

25 - 28 February 2002

Bristol, UK

3GPP TSG-T2 #16
Sophia Antipolis, France
11-15 February 2002

T2-020298

Title: Liaison Statement on MM7 Security Mechanisms for Release 5
Source: T2
To: SA3
Cc:
Response to:

Contact Person:
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Attachments: T2-020263 – CR 23.140 REL-5 - Functional Description and Abstract Messages for MM7 realization

1. Overall Description:

T2 has approved the attached document which specifies the authentication, authorization and confidentiality for the Value Added Service Provider (VASP) reference point – MM7 in Release 5.

2. Actions:

SA3 is encouraged to note and invited to comment on the recommendations contained in clauses 7.1.11.1, 7.1.11.2 and 7.1.11.3 of the attachment and to provide suggestions for improvement of the MM7 security mechanisms for REL-6 of 3G TS 23.140.

3. Date of Next T2 Meetings:

T2-SWG3#11 MMS	Week of 29 th April – 3 rd May, 2002
T2#17	13 th - 17 th May, 2002
T2#18	12 th – 18 rd August, 2002

CHANGE REQUEST

⌘ **23.140 CR CRNum** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘	Functional Description and Abstract Messages for MM7 realization	
Source:	⌘	Comverse, Materna	
Work item code:	⌘	Mess5-MMS	Date: ⌘ February 13, 2002
Category:	⌘	B	Release: ⌘ REL-5
		<i>Use one of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘	MM7 reference point defines the interworking between a VASP and the MMS Relay/Server. Before defining an actual protocol or API, it is required to define the actual functionality and abstract messages of MM7. This CR deals with these issues
Summary of change:	⌘	<ol style="list-style-type: none"> 1. Text change in section 6.9 defines the functionality of MM7 in general 2. Changes in sections 7.1.5 and 7.1.6 to include VASP into delivery-report and read-reply considerations 3. New section 7.1.11 on the full functionality of VASP support Completion of section 8.7 functionality of MM7
Consequences if not approved:	⌘	Lack of functionality definition of MM7 that is a work item for Release 5

Clauses affected:	⌘	Sections 6.9, 7.1.5, 7.1.6, 7.1.11, 8.7
Other specs affected:	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> 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] 3GPP TS 26.090: "Mandatory Speech Codec speech processing functions; AMR Speech Codec Transcoding Functions".
- [13] 3GPP TS 26.093 (V3.1.0): "Mandatory Speech Codec speech processing functions; AMR Speech Codec; Source Controlled Rate Operation".
- [14] [ISO/IEC 11172-3:1993](#): "Information technology; Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s; Part 3: Audio" (MP3, MPEG1-Audio, MPEG2-Audio)
- [15] MIDI Manufacturers Association Incorporated, Los Angeles, California: "MIDI Sample Dump Standard (SDS)"; URL: <http://www.midi.org>.
- [16] ISO/IEC 14496-2:1999/FDAM4, ISO/IEC JTC1/SC 29/WG11 N3904, Pisa, January, 2001
- [17] ITU-T Recommendation T.81 | [ISO/IEC 10918-1:1994](#): "Information technology; Digital compression and coding of continuous-tone still images: Requirements and guidelines".
- [18] Comuserve Incorporated, Columbus, Ohio (1990): "Graphics Interchange Format (Version 89a)".

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

[42] IETF; Internet Draft: "TCP over 2.5G and 3G Wireless Networks"; URL: <http://search.ietf.org/internet-drafts/draft-ietf-pilc-2.5g3g-03.txt>

NOTE: Reference [42] has to be replaced by the appropriate RFC number once the Internet draft is approved within the IETF.

[43] WAP Forum: "Wireless profiled TCP", WAP-225-TCP-20010331-a, URL: <http://www.wapforum.org>

[44] IETF; RFC 2045: "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", URL: <http://www.ietf.org/rfc/rfc2045.txt>

[45] IETF; RFC 2047: "Multipurpose Internet Mail Extensions (MIME) Part Three: Message Header Extensions for Non-ASCII-Text", URL: <http://www.ietf.org/rfc/rfc2047.txt>.

[46] IETF; RFC 2048: "Multipurpose Internet Mail Extensions (MIME) Part Four: Registration Procedures", URL: <http://www.ietf.org/rfc/rfc2048.txt>.

[47] IETF; RFC 2049: "Multipurpose Internet Mail Extensions (MIME) Part Five: Conformance Criteria and Examples", URL: <http://www.ietf.org/rfc/rfc2049.txt>.

[48] IETF; RFC 2616: "Hypertext Transfer Protocol, HTTP/1.1", URL: <http://www.ietf.org/rfc/rfc2616.txt>.

[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] WAP-183-ProvCont, Provisioning Content, URL: <http://www.wapforum.org>

[56] WAP-209-MMSEncapsulation, MMS Encapsulation Protocol, URL: <http://www.wapforum.org>

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

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

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3.1 Definitions

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

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

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

Delivery Report: feedback information provided to an originator MMS User Agent 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

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

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

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

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

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

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

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

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

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

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

Originator MMSE: MMSE associated with the sender of an MM

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

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

Originator VASP: [VASP which is sending an MM](#)

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

Recipient MMSE: MMSE associated with the recipient of an MM

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

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

Recipient VASP: [VASP which is receiving an MM](#)

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

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

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6.9 MM7: MMS Relay/Server – MMS VAS Applications

Reference point MM7 is used to transfer MMs from MMS Relay/Server to MMS VAS applications and to transfer MMs from MMS VAS applications to MMS Relay/Server. [This functionality is further elaborated in section 7.1.11.](#)

This reference point shall be based on existing protocols e.g. SMTP or HTTP for this release of the specification. Future releases may propose a mandatory protocol and encoding schemes. The service provider may decide to use an encoding format in this reference point, which uses the encoding implementation used in the MM1 reference point.

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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 the MMS Relay/Server must 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 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 be responsible for the storage of delivery reports in the network until the originator MMS Relay/Server becomes reachable or until the delivery report expires

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 (e.g. expired, rejected, delivered, forwarded or indeterminate) to the originator MMS Relay/Server
- 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](#).

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 ~~be responsible for the storage of~~ delivery reports ~~in the network~~ 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](#)

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 ~~MMS User Agent~~ address ([MMS User Agent or VASP address](#)) is available.

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.

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 be responsible for the storage of 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 address provided by the recipient MMS User Agent in the read-reply report (subject to MMS service provider's preferences)
- is responsible for resolving the MM originator's address,
- is responsible to 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.

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7.1.11 Support for Value Added Services (VAS) in MMS

The MMS Relay/Server may support services, in addition to user-to-user messaging, that are either provided by the MMS operator or by third-party Value Added Service Providers (VASP). Examples of services that may be provided as:

- Messages that originate from the VASP to a single or mass-distribution of recipients.
- Messages that originate from a MMS Relay/Server to the VASP that may generate a VASP reply or a new MM submission.

Note: MMS Relay/Server may receive multimedia message from MM1, MM3, MM4 or MM7 Reference points before routing forward message to the VASP. Messages originated from the VASP may be targeted to the recipient via MM1, MM3, MM4 or MM7 Reference points. In a case of the recipient or the originator is outside a single MMSE (outside MMSE to which VASP is connected) special functionalities are not specified in this release (e.g. the recipient MMS User Agent may deny generating Delivery report). Future releases may expand this support across multiple MMSEs.

7.1.11.1 Authentication

MM7 should use transport layer security mechanisms to authenticate the VASP in this release.

For example, if HTTP is used as an MM7 transport, many optional authentication mechanisms are available. The MMS Relay/Server or the VASP may use the mechanisms defined in [57], "basic" and "digest" authentication to authenticate the VASP during each session established for message submission. Each VASP may send a VASP ID and a password before any transactions will be allowed by the MMS Relay/Server. For additional security, HTTP may be carried over a TLS [58] session to the MM7 interface.

Alternatively, authentication mechanisms based on public/private key cryptography and certificates may also be used. Key management is out of scope for this release.

The VASP may authenticate the MMS Relay/Server using similar mechanisms.

7.1.11.2 Authorisation

The MMS Relay/Server should authorise the VAS to send MM to the MMS UA. The authorisation shall be completed during each session established by the VAS. For example, if the VAS attempts to send a MM to the MMS Relay/Server when the VAS is not authorized, then the MMS Relay/Server should not permit the operation .

7.1.11.3 Confidentiality

The interface between MMS Relay/server and VASP may be carried over an encrypted and secure bearer, e.g. HTTP over SSL or TLS, or by use of application-layer encryption. This is an optional feature and may be further elaborated in future releases.

7.1.11.4 Charging Information

VASP may provide service codes that contain billing information that may be transferred to the MMS Relay/Server and passed directly to the billing system without intervention.

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8.7 Technical realisation of MMS on reference point MM7

~~This clause may be specified further in future releases.~~

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

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

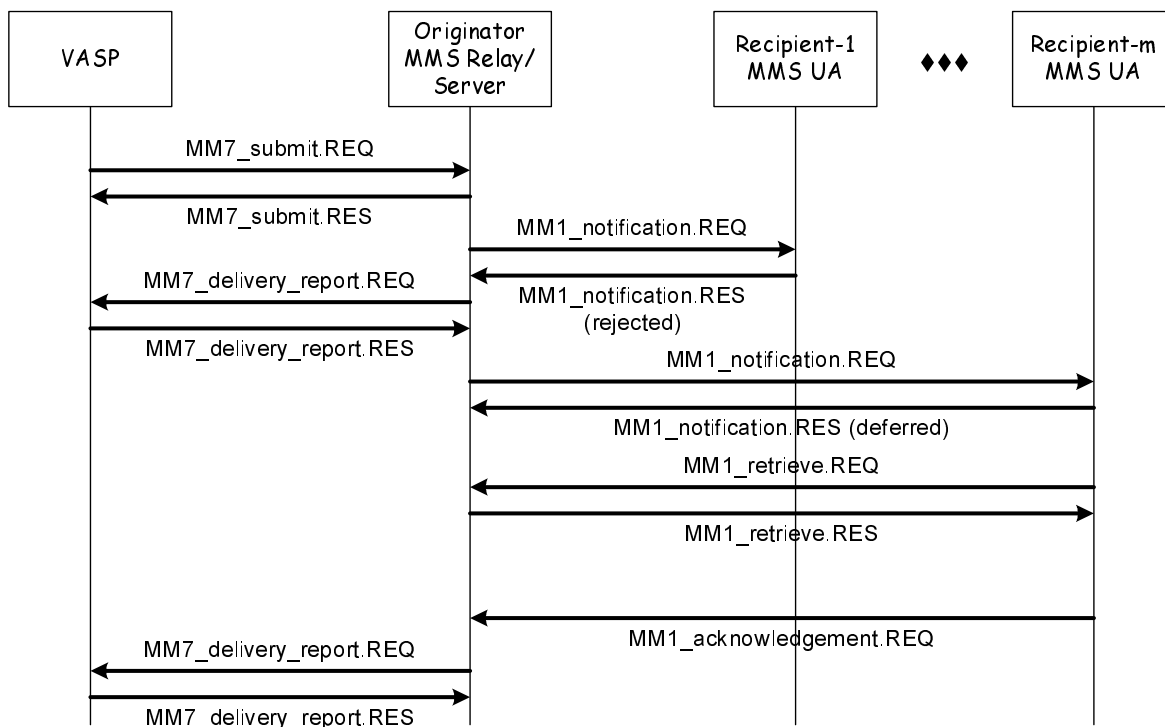


Figure 1. Sample data flow of MM7 message distribution

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

8.7.1 Submitting a VAS MM

This section addresses the operations necessary for a VASP to provide the service by sending a multimedia message to one or more subscribers or to a distribution list. The involved abstract messages are outlined in Table 36 from type and direction points of view.

Table 36: Abstract messages for submitting VAS message

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

8.7.1.1 Normal Operation

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

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

8.7.1.2 Abnormal Operation

The MMS Relay/Server should reject the MM7_submit.REQ if the VAS cannot be authorized or if the parameters of the request exceed the service level for the service being employed. Similarly, if none of the destinations can be

resolved then the response status should indicate an error. If one or several (but not all) addresses can be resolved, the MMS Relay/Server should deliver the message to those addresses and respond to the VAS using the MM7_submit.RES with a partial success to the VASP. Partial success does not indicate that the MM was actually delivered to the destinations but states that the request has been at least partially accepted.

8.7.1.3 Features

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

Addressing: The VASP may direct the MM to a one or more subscribers or to a distribution list. The originator of a submitted MM may be indicated in addressing-relevant information field(s) of the MM7_submit.REQ

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

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

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

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

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

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

Time stamping: The VASP may time stamp the MM.

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

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

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

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

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

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

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

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

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

8.7.1.4 Information Elements

Table 37: Information elements in the MM7_submit.REQ.

<u>Information element</u>	<u>Presence</u>	<u>Description</u>
<u>Transaction ID</u>	<u>Mandatory</u>	<u>The identification of the MM7_submit.REQ/MM7_submit.RES pair.</u>
<u>Message type</u>	<u>Mandatory</u>	<u>Identifies this message as a MM7_submit request.</u>
<u>MM7 version</u>	<u>Mandatory</u>	<u>Identifies the version of the interface supported by the VASP</u>
<u>VASP ID</u>	<u>Optional</u>	<u>Identifier of the VASP for this MMS Relay/Server.</u>
<u>VAS ID</u>	<u>Optional</u>	<u>Identifier of the originating application.</u>
<u>Sender address</u>	<u>Optional</u>	<u>The address of the MM originator.</u>
<u>Recipient address</u>	<u>Mandatory</u>	<u>The address of the recipient MM. Multiple addresses are possible or the use of the alias that indicates the use of a distribution list.</u>
<u>Service code</u>	<u>Optional</u>	<u>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.</u>
<u>Linked ID</u>	<u>Optional</u>	<u>This identifies a correspondence to a previous valid message delivered to the VASP.</u>
<u>Message class</u>	<u>Optional</u>	<u>Class of the MM (e.g. advertisement, information service, accounting)</u>
<u>Date and time</u>	<u>Optional</u>	<u>The time and date of the submission of the MM (time stamp).</u>
<u>Time of Expiry</u>	<u>Optional</u>	<u>The desired time of expiry for the MM.</u>
<u>Earliest delivery time</u>	<u>Optional</u>	<u>The earliest desired time of delivery of the MM to the recipient.</u>
<u>Delivery report</u>	<u>Optional</u>	<u>A request for delivery report.</u>
<u>Read reply</u>	<u>Optional</u>	<u>A request for confirmation via a read report to be delivered as described in section 8.1</u>
<u>Reply-Charging</u>	<u>Optional</u>	<u>A request for reply-charging.</u>
<u>Reply-Deadline</u>	<u>Optional</u>	<u>In case of reply-charging the latest time of submission of replies granted to the recipient(s).</u>
<u>Reply-Charging-Size</u>	<u>Optional</u>	<u>In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s).</u>
<u>Priority</u>	<u>Optional</u>	<u>The priority (importance) of the message.</u>
<u>Subject</u>	<u>Optional</u>	<u>The title of the whole multimedia message.</u>
<u>Adaptations</u>	<u>Optional</u>	<u>Indicates if VASP allows adaptation of the content (default True)</u>
<u>Content type</u>	<u>Mandatory</u>	<u>The content type of the MM's content.</u>
<u>Content</u>	<u>Optional</u>	<u>The content of the multimedia message</u>

Table 38: Information elements in the MM7_submit.RES.

<u>Information element</u>	<u>Presence</u>	<u>Description</u>
<u>Transaction ID</u>	<u>Mandatory</u>	<u>The identification of the MM7_submit.REQ/MM7_submit.RES pair.</u>
<u>Message type</u>	<u>Mandatory</u>	<u>Identifies this message as a MM7_submit response.</u>
<u>MM7 version</u>	<u>Mandatory</u>	<u>Identifies the version of the interface supported by the MMS Relay/Server</u>
<u>Message ID</u>	<u>Conditional</u>	<u>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.</u>
<u>Request Status</u>	<u>Mandatory</u>	<u>Status of the completion of the submission, no indication of delivery status is implied.</u>
<u>Request Status text</u>	<u>Optional</u>	<u>Text description of the status for display purposes, should qualify the Request Status code.</u>

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 44 from type and direction points of view.

Table 44: Abstract messages for demanding a service from a VASP

<u>Abstract messages</u>	<u>Type</u>	<u>Direction</u>
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.

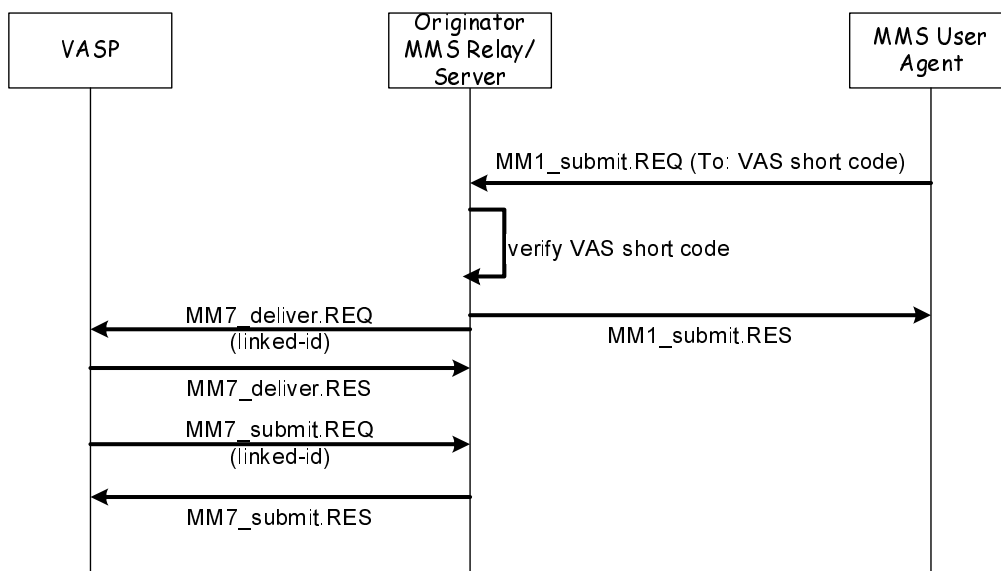


Figure 2. Use of MM7 deliver and subsequent response

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.

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

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

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

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

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

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

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

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

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

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

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

8.7.2.4 Information Elements

Table 45: Information elements in the MM7_deliver.REQ .

Information element	Presence	Description
Transaction ID	Mandatory	The identification of the MM7_deliver.REQ/MM7_deliver.RES pair.
Message type	Mandatory	Identifies this message as a MM7_deliver request.
MM7 version	Mandatory	Identifies the version of the interface supported by the MMS Relay/Server
MMS Relay/Server ID	Optional	Identifier of the MMS Relay/Server
Linked ID	Optional	Identifier that may be used by the VASP in a subsequent MM7_submit.REQ
Sender address	Mandatory	The address of the MM originator.
Recipient address	Optional	The address(es) of the intended recipients of the subsequent processing by the VASP or the original recipient address(es).
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 46: 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 code

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 39 from type and direction points of view.

Table 39: 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.

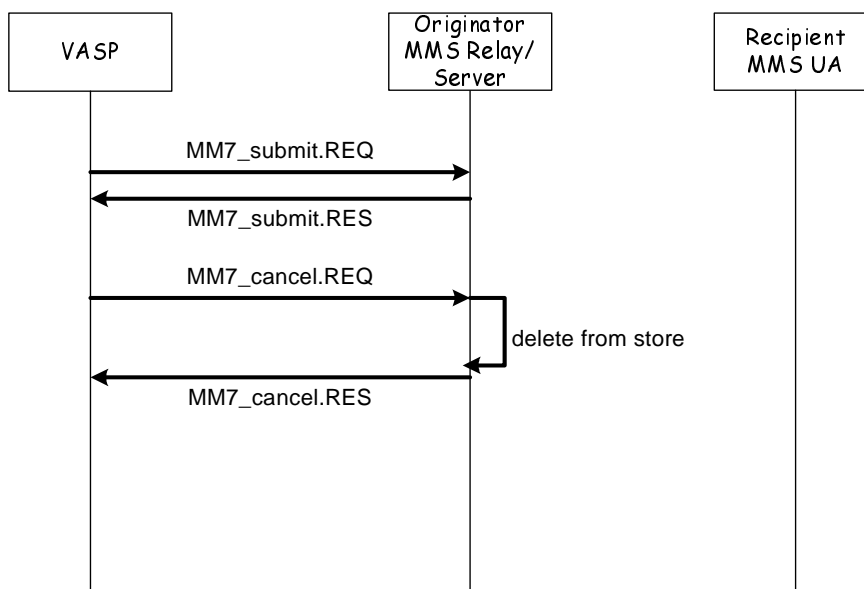


Figure 3. Data flow of VASP canceling a submitted message

8.7.3.1 Normal Operation

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

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

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

8.7.3.2 Abnormal Operation

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

8.7.3.3 Features

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

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

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

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

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

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

Time stamping: The VASP may time stamp the MM.

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

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

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

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

Content: The VASP may add content 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 40: Information elements in the MM7_cancel.REQ.

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

Table 41: Information elements in the MM7_cancel.RES.

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

Table 42: Information elements in the MM7_replace.REQ.

<u>Information element</u>	<u>Presence</u>	<u>Description</u>
<u>Transaction ID</u>	<u>Mandatory</u>	<u>The identification of the MM7_replace.REQ/ MM7_replace.RES pair.</u>
<u>Message type</u>	<u>Mandatory</u>	<u>Identifies this message as a MM7_replace request.</u>
<u>MM7 version</u>	<u>Mandatory</u>	<u>Identifies the version of the interface supported by the VASP</u>
<u>VASP ID</u>	<u>Optional</u>	<u>Identifier of the VASP for this MMS Relay/Server.</u>
<u>VAS ID</u>	<u>Optional</u>	<u>Identifier of the originating application.</u>
<u>Message ID</u>	<u>Mandatory</u>	<u>Identifier of the message that current message replaces.</u>
<u>Service code</u>	<u>Optional</u>	<u>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.</u>
<u>Date and time</u>	<u>Optional</u>	<u>The time and date of the submission of the MM (time stamp).</u>
<u>Earliest delivery time</u>	<u>Optional</u>	<u>The earliest desired time of delivery of the MM to the recipient.</u>
<u>Read reply</u>	<u>Optional</u>	<u>A request for confirmation via a read report to be delivered as described in section 8.1</u>
<u>Adaptations</u>	<u>Optional</u>	<u>Indicates if VASP allows adaptation of the content (default True)</u>
<u>Content type</u>	<u>Conditional</u>	<u>The content type of the MM's content. If the Content IE appears, then the Content type IE must appear.</u>
<u>Content</u>	<u>Optional</u>	<u>The content of the multimedia message</u>

Table 43: 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 code

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 47 from type and direction points of view.

Table 47: Abstract messages for delivery reports to VASP

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

8.7.4.1 Normal Operation

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

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

8.7.4.2 Abnormal Operation

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

8.7.4.3 Features

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

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

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

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

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

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

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

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

8.7.4.4 Information Elements

Table 48: 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.)
MM Status	Mandatory	Status of the MM, e.g. retrieved, expired, rejected
Status text	Optional	Text description of the status for display purposes, should qualify the MM Status code

Table 49: 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 code

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 50 from type and direction points of view.

Table 50: Abstract messages for sending and receiving read-reply reports in MM7

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

8.7.5.1 Normal Operation

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

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

8.7.5.2 Abnormal Operation

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

8.7.5.3 Features

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

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

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

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

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

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

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

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

8.7.5.4 Information Elements

Table 51: Information elements in the MM7_read_reply_report.REQ.

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

Table 52: Information elements in the MM7_read_reply_report.RES.

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

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 53 from type and direction points of view.

Table 53: Abstract message for generic error notification

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

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 54: Information elements in the MM7_RS_error.RES.

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

Table 55: Information elements in the MM7_VASP_error.RES.

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

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.