TSGS#28(05)0277

Source: **SA5 (Telecom Management)**

Title: **CR 32270 MMS charging**

Document for: **Approval**

Agenda Item: **7.5.3**

Doc-1st-Level	Spec__#_	CR__#	R	Phase	Subject	Cat	Ver-Cur	Doc-2nd-Level	Workitem
SP-050277	32.270	0008	-	Rel-6	Correction to scope	F	6.2.0	S5-054437	CH
SP-050277	32.270	0009	-	Rel-6	Correction to references	F	6.2.0	S5-054449	CH
SP-050277	32.270	0010	-	Rel-6	Corrections and alignments	F	6.2.0	S5-054458	CH

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CHANGE REQUEST

⌘ **32.270** **CR** **0008** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction to scope
Source:	⌘	SA5 (benni.alexander@nokia.com)
Work item code:	⌘	CH
Date:	⌘	12/05/2005
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:
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:	⌘	The last paragraph of text in Scope (clause 1) of TS 32.270 contains incorrect statements about the contents of TR 21.905 and the charging specifications.
Summary of change:	⌘	The paragraph has been modified to correct the above errors. Furthermore, a statement pointing to TS 22.115 for charging requirements has been added.
Consequences if not approved:	⌘	The scope of TS 32.270 remains erroneus, confusing the reader.

Clauses affected:	⌘	Clause 1

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

Other comments:	⌘	Parent CR 32.240 in S5-054466

Change in Clause 1

1 Scope

The present document is part of a series of documents that specify charging functionality and charging management in GSM/UMTS networks. The GSM/UMTS core network charging architecture and principles are specified in document TS 32.240 [1], which provides an umbrella for other charging management documents that specify:

- the content of the CDRs per domain and subsystem (offline charging);
- the content of real-time charging messages per domain / subsystem (online charging);
- the functionality of online and offline charging for those domains and subsystems;
- the interfaces that are used in the charging framework to transfer the charging information (i.e. CDRs or charging events).

The complete document structure for these TSs is defined in TS 32.240 [1].

The present document specifies the offline and online charging description for MMS charging, based on the functional stage 2 descriptions of the MMS in TS 23.140 [201]. This charging description includes the offline and online charging architecture and scenarios specific to the MMS, as well as the mapping of the common 3GPP charging architecture specified in TS 32.240 [1] onto MMS. It further specifies the structure and content of the CDRs for offline charging, and the charging events for online charging. The present document is related to other 3GPP charging TSs as follows:

- The common 3GPP charging architecture is specified in TS 32.240 [1];
- The parameters, abstract syntax and encoding rules for these CDR types are specified in TS 32.298 [51].
- A transaction based mechanism for the transfer of CDRs within the network is specified in TS 32.295 [54].
- The file based mechanism used to transfer the CDRs from the network to the operator's billing domain (e.g. the billing system or a mediation device) is specified in TS 32.297 [52].
- The 3GPP Diameter application that is used for MMS online charging is specified in TS 32.299 [50].

All ~~references~~terms, definitions and abbreviations~~, definitions, descriptions, principles and requirements,~~ used in the present document, that are common across 3GPP TSs, are defined in the 3GPP Vocabulary, TR 21.905 [100]. Those that are common across charging management in GSM/UMTS domains, services or subsystems are provided in the umbrella document TS 32.240 [1] and are copied into clause 3 of the present document for ease of reading. Finally, those items that are specific to the present document are defined exclusively in the present document.

Furthermore, requirements that govern the charging work are specified in 3GPP TS 22.115 [102].

End of change in Clause 1
End of document

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2005	SA_27	SP-050031	007	--	Extension of the charging functionality for MM cancellation and replacement Align with T2's TS 23.140	6.1.0	6.2.0

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CHANGE REQUEST

⌘ 32.270 CR 0009 ⌘rev - ⌘ Current version: 6.2.0 ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network X

Title: ⌘ Correction to references

Source: ⌘ SA5 (benni.alexander@nokia.com)

Work item code: ⌘ CH **Date:** ⌘ 13/05/2005

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:

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: ⌘ Clause 2 (References) is contradicting 3GPP TR 21.801 (Specification drafting rules).

Summary of change: ⌘ All references in clause 2 that are not explicitly cited in the TS have been removed from the list of references, and collected to a new Annex "Bibliography", which has been inserted to the TS just before the last Annex containing the change history.

The change has been done according to the instructions in 3GPP TR 21.801 listed below.

1. 3GPP TR 21.801 states (subclause 6.2.2) about the list of references as follows:
   "*The list shall not include the following:*
   …
   - documents which are not explicitly cited in the provisions of the deliverable (such documents may be listed in a bibliography (see subclause 6.4.2))."

2. 3GPP TR 21.801 states (subclause 6.4.2) about the Bibliography as follows:
   "*The Bibliography identifies documents which are not explicitly cited in the body of the 3GPP TS or 3GPP TR.*"

3. 3GPP TR 21.801 states (subclause 5.2.7) as follows:
   "*A bibliography, if present, shall appear after the penultimate annex entitled "Bibliography".*".

Consequences if not approved: ⌘ TS 32.270 remains contradictive to 3GPP specification drafting rules.

Clauses affected: ⌘ Clause 2, Annexes

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

Other comments: ⌘ Parent CR to 32.240 in S5-054467

Change in Clause 2

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*.

~~**a) The 3GPP charging specifications**~~

[1] 3GPP TS 32.240: "Telecommunication management; Charging management; Charging Architecture and Principles".

[2]-[9] Void.

[10] 3GPP TS 32.250: "Telecommunication management; Charging management; Circuit Switched (CS) domain charging".

~~[11] 3GPP TS 32.251: "Telecommunication management; Charging management; Packet Switched (PS) domain charging".~~

~~[12] 3GPP TS 32.252: "Telecommunication management; Charging management; Wireless Local Area Network (WLAN) charging".~~

~~[13] [19] Void.~~

~~[20] 3GPP TS 32.260: "Telecommunication management; Charging management; IP Multimedia Subsystem (IMS) charging".~~

~~[21] [30] Void.~~

~~[31] 3GPP TS 32.271: "Telecommunication management; Charging management; Location Services (LCS) charging".~~

[~~32~~11]-[49] Void.

[50] 3GPP TS 32.299: "Telecommunication management; Charging management; Diameter charging application".

[51] 3GPP TS 32.298: "Telecommunication management; Charging management; Charging Data Record (CDR) parameter description".

[52] 3GPP TS 32.297: "Telecommunication management; Charging management; Charging Data Records (CDR) file format and transfer".

[53] 3GPP TS 32.296: "Telecommunication management; Charging management; Online Charging System (OCS) applications and interfaces".

[54] 3GPP TS 32.295: "Telecommunication management; Charging management; Charging Data Record (CDR) transfer".

[55]-[~~69~~99] Void.

~~[70] 3GPP TS 23.125: "Overall High Level Functionality and Architecture Impacts of Flow Based Charging; Stage 2"~~

~~[70] [99] Void.~~

~~**b) Common 3GPP specifications**~~

[100] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

~~[101] 3GPP TS 22.101: "Service aspects; Service Principles".~~

~~[102] 3GPP TS 22.115: "Service aspects; Charging and billing".~~

~~[103] 3GPP TS 23.002: "Network Architecture".~~

~~[104] 3GPP TS 23.003: "Numbering, addressing and identification".~~

~~[105] 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".~~

[~~106~~101]-[199] Void.

~~**c) other Domain and Service specific 3GPP / ETSI specifications**~~

[200] 3GPP TS 22.140: "Service aspects; Stage 1; Multimedia Messaging Service".

[201] 3GPP TS 23.140: "Multimedia Messaging Service (MMS); Functional description; Stage 2".

[202]-[299] Void.

~~**d) Relevant ITU Recommendations**~~

~~[300] ITU-T Recommendation D.93: "Charging and accounting in the international land mobile telephone service (provided via cellular radio systems)".~~

~~[301] [309] Void.~~

~~[310] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".~~

~~[311] [329] Void.~~

~~[330] ITU-T Recommendation Q.767: "Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".~~

~~[331] [349] Void.~~

~~[350] ITU-T Recommendation X.25: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".~~

~~[351] ITU-T Recommendation X.121: "International numbering plan for public data networks".~~

[~~352~~300]-[399] Void.

~~**e) Relevant IETF RFCs**~~

[400] ~~IETF RFC 959 (1985): "File Transfer Protocol"~~Void.

[401] IETF RFC 3588 (2003): "Diameter Base Protocol"

[402] IETF Internet-Draft "Diameter Credit Control Application" ~~V05~~V06

Editor's note: The reference shall be replaced with the RFC number.~~[403] IETF RFC 1350: "The TFT Protocol (Revision 2)"~~

End of change in Clause 2

Change in Annexes

Annex A (informative): Bibliography

a) The 3GPP charging specifications

- 3GPP TS 32.251: "Telecommunication management; Charging management; Packet Switched (PS) domain charging".
- 3GPP TS 32.252: "Telecommunication management; Charging management; Wireless Local Area Network (WLAN) charging".
- 3GPP TS 32.260: "Telecommunication management; Charging management; IP Multimedia Subsystem (IMS) charging".
- 3GPP TS 32.271: "Telecommunication management; Charging management; Location Services (LCS) charging".
- 3GPP TS 23.125: "Overall High Level Functionality and Architecture Impacts of Flow Based Charging; Stage 2"

b) Common 3GPP specifications

- 3GPP TS 22.101: "Service aspects; Service Principles".
- 3GPP TS 22.115: "Service aspects; Charging and billing".
- 3GPP TS 23.002: "Network Architecture".
- 3GPP TS 23.003: "Numbering, addressing and identification".
- 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

c) other Domain and Service specific 3GPP / ETSI specifications

-

d) Relevant ITU Recommendations

- ITU-T Recommendation D.93: "Charging and accounting in the international land mobile telephone service (provided via cellular radio systems)".
- ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- ITU-T Recommendation Q.767: "Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".
- ITU-T Recommendation X.25: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".
- ITU-T Recommendation X.121: "International numbering plan for public data networks".

e) Relevant IETF RFCs

- IETF RFC 959 (1985): "File Transfer Protocol".
- IETF RFC 1350: "The TFT Protocol (Revision 2)"

Annex ~~A~~ B (informative): Change history

End of change in Annexes
End of document

Change history

Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Sep 2003	S_21	SP-030412	--	--	Submitted to TSG SA#21 for Information	1.0.0	
Sep 2004	S_25	SP-040555	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040780	001	--	Introduce Application Data in MMS Charging – Align with T2's TS 23.140 (MMS6)	6.0.0	6.1.0
Dec 2004	SA_26	SP-040780	002	--	Introduce Content Adaptation in MMS Charging – Align with T2's 23.140 (MMS6)	6.0.0	6.1.0
Dec 2004	SA_26	SP-040780	003	--	Correction on VASP MMS CDR triggers	6.0.0	6.1.0
Mar 2005	SA_27	SP-050031	004	--	Align MM10 charging functionality with T2's TS 23.140	6.1.0	6.2.0
Mar 2005	SA_27	SP-050031	005	--	Charge MMS VASP for getting Terminal Capabilities information - Align with T2's TS 23.140	6.1.0	6.2.0
Mar 2005	SA_27	SP-050031	006	--	Correct condition for generating a MM Deletion CDR - Align with T2's TS 23.140	6.1.0	6.2.0
Mar 2005	SA_27	SP-050031	007	--	Extension of the charging functionality for MM cancellation and replacement Align with T2's TS 23.140	6.1.0	6.2.0

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CHANGE REQUEST

⌘ **32.270** **CR** **0010** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Corrections and alignments
Source:	⌘	SA5 (Gerald.Goermer@siemens.com)
Work item code:	⌘	CH
Date:	⌘	11/05/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
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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:	⌘	Inconsistent architecture diagramm, wrong table numering scheme, inconsistent CDR parameter categories and missing MMS-Information description. The use of Diameter credit control is not consistent as specified in TS 32.299.
Summary of change:	⌘	The definition of the MMS-Information is completed and the corresponding credit control messages adapted. Some other editorial corrections on the trigger table definitions added.
Consequences if not approved:	⌘	Inconsistent specification and incomplete MMS online charging.

Clauses affected:	⌘	4, 5.1, 5.2, 6.1.1.1, 6.1.2.2, 6.1.5.1, 6.2, 6.3

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

⌘

Other comments: ⌘

Change in Clause 4

4 Architecture considerations

...

4.2 MMS offline charging architecture

As described in TS 32.240 [1], the CTF (an integrated component in each charging relevant NE) generates charging events and forwards them to the CDF. The CDF, in turn, generates CDRs which are then transferred to the CGF. Finally, the CGF creates CDR files and forwards them to the Billing Domain.

In MMS, all charging functions (CTF, CDF and CGF) reside within the MMS R/S. I.e. the MMS R/S is connected directly to the Billing Domain via the Bm interface. Bm is the MMS specific variant of the common Bx interface and is functionally equivalent to MM8. This architecture implies that there exists no separate CDF and CGF for MMS, i.e. no corresponding open interfaces between any such functions, within the 3GPP standards.

Figure 4.2 depicts the mapping of the 3GPP common charging architecture, as laid down in 3GPP TS 32.240 [1], onto the MMS.

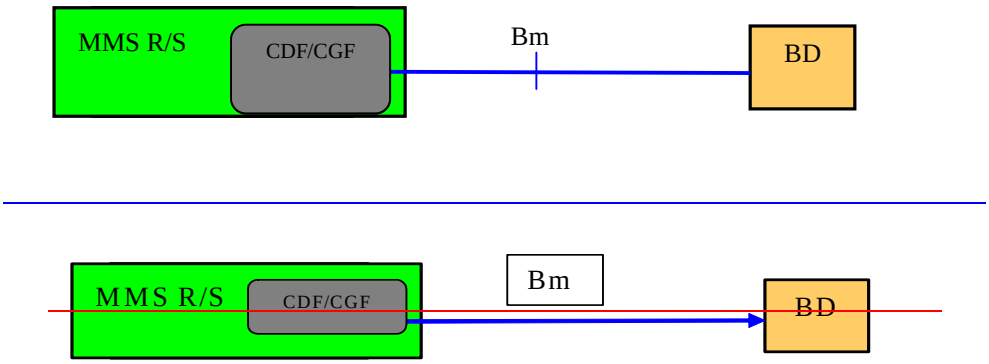

Figure 4.2 MMS offline charging architecture

In addition to the standard approach depicted in figure 4.2, vendors may choose to implement separate CDF and CGF for MMS. In that case, the interfaces between these functions should comply with the definition of the Rf and Ga interfaces (3GPP TS 32.299 [50] and 3GPP TS 32.295 [54], respectively) as much as possible.

4.3 MMS online charging architecture

MMS online charging is based on MMS R/S functionality that is further specified in the present document. For online charging, the MMS R/S utilises the Ro interface and application towards the OCS as specified in TS 32.299 [50]. The Ro reference point covers all online charging functionality required for MMS, i.e. it is functionally equivalent to the MM9 reference point.

The MMS online charging architecture is depicted in figure 4.3.

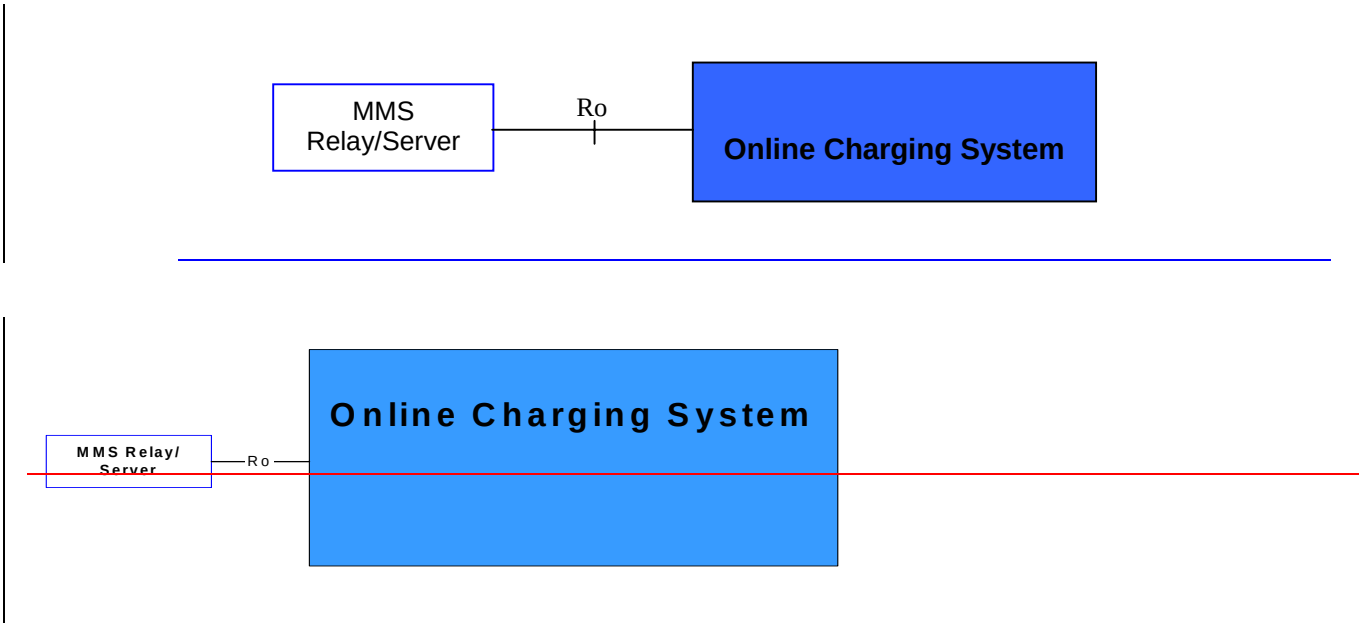

Figure 4.3: MMS online charging architecture

Details on the interfaces and functions can be found in TS 32.240 [1] for the general architecture components, TS 32.296 [53] for the OCS, and 32.299 [50] for the Ro application.

End of change in Clause 4

Change in Clause 5.1

5.1 MMS charging principles

The MMS Relay/Server collects charging information for each MM transaction that crosses the relevant reference points defined in 3GPP TS 22.140 [200]. The chargeable events that trigger the collection of charging information on the applicable reference points are identical for MMS offline and online charging and are specified below. The use of the events to generate CDRs (offline charging) or credit control requests (online charging) are described in clause 5.2 for offline charging and in clause 5.3 for online charging, respectively.

In line with the requirements laid down in TS 22.140 [200] and TS 23.140 [201] the MMS R/S collects charging information such as:

- the destination and source addresses applied for an MM ;
- identification of the MMS R/S(s) involved in the MM transaction;
- the amount and type of user data transmitted in MO and MT directions for the transfer of MM, i.e. the size of the MM and its components;
- storage duration, i.e. the time interval when a MM is saved on a non-volatile memory media;
- identification of the bearer resources used for the transport of the MM, i.e. the identity of the network and the network nodes;
- in scenarios involving a VASP, the charging information describes the identification of the VASP and the amount of user data sent and received between the MMS R/S and the VASP.

- in scenarios involving the MSCF, additional information supplied by the MSCF.

The information listed above is captured for use cases in relation to:

- MM submission;
- MM retrieval;
- MM forwarding;
- transactions involving the MMbox;
- transactions involving a VASP.

Refer to TS 23.140 [201] for further details on the above MM transactions.

The following scenarios can be distinguished in MMS charging:

- Combined originator and recipient MMS relay server. This scenario covers the case where the Originator MMS R/S and the Recipient MMS R/S are identical, which implies that that particular MMS R/S handles both MM submission and MM retrieval.
- Distributed originator and recipient MMS relay server. This scenario covers the case of the Originator MMS R/S and the Recipient MMS R/S being two different entities, where the Originator MMS R/S handles MM submission and the Recipient MMS R/S handles MM retrieval.
- MMBox management. MMBox is a logical entity of the MMS R/S that allow to support the persistent network-based storage of the MMs. This feature is an extension of the MM1 interface that enables a MMS User Agent to store, retrieve and delete incoming and submitted MMs.
- VASP transactions. MMS VAS Application offers value added services to the MMS Users. The MMS VASP are able to interact with the MMS R/S via the MM7 interface using transactions similar to those of the MM1 interface i.e. submission, reception, delivery-report, read-reply report, etc.

These scenarios all pertain to atomic actions related to MMs, e.g. submission, retrieval, storage, deletion, etc., implying that MMS only uses event based charging, as specified in TS 32.240 [1] (i.e. session based charging is not applicable for MMS). The following subclauses further describe the above scenarios and illustrate the conditions for the various types of chargeable events based on MMs crossing the reference points identified in TS 23~~2~~.140 [201] (MM1, MM4 and MM7). The labels in the message flows identify the chargeable events in relation to the particular reference point.

5.1.1 Combined originator and recipient MMS relay server

This scenario covers the case where the Originator MMS R/S and the Recipient MMS R/S are identical, which implies that that particular MMS R/S handles both MM submission and MM retrieval.

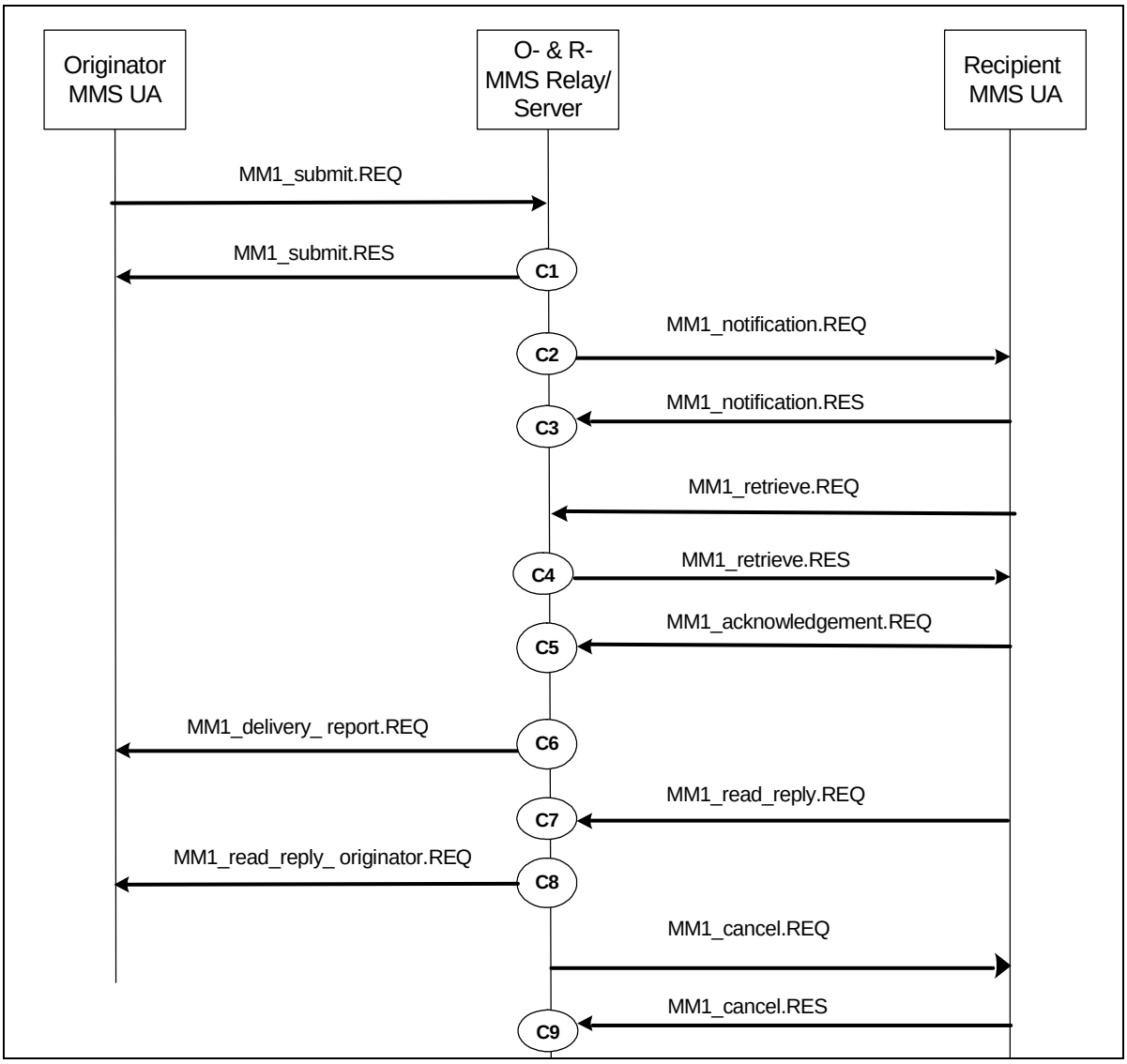

Figure 5.1.1 : Chargeable event overview for combined case

Table 5.1.1 : Trigger point overview for combined MMS Relay/Server

Trigger point	Trigger name
C1	Originator MM1 Submission
C2	Recipient MM1 Notification Request
C3	Recipient MM1 Notification Response
C4	Recipient MM1 Retrieval
C5	Recipient MM1 Acknowledgement
C6	Originator MM1 Delivery report
C7	Recipient MM1 Read reply Recipient
C8	Originator MM4 Read reply originator
C9	Recipient MM1 Cancellation
Any time between C1 to C8	Originator MM Deletion
NOTE: Chargeable events for MM submission, retrieval and cancellation are triggered by the MMS R/S responding to MM1_submit.REQ and MM1_retrieve.REQ, rather than upon receiving those requests and receiving a response to MM1_Cancel.RES rather than upon submitting this request	

5.1.2 Distributed originator and recipient MMS relay server

This scenario covers the case of the Originator MMS R/S and the Recipient MMS R/S being two different entities, where the Originator MMS R/S handles MM submission and the Recipient MMS R/S handles MM retrieval.

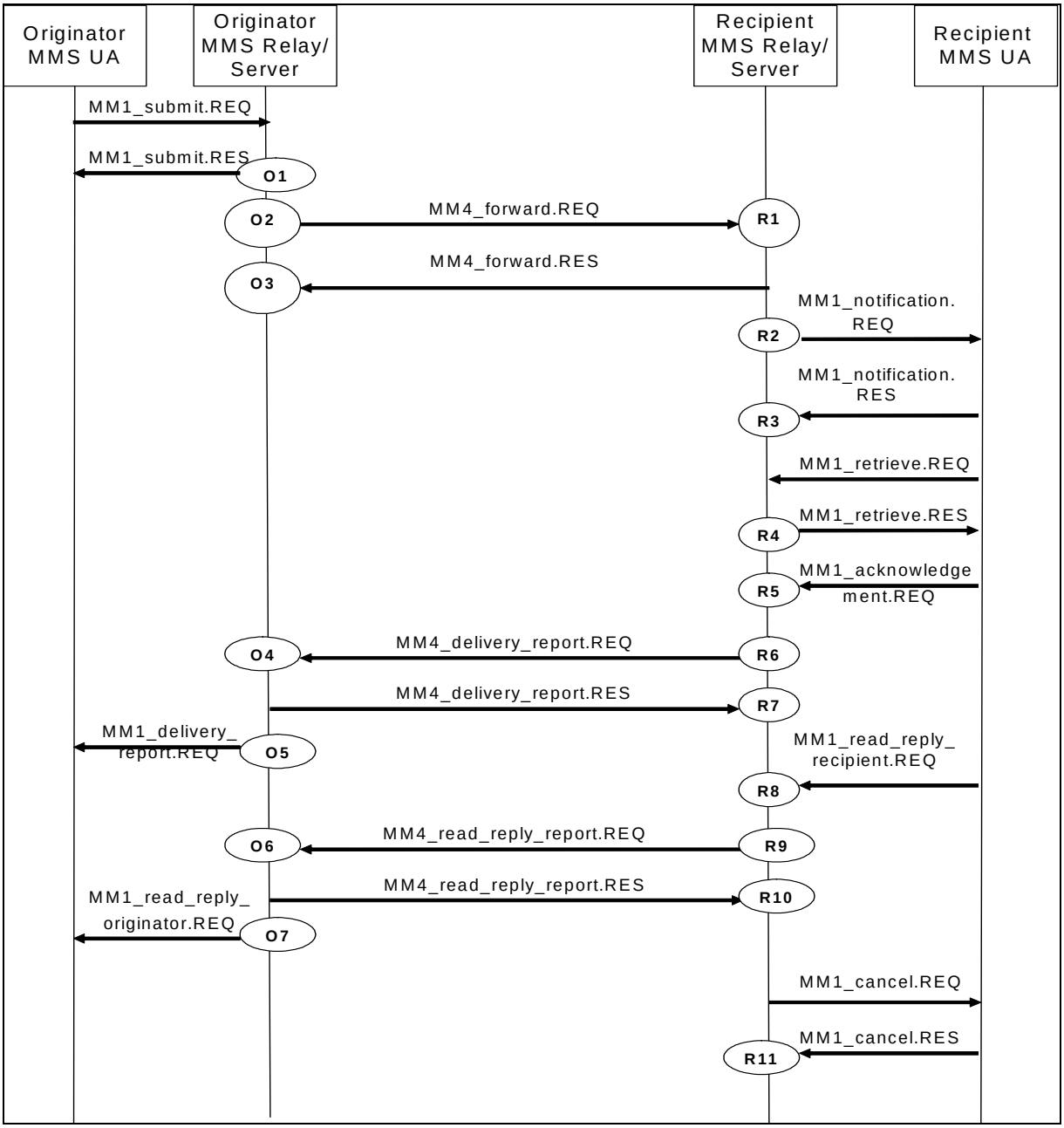

Figure 5.1.2 : Chargeable event overview for distributed case

Table 5.1.2.1a : Trigger type overview for the Originator MMS Relay/Server

Trigger point	Trigger name
O1	Originator MM1 Submission
O2	Originator MM4 Forward Request
O3	Originator MM4 Forward Response
O4	Originator MM4 Delivery report
O5	Originator MM1 Delivery report
O6	Originator MM4 Read reply report
O7	Originator MM1 Read reply originator
Any time between O1... O7	Originator MM Deletion
NOTE: Chargeable events for MM submission are triggered by the MMS R/S responding to MM1_submit.REQ, rather than upon receiving those requests.	

Table 5.1.2.2b : Trigger type overview for the Recipient MMS Relay/Server

Trigger point	Trigger name
R1	Recipient MM4 Forward
R2	Recipient MM1 Notification Request
R3	Recipient MM1 Notification Response
R4	Recipient MM1 Retrieval
R5	Recipient MM1 Acknowledgement
R6	Recipient MM4 Delivery report Request
R7	Recipient MM4 Delivery report Response
R8	Recipient MM1 Read reply Recipient
R9	Recipient MM4 Read reply report Request
R10	Recipient MM4 Read reply report Response
R11	Recipient MM1 Cancellation
Anytime after R1	Recipient MM Deletion
NOTE: Chargeable events for MM retrieval and cancellation are triggered by the MMS R/S responding to MM1_retrieve.REQ, rather than upon receiving those requests and receiving a response to MM1_Cancel.RES rather than upon submitting this request	

5.1.3 MMBox management

MMBox is a logical entity of the MMS R/S that allows to support the persistent network-based storage of the MMs. This feature is an extension of the MM1 interface that enables the MMS User Agent to store, retrieve and delete incoming and submitted MMs. For further detailed description of "Persistent Network-Based Storage" see TS 23.140 [201].

This scenario, as depicted in figure 5.1.3, covers the MM transactions related to MMBox usage and the associated chargeable events in the affected MMS R/S.

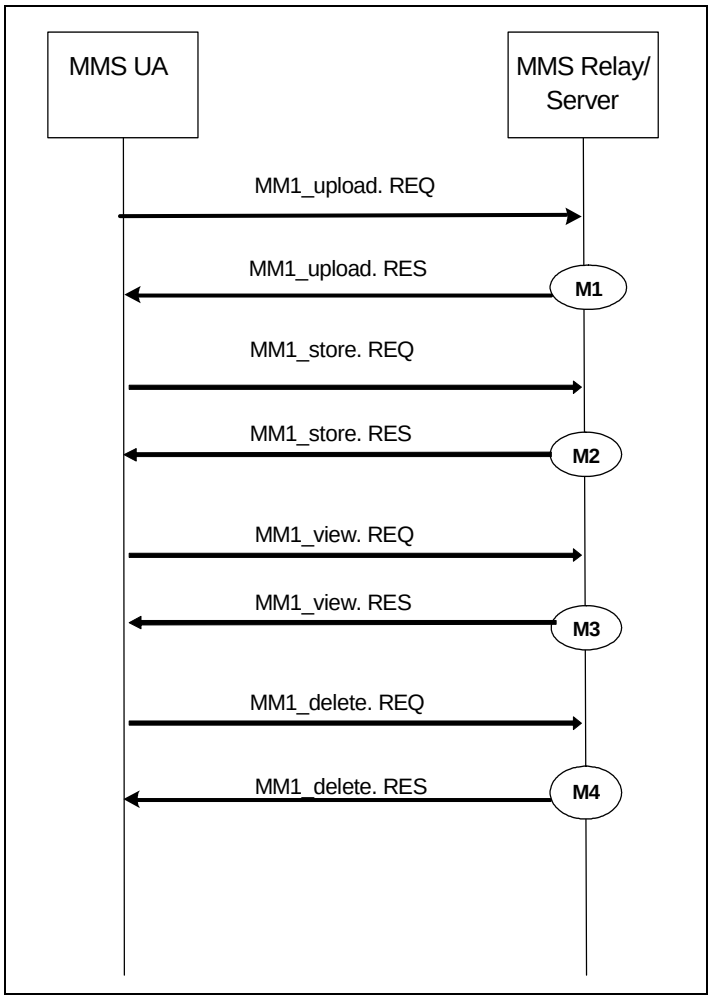

Figure 5.1.3 : Chargeable event overview for MMBox management

Table 5.1.3 : Trigger type overview for MMBox management

Trigger point	Trigger name
M1	MMBox MM1 Upload
M2	MMBox MM1 Store
M3	MMBox MM1 View
M4	MMBox MM1 Delete
NOTE: Chargeable events for MM Upload, Store, View and Delete are triggered by the MMS R/S responding to these requests, rather than upon receiving them.	

5.1.4 VASP transactions

MMS VAS Application offers value added services to the MMS Users. The MMS VASP are able to interact with the MMS R/S via the MM7 reference point using transactions similar to those of the MM1 interface i.e. submission, reception, delivery-report, read-reply report, etc.

The VASP may provide service codes that contain billing information which may be transferred to the MMS Relay/Server and passed directly to the billing system without intervention. In addition, the VASP may provide an indication to the MMS Relay/Server which party is expected to be charged for an MM submitted by the VASP, e.g. the sending, receiving, both parties or neither.

This scenario, as depicted in figure 5.1.4, covers the VASP related MM transactions and the associated chargeable events in the affected MMS R/S.

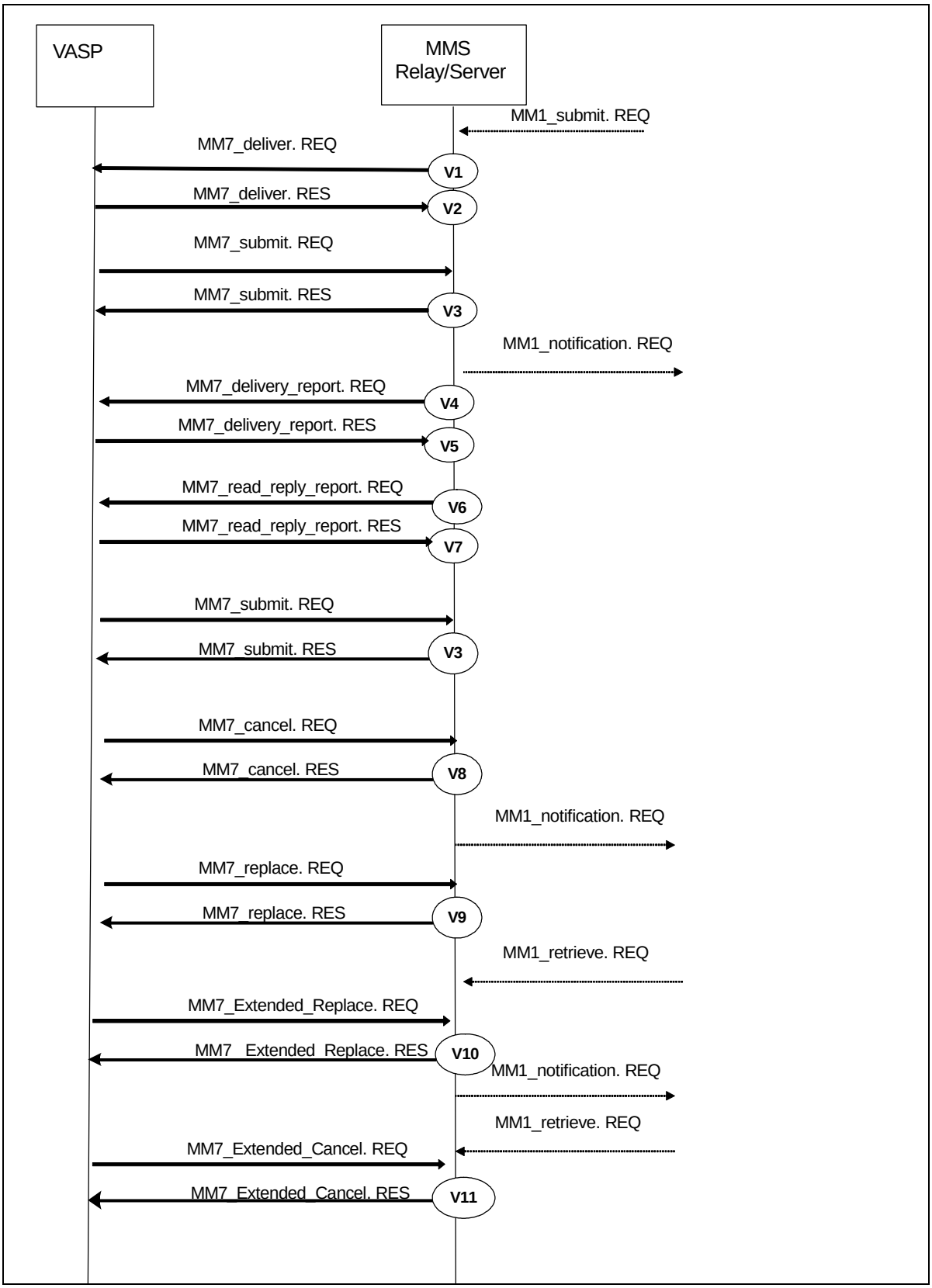

Figure 5.1.4 : Chargeable event overview for VASP transactions

Table 5.1.4 : Trigger type overview for VASP transactions

Trigger point	Trigger name
V1	MM7 Deliver report Request
V2	MM7 Deliver report Response
V3	MM7 Submission
V4	MM7 Delivery report Request
V5	MM7 Delivery report Response
V6	MM7 Read reply report Request
V7	MM7 Read reply report Response
V8	MM7 Replacement
V9	MM7 Cancellation
V10	MM7 Extended Replacement
V11	MM7 Extended Cancellation
NOTE: Chargeable events for MM7 submission, replacement and cancellation are triggered by the MMS R/S responding to these requests, rather than upon receiving them.	

End of Change in Clause 5.1

Change in Clause 5.2

5.2 MMS offline charging scenarios

5.2.1 Basic principles

MMS offline charging implies the generation of CDRs of various types by the involved MMS R/S(s). As explained in clause 5.1, only event based charging applies to MMS, i.e. there is no use of session based charging in the MMS R/S. In line with the principles for event based charging laid down in TS 32.240 [1], the relationship between chargeable events and charging events is 1:1, and the relationship between charging events and CDRs is also 1:1.

The chargeable event triggers are defined in clause 5.1.1 – 5.1.4 above and are identified by the labels within the figures 5.1. – 5.4 (message flows) in relation to the particular MMS reference point. As can be seen from these figures, the chargeable events relate to transactions at the MM1, MM4 and MM7 reference points.

An open Rf or Ga interface is not specified for MMS in the 3GPP standards, hence no charging events (Rf message flows) are specified in clause 5.2.2. In clause 5.2.3 below, CDR generation is described in relation to the chargeable event triggers specified in clause 5.1, given that there is a 1:1 relation all the way from chargeable event to CDR type as explained in the first paragraph above. However, due to the absence of a standard Ga interface for MMS, from the 3GPP standards perspective these CDRs are only visible in CDR files crossing the Bm interface.

5.2.2 Rf message flows

Not applicable, as the separation of the CTF and CDF is not in the scope of the MMS charging standards. Refer to clause 4.2 for further information.

Note: Vendors may nevertheless implement a separate CTF and CDF for MMS charging. In this case, it is recommended that the approach chosen conforms to the principles and protocol applications specified in TS 32.299 [50].

5.2.3 CDR generation

For MMS, the Ga interface is not applicable, as the separation of the CDF and CGF is not in the scope of the MMS charging standards. I.e. the following CDR types are visible only in the CDR files transferred from the MMS R/S embedded CGF to the BD via the Bm interface.

Note: If vendors choose to implement the Ga interface for MMS, then it is recommended that the approach chosen conforms with the CDRs specified in this section and the Ga protocol conventions laid down in TS 32.295 [54].

5.2.3.1 Combined originator and recipient MMS relay server case

The chargeable events for the case of a combined originator and recipient MMS R/S are depicted in figure 5.1.1 and further listed in table 5.1.1. Due to the fact that only event based charging applies to MMS (cf. clause 5.2.1), these chargeable events translate 1:1 into the CDR types listed in table 5.2.3.1~~5~~ below.

The first row in table 5.2.3.1~~5~~ refers to the trigger labels in figure/table 5.1.1. The second row identifies the associated CDR type. The content of these CDR types is specified in clause 6.

Table 5.2.3.1~~5~~ : Record type overview for combined MMS Relay/Server

Record trigger	C1	C2	C3	C4	C5	C6	C7	C8	C9	Any time between C1 .. C8
Record type	O1S	R1NRq	R1NRs	R1Rt	R1A	O1D	R1RR	O1R	R1C	OMD

5.2.3.2 Distributed originator and recipient MMS relay server case

The chargeable events for the case of distributed originator and recipient MMS R/Ss are depicted in figures 5.1.2.1/2~~a/b~~ and further listed in table 5.1.2. Due to the fact that only event based charging applies to MMS (cf. clause 5.2.1), these chargeable events translate 1:1 into the CDR types listed in tables 5.2.3.2.1/2~~6a/b~~ below.

The first row in the tables refers to the trigger labels in figure/table 5.1.2. The second row identifies the associated CDR type. The content of these CDR types is specified in clause 6.

Table 5.2.3.2.1~~6a~~ : Record type overview for the Originator MMS Relay/Server

Record Trigger	O1	O2	O3	O4	O5	O6	O7	Any time between O1.. O7
Record Type	O1S	O4FRq	O4FRs	O4D	O1D	O4R	O1R	OMD

Table 5.2.3.2.2~~6b~~ : Record type overview for the Recipient MMS Relay/Server

Record trigger	R1	R2	R3	R4	R5
Record type	R4F	R1NRq	R1NRs	R1Rt	R1A

Table 5.2.3.2.2~~6b~~ (cont'd) : Record type overview for the Recipient MMS Relay/Server

Record trigger	R6	R7	R8	R9	R10	R11	Anytime after R1
Record type	R4DRq	R4DRs	R1RR	R4RRq	R4RRs	R1C	RMD

5.2.3.3 MMBox related CDRs

The chargeable events for the MMBox management are depicted in figure 5.1.3 and further listed in table 5.1.3. Due to the fact that only event based charging applies to MMS (cf. clause 5.2.1), these chargeable events translate 1:1 into the CDR types listed in table 5.2.3.3~~7~~ below.

The first row in table 5.2.3.3~~7~~ refers to the trigger labels in figure/table 5.1.3. The second row identifies the associated CDR type. The content of these CDR types is specified in clause 6.

Table 5.2.3.3~~7~~ : Trigger type overview for MMBox management

Record trigger	M1	M2	M3	M4
Record type	Bx1U	Bx1S	Bx1V	Bx1D

5.2.3.4 CDRs related to VASP transactions

The chargeable events for the VASP transactions are depicted in figure 5.1.4 and further listed in table 5.1.4. Due to the fact that only event based charging applies to MMS (cf. clause 5.2.1), these chargeable events translate 1:1 into the CDR types listed in table 5.8 below.

The first row in table 5.2.3.4~~8~~ refers to the trigger labels in figure/table 5.1.4. The second row identifies the associated CDR type. The content of these CDR types is specified in clause 6.

Table 5.2.3.4~~8a~~: Record type overview for VASP transactions

Record trigger	V1	V2	V3	V4	V5
Record type	MM7S	MM7DRq	MM7DRs	MM7C	MM7R

Table 5.2.3.4 (cont'd)~~8b~~ : Record type overview for VASP transactions ~~(cont')~~

Record trigger	V6	V7	V8	V9	V10	V11
Record type	MM7DRRq	MM7DRRs	MM7RRq	MM7RRs	MM7ER	MM7EC

5.2.4 Ga record transfer flows

Not applicable, as the separation of the CDF and CGF is not in the scope of the MMS charging standards. Refer to clause 4.2 for further information.

Note: Vendors may nevertheless implement a separate CDF and CGF for MMS charging. In this case, it is recommended that the approach chosen conforms to the principles and protocol applications specified in TS 32.295 [54].

5.2.5 Bm CDR file transfer

The integrated CGF of the MMS R/S transfers the CDR files to the BD as described in TS 32.297 [52]. In MMS, both fully qualified partial CDRs (FQPC) and reduced partial CDRs (RPC), as specified in TS 32.240 [1] may be supported on the Bm interface. In line with TS 32.240 [13], the support of FQPCs is mandatory, the support of RPCs is optional. For further details on the Bm protocol application refer to TS 32.297 [52].

End of Change in Clause 5.2

Change in Clause 6.1.1.1

6.1.1.1 Originator MM1 Submission CDR (O1S-CDR)

If enabled, an Originator MM1 Submission Charging Data Record (O1S-CDR) shall be produced in the originator MMS Relay/Server for each MM submitted in an MM1_submit.REQ by an originator MMS User Agent to the originator MMS Relay/Server if and when the originator MMS Relay/Server responds with an MM1_submit.RES. The operator can configure whether this CDR, if enabled, shall only be created for MM1_submit.RES indicating acceptance of the submitted MM, or also for the unsuccessful submissions.

NOTE 1: This includes the case where the MM is a reply-MM to an original MM. In this case the MMS User Agent sending the reply-MM is called the originator MMS User Agent of this reply-MM and the MMS Relay/Server receiving the reply-MM in an MM1_submit.REQ is called the originator MMS Relay/Server for this reply-MM.

NOTE 2: The case of an MMS Relay/Server receiving an MM1_forward.REQ is treated in subclause 6.1.3.

Table 6.1.1.1 : Originator MM1 Submission CDR (O1S-CDR)

Field	Category	Description
Record Type	M	Originator MM1 Submission record
Originator MMS Relay/Server Address	M	.IP address or domain name of originator MMS Relay/Server
Message ID	M	The MM identification provided by the originator MMS Relay/Server
Reply-Charging ID	C	This field is present in the CDR only if the MM is a reply-MM to an original MM. The Reply-Charging ID is the Message ID of the original MM
Originator address	M	The address of the originator MMS User Agent (i.e., of the MMS User Agent that has sent the MM1_submit.REQ)
Recipients address list	M	The address(es) of the recipient MMS User Agent(s) of the MM. Multiple addresses are possible if the MM is not a reply MM
Access Correlation	O_m	A unique identifier delivered by the used access network domain of the originator MMS User Agent
Content type	M	The content type of the MM content
Content Class	O_c	This field classifies the content of the MM to the smallest content class to which the MM belongs, if specified in the MM1_submit_REQ
DRM Content	O_c	This field indicates if the MM contains DRM-protected content, if specified in the MM1_submit_REQ
Adaptations	O_c	This field indicates if the originator allows adaptation of the content (default True), if specified in the MM1_submit_REQ
MM component list	O_m	The list of media components with volume size
Message size	M	The total size of the MM content
Message class	O_c	The class selection such as personal, advertisement, information service if specified in the MM1_submit_REQ
Charge Information	O_m	The charged party indication and charge type
Submission Time	O_c	The time at which the MM was submitted from the originator MMS User Agent if specified in the MM1_submit_REQ
Time of Expiry	O_c	The desired date of expiry or duration of time prior to expiry for the MM if specified by the originator MMS User Agent
Earliest Time Of Delivery	C	This field contains either the earliest time to deliver the MM or the number of seconds to wait before delivering the MM as specified by the originator MMS User Agent
Duration Of Transmission	O_m	The time used for transmission of the MM between the User Agent and the MMS Relay/Server
Request Status Code	O_m	The status code of the MM as received in the MM1_submit_REQ
Delivery Report Requested	O_m	This field indicates whether a delivery report has been requested by the originator MMS User Agent or not
Reply Charging	O_c	A request for reply-charging if specified by the originator MMS User Agent
Reply Deadline	O_c	In case of reply-charging the latest time of submission of replies granted to the recipient(s) as specified by the originator MMS User Agent
Reply Charging Size	O_c	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s) as specified by the originator MMS User Agent
Priority	O_c	The priority (importance) of the message if specified by the originator MMS User Agent
Sender visibility	O_m	A request to show or hide the sender's identity when the message is delivered to the recipient as specified by the originator MMS User Agent
Read reply requested	O_m	A request for read reply report as specified in the MM1_submit.REQ

Field	Category	Description
Status Text	O_c	This field includes a more detailed technical status of the message at the point in time when the CDR is generated. This field is only present if the MM submission is rejected
Applic-ID	O_c	If present, this field holds the identification of the destination application that the underlying MMS abstract message was addressed to.
Reply-Applic-ID	O_c	If present, this parameter indicates a “reply path”, i.e. the identifier of the application to which delivery reports, read-reply reports and reply-MMs are addressed.
Aux-Applic-Info	O_c	If present, this parameter indicates additional application/implementation specific control information.
Record Time Stamp	O_m	Time of generation of the CDR
Local Record Sequence Number	O_m	Consecutive record number created by this node. The number is allocated sequentially including all CDR types
MMBox Storage Information	O_c~~C_o~~	A set of parameters related to the MMBox management. This parameter is only present if the MMBox feature is supported by the MMS Relay/Server and storage of the MM was requested by originator MMS User Agent (i.e., of the MMS User Agent that has sent the MM1_submit.REQ)
MSCF Information	O_c~~C_o~~	A set of parameters provided by the MSCF when interacting with the MMS R/S via the MM10 interface prior to the MM1_submit.RES
Serving network identity	O_m	SGSN PLMN Identifier (MCC and MNC) used during this record
Record extensions	O_c~~C_o~~	A set of network/manufacturer specific extensions to the record. Conditioned upon the existence of an extension

End of Change in Clause 6.1.1.1

Change in Clause 6.1.2.2

6.1.2.2 Recipient MM1 Notification Request CDR (R1NRq-CDR)

If enabled, a Recipient MM1 Notification Request Charging Data Record (R1NRq-CDR) shall be produced in the recipient MMS Relay/Server if and when the recipient MMS Relay/Server sends an MM1_notification.REQ to the recipient MMS User Agent.

Table 6.1.2.2 : Recipient MM1 Notification Request record (R1NRq -CDR)

Field	Category	Description
Record Type	M	Recipient MM1 Notification Request record
Recipient MMS Relay/Server Address	M	IP address or domain name of the recipient MMS Relay/Server
Message ID	M	The MM identification provided by the originator MMS Relay/Server
Reply Charging ID	C	This field is present in the CDR only if the MM is a reply-MM to an original MM. The Reply-Charging ID is the Message ID of the original MM
Sender address	M	The address of the MMS User Agent as used in the MM1_notification_REQ. This parameter is present in the CDR regardless of address hiding
Recipient address	M	The address of the MM recipient of the MM
Access Correlation	O_m	A unique identifier delivered by the used access network domain of the recipient MMS User Agent
Message class	M	The class selection such as personal, advertisement, information service; default = personal
MM component list	O_m	The list of media components with volume size
Message size	O_m	The total size of the MM content
Time of Expiry	O_m	The date of expiry or duration of time prior to expiry for the MM
Message Reference	M	A reference, e.g., URI, for the MM
Delivery Report Requested	O_m	This field indicates whether a delivery report is requested or not as specified in the MM1_notification.REQ
Reply Charging	O_c	Information that a reply to this particular original MM is free of charge as specified in the MM1_notification.REQ
Reply Deadline	O_c	In case of reply-charging the latest time of submission of a reply granted to the recipient as specified in the MM1_notification.REQ
Reply Charging-Size	O_c	In case of reply-charging the maximum size of a reply-MM granted to the recipient as specified in the MM1_notification.REQ
MM Status Code	O_m	The status code of the MM at the time when the CDR is generated
Status Text	O_m	This field includes a more detailed technical status of the message at the point in time when the CDR is generated.
MSCF Information	O_c~~C_o~~	A set of parameters provided by the MSCF when interacting with the MMS R/S via the MM10 interface prior to the MM1_notification.REQ
Applic-ID	O_c	If present, this field holds the identification of the destination application that the underlying MMS abstract message was addressed to.
Reply-Applic-ID	O_c	If present, this parameter indicates a “reply path”, i.e. the identifier of the application to which delivery reports, read-reply reports and reply-MMs are addressed.
Aux-Applic-Info	O_c	If present, this parameter indicates additional application/implementation specific control information.
Replace-ID	O_c	If present, this parameter holds the Identifier of the previous MM that is replaced by the current MM, if requested by a VASP
Record Time Stamp	O_m	Time of generation of the CDR
Local Record Sequence Number	O_m	Consecutive record number created by this node. The number is allocated sequentially including all CDR types
Serving network identity	O_m	SGSN PLMN Identifier (MCC and MNC) used during this record
Record extensions	O_c	A set of network/manufacturer specific extensions to the record. Conditioned upon the existence of an extension

End of Change in Clause 6.1.2.2

Change in Clause 6.1.5.1

6.1.5.1 MM7 Submission CDR (MM7S-CDR)

If enabled, an MM7 Submission Charging Data Record (MM7S-CDR) shall be produced in the MMS Relay/Server for each MM submitted in an MM7_submit.REQ by a VASP to the MMS Relay/Server if and when the MMS Relay/Server responds with an MM7_submit.RES. The operator can configure whether this CDR, if enabled, shall only be created for MM7_submit.RES indicating acceptance of the submitted MM, or also for the unsuccessful submissions.

Table 6.1.5.1 : MM7 Submission CDR (MM7S-CDR)

Field	Category	Description
Record Type	M	MM7 Submission record.
Originator MMS Relay/Server Address	M	.IP address or domain name of originator MMS Relay/Server.
Linked ID	C	This field is present in the CDR only if the MM defines a correspondence to a previous message that was delivered by the MMS Relay/Server. The MM identification provided by the originator MMS Relay/Server.
VASP ID	M	Identifier of the VASP for this MMS Relay/Server
VAS ID	M	Identifier of the originating application.
Message ID	M	The MM identification provided by the originator MMS Relay/Server.
Originator Address	M	The address of the MM originator.
Recipients address list	M	The address(es) of the recipient MMS User Agent(s) of the MM. Multiple addresses are possible if the MM is not a reply MM.
Service code	O_c	Charging related information that is used directly for billing purposes
Content type	M	The content type of the MM content.
Content Class	O_c	This field classifies the content of the MM to the smallest content class to which the MM belongs, if specified in the MM7_submit_REQ
DRM Content	O_c	This field indicates if the MM contains DRM-protected content, if specified in the MM7_submit_REQ
Adaptations	O_c	This field indicates if the originator allows adaptation of the content (default True), if specified in the MM7_submit_REQ
MM component list	O_m	The list of media components with volume size.
Message size	M	The total size of the MM content.
Message class	O_c	The class selection such as personal, advertisement, information service if specified in the MM7_submit_REQ.
Charge Information	O_m	The charged party indication and charge type e.g. the sending, receiving, both parties, third party or neither.
Submission Time	O_c	The time at which the MM was submitted from the VASP if specified in the MM7_submit_REQ.
Time of Expiry	O_c	The desired date of expiry or duration of time prior to expiry for the MM if specified by the VASP
Earliest Time Of Delivery	C	This field contains either the earliest time to deliver the MM or the number of seconds to wait before delivering the MM if specified by the VASP
Delivery Report Requested	O_m	This field indicates whether a delivery report has been requested by the VASP or not.
Reply Charging	O_c	A request for reply-charging if specified by the VASP
Read reply requested	O_m	A request for read reply report as specified in the MM7_submit.REQ.
Reply Deadline	O_c	In case of reply-charging the latest time of submission of replies granted to the recipient(s) as specified by the VASP
Reply Charging Size	O_c	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s) as specified by the VASP
Priority	O_c	The priority (importance) of the message if specified by the VASP
Charged Party ID	O_c	The address of the third party which is expected to pay for the MM.
Message Distribution Indicator	O_c	This field is present if specified in the MM7_submit.REQ 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.
Request Status Code	O_m	The status code of the associated MM7_submit_REQ
Status Text	O_c	This field includes a more detailed technical status of the message at the point in time when the CDR is generated. This field is only present if the MM submission is rejected.
MSCF Information	O_c ~~C_o~~	A set of parameters provided by the MSCF when interacting with the MMS R/S via the MM10 interface prior to the MM7_submit.RES

Field	Category	Description
Applic-ID	O_c	If present, this field holds the identification of the destination application that the underlying MMS abstract message was addressed to.
Reply-Applic-ID	O_c	If present, this parameter indicates a “reply path”, i.e. the identifier of the application to which delivery reports, read-reply reports and reply-MMs are addressed.
Aux-Applic-Info	O_c	If present, this parameter indicates additional application/implementation specific control information.
Record Time Stamp	O_m	Time of generation of the CDR.
Local Record Sequence Number	O_m	Consecutive record number created by this node. The number is allocated sequentially including all CDR types.
Record extensions	O_c	A set of network/manufacturer specific extensions to the record. Conditioned upon the existence of an extension.

End of Change in Clause 6.1.5.1

Change in Clause 6.2

6.2 Data description for MMS online charging

6.2.1 Ro message contents

The following table 6.2.1 describes the use of these messages for online charging.

Table 6.2.1 : Online Charging Messages Reference Table

Command-Name	Source	Destination	Abbreviation
Credit-Control-Request	MMS Relay/Server	OCS	CCR
Credit-Control-Answer	OCS	MMS Relay/Server	CCA

This sub-clause describes the different fields used in the credit control messages.

Note that not for all structured fields the individual parameters are listed in the table. Detailed descriptions of the fields are provided in TS 32.299 [50].

~~The specific parameters for MMS Charging are defined MMS specific Service Information AVP which is defined of type grouped as follows:~~

~~[MMS Information] :: = < AVP Header: TBD >~~

~~[Originator-Address]~~

~~* [Recipient-Address]~~

~~[Submission Time]~~

~~[Content Type]~~

~~[Priority]~~

~~[Message ID]~~

~~[Message-Type]~~

~~[Message-Size]~~

~~[Message-Class]~~

~~[Delivery Report Requested]~~

~~[Read Reply Report Requested]~~

~~[MMBox Storage Information]~~

~~[Applic-ID]~~

~~[Reply-Applic-ID]~~

~~[Aux-Applic-Info]~~

~~[Content Class]~~

~~[DRM Content]~~

~~[Adaptations]~~

6.2.1.1 MMS Credit-Control-Request Message

The following table 6.2.1.1 illustrates the basic structure of a Diameter credit control request message from MMS Relay/Server as used for MMS online charging.

Table 6.2.1.1 : Credit-Control-Request (CCR) Message Contents for MMS

~~AVP~~Field	Category	Description
Session-Id	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Origin-Host	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Origin-Realm	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Destination-Realm	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Auth-Application-Id	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Destination-Host	O_c	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
User-Name	O_c	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Origin-State-Id	O_c	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Event-Timestamp	O_c	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
CC-Request-Type	M	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
CC-Request-Number	M	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
CC-Sub-Session-Id	M	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Acct-Multi-Session-Id	-~~2~~	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Subscription-Id	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Service-Identifier	~~2~~-	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Termination-Cause	~~2~~-	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Requested-Service-Unit	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Requested-Action	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Used-Service-Unit	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Multiple-Services-Indicator	?	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Multiple-Services-Credit Control	?	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Service-Parameter-Info	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
CC-Correlation-Id	?	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
User-Equipment-Info	?	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Service-Information MMS-Information	O_M	This field holts the MMS specific parameter and is described in clause 6.3.
~~3GPP Diameter credit control AvPs~~		
~~MMS-Information~~		~~Grouped MMS specific Service-Information~~
~~Originator-Address~~	~~O_c~~	~~This AVP holds the address (Public User ID: SIP URL, E.164, etc.) of the party generating the MMS.~~
~~Recipient-Address~~	~~O_c~~	~~This AVP holds the address (Public User ID: SIP URL, E.164, etc.) of the party to whom the MMS is sent.~~
~~Correlation-Information~~	~~O_m~~	~~Bearer correlation information~~

AVPField	Category	Description
Submission Time	Oc	
Content Type	Oc	
Priority	Oc	
Message ID	Oc	This AVP holds the MM identification provided by the originator MMS Relay/Server.
Message-Type	Oc	This AVP holds the type of the message according to the MMS transactions e.g. submission, delivery
Message-Size	Oc	This AVP holds the total size of the MMS.
Message Class	Oc	
Delivery Report Requested	Oc	
Read Reply Report Requested	Oc	
MMBox Storage Information	Oc	
Applic-ID	Oc	This AVP holds the identification of the destination application that the underlying MMS abstract message was addressed to.
Reply-Applic-ID	Oc	This AVP holds the identifier of a "reply path", i.e. the identifier of the application to which delivery reports, read-reply reports and reply-MMs are addressed.
Aux-Applic-Info	Oc	This AVP holds additional application/implementation specific control information.
Content Class	Oc	This AVP classifies the content of the MM to the smallest content class to which the MM belongs
DRM Content	Oc	This AVP indicates if the MM contains DRM-protected content
Adaptations	Oc	This AVP indicates if the originator allows adaptation of the content (default True)

A full description and the detailed use of the AVPs for MMS Relay/Server and for each CCR request type (initial/update/termination/event) is specified in TS 32.299 [50].

6.2.1.2 MMS Credit-Control-Answer Message

The following table 6.2.1.2 illustrates the basic structure of a Diameter credit control answer message as used for MMS charging. This message is always used by the OCS as specified below, independent of the receiving MMS Relay/Server and the CCR request type that is being replied to.

Table 6.2.1.2 : Credit-Control-Answer (CCA) Message Contents for MMS

~~AVP~~Field	Category	Description
Session-Id	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Result-Code	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Origin-Host	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Origin-Realm	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Auth-Application-Id	M	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
User-Name	O_c	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Origin-State-Id	O_c	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
Event-Timestamp	O_c	Used as described in TS 32.299 [50].~~Described in RFC 3588, diameter base protocol [401]~~
CC-Request-Type	M	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
CC-Request-Number	M	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
CC-Session-Failover	~~?~~-	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
CC-Sub-Session-Id	M	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Acct-Multi-Session-Id	?	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Subscription-Id	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Granted-Service-Unit	~~?~~-	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Multiple-Services-Credit Control	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Cost-Information	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Final-Unit-Indication	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Check-Balance-Result	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Credit-Control-Failure-Handling	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Direct-Debiting-Failure-Handling	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Validity-Time	O_c	Used as described in TS 32.299 [50].~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Redirect-Host AVP	~~?~~-	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Redirect-Host-Usage	~~?~~-	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
Redirect-Max-Cache-Time	~~?~~-	Not used for MMS in 3GPP.~~Described in Internet-Draft, Diameter Credit Control Application [402]~~
~~3GPP Diameter credit control AvPs~~		

6.3 MMS Charging specific parameters

The MMS Information parameter used for MMS charging is provided in the Service-Information parameter.

The use of the Attribute Value Pairs (AVPs) that are defined is available in the Diameter application specification TS 32.299 [50].

6.3.1 Formal MMS charging parameter description

The components in the Service Information that are use for MMS charging can be found in Table 6.3.1.

Table 6.3.1 : Service-Information used for MMS Charging

Field	Category	Description
Service-Information	O_M	This is a grouped filed and holds the 3GPP specific parameter as defined in TS 32.299 [50]. For MMS Charging the MMS-Information is used.
MMS-Information	O_M	This is a grouped field and holds the IMS specific parameters. The details are defined in table 6.17.

6.3.2. Definition of the MMS charging Information

The detailed structure of the IMS-Information parameter can be found in Table 6.3.2.

Table 6.3.2 : Structure of the MMS-Information parameter

Field	Category	Description
Originator-Address	O_C	This field holds the address (Public User ID: SIP URL, E.164, etc.) of the party generating the MMS.
Recipient-Address	O_C	This field holds the address (Public User ID: SIP URL, E.164, etc.) of the party to whom the MMS is sent.
Correlation-Information	O_M	Bearer correlation information
Submission Time	O_C	The time at which the MM was submitted or forwarded as specified in the corresponding MM1 message.
Content Type	O_C	The content type of the MM content.
Priority	O_C	The priority (importance) of the message if specified by the originator MMS User Agent.
Message ID	O_C	This field holds the MM identification provided by the originator MMS Relay/Server.
Message-Type	O_C	This field holds the type of the message according to the MMS transactions e.g. submission, delivery.
Message-Size	O_C	This field holds the total size of the MMS.
Message Class	O_C	The class of the MM (e.g., personal, advertisement, information service) if specified by the originator MMS User Agent.
Delivery Report Requested	O_C	This field indicates whether a delivery report has been requested by the originator MMS User Agent or not.
Read Reply Report Requested	O_C	A request for read reply report as specified in the MM1 message.
MMBox Storage Information	O_C	A set of parameters related to the MMBox management. This parameter is only present if the MMBox feature is supported by the MMS Relay/Server and storage of the MM was requested by originator MMS User Agent (i.e., of the MMS User Agent that has sent the MM1 submit.REQ).
Applic-ID	O_C	This field holds the identification of the destination application that the underlying MMS abstract message was addressed to.
Reply-Applic-ID	O_C	This field holds the identifier of a “reply path”, i.e. the identifier of the application to which delivery reports, read-reply reports and reply-MMs are addressed.
Aux-Applic-Info	O_C	This field holds additional application/implementation specific control information.
Content Class	O_C	This field classifies the content of the MM to the smallest content class to which the MM belongs
DRM Content	O_C	This field indicates if the MM contains DRM-protected content.

Field	Category	Description
Adaptations	O_C	This field indicates if the originator allows adaptation of the content (default True).

End of Change in Clause 6.2
End of Document

Annex A (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Sep 2003	S_21	SP-030412	--	--	Submitted to TSG SA#21 for Information	1.0.0	
Sep 2004	S_25	SP-040555	--	--	Submitted to TSG SA#25 for Approval	2.0.0	6.0.0
Dec 2004	SA_26	SP-040780	001	--	Introduce Application Data in MMS Charging – Align with T2's TS 23.140 (MMS6)	6.0.0	6.1.0
Dec 2004	SA_26	SP-040780	002	--	Introduce Content Adaptation in MMS Charging – Align with T2's 23.140 (MMS6)	6.0.0	6.1.0
Dec 2004	SA_26	SP-040780	003	--	Correction on VASP MMS CDR triggers	6.0.0	6.1.0
Mar 2005	SA_27	SP-050031	004	--	Align MM10 charging functionality with T2's TS 23.140	6.1.0	6.2.0
Mar 2005	SA_27	SP-050031	005	--	Charge MMS VASP for getting Terminal Capabilities information - Align with T2's TS 23.140	6.1.0	6.2.0
Mar 2005	SA_27	SP-050031	006	--	Correct condition for generating a MM Deletion CDR - Align with T2's TS 23.140	6.1.0	6.2.0
Mar 2005	SA_27	SP-050031	007	--	Extension of the charging functionality for MM cancellation and replacement Align with T2's TS 23.140	6.1.0	6.2.0