3GPP TSG-CN Meeting #25 **NP-040377**
8th – 10th September 2004. Palm Springs, USA.

Source: **TSG CN WG1**

Title: **CRs to Rel-6 WI MBMS towards TS 24.008 and TS 24.007**

Agenda item: **9.8**

Document for: **APPROVAL**

This document contains **9 CRs on Rel-6 Work Item "MBMS"**, that have been agreed by TSG CN WG1 CN#35 meeting and forwarded to TSG CN Plenary meeting #25 for approval.

TDoc #	Tdoc Title	Spec	CR #	Rev	CAT	Current version	WI	Rel
N1-041578	Introduction of the MBMS general procedure and states	24.008	889	1	B	6.5.0	MBMS	Rel-6
N1-041579	Introduction of the MBMS Context Activation procedure	24.008	890	1	B	6.5.0	MBMS	Rel-6
N1-041622	Introduction of the MBMS Context Activation messages	24.008	891	1	B	6.5.0	MBMS	Rel-6
N1-041405	Update of the Service Request procedure - MBMS	24.008	896		B	6.5.0	MBMS	Rel-6
N1-041403	Introduction of the MBMS Multicast Service Deactivation procedure - Reuse of PDP context deactivation messages	24.008	894		B	6.5.0	MBMS	Rel-6
N1-041580	Introduction of the MBMS Multicast Service Deactivation messages - Reuse of PDP context deactivation messages	24.008	895	1	B	6.5.0	MBMS	Rel-6
N1-041624	Introduction of MBMS context handling	24.008	898	1	B	6.5.0	MBMS	Rel-6
N1-041623	Update of Annex I for MBMS	24.008	897	1	B	6.5.0	MBMS	Rel-6
N1-041625	Update of the Session Management services - MBMS	24.007	64	1	B	6.1.0	MBMS	Rel-6

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041403**
Sophia Antipolis, France, 16-20 August 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **894** ⌘ **rev** **-** ⌘ Current version: **6.5.0** ⌘

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

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

Title:	⌘	Introduction of the MBMS Multicast Service Deactivation procedure – Reuse of PDP context deactivation messages
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	01/07/2004
Category:	⌘	**B**
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:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. At last CN1#34bis meeting, the CN1 working group made the following working assumptions for CN1#35 on the MBMS work: ❖ TR 29.846 will be used as the MBMS reference specification for CN1 #35 (for the last time?) ❖ Stop using TR 29.846 as reference after CN1 #35 and send it for approval to CN #25 ❖ TR 29.846 is converted into 24.008 CRs ❖ Separate 24.008 CRs will be drafted for MBMS context activation and deactivation ❖ It was assumed that the transfer can only take place if both MBMS context activation and deactivation procedures can be shifted at the same time ❖ Ericsson volunteered to draft the 24.008 CRs for MBMS.
Summary of change:	⌘	TR 29.846 contains two alternative solutions for the MBMS Context Deactivation procedure and messages. One of the alternative reuses the PDP Context Deactivation messages for the MBMS Contet Deactivation procedure. This is the alternative that the current CR aims at introducing into TS 24.008. The procedure for the MBMS Context Deactivation procedure that reuses the PDP Context Deactivation messages is transferred from TR 29.846 to TS 24.008.
Consequences if not approved:	⌘	The 3GPP MBMS work will not be completed in the Rel-6 timeframe. The CN1 MBMS work will remain to be transferred from the TR 29.846 to the appropriated TSes, e.g. TS 24.008. No solution for MBMS will be in place at Core Network protocols. Therefore, MBMS will not be able to provide service.

Clauses affected:	⌘	6.1.3.4.1, 6.1.3.4.2, 10.5.6.6, new subclauses; 6.2.3.2, 6.2.3.2.1, 6.2.3.2.2.			
		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 CHANGE

6.1.3.4.1 PDP context deactivation initiated by the MS

In order to deactivate a PDP context, the MS sends a DEACTIVATE PDP CONTEXT REQUEST message to the network, enters the state PDP-INACTIVE-PENDING and starts timer T3390. The message contains the transaction identifier (TI) in use for the PDP context to be deactivated and a cause code that typically indicates one of the following causes:

25: LLC or SNDCP failure(GSM only);

26: insufficient resources;

36: regular ~~PDP context~~ deactivation; or

37: QoS not accepted.

The network shall reply with the DEACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of the DEACTIVATE PDP CONTEXT ACCEPT message, the MS shall stop timer T3390.

In GSM, both the MS and the network shall initiate local release of the logical link if it is not used by another PDP context.

In UMTS, the network shall initiate the release of Radio Access Bearer associated with this PDP context.

6.1.3.4.2 PDP context deactivation initiated by the network

In order to deactivate a PDP context, the network sends a DEACTIVATE PDP CONTEXT REQUEST message to the MS and starts timer T3395. The message contains the transaction identifier in use for the PDP context to be deactivated and a cause code that typically indicates one of the following causes:

8: Operator Determined Barring;

25: LLC or SNDCP failure (GSM only);

36: regular ~~PDP context~~ deactivation;

38: network failure; or

39: reactivation requested.

The MS shall, upon receipt of this message, reply with a DEACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of the DEACTIVATE PDP CONTEXT ACCEPT message, the network shall stop the timer T3395.

In GSM, both the MS and the network shall initiate local release of the logical link if it is not used by another PDP context.

In UMTS, the network shall initiate the release of Radio Access Bearer associated with this PDP context.

NEXT CHANGE

6.2.3.2 MBMS context deactivation

The purpose of this procedure is to deactivate an existing MBMS context in the MS and the network. The MS 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 MS at application layer or by the network, see 3GPP TS 23.246 [106].

After a successful MBMS context deactivation, the associated TI value shall be released in both the MS and the network.

The MBMS context deactivation procedure makes use of the messaging and signalling of the PDP context deactivation procedure as described in the subclause 6.2.3.2.1.

6.2.3.2.1 MBMS context deactivation initiated by the network

In order to request an MBMS context deactivation, the network sends a DEACTIVATE PDP CONTEXT REQUEST message to the MS, 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 deactivation;

38: network failure;

47: multicast group membership time-out.

The MS shall reply with a DEACTIVATE PDP CONTEXT ACCEPT message and enter the state MBMS-INACTIVE. Upon receipt of the DEACTIVATE PDP CONTEXT ACCEPT message, the network shall stop the timer T3395 and enter the state MBMS-INACTIVE.

6.2.3.2.2 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 PDP 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 MS.

NEXT CHANGE

10.5.6.6 SM cause

The purpose of the *SM cause* information element is to indicate the reason why a session management request is rejected.

The *SM cause* is a type 3 information element with 2 octets length.

The *SM cause* information element is coded as shown in figure 10.5.139/3GPP TS 24.008 and table 10.5.157/3GPP TS 24.008.

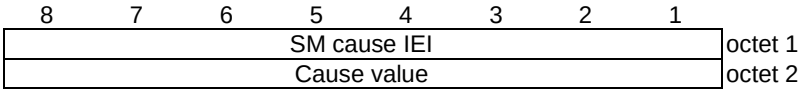

Figure 10.5.139/3GPP TS 24.008: *SM cause* information element

Table 10.5.157/3GPP TS 24.008: *SM cause* information element

Cause value (octet 2)
Bits

8 7 6 5 4 3 2 1	
0 0 0 0 1 0 0 0	Operator Determined Barring
0 0 0 1 1 0 0 1	LLC or SNDCP failure(GSM only)
0 0 0 1 1 0 1 0	Insufficient resources
0 0 0 1 1 0 1 1	Missing or unknown APN
0 0 0 1 1 1 0 0	Unknown PDP address or PDP type
0 0 0 1 1 1 0 1	User ~~A~~authentication failed
0 0 0 1 1 1 1 0	Activation rejected by GGSN
0 0 0 1 1 1 1 1	Activation rejected, unspecified
0 0 1 0 0 0 0 0	Service option not supported
0 0 1 0 0 0 0 1	Requested service option not subscribed
0 0 1 0 0 0 1 0	Service option temporarily out of order
0 0 1 0 0 0 1 1	NSAPI already used (not sent)
0 0 1 0 0 1 0 0	Regular deactivation
0 0 1 0 0 1 0 1	QoS not accepted
0 0 1 0 0 1 1 0	Network failure
0 0 1 0 0 1 1 1	Reactivation required
0 0 1 0 1 0 0 0	Feature not supported
0 0 1 0 1 0 0 1	Semantic error in the TFT operation
0 0 1 0 1 0 1 0	Syntactical error in the TFT operation
0 0 1 0 1 0 1 1	Unknown PDP context
0 0 1 0 1 1 1 0	PDP context without TFT already activated
0 0 1 0 1 1 1 1	Multicast group membership time-out
0 0 1 0 1 1 0 0	Semantic errors in packet filter(s)
0 0 1 0 1 1 0 1	Syntactical errors in packet filter(s)
0 1 0 1 0 0 0 1	Invalid transaction identifier value
0 1 0 1 1 1 1 1	Semantically incorrect message
0 1 1 0 0 0 0 0	Invalid mandatory information
0 1 1 0 0 0 0 1	Message type non-existent or not implemented
0 1 1 0 0 0 1 0	Message type not compatible with the protocol state
0 1 1 0 0 0 1 1	Information element non-existent or not implemented
0 1 1 0 0 1 0 0	Conditional IE error
0 1 1 0 0 1 0 1	Message not compatible with the protocol state
0 1 1 0 1 1 1 1	Protocol error, unspecified
0 1 1 1 0 0 0 0	APN restriction value incompatible with active PDP context

Any other value received by the mobile station shall be treated as 0010 0010, "Service option temporarily out of order". Any other value received by the network shall be treated as 0110 1111, "Protocol error, unspecified".

NOTE: The listed cause values are defined in ~~a~~Annex I

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041405**
Sophia Antipolis, France, 16-20 August 2004

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CHANGE REQUEST

⌘ **24.008** **CR** **896** ⌘ **rev** **-** ⌘ Current version: **6.5.0** ⌘

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

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

Title:	⌘	Update of the Service Request procedure – MBMS
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	05/07/2004
Category:	⌘	**B**
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:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘ CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. At last CN1#34bis meeting, the CN1 working group made the following working assumptions for CN1#35 on the MBMS work:

- TR 29.846 will be used as the MBMS reference specification for CN1 #35 (for the last time?)
- Stop using TR 29.846 as reference after CN1 #35 and send it for approval to CN #25
- TR 29.846 is converted into 24.008 CRs
- Separate 24.008 CRs will be drafted for MBMS context activation and deactivation
- It was assumed that the transfer can only take place if both MBMS context activation and deactivation procedures can be shifted at the same time
- Ericsson volunteered to draft the 24.008 CRs for MBMS.

Summary of change: ⌘ TR 29.846 indicates that the Service Request procedure has to be updated in order to specify a new Service type value for the case of counting the number of mobiles stations in a cell which are interested in a specific MBMS service. This has been acknowledged by RAN groups and SA2. The Service Request procedure is updated because of MBMS. All needed changes are transferred from TR 29.846 to TS 24.008.

Consequences if not approved: ⌘ The 3GPP MBMS work will not be completed in the Rel-6 timeframe. The CN1 MBMS work will remain to be transferred from the TR 29.846 to the appropriated TSes, e.g. TS 24.008. No solution for MBMS will be in place at Core Network protocols. Therefore, MBMS will not be able to provide service.

Clauses affected: ⌘ 4.7.13, 4.7.13.1, 4.7.13.5, 10.5.5.20.

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

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FIRST CHANGE

4.7.13 Service Request procedure (UMTS only)

The purpose of this procedure is to transfer the PMM mode from PMM-IDLE to PMM-CONNECTED mode, and/or to assign radio access bearer in case of PDP contexts are activated without radio access bearer assigned. In latter case, the PMM mode may be PMM-IDLE mode or may alternatively be the PMM-CONNECTED mode if the MS requires radio access bearer re-establishment. This procedure is used for;

- the initiation of CM layer service (e.g. SM or SMS) procedure from the MS in PMM-IDLE mode,
- the network to transfer down link signalling,
- uplink (in PMM-IDLE or PMM CONNECTED) and downlink (only in PMM-IDLE) user data~~,~~.
- counting the number of mobile stations in a cell which are interested in a specific MBMS multicast service.

For downlink transfer of signalling or user data in PMM-IDLE mode, the trigger is given from the network by the paging request procedure, which is out of scope of the present document.

For pending downlink user data in PMM-CONNECTED mode, the re-establishment of radio access bearers for all active PDP contexts is done without paging.

For counting the number of mobile stations in PMM-IDLE mode interested in a specific MBMS service, the trigger is given from the network by the MBMS notification procedure (see 3GPP TS 25.331 [23c]).

Service type can take either of the following values~~:~~, "signalling", "data", ~~or~~ "paging response" or "MBMS notification response". Each of the values shall be selected according to the criteria to initiate the Service request procedure.

The criteria to invoke the Service request procedure are when;

a) the MS has any signalling messages except GMM messages (e.g. for SM or SMS) to be sent to the network in PMM-IDLE mode (i.e., no secure PS signalling connection has been established). In this case, the service type shall be set to "signalling".

b) the MS, either in PMM-IDLE or PMM-CONNECTED mode, has pending user data to be sent and no radio access bearer is established for the corresponding PDP context. The procedure is initiated by an indication from the lower layers (see 3GPP TS 24.007 [20]). In this case, the service type shall be set to "data". If in PMM-CONNECTED mode, a Service Request with service type "data" was already accepted by the network the MS shall not issue a second Service Request with service type "data" unless the PMM-IDLE state is entered again.

c) the MS receives a paging request for PS domain from the network in PMM-IDLE mode. In this case, the service type shall be set to "paging response".

d) the MS is in PMM-IDLE, receives an MBMS notification for an MBMS multicast service for which the MS has activated an MBMS context, and is prompted by the contents of the notification to establish a PS signalling connection (see 3GPP TS 25.331 [23c]). In this case, the service type shall be set to "MBMS notification response".

After completion of a Service request procedure but before re-establishment of radio access bearer, if the PDP context status information element is included, then the network shall deactivate all those PDP contexts locally (without peer to peer signalling between the MS and the network), which are not in SM state PDP-INACTIVE on network side but are indicated by the MS as being in state PDP-INACTIVE.

After completion of a Service request procedure, the pending service is resumed and uses then the connection established by the procedure. If the service type is indicating "data", then the radio access bearers for all activated PDP contexts are re-established by the network, except for those activated PDP contexts having maximum bit rate value set to 0 kbit/s for both uplink and downlink. The re-establishment of radio access bearers for those PDP contexts is specified in subclause 6.1.3.3.

The selective re-assignment capability is not supported for the simplicity of the function.

4.7.13.1 Service Request procedure initiation

The MS initiates the Service request procedure by sending a SERVICE REQUEST message. The timer T3317 shall be started after the SERVICE REQUEST message has been sent and state GMM-SERVICE-REQUEST-INITIATED is entered. The message SERVICE REQUEST shall contain the P-TMSI and the Service type shall indicate either "data", "signalling", ~~or~~ "paging response" or "MBMS notification response".

NEXT CHANGE

4.7.13.5 Abnormal cases in the MS

The following abnormal cases can be identified:

a) Access barred because of access class control

The Service request procedure shall not be started. The MS stays in the current serving cell and applies normal cell reselection process. The Service request procedure may be started by CM layer if it is still necessary, i.e. when access is granted or because of a cell change.

b) Lower layer failure before the security mode control procedure is completed, SERVICE ACCEPT or SERVICE REJECT message is received

The procedure shall be aborted.

c) T3317 expired

The MS shall enter GMM-REGISTERED state.

If the MS is in PMM-IDLE mode then the procedure shall be aborted and the MS shall initiate a PS signalling connection release.

If the MS is in PMM-CONNECTED mode, then the procedure shall be aborted.

d) SERVICE REJECT received, other causes than those treated in subclause 4.7.13.4

The procedure shall be aborted.

e) Routing area update procedure is triggered

If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, a SERVICE ACCEPT or SERVICE REJECT message has been received, the Service request procedure shall be aborted and the routing area updating procedure is started immediately. Follow-on request pending may be indicated in the ROUTING AREA UPDATE REQUEST for the service, which was the trigger of the aborted Service request procedure, to restart the pending service itself or the Service ~~R~~request procedure after the completion of the routing area updating procedure. If the S~~s~~ervice type of the aborted SERVICE REQUEST was indicating "data", then the routing area update procedure may be followed by a re-initiated Service request procedure indicating "data", if it is still necessary. If the Service type was indicating "MBMS notification response", the Service request procedure shall be aborted.

f) Power off

If the MS is in state GMM-SERVICE-REQUEST-INITIATED at power off, the GPRS detach procedure shall be performed.

g) Procedure collision

If the MS receives a DETACH REQUEST message from the network in state GMM-SERVICE-REQUEST-INITIATED, the GPRS detach procedure shall be progressed and the Service request procedure shall be aborted. If the cause IE, in the DETACH REQUEST message, indicated a "reattach request", the GPRS attach procedure shall be performed.

NEXT CHANGE

10.5.5.20 Service type

The purpose of the *service type* information element is to specify the purpose of the Service request procedure.

The *service type* is a type 1 information element.

The *service type* information element is coded as shown in figure 10.5.135/3GPP TS 24.008 and table 10.5.153a/3GPP TS 24.008.

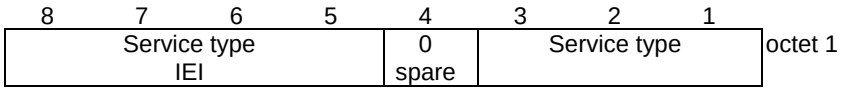

Figure 10.5.135/3GPP TS 24.008: *Service type* information element

Table 10.5.153a/3GPP TS 24.008: *Service type* information element

Service type value (octet 1)

Bits

3	**2**	**1**	
0	0	0	Signalling
0	0	1	Data
0	1	0	Paging Response
0	1	1	MBMS Notification Reponse

All other values are reserved.

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041578**
Sophia Antipolis, France, 16-20 August 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **889** ⌘ **rev** **1** ⌘ Current version: **6.5.0** ⌘

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

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

Title:	⌘	Introduction of the MBMS general procedure and states
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	16/08/2004
Category:	⌘	**B**
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)*
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Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. The MBMS work is now close to completion and based on the TR, CRs to the relevant stage 3 specifications will be written. This CR contains the text for the MBMS general procedures and the states.
Summary of change:	⌘	The MBMS Session Management is introduced into TS 24.008 under the clause 6 'Support for packet services'. The general procedure description of the MBMS Session Management as well as the state models in the MS and on the network side are transferred from TR 29.846 to TS 24.008.
Consequences if not approved:	⌘	The 3GPP MBMS work will not be completed in the Rel-6 timeframe. No solution for MBMS will be in place at Core Network protocols.

Clauses affected:	⌘	Clause 6, new subclauses; 6.2, 6.2.1, 6.2.2.1, 6.2.2.1.1, 6.2.2.1.2, 6.2.2.1.3, 6.2.2.2, 6.2.2.2.1, 6.2.2.2.2, 6.2.2.2.3, 6.2.2.2.4.

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

Other comments:	⌘	

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FIRST CHANGE

6 Support for packet services

This chapter contains the description of the procedures for the session management of GPRS point-to-point data services and MBMS point-to-point and point-to-multipoint data services at the radio interface (Reference point Uu and U_m).

NEXT CHANGE

6.2 MBMS Session Management

6.2.1 General

The function of the MBMS Session Management (MBMS-SM) is to support the MBMS service handling within the MS and network, which allows the MS to receive data from a specific MBMS source. The MBMS-SM comprises procedures for MBMS context activation and deactivation. The MBMS-SM procedures for identified access can only be performed if a GMM context has been established between the MS and the network and the MS has a PDP context activated. 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 [20]). 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 (see 3GPP TS 25.331 [23c]).

For the MBMS-SM protocol, the extended TI mechanism may be used (see 3GPP TS 24.007 [20]).

6.2.2 MBMS Session Management states

In this subclause, the MBMS states are described for one MBMS-SM entity (see 3GPP TS 24.007 [20]). Each MBMS-SM entity is associated with one MBMS context. The subclause 6.2.2.1 describes the MBMS states in the MS and subclause 6.2.2.2 describes the MBMS states on the network side.

6.2.2.1 MBMS Session Management states in the MS

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

6.2.2.1.1 MBMS-INACTIVE

This state indicates that no MBMS Context exists.

6.2.2.1.2 MBMS-ACTIVE-PENDING

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

6.2.2.1.3 MBMS-ACTIVE

This state indicates that the MBMS Context is active.

6.2.2.2 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.

6.2.2.2.1 MBMS-INACTIVE

This state indicates that the MBMS Context is not active.

6.2.2.2.2 MBMS-ACTIVE-PENDING

This state exists when the network has initiated MBMS Context activation.

6.2.2.2.3 MBMS-INACTIVE-PENDING

This state exists when the network has initiated MBMS Context deactivation.

6.2.2.2.4 MBMS-ACTIVE

This state indicates that the MBMS Context is active.

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041579**
Sophia Antipolis, France, 16-20 August 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **890** ⌘ **rev** **1** ⌘ Current version: **6.5.0** ⌘

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

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

Title:	⌘	Introduction of the MBMS Context Activation procedure
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	16/08/2004
Category:	⌘	**B**
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. The MBMS work is now close to completion and based on the TR, CRs to the relevant stage 3 specifications will be written. This CR contains the text for the MBMS Context Activation procedure.
Summary of change:	⌘	The MBMS Context Activation procedure is transferred from TR 29.846 to TS 24.008.
Consequences if not approved:	⌘	The 3GPP MBMS work will not be completed in the Rel-6 timeframe. No solution for MBMS will be in place at Core Network protocols
Clauses affected:	⌘	Clause 2, 10.5.6.6, 11.2.3 New subclauses; 6.2.3, 6.2.3.1.1, 6.2.3.1.2, 6.2.3.1.3, 6.2.3.1.4

	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 CHANGE

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] Void.

[2] Void.

[2a] 3GPP TR 21.905 "Vocabulary for 3GPP Specifications"

[3] 3GPP TS 22.002: "Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)".

[4] 3GPP TS 22.003: "Teleservices supported by a Public Land Mobile Network (PLMN)".

[5] 3GPP TS 42.009: "Security aspects".

[5a] 3GPP TS 33.102: "3G security; Security architecture".

[6] 3GPP TS 22.011: "Service accessibility".

[7] 3GPP TS 42.017: "Subscriber Identity Modules (SIM); Functional characteristics".

[8] 3GPP TS 22.101: "Service aspects; Service principles".

[8a] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".

[8b] 3GPP TS 23.038: "Alphabets and language-specific information".

[9] 3GPP TS 23.101: "General UMTS Architecture".

[9a] 3GPP TS 23.108: "Mobile radio interface layer 3 specification core network protocols; Stage 2 (structured procedures)".

[10] 3GPP TS 23.003: "Numbering, addressing and identification".

[11] 3GPP TS 43.013: "Discontinuous Reception (DRX) in the GSM system".

[12] 3GPP TS 23.014: "Support of Dual Tone Multi-Frequency (DTMF) signalling".

[12a] Void.

[13] 3GPP TS 43.020: "Security-related network functions".

[14] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode".

[15] 3GPP TS 24.002: "GSM-UMTS Public Land Mobile Network (PLMN) access reference configuration".

[16] 3GPP TS 44.003: "Mobile Station - Base Station System (MS - BSS) interface; Channel structures and access capabilities".

[17] 3GPP TS 44.004: "Layer 1; General requirements".

[18] 3GPP TS 44.005: "Data Link (DL) layer; General aspects".

[19] 3GPP TS 44.006: "Mobile Station - Base Station System (MS - BSS) interface; Data Link (DL) layer specification".

[19a] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[19b] 3GPP TS 25.322: "Radio Link Control (RLC) protocol specification".

[19c] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[20] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[21] 3GPP TS 24.010: "Mobile radio interface layer 3; Supplementary services specification; General aspects".

[22] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[23] 3GPP TS 24.012: "Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface".

[23a] 3GPP TS 44.071: "Location Services (LCS); Mobile radio interface layer 3 specification."

[23b] 3GPP TS 44.031 "Location Services LCS); Mobile Station (MS) - Serving Mobile Location Centre (SMLC); Radio Resource LCS Protocol (RRLP)".

[23c] 3GPP TS 25.331: "Radio Resource Control (RRC) protocol specification"

[24] 3GPP TS 24.080: "Mobile radio Layer 3 supplementary service specification; Formats and coding".

[25] 3GPP TS 24.081: "Line identification supplementary services; Stage 3".

[26] 3GPP TS 24.082: "Call Forwarding (CF) supplementary services; Stage 3".

[27] 3GPP TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3".

[28] 3GPP TS 24.084: "MultiParty (MPTY) supplementary services; Stage 3".

[29] 3GPP TS 24.085: "Closed User Group (CUG) supplementary services; Stage 3".

[30] 3GPP TS 24.086: "Advice of Charge (AoC) supplementary services; Stage 3".

[31] 3GPP TS 24.088: "Call Barring (CB) supplementary services; Stage 3".

[32] 3GPP TS 45.002: "Multiplexing and multiple access on the radio path".

[33] 3GPP TS 45.005: "Radio transmission and reception".

[34] 3GPP TS 45.008: "Radio subsystem link control".

[35] 3GPP TS 45.010: "Radio subsystem synchronization".

[36] 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[36a] 3GPP TS 27.060: "Mobile Station (MS) supporting Packet Switched Services ".

[37] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[38] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[39] 3GPP TS 51.010: "Mobile Station (MS) conformance specification".

[40] 3GPP TS 51.021: "GSM radio aspects base station system equipment specification".

[41] ISO/IEC 646 (1991): "Information technology - ISO 7-bit coded character set for information interchange".

[42] ISO/IEC 6429: "Information technology - Control functions for coded character sets".

[43] ISO 8348 (1987): "Information technology -- Open Systems Interconnection -- Network Service Definition".

[44] ITU-T Recommendation E.163: "Numbering plan for the international telephone service".

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

[46] ITU-T Recommendation E.212: "The international identification plan for mobile terminals and mobile users".

[47] ITU-T Recommendation F.69 (1993): "The international telex service - Service and operational provisions of telex destination codes and telex network identification codes".

[48] ITU-T Recommendation I.330: "ISDN numbering and addressing principles".

[49] ITU-T Recommendation I.440 (1989): "ISDN user-network interface data link layer - General aspects".

[50] ITU-T Recommendation I.450 (1989): "ISDN user-network interface layer 3 General aspects".

[51] ITU-T Recommendation I.500 (1993): "General structure of the ISDN interworking recommendations".

[52] ITU-T Recommendation T.50: "International Reference Alphabet (IRA) (Formerly International Alphabet No. 5 or IA5) - Information technology - 7-bit coded character set for information interchange".

[53] ITU Recommendation Q.931: ISDN user-network interface layer 3 specification for basic control".

[54] ITU-T Recommendation V.21: "300 bits per second duplex modem standardized for use in the general switched telephone network".

[55] ITU-T Recommendation V.22: "1200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[56] ITU-T Recommendation V.22bis: "2400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[57] Void.

[58] ITU-T Recommendation V.26ter: "2400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[59] ITU-T Recommendation V.32: "A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone-type circuits".

[60] ITU-T Recommendation V.110: "Support by an ISDN of data terminal equipments with V-Series type interfaces".

[61] ITU-T Recommendation V.120: "Support by an ISDN of data terminal equipment with V-Series type interfaces with provision for statistical multiplexing".

[62] ITU-T Recommendation X.21: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for synchronous operation on public data networks".

[63] Void.

[64] Void.

[65] ITU-T Recommendation X.30: "Support of X.21, X.21 bis and X.20 bis based Data Terminal Equipments (DTEs) by an Integrated Services Digital Network (ISDN)".

[66] ITU-T Recommendation X.31: "Support of packet mode terminal equipment by an ISDN".

[67] Void.

[68] Void.

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

[70] ETSI ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

[71] ETSI ETS 300 102-2: "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control; Specification Description Language (SDL) diagrams".

[72] ISO/IEC 10646: "Information technology -- Universal Multiple-Octet Coded Character Set (UCS)".

[73] 3GPP TS 22.060: "General Packet Radio Service (GPRS); Service Description; Stage 1".

[74] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service Description; Stage 2".

[75] 3GPP TS 43.064: "General Packet Radio Service (GPRS); Overall description of the GPRS radio interface; Stage 2".

[76] 3GPP TS 44.060: "General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control/Medium Access Control (RLC/MAC) protocol".

[77] IETF RFC 1034: "Domain names - concepts and facilities".

[78] 3GPP TS 44.065: "Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)".

[78a] 3GPP TS 44.064: "Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) Layer Specification".

[79] ITU Recommendation I.460: "Multiplexing, rate adaption and support of existing interfaces".

[80] 3GPP TS 26.111: "Codec for Circuit Switched Multimedia Telephony Service; Modifications to H.324".

[81] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

[82] 3GPP TS 43.022: "Functions related to Mobile Station (MS) in idle mode and group receive mode".

[83] 3GPP TS 26.103: "Speech Codec List for GSM and UMTS".

[84] 3GPP TS 44.018: "Mobile radio interface layer 3 specification, Radio Resource Control Protocol".

[85] 3GPP TS 48.008: "Mobile-services Switching Centre – Base Station System (MSC – BSS) interface; layer 3 specification".

[86] 3GPP TS 48.018: "General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN); BSS GPRS Protocol (BSSGP)".

[87] 3GPP TS 43.055: "Dual Transfer Mode (DTM); Stage 2".

[88] 3GPP TS 23.067: "enhanced Multi-Level Precedence and Pre-emption service (eMLPP); Stage 2".

[88a] 3GPP TS 23.093: "Technical realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[89] 3GPP TS 22.042: "Network Identity and Time Zone (NITZ), Stage 1".

[90] 3GPP TS 23.040: "Technical realization of Short Message Service (SMS)".

[91] 3GPP TS 44.056: "GSM Cordless Telephony System (CTS), (Phase 1) CTS Radio Interface Layer 3 Specification".

[92] 3GPP TS 23.226: "Global Text Telephony; Stage 2 "

[93] 3GPP TS 26.226: "Cellular Text Telephone Modem (CTM), General Description "

[94] 3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes"

[95] 3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP"

[96] 3GPP TS 23.205: "Bearer-independent circuit-switched core network; Stage 2".

[97] 3GPP TS 23.172: "UDI/RDI Fallback and Service Modification; Stage 2".

[98] 3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode"

[99] RFC 3513 (April 2003): "Internet Protocol Version 6 (IPv6) Addressing Architecture".

[100] 3GPP TS 29.207: "Policy control over Go interface".

[101] 3GPP TS 21.111: "USIM and IC card requirements".

[102] RFC 1661 (July 1994): "The Point-to-Point Protocol (PPP)".

[103] RFC 3232 (January 2002): "Assigned Numbers: RFC 1700 is Replaced by an On-line Database".

[104] 3GPP TS 23.034: "High Speed Circuit Switched Data (HSCSD) – Stage 2".

[105] 3GPP TS 23.271: "Functional stage 2 description of LCS".

[106] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and Functional Description".

NEXT CHANGE

6.2.3 MBMS Session management procedures

6.2.3.1 MBMS context activation

The purpose of this procedure is to establish an MBMS context in the MS and in the network for a specific IP Multicast Address using a specific NSAPI for MBMS user plane transmission. The MS 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 MS at the application layer (see 3GPP TS 23.246 [106]).

6.2.3.1.1 Successful MBMS context activation

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

Upon receipt of a REQUEST MBMS CONTEXT ACTIVATION message, the MS 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 shall contain an IP multicast address and an APN, which shall be the same as the IP multicast address and the APN requested by the network in the REQUEST MBMS CONTEXT ACTIVATION message. Furthermore, the MS shall include the Supported MBMS bearer capabilities, i.e. the maximum downlink bit rate the MS can handle.

Upon receipt of the ACTIVATE MBMS CONTEXT REQUEST message, the network shall stop timer T3385. If the network accepts the request, it shall reply with an ACTIVATE MBMS CONTEXT ACCEPT message.

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

6.2.3.1.2 Unsuccessful MBMS context activation requested by the MS

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 sender of the message shall include the same TI as included in the ACTIVATE MBMS CONTEX REQUEST and an additional cause code that typically indicates one of the following causes:

8: Operator Determined Barring;

24: MBMS bearer capabilities insufficient for the service;

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; or

95 - # 111: protocol errors.

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

6.2.3.1.3 Unsuccessful MBMS context activation requested by the network

Upon receipt of the REQUEST MBMS CONTEXT ACTIVATION message, the MS may reject the network requested MBMS context activation by sending the REQUEST MBMS CONTEXT ACTIVATION REJECT message to the network. The sender of the message shall include 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 in state MBMS-INACTIVE.

6.2.3.1.4 Abnormal cases

The following abnormal cases can be identified:

a) Expiry of timers in the mobile station: On the first expiry of the timer T3380, the MS shall resend the ACTIVATE MBMS CONTEXT REQUEST and shall reset and restart timer T3380. This retransmission is repeated four times, i.e. on the fifth expiry of timer T3380, the MS shall release all resources possibly allocated for this invocation and shall abort the procedure; no automatic MBMS context activation re-attempt shall be performed.

b) Expiry of timers on the network side: On the first expiry of the timer T3385, the network shall resend the message REQUEST MBMS CONTEXT ACTIVATION and shall reset and restart timer T3385. This

retransmission is repeated four times, i.e. on the fifth expiry of timer T3385, the network shall release possibly allocated resources for this activation and shall abort the procedure.

c) MBMS context activation request for an already activated MBMS context (on the mobile station side): If the MS receives a REQUEST MBMS CONTEXT ACTIVATION message with the same combination of APN and IP multicast address (i.e. PDP type and PDP address) as an already activated MBMS context, the MS shall deactivate the existing MBMS context locally without notification to the network and proceed with the requested MBMS context activation.

d) MBMS context activation request for an already activated MBMS context (on the network side): If the network receives an ACTIVATE MBMS CONTEXT REQUEST message with the same combination of APN and IP multicast address (i.e. PDP type and PDP address) as an already activated MBMS context, the network shall deactivate the existing MBMS context locally without notification to the MS and proceed with the requested MBMS context activation.

NEXT CHANGE

10.5.6.6 SM cause

The purpose of the *SM cause* information element is to indicate the reason why a session management request is rejected.

The *SM cause* is a type 3 information element with 2 octets length.

The *SM cause* information element is coded as shown in figure 10.5.139/3GPP TS 24.008 and table 10.5.157/3GPP TS 24.008.

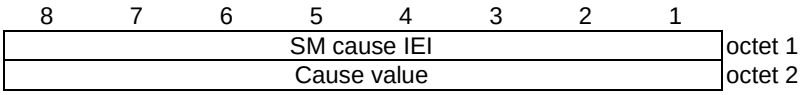

Figure 10.5.139/3GPP TS 24.008: *SM cause* information element

Table 10.5.157/3GPP TS 24.008: *SM cause* information element

Cause value (octet 2)
Bits

8 7 6 5 4 3 2 1	
0 0 0 0 1 0 0 0	Operator Determined Barring
0 0 0 1 1 0 0 0	MBMS bearer capabilities insufficient for the service
0 0 0 1 1 0 0 1	LLC or SNDCP failure (GSM only)
0 0 0 1 1 0 1 0	Insufficient resources
0 0 0 1 1 0 1 1	Missing or unknown APN
0 0 0 1 1 1 0 0	Unknown PDP address or PDP type
0 0 0 1 1 1 0 1	User ~~A~~authentication failed
0 0 0 1 1 1 1 0	Activation rejected by GGSN
0 0 0 1 1 1 1 1	Activation rejected, unspecified
0 0 1 0 0 0 0 0	Service option not supported
0 0 1 0 0 0 0 1	Requested service option not subscribed
0 0 1 0 0 0 1 0	Service option temporarily out of order
0 0 1 0 0 0 1 1	NSAPI already used (not sent)
0 0 1 0 0 1 0 0	Regular deactivation
0 0 1 0 0 1 0 1	QoS not accepted
0 0 1 0 0 1 1 0	Network failure
0 0 1 0 0 1 1 1	Reactivation required
0 0 1 0 1 0 0 0	Feature not supported
0 0 1 0 1 0 0 1	Semantic error in the TFT operation
0 0 1 0 1 0 1 0	Syntactical error in the TFT operation
0 0 1 0 1 0 1 1	Unknown PDP context
0 0 1 0 1 1 1 0	PDP context without TFT already activated
0 0 1 0 1 1 0 0	Semantic errors in packet filter(s)
0 0 1 0 1 1 0 1	Syntactical errors in packet filter(s)
0 1 0 1 0 0 0 1	Invalid transaction identifier value
0 1 0 1 1 1 1 1	Semantically incorrect message
0 1 1 0 0 0 0 0	Invalid mandatory information
0 1 1 0 0 0 0 1	Message type non-existent or not implemented
0 1 1 0 0 0 1 0	Message type not compatible with the protocol state
0 1 1 0 0 0 1 1	Information element non-existent or not implemented
0 1 1 0 0 1 0 0	Conditional IE error
0 1 1 0 0 1 0 1	Message not compatible with the protocol state
0 1 1 0 1 1 1 1	Protocol error, unspecified
0 1 1 1 0 0 0 0	APN restriction value incompatible with active PDP context

Any other value received by the mobile station shall be treated as 0010 0010, "Service option temporarily out of order". Any other value received by the network shall be treated as 0110 1111, "Protocol error, unspecified".

NOTE: The listed cause values are defined in ~~a~~Annex I

NEXT CHANGE

11.2.3 Timers of GPRS and MBMS session management

Table 11.2c/3GPP TS 24.008: GPRS and MBMS ~~S~~session management timers - MS side

TIMER NUM.	TIMER VALUE	STATE	CAUSE OF START	NORMAL STOP	ON THE 1st, 2nd, 3rd, 4th EXPIRY
T3380	30s	PDP-ACTIVE-PEND or MBMS ACTIVE-PENDING	ACTIVATE PDP CONTEXT REQUEST, ~~or~~ ACTIVATE SECONDARY PDP CONTEXT REQUEST or ACTIVATE MBMS CONTEXT REQUEST sent	ACTIVATE PDP CONTEXT ACCEPT, ~~or~~ ACTIVATE SECONDARY PDP CONTEXT ACCEPT or ACTIVATE MBMS CONTEXT ACCEPT received ACTIVATE PDP CONTEXT REJECT, ~~or~~ ACTIVATE SECONDARY PDP CONTEXT REJECT or ACTIVATE MBMS CONTEXT REJECT received	Retransmission of ACTIVATE PDP CONTEXT REQ, ~~or~~ ACTIVATE SECONDARY PDP CONTEXT REQUEST or ACTIVATE MBMS CONTEXT REQUEST
T3381	8s	PDP-MODIFY-PENDING	MODIFY PDP CONTEXT REQUEST sent	MODIFY PDP CONTEXT ACCEPT received	Retransmission of MODIFY PDP CONTEXT REQUEST
T3390	8s	PDP-INACT-PEND or MBMS INACTIVE-PENDING	DEACTIVATE PDP CONTEXT REQUEST sent	DEACTIVATE PDP CONTEXT ACC received	Retransmission of DEACTIVATE PDP CONTEXT REQUEST

NOTE: Typically, the procedures are aborted on the fifth expiry of the relevant timer. Exceptions are described in the corresponding procedure description.

Table 11.2d/3GPP TS 24.008: GPRS and MBMS ~~S~~session management timers - network side

TIMER NUM.	TIMER VALUE	STATE	CAUSE OF START	NORMAL STOP	ON THE 1st, 2nd, 3rd, 4th EXPIRY
T3385	8s	PDP-ACT-PEND or MBMS ACTIVE-PENDING	REQUEST PDP CONTEXT ACTIVATION or REQUEST MBMS CONTEXT ACTIVATION sent	ACTIVATE PDP CONTEXT REQ or ACTIVATE MBMS CONTEXT REQUEST received	Retransmission of REQUEST PDP CONTEXT ACTIVATION or REQUEST MBMS CONTEXT ACTIVATION
T3386	8s	PDP-MOD-PEND	MODIFY PDP CONTEXT REQUEST sent	MODIFY PDP CONTEXT ACC received	Retransmission of MODIFY PDP CONTEXT REQ
T3395	8s	PDP-INACT-PEND or MBMS INACTIVE-PENDING	DEACTIVATE PDP CONTEXT REQUEST sent	DEACTIVATE PDP CONTEXT ACC received	Retransmission of DEACTIVATE PDP CONTEXT REQ

NOTE: Typically, the procedures are aborted on the fifth expiry of the relevant timer. Exceptions are described in the corresponding procedure description.

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041580**
Sophia Antipolis, France, 16-20 August 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **895** ⌘ **rev** **1** ⌘ Current version: **6.5.0** ⌘

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

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

Title:	⌘	Introduction of the MBMS Multicast Service Deactivation messages – Reuse of PDP context deactivation messages
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	16/08/2004
Category:	⌘	**B**
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:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. The MBMS work is now close to completion and based on the TR, CRs to the relevant stage 3 specifications will be written. This CR contains the text for the PDP context deactivation messages.
Summary of change:	⌘	The MBMS Session Management is introduced into TS 24.008. This CR performs the transfer for the MBMS Context Deactivation messages, by reusing existing PDP context deactivation messages, from TR 29.846 to TS 24.008.
Consequences if not approved:	⌘	The 3GPP MBMS work will not be completed in the Rel-6 timeframe. No solution for MBMS will be in place at Core Network protocols

Clauses affected:	⌘	9.5.14, 9.5.14.1, 9.5.14.2, 9.5.15, 9.5.15.1, new subclauses; 9.5.14.3, 9.5.15.2.

Other specs affected:	⌘	Y	N		⌘
			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.

9.5.14 Deactivate PDP context request

This message is sent to request deactivation of an active PDP context or an active MBMS context. See table 9.5.8/3GPP TS 24.008.

Message type: DEACTIVATE PDP CONTEXT REQUEST

Significance: global

Direction: both

Table 9.5.14/3GPP TS 24.008: DEACTIVATE PDP CONTEXT REQUEST message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2– 3/2
	Deactivate PDP context request message identity	Message type 10.4	M	V	1
	SM cause	SM cause 10.5.6.6	M	V	1
9-	Tear down indicator	Tear down indicator 10.5.6.10	O	TV	1
27	Protocol configuration options	Protocol configuration options 10.5.6.3	O	TLV	3 – 253
XX	MBMS protocol configuration options	MBMS protocol configuration options 10.5.6.15	O	TLV	3 - 253

9.5.14.1 Tear down indicator

This IE is included in the message in order to indicate whether only the PDP context associated with this specific TI or all active PDP contexts sharing the same PDP address and APN as the PDP context associated with this specific TI shall be deactivated.

If this IE is received for an MBMS context, it shall be ignored by the receiver.

9.5.14.2 Protocol configuration options

This IE is included in the message when the MS or the network wishes to transmit (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity.

If this IE is received for an MBMS context, it shall be ignored by the receiver.

9.5.14.3 MBMS protocol configuration options

This IE is included in the message when the MS or the network wishes to transmit MBMS bearer related (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity for an MBMS context.

If the IE is received for a PDP context, it shall be ignored by the receiver.

9.5.15 Deactivate PDP context accept

This message is sent to acknowledge deactivation of the PDP context requested in the corresponding *Deactivate PDP context request* message. See table 9.5.15/3GPP TS 24.008.

Message type: DEACTIVATE PDP CONTEXT ACCEPT

Significance: global

Direction: both

Table 9.5.15/3GPP TS 24.008: DEACTIVATE PDP CONTEXT ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2– 3/2
	Deactivate PDP context accept message identity	Message type 10.4	M	V	1
27	Protocol configuration options	Protocol configuration options 10.5.6.3	O	TLV	3 – 253
XX	MBMS protocol configuration options	MBMS protocol configuration options 10.5.6.15	O	TLV	3 - 253

9.5.15.1 Protocol configuration options

This IE is included in the message when the MS or the network wishes to transmit (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity.

If this IE is received for an MBMS context, it shall be ignored by the receiver.

9.5.15.2 MBMS protocol configuration options

This IE is included in the message when the MS or the network wishes to transmit MBMS bearer related (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity for an MBMS context.

If the IE is received for a PDP context, it shall be ignored by the receiver.

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041622**
Sophia Antipolis, France, 16-20 August 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **891** ⌘ **rev** **1** ⌘ Current version: **6.5.0** ⌘

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

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

Title:	⌘	Introduction of the MBMS Context Activation messages
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	17/08/2004
Category:	⌘	**B**
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. The MBMS work is now close to completion and based on the TR, CRs to the relevant stage 3 specifications will be written. This CR contains the text for the MBMS context activation messages.
Summary of change:	⌘	The messages and related parameters for the MBMS Context Activation procedure are transferred from TR 29.846 to TS 24.008.
Consequences if not approved:	⌘	The 3GPP MBMS work will not be completed in the Rel-6 timeframe. No solution for MBMS will be in place at Core Network protocols.

Clauses affected:	⌘	New subclauses; 6.2.3.3, 9.5.22, 9.5.23, 9.5.24, 9.5.25, 9.5.26

	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

6.2.3.3 MBMS protocol configuration options

The MS and the GGSN may communicate parameters related to the MBMS bearer by means of the MBMS protocol configuration options information element when activating or deactivating an MBMS context. For example, such parameters can be used to convey information between the MS and the GGSN.

The MBMS protocol configuration options information element is transparent to the SGSN.

NEXT CHANGE

9.5.22 Activate MBMS Context Request

This message is sent by the MS to the network as an explicit response to a *Request MBMS Context Activation* message See table 9.5.22/3GPP TS 24.008.

Message type: ACTIVATE MBMS CONTEXT REQUEST

Significance: global

Direction: MS to network

TABLE 9.5.22 : ACTIVATE MBMS CONTEXT REQUEST message content

IEI	Information Element	Type/	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2– 3/2
	Activate MBMS context request message identity	Message type 10.4	M	V	1
	Requested MBMS NSAPI	Network service access point identifier 10.5.6.2	M	V	1
	Requested LLC SAPI	LLC service access point identifier 10.5.6.9	M	V	1
	Supported MBMS bearer capabilities	MBMS bearer capabilities 10.5.6.14	M	LV	2 – 3
	Requested multicast address	Packet data protocol address 10.5.6.4	M	LV	3 - 19
28	Access point name	Access point name 10.5.6.1	M	LV	2 – 101
35	MBMS protocol configuration options	MBMS protocol configuration options 10.5.6.15	O	TLV	3 - 253

NOTE: The MBMS NSAPI will be used when UTRAN chooses a point-to-point MBMS bearer for the transfer of MBMS data in the user plane.

9.5.22.1 MBMS protocol configuration options

This IE is included in the message when the MS wishes to transmit MBMS bearer related (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity for an MBMS context.

9.5.23 Activate MBMS Context Accept

This message is sent by the network to the MS to acknowledge activation of an MBMS context.
See table 9.5.23/3GPP TS 24.008.

Message type: ACTIVATE MBMS CONTEXT ACCEPT

Significance: global

Direction: network to MS

TABLE 9.5.23 : ACTIVATE MBMS CONTEXT ACCEPT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2– 3/2
	Activate MBMS context accept message identity	Message type 10.4	M	V	1
	Temporary Mobile Group Identity	Temporary Mobile Group Identity 10.5.6.13	M	LV	4-7
	Negotiated LLC SAPI	LLC service access point identifier 10.5.6.9	M	V	1
35	MBMS protocol configuration options	MBMS protocol configuration options 10.5.6.15	O	TLV	3 - 253

9.5.23.1 MBMS protocol configuration options

This IE is included in the message when the network wishes to transmit MBMS bearer related (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity for an MBMS context.

9.5.24 Activate MBMS Context Reject

This message is sent by the network to the MS to reject activation of a MBMS context.
See table 9.5.24/3GPP TS 24.008.

Message type: ACTIVATE MBMS CONTEXT REJECT

Significance: global

Direction: network to MS

TABLE 9.5.24 : ACTIVATE MBMS CONTEXT REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2– 3/2
	Activate MBMS context reject message identity	Message type 10.4	M	V	1
	SM cause	SM Cause 10.5.6.6	M	V	1
35	MBMS protocol configuration options	MBMS protocol configuration options 10.5.6.15	O	TLV	3 - 253

9.5.24.1 MBMS protocol configuration options

This IE is included in the message when the network wishes to transmit MBMS bearer related (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity for an MBMS context.

9.5.25 Request MBMS Context Activation

This message is sent by the network to the MS to initiate activation of an MBMS context.
See table 9.5.25/3GPP TS 24.008.

Message type: REQUEST MBMS CONTEXT ACTIVATION

Significance: global

Direction: network to MS

TABLE 9.5.25 : REQUEST MBMS CONTEXT ACTIVATION message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2– 3/2
	Request MBMS context activation message identity	Message type 10.4	M	V	1
	Linked NSAPI	Network service access point identifier 10.5.6.2	M	V	1
	Offered Multicast address	Packet data protocol address 10.5.6.4	M	LV	3 - 19
28	Access point name	Access point name 10.5.6.1	M	LV	2 – 101
35	MBMS protocol configuration options	MBMS protocol configuration options 10.5.6.15	O	TLV	3 - 253

9.5.25.1 Linked 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.

9.5.25.2 MBMS protocol configuration options

This IE is included in the message when the network wishes to transmit MBMS bearer related (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity for an MBMS context.

9.5.26 Request MBMS Context Activation Reject

This message is sent by the MS to the network to reject initiation of an MBMS context activation.
See table 9.5.26/3GPP TS 24.008.

Message type: REQUEST MBMS CONTEXT ACTIVATION REJECT

Significance: global

Direction: MS to network

TABLE 9.5.26 : REQUEST MBMS CONTEXT ACTIVATION REJECT message content

IEI	Information Element	Type/Reference	Presence	Format	Length
	Protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2– 3/2
	Request MBMS context act. reject message identity	Message type 10.4	M	V	1
	SM cause	SM Cause 10.5.6.6	M	V	1
35	MBMS protocol configuration options	MBMS protocol configuration options 10.5.6.15	O	TLV	3 – 253

9.5.26.1 MBMS protocol configuration options

This IE is included in the message when the MS wishes to transmit MBMS bearer related (protocol) data (e.g. configuration parameters, error codes or messages/events) to the peer entity for an MBMS context.

NEXT CHANGE

10.5.6.13 Temporary Mobile Group Identity (TMGI)

The purpose of the TMGI element is for group paging in MBMS.

The TMGI information element is a type 4 information element with a minimum length of 5 octets and a maximum length of 8 octets. If octet 6 is included, then octets 7 and 8 shall also be included.

The content of the TMGI element is shown in Figure 10.5.6.13/3GPP TS 24.008.

8	7	6	5	4	3	2	1	
Temporary Mobile Group Identity IEI								Octet 1
Length of Temporary Mobile Group Identity contents								Octet 2
MBMS Service ID								Octet 3 Octet 4 Octet 5
MCC digit 2				MCC digit 1				Octet 6
MNC digit 3				MCC digit 3				Octet 7
MNC digit 2				MNC digit 1				Octet 8

Figure 10.5.6.13/3GPP TS 24.008: TMGI information element

Table 10.5.6.13/3GPP TS 24.008: *TMGI* information element

MBMS Service ID (octet 3, 4 and 5)

In the MBMS Service ID field bit 8 of octet 3 is the most significant bit and bit 1 of octet 5 the least significant bit. The coding of the MBMS Service ID is the responsibility of each administration. Coding using full hexadecimal representation may be used. The MBMS Service ID consists of 3 octets.

MCC, Mobile country code (octet 6, octet 7 bits 1 to 4)

The MCC field is coded as in ITU-T Rec. E.212, Annex A.

MNC, Mobile network code (octet 7 bits 5 to 8, octet 8)

The coding of this field is the responsibility of each administration but BCD coding shall be used. The MNC shall consist of 2 or 3 digits. If a network operator decides to use only two digits in the MNC, bits 5 to 8 of octet 7 shall be coded as "1111".

10.5.6.14 MBMS bearer capabilities

The purpose of the *MBMS bearer capabilities* information element is to indicate the maximum bit rate for downlink supported by the MS for an MBMS context.

NOTE: The information element indicates the static physical capabilities of the MS, independent of the radio access (UMTS or GSM), the radio conditions, or other CS or PS services possibly activated by the MS.

The *MBMS bearer capabilities* is a type 4 information element with a maximum length of 4 octets.

The *MBMS bearer capabilities* information element is coded as shown in figure 10.5.6.14/3GPP TS 24.008.

8	7	6	5	4	3	2	1	
MBMS bearer capabilities IEI								Octet 1
Length of MBMS bearer capabilities IE								Octet 2
Maximum bit rate for downlink								Octet 3
Maximum bit rate for downlink (extended)								Octet 4

Figure 10.5.6.14/3GPP TS 24.008: *MBMS bearer capabilities* information element

Table 10.5.6.14/3GPP TR 24.008: *MBMS bearer capabilities* information element

Maximum bit rate for downlink, octet 3 (see 3GPP TS 23.107 [81])

The coding is identical to that of the maximum bit rate for downlink, octet 9, in the *Quality of service* information element (see subclause 10.5.6.5).

If the sending entity wants to indicate a maximum bit rate for downlink higher than 8640 kbps, it shall set octet 3 to ”11111110”, i.e. 8640 kbps, and shall encode the value for the maximum bit rate in octet 4.

Maximum bit rate for downlink (extended), octet 4

The coding is identical to that of the maximum bit rate for downlink (extended), octet 15, in the *Quality of service* information element (see subclause 10.5.6.5).

10.5.6.15 MBMS protocol configuration options

The purpose of the *MBMS protocol configuration options* information element is to:

- transfer protocol options associated with the bearer level of an MBMS context activation, and
- transfer additional MBMS bearer related (protocol) data (e.g. configuration parameters, error codes or messages/events).

The *MBMS protocol configuration options* is a type 4 information element with a minimum length of 3 octets and a maximum length of 253 octets.

The *MBMS protocol configuration options* information element is coded as shown in figure 10.5.6.15/3GPP TS 24.008 and table 10.5.6.15/3GPP TS 24.008.

8	7	6	5	4	3	2	1	
MBMS protocol configuration options IEI								octet 1
Length of MBMS protocol configuration options contents								octet 2
0	0	0	0	0	0	0	0	octet 3
Spare								

Figure 10.5.6.15/3GPP TS 24.008: *MBMS protocol configuration options* information element

Table 10.5.6.15/3GPP TR 24.008: *MBMS protocol configuration options* information element

Bits 1 to 8 of octet 3 are spare and shall be coded as "0".

NOTE: The reason for defining the information element is to have a transparent mechanism in the SGSN available from the introduction of MBMS. This will ensure that MS – GGSN communication is possible if new MBMS bearer service related parameters are defined.

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041623**
Sophia Antipolis, France, 16-20 August 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **897** ⌘**rev** **1** ⌘ Current version: **6.5.0** ⌘

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

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

Title:	⌘	Update of Annex I for MBMS
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	17/08/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
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A *(corresponds to a correction in an earlier release)*
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C *(functional modification of feature)*
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Use one of the following releases:

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R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. The MBMS work is now close to completion and based on the TR, CRs to the relevant stage 3 specifications will be written. This CR contains the text for Annex I.
Summary of change:	⌘	The RFCs 2236 (IGMP) and 2710 (MLD) are added to the references. At present, TS 24.008 contains different descriptions for the cause value #36. It is proposed to use the generic term "regular deactivation" in all places as agreed in TR 29.846. TR 29.846 makes some existing GPRS specific cause values valid not only for GPRS Session Management, but also for MBMS Session Management. Additionaly, TR 29.846 defines two new causes for MBMS Session Management. All neded changes are transferred from TR 29.846 to TS 29.008.
Consequences if not approved:	⌘	The 3GPP MBMS work will not be completed in the Rel-6 timeframe. No solution for MBMS will be in place at Core Network protocols.

Clauses affected:	⌘	Clause 2, Annex I, I.1, new suclause I.3.

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

⌘

Other comments:	⌘	

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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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FIRST CHANGE

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] Void.

[2] Void.

[2a] 3GPP TR 21.905 "Vocabulary for 3GPP Specifications"

[3] 3GPP TS 22.002: "Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)".

[4] 3GPP TS 22.003: "Teleservices supported by a Public Land Mobile Network (PLMN)".

[5] 3GPP TS 42.009: "Security aspects".

[5a] 3GPP TS 33.102: "3G security; Security architecture".

[6] 3GPP TS 22.011: "Service accessibility".

[7] 3GPP TS 42.017: "Subscriber Identity Modules (SIM); Functional characteristics".

[8] 3GPP TS 22.101: "Service aspects; Service principles".

[8a] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".

[8b] 3GPP TS 23.038: "Alphabets and language-specific information".

[9] 3GPP TS 23.101: "General UMTS Architecture".

[9a] 3GPP TS 23.108: "Mobile radio interface layer 3 specification core network protocols; Stage 2 (structured procedures)".

[10] 3GPP TS 23.003: "Numbering, addressing and identification".

[11] 3GPP TS 43.013: "Discontinuous Reception (DRX) in the GSM system".

[12] 3GPP TS 23.014: "Support of Dual Tone Multi-Frequency (DTMF) signalling".

[12a] Void.

[13] 3GPP TS 43.020: "Security-related network functions".

[14] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode".

[15] 3GPP TS 24.002: "GSM-UMTS Public Land Mobile Network (PLMN) access reference configuration".

[16] 3GPP TS 44.003: "Mobile Station - Base Station System (MS - BSS) interface; Channel structures and access capabilities".

[17] 3GPP TS 44.004: "Layer 1; General requirements".

[18] 3GPP TS 44.005: "Data Link (DL) layer; General aspects".

[19] 3GPP TS 44.006: "Mobile Station - Base Station System (MS - BSS) interface; Data Link (DL) layer specification".

[19a] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[19b] 3GPP TS 25.322: "Radio Link Control (RLC) protocol specification".

[19c] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[20] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[21] 3GPP TS 24.010: "Mobile radio interface layer 3; Supplementary services specification; General aspects".

[22] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[23] 3GPP TS 24.012: "Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface".

[23a] 3GPP TS 44.071: "Location Services (LCS); Mobile radio interface layer 3 specification."

[23b] 3GPP TS 44.031 "Location Services LCS); Mobile Station (MS) - Serving Mobile Location Centre (SMLC); Radio Resource LCS Protocol (RRLP)".

[23c] 3GPP TS 25.331: "Radio Resource Control (RRC) protocol specification"

[24] 3GPP TS 24.080: "Mobile radio Layer 3 supplementary service specification; Formats and coding".

[25] 3GPP TS 24.081: "Line identification supplementary services; Stage 3".

[26] 3GPP TS 24.082: "Call Forwarding (CF) supplementary services; Stage 3".

[27] 3GPP TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3".

[28] 3GPP TS 24.084: "MultiParty (MPTY) supplementary services; Stage 3".

[29] 3GPP TS 24.085: "Closed User Group (CUG) supplementary services; Stage 3".

[30] 3GPP TS 24.086: "Advice of Charge (AoC) supplementary services; Stage 3".

[31] 3GPP TS 24.088: "Call Barring (CB) supplementary services; Stage 3".

[32] 3GPP TS 45.002: "Multiplexing and multiple access on the radio path".

[33] 3GPP TS 45.005: "Radio transmission and reception".

[34] 3GPP TS 45.008: "Radio subsystem link control".

[35] 3GPP TS 45.010: "Radio subsystem synchronization".

[36] 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[36a] 3GPP TS 27.060: "Mobile Station (MS) supporting Packet Switched Services ".

[37] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[38] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[39] 3GPP TS 51.010: "Mobile Station (MS) conformance specification".

[40] 3GPP TS 51.021: "GSM radio aspects base station system equipment specification".

[41] ISO/IEC 646 (1991): "Information technology - ISO 7-bit coded character set for information interchange".

[42] ISO/IEC 6429: "Information technology - Control functions for coded character sets".

[43] ISO 8348 (1987): "Information technology -- Open Systems Interconnection -- Network Service Definition".

[44] ITU-T Recommendation E.163: "Numbering plan for the international telephone service".

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

[46] ITU-T Recommendation E.212: "The international identification plan for mobile terminals and mobile users".

[47] ITU-T Recommendation F.69 (1993): "The international telex service - Service and operational provisions of telex destination codes and telex network identification codes".

[48] ITU-T Recommendation I.330: "ISDN numbering and addressing principles".

[49] ITU-T Recommendation I.440 (1989): "ISDN user-network interface data link layer - General aspects".

[50] ITU-T Recommendation I.450 (1989): "ISDN user-network interface layer 3 General aspects".

[51] ITU-T Recommendation I.500 (1993): "General structure of the ISDN interworking recommendations".

[52] ITU-T Recommendation T.50: "International Reference Alphabet (IRA) (Formerly International Alphabet No. 5 or IA5) - Information technology - 7-bit coded character set for information interchange".

[53] ITU Recommendation Q.931: ISDN user-network interface layer 3 specification for basic control".

[54] ITU-T Recommendation V.21: "300 bits per second duplex modem standardized for use in the general switched telephone network".

[55] ITU-T Recommendation V.22: "1200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[56] ITU-T Recommendation V.22bis: "2400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[57] Void.

[58] ITU-T Recommendation V.26ter: "2400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[59] ITU-T Recommendation V.32: "A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone-type circuits".

[60] ITU-T Recommendation V.110: "Support by an ISDN of data terminal equipments with V-Series type interfaces".

[61] ITU-T Recommendation V.120: "Support by an ISDN of data terminal equipment with V-Series type interfaces with provision for statistical multiplexing".

[62] ITU-T Recommendation X.21: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for synchronous operation on public data networks".

[63] Void.

[64] Void.

[65] ITU-T Recommendation X.30: "Support of X.21, X.21 bis and X.20 bis based Data Terminal Equipments (DTEs) by an Integrated Services Digital Network (ISDN)".

[66] ITU-T Recommendation X.31: "Support of packet mode terminal equipment by an ISDN".

[67] Void.

[68] Void.

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

[70] ETSI ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

[71] ETSI ETS 300 102-2: "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control; Specification Description Language (SDL) diagrams".

[72] ISO/IEC 10646: "Information technology -- Universal Multiple-Octet Coded Character Set (UCS)".

[73] 3GPP TS 22.060: "General Packet Radio Service (GPRS); Service Description; Stage 1".

[74] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service Description; Stage 2".

[75] 3GPP TS 43.064: "General Packet Radio Service (GPRS); Overall description of the GPRS radio interface; Stage 2".

[76] 3GPP TS 44.060: "General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control/Medium Access Control (RLC/MAC) protocol".

[77] IETF RFC 1034: "Domain names - concepts and facilities".

[78] 3GPP TS 44.065: "Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)".

[78a] 3GPP TS 44.064: "Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) Layer Specification".

[79] ITU Recommendation I.460: "Multiplexing, rate adaption and support of existing interfaces".

[80] 3GPP TS 26.111: "Codec for Circuit Switched Multimedia Telephony Service; Modifications to H.324".

[81] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

[82] 3GPP TS 43.022: "Functions related to Mobile Station (MS) in idle mode and group receive mode".

[83] 3GPP TS 26.103: "Speech Codec List for GSM and UMTS".

[84] 3GPP TS 44.018: "Mobile radio interface layer 3 specification, Radio Resource Control Protocol".

[85] 3GPP TS 48.008: "Mobile-services Switching Centre – Base Station System (MSC – BSS) interface; layer 3 specification".

[86] 3GPP TS 48.018: "General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN); BSS GPRS Protocol (BSSGP)".

[87] 3GPP TS 43.055: "Dual Transfer Mode (DTM); Stage 2".

[88] 3GPP TS 23.067: "enhanced Multi-Level Precedence and Pre-emption service (eMLPP); Stage 2".

[88a] 3GPP TS 23.093: "Technical realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[89] 3GPP TS 22.042: "Network Identity and Time Zone (NITZ), Stage 1".

[90] 3GPP TS 23.040: "Technical realization of Short Message Service (SMS)".

[91] 3GPP TS 44.056: "GSM Cordless Telephony System (CTS), (Phase 1) CTS Radio Interface Layer 3 Specification".

[92] 3GPP TS 23.226: "Global Text Telephony; Stage 2 "

[93] 3GPP TS 26.226: "Cellular Text Telephone Modem (CTM), General Description "

[94] 3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes"

[95] 3GPP TS 24.229: "IP Multimedia Call Control Protocol based on SIP and SDP"

[96] 3GPP TS 23.205: "Bearer-independent circuit-switched core network; Stage 2".

[97] 3GPP TS 23.172: "UDI/RDI Fallback and Service Modification; Stage 2".

[98] 3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode"

[99] RFC 3513 (April 2003): "Internet Protocol Version 6 (IPv6) Addressing Architecture".

[100] 3GPP TS 29.207: "Policy control over Go interface".

[101] 3GPP TS 21.111: "USIM and IC card requirements".

[102] RFC 1661 (July 1994): "The Point-to-Point Protocol (PPP)".

[103] RFC 3232 (January 2002): "Assigned Numbers: RFC 1700 is Replaced by an On-line Database".

[104] 3GPP TS 23.034: "High Speed Circuit Switched Data (HSCSD) – Stage 2".

[105] 3GPP TS 23.271: "Functional stage 2 description of LCS".

[10x] RFC 2236 (November 1997): "Internet Group Management Protocol, Version 2".

[10y] RFC 2710 (October 1999): "Multicast Listener Discovery (MLD) for IPv6".

NEXT CHANGE

Annex I (informative): GPRS specific cause values for GPRS Ssession Mmanagement and MBMS Session Management

I.1 Causes related to nature of request

Cause value = 8 Operator Determined Barring

This cause code is used by the network to indicate that the requested service was rejected by the SGSN due to Operator Determined Barring.

Cause value = 25 LLC or SNDCP failure (GSM only)

This cause code is used by the MS indicate that a PDP context is deactivated because of a LLC or SNDCP failure (e.g. if the SM receives a *SNSM-STATUS.request* message with cause "*DM received* " or " *invalid XID response* ", see 3GPP TS 44.065 [78])

Cause value = 26 Insufficient resources

This cause code is used by the MS or by the network to indicate that a PDP context activation request, secondary PDP context activation request, ~~or~~ PDP context modification request, or MBMS context activation request cannot be accepted due to insufficient resources.

Cause value = 27 Unknown or missing access point name

This cause code is used by the network to indicate that the requested service was rejected by the external packet data network because the access point name was not included although required or if the access point name could not be resolved.

Cause value = 28 Unknown PDP address or PDP type

This cause code is used by the network to indicate that the requested service was rejected by the external packet data network because the PDP address or type could not be recognised.

Cause value = 29 User authentication failed

This cause code is used by the network to indicate that the requested service was rejected by the external packet data network due to a failed user authentication.

Cause value = 30 Activation rejected by GGSN

This cause code is used by the network to indicate that the requested service was rejected by the GGSN.

Cause value = 31 Activation rejected, unspecified

This cause code is used by the network to indicate that the requested service was rejected due to unspecified reasons.

Cause value = 32 Service option not supported

This cause code is used by the network when the MS requests a service which is not supported by the PLMN.

Cause value = 33 Requested service option not subscribed

See Annex G, clause 4.

Cause value = 34 Service option temporarily out of order

See Annex G, clause 4.

Cause value = 35 NSAPI already used

This cause code may be used by a network to indicate that the NSAPI requested by the MS in the PDP context activation request is already used by another active PDP context of this MS.

Never to be sent, but can be received from a R97/R98 network at PDP context activation

Cause value = 36 Regular ~~PDP context~~ deactivation

This cause code is used to indicate a regular MS or network initiated PDP context deactivation or a regular network initiated MBMS context deactivation.

Cause value = 37 QoS not accepted

This cause code is used by the MS if the new QoS cannot be accepted that were indicated by the network in the PDP Context Modification procedure.

Cause value = 38 Network failure

This cause code is used by the network to indicate that the PDP context deactivation or the MBMS context deactivation is caused by an error situation in the network.

Cause value = 39 Reactivation requested

This cause code is used by the network to request a PDP context reactivation after a GGSN restart.

Cause value = 40 Feature not supported

This cause code is used by the MS to indicate that the PDP context activation or the MBMS context activation initiated by the network is not supported by the MS.

Cause value = 41 semantic error in the TFT operation.

This cause code is used by the network to indicate that the there is a semantic error in the TFT operation included in a secondary PDP context activation request or an MS-initiated PDP context modification.

Cause value = 42 syntactical error in the TFT operation.

This cause code is used by the network to indicate that there is a syntactical error in the TFT operation included in a secondary PDP context activation request or an MS-initiated PDP context modification.

Cause value = 43 unknown PDP context

This cause code is used by the network to indicate that the PDP context identified by the Linked TI IE the secondary PDP context activation request is not active.

Cause value = 44 semantic errors in packet filter(s)

This cause code is used by the network to indicate that there is one or more semantic errors in packet filter(s) of the TFT included in a secondary PDP context activation request or an MS-initiated PDP context modification.

Cause value = 45 syntactical error in packet filter(s)

This cause code is used by the network to indicate that there is one or more syntactical errors in packet filter(s) of the TFT included in a secondary PDP context activation request or an MS-initiated PDP context modification.

Cause value = 46 PDP context without TFT already activated

This cause code is used by the network to indicate that the network has already activated a PDP context without TFT.

Cause value = 112 APN restriction value incompatible with active PDP context.

This cause code is used by the network to indicate that a requested primary PDP context or an MBMS context has an APN restriction value that is not allowed in combination with a currently active PDP context. Restriction values are defined in 3GPP TS 23.060 [74], subclause 15.4.

I.2 Causes related to invalid messages

Cause value = 81 Invalid transaction identifier value.

See annex H, subclause H.5.1.

Cause value = 95 Semantically incorrect message.

See annex H, subclause H.5.5.

Cause value = 96 Invalid mandatory information.

See annex H, subclause H.6.1.

Cause value = 97 Message type non-existent or not implemented.

See annex H, subclause H.6.2.

Cause value = 98 Message not compatible with protocol state.

See annex H, subclause H.6.3.

Cause value = 99 Information element non-existent or not implemented.

See annex H, subclause H.6.4.

Cause value = 100 Conditional IE error.

See annex H, subclause H.6.5.

Cause value = 101 Message not compatible with protocol state.

See annex H, subclause H.6.6.

Cause value = 111 Protocol error, unspecified.

See annex H, subclause H.6.8.

I.3 Additional causes for MBMS Session Management

Cause value = 24 MBMS bearer capabilities insufficient for the service

This cause code is used by the network to indicate that an MBMS context activation request was rejected by the network, because the MBMS bearer capabilities are insufficient for the MBMS service.

Cause value = 47 Multicast group membership time-out

This cause code is used by the network to indicate that the MBMS context is deactivated because the timer supervising the IGMP group membership interval (see RFC 2236 [10x], subclause 8.4) or the MLD multicast listener interval (see RFC 2710 [10y], subclause 7.4) expired.

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041624**
Sophia Antipolis, France, 16-20 August 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **898** ⌘**rev** **1** ⌘ Current version: **6.5.0** ⌘

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

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

Title:	⌘	Introduction of MBMS context handling
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	17/08/2004
Category:	⌘	**B**
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. The MBMS work is now close to completion and based on the TR, CRs to the relevant stage 3 specifications will be written. This CR contains the text for the MBMS context handling.
Summary of change:	⌘	The MBMS context handling is introduced into TS 24.008. Several subclauses are updated to have a consistent MBMS context handling.
Consequences if not approved:	⌘	The 3GPP MBMS work will not be completed in the Rel-6 timeframe. No solution for MBMS will be in place at Core Network protocols.

Clauses affected:	⌘	1.6.1, 4.7.3.1.6, 4.7.4, 4.7.4.1.2, 4.7.4.1.3, 4.7.4.2.1, 4.7.4.2.2, 4.7.4.2.4, 4.7.5.2.4, 4.7.9.1.2

Other specs affected: ⌘	Y	N		⌘
		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 CHANGE

1.6 Overview of control procedures

1.6.1 List of procedures

The following procedures are specified in the present document:

a) Clause 4 specifies elementary procedures for Mobility Management:

- mobility management common procedures (subclause 4.3):
  - TMSI reallocation procedure (subclause 4.3.1);
  - authentication procedure (subclause 4.3.2);
  - identification procedure (subclause 4.3.3);
  - IMSI detach procedure (subclause 4.3.4);
  - abort procedure (subclause 4.3.5);
  - MM information procedure (subclause 4.3.6).
- mobility management specific procedures (subclause 4.4):
  - location updating procedure (subclause 4.4.1);
  - periodic updating (subclause 4.4.2);
  - IMSI attach procedure (subclause 4.4.3);
  - generic location updating procedure (subclause 4.4).
- connection management sublayer service provision:
  - mobility management connection establishment (subclause 4.5.1);
  - mobility management connection information transfer phase (subclause 4.5.2);
  - mobility management connection release (subclause 4.5.3).
- GPRS specific mobility management procedures (subclause 4.7):
  - GPRS attach procedure (subclause 4.7.3);
  - GPRS detach procedure (subclause 4.7.4);
  - GPRS routing area updating procedure (subclause 4.7.5).
- GPRS common mobility management procedures (subclause 4.7):
  - GPRS P-TMSI reallocation procedure (subclause 4.7.6);
  - GPRS authentication and ciphering procedure (subclause 4.7.7);
  - GPRS identification procedure (subclause 4.7.8);
  - GPRS information procedure (subclause 4.7.12).

b) Clause 5 specifies elementary procedures for circuit switched Call Control comprising the following elementary procedures:

- mobile originating call establishment (subclause 5.2.1);
- mobile terminating call establishment (subclause 5.2.2);

- signalling procedures during the active state (subclause 5.3):
  - user notification procedure (subclause 5.3.1);
  - call rearrangements (subclause 5.3.2);
  - DTMF protocol control procedure (subclause 5.5.7);
  - in-call modification (subclause 5.3.4).
- call clearing initiated by the mobile station (subclause 5.4.3);
- call clearing initiated by the network (subclause 5.4.4);
- miscellaneous procedures:
  - in-band tones and announcements (subclause 5.5.1);
  - status enquiry procedure (subclause 5.5.3);
  - call re-establishment procedure (subclause 5.5.4).

d) Clause 6 specifies elementary procedures for session management:

- GPRS session management procedures (subclause 6.1):
  - PDP context activation (subclause 6.1.3.1 and 6.1.3.2);
  - PDP context modification (subclause 6.1.3.32);
  - PDP context deactivation (subclause 6.1.3.4).
- MBMS session management procedures (subclause 6.2):
  - MBMS context activation (sublclause 6.2.3.1);
  - MBMS context deactivation (subclause 6.2.3.2).

The elementary procedures can be combined to form structured procedures. Examples of such structured procedures are given in clause 7. This part of the present document is only provided for guidance to assist implementations.

Clause 8 specifies actions to be taken on various error conditions and also provides rules to ensure compatibility with future enhancements of the protocol.

NEXT CHANGE

4.7.3.1.6 Abnormal cases on the network side

The following abnormal cases can be identified:

a) Lower layer failure

If a low layer failure occurs before the message ATTACH COMPLETE has been received from the MS and a new P-TMSI (or a new P-TMSI and a new P-TMSI signature) has been assigned, the network shall consider both the old and new P-TMSI each with its corresponding P-TMSI-signature as valid until the old P-TMSI can be considered as invalid by the network (see subclause 4.7.1.5) and shall not resent the message ATTACH ACCEPT. During this period the network may:

- use the identification procedure followed by a P-TMSI reallocation procedure if the old P-TMSI is used by the MS in a subsequent message.

b) Protocol error

If the ATTACH REQUEST message is received with a protocol error, the network shall return an ATTACH REJECT message with one of the following reject causes:

#96: Mandatory information element error;

#99: Information element non-existent or not implemented;

#100: Conditional IE error;

#111: Protocol error, unspecified.

c) T3350 time-out

On the first expiry of the timer, the network shall retransmit the ATTACH ACCEPT message and shall reset and restart timer T3350.

This retransmission is repeated four times, i.e. on the fifth expiry of timer T3350, the GPRS attach procedure shall be aborted. If a new P-TMSI or a new P-TMSI together with a new P-TMSI signature were allocated in the ATTACH ACCEPT message, the network shall consider both the old and new P-TMSI each together with the corresponding P-TMSI signatures as valid until the old P-TMSI can be considered as invalid by the network (see subclause 4.7.1.5). During this period the network acts as specified for case a.

d.1) ATTACH REQUEST received

- If one or more of the information elements in the ATTACH REQUEST message differ from the ones received within the previous ATTACH REQUEST message, the previously initiated GPRS attach procedure shall be aborted and the new GPRS attach procedure shall be progressed, or

- If no information element differ, then the ATTACH ACCEPT message shall be resent.

d.2) More than one ATTACH REQUEST received and no ATTACH ACCEPT or ATTACH REJECT message has been sent

- If one or more of the information elements in the ATTACH REQUEST message differs from the ones received within the previous ATTACH REQUEST message, the previously initiated GPRS attach procedure shall be aborted and the new GPRS attach procedure shall be progressed;

- If the information elements do not differ, then the network shall continue with the previous attach procedure and shall not treat any further this ATTACH REQUEST message.

e) ATTACH REQUEST received in state GMM-REGISTERED

If an ATTACH REQUEST message is received in state GMM-REGISTERED the network may initiate the GMM common procedures; if it turned out that the ATTACH REQUEST message was send by an MS that has already been attached, the GMM context, ~~and~~ PDP contexts and MBMS contexts, if any, are deleted and the new ATTACH REQUEST is progressed.

f) ROUTING AREA UPDATE REQUEST message received before ATTACH COMPLETE message.

Timer T3350 shall be stopped. The allocated P-TMSI shall be considered as valid and the routing area updating procedure shall be progressed as described in subclause 4.7.5.

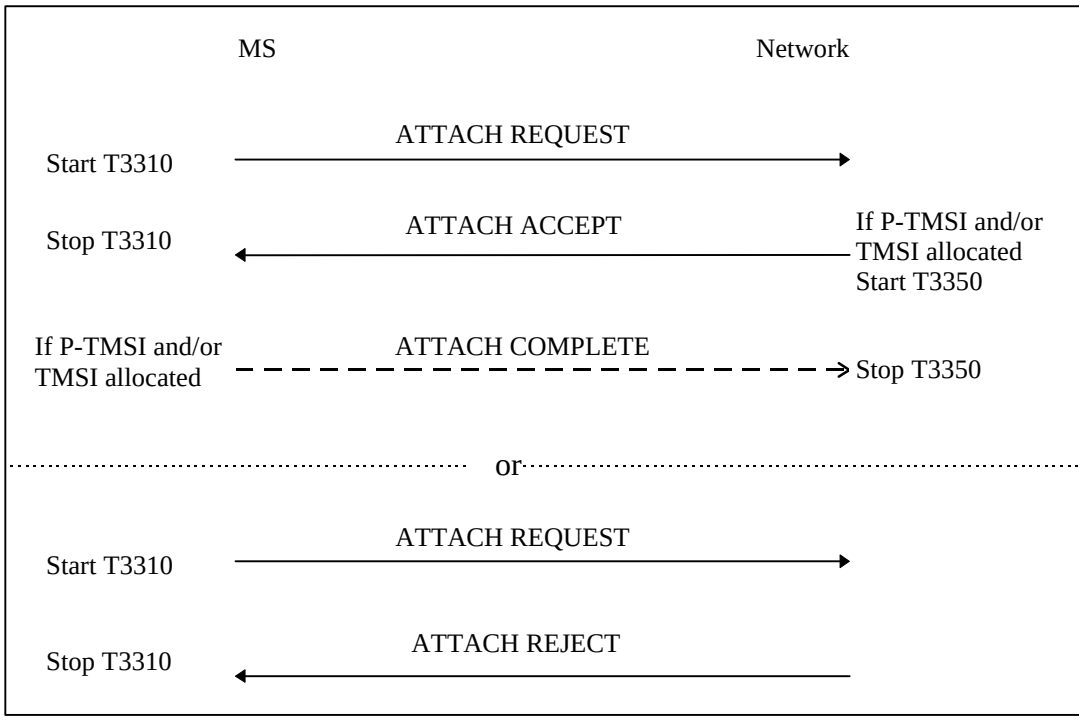

Figure 4.7.3/1 3GPP TS 24.008: GPRS attach procedure and combined GPRS attach procedure

NEXT CHANGE

4.7.4 GPRS detach procedure

The GPRS detach procedure is used:

- to detach the IMSI for GPRS services only. Independent of the network operation mode, this procedure is used by all kind of GPRS MSs;
- as a combined GPRS detach procedure used by GPRS MSs operating in MS operation mode A or B to detach the IMSI for GPRS and non-GPRS services or for non-GPRS services only, if the network operates in network operation mode I; or
- in the case of a network failure condition to indicate to the MS that a re-attach with successive activation of previously active PDP contexts shall be performed. In this case, the MS may also perform the procedures needed in order to activate any previously active multicast service(s).

After completion of a GPRS detach procedure or combined GPRS detach procedure for GPRS and non-GPRS services the GMM context is released.

The GPRS detach procedure shall be invoked by the MS if the MS is switched off, the SIM/USIM card is removed from the MS or if the GPRS or non-GPRS capability of the MS is disabled. The procedure may be invoked by the network to detach the IMSI for GPRS services. The GPRS detach procedure causes the MS to be marked as inactive in the network for GPRS services, non-GPRS services or both services.

In GSM, if the GPRS detach procedure is performed, the PDP contexts and the MBMS contexts, if any, are deactivated locally without peer to peer signalling between the SM and LLC entities in the MS and the network.

In UMTS, if the GPRS detach procedure is performed, the PDP contexts and the MBMS contexts, if any, are deactivated locally without peer to peer signalling between the SM entities in the MS and the network.

NEXT CHANGE

4.7.4.1.2 MS initiated GPRS detach procedure completion for GPRS services only

When the DETACH REQUEST message is received by the network, the network shall send a DETACH ACCEPT message to the MS, if the detach type IE value indicates that the detach request has not been sent due to switching off. If switching off was indicated, the procedure is completed when the network receives the DETACH REQUEST message. The network and the MS shall deactivate the PDP contexts, the MBMS contexts and deactivate the logical link(s), if any.

The MS is marked as inactive in the network for GPRS services; state GMM-DEREGISTERED is entered in the MS and the network.

In UMTS, if the detach has been sent due to switching off, then the network shall release the resources in the lower layers for this MS (see 3GPP TS 25.331 [23c]).

NOTE: When the DETACH REQUEST message is received by the network, and if the detach type IE value indicates that the detach is not due to power off, the authentication and ciphering procedure as well as the identification procedure may be performed.

4.7.4.1.3 MS initiated combined GPRS detach procedure completion

When the DETACH REQUEST message is received by the network, a DETACH ACCEPT message shall be sent to the MS, if the detach type IE value indicates that the detach request has not been sent due to switching off. Depending on the value of the detach type IE the following applies:

GPRS/IMSI detach:
The MS is marked as inactive in the network for GPRS and for non-GPRS services. The network and the MS shall deactivate the PDP contexts, the MBMS contexts and deactivate the logical link(s), if any. The States GMM-DEREGISTERED and MM NULL are entered in both the MS and the network.

In UMTS, if the detach has been sent due to switching off, then the network shall release the resources in the lower layers for this MS (see 3GPP TS 25.331 [23c]).

IMSI detach:
The MS is marked as inactive in the network for non-GPRS services. State MM NULL is entered in the MS and the network.

NEXT CHANGE

4.7.4.2.1 Network initiated GPRS detach procedure initiation

The network initiates the GPRS detach procedure by sending a DETACH REQUEST message to the MS. The DETACH REQUEST message shall include a detach type IE. In addition, the network may include a cause IE to specify the reason for the detach request. The network shall start timer T3322. If the detach type IE indicates "re-attach not required" or "re-attach required", the network shall deactivate the PDP contexts, the MBMS contexts and deactivate the logical link(s), if any, and shall change to state GMM-DEREGISTERED-INITIATED.

NEXT CHANGE

4.7.4.2.2 Network initiated GPRS detach procedure completion by the MS

When receiving the DETACH REQUEST message and the detach type IE indicates "re-attach required", the MS shall deactivate the PDP contexts, the MBMS contexts and deactivate the logical link(s), if any. The MS shall then send a DETACH ACCEPT message to the network and shall change state to GMM-DEREGISTERED. The MS shall, after the completion of the GPRS detach procedure, initiate a GPRS attach procedure. The MS should also activate PDPcontext(s) to replace any previously active PDP context(s). The MS should also perform the procedures needed in order to activate any previously active multicast service(s).

NOTE: In some cases, user interaction may be required and then the MS cannot activate the PDP/MBMS context(s) automatically.

A GPRS MS operating in MS operation mode A or B in network operation mode I, which receives an DETACH REQUEST message with detach type indicating "re-attach required" or "re-attach not required" and no cause code, is only detached for GPRS services in the network.

When receiving the DETACH REQUEST message and the detach type IE indicates "IMSI detach", the MS shall not deactivate the PDP/MBMS contexts. The MS shall set the MM update status to U2 NOT UPDATED. A MS in operation mode A or B in network operation mode I may send a DETACH ACCEPT message to the network, and shall re-attach to non-GPRS service by performing the combined routing area updating procedure according to subclause 4.7.5.2, sending a ROUTING AREA UPDATE REQUEST message with Update type IE indicating "combined RA/LA updating with IMSI attach". A MS in operation mode A that is in an ongoing circuit-switched transaction shall initiate the combined routing area updating after the circuit-switched transaction has been released. A MS in operation mode C, or in MS operation mode A or B in network operation mode II or III, shall send a DETACH ACCEPT message to the network.

If the detach type IE indicates "IMSI detach", or "re-attach required" then the MS shall ignore the cause code if received.

If the detach type information element value indicates "re-attach required" or "re-attach not required" and the MS is attached for GPRS and non-GPRS services and the network operates in network operation mode I, then if in the MS the timer T3212 is not already running, the timer T3212 shall be set to its initial value and restarted.

When receiving the DETACH REQUEST message and the detach type IE indicates "re-attach not required" and the cause code is not "#2 (IMSI unknown in HLR)", the MS shall deactivate the PDP contexts, the MBMS contexts and deactivate the logical link(s), if any. The MS shall then send a DETACH ACCEPT message to the network and shall change state to GMM-DEREGISTERED.

If the detach type IE indicates "re-attach not required", then, depending on the received cause code, the MS shall act as follows:

2 (IMSI unknown in HLR);

The MS shall set the update status to U3 ROAMING NOT ALLOWED and shall delete any TMSI, LAI and ciphering key sequence number. The new MM state is MM IDLE. The SIM/USIM shall be considered as invalid for non-GPRS services until switching off or the SIM/USIM is removed.

A GPRS MS operating in MS operation mode A or B in network operation mode I, is still IMSI attached for GPRS services in the network.

3 (Illegal MS);

6 (Illegal ME);

The MS shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2) and shall delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number. The new GMM state is GMM-DEREGISTERED. The SIM/USIM shall be considered as invalid for GPRS services until switching off or the SIM/USIM is removed.

A GPRS MS operating in MS operation mode A or B shall in addition set the update status to U3 ROAMING NOT ALLOWED, shall delete any TMSI, LAI and ciphering key sequence number. If the MS is operating in MS operation mode A and an RR connection exists, the MS shall abort the RR connection, unless an emergency call is ongoing. The SIM/USIM shall be considered as invalid also for non-GPRS services until switching off or the SIM/USIM is removed.

7 (GPRS services not allowed);

The MS shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2) and shall delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number. The SIM/USIM shall be considered as invalid for GPRS services until switching off or the SIM/USIM is removed. The new state is GMM-DEREGISTERED.

A GPRS MS operating in MS operation mode A or B in network operation mode I shall set the timer T3212 to its initial value and restart it, if it is not already running.

A GPRS MS operating in MS operation mode A or B in network operation mode I, is still IMSI attached for CS services in the network.

8 (GPRS services and non-GPRS services not allowed);

The MS shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2) and shall delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number. The new GMM state is GMM-DEREGISTERED.

The MS shall set the update status to U3 ROAMING NOT ALLOWED, shall delete any TMSI, LAI and ciphering key sequence number. If the MS is operating in MS operation mode A and an RR connection exists, the MS shall abort the RR connection, unless an emergency call is ongoing. The SIM/USIM shall be considered as invalid for GPRS and non-GPRS services until switching off or the SIM/USIM is removed.

11 (PLMN not allowed);

The MS shall delete any RAI or LAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number, shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2). The new GMM state is GMM-DEREGISTERED.

The MS shall store the PLMN identity in the "forbidden PLMN list".

If no RR connection exists, the MS shall perform the following additional actions immediately. If the MS is operating in MS operation mode A and an RR connection exists, the MS shall perform these actions when the RR connection is subsequently released:

- A GPRS MS operating in MS operation mode A or B shall set the update status to U3 ROAMING NOT ALLOWED and shall delete any TMSI, LAI and ciphering key sequence number. The new MM state is MM IDLE.

- The MS shall perform a PLMN selection according to 3GPP TS 23.122 [14].

12 (Location area not allowed);

The MS shall delete any RAI, P-TMSI, P-TMSI signature GPRS ciphering key sequence number, shall set the GPRS update status to GU3 ROAMING NOT ALLOWED(and shall store it according to clause 4.1.3.2) and shall reset the attach attempt counter. The state is changed to GMM-DEREGISTERED.LIMITED-SERVICE.

The MS shall store the LAI in the list of "forbidden location areas for regional provision of service".

If no RR connection exists, the MS shall perform the following additional actions immediately. If the MS is operating in MS operation mode A and an RR connection exists, the MS shall perform these actions when the RR connection is subsequently released:

- If the MS is IMSI attached, the MS shall set the update status to U3 ROAMING NOT ALLOWED, shall delete any TMSI, LAI and ciphering key sequence number and shall reset the location update attempt counter. The new MM state is MM IDLE.

- The MS shall perform a cell selection according to 3GPP TS 43.022 [82] and 3GPP TS 25.304.

13 (Roaming not allowed in this location area);

The MS shall delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number, shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to clause 4.1.3.2) and shall reset the attach attempt counter. The state is changed to GMM-DEREGISTERED.LIMITED-SERVICE or optionally to GMM-DEREGISTERED.PLMN-SEARCH.

The MS shall store the LAI in the list of "forbidden location areas for roaming".

If no RR connection exists, the MS shall perform the following additional actions immediately. If the MS is operating in MS operation mode A and an RR connection exists, the MS shall perform these actions when the RR connection is subsequently released:

- If the MS is IMSI attached, the MS shall set the update status to U3 ROAMING NOT ALLOWED, shall delete any TMSI, LAI and ciphering key sequence number and shall reset the location update attempt counter. The new MM state is MM IDLE.

- The MS shall perform a PLMN selection according to 3GPP TS 23.122 [14].

14 (GPRS services not allowed in this PLMN);

The MS shall delete any RAI, P-TMSI, P-TMSI signature, and GPRS ciphering key sequence number stored, shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2) and shall change to state GMM-DEREGISTERED.

The MS shall store the PLMN identity in the "forbidden PLMNs for GPRS service" list.

A GPRS MS operating in MS operation mode A or B in network operation mode I shall set the timer T3212 to its initial value and restart it, if it is not already running.

A GPRS MS operating in MS operation mode A or B, is still IMSI attached for CS services in the network.

15 (No Suitable Cells In Location Area);

The MS shall delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number, shall set the GPRS update status to GU3 ROAMING NOT ALLOWED(and shall store it according to clause 4.1.3.2) and shall reset the attach attempt counter. The state is changed to GMM-DEREGISTERED.LIMITED-SERVICE.

The MS shall store the LAI in the list of "forbidden location areas for roaming".

If no RR connection exists, the MS shall perform the following additional actions immediately. If the MS is operating in MS operation mode A and an RR connection exists, the MS shall perform these actions when the RR connection is subsequently released:

- If the MS is IMSI attached, the MS shall set the update status to U3 ROAMING NOT ALLOWED, shall delete any TMSI, LAI and ciphering key sequence number and shall reset the location update attempt counter. The new MM state is MM IDLE.
- The MS shall search for a suitable cell in another location area in the same PLMN according to 3GPP TS 43.022 [82] and 3GPP TS 25.304.

Other cause values shall not impact the update status. Further actions of the MS are implementation dependent.

4.7.4.2.3 Network initiated GPRS detach procedure completion by the network

The network shall, upon receipt of the DETACH ACCEPT message, stop timer T3322 and shall change state to GMM-DEREGISTERED.

4.7.4.2.4 Abnormal cases on the network side

The following abnormal cases can be identified:

a) T3322 time-out

On the first expiry of the timer, the network shall retransmit the DETACH REQUEST message and shall start timer T3322. This retransmission is repeated four times, i.e. on the fifth expiry of timer T3322, the GPRS detach procedure shall be aborted and the network changes to state GMM-DEREGISTERED.

b) Low layer failure

The GPRS detach procedure is aborted and the network changes to state GMM-DEREGISTERED.

c) GPRS detach procedure collision

If the network receives a DETACH REQUEST message with "switching off" indicated, before the network initiated GPRS detach procedure has been completed, both procedures shall be considered completed.

If the network receives a DETACH REQUEST message without "switching off" indicated, before the network initiated GPRS detach procedure has been completed, the network shall send a DETACH ACCEPT message to the MS.

d) GPRS detach and GPRS attach procedure collision

If the network receives an ATTACH REQUEST message before the network initiated GPRS detach procedure with type of detach 're-attach not required' has been completed, the network shall ignore the ATTACH REQUEST message. If the detach type IE value, sent in the DETACH REQUEST message, indicates "re-attach required" the detach procedure is aborted and the GPRS attach procedure shall be progressed after the PDP contexts and MBMS contexts, if any, have been deleted. If the detach type IE value, sent in the DETACH REQUEST message, indicates "IMSI detach" the detach procedure is aborted and the GPRS attach procedure shall be progressed.

e) GPRS detach and routing area updating procedure collision

GPRS detach containing detach type "re-attach required" or "re-attach not required":

If the network receives a ROUTING AREA UPDATE REQUEST message before the network initiated GPRS detach procedure has been completed, the detach procedure shall be progressed, i.e. the ROUTING AREA UPDATE REQUEST message shall be ignored.

GPRS detach containing detach type "IMSI detach":

If the network receives a ROUTING AREA UPDATE REQUEST message before the network initiated GPRS detach procedure has been completed, the network shall abort the detach procedure, shall stop T3322 and shall progress the routing area update procedure.

f) GPRS detach and service request procedure collision

If the network receives a SERVICE REQUEST message before the network initiated GPRS detach procedure has been completed, the network shall ignore the SERVICE REQUEST message.

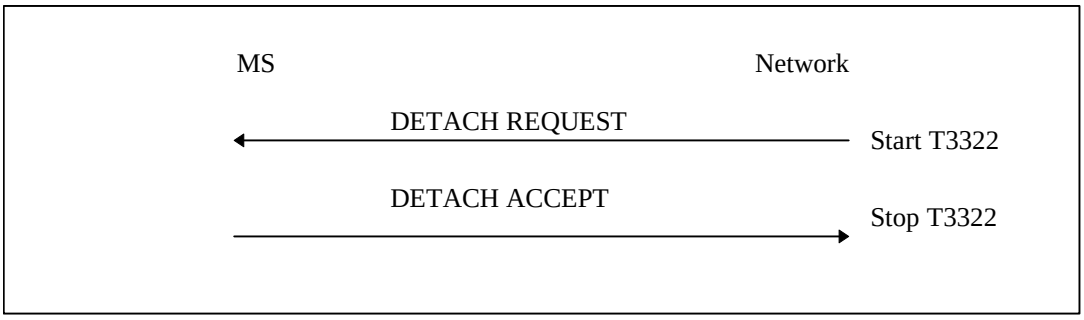

Figure 4.7.4/2 3GPP TS 24.008: Network initiated GPRS detach procedure

NEXT CHANGE

4.7.5.2.4 Combined routing area updating not accepted by the network

If the combined routing area updating cannot be accepted, the network sends a ROUTING AREA UPDATE REJECT message to the MS. An MS that receives a ROUTING AREA UPDATE REJECT message stops timer T3330, enters state MM IDLE, and for all causes except #12, #14 and #15 deletes the list of "equivalent PLMNs".

The MS shall then take different actions depending on the received reject cause:

3 (Illegal MS);

6 (Illegal ME), or

8 (GPRS services and non GPRS services not allowed);

The MS shall set the GPRS update status to GU3 ROAMING NOT ALLOWED and the update status to U3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2) and enter the state GMM-DEREGISTERED. Furthermore, it shall delete any P-TMSI, P-TMSI signature, TMSI, RAI, LAI, ciphering key sequence number and GPRS ciphering key sequence number and shall consider the SIM/USIM as invalid for GPRS and non GPRS services until switching off or the SIM/USIM is removed.

7 (GPRS services not allowed);

The MS shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2) and shall delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number. The SIM/USIM shall be considered as invalid for GPRS services until switching off or the SIM/USIM is removed. The new state is GMM-DEREGISTERED. If in the MS the timer T3212 is not already running, the timer shall be set to its initial value and restarted.

A GPRS MS operating in MS operation mode A or B in network operation mode I, is still IMSI attached for CS services in the network. and shall then proceed with the appropriate MM specific procedure according to the MM service state.

9 (MS identity cannot be derived by the network);

The MS shall set the GPRS update status to GU2 NOT UPDATED (and shall store it according to subclause 4.1.3.2), enter the state GMM-DEREGISTERED, and shall delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number. Subsequently, the MS may automatically initiate the GPRS attach procedure.

A GPRS MS operating in MS operation mode A or B in network operation mode I, is still IMSI attached for CS services in the network.

10 (Implicitly detached);

A GPRS MS operating in MS operation mode A or B in network operation mode I, is IMSI detached for both GPRS and CS services in the network.

The MS shall change to state GMM-DEREGISTERED.NORMAL-SERVICE. The MS shall then perform a new attach procedure. The MS should also activate PDP context(s) to replace any previously active PDP context(s). The MS should also perform the procedures needed in order to activate any previously active multicast service(s).

NOTE: In some cases, user interaction may be required and then the MS cannot activate the PDP/MBMS context(s) automatically.

11 (PLMN not allowed);

The MS shall set the GPRS update status to GU3 ROAMING NOT ALLOWED and the update status to U3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2) and enter the state GMM-DEREGISTERED. Furthermore, it shall delete any P-TMSI, P-TMSI signature, TMSI, RAI, LAI, ciphering key sequence number GPRS ciphering key sequence number, and reset the location update attempt counter.

The MS shall store the PLMN identity in the "forbidden PLMN list".

The MS shall then perform a PLMN selection according to 3GPP TS 23.122 [14].

12 (Location area not allowed);

The MS shall delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number, shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to clause 4.1.3.2), shall reset the routing area updating attempt counter and shall change to state GMM-DEREGISTERED.LIMITED-SERVICE.

The MS shall in addition set the update status to U3 ROAMING NOT ALLOWED, shall delete any TMSI, LAI and ciphering key sequence number and shall reset the location update attempt counter. The new MM state is MM IDLE.

The mobile station shall store the LAI in the list of "forbidden location areas for regional provision of service".

The MS shall perform a cell selection according to 3GPP TS 43.022 [82] and 3GPP TS 25.304.

13 (Roaming not allowed in this location area);

The MS shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to clause 4.1.3.2), shall reset the routing area updating attempt counter and shall change to state GMM-REGISTERED.LIMITED-SERVICE.

The MS shall in addition set the update status to U3 ROAMING NOT ALLOWED and shall reset the location update attempt counter. The new MM state is MM IDLE.

The MS shall store the LAI in the list of "forbidden location areas for roaming".

The MS shall perform a PLMN selection according to 3GPP TS 23.122 [14].

14 (GPRS services not allowed in this PLMN);

The MS shall delete any RAI, P-TMSI, P-TMSI signature, and GPRS ciphering key sequence number stored, shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to subclause 4.1.3.2) and shall change to state GMM-DEREGISTERED. If in the MS the timer T3212 is not already running, the timer shall be set to its initial value and restarted.

The MS shall store the PLMN identity in the "forbidden PLMNs for GPRS service" list.

A GPRS MS operating in MS operation mode A or B in network operation mode I, is still IMSI attached for CS services in the network and shall then proceed with the appropriate MM specific procedure according to the MM service state.

15 (No Suitable Cells In Location Area);

The MS shall set the GPRS update status to GU3 ROAMING NOT ALLOWED (and shall store it according to clause 4.1.3.2), shall reset the routing area updating attempt counter and shall change to state GMM-REGISTERED.LIMITED-SERVICE.

The MS shall in addition set the update status to U3 ROAMING NOT ALLOWED and shall reset the location update attempt counter. The new MM state is MM IDLE.

The MS shall store the LAI in the list of "forbidden location areas for roaming".

The MS shall search for a suitable cell in another location area in the same PLMN according to 3GPP TS 43.022 [82] and 3GPP TS 25.304.

Other values are considered as abnormal cases. The specification of the MS behaviour in those cases is described in subclause 4.7.5.2.5.

NEXT CHANGE

4.7.9.1.2 Paging for GPRS services using IMSI

Paging for GPRS services using IMSI is an abnormal procedure used for error recovery in the network.

The network may initiate paging using IMSI if the P-TMSI is not available due to a network failure.

In UMTS, to initiate the procedure the GMM entity in the network requests the lower layer to start paging (see 3GPP TS 25.331 [23c] and 3GPP TS 25.413).

In GSM, to initiate the procedure the GMM entity in the network requests the RR sublayer to start paging (see 3GPP TS 44.018 [84], 3GPP TS 44.060 [76]).

Upon reception of a paging indication for GPRS services using IMSI, the MS shall locally deactivate any active PDP context(s), MBMS context(s) and locally detach from GPRS. The local detach includes deleting any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number stored, setting the GPRS update status to GU2 NOT UPDATED and changing state to GMM-DEREGISTERED.

In UMTS, when an MS receives a paging request for GPRS services using the IMSI from the network before an MS initiated GMM specific procedure has been completed, then the MS shall abort the GMM specific procedure, and the MS shall proceed according to the description in this clause.

After performing the local detach, the MS shall then perform a GPRS attach or combined GPRS attach procedure.

After performing the attach, ~~a~~the MS should activate PDP context(s) to replace any previously active PDP context(s). The MS should also perform the procedures needed in order to activate any previously active multicast service(s).

NOTE 1: In some cases, user interaction may be required and then the MS cannot activate the PDP/MBMS context(s) automatically.

NOTE 2: The MS does not respond to the paging except with the Attach Request. Hence timer T3313 in the network is not used when paging with IMSI.

NOTE 3: Paging without DRX parameters may require a considerable extension of the paging duration.

NEXT CHANGE

4.1.3.1.1.4 GMM-REGISTERED

A GMM context has been established, i.e. the GPRS attach or combined GPRS attach procedure has been successfully performed. In this state, the MS may activate PDP contexts, MBMS contexts, may send and receive user data and signalling information and may reply to a page request. Furthermore, cell and routing area updating are performed.

3GPP TSG-CN1 Meeting #35 **Tdoc N1-041625**
Sophia Antipolis, France, 16-20 August 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.007** **CR** **064** ⌘ **rev** **1** ⌘ Current version: **6.1.0** ⌘

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

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

Title:	⌘	Update of the Session Management services – MBMS
Source:	⌘	Ericsson
Work item code:	⌘	MBMS
Date:	⌘	06/07/2004
Category:	⌘	**B**
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:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	CN1 has worked on TR 29.846 'Multicast Broadcast/Multicast Service (MBMS); CN1 description procedure'. The MBMS work is now close to completion and based on the TR, CRs to the relevant stage 3 specifications will be written. This CR contains the text for the MBMS Session management services for MBMS.
Summary of change:	⌘	TS 24.007 is updated to add service primitives needed for MBMS services.
Consequences if not approved:	⌘	The 3GPP MBMS work will not be completed in the Rel-6 timeframe. No solution for MBMS will be in place at Core Network protocols.

Clauses affected:	⌘	6.5, 6.5.1, 6.5.1.7, 6.5.1.21, .6.5.1.22, 6.5.1.23, 6.5.1.23, 6.5.1.24, 6.5.1.25, 6.5.1.26, 7.5, 7.5.1, 7.5.1.1, 7.5.1.2, 7.5.1.3, 7.5.1.4, 9.5.1.			
Other specs affected:	⌘	**Y**	**N**		
			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 CHANGE

6.5 Session Management Services for GPRS and MBMS

Session Management services are provided at the SMREG-SAP and the SNSM-SAP. The procedures for GPRS Session Management (i.e. PDP context activation, ~~and~~ PDP context deactivation and PDP context modification) and MBMS Session Management (i.e. MBMS context activation and MBMS context deactivation) are available at the SMREG-SAP. ~~In addition there exists a PDP context modification.~~

Before any user data transfer is initiated (e.g.via SNDCP in GSM case), the PDP context activation procedure must be performed. In case of MBMS, the MS must also perform the procedures needed in order to activate a multicast service.

6.5.1 Session Management Services for SMREG-SAP

Table 6.5.1: Primitives and Parameters at SMREG-SAP - MS side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
SMREG-PDP-ACTIVATE-REQ	PDP address, QoS, NSAPI, APN, Protocol configuration options	6.5.1.1
SMREG-PDP-ACTIVATE-CNF	PDP address, QoS, NSAPI, Protocol configuration options	6.5.1.2
SMREG-PDP-ACTIVATE-REJ	Cause, NSAPI, Protocol configuration options	6.5.1.3
SMREG-PDP-ACTIVATE-IND	PDP address, APN, protocol configuration options	6.5.1.4
SMREG-PDP-ACTIVATE-REJ-RSP	Cause, PDP address, APN, protocol configuration options, MBMS protocol configuration options	6.5.1.14
SMREG-PDP-DEACTIVATE-REQ	NSAPI(s) tear down indicator, cause, protocol configuration options, MBMS protocol configuration options	6.5.1.5
SMREG-PDP-DEACTIVATE-CNF	NSAPI(s), protocol configuration options, MBMS protocol configuration options	6.5.1.6
SMREG-PDP-DEACTIVATE-IND	NSAPI(s) (s), tear down indicator, cause, protocol configuration options, MBMS protocol configuration options	6.5.1.7
SMREG-PDP-MODIFY-IND	QoS, NSAPI, protocol configuration options	6.5.1.8
SMREG-PDP-MODIFY-REQ	QoS, NSAPI, TFT, protocol configuration options	6.5.1.18
SMREG-PDP-MODIFY-CNF	QoS, NSAPI, protocol configuration options	6.5.1.19
SMREG-PDP-MODIFY-REJ	Cause, NSAPI, protocol configuration options	6.5.1.20
SMREG-PDP-ACTIVATE-SEC-REQ	QoS, NSAPI, TFT, Primary NSAPI, protocol configuration options	6.5.1.15
SMREG-PDP-ACTIVATE-SEC-CNF	QoS, NSAPI, protocol configuration options	6.5.1.16
SMREG-PDP-ACTIVATE-SEC-REJ	Cause, NSAPI, protocol configuration options	6.5.1.17
SMREG-MBMS-ACTIVATE-REQ	Multicast address, supported MBMS bearer capabilities, NSAPI, APN, MBMS protocol configuration options	6.5.1.21
SMREG-MBMS-ACTIVATE-CNF	Multicast address, NSAPI, MBMS protocol configuration options	6.5.1.22
SMREG-MBMS-ACTIVATE-REJ	Cause, NSAPI, MBMS protocol configuration options	6.5.1.23
SMREG-MBMS-ACTIVATE-IND	Multicast address, APN, MBMS protocol configuration options	6.5.1.24

6.5.1.1 SMREG-PDP-ACTIVATE-REQ

The MS initiates a primary PDP context activation. SM is requested to send the ACTIVATE PDP CONTEXT REQUEST message to the network. The PDP context is pending activation.

6.5.1.2 SMREG-PDP-ACTIVATE-CNF

The MS initiated primary PDP context activation succeeded. The network confirmed the PDP context activation, i.e. the ACTIVATE PDP CONTEXT ACCEPT message was received from the network. In GSM, this implies that SM has ordered SNDCP to establish the needed LLC link. In the UMTS case, this implies that the RLC link towards the RNC has been established and that the SM has been informed about this from the RABM service entity in the MS. (RABM-

RAB Management service entity is FFS and could lead to update of the protocol architecture in figure 5.2 and 5.3) The PDP context is active.

6.5.1.3 SMREG-PDP-ACTIVATE-REJ

The PDP primary context activation failed, the PDP context is not activated. One reason for failure is that the network rejected the activation attempt, which means the ACTIVATE PDP CONTEXT REJECT message was received. Another reason is e.g. that it was not possible to establish the needed LLC link in the GSM case.

6.5.1.4 SMREG-PDP-ACTIVATE-IND

The network asked for a PDP context activation. The REQUEST PDP CONTEXT ACTIVATION message was received from the network. The MS reacts either by initiating a new primary PDP context activation or by rejecting the network's request.

6.5.1.5 SMREG-PDP-DEACTIVATE-REQ

The MS initiates a PDP context deactivation: SM is requested to send a DEACTIVATE PDP CONTEXT REQUEST message to the network. The PDP context is pending deactivation. Presence of the teardown indicator will lead to deactivation of all PDP contexts coupled to the identified PDP address. NSAPI(s) to be deallocated from the SNDCP entity via the SNSM-SAP for the GSM case, are included in the primitive.

6.5.1.6 SMREG-PDP-DEACTIVATE-CNF

The MS initiated PDP context deactivation has been done. The network confirmed the PDP context deactivation, i.e. the DEACTIVATE PDP CONTEXT ACCEPT message was received from the network. For GSM SM has ordered SNDCP to locally release not further needed LLC links. In the UMTS case, the release of the RLC link towards the RNC takes place as a result of a RAB release trigger from the network side. SM has been informed about this from the RABM service entity in the MS. (RABM- RAB Management service entity is FFS and could lead to update of the protocol architecture in figure 5.2 and 5.3.) The PDP context has been deactivated.

6.5.1.7 SMREG-PDP-DEACTIVATE-IND

A network initiated PDP context deactivation has been performed. The DEACTIVATE PDP CONTEXT REQUEST message has been received from the network. The MS has acknowledged with the DEACTIVATE PDP CONTEXT ACCEPT message. The PDP context has been deactivated, the related LLC links in GSM or RLC links in UMTS were locally released. Presence of the teardown indicator will lead to deactivation of all PDP contexts coupled to the identified PDP address. NSAPI is included in the primitive to allow identification of the PDP context(s) needing deactivation.

6.5.1.8 SMREG-PDP-MODIFY-IND

A network initiated PDP context modification has been performed. The MODIFY PDP CONTEXT REQUEST message has been received from the network. The modification has been acknowledged by sending the MODIFY PDP CONTEXT ACCEPT message. One PDP context has been modified. LLC links is adjusted.

6.5.1.9 VOID

6.5.1.10 VOID

6.5.1.11 VOID

6.5.1.12 VOID

6.5.1.13 VOID

6.5.1.14 SMREG-PDP-ACTIVATE-REJ-RSP

The network requested PDP context activation failed.

6.5.1.15 SMREG-PDP-ACTIVATE-SEC-REQ

The MS initiates a secondary PDP context activation. SM is requested to send the ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network. The PDP context is pending activation.

6.5.1.16 SMREG-PDP-ACTIVATE-SEC-CNF

The MS initiated secondary PDP context activation succeeded. The network confirmed the PDP context activation, i.e. the ACTIVATE SECONDARY PDP CONTEXT ACCEPT message was received from the network. In GSM, this implies that SM has ordered SNDCP to establish the needed LLC link. In the UMTS case, this implies that the RLC link towards the RNC has been established and that the SM has been informed about this from the RABM service entity in the MS. (RABM- RAB Management service entity is FFS and could lead to update of the protocol architecture in figure 5.2 and 5.3) The PDP context connected to the same PDP address as the PDP context identified by the primary NSAPI parameter in SMREG-PDP-ACTIVATE-SEC-REQ is active. ('Primary NSAPI' will point to any one of the other established PDP contexts for a given PDP address).

6.5.1.17 SMREG-PDP-ACTIVATE-SEC-REJ

The secondary PDP context activation failed, the PDP context is not activated. One reason for failure is that the network rejected the activation attempt, which means the ACTIVATE SECONDARY PDP CONTEXT REJECT message was received. Another reason is e.g. that it was not possible to establish the needed LLC link in the GSM case.

6.5.1.18 SMREG-PDP-MODIFY-REQ

An MS initiated PDP context modification is requested. The MODIFY PDP CONTEXT REQUEST message is sent to the network and pending acceptance. Affected PDP context is identified via the NSAPI value included in the primitive.

6.5.1.19 SMREG-PDP-MODIFY-CNF

An MS initiated PDP context modification has been accepted by the network. The modification is acknowledged from the network via the MODIFY PDP CONTEXT ACCEPT message. The addressed PDP context has been modified. LLC or RLC link is adjusted according to the QoS returned from the network.

6.5.1.20 SMREG-PDP-MODIFY-REJ

An MS initiated PDP context modification has been rejected by the network. The rejection is signalled from the network via the MODIFY PDP CONTEXT REJECT message with the cause code. The PDP context remains active without change of QoS.

The session management services provided at the service access point SMREG-SAP are illustrated in the state machines of figure 6.4 below. Note, that the state machine describes only one PDP context within the SM entity.

6.5.1.21 SMREG-MBMS-ACTIVATE-REQ

The MS initiates an MBMS context activation as requested by the network. SM is requested to send the ACTIVATE MBMS CONTEXT REQUEST message to the network. The MBMS context is pending activation waiting for the network confirmation.

6.5.1.22 SMREG-MBMS-ACTIVATE-CNF

The MBMS context activation succeeded. The network confirmed the MBMS context activation, i.e. the ACTIVATE MBMS CONTEXT ACCEPT message was received from the network. The MBMS context is active.

6.5.1.23 SMREG-MBMS-ACTIVATE-REJ

The MBMS context activation failed, the MBMS context is not activated.

6.5.1.24 SMREG-MBMS-ACTIVATE-REJ-RSP

The network requested MBMS context activation failed. SM is requested to send the REQUEST MBMS CONTEXT ACTIVATION REJECT message to the network.

6.5.1.25 SMREG-MBMS-ACTIVATE-IND

The network asked for an MBMS context activation. The REQUEST MBMS CONTEXT ACTIVATION message was received from the network. The MS reacts either by initiating the activation of the MBMS context or by rejecting the request from the network.

The ~~s~~Session ~~m~~Management services provided at the service access point SMREG-SAP are illustrated in the state machines of figure 6.4 and 6.5 below. Note, that each~~the~~ state machine describes only one PDP/MBMS context within the SM entity.

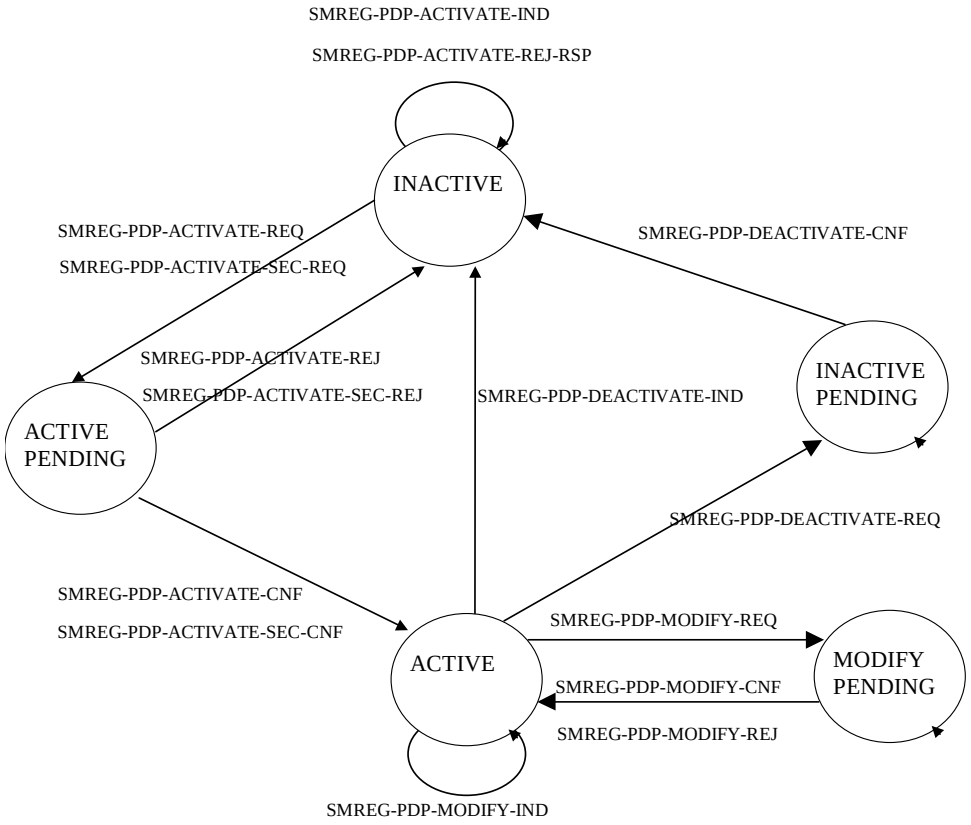

Figure 6.4: Session Management service states at the SMREG-SAP for GPRS PDP context handling - MS side

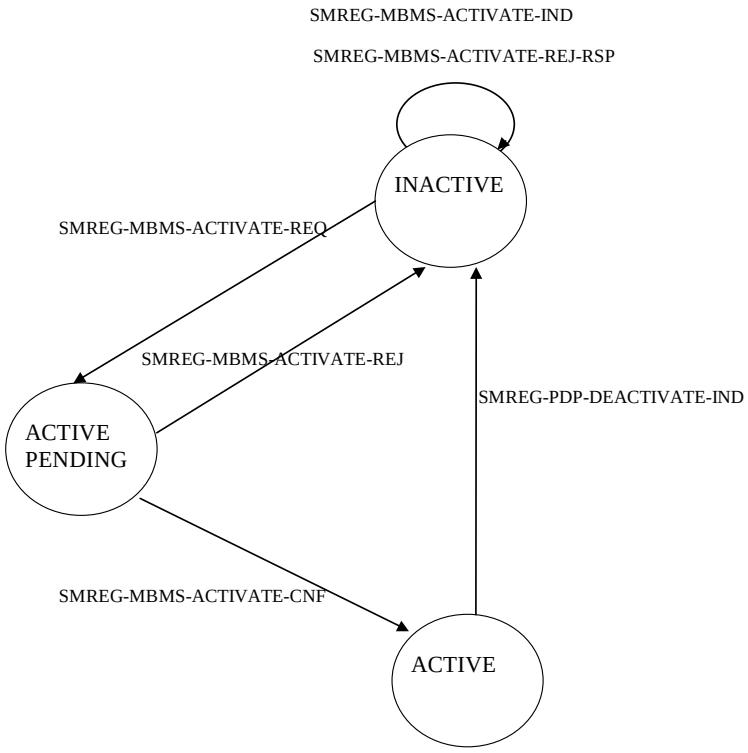

Figure 6.5: Session Management service states at the SMREG-SAP for MBMS context handling - MS side

6.5.2 Session Management Services for SNSM-SAP (GSM only)

The SNSM-SAP service primitives are defined in 3GPP TS 44.065 [12a].

6.5.3 Session Management Services for RABMSM-SAP (UMTS only)

Table 6.5.3: Service primitives and parameters at RABMSM-SAP - MS side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	Reference
RABMSM-ACTIVATE-IND	NSAPI, QoS	6.5.3.1
RABMSM-ACTIVATE-RSP	NSAPI	6.5.3.2
RABMSM-DEACTIVATE-IND	NSAPIs	6.5.3.3
RABMSM-DEACTIVATE-RSP	NSAPIs	6.5.3.4
RABMSM-DEACTIVATE-REQ	NSAPI	6.5.3.5
RABMSM-MODIFY-IND	NSAPI, QoS	6.5.3.6
RABMSM-MODIFY-RSP	-	6.5.3.7
RABMSM-STATUS-REQ	- Cause	6.5.3.8

6.5.3.1 RABMSM-ACTIVATE-IND

Indication used by the SM entity to inform the RABM entity that an NSAPI has been activated for data transfer (e.g. an activate PDP Context request has been sent to the network). It also informs the RABM entity about the requested QoS profile for this NSAPI. The indication is sent by SM towards RABM during an ongoing PDP context activation procedure.

6.5.3.2 RABMSM-ACTIVATE-RSP

Response used by the RABM entity to inform the SM entity that the indicated NSAPI is now in use and that a RAB for the indicated NSAPI is established.

6.5.3.3 RABMSM-DEACTIVATE-IND

Indication used by the SM entity to inform the RABM entity that an NSAPIs has been de-allocated and cannot be used by the RABM entity anymore. The request is sent by SM towards RABM during an ongoing MS initiated as well as network initiated PDP context de-activation procedure or during local de-activation of a PDP context.

6.5.3.4 RABMSM-DEACTIVATE-RSP

This message is the response to RABMSM-DEACTIVATE-IND used by the RABM entity to inform the SM entity that the NSAPI indicated is no longer in use. It is either sent immediately when there is no corresponding bearer active or it is sent after reception and processing of RABMAS-RAB-RELEASE-IND from access stratum.

6.5.3.5 RABMSM-DEACTIVATE-REQ

This primitive is used by the RABM entity to inform the SM entity that the RAB for an NSAPI has been released. This primitive is only sent for bearer with a RT-QoS classes.

6.5.3.6 RABMSM-MODIFY-IND

Indication used by the SM entity to indicate the change of the QoS for an NSAPI. The indication is sent by SM towards RABM during an ongoing PDP context modification procedure.

6.5.3.7 RABMSM-MODIFY-RSP

Response used by the RABM entity to inform the SM entity that the indicated NSAPI and QoS profile are now in use and the RAB for the NSAPI is established and/or released, if necessary.

6.5.3.8 RABMSM-STATUS-REQ

This primitive is used by the RABM entity to inform the SM entity that RABM cannot continue its operation due to errors at the lower layer (i.e. Access Stratum) or at the RABM layer. The Cause parameter indicates the cause of the error.

NEXT CHANGE

6.7 Services provided to SNDCP entities by GPRS Logical Link Control services

This clause is informative, the service primitives are defined in 3GPP TS 44.064 [11a]. They are included here to provide a complete overview of the radio interface protocol architecture.

Logical Link Control services are provided at the QoS1-SAP - QoS4 SAP towards the SNDCP and at the LLSMS-SAP towards SMS.

6.7.1 Service state diagram for QoS1-SAP, QoS2-SAP, QoS3-SAP and QoS4-SAP

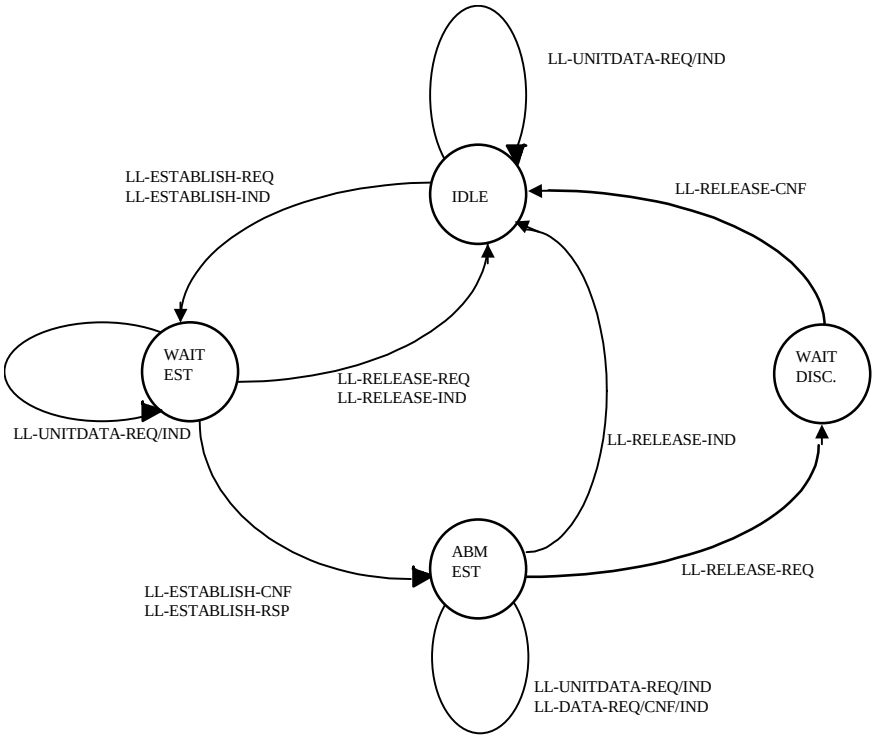

Figure 6.7: States to establish and release ABM mode operation

6.7.2 Service primitives for QoS1-SAP, QoS2-SAP, QoS3-SAP and QoS4-SAP

Table 6.7.2: Service primitives and parameters at QoS1 to QoS4 - MS side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
LL-ESTABLISH-REQ	TLLI, SNDCP requested parameters (XID)	6.7.2.1
LL-ESTABLISH-CNF	TLLI, SNDCP negotiated parameters (XID)	6.7.2.2
LL-ESTABLISH-IND	TLLI, SNDCP requested parameters (XID), N201	6.7.2.3
LL-ESTABLISH-RSP	TLLI, SNDCP negotiated parameters (XID)	6.7.2.4
LL-RELEASE-REQ	TLLI	6.7.2.5
LL-RELEASE-CFN	TLLI	6.7.2.6
LL-RELEASE-IND	TLLI	6.7.2.7
LL-XID-REQ	TLLI, SNDCP requested parameters (XID)	6.7.2.8
LL-XID-IND	TLLI, SNDCP requested parameters (XID), N201	6.7.2.9
LL-XID-RSP	TLLI, SNDCP negotiated parameters (XID)	6.7.2.10
LL-XID-CNF	TLLI, SNDCP negotiated parameters (XID), N201	6.7.2.11
LL-DATA-REQ	TLLI, N-PDU, local reference	6.7.2.12
LL-DATA-CNF	TLLI, local reference	6.7.2.13
LL-DATA-IND	TLLI, N-PDU	6.7.2.14
LL-UNITDATA-REQ	TLLI, N-PDU, protect, cipher	6.7.2.15
LL-UNITDATA-IND	TLLI, N-PDU	6.7.2.16
LL-STATUS-IND	TLLI, cause	6.7.2.17

6.7.2.1 LL-ESTABLISH-REQ

A LLC SABM frame will be sent to establish the LLC ABM mode.

6.7.2.2 LL-ESTABLISH-CNF

A LLC UA frame is received, the LLC ABM mode has been established.

6.7.2.3 LL-ESTABLISH-IND

A LLC SABM frame is received.

6.7.2.4 LL-ESTABLISH-RSP

A LLC UA frame will be sent, the ABM mode is established.

6.7.2.5 LL-RELEASE-REQ

A LLC DISC frame will be sent to change to LLC ADM mode.

6.7.2.6 LL-RELEASE-CNF

The LLC link has been disconnected, LLC is in ADM mode.

6.7.2.7 LL-RELEASE-IND

LLC is in idle mode.

6.7.2.8 LL-XID-REQ

An LLC XID frame will be sent.

6.7.2.9 LL-XID-IND

An LLC XID frame has been received.

6.7.2.10 LL-XID-RSP

An LLC XID frame will be sent as a response to a received XID frame.

6.7.2.11 LL-XID-CNF

An LLC XID frame has been received as a response to a sent XID frame.

6.7.2.12 LL-DATA-REQ

An LLC I frame will be sent to the peer entity.

6.7.2.13 LL-DATA-CNF

Successful reception of an LLC I frame has been acknowledged by the peer entity.

6.7.2.14 LL-DATA-IND

An LLC I frame has been received from the peer entity.

6.7.2.15 LL-UNITDATA-REQ

An LLC UI frame will be sent to the peer entity.

6.7.2.16 LL-UNITDATA-IND

An LLC UI frame has been received from the peer entity.

6.7.2.17 LL-STATUS-IND

Indication used by LLC to transfer LLC failures to the SNDCP sublayer. The failure may also be caused due to errors at the RLC/MAC layer.

NEXT CHANGE

7.4 Services provided to SNDCP and SMS entities by GPRS Logical Link Control services

This clause is informative, the service primitives are defined in 3GPP TS 44.064 [11a]. They are included here to provide a complete overview of the radio interface protocol architecture.

On the network side, Logical Link Control services are provided at the QoS1-SAP - QoS4 SAP towards the SNDCP and at the LLSMS-SAP towards SMS.

7.4.1 Service state diagram for QoS1-SAP, QoS2-SAP, QoS3-SAP and QoS4-SAP

The service state diagram is identical on the network side is identical to the one shown in figure 6.7 for the mobile side.

7.4.2 Service primitives for QoS1-SAP, QoS2-SAP, QoS3-SAP and QoS4-SAP

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
LL-ESTABLISH-REQ	TLLI, SNDCP requested parameters (XID)	7.4.2.1
LL-ESTABLISH-CNF	TLLI, SNDCP negotiated parameters (XID), N201	7.4.2.2
LL-ESTABLISH-IND	TLLI, SNDCP requested parameters (XID), N201	7.4.2.3
LL-ESTABLISH-RSP	TLLI, SNDCP negotiated parameters (XID)	7.4.2.4
LL-RELEASE-REQ	TLLI	7.4.2.5
LL-RELEASE-CNF	TLLI	7.4.2.6
LL-RELEASE-IND	TLLI	7.4.2.7
LL-XID-REQ	TLLI, SNDCP requested parameters (XID)	7.4.2.8
LL-XID-IND	TLLI, SNDCP requested parameters (XID), N201	7.4.2.9
LL-XID-RSP	TLLI, SNDCP negotiated parameters (XID)	7.4.2.10
LL-XID-CNF	TLLI, SNDCP negotiated parameters (XID), N201	7.4.2.11
LL-DATA-REQ	TLLI, N-PDU, local reference	7.4.2.12
LL-DATASENT-IND	TLLI, local reference, V(S)	7.4.2.13
LL-DATA-CNF	TLLI, local reference	7.4.2.14
LL-DATA-IND	TLLI, N-PDU	7.4.2.15
LL-UNITDATA-REQ	TLLI, N-PDU, protect, cipher	7.4.2.16
LL-UNITDATA-IND	TLLI, N-PDU	7.4.2.17
LL-STATUS-IND	TLLI, cause	7.4.2.18

7.4.2.1 LL-ESTABLISH-REQ

A LLC SABM frame will be sent to establish the LLC ABM mode.

7.4.2.2 LL-ESTABLISH-CNF

A LLC UA frame is received, the LLC ABM mode has been established.

7.4.2.3 LL-ESTABLISH-IND

A LLC SABM frame is received.

7.4.2.4 LL-ESTABLISH-RSP

A LLC UA frame will be sent, the ABM mode is established.

7.4.2.5 LL-RELEASE-REQ

A LLC DISC frame will be sent to change to LLC ADM mode.

7.4.2.6 LL-RELEASE-CNF

The LLC link has been disconnected, LLC is in ADM mode.

7.4.2.7 LL-RELEASE-IND

LLC is in idle mode.

7.4.2.8 LL-XID-REQ

An LLC XID frame will be sent.

7.4.2.9 LL-XID-IND

An LLC XID frame is received.

7.4.2.10 LL-XID-RSP

An LLC XID frame will be sent as a reply to a received XID frame.

7.4.2.11 LL-XID-CNF

An LLC XID frame has been received as a reply to a sent XID frame.

7.4.2.12 LL-DATA-REQ

An LLC I frame will be sent to the peer entity.

7.4.2.13 LL-DATASENT-IND

The sent LLC frame was sent with the V(S) indicated.

7.4.2.14 LL-DATA-CNF

Successful reception of an LLC I frame has been acknowledged by the peer entity.

7.4.2.15 LL-DATA-IND

An LLC I frame has been received form the peer entity.

7.4.2.16 LL-UNITDATA-REQ

An LLC UI frame will be sent to the peer entity.

7.4.2.17 LL-UNITDATA-IND

An LLC UI frame has been received from the peer entity.

7.4.2.18 LL-STATUS-IND

Indication used by LLC to transfer LLC failures to the SNDCP sublayer. The failure may also be caused due to errors at the RLC/MAC layer.

7.5 Session Management Services for GPRS and MBMS

On the network side Session Management Services are provided at the SNSM-SAP and SMREG-SAP. At the SMREG-SAP, the assumption taken is that the MS initiated primary and secondary PDP context activation, the~~and~~ MS initiated PDP context modification and deactivation, and the MBMS context activation and deactivation are not visible,~~.~~ ~~I~~i.e the service for these functions on the network side stops in the SM sublayer entity.

7.5.1 Session Management Services for SMREG-SAP

Table 7.5.1: Primitives and Parameters at SMREG-SAP - network side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
SMREG-PDP-ACTIVATE-REQ	PDP address, APN, protocol configuration options	7.5.1.1
SMREG-PDP-ACTIVATE-REJ	Cause, PDP address, APN, protocol configuration options	7.5.1.2
SMREG-PDP-DEACTIVATE-REQ	NSAPI(s), teardown indicator, cause, protocol configuration options, MBMS protocol configuration options	7.5.1.3
SMREG-PDP-DEACTIVATE-CNF	NSAPI(s), protocol configuration options, MBMS protocol configuration options	7.5.1.4
SMREG-PDP-MODIFY-REQ	QoS, NSAPI, protocol configuration options	7.5.1.5
SMREG PDP-MODIFY-CNF	NSAPI, protocol configuration options	7.5.1.6
SMREG PDP-MODIFY-REJ	NSAPI, protocol configuration options	7.5.1.7
SMREG-MBMS-ACTIVATE-REQ	Multicast address, APN, MBMS protocol configuration options	7.5.1.8
SMREG-MBMS-ACTIVATE-REJ	Cause, multicast address, APN, MBMS protocol configuration options	7.5.1.9

7.5.1.1 SMREG-PDP-ACTIVATE-REQ

The network initiates a PDP context activation. SM is requested to send the REQUEST PDP CONTEXT ACTIVATION message to the MS. The PDP context is pending activation. The network expects that the MS continues with a normal MS initiated PDP context activation. Therefore, at the SMREG-SAP no confirmation is provided.

7.5.1.2 SMREG-PDP-ACTIVATE-REJ

The network initiated PDP context activation failed. Either the REQUEST~~ACTIVATE~~ PDP CONTEXT ACTIVATION REJECT message was received from the MS, or lower layer failure or timer expiry caused abortion of the PDP context activation procedure.

7.5.1.3 SMREG-PDP-DEACTIVATE-REQ

The network initiates a PDP or MBMS context deactivation. SM is requested to send a DEACTIVATE PDP CONTEXT REQUEST message. The PDP context is pending deactivation. Presence of the teardown indicator will lead to deactivation of all PDP contexts coupled to the identified PDP address. NSAPI(s) to be deallocated from the SNDCP entity via the SNSM-SAP for the GSM case, are included in the primitive.

7.5.1.4 SMREG-PDP-DEACTIVATE-CNF

The network initiated PDP or MBMS context deactivation has been concluded. The MS confirmed the PDP context deactivation, i.e. the DEACTIVATE PDP CONTEXT ACCEPT message was received. Then SM ordered SNDCP to locally release LLC link(s) not further needed for the GSM case. In the UMTS case, release of affected GTP-U tunnel(s) towards the RNC has taken place. The PDP context is deactivated.

7.5.1.5 SMREG-PDP-MODIFY-REQ

The network initiates a modification of the PDP context. SM is requested to send a MODIFY PDP CONTEXT REQUEST message to the MS. The PDP context is pending modification.

7.5.1.6 SMREG-PDP-MODIFY-CNF

The PDP context modification has been concluded. The MS confirmed the PDP context modification, i.e. the MODIFY PDP CONTEXT ACCEPT message was received. Then, for the GSM case, SM ordered SNDCP to adjust the affected LLC link as required. For the UMTS case, RAB properties were updated as required. The PDP context is modified.

7.5.1.7 SMREG-PDP-MODIFY-REJ

The PDP context modification has been rejected. Due to timer expiry or lower layer failure the modification procedure has been aborted.

7.5.1.8 SMREG-MBMS-ACTIVATE-REQ

The network initiates an MBMS context activation. SM is requested to send the REQUEST MBMS CONTEXT ACTIVATION message to the MS. The MBMS context is pending activation. The network expects that the MS continues with the MBMS context activation. Therefore, at the SMREG-SAP no confirmation is provided.

7.5.1.9 SMREG-MBMS-ACTIVATE-REJ

The network initiated MBMS context activation failed. Either the REQUEST MBMS CONTEXT REJECT message was received from the MS, or lower layer failure or timer expiry caused abortion of the MBMS context activation procedure.

NEXT CHANGE

9.5 Services provided by the GMM for GPRS services

The GPRS Mobility Management (GMM) sublayer provides services to the Session Management (SM) entity, Supplementary Service (SS) entity and the Short Message Service Support (GSMS) entity for message transfer.

9.5.1 Service primitives for GMMSM-SAP

Session M~~m~~anagement services may request GPRS service registration or perform procedures needed to activate a multicast service before activating a PDP or an MBMS context.

Table 9.5.1: Primitives and parameters at GMMSM-SAP - MS side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
GMMSM-ESTABLISH-REQ	-	9.5.1.1
GMMSM-ESTABLISH-CNF	-	9.5.1.2
GMMSM-ESTABLISH-REJ	cause	9.5.1.3
GMMSM-RELEASE-IND	-	9.5.1.4
GMMSM-UNITDATA-REQ	SM-PDU	9.5.1.5
GMMSM-UNITDATA-IND	SM-PDU	9.5.1.6

9.5.1.1 GMMSM-ESTABLISH-REQ

Request from Session Management to send an ATTACH REQUEST message to the network to setup a GMM connection. The request is only performed in case the MS is not already attached. The GPRS attach is then indirectly caused by a request from Session Management, e.g. a requested PDP context activation or MBMS context activation.

9.5.1.2 GMMSM-ESTABLISH-CNF

The network has send the ATTACH ACCEPT message to the MS, the indirect attach was successful. Now, S~~s~~ession M~~m~~anagement can proceed with the Session Management request, e.g. the PDP context activation or the MBMS context activation.

9.5.1.3 GMMSM-ESTABLISH-REJ

The network has rejected the attach. The MS has received the ATTACH REJECT message.

9.5.1.4 GMMSM-RELEASE-IND

The GPRS ~~m~~Mobility ~~m~~Management informs the ~~s~~Session M~~m~~anagement that the MS has been GPRS detached, e.g. by timer expiry, and therefore, the PDP context(s) and the MBMS context(s), if any, are not valid anymore.

9.5.1.5 GMMSM-UNITDATA-REQ

The GMM is requested to forward a SM PDU to LLC in order to send it in unacknowledged more to the peer entity.

9.5.1.6 GMMSM-UNITDATA-IND

The GMM forwards a SM PDU, which has been received in unacknowledged mode via LLC from the peer entity.

NEXT CHANGE

10.4 Services provided by the LLC entity for GPRS services

10.4.1 Service primitives for LLGMM-SAP

Table 10.4.1: Primitives and Parameters at GRR-SAP - network side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
LLGMM-ASSIGN-REQ	newTLLI, oldTLLI, Kc, Algorithm	10.4.1.1
LLGMM-SUSPEND-REQ	TLLI, page	10.4.1.3
LLGMM-RESUME-REQ	TLLI	10.4.1.4
LLGMM-PAGE-IND	TLLI	10.4.1.5
LLGMM-PAGE-RESP-IND	TLLI	10.4.1.6
LL-UNITDATA-REQ	TLLI, SMM-PDU, protect, cipher	10.4.1.9
LL-UNITDATA-IND	TLLI, SMM-PDU, cipher	10.4.1.10
LLGMM-STATUS-IND	TLLI, cause	10.4.1.11

10.4.1.1 LLGMM-ASSIGN-REQ

A new TLLI and/or a ciphering key and/or a ciphering algorithm is assigned to the LL sublayer. Also an old TLLI can be unassigned.

10.4.1.2 Void

10.4.1.3 LLGMM-SUSPEND-REQ

All LLC links will cease sending PDUs. The parameter page indicates that data shall be sent if available and therefore paging shall be needed. Or the cause indicates that data shall not be sent until a RESUME-REQ is received.

10.4.1.4 LLGMM-RESUME-REQ

Normal LLC frame sending and reception is possible again.

10.4.1.5 Void

10.4.1.6 Void

10.4.1.7 LLGMM-PAGE-IND

Requires to send a paging message to the mobile station.

10.4.1.8 LLGMM-PAGE-RESP-IND

A paging response has been received from the mobile.

10.4.1.9 LL-UNITDATA-REQ

Request to send a SMM message in unacknowledged mode to the peer entity.

10.4.1.10 LL-UNITDATA-IND

A SMM message in unacknowledged mode has been received from the peer entity.

10.4.1.11 LLGMM-STATUS-IND

Indication used by LLC to transfer lower layer failures to the GMM sublayer.

10.4.2 Service primitives for LLSMS-SAP

Table 10.4.2: Primitives and Parameters at LLSMS-SAP - network side

PRIMITIVE	PARAMETER (message, info elements of message, other parameters)	REFERENCE
LL-UNITDATA-REQ	TLLI, SMS-CP-PDU, protect, cipher	10.4.2.1
LL-UNITDATA-IND	TLLI, SMS-CP-PDU	10.4.2.2

10.4.2.1 LL-UNITDATA-REQ

An LLC UI frame will be sent to the peer entity.

10.4.2.2 LL-UNITDATA-IND

An LLC UI frame has been received from the peer entity.