Source:	**SA5 (Telecom Management)**								

Source: **SA5 (Telecom Management)**

Title: **2 Rel-6 CR 32403 (Performance Management; Performance measurements - UMTS and combined UMTS/GSM)**

Document for: **Approval**

Agenda Item: **7.5.3**

Doc-1st-	Spec	CR	R	Ph	Subject	Cat	Ver	Doc-2nd-	Workite
SP-030293	32.403	016	-	Rel-6	**Addition of GPRS per cause measurement definitions**	C	5.2.0	S5-038244	OAM-PM
SP-030293	32.403	017	-	Rel-6	**Introduction of MMS Service Based Performance Measurement**	B	5.2.0	S5-038346	OAM-PM

CR-Form-v7

CHANGE REQUEST

| ⌘ | **32.403** CR **016** | ⌘**rev** | **-** | ⌘ | Current version: | **5.2.0** | ⌘ |

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

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

Title: ⌘	Addition of GPRS per cause measurement definitions	
Source: ⌘	S5	
Work item code: ⌘	OAM-PM	***Date:*** ⌘ 11/04/2003
Category: ⌘ **C**		***Release:*** ⌘ Rel-6

Use <u>one</u> of the following categories: *F (correction)* *A (corresponds to a correction in an earlier release)* *B (addition of feature),* *C (functional modification of feature)* *D (editorial modification)* Detailed explanations of the above categories can be found in 3GPP <u>TR 21.900</u>.	Use <u>one</u> of the following releases: *2　　(GSM Phase 2)* *R96　(Release 1996)* *R97　(Release 1997)* *R98　(Release 1998)* *R99　(Release 1999)* *Rel-4　(Release 4)* *Rel-5　(Release 5)* *Rel-6　(Release 6)*

Reason for change: ⌘	In release 5, the performance measurement definitions for UMTS and combined GSM/UMTS do not include per cause measurement definitions. These per cause measurement definitions are needed to enhance Performance Management in the GSM/UMTS networks.
Summary of change: ⌘	Addition of per cause measurement definitions to SGSN measurements
Consequences if not approved: ⌘	Lack of per cause measurement definitions for the SGSN measurements may make it difficult to identify and sort out the errors in the network.

Clauses affected: ⌘	New clause 5.1.48 and changed clause 5.6.25.

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

Other comments: ⌘	

How to create CRs using this form:

5. Measurements related to the SGSN

5.1   Mobility Management

Change in Clause 5.1.48

5.1.48   Failed GPRS Attach Procedure

a)   This measurement provides the number of GPRS attach procedures failures. The measurement is pegged by the failure cause. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b)   CC

c)   On transmission by the SGSN of the GPRS ATTACH REJECT message to the MS, as defined in TS 23.060, indicating an attach failure, the relevant measurement is incremented according to the cause. Possible causes are included in TS 24.008. The sum of all supported per cause measurements shall be equal to the total number of GPRS attach failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d)   A single integer value per measurement type as defined in e). The number of measurements is equal to the number of implemented per cause measurements plus a possible sum value identified by the *.sum* suffix

e)   MM. FailedGprsAttach.*Cause*

      MM. FailedGprsAttach.*Cause*   Combined (don't care)
      MM. FailedGprsAttach.*Cause*.G   GSM
      MM. FailedGprsAttach.*Cause*.U   UMTS
      where *Cause* identifies the failure cause

f)   Sgsn function

g)   Valid for packet switching

h)   GSM/UMTS

End of Change in Clause 5.1.48

5.6 Session Management

Change in Clause 5.6.25

5.6.25 Failed PDP context activation procedures initiated by MS

a) This measurement provides the number of Failed PDP context activation procedures. These include the static as well as the dynamic PDP addresses. This measurement is pegged by failure cause. The three measurement types defined in e) are subject to the "2 out of 3 approach".

b) CC.

c) Transmission by the SGSN of an ACTIVATE PDP CONTEXT REJECT message indicating a PDP context activation failure, the relevant measurement is incremented according to the failure cause. Possible causes are included in TS 24.008 Annex G. The sum of all supported per cause measurements should equal the total number of PDP context activation failures. In case only a subset of per cause measurements is supported, a sum measurement subtype will be provided first.

d) A single integer value per measurement type as defined in e). The number of measurements is equal to the number of implemented per cause measurements plus a possible sum value identified by the .*sum* suffix.

e) The measurement name has the form SM.FailActPdpCtxtMs.Cause
where Cause identifies the failure cause.

SM. FailActPdpCtxtMs.*Cause*	Combined (don't care)
SM. FailActPdpCtxtMs.*Cause*.G	GSM
SM. FailActPdpCtxtMs.*Cause*.U	UMTS

where *Cause* identifies the failure cause

f) SgsnFunction.

g) Valid for packet switching.

h) GSM/UMTS.

End of Change in Clause 5.6.25
End of Document

CR-Form-v7

CHANGE REQUEST

⌘   **32.403** CR **017**   ⌘**rev**   **-**   ⌘   Current version: **5.2.0**   ⌘

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

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

Title: ⌘	Introduction of MMS Service Based Performance Measurement
Source: ⌘	S5 ADC Telecommunications (samuel_sida@adc.com),

Work item code:⌘	OAM-PM	***Date:*** ⌘	29/05/2003

Category: ⌘ **B**   ***Release:*** ⌘ Rel-6

Use one of the following categories:	*Use one of the following releases:*
F (correction)	*2 (GSM Phase 2)*
A (corresponds to a correction in an earlier release)	*R96 (Release 1996)*
B (addition of feature),	*R97 (Release 1997)*
C (functional modification of feature)	*R98 (Release 1998)*
D (editorial modification)	*R99 (Release 1999)*
Detailed explanations of the above categories can	*Rel-4 (Release 4)*
be found in 3GPP TR 21.900.	*Rel-5 (Release 5)*
	Rel-6 (Release 6)

Reason for change: ⌘	Address MMS service Quality management needs
Summary of change:⌘	This CR introduces new Performance Measurements for MMS.
Consequences if not approved: ⌘	Managing MMS service quality will not be addressed

Clauses affected: ⌘	3.1, 3.4, new clause 7

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

Other comments: ⌘	

3.1   Definitions

....

Measurement family

The measurement names defined in the present document are all beginning with a prefix containing the measurement family name (e.g. RAB.AttEstabCS.Conv, MM.AttGprsAttach). This family name identifies all measurements which relate to a given functionality and it may be used for measurement administration (see TS 32.401 [12]).

The list of families currently used in the present document is as follows:

- CAM (measurements related to CAMEL)

- GTP (measurements related to GTP)

- HHO (measurements related to Hard Handover)

- IRATHO (measurements related to inter-Radio Access Technology Handover)

- ISYSC (measurements related to GSM/UMTS Intersystem changes)

- MM (measurements related to Mobility Management)

- MMS (measurements related to Multimedia Messaging Services)

- RAB (measurements related to Radio Access Bearer management)

- RELOC (measurements related to SRNS Relocation)

- RLC (measurements related to Radio Link Control)

- RRC (measurements related to Radio Resource Control)

- SEC (measurements related to Security)

- SHO (measurements related to Soft Handover)

- SIG (measurements related to Signalling)

- SM (measurements related to Session Management)

- SMS (measurements related to Short Message Service)

- SUB (measurements related to Subscriber Management)
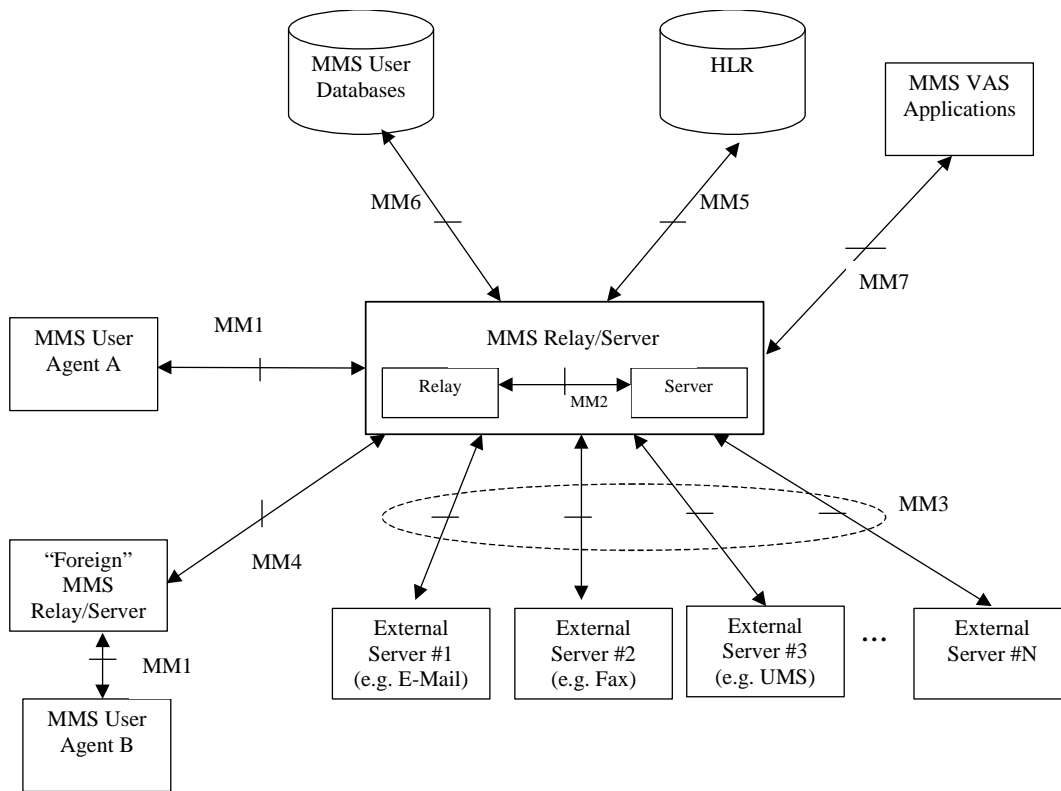
- UBS (measurements related to UMTS Bearer Service)

3.4.2   MMS Relay/Server

The Object Class MMS Relay/Server is needed to conduct measurements on MMS Relay/Server level. No specific moid structure is defined for the MMS Relay/Server. The moid is a PrintableString which contains a maximum of 20 characters.

7 Measurements related to the MMS Relay/Server

MM1:Reference point MM1 is used to submit Multimedia Messages from MMS User Agent to MMS Relay/Server, to let the MMS User Agent pull MMs from the MMS Relay/Server, let the MMS Relay/Server push information about MMs to the MMS User Agent as part of an MM notification, and to exchange delivery reports between MMS Relay/Server and MMS User Agents.

MM2: not specified yet

MM3: Reference point MM3 is used by the MMS Relay/Server to send Multimedia Messages to and retrieve MMs from servers of external (legacy) messaging systems that are connected to the service provider's MMS Relay/Server.

MM4: Reference point MM4 between MMS Relay/Servers belonging to different MMSEs is used to transfer messages between them.

MM5: Reference point MM5 may be used to provide information to the MMS Relay/Server about the subscriber.
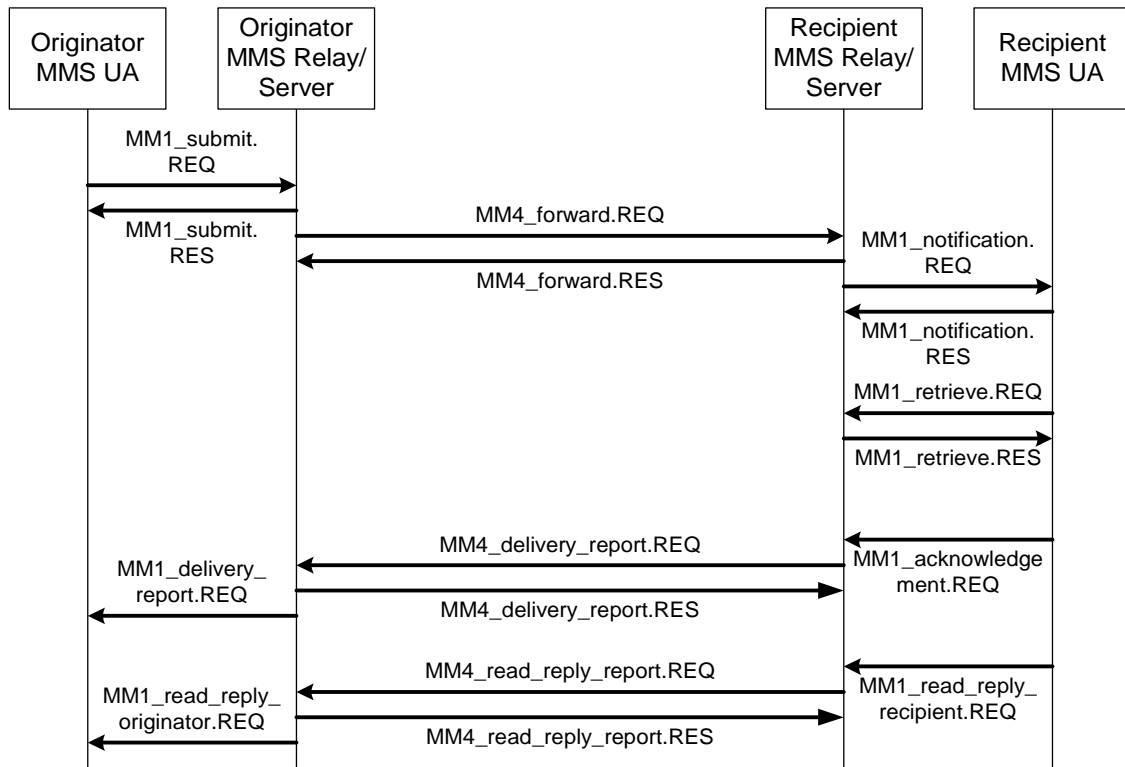
MM6: not specified

MM7: 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.

MMS uses a number of technologies to realise the requirements of the stage 1 description (3G TS 22.140) [1]. As far as possible existing protocols (e.g. WAP, SMTP, ESMTP as transfer protocols; lower layers to provide push, pull, notification) and existing message formats (e.g. SMIL, MIME) shall be used for the realisation of the Multimedia Messaging Service.

In order to define generic measurements, 3GPP should specify Performance measurements based on the Reference Points (MM1 to MM7) and not specific to the protocol implemented. So whatever the implementation IP or WAP for exemple, the Reference Point messages are generic and so the measurements will be the same.

The main interfaces involve in the MMS delivery are the interface MM1 and MM4, we can see in this diagram the exact messages involve in the delivery. Those messages can be used to define Performance Measurement on a MMS Relay/Server basis.

Originator MMS UA | **Originator MMS Relay/Server** | **Recipient MMS Relay/Server** | **Recipient MMS UA**

MM1_submit.REQ →

← MM1_submit.RES

MM4_forward.REQ →

MM1_notification.REQ →

← MM4_forward.RES

← MM1_notification.RES

MM1_retrieve.REQ ←

MM1_retrieve.RES →

MM4_delivery_report.REQ ←

MM1_acknowledgement.REQ ←

MM1_delivery_report.REQ ←

MM4_delivery_report.RES →

MM4_read_reply_report.REQ ←

MM1_read_reply_recipient.REQ ←

MM1_read_reply_originator.REQ ←

MM4_read_reply_report.RES →

Example Abstract Message Flow

The most important quality metrics for MMS are availability, accuracy and speed. This contribution addresses the first two, the speed will require additional measurements based on time to deliver the multimedia messages. Availability and accuracy are a measure of the percentage of request that are successfully served and how complete the response is. The mentioned triggering points enable to define raw number of messages sent and received by the MMS Relay/Server, but is not good enough to gather service quality measurement, because those are only volume measurements. Also Response messages provide an acknowledgement mechanism for the request messages and those response messages can be positive or negative acknowledgement. This information is in the "Request Status code" which is contained by the "Request Status" field in the response messages. So in order to gather service quality measurements, a higher granularity is required for the response messages measurements: sub-counters per request status code are introduced for that purpose. This is for MM1 submission and retrieval as well as every MM4 response messages measurements.

Background Information on the Request Status from TS 23.140 :

Request Status: The originator MMS Relay/Server shall indicate the status of the MM1_submit.REQ in the associated MM1_submit.RES. The reason code given in the status information element of the MM1_submit.RES may be supported with an explanatory text further qualifying the status. If this text is available in the Request status text information element the MMS User Agent should bring it to the user's attention. The choice of the language used in the Request status text information element is at the discretion of the MMS service provider.

Information elements in the MM1_submit.RES.

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

Example of Request Status Code from TS 23.140

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

7.1   MM1

MM1 is the interface between the MMS Relay/Server and the MMS User Agent, following are the proposed measurements:

7.1.1   Number of Multimedia Messages submit requests received by MMS Relay/Server

a)   This measurement provides the number of Multimedia Messages (MM) submit requests received by MMS Relay/Server from MMS User Agent on the Reference point MM1.

b)   CC.

c)   On receipt of a " MM1_submit.REQ " message from MMS User Agent (TS 23.140).

d)   A single integer value.

e)   The measurement name has the form MMS.MM1SubReq

f)   MMS Relay/Server Function.

g)   Valid for packet switching.

h)   GSM/UMTS.

7.1.2 Number of Multimedia Messages submit responses sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) submit responses sent by MMS Relay/Server to MMS User Agent on the Reference point MM1. The measurement is pegged by request status code.

b) CC.

c) On transmission of a " MM1_submit.RES " message to MMS User Agent. Each submit responses is added to the relevant measurement according to the request status code. See TS 23.140

d) A single integer value.

e) The measurement name has the form MMS.MM1SubRes.*Status*

   where *Status* identifies the request status code.

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.3 Number of Multimedia Messages notification requests sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) notification requests sent by MMS Relay/Server to MMS User Agent on the Reference point MM1.

b) CC.

c) On transmission of a " MM1_notification.REQ " message to MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1NotReq

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.4 Number of Multimedia Messages notification responses received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) notification responses received by MMS Relay/Server from MMS User Agent on the Reference point MM1.

b) CC.

c) On receipt of a " MM1_notification.RES " message from MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1NotRes

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.5 Number of Multimedia Messages retrieve requests received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) retrieve requests received by MMS Relay/Server from MMS User Agent on the Reference point MM1.

b) CC.

c) On receipt of a " MM1_retrieve.REQ" message from MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1RetReq

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.6 Number of Multimedia Messages retrieve responses sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) retrieve responses sent by MMS Relay/Server to MMS User Agent on the Reference point MM1. The measurement is pegged by request status code.

b) CC.

c) On transmission of a " MM1_retrieve.RES " message to MMS User Agent. Each retrieve responses is added to the relevant measurement according to the request status code. See TS 23.140

d) A single integer value.

e) The measurement name has the form MMS.MM1RetRes.*Status*

   where *Status* identifies the request status code.

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.7 Number of Multimedia Messages acknowledgement requests received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) acknowledgement requests received by MMS Relay/Server from MMS User Agent on the Reference point MM1.

b) CC.

c) On receipt of a " MM1_acknowledgement.REQ" message from MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1AckReq

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.8 Number of Multimedia Messages forward requests received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) forward requests received by MMS Relay/Server from MMS User Agent on the Reference point MM1.

b) CC.

c) On receipt of a " MM1_forward.REQ" message from MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1fwdREQ

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.9 Number of Multimedia Messages forward responses sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) forward responses sent by MMS Relay/Server to MMS User Agent on the Reference point MM1.

b) CC.

c) On transmission of a " MM1_forward.RES" message to MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1FwdRes

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.10 Number of Multimedia Messages delivery report requests sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) delivery report requests sent by MMS Relay/Server to MMS User Agent on the Reference point MM1.

b) CC.

c) On transmission of a " MM1_delivery_report.REQ" message to MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1RepReq

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.11 Number of Multimedia Messages read reply recipient requests received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) read reply recipient requests received by MMS Relay/Server to MMS User Agent on the Reference point MM1.

b) CC.

c) On receipt of a " MM1_read_reply_recipient.REQ" message from MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1ReadRecReq

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.1.12 Number of Multimedia Messages read reply originator requests sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) read reply originator requests sent by MMS Relay/Server to MMS User Agent on the Reference point MM1.

b) CC.

c) On transmission of a " MM1_read_reply_originator.REQ" message to MMS User Agent (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM1ReadOrigReq

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2 MM4

MM4 is the interface between MMS Relay/Servers, following are the proposed measurements:

7.2.1 Number of Multimedia Messages forward requests received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) forward requests received by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4.

b) CC.

c) On receipt of a " MM4_forward.REQ" message from MMS Relay/Server (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM4FwdReqRec

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.2 Number of Multimedia Messages forward requests sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) forward requests sent by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4.

b) CC.

c) On transmission of a " MM4_forward.REQ" message to MMS Relay/Server (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM4FwdReqSnt

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.3 Number of Multimedia Messages forward responses received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) forward responses received by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4. The measurement is pegged by request status code.

b) CC.

c) On receipt of a " MM4_forward.RES" message from MMS Relay/Server. Each forward responses is added to the relevant measurement according to the request status code. See TS 23.140

d) A single integer value.

e) The measurement name has the form MMS.MM4FwdResRec *Status*

where *Status* identifies the request status code.

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.4 Number of Multimedia Messages forward responses sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) forward responses sent by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4. The measurement is pegged by request status code.

b) CC.

c) On transmission of a " MM4_forward.RES " message to MMS Relay/Server. Each forward responses is added to the relevant measurement according to the request status code. See TS 23.140

d) A single integer value.

e) The measurement name has the form MMS.MM4FwdResSnt *Status*

where *Status* identifies the request status code.

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.5 Number of Multimedia Messages delivery report requests received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) delivery report requests received by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4.

b) CC.

c) On receipt of a " MM4_ delivery_report.REQ" message from MMS Relay/Server (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM4RepReqRec

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.6 Number of Multimedia Messages delivery report requests sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) delivery report requests sent by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4.

b) CC.

c) On transmission of a " MM4_ delivery_report.REQ" message to MMS Relay/Server (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM4RepReqSnt

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.7 Number of Multimedia Messages delivery report responses received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) delivery report responses received by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4. The measurement is pegged by request status code.

b) CC.

c) On receipt of a " MM4_ delivery_report.RES" message from MMS Relay/Server. Each delivery report responses is added to the relevant measurement according to the request status code. See TS 23.140

d) A single integer value.

e) The measurement name has the form MMS.MM4RepResRec *Status*

where *Status* identifies the request status code.

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.8 Number of Multimedia Messages delivery report responses sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) delivery report responses sent by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4. The measurement is pegged by request status code.

b) CC.

c) On transmission of a " MM4_delivery_report.RES" message to MMS Relay/Server. Each delivery report responses is added to the relevant measurement according to the request status code. See TS 23.140

d) A single integer value.

e) The measurement name has the form MMS.MM4RepResSnt *Status*

   where *Status* identifies the request status code.

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.9 Number of Multimedia Messages read reply requests received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) read reply requests received by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4.

b) CC.

c) On receipt of a " MM4_ read_reply.REQ" message from MMS Relay/Server (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM4ReadReqRec

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.10 Number of Multimedia Messages read reply requests sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) read reply requests sent by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4.

b) CC.

c) On transmission of a " MM4_ read_reply.REQ" message to MMS Relay/Server (TS 23.140).

d) A single integer value.

e) The measurement name has the form MMS.MM4ReadReqSnt

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.11 Number of Multimedia Messages read reply responses received by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) read reply responses received by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4. The measurement is pegged by request status code.

b) CC.

c) On receipt of a " MM4_ read_reply.RES" message from MMS Relay/Server. Each read reply responses is added to the relevant measurement according to the request status code. See TS 23.140

d) A single integer value.

e) The measurement name has the form MMS.MM4ReadResRec *Status*

where *Status* identifies the request status code.

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

7.2.12 Number of Multimedia Messages read reply responses sent by MMS Relay/Server

a) This measurement provides the number of Multimedia Messages (MM) read reply responses sent by MMS Relay/Server from another MMS Relay/Server on the Reference point MM4. The measurement is pegged by request status code.

b) CC.

c) On transmission of a " MM4_read_reply.RES " message to MMS Relay/Server. Each read reply responses is added to the relevant measurement according to the request status code. See TS 23.140

d) A single integer value.

e) The measurement name has the form MMS.MM4ReadResSnt *Status*

where *Status* identifies the request status code.

f) MMS Relay/Server Function.

g) Valid for packet switching.

h) GSM/UMTS.

End of new Clause 7
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