



Wireless Application Protocol

MMS Encapsulation Protocol

Version 05-Jan-2002

Wireless Application Protocol
WAP-209-MMSEncapsulation-20020105-a

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| Document History | |
|---|----------|
| WAP-209-MMSEncapsulation-20010601-a | Approved |
| WAP-209-MMSEncapsulation-20020105-a | Current |
| WAP-209_102-MMSEncapsulation-20011011-a | Approved |
| WAP-209_103-MMSEncapsulation-20011128-a | Approved |

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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.

The service description of the multimedia messaging service can be found in [MMSSERV]. This specification defines the message encapsulation, i.e., the message structure and encodings for the multimedia messaging service.

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2.2. Informative References

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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 a 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 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.

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 paper describes the content and encodings of the protocol data units (PDUs) for the multimedia messaging service.

In multimedia messaging service the WAP WSP/HTTP is used to transfer multimedia messages between 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.

There are basically eight 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.req)

Logically the PDU consists of headers and a multipart body. The multipart body is present only as a sent multimedia message and a successfully fetched message. Some of the headers originate from standard RFC 822 headers and others are specific to the multimedia messaging.

According to WSP definitions, comma separated lists of header field values are coded as multiple headers with identical name. If the headers are converted from binary encoding to 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 textual format of the headers is that defined in [RFC822] and [RFC2616]. Binary encoding is similar to WSP header encoding [WAPWSP]. In this specification, values for header fields and parameter names are assigned.

5. Message Structure Overview

The multimedia messaging PDUs consists of MMS headers and a message body. The message body may contain any content type, including preassigned content types defined in [WAPWSP]. The MIME multipart [RFC2045-7] is used in email systems and are therefore compatible. The content type of the PDUs is application/vnd.wap.mms-message.

The WSP content type application/vnd.wap.multipart.related content type 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.

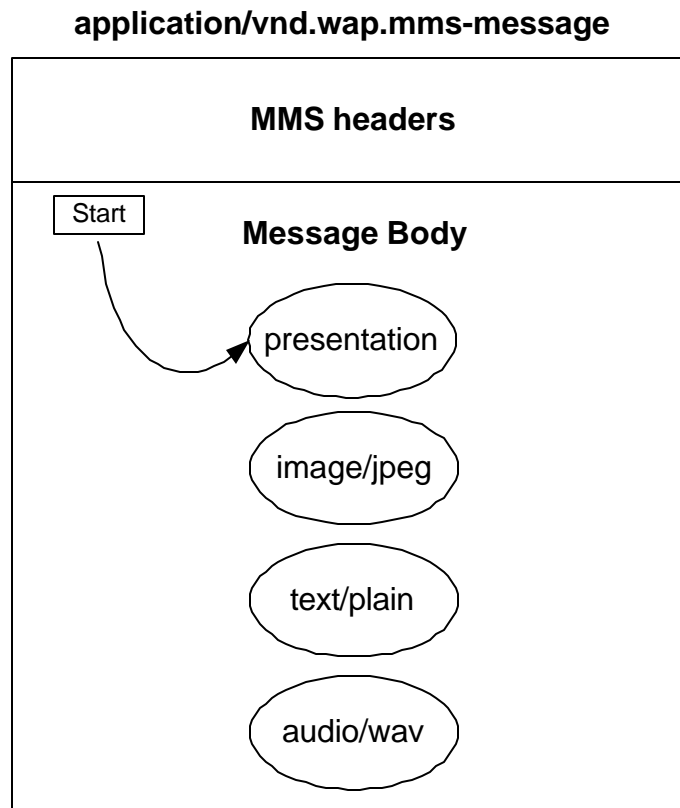


Figure 1. Model of MMS data encapsulation

The mms-headers contain MMS-specific information of the PDU. This information contains mainly information how to transfer the multimedia message from originating terminal to the recipient terminal.

In the multimedia messaging use case, the message body consists of multipart/related structure [RFC2387] including multimedia objects, each in separate part, as well as optional presentation part. The order of the parts has no significance. The presentation part contains instructions 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 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].

The message body is used only when the multimedia message is sent or retrieved. All other PDUs contain only the mms-headers part. The message can contain various multimedia parts. Figure 1 shows just one possibility.

All the content types are subject to WINA/IANA registration.

6. MMS Protocol Data Units and Fields

The header fields for sending, notification, retrieving, reporting and acknowledging of a multimedia message are described in the Tables 1-7. 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 such as found in standard [RFC822] headers which are not explicitly referenced in this document.

6.1. Sending of Multimedia Message

The sending of the multimedia message consists of two messages: M-Send.req and M-Send.conf. The transaction identifier is created and used by the sending client and it is unique within the send transaction only.

6.1.1. Send Request

This chapter describes messages sent by the MS to the MMSProxy-Relay, and those headers generated by the sender's MMS Proxy-Relay and added to the headers generated by the client. These headers are used to generate the MMS notification to the recipient, and are delivered with the message body parts to the recipient at retrieval.

In addition to the following tokens described in the table below, it is also possible to provide header extendability using WSP mechanism of encoding of a new unassigned header field name

| Name | Content | Comments |
|----------------------|---------------------------------|---|
| X-Mms-Message-Type | Message-type-value = m-send-req | Mandatory. Specifies the transaction type. |
| X-Mms-Transaction-ID | Transaction-id-value | Mandatory. A unique identifier for the message. 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 1.0 |
| Date | Date-value | Optional. Arrival time of the message at MMSProxy-Relay. MMS Proxy-Relay will generate this field when not supplied by terminal. |
| From | From-value | Mandatory. Address of the message sender. This field MUST be present in a message delivered to a recipient. 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. |
| To | To-value | Optional ¹ . |

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

| | | |
|--------------------------|-------------------------|--|
| | | 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 message. |
| X-Mms -Message-Class | Message-class -value | Optional. Class of the message. Value Auto indicates a message that is automatically generated by the client. If the Message-Class is Auto, 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 message will be stored in MMS Proxy-Relayor time to delete the message. The field has two formats, either absolute or interval. |
| 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 interval. |
| X-Mms -Priority | Priority-value | Optional. Default: Normal. Priority of the message for the recipient. |
| X-Mms -Sender-Visibility | Sender-visibility-value | Optional. Default: show address/phone number of the sender to the recipient unless the sender has a secret number/address. Hide = don't show any address. Show = show even secret address. |
| 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. When Message-Class is Auto, the field SHALL always be present and the value SHALL be No. |

| | | |
|------------------|--------------------|--|
| X-Mms-Read-Reply | Read-reply-value | Optional. Specifies whether the user wants a read report from each recipient as a new message. When Message-Class is Auto, the field SHALL always be present and the value SHALL be No. |
| Content-Type | Content-type-value | Mandatory. The content type of the message. |

Table 1. Headers of M-Send.req message

Application-specific headers in M-Send.req provide technology that allows the use of application-specific extensions for multimedia messaging service which allows, e.g., the use of additional RFC-822 headers.

The message body follows the headers.

When the content type application/vnd.wap.multipart.related [RFC2387] is used and if the Start parameter in the related structure is present, it MUST point to the presentation part of the multimedia message. If the Start parameter is not present, the presentation part, if present at all, MUST be the first part in the multipart structure.

6.1.2. Send confirmation

When the MMS Proxy -Relay has received the Send request, it sends a response message back to the MS indicating the status of the operation. The response message contains a the mms-headers only.

| Name | Content | Comments |
|-----------------------|----------------------------------|---|
| X-Mms-Message-Type | Message-type-value = m-send-conf | Mandatory. Identifies the message type. |
| X-Mms-Transaction-ID | Transaction-id-value | Mandatory. This transaction ID identifies the M-Send.conf and the corresponding request only. |
| X-Mms-MMS-Version | MMS-version-value | Mandatory. The MMS version number. According to this specification, the version is 1.0 |
| 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. |
| 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 message. The ID enables a client to match delivery reports with previously sent messages. |

Table 2. M-Send.conf message.

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

6.2. Multimedia Message Notification

MMS Notifications inform the MS about the contents a received message. The MMS Notification message consists only of MMS headers. No other parts are present. 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 it is unique up to the following M-NotifyResp only.

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

| Name | Content | Comments |
|------------------------|---|---|
| X-Mms-Message-Type | Message-type-value = m-notification-ind | Mandatory. Specifies the transaction type. |
| X-Mms-Transaction-ID | Transaction-id-value | Mandatory. Identifies the notification and the subsequent transaction that is closed by the following M-NotifyResp. |
| X-Mms-MMS-Version | MMS-version-value | Mandatory. The MMS version number. According to this specification, the version is 1.0. |
| From | From-value | Optional. Address of the sender. If hiding the address of the sender from the recipient is supported, the MMS Proxy-Relay will not add this field to a message header. |
| Subject | Subject-value | Optional. Subject of the message. |
| X-Mms-Message-Class | Message-class-value | Mandatory. Class of the message. |
| X-Mms-Message-Size | Message-size-value | Mandatory. Full size of message 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, interval. |
| X-Mms-Content-Location | Content-location-value | Mandatory. This field defines the location of the message. |

Table 3. M-Notification.ind message.

The standard URI format SHALL be used [RFC2396], for example:

<http://mmsc/message-id>

The confirmation of the notification is presented in Table 4. The purpose of the confirmation is to acknowledge the transaction to the MMSProxy-Relay.

| Name | Content | Comments |
|----------------------|---------------------------------------|---|
| X-Mms-Message-Type | Message-type-value = m-notifyresp-ind | Mandatory. Identifies the message type. |
| X-Mms-Transaction-ID | Transaction-id-value | Mandatory. Identifies the transaction started by M-Notification. |
| X-Mms-MMS-Version | MMS-version-value | Mandatory. The MMS version number. According to this specification, the version is 1.0 |
| X-Mms-Status | Status-value | Mandatory. Message status. The status Retrieved SHALL be used only after successful retrieval of multimedia message. |
| X-Mms-Report-Allowed | Report-allowed-value | Optional. Default: Yes. Sending of delivery report allowed to the user or not. |

Table 4. M-NotifyResp.ind message.

6.3. Retrieval Of Multimedia Message

A client SHALL retrieve messages by sending a WSP/HTTP GET request to the MMS Proxy -Relay containing a URI to the received message.

When successful, the response to the retrieve request will contain headers and the body of the incoming message.

| Name | Content | Comments |
|----------------------|--------------------------------------|---|
| X-Mms-Message-Type | Message-type-value = m-retrieve-conf | Mandatory. Specifies the message type. |
| X-Mms-Transaction-ID | Transaction-id-value | Optional. Identifies either the transaction that has been started by M-Notification without M-NotifResp or new transaction when deferred delivery 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 1.0. |
| Message-ID | Message-ID-value | Optional. This is a unique reference assigned to message. This ID SHALL always be present when the originator client requested a read reply. The ID enables a client to match read reports with |

| | | |
|-----------------------|-----------------------|---|
| | | previously sent messages. |
| Date | Date-value | Mandatory. Sending date and time. |
| From | From-value | Optional. Address of the sender. If hiding the address of the sender from the recipient is supported, the MMS Proxy-Relay will not add this field to a message header. |
| 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 message as personal. |
| X-Mms-Priority | Priority-value | Optional. Default: Normal Priority of the message. |
| X-Mms-Delivery-Report | Delivery-report-value | Optional. Default: No. Specifies whether the user wants a delivery report from each recipient. |
| X-Mms-Read-Reply | Read-reply-value | Optional. Default: No. Specifies whether the user wants a read report from each recipient as a new message. |
| Content-Type | Content-type-value | Mandatory. The content type of the message. |

Table 5. Headers of M-Retrieve.conf message.

Application-specific headers in M-Retrieve.conf provide technology that allows the use of application-specific extensions for multimedia messaging service which allows, e.g., the use of additional RFC-822 headers.

The message body follows the headers.

When the content type application/vnd.wap.multipart.related [RFC2387] is used and if the Start parameter in the related structure is present, the client SHOULD expect it to point to the presentation part of the multimedia message.

6.4. Delivery Acknowledgement

A MMS Acknowledge message confirms the delivery of the message from the receiving terminal to the MMS Proxy - Relay.

| Name | Content | Comments |
|----------------------|--|--|
| X-Mms-Message-Type | Message-type-value = m- acknowledge-ind | Mandatory. Identifies the transaction type. |
| X-Mms-Transaction-ID | Transaction-id-value | Mandatory. This is the transaction number that originates from immediately previous M-Retrieve operation. |
| X-Mms-MMS-Version | MMS-version-value | Mandatory. The MMS version number. According to this specification, the version is 1.0 |
| X-Mms-Report-Allowed | Report-allowed-value | Optional. Default: Yes. Sending of delivery report allowed to the user. |

Table 6. M-Acknowledge.ind message.

6.5. Delivery Reporting

A MMS Delivery Report MUST be sent from the MMS Proxy -Relay to the originating MS when the originator has requested a delivery report and the recipient 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 message. There will be a separate delivery report from each recipient. There is no response message to the delivery report.

| Name | Content | Comments |
|--------------------|-------------------------------------|---|
| X-Mms-Message-Type | Message-type-value = m-delivery-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 1.0 |
| Message-ID | Message-ID-value | Mandatory. Identifier of the message. From Send request, connects delivery report to sent message in MS. |
| 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 MMSProxy -Relay. |
| X-Mms-Status | Status-value | Mandatory. The status of the message. |

Table 7. M-Delivery.ind message.

6.6. Read Reporting

When the originating terminal requested the Read-Reply in the multimedia message, the recipient terminal MAY send a new multimedia message back to the originating terminal when the user has read the multimedia message. The content of the multimedia message is a terminal implementation issue. The read-reply multimedia message MUST have the Message-Class as Auto in the message.

The MMS Proxy -Relay MUST deliver the read-reply message as ordinary multimedia message.

When the originating terminal receives the Read-Reply, it SHALL NOT create delivery report or read-reply message.

6.7. Error Considerations

6.7.1. 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.

6.7.2. Interoperability between MMS Versions with the Same Major Version Number

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

When a terminal or 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 terminal or proxy -relay SHALL ignore all unrecognised fields and recognised fields with unrecognised values.

The receiving proxy -relay SHALL respond to any unknown PDU with M-Send.conf with status value 'Error-unsupported-message'.

The receiving terminal SHALL respond to any unknown PDU with M-NotifyResp.ind with status value 'Unrecognised'.

6.7.3. Interoperability between MMS Versions with Different Major Version Numbers

The following rules SHALL be followed between specifications with different major version numbers.

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

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

If the receiving terminal or 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.

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

7. Binary Encoding of Protocol Data Units

The basic encoding mechanism for multimedia messages originates from WSP specification [WAPWSP], because this is very tight encoding intended to optimize amount of data transmitted over the air.

The encoded MMS messages are stored to the Data field of the Post, Reply and Push PDUs [WAPWSP]. Thus, the MMS messages are NOT encoded into WSP headers using WSP codepage technique.

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

In the encoding of the fields, the order of the fields is not significant, except that Message-Type, Transaction-ID and MMS-Version MUST be at the beginning of the message headers, in that order, and the content type MUST be the last header, followed by message body.

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].

In the encoding of the message body, the binary encoding specified in [WAPWSP] SHOULD be used whenever available. Otherwise, text encoding is used.

7.1. Encoding Rules

The following rules are used to encode headers:

Header = MMS-header | Application-header

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

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

Token-text = Token End-of-strings

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 |

From-value |

Message-class-value |
Message-ID-value |
Message-type-value |
Message-size-value |
MMS-version-value |
Priority-value |
Read-reply-value |
Report-allowed-value |
Response-status-value |
Response-text-value |
Sender-visibility-value |
Status-value |
Subject-value |
To-value |
Transaction-id-value

7.2. Header Encoding

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. 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 define 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. Delivery-Report field

Delivery-report-value = Yes | No

Yes = <Octet 128>

No = <Octet 129>

7.2.7. 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.

7.2.10. 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. 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.

7.2.13. Message-ID field

Message-ID-value = Text -string

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

7.2.14. 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-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>

Unknown message types will be discarded.

7.2.15. Message-Size field

Message-size-value = Long-integer

Message size is in bytes.

7.2.16. 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].

7.2.17. Priority field

Priority-value = Low | Normal | High

Low = <Octet 128>

Normal = <Octet 129>

High = <Octet 130>

7.2.18. Read-Reply field

Read-reply-value = Yes | No

Yes = <Octet 128>

No = <Octet 129>

7.2.19. Report-Allowed field

Report-allowed-value = Yes | No

Yes = <Octet 128>

No = <Octet 129>

7.2.20. 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

Ok = <Octet 128>

Error-unspecified = <Octet 129>

Error- service-denied = <Octet 130>

Error-message-format-corrupt = <Octet 131>

Error-sending-address-unresolved = <Octet 132>

Error-message-not-found = <Octet 133>

Error-network-problem = <Octet 134>

Error- content-not-accepted = <Octet 135>

Error-unsupported-message = <Octet 136>

Any other values SHALL NOT be used. They are reserved for future use. The value Error-unsupported-message is reserved for version management purpose only.

7.2.21. Response-Text field

Response-text-value = Encoded-string-value

7.2.22. Sender-Visibility field

Sender-visibility-value = Hide | Show

Hide = <Octet 128>

Show = <Octet 129>

7.2.23. Status field

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

Expired = <Octet 128>

Retrieved = <Octet 129>

Rejected = <Octet 130>

Deferred = <Octet 131>

Unrecognised = <Octet 132>

The value Unrecognized is reserved for version management purpose only.

7.2.24. Subject field

Subject-value = Encoded-string-value

7.2.25. To field

To-value = Encoded-string-value

See Chapter 8 for addressing model.

7.2.26. Transaction-Id field

Transaction-id-value = Text-string

7.3. Assigned Numbers

The Table 8 contains the field name assignments.

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

Table 8. Field Name Assignments

The Table 9 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 9. 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]. 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 identifier registered with WINA

address-char = ( ALPHA / DIGIT / "_" )

value = 1*( %x20-2E / %x30-3C / %x3E-7E )
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

Addresses using the /TYPE format SHOULD NOT contain anything else than what is specified in the examples. E-mail addresses can use the field as it is allowed by RFC822 specification.

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 | 5.1 | M | |
| MMSE-C-002 | Support for MMS presentation part in multipart structure | 5.1 | O | |
| MMSE-C-003 | Sending additional headers | 5.1 | O | |
| MMSE-C-004 | Functionality for additional headers | 6.1.1 | O | MMSE-C-003 |
| MMSE-C-005 | Support of presentation without presentation part | 5.1 | O | |
| MMSE-C-006 | Support for text/plain multimedia objects | 5.1 | M | |
| MMSE-C-007 | Support for other multimedia objects than text | 5.1 | O | |

Table 10. Static Conformance Requirement for general message structure, originating terminal

| Item | Function | Reference | Status | Requirement |
|------------|--|-----------|--------|-------------|
| MMSE-C-008 | Support for application/vnd.wap.mms - message | 5.1 | M | |
| MMSE-C-009 | Support for MMS presentation part in multipart structure | 5.1 | O | |
| MMSE-C-010 | Recognizing additional headers | 6.1.1 | M | |
| MMSE-C-011 | Functionality for additional headers | 6.1.1 | O | MMSE-C-010 |
| MMSE-C-012 | Support of presentation without presentation part | 5.1 | M | |
| MMSE-C-013 | Support for text/plain multimedia objects | 5.1 | M | |
| MMSE-C-014 | Support for other multimedia objects | 5.1 | O | |

| | | | | |
|-----|-----------|--|--|--|
| 014 | than text | | | |
|-----|-----------|--|--|--|

Table 11. Static Conformance Requirement for general message structure, recipient terminal

A.1.2 Sending of Multimedia Message

| Item | Function | Reference | Status | Requirement |
|------------|--|-----------|--------|--|
| MMSE-C-015 | Message-Type field | Table 1,2 | M | |
| MMSE-C-016 | Transaction-ID field | Table 1,2 | M | |
| MMSE-C-017 | MMS- Version field | Table 1,2 | M | |
| MMSE-C-018 | Date field | Table 1 | O | |
| MMSE-C-019 | From field | Table 1 | M | |
| MMSE-C-020 | To field | Table 1 | O | |
| MMSE-C-021 | Cc field | Table 1 | O | |
| MMSE-C-022 | Bcc field | Table 1 | O | |
| MMSE-C-023 | Support for at least one To, Cc or Bcc field | Table 1 | M | MMSE-C-020 OR MMSE-C-021 OR MMSE-C-022 |
| MMSE-C-024 | Subject field | Table 1 | O | |
| MMSE-C-025 | Message-Class field | Table 1 | O | |
| MMSE-C-026 | Expiry field | Table 1 | O | |
| MMSE-C-027 | Delivery-Time field | Table 1 | O | |
| MMSE-C-028 | Priority field | Table 1 | O | |
| MMSE-C-029 | Sender-Visibility field | Table 1 | O | |
| MMSE-C-030 | Delivery-Report field | Table 1 | O | |

| | | | | |
|------------|---|---------|---|--|
| MMSE-C-031 | Read-Reply field | Table 1 | O | |
| MMSE-C-032 | Content-Type field | Table 1 | M | |
| MMSE-C-033 | Response-Status field | Table 2 | M | |
| MMSE-C-034 | Response-Text field | Table 2 | O | |
| MMSE-C-035 | In the case of application/vnd.wap.multipart.related the presentation is the root part of the aggregate document. | 6.1.1 | M | |
| MMSE-C-036 | Message-ID field in case of successful delivery to MMS Proxy -Relay | Table 2 | M | |

Table 12. Static Conformance Requirement for sent multimedia message and corresponding reply.

A.1.3 MMS Notification

| Item | Function | Reference | Status | Requirement |
|------------|------------------------|-----------|--------|-------------|
| MMSE-C-037 | Message-Type field | Table 3,4 | M | |
| MMSE-C-038 | Transaction-ID field | Table 3,4 | M | |
| MMSE-C-039 | MMS-Version field | Table 3,4 | M | |
| MMSE-C-040 | From field | Table 3 | O | |
| MMSE-C-041 | Subject field | Table 3 | O | |
| MMSE-C-042 | Message-Class field | Table 3 | M | |
| MMSE-C-043 | Message-Size field | Table 3 | M | |
| MMSE-C-044 | Expiry field | Table 3 | M | |
| MMSE-C-045 | Content-Location field | Table 3 | M | |
| MMSE-C-046 | Status field | Table 4 | M | |

| | | | | |
|------------|----------------------|---------|---|--|
| MMSE-C-047 | Report-Allowed field | Table 4 | O | |
|------------|----------------------|---------|---|--|

Table 13. Static Conformance Requirement for received MMS notification and corresponding reply.

A.1.4 Retrieval of Multimedia Message

| Item | Function | Reference | Status | Requirement |
|------------|--|-----------|----------------|---------------------------|
| MMSE-C-048 | Message-Type field | Table 5 | M | |
| MMSE-C-049 | Transaction-ID field | Table 5 | O | |
| MMSE-C-050 | Message-ID field | Table 5 | O | |
| MMSE-C-051 | Message-ID field present when Read-Reply value is Yes | Table 5 | O | MMSE-C-050 AND MMSE-C-063 |
| MMSE-C-052 | Support the functionality of Transaction-ID field when present | Table 5 | M | |
| MMSE-C-053 | MMS-Version field | Table 5 | M | |
| MMSE-C-054 | Date field | Table 5 | M | |
| MMSE-C-055 | From field | Table 5 | M | |
| MMSE-C-056 | To field | Table 5 | O | |
| MMSE-C-057 | Cc field | Table 5 | O | |
| MMSE-C-058 | Support for either one To or Cc field | Table 5 | M | MMSE-C-056 OR MMSE-C-057 |
| MMSE-C-059 | Subject field | Table 5 | O ² | |
| MMSE-C-060 | Message-Class field | Table 5 | O ² | |
| MMSE-C-061 | Priority field | Table 5 | O ² | |

² The recipient MS MUST recognise the field but need not provide additional functionality.

| | | | | |
|------------|---|---------|----------------|------------|
| MMSE-C-062 | Delivery-Report field | Table 5 | O ² | |
| MMSE-C-063 | Read-Reply field | Table 5 | O ² | |
| MMSE-C-064 | Content-Type field | Table 5 | O ² | |
| MMSE-C-065 | Report-Allowed field | Table 6 | O ² | |
| MMSE-C-066 | Support for recognition of read-reply message | Table 5 | O | MMSE-C-060 |

Table 14. 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-067 | Message-Type field | Tables 6,7 | M | |
| MMSE-C-068 | Transaction-ID field | Tables 6 | M | |
| MMSE-C-069 | MMS-Version field | Tables 6,7 | M | |
| MMSE-C-070 | Report-Allowed field | Table 6 | O | |
| MMSE-C-074 | Message-ID field | Table 7 | M | |
| MMSE-C-075 | To field | Table 7 | M | |
| MMSE-C-076 | Date field | Table 7 | M | |
| MMSE-C-077 | Status field | Table 7 | M | |

Table 15. Static Conformance Requirement for received delivery report.

A.1.6 Character Sets

| Item | Function | Reference | Status | Requirement |
|----------------|-------------------------|-----------|--------|-------------|
| MMSE-CHS-C-001 | Unicode UTF-8 encoding | 7.2.9 | O | |
| MMSE-CHS-C-002 | Unicode UTF-16 encoding | 7.2.9 | O | |

| | | | | |
|----------------|----------------------------|-------|---|--|
| CHS-C-002 | | | | |
| MMSE-CHS-C-003 | ISO 10646-1 UCS-2 encoding | 7.2.9 | O | |
| MMSE-CHS-C-004 | ISO 10646-1 UCS-4 encoding | 7.2.9 | O | |
| MMSE-CHS-C-005 | Other character encoding | 7.2.9 | O | |

Table 16. Static Conformance Requirement for character sets.

A.2 MMS Proxy-Relay

| Item | Function | Reference | Status | Requirement |
|------------|--|-----------|--------|-------------|
| MMSE-S-078 | Reception of multimedia message | 5.1 | M | |
| MMSE-S-079 | Sending of MMS notification | 5.1 | M | |
| MMSE-S-080 | Delivery of multimedia message | 5.1 | M | |
| MMSE-S-081 | Creation and delivery of delivery report upon user request | 6.5 | M | |
| MMSE-S-082 | Delivery of read-reply multimedia message | 6.6 | M | |
| MMSE-S-083 | Inserting current date to multimedia message being delivered | 6.1.1 | M | |
| MMSE-S-084 | Inserting correct address when insert-address-token present | 6.1.1 | M | |
| MMSE-S-085 | Support for removal of From field in notification & retrieved message when user requested hiding of source | 6.2, 6.3 | O | |
| MMSE-S-086 | Support for adding Message-Class field to MMS notification when not sent by terminal | 6.2 | M | |
| MMSE-S-087 | Support for user-requested time-of-expiration for the message | 6.1.1 | O | |
| MMSE-S-088 | Support for deferred delivery when user requested with Delivery-Time field | 6.1.1 | O | |
| MMSE-S-089 | Support for expedited delivery requested by priority field | 6.1.1 | O | |

Table 17. Static Conformance Requirement for MMS Proxy-Relay.

A.3 Character Sets

| Item | Function | Reference | Status | Requirement |
|----------------|----------------------------|-----------|--------|-------------|
| MMSE-CHS-S-001 | Unicode UTF-8 encoding | 7.2.9 | O | |
| MMSE-CHS-S-002 | Unicode UTF-16 encoding | 7.2.9 | O | |
| MMSE-CHS-S-003 | ISO 10646-1 UCS-2 encoding | 7.2.9 | O | |
| MMSE-CHS-S-004 | ISO 10646-1 UCS-4 encoding | 7.2.9 | O | |
| MMSE-CHS-S-005 | Other character encoding | 7.2.9 | O | |

Table 18. Static Conformance Requirement for character sets.

Appendix B. 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_101-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 |
| WAP-209_102-MMSEncapsulation-20011011-a | 11-Oct-2001 | 7, Appendix A | Incorporating a SIN that fixes syntax bugs in SCR tables and encoding definition of token-text. |
| 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. |