

Agenda Item: 5.2.3

Source: T2

Title: "MMS" Change Requests

Document for: Approval

Spec	CR	Rev	Rel	Subject	Cat	Vers-Current	Vers-New	T2 doc	Workitem
23.140	083	-	Rel-5	MMS UA behaviour with respect to handling MMS notification parameters stored on the USIM	F	5.3.0	5.4.0	T2-020773	MESS5-MMS
23.140	084	-	Rel-4	Handling of MMS-related information on the USIM	B	4.7.0	4.8.0	T2-020799	MMS REL-4
23.140	085	-	Rel-5	Correction of MM7 Schema	F	5.3.0	5.4.0	T2-020724	MESS5-MMS
23.140	086	-	Rel-5	Reference Update	F	5.3.0	5.4.0	T2-020734	MESS5-MMS
23.140	087	-	Rel-5	MMS UA behaviour for handling number of MMS connectivity parameters sets on the USIM	F	5.3.0	5.4.0	T2-020735	MESS5-MMS
23.140	088	-	Rel-5	Corrections for MM7 submit request/response examples	F	5.3.0	5.4.0	T2-020737	MESS5-MMS
23.140	089	-	Rel-5	Binary Encoding of MMS User Preferences for Storage on the USIM	F	5.3.0	5.4.0	T2-020749	MESS5-MMS
23.140	090	-	Rel-5	Corrections towards MM7 Stage 3 examples	F	5.3.0	5.4.0	T2-020766	MESS5-MMS
23.140	091	-	Rel-5	Changes to the support of MAP operations for recipient MSISDN address resolution based on IMSI.	F	5.3.0	5.4.0	T2-020809	MESS5-MMS
23.140	092	-	Rel-5	Acknowledgements for unconfirmed transactions	F	5.3.0	5.4.0	T2-020795	MESS5-MMS
23.140	093	-	Rel-5	Time stamp definition and time clarification	F	5.3.0	5.4.0	T2-020797	MESS5-MMS

CHANGE REQUEST

⌘ **23.140 CR 083** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘	MMS UA behaviour with respect to handling MMS notification parameters stored on the USIM		
Source:	⌘	T2		
Work item code:	⌘	MESS5-MMS	Date:	⌘ 15/08/2002
Category:	⌘	F	Release:	⌘ REL-5
		Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
		F (correction)		2 (GSM Phase 2)
		A (corresponds to a correction in an earlier release)		R96 (Release 1996)
		B (addition of feature),		R97 (Release 1997)
		C (functional modification of feature)		R98 (Release 1998)
		D (editorial modification)		R99 (Release 1999)
		Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
				REL-5 (Release 5)

Reason for change:	⌘	3GPP T3 suggests T2 that it be mandatory for the User Agent to perform the listed update actions so that the notification table accurately mirrors reality as well as the user's understanding of the current state of MM notification.
Summary of change:	⌘	This CR clarifies the handling of MMS notification related information on the USIM.
Consequences if not approved:	⌘	The MMS User Agent behaviour for MMS notification would not be defined and interoperability issues can occur when a user changes his/her terminal

Clauses affected:	⌘	7.1.14
Other specs Affected:	⌘	<input checked="" type="checkbox"/> Other core specifications ⌘ 3GPP TS 31.102 <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
Other comments:	⌘	

7 MMS Service Behaviour Description

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7.1.14 Handling of MMS-related information on the USIM

If the USIM according to [57] stores MMS related information, an MMS User Agent may be able to handle that MMS-related information on the USIM which comprises:

- MMS connectivity information, as defined in Annex F,
- MMS user preferences, as defined in Annex F, and
- MMS notifications.

MMS connectivity information, which is stored on the USIM, should be used by an MMS User Agent to connect to the network for the purpose of accessing the MMS Relay/Server. Such MMS connectivity information on the USIM may include preferences for the selection of Interface to Core Network and Bearer parameters (cf. Annex F) as defined in [57]. If these are stored on the USIM the MMS-capable UE should automatically select the Interface to Core Network and Bearer parameters based on their order of precedence defined on the USIM unless otherwise specified by the user.

When conflicting MMS connectivity information is stored on both the USIM and outside the USIM, the MMS connectivity information stored on the USIM should be used by an MMS User Agent to connect to the network.

MMS user preferences information, which is stored on the USIM, may be used by an MMS User Agent for user assistance in preparation of terminal-originated MMs (e.g. default values for parameters that are often used).

MMS notifications may be stored on the USIM together with an associated status by a recipient MMS User Agent.

- When an MMS User Agent has deleted a notification which was stored on the USIM, the associated status ~~should~~ shall be set to “Free space”
- When an MMS User Agent stores a notification on the USIM, the associated status ~~should~~ shall be set to “Used space”
- When a recipient MMS User Agent has not handled the notification which is stored on the USIM (e.g. the details of the notification were not shown to the user), the associated status should be set to “notification not read”,
- When a recipient MMS User Agent has handled the notification which is stored on the USIM (e.g. the details of the notification have been shown to the user), the associated status should be set to “notification read”,
- When a recipient MMS User Agent has not retrieved an MM based on the notification which is stored on the USIM, the associated status should be set to “MM not retrieved”,
- When a recipient MMS User Agent has retrieved an MM based on the notification which is stored on the USIM, the notification should be deleted or the associated status may be set to “MM retrieved”,
- When a recipient MMS User Agent has rejected an MM based on the notification which is stored on the USIM, the notification may be deleted or the associated status may be set to “MM rejected”,
- When a recipient MMS User Agent has forwarded an MM based on the notification which is stored on the USIM, the notification may be deleted or the associated status should be set to “MM forwarded”,

Upon an attempt to store a notification on a USIM, an MMS User Agent should ensure that the notification is not lost unless the USIM acknowledges the storage attempt to be successful.

CHANGE REQUEST

⌘ **23.140 CR 084** ⌘ rev **-** ⌘ Current version: **4.7.0** ⌘

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

Title:	⌘ Handling of MMS-related information on the USIM		
Source:	⌘ T2		
Work item code:	⌘ MMS REL-4	Date:	⌘ August 12, 2002
Category:	⌘ B	Release:	⌘ REL-4
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘ 3GPP T has required T2 to incorporate in the MMS REL-4 specifications the relevant changes related to the MMS support on the USIM for REL-4. This CR addresses the issues related to data inconsistency between the ME and the USIM.
Summary of change:	⌘ This CR reflects the support for MMS in the USIM specifications, 3GPP TS 31.102, and clarifies the handling of MMS-related information on the USIM.
Consequences if not approved:	⌘ <ol style="list-style-type: none"> 1) Consistency issues between the MMS specifications, 3GPP TS 23.140 and the USIM specifications, 3GPP TS 31.102 2) The MMS User Agent behaviour would not be defined 3) Interoperability issues when a user changes his/her terminal

Clauses affected:	⌘ 2, 5.1.1, 6.1.11 (new section), Annex F (new section)		
Other specs Affected:	⌘ <input checked="" type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	3GPP TS 31.102
Other comments:	⌘ This CR copies the corresponding sections from 23.140 v5.3.0 into REL-4. In addition the following (approved) category F REL-5 CRs are also incorporated in order not to create inconsistency between REL-4 and REL-5: T2-020735, T2-020749, T2-020773		

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TS 22.140: "Multimedia Messaging Service; Stage 1".
- [2] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [3] WAP Forum: "Wireless Application Environment Specification, Version 1.2", WAP-WAESpec-19991104, . URL: <http://www.wapforum.org/>.
- [4] 3GPP TS 23.057: "Mobile Execution Environment (MExE); Functional description; Stage 2".
- [5] IETF; STD 0011 (RFC 2822): "Internet Message Format", URL: <http://www.ietf.org/rfc/rfc2822.txt>.
- [6] IETF; RFC 2046: "Multipurpose Internet Mail extension (MIME) Part Two: Media Types", URL: <http://www.ietf.org/rfc/rfc2046.txt>.
- [7] The Unicode Consortium: "The Unicode Standard", Version 2.0, Addison-Wesley Developers Press, 1996. URL: <http://www.unicode.org/>.
- [8] ANSI X3.4, 1986: "Information Systems; Coded Character Set 7 Bit; American National Standard Code for Information Interchange".
- [9] ISO/IEC 8859-1:1998: "Information Processing; 8-bit Single-Byte Coded Graphic Character Sets; Part 1: Latin Alphabet No. 1".
- [10] IETF; RFC 2279: "UTF-8, A Transformation format of ISO 10646", URL: <http://www.ietf.org/rfc/rfc2279.txt>.
- [11] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".
- [12] 3GPP TS 26.090: "Mandatory Speech Codec speech processing functions; AMR Speech Codec Transcoding Functions".
- [13] 3GPP TS 26.093 (V3.1.0): "Mandatory Speech Codec speech processing functions; AMR Speech Codec; Source Controlled Rate Operation".
- [14] ISO/IEC 11172-3:1993: "Information technology; Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s; Part 3: Audio" (MP3, MPEG1-Audio, MPEG2-Audio)
- [15] MIDI Manufacturers Association Incorporated, Los Angeles, California: "MIDI Sample Dump Standard (SDS)"; URL: <http://www.midi.org>.
- [16] ISO/IEC 14496-2:1999/FDAM4, ISO/IEC JTC1/SC 29/WG11 N3904, Pisa, January, 2001
- [17] ITU-T Recommendation T.81 | ISO/IEC 10918-1:1994: "Information technology; Digital compression and coding of continuous-tone still images: Requirements and guidelines".
- [18] Compuserve Incorporated, Columbus, Ohio (1990): "Graphics Interchange Format (Version 89a)".

- [19] ISO/IEC 14496-2:1999: "Information technology; Coding of audio-visual objects; Part 2: Visual".
- [20] ITU-T Recommendation H.263 (1998): "Video coding for low bit rate communication".
- [21] ITU-T Recommendation H.263 (1998): "Video coding for low bit rate communication - Annex X, Profiles and Levels Definition"
- [22] IETF; STD 0010 (RFC 2821): "Simple Mail Transfer Protocol", URL: <http://www.ietf.org/rfc/rfc2821.txt>.
- [23] WAP Forum (November 1999): "WAP Wireless Session Protocol", WAP-WSP-19991105- , URL: <http://www.wapforum.org/>.
- [24] WAP Forum (November 1999): "WAP Push Access Protocol", WAP-PAP-19991108, URL: <http://www.wapforum.org/>.
- [25] WAP Forum (November 1999): "WAP User Agent Profile Specification", WAP-UAProf-19991110, URL: <http://www.wapforum.org/>.
- [26] W3C Recommendation 22 February 1999 "Resource Description Framework (RDF) Model and Syntax Specification", URL: <http://www.w3.org/TR/REC-rdf-syntax>.
- [27] WAP Forum (November 1999): "WAP Wireless Markup Language Specification, Version 1.2 ", WAP-WML-19991104, URL: <http://www.wapforum.org/>.
- [28] W3C Recommendation 15-June-1998: "Synchronized Multimedia Integration Language (SMIL) 1.0 Specification" - <http://www.w3.org/TR/REC-smil/>.
- [29] WAP Forum (November 1999): "WAP Wireless Transport Layer Security Specification", WAP-WTLS-19991105, URL: <http://www.wapforum.org/>.
- [30] WAP Forum (November 1999): "WAP Identity Module Specification", WAP-WIM-19991105, URL: <http://www.wapforum.org/>.
- [31] ITU-T Recommendation T.37 (06/98): "Procedures for the transfer of facsimile data via store-and-forward on the Internet".
- [32] ITU-T Recommendation T.30 (1996): "Procedures for document facsimile transmission in the general switched telephone network".
- [33] IETF; RFC 2421 (Sept. 1998): "Voice Profile for Internet Mail – version 2, VPIM" , URL: <http://www.ietf.org/rfc/rfc2421.txt>.
- [34] IETF; STD 0053 (RFC 1939): "POP 3, Post Office Protocol - Version 3" , URL: <http://www.ietf.org/rfc/rfc1939.txt>.
- [35] IETF; RFC 1730 (December 1994): "IMAP4, Internet Message Access Protocol - Version 4" , URL: <http://www.ietf.org/rfc/rfc1730.txt>.
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- [37] 3GPP TR 23.039: "Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)".
- [38] ISO/IEC TR 13818-5:1997/Amd 1:1999 "Advanced Audio Coding (AAC)"
- [39] IETF; Internet draft: "RTP payload format and file storage format for AMR and AMR-WB audio"; URL: <http://search.ietf.org/internet-drafts/draft-ietf-avt-rtp-amr-10.txt>.
- NOTE: Reference [39] is work in progress in IETF/AVT working group and to be replaced by the appropriate RFC number once the Internet draft is approved within the IETF (IESG approval is scheduled to spring/summer 2001).
- [40] 3GPP TS 26.233: "End-to-end transparent streaming Service (PSS); General Description".
- [41] 3GPP TS 26.234: "End-to-end transparent streaming Service (PSS); Protocols and Codecs".

- [42] IETF; Internet Draft: "TCP over 2.5G and 3G Wireless Networks"; URL: <http://search.ietf.org/internet-drafts/draft-ietf-pilc-2.5g3g-03.txt>
- NOTE: Reference [42] has to be replaced by the appropriate RFC number once the Internet draft is approved within the IETF.
- [43] WAP Forum: "Wireless profiled TCP", WAP-225-TCP-20010331-a, URL: <http://www.wapforum.org>
- [44] IETF; RFC 2045: "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", URL: <http://www.ietf.org/rfc/rfc2045.txt>
- [45] IETF; RFC 2047: "Multipurpose Internet Mail Extensions (MIME) Part Three: Message Header Extensions for Non-ASCII-Text", URL: <http://www.ietf.org/rfc/rfc2047.txt>.
- [46] IETF; RFC 2048: "Multipurpose Internet Mail Extensions (MIME) Part Four: Registration Procedures", URL: <http://www.ietf.org/rfc/rfc2048.txt>.
- [47] IETF; RFC 2049: "Multipurpose Internet Mail Extensions (MIME) Part Five: Conformance Criteria and Examples", URL: <http://www.ietf.org/rfc/rfc2049.txt>.
- [48] IETF; RFC 2616: "Hypertext Transfer Protocol, HTTP/1.1", URL: <http://www.ietf.org/rfc/rfc2616.txt>.
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- [51] IETF; RFC 2076: "Common Internet Message Headers", URL: <http://www.ietf.org/rfc/rfc2076.txt>.
- [52] IETF; RFC 1893: "Enhanced Mail System Status Codes", URL: <http://www.ietf.org/rfc/rfc1893.txt>.
- [53] IETF; RFC 1327: "Mapping between X.400(1988)/ISO 10021 and RFC 822", URL: <http://www.ietf.org/rfc/rfc1327.txt>.
- [54] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting Packet Based Services and Packet Data Networks (PDN)"
- [55] WAP-183-ProvCont, Provisioning Content, URL: <http://www.wapforum.org>
- [56] WAP-209-MMSEncapsulation, MMS Encapsulation Protocol, URL: <http://www.wapforum.org>
- [57] 3GPP TS 31.102 "Characteristics of the USIM Application".

5.1 MMS User Agent

5.1.1 MMS User Agent operations

The MMS User Agent shall provide the following application layer functionalities:-

- the retrieval of MMs (initiate MM delivery to the MMS User Agent).

The MMS User Agent may provide additional application layer functionalities such as:-

- the MM composition
- the MM submission
- the MM presentation;

- the presentation of notifications to the user;
- the signing of an MM on an end-user to end-user basis;
- the decryption and encryption of an MM on an end-user to end-user basis;
- all aspects of storing MMs on the terminal;
- handling of MMS-related information on the USIM, if the USIM supports MMS;
- the handling of external devices;
- the user profile management.

This optional list of additional functionalities of the MMS User Agent is not exhaustive.

6 MMS Service Behaviour Description

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6.1.11 Handling of MMS-related information on the USIM

If the USIM according to [57] stores MMS related information, an MMS User Agent may be able to handle that MMS-related information on the USIM which comprises:

- MMS connectivity information, as defined in Annex F,
- MMS user preferences, as defined in Annex F, and
- MMS notifications.

MMS connectivity information, which is stored on the USIM, should be used by an MMS User Agent to connect to the network for the purpose of accessing the MMS Relay/Server.

The MMS connectivity information on the USIM may include a number of sets of MMS connectivity parameters. One of these sets of MMS connectivity parameters is preset by the issuer of the USIM. Such preset MMS connectivity parameters set shall be selected unless otherwise specified by the user.

The MMS connectivity information on the USIM may include preferences for the selection of Interface to Core Network and Bearer parameters (cf. Annex F) as defined in [57]. If these are stored on the USIM the MMS-capable UE should automatically select the Interface to Core Network and Bearer parameters based on their order of precedence defined on the USIM unless otherwise specified by the user.

When conflicting MMS connectivity information is stored on both the USIM and outside the USIM, the MMS connectivity information stored on the USIM should be used by an MMS User Agent to connect to the network.

MMS user preferences information, which is stored on the USIM, may be used by an MMS User Agent for user assistance in preparation of terminal-originated MMs (e.g. default values for parameters that are often used).

MMS notifications, may be stored on the USIM together with an associated status by a recipient MMS User Agent.

- When an MMS User Agent has deleted a notification which was stored on the USIM, the associated status shall be set to “Free space”
- When an MMS User Agent stores a notification on the USIM, the associated status shall be set to “Used space”
- When a recipient MMS User Agent has not handled the notification which is stored on the USIM (e.g. the details of the notification were not shown to the user), the associated status should be set to “notification not read”,
- When a recipient MMS User Agent has handled the notification which is stored on the USIM (e.g. the details of the notification have been shown to the user), the associated status should be set to “notification read”,

- When a recipient MMS User Agent has not retrieved an MM based on the notification which is stored on the USIM, the associated status should be set to “MM not retrieved”.
- When a recipient MMS User Agent has retrieved an MM based on the notification which is stored on the USIM, the notification should be deleted or the associated status may be set to “MM retrieved”.
- When a recipient MMS User Agent has rejected an MM based on the notification which is stored on the USIM, the notification may be deleted or the associated status may be set to “MM rejected”.
- When a recipient MMS User Agent has forwarded an MM based on the notification which is stored on the USIM, the notification may be deleted or the associated status should be set to “MM forwarded”.

Upon an attempt to store a notification on a USIM, an MMS User Agent should ensure that the notification is not lost unless the USIM acknowledges the storage attempt to be successful.

Annex F (normative):

Configuration of MMS-capable UEs

An MMS-capable UE may be configured with information about MMS connectivity and user preferences. A configured MMS-capable UE requires minimum user interaction for different MMS-specific purposes, e.g. accessing network infrastructure, composing mobile-originated MMs. The information may be stored on USIM as part of terminal configuration. MMS connectivity information and user preferences are described below.

F.1 MMS Connectivity Information

MMS connectivity information consists of a set of information elements needed to access network infrastructure for the MMS purpose. This includes bearer, protocols, and addresses of related access points.

A list of information elements concerning MMS connectivity information is outlined below. Some of the connectivity information elements can also be used for purposes other than MMS. An MMS-capable UE can be configured with all or a subset of the listed elements depending on the provided service in terms of e.g. bearer, security, implementation protocol. Moreover, an MMS-capable UE can be configured with more than one sets of connectivity information for multiple access mechanisms, e.g. bearer, access type. Further information about the listed information elements for WAP MMS implementation can be found in [55] and [56].

MMS Relay/Server

- address: the address of the associated MMS Relay/Server as defined in [56]

WAP Gateway for WAP implementation of MMS (the terminology of the information elements as defined in chapter 5.6 in [55] is given in parenthesis)

- address: the address of the associated WAP Gateway. The address can be of different types, as indicated by the "type of address" (PXADDR)

- type of address: indicates the type (e.g. IPv4, IPv6) of the "address" of the WAP Gateway (PXADDRTYPE)

- port: indicates the port number specific to the address of the WAP Gateway (PORTNBR)

- service: specifies available service, e.g. connection-less, secured (SERVICE)

- authentication type: indicates the authentication method used by the WAP Gateway (PXAUTH-TYPE)

- authentication id: indicates the authentication identifier used for authentication by the WAP Gateway (PXAUTH-ID)

- authentication pw: indicates the authentication secret used for authentication by the WAP Gateway (PXAUTH-PW)

Interface to core network including access point for the core network (e.g. GGSN) and required bearer (the terminology of the information elements as defined in chapter 5.6 in [55] is given in parenthesis)

- bearer: indicates the type of network (e.g. CSD, GPRS) (BEARER)
- address: the address of the associated access point. The address could be of different types depending on the bearer, as indicated by the "type of address" (NAP-ADDRESS)
- type of address: indicates the type (e.g. MSISDN for CSD, APN for GPRS) of the "address" of the access point (NAP-ADDRTYPE)
- speed: indicates the speed of the connection for circuit switched bearers (LINKSPEED)
- call type: indicates type of call for specific bearer (e.g. analogue for CSD) (CALLTYPE)
- authentication type: indicates the authentication protocol used by the access point (AUTHTYPE)
- authentication id: indicates the authentication id used for authentication by the access point (AUTHNAME)
- authentication pw: indicates the authentication secret used for authentication by the access point (AUTHSECRET)

For the storage of WAP Gateway Information and Interface to Core Network and Bearer Information on the USIM only the binary encoding of information elements as defined in chapter 8 of [55] shall be taken into account, i.e. for each information element ("attribute name" according to [55]) and for each predefined attribute value according to [55] the equivalent tokens shall be used. Non-predefined attribute values shall be represented by ASCII string encoding with NULL character termination in order to indicate the end of the attribute value. The "connectivity document" structure as defined in previous chapters of [55] shall not be used for the storage of WAP Gateway Information and Interface to Core Network and Bearer Information on the USIM.

F.2 User Preferences

User preferences consist of a set of information elements with user-defined values. The set is a subset of information elements required for composing an MM. User preferences include following information elements.

For the WAP implementation of MMS the corresponding header field names and their equivalent binary tokens as defined in [56] are given in parenthesis. For the storage of MMS User Preferences on the USIM only these binary tokens shall be taken into account. The header field encoding according to [23] shall not be used for that purpose.

- Delivery report (*Delivery-Report*, encoded as 0x06)
- Read reply (*Read-Reply*, encoded as 0x10)
- Sender visibility (*Sender-Visibility*, encoded as 0x14)
- Priority (*Priority*, encoded as 0x0F)
- Time of expiry (*Expiry*, encoded as 0x08)
- Earliest delivery time (*Delivery-Time*, encoded as 0x07)

Further information about the information elements, listed here, can be found in section 8.1.1 (Submission of Multimedia Message) of this specification.

CHANGE REQUEST

⌘ **23.140 CR 085** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

Title:	⌘ Correction of MM7 Schema		
Source:	⌘ T2		
Work item code:	⌘ MESS5-MMS	Date:	⌘ 01/08/2002
Category:	⌘ F	Release:	⌘ Rel-5
	<i>Use one of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ The MM7 schema that is attached to the 23.140 specification is missing specification of two fields that are specified in the body of the document.
Summary of change:	⌘ Addition of the <i>ServiceCode</i> element in the Deliver response definition in schema Addition of the <i>MessageID</i> element in the Submit response definition in schema Change of schema name to reflect that this is a new version
Consequences if not approved:	⌘ Inconsistency between specification and the actual implementations!!

Clauses affected:	⌘ 8.7.8.1 Annex L										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="width: 20px; text-align: center;"> </td> <td style="width: 20px; text-align: center;"> </td> </tr> <tr> <td style="width: 20px; text-align: center;"> </td> <td style="width: 20px; text-align: center;"> </td> </tr> <tr> <td style="width: 20px; text-align: center;"> </td> <td style="width: 20px; text-align: center;"> </td> </tr> </table>	Y	N							Other core specifications	⌘
Y	N										
		Test specifications									
		O&M Specifications									
Other comments:	⌘										

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.7.8.1 SOAP Message Format and Encoding Principles

The following principles shall be used in the design of the SOAP implementation of the MM7 interface:

- The schema shall be based on the W3C SOAP 1.1 schema . The schema shall include an indication of the version of the MM7 specification that is supported.

NOTE: The W3C SOAP 1.1 schema will be published by the 3GPP. The URI shall be http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-01.

- The MM7 SOAP messages shall consist of a SOAP envelope, SOAP Header element and SOAP Body element, as described in [68].
- The SOAP EncodingStyle [68] should not be used.
- Transaction management shall be handled in the SOAP Header element. The TransactionID shall be included as a SOAP Header entry. The SOAP *actor* [68] attribute should not be specified in the SOAP Header entry. The SOAP *mustUnderstand* [68] attribute should be specified with value "1".
- All MM7 information elements, except for the TransactionID, shall be included in the SOAP Body element.
- XML element names shall use Upper Camel Case convention, where words are concatenated to form an element name with the first letter of each word in upper case (e.g. EarliestDeliveryTime). The only exception to this rule is where an acronym (e.g. VASP) is used - in such cases all of the letters of the acronym shall be in upper case (e.g. VASPHeader).

Annex L (normative): MM7 XML Schema

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-01"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:tns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-01" elementFormDefault="qualified"
attributeFormDefault="unqualified">
  <xs:element name="TransactionID" type="xs:NMTOKEN">
    <xs:annotation>
      <xs:documentation>The transaction ID that shall be included in the SOAP Header</xs:documentation>
    </xs:annotation>
  </xs:element>
  <xs:element name="SubmitReq" type="tns:submitReqType">
    <xs:annotation>
      <xs:documentation>VASP to MMS : Sending MM from the VASP to one or more recipients</xs:documentation>
    </xs:annotation>
  </xs:element>
  <xs:element name="SubmitRsp" type="tns:submitRspType">
    <xs:annotation>
      <xs:documentation>MMS to VASP: Response to a VASP after MM submission request</xs:documentation>
    </xs:annotation>
  </xs:element>
  <xs:element name="DeliverReq" type="tns:deliverReqType">
    <xs:annotation>
      <xs:documentation>MMS to VASP : Delivery of MM from the MMS Relay/Server to the VASP </xs:documentation>
    </xs:annotation>
  </xs:element>
  <xs:element name="DeliverRsp" type="tns:deliverRspType">
    <xs:annotation>
      <xs:documentation>VASP to MMS : Response to a message delivered to the VASP from the MMS
Relay/Server</xs:documentation>
    </xs:annotation>
  </xs:element>
  <xs:element name="CancelReq" type="tns:cancelReqType">
    <xs:annotation>
      <xs:documentation>VASP to MMS: Request to cancel a message submission </xs:documentation>
    </xs:annotation>
  </xs:element>
  <xs:element name="CancelRsp" type="tns:genericResponseType">
    <xs:annotation>
```

```

    <xs:documentation>MMS to VASP: Response to a VASP after MM cancellation request </xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="ReplaceReq" type="tns:replaceReqType">
  <xs:annotation>
    <xs:documentation>VASP to MMS: Request to replace a message which was submitted </xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="ReplaceRsp" type="tns:genericResponseType">
  <xs:annotation>
    <xs:documentation>MMS to VASP: Response to a VASP after MM replace request </xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="DeliveryReportReq" type="tns:deliveryReportReqType">
  <xs:annotation>
    <xs:documentation>MMS to VASP : Delivery Report from one of the MM recipients</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="DeliveryReportRsp" type="tns:genericResponseType">
  <xs:annotation>
    <xs:documentation>VASP to MMS: Response to a delivery report delivered to the VASP</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="ReadReplyReq" type="tns:readReplyReqType">
  <xs:annotation>
    <xs:documentation>MMS to VASP : Delivery Report from one of the MM recipients</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="ReadReplyRsp" type="tns:genericResponseType">
  <xs:annotation>
    <xs:documentation>VASP to MMS: Response to a read reply delivered to the VASP</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="RSErrorRsp" type="tns:genericResponseType">
  <xs:annotation>
    <xs:documentation>MMS to VASP: Error response to a any bad request sent to the MMS
Relay/Server</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:element name="VASPErrrorRsp" type="tns:genericResponseType">
  <xs:annotation>
    <xs:documentation>VASP to MMS: Error response to a any bad request sent to the VASP</xs:documentation>
  </xs:annotation>
</xs:element>
<xs:complexType name="senderIDType">
  <xs:sequence>
    <xs:element name="VASPID" type="tns:entityIDType" minOccurs="0"/>
    <xs:element name="VASID" type="tns:entityIDType" minOccurs="0"/>
    <xs:element name="SenderAddress" type="xs:string" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="submitReqType">
  <xs:complexContent>
    <xs:extension base="tns:genericVASPRequestType">
      <xs:sequence>
        <xs:element name="Recipients" type="tns:recipientsType"/>
        <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
        <xs:element name="LinkedID" type="tns:messageIDType" minOccurs="0"/>
        <xs:element name="MessageClass" type="tns:messageClassType" default="Informational"
minOccurs="0"/>
        <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
        <xs:element name="ReplyCharging" minOccurs="0">
          <xs:complexType>
            <xs:attribute name="replyChargingSize" type="xs:positiveInteger" use="optional"/>
            <xs:attribute name="replyDeadline" type="tns:relativeOrAbsoluteDateType" use="optional"/>
          </xs:complexType>
        </xs:element>
        <xs:element name="EarliestDeliveryTime" type="tns:relativeOrAbsoluteDateType" minOccurs="0"/>
        <xs:element name="ExpiryDate" type="tns:relativeOrAbsoluteDateType" minOccurs="0"/>
        <xs:element name="DeliveryReport" type="xs:boolean" minOccurs="0"/>
        <xs:element name="ReadReply" type="xs:boolean" minOccurs="0"/>
        <xs:element name="Priority" type="tns:priorityType" minOccurs="0"/>
        <xs:element name="Subject" type="xs:string" minOccurs="0"/>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>

```

```

        <xs:element name="ChargedParty" type="tns:chargedPartyType" minOccurs="0"/>
        <xs:element name="DistributionIndicator" type="xs:boolean" minOccurs="0"/>
        <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
    </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>
<xs:complexType name="submitRspType">
    <xs:complexContent>
        <xs:extension base="tns:genericResponseType">
            <xs:sequence>
                <xs:element name="MessageID" type="tns:messageIDType"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="deliverReqType">
    <xs:complexContent>
        <xs:extension base="tns:genericRSReqType">
            <xs:sequence>
                <xs:element name="LinkedID" type="tns:messageIDType" minOccurs="0"/>
                <xs:element name="Sender" type="tns:addressType"/>
                <xs:element name="Recipients" type="tns:recipientsType" minOccurs="0"/>
                <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
                <xs:element name="ReplyChargingID" type="tns:messageIDType"/>
                <xs:element name="Priority" type="tns:priorityType" minOccurs="0"/>
                <xs:element name="Subject" type="xs:string" minOccurs="0"/>
                <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="deliverRspType">
    <xs:complexContent>
        <xs:extension base="tns:genericResponseType">
            <xs:sequence>
                <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="cancelReqType">
    <xs:complexContent>
        <xs:extension base="tns:genericVASPRequestType">
            <xs:sequence>
                <xs:element name="MessageID" type="tns:messageIDType"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="replaceReqType">
    <xs:complexContent>
        <xs:extension base="tns:genericVASPRequestType">
            <xs:sequence>
                <xs:element name="MessageID" type="tns:messageIDType"/>
                <xs:element name="ServiceCode" type="tns:serviceCodeType" minOccurs="0"/>
                <xs:element name="TimeStamp" type="xs:dateTime" minOccurs="0"/>
                <xs:element name="ReadReply" type="xs:boolean" minOccurs="0"/>
                <xs:element name="EarliestDeliveryTime" type="tns:relativeOrAbsoluteDateType" minOccurs="0"/>
                <xs:element name="DistributionIndicator" type="xs:boolean" minOccurs="0"/>
                <xs:element name="Content" type="tns:contentReferenceType" minOccurs="0"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="deliveryReportReqType">
    <xs:complexContent>
        <xs:extension base="tns:genericRSReqType">
            <xs:sequence>
                <xs:element name="MessageID" type="tns:messageIDType"/>
                <xs:element name="Recipient" type="tns:addressType"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>

```

```

        <xs:element name="Sender" type="tns:addressType"/>
        <xs:element name="Date" type="xs:dateTime"/>
        <xs:element name="MMStatus" type="tns:mmDeliveryStatusType"/>
        <xs:element name="StatusText" type="xs:string" minOccurs="0"/>
    </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>
<xs:complexType name="readReplyReqType">
    <xs:complexContent>
        <xs:extension base="tns:genericRSReqType">
            <xs:sequence>
                <xs:element name="MessageID" type="tns:messageIDType"/>
                <xs:element name="Recipient" type="tns:addressType"/>
                <xs:element name="Sender" type="tns:addressType"/>
                <xs:element name="TimeStamp" type="xs:dateTime"/>
                <xs:element name="MMStatus" type="tns:mmReadStatusType"/>
                <xs:element name="StatusText" type="xs:string" minOccurs="0"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="genericRSReqType">
    <xs:annotation>
        <xs:documentation>base for all request messages from R/S to VASP</xs:documentation>
    </xs:annotation>
    <xs:sequence>
        <xs:element name="MM7Version" type="tns:versionType"/>
        <xs:element name="MMSRelayServerID" type="tns:entityIDType" minOccurs="0"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="genericVASPRequestType">
    <xs:annotation>
        <xs:documentation>Base type for all requests from VASP to R/S</xs:documentation>
    </xs:annotation>
    <xs:sequence>
        <xs:element name="MM7Version" type="tns:versionType"/>
        <xs:element name="SenderIdentification" type="tns:senderIDType"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="genericResponseType">
    <xs:annotation>
        <xs:documentation>Any simple response sent </xs:documentation>
    </xs:annotation>
    <xs:sequence>
        <xs:element name="MM7Version" type="tns:versionType"/>
        <xs:element name="Status" type="tns:responseStatusType"/>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="responseStatusType">
    <xs:annotation>
        <xs:documentation>Status information conveyed in responses</xs:documentation>
    </xs:annotation>
    <xs:all>
        <xs:element name="StatusCode">
            <xs:simpleType>
                <xs:restriction base="tns:statusCodeType"/>
            </xs:simpleType>
        </xs:element>
        <xs:element name="StatusText" type="tns:statusTextType"/>
        <xs:element name="Details" type="tns:anyDataType" minOccurs="0"/>
    </xs:all>
</xs:complexType>
<xs:simpleType name="mmDeliveryStatusType">
    <xs:annotation>
        <xs:documentation>Statuses for MM7_delivery_report</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
        <xs:enumeration value="Expired"/>
        <xs:enumeration value="Retrieved"/>
        <xs:enumeration value="Rejected"/>
        <xs:enumeration value="Indeterminate"/>
        <xs:enumeration value="Forwarded"/>
    </xs:restriction>
</xs:simpleType>

```



```

    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="mmReadStatusType">
    <xs:annotation>
      <xs:documentation>Statuses for MM7_read_reply</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
      <xs:enumeration value="Indeterminate"/>
      <xs:enumeration value="Read"/>
      <xs:enumeration value="Deleted"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="messageIDType">
    <xs:annotation>
      <xs:documentation>Message ID</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:NMTOKEN"/>
  </xs:simpleType>
  <xs:group name="AddressGroup">
    <xs:choice>
      <xs:element name="RFC2822Address">
        <xs:complexType>
          <xs:simpleContent>
            <xs:extension base="xs:string">
              <xs:attribute name="displayOnly" type="xs:boolean" use="optional" default="False"/>
            </xs:extension>
          </xs:simpleContent>
        </xs:complexType>
      </xs:element>
      <xs:element name="Number">
        <xs:complexType>
          <xs:simpleContent>
            <xs:extension base="xs:NMTOKEN">
              <xs:attribute name="displayOnly" type="xs:boolean" use="optional" default="False"/>
            </xs:extension>
          </xs:simpleContent>
        </xs:complexType>
      </xs:element>
      <xs:element name="ShortCode">
        <xs:complexType>
          <xs:simpleContent>
            <xs:extension base="xs:NMTOKEN">
              <xs:attribute name="displayOnly" type="xs:boolean" use="optional" default="False"/>
            </xs:extension>
          </xs:simpleContent>
        </xs:complexType>
      </xs:element>
    </xs:choice>
  </xs:group>
  <xs:complexType name="multiAddressType">
    <xs:sequence maxOccurs="unbounded">
      <xs:group ref="tns:AddressGroup"/>
    </xs:sequence>
  </xs:complexType>
  <xs:complexType name="addressType">
    <xs:group ref="tns:AddressGroup"/>
  </xs:complexType>
  <xs:complexType name="serviceCodeType">
    <xs:annotation>
      <xs:documentation>Used to identify the specific service given for billing purposes</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="xs:string">
        <xs:anyAttribute namespace="##other" processContents="lax"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>
  <xs:simpleType name="entityIDType">
    <xs:annotation>
      <xs:documentation>String used to identify the VAS, VASP and MMSC</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:NMTOKEN"/>
  </xs:simpleType>

```

```

<xs:complexType name="recipientsType">
  <xs:annotation>
    <xs:documentation>At least one of To,CC,Bcc</xs:documentation>
  </xs:annotation>
  <xs:sequence maxOccurs="unbounded">
    <xs:choice>
      <xs:element name="To" type="tns:multiAddressType"/>
      <xs:element name="Cc" type="tns:multiAddressType"/>
      <xs:element name="Bcc" type="tns:multiAddressType"/>
    </xs:choice>
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="messageClassType">
  <xs:annotation>
    <xs:documentation>Message class</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string">
    <xs:enumeration value="Personal"/>
    <xs:enumeration value="Informational"/>
    <xs:enumeration value="Advertisement"/>
    <xs:enumeration value="Auto"/>
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="priorityType">
  <xs:annotation>
    <xs:documentation>Priority of MM</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string">
    <xs:enumeration value="Normal"/>
    <xs:enumeration value="High"/>
    <xs:enumeration value="Low"/>
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="relativeOrAbsoluteDateType">
  <xs:annotation>
    <xs:documentation>Date which can be relative or absolute</xs:documentation>
  </xs:annotation>
  <xs:union memberTypes="xs:dateTime xs:duration"/>
</xs:simpleType>
<xs:simpleType name="chargedPartyType">
  <xs:annotation>
    <xs:documentation>Allows specification of which party - Sender or Reciever pays for
transmission</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string">
    <xs:enumeration value="Sender"/>
    <xs:enumeration value="Recipient"/>
    <xs:enumeration value="Both"/>
    <xs:enumeration value="Neither"/>
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="versionType">
  <xs:annotation>
    <xs:documentation>Version number in the format of x.y.z </xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string">
    <xs:enumeration value="5.3.0"/>
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="statusCodeType">
  <xs:annotation>
    <xs:documentation>request status resonse codes in RES </xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:positiveInteger"/>
</xs:simpleType>
<xs:complexType name="contentReferenceType">
  <xs:annotation>
    <xs:documentation>content element including only href</xs:documentation>
  </xs:annotation>
  <xs:attribute name="href" type="xs:anyURI" use="required"/>
  <xs:attribute name="allowAdaptations" type="xs:boolean" use="optional"/>
</xs:complexType>
<xs:complexType name="anyDataType">

```

```
<xs:annotation>
  <xs:documentation>Any element and attribute </xs:documentation>
</xs:annotation>
<xs:complexContent>
  <xs:restriction base="xs:anyType">
    <xs:sequence>
      <xs:any processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:restriction>
</xs:complexContent>
</xs:complexType>
<xs:simpleType name="statusTextType">
  <xs:annotation>
    <xs:documentation>list of standard human-readable status descriptions</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string"/>
</xs:simpleType>
</xs:schema>
```

CHANGE REQUEST

⌘ **23.140** **CR 086** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘ Reference Update		
Source:	⌘ T2		
Work item code:	⌘ MESS5-MMS	Date:	⌘ 06/08/2002
Category:	⌘ F	Release:	⌘ Rel-5
	<i>Use one of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ A reference in Annex F.2 is wrong.
Summary of change:	⌘ Update of the reference.
Consequences if not approved:	⌘ The reference would still be wrong.

Clauses affected:	⌘ Annex F.2						
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
	<input checked="" type="checkbox"/>	Test specifications					
	<input checked="" type="checkbox"/>	O&M Specifications					
Other comments:	⌘						

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

...

Annex F (normative): Configuration of MMS-capable UEs

An MMS-capable UE may be configured with information about MMS connectivity and user preferences. A configured MMS-capable UE requires minimum user interaction for different MMS-specific purposes, e.g. accessing network infrastructure, composing mobile-originated MMs. The information may be stored on USIM as part of terminal configuration. MMS connectivity information and user preferences are described below.

F.1 MMS Connectivity Information

MMS connectivity information consists of a set of information elements needed to access network infrastructure for the MMS purpose. This includes bearer, protocols, and addresses of related access points.

A list of information elements concerning MMS connectivity information is outlined below. Some of the connectivity information elements can also be used for purposes other than MMS. An MMS-capable UE can be configured with all or a subset of the listed elements depending on the provided service in terms of e.g. bearer, security, implementation protocol. Moreover, an MMS-capable UE can be configured with more than one sets of connectivity information for multiple access mechanisms, e.g. bearer, access type. Further information about the listed information elements for WAP MMS implementation can be found in [55] and [56].

MMS Relay/Server

- address: the address of the associated MMS Relay/Server as defined in [56]

WAP Gateway for WAP implementation of MMS (the terminology of the information elements as defined in chapter 5.6 in [55] is given in parenthesis)

- address: the address of the associated WAP Gateway. The address can be of different types, as indicated by the "type of address" (PXADDR)
- type of address: indicates the type (e.g. IPv4, IPv6) of the "address" of the WAP Gateway (PXADDRTYPE)
- port: indicates the port number specific to the address of the WAP Gateway (PORTNBR)
- service: specifies available service, e.g. connection-less, secured (SERVICE)
- authentication type: indicates the authentication method used by the WAP Gateway (PXAUTH-TYPE)
- authentication id: indicates the authentication identifier used for authentication by the WAP Gateway (PXAUTH-ID)
- authentication pw: indicates the authentication secret used for authentication by the WAP Gateway (PXAUTH-PW)

Interface to core network including access point for the core network (e.g. GGSN) and required bearer (the terminology of the information elements as defined in chapter 5.6 in [55] is given in parenthesis)

- bearer: indicates the type of network (e.g. CSD, GPRS) (BEARER)
- address: the address of the associated access point. The address could be of different types depending on the bearer, as indicated by the "type of address" (NAP-ADDRESS)
- type of address: indicates the type (e.g. MSISDN for CSD, APN for GPRS) of the "address" of the access point (NAP-ADDRTYPE)
- speed: indicates the speed of the connection for circuit switched bearers (LINKSPEED)
- call type: indicates type of call for specific bearer (e.g. analogue for CSD) (CALLTYPE)

- authentication type: indicates the authentication protocol used by the access point (AUTHTYPE)
- authentication id: indicates the authentication id used for authentication by the access point (AUTHNAME)
- authentication pw: indicates the authentication secret used for authentication by the access point (AUTHSECRET)

For the storage of WAP Gateway Information and Interface to Core Network and Bearer Information on the USIM only the binary encoding of information elements as defined in chapter 8 of [55] shall be taken into account, i.e. for each information element (“attribute name” according to [55]) and for each predefined attribute value according to [55] the equivalent tokens shall be used. Non-predefined attribute values shall be represented by ASCII string encoding with NULL character termination in order to indicate the end of the attribute value. The “connectivity document” structure as defined in previous chapters of [55] shall not be used for the storage of WAP Gateway Information and Interface to Core Network and Bearer Information on the USIM.

F.2 User Preferences

User preferences consist of a set of information elements with user-defined values. The set is a subset of information elements required for composing an MM. User preferences include following information elements

- Delivery report
- Read reply
- Sender visibility
- Priority
- Time of expiry
- Earliest delivery time

| Further information about the information elements, listed here, can be found in section 8.1.3⁺ (Submission of Multimedia Message) of this specification.

Annex G (normative):
DNS-ENUM recipient MSISDN address resolution.

...

CR-Form-v7

CHANGE REQUEST

⌘ **23.140 CR 087** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘	MMS UA behaviour for handling number of MMS connectivity parameters sets on the USIM	
Source:	⌘	T2	
Work item code:	⌘	MESS5-MMS	Date: ⌘ 11-07-2002
Category:	⌘	F	Release: ⌘ REL-5
		Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘	3GPP SA1/SA approved a new requirements w.r.t MMS configuration parameters for release 5 of the stage 1 specification of MMS (TS 22.140).
Summary of change:	⌘	Addition of MMS UA behaviour for handling number of MMS connectivity parameters sets on the USIM.
Consequences if not approved:	⌘	The new MMS Stage 1 (REL-5) requirement is not met.

Clauses affected:	⌘	7.1.14								
Other specs affected:	⌘	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications ⌘ TS 22.140, TS 31.102 Test specifications O&M Specifications	Y	N	X			X		X
Y	N									
X										
	X									
	X									
Other comments:	⌘									

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.1.14 Handling of MMS-related information on the USIM

If the USIM according to [67] stores MMS related information, an MMS User Agent may be able to handle that MMS-related information on the USIM which comprises:

- MMS connectivity information, as defined in Annex F,
- MMS user preferences, as defined in Annex F, and
- MMS notifications.

MMS connectivity information, which is stored on the USIM, should be used by an MMS User Agent to connect to the network for the purpose of accessing the MMS Relay/Server.

The MMS connectivity information on the USIM may include a number of sets of MMS connectivity parameters. One of these sets of MMS connectivity parameters is preset by the issuer of the USIM. Such preset MMS connectivity parameters set shall be selected unless otherwise specified by the user.

~~Such~~ The MMS connectivity information on the USIM may include preferences for the selection of Interface to Core Network and Bearer parameters (cf. Annex F) as defined in [67]. If these are stored on the USIM the MMS-capable UE should automatically select the Interface to Core Network and Bearer parameters based on their order of precedence defined on the USIM unless otherwise specified by the user.

When conflicting MMS connectivity information is stored on both the USIM and outside the USIM, the MMS connectivity information stored on the USIM should be used by an MMS User Agent to connect to the network.

MMS user preferences information, which is stored on the USIM, may be used by an MMS User Agent for user assistance in preparation of terminal-originated MMs (e.g. default values for parameters that are often used).

MMS notifications, may be stored on the USIM together with an associated status by a recipient MMS User Agent.

- When an MMS User Agent has deleted a notification which was stored on the USIM, the associated status should be set to “Free space”
- When an MMS User Agent stores a notification on the USIM, the associated status should be set to “Used space”
- When a recipient MMS User Agent has not handled the notification which is stored on the USIM (e.g. the details of the notification were not shown to the user), the associated status should be set to “notification not read”,
- When a recipient MMS User Agent has handled the notification which is stored on the USIM (e.g. the details of the notification have been shown to the user), the associated status should be set to “notification read”,
- When a recipient MMS User Agent has not retrieved an MM based on the notification which is stored on the USIM, the associated status should be set to “MM not retrieved”,
- When a recipient MMS User Agent has retrieved an MM based on the notification which is stored on the USIM, the notification should be deleted or the associated status may be set to “MM retrieved”,
- When a recipient MMS User Agent has rejected an MM based on the notification which is stored on the USIM, the notification may be deleted or the associated status may be set to “MM rejected”,
- When a recipient MMS User Agent has forwarded an MM based on the notification which is stored on the USIM, the notification may be deleted or the associated status should be set to “MM forwarded”,

Upon an attempt to store a notification on a USIM, an MMS User Agent should ensure that the notification is not lost unless the USIM acknowledges the storage attempt to be successful.

CHANGE REQUEST

⌘ **23.140 CR 088** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘ Corrections for MM7 submit request/response examples		
Source:	⌘ T2		
Work item code:	⌘ MESS5-MMS	Date:	⌘ 6/8/2002
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ The examples for MM7 request and response contains errors.
Summary of change:	⌘ The two examples are corrected.
Consequences if not approved:	⌘ The informative examples do not illustrate properly the use of the normative XML schema. This may confused content developers.

Clauses affected:	⌘ 8.7								
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="width: 20px; text-align: center;">⌘</td> <td style="width: 20px; text-align: center;">⌘</td> </tr> <tr> <td style="width: 20px; text-align: center;">⌘</td> <td style="width: 20px; text-align: center;">⌘</td> </tr> <tr> <td style="width: 20px; text-align: center;">⌘</td> <td style="width: 20px; text-align: center;">⌘</td> </tr> </table> Other core specifications ⌘ Test specifications ⌘ O&M Specifications ⌘	Y	N	⌘	⌘	⌘	⌘	⌘	⌘
Y	N								
⌘	⌘								
⌘	⌘								
⌘	⌘								
Other comments:	⌘								

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.7.9.2 MM7_submit.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is number of this specification, e.g. 5.2.0
Message ID	SOAP Body	MessageID	
Request Status	SOAP Body	StatusCode	See section 8.7.8.4
Request Status Text	SOAP Body	StatusText & Details	See section 8.7.8.4

Sample message submission

```
POST /mms-rs/mm7 HTTP/1.1
Host: mms.omms.com
Content-Type: multipart/related; boundary="NextPart_000_0028_01C19839.84698430"; type=text/xml;
 start="</tnn-200102/mm7-submit>"
Content-Length: nnnn
SOAPAction: ""
```

```
-- NextPart_000_0028_01C19839.84698430
Content-Type:text/xml; charset="utf-8"
Content-ID: </tnn-200102/mm7-submit>
```

```
<?xml version='1.0' ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope">
  <env:Header>
    <mm7:TransactionID xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
env:mustUnderstand="1">
      vas00001-sub
    </mm7:TransactionID>
  </env:Header>
  <env:Body>
    <mm7:SubmitReq xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0">
      <MM7Version>5.3.0</MM7Version>
      <SenderIdentification>
        <VASPID>TNN</VASPID>
        <VASID>News</VASID>
      </SenderIdentification>
      <Recipients>
        <To>
          <Number>7255441234</Number>
          <RFC2822Address displayOnly="True">7255442222@OMMS.com</RFC2822Address>
        </To>
        <Cc>
          <Number>7255443333</Number>
        </Cc>
        <Bcc>
          <RFC2822Address>7255444444@OMMS.com</RFC2822Address>
        </Bcc>
      </Recipients>
      <ServiceCode>gold-sp33-im42</ServiceCode>
      <LinkedID>mms00016666</LinkedID>
      <MessageClass>Informational</MessageClass>
      <TimeStamp>2002-01-02T09:30:47-05:00</DateTimeStamp>
      <EarliestDeliveryTime>2002-01-02T09:30:47-05:00</EarliestDeliveryTime>
      <ExpiryDate>P90D</ExpiryDate>
      <DeliveryReport>True</DeliveryReport>
      <Priority>Normal</Priority>
      <ChargedParty>Sender</ChargedParty>
      <DistributionIndicator>True</DistributionIndicator>
      <Subject>News for today</Subject>
      <Content href="cid:SaturnPics-01020930@news.tnn.com"; allowAdaptations="True"/>
    </mm7:SubmitReq>
  </env:Body>
</env:Envelope>
```

```
-- NextPart_000_0028_01C19839.84698430
Content-Type: multipart/mixed; boundary="StoryParts 74526 8432 2002-77645"
Content-ID:< SaturnPics-01020930@news.tnn.com>
```

```
-- StoryParts 74526 8432 2002-77645
Content-Type: text/plain; charset="us-ascii"
```

Science news, new Saturn pictures...

```
-- StoryParts 74526 8432 2002-77645
Content-Type: image/gif;
Content-ID:<saturn.gif>
```

```
R0IGODdhZAAwAOMAAAAAIGJjGltcDE0OOfWo6Ochbi1n1pmcbGojpKbnP/lpW54fBMTE1RYXEFO
...
```

```
-- StoryParts 74526 8432 2002-77645 --
--_NextPart_000_0028_01C19839.84698430--
```

The response message is sent by the MMS Relay/Server back to the VASP for the VAS application in a HTTP Response message.

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset="utf-8"
Content-Length: nnnn
```

```
<? xml version='1.0' ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope">
  <env:Header>
    <mm7:TransactionID xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
env:mustUnderstand="1">
      vas00001-sub
    </mm7:TransactionID>
  </env:Header>
  <env:Body>
    <mm7:SubmitRsp xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0">
      <MM7Version>5.3.0</MM7Version>
      <Status>
        <StatusCode>1000</StatusCode>
        <StatusText> Success</StatusText>
      </Status>
      <MessageID>041502073667</MessageID>
    </mm7:SubmitRsp>
  </env:Body>
</env:Envelope>
```

CHANGE REQUEST

⌘ **23.140** **CR 089** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘ Binary Encoding of MMS User Preferences for Storage on the USIM		
Source:	⌘ T2		
Work item code:	⌘ MESS5-MMS	Date:	⌘ 09-08-2002
Category:	⌘ F	Release:	⌘ Rel-5
	<i>Use one of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ The description for the storage of MMS User Preferences on the USIM in annex F is too vague.
Summary of change:	⌘ - addition of some explanatory text about details of the binary encoding of MMS User Preferences for storage on the USIM - mapping of 3GPP MMS information elements on binary tokens according to the WAP implementation of MMS
Consequences if not approved:	⌘ The binary encoding of the information elements for the storage of MMS User Preferences on the USIM would be ambiguous.

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

How to create CRs using this form:

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- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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Annex F (normative): Configuration of MMS-capable UEs

An MMS-capable UE may be configured with information about MMS connectivity and user preferences. A configured MMS-capable UE requires minimum user interaction for different MMS-specific purposes, e.g. accessing network infrastructure, composing mobile-originated MMs. The information may be stored on USIM as part of terminal configuration. MMS connectivity information and user preferences are described below.

F.1 MMS Connectivity Information

MMS connectivity information consists of a set of information elements needed to access network infrastructure for the MMS purpose. This includes bearer, protocols, and addresses of related access points.

A list of information elements concerning MMS connectivity information is outlined below. Some of the connectivity information elements can also be used for purposes other than MMS. An MMS-capable UE can be configured with all or a subset of the listed elements depending on the provided service in terms of e.g. bearer, security, implementation protocol. Moreover, an MMS-capable UE can be configured with more than one sets of connectivity information for multiple access mechanisms, e.g. bearer, access type. Further information about the listed information elements for WAP MMS implementation can be found in [55] and [56].

MMS Relay/Server

- address: the address of the associated MMS Relay/Server as defined in [56]

WAP Gateway for WAP implementation of MMS (the terminology of the information elements as defined in chapter 5.6 in [55] is given in parenthesis)

- address: the address of the associated WAP Gateway. The address can be of different types, as indicated by the "type of address" (PXADDR)
- type of address: indicates the type (e.g. IPv4, IPv6) of the "address" of the WAP Gateway (PXADDRTYPE)
- port: indicates the port number specific to the address of the WAP Gateway (PORTNBR)
- service: specifies available service, e.g. connection-less, secured (SERVICE)
- authentication type: indicates the authentication method used by the WAP Gateway (PXAUTH-TYPE)
- authentication id: indicates the authentication identifier used for authentication by the WAP Gateway (PXAUTH-ID)
- authentication pw: indicates the authentication secret used for authentication by the WAP Gateway (PXAUTH-PW)

Interface to core network including access point for the core network (e.g. GGSN) and required bearer (the terminology of the information elements as defined in chapter 5.6 in [55] is given in parenthesis)

- bearer: indicates the type of network (e.g. CSD, GPRS) (BEARER)
- address: the address of the associated access point. The address could be of different types depending on the bearer, as indicated by the "type of address" (NAP-ADDRESS)
- type of address: indicates the type (e.g. MSISDN for CSD, APN for GPRS) of the "address" of the access point (NAP-ADDRTYPE)
- speed: indicates the speed of the connection for circuit switched bearers (LINKSPEED)
- call type: indicates type of call for specific bearer (e.g. analogue for CSD) (CALLTYPE)

- authentication type: indicates the authentication protocol used by the access point (AUTHTYPE)
- authentication id: indicates the authentication id used for authentication by the access point (AUTHNAME)
- authentication pw: indicates the authentication secret used for authentication by the access point (AUTHSECRET)

For the storage of WAP Gateway Information and Interface to Core Network and Bearer Information on the USIM only the binary encoding of information elements as defined in chapter 8 of [55] shall be taken into account, i.e. for each information element (“attribute name” according to [55]) and for each predefined attribute value according to [55] the equivalent tokens shall be used. Non-predefined attribute values shall be represented by ASCII string encoding with NULL character termination in order to indicate the end of the attribute value. The “connectivity document” structure as defined in previous chapters of [55] shall not be used for the storage of WAP Gateway Information and Interface to Core Network and Bearer Information on the USIM.

F.2 User Preferences

User preferences consist of a set of information elements with user-defined values. The set is a subset of information elements required for composing an MM. User preferences include following information elements.

For the WAP implementation of MMS the corresponding header field names and their equivalent binary tokens as defined in [56] are given in parenthesis. For the storage of MMS User Preferences on the USIM only these binary tokens shall be taken into account. The header field encoding according to [23] shall not be used for that purpose.

- Delivery report (*Delivery-Report*, encoded as 0x06)
- Read reply (*Read-Reply*, encoded as 0x10)
- Sender visibility (*Sender-Visibility*, encoded as 0x14)
- Priority (*Priority*, encoded as 0x0F)
- Time of expiry (*Expiry*, encoded as 0x08)
- Earliest delivery time (*Delivery-Time*, encoded as 0x07)

Further information about the information elements, listed here, can be found in section 8.1.1 (Submission of Multimedia Message) of this specification.

Annex G (normative):
DNS-ENUM recipient MSISDN address resolution.

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CHANGE REQUEST

⌘ **23.140 CR 090** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘ Corrections towards MM7 Stage 3 examples		
Source:	⌘ T2		
Work item code:	⌘ MESS5-MMS	Date:	⌘ 14/8/2002
Category:	⌘ F	Release:	⌘ Rel-5
	<i>Use one of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ The examples for MM7 abstract messages contain errors		
Summary of change:	⌘ Minor corrections to examples in Chapter 8.7		
Consequences if not approved:	⌘ While the examples are informative by their nature and the normative XML Schema is in Annex L, developers will find contradicting information distracting.		

Clauses affected:	⌘ 8.7										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="width: 20px; text-align: center;">⌘</td> <td style="width: 20px; text-align: center;">⌘</td> </tr> <tr> <td style="width: 20px; text-align: center;">⌘</td> <td style="width: 20px; text-align: center;">⌘</td> </tr> <tr> <td style="width: 20px; text-align: center;">⌘</td> <td style="width: 20px; text-align: center;">⌘</td> </tr> </table>	Y	N	⌘	⌘	⌘	⌘	⌘	⌘	Other core specifications Test specifications O&M Specifications	⌘
Y	N										
⌘	⌘										
⌘	⌘										
⌘	⌘										
Other comments:	⌘										

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.7.9.2 MM7_submit.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is number of this specification, e.g. 5.2.0
Message ID	SOAP Body	MessageID	
Request Status	SOAP Body	StatusCode	See section 8.7.8.4
Request Status Text	SOAP Body	StatusText & Details	See section 8.7.8.4

Sample message submission

```
POST /mms-rs/mm7 HTTP/1.1
Host: mms.omms.com
Content-Type: multipart/related; boundary="NextPart_000_0028_01C19839.84698430"; type=text/xml;
 start="</tnn-200102/mm7-submit>"
Content-Length: nnnn
SOAPAction: ""
```

```
| --NextPart_000_0028_01C19839.84698430
Content-Type:text/xml; charset="utf-8"
Content-ID: </tnn-200102/mm7-submit>

<?xml version='1.0' ?>
| <env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Header>
    <mm7:TransactionID xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
env:mustUnderstand="1">
      vas00001-sub
    </mm7:TransactionID>
  </env:Header>
  <env:Body>
    <mm7:SubmitReq xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0">
      <MM7Version>5.3.0</MM7Version>
      <SenderIdentification>
        <VASPID>TNN</VASPID>
        <VASID>News</VASID>
      </SenderIdentification>
      <Recipients>
        <To>
          <Number>7255441234</Number>
          <RFC2822Address displayOnly="True">7255442222@OMMS.com</RFC2822Address>
        </To>
        <Cc>
          <Number>7255443333</Number>
        </Cc>
        <Bcc>
          <RFC2822Address>7255444444@OMMS.com</RFC2822Address>
        </Bcc>
      </Recipients>
      <ServiceCode>gold-sp33-im42</ServiceCode>
      <LinkedID>mms00016666</LinkedID>
      <MessageClass>Informational</MessageClass>
      <TimeStamp>2002-01-02T09:30:47-05:00</Date>
      <EarliestDeliveryTime>2002-01-02T09:30:47-05:00</EarliestDeliveryTime>
      <ExpiryDate>P90D</ExpiryDate>
      <DeliveryReport>True</DeliveryReport>
      <Priority>Normal</Priority>
      <ChargedParty>Sender</ChargedParty>
      <DistributionIndicator>True</DistributionIndicator>
      <Subject>News for today</Subject>
      <Content href="cid:SaturnPics-01020930@news.tnn.com"; allowAdaptations="True"/>
    </mm7:SubmitReq>
  </env:Body>
</env:Envelope>
```

```
| --NextPart_000_0028_01C19839.84698430
Content-Type: multipart/mixed; boundary="StoryParts 74526 8432 2002-77645"
Content-ID:< SaturnPics-01020930@news.tnn.com>
```

```
| --StoryParts 74526 8432 2002-77645
Content-Type: text/plain; charset="us-ascii"
```

Science news, new Saturn pictures...

```
| --StoryParts 74526 8432 2002-77645
Content-Type: image/gif;
Content-ID:<saturn.gif>
```

R0IGODdhZAAwAOMAAAAAIGJGltcDE00OfWo6Ochbi1n1pmcbGojpKbnP/lpW54fBMTE1RYXEFO
...

```
| --StoryParts 74526 8432 2002-77645--
--_NextPart_000_0028_01C19839.84698430--
```

The response message is sent by the MMS Relay/Server back to the VASP for the VAS application in a HTTP Response message.

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset="utf-8"
Content-Length: nnnn
```

```
<?xml version='1.0' ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Header>
    <mm7:TransactionID xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
env:mustUnderstand="1">
      vas00001-sub
    </mm7:TransactionID>
  </env:Header>
  <env:Body>
    <MM7Version>5.3.0</MM7Version>
    <Status>
      <StatusCode>1000</StatusCode>
      <StatusText> Success</StatusText>
    </Status>
    <MessageID>041502073667</MessageID>
  </env:Body>
</env:Envelope>
```

...

8.7.9.4 MM7_deliver.RES

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is number of this specification, e.g. 5.2.0
Service code	SOAP Body	ServiceCode	
Request status	SOAP Body	StatusCode	See section 8.7.8.4
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.4

Sample Deliver request and response

```
POST /mms/weather.xml HTTP/1.1
Host: www.yahoo.com
Content-Type: multipart/related; boundary="NextPart_000_0125_01C19839.7237929064"; type=text/xml;
  start="</cmvt256/mm7-deliver>"
Content-Length: nnnn
SOAPAction: ""
```



```

|--NextPart_000_0125_01C19839.-7237929064
Content-Type:text/xml; charset="utf-8"
Content-ID: </cmvt256/mm7-submit>

<?xml version='1.0' ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Header>
    <mm7:TransactionID xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
env:mustUnderstand="1"/>
      vas00324-dlvr
    </mm7:TransactionID>
  </env:Header>
  <env:Body>
    <!-- Example of MM7_deliverReq -->
    <mm7:DeliverReq xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0">
      <MM7Version>5.3.0</MM7Version>
      <MMSRelayServerID>240.110.75.34</MMSRelayServerID>
      <Sender>97254265781@OMMS.com</Sender>
      <LinkedID>wthr8391</LinkedID>
      <TimeStamp>2002-04-15T14:35:21-05:00</TimeStamp>
      <Priority>Normal</Priority>
      <Subject>Weather Forecast</Subject>
      <Content href=cid:forecast-location200102-86453/>
    </mm7:DeliverReq>
  </env:Body>
</env:Envelope>

|--NextPart_000_0125_01C19839.-7237929064
Content-Type:text/plain; charset="utf-8"
Content-ID:<forecast-location200102-86453>

Los Angeles, Calif, USA
|--_NextPart_000_0125_01C19839.-7237929064--

```

The deliver response message might look like this (with an application error code):

```

HTTP/1.1 200 OK
Content-Type: text/xml; charset="utf-8"
Content-Length: nnnn

<?xml version='1.0' ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Header>
    <mm7:TransactionID xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
env:mustUnderstand="1"/>
      vas00324-dlvr
    </mm7:TransactionID>
  </env:Header>
  <env:Body>
    <mm7:DeliverRsp xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0">
      <MM7Version>5.3.0</MM7Version>
      <ServiceCode>wthr-badl-6521</ServiceCode>
      <Status>
        <StatusCode>4006</StatusCode>
        <StatusText>Service Unavailable</ServiceText>
        <Detail>Location not covered in service </Detail>
      </Status>
    </mm7:DeliverRsp>
  </env:Body>
</env:Envelope>

...

```

8.7.9.6 MM7_cancel.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	TransactionID	
Message-Type	SOAP Body	MessageType	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7Version	Value is number of this specification, e.g. 5.2.0
Request status	SOAP Body	StatusCode	See section 8.7.8.4
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.4

The following shows an interchange of a MM7_cancel.REQ and MM7_cancel.RES to illustrate a SOAP message that does not include a multimedia content part.

POST /mms-rs/mm7 HTTP/1.1

Host: mms.omms.com

Content-Type: text/xml; charset="utf-8"

Content-Length: nnnn

SOAPAction: ""

```
<?xml version='1.0' ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Header>
    <mm7:TransactionID xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
env:mustUnderstand="1">
      vas0000—can
    </mm7:TransactionID>
  </env:Header>
  <env:Body>
    <mm7:CancelReq xmlns:mm7=" http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0">
      <MM7Version>5.3.0</MM7Version>
      <SenderIdentification>
        <VASPID>TNN</VASPID>
        <VASID>Reminder</VASID>
      </SenderIdentification>
      <MessageID>mms00022222</MessageID>
    </mm7:CancelReq>
  </env:Body>
</env:Envelope>
```

HTTP/1.1 200 OK

Content-Type: text/xml; charset="utf-8"

Content-Length: nnnn

```
<?xml version='1.0' ?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Header>
    <mm7:TransactionID xmlns:mm7=" http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
env:mustUnderstand="1">
      vas0000—can
    </TransactionID>
  </env:Header>
  <env:Body>
    <mm7:CancelRsp xmlns:mm7=" http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0">
      <MM7Version>5.3.0</MM7Version>
      <Status>
        <StatusCode>1000</StatusCode>
        <StatusText>Success</StatusText>
      </Status>
    </mm7:CancelRsp>
  </env:Body>
</env:Envelope>
```

CHANGE REQUEST

⌘ **23.140 CR 091** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘	Changes to the support of MAP operations for recipient MSISDN address resolution based on IMSI.
Source:	⌘	T2
Work item code:	⌘	MESS5-MMS
		Date: ⌘ 15/08/2002
Category:	⌘	F
		Use <u>one</u> of the following categories: <i>F</i> (correction) <i>A</i> (corresponds to a correction in an earlier release) <i>B</i> (addition of feature), <i>C</i> (functional modification of feature) <i>D</i> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.
		Release: ⌘ Rel-5
		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘	The Send_IMSI MAP operation is normally used for internal Operation & Maintenance tasks of the operator and therefore it is not usually open to other operators. In this case, an error will be returned when trying to get the IMSI by means of this MAP operation. On the contrary, the SRI_for_SM is normally supported and open to other operators, because it is a pre-condition for SMS interconnection. The current specifications do not clarify enough the different importance of the two operations.
Summary of change:	⌘	SRI_for_SM MAP operation is stated as the only mandatory MAP operation for retrieval of the recipient's IMSI. Instead, the support of Send_IMSI MAP operation by the MMS R/S is changed to optional.
Consequences if not approved:	⌘	Implementation of MMS interconnection may be impossible because two parties do not share a common MAP operation.

Clauses affected:	⌘	Annex H								
Other specs affected:	⌘	<table style="display: inline-table; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">Y</td> <td style="border: 1px solid black; padding: 2px;">N</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;"><input type="checkbox"/></td> <td style="border: 1px solid black; padding: 2px;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;"><input type="checkbox"/></td> <td style="border: 1px solid black; padding: 2px;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;"><input type="checkbox"/></td> <td style="border: 1px solid black; padding: 2px;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications ⌘ Test specifications ⌘ O&M Specifications ⌘	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Y	N									
<input type="checkbox"/>	<input checked="" type="checkbox"/>									
<input type="checkbox"/>	<input checked="" type="checkbox"/>									
<input type="checkbox"/>	<input checked="" type="checkbox"/>									
Other comments:	⌘									

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Annex H (normative): Recipient MSISDN address resolution based on IMSI.

Only if recipient addressing resolution mechanism based on a MAP query is used, the procedures defined in this annex shall be followed.

For those recipients MSISDN addresses that appear in an MM and belong to an external MMSE, the originator MMS Relay/Server shall translate (resolve) them to a routable RFC 2822 [5] address that shall be used in the "RCPT TO" SMTP subsequent commands.

Recipient MSISDN address resolution procedure:

1. The originator MMS Relay/Server determines that the recipient MSISDN address belongs to an external MMSE.
2. The originator MMS Relay/Server shall interrogate the recipient HLR for the associated IMSI by invoking ~~at the standard GSM-MAP operations SRI_for_SM-or/and-Send_IMSI~~ as described in [62] and [64]. This operation should be invoked with ~~When SRI_for_SM operation is used~~ the SM-RP-PRI parameter should be set to 'true'. As an optional feature, to complement the mandatory SRI_for_SM operation, the Relay/Server may also support the Send_IMSI MAP operation- as described in [62] and [64].
3. In case of a successful interrogation the originator MMS Relay/Server shall determine the MCC and MNC and look up for a matching entry in an IMSI table. The IMSI table shall maintain the associations of MCC + MNC → MMSE FQDN. Subsequently the originator MMS Relay/Server shall be able to resolve (e.g. using standard DNS) the MMSE FQDN to an IP address for establishing the SMTP (MM4) session.
4. If the recipient MSISDN is not known to belong to any MMSE (No entry in the IMSI table, GSM-MAP error, etc.), the MMS Relay/Server shall invoke an appropriate address resolution exception handling procedure. These procedures are not standardized.

NOTE: Although the ~~used mandatory~~ GSM-MAP operation SRI_for_SMs ~~are~~ is a standardized operations, in some cases HLR is unable to return the correct recipient's IMSI number (GSM MAP error received) due to e.g. recipient's settings or recipient network's settings. In that case MMS Relay/Server shall invoke an appropriate exception handling procedure. These procedures are not standardized.

The above procedure complies with the Mobile Number Portability (MNP) requirements and technical realization as they are specified in [63] and [64] respectively. In addition, this procedure complies with the Non-call related signalling MNP procedures for direct and indirect routeing as it is described in [64], Annex B.

Figure H.1 provides an example message flow diagram:

3GPP TSG-T WG2#18
 Velen, Germany
 11th – 16th May 2002

T2-020795

CR-Form-v5

CHANGE REQUEST

⌘ **23.140 CR 092** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘ Acknowledgements for unconfirmed transactions		
Source:	⌘ T2		
Work item code:	⌘ MESS5-MMS	Date:	⌘ 05/05/2002
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
			REL-5 (Release 5)

Reason for change: ⌘ The MMS Relay/Server and the originator/recipient MMS User Agent have to receive acknowledgements on whether the request reached the target destination or not.

Summary of change: ⌘ An additional statement, reflecting that stage 3 has to provide the reliable mechanism for acknowledgments delivery, is added to the delivery report and read-reply report sections.

Consequences if not approved: ⌘ If not approved, this leaves the MMS Relay/Server and the Originator/Recipient MMS User Agent in a doubt as to whether the request ever reached the target destination. This is putting a lot of faith in the quality of the radio path.

Clauses affected: ⌘ Clause 8: MMS Application Protocol Framework and Technical Realisation of MMS Service Features;
 Clause 8.1.7: Delivery Report;
 Clause 8.1.7.2: Abnormal Operation (Delivery Report);
 Clause 8.1.8: Read-Reply Report;
 Clause 8.1.8.2: Abnormal Operation (Read-Reply Report);

Other specs ⌘ Other core specifications ⌘

affected:	<input type="checkbox"/> Test specifications	
	<input type="checkbox"/> O&M Specifications	
Other comments:	⌘	

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to

8 MMS Application Protocol Framework and Technical Realisation of MMS Service Features

...

8.1.7 Delivery Report

This part of MMS service covers the sending of delivery report from originator MMS Relay/Server to the originator MMS User Agent. The involved abstract message is outlined in Table 14 from type and direction points of view.

Table : abstract message for sending delivery reports in MMS

Abstract Message	Type	Direction
MM1_delivery_report.REQ	Request	MMS Relay/Server -> MMS UA

8.1.7.1 Normal Operation

The originator MMS Relay/Server shall (subject to user, MMS service provider and/or operator preferences) create the MM1_delivery_report.REQ and send it to the originator MMS User Agent when the appropriate information for the creation of a delivery report is available.

Support for MM1_delivery_report.REQ is optional for the MMS User Agent but mandatory for the MMS Relay/Server.

8.1.7.2 Abnormal Operation

The MMS protocol framework does not provide mechanisms to cover and handle the unsuccessful delivery of MM1_delivery_report.REQ.

The underlying protocols shall provide reliable transport of MM1_delivery_report.REQ. Moreover, underlying protocol layers may provide a mechanism for the MMS User Agent to acknowledge successful reception of a MM1_delivery_report.REQ to the MMS Relay/Server.

8.1.7.3 Features

Identification: In the MM1_delivery_report.REQ the MMS Relay/Server shall always provide the original message identification of the MM that the delivery report corresponds to.

Addressing: The MM recipient address shall be provided to the originator MMS User Agent in the addressing-relevant information field of MM1_delivery_report.REQ.

Time stamping: The MM1_delivery_report.REQ shall carry the time and date of handling of the MM (e.g. retrieval, expiry, rejection).

MM Status: The MM1_delivery_report.REQ shall carry the status of the MM delivery, e.g. retrieved, forwarded, rejected, expired or indeterminate.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_delivery_report.REQ as such.

8.1.7.4 Information Elements

Table xxx: Information elements in the MM1_delivery_report.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_delivery_report.REQ.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message ID	Mandatory	The identification of the original MM.
Recipient address	Mandatory	The address of the MM recipient of the original MM.
Date and Time	Mandatory	Date and time the MM was handled (retrieved, expired, rejected, etc.) (time stamp)
MM Status	Mandatory	Status of the MM, e.g. retrieved, forwarded, expired, rejected

8.1.8 Read-Reply Report

This part of MMS service covers the sending of read-reply report from the recipient MMS User Agent to the recipient MMS Relay/Server and the sending of read-reply report from the originator MMS Relay/Server to the originator MMS User Agent. The involved abstract messages are outlined in Table 16 from type and direction points of view.

Table 4xx: Abstract messages for sending and receiving read-reply report in MMS

Abstract messages	Type	Direction
MM1_read_reply_recipient.REQ	Request	MMS UA -> MMS Relay/Server
MM1_read_reply_originator.REQ	Request	MMS Relay/Server -> MMS UA

8.1.8.1 Normal Operation

If a read-reply report is requested for an MM, the recipient MMS User Agent may create the MM1_read_reply_recipient.REQ and send it to the recipient MMS Relay/Server.

The originator MMS Relay/Server shall (subject to user, MMS service provider and/or operator preferences) create the MM1_read_reply_originator.REQ and send it to the originator MMS User Agent when the appropriate information for the creation of a read-reply report is available.

Support for MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ is optional for the MMS User Agent but mandatory for the MMS Relay/Server.

8.1.8.2 Abnormal Operation

The MMS protocol framework does not provide mechanisms to cover and handle the unsuccessful delivery of MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ.

The underlying protocols shall provide reliable transport of MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ. Moreover, underlying protocol layers may provide a mechanism for the MMS Relay/Server to acknowledge successful reception of a MM1_read_reply_recipient.REQ to the MMS User Agent. Underlying protocol layers may also provide a mechanism for the MMS User Agent to acknowledge successful reception of a MM1_read_reply_originator.REQ to the MMS Relay/Server.

8.1.8.3 Features

Identification: In the MM1_read_reply_recipient.REQ the recipient MMS User Agent shall provide the original message identification of the MM that the read-reply report corresponds to. In the MM1_read_reply_originator.REQ the originator MMS Relay/Server shall provide the original message identification of the MM that the read-reply report corresponds to.

Addressing: The MM originator address shall be provided in the addressing-relevant information field(s) of MM1_read_reply_recipient.REQ. The MM recipient address shall be provided in the addressing-relevant information field(s) of MM1_read_reply_recipient.REQ. Both, the MM recipient and MM originator addresses shall be provided in the addressing-relevant information field(s) of the MM1_read_reply_originator.REQ. If the MM recipient address is not yet provided in the MM1_read_reply_recipient.REQ the MM1_read_reply_originator.REQ shall carry the MM recipient address set by the recipient MMS Relay/Server.

Time stamping: The MM1_read_reply_recipient.REQ may carry the time and date of user handling the MM depending on the status of the MM. The MM1_read_reply_originator.REQ shall carry the time-stamp from the corresponding MM1_read_reply_recipient.REQ if provided. If this time-stamp is not yet provided the MM1_read_reply_originator.REQ shall carry the time-stamp set by the recipient MMS Relay/Server.

Read Status: Both the MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ shall carry the status of the MM handling, e.g. read or without being read.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ as such.

8.1.8.4 Information Elements

Table xxx: Information elements in the MM1_read_reply_recipient.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_read_reply_recipient.REQ.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS User Agent.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e, the originator of the read-reply report.
Originator address	Mandatory	The address of the MM originator of the original MM, i.e, the recipient of the read-reply report.
Message ID	Mandatory	The message ID of the original MM.
Date and Time	Optional	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Read Status	Mandatory	Status of the MM, e.g. Read, Deleted without being read

Table xxx: Information elements in the MM1_read_reply_originator.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_read_reply_originator.REQ.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e, the originator of the read-reply report.
Originator address	Mandatory	The address of the MM originator of the original MM, i.e, the recipient of the read-reply report.
Message ID	Mandatory	The message ID of the original MM.
Date and Time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Read Status	Mandatory	Status of the MM, e.g. Read, Deleted without being read

.....

CHANGE REQUEST

⌘ **23.140 CR 093** ⌘ rev **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘ Time stamp definition and time clarification		
Source:	⌘ T2		
Work item code:	⌘ MESS5-MMS	Date:	⌘ 15/08/2002
Category:	⌘ F	Release:	⌘ REL-5
	<i>Use one of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ It is not clear that the time information elements must have some additional information that allows for unambiguous calculation, e.g. relationship with time zone, UTC or GMT.
Summary of change:	⌘ Addition of definition for time stamp. Identifies all time related information elements as being of type time stamp
Consequences if not approved:	⌘ Time related information elements are meaningless without information, which allows the receiving entity to identify an exact time, e.g. relationship with UTC/GMT or time-zone

Clauses affected:	⌘ 3.1, 8.1.3.4, 8.1.4.4, 8.1.5.4, 8.1.6.4, 8.1.11.4, 8.4.1.4, 8.7.1.4, 8.7.3.4, 8.7.4.4										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications Test specifications O&M Specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
Other comments:	⌘										

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

3 Definitions and Abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions defined in 3GPP TR 21.905 [2] and 3GPP TS 22.140 [1] and the following apply:

Abstract message: information which is transferred between two MMS entities used to convey an MM and/or associated control information between these two entities

NOTE 1: The application protocol framework and technical realisation of MMS service features is described in terms of abstract messages in the present document.

Delivery Report: feedback information provided to an originator of MM (MMS User Agent or VASP) by an MMS Relay/Server about the status of the delivery of an MM

External Server: network entity/application of an external system such as Internet email, unified messaging system or facsimile to which MMs may be sent to and/or from which MMs may be received by an MMS User Agent via an MMS service provider

NOTE 2: An External Server is connected to that MMS Service Provider via non-MMS-specific protocols.

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

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

Message ID: a unique identifier for an MM

Message Reference: a unique identifier for an MM indicating the location of the MM

MMBox: network storage associated with a user into which MMs, along with MM State and MM Flags, may be stored, retrieved, and deleted

MM State: the state of an MM within the MMBox, as one of several, mutually-exclusive enumerated values

MM Flags: a list of zero, one, or more keyword flags, defined by the MMS User Agent, associated with the MM

MM Delivery: act of a recipient MMS Relay/Server delivering an MM to a recipient MMS User Agent

MM Submission: act of an originator MMS User Agent submitting an MM to the originator MMS Relay/Server

MMSNA: Multimedia Messaging Service Network Architecture encompasses all the various elements that provide a complete MMS to a user

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

MMS Relay/Server: MMS-specific network entity/application that is under the control of an MMS service provider

NOTE 3: An MMS Relay/Server transfers messages, provides operations of the MMS that are specific to or required by the mobile environment and provides (temporary and/or persistent) storage services to the MMS.

MMS User Agent: application residing on a UE, an MS or an external device that performs MMS-specific operations on a user's behalf

NOTE 4: An MMS User Agent is not considered part of an MMSE.

MMS VAS Applications: Applications providing Value Added Services (e.g. news service or weather forecasts) to MMS users.

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

Originator MMSE: MMSE associated with the sender of an MM

Originator MMS Relay/Server: MMS Relay/Server associated with the sender of an MM

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

Originator VASP: VASP which is sending an MM

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

Recipient MMSE: MMSE associated with the recipient of an MM

Recipient MMS Relay/Server: MMS Relay/Server associated with the recipient of an MM

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

Recipient VASP: VASP which is receiving an MM

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

Short code: Service provider specific address which is a string of alphanumeric characters

SOAP Attachment: Multimedia content, e.g. audio, image, text, presentation or a combination of different media types and/or formats, transferred from an MMS VASP to an MMS Relay/Server or vice versa.

Time stamp: The date, time and the additional information, e.g. UTC, GMT or time zone, which allows the unambiguous identification of time.

Transaction: message pair sent between an MMS User Agent and MMS Relay/Server, or between MMS Relay/Servers

8.1.3.4 Information Elements

Table 1: Information elements in the MM1_submit.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_submit.REQ
Transaction ID	Mandatory	The identification of the MM1_submit.REQ/MM1_submit.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS UA.
Recipient address	Mandatory	The address of the recipient(s) of the MM. Multiple addresses are possible.
Content type	Mandatory	The content type of the MM's content.
Sender address	Optional	The address of the MM originator.
Message class	Optional	The class of the MM (e.g., personal, advertisement, information service)
Date and time	Optional	The time and date of the submission of the MM (time stamp).
Time of Expiry	Optional	The desired time of expiry for the MM or reply-MM (time stamp).
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient (time stamp).
Delivery report	Optional	A request for delivery report.
Reply-Charging	Optional	A request for reply-charging.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of replies granted to the recipient(s) (time stamp).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s).
Priority	Optional	The priority (importance) of the message.
Sender visibility	Optional	A request to show or hide the sender's identity when the message is delivered to the recipient.
Store	Optional	A request to store a copy of the MM into the user's MMBx, in addition to the normal delivery of the MM.
MM State	Optional	The value to set in the MM State information element of the stored MM, if Store is present.
MM Flags	Optional	One or more MM Flag keywords to set in the MM Flags information element of the stored MM, if Store is present
Read reply	Optional	A request for read reply report.
Subject	Optional	The title of the whole multimedia message.
Reply-Charging-ID	Optional	In case of reply-charging when the reply-MM is submitted within the MM1_submit.REQ this is the identification of the original MM that is replied to.
Content	Optional	The content of the multimedia message

Table 2: Information elements in the MM1_submit.RES.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_submit.RES.
Transaction ID	Mandatory	The identification of the MM1_submit.REQ/MM1_submit.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Request Status	Mandatory	The status of the MM submit request.
Request Status Text	Optional	Description which qualifies the status of the MM submit request.
Message ID	Conditional	The identification of the MM if it is accepted by the originator MMS Relay/Server.
Store Status	Conditional	If the Store request was present in MM1_submit.REQ, the status of the store request.
Store Status Text	Optional	The explanatory text corresponding to the Store Status, if present.
Stored Message Reference	Conditional	If the Store request was present in MM1_submit.REQ, the message reference to the newly stored MM.

8.1.4 Multimedia Message Notification

This part of the MMS service covers the notification about MM from the recipient MMS Relay/Server to the corresponding recipient MMS User Agent and involving abstract messages are outlined in Table 4 from type, and direction points of view.

Table 3: abstract messages for notification of MM in MMS

Abstract message	Type	Direction
MM1_notification.REQ	Request	MMS Relay/Server -> MMS UA
MM1_notification.RES	Response	MMS UA -> MMS Relay/Server

8.1.4.1 Normal Operation

Upon receiving the MM1_notification.REQ, the recipient MMS User Agent shall respond with the MM1_notification.RES to the recipient MMS Relay/Server to acknowledge the successful reception of the MM1_notification.REQ.

The MM1_notification.RES shall unambiguously refer to the corresponding MM1_notification.REQ.

8.1.4.2 Abnormal Operation

In this case the MMS UA shall respond with a MM1_notification.RES encapsulating a status which indicates the reason the notification could not be processed. If the MMS UA does not provide the MM1_notification.RES the MMS Relay/Server should be able to retransmit the notification at a later state.

8.1.4.3 Features

Addressing: The MM originator address may be provided to the recipient MMS User Agent in the MM1_notification.REQ. The MM originator address shall not be provided to the recipient MMS User Agent if the MM originator has requested her address to be hidden from the MM recipient. In the case of forwarding, the address of the latest forwarding MMS User Agent shall be provided.

Time constraints: The recipient MMS User Agent shall be provided a time of expiry of the MM. In case of reply-charging the deadline for the latest time of submission of a reply-MM should be conveyed within the MM1_notification.REQ.

Reply-Charging: In case of reply-charging the MMS Relay/Server may indicate in the MM1_notification.REQ that a reply to the notified original MM is free of charge and the reply-charging limitations.

Message class, message size, priority and subject: The MM shall be qualified further by adding a message class and an approximate size to the MM in the MM1_notification.REQ. The MM may be qualified further by adding a priority and/or subject to the MM. Additional qualifiers may be added.

Reporting: If the originator MMS User Agent has requested to have a delivery report, the recipient MMS Relay/Server may convey this information to the recipient MMS User Agent in the MM1_notification.REQ. The recipient MMS User Agent may indicate in the MM1_notification.RES that it would not wish a delivery report to be created.

Identification: In case of reply-charging when a reply-MM is notified within the MM1_notification.REQ the MMS Relay/Server should convey the identification of the original MM replied to within the same MM1_notification.REQ.

Persistent storage: When the MMBBox is configured such that incoming MMs are stored automatically, the MM1_notification.REQ shall contain the Stored information element.

Message Reference: The recipient MMS Relay/Server shall always provide a reference, e.g., URI, for the MM in the MM1_notification.REQ. When incoming MMs are stored automatically, the Message Reference will refer to the newly stored MM within the MMBBox.

MM Status: The recipient MMS User Agent may indicate in the MM1_notification.RES how it intends the MM to be handled, e.g. the immediate rejection of the MM.

MM element descriptor: The recipient MMS Relay/Server may provide one or more description(s) of message elements in the MM1_notification.REQ. A description shall contain a reference to the message element, e.g. a URI, an index number etc.. A description of a message element may be further qualified by adding one or more of such parameters as:

- name of the message element
- type and format of the message element
- approximate size of the message element

Message Distribution Indication: The VASP may indicate whether the content of the MM is intended for redistribution.

Transaction Identification: The originator MMS Relay/Server shall provide an unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_notification.REQ and MM1_notification.RES as such.

8.1.4.4 Information Elements

Table 4: Information elements in the MM1_notification.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_notification.REQ
Transaction ID	Mandatory	The identification of the MM1_notification.REQ/MM1_notification.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message class	Mandatory	The class of the MM (e.g., personal, advertisement, information service; default = personal)
Message size	Mandatory	The approximate size of the MM
Time of expiry	Mandatory	The time of expiry for the MM (time stamp).
Message Reference	Mandatory	a reference, e.g., URI, for the MM
Subject	Optional	The title of the whole MM.
Priority	Optional	The priority (importance) of the message.
Sender address	Conditional	The address of the MMS User Agent that most recently handled the MM, i.e. that either submitted or forwarded the MM. If the originator MMS User Agent has requested her address to be hidden from the recipient her address shall not be provided to the recipient.
Stored	Optional	Indicates that the MM was automatically stored into the MMBBox.
Delivery report	Optional	Request for delivery report
Reply-Charging	Optional	Information that a reply to this particular original MM is free of charge.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of a reply granted to the recipient (time stamp).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size of a reply-MM granted to the recipient.
Reply-Charging-ID	Optional	The identification of the original MM replied to if this notification indicates a reply-MM.
Element-Descriptor	Optional	The reference for an element of the MM, which may contain further information about the referenced element of the MM, e.g. the name, the size and/or the type and format of the message element
Message Distribution Indicator	Optional	If set to "false" the VASP has indicated that content of the MM is not intended for redistribution. If set to "true" the VASP has indicated that content of the MM can be redistributed.

Table 5: Information elements in the MM1_notification.RES.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_notification.RES.
Transaction ID	Mandatory	The identification of the MM1_notification.REQ/MM1_notification.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS User Agent.
MM Status	Optional	The status of the MM's retrieval
Report allowed	Optional	Request to allow or disallow the sending of a delivery report to the MM originator

8.1.5 Retrieval of Multimedia Message

This part of MMS service covers the retrieval of an MM. For retrieval purposes an MM shall always be retrieved by the recipient MMS User Agent from the recipient MMS Relay/Server. Involved abstract messages are outlined in Table 7 from type and direction points of view.

Table 6: Abstract messages for retrieval of MM in MMS

Abstract messages	Type	Direction
MM1_retrieve.REQ	Request	MMS UA -> MMS Relay/Server
MM1_retrieve.RES	Response	MMS Relay/Server -> MMS UA
MM1_acknowledgement.REQ	Request	MMS UA -> MMS Relay/Server

8.1.5.1 Normal Operation

The recipient MMS User Agent shall issue an MM1_retrieve.REQ to the recipient MMS Relay/Server to initiate the retrieval process. The MMS Relay/Server shall respond with an MM1_retrieve.RES, which contains MMs control information and the MM content.

After receiving the MM1_retrieve.RES, the recipient MMS User Agent shall send an MM1_acknowledgement.REQ to the corresponding MMS Relay/Server, if requested by the MMS Relay/Server. The MM1_acknowledgement.REQ shall unambiguously refer to the corresponding MM1_retrieve.RES.

8.1.5.2 Abnormal Operation

If the recipient MMS Relay/Server can not process the MM1_retrieve.REQ, for example due to invalid content location or expiration of the message, the recipient MMS Relay/Server shall respond with either an MM1_retrieve.RES or a lower protocol layer error message encapsulating a status which indicates the reason to the MMS User Agent the multimedia message was not delivered.

If the MMS Relay/Server does not provide the MM1_retrieve.RES or the lower protocol layer error message the MMS User Agent should be able to recover.

8.1.5.3 Features

Message Reference: The recipient MMS User Agent shall provide a reference, e.g., URI, for the MM in the MM1_retrieve.REQ.

This reference was previously delivered to the MMS User Agent from MM1_notification.REQ, MM1_submit.RES, MM1_forward.RES, MM1_mmbox_view.RES, MM1_mmbox_upload.RES, or MM1_mmbox_store.RES. In the latter cases, the Message Reference will address an MM that resides in the MMBox.

Addressing: The MM originator address may be provided to the recipient MMS User Agent in the addressing-relevant information field of MM1_retrieve.RES. The MM originator address shall not be provided to the recipient MMS User Agent if the MM originator has requested her address to be hidden from the MM recipient. In the case of forwarding, the address of the latest forwarding MMS User agent shall be provided and the address(es) of the previous forwarding MMS User Agent(s) and the address of the originator MMS User Agent may be provided. One or several address(es) of

the MM recipient(s) may be provided to the recipient MMS User Agent in the addressing-relevant information field(s) of the MM1_retrieve.RES.

Time stamping: The MM1_retrieve.RES shall carry the time and date of the most recent handling of the MM by an MMS User Agent (i.e. either submission or the most recent forwarding of the MM). In the case of forwarding, the MM1_retrieve.RES may in addition carry the time and date of the submission of the MM.

Time constraints: In case of reply-charging the deadline for the latest time of submission of a reply-MM shall be conveyed within the MM1_retrieve.RES.

Message class, priority and subject: Information about class, priority, subject of the MM shall be included in the MM1_retrieve.RES according to their presence and value received at the MMS Relay/Server. Information about additional end-to-end qualifiers of the MM should be included in the MM1_retrieve.RES according to their presence and value received at the MMS Relay/Server.

Reporting: If the originator MMS User Agent has requested to have a read-reply report, the recipient MMS Relay/Server shall convey this information in the MM1_retrieve.RES. If the originator MMS User Agent has requested to have a delivery report, the recipient MMS Relay/Server may convey this information to the recipient MMS User Agent in the MM1_retrieve.RES.

If a request for a delivery report is included in the MM1_retrieve.RES the recipient MMS User Agent shall convey the information whether it accepts or denies the sending of a delivery report to the MM originator in MM1_acknowledgement.REQ.

If a delivery report is not requested, it is up to the recipient MMS User Agent to include this information in MM1_acknowledgement.REQ or not.

Reply-Charging: In case of reply-charging the MMS Relay/Server should indicate in the MM1_retrieve.RES that a reply to this particular original MM is free of charge and the reply-charging limitations.

Identification: The MMS Relay/Server shall provide a message identification for a message, which it has accepted for delivery in the MM1_retrieve.RES. In case of reply-charging the MMS Relay/Server shall provide the message ID of the original MM which is replied to in the MM1_retrieve.RES.

Persistent storage: In the MM1_retrieve.RES, the MMS Relay/Server shall convey the MM State and/or MM Flags information elements if they have been previously set for the persistently stored MM.

Content Type: The type of the MM's content shall always be identified in the MM1_retrieve.RES.

Content: The content of the multimedia message if added by the originator MMS User Agent of the MM may be conveyed in the MM1_retrieve.RES.

Request Status: In case of normal operation the recipient MMS Relay/Server may indicate in the MM1_retrieve.RES that the retrieval of the MM was processed correctly. In case of abnormal operation the recipient MMS Relay/Server shall indicate in the MM1_retrieve.RES the reason why the multimedia message could not be retrieved. The corresponding reason codes should cover application level errors (e.g. "the media format could not be converted", "insufficient credit for retrieval"). Lower layer errors may be handled by corresponding protocols.

The reason code given in the status information element of the MM1_retrieve.RES may be supported with an explanatory text further qualifying the status. If this text is available in the Request status text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Request status text information element is at the discretion of the MMS service provider.

Previously-sent-by: The address(es) of the MMS User Agent(s) that submitted or forwarded the MM prior to the last forwarding MMS User Agent. In the multiple forwarding case the order of the provided addresses shall be indicated and the address of the originator MMS User Agent shall be indicated, if present.

NOTE: The address of the last forwarding MMS User Agent is carried in other addressing elements.

Transaction Identification: The originator MMS User Agent shall provide unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_retrieve.RES and MM1_acknowledgement.REQ as such.

8.1.5.4 Information Elements

Table 7: Information elements in the MM1_retrieve.REQ

Information element	Presence	Description
Message Reference	Mandatory	Location of the content of the MM to be retrieved.

Table 8: Information elements in the MM1_retrieve.RES

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_retrieve.RES.
Transaction ID	Conditional	If the MMS Relay/Server requests an acknowledgement from the recipient MMS User Agent then the Transaction ID shall be present. It then identifies the MM1_retrieve.RES/MM1_acknowledgement.REQ messages.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message ID	Mandatory	The message ID of the MM.
Sender address	Conditional	The address of the MMS User Agent that most recently handled the MM, i.e. that either submitted or forwarded the MM. If the originator MMS User Agent has requested her address to be hidden from the recipient her address shall not be provided to the recipient.
Content type	Mandatory	The content type of the MM's content.
Recipient address	Optional	The address of the MM recipient. Multiple addresses are possible.
Message class	Optional	The class of the message (e.g., personal, advertisement, information service)
Date and time	Mandatory	The time and date of the most recent handling (i.e. either submission or forwarding) of the MM by an MMS User Agent (time stamp).
Delivery report	Conditional	A request for delivery report if a delivery report has been requested by the originator MMS User Agent.
Priority	Conditional	The priority (importance) of the message if specified by the originator MMS User Agent..
Read reply	Conditional	A request for read-reply report if the originator MMS User Agent of the MM has requested a read-reply report.
Subject	Conditional	The title of the whole multimedia message if specified by the originator MMS User Agent of the MM.
MM State	Conditional	The MM State. May be absent for incoming MMs; shall be present for persistently stored MMs
MM Flags	Optional	Present only for persistently stored MMs. One or more keyword flags, which shall be present if they have been previously set for the MM.
Request Status	Optional	The status of the MM retrieve request.
Request Status Text	Optional	Description which qualifies the status of the MM retrieve request.
Reply-Charging	Optional	Information that a reply to this particular original MM is free of charge.
Reply-Charging-ID	Optional	In case of reply-charging this is the identification of the original MM replied to.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of a reply granted to the recipient (time stamp).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size of a reply-MM granted to the recipient.
Previously-sent-by	Optional	In case of forwarding this information element contains one or more address(es) of MMS User Agent(s) that handled (i.e. forwarded or submitted) the MM prior to the MMS User Agent whose address is contained in the Sender address information element. The order of the addresses provided shall be marked. The address of the originator MMS User Agent shall be marked, if present.
Previously-sent-date-and-time	Optional	The date(s) and time(s) associated with submission and forwarding event(s) prior to the last handling of the MM by an MMS User Agent (time stamps).
Content	Conditional	The content of the multimedia message if specified by the originator MMS User Agent of the MM.

Table 9: Information elements in the MM1_acknowledgement.REQ

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_acknowledgment.REQ.
Transaction ID	Conditional	If an acknowledgement is requested by the MMS Relay/Server then the Transaction ID shall be present. It then identifies the MM1_retrieve.RES/MM1_acknowledgement.REQ messages.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS User Agent.
Report allowed	Optional	Request to allow or disallow the sending of a delivery report to the MM originator

8.1.6 Forwarding of Multimedia Message

This part of the MMS service describes the mechanism by which a forwarding MMS User Agent can request from the corresponding MMS Relay/Server, that an MM for which the MMS User Agent is the intended recipient (and has been notified of the MM) be forwarded to other specified recipient(s) MMS User Agent(s) whose address(es) shall be specified by the forwarding MMS User Agent, without having to first retrieve the MM. If the MMBox is supported, the MM being forwarded may also be requested to be stored in to the originator's MMBox.

For forwarding purposes an MM forward request shall always be requested by the forwarding MMS User Agent of the forwarding MMS Relay/Server. Involved abstract messages are outlined in Table 11 from type and direction points of view.

Table 10: Abstract messages for forwarding of MM

Abstract messages	Type	Direction
MM1_forward.REQ	Request	MMS UA -> MMS Relay/Server
MM1_forward.RES	Response	MMS Relay/Server -> MMS UA

8.1.6.1 Normal operation

The forwarding MMS User Agent shall issue an MM1_forward.REQ to the forwarding MMS Relay/Server, which contains MMS control information. The MMS Relay/Server shall respond with an MM1_forward.RES, which provides the status of the request.

The MM1_forward.RES shall unambiguously refer to the corresponding MM1_forward.REQ.

Support for MM1_forward.REQ and MM1_forward.RES is mandatory for the MMS Relay/Server that also supports MMBoxes. Otherwise, support for MM1_forward.REQ is optional for the MMS User Agent, and support for MM1_forward.REQ is optional for the MMS Relay/Server..

8.1.6.2 Abnormal Operation

In this case the MMS Relay/Server shall respond with an MM1_forward.RES encapsulating a status which indicates the reason the request for forwarding was not accepted, e.g. no subscription, service not available, invalid content location, message expired, MMBoxes not supported, MMBox not enabled, MMBox over quota, MMBox system full, MMBox I/O error.

When MM1_forward.REQ contains a Store request, the MMS Relay/Server shall provide the results of the store operation in the MM1_forward.RES. If the MMS Relay/Server does not provide the MM1_forward.RES the MMS User Agent should be able to recover.

8.1.6.3 Features

Addressing: One or several recipients of an MM forward request shall be indicated in the addressing-relevant information field(s) of the MM1_forward.REQ. The forwarding MMS User Agent may be indicated in addressing-relevant information field(s) of the MM1_forward.REQ.

Time stamping: The forwarding MMS User Agent may time stamp the MM.

Time constraints: The forwarding MMS User Agent may request an earliest desired time of delivery of the MM. The forwarding MMS User Agent may request a time of expiry for the MM.

Reporting: The forwarding MMS User Agent may request a delivery report for the MM. In addition, the forwarding MMS User Agent may request a read-reply report when the user has viewed the MM.

Identification: The MMS Relay/Server of the forwarding MMS User Agent shall always provide a message identification for an MM forward request, which it has accepted for being forwarded in the MM1_forward.RES.

Persistent storage: If MMBBoxes are supported, the presence of the Store information element in MM1_forward.REQ is a request to have a copy of the message being forwarded stored persistently within the forwarder's MMBBox. The MM State and/or MM Flags values of the stored MM may be set with the values from the corresponding information elements.

Store Status: The MMS Relay/Server shall indicate the store status of the MM1_forward.REQ in the Store Status information element of the associated MM1_forward.RES. The Store Status information element of the MM1_forward.RES may be supported with an explanatory text. If this text is available in the Store Status Text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Store Status Text information element is at the discretion of the MMS service provider

Message Reference: The forwarding MMS User Agent shall always provide the reference, e.g., URI, for the MM in the MM1_forward.REQ which was provided in MM1_notification.REQ.

Request Status: The MMS Relay/Server of the forwarding MMS User Agent shall indicate the status of the MM1_forward.REQ in the MM1_forward.RES. The reason code given in the status information element of the MM1_forward.RES may be supported with an explanatory text further qualifying the status. If this text is available in the Request status text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Request status text information element is at the discretion of the MMS service provider.

Transaction Identification: The forwarding MMS User Agent shall provide unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_forward.REQ and MM1_forward.RES as such.

8.1.6.4 Information Elements

Table 11: Information elements in the MM1_forward.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_forward.REQ.
Transaction ID	Mandatory	The identification of the MM1_forward.REQ/MM1_forward.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the forwarding MMS User Agent.
Recipient address	Mandatory	The address of the recipient of the forwarded MM. Multiple addresses are possible.
Forwarding address	Optional	The address of the forwarding MMS User Agent.
Date and time	Optional	The time and date of the forwarding of the MM (<u>time stamp</u>).
Time of Expiry	Optional	The desired time of expiry for the forwarded MM (<u>time stamp</u>).
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient (<u>time stamp</u>).
Store	Optional	If MMBboxes are supported, the presence of the Store information element in MM1_forward.REQ causes a copy of the MM being forwarded to be stored in the user's MMBbox, unless the Message Reference is to an MM already in the MMBbox.
MM State	Optional	The value to set in the MM State information element of the stored MM, if Store is present.
MM Flags	Optional	One or more MM Flag keywords to set in the MM Flags information element of the stored MM, if Store is present
Delivery report	Optional	A request for delivery report for the forwarded MM.
Read reply	Optional	A request for read reply report.
Message Reference	Mandatory	A reference, e.g., URI, for the MM being forwarded. This may either be the Message Reference from MM1_notification.REQ, MM1_mmbbox_store.REQ, or MM1_mmbbox_view.REQ.

Table 12: Information elements in the MM1_forward.RES.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_forward.RES.
Transaction ID	Mandatory	The identification of the MM1_forward.REQ/MM1_forward.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Request Status	Mandatory	The status of the MM Forward request.
Request Status Text	Optional	Description which qualifies the status of the MM Forward request.
Message ID	Mandatory	The unique identification of the forwarded MM.
Store status	Conditional	The status of the store request, if the Store request was present in MM1_forward.REQ.
Store Status Text	Optional	The explanatory text corresponding to the Store status, if present.
Stored Message Reference	Conditional	The message reference to the newly stored copy of the forwarded MM, if the Store request was present in MM1_forward.REQ and the store operation was successful.

8.1.7 Delivery Report

This part of MMS service covers the sending of delivery report from originator MMS Relay/Server to the originator MMS User Agent. The involved abstract message is outlined in Table 14 from type and direction points of view.

Table 13: abstract message for sending delivery reports in MMS

Abstract Message	Type	Direction
MM1_delivery_report.REQ	Request	MMS Relay/Server -> MMS UA

8.1.7.1 Normal Operation

The originator MMS Relay/Server shall (subject to user, MMS service provider and/or operator preferences) create the MM1_delivery_report.REQ and send it to the originator MMS User Agent when the appropriate information for the creation of a delivery report is available. Support for MM1_delivery_report.REQ is optional for the MMS User Agent but mandatory for the MMS Relay/Server.

8.1.7.2 Abnormal Operation

The MMS protocol framework does not provide mechanisms to cover and handle the unsuccessful delivery of MM1_delivery_report.REQ. The underlying protocols shall provide reliable transport of MM1_delivery_report.REQ.

8.1.7.3 Features

Identification: In the MM1_delivery_report.REQ the MMS Relay/Server shall always provide the original message identification of the MM that the delivery report corresponds to.

Addressing: The MM recipient address shall be provided to the originator MMS User Agent in the addressing-relevant information field of MM1_delivery_report.REQ.

Time stamping: The MM1_delivery_report.REQ shall carry the time and date of handling of the MM (e.g. retrieval, expiry, rejection).

MM Status: The MM1_delivery_report.REQ shall carry the status of the MM delivery, e.g. retrieved, forwarded, rejected, expired or indeterminate.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_delivery_report.REQ as such.

8.1.7.4 Information Elements

Table 14: Information elements in the MM1_delivery_report.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_delivery_report.REQ.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message ID	Mandatory	The identification of the original MM.
Recipient address	Mandatory	The address of the MM recipient of the original MM.
Date and Time	Mandatory	Date and time the MM was handled (retrieved, expired, rejected, etc.) (time stamp)
MM Status	Mandatory	Status of the MM, e.g. retrieved, forwarded, expired, rejected

8.1.8 Read-Reply Report

This part of MMS service covers the sending of read-reply report from the recipient MMS User Agent to the recipient MMS Relay/Server and the sending of read-reply report from the originator MMS Relay/Server to the originator MMS User Agent. The involved abstract messages are outlined in Table 16 from type and direction points of view.

Table 15: Abstract messages for sending and receiving read-reply report in MMS

Abstract messages	Type	Direction
MM1_read_reply_recipient.REQ	Request	MMS UA -> MMS Relay/Server
MM1_read_reply_originator.REQ	Request	MMS Relay/Server -> MMS UA

8.1.8.1 Normal Operation

If a read-reply report is requested for an MM, the recipient MMS User Agent may create the MM1_read_reply_recipient.REQ and send it to the recipient MMS Relay/Server.

The originator MMS Relay/Server shall (subject to user, MMS service provider and/or operator preferences) create the MM1_read_reply_originator.REQ and send it to the originator MMS User Agent when the appropriate information for the creation of a read-reply report is available.

Support for MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ is optional for the MMS User Agent but mandatory for the MMS Relay/Server.

8.1.8.2 Abnormal Operation

The MMS protocol framework does not provide mechanisms to cover and handle the unsuccessful delivery of MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ.

8.1.8.3 Features

Identification: In the MM1_read_reply_recipient.REQ the recipient MMS User Agent shall provide the original message identification of the MM that the read-reply report corresponds to. In the MM1_read_reply_originator.REQ the originator MMS Relay/Server shall provide the original message identification of the MM that the read-reply report corresponds to.

Addressing: The MM originator address shall be provided in the addressing-relevant information field(s) of MM1_read_reply_recipient.REQ. The MM recipient address shall be provided in the addressing-relevant information field(s) of MM1_read_reply_recipient.REQ. Both, the MM recipient and MM originator addresses shall be provided in the addressing-relevant information field(s) of the MM1_read_reply_originator.REQ. If the MM recipient address is not yet provided in the MM1_read_reply_recipient.REQ the MM1_read_reply_originator.REQ shall carry the MM recipient address set by the recipient MMS Relay/Server.

Time stamping: The MM1_read_reply_recipient.REQ may carry the time and date of user handling the MM depending on the status of the MM. The MM1_read_reply_originator.REQ shall carry the time-stamp from the corresponding MM1_read_reply_recipient.REQ if provided. If this time-stamp is not yet provided the MM1_read_reply_originator.REQ shall carry the time-stamp set by the recipient MMS Relay/Server.

Read Status: Both the MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ shall carry the status of the MM handling, e.g. read or without being read.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_read_reply_recipient.REQ and MM1_read_reply_originator.REQ as such.

8.1.8.4 Information Elements

Table 16: Information elements in the MM1_read_reply_recipient.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_read_reply_recipient.REQ.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS User Agent.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e, the originator of the read-reply report.
Originator address	Mandatory	The address of the MM originator of the original MM, i.e, the recipient of the read-reply report.
Message ID	Mandatory	The message ID of the original MM.
Date and Time	Optional	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Read Status	Mandatory	Status of the MM, e.g. Read, Deleted without being read

Table 17: Information elements in the MM1_read_reply_originator.REQ.

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_read_reply_originator.REQ.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e, the originator of the read-reply report.
Originator address	Mandatory	The address of the MM originator of the original MM, i.e, the recipient of the read-reply report.
Message ID	Mandatory	The message ID of the original MM.
Date and Time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Read Status	Mandatory	Status of the MM, e.g. Read, Deleted without being read

8.1.9 Storing and Updating Multimedia Messages in an MMBox

This section describes the storage of an MM into the user's MMBox. Requests from an MMS User Agent to store MMs will always be sent to the corresponding MMS Relay/Server. Involved abstract messages are outlined in the table below from type and direction points of view.

Table 18: Abstract messages for storing or updating stored MMs

Abstract messages	Type	Direction
MM1_mmbox_store.REQ	Request	MMS UA -> MMS Relay/Server
MM1_mmbox_store.RES	Response	MMS UA <- MMS Relay/Server

8.1.9.1 Normal operation

The MMS User Agent shall submit a request to store an MM into the MMBox using the MM1_mmbox_store.REQ, which contains the Message Reference received in the MM1_notification.REQ. In addition, the MMS User Agent shall submit a request to update the MM State and/or MM Flags of an MM already stored within an MMBox using the MM1_mmbox_store.REQ, which contains the Message Reference, MM State and/or MM Flags obtained from any previous operation resulting in an MM being stored or updated in the MMBox.

The MMS Relay/Server shall respond with an MM1_mmbox_store.RES, which provides the status of the store or MM update request. The MM1_mmbox_store.RES shall unambiguously refer to the corresponding MM1_mmbox_store.REQ.

Support for MM1_mmbox_store transactions are optional for the MMS UA and mandatory for the MMS Relay/Server, if MMBoxes are supported.

8.1.9.2 Abnormal Operation

In this case the MMS Relay/Server shall respond with a MM1_mmbox_store.RES containing a status which indicates the reason the multimedia message was not able to be stored or updated, e.g. service not available, MMBoxes not supported, MMBox not enabled, MMBox over quota, MMBox system full, MMBox system I/O error.

If the MMS Relay/Server does not provide the MM1_mmbox_store.RES, the MMS User Agent should assume that the MM was not stored or updated, and should be able to recover.

8.1.9.3 Features

Message Reference: The message reference, in MM1_mmbox_store.REQ, indicates the MM to be stored or updated. This reference can be from MM1_notification.REQ, or the message reference from any of the store request responses (e.g.: MM1_mmbox_store.RES, MM1_mmbox_view.RES, MM1_forward.RES with Store, MM1_submit.RES with Store). The message reference, in MM1_mmbox_store.RES, indicates a reference to the newly stored or updated MM, suitable for subsequent usage.

MM State: The MMS User Agent may request that the MM be stored, or updated, with a specific MM State. In the absence of this value when the Message Reference refers to a new MM (i.e.: from MM1_notification.REQ), the default shall be the New state. In the absence of this value when the Message Reference refers to an MM already stored, the MM State will not be changed.

MM Flags: if present, one or more keyword values. In the absence of this element, no values are assumed for newly stored MMs and no changes made for already stored MMs.

Store Status: The MMS Relay/Server shall indicate the status of the MM1_mmbox_store.REQ in the Store Status information element of the associated MM1_mmbox_store.RES. The Store Status information element of the MM1_mmbox_store.RES may be supported with an explanatory text. If this text is available in the Store Status Text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Store Status text information element is at the discretion of the MMS service provider.

Transaction Identification: The MMS User Agent shall provide unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_mmbox_store.REQ and MM1_mmbox_store.RES as such.

8.1.9.4 Information Elements

Table 19: Information elements in the MM1_mmbox_store.REQ

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_mmbox_store.REQ.
Transaction ID	Mandatory	The identification of the MM1_mmbox_store.REQ/MM1_mmbox_store.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS User Agent.
Message Reference	Mandatory	The message reference from a MM1_notification.REQ or any previous store or MMBox view operation.
MM State	Optional	The state of the MM. If not present when the Message Reference is from a notification request, defaults to New. No value is assumed when the Message Reference refers to an already stored MM.
MM Flags	Optional	The keyword flags of the MM. There are no defaults.

Table 20: Information elements in the MM1_mmbox_store.RES

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_mmbox_store.RES.
Transaction ID	Mandatory	The identification of the MM1_mmbox_store.REQ/MM1_mmbox_store.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message reference	Mandatory	A reference to the newly stored or updated MM, suitable for subsequent usage (eg: with MM1_retrieve.REQ and MM1_mmbox_delete.REQ).
Store Status	Mandatory	The status of the MM store operation.
Store Status Text	Optional	Description which qualifies the status of the MM store request.

8.1.10 View the MMBox

This part of the MMS service describes the mechanism by which an MMS User Agent may request a listing of the MMs contained within the subscriber's MMBox. The MMS User Agent shall issue the request to view selected portions of MMs within the subscriber's MMBox, as well as information about the MMBox itself, from the corresponding MMS Relay/Server.

Involved abstract messages are outlined in Table 22 from type and direction points of view.

Table 21: Abstract messages for viewing the MMBox

Abstract messages	Type	Direction
MM1_mmbox_view.REQ	Request	MMS UA -> MMS Relay/Server
MM1_mmbox_view.RES	Response	MMS UA <- MMS Relay/Server

8.1.10.1 Normal Operations

The MMS User Agent will issue an MM1_mmbox_view.REQ message, containing optional request qualifiers, to the MMS Relay/Server. The MMS Relay/Server will respond with an abstract message, MM1_mmbox_view.RES, containing the resulting view data as the content of the abstract message. This information shall consist of a listing of the MMBox contents, possibly including information about the MMBox itself.

When the Start and Limit attributes are used, several pairs of MM1_mmbox_view.REQ and MM1_mmbox_view.RES transactions might be used in order to acquire the complete set of results.

8.1.10.2 Abnormal Operations

In this case the originator MMS Relay/Server shall respond with a MM1_mmbox_view.RES encapsulating a status which indicates the reason the operation could not be completed, e.g. corrupted abstract message, no subscription, service not available, MMBox not supported, MMBox not enabled, MMBox I/O error.

If the MMS Relay/Server does not provide the MM1_mmbox_view.RES the MMS User Agent should be able to recover.

8.1.10.3 Features

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

Message Selection: Messages which are to be viewed may be selected by a list of Message References or by a selection based on MM State and/or MM Flags keywords. Either Message Reference List or Select may be supplied in the

MM1_mmbox_view.REQ, which selects MMs for inclusion in the content in the MM1_mmbox_view.RES. In the absence of the Message Reference List, if Select is present and if any of the select keywords matches either the MM State or any of the MM flags on an MM in the MMBox, the requested information elements of the MM shall be included in the MM1_mmbox_view.RES (example: "Select: new" or "Select: draft"). The absence of both the Message References List and the Select information elements shall yield a listing of all MMs currently stored within the MMBox.

Partial views: MMBox view results may be received in its entirety, or may be indexed to start the view at a given MM offset relative to the selected MMs, and/or may be limited to finite number of MMs to be viewed. The Start information element is a number that may be used in the MM1_mmbox_view.REQ to index the first MM to be viewed, relative to the selected set of MMs, allowing partial views to be requested. If Start is absent, the first selected MM will begin the view results. The Limit information element is a number that may be provided in the MM1_mmbox_view.REQ to specify a limit for the number of MMs the information elements to which shall be returned in the MM1_mmbox_view.RES. If Limit is absent, all of the remaining MMs shall be returned.

MMBox Information: The Totals information element, if present on the request, indicates that the MMBox totals are requested. In the response, the Totals information element value shall be the total number of messages and/or total size, with the units (e.g.: Messages or Bytes) identified. The Quotas information element, if present on the request, indicates that the MMBox quotas, in terms of messages and/or size, are requested. In the response, the Quotas information element value shall be the quotas as the maximum number of messages allowed and/or the maximum size allowed, with the units (e.g.: Messages or Bytes) identified.

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

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

Request Status: This will be the status code for any failures of the MM1_mmbox_view.REQ command. The reason code given in the status information element of the MM1_mmbox_view.RES may be supported with an explanatory text further qualifying the status. If this text is available in the Request status text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Request status text information element is at the discretion of the MMS service provider.

Transaction Identification: The MMS User Agent shall provide unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_mmbox_view.REQ and MM1_mmbox_view.RES as such.

8.1.10.4 Information Elements

Table 22: Information elements in the MM1_mmbox_view.REQ

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_mmbox_view.REQ.
Transaction ID	Mandatory	The identification of the MM1_mmbox_view.REQ/MM1_mmbox_view.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS User Agent.
Attributes list	Optional	A list of information elements that are to be returned as a group for each MM to be listed in the MM1_mmbox_view.RES. If absent, the default list shall apply.
Message Reference list	Optional	One or more Message References which are to have their information elements listed.
Select	Optional	A list of MM State or MM Flags keywords, by which MMs within the MMBox can be selected, if the Message Reference list is absent.
Start	Optional	A number, indicating the index of the first MM of those selected to have information elements returned in the response. If this is absent, the first item selected is returned.
Limit	Optional	A number indicating the maximum number of selected MMs to their information elements returned in the response. If this is absent, information elements from all remaining MMs are returned.
Totals	Optional	Indicates that the current total number of messages and/or size contained by the MMBox are requested
Quotas	Optional	Indicates that the current message and/or size quotas are requested

Table 23: Information elements in the MM1_mmbox_view.RES

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_mmbox_view.RES.
Transaction ID	Mandatory	The identification of the MM1_mmbox_view.REQ/MM1_mmbox_view.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
MM Listing	Conditional	The requested listing of the selected MMs, which shall be one or more groups of information elements, one for each MM listed. Each MM group shall include: a Message Reference, and may include additional information elements as well. If absent, no MMs were found or selected.
Request Status	Conditional	If an error occurs, this is a code indicating the exact cause of the error. For successful responses, the Status may be returned with a corresponding success code.
Request Status Text	Optional	If an error occurs, this may contain explanatory text that corresponds to the Request Status.
Totals	Conditional	The total number of messages and/or bytes for the MMBox, identified with Messages or Bytes, respectively, depending upon the presence of Totals in the request.
Quotas	Conditional	The quotas of the MMBox in messages and/or bytes identified with Messages or Bytes, respectively, depending upon the presence of Quotas in the request.

8.1.11 Uploading and Persistently Storing Multimedia Messages

This section describes the uploading and storage of an MM into the subscriber's MMBox. Requests from an MMS User Agent to upload and store MMs in the subscriber's MMBox shall be sent to the corresponding MMS Relay/Server. Involved abstract messages are outlined in the table below from type and direction points of view.

Table 24: Abstract messages for uploading and storing MMs

Abstract messages	Type	Direction
MM1_mmbox_upload.REQ	Request	MMS UA -> MMS Relay/Server
MM1_mmbox_upload.RES	Response	MMS UA <- MMS Relay/Server

8.1.11.1 Normal operation

The MMS User Agent shall submit a request to upload and store an MM into the MMBox using the MM1_mmbox_upload.REQ, which contains MMS control information and the MM content.

The MMS Relay/Server shall respond with an MM1_mmbox_upload.RES, which provides the status of the store request. The MM1_mmbox_upload.RES shall unambiguously refer to the corresponding MM1_mmbox_upload.REQ.

Support for MM1_mmbox_upload.REQ is optional for the MMS UA, support for MM1_mmbox_upload.RES is mandatory for the MMS Relay/Server.

8.1.11.2 Abnormal Operation

In this case the MMS Relay/Server shall respond with a MM1_mmbox_upload.RES encapsulating a status which indicates the reason the multimedia message was not accepted, e.g. service not available, MMBoxes not supported, MMBox not enabled, MMBox over quota, MMBox system full, MMBox system I/O error.

If the MMS Relay/Server does not provide the MM1_mmbox_upload.RES the MMS User Agent should assume that the MM was not stored, and should be able to recover.

8.1.11.3 Features

Addressing: One or several MM recipients and the originator of a submitted MM may be indicated in the addressing-relevant information field(s) of the MM1_mmbox_upload.REQ. It is possible for incompletely composed MMs to be stored, which means that the addressing-relevant information fields may be empty.

Time stamping: The originator MMS User Agent may time stamp the MM.

Message class, priority and subject: The MM may be qualified further by adding a message class, priority and/or subject to the MM in the MM1_mmbox_upload.REQ. Additional qualifiers may be added.

Identification: For an MM that has been stored persistently, the MMS Relay/Server shall always provide a message identification in the MM1_mmbox_upload.RES.

MM State: The MMS User Agent may request that the submitted MM be stored with a specific MM State. In the absence of this value, the default shall be the Draft state.

MM Flags: if present, one or more keyword values.

Content Type: The MIME type of the MM shall always be identified.

Content: The content of the MM to be uploaded and stored.

Request Status: The MMS Relay/Server shall indicate the status of the MM1_mmbox_upload.REQ in the associated MM1_mmbox_upload.RES. The reason code given in the status information element of the MM1_mmbox_upload.RES may be supported with an explanatory text further qualifying the status. If this text is available in the Request status text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Request status text information element is at the discretion of the MMS service provider.

Transaction Identification: The MMS User Agent shall provide unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_mmbox_upload.REQ and MM1_mmbox_upload.RES as such.

8.1.11.4 Information Elements

Table 25: Information elements in the MM1_mmbox_upload.REQ

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_mmbox_upload.REQ.
Transaction ID	Mandatory	The identification of the MM1_mmbox_upload.REQ/MM1_mmbox_upload.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS User Agent.
Recipient address	Optional	The address of the recipient(s).
Sender address	Optional	The address of the MM originator.
Message class	Optional	The class of the MM (e.g., personal, advertisement, information service)
Date and time	Optional	The time and date of the upload of the MM (time stamp).
Time of Expiry	Optional	The desired time of expiry for the MM or reply-MM (time stamp).
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient (time stamp).
Priority	Optional	The priority (importance) of the message.
MM State	Optional	The state of the MM. Will default to the Draft state if absent.
MM Flags	Optional	The keyword flags of the MM. There are no defaults.
Subject	Optional	The title of the whole multimedia message.
Content type	Mandatory	The content type of the MM's content
Content	Mandatory	The content of the multimedia message

Table 26: Information elements in the MM1_mmbox_upload.RES

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_mmbox_upload.RES.
Transaction ID	Mandatory	The identification of the MM1_mmbox_upload.REQ/MM1_mmbox_upload.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message reference	Mandatory	A reference to the newly stored MM, suitable for subsequent usage (e.g.: with MM1_retrieve.REQ, MM1_mmbox_delete.REQ, etc.).
Request Status	Mandatory	The status of the MM upload operation.
Request Status Text	Optional	Description which qualifies the status of the MM submit request.

8.1.12 Deletion of Stored Multimedia Messages

This section describes the deletion of one or more Multimedia Messages (MMs) from the subscriber's MMBox. Requests from an MMS User Agent to delete MMs from the subscriber's MMBox will always be sent to the corresponding MMS Relay/Server. Involved abstract messages are outlined in the table below from type and direction points of view.

Table 27: Abstract messages for MM deletion in MMS

Abstract messages	Type	Direction
MM1_mmbox_delete.REQ	Request	MMS User Agent -> MMS Relay/Server
MM1_mmbox_delete.RES	Response	MMS User Agent <- MMS Relay/Server

8.1.12.1 Normal Operations

The MMS User Agent may issue an MM1_mmbox_delete.REQ message to the MMS Relay/Server with one or more Message References. The MMS Relay/Server shall perform the requested deletions and return an MM1_mmbox_delete.RES which shall contain a successful response code, or shall contain any error status and optional text.

If multiple Message References are successfully deleted, the response shall contain only a successful Status code and no Message Reference.

Support for MM1_mmbox_delete.REQ is optional for the MMS UA, and mandatory for the MMS Relay/Server, if MMBoxes are supported.

8.1.12.2 Abnormal Operations

In this case the MMS Relay/Server shall respond with a MM1_mmbox_delete.RES encapsulating a status which indicates the reason the multimedia message was not deleted, e.g. corrupted abstract message, invalid message reference, service not available, MMBoxes not supported, MMBox not enabled, MMBox system I/O error.

If the MMS Relay/Server does not provide the MM1_mmbox_delete.RES the MMS User Agent should be able to recover.

When multiple Message References are submitted for deletion and an error occurs, then the Message Reference of each MM in error will be returned with an appropriate error code and text.

8.1.12.3 Features

Message Reference: The message reference indicating the MM to be deleted. Multiple message references may be given, allowing multiple MMs to be deleted within the same transaction.

Request Status: The MMS Relay/Server shall indicate the status of the MM1_mmbox_delete.REQ in the associated MM1_mmbox_delete.RES. The reason code given in the status information element of the MM1_mmbox_delete.RES may be supported with an explanatory text further qualifying the status. If this text is available in the Request status text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Request status text information element is at the discretion of the MMS service provider.

Transaction Identification: The MMS User Agent shall provide unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Version: The MMS protocol shall provide unique means to identify the current version of the particular protocol environment.

Message Type: The type of the message used on the reference point MM1 indicating MM1_mmbox_delete.REQ and MM1_mmbox_delete.RES as such.

8.1.12.4 Information Elements

Table 28: Information elements in the MM1_mmbox_delete.REQ

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_mmbox_delete.REQ.
Transaction ID	Mandatory	The identification of the MM1_mmbox_delete.REQ/MM1_mmbox_delete.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS User Agent.
Message Reference	Mandatory	The Message Reference of the message to be deleted; this element may occur multiple times, once for each MM to be deleted.

Table 29: Information elements in the MM1_mmbox_delete.RES

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM1_mmbox_delete.RES.
Transaction ID	Mandatory	The identification of the MM1_mmbox_delete.REQ/MM1_mmbox_delete.RES pair.
MMS Version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server.
Message Reference	Conditional	A reference to the message in error, if any, to which the following information elements apply. Multiple message references may occur.
Request Status	Mandatory	The status of the MM deletion request; multiple Statuses may occur, each one referring to the immediately preceding Message Reference.
Request Status Text	Optional	Description which qualifies the status of the MM deletion request; multiple Status Text entries may occur, each one corresponding to the immediately preceding Request Status.

8.2 Technical realisation of MMS on reference point MM2

This clause may be specified further in future releases.

8.3 Technical realisation of MMS on reference point MM3

This clause defines the interworking between MMS Relay/Servers and External Servers. The interworking with these External Servers may be based on the Internet Protocol, IP.

Reference point MM3 should be based upon existing standards e.g. HTTP, SMTP. Several examples of realisations can be found in Annex A. In addition, MMS service providers or network operators may develop solutions for their particular needs.

8.3.1 Sending of MMs

For the purpose of sending an MM to an external messaging system the originator MMS Relay/Server should convert the MM into a format appropriate for the external messaging system.

The originator MMS Relay/Server should use the information elements associated with the MM to define the control information needed for the transfer protocol in use. The originator MMS Relay/Server may use the information elements associated with the MM to convey these as part of the converted message.

E.g., the originator MMS Relay/Server should use the recipient's address(es) as indicated in the corresponding MM to route the converted message towards its recipient(s). In addition to this, it may e.g. convey message class, priority and subject of the associated MM as part of the converted message.

8.3.2 Receiving of messages

For the purpose of receiving a message from an external messaging system the recipient MMS Relay/Server should convert incoming messages to the MM format in use by the recipient(s) that form part of the recipient MMS Service Provider's domain.

The recipient MMS Relay/Server may convert control information received from the External Server into appropriate information elements of an MM.

E.g., the recipient MMS Relay/Server should use the MSISDNs associated with an SMS-Short Message to define the sender's and recipient's addresses of the MM. In addition to this, it may e.g. map a priority assigned to an incoming SMS-Short Message to the MM's priority.

8.3.3 Discovery of new messages on External Servers

For discovery of incoming messages from external messaging systems different mechanisms may be utilised, e.g.:

- forwarding of messages from External Server to MMS Relay/Server, based on criteria defined by the user or application;
- notification of messages from an External Server, followed by retrieval by the MMS User Agent via the MMS Relay/Server;
- periodic polling for messages on External Server, followed by retrieval by the MMS User Agent via the MMS Relay/Server.

More detailed specification of these mechanisms should be further elaborated in future versions of the present document.

8.4 Technical realisation of MMS on reference point MM4

An MMSE shall be able to discover a peer MMSE as described in clause 7.2.2. This clause defines the interworking between MMS Relay/Servers once the peer systems are aware of each other being an MMSE.

8.4.1 Routing Forward of a Multimedia Message

This part of MMS service covers the routing forward of an MM from an originator MMS Relay/Server to a recipient MMS Relay/Server of different MMSEs. Involved abstract messages are outlined in Table 31 from type and direction points of view.

Table 30: Abstract messages for forwarding of MM in MMS

Abstract messages	Type	Direction
MM4_forward.REQ	Request	Originator MMS Relay/Server -> recipient MMS Relay/Server
MM4_forward.RES	Response	Recipient MMS Relay/Server -> originator MMS Relay/Server

8.4.1.1 Normal operation

After successful discovery of its peer entity the originator MMS Relay/Server shall route an MM forward to the recipient MMS Relay/Server using the MM4_forward.REQ, which contains MMS control information and the MM content. The recipient MMS Relay/Server shall respond with a MM4_forward.RES, which provides the status of the request if an MM4_forward.RES was requested.

Support for MM4_forward.REQ and MM4_forward.RES is mandatory for the MMS Relay/Server.

8.4.1.2 Abnormal Operation

In this case the recipient MMS Relay/Server shall respond with a MM4_forward.RES, which includes a status that indicates the reason the multimedia message was not accepted, e.g. no subscription, bad address, network not reachable, etc., if an MM4_forward.RES was requested.

8.4.1.3 Features

Addressing: The recipient(s) of a routed forward MM shall be indicated in the addressing-relevant information field(s) of the MM4_forward.REQ. If the addresses of several MM recipients of the MM are associated with a single MMS Relay/Server then more than one MM recipient may be indicated in the addressing-relevant information field(s) of the MM4_forward.REQ. Addresses of all MM recipients of the MM (including those that are not associated with the MMS Relay/Server the MM is forwarded to) shall be conveyed in the MM4_forward.REQ for the MM recipient's informational purposes.

The MM originator of a routed forward MM shall be indicated in addressing-relevant information field(s) of the MM4_forward.REQ. If the originator MMS User Agent requested to hide its identity from the MM recipient then the information about this request shall also be conveyed in the MM4_forward.REQ.

Time stamping: The MM4_forward.REQ shall carry the date and time-of the most recent handling of the MM by an MMS User Agent (i.e. either submission or forwarding of the MM). In the case of forwarding the MM4_forward.REQ may carry the date and time of the submission of the MM.

Time constraints: If the originator MMS User Agent requested a time of expiry for the MM then this information shall be conveyed in the MM4_forward.REQ.

Message class, priority and subject: If the MM is qualified further by message class, priority, subject and/or additional qualifiers then this information shall be conveyed in the MM4_forward.REQ.

Reporting: If the originator MMS User Agent requested a delivery report for the MM then the information about this request shall be conveyed in the MM4_forward.REQ. If, in addition, the originator MMS User Agent requested a read-reply report then the information about this request shall be conveyed in the MM4_forward.REQ.

Identification: The originator MMS Relay/Server shall always provide a unique message identification for an MM, which it routed forward to a peer MMS Relay/Server in the MM4_forward.REQ.

Content Type: The type of the multimedia content shall always be identified in the MM4_forward.REQ.

Acknowledgement Request: The originator MMS Relay/Server may request a MM4_forward.RES from the recipient MMS Relay/Server acknowledging the successful reception of the MM.

Request Status: The recipient MMS Relay/Server shall indicate the status of the MM4_forward.REQ in the associated MM4_forward.RES if requested.

Message Type: The type of message used on reference point MM4 indicating MM4_forward.REQ and MM4_forward.RES as such.

Transaction Identification: If the originator MMS Relay/Server requests an MM4_forward.RES from the recipient MMS Relay/Server it shall provide a transaction identification within an MM4_forward.REQ. The MM4_forward.RES shall unambiguously refer to the corresponding MM4_forward.REQ using the same transaction identification.

Forward_Counter: A Counter indicating the number of times the particular MM was forwarded.

Previously-sent-by: The address(es) of the MMS User Agent(s) that submitted or forwarded the MM prior to the last forwarding MMS User Agent. In the multiple forwarding case the order of the provided addresses shall be indicated and the address of the originator MMS User Agent shall be marked, if present.

NOTE: The address of the last forwarding MMS User Agent is carried in other addressing elements.

Version: The MMS protocol shall provide unique means to identify the current version in the particular protocol environment.

8.4.1.4 Information Elements

Table 31: Information elements in the MM4_forward.REQ.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the originator MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_forward.REQ".
Transaction ID	Mandatory	The identification of the MM4_forward.REQ/MM4_forward.RES pair.
Message ID	Mandatory	The identification of the MM.
Recipient(s) address	Mandatory	The address(es) of the MM recipient(s). Multiple addresses are possible.
Sender address	Mandatory	The address of the MMS User Agent that most recently handled the MM, i.e. that either submitted or forwarded the MM. If the originator MMS User Agent has requested her address to be hidden from the recipient her address shall not be provided to the recipient.
Content type	Mandatory	The content type of the MM's content.
Message class	Conditional	The class of the MM (e.g., personal, advertisement, information service) if specified by the originator MMS User Agent
Date and time	Mandatory	The time and date of the most recent handling (i.e. either submission or forwarding) of the MM by an MMS User Agent (<u>time stamp</u>).
Time of Expiry	Conditional	The desired time of expiry for the MM if specified by the originator MMS User Agent (<u>time stamp</u>).
Delivery report	Conditional	A request for delivery report if the originator MMS User Agent has requested a delivery report for the MM.
Priority	Conditional	The priority (importance) of the message if specified by the originator MMS User Agent.
Sender visibility	Conditional	A request to show or hide the sender's identity when the message is delivered to the MM recipient if the originator MMS User Agent has requested her address to be hidden from the recipient.
Read reply	Conditional	A request for read reply report if the originator MMS User Agent has requested a read-reply report for the MM..
Subject	Conditional	The title of the whole MM if specified by the originator MMS User Agent.
Acknowledgement Request	Optional	Request for MM4_forward.RES
Forward_counter	Conditional	A counter indicating the number of times the particular MM was forwarded.
Previously-sent-by	Optional	In case of forwarding this information element contains one or more address(es) of MMS User Agent(s) that handled (i.e. forwarded or submitted) the MM prior to the MMS User Agent whose address is contained in the Sender address information element. The order of the addresses provided shall be marked. The address of the originator MMS User Agent shall be marked, if present.
Previously-sent-date-and-time	Optional	The date(s) and time(s) associated with submission and forwarding event(s) prior to the last handling of the MM by an MMS User Agent (<u>time stamps</u>).
Content	Conditional	The unaltered content of the multimedia message if specified by the originator MMS User Agent.

Table 32: Information elements in the MM4_forward.RES.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_forward.RES".
Transaction ID	Mandatory	The identification of the MM4_forward.REQ/MM4_forward.RES pair.
Message ID	Mandatory	The Message ID of the MM which has been forwarded within the corresponding MM4_forward.REQ
Request Status	Mandatory	The status of the request to route forward the MM.
Request Status text	Optional	Status text corresponding to the Request Status

8.4.2 Routing Forward of a Delivery Report

This part of MMS service covers the routing forward of a delivery report from recipient MMS Relay/Server to originator MMS Relay/Server. The involved abstract messages are outlined in Table 34 from type and direction points of view.

Table 33: Abstract messages for routing delivery reports forward in MMS

Abstract Message	Type	Direction
MM4_delivery_report.REQ	Request	Recipient MMS Relay/Server -> originator MMS Relay/Server
MM4_delivery_report.RES	Response	Originator MMS Relay/Server -> recipient MMS Relay/Server

8.4.2.1 Normal Operation

After successful discovery of its peer entity the recipient MMS Relay/Server shall route a previously created delivery report forward to the originator MMS Relay/Server using the MM4_delivery_report.REQ which contains MMS control information only. The originator MMS Relay/Server shall respond with a MM4_delivery_report.RES, which provides the status of the MM4_delivery_report.REQ if an MM4_delivery_report.RES was requested.

Support for MM4_delivery_report.REQ and MM4_delivery_report.RES is mandatory for the MMS Relay/Server.

8.4.2.2 Abnormal Operation

In this case the originator MMS Relay/Server shall respond with a MM4_delivery_report.RES encapsulating a status which indicates the reason the delivery report was not accepted, if an MM4_delivery_report.RES was requested.

8.4.2.3 Features

Addressing: Both the address of the recipient (which is the MM originator) and the address of the originator (which is the MM recipient) of a routed forward delivery report shall be provided to the originator MMS Relay/Server in the addressing-relevant information field of MM4_delivery_report.REQ.

Identification: In the MM4_delivery_report.REQ the recipient MMS Relay/Server shall always provide the original message identification of the MM that the delivery report corresponds to as obtained from the associated MM4_forward.req.

MM Time stamping: The MM4_delivery_report.REQ shall carry the time and date of handling of the MM (e.g. retrieval, expiry, rejection).

MM Status: The MM4_delivery_report.REQ shall carry the status of the MM delivery, e.g. retrieved, rejected, expired or indeterminate.

Acknowledgement Request: The recipient MMS Relay/Server may request a MM4_delivery_report.RES from the originator MMS Relay/Server acknowledging the successful reception of the delivery report.

Request Status: The originator MMS Relay/Server shall indicate the status of the MM4_delivery_report.REQ in the associated MM4_delivery_report.RES if requested.

Version: The MMS protocol shall provide unique means to identify the current version in the particular protocol environment.

Message Type: The type of message used on reference point MM4 indicating MM4_delivery_report.REQ and MM4_delivery_report.RES as such.

Transaction Identification: If the originator MMS Relay/Server requests an MM4_delivery_report.RES from the recipient MMS Relay/Server it shall provide a transaction identification within an MM4_delivery_report.REQ. The MM4_delivery_report.RES shall unambiguously refer to the corresponding MM4_delivery_report.REQ using the same transaction identification.

8.4.2.4 Information Elements

Table 34: Information elements in the MM4_delivery_report.REQ.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_delivery_report.REQ".
Transaction ID	Mandatory	The identification of the MM4_delivery_report.REQ/MM4_delivery_report.RES pair.
Message ID	Mandatory	The identification of the original MM.
Recipient address	Mandatory	The address of the MM recipient of the original MM.
Sender address	Mandatory	The address of the MM originator of the original MM.
Date and time	Mandatory	Date and time the MM was handled (retrieved, expired, rejected, etc.).(time stamp)
Acknowledgement Request	Optional	Request for MM4_delivery_report.RES
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
MM Status text	Optional	Status text corresponding to the MM Status

Table 35: Information elements in the MM4_delivery_report.RES.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_delivery_report.RES".
Transaction ID	Mandatory	The identification of the MM4_delivery_report.REQ/MM4_delivery_report.RES pair.
Message ID	Mandatory	The Message ID of the MM which caused the delivery report
Request Status	Mandatory	The status of the associated MM4_delivery_report.REQ.
Request Status text	Optional	The text explanation corresponding to the Request Status

8.4.3 Routing Forward of a Read-Reply Report

This part of MMS service covers the routing forward of a read-reply report from the recipient MMS Relay/Server to the originator MMS Relay/Server. The involved abstract messages are outlined in Table 37 from type and direction points of view.

Table 36: Abstract messages for sending and receiving read-reply reports in MMS

Abstract messages	Type	Direction
MM4_read_reply_report.REQ	Request	Recipient MMS Relay/Server -> originator MMS Relay/Server
MM4_read_reply_report.RES	Response	Originator MMS Relay/Server -> recipient MMS Relay/Server

8.4.3.1 Normal Operation

After successful discovery of its peer entity the recipient MMS Relay/Server shall route a read-reply report forward, that has been previously submitted by the recipient MMS User Agent, to the originator MMS Relay/Server using the MM4_read_reply_report.REQ which contains MMS control information only. The recipient MMS Relay/Server shall respond with a MM4_read_reply_report.RES, which provides the status of the MM4_read_reply_report.REQ if an MM4_read_reply_report.RES was requested.

Support for MM4_read_reply_report.REQ and MM4_read_reply_report.RES is mandatory for the MMS Relay/Server.

8.4.3.2 Abnormal Operation

In this case the originator MMS Relay/Server shall respond with a MM4_read_reply_report.RES encapsulating a status which indicates the reason the read-reply report was not accepted, if an MM4_read_reply_report.RES was requested.

8.4.3.3 Features

Addressing: Both, the address of the recipient (which is the MM originator) and the address of the originator (which is the MM recipient) of a routed forward read-reply report shall be provided to the originator MMS Relay/Server in the addressing-relevant information field of MM4_read_reply_report.REQ.

Identification: In the MM4_read_reply_report.REQ the recipient MMS Relay/Server shall always provide the original message identification of the MM that the read-reply report corresponds to as obtained from the associated MM4_forward.req.

MM Time Stamping: The MM4_read_reply_report.REQ shall carry the time-stamp associated with the read-reply report.

Read Status: The MM4_read_reply_report.REQ shall carry the status of the MM handling, e.g. read or without being read.

Acknowledgement Request: The recipient MMS Relay/Server may request a MM4_read_reply_report.RES from the originator MMS Relay/Server acknowledging the successful reception of the read-reply report.

Request Status: The originator MMS Relay/Server shall indicate the status of the MM4_read_reply_report.REQ in the associated MM4_read_reply_report.RES if requested.

Version: The MMS protocol shall provide unique means to identify the current version in the particular protocol environment.

Message Type: The type of message used on reference point MM4 indicating MM4_read_reply_report.REQ and MM4_read_reply_report.RES as such.

Transaction Identification: If the originator MMS Relay/Server requests an MM4_read_reply_report.RES from the recipient MMS Relay/Server it shall provide a transaction identification within an MM4_read_reply_report.REQ. The MM4_read_reply_report.RES shall unambiguously refer to the corresponding MM4_read_reply_report.REQ using the same transaction identification.

8.4.3.4 Information Elements

Table 37: Information elements in the MM4_read_reply_report.REQ.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.REQ".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e. the originator of the read-reply report.
Sender address	Mandatory	The address of the MM originator of the original MM, i.e. the recipient of the read-reply report.
Message ID	Mandatory	The message ID of the original MM.
Date and time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Acknowledgement Request	Optional	Request for MM4_read_reply_report.RES
Read Status	Mandatory	Status of the MM, e.g. Read, Deleted without being read
Read Status text	Optional	The text explanation corresponding to the Read Status

Table 38: Information elements in the MM4_read_reply_report.RES.

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.RES".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Request Status	Mandatory	The status of the associated MM4_read_reply_report.REQ.
Request Status text	Optional	The textual explanation for the Request Status

8.4.4 Message format on MM4

All elements of an MM shall be included within a single SMTP "mail" message which shall be organised as MIME message with the appropriate 'Content-Type' [44] header field value (e.g. multipart/related, multipart/mixed, image/jpeg, text/plain). All MM elements shall be of standard MIME content types. In addition to the MM elements this SMTP "mail" message should reflect all MMS information elements according to the definitions in clauses 6 and 8.4.

All other MMS-related messages, such as delivery reports, read-reply reports, transfer acknowledgements shall each be transferred as a single SMTP "mail" message which shall be organised as MIME type text/plain. This SMTP "mail" message should reflect all MMS information elements as defined above.

8.4.4.1 Message header fields

MMS information elements should be reflected as "header fields" according to STD 11 in the SMTP "mail" message. See RFC 1327 [53] for a detailed description of the X.400 header to STD 11 headers mappings. Some of the mappings are context dependent.

For those information elements that cannot be mapped to standard STD 11 "header fields" the "X-" extensions mechanism shall be used with an "X-MMS-" prefix.

The mapping of information elements to commonly used (RFC 1327) [53] or standard STD 11 "header fields" is shown in following tables.

8.4.4.2 MM4_Forward.REQ Header Mappings

The MM4 Forward request header mappings are detailed below.

Table 39: MM4_Forward.REQ Information Elements to STD 11 Header Mappings

Information element	STD 11 Headers
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Message ID	X-Mms-Message-ID:
Recipient(s) address	To:, CC:
Sender address	From:
Content type	Content-Type:
Message class	X-Mms-Message-Class:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Delivery report	X-Mms-Delivery-Report:
Priority	X-Mms-Priority:
Sender visibility	X-Mms-Sender-Visibility:
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Acknowledgement Request	X-Mms-Ack-Request:
Forward counter	X-Mms-Forward-Counter:
Previously-sent-by	X-Mms-Previously-sent-by:
Previously-sent-date and-time	X-Mms-Previously-sent-date-and-time:
Content	<message body>
-	Sender:
-	X-Mms-Originator-System:
-	Message-ID:

The table above indicates the mappings from MM4_Forward.REQ information elements to the corresponding STD 11 [5] headers.

The MM4 information element Message ID is not directly mapped to a corresponding STD 11 "Message-ID:" header. Each STD 11 message must have a unique message id, which is carried in the "Message-ID:" header.

Content-type maps directly since both are defined as being MIME content types as specified in RFC 2046 [6].

The STD 11 "From:" header is determined by the mail user agent, or, in this case, the MMS User Agent. This corresponds to the MM4 information element Sender address, as set by the MMS User Agent or MMS Relay/Server.

STD 11 messages are required to have a "Sender:" header that indicates the originator address (as determined by the SMTP "MAIL From" command).

The STD 11 "X-Mms-Originator-System:" header shall be used to indicate the address that the recipient MMS Relay/Server shall use as the recipient address with MM4_Forward.RES.

8.4.4.3 MM4_Forward.RES Header Mappings

The MM4 Forward response information element mappings are detailed in the table below.

The transmission of the Forward Response from the recipient MMS Relay/Server requires a properly addressed STD 11 message. While the addressing of the MM4_Forward.REQ is clearly that of the intended recipients and originator, the MM4_Forward.RES addressing is related to neither the recipients nor the originator of the original MM. Instead, the MM4_Forward.RES addressing is based on special systems addresses. MMS Service Provider should configure appropriate system addresses which will be used as both the recipient and originator of these administrative messages. It is suggested that the administrative addressing be based on the pattern:

system-user@mms-relay-host.mmse-domain.

The STD 11 "To:" header value shall be according to the STD 11 "X-Mms-Originator-System:" header value provided in MM4_Forward.REQ.

Table 40: MM4_Forward.RES Information Elements to STD 11 Header Mappings

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Message ID	X-Mms-Message-ID:
Request Status	X-Mms-Request-Status-Code:
Request Status text	X-Mms-Status-Text:
-	Sender:
-	To:
-	Message-ID:
-	Date:

The STD 11 "Sender:" and "To:" headers contain system addresses as described above, and do not map to MM4_Forward.RES information elements. The STD 11 message requires a "Date:" header, but there currently is no corresponding MM4_Forward.RES information element.

8.4.4.4 MM4_Delivery_report.REQ Header Mappings

The mappings of the MM4_Delivery_report.REQ information elements to STD 11 headers is detailed in the table below.

Table 41: MM4_Delivery_report.REQ Information Elements to STD 11 Header Mappings

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Message ID	X-Mms-Message-ID:
Recipient address	From:
Sender address	To:
Date and time	Date:
Acknowledgement Request	X-Mms-Ack-Request:
MM Status	X-Mms-MM-Status-Code:
MM Status Text	X-Mms-Status-text:
-	Sender:
-	Message-ID:

The meaning of Recipient address is that of the original MM, from whose MMS User Agent this Delivery-report is being generated. The meaning of Sender address is that of the original MM, to whom the Delivery-report is being sent.

The value of the STD 11 "Sender:" header is a system administration address, to which the corresponding response will be sent.

The STD 11 "Sender:" header value is automatically set to the system address of the MMS Relay/Server.

The STD 11 "Message-ID:" value is automatically generated by the MMS Relay/Server, in conformance to STD 11 [5].

The other header mappings from information elements are similar to those already described above.

8.4.4.5 MM4_Delivery_report.RES Header Mappings

The mappings of the M4_Delivery_report.RES information elements to STD 11 headers is detailed in the table below.

Table 42: MM4_Delivery_report.RES Information Elements to STD 11 Header Mappings

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Message ID	X-Mms-Message-ID:
Request Status	X-Mms-Request-Status-Code:
Request Status text	X-Mms-Status-Text:
-	Sender:
-	To:
-	Message-ID:
-	Date:

The STD 11 "Sender:" header value is automatically set to the system address of the MMS Relay/Server that is replying to the MM4_Delivery_report.REQ.

The STD 11 "To:" header value of the MM4_Delivery_report.RES abstract message is obtained from the STD 11 "Sender:" header value of the corresponding MM4_Delivery_report.REQ.

The STD 11 "Date" and "Message-ID:" headers, which have no corresponding MM4_Forward.RES information elements, are automatically provided values by the MMS Relay/Server.

8.4.4.6 MM4_Read_reply_report.REQ Header Mappings

The mappings of the MM4_Read_reply_report.REQ information elements to STD 11 headers is detailed in the table below.

Table 43: MM4_Read_reply_report.REQ Information Elements to STD 11 Header Mappings

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Recipient address	From:
Sender address	To:
Message ID	X-Mms-Message-ID:
Date and time	Date:
Acknowledgement Request	X-Mms-Ack-Request:
Read Status	X-Mms-Read-Status:
Read Status text	X-Mms-Status-Text:
-	Sender:
-	Message-ID:
-	Date:

The meaning of Recipient address is that of the original MM, from whose MMS User Agent this Read-reply-report is being generated. The meaning of Sender address is that of the original MM, to whom the Read-reply-report is being sent.

The value of the Sender: header is a system address, to which the corresponding MM4_Read_reply_report.RES shall be sent.

The "Message-ID:", and "Date:" headers, which have no corresponding information element in the MM4_Read_reply_report.REQ, are automatically provided appropriate values by the MMS Relay/Server.

8.4.4.7 MM4_Read_reply_report.RES Header Mappings

The mappings of the MM4_Read_reply_report.RES information elements to STD 11 headers is detailed in the table below.

Table 44: MM4_Read_reply_report.RES Information Elements to STD 11 Header Mappings

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Request Status	X-Mms-Request-Status-Code:
Request Status text	X-Mms-Status-Text:
-	Sender:
-	To:
-	Message-ID:
-	Date:

The STD 11 "Sender:" header value shall be the system address of the MMS Relay/Server that is replying to the MM4_Delivery_report.REQ.

The STD 11 "To:" header value of the MM4_Delivery_report.RES abstract message shall be obtained from the corresponding MM4_Delivery_report.REQ Sender: header value.

The STD 11 "Date:" and "Message-ID:" headers, which do not have corresponding information elements, shall be provided appropriate values automatically by the MMS Server/Relay.

8.4.4.8 Header Field Value Range

MMS information elements that are mapped to standard STD 11 "header fields", i.e. which do not have an "X-Mms-" prefix, should be used according to [5].

The rest of the header definitions used in this clause, including the mechanisms and pre-defined tokens, are described in an augmented Backus-Naur Form (BNF) defined in [48], similar to that used by RFC 822 [5]. Implementers will need to be familiar with the notation in order to understand these definitions.

For the residual MMS information elements the following applies:

X-Mms-3GPP-MMS-Version:

```
3GPP-MMS-Version = "X-Mms-3GPP-MMS-Version" ":" 1*DIGIT "." 1*DIGIT "."
1*DIGIT
```

Note that the numbers MUST be treated as separate integers and that each may be incremented higher than a single digit. Thus, 2.1.4 is a lower version than 2.1.13, which in turn is lower than 2.3.0. Leading zeros shall be ignored by recipient MMS Relay/Server and shall NOT be sent. The version is according to the version of the present document (see also clause "Foreword").

X-Mms-Message-Type:

```
Message-type = "X-Mms-Message-Type" ":" ( "MM4_forward.REQ" |
"MM4_forward.RES" | "MM4_delivery_report.REQ" | "MM4_delivery_report.RES" |
"MM4_read_reply_report.REQ" | "MM4_read_reply_report.RES" )
```

X-Mms-Transaction-Id:

```
Transaction-id = "X-Mms-Transaction-ID" ":" quoted-string
```

X-Mms-Message-Id:

```
Message-id = "X-Mms-Message-ID" ":" quoted-string
```

X-Mms-Message-Class:

```
Message-class = "X-Mms-Message-Class" ":" ( Class-identifier | quoted-string
)
```

```
Class-identifier = "Personal" | "Advertisement" | "Informational" | "Auto"
```

X-Mms-Expiry:

Expiry-value = "X-Mms-Expiry" ":" (HTTP-date | delta-seconds)

X-Mms-Delivery-Report:

Delivery-report = "X-Mms-Delivery-Report" ":" ("Yes" | "No")

X-Mms-Priority:

Priority = "X-Mms-Priority" ":" ("Low" | "Normal" | "High")

X-Mms-Sender-Visibility:

Sender-visibility = "X-Mms-Sender-Visibility" ":" ("Hide" | "Show")

X-Mms-Read-Reply:

Read-reply = "X-Mms-Read-Reply" ":" ("Yes" | "No")

X-Mms-Ack-Request:

Ack-Request = "X-Mms-Ack-Request" ":" ("Yes" | "No")

X-Mms-Request-Status-Code:

Request-status-code = "X-Mms-Request-Status-Code" ":" ("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")

The meaning of the X-Mms-Request-Status-Code header field is further described in section 8.4.4.10 of this specification.

X-Mms-MM-Status-Code:

MM-Status-Code = "X-Mms-MM-Status-Code" ":" ("Expired" | "Retrieved" |
"Rejected" | "Deferred" | "Indeterminate" | "Forwarded" | "Unrecognised")

X-Mms-Read-Status:

Read-Status = "X-Mms-Read-Status" ":" ("Read" | "Deleted without being read")

X-Mms-Forward-Counter

Forward-Counter = "X-Mms-Forward-Counter" ":" 1*DIGIT

X-Mms-Previously-sent-by

Previously-sent-by = "X-Mms-Previously-sent-by" ":" 1*DIGIT "," mailbox

The address should be machine-usable, as defined by "mailbox" in RFC 2822 [5].

NOTE: The number indicates the chronological order of the submission and forwarding event(s). The number "0" is associated with the submission of the MM. A higher number indicates an event at a later point in time.

X-Mms-Previously-sent-date-and-time

Previously-sent-date-and-time = "X-Mms-Previously-sent-date-and-time" ":"
1*DIGIT "," HTTP-date

The date should be machine-usable, as defined by "HTTP-date" in RFC 2616 [48].

NOTE: The number indicates the chronological order of the submission and forwarding events. The number "0" is associated with the submission of the MM. The number indicates the correspondence to the MMS User Agent's address in the "X-Mms-Previously-sent-by" header field with the same number.

8.4.4.9 Message Encoding on MM4

The SMTP "mail" message shall be encoded according to STD 11 [5].

8.4.4.10 Request Status Codes Clarification

The table below dictates how the originator MMS Relay/Server should interpret the possible values of the X-Mms-Request-Status-Code header field.

Table 45: Clarification of the Request Status Codes

X-Mms-Request-Status-Code	Meaning
Ok	The corresponding request and some or all of its contents were accepted without errors.
Error-unspecified	An unspecified error occurred during the processing or reception of the corresponding request.
Error-service-denied	The corresponding request was rejected due to failure of authentication or authorisation of the originating MMS Relay/Server.
Error-message-format-corrupt	An inconsistency with the message format was detected when the corresponding request was parsed.
Error-sending-address-unresolved	There were no MMS address (From:, To:, Cc:) in its proper format or none of the addresses belong to the recipient MMS Relay/Server.
Error-message-not-found	This status code is obsolete
Error-network-problem	The recipient MMS Relay/Server was not able to accept the corresponding request due to capacity overload.
Error-content-not-accepted	The MM content was not accepted due to size, media type, copyrights or some other reason.
Error-unsupported-message	The recipient MMS Relay/Server does not support the corresponding request abstract message.

8.4.5 Message Transfer Protocol on MM4

Interworking between different MMSEs shall be based on SMTP according to STD 10 [22] as depicted in figure 5.

The originator MMS Relay/Server should use an SMTP connection to transfer MMs/abstract messages. The originator MMS Relay/Server should use the sender's address as indicated in the corresponding MM/abstract message in the SMTP "MAIL FROM:" command (subject to the sender's visibility) and should use the recipient's address(es) as indicated in the corresponding MM/abstract message in the SMTP "RCPT TO:" command. The originator MMS Relay/Server should use SMTP "DATA" command to transfer the message.

Private agreements may utilise additional connection and security (e.g. IPSec) methods. Such methods are out of the scope of standardisation for this release.

8.4.5.1 Address Encoding

In the case where E.164 addressing is used and the address resolution returns an RFC 2822 recipient address (ENUM based resolution), this address shall become the 'forward-path' argument to the 'RCPT TO:' SMTP command as it is described in [22]. The 'Reverse-Path' argument to the 'MAIL FROM:' SMTP command shall be determined by the originator MMS Relay/Server as it is described in [22].

In the case where E.164 addressing is used and the address resolution returns only the domain of the recipient MMSE, the addresses shall be encoded in the following way:

SMTP protocol level:

```
SMTP-address = "<" MMS-address "@" domain ">"
```

```
MMS-address = "+" E.164 "/TYPE=PLMN"
```

```
E.164 = 1*DIGIT
```

```
domain = dom-fragment *( "." dom-fragment )
dom-fragment = ( ALPHA | DIGIT ) *( ALPHA | DIGIT | "-" )
```

Example:

If the originator's address was an E.164 address, the address fields used in RCPT shall be converted to the following format by the sender's MMS Relay/Server:

```
+E.164/TYPE=PLMN@recipient-mmse
```

where recipient-mmse is a FQDN of the recipient's MMS Relay/Server, e.g.

```
+358401234567/TYPE=PLMN@mmse.sonera.net
```

SMTP commands:

SMTP commands should be then used in the following way:

```
MAIL FROM: SMTP-address
RCPT TO: SMTP-address
DATA
X-MMS-3GPP-MMS-version: 4.2.0
X-MMS-Message-Type: MM4_forward.REQ
X-MMS-Transaction-ID: "ABCDEFGHIJ0123456789"
X-MMS-Message-ID: "originator-mmse/originator-username/123456789"
Date: Wed, 16 May 2001 10:35:00 +0800
From: MMS-address
To: MMS-address
Subject: Greetings from Greece
Content-Type: text/plain

Hi, ...
.
```

NOTE: In the example above the "X-MMS-3GPP-MMS-version" header may not refer to the current version of the present document.

8.4.5.2 SMTP Service Extensions

This section specifies the usage of SMTP service extensions [22] over MM4.

The following SMTP service extensions should be supported by the MMS Relay/Server for the interworking over MM4:

- SMTP Service Extension for Message Size Declaration [57]
- SMTP Service Extension for 8bit-MIME transport [58]

8.5 Technical realisation of MMS on reference point MM5

This clause may be specified further in future releases.

8.6 Technical realisation of MMS on reference point MM6

This reference point is outside the scope of this release of the present document.

8.7 Technical realisation of MMS on reference point MM7

The MMSE may support Value Added Services in addition to the basic messaging services defined for MMS. These Value Added Services may be provided by the network operator of the MMSE or by third-party Value Added Service Providers (VASP). This clause defines the interworking between the MMS Relay/Server and the VASP.

The following figure illustrates an example data-flow of the message exchange involved in a VAS distribution of a MM as outlined by the abstract messages specified here:

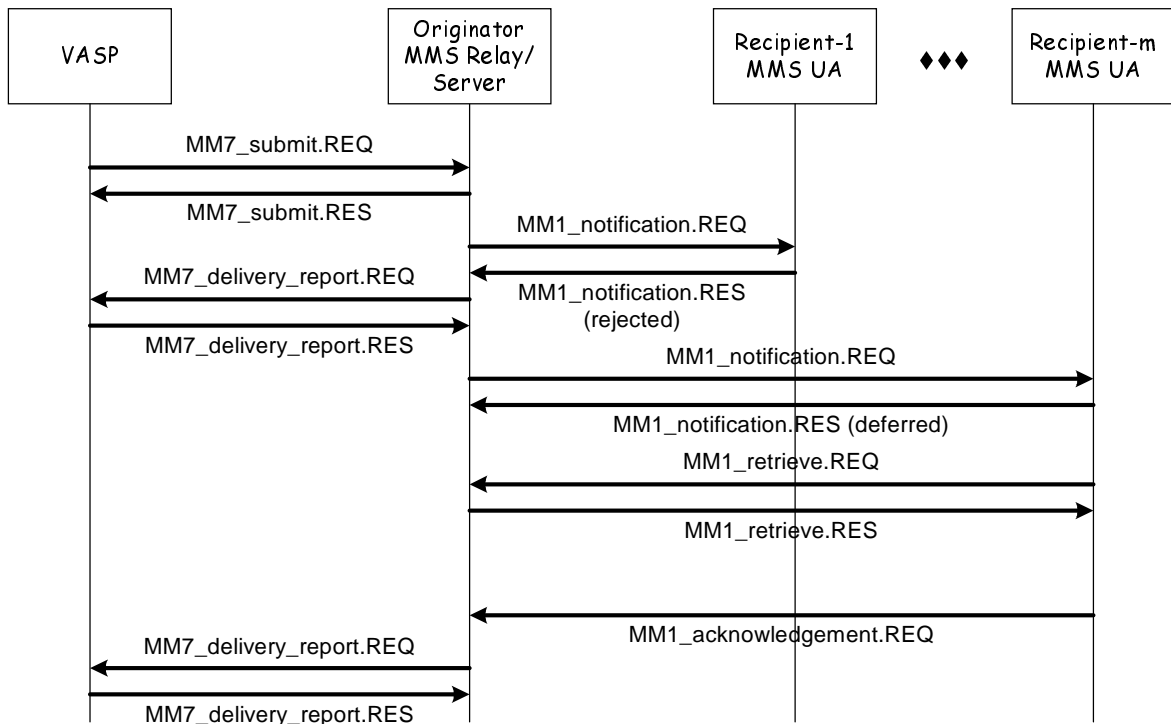


Figure 8. Sample data flow of MM7 message distribution

Subsequent sub-clauses will specify the abstract messages that will define the MM7 protocol.

8.7.1 Submitting a VAS MM

This section addresses the operations necessary for a VASP to provide the service by sending a multimedia message to one or more subscribers or to a distribution list. The involved abstract messages are outlined in Table 47 from type and direction points of view.

Table 46: Abstract messages for submitting VAS message

Abstract messages	Type	Direction
MM7_submit.REQ	Request	VASP -> MMS Relay/Server
MM7_submit.RES	Response	MMS Relay/Server -> VASP

8.7.1.1 Normal Operation

The VASP submits a message to the MMS Relay/Server by sending the MM7_submit.REQ supplying the multimedia message (MM) as the payload of the message. The message may be directed to one or more subscribers or to a distribution list. If the MMS Relay/Server accepts the submission, the MMS Relay/Server must send a MM7_submit.RES with a “success” status. This in no way indicates that the MM was actually delivered to the destinations but states that the request has been accepted.

Support for MM7_submit.REQ and MM7_submit.RES is mandatory for all MMS Relay/Servers that support MM7.

8.7.1.2 Abnormal Operation

The MMS Relay/Server should reject the MM7_submit.REQ if the VAS cannot be authorized or if the parameters of the request exceed the service level for the service being employed. Similarly, if none of the destinations can be resolved then the response status should indicate an error. If one or several (but not all) addresses can be resolved, the MMS Relay/Server should deliver the message to those addresses and respond to the VAS using the MM7_submit.RES with a partial success to the VASP. Partial success does not indicate that the MM was actually delivered to the destinations but states that the request has been at least partially accepted.

8.7.1.3 Features

Authorisation: The VASP must supply its own identifier or the VAS identifier as part of the request.

Addressing: The VASP may direct the MM to a one or more subscribers or to a distribution list. In the addressing information, it may be indicated whether a recipient address is meant for informational purposes only or to be used for routing. The originator of a submitted MM may be indicated in addressing-relevant information field(s) of the MM7_submit.REQ

Version: The MM7 protocol shall provide unique means to identify the version supported by both the MMS Relay/Server and VASP.

Message Type: The type of message used on reference point MM7 indicating MM7_submit.REQ and MM7_submit.RES as such.

Transaction Identification: The VASP shall provide an unambiguous transaction identification within an MM7_submit.REQ. The MM7_submit.RES shall unambiguously refer to the corresponding MM7_submit.REQ using the same transaction identification.

Linked message identification: The VASP will supply a message identifier when submitting a message, that defines a correspondence to a previous message that was delivered by the MMS Relay/Server to the VASP

Message class, priority, and subject: The VASP may qualify the MM further by adding a message class, a priority and/or subject to the MM7_submit.REQ.

Service code: The VASP may mark the content of the message with a service code that may be transferred by the MMS Relay/Server in the form of charging information for use by the billing system to properly bill the user for the service being supplied.

Time stamping: The VASP may time stamp the MM.

Time constraints: The VASP may request an earliest desired time of delivery of the MM. The VASP may request a time of expiry for the MM

Reply-Charging: The originator VASP may indicate that it wants to pay for a reply-MM and convey the reply-charging limitations (e.g. the latest time of submission and/or the maximum size of a reply-MM) in the MM7_submit.REQ.

Delivery reporting: The VASP may request a delivery report for the MM

Read reporting: The VASP may request a read-reply report when the user has viewed the MM.

Content adaptation restriction: The VASP may request that the content of the MM will not be subjected to content adaptation.

Content type: The MIME type of the multimedia content shall always be identified in the MM7_submit.REQ.

Content: The VASP may add content in the MM7_submit.REQ.

Message identification: The MMS Relay/Server shall always provide a message identification for an MM, which it has accepted for submission in the MM7_submit.RES.

Request status: The MMS Relay/Server shall indicate the status of the MM7_submit.REQ in the associated MM7_submit.RES. The reason code given in the status information element of the MM7_submit.RES may be supported with an explanatory text further qualifying the status.

Charged-Party: The VASP may indicate in the MM7_submit.REQ which party is expected to be charged for an MM submitted by the VASP, e.g. the sending, receiving, both parties or neither.

Message Distribution Indication: The VASP may indicate whether the content of the MM is intended for redistribution.

8.7.1.4 Information Elements

Table 47: Information elements in the MM7_submit.REQ .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_submit.REQ/ MM7_submit.RES pair.
Message type	Mandatory	Identifies this message as a MM7_submit request.
MM7 version	Mandatory	Identifies the version of the interface supported by the VASP
VASP ID	Optional	Identifier of the VASP for this MMS Relay/Server.
VAS ID	Optional	Identifier of the originating application.
Sender address	Optional	The address of the MM originator.
Recipient address	Mandatory	The address of the recipient MM. Multiple addresses are possible or the use of the alias that indicates the use of a distribution list. It is possible to mark an address to be used only for informational purposes.
Service code	Optional	Information supplied by the VASP which may be included in charging information. The syntax and semantics of the content of this information are out of the scope of this specification.
Linked ID	Optional	This identifies a correspondence to a previous valid message delivered to the VASP.
Message class	Optional	Class of the MM (e.g. advertisement, information service, accounting)
Date and time	Optional	The time and date of the submission of the MM (time stamp).
Time of Expiry	Optional	The desired time of expiry for the MM (time stamp).
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient (time stamp).
Delivery report	Optional	A request for delivery report.
Read reply	Optional	A request for confirmation via a read report to be delivered as described in section 8.1
Reply-Charging	Optional	A request for reply-charging.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of replies granted to the recipient(s) (time stamp).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s).
Priority	Optional	The priority (importance) of the message.
Subject	Optional	The title of the whole multimedia message.
Adaptations	Optional	Indicates if VASP allows adaptation of the content (default True)
Charged Party	Optional	An indication which party is expected to be charged for an MM submitted by the VASP, e.g. the sending, receiving, both parties or neither.
Content type	Mandatory	The content type of the MM's content.
Content	Optional	The content of the multimedia message
Message Distribution Indicator	Optional	If set to "false" the VASP has indicated that content of the MM is not intended for redistribution. If set to "true" the VASP has indicated that content of the MM can be redistributed.

Table 48: Information elements in the MM7_submit.RES .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_submit.REQ/MM7_submit.RES pair.
Message type	Mandatory	Identifies this message as a MM7_submit response.
MM7 version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server
Message ID	Conditional	If status indicates success then this contains the MMS Relay/Server generated identification of the submitted message. This ID may be used in subsequent requests and reports relating to this message.
Request Status	Mandatory	Status of the completion of the submission, no indication of delivery status is implied.
Request Status text	Optional	Text description of the status for display purposes, should qualify the Request Status.

8.7.2 Delivery Request

This section addresses cases where a message that is passed by the MMS Relay/Server to a VASP for processing. For example, this may include cases where the message originated from the MMS User-Agent.

The involved abstract messages are outlined in Table 50 from type and direction points of view.

Table 49: Abstract messages for demanding a service from a VASP

Abstract messages	Type	Direction
MM7_deliver.REQ	Request	MMS Relay/Server -> VASP
MM7_deliver.RES	Response	VASP -> MMS Relay/Server

8.7.2.1 Normal Operation

The MMS Relay/Server will deliver messages to the VASP by supplying the MM as the payload of the MM7_deliver.REQ. The message originates, for example, from a MMS User Agent, an external application, or from outside the MMSE. This delivery may include an identification of the request that may be used by the VASP to correlate a response to the message. The VASP should reply with a MM7_deliver.RES message indicating that the message has been successfully received and will be processed.

The following figure illustrates the data flow of a use case where a MMS User Agent requesting a service from a VASP that requires a response.

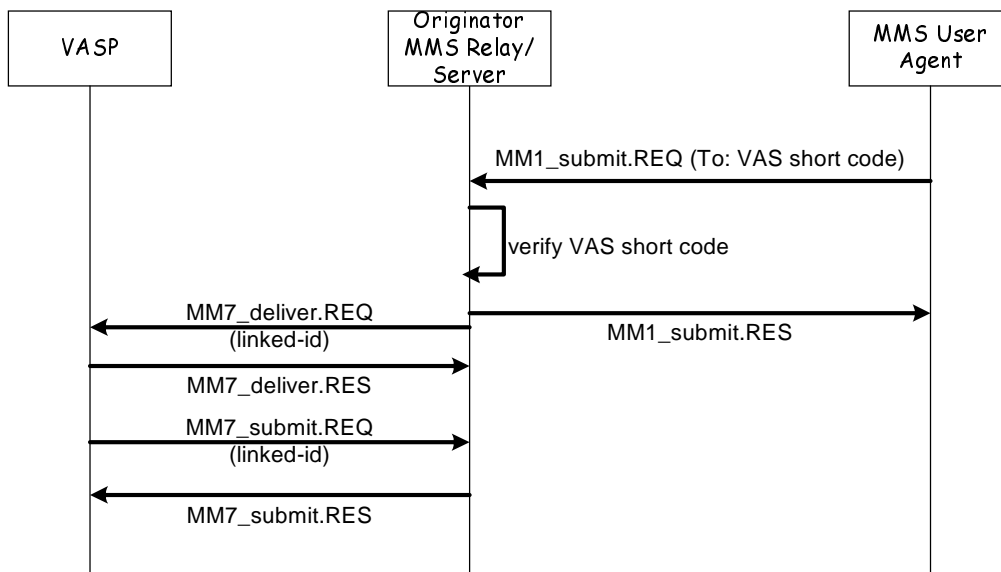


Figure 9: Use of MM7_deliver and subsequent response

Support for MM7_deliver.REQ and MM7_deliver.RES is mandatory for a MMS Relay/Server that supports MM7

8.7.2.2 Abnormal Operation

If the VASP cannot identify the requested content then it should indicate the failure in the MM7_deliver.RES status fields.

8.7.2.3 Features

Authentication: The MMS Relay/Server may supply its own identifier as part of the request.

Addressing: All relevant address information for the delivery of the message to the VASP – including the addressing information from the original message and from the MMS Relay/Server should be included in the relevant information elements of MM7_deliver.REQ. In the addressing information, it may be indicated whether a certain recipient address is meant for informational purposes only or to be used for routing.

Version: The MM7 protocol shall provide unique means to identify the version supported by both the MMS Relay/Server and VASP.

Message Type: The type of message used on reference point MM7 indicating MM7_deliver.REQ and MM7_deliver.RES as such.

Transaction Identification: The VASP shall provide an unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Message priority and subject: The MMS Relay/Server may qualify the MM further by adding a priority and/or subject to the MM7_deliver.REQ. This information will originate from the end-user’s original request.

Linked message identification: The MMS Relay/Server will supply an identifier for the request that may be used by the VASP.

Service code: The VASP may mark the response to the message with a service code that will be transferred to the charging information for use by the billing system to properly bill the user for the service being supplied.

Time stamping: The MM may include a time stamp indicating the time of original submission.

Reply-Charging: In case of reply-charging when the reply-MM is submitted within the MM7_deliver.REQ MMS Relay/Server should indicate that the message is free-of-charge reply.

Content type: The MIME type of the multimedia content shall always be identified in the MM7_deliver.REQ.

Content: The originator of the MM may supply content that is delivered to the VASP in the MM7_deliver.REQ.

Request status: The MMS Relay/Server shall indicate the status of the request in the associated response. The reason code given in the status information element of the response may be supported with an explanatory text further qualifying the status.

8.7.2.4 Information Elements

Table 50: Information elements in the MM7_deliver.REQ .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_deliver.REQ/ MM7_deliver.RES pair.
Message type	Mandatory	Identifies this message as a MM7_deliver request.
MM7 version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server
MMS Relay/Server ID	Optional	Identifier of the MMS Relay/Server
Linked ID	Optional	Identifier that may be used by the VASP in a subsequent MM7_submit.REQ
Sender address	Mandatory	The address of the MM originator.
Recipient address	Optional	The address(es) of the intended recipients of the subsequent processing by the VASP or the original recipient address(es). It is possible to mark an address to be used only for informational purposes.
Date and time	Optional	The time and date of the submission of the MM (time stamp).
Reply-Charging-ID	Optional	In case of reply-charging when the reply-MM is submitted within the MM7_deliver.REQ this is the identification of the original MM that is replied to.
Priority	Optional	The priority (importance) of the message.
Subject	Optional	The title of the whole MM.
Content type	Mandatory	The content type of the MM's content.
Content	Optional	The content of the multimedia message

Table 51: Information elements in the MM7_deliver.RES .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_deliver.REQ/ MM7_deliver.RES pair.
Message type	Mandatory	Identifies this message as a MM7_deliver response.
MM7 version	Mandatory	Identifies the version of the interface supported by the VASP
Service code	Optional	Information supplied by the VASP which may be included in charging information. The syntax and semantics of the content of this information are out of the scope of this specification.
Request Status	Mandatory	Status of the completion of the request.
Request Status text	Optional	Text description of the status for display purposes, should qualify the Request Status

8.7.3 Cancel and replace of MM

This section details the requests that should be supported in MM7 to allow a VASP to control or change the distribution of a message. These operations will allow the VASP to cancel a submitted message prior to delivery or replace a submitted message with a new message.

The involved abstract messages are outlined in Table 53 from type and direction points of view.

Table 52: Abstract messages for controlling Distribution MM

Abstract messages	Type	Direction
MM7_cancel.REQ	Request	VASP -> MMS Relay/Server
MM7_cancel.RES	Response	MMS Relay/Server -> VASP
MM7_replace.REQ	Request	VASP -> MMS Relay/Server
MM7_replace.RES	Response	MMS Relay/Server -> VASP

The following figure illustrates the interaction between the different MMS entities in canceling a VASP message.

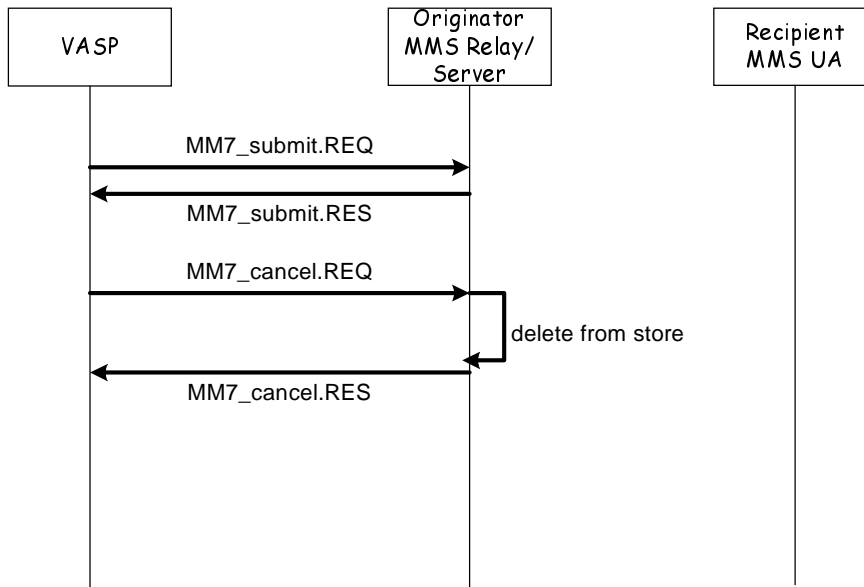


Figure 10: Data flow of VASP canceling a submitted message

8.7.3.1 Normal Operation

If the VASP has decided to cancel the delivery of a MM that it has already submitted, then the VASP should indicate this by sending the MM7_cancel.REQ message to the MMS Relay/Server. The MMS Relay/Server should check the status of the message indicated by the Message ID and cancel delivery to all destinations for which the MMS Relay/Server has not sent out a notification. The MMS Relay/Server should respond to the request with a MM7_cancel.RES indicating that the request was processed.

If the VASP has new content that it wishes to submit in place of the content that was originally submitted it should submit the new replacement content using the MM7_replace.REQ message. The MMS Relay/Server should check the status of the message indicated by the Message ID and replace the message content for all destinations that have not retrieved or forwarded the message as yet. The MMS Relay/Server should redistribute the new content to the destination list from the original MM7_submit.REQ. Optional information elements that appear in the MM7_replace.REQ message shall replace the corresponding information elements of the original submission (the VASP shall not replace information elements that were already provided in the previously sent notification), information elements that do not appear in the MM7_replace.REQ message shall retain the original submission values. Replacement of messages that have been retrieved may be specified in future releases.

Support for MM7_cancel.REQ, MM7_cancel.RES, MM7_replace.REQ, and MM7_replace.RES is optional for all MMS Relay/Server that support MM7

8.7.3.2 Abnormal Operation

The MMS Relay/Server should reject a request to cancel or replace a message if it is unable to authorise the VAS to cancel or replace MMs, or find the Message ID indicated in the request, or cannot determine that the indicated message was originally submitted by the VASP.

8.7.3.3 Features

Authorisation: The VASP must supply its own identifier or the VAS identifier as part of the request.

Addressing: When replacing a previously sent message the replacement shall be addressed to the same recipients as the original being replaced.

Version: The MM7 protocol shall provide unique means to identify the version supported by both the MMS Relay/Server and VASP.

Message type: The type of message used on reference point MM7 indicating MM7_cancel.REQ, MM7_cancel.RES, MM7_replace.REQ, and MM7_replace.RES as such.

Transaction identification: The VASP shall provide an unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Service code: The VASP may mark the content of the message with a service code that may be transferred by the MMS Relay/Server in the form of charging information for use by the billing system to properly bill the user for the service being supplied.

Time stamping: The VASP may time stamp the MM.

Time constraints: The VASP may also request the earliest desired time of delivery of the MM to be changed.

Read reporting: The VASP may request a read-reply report when the user has viewed the MM.

Content adaptation restriction: The VASP may request that the content of the MM will not be subjected to content adaptation.

Content type: The MIME type of the multimedia content shall always be identified in the MM7_replace.REQ if content is replaced.

Content: The content of the multimedia message if provided by the VASP may be conveyed in the MM7_replace.REQ.

Message identification: The MMS Relay/Server shall always provide a message identification for an MM, which it has accepted for submission in either the MM7_replace.REQ or in the MM7_cancel.REQ. The VASP shall supply this message identification when requesting to cancel or replace a previously submitted message. When replacing a MM the updated message retains the identification of the original (replaced) message.

Request status: The MMS Relay/Server shall indicate the status of the request in the associated response. The reason code given in the status information element of the response may be supported with an explanatory text further qualifying the status.

8.7.3.4 Information Elements

Table 53: Information elements in the MM7_cancel.REQ .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_cancel.REQ/MM7_cancel.RES pair.
Message type	Mandatory	Identifies this message as a MM7_cancel request.
MM7 version	Mandatory	Identifies the version of the interface supported by the VASP
VASP ID	Optional	Identifier of the VASP for this MMS Relay/Server.
VAS ID	Optional	Identifier of the originating application.
Sender address	Optional	The address of the MM originator.
Message ID	Mandatory	Identifier of the message to cancel.

Table 54: Information elements in the MM7_cancel.RES .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_cancel.REQ/ MM7_cancel.RES pair.
Message type	Mandatory	Identifies this message as a MM7_cancel response.
MM7 version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server
Request Status	Mandatory	Status of the completion of the request.
Request Status text	Optional	Text description of the status for display purposes, should qualify the Request Status

Table 55: Information elements in the MM7_replace.REQ .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_replace.REQ/ MM7_replace.RES pair.
Message type	Mandatory	Identifies this message as a MM7_replace request.
MM7 version	Mandatory	Identifies the version of the interface supported by the VASP
VASP ID	Optional	Identifier of the VASP for this MMS Relay/Server.
VAS ID	Optional	Identifier of the originating application.
Message ID	Mandatory	Identifier of the message that current message replaces.
Service code	Optional	Information supplied by the VASP which may be included in charging information. The syntax and semantics of the content of this information are out of the scope of this specification.
Date and time	Optional	The time and date of the submission of the MM (time stamp).
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient (time stamp).
Read reply	Optional	A request for confirmation via a read report to be delivered as described in section 8.1
Adaptations	Optional	Indicates if VASP allows adaptation of the content (default True)
Content type	Conditional	The content type of the MM's content. If the Content IE appears, then the Content type IE must appear.
Content	Optional	The content of the multimedia message
Message Distribution Indicator	Optional	If set to "false" the VASP has indicated that content of the MM is not intended for redistribution. If set to "true" the VASP has indicated that content of the MM can be redistributed.

Table 56: Information elements in the MM7_replace.RES.

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_replace.REQ/ MM7_replace.RES pair.
Message type	Mandatory	Identifies this message as a MM7_replace response.
MM7 version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server
Request Status	Mandatory	Status of the completion of the request.
Request Status text	Optional	Text description of the status for display purposes, should qualify the Request Status

8.7.4 Delivery reporting to VASP

This part of MMS service covers the generation of a delivery report from the MMS Relay/Server to the VASP. The involved abstract messages are outlined in Table 58 from type and direction points of view.

Table 57: Abstract messages for delivery reports to VASP

Abstract Message	Type	Direction
MM7_delivery_report.REQ	Request	MMS Relay/Server -> VASP
MM7_delivery_report.RES	Response	VASP -> MMS Relay/Server

8.7.4.1 Normal Operation

The MMS Relay/Server shall create the MM7_delivery_report.REQ and send it to the VASP when the appropriate information is available.

Support for MM7_delivery_report.REQ and MM7_delivery_report.RES is mandatory for a MMS Relay/Server that supports MM7.

8.7.4.2 Abnormal Operation

In case the VASP cannot identify the MMS Relay/Server or the Message ID is not recognized, then the VASP shall respond with a MM7_delivery_report.RES including a status which indicates the reason the delivery report was not accepted.

8.7.4.3 Features

Addressing: Both the address of the VAS (which is the original MM originator) and the address of the recipient of the original MM shall be provided in the addressing-relevant information fields of MM7_delivery_report.REQ.

Version: The MM7 protocol shall provide unique means to identify the version supported by both the MMS Relay/Server and VASP.

Message Type: The type of message used on reference point MM7 indicating MM7_delivery_report.REQ and MM7_delivery_report.RES as such.

Transaction Identification: The VASP shall provide an unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Time stamping: The MM7_delivery_report.REQ shall carry the time and date of handling of the MM (e.g. retrieval, expiry, rejection).

Message identification: In the MM7_delivery_report.REQ the MMS Relay/Server shall always provide the original message identification of the MM that the delivery report corresponds to as generated in response to the associated MM7_submit.REQ.

MM Status: The MM7_delivery_report.REQ shall carry the status of the MM delivery, e.g. retrieved, rejected, expired or indeterminate.

Request Status: The VASP shall indicate the status of the MM7_delivery_report.REQ in the associated MM7_delivery_report.RES. The reason code given in the status information element of the response may be supported with an explanatory text further qualifying the status.

8.7.4.4 Information Elements

Table 58: Information elements in the MM7_delivery_report.REQ.

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_delivery_report.REQ/MM7_delivery_report.RES pair.
Message Type	Mandatory	The type of message used on reference point MM7 "MM7_delivery_report.REQ".
MM7 Version	Mandatory	The version of MM7 supported by the MMS Relay/Server
MMS Relay/Server ID	Optional	Identifier of the MMS Relay/Server
Message ID	Mandatory	The identification of the original MM.
Recipient address	Mandatory	The address of the recipient of the original MM.
Sender address	Mandatory	The address of the VAS that submitted the original MM.
Date and time	Mandatory	Date and time the MM was handled (retrieved, expired, rejected, etc.) (<u>time stamp</u>)
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
MM Status text	Optional	Text description of the status for display purposes, should qualify the MM Status

Table 59: Information elements in the MM7_delivery_report.RES.

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_delivery_report.REQ/MM7_delivery_report.RES pair.
Message Type	Mandatory	The type of message used on reference point MM7: "MM7_delivery_report.RES".
MM7 Version	Mandatory	The version of MM7 supported by the VASP
Request Status	Mandatory	The status of the associated MM7_delivery_report.REQ.
Request Status text	Optional	Text description of the status for display purposes, should qualify the Request Status

8.7.5 Read-Reply Report for VASP

This part of MMS service covers the delivery of a read-reply report from the MMS Relay/Server to the VASP. The involved abstract messages are outlined in Table 61 from type and direction points of view.

Table 60: Abstract messages for sending and receiving read-reply reports in MM7

Abstract messages	Type	Direction
MM7_read_reply.REQ	Request	MMS Relay/Server -> VASP
MM7_read_reply.RES	Response	VASP -> MMS Relay/Server

8.7.5.1 Normal Operation

If the VASP requested a read-reply report then the recipient MMS User Agent may create and send a read-reply to the MMS Relay/Server. The MMS Relay/Server must identify that this read-reply report is associated with a MM originating from the MM7 reference point and must create the MM7_read_reply.REQ and send it to the VASP. The VASP shall return a MM7_read_reply.RES that reflects the successful reception of the read-reply report.

Support for MM7_read_reply_report.REQ and MM7_read_reply_report.RES is optional for a MMS Relay/Server that supports MM7.

8.7.5.2 Abnormal Operation

In case the VASP cannot identify the MMS Relay/Server or the Message ID is not recognized, then the VASP shall respond with a MM7_read_reply.RES including a status which indicates the reason the read reply report was not accepted.

8.7.5.3 Features

Addressing: Both, the address of the VASP (which is the MM originator), and the address of the originator (which is the MM recipient) of a read-reply report shall be provided in the addressing-relevant information fields of MM7_read_reply_report.REQ.

Version: The MM7 protocol shall provide unique means to identify the version supported by both the MMS Relay/Server and VASP.

Message Type: The type of message used on reference point MM7 indicating MM7_read_reply.REQ and MM7_read_reply.RES as such.

Transaction Identification: The VASP shall provide an unambiguous transaction identification within a request. The response shall unambiguously refer to the corresponding request using the same transaction identification.

Message identification: In the MM7_read_reply_report.REQ the MMS Relay/Server shall always provide the original message identification of the MM that the read-reply report corresponds to as generated for the MM7_submit.RES.

Time Stamping: The MM7_read_reply_report.REQ shall carry the time-stamp associated with the read-reply report.

Read Status: The MM7_read_reply_report.REQ shall carry the status of the MM retrieval, e.g. read or deleted without being read.

Request Status: The VASP shall indicate the status of the MM7_read_reply.REQ in the associated MM7_read_reply.RES. The reason code given in the status information element of the response may be supported with an explanatory text further qualifying the status.

8.7.5.4 Information Elements

Table 61: Information elements in the MM7_read_reply_report.REQ.

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_read_reply_report.REQ/MM7_read_reply_report.RES pair.
Message Type	Mandatory	Identifies this message as a MM7_read_reply_report request.
MM7 Version	Mandatory	The version of MM7 supported by the MMS Relay/Server.
MMS Relay/Server ID	Optional	Identifier of the MMS Relay/Server
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e. the originator of the read-reply report.
Sender address	Mandatory	The address of the VASP (originator of the original MM) i.e. the recipient of the read-reply report.
Message ID	Mandatory	The message ID of the original MM.
Date and time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Read Status	Mandatory	Status of the MM, e.g. Read, Deleted without being read
Read Status text	Optional	Text description of the status for display purposes, should qualify the Read Status

Table 62: Information elements in the MM7_read_reply_report.RES.

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_read_reply_report.REQ/MM7_read_reply_report.RES pair.
Message Type	Mandatory	Identifies this message as a MM7_read_reply_report response.
MM7 Version	Mandatory	The version of MM7 supported by the VASP.
Request Status	Mandatory	The status of the associated MM7_read_reply_report.REQ.
Request Status text	Optional	Text description of the status for display purposes, should qualify the Request Status.

8.7.6 Generic Error Handling

When the MMS Relay/Server or VASP receives a MM7 abstract message that cannot be replied to with the specific response it shall reply using a generic error message as described here. To get a correlation between the original send REQ and the error response, every abstract message on the MM7 reference point shall include a Transaction ID.

The involved abstract messages are outlined in Table 64 from type and direction points of view.

Table 63: Abstract message for generic error notification

Abstract message	Type	Direction
MM7_RS_error.RES	Response	MMS Relay/Server -> VASP
MM7_VASP_error.RES	Response	VASP->MMS Relay/Server

8.7.6.1 Normal Operation

If the MMS Relay/Server has received a message over the MM7 interface and does not recognize the Message Type, or the requested feature is not supported and the normal response message is not supported, then the MMS Relay/Server must generate a MM7_RS_error.RES message to reply to the VASP.

If the VASP has received a message over the MM7 interface and does not recognize the Message Type, or the requested feature is not supported and the normal response message is not supported, then the VASP must generate a MM7_VASP_error.RES message to reply to the MMS Relay/Server.

Support for the MM7_RS_error.RES and MM7_VASP_error.RES is Mandatory for a MMS Relay/Server that supports MM7

8.7.6.2 Features

Version: The MM7 protocol shall provide unique means to identify the version supported by both the MMS Relay/Server and VASP.

Message Type: The type of message used on reference point MM7 indicating MM7_RS_error.RES or MM7_VASP_error.RES as such.

Transaction Identification: The response shall unambiguously refer to the corresponding request using the same transaction identification.

Error Status: The MMS Relay/Server or VASP shall indicate the error condition that caused the generation of the error response. The reason code given in the status information element of the response may be supported with an explanatory text further qualifying the status.

8.7.6.3 Information Elements

Table 64: Information elements in the MM7_RS_error.RES .

Information element	Presence	Description
Transaction ID	Mandatory	Identifier that corresponds to the Transaction ID of the incoming message.
Message type	Mandatory	Identifies this message as a MM7_RS_error response.
MM7 version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server
Error Status	Mandatory	Error code (e.g. Message type not-supported, MM7 version not supported).
Error Status text	Optional	Text description of the status for display purposes, should qualify the Error Status.

Table 65: Information elements in the MM7_VASP_error.RES .

Information element	Presence	Description
Transaction ID	Mandatory	Identifier that corresponds to the Transaction ID of the incoming message.
Message type	Mandatory	Identifies this message as a MM7_VASP_error response.
MM7 version	Mandatory	Identifies the version of the interface supported by the VASP
Error Status	Mandatory	Error code (e.g. Message type not-supported, MM7 version not supported).
Error Status text	Optional	Text description of the status for display purposes, should qualify the Error Status.