     [26] TimeStamp,
  localSequenceNumber [27] LocalSequenceNumber OPTIONAL,
}

```

```

recordExtensions [28] ManagementExtensions OPTIONAL,
}

MM7DRqRecord ::= SET
{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress,
linkedID [2] OCTET STRING OPTIONAL,
replyChargingID [3] OCTET STRING OPTIONAL,
originatorAddress [4] MMSAgentAddress,
recipientAddress [5] MMSAgentAddress,
mmComponentType [6] MMComponentType OPTIONAL,
messageSize [7] DataVolume,
contentType [8] ContentType,
priority [9] PriorityType OPTIONAL,
recordTimeStamp [10] TimeStamp OPTIONAL,
localSequenceNumber [11] LocalSequenceNumber OPTIONAL,
recordExtensions [12] ManagementExtensions OPTIONAL
}

MM7DRsRecord ::= SET
{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress,
messageID [2] OCTET STRING,
recipientAddress [3] MMSAgentAddress,
serviceCode [4] OCTET STRING OPTIONAL,
requestStatusCode [5] RequestStatusCodeType OPTIONAL,
statusText [6] StatusTextType OPTIONAL,
recordTimeStamp [7] TimeStamp OPTIONAL,
localSequenceNumber [8] LocalSequenceNumber OPTIONAL,
recordExtensions [9] ManagementExtensions OPTIONAL
}

MM7CRecord ::= SET
{
recordType [0] CallEventRecordType,
originatorMmsRSAddress [1] MMSRSAddress,
vaspID [2] OCTET STRING,
vasID [3] OCTET STRING,
messageID [4] OCTET STRING,
originatorAddress [5] MMSAgentAddress,
serviceCode [6] OCTET STRING OPTIONAL,
requestStatusCode [7] RequestStatusCodeType OPTIONAL,
statusText [8] StatusTextType OPTIONAL,
recordTimeStamp [9] TimeStamp OPTIONAL,
localSequenceNumber [10] LocalSequenceNumber OPTIONAL,
recordExtensions [11] ManagementExtensions OPTIONAL
}

MM7RRRecord ::= SET
{
recordType [0] CallEventRecordType,
originatorMmsRSAddress [1] MMSRSAddress,
vaspID [2] OCTET STRING,
vasID [3] OCTET STRING,
messageID [4] OCTET STRING,
originatorAddress [5] MMSAgentAddress,
serviceCode [6] OCTET STRING OPTIONAL,
contentType [7] ContentType,
submissionTime [8] TimeStamp OPTIONAL,
timeOfExpiry [9] WaitTime OPTIONAL,
earliestTimeOfDelivery [10] WaitTime OPTIONAL,
requestStatusCode [11] RequestStatusCodeType OPTIONAL,
statusText [12] StatusTextType OPTIONAL,
recordTimeStamp [13] TimeStamp OPTIONAL,
localSequenceNumber [14] LocalSequenceNumber OPTIONAL,
recordExtensions [15] ManagementExtensions OPTIONAL
}

MM7DRRqRecord ::= SET
{
recordType [0] CallEventRecordType,
recipientMmsRSAddress [1] MMSRSAddress OPTIONAL,
messageID [2] OCTET STRING,
originatorAddress [3] MMSAgentAddress OPTIONAL,
recipientAddress [4] MMSAgentAddress,
}

```

```

    mmDateAndTime          [5] TimeStamp OPTIONAL,
    mmStatusCode           [6] MMStatusCodeTypeL,
    mmStatusText           [7] StatusTextType OPTIONAL,
    recordTimeStamp        [8] TimeStamp OPTIONAL,
    localSequenceNumber    [9] LocalSequenceNumber OPTIONAL,
    recordExtensions       [10] ManagementExtensions OPTIONAL
}

```

```
MM7DRRsRecord ::= SET
```

```

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

```

```
MM7RRqRecord ::= SET
```

```

{
    recordType              [0] CallEventRecordType,
    recipientMmsRSAddress   [1] MMSRSAddress OPTIONAL,
    messageID               [2] OCTET STRING,
    originatorAddress       [3] MMSAgentAddress OPTIONAL,
    recipientAddress        [4] MMSAgentAddress,
    mmDateAndTime          [5] TimeStamp OPTIONAL,
    readStatus              [6] MMStatusCodeType,
    mmStatusText           [7] StatusTextType OPTIONAL,
    recordTimeStamp         [8] TimeStamp OPTIONAL,
    localSequenceNumber     [9] LocalSequenceNumber OPTIONAL,
    recordExtensions        [10] ManagementExtensions OPTIONAL
}

```

```
MM7RRsRecord ::= SET
```

```

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

```

```

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

```

```
AccessCorrelation ::= CHOICE
```

```

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

```

```
AttributesList ::= SEQUENCE
```

```

--
-- Note: the values below are subject to WAP Forum ongoing standardization
--
{
    messageID              [0] OCTET STRING,
    DateAndTime            [1] TimeStamp,
    senderAddress          [2] MMSRSAddress,
    subject                 [3] OCTET STRING,
    messageSize            [4] DataVolume ,
    mmFlags                 [5] OCTET STRING,
    mmState                 [6] MMState
}

```

```

ChargeInformation ::= SEQUENCE
{
  ---
  --- one of the two following parameters must be present
  ---
  chargeIndicationchargedparty [0] ChargeIndicatorChargedParty OPTIONAL,
  chargetype [1] ChargeType OPTIONAL
}

ChargedParty ::= ENUMERATED
{
  sender (0),
  recipient (1),
  both (2) {2},
  neither (3) {3},
  notspecifiedbyVASP (99)
}

ChargeType ::= ENUMERATED
{
  normalpostpaid (0),
  pre-paid (1),
  reply (2)
}

CircuitSwitchedAccess ::= SEQUENCE
{
  mSCIdentifier [0] MscNo,
  callReferenceNumber [1] CallReference
}

ContentType ::= OCTET STRING

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

DeltaSeconds ::= OCTET STRING[8]

MediaComponent = SEQUENCE
{
  mediaType [0] OCTET STRING,
  mediaSize [1] DataVolume
}

MediaComponents = Set of MediaComponent

MessageClass ::= ENUMERATED
{
  personal (0),
  advertisement (1),
  information-service (2),
  auto (3)
}

MMBoxStorageInformation ::= SET
{
  mmState [0] MMState,
  mmFlag [1] OCTET STRING,
  storeStatus [2] StoreStatus,
  storeStatusText [3] StatusTextType,
  storedMessageReference [4] OCTET STRING
}

MMComponentType ::= SEQUENCE
{
  subject [0] SubjectComponent,
  media [1] MediaComponents
}

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
}

MMState           ::= ENUMERATED
--
-- Note: the values below are subject to WAP Forum ongoing standardization
--
{
    draft          (0),
    sent           (1),
    new            (2),
    retrieved      (3),
    forwarded      (4)
}

MMStatusCodeType ::= ENUMERATED
{
    retrieved          (0),
    forwarded          (1),
    expired            (2),
    rejected           (3),
    deferred           (4),
    unrecognised      (5),
    read              (6),
    deletedWithoutBeingRead (7)
}

PacketSwitchedAccess ::= SEQUENCE
{
    gSNAddress        [0] GSNAddress,
    chargingID        [1] ChargingID
}

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

Quotas           ::= SEQUENCE
{
    numberOfMessages [0] INTEGER OPTIONAL,
    numberOfOctets   [1] INTEGER OPTIONAL
}

RequestStatusCodeType ::= 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

StoreStatus ::= INTEGER
--
-- Note: the values below are subject to WAP Forum ongoing standardization
--
{
  stored (0),
  errorTransientFailure (1),
  errorTransientMailboxFull (2),
  errorTransientNetworkProblems (3),
  errorPermanentFailure (4),
  errorPermanentPermissionDenied (5),
  errorPermanentMessageFormat (6),
  errorPermanentMessageNotFound (7)
}

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

Totals ::= SEQUENCE
{
  numberOfMessages [0] INTEGER OPTIONAL,
  numberOfOctets [1] INTEGER OPTIONAL
}

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

END
```

| |
|----------------------------------|
| End of Change in Clause 6 |
|----------------------------------|