3GPP TSG-T (Terminals) Meeting #25
Palm Springs, CA, USA
8 - 10 September 2004

TP-040172

Agenda Item: 5.2.3

Source: T2

Title: Change Request on MMS

Document for: Approval

_____

Spec	CR	Rev	Rel	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level	Workitem
23.140	164	-	Rel-6	Deletion of annex K.6	F	6.6.0	6.7.0	T2-040359	MMS6
23.140	165	-	Rel-6	Clarification about WAP-based and IP-based MM1 implementations	F	6.6.0	6.7.0	T2-040342	MMS6
23.140	166	-	Rel-6	Introducing Application Addressing in MMS	B	6.6.0	6.7.0	T2-040347	MMS6
23.140	167	-	Rel-6	Adding status text in the MM1 Delivery Report	C	6.6.0	6.7.0	T2-040355	MMS6
23.140	168	-	Rel-6	Indication about Content Adaptation	C	6.6.0	6.7.0	T2-040356	MMS6
23.140	169	-	Rel-6	Clarification of interpretation of value "No" in Information Element "Forward to Originator UA" in the MM4 Delivery Report Forwarding	C	6.6.0	6.7.0	T2-040358	MMS6
23.140	170	-	Rel-6	Clarification of MM4_Forward.RES covering partial status information.	C	6.6.0	6.7.0	T2-040362	MMS6
23.140	171	-	Rel-6	Support for multiple and single recipients on MM4	C	6.6.0	6.7.0	T2-040352	MMS6
23.140	172	-	Rel-6	Adding the Information Elements VASID and VASPID to the MM7_Deliver.REQ	B	6.6.0	6.7.0	T2-040354	MMS6
23.140	173	-	Rel-6	Support of Messaging Service Control Function (MSCF)	B	6.6.0	6.7.0	T2-040369	MMS6
23.140	174	-	Rel-6	Additional DRM Requirements to the MMS Relay Server	B	6.6.0	6.7.0	T2-040357	MMS6

⌘ CR-Form-v7

CHANGE REQUEST

| | ⌘ | **23.140** CR **164** | ⌘**rev** | **-** | ⌘ | Current version: | **6.6.0** | ⌘ |

*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 **X**

Title:	⌘	Deletion of annex K.6
Source:	⌘	T2
Work item code:⌘	MMS6	*Date:* ⌘ 26/08/2004
Category:	⌘	**F**

Release: ⌘	Rel-6

Use one 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 one 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:	⌘	Annex K.6 shows the mapping of the MM7_Submit.REQ to the MM4_Forward.REQ. It then provides how the mapping could be done, which is inconsistent to section 7.1.13 which states that MM7_Submit.REQ -> to MM4_Forward.REQ is not recommended.
Summary of change:⌘		Deletes Annex K.6
Consequences if not approved:	⌘	Specification inconsistency, as annex K.6 shows how to map, while section 7.1.13 discourages such mapping.

Clauses affected:	⌘	K.6

			Y	N		
Other specs Affected:	⌘			X	Other core specifications	⌘
				X	Test specifications	
				X	O&M Specifications	

Other comments:	⌘	

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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.

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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 K (informative):
MM1, MM4 <-> MM7 header mapping

This annex maps the abstract messages from MM1 and MM4 to MM7.

The abstract messages mapped between MM1 and MM7 are:

- MM1_Submit.REQ to the MM7_Deliver.REQ

- MM7_Submit.REQ to the MM1_Notification.REQ and the MM1_Retrieve.RES

- MM1_Read_Reply_Recipient.REQ to the MM7_Read_Reply_Report.REQ

- MM1_Forward.REQ to the MM7_Deliver.REQ

The abstract messages mapped between MM4 and MM7 are:

- MM4_Forward.REQ to the MM7_Deliver.REQ

  ~~MM7_Submit.REQ to the MM4_Forward.REQ~~

- MM4_Delivery_Report.REQ to the MM7_Delivery_Report.REQ

- MM4_Read_Reply_Report.REQ to the MM7_Read_Reply.REQ

. . .

Table K.6: void Mapping MM7_Submit.REQ -> MM4_Forward.REQ

Information elements in MM4_Forward.REQ	Information elements in MM7_Submit.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID	-
Recipient(s) address	Recipient address
Sender address	Sender address
Content type	Content type
Message class	Message class
Date and time	Date and time
Time of Expiry	Time of Expiry
Delivery report	Delivery report
Priority	Priority
Sender visibility	-
Read reply	Read reply
Subject	Subject
Acknowledgement Request	-
Forward counter	-
Previously-sent-by	-
Previously-sent-date and-time	-
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	VASP ID
-	VAS ID
-	Service code
-	Linked ID
-	Earliest delivery time
-	Reply-Charging
-	Reply-Deadline
-	Reply-Charging-Size
-	Adaptations
-	Message Distribution-Indicator
-	Charged Party ID

CR-Form-v7

CHANGE REQUEST

| ⌘ | **23.140** CR **165** | ⌘**rev** | **-** | ⌘ | Current version: | **6.6.0** | ⌘ |

*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 **X** Radio Access Network ☐   Core Network **X**

Title: ⌘	Clarification about WAP-based and IP-based MM1 implementations	
Source: ⌘	T2	
Work item code:⌘	MMS6	***Date:*** ⌘ 24/08/2004
Category: ⌘	**F**	***Release:*** ⌘ Rel-6

Use one 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.

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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: ⌘	Recently there was again confusion on the existence of WAP and/or IP-based implementations. In addition, the description about WAP-based MM1 implementation in informative annex B.1 is not right. The annex does not correctly refer the right specs. Moreover, the description about IP-based implementation does not specifically mention the fact that the solution is not defined in reality.
Summary of change:⌘	Removes the content from Annex B with the exception of a reference to the OMA MMS stage 3 specifications.
Consequences if not approved: ⌘	Confusion remains, the description about WAP-based MM1 implementation remains wrong. The spec provides wrong impression about the IP-based MM1 solution.

Clauses affected: ⌘	Annex B

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

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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]   void

[13]   void

[14]   void

[15]   void

[16]   void

[17]   void

[18]   void

[19]   void

[20]   void

[21]   void

[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..

[36]   Adobe Systems: "Tag Image File Format (TIFF), Version 6", URL:, http://www.adobe.com.

[37]   3GPP TR 23.039: "Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)".

[38]   void

[39]   void

[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; RFC 3481: "TCP over Second (2.5G) and Third (3G) Generation Wireless Networks"; URL: http://www.ietf.org/rfc/rfc3481.txt

[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.

[49]   IETF; STD 13 (RFC 1034, 1035): "Domain Names -- concepts and facilities", "Domain names – implementation and specification", URL: http://www.ietf.org/rfc/rfc1034.txt, http://www.ietf.org/rfc/rfc1035.txt.

[50]   IETF; STD 14 (RFC 947): "Multi-network broadcasting within the Internet", URL: http://www.ietf.org/rfc/rfc947.txt.

[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]   Open Mobile Alliance; OMA-WAP-ProvCont-v1_1-20021112-C, Provisioning Content Version 1.1, URL: http://www.openmobilealliance.org/

[56]   Open Mobile Alliance; OMA-MMS-ENC-v1_2, Multimedia Messaging Service, Encapsulation Protocol, Version 1.2, URL: http://www.openmobilealliance.org/

NOTE: Reference [56] is the REL-5 MM1 stage 3 specification. OMA is committed to develop a REL-6 version. Consequently, reference [56] is to be replaced by the appropriate document identifier once the REL-6 MM1 stage 3 specification is approved within OMA.

[57]   IETF; RFC 1870: "SMTP Service Extension for Message Size Declaration", URL: http://www.ietf.org/rfc/rfc1870.txt

[58]   IETF; RFC 1652: "SMTP Service Extension for 8bit-MIME transport", URL: http://www.ietf.org/rfc/rfc1652.txt

[59]   void

[60]   IETF, RFC 2915: "The Naming Authority Pointer (NAPTR) DNS Resource Record", URL: http://www.ietf.org/rfc/rfc2915.txt

[61]   IETF, RFC 2916: "E.164 number and DNS", URL: http://www.ietf.org/rfc/rfc2916.txt

[62]   3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[63]   3GPP TS 22.066: "Support of Mobile Number Portability (MNP); Service description. Stage 1".

[64]   3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical realization. Stage 2".

[65]   IETF; RFC 2617 "Access Authentication", URL:http://www.ietf.org/rfc/rfc2617.txt

[66]   IETF; RFC 2246 "TLS protocol, version 1.0" , URL:http://www.ietf.org/rfc/rfc2246.txt

[67]   3GPP TS 31.102 "Characteristics of the USIM Application".

[68]   W3C Note 08 May 2000 "Simple Object Access Protocol (SOAP) 1.1", URL: http://www.w3.org/TR/SOAP

[69]   W3C Note 11 December 2000 "SOAP Messages with Attachments", URL: http://www.w3.org/TR/SOAP-attachments

[70]   IETF; RFC 2376: "XML Media Type", URL: http://www.ietf.org/rfc/rfc2376.txt.

[71]   IETF; RFC 2387: "The MIME Multipart/Related Content Type", URL: http://www.ietf.org/rfc/rfc2387.txt.

[72]   IETF; RFC 2111: "Content-ID and Message-ID Uniform Resource Locators", URL: http://www.ietf.org/rfc/rfc2111.txt.

[73]   IETF; RFC 2557: "MIME Encapsulation of Aggregate Documents, such as HTML (MHTML)", URL: http://www.ietf.org/rfc/rfc2557.txt.

[74]   3GPP TS 26.140: "Multimedia Messaging Service; Media formats and codecs".

[75]   3GPP TS 51.011 (Rel-4): "Specification of the Subscriber Identity Module – Mobile Equipment (SIM-ME) interface".

[76]   "Digital Rights Management", Open Mobile AllianceTM, OMA-Download-DRM-v1_0, http://www.openmobilealliance.org/

[77]   "DRM Rights Expression Language", Open Mobile AllianceTM, OMA-Download-DRMREL-v1_0, http://www.openmobilealliance.org/

[78]   "DRM Content Format", Open Mobile AllianceTM, OMA-Download-DRMCF-v1_0, http://www.openmobilealliance.org/

[79]   ITU-T Recommendation E.212: " The international identification plan for mobile terminals and mobile users".

[80]   3GPP TS 32.240: "Charging Management; Charging Architecture and Principles ".

[81]   3GPP TS 32.270: "Charging Management; Multimedia Messaging Service (MMS) charging".

[82]   Open Mobile Alliance; OMA-ERELD-MMS-v1_2-20030923-C, Enabler Release Definition for MMS Version 1.2, URL: http://www.openmobilealliance.org/

NOTE: Reference [82] is the REL-5 MM1 stage 3 specification. OMA is committed to develop a REL-6 version. Consequently, reference [82] is to be replaced by the appropriate document identifier once the REL-6 MM1 stage 3 specification is approved within OMA.

……

Annex B (informative):
MMS Stage 3 Implementations

WAP/OMA implementation (stage 3) for the MM1 reference point of MMS, as defined in this specification, is available in [82]. This annex contains examples of protocols which support MMS at the interface between the MMS Relay/Server and the MMS User Agent

B.1   WAP/OMA Implementation of MMS

This informative annex shows how MMS will be implemented using the WAP MMS specifications suite. The WAP Forum has created MMS specifications in response to a request from 3GPP to include MMS as part of WAP. At the time of writing, the WAP MMS specifications are still under development in the WAP forum.

It is not expected that implementations of MMS based upon WAP will be realised until the WAP MMS specifications are approved and published by the WAP forum.

WAP provides significant support for MMS, both in direct service specification and in the underlying technologies. While the WAP MMS service specification work is new and is therefore unavailable for direct reference, its basic

approach and limitations are based on WAP documents describing MMS architecture and message encapsulation. This should be done based on the underlying WAP technologies that have been published, and can therefore be referenced.

B.1.1   Protocol Framework

In reference to clause 6.2, the protocol framework applied to WAP implementation of MMS on reference point MM1 is provided in figure B.1.
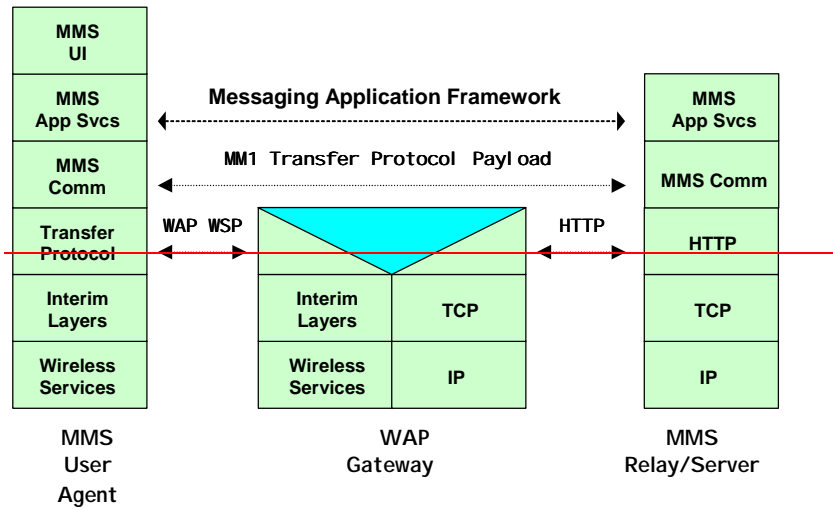

Figure B.1: Protocol Framework applied to WAP implementation of MMS

B.1.2   Architectural Support for MMS

WAP support for MMS is based upon the services of its supporting technology. Therefore, the scope of WAP, as it addresses MMS, is as shown in figure B.2. It does not cover activities or network elements beyond those shown and no such dependencies or expectations should be inferred or implied.

Figure B.2 shows an MMS Relay/Server which in the WAP architecture's terminology is referred to as an MMS Server. The WAP architecture also refers to the MMS User Agent as an MM Client. These cover equivalent functionalities.
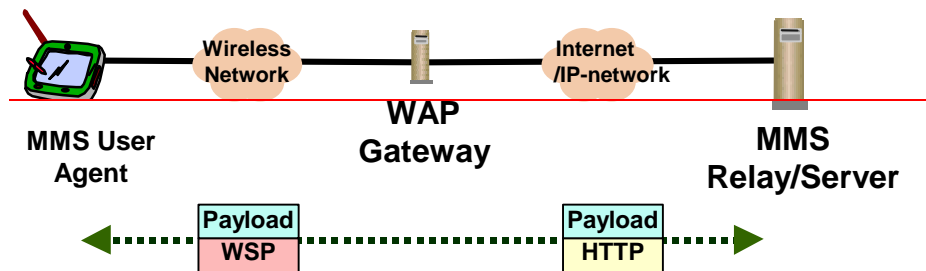
Figure B.2: Scope of WAP Support for MMS

Figure B.2 shows two links. The first, between the wireless MMS User Agent and the WAP Gateway, is where the "WAP Stack" is used to provide a common set of services over a variety of wireless bearers. For application oriented services, like MMS, the interest is primarily in services offered by WAP Session Protocol (WSP) [23].

The second link connects the WAP Gateway and the MMS Relay/Server. In the WAP architecture the MMS Relay/Server is considered an Origin Server. These entities are connected over an IP network such as the Internet or a local Intranet. HTTP is used for data transfer and data can be originated from either entity.

End to end connectivity, for the MMS application, between the wireless MMS User Agent and the MMS Relay/Server is accomplished by sending data over WSP and HTTP. This is accomplished using the WSP/HTTP POST method for data originating at the wireless MMS User Agent and by using the WAP Push Access Protocol [24] in the other direction.

The WAP Gateway, which enables the needed interworking, should not modify the data transfer via these transactions.

The WAP view of MMS is constrained to the interactions between the MMS User Agent and the MMS Relay/Server. It makes no representations as to services that are provided to or required of any other network elements.

B.1.3 Transaction Flows Supporting MMS

NOTE: The WAP MMS work is ongoing and the descriptions in this clause are based upon preliminary material that is expected to remain stable.

The WAP MMS work describes the end to end transactions that occur between the MMS User Agent and the MMS Relay/Server. These transactions accomplish the following services:

- MMS User Agent originates a Multimedia Message (MM);

- MMS Relay/Server notification to an MMS User Agent about an available MM;

- MMS User Agent retrieving an MM;

- MMS User Agent support for retrieval acknowledgement to MMS Relay/Server;

- MMS Relay/Server sending delivery report to MMS User Agent.

Figure B.3 shows an example transaction flow illustrating a message origination, delivery and delivery report.

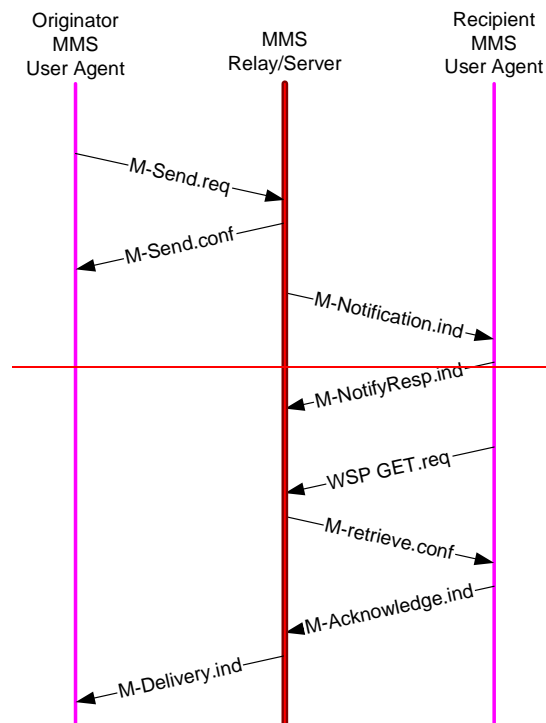**Figure B.3: Example MMS Transactional Flow in WAP**

The transactions utilise a variety of transport schemes. For example, the MMS User Agent originates an MM by sending a M-Send.req to the MMS Relay/Server by use of a WSP/HTTP POST method. This operation transmits the required data from the MMS User Agent to the MMS Relay/Server as well as provides a transactional context for the resulting M-Send.conf response.

The MMS Relay/Server uses WAP PUSH technology to send the M-Notification.ind to the MMS User Agent. This is how the MMS User Agent is informed of MMs available for retrieval. Included, as a data component, is the URI of the MM that the MMS User Agent is to use for the retrieval.

The retrieval activity is performed by the MMS User Agent using the WSP/HTTP GET method on the URI provided. The fetch of the URI returns the M-retrieve.conf which contains the actual MM to be presented to the user.

The MMS Relay/Server may request information that would permit to know that the MM was actually received by the MMS User Agent. One approach would be for a distinct M-Acknowledge.ind to be passed from the MMS User Agent to the MMS Relay/Server.

The MMS Relay/Server is responsible for supporting an optional delivery report back to the originator MMS User Agent. Based upon possible delivery outcomes, the MMS Relay/Server would again utilise WAP PUSH technology to inform the MMS User Agent with the M-Delivery.ind message.

B.1.4 Terminal Capability Negotiation

WAP provides a mechanism to inform an origin server, such as the MMS Relay/Server, of the capabilities of the MMS User Agent. This is known as User Agent Profile (UAProf) [25]. It provides information about the characteristics of the display (e.g. size, color support, bit depth), supported content types and network limitations (e.g. max message size).

The UAProf data is encoded in an RDF [26] data description language. It is conveyed, possibly indirectly, when the MMS User Agent performs a WSP/HTTP operation, such as a GET, to an origin server. It is up to the origin server to decode the RDF data, extracting any needed device characteristics, to guide the content generation or filtering operation it performs before returning data to the MMS User Agent.

For MMS, the MMS Relay/Server should be able to utilise the capability information to make adjustments to the delivered MM contents. For example, an MMS Relay/Server may delete a message component if the content type was not supported by the terminal. Alternatively, the MMS Relay/Server may adapt an unsupported content type to adjust the size, color depth or encoding format. WAP makes no requirements to the handling of this data or of any notifications that may be made to the user concerning such adjustments.

B.1.5 MMS Message Contents

The WAP work on MMS is defining a message encapsulation scheme to convey the data between the MMS User Agent and the MMS Relay/Server.

B.1.5.1 Multimedia Messages

The MIME multipart technique is standard Internet technique to combine the email body and the attachments together. The WAP has a binary equivalent to this, referenced in [23] which can be used to combine multimedia objects in the multimedia messages together. This approach shall be used for messages between the MMS Relay/Server and MMS User Agent which also include MM components. This includes the message send and retrieve.

The use of the WAP binary multipart structure allows easy conversion between binary format and the Internet MIME multipart. In addition, the binary format allows efficient handling of the message especially in cases when some multimedia objects must be taken out of the structure.

A special, application specific part should contain the MMS header information. This header information is used to provide the message type information as well as message-specific information. The proposed content type for this part is application/mmsheader and until registration within IANA, the interim content type shall be application/x-mmsheader.

B.1.5.2 Other Messages

Other MMS transactional messages utilise additional PDUs for multimedia message notification, acknowledgements and delivery reports. These messages are conveyed with messages that just utilise a content type proposed to be application/mmsheader. Until registration within IANA, the interim content type shall be application/x-mmsheader.

B.1.6 MMS Presentation

The rendering of an MM for a user is the ultimate objective of the MMS. This rendering operation is known as presentation. Various types of data may be used to drive the presentation. For example, the MM presentation may be based on a WML deck [27] or Synchronised Multimedia Integration Language (SMIL) [28] which includes links to other component elements in the multipart message. Other presentation models may include a simple text body with image attachments. WAP has not specified any specific requirements on MMS presentations. UAProf [25] content negotiation methods should be used for presentation method selection.

NOTE: In the future, it will be desirable to consider mobile-optimised presentation technologies. For example, WAP Forum and W3C have initiated work on a mobile-optimised version of SMIL that would be suitable for use in an MMSE.

B.1.7 MMS Security Model between MMS User Agent and MMS Relay/Server

No MMS-specific requirements are in place within the WAP Forum to support security mechanisms in the transactions between the MMS Relay/Server and MMS User Agent. Existing schemes such as WTLS [29] and WIM [30] are available and other end-to-end techniques are under development.

B.2 IP Based Implementation of MMS for future releases

This informative annex conceptually demonstrates how IP based MMS would be fulfilled using standard internet transport and email protocols.

It is not expected that fully featured implementations of MMS will be realised using existing IETF protocols until additional capabilities are included to support all aspects of MMS. It is anticipated that in due course, these new capabilities will be standardised by appropriate standards organisations and will be described in a future release of the present document.

B.2.1 Protocol Framework

The following figure B.4 is an example of the protocol framework definition for IP Based Implementation of reference point MM1 in 3GPP MMS.
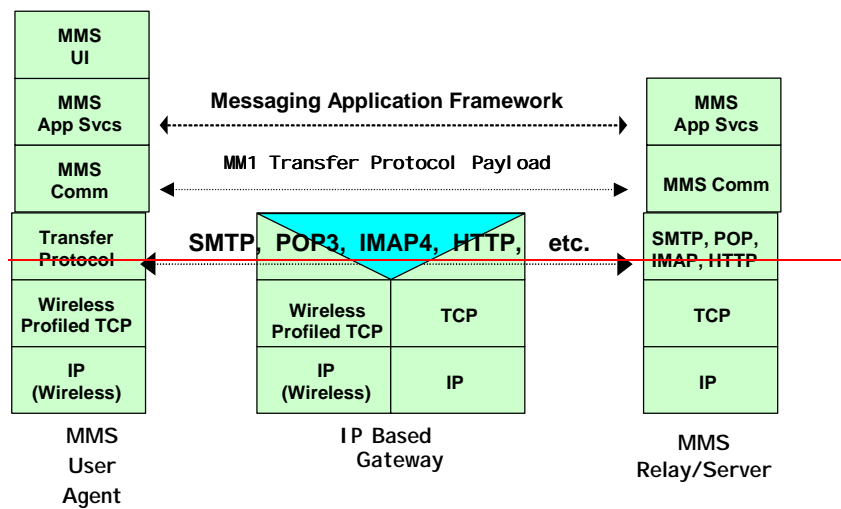
Figure B.4: Example of Protocol Framework Definition for IP Based Implementation in 3GPP MMS

The protocols of IP Based Implementation would be based on the Internet standards that have been standardized by IETF. Wireless profiled TCP, which tunes up the wireless network, would be used for the transmission control protocol. What kind of wireless tuned TCP could be used, would be defined by a profile.

The Transfer Protocol between MMS User Agent and MMS Relay/Server would be SMTP, POP3, IMAP4, HTTP, etc., depending on the services.

The notification services and the other needed services between MMS User Agent and MMS Relay/Server would be supported by using the appropriate protocol.

NOTE: The appropriate protocol would be used as soon as the standardization would have been completed.

B.2.2 Architectural Support for MMS

The following figure B.5 is an example of the architecture definition for IP Based Implementation in 3GPP MMS.

IP Based Implementation
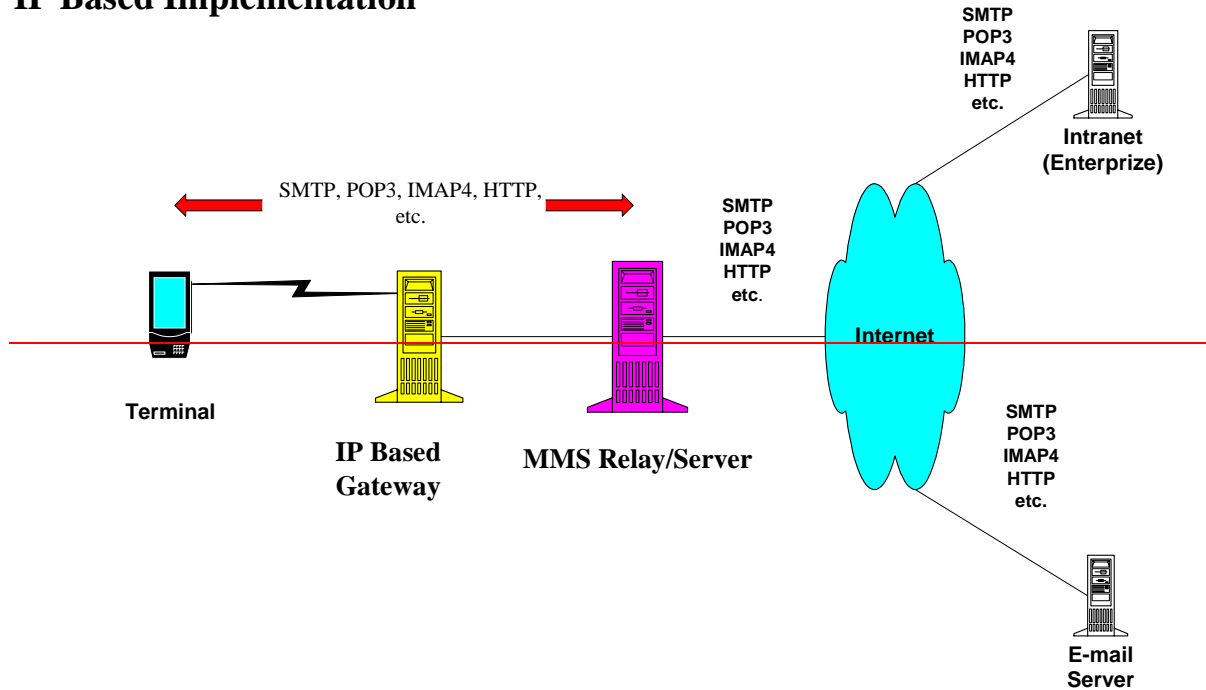
Figure B.5: Architectural example of IP Based Implementation for 3GPP MMS

The communication between a terminal and the IP Based Gateway would use the appropriate IP Based protocol like SMTP, POP3, IMAP4, HTTP, etc. on wireless profiled TCP to provide services.

The communication between the IP Based Gateway and the MMS Relay/Server would use the appropriate IP Based protocol like SMTP, POP3, IMAP4, HTTP, etc. on TCP to provide services. Wireless profiled TCP would be translated to normal TCP in the IP Based Gateway.

B.2.3   Transaction Flows Supporting MMS

The following figure B.6 is an example of transaction flows for IP Based Implementation in 3GPP MMS.
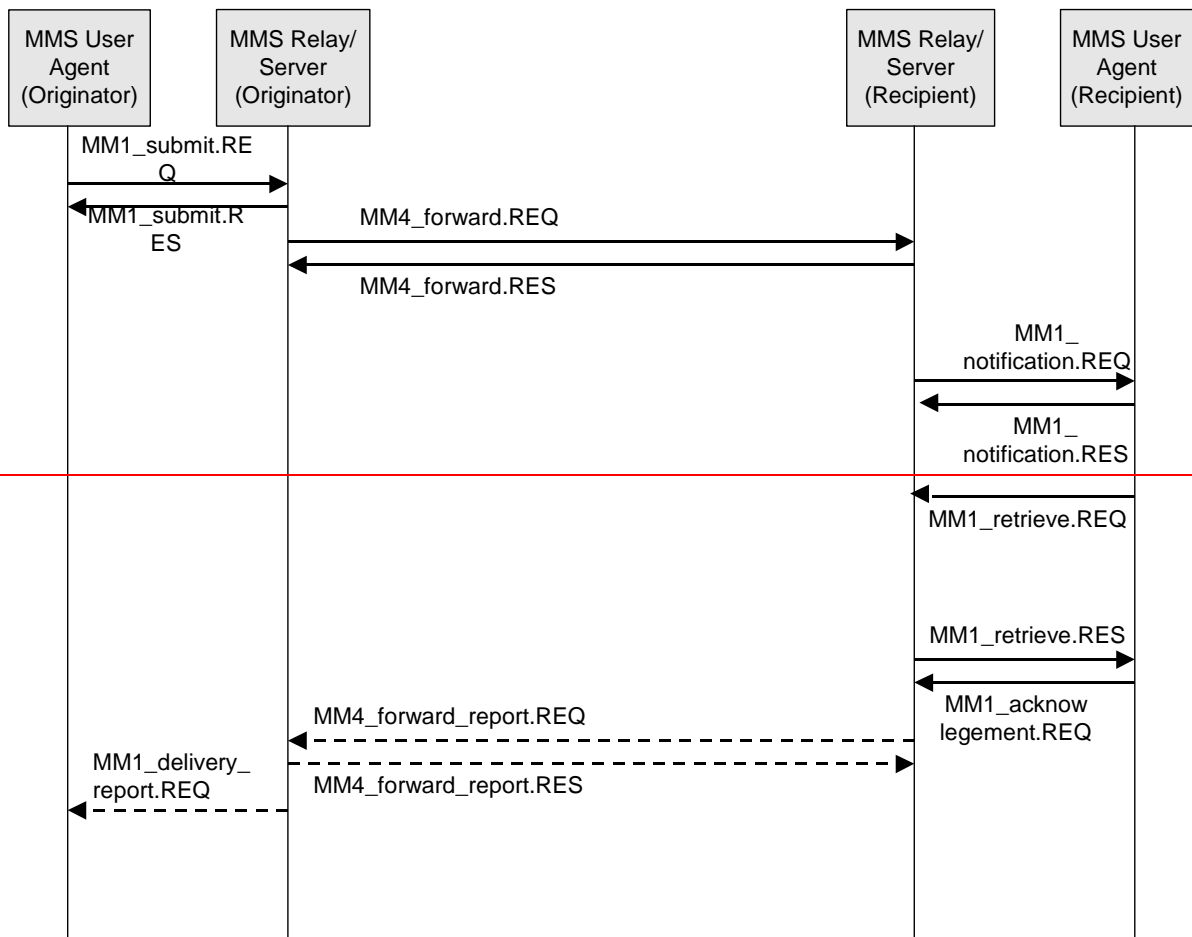
Figure B.6: Example of transaction flows for IP Based Implementation in 3GPP MMS

For example:

1. MMS User Agent (Originator) would send a Multimedia Message (MM) by sending MM1_Submit.REQ to MMS Relay/Server by use of a SMTP or HTTP POST method. There could be MM1_Submit.RES response by use of HTTP.

2. MMS Relay/Server (Originator) would forward the MM sending MM4_forward.REQ to MMS Relay/Server (Recipient) by use of SMTP. There could be MM4_forward.RES response by use of HTTP.

3. MMS Relay/Server (Recipient) would use IP based PUSH technology to send MM1_notification.REQ to MMS User Agent (Recipient) by use of HTTP POST method or the other appropriate way. There could be MM1_notification.RES response by use of HTTP.

4. The MMS Relay/Server might request information that would permit to know that the MM was actually received by the MMS User Agent. One approach would be sending MM1_acknowledgement.REQ from the MMS User Agent to the MMS Relay/Server.

5. As an option, MMS Relay/Server (Recipient) might forward a message by using MM4_forward_report.REQ to MMS Relay/Server (Originator) by using SMTP or HTTP. There could be MM4_forward_report.RES response by use of SMTP or HTTP.

6. The MMS Relay/Server is responsible for supporting an optional delivery report back to the originator MMS User Agent. Based upon possible delivery outcomes, the MMS Relay/Server would again utilize IP based PUSH technology to inform the MMS User Agent with the MM1_delivery_report.REQ message.

B.2.4   Terminal Capability Negotiation

The Terminal Capability Negotiation would be based on the Internet standard (e.g. CC/PP).

B.2.5 MMS Message Contents

The MMS Message Contents would be video mail, audio mail, image mail, text mail and so on.

B.2.5.1 Multimedia Messages

The Multimedia Messages would be based on RFC2822 (Standard for the format of ARPA Internet text messages) and MIME (Multipurpose Internet Mail Extensions, RFC 2045 - 2049).

B.2.6 MMS Presentation

The MMS Presentation would be based on MIME (Multipurpose Internet Mail Extensions, RFC 2045 - 2049) and Internet standard.

B.2.7 MMS Security Model between MMS User Agent and MMS Relay/Server

What kind of security mechanism could be used, would be defined by a profile.

<table>
<tr><td colspan="9" align="right">*CR-Form-v7*</td></tr>
<tr><td colspan="9" align="center">**CHANGE REQUEST**</td></tr>
</table>

⌘　　　**23.140** CR **166**　　⌘**rev**　**-**　⌘　Current version: **6.6.0**　⌘

*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 **X** Radio Access Network ☐　Core Network **X**

Title: ⌘	Introducing Application Addressing in MMS	
Source: ⌘	T2	
Work item code:⌘	MMS6	***Date:*** ⌘ 27/08/2004
Category: ⌘ **B**		***Release:*** ⌘ Rel-6

	Use one 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 one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *Rel-4 (Release 4)* *Rel-5 (Release 5)* *Rel-6 (Release 6)*

Reason for change: ⌘	A requirement is identified in TS 22.140 that application addressing in MMS needs to be supported.
Summary of change:⌘	Introduction of three new optional information elements for application addressing into the following MMS abstract messages: - MM1_submit.REQ - MM1_notification.REQ - MM1_retrieve.RES - MM1_delivery_report.REQ - MM1_read_reply_recipient.REQ - MM1_read_reply_originator.REQ - MM4_forward.REQ - MM4_delivery_report.REQ - MM4_read_reply_report.REQ - MM7_submit.REQ - MM7_deliver.REQ - MM7_cancel.REQ - MM7_replace.REQ - MM7_delivery_report.REQ - MM7_read_reply_report.REQ The new information elements added are: '*Applic-ID*', '*Reply-Applic-ID*' and '*Aux-Applic-Info*'.

<table>
<tr><td>Consequences if not approved: ⌘</td><td>The associated requirement defined in TS 22.140 will not be met.</td></tr>
</table>

<table>
<tr><td rowspan="30">Clauses affected: ⌘</td><td>3.1 Definition</td></tr>
<tr><td>5.1 MMS User Agent</td></tr>
<tr><td>5.1.1 MMS Retrieval Modes</td></tr>
<tr><td>5.2 MMS Relay/Server</td></tr>
<tr><td>7.1.3.1 Terminal Capability Negotiation</td></tr>
<tr><td>7.1.6 Read-Reply Report</td></tr>
<tr><td>7.1.13.1 (NEW) Identification of applications that reside on MMS VAS Applications</td></tr>
<tr><td>7.1.17 (NEW) Support for transporting Application Data</td></tr>
<tr><td>8.1.3 Submission of Multimedia Message</td></tr>
<tr><td>8.1.4 Multimedia Message Notification</td></tr>
<tr><td>8.1.5 Retrieval of Multimedia Message</td></tr>
<tr><td>8.1.7 Delivery Report</td></tr>
<tr><td>8.1.8 Read-Reply Report</td></tr>
<tr><td>8.4.1 Routing Forward of a Multimedia Message</td></tr>
<tr><td>8.4.2 Routing Forward of a Delivery Report</td></tr>
<tr><td>8.4.3 Routing Forward of a Read-Reply Report</td></tr>
<tr><td>8.4.4 Message format on MM4</td></tr>
<tr><td>8.7.1 Submitting a VAS MM</td></tr>
<tr><td>8.7.2 Delivery Request</td></tr>
<tr><td>8.7.3 Cancel and replace of MM</td></tr>
<tr><td>8.7.4 Delivery reporting to VASP</td></tr>
<tr><td>8.7.5 Read-Reply Report for VASP</td></tr>
<tr><td>8.7.9 Mapping of Information Elements to SOAP Elements</td></tr>
<tr><td>Annex C (charging data records)</td></tr>
<tr><td>Annex I (MM1 <-> MM4 header mapping)</td></tr>
<tr><td>Annex K (MM1, MM4 <-> MM7 header mapping)</td></tr>
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<tr><td rowspan="4">Other specs ⌘

affected:</td><td>Y</td><td>N</td><td></td><td></td></tr>
<tr><td>X</td><td></td><td>Other core specifications ⌘</td><td rowspan="3">3GPP TS 32.270;
OMA MMS v1.3 (MM1 stage 3 specs)</td></tr>
<tr><td></td><td>X</td><td>Test specifications</td></tr>
<tr><td></td><td>X</td><td>O&M Specifications</td></tr>
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<tr><td>Other comments: ⌘</td><td></td></tr>
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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.

Application Data: Information / data specific to an application other than the MMS User Agent / VASP which is intended to be transported without alteration by using MMS. Application Data may be of any content type and format.

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 and/or on another application'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

Service provider identification: an identification for a service provider, e.g. a domain name, MCC+MNC, or a subset of the IMSI identifying the service provider. It is possible for the MMS Relay/Server to host several service providers. Mechanisms for this are implementation- and operator-specific.

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

…

5.1   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);

-        terminal capability negotiation.

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

-        the MM composition ;

-        the presentation of the MM Size (as defined in clause 4.4) prior to MM submission;

-        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 (U)SIM;

- management and presentation of MMBox content;

- the handling of external devices;

- the user profile management;

- transport of application data.

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

5.1.1.1   MMS Retrieval Modes

MMS allows for the retrieval of MMs in a manual or automatic fashion. The retrieval mode is a terminal behavior and is based on different factors. These factors may include roaming conditions, message size, MMS User Agent configuration, recommendation from the MMS Relay/Server for retrieval, and the originator of an MM, and transport of application data.

In automatic mode the retrieval of an MM and its storage to local memory is accomplished without any interaction with the end user. Depending on terminal implementation, the MM may be displayed to the end user with or without any pre-notice. In this mode the end user is probably not aware of the MM notification and whether it's stored on the device or not.

In manual mode the end user is made aware of the MM notification and is allowed to make a decision whether to download the MM or not. In this mode the end user is aware of an MM notification and where it's stored on the terminal.

...

5.2   MMS Relay/Server

The MMS Relay/Server is responsible for storage and notification, reports, and general handling of messages. The MMS Relay/Server may also provide convergence functionality between External Servers and MMS User Agents and thus enable the integration of different server types across different networks. An Example can be found in Annex A.

It is possible to separate the MMS Relay/Server element into MMS Relay and MMS Server elements, but an allocation of the MMS Relay/Server functionalities to such elements is not defined in this release.

The MMS Relay/Server shall provide the following functionalities:

- receiving and sending MM;

- conversion of messages arriving at the recipient MMS Relay/Server from legacy messaging systems to MM format (e.g. facsimile to MM) if interworking with legacy messaging systems (MM3) is supported;

- conversion of MMs leaving the originator MMS Relay/Server to legacy messaging systems to the appropriate message format (e.g. MM to internet email) if interworking with legacy messaging systems (MM3) is supported;

- message content retrieval;

- MM notification to the MMS User Agent;

- generating delivery reports;

- routing forward MMs and read-reply reports;

- address translation;

- temporary storage of messages;

- ensuring that messages are not lost until successfully delivered to another MMSE element;

- DRM functionalities according to section 7.1.15;

The MMS Relay/Server should provide additional functionalities such as:

- generating charging data records (CDR);

- negotiation of terminal capabilities;

- transport of application data.

The MMS Relay/Server may provide additional functionalities such as:

- MM forwarding;

- address hiding;

- persistent storage of messages;

- controlling the reply-charging feature of MMS;

- relaying Message Distribution Indicator.

The MMS Relay/Server can provide additional functionalities which are not further specified in this release such as:-

- enabling/disabling MMS function;

- personalising MMS based on user profile information;

- MM deletion based on user profile or filtering information;

- media type conversion;

- media format conversion;

- screening of MM;

- checking terminal availability;

- managing the message properties on servers (e.g. voicemail or email server) integrated in the MMSE (consistency) (only applicable if interworking with legacy messaging systems (MM3) is supported).

This list of additional optional functionalities of the MMS Relay/Server is not exhaustive.

▪ ▪ ▪

7.1.3.1   Terminal Capability Negotiation

An MMS User Agent shall support Terminal Capability Negotiation. An MMS Relay/Server shall support Terminal Capability Negotiation.

Within a request for delivery of an MM the recipient MMS User Agent shall be able to indicate its capabilities towards the recipient MMS Relay/Server.

The recipient MMS User Agent may indicate its capabilities towards the recipient MMS Relay/Server by transmitting:

- a set of information describing the terminal's capabilities

- a link (e.g. URI) to a database where the MMS Relay/Server can fetch a set of information describing the terminal's capabilities, and/or

- a differential set of information indicating changes to a previously indicated set of terminal capability information.

The detailed definition of the specific mechanism for terminal capability negotiation shall be defined by the MM1 implementation (WAP etc.). The mechanism for terminal capability negotiation shall ensure that the MMS Relay/Server

is provided with the information describing the MMS User Agent's capabilities within every request for delivery of an MM.

E.g. in the WAP implementation of MMS, in case an underlying WSP session is established between the MMS User Agent and an intermediate WAP Gateway, the MMS User Agent indicates its capabilities towards the WAP Gateway only after the initial set-up of the underlying WSP session or spontaneously following a change in terminal capabilities. The WAP Gateway, however, caches the terminal capability information and passes these on to the MMS Relay/Server within every request for delivery of an MM. Intermediate proxies on the MM1 reference point may also be involved in terminal capability negotiation and/or content adaptation.

Upon reception of such a delivery request the recipient MMS Relay/Server should use the information about the capabilities of the recipient MMS User Agent in preparation of MMs to be delivered to the recipient MMS User Agent. The MMS Relay/Server should adjust an MM to be delivered that contains media types and media formats that are not supported by the recipient MMS User Agent. This adjustment might involve the deletion or adaptation of those unsupported media types and media formats.

The MMS User Agent's capability information should include

- the maximum supported size of an MM,

- the maximum supported resolution of an image,

- a list of supported media types and media formats (e.g. MIME types),

- a list of supported character sets,

- a list of preferred languages,

- the maximum supported colour depth,

- an indication whether or not the recipient MMS User Agent supports streaming for the retrieval of MM contents as specified in clause 7.1.7.

- an indication if the recipient MMS User Agent supports transporting application data.

The MMS User Agent's capability information shall include:

- an indication of which Digital Rights Management methods are supported by the recipient MMS User Agent for protecting MM elements as specified in clause 7.1.15.

This information may include additional information related to the MMS implementation (WAP etc.).

. . .

7.1.6   Read-Reply Report

The MMS Relay/Server shall support the read-reply reporting service. Read-reply reports shall only be generated for MMs.

Upon MM submission the originator MMS User Agent or VASP may be able to request a read-reply report for a specific MM.

Upon MM retrieval the recipient MMS User Agent may receive an indication that a read-reply report is requested for the MM.

After having handled/rendered the MM the recipient MMS User Agent may generate a read-reply report if requested by the originator (MMS User Agent or VASP) and if the originator address (MMS User Agent or VASP address) is available. In case of transporting of application data acc. to clause 7.1.17 the recipient MMS User Agent shall not generate a read-reply report unless it has successfully delivered the MM related information to the application addressed by the destination application identifier.

The originator MMS User Agent or VASP, i.e. the MMS User Agent or VASP receiving the read-reply report, may match the read-reply report to the sent MM by retaining the message identification of the sent MM and comparing it to the received read-reply report, which shall contain the message identification of the original MM. In case of multiple

MM recipients, it is necessary for the originator MMS User Agent or VASP to retain the MM recipient addresses as well as to match the read-reply report to the sent MM.

If a read-reply report has been requested by the originator MMS User Agent or VASP and if the recipient MMS User Agent supports the read-reply feature and if the recipient allows its creation the recipient MMS User Agent shall submit the read-reply report to the recipient MMS Relay/Server at the earliest opportunity.

NOTE: Since the MM recipient has the right to deny this service not receiving a read-reply report does not mean the message has not been rendered / handled by the recipient MMS User Agent.

A read-reply report:

- shall contain the MM originator's address

- shall contain the MM recipient's address

- shall contain the message identification of the original MM for which the read-reply report has been generated.

- shall provide status information how the MM was rendered (e.g. read, deleted without being read)

- shall provide a time stamp for when the MM was rendered

The recipient MMS User Agent shall store read-reply reports in the UE until the recipient MMS Relay/Server becomes reachable (subject to support of the read-reply reporting service by the recipient MMS User Agent and storage place being available).

Upon reception of a read-reply report from a recipient MMS User Agent the recipient MMS Relay/Server

- may provide a time stamp for the read-reply report, i.e. it may also override the MMS User Agent's time stamp,

- shall pass the MM originator address unaltered when routing the read-reply report towards the originator MMS User Agent or originator VASP (i.e. the recipient MMS User Agent or recipient VASP of the read reply report)

- shall insert the MM recipient's address into the read-reply report if not yet provided

- may override the recipient's address provided by the recipient MMS User Agent in the read-reply report (subject to MMS service provider's preferences)

- shall resolve the MM originator's address,

- shall route the read-reply report towards the originator MMS User Agent or originator VASP of the original MM.

A special case is where the recipient MMS Relay/Server is also the originator MMS Relay/Server. In this case the MM does not have to be routed forward.

▪ ▪ ▪

7.1.13   Support for Value Added Services (VAS) in MMS

▪ ▪ ▪

7.1.13.6   Identification of applications that reside on MMS VAS Applications

Applications that reside on a MMS VAS Application (see section 7.1.17) may trigger a VAS to submit or receive abstract messages over the MM7 reference point. These applications shall be identified in the abstract messages separately from the identification of the VASP and VAS. The identification of the VASP and VAS should not be affected by the addition of these new application identification fields. It is the responsibility of the VASP and VAS to maintain the connection of the identification to the applications that reside on the MMS VAS Application, and, as such, is out-of-scope for this specification.

• • •

7.1.17   Support for transporting Application Data

Apart from using MMS as a service for users to exchange messages, MMS may also be used to transport data specific to applications. Applications that intend to transport application specific data using MMS may either reside on an MMS User Agent or on an MMS VAS Application. Details of these applications or how an MMS User Agent or an MMS VAS Application would interface with them are outside the scope of this specification.

NOTE: Applications that want to transport data specific to applications other than MMS will initially need to register with the appropriate MMS User Agent or MMS VAS Application. During this registration process the application provisions an MMS User Agent or an MMS VAS Application with its application identification value and may negotiate with the MMS User Agent or MMS VAS Application the details (amount and format) of information to be exchanged between the two entities. The application registration process is outside the scope of this specification. The registration may be an inherent process e.g., in the application's integration into a mobile phone. It may also be the initial step after the download of a downloadable application to a mobile phone. Whatever the details of the application registration process are, an MMS User Agent or an MMS VAS Application acts according to the negotiated results from the application registration process.

Applications that reside on a MMS VAS Application are differentiated from the MMS VAS Application. These applications may trigger the MMS VAS Application as a MMS front-end to transmit or receive information formatted in MMS abstract messages. Such applications have an additional level of addressing – in addition to the identification of the VASP and the MMS VAS Application.

When MMS is used to transport data specific to applications between two MMS User Agents or an MMS User Agent and an MMS VAS Application (or vice versa) the following exceptions to the normal MMS service behaviour apply:

7.1.17.1   Application Identifiers

The application identifier of the destination application shall be present in an abstract message, while the identifier of a "reply-path" and some additional application/implementation specific control information may be present in an abstract message.

The additional application/implementation specific control information shall be used for all future needs that are not supported by the application identifier of the destination application and the identifier of the originating application, such as specifying a particular logical channel in the application addressing method (e.g., "discussion thread #05") or distinguishing between multiple instances of the same application (e.g., "chess application #02").

The format of the application identifiers' values shall be text string.

NOTE: The syntax of the application identifiers' values is outside the scope of this specification, i.e. an industry group other than 3GPP may define these and shall guarantee their global uniqueness.

7.1.17.2   Applications sending and receiving abstract messages

7.1.17.2.1   Sending abstract messages

Based on the negotiated details upon application registration process an application may trigger an MMS User Agent or an MMS VAS Application to submit certain abstract messages. Upon triggering an MMS User Agent or an MMS VAS Application to send an abstract message the MMS User Agent or MMS VAS Application may receive information from the application. The MMS User Agent or MMS VAS Application may insert this information in both the information elements and/or payload (if present) of the abstract message. The details for the above are according to the results of the application registration process.

Abstract messages that are sent by an MMS User Agent or an MMS VAS Application on behalf of an originating application shall contain a destination application identifier. They may, in addition, contain an application identifier which is to be used in reply-MMs and they may contain additional application/implementation specific control information.

7.1.17.2.2   Receiving abstract messages

If an MMS Relay/Server finds from the recipient MMS User Agent's capability indication that the recipient MMS User Agent does not support the transport of application data, the MMS Relay/Server

- should delete the content of the MM before notifying the MMS User Agent or before retrieval. In such a case the recipient MMS Relay/Server shall apply the normal reporting behaviour towards receiving as well as sending entities;

- may decide about the deletion of content based on user setting in the user's profile and/or configuration by network operator and/or MMS service provider.

If the MMS Relay/Server finds from the recipient MMS User Agent's capability indication that the recipient MMS User Agent supports transport of application data, the MMS Relay/Server

- shall not perform any type of content adaptation to a multimedia message (MM) that may be contained in the payload of an abstract message that contains a destination application identifer;

- shall pass on the destination application identifier, the "reply-path" identifier (if present) and the additional application/implementation specific control information (if present) unaltered.

Upon reception of an abstract message containing a destination application identifier, the receiving MMS User Agent or MMS VAS Application shall first check if the destination application resides on it.

If the destination application resides on a receiving MMS VAS Application, the MMS VAS Application shall immediately route the received MMS information on to the destination application that is referred to by the destination application identifier (based on the negotiated details upon application registration process).

If the destination application resides on a receiving MMS User Agent, the MMS User Agent shall immediately route the received MMS information on to the destination application that is referred to from the destination application identifier (based on the negotiated details upon application registration process) without presentation to the user.

  NOTE: The further handling and processing of the information by the destination application is outside the scope of this specification.

If the destination application does not reside on the receiving MMS User Agent or MMS VAS Application, the MMS User Agent or MMS VAS Application shall discard the corresponding abstract message.

7.1.17.2.3   End User Confirmation

An MMS User Agent may ask for end user confirmation before any submission or retrieval of an MM triggered by an application due to charging, privacy or security reasons.

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8.1.3   Submission of Multimedia Message

This part of MMS service covers the submission of an MM. For sending purposes a terminal-originated MM shall always be submitted from the originator MMS User Agent to the corresponding MMS Relay/Server. Involved abstract messages are outlined in Table 1 from type and direction points of view.

Table 1: Abstract messages for submission of MM in MMS

Abstract messages	Type	Direction
MM1_submit.REQ	Request	MMS UA -> MMS Relay/Server
MM1_submit.RES	Response	MMS Relay/Server -> MMS UA

8.1.3.1   Normal operation

The originator MMS User Agent shall submit a terminal-originated MM to the originator MMS Relay/Server using the MM1_submit.REQ, which contains MMS control information and the MM content. If the Store information element is present, the MM will also be copied to the MMBox, if the MMBox is supported and enabled for the subscriber.

The MMS Relay/Server shall respond with an MM1_submit.RES, which provides the status of the request. The MM1_submit.RES shall unambiguously refer to the corresponding MM1_submit.REQ.

Support for MM1_submit.REQ is optional for the MMS UA, support for MM1_submit.RES is mandatory for the MMS Relay/Server.

8.1.3.2   Abnormal Operation

In this case the originator MMS Relay/Server shall respond with a MM1_submit.RES encapsulating a status which indicates the reason the multimedia message was not accepted, e.g. no subscription, corrupt message structure, service not available, MMBox not supported, MMBox not enabled, MMBox over quota, MMBox system full, MMBox I/O error.

If the MMS Relay/Server does not provide the MM1_submit.RES the MMS User Agent should be able to recover.

8.1.3.3   Features

Addressing: One or several MM recipients of a submitted MM shall be indicated in the addressing-relevant information field(s) of the MM1_submit.REQ. The originator of a submitted MM may be indicated in addressing-relevant information field(s) of the MM1_submit.REQ. The originator MMS User Agent may request to hide its identity from the MM recipient.

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

Time constraints: The originator MMS User Agent may also request an earliest desired time of delivery of the MM. The originator MMS User Agent may request a time of expiry for the MM. In case of reply-charging the originator MMS User Agent may also request a deadline for the latest time of submission of reply-MMs granted to the recipient(s).

Reply-Charging: The originator MMS User Agent may indicate that the sender 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 MM1_submit.REQ.

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_submit.REQ. Additional qualifiers may be added.

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

Identification: The originator MMS Relay/Server shall always provide a message identification for an MM, which it has accepted for submission in the MM1_submit.RES. In case of reply-charging the MMS User Agent which submits a reply-MM (i.e. the MMS User Agent that received the original MM) shall provide the message ID of the original MM which it replies to in the MM1_submit.REQ.

Persistent storage: In addition to being submitted for normal delivery, the MMS User Agent may request that the submitted MM be stored into the MMBox, by the presence of the Store information element. As part of the store request, the MM State and MM Flags can be set with the use of corresponding information elements. The response to a Store request shall include a Message Reference to the newly stored MM, as well as the associated MM State and optional MM Flags.

Store Status: The MMS Relay/Server shall indicate the store status of the MM1_submit.REQ in the Store Status information element of the associated MM1_submit.RES. The Store Status information element of the MM1_submit.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

Content Type: The MIME type of the multimedia content shall always be identified in the MM1_submit.REQ.

Content: The originator MMS User Agent may add content in the MM1_submit.REQ.

Request Status: The originator MMS Relay/Server shall indicate the status of the MM1_submit.REQ in the associated MM1_submit.RES. The reason code given in the status information element of the MM1_submit.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 originator MMS User Agent 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_submit.REQ and MM1_submit.RES as such.

Applic-ID: The presence of this information element indicates that this abstract message shall be provided to an application residing on an MMS User Agent or MMS VAS Application. It contains the identification of the destination application.

Reply-Applic-ID: If present, this information element indicates a "reply path", i.e. the identifier of the application to which delivery reports, read-reply reports and reply-MMs are addressed if any.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1).

8.1.3.4   Information Elements

Table 2: 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 MMBox, 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.
Applic-ID	Optional	Identification of the destination application.
Reply-Applic-ID	Optional	Identification of an application to which reply-MMs, delivery reports and read-reply reports are addressed.
Aux-Applic-Info	Optional	Auxiliary application addressing information.
Content	Optional	The content of the multimedia message

Table 3: 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 4: 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 MMBox 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 MMBox.

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.

> NOTE: From REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail over the Message Distribution Indication feature.

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.

MM recommended retrieval mode: the MMS Relay/Server may include an indication about the recommended manual retrieval mode of the MM. This indication code may be supported with an explanatory text (e.g. indication about charging related information if recipient has to pay for the retrieval or roaming condition) further expliciting why the manual retrieval mode is recommended for the MM.

Applic-ID: This information element contains the identification of the destination application. Upon reception, the recipient MMS User Agent shall provide this MM1_notification.REQ to the specified destination application.

Reply-Applic-ID: If present, this information element may be used by the originating application to indicate a "reply path" to the destination application residing on the receiving MMS User Agent or MMS VAS Application. It contains the application identifier which shall be used by the recipient MMS User Agent when a reply-MM or a read-reply report is created.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1).

8.1.4.4   Information Elements

Table 5: 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 MMBox.
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
MM recommended retrieval mode	Optional	Indication that manual retrieval mode is recommended for this MM
Text explaining MM recommended retrieval mode	Optional	Description that explicits why the manual retrieval mode is recommended for the MM.
Message Distribution Indicator	Optional	If set to "false" the VASP has indicated that content of the MM is not intended for redistribution.\nIf set to "true" the VASP has indicated that content of the MM can be redistributed (NOTE).
Applic-ID	Optional	Identification of the destination application.
Reply-Applic-ID	Optional	Identification of an application to which reply-MMs and read-reply reports are addressed.
Aux-Applic-Info	Optional	Auxiliary application addressing information.
NOTE: From REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.		

Table 6: 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 7: 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.

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

    NOTE: From REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail over the Message Distribution Indication feature.

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.

Applic-ID: This information element contains the identification of the destination application. Upon reception, the recipient MMS User Agent shall provide this MM1_retrieve.RES to the specified destination application.

Reply-Applic-ID: If present, this information indicates a "reply path". It contains the application identifier which shall be used by the recipient MMS User Agent when a reply-MM or a read-reply report is created.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1).

8.1.5.4 Information Elements

Table 8: 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 9: 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	Conditional	The message ID of the MM. Condition: this information element shall be present when the MM1_retrieve.RES contains the requested MM content.
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 stamp).
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. (NOTE)
Applic-ID	Optional	Identification of the destination application.
Reply-Applic-ID	Optional	Identification of an application to which reply-MMs and read-reply reports are addressed.

Aux-Applic-Info	Optional	Auxiliary application addressing information.
Content	Conditional	The content of the multimedia message if specified by the originator MMS User Agent of the MM.
NOTE: From REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.		

Table 10: 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

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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 11: 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.

Applic-ID: This information element indicates the identification of the application that the delivery report is intended for. If a Reply-Applic-ID was indicated in the corresponding original MM, the recipient MMS Relay/Server shall set its value to that Reply-Applic-ID value. Otherwise, the recipient MMS Relay/Server shall set its value to the Applic-ID value that was indicated in the corresponding original MM.

Reply-Applic-ID: If present, this information element indicates a "reply path" to this delivery report, i.e. the identification of an application to which reply-MMs are addressed. The recipient MMS Relay/Server shall insert it into the MM1_delivery_report.REQ if the values of Applic-ID and Reply-Applic-ID in the corresponding original MM differ, in which case its value shall equal the Applic-ID value that was indicated in the corresponding original MM.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1). The recipient MMS Relay/Server shall insert it if Aux-Applic-Info was indicated in the corresponding original MM, in which case its value shall equal that Aux-Applic-Info value.

8.1.7.4   Information Elements

Table 12: 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
Applic-ID	Optional	The identification of the application that this delivery report is intended for.
Reply-Applic-ID	Optional	Identification of a "reply path" to this delivery report.
Aux-Applic-Info	Optional	Auxiliary application addressing information as indicated in the original MM.

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 13: 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.

Applic-ID: This information element indicates the identification of the application that the read-reply report is intended for. If a Reply-Applic-ID was indicated in the corresponding original MM, the recipient MMS User Agent shall set its value to that Reply-Applic-ID value. Otherwise, the recipient MMS User Agent shall set its value to the Applic-ID value that was indicated in the corresponding original MM.

Reply-Applic-ID: If present, this information element indicates a "reply path" to this read-reply report, i.e. the identifier of the application to which reply-MMs to this read-reply report are addressed if any.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1).

8.1.8.4   Information Elements

Table 14: 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
Applic-ID	Optional	The identification of the application that the read-reply report is intended for.
Reply-Applic-ID	Optional	The identification of a "reply path" to this read-reply report.
Aux-Applic-Info	Optional	Auxiliary application addressing information.

Table 15: 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
Applic-ID	Optional	The identification of the application that the read-reply report is intended for.
Reply-Applic-ID	Optional	The identification of a "reply path" to this read-reply report.
Aux-Applic-Info	Optional	Auxiliary application addressing information.

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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 31: 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 a separate MM4_forward.REQ per MM recipient. The MM4_forward.REQ 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. If multiple recipients are addressed in the MM4_Forward.REQ the recipient MMS Relay/Server may respond with any of the following to the originator MMS Relay/Server: a single MM4_Forward.RES message, multiple MM4_Forward.RES messages, or any combination of single or multiple MM4_Forward.RES messages. E.g. this will allow for multiple status indications or a single collective status indication in the MM4_Forward.RES in case of partial addressing failures.

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 either the originator MMS User Agent, or the originator MMS Relay/Server 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.

Request Recipients: A list of recipients to whom the request status applies.

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.

Applic-ID: This information element specifies the identification of the application that the routed forward MM is intended for. Its value shall equal the Applic-ID value of the MM which is being routed forward with this MM4_forward.REQ.

Reply-Applic-ID: If present, this information element indicates a "reply path" to this MM, i.e. the identifier of the application to which a destination application shall address reply-MMs if any. The Reply-Applic-ID value shall equal the Reply-Applic-ID value of the MM which is being routed forward with this MM4_forward.REQ.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1). The Aux-Applic-Info value shall equal the Aux-Applic-Info value of the MM which is being routed forward with this MM4_forward.REQ.

8.4.1.4   Information Elements

Table 32: 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 (time stamp).
Time of Expiry	Conditional	The desired time of expiry for the MM if specified by the originator MMS User Agent (time stamp).
Delivery report	Conditional	A request for delivery report if the originator MMS User Agent has requested a delivery report for the MM.
Originator R/S delivery report	Conditional	A request for delivery report that, when set to "Yes", means the originator MMS Relay/Server has requested a delivery report for the MM. Interpret as "No" in the absence of this Information element.
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 (time stamps).
Applic-ID	Optional	Identification of the destination application.
Reply-Applic-ID	Optional	Identification of a "reply-path" to this MM.
Aux-Applic-Info	Optional	Auxiliary application addressing information.
Content	Conditional	The unaltered content of the multimedia message if specified by the originator MMS User Agent.

Table 33: 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 Recipients	Conditional	List of recipients to whom the Request Status value applies. If this element is absent the Request Status value is applicable to all recipients of 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 34: 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. The MM Status Extension may be used to provide more granularity.

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.

Forward To originator UA: The recipient MMS Relay/Server shall indicate if the originator MMS Relay/Server is allowed to forward the Delivery Report to the originator MMS User Agent.

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.

Applic-ID: This information element indicates the identification of the application that the delivery report is intended for. The recipient MMS Relay/Server shall insert this Applic-ID in a MM4_delivery_report.REQ if an Applic-ID was present in the corresponding original MM. If a Reply-Applic-ID was indicated in the corresponding original MM, the Applic-ID value shall equal that Reply-Applic-ID value. Otherwise, its value shall equal the Applic-ID value that was indicated in the corresponding original MM.

Reply-Applic-ID: If present, this information element indicates the application that the original MM was delivered to. The recipient MMS Relay/Server shall insert this Reply-Applic-ID if the values of Applic-ID and Reply-Applic-ID in the corresponding original MM differ. Its value shall equal the Applic-ID value that was indicated in the corresponding original MM.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1). The recipient MMS Relay/Server shall insert this Aux-Applic-Info if Aux-Applic-Info was present in the corresponding original MM. Its value shall equal the Aux-Applic-Info value that was indicated in the corresponding original MM.

8.4.2.4   Information Elements

Table 35: 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
Forward to Originator UA	Optional	If "No", indicates that the originator MMS Relay/Server is not allowed to forward the Delivery Report to the originator MMS User Agent. Interpret as "Yes" in the absence of this Information element.
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
MM Status Extension	Optional	Extension of the MM Status, to provide more granularity.
MM Status text	Optional	Status text corresponding to the MM Status
Applic-ID	Optional	The identification of the originating application of the original MM.
Reply-Applic-ID	Optional	The identification of the destination application of the original MM.
Aux-Applic-Info	Optional	Auxiliary application addressing information as indicated in the original MM.

Table 36: 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 37: 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.

Applic-ID: This information element indicates the identification of the application that the read-reply report is intended for. If a Applic-ID was indicated in the corresponding MM1_read_reply_recipient.REQ, the Applic-ID value shall equal that Applic-ID value.

Reply-Applic-ID: If present, this information element indicates the application that the original MM was delivered to. If a Reply-Applic-ID was present in the corresponding MM1_read_reply_recipient.REQ, the Reply-Applic-ID value shall equal that Reply-Applic-ID value.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1). It shall be present if Aux-Applic-Info was indicated in the corresponding MM1_read_reply_recipient.REQ, in which case its value shall equal the Aux-Applic-Info value that was indicated in the corresponding original MM.

8.4.3.4   Information Elements

Table 38: 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
Applic-ID	Optional	The identification of the originating application of the original MM.
Reply-Applic-ID	Optional	The identification of the destination application of the original MM.
Aux-Applic-Info	Optional	Auxiliary application addressing information.

Table 39: 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 40: 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: , Bcc:
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:
Originator R/S delivery report	X-Mms-Originator-R/S-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:
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info
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.

In case there are only blind carbon-copy recipient(s) ("Bcc:"), the behaviour shall be as recommended by RFC2821 [22], Appendix B, i.e. the originating MMS Relay/Server shall only insert an empty "Bcc:" header and no "To:" or "Cc:" headers. The recipient(s) shall then only be indicated in the SMTP command layer (RCPT TO:).

In case there are both "To:" / "Cc:" and "Bcc:" recipients, the "Bcc:" headers shall be removed by the originating MMS Relay/Server and the "Bcc:" recipients shall only be indicated in the SMTP command level (RCPT TO:). This is in accordance with the functionality recommended by RFC2821 [22], Appendix B.

The SMTP RCPT TO: shall convey the MM to the recipient, one recipient at a time.

For example, if an MMS originator sends an MM to 3 recipients (e.g., To: userA, Cc: userB; Bcc: userC), all served by the same MMS Relay/Server, differing from the originator's MMS Relay/Server; the originator MMS Relay/Server shall send:

an SMTP MM4_Forward.REQ, with RCPT To: = userA,

a different SMTP MM4_Forward.REQ, with RCPT To: = userB,

and another SMTP MM4_Forward.REQ, with RCPT To: = userC.

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 41: 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:
Request Recipients	X-Mms-Request-Recipients
-	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 42: 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:
Forward to Originator UA	X-Mms-Forward-To-Originator-UA
MM Status	X-Mms-MM-Status-Code:
MM Status Extension	X-Mms-MM-Status-Extension
MM Status Text	X-Mms-Status-text:
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info
-	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 43: 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 44: 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:
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info
-	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 45: 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_Read_reply_report.REQ.

The STD 11 "To:" header value of the MM4_Delivery_report.RES abstract message shall be obtained from the corresponding MM4_Read-reply_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 2822 [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-Originator-R/S-Delivery-Report:

```
Originator-R/S-Delivery-Report =   "X-Mms-Originator-R/S-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-Forward-To-Originator-UA:

```
Forward-To-Originator-UA = "X-Mms-Forward-To-Originator-UA" ":" ( "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-MM-Status-Extension:

```
 MM-Status-Extension =  "X-Mms-MM-Status-Extension" ":" ( "Rejection-By-MMS-
 Recipient" | "Rejection-by-Other-RS" )
```

The meaning of the X- Mms-Status-Extension header field is further described in section 8.4.4.11 of this specification.

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.

X-Mms-Applic-ID

```
Applic-ID = "X-Mms-Applic-ID" ":" quoted-string
```

X-Mms-Reply-Applic-ID

```
Reply-Applic-ID = "X-Mms-Reply-Applic-ID" ":" quoted-string
```

```
Aux-Applic-Info = "X-Mms-Aux-Applic-Info" ":" quoted-string
```

...

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 47: 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, or if the Relay/Server does not support third party charging. 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. In the addressing information, it may be indicated whether a recipient address has been encrypted or obfuscated. 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.

NOTE: Use case examples:

1) The Linked ID can be used by the Relay/Server to logically relate a VASP reply (MM7_Submit.REQ) to an original user's request (MM1_Submit.REQ, and MM7_Deliver.REQ), in which case the Linked ID corresponds to the Message ID returned in the original MM1_Submit.RES.

2) The LinkedID can as well be used by the VASP to keep track of a sequence of MM7_Submit.REQ (e.g. MMs to multiple users) triggered by a single MM7_Deliver.REQ (e.g. which was triggered by a user's MM1_submit.REQ).

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.

NOTE: From REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Content Adaptation Restriction feature.

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.

Charged party ID: The address of the third party which is expected to pay for the MM.

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

NOTE: From REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Message Distribution Indication feature.

Delivery Condition: The VASP may indicate a condition which needs to be met to allow delivery. If the condition is not met the MM shall be discarded by the MMS Relay/Server.

Applic-ID: The presence of this information element indicates that this abstract message shall be provided to an application residing on an MMS User Agent. It contains the identification of the destination application.

Reply-Applic-ID: If present, this information element indicates a "reply path", i.e. the identifier of the application to which delivery reports, read-reply reports and reply-MMs are addressed if any.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1).

8.7.1.4　　　Information Elements

Table 48: 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. It is possible to mark that a recipient address is provided in encrypted or obfuscated format. E.g. the address was originally provided in encrypted or obfuscated form in an associated MM7_deliver.REQ.
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) (NOTE 1)
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 third party 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. (NOTE 2)
Charged Party ID	Optional	The address of the third party which is expected to pay for the MM
Delivery Condition	Optional	If the condition is met the MM shall be delivered to the recipient MMS User Agent, otherwise the MM shall be discarded. The initial values are: MMS capable only; HPLMN only; any other values can be added based on bilateral agreements between the MMS Relay/Server operator and the VASP.
Applic-ID	Optional	Identification of the destination application.
Reply-Applic-ID	Optional	Identification of an application to which reply-MMs, delivery reports and read-reply reports are addressed.
Aux-Applic-Info	Optional	Auxiliary application addressing information.

NOTE 1:	From REL-6 onwards, in case of misalignment between the value assigned to Adaptations and DRM-protection rules, the latter shall prevail.
NOTE 2:	From REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.

Table 49: 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 50: 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 VAS that requires a response.
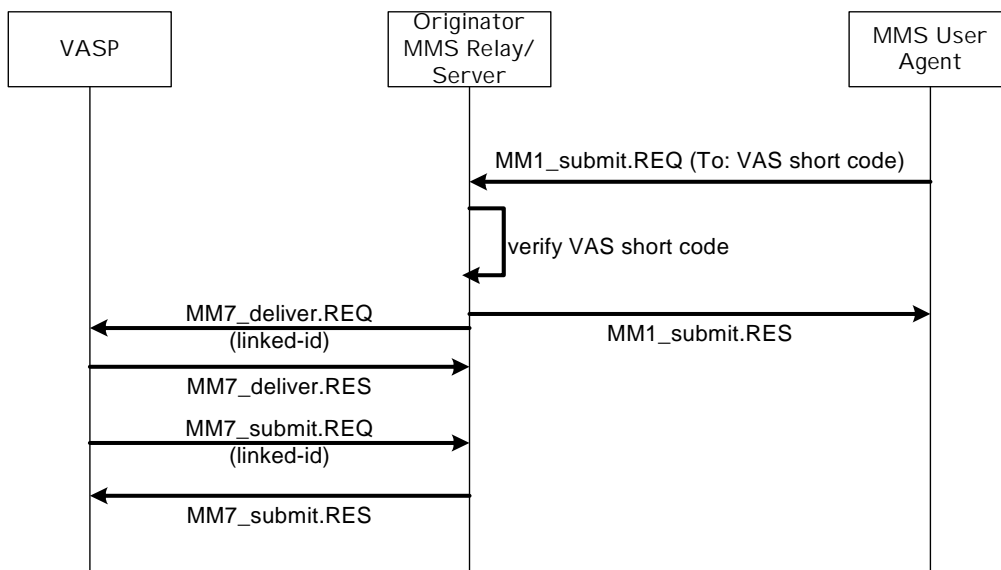
Figure 9: Use of MM7_deliver and subsequent response

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. In the addressing information, it may be indicated whether the sender address has been encrypted or obfuscated.

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 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.

NOTE: Use case examples:

1) The Linked ID can be used by the Relay/Server to logically relate a VASP reply (MM7_Submit.REQ) to an original user's request (MM1_Submit.REQ, and MM7_Deliver.REQ), in which case the Linked ID corresponds to the Message ID returned in the original MM1_Submit.RES.

2) The LinkedID can as well be used by the VASP to keep track of a sequence of MM7_Submit.REQ (e.g. MMs to multiple users) triggered by a single MM7_Deliver.REQ (e.g. which was triggered by a user's MM1_submit.REQ).

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.

Service Provider Identification: The MMS Relay/Server may provide the SPI (Service Provider Identification) for the sender. In case a message is delivered to a VASP based on the recipient address, the MMS Relay/Server may provide the SPI for the recipient. The SPI information can originate from e.g. a user profile or a MAP query.

Time stamping: The MM may include 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 MM7_deliver.REQ may carry the date and time of the submission of the MM.

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.

Applic-ID: This information element contains the identification of the destination application. Upon reception, the recipient MMS VAS Application shall provide this MM7_retrieve.REQ to the specified destination application.

Reply-Applic-ID: If present, this information element indicates a "reply path". It contains the application identifier which shall be used by the recipient MMS VAS Application when a reply-MM or a read-reply report is created.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1).

8.7.2.4   Information Elements

Table 51: 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. It is possible to mark that the sender address has been encrypted or obfuscated by the MMS Relay/Server.
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.
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).
Sender SPI	Optional	The SPI of the MM originator.
Recipient SPI	Optional	The SPI of the intended MM recipient, in case the MM was delivered to VASP based on the recipient address.
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.
Applic-ID	Optional	Identification of the destination application.
Reply-Applic-ID	Optional	Identification of an application to which reply-MMs and read-reply reports are addressed.
Aux-Applic-Info	Optional	Auxiliary application addressing information.
Content	Optional	The content of the multimedia message

Table 52: 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 53: 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.
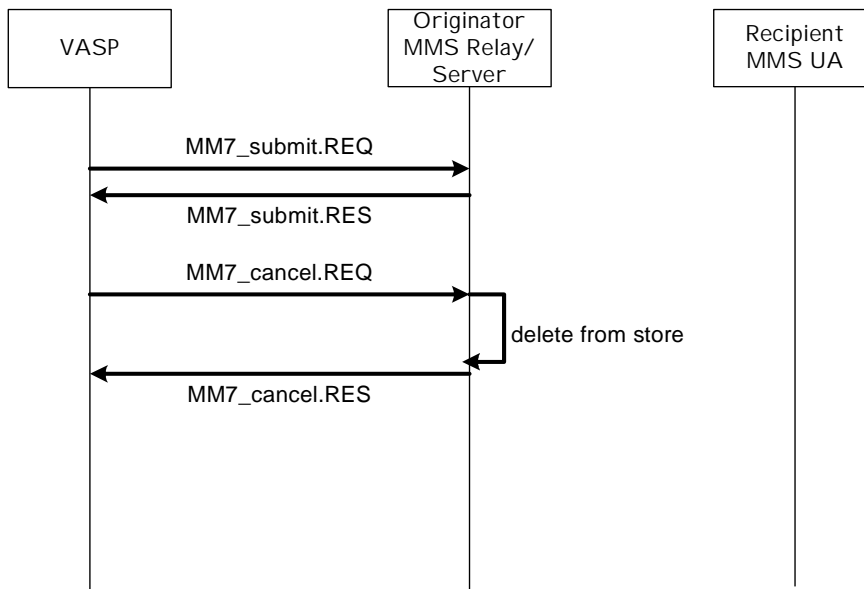
Figure 10: Data flow of VASP canceling a submitted message

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. An application which resides on a MMS VAS application may supply its own identifiers 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.

> NOTE: From REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Content Adaptation Restriction feature.

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.

Applic-ID: The presence of this information element indicates that this abstract message shall be provided to an application residing on an MMS User Agent. It contains the identification of the destination application.

Reply-Applic-ID: If present, this information element indicates a "reply path", i.e. the identifier of the application to which delivery reports, read-reply reports and reply-MMs are addressed if any.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1).

8.7.3.4 Information Elements

Table 54: 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.
Applic-ID	Optional	Identification of the destination application.
Reply-Applic-ID	Optional	Identification of an application to which reply-MMs, delivery reports and read-reply reports are addressed.
Aux-Applic-Info	Optional	Auxiliary application addressing information.

Table 55: 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 56: 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. (NOTE 1)
Applic-ID	Optional	Identification of the destination application.
Reply-Applic-ID	Optional	Identification of an application to which reply-MMs, delivery reports and read-reply reports are addressed.
Aux-Applic-Info	Optional	Auxiliary application addressing information.
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. (NOTE 2)
NOTE 1: From REL-6 onwards, in case of misalignment between the value assigned to Adaptations and DRM-protection rules, the latter shall prevail. NOTE 2: From REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.		

Table 57: 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 58: 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. If there is no match between delivery condition and user status, delivery condition not met shall be returned.

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.

Applic-ID: This information element indicates the identification of the application that the delivery report is intended for. If a Reply-Applic-ID was indicated in the corresponding original MM, the recipient MMS Relay/Server shall set its value to that Reply-Applic-ID value. Otherwise, the recipient MMS Relay/Server shall set its value to the Applic-ID value that was indicated in the corresponding original MM.

Reply-Applic-ID: If present, this information element indicates a "reply path", i.e. the identification of an application to which reply-MMs are addressed. The recipient MMS Relay/Server shall insert it into the MM7_delivery_report.REQ if the values of Applic-ID and Reply-Applic-ID in the corresponding original MM differ, in which case its value shall equal the Applic-ID value that was indicated in the corresponding original MM.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1). The recipient MMS Relay/Server shall insert it if Aux-Applic-Info was indicated in the corresponding original MM, in which case its value shall equal that Aux-Applic-Info value.

8.7.4.4 Information Elements

Table 59: 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.) (time stamp)
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
MM Status Extension	Optional	Extension of the MM Status, to provide more granularity.
MM Status text	Optional	Text description of the status for display purposes, should qualify the MM Status
Applic-ID	Optional	The identification of the originating application of the original MM.
Reply-Applic-ID	Optional	Identification of an application to which the originating application of the original MM shall address reply-MMs if any.
Aux-Applic-Info	Optional	Auxiliary application addressing information.

Table 60: 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 61: 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.

Applic-ID: In case of application addressing, this information element indicates the identification of the application that the read-reply report is intended for. The recipient MMS Relay/Server shall set its value to the Applic-ID value indicated in the corresponding MM1_read_reply.REQ or MM4_read_reply_recipient.REQ.

Reply-Applic-ID: If present, this information element indicates a "reply path", i.e. the identifier of the application to which reply-MMs to this read-reply report are addressed if any. The recipient MMS Relay/Server shall set its value to the Reply-Applic-ID value indicated in the corresponding MM1_read_reply.REQ or MM4_read_reply_recipient.REQ.

Aux-Applic-Info: If present, this information element indicates additional application/implementation specific control information (cf. 7.1.17.1). The recipient MMS Relay/Server shall set its value to the Aux-Applic-Info value indicated in the corresponding MM1_read_reply.REQ or MM4_read_reply_recipient.REQ.

8.7.5.4 Information Elements

Table 62: 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
Applic-ID	Optional	The identification of the originating application of the original MM.
Reply-Applic-ID	Optional	Identification of an application to which the originating application of the original MM shall address reply-MMs if any.
Aux-Applic-Info	Optional	Auxiliary application addressing information.

Table 63: 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 64: 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 65: 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 66: 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.

8.7.7 Administrating the Distribution List

After a Value Added Service becomes available users may subscribe to the service using direct contact to the VASP (e.g. by sending a MM via MM1_submit.REQ to the service provider including registration information). The distribution list may be maintained by the MMS Relay/Server. The full definition of the administration of the distribution list may be specified in future releases of this specification.

8.7.8 Implementation of the MM7 Abstract Messages

The interface between a VASP and the MMS Relay/Server, over the MM7 reference point, shall be realised using SOAP 1.1[68] as the formatting language. The VASP and the MMS Relay/Server shall be able to play dual roles of sender and receiver of SOAP messages. HTTP [48] shall be used as the transport protocol of the SOAP messages. The SOAP message shall bind to the HTTP request/response model by providing SOAP request parameters in the body of the HTTP POST request and the SOAP response in the body of the corresponding HTTP response.

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-MM7-1-1.

- 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).

8.7.8.1.1 Binding to HTTP

MM7 request messages shall be transferred in an HTTP POST request. MM7 responses shall be transferred in an HTTP Response message. The media type "text/xml" [70] shall be used for messages containing only the SOAP envelope.

MM7 requests that carry a SOAP attachment shall have a "multipart/related" [71] Content-Type. The SOAP envelope shall be the first part of the MIME message and shall be indicated by the Start parameter of the multipart/related Content-Type. If a SOAP attachment is included it shall be encoded as a MIME part and shall be the second part of the HTTP Post message. The MIME part should have the appropriate content type(s) to identify the payload. Figures 11 and 12 provide few examples of the message structure.This MIME part shall have two MIME headers - Content-Type and Content-ID fields. The Content-ID shall be referenced by the MM7 request <Content> element using the format specified in [69].
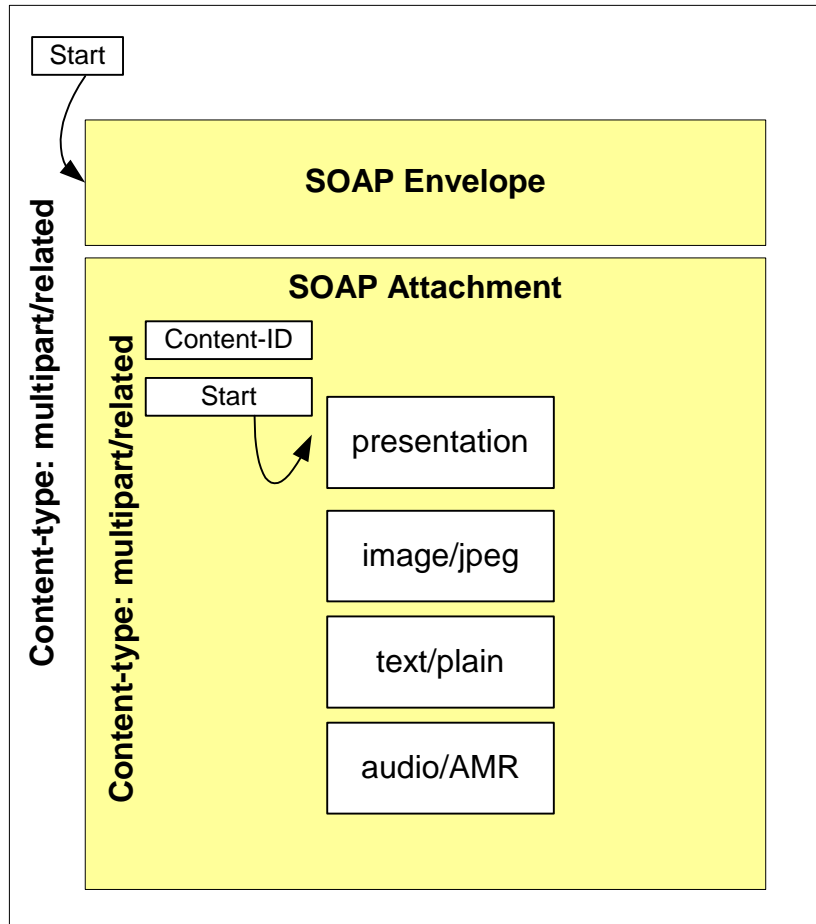
Figure 11: Message structure for a message with a SOAP Attachment (multipart/related payload)
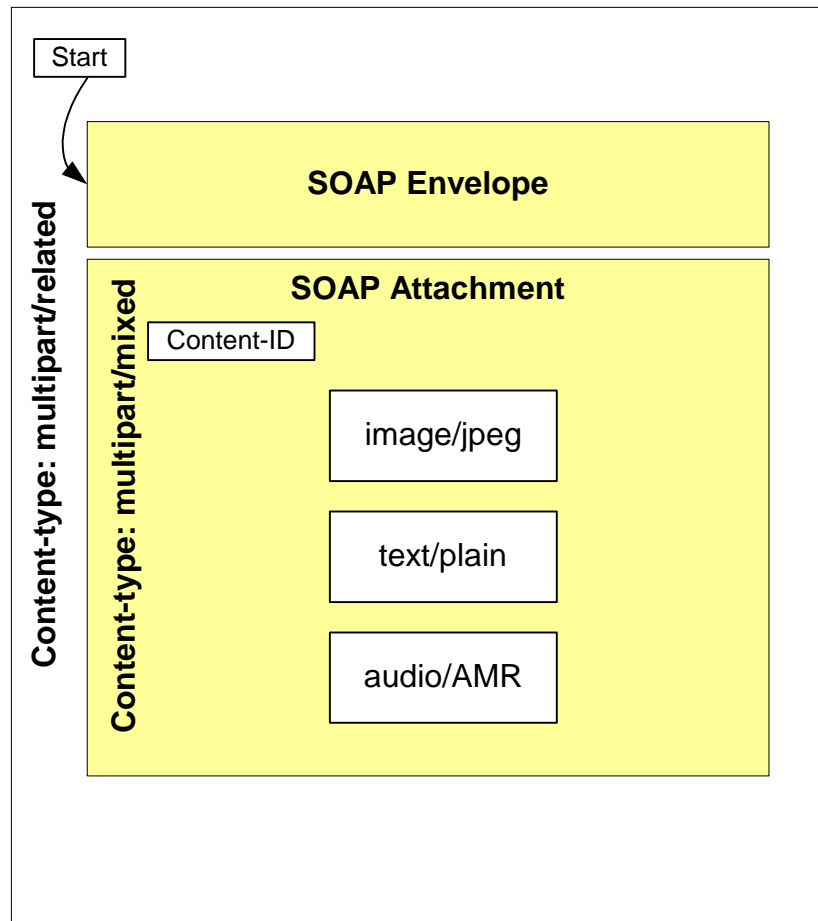
Figure 12: Message structure for a message with a SOAP Attachment (multipart/mixed payload)

For specific examples see the section describing SOAP HTTP examples.

8.7.8.1.2 SOAPAction Header Field

The SOAPAction HTTP request header field [68] should be set to the NULL string (i.e. "").

8.7.8.1.3 DRM-related media types in SOAP messages

In case MM elements are DRM-protected these MM elements shall be of media types as defined in [76] and [78].

8.7.8.2 MM7 Addressing Considerations

In order to bind properly to HTTP, the MMS Relay/Server and the VASP shall be addressable by a unique URI type address [48]. This address shall be placed in the host header field in the HTTP POST method.

In the SOAP body, when the recipient MMS User Agent is addressed, the address-encoding scheme for MM1 shall be used. For these purposes the VASP shall be identified by a MM1 addressable address.

8.7.8.3 Status Reporting

The MM7 response messages shall be carried within a HTTP Response. The response may carry status at three levels:

– network errors shall be indicated by the HTTP level, e.g. as an HTTP 403 "Server not found" and shall be carried in the HTTP response back to the originating application.

– request processing errors (status codes in the range 2xxx-9xxx) shall be reported as a SOAP Fault as defined in [68]. The SOAP fault shall include the *faultcode* [68], *faultstring*[68], and *detail*[68] elements. The *detail* element shall include the status elements described below and in Table 67. The SOAP detail element shall include VASPErrorRsp or RSErrorRsp element as direct child elements. VASPErrorRsp element shall be included if the SOAP Fault is generated by the VASP and RSErrorRsp element shall be sent if the SOAP Fault is generated by the MMS Relay/Server. Errors relating to the TransactionID shall be reported as a SOAP Fault. The *faultcode* shall be "Client.TransactionID" and the *faultstring* shall be used to indicate the human-readable description of the error. No *detail* element shall appear.

– success or partial success (status codes from the Success class, i.e. with format 1xxx) shall be reported in a MM7 response message that will include the following status elements, contained in the Status element of the response messages.

All status responses shall be reported with three XML elements in the response, i.e. the details of the SOAP Fault and the status of the MM7 response message –

- StatusCode shall indicate a numerical code that identifies different classes of error or successful completion of the operation. The StatusCode is a four-digit number of which the two high-order digits are defined in section 8.7.8.3.1, the two low-order digits are implementation specific.

- StatusText shall contain a predefined human readable description of the numerical code that indicates the general type of the error.

- Details, optionally, gives particular details of the error or partial success, e.g. indicates the address that cannot be resolved or message-id that is not recognized. The format of the details element is implementation specific.

8.7.8.3.1   Request and Error Status Codes

The StatusText element (for application-level situations) shall be used to carry a human readable explanation of the error or success situation, e.g. partial success. In Table 67 below the status text should be used by the VASP or MMS Relay/Server when indicating status information to the originator. In addition to this there will be status codes consisting of a four digit numeric value. The first digit of the status code indicates the class of the code. There are 4 classes:

- 1xxx: Success in the operation,
- 2xxx: Client errors,
- 3xxx: Server errors,
- 4xxx: Service errors.

Status codes are extensible. The VASP and the MMS Relay/Server must understand the class of a status code. Unrecognised codes shall be treated as the x000 code for that class. Codes outside the 4 defined class ranges shall be treated as 3000. For implementation specific codes, the numbers in the range x500-x999 shall be used.

The following Table 67 shows the StatusCodes and StatusTexts that are currently defined.

<div align="center">**Table 16: StatusCode and StatusText**</div>

StatusCode	StatusText	Meaning
1000	Success	This code indicates that the request was executed completely
1100	Partial success	This code indicates that the request was executed partially but some parts of the request could not be completed. Lower order digits and the optional Details element may indicate what parts of the request were not completed.
2000	Client error	Client made an invalid request
2001	Operation restricted	The request was refused due to lack of permission to execute the command.
2002	Address Error	The address supplied in the request was not in a recognized format or the MMS Relay/Server ascertained that the address was not valid for the network because it was determined not to be serviced by this MMS Relay/Server. When used in response-result, and multiple recipients were specified in the corresponding push submission, this status code indicates that at least one address is incorrect.
2003	Address Not Found	The address supplied in the request could not be located by the MMS Relay/Server. This code is returned when an operation is requested on a previously submitted message and the MMS Relay/Server cannot find the message for the address specified.
2004	Multimedia content refused	The server could not parse the MIME content that was attached to the SOAP message and indicated by the Content element or the content size or media type was unacceptable.
2005	Message ID Not found	This code is returned when an operation is requested on a previously submitted message and the MMS Relay/Server cannot find the message for the message ID specified or when the VASP receives a report concerning a previously submitted message and the message ID is not recognized.
2006	LinkedID not found	This code is returned when a LinkedID was supplied and the MMS Relay/Server could not find the related message.
2007	Message format corrupt	An element value format is inappropriate or incorrect.
3000	Server Error	The server failed to fulfill an apparently valid request.
3001	Not Possible	The request could not be carried out because it is not possible. This code is normally used as a result of a cancel or status query on a message that is no longer available for cancel or status query. The MMS Relay/Server has recognized the message in question, but it cannot fulfill the request because the message is already complete or status is no longer available.
3002	Message rejected	Server could not complete the service requested.
3003	Multiple addresses not supported	The MMS Relay/Server does not support this operation on multiple recipients. The operation MAY be resubmitted as multiple single recipient operations.
4000	General service error	The requested service cannot be fulfilled.
4001	Improper identification	Identification header of the request does not uniquely identify the client (either the VASP or MMS Relay/Server).
4002	Unsupported version	The version indicated by the MM7 Version element is not supported.
4003	Unsupported operation	The server does not support the request indicated by the MessageType element in the header of the

		message.
4004	Validation error	The SOAP and XML structures could not be parsed, mandatory fields are missing, or the message-format is not compatible to the format specified. Details field may specify the parsing error that caused this status.
4005	Service error	The operation caused a server (either MMS Relay/Server or VASP) failure and should not be resent.
4006	Service unavailable	This indication may be sent by the server when service is temporarily unavailable, e.g. when server is busy
4007	Service denied	The client does not have permission or funds to perform the requested operation.

8.7.9   Mapping of Information Elements to SOAP Elements

The following subsections detail the mapping of the information elements of the abstract messages to SOAP elements. The full XML Schema definition of the MM7 reference point appears in Annex L of this document. Specification of the format of SOAP element values appear in the schema.

8.7.9.1   MM7_submit.REQ 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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
VASP ID	SOAP Body	VASPID	
VAS ID	SOAP Body	VASID	
Sender Address	SOAP Body	SenderAddress	
Recipient Address	SOAP Body	Recipients	Different address format will be specified as part of element value
Service code	SOAP Body	ServiceCode	Information supplied for billing purposes – exact format is implementation dependent
Linked ID	SOAP Body	LinkedID	Message-ID of linked message
Message class	SOAP Body	MessageClass	Enumeration – possible values: Informational, Advertisement, Auto
Date and time	SOAP Body	TimeStamp	
Time of Expiry	SOAP Body	ExpiryDate	
Earliest delivery time	SOAP Body	EarliestDeliveryTime	
Delivery report	SOAP Body	DeliveryReport	Boolean – true or false
Read reply	SOAP Body	ReadReply	Boolean – true or false
Reply-Charging	SOAP Body	ReplyCharging	No value – presence implies true!
Reply-Deadline	SOAP Body	replyDeadline	Attribute of *ReplyCharging* element Date format – absolute or relative
Reply-Charging-Size	SOAP Body	replyChargingSize	Attribute of *ReplyCharging* element
Priority	SOAP Body	Priority	Enumeration – possible values: High, Normal, Low
Subject	SOAP Body	Subject	
Adaptations	SOAP Body	allowAdaptations	Attribute of *Content* element Boolean – true or false
Charged Party	SOAP Body	ChargedParty	Enumeration – possible values: Sender, Recipient, Both, Neither
Message Distribution Indicator	SOAP Body	DistributionIndicator	Boolean – true or false
Delivery Condition	SOAP Body	DeliveryCondition	Possible values include MMS capable only, HPLMN only
Applic-ID	SOAP Body	ApplicID	
Reply-Applic-ID	SOAP Body	ReplyApplicID	
Aux-Applic-Info	SOAP Body	AuxApplicInfo	
Content type	MIME header – Attachment	Content-Type	
Content	SOAP Body	Content	href:cid attribute links to attachment

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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Message ID	SOAP Body	MessageID	
Request Status	SOAP Body	StatusCode	See section 8.7.8.3
Request Status Text	SOAP Body	StatusText & Details	See section 8.7.8.3

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-MM7-1-3"
env:mustUnderstand="1">
            vas00001-sub
        </mm7:TransactionID>
    </env:Header>
    <env:Body>
        <SubmitReq xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-
MM7-1-3">
            <MM7Version>5.6.0</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</TimeStamp>
            <EarliestDeliveryTime>2002-01-02T09:30:47-05:00</EarliestDeliveryTime>
            <ExpiryDate>P90D</ExpiryDate>
            <DeliveryReport>true</DeliveryReport>
            <Priority>Normal</Priority>
            <Subject>News for today</Subject>
            <ChargedParty>Sender</ChargedParty>
            <DistributionIndicator>true</DistributionIndicator>

        <Content href="cid:SaturnPics-01020930@news.tnn.com" allowAdaptations="true"/>
        </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>
Content-Transfer-Encoding: base64

R0lGODdhZAAwAOMAAAAAAIGJjGltcDE0OOfWo6Ochbi1n1pmcbGojpKbnP/lpW54fBMTE1RYXEFO
…

--StoryParts 74526 8432 2002-77645--
--NextPart_000_0028_01C19839.84698430--
```

NOTE: The different encoding mechanisms, as defined by RFC2045 [44], can be utilized for content encoding.

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-MM7-1-3"
env:mustUnderstand="1">
            vas00001-sub
       </mm7:TransactionID>
    </env:Header>
    <env:Body>
       <SubmitRsp xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-
MM7-1-3">
            <MM7Version>5.6.0</MM7Version>
            <Status>
                <StatusCode>1000</StatusCode>
                <StatusText>Success</StatusText>
            </Status>
            <MessageID>041502073667</MessageID>
       </SubmitRsp>
    </env:Body>
</env:Envelope>
```

Sample message submission with application addressing

```
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-6-MM7-6-7"
env:mustUnderstand="1">
            vas00001-sub
       </mm7:TransactionID>
    </env:Header>
    <env:Body>
       <SubmitReq xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-6-
```

```
MM7-6-7">
                <MM7Version>6.7.0</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</TimeStamp>
                <EarliestDeliveryTime>2002-01-02T09:30:47-05:00</EarliestDeliveryTime>
                <ExpiryDate>P90D</ExpiryDate>
                <DeliveryReport>true</DeliveryReport>
                <Priority>Normal</Priority>
                <Subject>News for today</Subject>
                <ChargedParty>Sender</ChargedParty>
                <DistributionIndicator>true</DistributionIndicator>
        <ApplicID>ifx.com.neon.MyPackage.MAFIA</ApplicID>
                <ReplyApplicID>ifx.com.neon.downloadedPackage.MAFIA</ReplyApplicID>
                <AuxApplicID>MAFIA instance #04</AuxApplicID>
            <Content href="cid:SaturnPics-01020930@news.tnn.com" allowAdaptations="true"/>
            </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>
Content-Transfer-Encoding: base64

R0lGODdhZAAwAOMAAAAAAIGJjGltcDE0OOfWo6Ochbi1n1pmcbGojpKbnP/lpW54fBMTE1RYXEFO
…

--StoryParts 74526 8432 2002-77645--
--NextPart_000_0028_01C19839.84698430--
```

NOTE: The different encoding mechanisms, as defined by RFC2045 [44], can be utilized for content encoding.

Again, 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-6-MM7-6-7"
env:mustUnderstand="1">
            vas00001-sub
        </mm7:TransactionID>
    </env:Header>
    <env:Body>
```

```
        <SubmitRsp xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-6-
MM7-6-7">
                <MM7Version>6.7.0</MM7Version>
                <Status>
                    <StatusCode>1000</StatusCode>
                    <StatusText>Success</StatusText>
                </Status>
                <MessageID>041502073667</MessageID>
                <ApplicID>ifx.com.neon.downloadedPackage.MAFIA</ApplicID>
                <ReplyApplicID>ifx.com.neon.MyPackage.MAFIA</ReplyApplicID>
                <AuxApplicID>session.ABC.DEF</AuxApplicID>
            </SubmitRsp>
        </env:Body>
</env:Envelope>
```

8.7.9.3   MM7_deliver.REQ 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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
MMS Relay/Server ID	SOAP Body	MMSRelayServerID	
Linked ID	SOAP Body	LinkedID	Message-ID of linked message
Sender address	SOAP Body	Sender	
Recipient address	SOAP Body	Recipients	If none appear then Sender Address is used
Date and time	SOAP Body	TimeStamp	
Reply-Charging-ID	SOAP Body	ReplyChargingID	Should correspond to an ID that appeared in previous MM7_submit.REQ
Priority	SOAP Body	Priority	Enumeration – possible values: High, Normal, Low
Subject	SOAP Body	Subject	
Content type	MIME header of attachment	Content-Type	
Applic-ID	SOAP Body	ApplicID	
Reply-Applic-ID	SOAP Body	ReplyApplicID	
Aux-Applic-Info	SOAP Body	AuxApplicInfo	
Content	SOAP Body	Content	href:cid attribute links to attachment

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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Service code	SOAP Body	ServiceCode	
Request status	SOAP Body	StatusCode	See section 8.7.8.3
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.3

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-deliver>

<?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-MM7-1-3"
env:mustUnderstand="1">
             vas00324-dlvr
         </mm7:TransactionID>
    </env:Header>
    <env:Body>
         <!-- Example of MM7_deliverReq -->
         <DeliverReq xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-
MM7-1-3">
             <MM7Version>5.6.0</MM7Version>
             <MMSRelayServerID>240.110.75.34</MMSRelayServerID>
             <LinkedID>wthr8391</LinkedID>
             <Sender>
                 <RFC2822Address>97254265781@OMMS.com</RFC2822Address>
             </Sender>
             <TimeStamp>2002-04-15T14:35:21-05:00</TimeStamp>
             <Priority>Normal</Priority>
             <Subject>Weather Forecast</Subject>
             <Content href="cid:forecast-location200102-86453"/>
         </DeliverReq>
    </env:Body>
</env:Envelope>

--NextPart_000_0125_01C19839.7237929064
Content-Type:text/plain;charset="utf-8"
Content-ID:<forecast-location2000102-86453>

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-MM7-1-3"
env:mustUnderstand="1">
             vas00324-dlvr
         </mm7:TransactionID>
    </env:Header>
    <env:Body>
       <env:Fault>
           <faultcode>env:Client</faultcode>
           <faultstring>Client error</faultstring>
           <detail>
         <VASPErrorRsp xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-
MM7-1-3">
                   <MM7Version>5.6.0</MM7Version>
                   <Status>
                       <StatusCode>4006</StatusCode>
                       <StatusText>Service Unavailable</StatusText>
                       <Details>
```

```
                          <app:Reason xmlns:app="http://vendor.example.com/MM7Extension">Location
not covered in service</app:Reason>
                        </Details>
                    </Status>
                </ VASPErrorRsp>
            </detail>
        </env:Fault>
    </env:Body>
</env:Envelope>
```

8.7.9.5   MM7_cancel.REQ mapping

Information Element	Location	Element-name	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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
VASP ID	SOAP Body	VASPID	
VAS ID	SOAP Body	VASID	
Sender Address	SOAP Body	SenderAddress	
Message ID	SOAP Body	MessageID	
Applic-ID	SOAP Body	ApplicID	
Reply-Applic-ID	SOAP Body	ReplyApplicID	
Aux-Applic-Info	SOAP Body	AuxApplicInfo	

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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Request status	SOAP Body	StatusCode	See section 8.7.8.3
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.3

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-MM7-1-3"
env:mustUnderstand="1">
                vas0000—can
        </mm7:TransactionID>
    </env:Header>
    <env:Body>
        <CancelReq xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-
3">
            <MM7Version>5.6.0</MM7Version>
```

```
                <SenderIdentification>
                    <VASPID>TNN</VASPID>
                    <VASID>Reminder</VASID>
                </SenderIdentification>
                <MessageID>mms000222222</MessageID>
            </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-MM7-1-3"
env:mustUnderstand="1">
                    vas0000—can
            </mm7:TransactionID>
        </env:Header>
        <env:Body>
            <CancelRsp xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-
3">
                <MM7Version>5.6.0</MM7Version>
                <Status>
                    <StatusCode>1000</StatusCode>
                    <StatusText>Success</StatusText>
                </Status>
            </CancelRsp>
        </env:Body>
</env:Envelope>
```

8.7.9.7 MM7_replace.REQ 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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
VASP ID	SOAP Body	VASPID	
VAS ID	SOAP Body	VASID	
Sender address	SOAP Body	SenderAddress	
Message ID	SOAP Body	MessageID	
Service code	SOAP Body	ServiceCode	Information supplied for billing purposes – exact format is implementation dependent
Date and time	SOAP Body	TimeStamp	
Earliest delivery time	SOAP Body	EarliestDeliveryTime	Date format – absolute or relative
Read reply	SOAP Body	ReadReply	Boolean – true or false
Adaptations	SOAP Body	allowAdaptations	Attribute of *Content* element Boolean – true or false
Content type	MIME part Header	Content-Type	
Content	SOAP Body	Content	href:cid attribute links to attachment
Message Distribution Indicator	SOAP Body	DistributionIndicator	Boolean – true or false
Applic-ID	SOAP Body	ApplicID	
Reply-Applic-ID	SOAP Body	ReplyApplicID	
Aux-Applic-Info	SOAP Body	AuxApplicInfo	

8.7.9.8 MM7_replace.RES mapping

Information Element	Location	ElementName	Comments
Transaction ID	SOAP Header	Transaction-ID	
Message-Type	SOAP Body	Message-Type	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7-Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Request status	SOAP Body	StatusCode	See section 8.7.8.3
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.3

8.7.9.9 MM7_delivery_report.REQ 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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
MMS Relay/Server ID	SOAP Body	MMSRelayServerID	
Message ID	SOAP Body	MessageID	
Recipient address	SOAP Body	Recipient	
Sender address	SOAP Body	Sender	
Date and time	SOAP Body	Date	
MM Status	SOAP Body	MMStatus	Enumeration – possible values: Expired, Retrieved, Rejected, Indeterminate, Forwarded, Delivery Condition Not Met
Status text	SOAP Body	StatusText	
Applic-ID	SOAP Body	ApplicID	
Reply-Applic-ID	SOAP Body	ReplyApplicID	
Aux-Applic-Info	SOAP Body	AuxApplicInfo	

8.7.9.10 MM7_delivery_report.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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Request Status	SOAP Body	StatusCode	See section 8.7.8.3
Request Status text	SOAP Body	StatusText & Details	See section 8.7.8.3

8.7.9.11 MM7_read_reply.REQ 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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
MMS Relay/Server ID	SOAP Body	MMSRelayServerID	
Message ID	SOAP Body	MessageID	
Recipient address	SOAP Body	Recipient	
Sender address	SOAP Body	Sender	
Date and time	SOAP Body	TimeStamp	
Read Status	SOAP Body	MMStatus	Enumeration – possible values: Indeterminate, Read, Deleted without Read
Status text	SOAP Body	StatusText	
Applic-ID	SOAP Body	ApplicID	
Reply-Applic-ID	SOAP Body	ReplyApplicID	
Aux-Applic-Info	SOAP Body	AuxApplicInfo	

8.7.9.12 MM7_read_reply.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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Request status	SOAP Body	StatusCode	See section 8.7.8.3
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.3

8.7.9.13 MM7_RS_error.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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Error status	SOAP Body	StatusCode	See section 8.7.8.3
Error status text	SOAP Body	StatusText & Details	See section 8.7.8.3

8.7.9.14 MM7_VASP_error.RES mapping

Information Element	Location	Element-name	Comments
Transaction ID	SOAP Header	Transaction-ID	
Message-Type	SOAP Body	Message-Type	Defined as Root element of SOAP Body
MM7 Version	SOAP Body	MM7-Version	Value is the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Error status	SOAP Body	StatusCode	See section 8.7.8.3
Error status text	SOAP Body	StatusText & Details	See section 8.7.8.3

...

Annex C (informative): Charging Data Records

This annex describes information of MMs/abstract messages which may be required for inclusion into Charging Data Records (CDR's) for MMS for the purpose of Billing and Traceability in the operators post-processing system. Further details on the CDR content and transport for MMS are described in the 3GPP TS 32.270 [81].

This list may include:

- Message –ID of Multimedia Message

- Recipient address(es)

- Sender address

- Message size

- Time stamp for submission time, earliest delivery time and time of expiry

- Duration of transmission (for streaming purposes)

- Duration of storage (in the MMS Relay/Server)

- Type of message: (e.g. notification, message MM, delivery report, read-reply)

- Bearer type used

- Content information (e.g. audio, picture, video, text,)

- Message class (e.g. advertisement/informational)

- Delivery Report Request

- Read Reply Request

- Charging Indicator (e.g. Pre paid charging, Reply charging, Charged Party)

- MM7 service code

- MM Status (e.g. delivered, rejected, expired, delivery pending).

- Indication of forwarding

- Conversion of type and media

-        Priority of the MM

-        Linked ID

-        VASP ID

-        VAS ID

-        Reply-Charging

-        Content type

-        Reply-Charging-ID

-        Charged Party, Charged Party ID

-        MCC + MNC

-        Applic-ID

-        Reply-Applic-ID

-        Aux-Applic-Info

The following information elements at least will be considered for the future.

-

-        Identification if a message has been sent to a pre-defined group

   NOTE: Some of the above fields may not be available in the MMS Relay/Server e.g. due to network
             implementation options. Also some fields may not be directly available from MMS Relay/Server CDRs
             but defined in the Charging and Billing system.

...

Annex I (normative):
MM1 <-> MM4 header mapping

This annex maps the information elements found on MM1 onto the STD 11 header fields of MM4.

The tables below are provided to give a normative end-to-end description of MMS. It provides mapping of MM1 with respect to MM4/STD11.

In many cases there is no mapping between MM1 information elements and MM4 STD 11 header fields, this is according to specifications. These information elements are included in the tables below in order to give a complete picture of how the MM1 information elements are handled.

Table I.1: Mapping MM1_submit.REQ -> MM4_forward.REQ

Information elements in MM1_submit.REQ	STD11 Header fields in Egress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Recipient address	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
Content type	Content-Type:
Sender address	From:
Message class	X-Mms-Message-Class:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Earliest Delivery Time	-
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	X-Mms-Priority:
Sender visibility	X-Mms-Sender-Visibility:
Store	-
MM State	-
MM Flags	-
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info
Reply-Charging-ID	-
Content	*<message body>*
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Message-Id
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-sent-by
-	X-Mms-Previously-sent-date-and-time
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2. NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.2: Mapping MM1_submit.RES -> MM4_forward.REQ

Information elements in MM1_submit.RES	STD11 Header fields in Egress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Request Status	-
Request Status Text	-
Message ID	X-Mms-Message-ID:
Store Status	-
Store Status Text	-
Stored Message Reference	-
-	X-Mms-Applic-ID
-	X-Mms-Reply-Applic-ID
-	X-Mms-Aux-Applic-Info
-	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
-	Content-Type:
-	From:
-	X-Mms-Message-Class:
-	Date:
-	X-Mms-Expiry:
-	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
-	X-Mms-Priority:
-	X-Mms-Sender-Visibility:
-	X-Mms-Read-Reply:
-	Subject:
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-sent-by
-	X-Mms-Previously-sent-date-and-time
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2.	
NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.3: Mapping MM1_notification.REQ <- MM4_forward.REQ

Information elements in MM1_notification.REQ	STD11 Header fields in Ingress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Message class	X-Mms-Message-Class:
Message size	-
Time of expiry	X-Mms-Expiry:
Message Reference	-
Subject	Subject:
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info
Priority	X-Mms-Priority:
Sender address	From:
Stored	-
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Reply-Charging-ID	-
Element-Descriptor	-
Message Distribution Indicator	-
-	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
-	Content-Type:
-	Date:
-	X-Mms-Sender-Visibility:
-	X-Mms-Read-Reply:
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-sent-by
-	X-Mms-Previously-sent-date-and-time
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2.	
NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.4: Information elements in the MM1_notification.RES.

Information elements in MM1_notification.RES	MM4 STD 11 Header fields
Message Type	-
MMS Version	-
Transaction ID	-
MM Status	-
Report allowed	-

Table I.5: Information elements in the MM1_retrieve.REQ

Information elements in MM1_retrieve.REQ	MM4 STD 11 Header fields
Message Reference	-

Table I.6: Mapping MM1_retrieve.RES <- MM4_forward.REQ

Information elements in MM1_retrieve.RES	STD11 Header fields in Ingress MM4_Forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Message ID	X-Mms-Message-ID:
Sender address	From:
Content type	Content-type:
Recipient address	To:
Message class	X-Mms-Message-Class:
Date and time	Date:
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Priority	X-Mms-Priority:
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info
Request Status	-
MM State	-
MM Flags	-
Request Status Text	-
Reply-Charging	-
Reply-Charging-ID	-
Reply-Deadline	-
Reply-Charging-Size	-
Previously-Sent-By	X-Mms-Previously-Sent-By
Previously-Sent-Date	X-Mms-Previously-Sent-Date
Content	*<message body>*
Message Distribution Indicator	-
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Expiry
-	X-Mms-Sender-Visibility:
-	X-Mms-Read-Reply:
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter

Table I.7: Information elements in the MM1_acknowledgement.REQ

Information elements in MM1_acknowledgement.REQ	MM4 STD 11 Header fields
Message Type	-
MMS Version	-
Transaction ID	-
Report allowed	-

Table I.8: Mapping MM1_forward.REQ -> MM4_forward.REQ

Information elements in MM1_forward.REQ	STD11 Header fields in Egress MM4_Forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Recipient address	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
Forwarding address	From:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Earliest delivery time	-
Store	-
MM State	-
MM Flags	-
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Read reply	X-Mms-Read-Reply:
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Message Reference	-
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Message-ID:
-	Content-Type:
-	X-Mms-Message-Class:
-	X-Mms-Priority:
-	X-Mms-Sender-Visibility:
-	Subject:
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-Sent-By
-	X-Mms-Previously-Sent-Date
-	Content
-	X-Mms-Applic-ID
-	X-Mms-Reply-Applic-ID
-	X-Mms-Aux-Applic-Info
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2.	
NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

Table I.9: Information elements in the MM1_forward.RES.

Information elements in MM1_forward.RES	MM4 STD 11 Header fields
Message Type	-
MMS Version	-
Transaction ID	-
Request Status	-
Request Status Text	-
Message ID	-
Store Status	-
Store Status Text	-
Stored Message Reference	-

Table I.10: Mapping MM1_delivery_report.REQ <- MM4_delivery_report.REQ

Information elements in MM1_delivery_report.REQ	STD11 Header fields in Ingress MM4_delivery_report.REQ
Message Type	-
MMS Version	-
Message ID	X-Mms-Message-ID
Recipient address	From:
Date and Time	Date:
MM Status	X-Mms-MM-Status-Code
-	X-Mms-MM-Status-Extension
-	X-Mms-Forward-To-Originator-UA
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info

Table I.11: Mapping MM1_read_reply_recipient.REQ -> MM4_read_reply_report.REQ

Information elements in MM1_read_reply_recipient.REQ	STD11 Header fields in Egress MM4_read_reply_report.REQ
Message Type	-
MMS Version	-
Recipient address	From:
Originator address	To:
Message ID	X-Mms-Message-ID:
Date and Time	Date:
Read Status	X-Mms-Read-Status:
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Acq-Request
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info

Table I.12: Mapping MM1_ read_reply_originator.REQ <- MM4_ read_reply_report.REQ

Information elements in MM1_read_reply_originator.REQ	Ingress STD11 Header fields in MM4_read_reply_report.REQ
Message Type	-
MMS Version	-
Recipient address	From:
Originator address	To:
Message ID	X-Mms-Message-ID:
Date and Time	Date:
Read Status	X-Mms-Read-Status:
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Acq-Request
Applic-ID	X-Mms-Applic-ID
Reply-Applic-ID	X-Mms-Reply-Applic-ID
Aux-Applic-Info	X-Mms-Aux-Applic-Info

…

Annex K (informative): MM1, MM4 <-> MM7 header mapping

This annex maps the abstract messages from MM1 and MM4 to MM7.

The abstract messages mapped between MM1 and MM7 are:

- MM1_Submit.REQ to the MM7_Deliver.REQ

- MM7_Submit.REQ to the MM1_Notification.REQ and the MM1_Retrieve.RES

- MM1_Read_Reply_Recipient.REQ to the MM7_Read_Reply_Report.REQ

- MM1_Forward.REQ to the MM7_Deliver.REQ

The abstract messages mapped between MM4 and MM7 are:

- MM4_Forward.REQ to the MM7_Deliver.REQ

- MM7_Submit.REQ to the MM4_Forward.REQ

- MM4_Delivery_Report.REQ to the MM7_Delivery_Report.REQ

- MM4_Read_Reply_Report.REQ to the MM7_Read_Reply.REQ

The tables below shows the mapping and are provided to give an end-to-end description of MMS. There is a table for each MM1, MM4 abstract message that maps to a MM7 abstract message. In many cases there is no mapping between MM1, MM4 and MM7 information elements, this is according to specifications. These information elements are included in the tables below in order to give a complete picture of how the information elements are handled.

There are also several abstract messages over MM1, MM4 that have no relevant mapping to MM7 and vice versa. These abstract messages are omitted from this annex.

Table K.1: Mapping MM1_submit.REQ -> MM7_deliver.REQ

Information elements in MM1_submit.REQ	Information elements in MM7_deliver.REQ
Message Type	-
Transaction ID	-
MMSVersion	-
Recipient address, -	Recipient address, - (NOTE 1)
Content type	Content type
Sender address	Sender address, - (NOTE 2)
Message class	-
Date and time	Date and time
Time of Expiry	-
Earliest delivery time	-
Delivery report	-
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	Priority
Sender visibility	-
Store	-
MM State	-
MM Flags	-
Read reply	-
Subject	Subject
Reply-Charging-ID	Reply-Charging-ID
Applic-ID	Applic-ID
Reply-Applic-ID	Reply-Applic-ID
Aux-Applic-Info	Aux-Applic-Info
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Linked ID
-	Sender SPI
-	Recipient SPI
NOTE 1: The recipient address over MM1 may or may not be mapped to recipient address over MM7. The recipient address over MM7 may also be independent of the recipient address over MM1. NOTE 2: If the Sender Visibility flag is set over MM1, the Sender address from MM1 is not mapped onto MM7.	

Table K.2: Mapping MM7_submit.REQ -> MM1_notification.REQ, MM1_Retrieve.RES

Information elements in MM7_submit.REQ	Information elements in MM1_notification.REQ	Information elements in MM1_retrieve.RES
-	Message Type	-
-	Transaction ID	-
-	MMS Version	-
Message class	Message class	Message class
Time of Expiry	Time of expiry	-
Subject	Subject	Subject
Priority	Priority	Priority
Sender address	Sender address	Sender address
Reply-Charging	Reply-Charging	Reply-Charging
-	-	Reply-Charging-ID
Reply-Deadline	Reply-Deadline	Reply-Deadline
Reply-Charging-Size	Reply-Charging-Size	Reply-Charging-Size
Transaction ID	-	-
Message type	-	-
MM7 version	-	-
VASP ID	-	-
VAS ID	-	-
Recipient address	-	Recipient address
Service code	-	-
Linked ID	-	-
Date and time	-	Date and time
Earliest delivery time	-	-
Delivery report	-	-
Read reply	-	Read reply
Adaptations	-	-
Content type	-	Content type
Content	-	Content
Message Distribution Indicator	Message Distribution Indicator	Message Distribution Indicator
Charged Party	-	-
Charged Party ID	-	-
-	Message size	-
-	Message Reference	-
-	Stored	-
-	Delivery report	Delivery report
-	Reply-Charging-ID	-
-	Element-Descriptor	-
-	-	Message ID
-	-	MM State
-	-	MM Flags
-	-	Request Status
-	-	Request Status Text
-	-	Previously-sent-by
-	-	Previously-sent-date-and-time
-	-	Message Type
-	-	Transaction ID
-	-	MMS Version
Applic-ID	Applic-ID	Applic-ID
Reply-Applic-ID	Reply-Applic-ID	Reply-Applic-ID
Aux-Applic-Info	Aux-Applic-Info	Aux-Applic-Info

Table K.3: Mapping MM1_read_reply_recipient.REQ -> MM7_read_reply_report.REQ

Information elements in MM1_read_reply_recipient.REQ	Information elements in MM7_read_reply_report.REQ
Message Type	-
MMS Version	-
Recipient address	Recipient address
Originator address	Sender address
Message-ID	Message-ID
Date and Time	Date and Time
Read Status	Read Status
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID
-	Status text
Applic-ID	Applic-ID
Reply-Applic-ID	Reply-Applic-ID
Aux-Applic-Info	Aux-Applic-Info

Table K.4: Mapping MM1_Forward.REQ -> MM7_Deliver.REQ

Information elements in MM1_Forward.REQ	Inform in MM
Message Type	-
Transaction ID	-
MMS Version	-
Recipient address	Recipient a
Forwarding address	Sender ad
Date and time	Date and t
Time of Expiry	-
Earliest delivery time	-
Store	-
MM State	-
MM Flags	-
Delivery report	-
Read reply	-
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Message Reference	<Content> Subject, P
-	Transactio
-	Message t
-	MM7 vers
-	MMS Rela
-	Linked ID
	Reply Cha
-	Sender SP
-	Recipient S
-	Applic-ID
-	Reply-App
-	Aux-Applic
NOTE:	The message reference is us content from the original MM these fields is identical to the MM1_Submit.REQ/MM7_De table K.1.

Table K.5: Mapping MM4_Forward.REQ -> MM7_Deliver.REQ

Information elements in MM4_Forward.REQ	Information elements in MM7_Deliver.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID, -	Linked ID, - (NOTE 1)
Recipient(s) address	Recipient address
Sender address	Sender address (NOTE 2)
Content type	Content type
Message class	-
Date and time	Date and time
Time of Expiry	-
Delivery report	-
Priority	Priority
Sender visibility	-
Read reply	-
Subject	Subject
Acknowledgement Request	-
Forward counter	-
Previously-sent-by	Previously-sent-by
Previously-sent-date and-time	Previously-sent-date-and-time
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Recipient address
-	Reply-Charging-ID
-	Sender SPI
-	Recipient SPI
Applic-ID	Applic-ID
Reply-Applic-ID	Reply-Applic-ID
Aux-Applic-Info	Aux-Applic-Info
NOTE 1: The Message ID over MM1 may or may not be mapped to the Linked ID over MM7. The Linked ID over MM7 may also be independent of the Message ID over MM1. NOTE 2: If the Sender Visibility flag is set over MM4, the Sender address from MM4 is not mapped onto MM7.	

Table K.6: Mapping MM7_Submit.REQ -> MM4_Forward.REQ

Information elements in MM4_Forward.REQ	Information elements in MM7_Submit.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID	-
Recipient(s) address	Recipient address
Sender address	Sender address
Content type	Content type
Message class	Message class
Date and time	Date and time
Time of Expiry	Time of Expiry
Delivery report	Delivery report
Priority	Priority
Sender visibility	-
Read reply	Read reply
Subject	Subject
Acknowledgement Request	-
Forward counter	-
Previously-sent-by	-
Previously-sent-date and-time	-
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	VASP ID
-	VAS ID
-	Service code
-	Linked ID
-	Earliest delivery time
-	Reply-Charging
-	Reply-Deadline
-	Reply-Charging-Size
-	Adaptations
-	Message Distribution-Indicator
-	Charged Party ID

Table K.7: MM4_delivery_report.REQ -> MM7_delivery_report.REQ

Information elements in MM4_delivery_report.REQ	Information elements in MM7_delivery_report.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID	Message ID
Recipient address	Sender address
Sender address	Recipient address
Date and time	Date and time
Acknowledgement Request	-
MM Status	MM Status
MM Status Extension	MM Status Extension
MM Status Text	Status text
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID
Applic-ID	Applic-ID
Reply-Applic-ID	Reply-Applic-ID
Aux-Applic-Info	Aux-Applic-Info

Table K.8: MM4_Read_reply_report.REQ -> MM7_read_reply_report.REQ

Information elements in MM4_Read_reply_report.REQ	Information elements in MM7_read_reply.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Recipient address	Recipient address
Sender address	Sender address
Message-ID	Message-ID
Date and time	Date and time
Acknowledgement Request	-
Read Status	Read Status
Status text	Status text
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID
Applic-ID	Applic-ID
Reply-Applic-ID	Reply-Applic-ID
Aux-Applic-Info	Aux-Applic-Info

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CR-Form-v7

CHANGE REQUEST

| ⌘ | **23.140 CR 167** | ⌘**rev** | **-** | ⌘ | Current version: | **6.6.0** | ⌘ |

*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 **X** Radio Access Network ☐ Core Network ☐

| *Title:* | ⌘ | Adding status text in the MM1 Delivery Report |

| *Source:* | ⌘ | T2 |

| *Work item code:*⌘ | MMS6 | *Date:* ⌘ | 09/08/2004 |

| *Category:* | ⌘ | **C** | | *Release:* ⌘ | Rel-6 |

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:* | ⌘ | In the Delivery Report over MM1 (i.e. MM1_delivery_report.Req), the "MM status" information element is not sufficient to convey the specific reason of a delivery failure (e.g. recipient does not support MMS, recipient address unresolved, message too big) or exact status of a delivery success (e.g. if/what content adaptation took place, address where forwarded) to the originator. In addition, as the Delivery Report over MM4 (i.e. MM4_delivery_report.Req) has an information element (i.e. "MM status text") to further qualify the status of a delivery, there is an inconsistency between the Delivery Report over MM1 and MM4.

 Service Behaviour section about Delivery Report misses description about the "MM status text" information element. Moreover, the "MM status text" information element in the Delivery Report over MM4 and MM7 is not described in the respective Feature sections. |

| *Summary of change:*⌘ | Adding a new information element in MM1_delivery_report.Req to further qualify the status of a delivery. Clarification added for the "MM status text" information element in the Delivery Report over MM4 and MM7. Clarification about the "MM status text" information element also added in the Service Behaviour section about Delivery Report. |

| *Consequences if* *not approved:* | ⌘ | The MM1_delivery_report.Req remains incapable of carrying the descrition to provide the originator exact status of a delivery of an MM. Inconsistence between MM1_delivery_report.Req and MM4_delivery_report.Req message.

 Description about the "MM status text" information element in the Delivery Report over MM4 and MM7 remain missing. |

Clauses affected:	⌘	7.1.5, 8.1.7.3, 8.1.7.4, 8.4.2.3, 8.4.2.4, 8.7.4.3, 8.7.4.4, Annex I (Table I.10)		

		Y	N			
Other specs Affected:	⌘	X		Other core specifications	⌘	OMA MMS Specs
				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.

7   MMS Service Behaviour Description

7.1   MMS services offered

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7.1.5   Delivery Report

The MMS Relay/Server shall support the delivery reporting service. Delivery reports shall only be generated for MMs.

The originator MMS User Agent or VASP may be able to request a delivery report for a specific MM.

Within an MM notification or upon MM retrieval the recipient MMS User Agent may receive an indication that a delivery report is requested for the MM.

Within either a response to a notification or a response to an MM's delivery, the recipient MMS User Agent may request a delivery report not to be generated by the MMS Relay/Server. When a VASP has requested the delivery report (via MM7) the MMS Relay/Server shall send the delivery report regardless of the MMS User Agent's request.

The originator MMS Relay/Server shall generate a delivery report if a delivery report has been requested by the originator MMS User Agent or VASP

- upon routing forward the MM, in case the peer entity is not known by the MMS Relay/Server;

- upon routing forward the MM, in case that originator is VASP.

The originator MMS Relay/Server may generate a delivery report if a delivery report has been requested by the originator MMS User Agent

- upon failure of routing forward the MM.

The recipient MMS Relay/Server shall generate a delivery report if a delivery report has been requested by the originator MMS User Agent and if the recipient MMS User Agent did not request a delivery report not to be generated or in any case that a VASP has requested a delivery report

- upon receipt of a response to a notification, in case the MM is rejected by the recipient MMS User Agent;

- upon receipt of a forwarding request, in case the MM is forwarded by the recipient MMS User Agent to other MM recipient(s), without prior retrieval;

- upon receipt of a response to an MM's delivery, in case the MM is retrieved by the MM recipient;

- upon expiry of the MM, in case the MM is not rejected and not retrieved by the MM recipient before the expiry.

The originator MMS User Agent or VASP, i.e. the MMS User Agent or VASP receiving the delivery report, may match the delivery report to the sent MM by retaining the message identification of the sent MM and comparing it to the received delivery report, which shall contain the message identification of the original MM. In case of multiple MM recipients, it is necessary for the originator MMS User Agent or VASP to retain the MM recipient addresses as well, to match the delivery report to the sent MM.

If a delivery report has been requested by the originator MMS User Agent and if the recipient MMS User Agent did not request a delivery report not to be generated, or in any case that the request for the delivery report comes from a VASP, the recipient MMS Relay/Server

- shall generate the delivery report;

- shall deliver the delivery report to the originator MMS Relay/Server;

- shall store delivery reports in the network until the originator MMS Relay/Server becomes reachable or until the delivery report expires.

In addition to the above, and as depicted in Annex M, if an agreement exists between the MMS Relay/Servers, the originator MMS Relay/Server may request a delivery report regardless of whether the originator MMS User Agent requested the delivery report. Then, if the originator MMS Relay/Server requests a delivery report, the recipient MMS Relay/Server shall generate a delivery report for each MM received for that specific originator MMS Relay/Server.

In the event where both the originator MMS User Agent and the originator MMS Relay/Server request a delivery report, and the recipient refuses to have a report generated:

- if the originator MMS Relay/Server requested a delivery report; the recipient MMS Relay/Server shall produce and provide it to the originator MMS Relay/Server (which shall not forward to the requesting originator MMS User Agent);

- if the originator MMS Relay/Server did not request a delivery report; the recipient MMS Relay/Server shall not produce a delivery report.

Within the delivery report the recipient MMS Relay/Server

- shall provide the MM originator address to the originator MMS Relay/Server;

- shall provide the MM recipient address to the originator MMS Relay/Server;

- shall provide the identification of the original MM for which the delivery report has been generated to the originator MMS Relay/Server;

- shall provide status information how the MM was handled/delivered (e.g. expired, rejected, delivered, forwarded or indeterminate) to the originator MMS Relay/Server;

- may provide further qualification about the status information how the MM was handled/delivered to the originator MMS Relay/Server for displaying the same to the originator;

- shall provide a time stamp when the MM was handled to the originator MMS Relay/Server.

For each MM recipient of the original MM for which the delivery report has been generated and becomes available at the originator MMS Relay/Server, the originator MMS Relay/Server

- shall deliver the delivery report to the originator MMS User Agent (i.e. the recipient MMS User Agent of the delivery report) or VASP, when requested by the originator MMS User Agent and not refused by the recipient.

Within the delivery report the originator MMS Relay/Server

- shall provide the MM recipient's address to the originator MMS User Agent (the recipient MMS User Agent of the delivery report) or VASP;

- shall provide the identification of the original MM for which the delivery report has been generated to the originator MMS User Agent (the recipient MMS User Agent of the delivery report) or VASP;

- shall store delivery reports until the originator MMS User Agent becomes reachable (e.g. user moves back into coverage, switches MMS User Agent on) or until the delivery report expires;

- should store delivery reports until the VASP becomes reachable (e.g. in case of transport failure towards the VASP) or until the delivery report expires.

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

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8.1   Technical realisation of MMS on reference point MM1

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8.1.7   Delivery Report

……….

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. The status code may be supported with an explanatory text to further qualify the status of the MM delivery (e.g. recipient does not support MMS, recipient address unresolved, MM is too big, if/what content adaptation took place, address where the MM was forwarded).

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 1: 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
MM Status text	Optional	Text description of the status for display purposes, should qualify the MM Status

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8.4   Technical realisation of MMS on reference point MM4

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8.4.2   Routing Forward of a Delivery Report

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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. The MM Status Extension may be used to provide more granularity. The status code may be supported with an explanatory text to further qualify the status of the MM delivery (e.g. recipient does not support MMS, recipient address unresolved, MM is too big, if/what content adaptation took place, address where the MM was forwarded).

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.

Forward To originator UA: The recipient MMS Relay/Server shall indicate if the originator MMS Relay/Server is allowed to forward the Delivery Report to the originator MMS User Agent.

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 2: 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
Forward to Originator UA	Optional	If "No", indicates that the originator MMS Relay/Server is not allowed to forward the Delivery Report to the originator MMS User Agent. Interpret as "Yes" in the absence of this Information element.
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
MM Status Extension	Optional	Extension of the MM Status, to provide more granularity.
MM Status text	Optional	Text description of the status for display purposes, should qualify the MM Status~~Status text corresponding to the MM Status~~

Table 3: 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

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8.7   Technical realisation of MMS on reference point MM7

………..

8.7.4   Delivery reporting to VASP

………

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. The MM Status Extension may be used to provide more granularity. The status code may be supported with an explanatory text to further qualify the status of the MM delivery (e.g. recipient does not support MMS, recipient address unresolved, MM is too big, if/what content adaptation took place, address where the MM was forwarded). If there is no match between delivery condition and user status, delivery condition not met shall be returned.

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 4: 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.) (time stamp)
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
MM Status Extension	Optional	Extension of the MM Status, to provide more granularity.
MM Status text	Optional	Text description of the status for display purposes, should qualify the MM Status

Table 5: 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

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Annex I (normative): MM1 <-> MM4 header mapping

This annex maps the information elements found on MM1 onto the STD 11 header fields of MM4.

The tables below are provided to give a normative end-to-end description of MMS. It provides mapping of MM1 with respect to MM4/STD11.

In many cases there is no mapping between MM1 information elements and MM4 STD 11 header fields, this is according to specifications. These information elements are included in the tables below in order to give a complete picture of how the MM1 information elements are handled.

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Table I.10: Mapping MM1_delivery_report.REQ <- MM4_delivery_report.REQ

Information elements in MM1_delivery_report.REQ	STD11 Header fields in Ingress MM4_delivery_report.REQ
Message Type	-
MMS Version	-
Message ID	X-Mms-Message-ID
Recipient address	From:
Date and Time	Date:
MM Status	X-Mms-MM-Status-Code
-	X-Mms-MM-Status-Extension
MM Status text	X-Mms-Status-text:
-	X-Mms-Forward-To-Originator-UA

………………

CR-Form-v7

CHANGE REQUEST

| ⌘ | **23.140** CR **168** | ⌘**rev** | **-** | ⌘ | Current version: | **6.6.0** | ⌘ |

*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 **X** Radio Access Network ☐   Core Network **X**

Title: ⌘	Indication about Content Adaptation	
Source: ⌘	T2	
Work item code: ⌘	MMS6	***Date:*** ⌘ 26/08/2004
Category: ⌘ **C**		***Release:*** ⌘ *Rel-6*

Use one 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 one 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: ⌘	Without any indication from the originator, MMS Relay/Server needs to make a detail analysis (going deep in to different contents) for each MM before deciding if the MM required content adaptation. The detail analysis is required for an MM that may not require content adaptation at the end. Some indication from the originator in terms of headers might make it very straightforward for the MMS Relay/Server to decide if content adaptation is not required on the MM.
Summary of change: ⌘	Following indication (in terms of headers) from the sender are proposed in the submission message, so that MMS Relay/Server has simple means to decide about the need of content adaptation in most of the cases – if the MM contains DRM protected content, which conten class the MM belongs, and if sender forbids content adaptaion.
Consequences if not approved: ⌘	MMS Relay/Server has to go through a complex and lengthy process for all the MMs to only determine if content adaptation is required for any MM.

Clauses affected: ⌘	7.1.1, 7.1.3, 8.1.3.3, 8.1.3.4, 8.4.1.3, 8.4.1.4, 8.4.4.2, 8.4.4.8, 8.7.1.3, 8.7.1.4, 8.7.3.3, 8.7.3.4, 8.7.9.1, 8.7.9.2, 8.7.9.7, Annex I, Annex K

	Y	N		
Other specs ⌘	**X**		Other core specifications	⌘ OMA MMS Specs
Affected:		**X**	Test specifications	
		X	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.

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]   void

[13]   void

[14]   void

[15]   void

[16]   void

[17]   void

[18]   void

[19]   void

[20]   void

[21]   void

[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..

[36]   Adobe Systems: "Tag Image File Format (TIFF), Version 6", URL:, http://www.adobe.com.

[37]   3GPP TR 23.039: "Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)".

[38]   void

[39]   void

[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; RFC 3481: "TCP over Second (2.5G) and Third (3G) Generation Wireless Networks";
            URL: http://www.ietf.org/rfc/rfc3481.txt

 [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.

[49]   IETF; STD 13 (RFC 1034, 1035): "Domain Names -- concepts and facilities", "Domain names –
            implementation and specification", URL: http://www.ietf.org/rfc/rfc1034.txt,
            http://www.ietf.org/rfc/rfc1035.txt.

[50]   IETF; STD 14 (RFC 947): "Multi-network broadcasting within the Internet", URL:
            http://www.ietf.org/rfc/rfc947.txt.

[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]   Open Mobile Alliance; OMA-WAP-ProvCont-v1_1-20021112-C, Provisioning Content Version
            1.1, URL: http://www.openmobilealliance.org/

[56]   Open Mobile Alliance; OMA-MMS-ENC-v1_2, Multimedia Messaging Service, Encapsulation
            Protocol, Version 1.2, URL: http://www.openmobilealliance.org/

NOTE: Reference [56] is the REL-5 MM1 stage 3 specification. OMA is committed to develop a REL-6 version.
            Consequently, reference [56] is to be replaced by the appropriate document identifier once the REL-6
            MM1 stage 3 specification is approved within OMA.

[57]   IETF; RFC 1870: "SMTP Service Extension for Message Size Declaration", URL:
            http://www.ietf.org/rfc/rfc1870.txt

[58]   IETF; RFC 1652: "SMTP Service Extension for 8bit-MIME transport", URL:
            http://www.ietf.org/rfc/rfc1652.txt

[59]   void

[60]   IETF, RFC 2915: "The Naming Authority Pointer (NAPTR) DNS Resource Record", URL:
            http://www.ietf.org/rfc/rfc2915.txt

[61]   IETF, RFC 2916: "E.164 number and DNS", URL: http://www.ietf.org/rfc/rfc2916.txt

[62]   3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[63]   3GPP TS 22.066: "Support of Mobile Number Portability (MNP); Service description. Stage 1".

[64]   3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical realization. Stage 2".

[65]   IETF; RFC 2617 "Access Authentication", URL:http://www.ietf.org/rfc/rfc2617.txt

[66]   IETF; RFC 2246 "TLS protocol, version 1.0" , URL:http://www.ietf.org/rfc/rfc2246.txt

[67]   3GPP TS 31.102 "Characteristics of the USIM Application".

[68]   W3C Note 08 May 2000 "Simple Object Access Protocol (SOAP) 1.1", URL: http://www.w3.org/TR/SOAP

[69]   W3C Note 11 December 2000 "SOAP Messages with Attachments", URL: http://www.w3.org/TR/SOAP-attachments

[70]   IETF; RFC 2376: "XML Media Type", URL: http://www.ietf.org/rfc/rfc2376.txt.

[71]   IETF; RFC 2387: "The MIME Multipart/Related Content Type", URL: http://www.ietf.org/rfc/rfc2387.txt.

[72]   IETF; RFC 2111: "Content-ID and Message-ID Uniform Resource Locators", URL: http://www.ietf.org/rfc/rfc2111.txt.

[73]   IETF; RFC 2557: "MIME Encapsulation of Aggregate Documents, such as HTML (MHTML)", URL: http://www.ietf.org/rfc/rfc2557.txt.

[74]   3GPP TS 26.140: "Multimedia Messaging Service; Media formats and codecs".

[75]   3GPP TS 51.011 (Rel-4): "Specification of the Subscriber Identity Module – Mobile Equipment (SIM-ME) interface".

[76]   "Digital Rights Management", Open Mobile AllianceTM, OMA-Download-DRM-v1_0, http://www.openmobilealliance.org/

[77]   "DRM Rights Expression Language", Open Mobile AllianceTM, OMA-Download-DRMREL-v1_0, http://www.openmobilealliance.org/

[78]   "DRM Content Format", Open Mobile AllianceTM, OMA-Download-DRMCF-v1_0, http://www.openmobilealliance.org/

[79]   ITU-T Recommendation E.212: " The international identification plan for mobile terminals and mobile users".

[80]   3GPP TS 32.240: "Charging Management; Charging Architecture and Principles ".

[81]   3GPP TS 32.270: "Charging Management; Multimedia Messaging Service (MMS) charging".

[xx]   Open Mobile Alliance; OMA-MMS-CONF-v1_2-20040219-C, MMS Conformance Document 1.2, URL: http://www.openmobilealliance.org/

NOTE: Reference [xx] is the REL-5 MM1 stage 3 specification. OMA is committed to develop a REL-6 version. Consequently, reference [xx] is to be replaced by the appropriate document identifier once the REL-6 MM1 stage 3 specification is approved within OMA.

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7 MMS Service Behaviour Description

7.1 MMS services offered

7.1.1 Submission of a Multimedia Message in the originator MMSE

When a user intends to send an MM to one or several destinations the MM shall be submitted to the originator MMS Relay/Server.

The support for submission of MMs is optional for MMS User Agents. The support for submission of MMs is mandatory for MMS Relay/Servers.

If an MMS User Agent supports submission of MMs the MMS User Agent shall be able to:

- Indicate the address of the MM recipient;

- Identify the MIME content type of the message.

If a MMS User Agent supports submission of MMs the MMS User Agent may be able to:

- Request a delivery report for the message;

- Request a read-reply report for the message;

- Provide a time stamp for the time of submission of the message;

- Set the earliest desired time of delivery for the message;

- Set the desired time of expiry for the message;

- Indicate the address of the MM originator;

- Set further message qualifications (e.g. priority, message class, subject);

- Request the MM originator's address being hidden from the recipient MMS User Agent;

- Indicate the sender's willingness to pay the charge for one reply-MM per recipient;

- Indicate a reply-charging limitation;

- Request that a copy of the submitted MM be stored in the originator's MMBox, in addition to being delivered to the recipient;

- Provide guideline for content adaptation (e.g. if content adaptation for the MM is restricted);

- Provide content information (e.g. content class [xx], presence of DRM content).

Upon reception of an MM from an originator MMS User Agent the originator MMS Relay/Server

- shall assign a Message Identification to the MM and immediately provide the originator MMS User Agent with this Message Identification;

- shall retain the MM until the earliest desired time of delivery, if the optional feature of earliest time of delivery is supported by the originator MMS Relay/Server. If this feature is not supported then the MM is immediately routed forward;

- shall provide the peer entity with a time stamp if not provided by the originator MMS User Agent. The originator MMS Relay/Server may also override the MMS User Agent's time stamp;

- shall insert the originator's address into the MM if not provided by the originator MMS User Agent;

- shall pass the originator's address to the peer entity if the peer entity is known to be a MMS Relay/Server;

- shall route forward the request for address hiding unaltered to the recipient MMS Relay/Server if the peer entity is known to be an MMS Relay/Server;

- shall pass the originator's address to the peer entity if the peer entity is not known to be an MMS Relay/Server and address hiding has not been requested by the originator MMS User Agent;

- shall not pass the originator's address to the peer entity and should override the address provided by the originator MMS User Agent in the MM to an "anonymous" address if the peer entity is not known to be an MMS Relay/Server and address hiding has been requested by the originator MMS User Agent;

- may override the originator's address provided by the originator MMS User Agent in the MM (subject to MMS service provider's preferences);

- shall resolve the MM recipient's address(es);

- if an MMBox is supported and enabled for the originator, shall store a copy of the MM into the originator's MMBox automatically, according to the service configuration for the originator or as requested by the MMS User Agent;

- shall route the MM towards the MM recipients;

- should pass the indication whether or not a delivery report is requested unaltered when routing the MM towards the MM recipient(s);

- shall pass the indication whether or not a read-reply report is requested unaltered when routing the MM towards the MM recipient(s);

- shall pass the indication about MIME content type of the message and message qualifications (e.g. priority, message class, subject) unaltered when routing the MM towards the MM recipient(s);

- shall generate a delivery report indicating "indeterminate" status of the MM's delivery if a delivery report was requested by the originator MMS User Agent and if the peer entity the MM is routed forward to is not known by the originator MMS Relay/Server;

- may reject the MM submission if the MM is identified as a duplicate of an MM already stored;

- shall route forward, if available, the guideline for content adaptation to the peer entity if the peer entity is known to be a MMS Relay/Server.

- shall route forward, if available, the content information to the peer entity if the peer entity is known to be a MMS Relay/Server.

A special case is where the recipient MMS Relay/Server is also the originator MMS Relay/Server. In this case the MM does not have to be routed forward.

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7.1.3   Retrieval of a Multimedia Message in the recipient MMSE

The recipient MMS User Agent shall be able to request retrieval of an MM from the recipient MMS Relay/Server based on the Message Reference received in a notification. If MMBoxes are supported, the MMS User Agent shall be able to request retrieval of an MM from the user's MMBox, based on a Message Reference received from a previous MMBox operation.

Within a retrieval request the recipient MMS User Agent may indicate a size restriction of the returned MM (i.e., maximum size) that the MMS Relay/Server is to use in processing the retrieval request.

Upon retrieval request the recipient MMS Relay/Server

- shall deliver the MM to the recipient MMS User Agent

- may perform data adaptation based on user profile-and/or, MMS User Agent capabilities and/or, guideline and/or content information provided by the originator

- shall not provide the MM originator address to the MM recipient if the originator MMS User Agent requested its address to be hidden from the MM recipient

- shall provide the MM originator address to the MM recipient if the originator MMS User Agent did not request its address to be hidden from the MM recipient and if the MM originator address is available at the recipient MMS Relay/Server

- may provide an alias or clarifying text (e.g. "anonymous address" or "unknown address") in the originator address field instead of providing the originator address to the recipient MMS User Agent, if the originator has requested address hiding or the original message does not contain the originator address

- shall give an indication to the recipient MMS User Agent that a delivery report is requested if such a delivery report has been requested by the originator MMS User Agent

- shall give an indication to the recipient MMS User Agent that a read-reply report is requested if such a read reply report has been requested by the originator MMS User Agent

- shall indicate the MIME content type of the MM to the recipient MMS User Agent

- shall provide other available message qualifications unaltered to the recipient MMS User Agent

- shall provide the time stamp of the MM unaltered to the recipient MMS User Agent

- shall store messages in the network until the recipient MMS User Agent becomes reachable (e.g. user moves back into coverage, switches MMS User Agent on) or until the MM expires

- should provide the recipient MMS User Agent with a list of addresses of forwarding MMS User Agents for the MM if the MM was forwarded and the address information is available to the recipient MMS Relay/Server

- should not deliver the MM (or any adaptation of the MM) to the recipient MMS User Agent unless the size restriction set by the MMS User Agent is met.

Content information provided by the originator of an MM may be used by the recipient MMS Relay/Server for various purposes. For instance, if the content class [xx] is supported by the recipient and the content does not contain any DRM-protected content, the MMS Relay/Server may identify that adaptation is not required without need for further analysis of the message.

While the recipient MMS Relay/Server is adapting data, the adaptation rule based on DRM-protected content shall prevail the adaptation guideline provided by the originator.

The recipient MMS Relay/Server shall be able to ignore a request from an originator that the content of the MM will not be subjected to content adaptation, e.g. based on MMS service provider / network operator configuration.

In a response to an MM's delivery the recipient MMS User Agent may be able to

- request a delivery report not to be generated by the MMS Relay/Server.

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

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8.1 Technical realisation of MMS on reference point MM1

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8.1.3 Submission of Multimedia Message

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8.1.3.3 Features

Addressing: One or several MM recipients of a submitted MM shall be indicated in the addressing-relevant information field(s) of the MM1_submit.REQ. The originator of a submitted MM may be indicated in addressing-relevant information field(s) of the MM1_submit.REQ. The originator MMS User Agent may request to hide its identity from the MM recipient.

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

Time constraints: The originator MMS User Agent may also request an earliest desired time of delivery of the MM. The originator MMS User Agent may request a time of expiry for the MM. In case of reply-charging the originator MMS User Agent may also request a deadline for the latest time of submission of reply-MMs granted to the recipient(s).

Reply-Charging: The originator MMS User Agent may indicate that the sender 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 MM1_submit.REQ.

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_submit.REQ. Additional qualifiers may be added.

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

Identification: The originator MMS Relay/Server shall always provide a message identification for an MM, which it has accepted for submission in the MM1_submit.RES. In case of reply-charging the MMS User Agent which submits a reply-MM (i.e. the MMS User Agent that received the original MM) shall provide the message ID of the original MM which it replies to in the MM1_submit.REQ.

Persistent storage: In addition to being submitted for normal delivery, the MMS User Agent may request that the submitted MM be stored into the MMBox, by the presence of the Store information element. As part of the store request, the MM State and MM Flags can be set with the use of corresponding information elements. The response to a Store request shall include a Message Reference to the newly stored MM, as well as the associated MM State and optional MM Flags.

Store Status: The MMS Relay/Server shall indicate the store status of the MM1_submit.REQ in the Store Status information element of the associated MM1_submit.RES. The Store Status information element of the MM1_submit.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

Content Type: The MIME type of the multimedia content shall always be identified in the MM1_submit.REQ.

Content: The originator MMS User Agent may add content in the MM1_submit.REQ.

Request Status: The originator MMS Relay/Server shall indicate the status of the MM1_submit.REQ in the associated MM1_submit.RES. The reason code given in the status information element of the MM1_submit.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 originator MMS User Agent 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_submit.REQ and MM1_submit.RES as such.

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

Content Information: The originator may provide information about the nature of the content in the message. The content information could be in terms of indications that:

- classifies content of the MM based on e.g. media types/formats, size, presentation formats [xx]

- the MM contains DRM-protected content

In case of conflict with the adaptation restriction provided by the originator, DRM-protection rules in content adaptation shall prevail over the adaptation restriction.

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 MMBox, 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 Class	Optional	Classifies the content of the MM to the smallest content class to which the MM belongs [xx].
DRM Content	Optional	Indicates if the MM contains DRM-protected content
Adaptations	Optional	Indicates if the originator allows adaptation of the content (default True)
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.

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8.4 Technical realisation of MMS on reference point MM4

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8.4.1 Routing Forward of a Multimedia Message

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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 either the originator MMS User Agent, or the originator MMS Relay/Server 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.

Request Recipients: A list of recipients to whom the request status applies.

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.

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

Content Information: The originator may provide information about the nature of the content in the message. The content information could be in terms of indications that:

   • classifies content of the MM based on e.g. media types/formats, size, presentation formats [xx]

   • the MM contains DRM-protected content

In case of conflict with the adaptation restriction provided by the originator, DRM-protection rules in content adaptation shall prevail over the adaptation restriction.

8.4.1.4 Information Elements

Table 3: 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 (time stamp).
Time of Expiry	Conditional	The desired time of expiry for the MM if specified by the originator MMS User Agent (time stamp).
Delivery report	Conditional	A request for delivery report if the originator MMS User Agent has requested a delivery report for the MM.
Originator R/S delivery report	Conditional	A request for delivery report that, when set to "Yes", means the originator MMS Relay/Server has requested a delivery report for the MM. Interpret as "No" in the absence of this Information element.
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 (time stamps).
Content Class	Optional	Classifies the content of the MM to the smallest content class to which the message belongs [xx]
DRM Content	Optional	Indicates if the MM contains DRM-protected content
Adaptations	Optional	Indicates if the originator allows adaptation of the content (default True)
Content	Conditional	The unaltered content of the multimedia message if specified by the originator MMS User Agent.

Table 4: 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 Recipients	Conditional	List of recipients to whom the Request Status value applies. If this element is absent the Request Status value is applicable to all recipients of 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

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8.4.4   Message format on MM4

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8.4.4.2 MM4_Forward.REQ Header Mappings

The MM4 Forward request header mappings are detailed below.

**Table 5: 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: , Bcc:
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:
Originator R/S delivery report	X-Mms-Originator-R/S-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 Class	X-Mms-Content-Class:
DRM Content	X-Mms-Drm-Content:
Adaptations	X-Mms-Adaptation-Allowed:
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.

In case there are only blind carbon-copy recipient(s) ("Bcc:"), the behaviour shall be as recommended by RFC2821 [22], Appendix B, i.e. the originating MMS Relay/Server shall only insert an empty "Bcc:" header and no "To:" or "Cc:" headers. The recipient(s) shall then only be indicated in the SMTP command layer (RCPT TO:).

In case there are both "To:" / "Cc:" and "Bcc:" recipients, the "Bcc:" headers shall be removed by the originating MMS Relay/Server and the "Bcc:" recipients shall only be indicated in the SMTP command level (RCPT TO:). This is in accordance with the functionality recommended by RFC2821 [22], Appendix B.

The SMTP RCPT TO: shall convey the MM to the recipient, one recipient at a time.

For example, if an MMS originator sends an MM to 3 recipients (e.g., To: userA, Cc: userB; Bcc: userC), all served by the same MMS Relay/Server, differing from the originator's MMS Relay/Server; the originator MMS Relay/Server shall send:

    an SMTP MM4_Forward.REQ, with RCPT To: = userA,

    a different SMTP MM4_Forward.REQ, with RCPT To: = userB,

    and another SMTP MM4_Forward.REQ, with RCPT To: = userC.

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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 2822 [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-Originator-R/S-Delivery-Report:

```
Originator-R/S-Delivery-Report =  "X-Mms-Originator-R/S-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-Forward-To-Originator-UA:

```
Forward-To-Originator-UA = "X-Mms-Forward-To-Originator-UA" ":" ( "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-MM-Status-Extension:

```
MM-Status-Extension =  "X-Mms-MM-Status-Extension" ":" ( "Rejection-By-MMS-
Recipient" | "Rejection-by-Other-RS" )
```

The meaning of the X- Mms-Status-Extension header field is further described in section 8.4.4.11 of this specification.

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.

X-Mms-Content-Class:

```
Content-class = "X-Mms-Content-Class" ":" ("text" | "image-basic" | "image-
rich" | "video-basic" | "video-rich" | "megapixel" | "content-basic" |
"content-rich")
```

X-Mms-Drm-Content:

```
Drm-content =  "X-Mms-Drm-Content" ":" ( "Yes" | "No" )
```

X-Mms-Adaptation-Allowed:

```
Adaptations =  "X-Mms-Adaptation-Allowed" ":" ( "Yes" | "No" )
```

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8.7 Technical realisation of MMS on reference point MM7

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8.7.1 Submitting a VAS MM

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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. In the addressing information, it may be indicated whether a recipient address has been encrypted or

obfuscated. 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.

  NOTE: Use case examples:

  1)   The Linked ID can be used by the Relay/Server to logically relate a VASP reply (MM7_Submit.REQ) to an original user's request (MM1_Submit.REQ, and MM7_Deliver.REQ), in which case the Linked ID corresponds to the Message ID returned in the original MM1_Submit.RES.

  2)   The LinkedID can as well be used by the VASP to keep track of a sequence of MM7_Submit.REQ (e.g. MMs to multiple users) triggered by a single MM7_Deliver.REQ (e.g. which was triggered by a user's MM1_submit.REQ).

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.

  NOTE: From REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Content Adaptation Restriction feature.

Content Information: The VASP may provide information about the nature of the content in the message. The content information could be in terms of indications that:

  •   classifies content of the MM based on e.g. media types/formats, size, presentation formats [xx]

  •   the MM contains DRM-protected content

In case of conflict with the adaptation restriction provided by the VASP, DRM-protection rules in content adaptation shall prevail over the adaptation restriction.

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.

Charged party ID: The address of the third party which is expected to pay for the MM.

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

> NOTE: From REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Message Distribution Indication feature.

Delivery Condition: The VASP may indicate a condition which needs to be met to allow delivery. If the condition is not met the MM shall be discarded by the MMS Relay/Server.

8.7.1.4   Information Elements

Table 6: 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. It is possible to mark that a recipient address is provided in encrypted or obfuscated format. E.g. the address was originally provided in encrypted or obfuscated form in an associated MM7_deliver.REQ.
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.
Content Class	Optional	Classifies the content of the MM to the smallest content class to which the message belongs [xx].
DRM Content	Optional	Indicates if the MM contains DRM-protected content
Adaptations	Optional	Indicates if VASP allows adaptation of the content (default True) (NOTE 1)
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 third party 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. (NOTE 2)
Charged Party ID	Optional	The address of the third party which is expected to pay for the MM
Delivery Condition	Optional	If the condition is met the MM shall be delivered to the recipient MMS User Agent, otherwise the MM shall be discarded. The initial values are: MMS capable only; HPLMN only; any other values can be added based on bilateral agreements between the MMS Relay/Server operator and the VASP.

NOTE 1:	From REL-6 onwards, in case of misalignment between the value assigned to Adaptations and DRM-protection rules, the latter shall prevail.
NOTE 2:	From REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.

Table 7: 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.

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8.7.3   Cancel and replace of MM

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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: While replacing an MM, tThe VASP may request that the content of the MM will not be subjected to content adaptation.

NOTE: From REL-6 onwards, in case of misalignment, DRM-protection rules shall prevail on the Content Adaptation Restriction feature.

Content Information: While replacing an MM, the VASP may provide information about the nature of the content in the message. The content information could be in terms of indications that:

- classifies content of the MM based on e.g. media types/formats, size, presentation formats [xx]

- the MM contains DRM-protected content

In case of conflict with the adaptation restriction provided by the VASP, DRM-protection rules in content adaptation shall prevail over the adaptation restriction.

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 8: 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 9: 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 10: 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
Content Class	Optional	Classifies the content of the MM to the smallest content class to which the message belongs [xx].
DRM Content	Optional	Indicates if the MM contains DRM-protected content
Adaptations	Optional	Indicates if VASP allows adaptation of the content (default True) (NOTE 1)
Content type	Conditional	The content type of the MM's content. If the Content IE appears, then the Content type IE must appear. (NOTE 1)
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. (NOTE 2)
NOTE 1: From REL-6 onwards, in case of misalignment between the value assigned to Adaptations and DRM-protection rules, the latter shall prevail. NOTE 2: From REL-6 onwards, in case of misalignment between the value assigned to MDI and DRM-protection rules, the latter shall prevail.		

Table 11: 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

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8.7.9   Mapping of Information Elements to SOAP Elements

The following subsections detail the mapping of the information elements of the abstract messages to SOAP elements. The full XML Schema definition of the MM7 reference point appears in Annex L of this document. Specification of the format of SOAP element values appear in the schema.

8.7.9.1   MM7_submit.REQ 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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
VASP ID	SOAP Body	VASPID	
VAS ID	SOAP Body	VASID	
Sender Address	SOAP Body	SenderAddress	
Recipient Address	SOAP Body	Recipients	Different address format will be specified as part of element value
Service code	SOAP Body	ServiceCode	Information supplied for billing purposes – exact format is implementation dependent
Linked ID	SOAP Body	LinkedID	Message-ID of linked message
Message class	SOAP Body	MessageClass	Enumeration – possible values: Informational, Advertisement, Auto
Date and time	SOAP Body	TimeStamp	
Time of Expiry	SOAP Body	ExpiryDate	
Earliest delivery time	SOAP Body	EarliestDeliveryTime	
Delivery report	SOAP Body	DeliveryReport	Boolean – true or false
Read reply	SOAP Body	ReadReply	Boolean – true or false
Reply-Charging	SOAP Body	ReplyCharging	No value – presence implies true!
Reply-Deadline	SOAP Body	ReplyDeadline	Attribute of *ReplyCharging* element Date format – absolute or relative
Reply-Charging-Size	SOAP Body	replyChargingSize	Attribute of *ReplyCharging* element
Priority	SOAP Body	Priority	Enumeration – possible values: High, Normal, Low
Subject	SOAP Body	Subject	
Content Class	SOAP Body	ContentClass	Enumeration – possible values: text, image-basic, image-rich, video-basic, video-rich, megapixel, content-basic, content-rich
DRM Content	SOAP Body	DRMContent	Boolean – true or false
Adaptations	SOAP Body	allowAdaptations	Attribute of *Content* element Boolean – true or false
Charged Party	SOAP Body	ChargedParty	Enumeration – possible values: Sender, Recipient, Both, Neither
Message Distribution Indicator	SOAP Body	DistributionIndicator	Boolean – true or false
Delivery Condition	SOAP Body	DeliveryCondition	Possible values include MMS capable only, HPLMN only
Content type	MIME header – Attachment	Content-Type	
Content	SOAP Body	Content	href:cid attribute links to attachment

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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Message ID	SOAP Body	MessageID	
Request Status	SOAP Body	StatusCode	See section 8.7.8.3
Request Status Text	SOAP Body	StatusText & Details	See section 8.7.8.3

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-MM7-1-3"
env:mustUnderstand="1">
          vas00001-sub
      </mm7:TransactionID>
    </env:Header>
    <env:Body>
      <SubmitReq xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-
MM7-1-3">
          <MM7Version>5.6.0</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</TimeStamp>
          <EarliestDeliveryTime>2002-01-02T09:30:47-05:00</EarliestDeliveryTime>
          <ExpiryDate>P90D</ExpiryDate>
          <DeliveryReport>true</DeliveryReport>
          <Priority>Normal</Priority>
          <Subject>News for today</Subject>
          <ContentClass>video-rich</ContentClass>
          <DRMContent>true</DRMContent>
          <ChargedParty>Sender</ChargedParty>
          <DistributionIndicator>true</DistributionIndicator>
          <Content href="cid:SaturnPics-01020930@news.tnn.com" allowAdaptations="true"/>
      </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>
Content-Transfer-Encoding: base64

R0lGODdhZAAwAOMAAAAAAIGJjGltcDE0OOfWo6Ochbi1n1pmcbGojpKbnP/lpW54fBMTE1RYXEFO
…

--StoryParts 74526 8432 2002-77645--
--NextPart_000_0028_01C19839.84698430--
```

NOTE: The different encoding mechanisms, as defined by RFC2045 [44], can be utilized for content encoding.

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-MM7-1-3"
env:mustUnderstand="1">
           vas00001-sub
       </mm7:TransactionID>
    </env:Header>
    <env:Body>
        <SubmitRsp xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-
MM7-1-3">
           <MM7Version>5.6.0</MM7Version>
           <Status>
              <StatusCode>1000</StatusCode>
              <StatusText>Success</StatusText>
           </Status>
           <MessageID>041502073667</MessageID>
        </SubmitRsp>
    </env:Body>
</env:Envelope>
```

………………..

8.7.9.7 MM7_replace.REQ 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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
VASP ID	SOAP Body	VASPID	
VAS ID	SOAP Body	VASID	
Sender address	SOAP Body	SenderAddress	
Message ID	SOAP Body	MessageID	
Service code	SOAP Body	ServiceCode	Information supplied for billing purposes – exact format is implementation dependent
Date and time	SOAP Body	TimeStamp	
Earliest delivery time	SOAP Body	EarliestDeliveryTime	Date format – absolute or relative
Read reply	SOAP Body	ReadReply	Boolean – true or false
Content Class	SOAP Body	ContentClass	Enumeration – possible values: text, image-basic, image-rich, video-basuc, video-rich, megapixel, content-basic, content-rich
DRM Content	SOAP Body	DRMContent	Boolean – true or false
Adaptations	SOAP Body	allowAdaptations	Attribute of *Content* element Boolean – true or false
Content type	MIME part Header	Content-Type	
Content	SOAP Body	Content	href:cid attribute links to attachment
Message Distribution Indicator	SOAP Body	DistributionIndicator	Boolean – true or false

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Annex I (normative):
MM1 <-> MM4 header mapping

This annex maps the information elements found on MM1 onto the STD 11 header fields of MM4.

The tables below are provided to give a normative end-to-end description of MMS. It provides mapping of MM1 with respect to MM4/STD11.

In many cases there is no mapping between MM1 information elements and MM4 STD 11 header fields, this is according to specifications. These information elements are included in the tables below in order to give a complete picture of how the MM1 information elements are handled.

Table I.1: Mapping MM1_submit.REQ -> MM4_forward.REQ

Information elements in MM1_submit.REQ	STD11 Header fields in Egress MM4_forward.REQ
Message Type	-
MMS Version	-
Transaction ID	-
Recipient address	To:, Cc:, Bcc: (NOTE 1, NOTE 2)
Content type	Content-Type:
Sender address	From:
Message class	X-Mms-Message-Class:
Date and time	Date:
Time of Expiry	X-Mms-Expiry:
Earliest Delivery Time	-
Delivery report	X-Mms-Delivery-Report:
-	X-Mms-Originator-R/S-Delivery-Report
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	X-Mms-Priority:
Sender visibility	X-Mms-Sender-Visibility:
Store	-
MM State	-
MM Flags	-
Read reply	X-Mms-Read-Reply:
Subject	Subject:
Reply-Charging-ID	-
Content Class	X-Mms-Content-Class:
DRM Content	X-Mms-Drm-Content:
Adaptations	X-Mms-Adaptation-Allowed:
Content	*<message body>*
-	X-Mms-3GPP-MMS-Version
-	X-Mms-Message-Type
-	X-Mms-Transaction-Id
-	X-Mms-Message-Id
-	X-Mms-Acq-Request
-	X-Mms-Forward-Counter
-	X-Mms-Previously-sent-by
-	X-Mms-Previously-sent-date-and-time
NOTE 1: A "Bcc:" field is created on MM4 only when the original MM on MM1 contains only blind-carbon-copy recipient(s). In this case the "Bcc:" field is left blank, see clause 8.4.4.2.	
NOTE 2: Recipient addresses for blind-carbon-copy recipient(s) on MM1 are mapped onto <RCPT TO:> commands on SMTP level on MM4.	

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Annex K (informative): MM1, MM4 <-> MM7 header mapping

This annex maps the abstract messages from MM1 and MM4 to MM7.

The abstract messages mapped between MM1 and MM7 are:

- MM1_Submit.REQ to the MM7_Deliver.REQ

- MM7_Submit.REQ to the MM1_Notification.REQ and the MM1_Retrieve.RES

- MM1_Read_Reply_Recipient.REQ to the MM7_Read_Reply_Report.REQ

- MM1_Forward.REQ to the MM7_Deliver.REQ

The abstract messages mapped between MM4 and MM7 are:

- MM4_Forward.REQ to the MM7_Deliver.REQ

- MM7_Submit.REQ to the MM4_Forward.REQ

- MM4_Delivery_Report.REQ to the MM7_Delivery_Report.REQ

- MM4_Read_Reply_Report.REQ to the MM7_Read_Reply.REQ

The tables below shows the mapping and are provided to give an end-to-end description of MMS. There is a table for each MM1, MM4 abstract message that maps to a MM7 abstract message. In many cases there is no mapping between MM1, MM4 and MM7 information elements, this is according to specifications. These information elements are included in the tables below in order to give a complete picture of how the information elements are handled.

There are also several abstract messages over MM1, MM4 that have no relevant mapping to MM7 and vice versa. These abstract messages are omitted from this annex.

Table K.1: Mapping MM1_submit.REQ -> MM7_deliver.REQ

Information elements in MM1_submit.REQ	Information elements in MM7_deliver.REQ
Message Type	-
Transaction ID	-
MMSVersion	-
Recipient address, -	Recipient address, - (NOTE 1)
Content type	Content type
Sender address	Sender address, - (NOTE 2)
Message class	-
Date and time	Date and time
Time of Expiry	-
Earliest delivery time	-
Delivery report	-
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	Priority
Sender visibility	-
Store	-
MM State	-
MM Flags	-
Read reply	-
Subject	Subject
Reply-Charging-ID	Reply-Charging-ID
Content Class	-
DRM Content	-
Adaptations	-
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Linked ID
-	Sender SPI
-	Recipient SPI
NOTE 1: The recipient address over MM1 may or may not be mapped to recipient address over MM7. The recipient address over MM7 may also be independent of the recipient address over MM1. NOTE 2: If the Sender Visibility flag is set over MM1, the Sender address from MM1 is not mapped onto MM7.	

Table K.2: Mapping MM7_submit.REQ -> MM1_notification.REQ, MM1_Retrieve.RES

Information elements in MM7_submit.REQ	Information elements in MM1_notification.REQ	Information elements in MM1_retrieve.RES
-	Message Type	-
-	Transaction ID	-
-	MMS Version	-
Message class	Message class	Message class
Time of Expiry	Time of expiry	-
Subject	Subject	Subject
Priority	Priority	Priority
Sender address	Sender address	Sender address
Reply-Charging	Reply-Charging	Reply-Charging
-	-	Reply-Charging-ID
Reply-Deadline	Reply-Deadline	Reply-Deadline
Reply-Charging-Size	Reply-Charging-Size	Reply-Charging-Size
Transaction ID	-	-
Message type	-	-
MM7 version	-	-
VASP ID	-	-
VAS ID	-	-
Recipient address	-	Recipient address
Service code	-	-
Linked ID	-	-
Date and time	-	Date and time
Earliest delivery time	-	-
Delivery report	-	-
Read reply	-	Read reply
Content Class	-	-
DRM Content	-	-
Adaptations	-	-
Content type	-	Content type
Content	-	Content
Message Distribution Indicator	Message Distribution Indicator	Message Distribution Indicator
Charged Party	-	-
Charged Party ID	-	-
-	Message size	-
-	Message Reference	-
-	Stored	-
-	Delivery report	Delivery report
-	Reply-Charging-ID	-
-	Element-Descriptor	-
-	-	Message ID
-	-	MM State
-	-	MM Flags
-	-	Request Status
-	-	Request Status Text
-	-	Previously-sent-by
-	-	Previously-sent-date-and-time
-	-	Message Type
-	-	Transaction ID
-	-	MMS Version

Table K.3: Mapping MM1_read_reply_recipient.REQ -> MM7_read_reply_report.REQ

Information elements in MM1_read_reply_recipient.REQ	Information elements in MM7_read_reply_report.REQ
Message Type	-
MMS Version	-
Recipient address	Recipient address
Originator address	Sender address
Message-ID	Message-ID
Date and Time	Date and Time
Read Status	Read Status
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID
-	Status text

Table K.4: Mapping MM1_Forward.REQ -> MM7_Deliver.REQ

Information elements in MM1_Forward.REQ	Information elements in MM7_Deliver.REQ
Message Type	-
Transaction ID	-
MMS Version	-
Recipient address	Recipient address
Forwarding address	Sender address
Date and time	Date and time
Time of Expiry	-
Earliest delivery time	-
Store	-
MM State	-
MM Flags	-
Delivery report	-
Read reply	-
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Message Reference	<Content>, Content Type, Subject, Priority (NOTE)
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Linked ID
	Reply Charging ID
-	Sender SPI
-	Recipient SPI
NOTE:	The message reference is used to map fields and content from the original MM. The mapping of these fields is identical to the MM1_Submit.REQ/MM7_Deliver.REQ mapping in table K.1.

Table K.5: Mapping MM4_Forward.REQ -> MM7_Deliver.REQ

Information elements in MM4_Forward.REQ	Information elements in MM7_Deliver.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID, -	Linked ID, - (NOTE 1)
Recipient(s) address	Recipient address
Sender address	Sender address (NOTE 2)
Content type	Content type
Message class	-
Date and time	Date and time
Time of Expiry	-
Delivery report	-
Priority	Priority
Sender visibility	-
Read reply	-
Subject	Subject
Acknowledgement Request	-
Forward counter	-
Previously-sent-by	Previously-sent-by
Previously-sent-date and-time	Previously-sent-date-and-time
Content Class	-
DRM Content	-
Adaptations	-
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Recipient address
-	Reply-Charging-ID
-	Sender SPI
-	Recipient SPI
NOTE 1: The Message ID over MM1 may or may not be mapped to the Linked ID over MM7. The Linked ID over MM7 may also be independent of the Message ID over MM1. NOTE 2: If the Sender Visibility flag is set over MM4, the Sender address from MM4 is not mapped onto MM7.	

Table K.6: Mapping MM7_Submit.REQ -> MM4_Forward.REQ

Information elements in MM4_Forward.REQ	Information elements in MM7_Submit.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID	-
Recipient(s) address	Recipient address
Sender address	Sender address
Content type	Content type
Message class	Message class
Date and time	Date and time
Time of Expiry	Time of Expiry
Delivery report	Delivery report
Priority	Priority
Sender visibility	-
Read reply	Read reply
Subject	Subject
Acknowledgement Request	-
Forward counter	-
Previously-sent-by	-
Previously-sent-date and-time	-
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	VASP ID
-	VAS ID
-	Service code
-	Linked ID
-	Earliest delivery time
-	Reply-Charging
-	Reply-Deadline
-	Reply-Charging-Size
-	Content Class
-	DRM Content
-	Adaptations
-	Message Distribution-Indicator
-	Charged Party ID

Table K.7: MM4_delivery_report.REQ -> MM7_delivery_report.REQ

Information elements in MM4_delivery_report.REQ	Information elements in MM7_delivery_report.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID	Message ID
Recipient address	Sender address
Sender address	Recipient address
Date and time	Date and time
Acknowledgement Request	-
MM Status	MM Status
MM Status Extension	MM Status Extension
MM Status Text	Status text
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID

Table K.8: MM4_Read_reply_report.REQ -> MM7_read_reply_report.REQ

Information elements in MM4_Read_reply_report.REQ	Information elements in MM7_read_reply.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Recipient address	Recipient address
Sender address	Sender address
Message-ID	Message-ID
Date and time	Date and time
Acknowledgement Request	-
Read Status	Read Status
Status text	Status text
-	Transaction ID
-	Message Type
-	MM7 Version
-	MMS Relay/Server ID

…………………

Annex L (normative): MM7 XML Schema

CR-Form-v7

CHANGE REQUEST

⌘ **23.140 CR 169** ⌘**rev** **-** ⌘ Current version: **6.6.0** ⌘

*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 **X**

Title: ⌘	Clarification of interpretation of value "No" in Information Element "Forward to Originator UA" in the MM4 Delivery Report Forwarding	
Source: ⌘	T2	
Work item code:⌘	MMS6	***Date:*** ⌘ 10/08/2004
Category: ⌘ **C**	Use one 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.	***Release:*** ⌘ Rel-6 Use one 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: ⌘	MM4_delivery_report.REQ information element "Forward to Originator UA" definition may lead to interoperability problems due to incorrect understanding of its value.
Summary of change:⌘	"Is not allowed to" is changed to "shall not" in section 8.4.2.4
Consequences if not approved: ⌘	Further miss-interpretation may lead to Interoperability problems.

Clauses affected: ⌘	8.4.2.4 Table 35

	Y	N		
Other specs affected: ⌘		X	Other core specifications ⌘	
		X	Test specifications	
		X	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.

8.4.2.4 Information Elements

Table 1: 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
Forward to Originator UA	Optional	If "No", indicates that the originator MMS Relay/Server shall not~~is not allowed to~~ forward the Delivery Report to the originator MMS User Agent. The value "No" is only used when the recipient User Agent refuses a delivery report or when the originator User Agent has not requested a delivery report. Interpret as "Yes" in the absence of this Information element.
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
MM Status Extension	Optional	Extension of the MM Status, to provide more granularity.
MM Status text	Optional	Status text corresponding to the MM Status

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CHANGE REQUEST

| ⌘ | **23.140** CR **170** | ⌘**rev** | **-** | ⌘ | Current version: | **6.6.0** | ⌘ |

*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 **X**

Title: ⌘	Clarification of MM4_Forward.RES covering partial status information.	
Source: ⌘	T2	
Work item code: ⌘	MMS6	***Date:*** ⌘ 26/08/2004
Category: ⌘ **C**		***Release:*** ⌘ Rel-6

Use one of the following categories:	*Use one of the following releases:*
F *(correction)*	*Ph2 (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)
	Rel-6 (Release 6)
	Rel-7 (Release 7)

Reason for change: ⌘	To clarify that the MMS Relay / Server is responsible for ensuring that the MM4_Forward.RES messages sent back in response to a bundled MM4_Forward.REQ cover all recipients.
Summary of change: ⌘	Following text is added to section 8.4.1.2: "The MMS Relay/Server should ensure that MM4_Forward.RES messages sent back in response to a MM4_Forward.REQ cover all recipients."
Consequences if not approved: ⌘	Charging problems may occur due to recipient(s) missing in MM4_forward.RES.

Clauses affected: ⌘	8.4.1.2		

	Y	N	
Other specs affected: ⌘		X	Other core specifications ⌘
		X	Test specifications
		X	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.

8.4.1.2   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. The MMS Relay/Server should ensure that MM4_Forward.RES messages sent back in response to a MM4_Forward.REQ cover all recipients.

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CHANGE REQUEST

| ⌘ | **23.140** CR **171** | ⌘**rev** | **-** | ⌘ | Current version: | **6.6.0** | ⌘ |

*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 **X**

Title:	⌘	Support for multiple and single recipients on MM4

Source:	⌘	T2

Work item code: ⌘	MMS6		**Date:** ⌘	25/08/2004

Category:	⌘	**C**		**Release:** ⌘	REL-6

Use one 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 one of the following releases:
Ph2 (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)
Rel-7 (Release 7)

Reason for change:	⌘	Release 4, Release 5 and upto Release 6.4.0 MM4 Multiple recipients have been permitted in the MM4_Forward.Req

Summary of change: ⌘	Section 8.4.1.1 Ability to use the MM4_Forward.Req for more than a single recipient is restored and thus the ability to address more than one recipients in the MM4_Forward.Req remains consistent as defined in Release 4 though to Release 6.

Consequences if not approved:	⌘	Release 6.5.0 will not be compatible with Release 6.4.0 and lower releases all the way to Release 4.2.0

Clauses affected:	⌘	8.4.1.1

Other specs affected:	⌘	Y	N			⌘	
		X		Other core specifications	⌘	3G TS 32.270
			X	Test specifications		
			X	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.

8.4.1.1   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 a single or multiple separate MM4_forward.REQs each containing multiple or single MM recipients per MM recipient. The MM4_forward.REQ 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. If multiple recipients are addressed in the MM4_Forward.REQ the recipient MMS Relay/Server may respond with any of the following to the originator MMS Relay/Server: a single MM4_Forward.RES message, multiple MM4_Forward.RES messages, or any combination of single or multiple MM4_Forward.RES messages. E.g. this will allow for multiple status indications or a single collective status indication in the MM4_Forward.RES in case of partial addressing failures.

> NOTE: Before and including version 6.5.0 of the present document had insufficient mechanisms to convey errors that occurred on multiple recipients to the originator's MMS Relay/Server.

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

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CHANGE REQUEST

⌘ **23.140** CR **172** ⌘ **rev** **-** ⌘ Current version: **6.6.0** ⌘

*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 **X**

Title: ⌘	Adding the Information Elements VASID and VASPID to the MM7_Deliver.REQ
Source: ⌘	T2
Work item code:⌘	MMS6 **Date:** ⌘ 26/08/2004
Category: ⌘	**B** **Release:** ⌘ Rel-6

Use *one* of the following categories: Use *one* 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	Rel-4	(Release 4)
be found in 3GPP TR 21.900.	Rel-5	(Release 5)
	Rel-6	(Release 6)

Reason for change: ⌘	The Information Elements VASID and VASPID are missing from the MM7_Deliver.REQ.
Summary of change:⌘	Add the Information Elements VASID and VASPID to the MM7_Deliver.REQ.
Consequences if not approved: ⌘	VAS and VASPs can not be addressed in delivering an MM to a VASP (MM7_Deliver.REQ).

Clauses affected: ⌘	8.7.2, 8.7.9, K.4, K.5

	Y	N	
Other specs affected: ⌘		X	Other core specifications ⌘
		X	Test specifications
		X	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.

8.7.2   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 1: 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 VAS 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. In the addressing information, it may be indicated whether the sender address has been encrypted or obfuscated.

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 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.

   NOTE: Use case examples:

   1)   The Linked ID can be used by the Relay/Server to logically relate a VASP reply (MM7_Submit.REQ) to an original user's request (MM1_Submit.REQ, and MM7_Deliver.REQ), in which case the Linked ID corresponds to the Message ID returned in the original MM1_Submit.RES.

   2)   The LinkedID can as well be used by the VASP to keep track of a sequence of MM7_Submit.REQ (e.g. MMs to multiple users) triggered by a single MM7_Deliver.REQ (e.g. which was triggered by a user's MM1_submit.REQ).

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.

Service Provider Identification: The MMS Relay/Server may provide the SPI (Service Provider Identification) for the sender. In case a message is delivered to a VASP based on the recipient address, the MMS Relay/Server may provide the SPI for the recipient. The SPI information can originate from e.g. a user profile or a MAP query.

Time stamping: The MM may include 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 MM7_deliver.REQ may carry the date and time of the submission of the MM.

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 2: 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
VASP ID	Optional	Identifier of the VASP for this MMS Relay/Server.
VAS ID	Optional	Identifier of the originating application.
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. It is possible to mark that the sender address has been encrypted or obfuscated by the MMS Relay/Server.
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.
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).
Sender SPI	Optional	The SPI of the MM originator.
Recipient SPI	Optional	The SPI of the intended MM recipient, in case the MM was delivered to VASP based on the recipient address.
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 3: 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

8.7.9.3   MM7_deliver.REQ 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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
VASP ID	SOAP Body	VASPID	
VAS ID	SOAP Body	VASID	
MMS Relay/Server ID	SOAP Body	MMSRelayServerID	
Linked ID	SOAP Body	LinkedID	Message-ID of linked message
Sender address	SOAP Body	Sender	
Recipient address	SOAP Body	Recipients	If none appear then Sender Address is used
Date and time	SOAP Body	TimeStamp	
Reply-Charging-ID	SOAP Body	ReplyChargingID	Should correspond to an ID that appeared in previous MM7_submit.REQ
Priority	SOAP Body	Priority	Enumeration – possible values: High, Normal, Low
Subject	SOAP Body	Subject	
Content type	MIME header of attachment	Content-Type	
Content	SOAP Body	Content	href:cid attribute links to attachment

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 the number of the specification in which the schema has changed most recently, e.g. 5.2.0
Service code	SOAP Body	ServiceCode	
Request status	SOAP Body	StatusCode	See section 8.7.8.3
Request status text	SOAP Body	StatusText & Details	See section 8.7.8.3

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-deliver>

<?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-65-MM7-1-43"
env:mustUnderstand="1">
                vas00324-dlvr
            </mm7:TransactionID>
    </env:Header>
    <env:Body>
        <!-- Example of MM7_deliverReq -->
        <DeliverReq xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-65-
MM7-1-43">
            <MM7Version>56.76.0</MM7Version>
                <VASPID>TNN</VASPID>
                <VASID>Reminder</VASID>
            <MMSRelayServerID>240.110.75.34</MMSRelayServerID>
            <LinkedID>wthr8391</LinkedID>
            <Sender>
                <RFC2822Address>97254265781@OMMS.com</RFC2822Address>
            </Sender>
            <TimeStamp>2002-04-15T14:35:21-05:00</TimeStamp>
            <Priority>Normal</Priority>
            <Subject>Weather Forecast</Subject>
            <Content href="cid:forecast-location200102-86453"/>
        </DeliverReq>
    </env:Body>
</env:Envelope>


--NextPart_000_0125_01C19839.7237929064
Content-Type:text/plain;charset="utf-8"
Content-ID:<forecast-location2000102-86453>

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-65-MM7-1-43"
env:mustUnderstand="1">
                vas00324-dlvr
        </mm7:TransactionID>
    </env:Header>
    <env:Body>
        <env:Fault>
            <faultcode>env:Client</faultcode>
            <faultstring>Client error</faultstring>
            <detail>
        <VASPErrorRsp xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-65-
MM7-1-43">
                    <MM7Version>56.76.0</MM7Version>
                    <Status>
                        <StatusCode>4006</StatusCode>
                        <StatusText>Service Unavailable</StatusText>
                        <Details>
                            <app:Reason xmlns:app="http://vendor.example.com/MM7Extension">Location
not covered in service</app:Reason>
                        </Details>
                    </Status>
                </ VASPErrorRsp>
            </detail>
        </env:Fault>
    </env:Body>
</env:Envelope>
```

Table K.4: Mapping MM1_Forward.REQ -> MM7_Deliver.REQ

Information elements in MM1_Forward.REQ	Information elements in MM7_Deliver.REQ
Message Type	-
Transaction ID	-
MMS Version	-
Recipient address	Recipient address
Forwarding address	Sender address
Date and time	Date and time
Time of Expiry	-
Earliest delivery time	-
Store	-
MM State	-
MM Flags	-
Delivery report	-
Read reply	-
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Message Reference	<Content>, Content Type, Subject, Priority (NOTE)
-	Transaction ID
-	Message type
-	MM7 version
-	VASP ID
-	VAS ID
-	MMS Relay/Server ID
-	Linked ID
	Reply Charging ID
-	Sender SPI
-	Recipient SPI
NOTE: The message reference is used to map fields and content from the original MM. The mapping of these fields is identical to the MM1_Submit.REQ/MM7_Deliver.REQ mapping in table K.1.	

Table K.5: Mapping MM4_Forward.REQ -> MM7_Deliver.REQ

Information elements in MM4_Forward.REQ	Information elements in MM7_Deliver.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID, -	Linked ID, - (NOTE 1)
Recipient(s) address	Recipient address
Sender address	Sender address (NOTE 2)
Content type	Content type
Message class	-
Date and time	Date and time
Time of Expiry	-
Delivery report	-
Priority	Priority
Sender visibility	-
Read reply	-
Subject	Subject
Acknowledgement Request	-
Forward counter	-
Previously-sent-by	Previously-sent-by
Previously-sent-date and-time	Previously-sent-date-and-time
Content	Content
-	Transaction ID
-	Message type
-	MM7 version
-	VASP ID
-	VAS ID
-	MMS Relay/Server ID
-	Recipient address
-	Reply-Charging-ID
-	Sender SPI
-	Recipient SPI
NOTE 1: The Message ID over MM1 may or may not be mapped to the Linked ID over MM7. The Linked ID over MM7 may also be independent of the Message ID over MM1. NOTE 2: If the Sender Visibility flag is set over MM4, the Sender address from MM4 is not mapped onto MM7.	

3GPP TSG-T2 #26
Montreal, CA
23-27 August 2004

T2-040369

⌘

CR-Form-v7

CHANGE REQUEST

| ⌘ | **23.140** CR **173** | ⌘**rev** | **-** | ⌘ | Current version: | **6.6.0** | ⌘ |

*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 **X**

Title: ⌘	Support of Messaging Service Control Function (MSCF)	
Source: ⌘	T2	
Work item code: ⌘	MMS-6	***Date:*** ⌘ 18/08/2004
Category: ⌘	**B**	***Release:*** ⌘ REL-6

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: ⌘	CR 22.140-044 provides the service requirements to support operator specific services dealing with enhanced addressing for the Multimedia Messaging Service. To fulfil this service requirement the concept of the "Messaging Service Control Function" is added to the existing Specification. The MMS shall support a control interface towards the MSCF.
Summary of change: ⌘	Functional description for the support of the "Messaging Service Control Function" added, Stage 2 MMx Interface description added.
Consequences if not approved: ⌘	No standardised way to handle operator specific services

Clauses affected: ⌘	New Section 5.4, Section 6.1 modified, new Section 6.11, new Section 7.1.16, new Section 8.9, New Annex N

	Y	N	
Other specs affected: ⌘		X	Other core specifications ⌘
		X	Test specifications
		X	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.

First Modified Section

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*.

[82] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 4 - Stage 2"

[83] IETF RFC 3588 "Diameter Base Protocol", URL: http://www.ietf.org/rfc/rfc3588.txt.

Next Modified Section

3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in [1] and [2] and the following apply:

CDR	Charging Data Record
DCF	DRM Content Format
DNS	Domain Name System
DRM	Digital Rights Management
EMA	Electronic Message Association
E-Mail	Electronic Mail
ENUM	Electronic Numbering
FQDN	Fully Qualified Domain Name
GW	Gateway
HTTP	Hypertext Transfer Protocol
IANA	Internet Assigned Numbering Authority
IETF	Internet Engineering Task Force
IMAP4	Internet Message Access Protocol
MIME	Multipurpose Internet Mail Extensions
MM	Multimedia Message
MMS	Multimedia Messaging Service
MMSE	Multimedia Messaging Service Environment
MMSNA	Multimedia Messaging Service Network Architecture
MSCF	Messaging Service Control Function
MTA	Mail Transfer Agent
PDU	Protocol Data Unit
POP3	Post Office Protocol Version 3
RADIUS	Remote Authentication Dial In User Service
RDF	Resource Description Format
RFC	Request for Comments
RTSP	Real Time Streaming Protocol
SDP	Session Description Protocol
SMIL	Synchronised Multimedia Integration Language
SMTP	Simple Mail Transfer Protocol

SOAP	Simple Object Access Protocol
SPI	Service Provider Identification
UA	User Agent
UAProf	User Agent Profile
URI	Uniform Resource Identifiers
VAS	Value Added Service
VASP	Value Added Service Provider
VPIM	Voice Profile for Internet Mail
W3C	WWW Consortium
WAP	Wireless Application Protocol
WIM	WAP Identity Module
WML	Wireless Markup Language
WSP	WAP Session Protocol
WTLS	Wireless Transport Layer Security
XML	Extensible Markup Language

First New Section

5.4 Messaging Service Control Function (MSCF)

The MSCF is a functional entity which may be connected to the MMS Relay/Server to execute messaging related service logic. It may influence addressing, routeing and charging for multimedia messages. Furthermore it may control access rights of the user.

The MSCF may be co-located with the gsmSCF [82].

Next Modified Section

6 MMSE Architecture and Interfaces

This clause defines the Multimedia Messaging framework. The application protocol framework described by the means of abstract messages and the technical realisation of MMS service features are defined in clause 8.

6.1 MMS Reference Architecture

Figure 3 shows the MMS Reference Architecture and identifies reference points within an MMSNA that are further described below. Abstract messages are indicated in clause 8 that describe the logical message exchange on these reference points on a high-level basis.
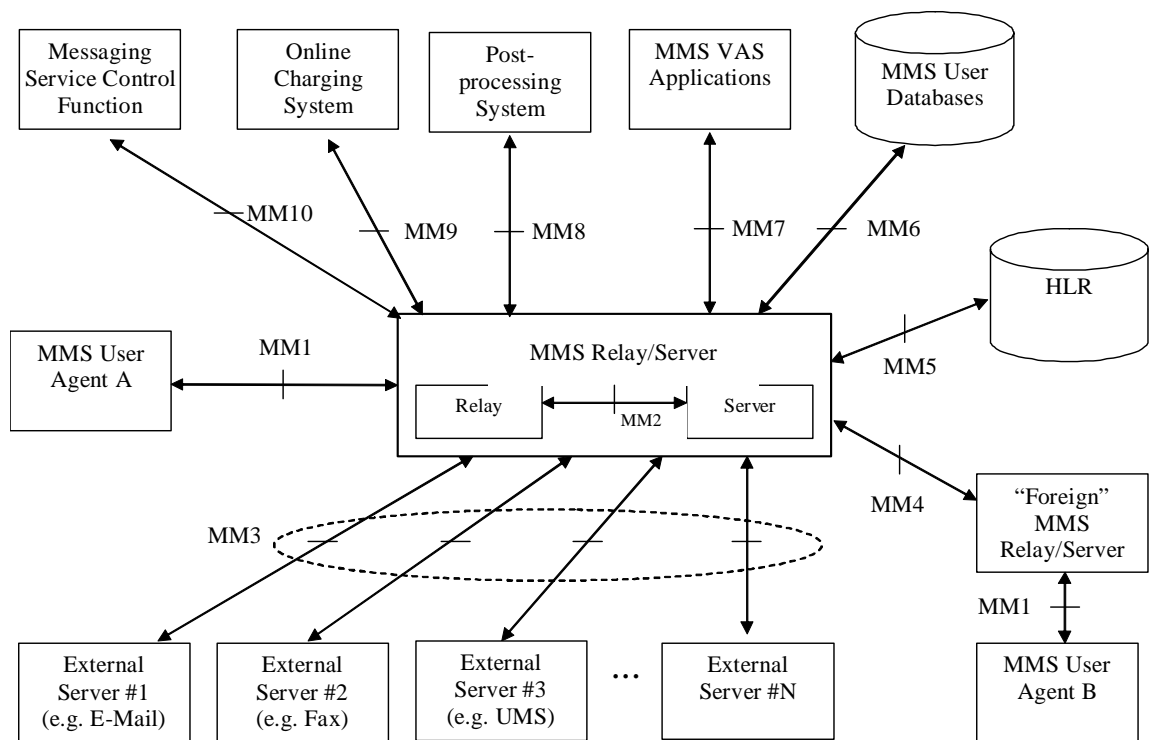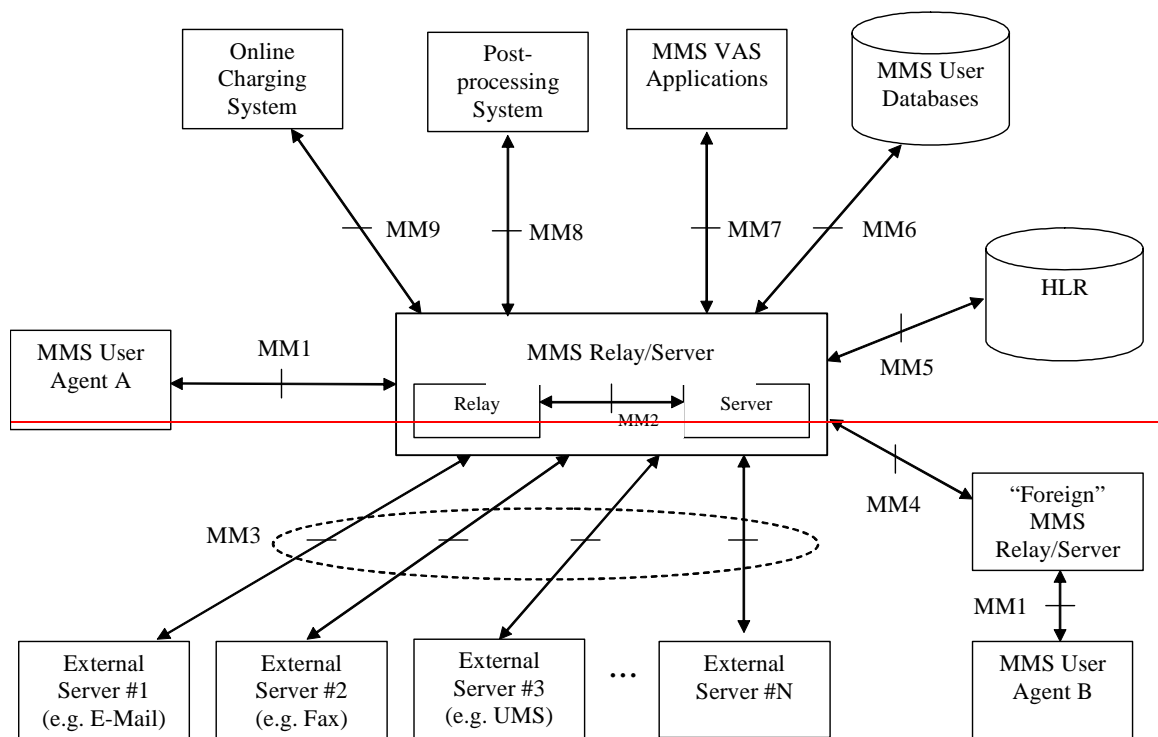
Figure 3: MMS Reference Architecture

The interfaces in the MMS Reference Architecture are:

MM1: The reference point between the MMS User Agent and the MMS Relay/Server.

MM2: The reference point between the MMS Relay and the MMS Server.

MM3: The reference point between the MMS Relay/Server and external (legacy) messaging systems.

MM4: The reference point between the MMS Relay/Server and another MMS Relay/Server that is within another MMSE.

MM5: The reference point between the MMS Relay/Server and the Home Location Register (HLR).

MM6: The reference point between the MMS Relay/Server and the MMS User Databases.

MM7: The reference point between the MMS Relay/Server and MMS VAS Applications.

MM8: The reference point between the MMS Relay/Server and the post-processing system.

MM9: The reference point between the MMS Relay/Server and the online charging system.

MM10: The reference point between the MMS Relay/Server and a Messaging Service Control Function (MSCF).

Next New Section

6.12   MM10: MMS Relay/Server – Messaging Service Control Function (MSCF)

Reference Point MM10 is used to transfer multimedia message specific information between the MMS Relay/Server and an external MSCF, e.g. for number translation purposes.

This reference point shall be based on Diameter [83].

Next New Section

7.1.17 Support of Messaging Service Control Function

The MMS Relay/Server may support interworking with a MSCF, which allows the operator to handle advanced addressing within the MMSE.

Whether the MMS Relay/Server shall interact depends on the following trigger configuration data in the MMSE:

- User specific trigger, i.e. the interaction with the MSCF is invoked if the user is provisioned with the relevant trigger information.

- Address specific trigger, i.e. the interaction with the MSCF is invoked, if the recipient address is configured in the MMS Relay/Server with a MSCF trigger profile.

7.1.17.1 Triggering of interactions with the MSCF

The MMS Relay/Server shall support procedures for the interaction with the MSCF together with the following MMS services:

- at the time of MM submission via the MM1 interface

- at the time of submission via the MM7 interface

- prior to the MM notification via the MM1 interface.

Whether the interaction with the MSCF is invoked depends on the provisioning of the following triggers definitions in the MMS Relay/Server:

Users profile based Trigger:

The sending user is provisioned with a trigger information for the invocation of the interaction with the MSCF function.

Note, the provisioned user may be an MMS subscriber or a VASP.

Address based Trigger:

The MMS Relay/Server keeps a trigger criterion for the recipient address provided in a submit request.

Table XX defines the applicability of trigger definitions to MMS services:

Trigger MMS Service	User profile specific	Address specific
MM1 submission	YES	YES
MM7 submission	YES	YES
MM1 notification	YES	NO

Table XX: Applicability of Trigger Definitions to MMS services

7.1.17.2 User Profile Trigger criteria

If the Relay/Server supports the interworking with MSCF it shall be possible to provision trigger definitions in the MMS user profile. Any MMS subscriber can be provided with a maximum of two trigger definitions. A VASP can be provided with the Submit trigger definition only. A user profile trigger definition shall provide at least the attributes defined in table YY:

Parameter	Value	Description
Trigger Point	Submit / Delivery	Specifies the MMS service for which the MM10 interworking process shall be invoked. Each entry shall contain one trigger definition. For a VASP only the Submit value is applicable.
MSCF Address	Host and Realm indication of the MSCF	Address information to route the MM10 interrogation request to the MSCF.
Application identification	String defined by the operator	Identification of the application on the MSCF.
Recovery handling	Continue / Reject	Specifies the MMS Relay/Server process handling if the interrogation to the MSCF fails abnormally.

Table YY: User Profile to support Messaging Service Control Function

7.1.17.3 Address based Trigger criteria

The MMS Relay/Server may keep a list of recipient addresses for which interworking with the MSCF is required. The address criteria may be managed independently for MM1 submission and MM7 submission. For MM7 submission criteria definition per VASP may be supported in addition.

For each of the recipient address criteria at least the following trigger definition shall be supported.

Parameter	Value	Description
Address Criterion	Address string	Specifies the recipient address in a submit request that shall lead to invocation of an MM10 interworking process. Address string may be a RFC2822 address, a PLMN address or any other address (alphanumeric short code etc.). Note, address string may

		contain wildcards to allow address range definitions.
MSCF Address	Host and Realm indication of the MSCF	Address information to route the MM10 interrogation request to the physical MSCF.
Application identification	String defined by the operator	Identification of the application on the MSCF.
Recovery handling	Continue / Reject	Specifies the MMS Relay/Server process handling if the interrogation to the MSCF fails abnormally.

Table ZZ: User Profile to support Messaging Service Control Function

7.1.17.4 Charging impact

The MSCF shall be able to influence the content of the CDR created at the MMS Relay/Server. The data provided to the MMS Relay/Server is transparent for the MMS Relay/Server and will be transferred to the post processing or real-time charging services.

The MSCF is able to modify the recipient routeing addresses. CDRs generated by the MMS Relay/Server shall contain the recipient addresses originally requested by the MMS User Agent and the routeing recipient addresses requested by the MSCF.

The MSCF shall be able to request an original MM to be sent to a number of alternative recipients (copy/forward). The MMS Relay/Server copy forward the MM as requested by the MSCF. In this case the MMS Relay/Server shall create CDRs for all result recipient addresses as requested by the MSCF.

7.1.17.5 Message handling

The handling of following MMS services may result in triggering the MSCF :

- MM1 Submission
- MM1 Delivery
- MM7 Submission

This section defines the message handling procedures in the MMS Relay/Server if interworking with an MSCF is supported. The message handling process shall follow the order as defined by the description below.

7.1.17.5.1 MM1 Submission

7.1.17.5.1.1 User Profile based trigger

7.1.17.5.1.1.1 Interrogation Request

For any MM1 submitted message the MMS Relay/Server shall query the sender's user profile entry for a profile specific trigger as defined in section 7.1.17.2. If an profile specific trigger for submission is in place, the MMS Relay/Server shall suspend message processing and send the MM10 interrogation request as defined in section 8.9 to the MSCF.

The following principles for the composition and processing of the MM10 interrogation request shall apply:

The MMS Relay/Server shall provide as the served user identity the sender's key identification as derived from the user's profile (e.g. the MSISDN).

In the Sender address parameter the MMS Relay/Server may provide the sender identification intended for presentation purposes. This identification may be the sender address as provided by the user agent.

The MM10 interrogation request shall contain the list of all recipient addresses provided by the user in the submitted message. For each of the recipient addresses a qualification of the used address field (To, CC, BCC) shall be given.

The sender may request multiple recipients for one message. If the MM10 interrogation request is triggered due to a user profile based trigger then all recipient addresses shall be provided to the MSCF. The MMS Relay/Server shall provide

an unique reference (sequence number) for each of the recipient addresses. This reference shall allow the MMS Relay/Server to track the modification of the original address after processing in the MSCF.

7.1.17.5.1.1.2 Interrogation Response

The MSCF shall respond to the MM10 interrogation request with an MM10 interrogation response as defined in section 8.9.

The MSCF may return for each specific recipient addresses a result. The result shall provide a reference to the initial recipient address of the MM10 interrogation request by means of the unique reference (sequence number). If the MSCF requests additional recipient addresses in the response (e.g. forwarding addresses), then it shall allocate new reference numbers. The MSCF shall continue to use reference number values greater then the highest value provided by the MMS Relay/Server.

Each result recipient address may consist of several components.

Routeing Address

If the result recipient address contains a Routeing Address then the MMS Relay/Server shall continue handling of the MM as follows:

- The Routeing Address may contain recipient addresses in all formats that are specified for the MM1 interface. In this case the MMS Relay/Server shall continue handling of the recipient according to the definitions of this specification for the MM1 interface.

  A Routeing Address provided in this format may be subject to a subsequent MM10 interrogation request if the result matches to an address specific trigger.

- The Routeing Address may contain a routeing address composed according to the MM4 address coding on SMTP level (refer to section 8.4.5.1). In this case the MMS Relay/Server shall analyse the FQDN provided. If the FQDN refers to the own domain, then the message is treated locally within the MMSE. If the FQDN refers not to the own domain, then the message shall be forwarded according to the definitions for the MM4 interface.

  A Routeing Address provided in this format shall not be subject to a subsequent MM10 interrogation request.

If the Result Recipient Address contains no Routeing Address for a specific reference (sequence number) then the original recipient is omitted, i.e. removed from the list of recipients.

If the MSCF requests the recipient address to be kept unmodified, then the initial recipient address value shall be returned with its reference (sequence number).

Presentation Address

The Presentation Address is only applicable if a Routeing Address has been provided by the MSCF.

The value contained in the Presentation Address is used for identification presentation to the recipient user, i.e. the presentation of address information in the To:, CC: and BCC: fields presented to the recipient.

If a Presentation Address is provided by the MSCF in the MM10 interrogation response, then the MMS Relay/Server shall replace the corresponding address in the recipient field and store it together with the message for further processing.

The MMS Relay/Server shall not use the presentation address for message routeing purposes.

Sender Address

The Sender Address is used for sender identification to the recipient user, i.e. the presentation of address information in the From: field presented to the recipient.

If the sender address is provided by the MSCF in the MM10 interrogation response then the MMS Relay/Server replace the sender address field and store it together with the message for further processing.

In order to support delivery and read reply reporting via the MM4 interface, the Sender Address value has to refer to the address of the original sender. MSCF applications may take this into account when setting up values for this attribute. If the addressing service requires presentation of a "not routeable" sender address to the recipient, then a delivery report request should be suppressed.

Full support of delivery and read reply reports in conjunction with the MSCF may be defined in later versions of this specification.

7.1.17.5.1.2 Address specific trigger

7.1.17.5.1.2.1 Interrogation Request

After the user profile based interrogation or if no profile based trigger criteria was met the MMS Relay/Server shall check if an address specific trigger is in place. The verification of the address specific trigger shall be based on

- the outcome of the previous MM10 interrogation procedure if a profile based trigger was met. In this case the MMS Relay/Server shall consider only the Routeing Address part of the Result Recipient Address received from the MSCF,

- the recipient address information of the initial message if the user profile based trigger was not met.

The MMS Relay/Server shall analyse all recipient addresses of a submitted MM.

An address based trigger criteria is met if both the recipient address and the address criterion string match fully. Note, the address criterion definition may allow wildcards to define address ranges.

If the recipient address is a PLMN address the MMS Relay/Server shall first attempt to convert the address into international format based on the numbering plan of the HPLMN, i.e. the numbering plan applicable for the serving MMS Relay/Server. If successful the address comparison shall happen based on the international format version of the number.

If the recipient address can not be converted into international format (e.g. in case of short codes) the address digits shall be used for comparison unmodified.

If for one or several recipient addresses match the criteria, then the MMS Relay Server shall send an interrogation request to the MSCF as specified in section 8.9. One MM10 interrogation per matched recipient address shall be sent.

The MMS Relay/Server shall provide as the served user identity the sender's key identification as derived from the user's profile (e.g. the MSISDN).

In the Sender address parameter the MMS Relay/Server may provide the sender identification intended for presentation purposes. This identification may be either the sender address as provided by the MMS User Agent or the value of the Sender Address returned form an MSCF in result of the previous MM10 interrogation request for a user profile based trigger.

The MM10 interrogation request shall contain only the recipient address that matches the address specific trigger of the MMS Relay/Server. The MMS Relay/Server shall provide reference (sequence number) for the recipient address.

7.1.17.5.1.2.2 Interrogation Response

The MSCF shall respond to the MM10 interrogation request with an MM10 interrogation response as defined in section 8.9.

The MSCF may return result one or more recipient addresses. If the MSCF requests additional recipient addresses in the response (e.g. forwarding addresses), then it may allocate new reference numbers above the value used in the interrogation.

The result recipient address may consist of several components.

Routeing Address

If the result recipient address contains a Routeing Address then the MMS Relay/Server shall continue handling of the MM as follows:

- The Routeing Address may contain recipient addresses in all formats that are specified for the MM1 interface. In this case the MMS Relay/Server shall continue handling of the recipient according to the definitions of this specification for the MM1 interface.

- The Routeing Address may contain an routeing address composed according to the MM4 address coding on SMTP level (refer to section 8.4.5.1). In this case the MMS Relay/Server shall analyse the FQDN provided. If the FQDN refers to the own MMSE, then the message is treated internally. If the FQDN refers not to the own MMSE, then the message shall be forwarded according to the definitions for the MM4 interface.

If the Result Recipient Address contains no Routeing Address with a specific reference (sequence number) then the original recipient is omitted, i.e. removed from the list of recipients.

Note: Omission only effects the message to this individual address. Messages to multiple recipients not being subject to the address specific trigger may still contain unmodified addresses as provided by the sender.

If the MSCF requests the recipient address to be kept unmodified, then the initial recipient address value shall be returned with its reference (sequence number)

Presentation Address

The Presentation Address is only applicable if a Routeing Address has been provided by the MSCF.

The value contained in the Presentation Address is used for identification presentation to the recipient user, i.e. the presentation of address information in the To:, CC: and BCC: fields presented to the recipient.

If a Presentation Address is provided by the MSCF in the MM10 interrogation response, then the MMS Relay/Server shall store the modified recipient field together with the message for further processing.

The MMS Relay/Server must not use the presentation address for message routeing purposes.

Sender Address

The Sender Address is used only for sender identification to the recipient user provided by the result recipient address, i.e. the presentation of address information in the From: field presented to this recipient.

If the sender address is provided by the MSCF in the MM10 interrogation response then the MMS Relay/Server shall store the modified sender address with the message for further processing.

In order to support delivery and read reply reporting via the MM4 interface, the Sender Address value has to refer to the address of the original sender. MSCF applications may take this into account when setting up values for this attribute. If the addressing service requires presentation of a "not routeable" sender address to the recipient, then delivery and read reply report request should be suppressed.

Full support of delivery and read reply reports in conjunction with the MSCF may be defined in later versions of this specification.

7.1.17.5.2 MM1 Delivery

7.1.17.5.2.1 Interrogation Request

Prior to the notification about an MM to be delivered the MMS Relay/Server shall query the recipient's user profile entry for a profile specific trigger as defined in section 7.1.17.2. If a profile specific trigger for delivery is in place, the MMS Relay/Server shall suspend message processing and send the MM10 interrogation request as defined in section 8.9 to the MSCF.

The MMS Relay/Server shall provide as the served user identity the recipient's key identification as derived from the user's profile (e.g. the MSISDN).

The MM10 interrogation request shall contain the recipient addresses (including the served user) that are contained in the incoming message. For each of the recipient addresses a qualification of the used address field (To, CC, BCC) shall be given.

The MMS Relay/Server shall provide a unique identification of each of the recipient addresses in case of multiple recipients. This identification shall allow the MMS Relay/Server to track the modification of the original address after processing in the MSCF.

In the Sender address parameter the MMS Relay/Server shall provide the sender identification intended for presentation to the recipient MMS User Agent. This identification shall contain the sender address as received with the message to be delivered.

7.1.17.5.2.2 Interrogation Response

The MSCF is able to respond to the MM10 interrogation request with an MM10 interrogation response as defined in section 8.9. For the processing of the MM10 interrogation response the following principles shall apply:

The MSCF may return for each of the specific recipient addresses a result recipient address. This shall be achieved by returning the unique identification for each of the recipients. If the MSCF requests additional recipient addresses in the response (e.g. forwarding addresses), then it may allocate new reference numbers. The MCG shall continue to use reference number values greater then the highest value provided by the MMS Relay/Server in the Interrogation request.

Each result recipient address may consist of several components.

Routeing Address

A routeing address shall only be returned if the MSCF requests alternate recipient addresses for the message, i.e. to copy or forward the received MM.

If the result recipient address contains a Routeing Address then the MMS Relay/Server shall continue handling of the MM as follows:

- the Routeing Address may contain recipient addresses in all formats that are specified for the MM1 interface. In this case the MMS Relay/Server shall copy/forward the MM using the alternative recipient address,

- the Routeing Address may contain a recipient address composed according to the MM4 address coding on SMTP level (refer to section 8.4.5.1). In this case the MMS Relay/Server shall copy/forward the MM using the alternative recipient address. It shall analyse the FQDN provided. If the FQDN refers to the own MMSE, then the message is treated internally. If the FQDN refers not to the own MMSE, then the message shall be forwarded according to the definitions for the MM4 interface.

Presentation Address

The Presentation Address is used for identification presentation to the recipient user.

If a Presentation Address is provided by the MSCF in the MM10 interrogation response, then the MMS Relay/Server shall substitute the recipient field (To, CC, BCC) with this information. The MMS Relay/Server must not use the presentation address for message routeing or forwarding purposes.

Sender Address

The Sender Address is used for sender identification to the recipient user, i.e. the presentation of address information in the From: field presented to the recipient.

If the sender address is provided by the MSCF in the MM10 interrogation response the MMS relay server shall store the modified sender address with the message for further processing.

7.1.17.5.3 MM7 Submission

7.1.17.5.3.1 VASP Profile based trigger

7.1.17.5.3.1.1 Interrogation Request

For any MM7 submitted message the MMS Relay/Server shall query the VASP's profile entry for a profile specific trigger as defined in section 7.1.16.2. If a profile specific trigger for submission is in place, the MMS Relay/Server shall suspend message processing and send the MM10 interrogation request as defined in section 8.9 to the MSCF.

The MMS Relay/Server shall provide as the served user identity the sender's key identification as derived from the VASP's profile (e.g. VASP-ID, VAS-ID).

In the Sender address parameter the MMS Relay/Server may provide the sender identification intended for presentation purposes. This identification may be the sender address as provided by the VASP.

The MM10 interrogation request shall contain the list of all recipient addresses provided by the user in the submitted message. For each of the recipient addresses a qualification of the used address field (To, CC, BCC) shall be given.

The sender may request multiple recipients for one message. If the MM10 interrogation request is triggered due to a user profile based trigger then all recipient addresses shall be provided to the MSCF. The MMS Relay/Server shall provide a unique reference (sequence number) for each of the recipient addresses. This reference shall allow the MMS Relay/Server to track the modification of the original address after processing in the MSCF.

If the recipient address of the MM7_submit.REQ is provided in encrypted or obfuscated format then the MMS Relay/Server shall decrypt it prior to invocation of the MM10 interrogation request.

7.1.17.5.3.1.2 Interrogation Response

The MSCF shall respond to the MM10 interrogation request with an MM10 interrogation response as defined in section 8.9. For the composition and processing of the MM10 interrogation response the following principles shall apply:

The MSCF may return for each specific recipient addresses an result. The result shall provide a reference to the initial recipient address of the MM10 interrogation request by means of the unique reference (sequence number). If the MSCF requests additional recipient addresses in the response (e.g. forwarding addresses), then it shall allocate new reference numbers. The MCG shall continue to use reference number values greater then the highest value provided by the MMS Relay/Server.

The result recipient address may consist of several components.

Routeing Address

If the result recipient address contains a Routeing Address then the MMS Relay/Server shall continue handling of the MM as follows:

- the Routeing Address may contain recipient addresses in all formats that are specified for the MM7 interface. In this case the MMS Relay/Server shall continue handling of the recipient according to the definitions of this specification for the MM7 interface.
  Note: A Routeing Address provided in this format may be subject to a subsequent MM10 interrogation request if for the result matches to an address specific trigger,

- the Routeing Address may contain an routeing address composed according to the MM4 address coding on SMTP level (refer to section 8.4.5.1). In this case the MMS Relay/Server shall analyse the FQDN provided. If the FQDN refers to the own domain, then the message is treated locally within the MMSE. If the FQDN refers not to the own domain, then the message shall be forwarded according to the definitions for the MM4 interface.
  Note: A Routeing Address provided in this format shall not be subject to a subsequent MM10 interrogation request.

If the Result Recipient Address contains no Routeing Address for a specific reference (sequence number) then the original recipient is omitted, i.e. removed from the list of recipients.

If the MSCF requests the recipient address to be kept unmodified, then the initial recipient address value shall be returned with its reference (sequence number).

Presentation Address

The Presentation Address is only applicable if a Routeing Address has been provided by the MSCF.

The value contained in the Presentation Address is used for identification presentation to the recipient user, i.e. the presentation of address information in the To:, CC: and BCC: fields presented to the recipient.

If a Presentation Address is provided by the MSCF in the MM10 interrogation response, then the MMS Relay/Server shall store the modified recipient field together with the message for further processing.

The MMS Relay/Server must not use the presentation address for message routeing purposes.

Sender Address

The Sender Address is used for sender identification to the recipient user, i.e. the presentation of address information in the From: field presented to the recipient.

If the sender address is provided by the MSCF in the MM10 interrogation response then the MMS Relay/Server shall store the modified sender address with the message for further processing.

In order to support delivery and read reply reporting via the MM4 interface, the Sender Address value has to refer to the address of the original sender. MSCF applications may take this into account when setting up values for this attribute. If the addressing service requires presentation of a "not routeable" sender address to the recipient, then delivery report request should be suppressed.

Full support of delivery and read reply reports in conjunction with the MSCF may be defined in later versions of this specification.

7.1.17.5.3.2 Address specific trigger

7.1.17.5.3.2.1 Interrogation Request

After the profile based interrogation or if no profile based trigger was identified the MMS Relay/Server shall check if an address specific trigger is in place. The verification of the address specific trigger shall be based on

- the outcome of the previous MM10 interrogation procedure if a profile based trigger was met. In this case the MMS Relay/Server shall consider only the Routeing Address part of the Result Recipient Address received from the MSCF.

- The recipient address information of the initial message if the user profile based trigger was not met.

The MMS Relay/Server shall analyse all recipient addresses of a submitted MM.

An address based trigger criteria is met if the both the recipient address and the address criterion string match fully. Note, the address criterion definition may allow wildcards to define address ranges.

If the recipient address is a PLMN address the MMS Relay/Server shall first attempt to convert the address into international format based on the numbering plan of the HPLMN, i.e. the numbering plan applicable for the serving MMS Relay/Server. If successful the address comparison shall happen based on the international format version of the number.

If the recipient address can not be converted into international format (e.g. in case of short codes) the address digits shall be used for comparison unmodified.

If for one or several recipient addresses match the criteria, then the MMS Relay/Server shall send an interrogation request to the MSCF as specified in section 8.9. One MM10 interrogation per matched recipient address shall be sent.

The MMS Relay/Server shall provide as the served user identity the sender's key identification as derived from the user's profile (e.g. the MSISDN).

In the Sender address parameter the MMS Relay/Server may provide the sender identification intended for presentation purposes. This identification may be either the sender address as provided by the user agent or the value of the Sender Address returned form an MSCF in result of the previous MM10 interrogation request for a user profile based trigger.

The MM10 interrogation request shall contain only the recipient address that match the address specific trigger of the MMS Relay/Server. The MMS Relay/Server shall provide a reference (sequence number) for the recipient address.

7.1.17.5.3.2.2 Interrogation Response

The MSCF shall respond to the MM10 interrogation request with an MM10 interrogation response as defined in section 8.9. For the composition and processing of the MM10 interrogation response the following principles shall apply:

The MSCF may return result recipient addresses. If the MSCF requests additional recipient addresses in the response (e.g. forwarding addresses), then it may allocate new reference numbers above the value used in the MM10 interrogation.

The result recipient address may consist of several components.

Routeing Address

If the result recipient address contains a Routeing Address then the MMS Relay/Server shall continue handling of the MM as follows:

- the Routeing Address may contain recipient addresses in all formats that are specified for the MM1 interface. In this case the MMS Relay/Server shall continue handling of the recipient according to the definitions of this specification for the MM1 interface,

- the Routeing Address may contain an routeing address composed according to the MM4 address coding on SMTP level (refer to section 8.4.5.1). In this case the MMS Relay/Server shall analyse the FQDN provided. If the FQDN refers to the own MMSE, then the message is treated internally. If the FQDN refers not to the own MMSE, then the message shall be forwarded according to the definitions for the MM4 interface.

If the Result Recipient Address contains no Routeing Address with a specific reference (sequence number) then the original recipient is omitted, i.e. removed from the list of recipients.

Note: Omission only affects the message to this individual address. Messages to multiple recipients not being subject to the address specific trigger may still contain unmodified addresses as provided by the sender.

If the MSCF requests the recipient address to be kept unmodified, then the initial recipient address value shall be returned with its reference (sequence number)

Presentation Address

The Presentation Address is only applicable if a Routeing Address has been provided by the MSCF.

The value contained in the Presentation Address is used for identification presentation to the recipient user, i.e. the presentation of address information in the To:, CC: and BCC: fields presented to the recipient.

If a Presentation Address is provided by the MSCF in the MM10 interrogation response, then the MMS Relay/Server shall store the modified recipient field together with the message for further processing.

The MMS Relay/Server must not use the presentation address for message routeing purposes.

Sender Address

The Sender Address is used only for sender identification to the recipient user provided by the result recipient address, i.e. the presentation of address information in the From: field presented to this recipient.

If the sender address is provided by the MSCF in the MM10 interrogation response then the MMS Relay/Server shall store the modified sender address with the message for further processing.

In order to support delivery and read reply reporting via the MM4 interface, the Sender Address value has to refer to the address of the original sender. MSCF applications may take this into account when setting up values for this attribute. If the addressing service requires presentation of a "not routeable" sender address to the recipient, then delivery and read reply report request should be suppressed.

Full support of delivery and read reply reports in conjunction with the MSCF may be defined in later versions of this specification.

7.1.17.6 Access control

In result of a interrogation request the MSCF may deny the further handling of the Message. In this case the MSCF shall send a MM10 interrogation response with an appropriate result code. Deny of access may be applicable for sending or receiving Messages.

7.1.17.7 Interrogation Request Timeout

If the MSCF does not return an MM10 interrogation response to an MM10 interrogation request the MMS Relay/Server shall process the message according to the setting of the "recovery handling" parameter of the user's profile, i.e. either reject or accept the MM1 submission request.

7.1.17.8 Trigger Information Data in MM10 Interrogation Requests

The MMS user profile, the VASP profile or the address specific trigger criterion may contain an application identification required for the execution of the user specific service on the MSCF. The MMS Relay/Server shall forward this information transparently if available.

7.1.17.9 MSCF Addressing and Routeing

The user profile and the address specific trigger criterion shall contain the MSCF address information. The MMS Relay/Server shall use this information to derive a routeing address to forward the MM10 interrogation request to the MSCF.

Next New Section

8.9 Technical realisation of MMS on reference point MM10

The MMSE may support the interrogation of an external MSCF. Section 7.1.17 specifies the applicability of the MM10 interrogation to certain MMS services. The MM10 message flow may be invoked during MM1 submission. The figures below describes the Message flows between the MMS Relay/Server and an external MSCF.

In the following example the submission of a MM through MM1 is shown.
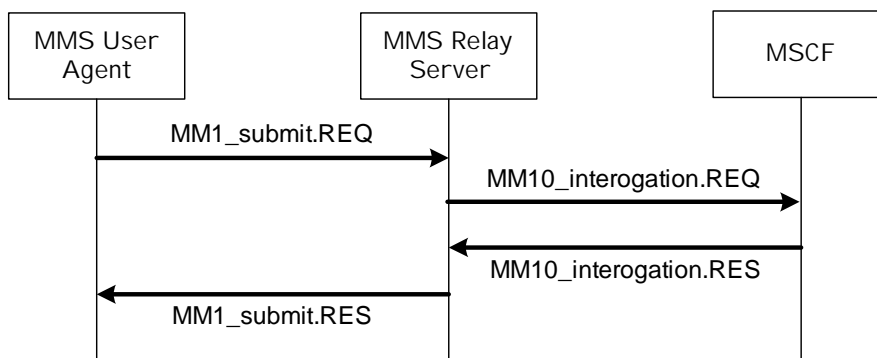
Figure AA: Message Flow Example for the MM1 submit traffic case

In the following example the MM1 delivery is shown.
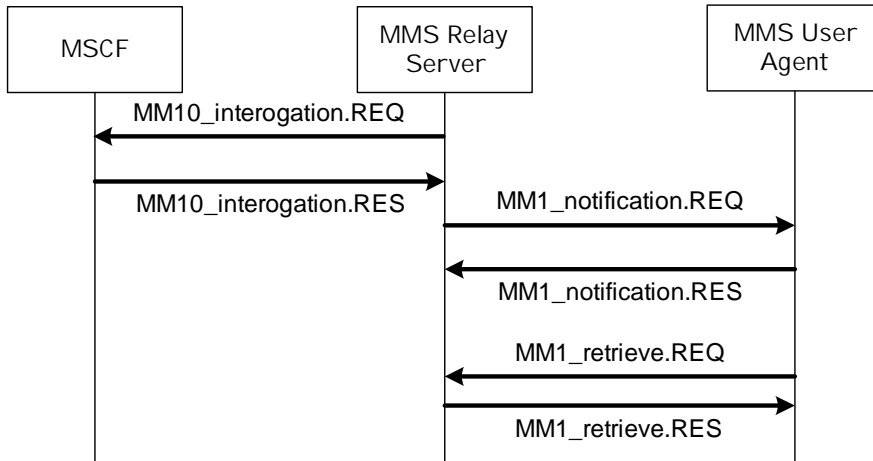
Figure AB: Message Flow Example for the MM1 notification traffic case

In the following example the submission of a MM through MM7 is shown.
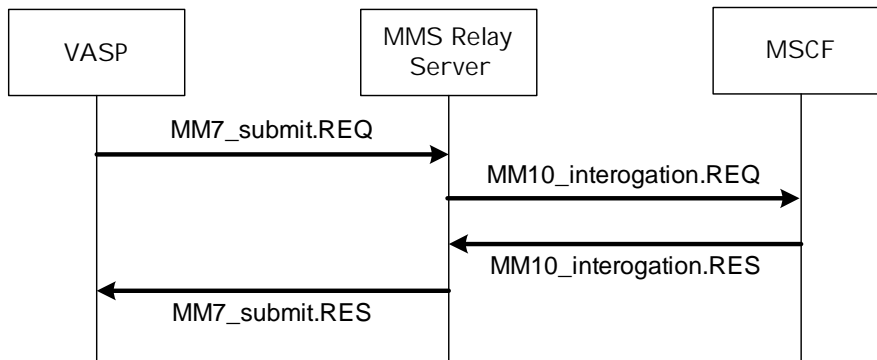
Figure AC: Message Flow Example for the MM7 submit traffic case

8.9.1 Interrogation of the Messaging Service Control Function (MSCF)

This section addresses the operations necessary for a MSCF to provide the service by sending a interrogation Message from the Relay/Server to the MSCF. The involved abstract messages are outlined in Table 68 from type and direction points of view.

Table 68: Abstract messages for interrogation of the Address resolution Node

Abstract messages	Type	Direction
MM10_Interrogation.REQ	Request	MMS Relay/Server -> MSCF
MM10_ Interrogation.RES	Response	MSCF -> MMS Relay/Server

8.9.2   Normal Operation

After reaching the specified trigger point the MMS Relay/Server sends a MM10_interrogation.REQ to the MSCF. This Message includes a information set received in the incoming MM. Furthermore the information of the reached trigger Point as well as the information of the incoming interface shall be included in the MM10_Interrogation.REQ Abstract Message. The MSCF reacts with a MM10_Interrogation.RES where relevant information fields are substituted or added if necessary. Furthermore, charging relevant information may included in the response. All this information needs to reflected in a appropriate CDR.

The received information shall be taken for the further handling of the MM.

8.9.3 Abnormal Operation

If no response on an MM10_interrogation.REQ is received in a appropriate timeframe the MMS Relay/Server shall process according the information given by the specific trigger information.

The further handling of potential Error scenarios (resulting from incorrect addresses) is subject of the associated Message handling process.

8.9.4 Features

Served User Identity: This field contains the public identity of served user. It shall be filled, depending of the traffic case. Possible values are: MM1 Submission: Sender, MM1 delivery: Recipient, MM7 submission: VASP ID

Server User IMSI: This field contains the IMSI of the served user.

Service Key: A operator configurable string which identifies the target application at the MSCF.

Addressing: In the MM10_interrogation.REQ the MMS Relay/Server shall provide the initial MM address information to the MSCF. In the MM10_interrogation.RES the MSCF may return the address information unmodified or modified according to the requirements of the operator specific service.

Trigger Event: The Trigger point, which initiated the sending of the MM10_Interrogation.REQ.

Originating Interface: Indicator of the interface from which the MM was originated.

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

Reporting: The originator MMS User Agent may request a delivery report for the MM. In addition, the originator MMS User Agent may request a read-reply report when the user has viewed the MM. This feature allows the MSCF to override the request provided by the MMS User Agent. This feature shall only be invoked if there is an appropriate mutual agreement between the subscriber and the network opertor.

Sender Visibility: A request to show or hide the sender's identity when the message is delivered to the recipient. This feature allows the MSCF to override the request provided by the MMS User Agent. This feature shall only be invoked if there is an appropriate mutual agreement between the subscriber and the network opertor.

Result Code: The Result Code determines whether the request have been accepted or rejected by the MSCF or whether an error occurred during processing.

CDR Information: Billing information, which are introduced by the MSCF. This information will be transparently copied to the CDR for post-processing proposes, or transparently forwarded to the pre paid systems.

8.9.5 Information Elements

Table 69: Information elements in the MM10_Interrogation.REQ .

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM10_interrogation.REQ
Trigger Event	Manadory	The Trigger point, which initiated the sending of the MM10_Interrogation.REQ
Served User Identity	Mandatory	The identity of the served user depending on the traffic case.
Served User IMSI	Optional	The IMSI of the served user
Initial Recipient address	Mandatory	The address of the recipient(s) of the MM. Multiple addresses are possible.
Originating Interface	Mandatory	Indicator of the interface from which the MM was originated
Service Key	Optional	A operator configurable string which identifies the target application at the MSCF
Sender address	Optional	The address of the MM originator.
Delivery report	Optional	A request for delivery report.
Read Reply	Optional	A request for read reply report.
Sender visibility	Optional	A request to show or hide the sender's identity when the message is delivered to the recipient.

Table 70: Information elements in the MM10_Interrogation.RES .

Information element	Presence	Description
Message Type	Mandatory	Identifies this message as MM10_interrogation.RES
Result Code	Mandatory	The Result Code determines whether the request have been accepted or rejected by the MSCF or whether an error occurred during processing.
Presentation address	Optional	Recipient address used for presentation 71
Routeing Address	Optional	Recipient Address used for routeing of the message
Sender Address	Optional	Sender Address used for presentation
Read reply	Optional	A request for read reply report.
CDR information	Optional	Billing information, which are introduced by the MSCF. This information will be transparently copied to the CDR for post-processing purposes, or transparently forwarded to the pre paid systems

Next Modified Section

Annex C (informative): Charging Data Records

This annex describes information of MMs/abstract messages which may be required for inclusion into Charging Data Records (CDR's) for MMS for the purpose of Billing and Traceability in the operators post-processing system. Further details on the CDR content and transport for MMS are described in the 3GPP TS 32.270 [81].

This list may include:

- Message –ID of Multimedia Message

- Recipient address(es)

- Sender address

- Message size

- Time stamp for submission time, earliest delivery time and time of expiry

- Duration of transmission (for streaming purposes)

- Duration of storage (in the MMS Relay/Server)

- Type of message: (e.g. notification, message MM, delivery report, read-reply)

- Bearer type used

- Content information (e.g. audio, picture, video, text,)

- Message class (e.g. advertisement/informational)

- Delivery Report Request

- Read Reply Request

- Charging Indicator (e.g. Pre paid charging, Reply charging, Charged Party)

- MM7 service code

- MM Status (e.g. delivered, rejected, expired, delivery pending).

- Indication of forwarding

- Conversion of type and media

- Priority of the MM

- Linked ID

- VASP ID

- VAS ID

- Reply-Charging

- Content type

- Reply-Charging-ID

- Charged Party, Charged Party ID

- MCC + MNC

- MSCF CDR information

- Sender address provided by MSCF

- Recipient address(es) provided by MSCF

- MSCF service Key

- MSCF host and realm information

The following information elements at least will be considered for the future.

-

- Identification if a message has been sent to a pre-defined group

    NOTE: Some of the above fields may not be available in the MMS Relay/Server e.g. due to network implementation options. Also some fields may not be directly available from MMS Relay/Server CDRs but defined in the Charging and Billing system.

Next New Section

Annex N (normative): Information Element mapping for the support of MSCF

This annex defines the mapping of MM1, MM4, MM7 abstract message information elements to and from MM10 message information elements.

Table N.1: Mapping MM1_submit.REQ -> MM10_Interrogation.REQ

Information elements in MM1_submit.REQ	Information elements in MM10_interrogation.REQ
Message Type	-
Transaction ID	-
MMSVersion	-
Recipient address	Initial Recipient Address
Content type	-
Sender address	Sender Address
Message class	-
Date and time	-
Time of Expiry	-
Earliest delivery time	-
Delivery report	Delivery Report
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	-
Sender visibility	Sender Visibility
Store	-
MM State	-
MM Flags	-
Read reply	Read Reply
Subject	
Reply-Charging-ID	
Content	
-	Message type
-	Trigger Event
-	Served User Identity (Note 1)
	Served User IMSI (Note 2)
-	Originating Interface (MM1)
-	Service Key
Note 1: The Served User Identity contains the authentic subscriber identification as derived from the MM1 authentication mechanism	
Note 2: The Served User IMSI shall be present if made available to the MMS Relay/Server as part of the MM1 authentication process.	

Table N.2: Mapping MM4_forward.REQ -> MM10_Interrogation.REQ

Information elements in MM7_submit.REQ	Information elements in MM10_interrogation.REQ
3GPP MMS Version	-
Message Type	-
Transaction ID	-
Message ID	-
Recipient(s) address	Initial Recipient Address
Sender address	Sender Address
Content type	
Message class	-
Date and time	-
Time of Expiry	-
Delivery report	Delivery Report
Originator R/S delivery report	-
Priority	-
Sender visibility	Sender Visibility
Read reply	Read Reply
Subject	-
Acknowledgement Request	-
Forward_counter	-
Previously-sent-by	-
Previously-sent-date-and-time	-
Content	-
-	Message type
-	Trigger Event
-	Originating Interface (MM4)
-	Service Key
-	Served User Identity

Table N.3: Mapping MM7_submit.REQ -> MM10_Interrogation.REQ

Information elements in MM7_submit.REQ	Information elements in MM10_interrogation.REQ
Transaction ID	-
Message type	-
MM7 version	-
VASP ID	Served User Identity
VAS ID	Served User Identity
Sender address	Sender Address
Recipient address	Initial Recipient Address
Service code	-
Linked ID	-
Message class	-
Date and time	-
Time of Expiry	-
Earliest delivery time	-
Delivery report	Delivery Report
Read Reply	Read Reply
Reply-Charging	-
Reply-Deadline	-
Reply-Charging-Size	-
Priority	-
Subject	-
Adaptations	-
Charged Party	-
Content type	-
Content	-
Message Distribution Indicator	-
Charged Party ID	-
Delivery Condition	-
Transaction ID	-
Message type	-
	Message type
	Trigger Event
	Originating Interface (MM7)
	Service Key

Table N.4: Mapping MM10_interrogation.RES -> MM1_Notification.REQ and MM1_retrieve.RES

Information elements in MM10_Interrogation.RES	Information elements in MM1_notification.REQ	Information elements in MM1_retrieve.RES
Message Type	-	-
Result Code	-	-
Delivery report	Delivery report	Delivery report
Sender visibility	-	-
Read reply	-	Read reply
Presentation-address	-	Recipient address
Routeing-Address	-	-
Sender-Address	Sender address	Sender address
CDR information	-	-
-	Message Type	Message Type
-	Transaction ID	Transaction ID
-	MMS Version	MMS Version
-	Message class	Message class
-	Message size	-
-	Time of expiry	-
-	Message Reference	-
-	Subject	Subject
-	Priority	Priority
-	Stored	-
-	Reply-Charging	Reply-Charging
-	Reply-Deadline	Reply-Deadline
-	Reply-Charging-Size	Reply-Charging-Size
-	Reply-Charging-ID	Reply-Charging-ID
-	Element-Descriptor	-
-	MM recommended retrieval mode	-
-	Text explaining MM recommended retrieval mode	-
-	Message Distribution Indicator	-
-	-	Message ID
-	-	Content type
-	-	Date and time
-	-	MM State
-	-	MM Flags
-	-	Request Status
-	-	Request Status Text
-	-	Previously-sent-by
-	-	Previously-sent-date-and-time
-	-	Message Distribution Indicator
-	-	Content

Table N.5: Mapping MM10_interrogation.RES -> MM4_Forward.REQ

Information elements in MM10_interrogation.RES	Information elements in MM4_forward.REQ
Message Type	-
Result Code	-
Delivery report	Delivery report
Sender visibility	Sender visibility
Read reply	Read reply
Presentation-address	Recipient(s) address
Routeing Address	(Note 1)
Sender Address	Sender address
CDR information	-
-	3GPP MMS Version
-	Message Type
-	Transaction ID
-	Message ID
-	Content type
-	Message class
-	Date and time
-	Time of Expiry
-	Originator R/S delivery report
-	Priority
-	Subject
-	Acknowledgement Request
-	Forward_counter
-	Previously-sent-by
-	Previously-sent-date-and-time
-	Content
Note 1: The Routeing address is used by the MMS relay server to determine the MM4 routeing address used on SMTP level	

Table N.6: Mapping MM10_interrogation.RES -> MM7_Deliver.REQ

Information elements in MM10_interrogation.RES	Information elements in MM4_forward.REQ
Message Type	-
Result Code	-
Delivery report	Delivery Report
Sender visibility	-
Read reply	Read Reply
Presentation-address	Recipient address
Routeing Address	-
Sender Address	Sender address
CDR information	-
-	Transaction ID
-	Message type
-	MM7 version
-	MMS Relay/Server ID
-	Linked ID
-	Previously-sent-by
-	Previously-sent-date-and-time
-	Sender SPI
-	Recipient SPI
-	Date and time
-	Reply-Charging-ID
-	Priority
-	Subject
-	Content type
-	Content

3GPP TSG-T2 #26   *Tdoc* ⌘ *T2-040357*
Montreal, CA, 23-27 August 2004

CHANGE REQUEST	
CR-Form-v7.1	

⌘   **23.140 CR 174**   ⌘**rev**   **-**   ⌘   Current version: **6.6.0**   ⌘

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: ⌘	Additional DRM Requirements to the MMS Relay Server	
Source: ⌘	T2	
Work item code: ⌘	MMS6	**Date:** ⌘ 13/08/2004
Category: ⌘ **B**		**Release:** ⌘ Rel-6

Use one 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 one of the following releases:
Ph2   (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)
Rel-7   (Release 7)

Reason for change: ⌘	This CR lists additional DRM requirements to the MMS R/S to be added to 3GPP [TS23140] to bring these specifications into line with new DRM functionalities, complementing and/or detailing DRM functionalities specified in OMA DRM V1.0 and 3GPP Rel 6, in order to enhance overall interoperability and ensure effective and common handling of DRM protected MM elements distributed via MMS.
Summary of change: ⌘	Additional detailed requirements are listed to describe MMS R/S behaviour in case of handling MM elements containing DRM protected elements.
Consequences if not approved: ⌘	If not approved, individual MMS R/S behaviour could differ amongst operators resulting in non-interoperability amongst operator networks leading to non-delivery of MM elements, inconsistent server behaviour and eventually negative or varying user experiences.

Clauses affected: ⌘	Clause 7.1.15		
	Y	**N**	
Other specs ⌘		**X**	Other core specifications ⌘
affected:		**X**	Test specifications
		X	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.

7.1.15   Support for Digital Rights Management in MMS

The support of DRM in MMS shall conform to the OMA DRM specifications [76], [77] and [78].

DRM-protection of an MM shall take precedence over Message Distribution Indication and over MM7 Content Adaptation Restriction from REL-6 onwards.

The following sections describe the application of DRM protection to MMS.

7.1.15.1   DRM-protected content within an MM

An MM may include one or more DRM-protected MM elements. DRM protection of MM elements shall be performed according to [76], [77] and [78], with each MM element being protected separately. Each DRM-protected MM element shall be encapsulated as a DRM object, i.e. 'DRM Message' or 'DCF'.

In particular, DRM protection shall neither be applied to an MM as a whole (MMS PDU), nor to any presentation description (e.g. SMIL) within an MM.

The headers (i.e. content-location or content-ID) used by the presentation description (e.g. SMIL) to refer to a DRM object shall be placed as MMS body part headers, due to MIME-based structure of the MM.

In case of Separate Delivery, the 'X-Oma-Drm-Separate-Delivery' header, if present, shall be placed as MMS body part header, due to MIME-based structure of the MM.

MMS body part headers shall not be DRM-protected.

7.1.15.2   DRM-related User Agent beaviour

An MMS User Agent may support Digital Rights Management, DRM according to [76], [77], [78]. An MMS User Agent that supports the DRM restrictions shall indicate this support in its terminal capability profile, as defined in the DRM specifications.

NOTE: E.g. after having received an MM containing a 'DRM Message' object, an MMS User Agent does neither use that DRM-protected MM element while composing a new MM nor store it into a user accessible persistent network storage (e.g. MMBox).

7.1.15.3   DRM-related Relay/Server behaviour

An MMS Relay/Server shall support Forward Lock, Combined Delivery and Separate Delivery DRM functionalities according to [76], [77], [78].

7.1.15.3.1   Support for Forward Lock and Combined Delivery

For Forward Lock and Combined Delivery support, the MMS Relay/Server shall ensure that no single DRM-protected MM element is conveyed to any receiving entity, such as an MMS User Agent, an MMS Relay/Server, a user-accessible persistent network-storage (e.g. MMBox), which does not comply with OMA DRM specifications [76], [77].

In particular, the MMS Relay/Server shall not:

- deliver any DRM-protected MM elements ('DRM Message') to an MMS User Agent which does not support DRM;

- route forward any DRM-protected MM elements ('DRM Message') over MM3, MM4 or MM7 to a receiving entity which does not support DRM;

- store any DRM-protected MM elements ('DRM Message') into a user accessible persistent network storage (e.g. MMBox);

- forward any DRM-protected MM elements ('DRM Message') prior to MM retrieval or from the MMBox.

The MMS Relay/Server shall not alter or strip-off any part of the 'DRM Message' header (e.g. the Boundary parameter declaration).

7.1.15.3.2 Support for Separate Delivery

If the recipient MMS User Agent supports For DRM Separate Delivery the MMS Relay/Server shall relay any DCF object unaltered. In particular it shall not strip-off any part of the DCF body or headers (e.g. the 'X-Oma-Drm-Separate-Delivery' header).

The MMS Relay/Server shall accept separate delivery protected content on all interfaces.

If the recipient MMS User Agent does not support separate delivery the MMS Relay server shall either:

- Replace all non supported DRM protected elements by a descriptive error text and/or a placeholder and send the modified MM to the recipient MMS User Agent, or

- Not deliver the whole MM to the MMS User Agent.