Multimedia Messaging Service

Encapsulation Protocol

Version 1.1

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Continues the Technical Activities
Originated in the WAP Forum

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Contents

1. Scope

The Wireless Application Protocol (WAP) is a result of continuous work to define an industry-wide specification for developing applications that operate over wireless communication networks. The scope for the WAP Forum is to define a set of specifications to be used by service applications. The wireless market is growing very quickly, and reaching new customers and services. To enable operators and manufacturers to meet the challenges in advanced services, differentiation and fast/flexible service creation WAP Forum defines a set of protocols in transport, security, transaction, session, and application layers. For additional information on the WAP architecture, please refer to "*Wireless Application Protocol Architecture Specification*" [WAPARCH].

Multimedia Messaging Service (MMS) is a system application by which a WAP client is able to provide a messaging operation with a variety of media types. The service is described in terms of actions taken by the WAP MMS Client and its service partner, the MMS Proxy-Relay, a device which operates as a WAP Origin Server for this specialised service.

This document is part of the WAP MMS specification suite and complies with the requirements and service behaviour descriptions described in the technical specifications of the 3rd Generation Partnership Project (3GPP). These include the service aspects of MMS and the functional description of MMS, which are contained in [TS23140].

The transaction between MMS Client and MMS Proxy-Relay for the multimedia messaging service can be found in [MMSCTR]. This specification defines the message encapsulation, i.e., the message structure and encodings for the multimedia messaging service.

2. References

2.1. Normative References

[CREQ] "Specification of WAP Conformance Requirements", WAP-221-CREQ, WAP Forum™. URL: http//www.openmobilealliance.org

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels". S. Bradner. March 1997. URL: http://www.ietf.org/rfc/rfc2119.txt

[RFC2396] "Uniform Resource Identifiers (URI): Generic Syntax", T. Berners-Lee, et al., August 1998. URL: http://www.ietf.org/rfc/rfc2396.txt

[RFC2045] "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", Freed N., November 1996. URL: http://www.ietf.org/rfc/rfc2045.txt .

[RFC2046] "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types", Freed N., November 1996. URL: http://www.ietf.org/rfc/rfc2046.txt

[RFC2047] "Multipurpose Internet Mail Extensions (MIME) Part Three: Message Header Extensions for Non-ASCII Text", Moore K., November 1996. URL: http://www.ietf.org/rfc/rfc2047.txt

[RFC2234] "Augmented BNF for Syntax Specifications: ABNF", Crocker D., Overell P., November 1997. URL: http://www.ietf.org/rfc/rfc2234.txt

[RFC2387] "The MIME Multipart/related content type", Levinson E., August 1998. URL: http://www.ietf.org/rfc/rfc2387.txt

[RFC2392] "Content-ID and Message-ID Uniform Resource Locators", Levinson E., August 1998. URL: http://www.ietf.org/rfc/rfc2392.txt

[RFC2616] "Hypertext Transfer Protocol HTTP/1.1", Fielding R., Gettys J., Mogul J., Frystyk H., Masinter L., Leach P., Berners-Lee T., June 1999. URL: http://www.ietf.org/rfc/rfc2616.txt

[RFC822] "Standard for the Format of ARPA Internet Text Messages", Crocker D., August 1982. URL: http://www.ietf.org/rfc/rfc822.txt

[WAPWSP] "Wireless Application Protocol, Wireless Session Protocol Specification", WAP-203-WSP-20000504-a, WAP Forum™. URL: http://www.openmobilealliance.org.

[WDP] "Wireless Datagram Protocol", WAP-259-WDP, WAP Forum™. URL: http://www.openmobilealliance.org

2.2. Informative References

[WAPARCH] "WAP Architecture", WAP-210-Arch, WAP Forum™. URL: http//www.openmobilealliance.org

[MMSCTR] "Wireless Application Protocol, MMS Client Transactions", OMA-WAP-MMS-CTR-v1_1-20020823, Open Mobile Alliance. URL: http://www.openmobilealliance.org.

[PPG] "Wireless Application Protocol, Push Proxy Gateway Service Specification", WAP-249-PPGService, WAP Forum™. URL: http://www.openmobilealliance.org.

[RFC1893] "Enhanced Mail System Status Codes", G. Vaudreuil, January 1996. URL: http://www.ietf.org/rfc/rfc1893.txt

[SMIL] "Synchronized Multimedia Integration Language (SMIL 2.0)", W3C Recommendation 07 August 2001. URI: http://www.w3.org/TR/smil20/

[TS22140] "Multimedia Messaging Service: Service aspects; Stage 1", 3rd Generation Partnership Project TS 22.140 Rel-4 . URL: http://www.3gpp.org/ftp/Specs/

[TS23140] "Multimedia Messaging Service: Functional description; Stage 2", 3rd Generation Partnership Project TS 23.140 Rel-4. URL: http://www.3gpp.org/ftp/Specs/

[WML] "Wireless Application Protocol, Wireless Markup Language Specification, Version 1.3", WAP-191-WML, WAP Forum™. URL: http://www.openmobilealliance.org.

[WSP230] "Wireless Application Protocol, Wireless Session Protocol Specification", WAP-230-WSP, WAP

Forum™. URL: http://www.openmobilealliance.org.

3. Terminology and Conventions

3.1. Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2. Definitions

This section introduces terminology that will be used throughout this document.

Multimedia Messaging Service (MMS)

A system application by which a WAP client is able to provide a messaging operation with a variety of media types.

MMS Encapsulation

The definition of the protocol data units, the fields and their encodings necessary to send and receive multimedia messages including multimedia objects.

MMS Entity

MMS Proxy-Relay or MMS Client.

MMS Proxy-Relay

A server which provides access to various messaging systems. It may operate as WAP origin server in which case it may be able to utilise features of the WAP system.

MMS Client

The MMS service endpoint located on the WAP client device.

MMS Terminal

A mobile station (MS, terminal) that implements the MMS Client to provide the MMS service.

MMS Originating Terminal

The MMS Terminal which sends a multimedia message.

MMS Recipient Terminal

The MMS Terminal which receives a multimedia message.

Original-MM

In case of Reply-Charging a (initial) MM sent from an originator to a recipient.

Reply-MM

In case of Reply-Charging the reply to the Original-MM.

Reply-Charging
: An originator may request a Reply-Charging functionality when submitting an Original-MM, i.e. she may express her willingness to accept charges for a reply to this particular Original-MM.

3.3. Abbreviations

For the purposes of this specification the following abbreviations apply.

HTTP	Hypertext Transfer Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
MIME	Multipurpose Internet Mail Extensions
MM	Multimedia Message
MMS	Multimedia Messaging Service
MS	Mobile Station, Terminal
PDU	Protocol Data Unit
PLMN	Public Land Mobile Network
SMIL	Synchronized Multimedia Integration Language
RFC	Request For Comments
URI	Uniform Resource Identifier
WAP	Wireless Application Protocol
WINA	WAP Interim Naming Authority
WML	Wireless Markup Language
WSP	Wireless Session Protocol

4. Introduction

This section is informative.

This specification defines the structure, content and encoding of the protocol data units (PDUs) for the Multimedia Messaging Service (MMS) Version 1.1.

The WAP Multimedia Messaging Service uses WAP WSP/HTTP as underlying protocols to transfer MMS PDUs between MMS Client which resides on the terminal (MS) and the MMS Proxy-Relay. The WSP session management and the related capability negotiation mechanisms as well as security functions are out of the scope of this document.

Chapter 5 of this specification contains a general description of the message structure to be applied to MMS PDUs. This structure is based on the well-known message structure of Internet email which is defined in [RFC822], [RFC2045] and [RFC2387]. [WAPWSP] provides mechanisms for binary encoding of such messages and serves as a basis for the binary encoding of MMS PDUs.

Because of the limited bandwidth of the air interface of mobile networks MMS PDUs are transferred between an MMS Client and an MMS Proxy-Relay in binary encoded message format. This process is called encapsulation. WSP PDUs or HTTP messages which contain MMS PDUs as their body are used for this transport.

There are basically twelve types of PDUs in MMS level:

- Send message to MMS Proxy-Relay (M-Send.req, M-Send.conf)
- Fetch message from MMS Proxy-Relay (WSP/HTTP GET.req, M-Retrieve.conf)
- MMS Notification about new message (M-Notification.ind, M-NotifyResp.ind)
- Delivery Report about sent message (M-Delivery.ind)
- Acknowledgement of message delivery (M-Acknowledge.ind)
- Read Report about sent message (M-Read-Rec.ind, M-Read-Orig.ind)
- Forward transaction (MMS Client sending a request to forward a message to MMS Proxy-Relay, M-Forward.req and M-Forward.conf)

Chapter 6 of this specification contains definitions of the MMS PDU types. The header fields and the values included are described in detail.

Chapter 7 of this specification defines the binary encoding of MMS PDUs to be transferred via WSP/HTTP. Binary codes for header field names as well as header field values are assigned.

Textual encoding of MMS PDUs is out of scope of this specification.

5. Message Structure Overview

MMS PDUs which are described in this specification SHALL be included in WSP PDUs/HTTP messages of different types. See [MMSCTR] for more detailed information about this topic. The entire MMS information is contained in MMS PDUs which are encapsulated in WSP PDUs/HTTP messages.

The content type of WSP PDUs/HTTP messages containing MMS PDUs SHALL be application/vnd.wap.mms-message.

The WSP content type application/vnd.wap.multipart.related provides a good example how multimedia content and presentation information can be encapsulated to a single message. Figure 1 depicts the conceptual model and example of the encapsulation.

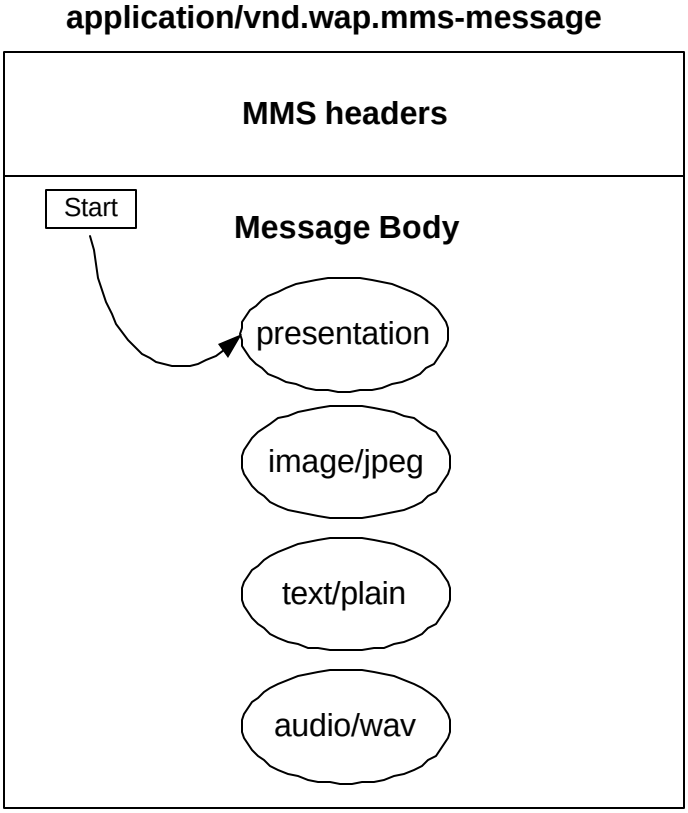

Figure 1. Model of MMS PDU containing a multipart/related message body

If the message body consists of multipart/related structure [RFC2387] it contains multimedia objects, each in a separate part, as well as an optional presentation part. The order of the parts has no significance. The presentation part, if present, contains instructions on how the multimedia content should be rendered to the display and speakers etc, on the terminal. There MAY be multiple presentation parts, but one of them MUST be the root part. In case of multipart/related, the root part is pointed from the Start parameter. If the Start parameter is not present, the presentation part, if present at all, MUST be the first part in the multipart structure.

If the presentation part does not exist, it is up to the implementation of the terminal how the multimedia content is presented. Examples of the presentation techniques are SMIL [SMIL] and WML [WML].

Multimedia object text/plain MUST be supported by the MMS Client. The character-set encoding UTF-8 SHOULD be supported by the MMS Client.

The header of an MMS PDU consists of header fields which in general consist of a field name and a field value. Some of the header fields are common [RFC 822] header fields and others are specific to the Multimedia Messaging Service.

6. MMS Protocol Data Units and Header Fields

The header fields for sending, notification, retrieving, reporting and acknowledging of a Multimedia Message (MM) are described in the tables 1-11. The names of the fields that do not originate from [RFC822] are preceded by "X-Mms-". The MMS Protocol Data Units MAY contain additional header fields that are conformant to [RFC822] and are not explicitly referenced in this document.

6.1. Sending of Multimedia Message

The Send transaction of the MM consists of two messages: M-Send.req and M-Send.conf. The transaction identifier is created and used by the originating MMS Client and it is unique within the send transaction only.

6.1.1. Send Request

This chapter describes the header fields of the M-Send.req sent by the MMS Client to the MMS Proxy-Relay, and how these header fields may be modified by the sender's MMS Proxy-Relay.. These header fields are used to generate the MMS notification to the recipient, and are delivered with the message body parts to the recipient MMS Client at retrieval.

Table 1 contains the field names, the field values and descriptions of the header fields of M-Send.req PDU.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-send-req	Mandatory. Specifies the PDU type.
X-Mms-Transaction-ID	Transaction-id-value	Mandatory. A unique identifier for the PDU. This transaction ID identifies the M-Send.req and the corresponding reply only.
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
Date	Date-value	Optional. Date and time of submission of the M-Send.req PDU. If the field was not provided by the sending MMS Client, the MMS Proxy-Relay SHALL insert the time of arrival of the M-Send.req PDU at the MMS Proxy-Relay.
From	From-value	Mandatory. Address of the originator MMS Client . The originator MMS Client MUST send either its address or an Insert-address-token. In case of token, the MMS Proxy-Relay MUST insert the correct address of the originator MMS Client.

To	To-value	Optional[1]. Address of the recipient. Addressing is handled in Chapter 8. Any number of address fields allowed.
Cc	Cc-value	Optional[1]. Address of the recipient. Addressing is handled in Chapter 8. Any number of address fields allowed.
Bcc	Bcc-value	Optional[1]. Address of the recipient. Addressing is handled in Chapter 8. Any number of address fields allowed.
Subject	Subject-value	Optional. Subject of the MM.
X-Mms-Message-Class	Message-class-value	Optional. Class of the MM. Value Auto indicates a MM that is automatically generated by the client. If the field value is Auto, then the originating terminal SHALL NOT request Delivery-Report or Read-Report. If field is not present, the receiver interprets the message as personal.
X-Mms-Expiry	Expiry-value	Optional, default: maximum. Length of time the MM will be stored in MMS Proxy-Relay or time to delete the MM. The field has two formats, either absolute or relative.
X-Mms-Delivery-Time	Delivery-time-value	Optional: default: immediate. Time of desired delivery. Indicates the earliest possible delivery of the MM to the recipient. The field has two formats, either absolute or relative.
X-Mms-Priority	Priority-value	Optional. Default: Normal. Priority of the MM assigned by the originator MMS Client.
X-Mms-Sender-Visibility	Sender-visibility-value	Optional. Default: show address/phone number of the originator MMS Client to the recipient unless the former has a secret number/address. Hide = don't show any address. Show = show even secret address.

[1] At least one of these address fields (To, Cc or Bcc) MUST be present.

X-Mms-Delivery-Report	Delivery-report-value	Optional. Default determined when service is ordered. Specifies whether the originator MMS Client requests a delivery report from each recipient. When X-Mms-Message-Class is Auto, the field SHALL always be present and the value SHALL be No.
X-Mms-Read-Report	Read-report-value	Optional. Specifies whether the originator MMS Client wants a read report from each recipient. When X-Mms-Message-Class is Auto, the field SHALL always be present and the value SHALL be No.
X-Mms-Reply-Charging	Reply-charging-value	Optional. This header field SHALL only be present if the originator is willing to pay for the Reply-MM of the recipient(s). Only the field values “requested” and “requested text only” are allowed. The MMS Proxy-Relay SHALL reject an M-Send.req PDU that includes this field if it doesn’t support reply-charging. The MMS Proxy-Relay SHALL reject an M-Send.req PDU if the values ‘Accepted’ or ‘Accepted text only’ are used for this field.
X-Mms-Reply-Charging-Deadline	Reply-charging-deadline-value	Optional. This header field SHALL NOT be present if the X-Mms-Reply-Charging header field is not present. It specifies the latest time of the recipient(s) to submit the Reply-MM. After this time the originator of the Original-MM will not pay for the Reply-MM any more.
X-Mms-Reply-Charging-Size	Reply-charging-size-value	Optional. This header field SHALL NOT be present if the X-Mms-Reply-Charging header field is not present. It specifies the maximum size (number of octets) for the Reply-MM.
X-Mms-Reply-Charging-ID	Reply-charging-ID-value	Optional. This header field SHALL only be present if this PDU contains the Reply-MM that was offered by the value “accepted” or “accepted text only” in the X-Mms-Reply-Charging header field in M-Retrieve.conf received earlier and if the Reply-Charging limitations are met. The value of this header field SHALL be the same as the Message-ID of the Original-MM that is replied to.
Content-Type	Content-type-value	Mandatory. The content type of the MM.

Table 1. Header fields of M-Send.req PDU

The message body follows the MMS header.

6.1.2. Send confirmation

When the MMS Proxy-Relay has received the M-Send.req PDU, it sends an M-Send.conf PDU back to the MMS Client indicating the status of the operation. The response PDU contains MMS header only.

Table 2 contains the field names, the field values and descriptions of the header fields of the M-Send.conf PDU.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-send-conf	Mandatory. Specifies the PDU type.
X-Mms-Transaction-ID	Transaction-id-value	Mandatory. This transaction ID identifies the M-Send.conf and the corresponding M-Send.req only.
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
X-Mms-Response-Status	Response-status-value	Mandatory. MMS specific status.
X-Mms-Response-Text	Response-text-value	Optional. Description which qualifies the Response-status-value. The description may be based on the status code names contained in [RFC1893].
Message-ID	Message-ID-value	Optional. This is a unique reference assigned to the MM. This ID SHALL always be present after the MMS Proxy-Relay accepted the corresponding M-Send.req PDU. The ID enables a MMS Client to match delivery reports or read-report PDUs with previously sent MM.

Table 2. Header fields of M-Send.conf PDU

The MMS Proxy-Relay MUST always assign a Message-ID header field to the message when successfully received for delivery. The value of Message-ID shall be globally unique according to the needs of the MMS Proxy-Relay that receives the MM for delivery.

6.2. Multimedia Message Notification

MMS Notifications provide the MMS Client with information (e.g. message class and expiry time) about a MM located at the recipient MMS Proxy-Relay and waiting for retrieval. The purpose of the notification is to allow the client to automatically fetch a MM from the location indicated in the notification.

The transaction identifier is created by the MMS Proxy-Relay and is unique up to the following M-NotifyResp.ind only.

Note: If the MMS Notification is resent at a later point in time - prior to receiving a corresponding M-NotifyResp.ind - then this MMS Notification must be identical to the original MMS Notification.

If the MMS Client requests deferred retrieval with M-NotifyResp.ind, the MMS Proxy-Relay MAY create a new transaction identifier.

Table 3 contains the field names, the field values and descriptions of the header fields of the M-Notification.ind PDU.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-notification-ind	Mandatory. Specifies the PDU type.
X-Mms-Transaction-ID	Transaction-id-value	Mandatory. This transaction ID identifies the M-Notification.ind and the corresponding M-NotifyResp.ind
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
From	From-value	Optional. Address of the last MMS Client that handled the MM, i.e. that sent or forwarded the MM. If hiding the address of the sender from the recipient is requested by the originating MMS Client and supported and accepted by the MMS Proxy-Relay, the MMS Proxy-Relay MUST NOT add this field to the M-Notification.ind PDU. The insert-address-token MUST NOT be used as the value of the field.
Subject	Subject-value	Optional. Subject of the message.
X-Mms-Delivery-Report	Delivery-report-value	Optional. Specifies whether the user wants a delivery report from each recipient. The absence of the field does not indicate any default value.
X-Mms-Message-Class	Message-class-value	Mandatory. Class of the message. The MMS Proxy-Relay MUST provide the Personal message class if the original submission did not include the X-Mms-Message-Class field.
X-Mms-Message-Size	Message-size-value	Mandatory. Full size of the associated M-Retrieve.conf PDU in octets. The value of this header field could be based on approximate calculation, therefore it SHOULD NOT be used as a reason to reject the MM.
X-Mms-Expiry	Expiry-value	Mandatory.

		Length of time the message will be available. The field has only one format, relative.
X-Mms-Reply-Charging	Reply-charging-value	Optional. If this field is present its value is set to “accepted” or “accepted text only” and the MMS-version-value of the M-Notification.ind PDU is higher than 1.0, this header field will indicate that a reply to this particular MM is free of charge for the recipient. If the Reply-Charging service is offered and the request for reply-charging has been accepted by the MMS service provider the value of this header field SHALL be set to “accepted” or “accepted text only”.
X-Mms-Reply-Charging-Deadline	Reply-charging-deadline-value	Optional. This header field SHALL NOT be present if the X-Mms-Reply-Charging header field is not present. It SHALL only be interpreted if the value of X-Mms-Reply-Charging header field is set to ”accepted” or “accepted text only”. It specifies the latest time the recipient has to submit the Reply-MM. After this time the originator of the Original-MM will not pay for the Reply-MM any more.
X-Mms-Reply-Charging-Size	Reply-charging-size-value	Optional. This header field SHALL NOT be present if the X-Mms-Reply-Charging header field is not present. It specifies the maximum size (number of octets) for the Reply-MM.
X-Mms-Reply-Charging-ID	Reply-charging-ID-value	Optional. This header field SHALL only be present in PDUs that notify a recipient about a Reply-MM. The value of this header field SHALL be the same as the Message-ID of the Original-MM that is replied to.
X-Mms-Content-Location	Content-location-value	Mandatory. This field defines the location of the MM to be retrieved.

Table 3. Header fields of M-Notification.ind PDU.

The M-Notification.ind PDU does not contain a message body.

The standard URI format according to [RFC2396] SHALL be set as the Content-location-value, for example:

http://mmsc/message-id

Table 4 contains the field names, the field values and descriptions of the header fields of the M-NotifyResp.ind PDU which has the purpose to acknowledge the transaction to the MMS Proxy-Relay.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-notifyresp-ind	Mandatory. Specifies the PDU type.
X-Mms-Transaction-ID	Transaction-id-value	Mandatory. Identifies the transaction started by M-Notification.ind PDU.
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
X-Mms-Status	Status-value	Mandatory. Message status. The status Retrieved SHALL be used only after successful retrieval of the MM.
X-Mms-Report-Allowed	Report-allowed-value	Optional. Default: Yes. Indication whether or not the sending of delivery report is allowed by the recipient MMS Client.

Table 4. Header fields of M-NotifyResp.ind PDU

M-NotifyResp.ind PDU doesn't contain a message body.

6.3. Retrieval Of Multimedia Message

A MMS Client SHALL request the retrieval of an MM by sending a WSP/HTTP GET request to the MMS Proxy-Relay containing a URI that indicates the location of the MM to be retrieved.

When successful, the response to the retrieve request will be M-Retrieve.conf PDU containing MMS header and the MM.

Table 5 contains the field names, the field values and descriptions of the header fields of the M-Retrieve.conf PDU.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-retrieve-conf	Mandatory. Specifies the PDU type.
X-Mms-Transaction-ID	Transaction-id-value	Optional. Identifies either the transaction that has been started by M-Notification.ind PDU without M-NotifyResp.ind PDU (immediate retrieval) or a new transaction when deferred retrieval was requested. The new transaction ID is optional.
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this

		specification, the version is 1.1.
Message-ID	Message-ID-value	Conditional. This is an unique reference assigned to the MM. The ID enables an MMS Client to match read report PDUs or Reply-MMs with previously sent or forwarded MM. This header field SHALL be present when the M-Retrieve.conf PDU includes the requested MM.
Date	Date-value	Mandatory. Date and time of latest submission or forwarding of the message by an MMS Client or reception of the MMS Proxy-Relay.
From	From-value	Optional. Address of the last MMS Client that handled the MM, i.e. that either sent or forwarded the MM. If hiding the address of the sender from the recipient is requested by the originating MMS Client and supported and accepted by the MMS Proxy-Relay, the MMS Proxy-Relay MUST NOT add this field to the M-Retrieve.conf PDU. The MMS Client MUST be able to process the From field if it is present, i.e. the originating MMS Client did not request address hiding. The insert-address-token MUST NOT be used as the value of the field.
X-Mms-Previously-Sent-By	Previously-sent-by-value	Optional. Address of the MMS Client that forwarded or originally sent the message and a sequence number. A higher sequence number indicates a forwarding event at a later point in time.
X-Mms-Previously-Sent-Date	Previously-sent-date-value	Optional. Date and time of a forwarding or original send transaction of the message and a sequence number. The sequence number indicates the correspondence to the MMS Client's address in the "X-Mms-Previously-Sent-By" header field with the same sequence number.
To	To-value	Optional. Address of the recipient. Addressing will be handled in Chapter 8. Any number of address fields allowed.
Cc	Cc-value	Optional.

		Address of the recipient. Addressing will be handled in Chapter 8. Any number of address fields allowed.
Subject	Subject-value	Optional. Message subject
X-Mms-Message-Class	Message-class-value	Optional. Message class. If field is not present, the receiver interprets the MM as personal.
X-Mms-Priority	Priority-value	Optional. Default: Normal Priority of the MM.
X-Mms-Delivery-Report	Delivery-report-value	Optional. Default: No. Specifies whether the originator MMS Client requested a delivery report from each recipient.
X-Mms-Read-Report	Read-report-value	Optional. Default: No. Specifies whether the originator MMS Client wants a read report from each recipient as a new message.
X-Mms-Reply-Charging	Reply-charging-value	Optional. If this field is present its value is set to “accepted” or “accepted text only” and the MMS-version-value of the M-Retrieve.conf PDU is higher than 1.0, this header field indicates that a reply to this particular MM is free of charge for the recipient. If the Reply-Charging service is offered and the request for reply-charging has been accepted by the MMS service provider the value of this header field SHALL be set to “accepted” or “accepted text only”.
X-Mms-Reply-Charging-Deadline	Reply-charging-deadline-value	Optional. This header field SHALL NOT be present if the X-Mms-Reply-Charging header field is not present. It SHALL be interpreted only if the value of X-Mms-Reply-Charging header field is set to ”accepted” or “accepted text only”. It specifies the latest time the recipient has to submit the Reply-MM. After this time the originator of the Original-MM will not pay for the Reply-MM any more.
X-Mms-Reply-Charging-Size	Reply-charging-Size-value	Optional. This header field SHALL NOT be present if the X-Mms-Reply-Charging header field is not present. It SHALL be interpreted only if the value of X-Mms-Reply-Charging header field is set to ”accepted” or

		"accepted text only". It specifies the maximum size (number of octets) for the Reply-MM.
X-Mms-Reply-Charging-ID	Reply-charging-ID-value	Optional. This header field SHALL only be present in PDUs with which a Reply-MM is retrieved. The value of this header field SHALL be the same as the Message-ID of the Original-MM that is replied to.
X-Mms-Retrieve-Status	Retrieve-status-value	Optional. MMS specific status.
X-Mms-Retrieve-Text	Retrieve-text-value	Optional. Description which qualifies the retrieve status value. The description may be based on the status code names contained in [RFC1893].
Content-Type	Content-type-value	Mandatory. The content type of the MM.

Table 5. Header Fields of M-Retrieve.conf PDU.

The message body follows the headers. In case the M-Retrieve.conf message carries the X-Mms-Retrieve-Status header field, the MMS Proxy-Relay SHALL also include a message body in the message, for backward compatibility reasons. The MMS Proxy-Relay may elaborate the description of the corresponding value of the header field in the message body. The description may be based on the status code names contained in [RFC1893].

6.4. Delivery Acknowledgement

A M-Acknowledge.ind PDU confirms the delivery of the MM to the MMS Proxy-Relay.

Table 6 contains the field names, the field values and descriptions of the header fields of the M-Acknowledge.ind PDU.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-acknowledge-ind	Mandatory. Specifies the PDU type.
X-Mms-Transaction-ID	Transaction-id-value	Mandatory. This transaction ID identifies the M-Acknowledge.ind PDU and the corresponding M-Retrieve.conf PDU
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
X-Mms-Report-Allowed	Report-allowed-value	Optional. Default: Yes. Sending of delivery report allowed to the user.

Table 6. Header fields of M-Acknowledge.ind PDU

M-Acknowledge.ind PDU does not contain a message body.

6.5. Forwarding of Multimedia Message

The forward transaction consists of the M-Forward.req message sent from the MMS Client to the MMS Proxy-Relay in order to request an MM to be forwarded that is located at the MMS Proxy-Relay and the corresponding confirmation message (M-Forward.conf) sent from the MMS Proxy-Relay to the MMS Client.

The request for Reply-Charging SHALL NOT be forwarded. The MMS Proxy-Relay MAY reject a request to forward a MM that includes Reply-Charging fields or the MMS Proxy-Relay MAY accept the forward request but it MUST remove the Reply-Charging fields from the forwarded MM.

The MMS Client MUST include a unique transaction identifier in the M-Forward.req message.

6.5.1. Forward Request

This chapter describes the M-Forward.req message sent by the MMS Client to the MMS Proxy-Relay to request forwarding of an MMS message.

Some of the header fields described in this chapter that are generated by the forwarding MMS Client and sent to the MMS Proxy-Relay are used by the MMS Proxy-Relay to generate the MMS notification to the recipient MMS Client and are delivered with the retrieval message to the recipient MMS Client.

In addition to the header fields described in the table below, it is also possible to provide header extensibility using WSP mechanism for encoding of header fields not defined in this specification.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-forward-req	Mandatory. Specifies the message type.
X-Mms-Transaction-ID	Transaction-id-value	Mandatory. A unique identifier for the forward transaction that provides linkage between the M-Forward.req and corresponding M-Forward.conf message.
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
Date	Date-value	Optional. Date and time the M-Forward.req was sent to the MMS Proxy-Relay. The MMS Proxy-Relay will generate this field when not supplied by the MMS Client.
From	From-value	Mandatory. Address of the MMS Client that requests forwarding of the message The forwarding MMS Client MUST send either its address or an Insert-address-token. In latter case, the MMS Proxy-Relay MUST insert the correct address of the MMS Client that forwards the message.

To	To-value	Optional[2]. Address of the recipient. Addressing is handled in Chapter 8. Any number of address fields is allowed.
Cc	Cc-value	Optional[2]. Address of the recipient. Addressing is handled in Chapter 8. Any number of address fields is allowed.
Bcc	Bcc-value	Optional[2]. Address of the recipient. Addressing is handled in Chapter 8. Any number of address fields is allowed.
X-Mms-Expiry	Expiry-value	Optional, default: maximum. Period of time the message will be stored in MMS Proxy-Relay or time to delete the message. The field has two formats, either absolute or relative.
X-Mms-Delivery-Time	Delivery-time-value	Optional: default: immediate. Time of desired delivery. Indicates the earliest possible delivery of the message to the recipient. The field has two formats, either absolute or relative.
X-Mms-Report-Allowed	Report-allowed-value	Optional. Default: Yes. Sending of delivery report allowed to the previous sender of the message to be forwarded.
X-Mms-Delivery-Report	Delivery-report-value	Optional. Default determined when service is ordered. Specifies whether the user wants a delivery report from each recipient.
X-Mms-Read-Report	Read-report-value	Optional. Specifies whether the user wants a read report from each recipient.
X-Mms-Content-Location	Content-location-value	Mandatory. This field specifies the location of the message to be forwarded, as received in the M-Notification.ind message.

Table 7. Header fields of M-Forward.req PDU

When accepting the forwarding request the MMS Proxy-Relay SHALL insert the address of the forwarding MMS Client into the header field From of the forwarded message. Furthermore the MMS Proxy-Relay MAY insert the address contained in the former From header field of the forwarded message into a new header field X-Mms-

[2] At least one of these address fields (To, Cc or Bcc) MUST be present.

Previously-Sent-By and assign a sequence number to that address. That sequence number is an increment of the highest sequence number of the already existing X-Mms-Previously-Sent-By header fields of the same type within the forwarded MM. If there is no X-Mms-Previously-Sent-By header field present in the message to be forwarded the new header field of that type SHALL be allocated and have the sequence number "0", which then identifies the original sender of the message.

Additionally, the MMS Proxy-Relay MAY insert the date and time contained in the Date header field of the message to be forwarded into a new header field X-Mms-Previously-Sent-Date and assign a sequence number to that header field. In that case the sequence number SHALL be the same as the sequence number of the corresponding X-Mms-Previously-Sent-By header field. Thus, the MMS Proxy-Relay MUST provide a corresponding X-Mms-Previously-Sent-By header field for each (optional) X-Mms-Previously-Sent-Date header field.

6.5.2. Forward confirmation

When the MMS Proxy-Relay has received the Forward request (M-Forward.req message), it SHALL send a confirmation message (M-Forward.conf message) back to the MMS Client indicating the status of the operation.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-forward-conf	Mandatory. Specifies the message type.
X-Mms-Transaction-ID	Transaction-id-value	Mandatory. A unique identifier for the forward transaction that provides linkage between the M-Forward.req and corresponding M-Forward.conf message. It originates from the M-Forward.req message.
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
X-Mms-Response-Status	Response-status-value	Mandatory. MMS specific status.
X-Mms-Response-Text	Response-text-value	Optional. Description which qualifies the response status value. The description may be based on the status code names contained in [RFC1893].
Message-ID	Message-ID-value	Optional. This is a unique reference assigned to message. This ID SHALL always be present when the MMS Proxy-Relay accepted the request to forward the MMS message. The ID enables an MMS Client to match delivery reports or read report PDUs with forwarded MMS messages.

Table 8. Header fields of M-Forward.conf PDU

The MMS Proxy-Relay MUST always assign a message ID to the message when it successfully received the forwarding request. The message ID shall be globally unique according to the needs of the MMS Proxy-Relay that received the forwarding request.

6.6. Delivery Reporting

A MMS Delivery Report MUST be sent from the MMS Proxy-Relay to the originator MMS Client or the forwarding MMS Client when a delivery report has been requested and the recipient MMS Client has not explicitly requested for denial of the report. As for example, the recipient can request for denial of the Delivery Report by using the X-Mms-Report-Allowed field of M-Acknowledge.ind or M-NotifyResp.ind PDU. There will be a separate delivery report from each recipient. There is no response PDU to the delivery report.

Field Name	Field Value	Description
X-Mms-Message-Type	Message-type-value = m-delivery-ind	Mandatory. Specifies the PDU type.
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
Message-ID	Message-ID-value	Mandatory. This is the reference that was originally assigned to the MM by the MMS Proxy-Relay and included in the corresponding M-Send.conf or M-Forward.conf PDU. The ID enables an MMS Client to match delivery reports with previously sent or forwarded MMs.
To	To-value	Mandatory. Needed for reporting in case of point-to-multipoint message.
Date	Date-value	Mandatory. Date and time the message was handled (fetched, expired, etc.) by the recipient or MMS Proxy-Relay.
X-Mms-Status	Status-value	Mandatory. The status of the message.

Table 9. Header fields of M-Delivery.ind PDU

6.7. Read Reporting

Read reporting can be done either in the form of a new MM or be handled by specific PDUs. Backward compatibility between these methods is handled with the **X-Mms-MMS-Version** header field and a transformation mechanism in the originating Proxy-Relay. If the MMS Client is of higher version than 1.0 and if it supports read reporting it MUST also support the handling of Read Report PDUs.

6.7.1. Multimedia Message Read Report

When the originating terminal requested the Read Report in the MM, the recipient MMS Client MAY send a new MM back to the originating MMS Client when the user has handled the MM. The content of the MM is a terminal implementation issue. The Read Report MM MUST have the X-Mms-Message-Class as Auto in the MMS header.

The MMS Proxy-Relay MUST deliver the Read Report as ordinary MM.

When the originating terminal receives the Read Report, it SHALL NOT create Read Report or indicate to the Proxy-Relay to create a Delivery Report.

6.7.2. PDU Read Report

There are two types of PDUs used for the handling of Read Reports. On the MM recipient side the **M-Read-Rec.ind** MUST be used and on the MM originating side the **M-Read-Orig.ind** MUST be used.

Field Name	Field Value	Description
X-Mms-Message-Type	m-read-rec-ind	Mandatory. Identifies the PDU type
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
Message-ID	Message-ID-value	Mandatory. This is the reference that was originally assigned to the MM by the MMS Proxy-Relay and included in the corresponding M-Send.conf or M-Forward.conf PDU. The ID enables an MMS Client to match read report PDUs with previously sent or forwarded MMs.
To	To-value	Mandatory The address of the recipient of the Read Report, i.e. the originator of the original multimedia message.
From	From-value	Mandatory Address of the sender of the Read Report. The sending client MUST send either its address or insert an address token. In case of token, the MMS Proxy-Relay MUST insert the correct address of the sender.
Date	Date-value	Optional Time the message was handled by the recipient MMS Client. Recipient MMS Proxy-Relay SHALL generate this field when not supplied by the recipient MMS Client.
X-Mms-Read-Status	Read-status-value	Mandatory The status of the message.

Table 10. Header Fields of M-Read-Rec.ind PDU

Field Name	Field Value	Description
X-Mms-Message-Type	m-read-orig-ind	Mandatory. Identifies the PDU type
X-Mms-MMS-Version	MMS-version-value	Mandatory. The MMS version number. According to this specification, the version is 1.1
Message-ID	Message-ID-value	Mandatory. This is the reference that was originally assigned to the MM by the MMS Proxy-Relay and included in the corresponding M-Send.conf or M-Forward.conf PDU. The ID enables an MMS Client to match read report PDUs with previously sent or forwarded MMs.
To	To-value	Mandatory The address of the recipient of the Read Report, i.e. the originator of the original multimedia message.
From	From-value	Mandatory The address of the originator of the Read Report, i.e. the recipient of the original multimedia message. The insert-address-token MUST NOT be used as the value of the field.
Date	Date-value	Mandatory Time the message was handled by the recipient MMS Client.
X-Mms-Read-Status	Read-status-value	Mandatory The status of the message.

Table 11. Header Fields of M-Read-Orig.ind PDU

If the originating MMS Client does not support the M-read-orig.ind PDU the originating Proxy-Relay MAY convert the PDU into a MM, as described in [MMSCTR].

6.8. Error Considerations

6.8.1. Interoperability Considerations with Version Numbering

The MMS version number is divided into two parts: major version number and minor version number. MMS versions with only minor version number differences SHALL provide full backward compatibility. MMS versions with major version number differences SHALL NOT provide backward compatibility.

All major MMS versions MUST support MMS 1.0 M-Send.conf PDU and MMS 1.0 M-NotifyResp.ind PDU.

6.8.2. Interoperability between MMS Entities implementing MMS Versions with the Same Major Version Number

The following rules SHALL be followed between MMS Entities implementing different MMS versions having the same major version number but different minor version number.

When a MMS Client or MMS Proxy-Relay receives a PDU containing a particular minor version number it MAY respond with a PDU containing a different minor version number.

Unless a specific behaviour has been defined, the receiving MMS Client or MMS Proxy-Relay SHALL ignore all unrecognised fields and recognised fields with unrecognised values and a receiving MMS Proxy-Relay SHALL pass all unrecognised fields and SHOULD pass all recognised fields with unrecognised values unchanged.

The receiving MMS Proxy-Relay SHALL respond to any unknown PDU with M-Send.conf PDU containing Response-status-value 'Error-unsupported-message'.

The receiving MMS Client SHALL respond to any unknown PDU with M-NotifyResp.ind PDU containing Status-value 'Unrecognised'.

6.8.3. Interoperability between MMS Entities implementing MMS Versions with different Major Version Numbers

The following rules SHALL be followed between MMS Entities implementing MMS versions with different major version numbers.

The receiving MMS Proxy-Relay SHALL respond to any PDU having major version number which it does not support with MMS 1.0 M-Send.conf PDU containing Response-status-value 'Error-unsupported-message'.

The receiving MMS Client SHALL respond to any PDU having major version number which it does not support with MMS 1.0 M-NotifyResp.ind PDU containing Status-value 'Unrecognised'.

If the receiving MMS Client or MMS Proxy-Relay supports multiple major versions including the version number of the received PDU, it MUST respond to the received PDU with a PDU from the same major version.

6.8.4. Transient and permanent failures

The confirmation PDUs sent from the MMS Proxy-Relay to the MMS Client, i.e., M-Send.conf, M-Retrieve.conf, and M-Forward.conf, each contain a field for reporting a resulting status for the corresponding MMS Client request. The possible status values fall in three complementary classes, similar to the classification used in [RFC1893]:

- Success. This class includes the status value ‘Ok’. Indication is that the MMS Client request was successfully received, understood, and accepted.
- Transient failure. This class includes the status value ‘Error-transient-failure’ for unspecified errors, a number of other assigned values, and certain reserved values. Indication is that the request PDU as received was valid, but some temporary event prevented successful fulfillment. Sending the request in the future may be successful.
- Permanent failure. This class includes the status value ‘Error-permanent-failure’ for unspecified errors, ‘Error-unsupported-message’ for version mismatch detection, a number of other assigned values, and certain reserved values. Indication is that the failure is not likely to be resolved by resending the request PDU in its current form. Some change to the request PDU must be made to achieve a successful outcome.

In addition the legacy type status values that have been obsoleted for use in the X-Mms-Response-Status field, see section 7.2.27, are all indicative of transient or permanent failures. For backward compatibility reasons, these status values are however not explicitly mapped to either the transient or the permanent failure class. Instead close counterparts to these legacy values have been defined as appropriate in the transient and permanent failure classes.

The status values contained in the X-Mms-Response-Status and X-Mms-Retrieve-Status fields are intended for use by the MMS Client. An accompanying description contained in the X-Mms-Response-Text or X-Mms-Retrieve-Text field is intended for the human user.

7. Binary Encoding of Protocol Data Units

The basic encoding mechanisms for binary encoded MMS PDUs originates from WSP specification [WAPWSP], because this is very tight encoding intended to optimize amount of data transmitted over the air.

The MMS PDU is stored to the Data field of the Post, Reply and Push PDUs [WAPWSP] when using the WSP based stack, and to the Message Body of the POST or Response HTTP message when using the HTTP based stack. Thus, the MMS header fields are NOT encoded into WSP/HTTP PDU headers using WSP code page technique. MMS Clients and MMS Proxy-Relays that support this version of MMS MUST recognise the encoding of all of the MMS header fields defined in this chapter.

If user-defined header fields are used in MMS PDU, the mechanism described in Chapter 7.1 (Application-header) MUST be used.

In the encoding of the header fields, the order of the fields is not significant, except that X-Mms-Message-Type, X-Mms-Transaction-ID (when present) and X-Mms-MMS-Version MUST be at the beginning of the message headers, in that order, and if the PDU contains a message body the Content Type MUST be the last header field, followed by message body.

According to WSP definitions, comma separated lists of header field values are coded as multiple header fields with identical name. If the header fields are converted between binary encoding and textual format, several header fields with the same name are combined into a comma-separated list, and vice versa. The order of the header fields is preserved.

The definitions for non-terminals not found in this document MUST follow the definitions in [WAPWSP].

> Note: The term "non-terminal" comes from the same context as described in [RFC2234].

Header fields included in a MM SHALL be encoded according to WSP Binary Encoding version 1.3 [WAPWSP] whenever possible. Otherwise, textual encoding is used. If binary encoding of MMS PDUs is applied, it is also possible to provide header extensibility using WSP mechanism of encoding of new unassigned header field names.

> Note: Referenced WSP version for binary encoding has been fixed to [WAPWSP] in order to avoid an incompatibility between different versions of MMS PDU. Any newer header field or header field value binary encoding than [WAPWSP] must not be used, including changes specified in SINs against [WAPWSP]. When attempting to use newer header or value, the entire header field and value must be encoded in textual format. For example, Content-Disposition field in 8.4.2.53 [WSP230] is encoded without any binary value at all.
>
> Note: Table 38 in [WAPWSP] contains bugs at Expected BNF Rules for Value. “Text-value” must be used for parameter values instead of “Text-string”.

7.1. Encoding Rules

The following rules are used to encode header fields:

Header-field = MMS-header | Application-header

MMS-header = MMS-field-name MMS-value

Application-header = Token-text Application-specific-value

Token-text = Token End-of-string

MMS-field-name = Short-integer

Application-specific-value = Text-string

MMS-value = Bcc-value |

Cc-value |

Content-location-value |

Content-type-value |

Date-value |

Delivery-report-value |

Delivery-time-value |

Delta-seconds-value |

Expiry-value |

Previously-sent-by-value |

Previously-sent-date-value |

From-value |

Message-class-value |

Message-ID-value |

Message-type-value |

Message-size-value |

MMS-version-value |

Priority-value |

Read-report-value |

Read-status-value |

Reply-charging-value |

Reply-charging-deadline-value |

Reply-charging-ID-value |

Reply-charging-size-value |

Report-allowed-value |

Response-status-value |

Response-text-value |

Retrieve-status-value |

Retrieve-text-value |

Sender-visibility-value |

Status-value |

Subject-value |

To-value |

Transaction-id-value

7.2. Header Field Values and Assigned Numbers

7.2.1. Bcc field

Bcc-value = Encoded-string-value

See Chapter 8 for addressing model.

7.2.2. Cc field

Cc-value = Encoded-string-value

See Chapter 8 for addressing model.

7.2.3. X-Mms-Content-Location field

Content-location-value = Uri-value

Uri-value = Text-string

URI value SHOULD be encoded per [RFC2616], but service user MAY use a different format.

7.2.4. Content-Type field

The Content-Type field is encoded as Content-type-value defined in [WAPWSP 8.4.2.24]. Preassigned content-types can be found in [WAPWSP Appendix A, Table 40]. The use of start-parameter in case of multipart/related is defined in [RFC2387] and SHOULD be encoded according to [WAPWSP].

7.2.5. Date field

Date-value = Long-integer

In seconds from 1970-01-01, 00:00:00 GMT.

7.2.6. X-Mms-Delivery-Report field

Delivery-report-value = Yes | No

Yes = <Octet 128>

No = <Octet 129>

7.2.7. X-Mms-Delivery-Time field

Delivery-time-value = Value-length (Absolute-token Date-value | Relative-token Delta-seconds-value)

Absolute-token = <Octet 128>

Relative-token = <Octet 129>

7.2.8. Delta-seconds-value

Delta-seconds-value = Long-integer

7.2.9. Encoded-string-value

Encoded-string-value = Text-string | Value-length Char-set Text-string

The Char-set values are registered by IANA as MIBEnum value.

UTF-8 character-set encoding SHOULD be supported in Encoded-string-value. If the MMS Client uses UTF-8 character-set encoding, the Char-set parameter SHOULD be used to indicate its usage.

Encoding according to [RFC2047] MAY be supported in the MMS Client and/or MMS Proxy-Relay. Encoding according to [RFC2047] SHOULD only be used without "Value-length Char-set" parameters. [RFC2047] encoding for UTF-8 character-set encoding MAY be supported in the MMS Client and/or MMS Proxy-Relay.

Note: The usage of Unicode character-set encoding is recommended. The supported set of actual character-sets in the MMS Client is up to the implementation. The MMS Client must not rely on the MMS Proxy-Relay doing any character-set transformation.

7.2.10. X-Mms-Expiry field

Expiry-value = Value-length (Absolute-token Date-value | Relative-token Delta-seconds-value)

Absolute-token = <Octet 128>

Relative-token = <Octet 129>

7.2.11. From field

From-value = Value-length (Address-present-token Encoded-string-value | Insert-address-token)

Address-present-token = <Octet 128>

Insert-address-token = <Octet 129>

See Chapter 8 for addressing model.

7.2.12. X-Mms-Previously-Sent-By field

Previously-sent-by-value = Value-length Forwarded-count-value Encoded-string-value

Forwarded-count-value = Integer-value

See chapter 8 for addressing model.

7.2.13. X-Mms-Previously-Sent-Date field

Previously-sent-date-value = Value-length Forwarded-count-value Date-value

7.2.14. X-Mms-Message-Class field

Message-class-value = Class-identifier | Token-text

Class-identifier = Personal | Advertisement | Informational | Auto

Personal = <Octet 128>

Advertisement = <Octet 129>

Informational = <Octet 130>

Auto = <Octet 131>

The token-text is an extension method to the message class.

7.2.15. Message-ID field

Message-ID-value = Text -string

Encoded as in email address as per [RFC822]. The characters "<" and ">" are not included.

7.2.16. X-Mms-Message-Type field

Message-type-value = m-send-req | m-send-conf | m-notification-ind | m-notifyresp-ind | m-retrieve-conf | m-acknowledge-ind | m-delivery-ind | m-read-rec-ind | m-read-orig-ind | m-forward-req | m-forward-conf

m-send-req = <Octet 128>

m-send-conf = <Octet 129>

m-notification-ind = <Octet 130>

m-notifyresp-ind = <Octet 131>

m-retrieve-conf = <Octet 132>

m-acknowledge-ind = <Octet 133>

m-delivery-ind = <Octet 134>

m-read-rec-ind = <Octet 135>

m-read-orig-ind = <Octet 136>

m-forward-req = <Octet 137>

m-forward-conf = <Octet 138>

Unknown message types will be discarded.

7.2.17. X-Mms-Message-Size field

Message-size-value = Long-integer

Message size is in octets.

7.2.18. X-Mms-MMS-Version field

MMS-version-value = Short-integer

The three most significant bits of the Short-integer are interpreted to encode a major version number in the range 1-7, and the four least significant bits contain a minor version number in the range 0-14. If there is only a major version number, this is encoded by placing the value 15 in the four least significant bits [WAPWSP].

7.2.19. X-Mms-Priority field

Priority-value = Low | Normal | High

Low = <Octet 128>

Normal = <Octet 129>

High = <Octet 130>

7.2.20. X-Mms-Read-Report field

Read-report-value = Yes | No

Yes = <Octet 128>

No = <Octet 129>

7.2.21. X-Mms-Read-Status field

Read-status-value = Read | Deleted without being read

Read = <Octet 128>

Deleted without being read = <Octet 129>

7.2.22. X-Mms-Reply-Charging field

Reply-charging-value = Requested | Requested text only | Accepted | Accepted text only

Requested = <Octet 128>

Requested text only = <Octet 129>

Accepted = <Octet 130>

Accepted text only = <Octet 131>

7.2.23. X-Mms-Reply-Charging-Deadline field

Reply-charging-deadline-value = Value-length (Absolute-token Date-value | Relative-token Delta-seconds-value)

Absolute-token = <Octet 128>

Relative-token = <Octet 129>

7.2.24. X-Mms-Reply-Charging-ID field

Reply-charging-ID-value = Text-string

7.2.25. X-Mms-Reply-Charging-Size field

Reply-charging-size-value = Long-integer

7.2.26. X-Mms-Report-Allowed field

Report-allowed-value = Yes | No

Yes = <Octet 128>

No = <Octet 129>

7.2.27. X-Mms-Response-Status field

Response-status-value = Ok |
Error-unspecified |
Error-service-denied |
Error-message-format-corrupt |
Error-sending-address-unresolved |
Error-message-not-found |
Error-network-problem |
Error-content-not-accepted |
Error-unsupported-message |
Error-transient-failure |
Error-transient-sending-address-unresolved |
Error-transient-message-not-found |
Error-transient-network-problem |
Error-permanent-failure |
Error-permanent-service-denied |
Error-permanent-message-format-corrupt |
Error-permanent-sending-address-unresolved |
Error-permanent-message-not-found |
Error-permanent-content-not-accepted |
Error-permanent-reply-charging-limitations-not-met |
Error-permanent-reply-charging-request-not-accepted |
Error-permanent-reply-charging-forwarding-denied |
Error-permanent-reply-charging-not-supported

Ok = <Octet 128>

Error-unspecified = <Octet 129> (obsolete)

Error- service-denied = <Octet 130> (obsolete)

Error-message-format-corrupt = <Octet 131> (obsolete)

Error-sending-address-unresolved = <Octet 132> (obsolete)

Error-message-not-found = <Octet 133> (obsolete)

Error-network-problem = <Octet 134> (obsolete)

Error- content-not-accepted = <Octet 135> (obsolete)

Error-unsupported-message = <Octet 136>

Error-transient-failure = <Octet 192>

Error-transient-sending-address-unresolved = <Octet 193>

Error-transient-message-not-found = <Octet 194>

Error-transient-network-problem = <Octet 195>

Error-permanent-failure = <Octet 224>

Error-permanent-service-denied = <Octet 225>

Error-permanent-message-format-corrupt = <Octet 226>

Error-permanent-sending-address-unresolved = <Octet 227>

Error-permanent-message-not-found = <Octet 228>

Error-permanent-content-not-accepted = <Octet 229>

Error-permanent-reply-charging-limitations-not-met = <Octet 230>

Error-permanent-reply-charging-request-not-accepted = <Octet 231>

Error-permanent-reply-charging-forwarding-denied = <Octet 232>

Error-permanent-reply-charging-not-supported = <Octet 233>

The values 196 through 223 are reserved for future use to indicate other transient failures. An MMS Client MUST react the same to a value in range 196 to 223 as it does to the value 192 (Error-transient-failure).

The values 234 through 255 are reserved for future use to indicate other permanent failures. An MMS Client MUST react the same to a value in range 234 to 255 as it does to the value 224 (Error-permanent-failure).

Any other values SHALL NOT be used. They are reserved for future use. An MMS Client that receives such a reserved value MUST react the same as it does to the value 224 (Error-permanent-failure). The value Error-unsupported-message is reserved for version and supported feature management purposes only.

The Response-status-values marked ‘obsolete’, i.e., the values 129 through 135, should only be supported for backward compatibility purposes. Close counterparts to these legacy values have been defined in the ranges 193 through 195 (transient failures) and 225 through 229 (permanent failures) in a numbering realignment.

7.2.28. X-Mms-Response-Text field

Response-text-value = Encoded-string-value

7.2.29. X-Mms-Retrieve-Status field

Retrieve-status-value = Ok |
Error-transient-failure |
Error-transient-message-not-found |
Error-transient-network-problem |
Error-permanent-failure |
Error-permanent-service-denied |
Error-permanent-message-not-found |
Error-permanent-content-unsupported

Ok = <Octet 128>

Error-transient-failure = <Octet 192>

Error-transient-message-not-found = <Octet 193>

Error-transient-network-problem = <Octet 194>

Error-permanent-failure = <Octet 224>

Error-permanent-service-denied = <Octet 225>

Error-permanent-message-not-found = <Octet 226>

Error-permanent-content-unsupported = <Octet 227>

The values 195 through 223 are reserved for future use to indicate other transient failures. An MMS Client MUST react the same to a value in range 195 to 223 as it does to the value 192 (Error-transient-failure).

The values 228 through 255 are reserved for future use to indicate other permanent failures. An MMS Client MUST react the same to a value in range 228 to 255 as it does to the value 224 (Error-permanent-failure).

Any other values SHALL NOT be used. They are reserved for future use. An MMS Client that receives such a reserved value MUST react the same as it does to the value 224 (Error-permanent-failure).

7.2.30. X-Mms-Retrieve-Text field

Retrieve-text-value = Encoded-string-value

7.2.31. X-Mms-Sender-Visibility field

Sender-visibility-value = Hide | Show

Hide = <Octet 128>

Show = <Octet 129>

7.2.32. X-Mms-Status field

Status-value = Expired | Retrieved | Rejected | Deferred | Unrecognised | Indeterminate | Forwarded

Expired = <Octet 128>

Retrieved = <Octet 129>

Rejected = <Octet 130>

Deferred = <Octet 131>

Unrecognised = <Octet 132>

Indeterminate = <Octet 133>

Forwarded = <Octet 134>

The value Unrecognised is reserved for version management purpose only.

7.2.33. Subject field

Subject-value = Encoded-string-value

7.2.34. To field

To-value = Encoded-string-value

See Chapter 8 for addressing model.

7.2.35. X-Mms-Transaction-Id field

Transaction-id-value = Text-string

7.3. Header Field Names and Assigned Numbers

The Table 12 contains the field name assignments.

Name	Assigned Number
Bcc	0x01
Cc	0x02
X-Mms-Content-Location	0x03
Content-Type	0x04
Date	0x05
X-Mms-Delivery-Report	0x06
X-Mms-Delivery-Time	0x07
X-Mms-Expiry	0x08
From	0x09
X-Mms-Message-Class	0x0A
Message-ID	0x0B
X-Mms-Message-Type	0x0C
X-Mms-MMS-Version	0x0D
X-Mms-Message-Size	0x0E
X-Mms-Priority	0x0F
X-Mms-Read-Report	0x10
X-Mms-Report-Allowed	0x11
X-Mms-Response-Status	0x12
X-Mms-Response-Text	0x13
X-Mms-Sender-Visibility	0x14
X-Mms-Status	0x15
Subject	0x16
To	0x17
X-Mms-Transaction-Id	0x18
X-Mms-Retrieve-Status	0x19
X-Mms-Retrieve-Text	0x1A
X-Mms-Read-Status	0x1B
X-Mms-Reply-Charging	0x1C
X-Mms-Reply-Charging-Deadline	0x1D

X-Mms-Reply-Charging-ID	0x1E
X-Mms-Reply-Charging-Size	0x1F
X-Mms-Previously-Sent-By	0x20
X-Mms-Previously-Sent-Date	0x21

Table 12. Field Name Assignments

The Table 13 contains the assignments of the necessary content types.

Name	Assigned Number
Push Application-ID	4
Application/vnd.wap.mms-message	Subject to IANA registration

Table 13. Content Type Assignments

8. MMS Addressing Model

The MMS addressing model contains two addresses: the address of the MMS Proxy-Relay and the address of the recipient user and terminal. The address of the MMS Proxy-Relay shall be the URI of MMS Proxy-Relay given by the MMS service provider. Thus, the URI needs to be configurable in the terminal.

A notation for the address of the recipient user in the terminal needs to be defined. The addressing model allows only single user in the terminal, thus combining the address of the terminal and the user. WAP Push Drafting Committee has solved this issue by using ABNF [RFC2234] notation for defining the address type in the WAP Push Proxy Gateway [PPG] specification. The text below is copied from the PPG specification and edited for usage in this specification.

The external representation of addresses processed by the MMS Proxy-Relay is defined using ABNF. The format is compatible with Internet e-mail addresses [RFC822]. However, whereas [RFC822] allows a comma separated list of address values to be used in header fields, MMS, in accordance with WSP definitions, codes such lists into multiple header fields with identical names. The MMS Proxy-Relay MUST be able to parse this address format, and it MUST be able to determine whether it supports the specified address type or not.

```
address = ( e-mail / device-address )
e-mail = "Joe User <joe@user.org>" ; corresponding syntax defined in RFC822
                                   ; per header field

device-address = ( global-phone-number "/TYPE=PLMN" )
           / ( ipv4 "/TYPE=IPv4" )
           / ( ipv6 "/TYPE=IPv6" )
           / ( escaped-value "/TYPE=" address-type )
address-type = 1*address-char
; A network bearer address type [WDP]
address-char = ( ALPHA / DIGIT / "_" )
escaped-value = 1*( safe-char )
; the actual value escaped to use only safe characters by replacing
; any unsafe-octet with its hex-escape
safe-char = ALPHA / DIGIT / "+" / "-" / "." / "%" / "_"
unsafe-octet = %x00-2A / %x2C / %x2F / %x3A-40 / %x5B-60 / %x7B-FF
hex-escape = "%" 2HEXDIG ; value of octet as hexadecimal value
global-phone-number = ["+"] 1*( DIGIT / written-sep )
written-sep =("-"/".")
ipv4 = 1*3DIGIT 3( "." 1*3DIGIT ) ; IPv4 address value
ipv6 = 4HEXDIG 7( ":" 4HEXDIG ) ; IPv6 address per RFC 2373
```

Each value of a user-defined-identifier is a sequence of arbitrary octets. They can be safely embedded in this address syntax only by escaping potentially offending values. The conversion to escaped-value is done by replacing each instance of unsafe-octet by a hex-escape which encodes the numeric value of the octet.

Some examples of the mechanism:

```
To: 0401234567/TYPE=PLMN
To: +358501234567/TYPE=PLMN
To: Joe User <joe@user.org>
To: FEDC:BA98:7654:3210:FEDC:BA98:7654:3210/TYPE=IPv6
To: 195.153.199.30/TYPE=IPv4
```

The terminal MUST support at least one of the addressing methods. The addressing model may be expanded later to cover other formats of addresses, such as URI-based addressing [RFC2396].

Appendix A. Static Conformance Requirements (Normative)

Static Conformance Requirement is presented as a set of tables below. The format, contents and syntax of the tables are mandated by [CREQ].

A.1 MMS Client

A.1.1 General Message Structure

Item	Function	Reference	Status	Requirement
MMSE-C-001	Support for application/vnd.wap.mms-message	5	M	
MMSE-C-002	Support for MMS presentation part in multipart structure	5	O	
MMSE-C-003	Sending additional headers	5	O	
MMSE-C-004	Functionality for additional headers	6	O	MMSE-C-003
MMSE-C-005	Support of presentation without presentation part	5	O	
MMSE-C-006	Support for text/plain multimedia objects	5	M	
MMSE-C-007	Support for other multimedia objects than text	5	O	

Table 14. Static Conformance Requirement for general message structure, originating terminal

Item	Function	Reference	Status	Requirement
MMSE-C-008	Support for application/vnd.wap.mms-message	5	M	
MMSE-C-009	Support for MMS presentation part in multipart structure	5	O	
MMSE-C-010	Recognising encoding of all MMS header fields	7	M	
MMSE-C-011	Recognising additional headers	6,7	M	
MMSE-C-012	Functionality for additional headers	6,7	O	MMSE-C-011
MMSE-C-013	Support of presentation without presentation part	5	M	
MMSE-C-	Support for text/plain multimedia	5	M	

014	objects			
MMSE-C-015	Support for other multimedia objects than text	5	O	

Table 15. Static Conformance Requirement for general message structure, recipient terminal

A.1.2 Sending of Multimedia Message

Item	Function	Reference	Status	Requirement
MMSE-C-016	X-Mms-Message-Type field	Table 1,2	M	
MMSE-C-017	X-Mms-Transaction-ID field	Table 1,2	M	
MMSE-C-018	X-Mms-MMS-Version field	Table 1,2	M	
MMSE-C-019	Date field	Table 1	O	
MMSE-C-020	From field	Table 1	M	
MMSE-C-021	To field	Table 1	O	
MMSE-C-022	Cc field	Table 1	O	
MMSE-C-023	Bcc field	Table 1	O	
MMSE-C-024	Support for at least one To, Cc or Bcc field	Table 1	M	MMSE-C-021 OR MMSE-C-022 OR MMSE-C-023
MMSE-C-025	Subject field	Table 1	O	
MMSE-C-026	X-Mms-Message-Class field	Table 1	O	
MMSE-C-027	X-Mms-Expiry field	Table 1	O	
MMSE-C-028	X-Mms-Delivery-Time field	Table 1	O	
MMSE-C-029	X-Mms-Priority field	Table 1	O	
MMSE-C-030	X-Mms-Sender-Visibility field	Table 1	O	

MMSE-C-031	X-Mms-Delivery-Report field	Table 1	O	
MMSE-C-032	X-Mms-Read-Report field	Table 1	O	
MMSE-C-033	Content-Type field	Table 1	M	
MMSE-C-034	X-Mms-Response-Status field	Table 2	M	
MMSE-C-035	X-Mms-Response-Text field	Table 2	O	
MMSE-C-036	In the case of application/vnd.wap.multipart.related the presentation is the root part of the aggregate document.	5	M	
MMSE-C-037	Message-ID field in case of successful delivery to MMS Proxy-Relay	Table 2	M	
MMSE-C-038	X-Mms-Reply-Charging field	Table 1	O	
MMSE-C-039	X-Mms-Reply-Charging-Deadline field	Table 1	O	MMSE-C-038
MMSE-C-040	X-Mms-Reply-Charging-Size field	Table 1	O	MMSE-C-038
MMSE-C-041	X-Mms-Reply-Charging-ID field	Table 1	O	

Table 16. Static Conformance Requirement for sent multimedia message and corresponding reply.

A.1.3 MMS Notification

Item	Function	Reference	Status	Requirement
MMSE-C-042	X-Mms-Message-Type field	Table 3,4	M	
MMSE-C-043	X-Mms-Transaction-ID field	Table 3,4	M	
MMSE-C-044	X-Mms-MMS-Version field	Table 3,4	M	
MMSE-C-045	From field	Table 3	O	
MMSE-C-046	Subject field	Table 3	O	
MMSE-C-047	X-Mms-Message-Class field	Table 3	M	

MMSE-C-048	X-Mms-Message-Size field	Table 3	M	
MMSE-C-049	X-Mms-Expiry field	Table 3	M	
MMSE-C-050	X-Mms-Content-Location field	Table 3	M	
MMSE-C-051	Status field	Table 4	M	
MMSE-C-052	X-Mms-Report-Allowed field	Table 4	O	
MMSE-C-053	X-Mms-Delivery-Report field	Table 3	O	
MMSE-C-054	X-Mms-Reply-Charging field	Table 3	O	
MMSE-C-055	X-Mms-Reply-Charging-Deadline field	Table 3	O	MMSE-C-054
MMSE-C-056	X-Mms-Reply-Charging-ID field	Table 3	O	
MMSE-C-057	X-Mms-Reply-Charging-Size field	Table 3	O	MMSE-C-054

Table 17. Static Conformance Requirement for received MMS notification and corresponding reply.

A.1.4 Retrieval of Multimedia Message

Item	Function	Reference	Status	Requirement
MMSE-C-058	X-Mms-Message-Type field	Table 5	M	
MMSE-C-059	X-Mms-Transaction-ID field	Table 5	O	
MMSE-C-060	Message-ID field	Table 5	O[3]	
MMSE-C-061	Support the functionality of X-Mms-Transaction-ID field when present	Table 5	M	
MMSE-C-062	X-Mms-MMS-Version field	Table 5	M	
MMSE-C-063	Date field	Table 5	M	

[3] This header field SHALL be present when the M-Retrieve.conf PDU includes the requested MM.

MMSE-C-064	From field	Table 5	M	
MMSE-C-065	To field	Table 5	O	
MMSE-C-066	Cc field	Table 5	O	
MMSE-C-067	Subject field	Table 5	O	
MMSE-C-068	X-Mms-Message-Class field	Table 5	O	
MMSE-C-069	X-Mms-Priority field	Table 5	O	
MMSE-C-070	X-Mms-Delivery-Report field	Table 5	O	
MMSE-C-071	X-Mms-Read-Report field	Table 5	O	
MMSE-C-072	Content-Type field	Table 5	O	
MMSE-C-073	X-Mms-Report-Allowed field	Table 6	O	
MMSE-C-074	Support for recognising of read-report message	Table 5	O	MMSE-C-068
MMSE-C-075	X-Mms-Retrieve-Status field	Table 5	O	
MMSE-C-076	X-Mms-Retrieve-Text field	Table 5	O	
MMSE-C-077	X-Mms-Reply-Charging field	Table 5	O	
MMSE-C-078	X-Mms-Reply-Charging-Deadline field	Table 5	O	MMSE-C-077
MMSE-C-079	X-Mms-Reply-Charging-Size field	Table 5	O	MMSE-C-077
MMSE-C-080	X-Mms-Reply-Charging-ID field	Table 5	O	
MMSE-C-081	X-Mms-Previously-Sent-By field	Table 5	O	
MMSE-C-082	X-Mms-Previously-Sent-Date field	Table 5	O	

Table 18. Static Conformance Requirement for received multimedia message and the corresponding reply.

A.1.5 Acknowledge and Delivery Report

Item	Function	Reference	Status	Requirement
MMSE-C-083	X-Mms-Message-Type field	Tables 6,9	M	
MMSE-C-084	X-Mms-Transaction-ID field	Tables 6	M	
MMSE-C-085	X-Mms-MMS-Version field	Tables 6,9	M	
MMSE-C-086	X-Mms-Report-Allowed field	Table 6	O	
MMSE-C-087	Message-ID field	Table 9	M	
MMSE-C-088	To field	Table 9	M	
MMSE-C-089	Date field	Table 9	M	
MMSE-C-090	X-Mms-Status field	Table 9	M	

Table 19. Static Conformance Requirement for received delivery report.

A.1.6 Forwarding of Multimedia Message

Item	Function	Reference	Status	Requirement
MMSE-FWD-C-001	Support for M-Forward Transaction	Tables 7,8	O	MMSE-FWD-C-002 AND MMSE-FWD-C-003 AND MMSE-FWD-C-004 AND MMSE-FWD-C-006 AND MMSE-FWD-C-015AND MMSE-FWD-C-016 AND MMSE-FWD-C-018 AND MMSE-FWD-C-019
MMSE-FWD-C-002	X-Mms-Message-Type field	Tables 7,8	O	
MMSE-FWD-C-003	X-Mms-Transaction-ID field	Table 7,8	O	

MMSE-FWD-C-004	X-Mms-MMS-Version field	Table 7,8	O	
MMSE-FWD-C-005	Date field	Table 7	O	
MMSE-FWD-C-006	From field	Table 7	O	
MMSE-FWD-C-007	To field	Table 7	O	
MMSE-FWD-C-008	Cc field	Table 7	O	
MMSE-FWD-C-009	Bcc field	Table 7	O	
MMSE-FWD-C-010	X-Mms-Expiry field	Table 7	O	
MMSE-FWD-C-011	X-Mms-Delivery-Time field	Table 7	O	
MMSE-FWD-C-012	X-Mms-Report-Allowed field	Table 7	O	
MMSE-FWD-C-013	X-Mms-Delivery-Report field	Table 7	O	
MMSE-FWD-C-014	X-Mms-Read-Report field	Table 7	O	
MMSE-FWD-C-015	X-Mms-Content-Location field	Table 7	O	
MMSE-FWD-C-016	X-Mms-Response-Status field	Table 8	O	
MMSE-FWD-C-017	X-Mms-Response-Text field	Table 8	O	
MMSE-FWD-C-018	Message-ID field in case of acceptance by MMS Proxy-Relay	Table 8	O	
MMSE-FWD-C-019	Support for at least one To, Cc or Bcc field	Table 7	O	MMSE-FWD-C-007 OR MMSE-FWD-C-008 OR MMSE-FWD-C-009

Table 20. Static Conformance Requirement for forwarding a multimedia message.

A.1.7 Read Reporting

Item	Function	Reference	Status	Requirement

MMSE-RDR-C-001	Support of Read Reporting functionality	6.7	O	MMSE-RDR-C-003
MMSE-RDR-C-002	Support of Multimedia Message Read Report	6.7.1	O	MMSE-C-071
MMSE-RDR-C-003	Support for PDU Read Reporting functionality	Tables 10,11	O	MMSE-C-058 AND MMSE-C-071 AND MMSE-RDR-C-004 AND MMSE-RDR-C-005 AND MMSE-RDR-C-006 AND MMSE-RDR-C-007 AND MMSE-RDR-C-008 AND MMSE-RDR-C-010 AND MMSE-RDR-C-011
MMSE-RDR-C-004	X-Mms-Message-Type field	Tables 10,11	O	
MMSE-RDR-C-005	X-Mms-MMS-Version field	Tables 10,11	O	
MMSE-RDR-C-006	Message-ID field	Tables 10,11	O	
MMSE-RDR-C-007	To field	Tables 10,11	O	
MMSE-RDR-C-008	From field	Tables 10,11	O	
MMSE-RDR-C-009	Date field in M-Read-Rec.ind PDU	Tables 10	O	
MMSE-RDR-C-010	Date field in M-Read-Orig.ind PDU	Table 11	O	
MMSE-RDR-C-011	X-Mms-Read-Status field	Tables 10,11	O	

Table 21. Static Conformance Requirement for read report PDU.

A.1.8 Character Sets

Item	Function	Reference	Status	Requirement
MMSE-CHS-C-001	Unicode UTF-8 encoding	5, 7.2.9	O	

MMSE-CHS-C-002	Unicode UTF-16 encoding	5	O	
MMSE-CHS-C-003	ISO 10646-1 UCS-2 encoding	5	O	
MMSE-CHS-C-004	ISO 10646-1 UCS-4 encoding	5	O	
MMSE-CHS-C-005	Other character encoding	5, 7.2.9	O	
MMSE-CHS-C-006	Support for character-set encoding according to [RFC2047]	7.2.9	O	

Table 22. Static Conformance Requirement for character sets in client.

A.2 MMS Proxy-Relay

A.2.1 Support of PDUs

Item	Function	Reference	Status	Requirement
MMSE-S-076	Reception of multimedia message	6.1	M	
MMSE-S-077	Sending of MMS notification	6.2	M	
MMSE-S-078	Delivery of multimedia message	6.3, 6.4	M	
MMSE-S-079	Creation and delivery of delivery report upon user request	6.6	M	
MMSE-S-080	Delivery of Multimedia Message Read Report	6.7.1	M	
MMSE-S-081	Inserting current date to multimedia message being delivered	6.1.1	M	
MMSE-S-082	Inserting correct address when insert-address-token present	6.1.1	M	
MMSE-S-083	Support for removal of From field in notification & retrieved message when user requested hiding of source	6.2, 6.3	M	
MMSE-S-084	Support for adding X-Mms-Message-Class field to MMS notification when not sent by terminal	Table 3	M	
MMSE-S-085	Support for user-requested time-of-expiration for the message	6.1.1	O	
MMSE-S-086	Support for deferred delivery when user requested with X-Mms-Delivery-Time	6.1.1	O	

	field			
MMSE-S-087	Support for expedited delivery requested by X-Mms-Priority field	6.1.1	O	
MMSE-S-088	Inserting the X-Mms-Retrieve-Status field in the M-Retrieve.conf PDU	6.3	O	
MMSE-S-089	Inserting the X-Mms-Retrieve-Text field in the M-Retrieve.conf PDU	6.3	O	MMSE-S-088
MMSE-S-090	Include a message body in the M-Retrieve.conf PDU	6.3	M	
MMSE-S-091	Support of Read Report PDUs (reception of M-Read-Rec.ind from the recipient MMS Client and sending M-Read-Orig.ind to the originating MMS Client)	6.7.2	M	
MMSE-S-092	Inserting current Date to Read PDU (M-Read-Rec.ind) being sent	6.6.2	M	
MMSE-S-093	Rejection of M-Send.req PDU if it contains an "X-Mms-Reply-Charging" header field and reply-charging is not supported	6.1	M	
MMSE-S-094	Rejection of M-Send.req PDU if the value of the X-Mms-Reply-Charging field is 'Accepted' or 'Accepted_text_only'.	6.1	M	
MMSE-S-095	Support for changing the value of X-Mms-Reply-Charging header field if Reply-Charging is requested by the originator MMS Client and accepted by the MMS Proxy-Relay	6.1, 6.2, 6.3	O	
MMSE-S-096	Recognising encoding of all MMS Header fields	7	M	
MMSE-S-097	Support for Forwarding Multimedia Message located at the MMS Proxy-Relay	6.5	O	MMSE-S-101
MMSE-S-098	Support for inserting an address value specified in From header field to X-Mms-Previously-Sent-By header field	6.5	O	
MMSE-S-099	Support for inserting a Date header field value to X-Mms-Previously-Sent-Date header field	6.5	O	
MMSE-S-100	Including Message-ID header field in M-Retrieve.conf PDU when X-Mms-Read-Report value is Yes	Table 5	M	
MMSE-S-	Not allowing forward of Reply-	6.5	M	MMSE-S-102

101	Charging MM			OR MMSE-S-103
MMSE-S-102	Rejection of forward request without prior download of MM that includes Reply-Charging related header fields	6.5	O	
MMSE-S-103	Deletion of Reply-Charging related header fields if MM is forwarded without prior download	6.5	O	

Table 23. Static Conformance Requirement for MMS Proxy-Relay.

A.2.2 Character Sets

Item	Function	Reference	Status	Requirement
MMSE-CHS-S-001	Unicode UTF-8 encoding	7.2.9	O	
MMSE-CHS-S-002	Other character encoding	7.2.9	O	
MMSE-CHS-S-003	Support for character-set encoding according to [RFC2047]	7.2.9	O	

Table 24. Static Conformance Requirement for character sets in server.

Appendix B. Mapping of WAP PDU Header Fields to 3GPP Abstract Message Information Elements

This appendix is informative.

In order to provide for an unambiguous relationship between WAP MMS PDU and 3GPP MMS abstract messages and the contained information elements, respectively, this appendix contains a mapping of the header fields of the PDUs defined in this document to the information elements defined in [TS23140].

WAP PDUs are defined for the interface between the MMS Proxy -Relay and the MMS Client, called MMS_M. This interface corresponds to the interface between the MMS Relay/Server and the MMS User Agent, called “MM1”in the 3GPP specifications.

NOTE: The distinction between immediate and deferred retrieval is only done in the WAP MMS specifications. Therefore the relationship between WAP MMS PDUs and 3GPP MMS abstract messages are slightly different for the two retrieval schemes.

a) Mapping between Header Fields of the WAP MMS PDU M-Send.req and the 3GPP MMS Abstract Message MM1_submit .REQ

The following table describes the relationship between the WAP MMS PDU M-Send.req and the corresponding 3GPP MMS abstract message MM1_submit.REQ.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-Send.req		**MM1_submit.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-Transaction-ID	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
To	Optional	Recipient address	Mandatory
Cc	Optional[1]		
Bcc	Optional[1]		
Content-Type	Mandatory	Content type	Mandatory
From	Mandatory	Sender address	Optional
X-Mms-Message-Class	Optional	Message class	Optional
Date	Optional	Date and time	Optional
X-Mms-Expiry	Optional	Time of Expiry	Optional
X-Mms-Delivery-Time	Optional	Earliest delivery time	Optional
X-Mms-Delivery-Report	Optional	Delivery report	Optional
X-Mms-Reply-Charging	Optional	Reply-Charging	Optional

-X-Mms-Reply-Charging-Deadline	Optional	Reply-Deadline	Optional
X-Mms-Reply-Charging-Size	Optional	Reply-Charging-Size	Optional
X-Mms-Priority	Optional	Priority	Optional
X-Mms-Sender-Visibility	Optional	Sender visibility	Optional
X-Mms-Read-Report	Optional	Read reply	Optional
Subject	Optional	Subject	Optional
X-Mms-Reply-Charging-ID	Optional	Reply-Charging-ID	Optional
(Message Body)		Content	Optional

Table 25. Mapping of M-Send.req Header Fields to MM1_submit.REQ Information Elements

b) Mapping between Header Fields of the WAP MMS PDU M-Send.conf and the 3GPP MMS Abstract Message MM1_submit .RES

The following table describes the relationship between the WAP MMS PDU M-Send.conf and the corresponding 3GPP MMS abstract message MM1_submit.RES.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-Send.conf		**MM1_submit.RES**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-Transaction-ID	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
X-Mms-Response-Status	Mandatory	Request Status	Mandatory
X-Mms-Response-Text	Optional	Request Status Text	Optional
Message-ID	Optional	Message ID	Mandatory

Table 26. Mapping of M-Send.conf Header Fields to MM1_submit.RES Information Elements

c) Mapping between Header Fields of the WAP MMS PDU M-Notification.ind and the 3GPP MMS Abstract Message MM1_notification.REQ

The following table describes the relationship between the WAP MMS PDU M-Notification.ind and the corresponding 3GPP MMS abstract message MM1_notification.REQ.

WAP MMS PDU	**3GPP MMS Abstract Message**

M-Notification.ind		**MM1_notification.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-Transaction-ID	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
X-Mms-Message-Class	Mandatory	Message class	Mandatory
X-Mms-Message-Size	Mandatory	Message size	Mandatory
X-Mms-Expiry	Mandatory	Time of expiry	Mandatory
X-Mms-Content-Location	Mandatory	Message Reference	Mandatory
Subject	Optional	Subject	Optional
From	Optional	Sender address	Optional
X-Mms-Delivery-Report	Optional	Delivery report	Optional
X-Mms-Reply-Charging	Optional	Reply-Charging	Optional
X-Mms-Reply-Charging-Deadline	Optional	Reply-Deadline	Optional
X-Mms-Reply-Charging-ID	Optional	Reply-Charging-ID	Optional
X-Mms-Reply-Charging-Size	Optional	Reply-Charging-Size	Optional

Table 27. Mapping of M-Notification.ind Header Fields to MM1_notification.REQ Information Elements

d) Mapping between Header Fields of the WAP MMS PDU M-NotifyResp.ind and the 3GPP MMS Abstract Message MM1_notification.RES (deferred retrieval)

The following table describes the relationship between the WAP MMS PDU M-NotifyResp.ind and the corresponding 3GPP MMS abstract message MM1_notification.RES in case of deferred retrieval.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-NotifyResp.ind		**MM1_notification.RES**	
Header Field Names	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-Transaction-ID	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
X-Mms-Status	Mandatory	MM Status	Optional
X-Mms-Report-Allowed	Optional	Report allowed	Optional

Table 28. Mapping of M-NotifyResp.ind Header Fields to MM1_notification.RES Information Elements

e) Mapping between Header Fields of the WAP MMS PDU WSP/HTTP-GET and the 3GPP MMS Abstract Message MM1_retrieve.REQ

The following table describes the relationship between the WAP MMS PDU W-Get.req and the corresponding 3GPP MMS abstract message MM1_retrieve.REQ.

WAP MMS PDU		**3GPP MMS Abstract Message**	
WSP/HTTP GET		**MM1_retrieve.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Content-Location	Mandatory	Message Reference	Mandatory

Table 29.Mapping of WSP/HTTP GET Header Fields to MM1_retrieve.REQ Information Elements

f) Mapping between Header Fields of the WAP MMS PDU M-Retrieve.conf and the 3GPP MMS Abstract Message MM1_retrieve.RES

The following table describes the relationship between the WAP MMS PDU M-Retrieve.conf and the corresponding 3GPP MMS abstract message MM1_retrieve.RES.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-Retrieve.conf		**MM1_retrieve.RES**	
Header Field Names	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-Transaction-ID	Optional	-	-
X-Mms-MMS-Version	Mandatory	-	-
Message-ID	Conditional[4]	Message ID	Mandatory
From	Optional	Sender address	Conditional
Content-Type	Mandatory	Content type	Mandatory
To	Optional	Recipient address	Optional
Cc	Optional		
X-Mms-Message-Class	Optional	Message class	Optional
Date	Mandatory	Date and time	Mandatory
X-Mms-Delivery-Report	Optional	Delivery report	Optional

[4] This header field SHALL be present when the M-Retrieve.conf PDU includes the requested MM.

X-Mms-Priority	Optional	Priority	Conditional
X-Mms-Read-Report	Optional	Read reply	Conditional
Subject	Optional	Subject	Conditional
X-Mms-Retrieve-Status	Optional	Status	Optional
X-Mms-Retrieve-Text	Optional	Status Text	Optional
X-Mms-Reply-Charging	Optional	Reply-Charging	Optional
X-Mms-Reply-Charging-ID	Optional	Reply-Charging-ID	Optional
X-Mms-Reply-Charging-Deadline	Optional	Reply-Deadline	Optional
X-Mms-Reply-Charging-Size	Optional	Reply-Charging-Size	Optional
X-Mms-Previously-Sent-By	Optional	Previously-sent-by	Conditional
X-Mms-Previously-Sent-Date	Optional	Previously-sent-date-and-time	Conditional
(Message Body)		Content	Conditional

Table 30. Mapping of M-Retrieve.conf Header Fields to MM1_retrieve.RES Information Elements

g) Mapping between Header Fields of the WAP MMS PDU M-NotifyResp.ind and the 3GPP MMS Abstract Message MM1_acknowledge.REQ (immediate retrieval)

The following table describes the relationship between the WAP MMS PDU M-NotifyResp.ind and the corresponding 3GPP MMS abstract message MM1_acknowledge.REQ in case of immediate retrieval.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-NotifyResp.ind		**MM1_acknowledgement.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-Transaction-ID	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
X-Mms-Status	Mandatory	-	-
X-Mms-Report-Allowed	Optional	Report allowed	Optional

Table 31. Mapping of M-NotifyResp.ind Header Fields to MM1_acknowledgement.REQ Information Elements

h) Mapping between Header Fields of the WAP MMS PDU M-Acknowledge.ind and the 3GPP MMS Abstract Message MM1_acknowledge.REQ (deferred retrieval)

The following table describes the relationship between the WAP MMS PDU M-Acknowledge.ind and the corresponding 3GPP MMS abstract message MM1_acknowledge.REQ in case of deferred retrieval.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-Acknowledge.ind		**MM1_acknowledgement.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-Transaction-ID	Optional	-	-
X-Mms-MMS-Version	Mandatory	-	-
X-Mms-Report-Allowed	Optional	Report allowed	Optional

Table 32. Mapping of M-Acknowledge.ind Header Fields to MM1_acknowledgement.REQ Information Elements

i) Mapping between Header Fields of the WAP MMS PDU M-Delivery.ind and the 3GPP MMS Abstract Message MM1_delivery_report.REQ

The following table describes the relationship between the WAP MMS PDU M-Delivery.ind and the corresponding 3GPP MMS abstract message MM1_delivery_report.REQ.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-Delivery.ind		**MM1_delivery_report.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
Message-ID	Mandatory	Message ID	Mandatory
To	Mandatory	Recipient address	Mandatory
Date	Mandatory	Event Date	Mandatory
X-Mms-Status	Mandatory	MM Status	Mandatory

Table 33. Mapping of M-Delivery.ind Header Fields to MM1_delivery_report.REQ Information Elements

j) Mapping between Header Fields of the WAP MMS PDU M-Read-Rec.ind and the 3GPP MMS Abstract Message MM1_read_reply_recipient.REQ

The following table describes the relationship between the WAP MMS PDU M-Read-Rec.ind and the corresponding 3GPP MMS abstract message MM1_read_reply_recipient.REQ.

WAP MMS PDU	**3GPP MMS Abstract Message**

M-Read-Rec.ind		**MM1_read_reply_recipient.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
To	Mandatory	Recipient address	Mandatory
From	Mandatory	Originator address	Mandatory
Message-ID	Mandatory	Message-ID	Mandatory
Date	Optional	Date and Time	Optional
X-Mms-Read-Status	Mandatory	Read Status	Mandatory

Table 34. Mapping of M-Read-Rec.ind Header Fields to MM1_read_reply_recipient.REQ Information Elements

k) Mapping between Header Fields of the WAP MMS PDU M-Read-Orig.ind and the 3GPP MMS Abstract Message MM1_read_reply_originator.REQ

The following table describes the relationship between the WAP MMS PDU M-Read-Orig.ind and the corresponding 3GPP MMS abstract message MM1_read_reply_originator.REQ.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-Read-Orig.ind		**MM1_read_reply_originator.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
To	Mandatory	Recipient address	Mandatory
From	Mandatory	Originator address	Mandatory
Message-ID	Mandatory	Message-ID	Mandatory
Date	Mandatory	Date and Time	Mandatory
X-Mms-Read-Status	Mandatory	Read Status	Mandatory

Table 35. Mapping of M-Read-Orig.ind Header Fields to MM1_read_reply_originator.REQ Information Elements

l) Mapping between Header Fields of the WAP MMS PDU M-Forward.req and the 3GPP MMS Abstract Message MM1_forward.REQ

The following table describes the relationship between the WAP MMS PDU M-Forward.req and the corresponding 3GPP MMS abstract message MM1_forward.REQ.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-Forward.req		**MM1_forward.REQ**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-
X-Mms-Transaction-ID	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
To	Optional[1]	Recipient address	Mandatory
Cc	Optional[1]		
Bcc	Optional[1]		
From	Mandatory	Forwarding address	Optional
Date	Optional	Date and time	Optional
X-Mms-Expiry	Optional	Time of Expiry	Optional
X-Mms-Delivery-Time	Optional	Earliest delivery time	Optional
X-Mms-Report-Allowed	Optional	-	-
X-Mms-Delivery-Report	Optional	Delivery report	Optional
X-Mms-Read-Report	Optional	Read reply	Optional
X-Mms-Content-Location	Mandatory	Message Reference	Mandatory

Table 36. Mapping of M-Forward.req Header Fields to MM1_forward.REQ Information Elements

m) Mapping between Header Fields of the WAP MMS PDU M-Forward.conf and the 3GPP MMS Abstract Message MM1_forward.RES

The following table describes the relationship between the WAP MMS PDU M-Forward.conf and the corresponding 3GPP MMS abstract message MM1_forward.REQ.

WAP MMS PDU		**3GPP MMS Abstract Message**	
M-Forward.conf		**MM1_forward.RES**	
Header Field Name	Presence	Information Element	Presence
X-Mms-Message-Type	Mandatory	-	-

[1] At least one of the To, Cc, or Bcc fields MUST appear

X-Mms-Transaction-ID	Mandatory	-	-
X-Mms-MMS-Version	Mandatory	-	-
X-Mms-Response-Status	Mandatory	Status	Mandatory
X-Mms-Response-Text	Optional	Status Text	Optional
Message-ID	Optional	Message-ID	Mandatory

Table 37. Mapping of M-Forward.conf Header Fields to MM1_forward.RES Information Elements

Appendix C. String Representation of MMS PDU Header Field values

This appendix is informative.

This appendix contains string representations for some of the header field values in the PDUs described in this specification. String representation must not be used over MMS_M when binary encoding is available, the string representation in the table below is provided only to give an end to end description of MMS in conjunction with Appendix B and [TS23140].

The string representations are expressed using the tokens defined in [RFC2616]. In some cases direct references are made to [RFC822] and the tokens defined there.

MMS_M Header Field Name	**Encoding of header field values over MMS_M**	**String Representation in [TS23140]**
Content-type	according to [WAPWSP]	content-type
Date	long-integer	[RFC822]date-time
X-Mms-Delivery-report	<Octet 128>	“Yes”
	<Octet 129>	“No”
X-Mms-Expiry	long-integer	HTTP-date | delta-seconds
From	address-token | encoded-string	[RFC822]mailbox
X-Mms-Message-class	<Octet 128>	“Personal”
	<Octet 129>	“Advertisement”
	<Octet 130>	“Informational”
	<Octet 131>	“Auto”
Message-ID	text-string	quoted-string
X-Mms-Previously-Sent-By	integer encoded-string	(1*DIGIT “,” [RFC822]address)
X-Mms-Previously-Sent-Date	integer long-integer	(1*DIGIT “,” [RFC822]date-time)
X-Mms-Priority	<Octet 128>	“Low”
	<Octet 129>	“Normal”
	<Octet 130>	“High”
X-Mms-Read-Report	<Octet 128>	“Yes”
	<Octet 129>	“No”
X-Mms-Read-Status	<Octet 128>	“Read”
	<Octet 129>	“Deleted without being read”
X-Mms-Sender-visibility	<Octet 128>	“Yes”
	<Octet 129>	“No”
X-Mms-Status	<Octet 128>	“Expired”
	<Octet 129>	“Retrieved”
	<Octet 130>	“Rejected”
	<Octet 131>	“Deferred”
	<Octet 132>	“Unrecognised”
	<Octet 133>	“Indeterminate”
	<Octet 134>	“Forwarded”
Subject	text-string	*TEXT
To	encoded-string	[RFC822]address
Cc	encoded-string	[RFC822]address
Bcc	encoded-string	[RFC822]address

Appendix D. Change History(Informative)

Type of Change	Date	Section	Description
WAP-209-MMSEncapsulation-20000217-d	17-Feb-2000		The final draft of this document for Proposed voting.
Proposed version	14-Sep-2000		Approved as a Proposed version
WAP-209_100-MMSEncapsulation-20000914-p	30-Sep-2000	Overall	Proposed SCD which fixes a couple of bugs and editorial mistakes
WAP-209_100-MMSEncapsulation-20010418-p	18-Apr-2001	Overall	Proposed SCD which fixes yet other bugs and addresses Arch Cons issues
WAP-209-MMSEncapsulation-20010601-p	01-Jun-2001		The final proposed version for Approved voting
WAP-209-MMSEncapsulation-20010601-a	21-Jun-2001		Approved version with changes in disclaimer
CR-MMS-ENC-NOKIA015	30-May-2001	6.2,7.2.2.23 ,9.1.3	Enhancement of Delivery Report
CR-MMS-ENC-NOKIA016	30-May-2001	6.3, 7, 9	Application level errors in M-rtrieve.conf PDU
CR-MMSENC-Siemens008	15-Aug-2001	7	Correction of header field names
WAP-276-MMSEncapsulation-20011001-d	01-Oct-2001		The new baseline of the 2nd MMS Encapsulation Version
CR-MMS-ENC-ERICSSON003-2001-09-21	21-Sep-2001	2.1, 2.2	Update of WAP references
CR-MMS-ENC-ERICSSON03-011017	17-Oct-2001	4, 6.1.1, 6.6,	Consistent use of wording, MMS PDU, MM, and header, based on the agreement in the MMDC
CR-MMSENC-MATSIE005	10-Oct-2001	3.2, 6.1,6.2, 6.3, 6.X, 7	Support of Reply-Charing in MMS
CR-MMS-ENC-SIEMENS018	15-Nov-2001	2,4, 6 and 7	Forwarding messages located at the MMS Proxy-Relay
CR-MMS-ENC-SIEMENS015	10-Oct-2001	3,4,5,6,7	Refinements of message structure description and some editorial refinements.
WAP-209_102-MMSEncapsulation-20011011-a	11-Oct-2001	7, Appendix A	Incorporating a SIN that fixes syntax bugs in SCR tables and bugs in PDU encoding definition.
WAP-209_103-MMSEncapsulation-20011128-a	28-Nov-2001	6.2	Incorporating a SIN that fixes a misleading text of message size parameter in M-Notification.ind PDU.
CR-MMS-ENC-SIEMENS020	04-Dec-2001	1	Adding a reference statement to 3GPP TS 23.140 in the scope section.
CR-MMS-ENC-SIEMENS021	04-Dec-2001	2, 4, 6, 7, Appendix A	Renaming of X-MMS-forwarded-by and x-mms-forwarded-date header fields
CR-MMS-ENC-MATERNA04V2	12-Feb-2002	6.2	Addition of note that resent notifications should be identical to original notification.
CR-MMSENC-SIEMENS024v3	12-Feb-2002	6, 7, Appendix A & B	Clarification of Reply-Charging field usage and editorial changes to Appendix B
CR-WAP-276-MOTOROLA001-V5	12-Feb-2002	6.8.4 & 7	Specification of different error classes and definition of error codes by class.
CR-WAP276-NOKIA001-20020206-v2	12-Feb-2002	2 & 7	Specifies that binary encoding is WSP 1.3
CR-MMS-ENC-ERICSSON0201	19-Feb-2002	B.1	String representation for end-to-end interoperability
CR-WAP276-NOKIA002v2-20020218	22-Feb-2002	5, 7.2.9	Character encodings
CR-WAP276-NOKIA003-20020228+MOT	3-Mar-2002	Appendix A	Corrections to SCR tables for Read-reportin g, Forwarding, and Reply-charging
Architectural Consistency Review	9-Apr-2002	6, 7, 8, Appendix A	Clarification of Message-ID, Forwarding of MM with Reply-Charging, Use of Message-Class field, Address hiding, HTTP encoding, and related changes to the SCR tables
Internal review of document (Paris, 2002)	10-Apr-2002	2, 7, 8	1. Clarify that email addresses should be encoded into separate header fields rather than comma-separated list 2. Change definition of address-type as defined by WDP (rather than WINA) with appropriate normative reference. 3. Updated reference to SMIL specification.
OMA-WAP-MMS-ENC-v1_1-20020823-p	23-Aug-2002		Promoted to proposed state – accepted all changes
OMA-WAP-MMS-ENC-v1_1-20021030-p	30-Oct-2002		Incorporation of the SIN OMA-WAP-MMS-ENC-v1_1_001-20020909-a