Source:	**CN3**
Title:	**CRs to Rel-6 on Work Item "MBMS"**
Agenda item:	**9.8**
Document for:	**APPROVAL**

Introduction:

This document contains 9 CRs to Rel-6 on Work Item "MBMS" that have been agreed by TSG CN WG3, and are forwarded to TSG CN Plenary for approval.

WG_tdoc	Spec	CR	R	Cat	Title	Rel	C_Ver	Work Item
N3-050015	29.061	141		F	Adding the TMGI to the Session Start message	Rel-6	6.3.1	MBMS
N3-050157	29.061	142	1	F	Adding list of downstream nodes in the Session Start message	Rel-6	6.3.1	MBMS
N3-050163	29.061	143	1	F	Various corrections of Gmb	Rel-6	6.3.1	MBMS
N3-050018	29.061	144		F	Adding in the 2G/3G indicator to the Session Start message	Rel-6	6.3.1	MBMS
N3-050225	29.061	145	2	F	Adding the MBMS session id to the Gmb Session Start message	Rel-6	6.3.1	MBMS
N3-050159	29.061	146	1	F	Adding the multicast address and the APN to the Gmb Session Start message	Rel-6	6.3.1	MBMS
N3-050046	29.061	147		F	Text corection and multiple MBMS-Service-Area	Rel-6	6.3.1	MBMS
N3-050160	29.061	148	1	F	Providing the BM-SC with approximate UE location information at MBMS context activation.	Rel-6	6.3.1	MBMS
N3-050171	29.061	158	1	F	Indefinite MBMS session duration	Rel-6	6.3.1	MBMS

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **29.061** CR **141** | ⌘ **rev** | **-** | ⌘ | Current version: | **6.3.1** | ⌘ |

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

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

Title: ⌘	Adding the TMGI to the Gmb Session Start message	
Source: ⌘	Ericsson, Nortel	
Work item code:⌘	MBMS	**Date:** ⌘ 18/02/2005
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: ⌘	According to 3GPP TS 23.246 v6.5.0 clause 8.3, the TMGI shall be sent from the BM-SC to the GGSN the Session Start message. The TMGI identifies the actual MBMS bearer services. It will be distributed further to the SGSNs. For broadcast MBMS services this is the only way the GGSN can receive the TMGI since no registration procedure takes place. Se also approved CR to TS23.246 in S2-040060.
Summary of change:⌘	TMGI added to the Gmb Session Start (Diameter RAR) message
Consequences if not approved: ⌘	Misalignment with stage 2 specifications. TMGI not distributed in the network for broadcast services.

Clauses affected: ⌘	17.6.5

Other specs affected: ⌘	**Y**	**N**		⌘	
	Y		Other core specifications	⌘	Related CRs to TS29.060 and TS24.018
		X	Test specifications		
		X	O&M Specifications		

Other comments: ⌘	

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Below is a brief summary:

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

Start of modifications

17.6.5   Re-Auth-Request Command

The Re-Auth-Request (RAR) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags' 'R' bit set.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
<RAR>  ::= < Diameter Header: 258, REQ, PXY >
           < Session-Id >
           { Origin-Host }
           { Origin-Realm }
           { Destination-Realm }
           { Destination-Host }
           { Auth-Application-Id }
           { Re-Auth-Request-Type }
           [ MBMS-StartStop-Indication ]
           [ MBMS-Service-Area ]
           [ 3GPP-GPRS-Negotiated-QoS-Profile ]
           [ 3GPP-IMSI]
           [ MBMS-Session-Duration ]
           [ MBMS-Service-Type ]
           [ TMGI ]
           [ Origin-State-Id ]
         * [ Proxy-Info ]
         * [ Route-Record ]
```

The MBMS-StartStop-Indication AVP will indicate if the command is indicating a MBMS Start procedure or a MBMS Stop procedure.

For the MBMS Start procedure, RAR is sent by the BM-SC to the GGSN(s) that have previously registered for the corresponding MBMS bearer service, when it is ready to send data. This is a request to activate all necessary bearer resources in the network for the transfer of MBMS data and to notify interested UEs of the imminent start of the transmission.

For MBMS Stop procedure, RAR is sent by the BM-SC to the GGSN(s) when it considers the MBMS session to be terminated. The session is typically terminated when there is no more MBMS data expected to be transmitted for a sufficiently long period of time to justify a release of bearer plane resources in the network.

The MBMS service to be started/stopped is identified by the session-id.

End of modifications

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CHANGE REQUEST

| ⌘ | **29.061** CR **158** | ⌘**rev** **1** | ⌘ | Current version: | **6.3.1** | ⌘ |

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: ⌘	Indefinite MBMS session duration	
Source: ⌘	Nortel	
Work item code: ⌘	MBMS	***Date:*** ⌘ 18/02/2005
Category: ⌘ **F**	*Use one of the following categories:* ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	***Release:*** ⌘ Rel-6 *Use one of the following releases:* *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: ⌘	It has been identified the need to code one value of the MBMS-Session-Duration AVP to indicate "Indefinite" duration of the MBMS session
Summary of change: ⌘	The value "all 1's" is chosen and reserved to indicate "indefinite" duration of the MBMS session
Consequences if ⌘ ***not approved:***	There's no way to code an indefinite duration of an MBMS session

Clauses affected: ⌘	17.7.7			
		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:

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

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

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

******************** **FIRST CHANGE** ***********

17.7.7   MBMS-Session-Duration AVP

The MBMS-Session-Duration AVP (AVP code 904) is of type Unsigned32, and indicates the estimated session duration (MBMS Service data transmission) if available. This AVP is optional within the Gmb interface. The time is indicated in seconds.

The highest value of this AVP (i.e. all 1's), is reserved to indicate an indefinite value to denote sessions that are expected to be always-on.

**************** **END OF CHANGE** ************

CR-Form-v7.1

CHANGE REQUEST

⌘   **29.061** CR **143**   ⌘ **rev** **1** ⌘   Current version: **6.3.1** ⌘

*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: ⌘	Various corrections of Gmb
Source: ⌘	Ericsson, Nortel

Work item code:⌘	MBMS	***Date:*** ⌘	18/02/2005

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: ⌘	1. Registration/de-registration procedures are specified for MBMS services in general, while they are applicable for multicast services only. 2. It is stated that the STR may be sent from the Diameter server (BM-SC). This is not possible according to the Diameter base protocol, RFC 3588.
Summary of change:⌘	1. It is clarified that registration/de-registration procedures are restricted to multicast services only 2. The option to send STR from BM-SC has been removed 3. Some minor editorial updates
Consequences if not approved: ⌘	1. Scope of registration/deregistration is unclear, which could cause interoperability problems. 2. Misalignment with RFC 3588.

Clauses affected: ⌘	17, 17.2, 17.3, 17.4, 17.5.1, 17.5.2, 17.5.3, 17.5.4, 17.5.5, 17.5.6, 17.6, 17.6.1, 17.6.3, 17.6.5

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

Other comments: ⌘	

How to create CRs using this form:

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

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

17 Usage of Diameter on Gmb interface

Signalling between GGSN and BM-SC is exchanged at Gmb reference point. BM-SC functions for different MBMS bearer services may be provided by different physical network elements. To allow this distribution of BM-SC functions, the Gmb protocol must support the use of proxies to correctly route the different signalling interactions in a manner which is transparent to the GGSN.

The GGSN uses the Gmb interface

- to request authorisation/deactivation of a user for an multicast MBMS service,

- to register/de-register the GGSN for receiving the a multicast MBMS service.

- to receive indication of session start and session stop messages, which shall cause the GGSN, SGSN and RAN to set up/tear down the appropriate resources for the service. For further details, see 3GPP TS 23.246 [65].

The support of Gmb within the GGSN is optional, and needed for MBMS.

The Gmb application is defined as an IETF vendor specific Diameter application, where the vendor is 3GPP. The vendor identifier assigned by IANA to 3GPP (http://www.iana.org/assignments/enterprise-numbers) is 10415. The Gmb application identifier value assigned by IANA is xxx.

The BM-SC and the GGSN shall advertise the support of the Gmb application by including the value of the application identifier in the Auth-Application-Id AVP and the value of the 3GPP (10415) in the Vendor-Id AVP of the Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands. The Capabilities-Exchange-Request and Capabilities-Exchange-Answer commands are specified in the Diameter Base Protocol.

17.1 MBMS user authorisation

Upon reception of an IGMP (IPv4) or MLD (IPv6) Join message for an IP multicast address allocated to MBMS services, the GGSN shall request authorisation of the user for this multicast MBMS bearer service (identified by the PDP context over which the IGMP join is received).

The GGSN shall support pre-configuration of a BM-SC or Gmb proxy server for authorisation purposes to which the request shall be sent. The GGSN may support a list of pre-configured BM-SC servers based on the MBMS bearer service requested, for authorisation purposes.

Upon receipt of an MBMS UE Context Establishment Request for a user who has not already been authorised for the MBMS bearer service, the GGSN shall request authorisation of the user for this service.

17.2 MBMS service registration / de-registration

The MBMS service registration of the GGSN at the BM-SC shall be performed after authorisation of the first user on a particular GGSN, for a particular multicast MBMS Bearer service. The MBMS service de-registration of the GGSN shall be performed when the last user leaves a particular GGSN, for a particular multicast MBMS bearer service.

The MBMS de-registration procedure shall be initiated by BM-SC when the specific multicast MBMS service is terminated.

The GGSN shall support pre-configuration of a BM-SC or Gmb proxy server for registration/de-registration purposes. The GGSN may support a list of pre-configured BM-SC servers based on the MBMS bearer service requested for bearer registration purposes.

17.3   MBMS session start / stop

The MBMS session start shall be used by the BM-SC to trigger the bearer resource establishment and announce the arrival of data for a MBMS bearer service (along with the attributes of the data to be delivered e.g. QoS or MBMS service area) to every GGSN that ~~has registered for~~will deliver the MBMS bearer service.

The MBMS session stop shall be used by the BM-SC to indicate the end of the data stream for a~~n~~ MBMS bearer service to every GGSN that has ~~registered~~ been delivering ~~for~~ the MBMS bearer service.

17.4   MBMS user deactivation

The MBMS user deactivation is a procedure that removes the MBMS UE context from the GGSN for a particular multicast MBMS bearer service (also called "~~"~~leaving procedure"~~"~~). This procedure can be initiated by the GGSN or the BM-SC over the Gmb interface.

When the last user leaves a particular GGSN, for a particular multicast MBMS service, a de-registration process shall be initiated.

17.5   Message flows

17.5.1   Service activation

The multicast MBMS bearer service activation procedure registers the user in the network to enable the reception of data from a specific multicast MBMS bearer service
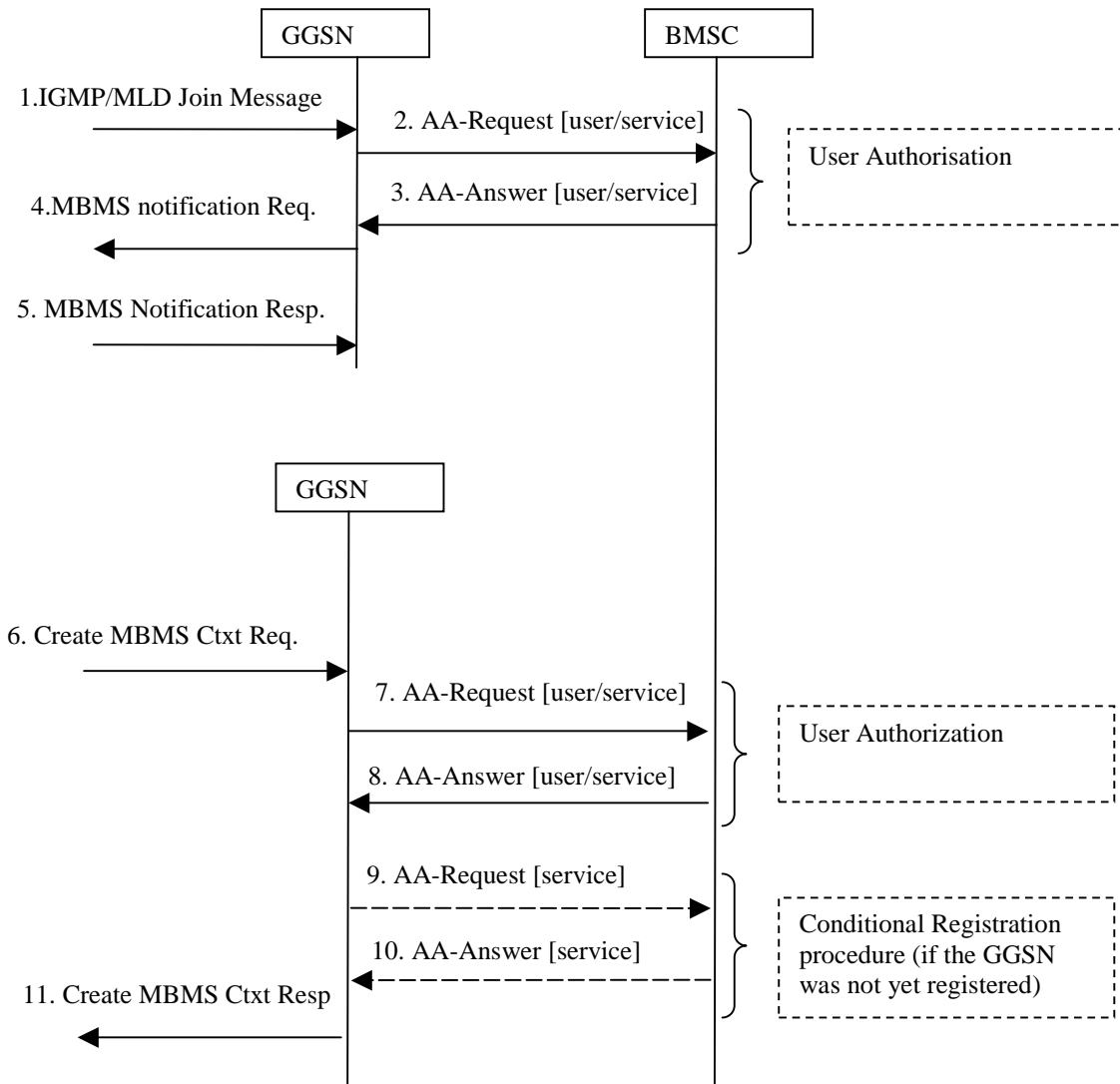
Figure 26; Activation of an MBMS multicast service

1. The GGSN receives an IGMP (IPv4) or MLD (IPv6) Join message from a UE, over the default PDP context to signal its interest in receiving a particular multicast MBMS bearer service identified by an IP multicast address.

2. The GGSN sends an AAR seeking authorization for the activating UE to receive data from a particular service.

3. The authorization decision is provided in the AAA together with the APN to be used for creation of the MBMS UE context. If the AAA indicates that the UE is not authorized to receive the MBMS data the process terminates with no additional message exchange.

4. The GGSN receives the IGMP/MLD Join request and sends an MBMS Notification Request (IP multicast address, APN, Linked NSAPI) to the SGSN. Linked NSAPI is set equal to the NSAPI of the PDP context over which the Join request was received. The IP multicast address is the one requested by the UE in the Join request. The APN may be different from the APN to which the default PDP context has been activated. In any case, the APN may resolve to a GGSN that is different from the GGSN receiving the IGMP/MLD Join request. The GGSN starts a MBMS Activation Timer as GGSN may receive no response, e.g. in case SGSN or UE does not support MBMS.

5. The SGSN sends a MBMS Notification Response (Cause) to the GGSN that sent the MBMS Notification Request, where Cause shall indicate successful or unsuccessful MBMS context activation for the reason of SGSN or UE . Upon reception of the response message with Cause indicating unsuccessful operation or time-out of the MBMS Activation Timer in the GGSN, the GGSN may fallback to IP multicast access as defined in 3GPP TS 29.061 [4].

6.   The SGSN creates an MBMS UE context and sends a Create MBMS Context Requests (IP multicast address, APN) to the GGSN. That GGSN may be different from the GGSN receiving the IGMP/MLD Join request.

7.   The GGSN sends an AAR seeking authorization for the activating UE.

8.   The authorization decision is provided in the AAA

9.   If the GGSN does not have the MBMS Bearer Context information for this MBMS bearer service, i.e. the GGSN was not yet registered, the GGSN sends a AAR to the BM-SC. See subclause 17.5.4 "Registration Procedure".

     If no TMGI has been allocated for this MBMS bearer service, the BM-SC will allocate a new TMGI. This TMGI will be passed to GGSN via the AAA message.

10. The BM-SC responds with a AAA containing the MBMS Bearer Context information for this MBMS bearer service and adds the identifier of the GGSN to the "list of downstream nodes" parameter in its MBMS Bearer Context. See subclause 17.5.4 "Registration Procedure".

11. The GGSN creates an MBMS UE context and sends a Create MBMS Context Response to the SGSN

17.5.2   Session start procedure

The BM-SC initiates the MBMS session start procedure when it is ready to send data. This informs the GGSN of the imminent start of the transmission and MBMS session attributes are provided to the GGSNs included in the list of downstream nodes in BM-SC.   For a multicast MBMS service these are the GGSNs that have previously registered for the corresponding MBMS bearer service. The bearer plane is allocated.
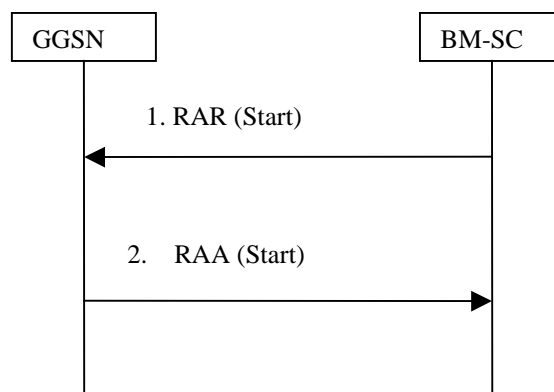

Figure 27: MBMS Session Start procedure

1.   The BM-SC sends a RAR message to indicate the impending start of the transmission and to provide the session attributes (QoS, MBMS service Area, estimated session duration…) to the GGSNs listed in the "list of downstream nodes" parameter of the corresponding MBMS Bearer Context. The BM-SC sets the state attribute of its MBMS Bearer Context to 'Active'.

2.   For a broadcast MBMS bearer service the GGSN creates an MBMS Bearer Context. The GGSN stores the session attributes in the MBMS Bearer Context, sets the state attribute of its MBMS Bearer Context to 'Active' and sends a RAA message to the BM-SC. An AAR message is not mandated for the Gmb application in response to a RAR- RAA command exchange.

17.5.3   Session stop procedure

The BM-SC initiates the MBMS session stop procedure when it considers the MBMS session terminated. Typically this will happen when there is no more MBMS data expected to be transmitted for a sufficiently long period of time to justify the release of bearer plane resources in the network.
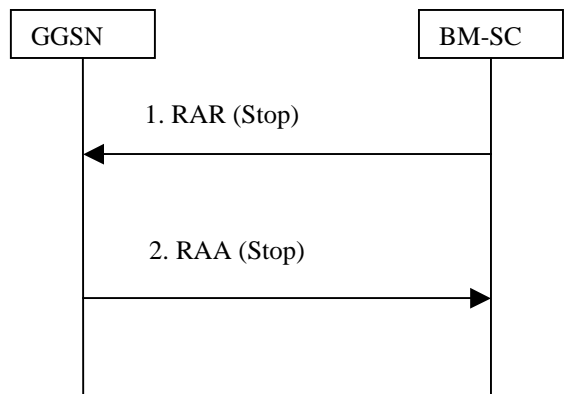
Figure 28: MBMS Session Stop procedure

1. The BM-SC sends a RAR message to all GGSNs listed in the "list of downstream nodes" parameter of the affected MBMS Bearer Context to indicate that the MBMS session is terminated and the bearer plane resources can be released.

2. The GGSN sets the state attribute of its MBMS Bearer Context to 'Standby' and sends a RAA message to the BM-SC. An AAR message is not mandated for the Gmb application in response to a RAR- RAA command exchange.

17.5.4   Registration procedure

The registration procedure occurs when the GGSN indicates the BM-SC that it would like to receive session attributes and data for a particular multicast MBMS bearer service, in order to be distributed further downstream. A corresponding MBMS Bearer Context is established as a result between the GGSN and the BM-SC.
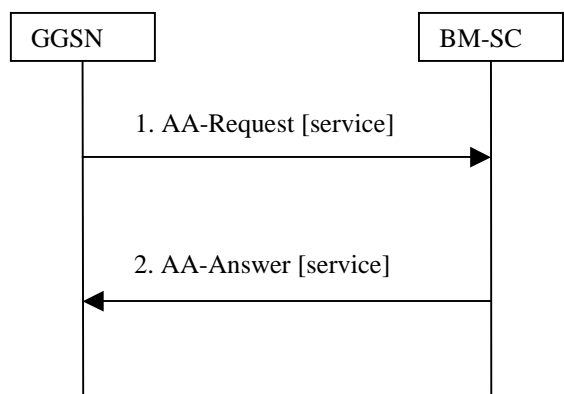
Figure 29: MBMS Registration procedure

1. When the GGSN has no MBMS Bearer Context for an MBMS bearer service and the GGSN receives an MBMS Registration from an SGSN for this MBMS bearer service, or when the first MBMS UE Context is created in the GGSN for an MBMS bearer service for which the GGSN has no MBMS Bearer Context, the GGSN sends a AAR message (containing the IP multicast address and the APN) to the BM-SC.

2. Upon reception of an AAR from a GGSN, the BM-SC adds the identifier of the GGSN to the "list of downstream nodes" parameter in its MBMS Bearer Context and responds with an AAA message (containing TMGI, and Required Bearer Capabilities). If the MBMS Bearer Context is in the 'Active' state, the BM-SC initiates the Session Start procedure with the GGSN, as described in clause 17.5.2 "Session Start Procedure".

17.5.5   De-registration procedure (GGSN initiated)

The MBMS de-registration is the procedure by which the GGSN informs the BM-SC that it does not need to receive signalling, session attributes and data for a particular multicast MBMS bearer service anymore and therefore would like to be removed from the corresponding distribution tree.
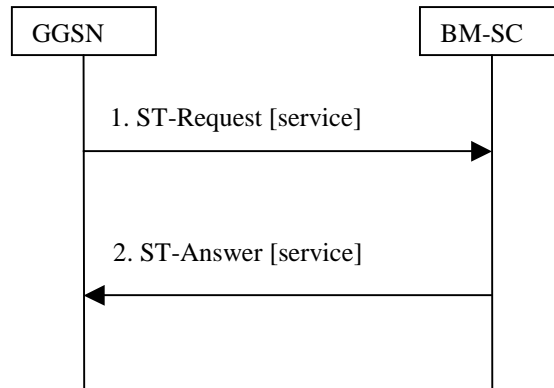

Figure 30: MBMS De-Registration procedure

1. When the "list of downstream nodes" of a particular MBMS Bearer Context in the GGSN becomes empty and the GGSN has no MBMS UE Contexts linked to that MBMS Bearer Context, the GGSN sends a STR message to the BM-SC. If a bearer plane had been established over Gi for this MBMS bearer service, the bearer plane is released.

2. The BM-SC removes the identifier of the GGSN from the "list of downstream nodes" parameter of the affected MBMS Bearer Context and confirms the operation by sending a STA message to the GGSN.

17.5.6   De-registration procedure (BM-SC initiated)

This MBMS de-registration procedure is initiated by BM-SC when the specific multicast MBMS bearer service is terminated. This procedure tears down the distribution tree for the delivery of session attributes and MBMS data. This procedure results in releasing of all MBMS Bearer Contexts.
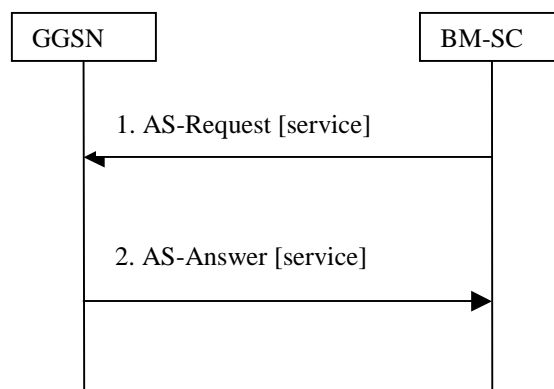
Figure 31: MBMS De-Registration procedure BM-SC initiated

1. The BM-SC sends a ASR message to all GGSNs contained in the "list of downstream nodes" parameter of the corresponding MBMS Bearer Context to indicate that a specific MBMS bearer service is terminated.

2. The GGSN returns a ASA message to the BM-SC. The BM-SC releases all MBMS UE Contexts and removes the identifier of the GGSN from the "list of downstream nodes" parameter of the corresponding MBMS Bearer context.

17.5.7   Service deactivation

The multicast service deactivation is a signalling procedure that will terminate the user registration to a particular MBMS multicast service. The multicast service deactivation can be initiated by the GGSN, when indicated so by the UE, or by the BM-SC, for service specific reasons.
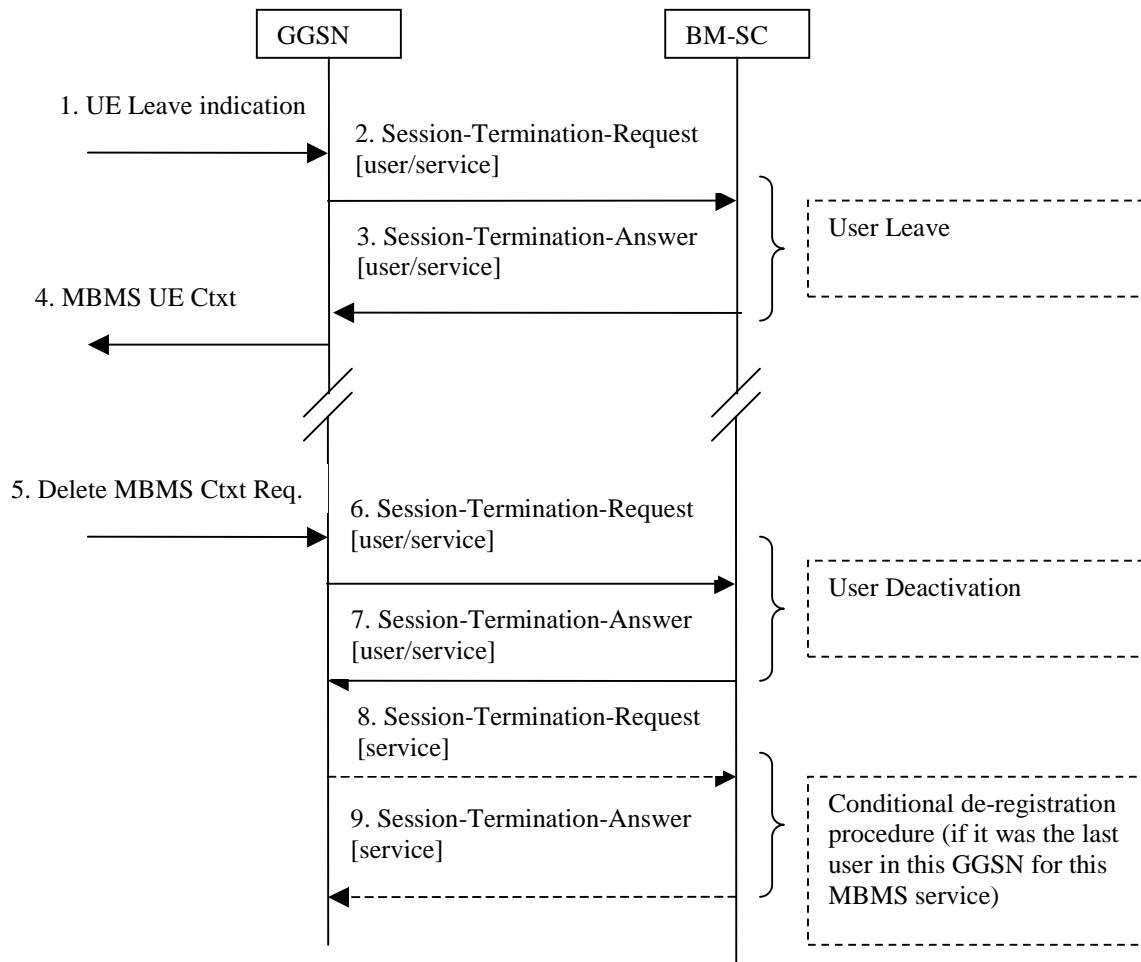
Figure 32: MBMS Service deactivation procedure

1. The UE sends an IGMP (IPv4) or MLD (IPv6) Leave message over the default PDP context to leave a particular multicast service identified by an IP multicast address.

2. The GGSN sends a STR to the BM-SC, indicating that the UE is requesting to leave the multicast service. The session to be terminated is uniquely identified by the Diameter session-id.

3. Upon reception of the STR, the BM-SC verifies that the IP multicast address corresponds to a valid MBMS bearer service and sends a STA to the GGSN that originated the Leave Indication. The APN shall be the same that was provided during service activation (see " Service Activation" procedure).

4. Upon reception of the STA the GGSN sends an MBMS UE Context Deactivation Request to the SGSN. The IP multicast address, APN and IMSI together identify the MBMS UE Context to be deleted by the SGSN. The APN is the one received in step 3.

5. The GGSN receives a Delete MBMS Context Request (NSAPI). This GGSN may be different from the GGSN that receives IGMP Leave request in step 1.

6. The GGSN deletes the MBMS UE Context and sends a STR to the BM-SC to confirm the successful deactivation of the MBMS UE Context.

7. The BM-SC, then, deletes the MBMS UE Context and sends a confirmation to the GGSN in a STA message.

8. If the GGSN does not have any more users interested in this MBMS bearer service and the "list of downstream nodes" in the corresponding MBSM Bearer Context is empty, the GGSN initiates a De-Registration procedure as specified in 17.5.5.

9. The BM-SC confirms the operation by sending a STA message to the GGSN as specified in 17.5.5.

17.6   Gmb Messages

This clause defines the Gmb interface Diameter messages.

The relevant AVPs that are of use for the Gmb interface are detailed in this clause. Other Diameter NASREQ AVPs, even if their AVP flag rules is marked with "“M"”, are not required for being compliant with the current specification.

17.6.1   AAR Command

The AAR command, defined in Diameter NASREQ[67], is indicated by the Command-Code field set to 265 and the 'R' bit set in the Command Flags field. It, is sent by the GGSN to the BM-SC to request user authorization (authorize the activating UE to receive Data) or to register the GGSN for a particular multicast MBMS bearer service.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
<AA-Request> ::= < Diameter Header: 265, REQ, PXY >
                    < Session-Id >
                    { Auth-Application-Id }
                    { Origin-Host }
                    { Origin-Realm }
                    { Destination-Realm }
                    { Auth-Request-Type }
                    [ Destination-Host ]
                    [ Called-Station-Id ]
                    [ Calling-Station-Id ]
                    [ Framed-IP-Address]
                    [ Framed-IPv6-Prefix ]
                    [ Framed-Interface-Id ]
                  * [ Proxy-Info ]
                  * [ Route-Record ]
                    [ 3GPP-GPRS-Negotiated-QoS-Profile ]
                    [ 3GPP-IMSI]
                    [ 3GPP-SGSN-MCC-MNC ]
```


The GGSN shall allocate a new Session-Id for each time an AAR command is sent.

A request for user authorisation for an MBMS bearer service is indicated by the presence of the MSISDN within the Calling-Station-Id AVP and the 3GPP-IMSI. Otherwise the request is for the GGSN to be authorised (i.e. registered) to receive the MBMS bearer service.

The Framed-IPv6-Prefix AVP contains the IPv6 prefix of the multicast address identifying the MBMS bearer service.

The Framed-Interface-Id AVP contains the IPv6 interface identifier of the multicast address identifying the MBMS bearer service.

The Framed-IP-Address AVP contains the IPv4 multicast address identifying the MBMS bearer service.

The Called-Station-Id AVP contains the Access Point Name (APN) on which the MBMS bearer service authorisation request was received.

17.6.2   AAA Command

The AAA command, defined in Diameter NASREQ [67], is indicated by the Command-Code field set to 265 and the 'R' bit cleared in the Command Flags field., It is sent by the BM-SC to the GGSN in response to the AAR command.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

Message Format:

```
<AA-Answer> ::= < Diameter Header: 265, PXY >
                      < Session-Id >
                      { Auth-Application-Id }
                      { Origin-Host }
                      { Origin-Realm }
                      [ Result-Code ]
                      [ Experimental-Result ]
                      [ Error-Message ]
                      [ Error-Reporting-Host ]
                  * [ Failed-AVP ]
                  * [ Proxy-Info ]
                      [ Alternative-APN ]
                      [ 3GPP-GPRS-Negotiated-QoS-Profile ]
                      [ 3GPP-IMSI]
                      [ TMGI ]
                      [ Required-MBMS-Bearer-Capabilities ]
```

17.6.3   STR Command

The STR command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code field set to 275 and the 'R' bit set in the Command Flags field, It is sent by the GGSN to the BM-SC to terminate a DIAMETER session.

A DIAMETER session for an multicast MBMS service is terminated when the last MBMS UE context for a particularthe MBMS bearer service is deleted. This informs the BM-SC that the GGSN would like to be deleted from the distribution tree of a particular MBMS bearer service (De-registration procedure).

A DIAMETER session for an individual UE's multicast MBMS service authorisation is terminated when the UE has requested to the GGSN to leave the MBMS bearer service.

This command can also be originated by the BM-SC when the specific MBMS bearer service is terminated and all MBMS Bearer Context must be released.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicates: new optional specific AVPs for Gmb, or modified existing

Message Format:

```
<ST-Request> ::= < Diameter Header: 275, REQ, PXY >
                      < Session-Id >
                      { Origin-Host }
                      { Origin-Realm }
                      { Destination-Realm }
                      { Auth-Application-Id }
                      { Termination-Cause }
```

```
                       [ Destination-Host ]
                   * [ Class ]
                     [ Origin-State-Id ]
                   * [ Proxy-Info ]
                   * [ Route-Record ]
```

17.6.4   STA Command

The STA command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code field set to 275 and the 'R' bit cleared in the Command Flags field, is sent in response to an STR command (De-registration procedure).

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs n the message format indicates: new optional specific AVPs for Gmb, or modified existing

Message Format:

```
<ST-Answer>  ::= < Diameter Header: 275, PXY >
                     < Session-Id >
                     { Result-Code }
                     { Origin-Host }
                     { Origin-Realm }
                   * [ Class ]
                     [ Error-Message ]
                     [ Error-Reporting-Host ]
                   * [ Failed-AVP ]
                     [ Origin-State-Id ]
                   * [ Redirect-Host ]
                     [ Redirect-Host-Usage ]
                     [ Redirect-Max-Cache-Time ]
                   * [ Proxy-Info ]
```

Editor's note: The same way that in 17.6.1, some text describing how this AVP's are use for Gmb purposes is needed. This is FFS if those clarifications are needed.

17.6.5   Re-Auth-Request Command

The Re-Auth-Request (RAR) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags 'R' bit set.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
    <RAR>  ::= < Diameter Header: 258, REQ, PXY >
                 < Session-Id >
                 { Origin-Host }
                 { Origin-Realm }
                 { Destination-Realm }
                 { Destination-Host }
                 { Auth-Application-Id }
                 { Re-Auth-Request-Type }
                 [ MBMS-StartStop-Indication ]
                 [ MBMS-Service-Area ]
                 [ 3GPP-GPRS-Negotiated-QoS-Profile ]
                 [ 3GPP-IMSI]
                 [ MBMS-Session-Duration ]
                 [ MBMS-Service-Type ]
```

```
                        [ Origin-State-Id ]
                    * [ Proxy-Info ]
                    * [ Route-Record ]
```

The MBMS-StartStop-Indication AVP will indicate if the command is indicating a MBMS Start procedure or a MBMS Stop procedure.

For the MBMS Start procedure, RAR is sent by the BM-SC to the GGSN(s) that will deliver the MBMS service (e.g. in the multicast case these are the GGSNs that have previously registered for the corresponding multicast MBMS bearer service) , when it is ready to send data. This is a request to activate all necessary bearer resources in the network for the transfer of MBMS data and to notify interested UEs of the imminent start of the transmission.

For MBMS Stop procedure, RAR is sent by the BM-SC to the GGSN(s) when it considers the MBMS session to be terminated. The session is typically terminated when there is no more MBMS data expected to be transmitted for a sufficiently long period of time to justify a release of bearer plane resources in the network.

The MBMS service to be started/stopped is identified by the session-id.

17.6.6   RE-Auth-Answer Command

The Re-Auth-Answer (RAA) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags' 'R' bit clear, is sent in response to the RAR.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

Message Format:

```
    <RAA>  ::= < Diameter Header: 258, PXY >
               < Session-Id >
               { Origin-Host }
               { Origin-Realm }
               [ Result-Code ]
               [ Experimental-Result ]
               [ MBMS-StartStop-Indication ]
               [ Origin-State-Id ]
               [ Error-Message ]
               [ Error-Reporting-Host ]
            * [ Failed-AVP ]
            * [ Redirected-Host ]
               [ Redirected-Host-Usage ]
               [ Redirected-Host-Cache-Time ]
            * [ Proxy-Info ]
```

17.6.7   Abort-Session-Request Command

The Abort-Session-Request (ASR) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 274 and the message flags' 'R' bit set, is sent by the BM-SC to the GGSN to request that the session identified by the Session-Id be stopped.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

Message Format

```
    <ASR>  ::= < Diameter Header: 274, REQ, PXY >
               < Session-Id >
               { Origin-Host }
               { Origin-Realm }
               { Destination-Realm }
               { Destination-Host }
               { Auth-Application-Id }
               [ Origin-State-Id ]
```

```
                    * [ Proxy-Info ]
                    * [ Route-Record ]
```

17.6.8   Abort-Session-Answer Command

The Abort-Session-Answer (ASA) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 274 and the message flags' 'R' bit clear, is sent in response to the ASR.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

Message Format

```
<ASA>  ::= < Diameter Header: 274, PXY >
              < Session-Id >
              { Result-Code }
              { Origin-Host }
              { Origin-Realm }
              [ Origin-State-Id ]
              [ Error-Message ]
              [ Error-Reporting-Host ]
            * [ Failed-AVP ]
            * [ Redirected-Host ]
              [ Redirected-Host-Usage ]
              [ Redirect-Max-Cache-Time ]
            * [ Proxy-Info ]
```

17.7   Gmb specific AVPs

Table 10 describes the Gmb specific Diameter AVPs. The Vendor-Id header of all Gmb specific AVPs defined in the present specification shall be set to 3GPP (10415).

The Gmb specific AVPs require to be supported to be compliant to the present specification. All AVPs in table 10 are mandatory within Gmb interface unless otherwise stated.

Table 10: Gmb specific AVPs

Attribute Name	AVP Code	Section defined	Value Type	AVP Flag rules				
				Must	May	Should not	Must not	May Encr.
TMGI	900	17.7.2	OctectString	M,V	P			Y
Required-MBMS-Bearer-Capabilities	901	17.7.3	UTF8String	M,V	P			Y
MBMS-StartStop-Indication	902	17.7.5	Enumerated	M,V	P			Y
MBMS-Service-Area	903	17.7.6	OctectString	M,V	P			Y
MBMS-Session-Duration	904	17.7.7	Unsigned32	M,V	P			Y
3GPP-GPRS-Negotiated-QoS-Profile	5	16.4.7 (see Note)	UTF8String	M,V	P			Y
3GPP-IMSI	1	16.4.7	UTF8String	M.V	P			Y

		(see Note)						
Alternative-APN	905	17.7.8	UTF8String	M,V	P			Y
MBMS-Service-Type	906	17.7.9	Enumerated	M,V	P			Y
3GPP-SGSN-MCC-MNC	18	16.4.7 (see Note)	UTF8String	M.V	P			Y
NOTE: The use of Radius VSA as a Diameter vendor AVP is described in Diameter NASREQ [67] and the P flag may be set.								

Table 11 lists the set of Diameter AVPs that are not Gmb specific, but are reused from other Diameter applications by the Gmb interface. A reference is done to the specifications where the AVPs are specified. This set of AVPs requires to be supported to be compliant to the present specification.

Table 11: Gmb reused AVPs from other Diameter applications.

AVP Name	Reference
Called-Station-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Calling-Station-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-Interface-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IP-Address	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IPv6-Prefix	draft-ietf-aaa-diameter-nasreq-17.txt [67]

NOTE: Diameter Base AVPs are not listed as support of them is mandated by IETF RFC 3588 [66].

17.7.1   3GPP-Vendor-Specific AVP

Void.

17.7.2   TMGI AVP

The TMGI AVP (AVP code 900) is of type OctectString, and contains the Temporary Mobile Group Identity allocated to a particular MBMS bearer service. TMGI use and structure is specified in 3GPP TS 23.003 [40].

17.7.3   Required-MBMS-Bearer-Capabilities AVP

The Required-MBMS-Bearer-Capabilities AVP (AVP code 901) is of type UTF8String, and contains the minimum bearer capabilities the UE needs to support. The information contained in this AVP is UTF-8 encoded QoS profile as defined in 3GPP TS 24.008 [54].

17.7.4   MBMS-Service-Area AVP

Void.

17.7.5   MBMS-StartStop-Indication AVP

The MBMS-StartStop-Indication AVP (AVP code 902) is of type Enumerated. The following values are supported:

> START (0)
>
>> The message containing this AVP is indicating a MBMS session start procedure.
>
> STOP (1)
>
>> The message containing this AVP is indicating a MBMS session stop procedure.

17.7.6   MBMS-Service-Area AVP

The MBMS-Service-Area AVP (AVP code 903) is of type OctetString, and indicates the area over which the MBMS bearer service has to be distributed.

17.7.7   MBMS-Session-Duration AVP

The MBMS-Session-Duration AVP (AVP code 904) is of type Unsigned32, and indicates the estimated session duration (MBMS Service data transmission) if available. This AVP is optional within the Gmb interface. The time is indicated in seconds.

17.7.8   Alternative-APN AVP

The Alternative-APN AVP (AVP code 905) is of type UTF8String, and contains the value of a new APN. This AVP is optional within the Gmb interface. BM-SC only includes it if the UE must use a different APN for the MBMS PDP Context from the one used in the Join message.

17.7.9 MBMS-Service-Type AVP

The MBMS-Service-Type AVP (AVP code 906) is of type Enumerated, and contains explicit information about the type of service that the BM-SC Start Procedure is about to start.

> MULTICAST (0)
>
>> The Start Procedure signalled by the BM-SC is for a Multicast Service.
>
> BROADCAST (1)
>
>> The Start Procedure signalled by the BM-SC is for a Broadcast Service.

17.8   Gmb specific Experimental-Result-Code AVP values

There are two different types of errors in Diameter; protocol and application errors. A protocol error is one that occurs at the base protocol level, those are covered in the Diameter Base RFC 3588 [66] specific procedures. Application errors, on the other hand, generally occur due to a problem with a function specified in a Diameter application.

Diameter Base RFC 3588 [66] defines a number of Result-Code AVP values that are used to report protocol errors and how those are used. Those procedures and values apply for the present specification.

Due to the Gmb specific AVPs, new applications errors can occur. The Gmb specific errors are described by the Experimental-Result-Code AVP in this clause, below. Note that according to RFC 3588 [66], the Diameter node reports

only the first error encountered and only one Result-Code AVP or one Experimental-Result AVP is included in the Diameter answer.

17.8.1   Success

Resulting codes that fall within the Success category are used to inform a peer that a request has been successfully completed.

The Result-Code AVP values defined in Diameter Base RFC 3588 [66] are applicable.

17.8.2   Permanent Failures

Errors that fall within the Permanent Failures category are used to inform the peer that the request failed, and should not be attempted again.

The Result-Code AVP values defined in Diameter Base RFC 3588 [66] are applicable. Also the following specific Gmb Experimental-Result-Code values are defined:

DIAMETER_ERROR_START_INDICATION (5120)

> This error covers the case when a MBMS Session Start procedure could not be performed due to some of the required session attributes that are necessary to activate the bearer resources are missing (QoS, MBMS Service Area…). The Failed-AVP AVP must contain the missing AVP.

DIAMETER_ERROR_STOP_INDICATION (5121)

> An indication of session stop has been received with no session start procedure running.

DIAMETER_ERROR_UNKNOWN_MBMS_BEARER_SERVICE (5122)

> The requested MBMS service is unknown at the BM-SC.

DIAMETER_ERROR_SERVICE_AREA (5123)

> The MBMS service area indicated for a specific MBMS Bearer Service is unknown or not available.

End of modifications

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CHANGE REQUEST

⌘   **29.061 CR 148**   ⌘**rev** **1** ⌘   Current version: **6.3.1** ⌘

*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: ⌘	Providing the BM-SC with approximate UE location information at MBMS context activation.	
Source: ⌘	Vodafone	
Work item code: ⌘	MBMS	***Date:*** ⌘ 15/02/2005
Category: ⌘	**F**	***Release:*** ⌘ Rel-6

Use <u>one</u> of the following categories:
    F *(correction)*
    A *(corresponds to a correction in an earlier release)*
    B *(addition of feature),*
    C *(functional modification of feature)*
    D *(editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
    Ph2   *(GSM Phase 2)*
    R96   *(Release 1996)*
    R97   *(Release 1997)*
    R98   *(Release 1998)*
    R99   *(Release 1999)*
    Rel-4   *(Release 4)*
    Rel-5   *(Release 5)*
    Rel-6   *(Release 6)*
    Rel-7   *(Release 7)*

Reason for change: ⌘	This change is linked to a Stage 2 CR (S2-050175). There are a number of service scenarios where an operator may wish to prevent a user Activating (c.f. joining) an MBMS service when the user is a large distance outside of the MBMS service area. These scenarios will be particularly important to operators in very large countries – and many of these eg China, Australia, and probably America, have networks which use a single PLMN identity. Currently the BM-SC does not receive sufficient information from the GGSN to enable these service scenarios to be realised.
Summary of change: ⌘	At Service Activation when the GGSN sends the AAR seeking authorization for the activating UE, the full Routing Area Identity (sent by the SGSN in the Create MBMS Context Request) is provided to the BM-SC. A new AVP carring the Routing Area Identity is defined. Note: because the full RAI includes the MCC and MNC there is no need to separately transfer the 3GPP-SGSN-MCC-MNC AVP.
Consequences if not approved: ⌘	Network operators will be missing an important tool that can be used to optimise customer services/network entity load.
Clauses affected: ⌘	17.5.1, 17.6.1, 17.7, new clause added

		Y	N	
Other specs	⌘		X	Other core specifications ⌘

affected:		X	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	

17.5.1   Service activation

The MBMS bearer service activation procedure registers the user in the network to enable the reception of data from a specific MBMS bearer service

Figure 26; Activation of an MBMS multicast service

1. The GGSN receives an IGMP (IPv4) or MLD (IPv6) Join message from a UE, over the default PDP context to signal its interest in receiving a particular multicast MBMS bearer service identified by an IP multicast address.

2. The GGSN sends an AAR seeking authorization for the activating UE to receive data from a particular service.

3. The authorization decision is provided in the AAA together with the APN to be used for creation of the MBMS UE context. If the AAA indicates that the UE is not authorized to receive the MBMS data the process terminates with no additional message exchange.

4. The GGSN receives the IGMP/MLD Join request and sends an MBMS Notification Request (IP multicast address, APN, Linked NSAPI) to the SGSN. Linked NSAPI is set equal to the NSAPI of the PDP context over which the Join request was received. The IP multicast address is the one requested by the UE in the Join request. The APN may be different from the APN to which the default PDP context has been activated. In any case, the APN may resolve to a GGSN that is different from the GGSN receiving the IGMP/MLD Join request. The GGSN starts a MBMS Activation Timer as GGSN may receive no response, e.g. in case SGSN or UE does not support MBMS.

5. The SGSN sends a MBMS Notification Response (Cause) to the GGSN that sent the MBMS Notification Request, where Cause shall indicate successful or unsuccessful MBMS context activation for the reason of SGSN or UE . Upon reception of the response message with Cause indicating unsuccessful operation or time-out of the MBMS Activation Timer in the GGSN, the GGSN may fallback to IP multicast access as defined in 3GPP TS 29.061 [4].

6. The SGSN creates an MBMS UE context and sends a Create MBMS Context Requests (IP multicast address, APN, RAI) to the GGSN. That GGSN may be different from the GGSN receiving the IGMP/MLD Join request.

7. The GGSN sends an AAR seeking authorization for the activating UE.

8. The authorization decision is provided in the AAA

9. If the GGSN does not have the MBMS Bearer Context information for this MBMS bearer service, i.e. the GGSN was not yet registered, the GGSN sends a AAR to the BM-SC. See subclause 17.5.4 "Registration Procedure".

   If no TMGI has been allocated for this MBMS bearer service, the BM-SC will allocate a new TMGI. This TMGI will be passed to GGSN via the AAA message.

10. The BM-SC responds with a AAA containing the MBMS Bearer Context information for this MBMS bearer service and adds the identifier of the GGSN to the "list of downstream nodes" parameter in its MBMS Bearer Context. See subclause 17.5.4 "Registration Procedure".

11. The GGSN creates an MBMS UE context and sends a Create MBMS Context Response to the SGSN

************************* Next Modified Section **************************************

17.6.1   AAR Command

The AAR command, defined in Diameter NASREQ[67], is indicated by the Command-Code field set to 265 and the 'R' bit set in the Command Flags field. It, is sent by the GGSN to the BM-SC to request user authorization (authorize the activating UE to receive Data) or to register the GGSN for a particular MBMS bearer service.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
<AA-Request> ::= < Diameter Header: 265, REQ, PXY >
                     < Session-Id >
                     { Auth-Application-Id }
                     { Origin-Host }
                     { Origin-Realm }
                     { Destination-Realm }
                     { Auth-Request-Type }
                     [ Destination-Host ]
                     [ Called-Station-Id ]
                     [ Calling-Station-Id ]
```

```
                    [ Framed-IP-Address]
                    [ Framed-IPv6-Prefix ]
                    [ Framed-Interface-Id ]
                  * [ Proxy-Info ]
                  * [ Route-Record ]
                    [ 3GPP-GPRS-Negotiated-QoS-Profile ]
                    [ 3GPP-IMSI]
                    [ 3GPP-SGSN-MCC-MNC ]
                    [ RAI ]
```

The GGSN shall allocate a new Session-Id for each time an AAR command is sent.

A request for user authorisation for an MBMS bearer service is indicated by the presence of the MSISDN within the Calling-Station-Id AVP and the 3GPP-IMSI. Otherwise the request is for the GGSN to be authorised (i.e. registered) to receive the MBMS bearer service.

The Framed-IPv6-Prefix AVP contains the IPv6 prefix of the multicast address identifying the MBMS bearer service.

The Framed-Interface-Id AVP contains the IPv6 interface identifier of the multicast address identifying the MBMS bearer service.

The Framed-IP-Address AVP contains the IPv4 multicast address identifying the MBMS bearer service.

The Called-Station-Id AVP contains the Access Point Name (APN) on which the MBMS bearer service authorisation request was received.

************************* Next Modified Section *************************

17.7   Gmb specific AVPs

Table 10 describes the Gmb specific Diameter AVPs. The Vendor-Id header of all Gmb specific AVPs defined in the present specification shall be set to 3GPP (10415).

The Gmb specific AVPs require to be supported to be compliant to the present specification. All AVPs in table 10 are mandatory within Gmb interface unless otherwise stated.

Table 10: Gmb specific AVPs

Attribute Name	AVP Code	Section defined	Value Type	AVP Flag rules				
				Must	May	Should not	Must not	May Encr.
TMGI	900	17.7.2	OctectString	M,V	P			Y
Required-MBMS-Bearer-Capabilities	901	17.7.3	UTF8String	M,V	P			Y
MBMS-StartStop-Indication	902	17.7.5	Enumerated	M,V	P			Y
MBMS-Service-Area	903	17.7.6	OctectString	M,V	P			Y
MBMS-Session-Duration	904	17.7.7	Unsigned32	M,V	P			Y
3GPP-GPRS-Negotiated-QoS-Profile	5	16.4.7 (see Note)	UTF8String	M,V	P			Y

3GPP-IMSI	1	16.4.7 (see Note)	UTF8String	M.V	P			Y
Alternative-APN	905	17.7.8	UTF8String	M,V	P			Y
MBMS-Service-Type	906	17.7.9	Enumerated	M,V	P			Y
~~3GPP-SGSN-MCC-MNC~~	~~18~~	~~16.4.7 (see Note)~~	~~UTF8String~~	~~M.V~~	~~P~~			~~Y~~
RAI	9XX	17.7.X	UTF8String	M, V	P			Y
NOTE: The use of Radius VSA as a Diameter vendor AVP is described in Diameter NASREQ [67] and the P flag may be set.								

Table 11 lists the set of Diameter AVPs that are not Gmb specific, but are reused from other Diameter applications by the Gmb interface. A reference is done to the specifications where the AVPs are specified. This set of AVPs requires to be supported to be compliant to the present specification.

Table 11: Gmb reused AVPs from other Diameter applications.

AVP Name	Reference
Called-Station-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Calling-Station-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-Interface-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IP-Address	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IPv6-Prefix	draft-ietf-aaa-diameter-nasreq-17.txt [67]

NOTE: Diameter Base AVPs are not listed as support of them is mandated by IETF RFC 3588 [66].

************************** Next Modified Section ***************************

17.7.X   RAI AVP

The RAI AVP (AVP Code 9XX) is of type UTF8String, and contains the Routing Area Identity of the SGSN where the UE is registered. RAI use and structure is specified in 3GPP TS 23.003 [40].

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CHANGE REQUEST

| ⌘ | **29.061** CR **146** | ⌘**rev** | **1** | ⌘ | Current version: | **6.3.1** | ⌘ |

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

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

Title: ⌘	Adding the multicast address and the APN to the Gmb Session Start message	
Source: ⌘	Ericsson	
Work item code:⌘	MBMS	***Date:*** ⌘ 18/02/2005
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 MBMS service address information (IP multicast address and the APN) are allocated and stored in the BM-SC. For MBMS multicast services this information is distributed in the network during the registration procedure. For MBMS broadcast services the information must be sent to the network when a session is to start. This information is needed in GGSN in order to relate the incoming payload packets to a specific MBMS bearer service. GGSN is also expected to send this address information to its downstream nodes (ref. TS29.060).
Summary of change:⌘	The IP multicast address and the APN are added to the Diameter RAR message for the MBMB Session Start procedure For consistency, the names of the MBMS Session Start/Stop procedures have been corrected in several places
Consequences if not approved: ⌘	Network is missing address information necessary to distribute MBMS data to the downstream nodes for MBMS broadcast services.

Clauses affected: ⌘	17.6.5

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

Other comments: ⌘	

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

Start of modifications

17.6.5   Re-Auth-Request Command

The Re-Auth-Request (RAR) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags' 'R' bit set.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
<RAR>  ::= < Diameter Header: 258, REQ, PXY >
           < Session-Id >
           { Origin-Host }
           { Origin-Realm }
           { Destination-Realm }
           { Destination-Host }
           { Auth-Application-Id }
           { Re-Auth-Request-Type }
           [ Called-Station-Id ]
           [ Framed-IP-Address]
           [ Framed-IPv6-Prefix ]
           [ Framed-Interface-Id ]
           [ MBMS-StartStop-Indication ]
           [ MBMS-Service-Area ]
           [ 3GPP-GPRS-Negotiated-QoS-Profile ]
           [ 3GPP-IMSI]
           [ MBMS-Session-Duration ]
           [ MBMS-Service-Type ]
           [ Origin-State-Id ]
         * [ Proxy-Info ]
         * [ Route-Record ]
```

The MBMS-StartStop-Indication AVP will indicate if the command is indicating a MBMS Session Start procedure or a MBMS Session Stop procedure.

For the MBMS Session Start procedure, RAR is sent by the BM-SC to the GGSN(s) that have previously registered for the corresponding MBMS bearer service, when it is ready to send data. This is a request to activate all necessary bearer resources in the network for the transfer of MBMS data and to notify interested UEs of the imminent start of the transmission.

For MBMS Session Stop procedure, RAR is sent by the BM-SC to the GGSN(s) when it considers the MBMS session to be terminated. The session is typically terminated when there is no more MBMS data expected to be transmitted for a sufficiently long period of time to justify a release of bearer plane resources in the network.

The MBMS service to be started/stopped is identified by the session-id.

According to 3GPP TS 23.246 [65], a specific MBMS bearer service is uniquely identified by its IP multicast address and an APN. For the MBMS Session Start procedure for broadcast MBMS bearer services, the following AVPs are included (either IPv4 or IPv6 address) to enable GGSN to relate incoming payload packets to the actual MBMS bearer service and distribute the packets to the downstream SGSNs related to this service:

- The Framed-IPv6-Prefix AVP contains the IPv6 prefix of the multicast address.

- The Framed-Interface-Id AVP contains the IPv6 interface identifier of the multicast address.

- The Framed-IP-Address AVP contains the IPv4 multicast address.

- The Called-Station-Id AVP contains the Access Point Name (APN) for which the MBMS bearer service is defined.

End of modifications

End of modifications

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **29.061** CR **142** | ⌘ rev | **1** | ⌘ | Current version: | **6.3.1** | ⌘ |

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

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

Title: ⌘	Adding list of downsteam nodes in the Session Start message	
Source: ⌘	Ericsson, Nortel	
Work item code:⌘	MBMS	***Date:*** ⌘ 18/02/2005
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: ⌘	According to the approved CR (S2-043911) to TS23.246, for broadcast MBMS bearer services the list of downstream nodes in GGSN shall be sent from the BM-SC to the GGSN during the MBMS Session Start procedure.
Summary of change:⌘	SGSN address(es) are added to the Diameter RAR Session Start request message. GGSN needs one address (IPv4 or IPv6) per participating SGSN.
Consequences if not approved: ⌘	Misalignment with stage 2 specifications.

Clauses affected: ⌘	17.6.5, 17.7

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

Other comments: ⌘	

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

17.6.5   Re-Auth-Request Command

The Re-Auth-Request (RAR) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags' 'R' bit set.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
    <RAR>  ::= < Diameter Header: 258, REQ, PXY >
               < Session-Id >
               { Origin-Host }
               { Origin-Realm }
               { Destination-Realm }
               { Destination-Host }
               { Auth-Application-Id }
               { Re-Auth-Request-Type }
               [ MBMS-StartStop-Indication ]
               [ MBMS-Service-Area ]
               [ 3GPP-GPRS-Negotiated-QoS-Profile ]
               [ 3GPP-IMSI]
               [ MBMS-Session-Duration ]
               [ MBMS-Service-Type ]
             * [ 3GPP-SGSN-Address ]            ; broadcast case only
             * [ 3GPP-SGSN-IPv6-Address ]       ; broadcast case only
               [ Origin-State-Id ]
             * [ Proxy-Info ]
             * [ Route-Record ]
```

The MBMS-StartStop-Indication AVP will indicate if the command is indicating a MBMS Start procedure or a MBMS Stop procedure.

For the MBMS Start procedure, RAR is sent by the BM-SC to the GGSN(s) that have previously registered for the corresponding MBMS bearer service, when it is ready to send data. This is a request to activate all necessary bearer resources in the network for the transfer of MBMS data and to notify interested UEs of the imminent start of the transmission. For broadcast MBMS bearer services the RAR message contains either an IPv4 address or an IPv6 address for each participating SGSN.

For MBMS Stop procedure, RAR is sent by the BM-SC to the GGSN(s) when it considers the MBMS session to be terminated. The session is typically terminated when there is no more MBMS data expected to be transmitted for a sufficiently long period of time to justify a release of bearer plane resources in the network.

The MBMS service to be started/stopped is identified by the session-id.

17.7   Gmb specific AVPs

Table 10 describes the Gmb specific Diameter AVPs. The Vendor-Id header of all Gmb specific AVPs defined in the present specification shall be set to 3GPP (10415).

The Gmb specific AVPs require to be supported to be compliant to the present specification. All AVPs in table 10 are mandatory within Gmb interface unless otherwise stated.

Table 10: Gmb specific AVPs

Attribute Name	AVP Code	Section defined	Value Type	AVP Flag rules				May Encr.
				Must	May	Should not	Must not	
TMGI	900	17.7.2	OctectString	M,V	P			Y
Required-MBMS-Bearer-Capabilities	901	17.7.3	UTF8String	M,V	P			Y
MBMS-StartStop-Indication	902	17.7.5	Enumerated	M,V	P			Y
MBMS-Service-Area	903	17.7.6	OctectString	M,V	P			Y
MBMS-Session-Duration	904	17.7.7	Unsigned32	M,V	P			Y
3GPP-GPRS-Negotiated-QoS-Profile	5	16.4.7 (see Note)	UTF8String	M,V	P			Y
3GPP-IMSI	1	16.4.7 (see Note)	UTF8String	M.V	P			Y
Alternative-APN	905	17.7.8	UTF8String	M,V	P			Y
MBMS-Service-Type	906	17.7.9	Enumerated	M,V	P			Y
3GPP-SGSN-MCC-MNC	18	16.4.7 (see Note)	UTF8String	M.V	P			Y
3GPP-SGSN-Address	6	16.4.7 (see note)	UTF8String	M, V	P			Y
3GPP-SGSN-IPv6-Address	15	16.4.7 (see note)	UTF8String	M, V	P			Y
NOTE: The use of Radius VSA as a Diameter vendor AVP is described in Diameter NASREQ [67] and the P flag may be set.								

Table 11 lists the set of Diameter AVPs that are not Gmb specific, but are reused from other Diameter applications by the Gmb interface. A reference is done to the specifications where the AVPs are specified. This set of AVPs requires to be supported to be compliant to the present specification.

Table 11: Gmb reused AVPs from other Diameter applications.

AVP Name	Reference
Called-Station-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Calling-Station-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]

Framed-Interface-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IP-Address	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IPv6-Prefix	draft-ietf-aaa-diameter-nasreq-17.txt [67]

NOTE: Diameter Base AVPs are not listed as support of them is mandated by IETF RFC 3588 [66].

End of modifications

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **29.061** CR **147** | ⌘ **rev** | **-** | ⌘ | Current version: | **6.3.1** | ⌘ |

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:	⌘	Text corection and multiple MBMS-Service-Area

Source:	⌘	Nortel Networks

Work item code:	⌘	MBMS		**Date:**	⌘	18/02/2005

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:	⌘	Some clarifying text of the formatting used in the command description is missing in some commands, in other is incomplete, and in other need to be removed. In some cases this is correcting a mitake when implementing an aproved CR.
		Also an editor's note that is not longer applicable is removed
		Also, and * has been added to RAR in front of [MBMS-Service-Area] as several areas can be indicated (list of service area)

Summary of change:	⌘	Add the missing clarifying text about the formating to the relevant clauses and remove it from where it is not needed
		Multiple MBMS-Service-Area AVPs are allowed in RAR as the way to indicate a list of service area

Consequences if not approved:	⌘	Lack of clarity about the formating used to describe the AVPs in the commands

Clauses affected:	⌘	17.6.2, 17.6.3, 17.6.4, 17.6.6

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

| *Other comments:* | ⌘ | |

How to create CRs using this form:

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

********** FIRST MODIFICATION **********

17.6.2   AAA Command

The AAA command, defined in Diameter NASREQ [67], is indicated by the Command-Code field set to 265 and the 'R' bit cleared in the Command Flags field., It is sent by the BM-SC to the GGSN in response to the AAR command.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
<AA-Answer> ::= < Diameter Header: 265, PXY >
                    < Session-Id >
                    { Auth-Application-Id }
                    { Origin-Host }
                    { Origin-Realm }
                    [ Result-Code ]
                    [ Experimental-Result ]
                    [ Error-Message ]
                    [ Error-Reporting-Host ]
                  * [ Failed-AVP ]
                  * [ Proxy-Info ]
                    [ Alternative-APN ]
                    [ 3GPP-GPRS-Negotiated-QoS-Profile ]
                    [ 3GPP-IMSI]
                    [ TMGI ]
                    [ Required-MBMS-Bearer-Capabilities ]
```

17.6.3   STR Command

The STR command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code field set to 275 and the 'R' bit set in the Command Flags field, It is sent by the GGSN to the BM-SC to terminate a DIAMETER session.

A DIAMETER session for an MBMS service is terminated when the last MBMS UE context for a particular MBMS bearer service is deleted. This informs the BM-SC that the GGSN would like to be deleted from the distribution tree of a particular MBMS bearer service (De-registration procedure).

A DIAMETER session for an individual UE's MBMS service authorisation is terminated when the UE has requested to the GGSN to leave the MBMS bearer service.

This command can also be originated by the BM-SC when the specific MBMS bearer service is terminated and all MBMS Bearer Context must be released.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicates: new optional specific AVPs for Gmb, or modified existing

Message Format:

```
<ST-Request> ::= < Diameter Header: 275, REQ, PXY >
                    < Session-Id >
                    { Origin-Host }
                    { Origin-Realm }
                    { Destination-Realm }
```

```
                   { Auth-Application-Id }
                   { Termination-Cause }
                   [ Destination-Host ]
                 * [ Class ]
                   [ Origin-State-Id ]
                 * [ Proxy-Info ]
                 * [ Route-Record ]
```

17.6.4   STA Command

The STA command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code field set to 275 and the 'R' bit cleared in the Command Flags field, is sent in response to an STR command (De-registration procedure).

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs n the message format indicates: new optional specific AVPs for Gmb, or modified existing

Message Format:

```
<ST-Answer>  ::= < Diameter Header: 275, PXY >
                      < Session-Id >
                    { Result-Code }
                    { Origin-Host }
                    { Origin-Realm }
                  * [ Class ]
                    [ Error-Message ]
                    [ Error-Reporting-Host ]
                  * [ Failed-AVP ]
                    [ Origin-State-Id ]
                  * [ Redirect-Host ]
                    [ Redirect-Host-Usage ]
                    [ Redirect-Max-Cache-Time ]
                  * [ Proxy-Info ]
```

Editor's note: The same way that in 17.6.1, some text describing how this AVP's are use for Gmb purposes is needed. This is FFS if those clarifications are needed.

17.6.5   Re-Auth-Request Command

The Re-Auth-Request (RAR) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags' 'R' bit set.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
      <RAR>  ::= < Diameter Header: 258, REQ, PXY >
                  < Session-Id >
                { Origin-Host }
                { Origin-Realm }
                { Destination-Realm }
                { Destination-Host }
                { Auth-Application-Id }
                { Re-Auth-Request-Type }
                [ MBMS-StartStop-Indication ]
              * [ MBMS-Service-Area ]
                [ 3GPP-GPRS-Negotiated-QoS-Profile ]
                [ 3GPP-IMSI]
```

```
                    [ MBMS-Session-Duration ]
                    [ MBMS-Service-Type ]
                    [ Origin-State-Id ]
                  * [ Proxy-Info ]
                  * [ Route-Record ]
```

The MBMS-StartStop-Indication AVP will indicate if the command is indicating a MBMS Start procedure or a MBMS Stop procedure.

For the MBMS Start procedure, RAR is sent by the BM-SC to the GGSN(s) that have previously registered for the corresponding MBMS bearer service, when it is ready to send data. This is a request to activate all necessary bearer resources in the network for the transfer of MBMS data and to notify interested UEs of the imminent start of the transmission.

For MBMS Stop procedure, RAR is sent by the BM-SC to the GGSN(s) when it considers the MBMS session to be terminated. The session is typically terminated when there is no more MBMS data expected to be transmitted for a sufficiently long period of time to justify a release of bearer plane resources in the network.

The MBMS service to be started/stopped is identified by the session-id.

17.6.6   RE-Auth-Answer Command

The Re-Auth-Answer (RAA) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags' 'R' bit clear, is sent in response to the RAR.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
    <RAA>  ::= < Diameter Header: 258, PXY >
               < Session-Id >
               { Origin-Host }
               { Origin-Realm }
               [ Result-Code ]
               [ Experimental-Result ]
               [ MBMS-StartStop-Indication ]
               [ Origin-State-Id ]
               [ Error-Message ]
               [ Error-Reporting-Host ]
             * [ Failed-AVP ]
             * [ Redirected-Host ]
               [ Redirected-Host-Usage ]
               [ Redirected-Host-Cache-Time ]
             * [ Proxy-Info ]
```

**********   END OF MODIFICATIONS   **********

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **29.061** CR **144** | ⌘**rev** | **-** | ⌘ | Current version: | **6.3.1** | ⌘ |

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

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

Title: ⌘	Adding in the 2G/3G indicator to the Gmb Session Start message
Source: ⌘	Ericsson, Nortel
Work item code:⌘	MBMS ***Date:*** ⌘ 18/02/2005
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: ⌘	According to TS 23.246 clauses 5.1.5 and 8.3 a 2G/3G indicator shall be sent transparently from the BM-SC through GGSN to the actual SGSNs to inform SGSNs that the MBMS bearer service will be used to deliver 2G content, 3G content or both 2G and 3G content sequentially. See also approved CR107(S2-0402960) and CR126(S2-043867) to TS23.246.
Summary of change:⌘	A 2G/3G indicator is added to the Diameter RAR Session Start request message
Consequences if not approved: ⌘	Misalignment with stage 2 specifications.

Clauses affected: ⌘	17.6.5, 17.7, 17.7.x(new clause)

	Y	N		
Other specs affected: ⌘	Y		Other core specifications ⌘	Related CR to TS29.060
		X	Test specifications	
		X	O&M Specifications	
Other comments: ⌘				

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

<div align="center">

Start of modifications

</div>

17.6.5   Re-Auth-Request Command

The Re-Auth-Request (RAR) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags' 'R' bit set.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
    <RAR>  ::= < Diameter Header: 258, REQ, PXY >
               < Session-Id >
               { Origin-Host }
               { Origin-Realm }
               { Destination-Realm }
               { Destination-Host }
               { Auth-Application-Id }
               { Re-Auth-Request-Type }
               [ MBMS-StartStop-Indication ]
               [ MBMS-Service-Area ]
               [ 3GPP-GPRS-Negotiated-QoS-Profile ]
               [ 3GPP-IMSI]
               [ MBMS-Session-Duration ]
               [ MBMS-Service-Type ]
               [ MBMS-2G-3G-Indicator ]
               [ Origin-State-Id ]
             * [ Proxy-Info ]
             * [ Route-Record ]
```

The MBMS-StartStop-Indication AVP will indicate if the command is indicating a MBMS Start procedure or a MBMS Stop procedure.

For the MBMS Start procedure, RAR is sent by the BM-SC to the GGSN(s) that have previously registered for the corresponding MBMS bearer service, when it is ready to send data. This is a request to activate all necessary bearer resources in the network for the transfer of MBMS data and to notify interested UEs of the imminent start of the transmission.

For MBMS Stop procedure, RAR is sent by the BM-SC to the GGSN(s) when it considers the MBMS session to be terminated. The session is typically terminated when there is no more MBMS data expected to be transmitted for a sufficiently long period of time to justify a release of bearer plane resources in the network.

The MBMS service to be started/stopped is identified by the session-id.

The information of the MBMS-2G-3G-Indicator is passed from BM-SC transparently through GGSN to the SGSN(s) that are relevant for the actual MBMS bearer service.

<div align="center">

Next modification

</div>

17.7   Gmb specific AVPs

Table 10 describes the Gmb specific Diameter AVPs. The Vendor-Id header of all Gmb specific AVPs defined in the present specification shall be set to 3GPP (10415).

The Gmb specific AVPs require to be supported to be compliant to the present specification. All AVPs in table 10 are mandatory within Gmb interface unless otherwise stated.

Table 10: Gmb specific AVPs

Attribute Name	AVP Code	Section defined	Value Type	AVP Flag rules				May Encr.
				Must	May	Should not	Must not	
TMGI	900	17.7.2	OctectString	M,V	P			Y
Required-MBMS-Bearer-Capabilities	901	17.7.3	UTF8String	M,V	P			Y
MBMS-StartStop-Indication	902	17.7.5	Enumerated	M,V	P			Y
MBMS-Service-Area	903	17.7.6	OctectString	M,V	P			Y
MBMS-Session-Duration	904	17.7.7	Unsigned32	M,V	P			Y
3GPP-GPRS-Negotiated-QoS-Profile	5	16.4.7 (see Note)	UTF8String	M,V	P			Y
3GPP-IMSI	1	16.4.7 (see Note)	UTF8String	M.V	P			Y
Alternative-APN	905	17.7.8	UTF8String	M,V	P			Y
MBMS-Service-Type	906	17.7.9	Enumerated	M,V	P			Y
3GPP-SGSN-MCC-MNC	18	16.4.7 (see Note)	UTF8String	M.V	P			Y
MBMS-2G-3G-Indicator	9xx	17.7.x	Enumerated	M, V	P			Y
NOTE: The use of Radius VSA as a Diameter vendor AVP is described in Diameter NASREQ [67] and the P flag may be set.								

Table 11 lists the set of Diameter AVPs that are not Gmb specific, but are reused from other Diameter applications by the Gmb interface. A reference is done to the specifications where the AVPs are specified. This set of AVPs requires to be supported to be compliant to the present specification.

Table 11: Gmb reused AVPs from other Diameter applications.

AVP Name	Reference
Called-Station-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Calling-Station-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-Interface-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]

Framed-IP-Address	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IPv6-Prefix	draft-ietf-aaa-diameter-nasreq-17.txt [67]

NOTE: Diameter Base AVPs are not listed as support of them is mandated by IETF RFC 3588 [66].

17.7.1   3GPP-Vendor-Specific AVP

Void.

17.7.2   TMGI AVP

The TMGI AVP (AVP code 900) is of type OctectString, and contains the Temporary Mobile Group Identity allocated to a particular MBMS bearer service. TMGI use and structure is specified in 3GPP TS 23.003 [40].

17.7.3   Required-MBMS-Bearer-Capabilities AVP

The Required-MBMS-Bearer-Capabilities AVP (AVP code 901) is of type UTF8String, and contains the minimum bearer capabilities the UE needs to support. The information contained in this AVP is UTF-8 encoded QoS profile as defined in 3GPP TS 24.008 [54].

17.7.4   MBMS-Service-Area AVP

Void.

17.7.5   MBMS-StartStop-Indication AVP

The MBMS-StartStop-Indication AVP (AVP code 902) is of type Enumerated. The following values are supported:

START (0)

The message containing this AVP is indicating a MBMS session start procedure.

STOP (1)

The message containing this AVP is indicating a MBMS session stop procedure.

17.7.6   MBMS-Service-Area AVP

The MBMS-Service-Area AVP (AVP code 903) is of type OctetString, and indicates the area over which the MBMS bearer service has to be distributed.

17.7.7   MBMS-Session-Duration AVP

The MBMS-Session-Duration AVP (AVP code 904) is of type Unsigned32, and indicates the estimated session duration (MBMS Service data transmission) if available. This AVP is optional within the Gmb interface. The time is indicated in seconds.

17.7.8   Alternative-APN AVP

The Alternative-APN AVP (AVP code 905) is of type UTF8String, and contains the value of a new APN. This AVP is optional within the Gmb interface. BM-SC only includes it if the UE must use a different APN for the MBMS PDP Context from the one used in the Join message.

17.7.9 MBMS-Service-Type AVP

The MBMS-Service-Type AVP (AVP code 906) is of type Enumerated, and contains explicit information about the type of service that the BM-SC Start Procedure is about to start.

MULTICAST (0)

The Start Procedure signalled by the BM-SC is for a Multicast Service.

BROADCAST (1)

The Start Procedure signalled by the BM-SC is for a Broadcast Service.

17.7.x MBMS-2G-3G-Indicator AVP

The MBMS-2G-3G-Indicator AVP (AVP code 9xx) is of type Enumerated. It indicates whether the MBMS bearer service will be delivered in 2G- only, 3G- only of both coverage areas. The following values are supported:

2G (0)

The MBMS bearer service will be used to deliver 2G content.

3G (1)

The MBMS bearer service will be used to deliver 3G content

2G-AND-3G (2)

The MBMS bearer service will be used to deliver both 2G and 3G content

---

End of modifications

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **29.061** CR **145** | ⌘ **rev** | **2** | ⌘ | Current version: | **6.3.1** | ⌘ |

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

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

Title: ⌘	Adding the MBMS session identity to the Gmb Session Start message	
Source: ⌘	Ericsson	
Work item code:⌘	MBMS	***Date:*** ⌘ 18/02/2005
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: ⌘	According to TS 23.246 clauses 5.1.2 and 8.3 the BM-SC shall label each each MBMS session with an MBMS session identity. This identity shall be sent as one octet in the session start messages. See also incoming LSs from SA4 (N3-050031), RAN2 (N3-050025) and GERAN2 (GP-050573),
Summary of change:⌘	An MBMS session identity is added to the Diameter RAR Session Start request message
Consequences if not approved: ⌘	Misalignment with stage 2 specifications.

Clauses affected: ⌘	17.6.5, 17.7, 17.7.y(new clause)

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

Other comments: ⌘	Corresponding CRs are provided to TS29.060 and 24.018

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

Start of modifications

17.6.5   Re-Auth-Request Command

The Re-Auth-Request (RAR) command, defined in IETF RFC3588 (DIAMETER BASE) [66], is indicated by the Command-Code set to 258 and the message flags' 'R' bit set.

The relevant AVPs that are of use for the Gmb interface are detailed in the ABNF description below. Other valid AVPs for this command are not used for Gmb purposes and should be ignored by the receiver or processed according to the relevant specifications.

The bold marked AVPs in the message format indicate new optional AVPs for Gmb, or modified existing AVPs.

Message Format:

```
    <RAR>  ::= < Diameter Header: 258, REQ, PXY >
               < Session-Id >
               { Origin-Host }
               { Origin-Realm }
               { Destination-Realm }
               { Destination-Host }
               { Auth-Application-Id }
               { Re-Auth-Request-Type }
               [ MBMS-StartStop-Indication ]
               [ MBMS-Service-Area ]
               [ 3GPP-GPRS-Negotiated-QoS-Profile ]
               [ 3GPP-IMSI]
               [ MBMS-Session-Duration ]
               [ MBMS-Service-Type ]
               [ MBMS-Session-Identity]
               [ Origin-State-Id ]
             * [ Proxy-Info ]
             * [ Route-Record ]
```

The MBMS-StartStop-Indication AVP will indicate if the command is indicating a MBMS Start procedure or a MBMS Stop procedure.

For the MBMS Start procedure, RAR is sent by the BM-SC to the GGSN(s) that have previously registered for the corresponding MBMS bearer service, when it is ready to send data. This is a request to activate all necessary bearer resources in the network for the transfer of MBMS data and to notify interested UEs of the imminent start of the transmission.

For MBMS Stop procedure, RAR is sent by the BM-SC to the GGSN(s) when it considers the MBMS session to be terminated. The session is typically terminated when there is no more MBMS data expected to be transmitted for a sufficiently long period of time to justify a release of bearer plane resources in the network.

The MBMS service session to be started/stopped is identified by the session id.TMGI and the MBMS-Session-Identity.

Next modification

17.7   Gmb specific AVPs

Table 10 describes the Gmb specific Diameter AVPs. The Vendor-Id header of all Gmb specific AVPs defined in the present specification shall be set to 3GPP (10415).

The Gmb specific AVPs require to be supported to be compliant to the present specification. All AVPs in table 10 are mandatory within Gmb interface unless otherwise stated.

Table 10: Gmb specific AVPs

	AVP Flag rules	

Attribute Name	AVP Code	Section defined	Value Type	Must	May	Should not	Must not	May Encr.
TMGI	900	17.7.2	OctectString	M,V	P			Y
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MBMS-StartStop-Indication	902	17.7.5	Enumerated	M,V	P			Y
MBMS-Service-Area	903	17.7.6	OctectString	M,V	P			Y
MBMS-Session-Duration	904	17.7.7	Unsigned32	M,V	P			Y
3GPP-GPRS-Negotiated-QoS-Profile	5	16.4.7 (see Note)	UTF8String	M,V	P			Y
3GPP-IMSI	1	16.4.7 (see Note)	UTF8String	M.V	P			Y
Alternative-APN	905	17.7.8	UTF8String	M,V	P			Y
MBMS-Service-Type	906	17.7.9	Enumerated	M,V	P			Y
3GPP-SGSN-MCC-MNC	18	16.4.7 (see Note)	UTF8String	M.V	P			Y
MBMS-Session-Identity	9yy	17.7.y	OctetString	M.V	P			Y
NOTE: The use of Radius VSA as a Diameter vendor AVP is described in Diameter NASREQ [67] and the P flag may be set.								

Table 11 lists the set of Diameter AVPs that are not Gmb specific, but are reused from other Diameter applications by the Gmb interface. A reference is done to the specifications where the AVPs are specified. This set of AVPs requires to be supported to be compliant to the present specification.

Table 11: Gmb reused AVPs from other Diameter applications.

AVP Name	Reference
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Framed-Interface-Id	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IP-Address	draft-ietf-aaa-diameter-nasreq-17.txt [67]
Framed-IPv6-Prefix	draft-ietf-aaa-diameter-

nasreq-17.txt [67]

NOTE: Diameter Base AVPs are not listed as support of them is mandated by IETF RFC 3588 [66].

17.7.1   3GPP-Vendor-Specific AVP

Void.

17.7.2   TMGI AVP

The TMGI AVP (AVP code 900) is of type OctectString, and contains the Temporary Mobile Group Identity allocated to a particular MBMS bearer service. TMGI use and structure is specified in 3GPP TS 23.003 [40].

17.7.3   Required-MBMS-Bearer-Capabilities AVP

The Required-MBMS-Bearer-Capabilities AVP (AVP code 901) is of type UTF8String, and contains the minimum bearer capabilities the UE needs to support. The information contained in this AVP is UTF-8 encoded QoS profile as defined in 3GPP TS 24.008 [54].

17.7.4   MBMS-Service-Area AVP

Void.

17.7.5   MBMS-StartStop-Indication AVP

The MBMS-StartStop-Indication AVP (AVP code 902) is of type Enumerated. The following values are supported:

START (0)

The message containing this AVP is indicating a MBMS session start procedure.

STOP (1)

The message containing this AVP is indicating a MBMS session stop procedure.

17.7.6   MBMS-Service-Area AVP

The MBMS-Service-Area AVP (AVP code 903) is of type OctetString, and indicates the area over which the MBMS bearer service has to be distributed.

17.7.7   MBMS-Session-Duration AVP

The MBMS-Session-Duration AVP (AVP code 904) is of type Unsigned32, and indicates the estimated session duration (MBMS Service data transmission) if available. This AVP is optional within the Gmb interface. The time is indicated in seconds.

17.7.8   Alternative-APN AVP

The Alternative-APN AVP (AVP code 905) is of type UTF8String, and contains the value of a new APN. This AVP is optional within the Gmb interface. BM-SC only includes it if the UE must use a different APN for the MBMS PDP Context from the one used in the Join message.

17.7.9 MBMS-Service-Type AVP

The MBMS-Service-Type AVP (AVP code 906) is of type Enumerated, and contains explicit information about the type of service that the BM-SC Start Procedure is about to start.

MULTICAST (0)

The Start Procedure signalled by the BM-SC is for a Multicast Service.

BROADCAST (1)

The Start Procedure signalled by the BM-SC is for a Broadcast Service.

17.7.y MBMS-Session-Identity AVP

The MBMS-Session-Identity AVP (AVP code 9yy) is of type OctetString. Its length is one octet. It is allocated by the BM-SC. Together with TMGI it identifies a transmission of a specific MBMS session. The initial transmission and subsequent retransmissions of the MBMS session will use the same values of these parameters.

End of modifications