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Presentation of Technical Report to TSG or WG

Presentation to:	**TSG CN Meeting #22**
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Abstract of document:

The document is a temporary container for layer 3 UE to Core Network signalling flows for MBMS. The intention of this report is that when stable, the relevant content, including MBMS specific messages, information elements, and procedures will be moved into the Technical Specification 3GPP TS 24.008 and 3GPP TS 24.007.

The document includes information applicable to network operators, service providers and manufacturers.

This TR will not be published.

Changes since last presentation to TSG Meeting #:

First time seen in a Plenary.

Outstanding Issues:

- It is for further study as to whether the procedures highlighted within this technical report are directly applicable to GERAN, or whether modifications need to be done to deal with GERAN specific issues.
- Whilst some general error handling for MBMS is included within the existing TR, error handling mechanisms covering all the possible scenarios for MBMS is currently not concluded.
- The exact format and type of some of the information elements required within MBMS messages is not complete (e.g. TMGI).

Contentious Issues:

The current working assumption, as documented within the TR, is that new messages types shall be introduced for MBMS, however there is still ongoing discussion and investigation into the

possibility of re-using existing session management messages for MBMS, and the pros and cons of adopting such an approach.

3GPP TR 29.846 1.0.0 (2003-10)

Technical Report

3rd Generation Partnership Project; Technical Specification Group Core Networks; Multimedia broadcast / multicast service; CN1 procedure description (Release 6)

Keywords
MBMS, Broadcast, Multicast, Multimedia

3GPP

Postal address

3GPP support office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet
http://www.3gpp.org

Contents

Foreword

This Technical Report has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

This document discusses procedures required in the Core Network to support the Multimedia Broadcast/Multicast Service. (MBMS) requirements that are outlined in [2] within the architectural solutions discussed in [3].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TR 21.905: "3G Vocabulary".

[2] 3GPP TS 22.146: “Multimedia Broadcast/Multicast Service; Stage 1”.

[3] 3GPP TS 23.246: “Multimedia Broadcast/Multicast Service; Architecture and Functional Description”

[4] 3GPP TS 24.007: “Mobile radio interface signalling layer 3; General aspects”

[5] 3GPP TS 25.331: “Radio Resource Control (RRC) protocol specification”

3 Definitions and abbreviations

3.1 Definitions

The following terms are used in the present document:

MBMS context: The present document uses this term to refer to the MBMS UE context as defined in 3GPP TS 23.246 [3].

MBMS Bearer context: The present document uses this term as defined in 3GPP TS 23.246 [3].

MS: Mobile Station. The present document makes no distinction between MS and UE.

UE: User Equipment. The present document makes no distinction between MS and UE.

3.2 Abbreviations

Other abbreviations used in the present document are listed in 3GPP TR 21.905 [1] and 3GPP TS 22.146 [2] apply.

4 Introduction

The MBMS [2] is a point-to-multipoint service in which data is transmitted from a single source entity to multiple users. Transmitting the same data to multiple users allows network resources to be shared.

The MBMS offers two modes:

- **Broadcast Mode**
- **Multicast Mode**

5 MBMS session management

Editors Note: This section will describe general information, as well as the state models, procedures and protocols used to activate and deactivate MBMS contexts between the UE and the Core Network and between core network elements. None of the text within this section shall be transferred directly to any specification unless explicitly stated.

5.1 General

Editor's Note: This section will contain the general information describing the function of the MBMS session management. The text within this section should be readily transferable to Section 6 of TS 24.008.

The function of the MBMS session management (MBMS-SM) is to support the MBMS service handling within the user terminal and network, which allows the user in the network to receive data from a specific MBMS source. The MBMS-SM comprises procedures for MBMS context activation and deactivation. MBMS-SM procedures for identified access can only be performed if a GMM context has been established between the UE and the network. If no GMM context has been established, the MM sublayer has to initiate the establishment of a GMM context by use of the GMM procedures as described in subclause 4. After GMM context establishment, MBMS-SM uses services offered by GMM (see 3GPP TS 24.007 [4]). Ongoing MBMS-SM procedures are suspended during GMM procedure execution.

In UMTS only, the MBMS protocol shall use integrity protected signalling. Integrity protection of all MBMS-SM signalling messages is the responsibility of lower layers. It is the network which activates integrity protection. This is done using the security mode control procedure (3GPP TS 25.331 [5]).

5.2 MBMS Session management states

Editor's Note: This section will describe the MBMS state models. The text within this section should be readily transferable to Section 6 of TS 24.008.

5.2.1 MBMS Session management states in the UE

In this subclause, the possible states of an MBMS-SM entity in the UE are described.

5.2.1.1 MBMS-INACTIVE

This state indicates that no MBMS Context exists.

5.2.1.2 MBMS-ACTIVE-PENDING

This state exists when the UE has requested the network to initiate MBMS Context activation.

5.2.1.3 MBMS-ACTIVE

This state indicates that the MBMS Context is active.

5.2.2 MBMS Session management states on the network side

In this clause, the possible states of an MBMS-SM entity on the network side are described.

5.2.2.1 MBMS-INACTIVE

This state indicates that the MBMS Context is not active.

5.2.2.2 MBMS-ACTIVE-PENDING

This state exists when the network has requested the UE to initiate MBMS Context activation.

5.2.2.3 MBMS-INACTIVE-PENDING

This state exists when the network has requested the UE to initiate MBMS Context deactivation.

5.2.2.4 MBMS-ACTIVE

This state indicates that the MBMS Context is active.

5.3 Multicast session management procedures

5.3.1 Multicast service activation

5.3.1.1 End to end overview

Figure 1 shows the Multicast mode end to end service activation flow for MBMS. The activation procedure registers the user in the network to enable the reception of data from a specific multicast service. The procedure establishes the MBMS contexts in the UE, RNC, SGSN and GGSN for each activated multicast service.

New UE to CN messages requiring definition are shown in red within the diagram.

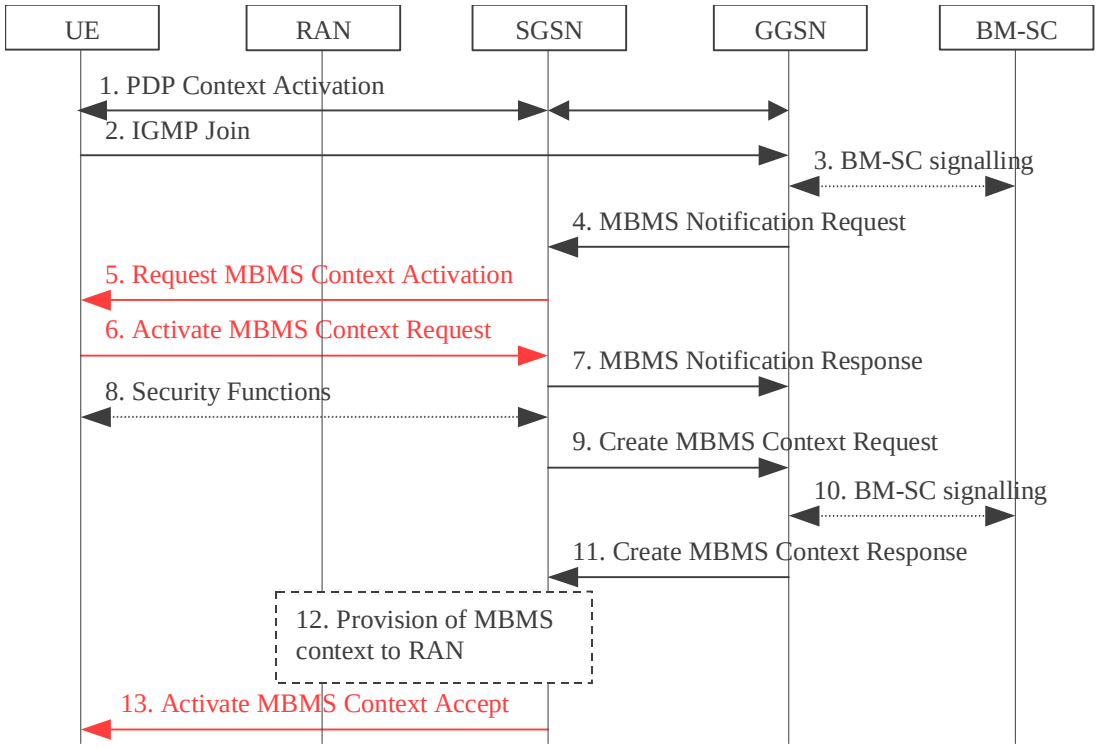

Figure 1. Activation of an MBMS Multicast service.

1. The UE activates a default, typically best-effort PDP context if not already established. This can be a PDP context used for basic IP services like WAP or Internet access, or it might be the signalling PDP context used for IMS access.

2. The UE sends an IGMP (IPv4) or MLD (IPv6) Join message over the default PDP context to signal its interest in receiving a particular multicast service identified by an IP multicast address.

3. This signaling between GGSN and BMSC is per user service access authorization.

4. The GGSN receives the IGMP Join request and sends an MBMS notification request to the SGSN.

5. The SGSN requests the UE to activate an MBMS context. This message will include the offered IP multicast address, along with an Access Point Name (APN), which has been received from GGSN.

6. The UE checks for the validity of the request to activate the service, and if valid, creates an MBMS UE context, and sends an Activate MBMS Context Request to the SGSN. This message will include the IP multicast address which the UE wants to join/activate, and an APN.

7. The SGSN sends an MBMS Notification Response to the GGSN that sent the MBMS Notification Request. The MBMS Notification Response contains a cause that shall indicate successful or unsuccessful MBMS context activation for the reason of SGSN or UE (Cause is FFS). 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.

8. Security Functions may be performed, e.g. to authenticate the UE.

9. It is FFS whether the SGSN performs a subscription check for the requested MBMS multicast service identified by the IP multicast address and APN or whether another network entity performs this check. The SGSN creates an UE specific MBMS context and sends Create MBMS Context Requests to the GGSN.

10. This signaling between GGSN and BMSC is per user service access authorization and/or signaling of the GGSNs interest to receive the MBMS service data (per service and not per user). Also the GGSN or another network entity may perform a subscription check for the requested MBMS multicast service identified by the IP multicast address and APN.

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

12. The SGSN provides RAN with the MBMS context.

13. The SGSN sends an Activate MBMS Context Accept to the UE. The SGSN does not need to wait for step 11 to be completed before sending this message.

5.3.1.2 Layer 3 multicast session activation

Editor's Note: This section will describe the Layer 3 procedures for MBMS session activation including successful and failure scenarios. The text within this section should be readily transferable to Section 6 of TS24.008.

5.3.1.2.1 MBMS context activation

The purpose of this procedure is to establish an MBMS context between the UE and the network for a specific IP Multicast Address on a specific NSAPI. Each IP Multicast address may uniquely be described by one MBMS context in the UE and in the network. The UE shall only initiate the MBMS context activation when requested by the network, however the trigger for the activation request by the network is initiated by the UE at the application layer. (see 3GPP TS 23.246 [3])

5.3.1.2.1.1 Successful MBMS context activation

In order to request MBMS context activation, the network sends a REQUEST MBMS CONTEXT ACTIVATION message to the UE, enters the state MBMS-ACTIVE-PENDING and starts timer T3385. The message contains the IP multicast address, APN and Linked NSAPI.

Upon receipt of a REQUEST MBMS CONTEXT ACTIVATION message, the UE shall validate the message by verifying the NSAPI given in the Linked NSAPI IE to be one of the active PDP context(s), and send an ACTIVATE MBMS CONTEXT REQUEST, enter state MBMS ACTIVE-PENDING and start timer T3380. The message contains the IP mutlicast address and APN which should be the same as IP Mulitcast address and APN requested by the network in the REQUEST MBMS CONTEXT ACTIVATION message.

Upon receipt of the ACTIVATE MBMS CONTEXT REQUEST message, the network shall stop timer T3385, and may reply with an ACTIVATE MBMS CONTEXT ACCEPT message.

Upon receipt of the message ACTIVATE MBMS CONTEXT ACCEPT the MS shall stop timer T3380, shall enter the state MBMS-ACTIVE.

5.3.1.2.1.2 Unsuccessful MBMS context activation requested by the UE

Upon receipt of an ACTIVATE MBMS CONTEXT REQUEST message the network may reject the MS initiated MBMS context activation by sending an ACTIVATE MBMS CONTEXT REJECT message to the MS. The message shall contain a cause code that typically indicates one of the following causes:

8: Operator Determined Barring;

26: insufficient resources;

27: missing or unknown APN;

29: user authentication failed;

30: activation rejected by GGSN;

31: activation rejected, unspecified;

32: service option not supported;

33: requested service option not subscribed;

34: service option temporarily out of order;

35: NSAPI already used. The network shall not send this cause code (see note 1); or

95 - 111: protocol errors.

NOTE 1: Pre-R99 network may send this cause code.

Upon receipt of an ACTIVATE MBMS CONTEXT REJECT message, the MS shall stop timer T3380 and enter/remain in state MBMS-INACTIVE.

5.3.1.2.1.3 Unsuccessful MBMS context activation requested by the network

Upon receipt of the REQUEST MBMS CONTEXT ACTIVATION message, the UE may reject the network requested MBMS context activation by sending the REQUEST MBMS CONTEXT ACTIVATION REJECT message to the network. The message contains the same TI as included in the REQUEST MBMS CONTEXT ACTIVATION and an additional cause code that typically indicates one of the following causes

26: insufficient resources;

31: activation rejected, unspecified;

40: feature not supported; or

95 - 111: protocol errors.

The network shall stop timer T3385 and enter state MBMS-INACTIVE.

5.3.1.3 Multicast session management messages for activation

Editor's Note: This section will describe the Layer 3 message formats and IE. Where ever possible, any IE types referenced here shall re-use existing IE formats from TS 24.008. If new IEs need to be defined, they must be included within this section. The text within this section should be readily transferable to Section 9 of TS 24.008. The text in this subclause is intended to be copied directly to TS 24.008 when it is fully agreed.

5.3.1.3.1 Activate MBMS context request

This message is sent by the MS to the network in explicit response to a Request MBMS Context Activation.

Message type: Activate MBMS context request

Significance: global

Direction: MS to network

TABLE 5.3.1.3.1 : ACTIVATE MBMS CONTEXT REQUEST message content

IEI	Information Element	Type/	Presence	Format	Length
	Protocol discriminator	Protocol discriminator	M	V	1/2
	Transaction identifier	Transaction identifier	M	V	1/2– 3/2
	Activate MBMS context request message identity	Message type	M	V	1
	Requested NSAPI	Network service access point identifier	M	V	1
	Requested LLC SAPI	LLC service access point identifier	M	V	1
	Requested Multicast address	Packet data protocol address	M	LV	3 - 19
28	Access point name	Access point name	O	TLV	3 - 102

5.3.1.3.2 Activate MBMS context accept

This message is sent by the network to the MS to acknowledge activation of an MBMS context.

Message type: ACTIVATE MBMS CONTEXT ACCEPT

Significance: global

Direction: network to MS

TABLE 5.3.1.3.2 : ACTIVATE MBMS CONTEXT ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator	M	V	1/2
	Transaction identifier	Transaction identifier	M	V	1/2– 3/2
	Activate MBMS context accept message identity	Message type	M	V	1
	Negotiated LLC SAPI	LLC service access point identifier	M	V	1

5.3.1.3.3 Activate MBMS context reject

This message is sent by the network to the MS to reject activation of a MBMS context.

Message type: ACTIVATE MBMS CONTEXT REJECT

Significance: global

Direction: network to MS

TABLE 5.3.1.3.3 : ACTIVATE MBMS CONTEXT REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator	M	V	1/2
	Transaction identifier	Transaction identifier	M	V	1/2– 3/2
	Activate MBMS context reject message identity	Message type	M	V	1
	SM cause	SM Cause	M	V	1

5.3.1.3.4 Request MBMS context activation

This message is sent by the network to the MS to initiate activation of a MBMS context.

Message type: REQUEST MBMS CONTEXT ACTIVATION

Significance: global

Direction: network to MS

TABLE 5.3.1.3.4 : REQUEST MBMS CONTEXT ACTIVATION message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator	M	V	1/2
	Transaction identifier	Transaction identifier	M	V	1/2– 3/2
	Request MBMS context activation message identity	Message type	M	V	1
	Linked IGMP/MLD NSAPI	Network service access point identifier	M	V	1
	Offered Multicast address	Packet data protocol address	M	LV	3 - 19
28	Access point name	Access point name	O	TLV	3 – 102

5.3.1.3.4.1 Linked IGMP/MLD NSAPI

This IE is included in the message to allow the UE to associate the MBMS context with the PDP context over which the IGMP/MLD join message was sent.

5.3.1.3.5 Request MBMS context activation reject

This message is sent by the MS to the network to reject initiation of a MBMS context activation.

Message type: REQUEST MBMS CONTEXT ACTIVATION REJECT

Significance: global

Direction: MS to network

TABLE 5.3.1.3.5 : REQUEST MBMS CONTEXT ACTIVATION REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator	M	V	1/2
	Transaction identifier	Transaction identifier	M	V	1/2– 3/2
	Request MBMS context act. reject message identity	Message type	M	V	1
	SM cause	SM cause	M	V	1

5.3.2 Multicast service deactivation

5.3.2.1 End to end overview

Figure 2 shows the multicast service deactivation signalling flow for MBMS. The deactivation procedure removes the MBMS context from the UE and the network (i.e. SGSN and GGSN) for a specific multicast service.

New messages requiring definition are shown in red within the diagram.

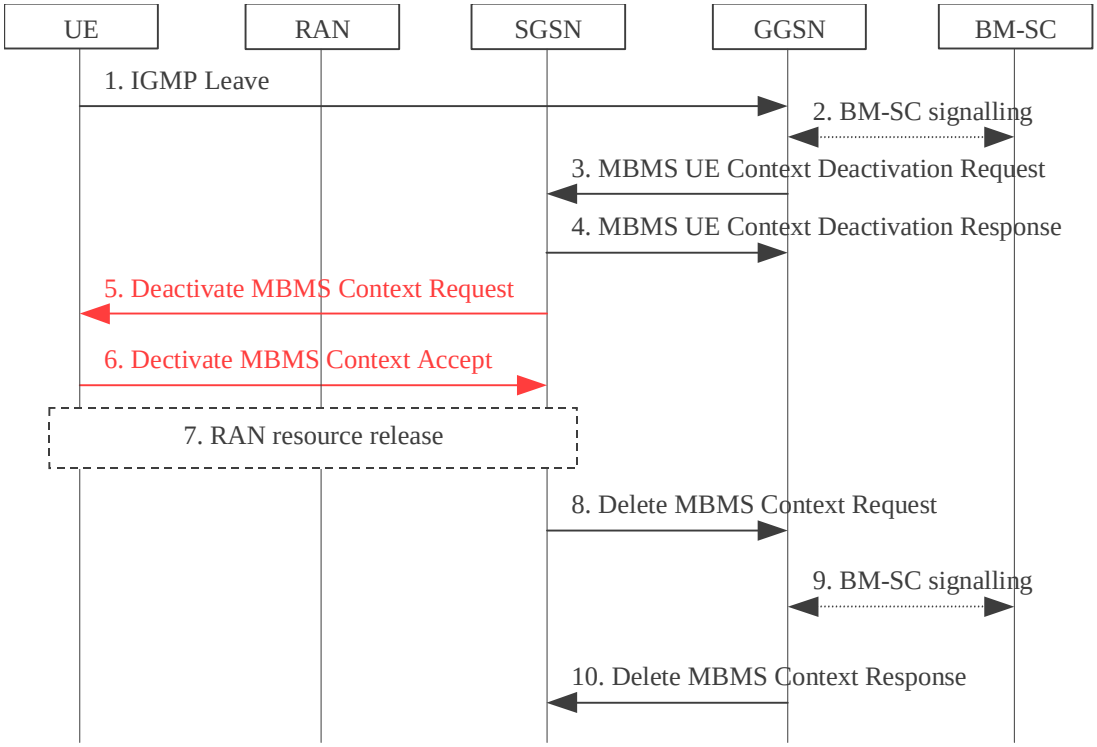

Figure 2: Deactivation of an MBMS Multicast service.

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. This signaling between GGSN and BM-SC is performed in order to indicate that the UE is requesting to leave the multicast service identified by the IP multicast address. The exact nature of the signalling between GGSN and BM-SC is however FFS in general.

3. The GGSN sends an MBMS Context Deactivation Request (IP multicast address, APN, IMSI) to the SGSN. The IP multicast address, APN and IMSI together identify the MBMS context to be deleted by the SGSN. The APN is received in step 2. The SGSN acknowledges reception of the MBMS Context Deactivation Request by sending an MBMS Context Deactivation Response to the GGSN.

4. Upon reception of the MBMS Context Deactivation Request or for other reasons (e.g. due to a change in the roaming restrictions for the user) the SGSN sends a Deactivate MBMS Context Request (TI) to the UE. The TI identifies the MBMS context to be deleted by the UE.

5. Upon reception of the MBMS Context Deactivation Request or for other reasons (e.g. due to a change in the roaming restrictions for the user) the SGSN sends a Deactivate MBMS Context Request (TI) to the UE. The TI identifies the MBMS context to be deleted by the UE.

6. The UE deletes the MBMS context and sends a Deactivate MBMS Context Accept (TI) to the SGSN.

7. If dedicated radio resources are currently assigned to the UE for the reception of the MBMS data, the RAN releases these radio resources. The detailed procedures and conditions are FFS depending on ongoing work in RAN groups.

8. Upon reception of the Deactivate MBMS Context Accept or for other reasons (e.g. due to missing periodic updates) the SGSN sends a Delete MBMS Context Request (NSAPI) to the GGSN that holds the MBMS context.

9. This signaling between GGSN and BM-SC is mainly performed to delete the MBMS context in the GGSN and BM-SC. The exact nature of the signalling between GGSN and BM-SC is however FFS in general.

10. The GGSN confirms the deactivation of the MBMS context to the SGSN by sending a Delete MBMS Context Response to the SGSN, which then deletes the MBMS context.

5.3.2.2 Layer 3 multicast session deactivation

Editor's Note: This section will describe the Layer 3 procedures for MBMS session deactivation including successful and failure scenarios. The text within this section should be readily transferable to Section 6 of TS 24.008.

The purpose of this procedure is to deactivate an existing MBMS context between the UE and the network. The UE shall only initiate the MBMS context deactivation when requested by the network, however the trigger for the deactivation request by the network may be initiated by the UE at application layer or by the network, see 3GPP TS 23.246 [3].

After the successful MBMS context deactivation, the associate TI value is released.

5.3.2.2.1 MBMS context deactivation

In order to request an MBMS context deactivation, the network sends a DEACTIVATE MBMS CONTEXT REQUEST message to the UE, enters the state MBMS-INACTIVE-PENDING and starts timer T3395. The messages contains the transaction identifier (TI) in use for the MBMS context to be deactivated and a cause code that typically indicates one of the following causes:

36: regular MBMS context deactivation;

38: network failure;

47: IGMP querier time-out.

Note: The indication of the IGMP querier time-out requires defining a new cause value in the SM cause IE. See 3GPP TS 24.008 sub clause 10.5.6.6. Other possible new cause values may be identified in the future.

The UE shall reply with a DEACTIVATE MBMS CONTEXT ACCEPT message and enter the state MBMS-INACTIVE. Upon receipt of the DEACTIVATE MBMS CONTEXT ACCEPT message, the network shall stop the timer T3385 and enter the state MBMS-INACTIVE.

5.3.2.2.1.1 Abnormal cases

The following abnormal cases can be identified:

a) Expiry of timers:

On the first expiry of the timer T3395, the network shall resend the message DEACTIVATE MBMS CONTEXT REQUEST and shall reset and restart the timer T3395. This retransmission is repeated, i.e. on the fifth expiry of the timer T3395, the network shall erase the MBMS context related data for that UE.

5.3.2.3 Multicast session management messages for deactivation

Editor's Note: This section will describe the Layer 3 message formats and IE. Where ever possible, any IE types referenced here shall re-use existing IE formats from TS 24.008,. If new IEs need to be defined, they must be included within this section. The text within this section should be readily transferable to Section 9 of TS 24.008.

5.3.2.3.1 Deactivate MBMS context request

This message is sent by the network to the MS to request the deactivation of an active MBMS context.

Message type: DEACTIVATE MBMS CONTEXT REQUEST

Significance: global

Direction: network to MS

TABLE 5.3.2.3.1 : DEACTIVATE MBMS CONTEXT REQUEST message content

IEI	Information Element	Type/	Presence	Format	Length
	Protocol discriminator	Protocol discriminator	M	V	1/2
	Transaction identifier	Transaction identifier	M	V	1/2– 3/2
	Deactivate MBMS context request message identity	Message type	M	V	1
	SM cause	SM cause	M	V	1

5.3.2.3.2 Deactivate MBMS context accept

This message is sent by the MS to the network to acknowledge deactivation of the MBMS context requested in the corresponding DEACTIVATE MBMS CONTEXT REQUEST message. See 5.3.2.3.1.

Message type: DEACTIVATE MBMS CONTEXT ACCEPT

Significance: global

Direction: MS to network

TABLE 5.3.2.3.2 : DEACTIVATE MBMS CONTEXT ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator	M	V	1/2
	Transaction identifier	Transaction identifier	M	V	1/2– 3/2
	Deactivate MBMS context accept message identity	Message type	M	V	1

6 Service Continuity and Mobility

Editors Note: This section will describe the procedure for maintaining continuity of service during mobility related events.

The CN is required to support mobility functions for MBMS in order to support service continuity. It is recognised that some data loss may occur when a mobile moves (e.g. between SGSNs) and MBMS applications are required to be able to deal with such data loss. This is reflected in 3GPP TS 23.246 [3].

The RAN is responsible for dealing with mobility and selection of radio bearers transparently to the CN. Only when a UE moves between RNCs supported by different SGSNs does the CN need to become involved. In this case it there are two possible scenarios

1. The MBMS context needs to be set up to this new SGSN as no other UEs under this SGSN are currently receiving this service, hence CN signalling is required (via GTP) to create the MBMS context..

2. The MBMS context already exists for this service at the SGSN, hence no MBMS contexts need to be established in the CN. There may be a need to establish the context to the RNC, dependent on whether there are UEs under that particular RNC receiving the service or not.

In either case the CN will use existing GTP signalling to establish the contexts using SRNS relocation message (modified to support MBMS)) if the change of SGSN is due to SRNS relocation, and/or new GTP messages to update the contexts between the SGSNs and GGSN. At this point, dependent on the network configuration, the UE may be required to set up a signalling connection via the service request procedure. It is for further study whether a new encoding for Service Type is introduced to explicitly indicate MBMS as the service type

Editors Note: The impact to a UE operating in A/Gb mode is for further study

7 MBMS Data Transfer

Editors Note: This section will describe the procedures and protocols used to notify the user of MBMS data transfer, the establishment of data bearers, and transfer data in the Core Network.

In MBMS, once the user has requested to join a service the MBMS context is established in the CN and RAN. The GTP User plane, Iu interface and radio bearers are not established at this time. These bearers are set up when an indication is received from the BM-SC that the session is about to start.

The start indication will be supported by new messages on the Gmb interface, on Gn interface and on the Iu interface. When the SGSN receives this message it will, using new RANAP messages, make a request on Iu interface to establish the radio bearers for all UEs that have requested the service, including taking responsibility for the paging of the interested UEs. The RAN sets up appropriate radio bearers (point to point or point to multipoint dependent on the number of UEs in each cell). At this point, dependent on the network configuration, a certain number of UEs may be required to set up signalling connections via the service request procedure. It is for further study whether a new encoding for Service Type is introduced to explicitly indicate MBMS as the service type.

Editors Note: The impact to a UE operating in A/Gb mode is for further study.

8 Information Storage

Editor's Note: This section will highlight additional Information storage requirements for MBMS.

8.1 MBMS Context

In MBMS it is necessary for the SGSN and GGSN to maintain data for each UE that has requested to join each Multicast service - the MBMS context. This context information is passed from one SGSN to another during inter-SGSN Routing Area Update procedure and Inter SGSN SRNS relocation procedures. The MBMS Context information includes

- IP Multicast Address
- APN
- TMGI
- Linked NSAPI

This context information is derived from the MBMS Context Activation procedure..

Hence the CN is required to store this information as described in 3GPP TS 23.246 [3], but it has no impact on the SM procedures over and above those defined for the MBMS context activation procedure.

8.2 MBMS Bearer Context

The MBMS Bearer Context contains all information describing a particular bearer of a Multicast service and is created in each node involved in the delivery of the MBMS data.

An MBMS Bearer Context is created in the SGSN and GGSN when the first MBMS Context is created in the node or when a downstream node requests it. An MBMS Bearer Context, once created, can be in one of two states (Standby or Active) reflecting the activity status of the corresponding MBMS bearer.

'Active' reflects the state of an MBMS Bearer Context in which user plane resources are established in the network for the transfer of MBMS data. This state is maintained as long as there is data pending for a corresponding MBMS session.

'Standby' reflects the state of an MBMS Bearer Context in which no user plane resources are established in the network for the transfer of MBMS data. This state is maintained as long as there is data pending for a corresponding MBMS session.

The MBMS Bearer Context information can include, dependent on state

- IP Multicast Address
- APN
- TMGI
- State
- QoS (if Active state)
- MBMS Service Area (if Active state)
- List of Downstream Nodes

9 Interaction with other features

Editors note: This section will describe the impacts on any existing features.

10 Agreed Solutions

Editors Note: This section will describe agreements reached and the specifications affected. The changes will be described in enough detail to allow CR's to be written to the appropriate specifications.

10.1 Impacts on TS24.008

Annex A:
Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
2003-03					Tdoc N1-0300277 agreed at CN3#27 in Dublin	0.0.1	0.1.0
2003-10					Changes after CN1#32 with agreed tdocs, N1-031654, N1-031655, N1-031726, N1-031657, N1-031658, N1-031659, N1-031660	0.2.0	0.3.0