Source: TSG CN WG4

Title: Corrections on Multimedia Broadcast and Multicast Services

Agenda item: 9.8

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level N4-040	Phase	Subject	Cat	Ver_C
29.060	497		559	Rel-6	Another Cause for MBMS Notification Reject Request	B	6.4.0
29.060	495	1	710	Rel-6	Addition of BM-SC initiated De-registration	B	6.4.0
29.060	486	2	711	Rel-6	Support of Inter-SGSN RA update for MBMS	B	6.4.0
29.060	496	1	712	Rel-6	Addition of TMGI	B	6.4.0
23.003	088	1	713	Rel-6	Addition of TMGI	B	6.2.0

CR-Form-v7

CHANGE REQUEST

| ⌘ | **29.060** CR **497** | ⌘rev | **-** | ⌘ | Current version: | **6.4.0** | ⌘ |

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

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

Title: ⌘	Another Cause for MBMS Notification Reject Request	
Source: ⌘	CN4	
Work item code:⌘	MBMS	**Date:** ⌘ 29/04/2004
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: ⌘	During the MBMS Multicast Service Activation procedure, it is more efficient for the SGSN to verify the MS's MBMS bearer capabilities and to reject a MS whose MBMS bearer capabilities are less than the required MBMS bearer capabilities as soon as the SSGN gets the Activate MBMS Context Request from the MS. At SA2 #39, TS 23.246 CR 051 (S2-041199) was approved to specify this change in Stage 2. TS 29.060 should be updated accordingly.
Summary of change:⌘	Add 'MS MBMS Capabilities Insufficient' as a possible cause value for the MBMS Notification Reject Request message.

Change the cause value of 'MS Not GPRS Responding' to be 'MS is not GPRS Responding' (editorial). |
| **Consequences if not approved:** ⌘ | TS 29.060 will not be aligned with TS 23.246 and 'MS MBMS Capabilities Insufficient' will not be a valid MBMS Notification Reject Request cause value.

The cause value 'MS Not GPRS Responding' is not consistent with other references of 'MS is not GPRS Responding' in the TS. |

Clauses affected: ⌘	7.3.10, 7.5A.1.3, 7.7.1

	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.

******************** 1st Change ********************

7.3.10 PDU Notification Reject Request

If the PDP context activation proceeds after the PDU Notification Response, but the PDP context was not established, the SGSN sends a PDU Notification Reject Request message. The Cause value indicates the reason why the PDP Context could not be established:

- 'MS ~~Not~~ is not GPRS Responding'.

- 'MS Refuses'.

When receiving the PDU Notification Reject Request message the GGSN may reject or discard the stored T-PDU(s) depending on the PDP type.

After an unsuccessful activation attempt the GSNs may perform some actions to prevent unnecessary enquiries to the HLR as described in the section Unsuccessful Network-Requested PDP Context Activation procedure in 3GPP TS 23.060 [4].

The Tunnel Endpoint Identifier in the GTP header of the PDU Notification Reject Request message shall be the same as the Tunnel Endpoint Identifier Control Plane information element of the PDU Notification Request that triggered the reject.

The Tunnel Endpoint Identifier Control Plane information element shall be a tunnel endpoint identifier Control Plane selected by the SGSN and shall be used by the GGSN in the GTP header of the corresponding PDU Notification Reject Response message.

The End User Address information element contains the PDP type and PDP address of the PDP context that could not be activated.

The Access Point Name shall be the same as the Access Point Name of the received PDU Notification Request message that triggered the reject.

The SGSN includes the Protocol Configuration Options (PCO) information element in the request if the MS wishes to provide the GGSN with application specific parameters. The SGSN includes this IE in the PDU Notification Reject Request message if the associated Request PDP Context Activation Reject message from the MS includes protocol configuration options. The SGSN shall copy the content of the IE transparently from the PCO IE in the Request PDP Context Activation Reject message.

The optional Private Extension contains vendor or operator specific information.

Table 16: Information Elements in a PDU Notification Reject Request

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
Tunnel Endpoint Identifier Control Plane	Mandatory	7.7.14
End User Address	Mandatory	7.7.27
Access Point Name	Mandatory	7.7.30
Protocol Configuration Options	Optional	7.7.31
Private Extension	Optional	7.7.46

******************** 2nd Change ********************

7.5A.1.3 MBMS Notification Reject Request

If the MBMS context activation proceeds after the MBMS Notification Response, but the MBMS context was not established, due to explicit rejection of the MBMS context Activation Request by the MS, or the MS not responding, or the MS MBMS Bearer Capabilities are insufficient, the SGSN sends a MBMS Notification Reject Request message. The Cause value indicates the reason why the MBMS Context could not be established:

- 'MS ~~Not~~ is not GPRS Responding'.

- 'MS Refuses'.

- 'MS MBMS Capabilities Insufficient'.

When receiving the MBMS Notification Reject Request message the GGSN may, dependent the cause value indicated, and based on operator configuration fall back to IP multicast access as defined in 3GPP TS29.061[27]..

The Tunnel Endpoint Identifier in the GTP header of the MBMS Notification Reject Request message shall be the same as the Tunnel Endpoint Identifier Control Plane information element of the MBMS Notification Request that triggered the reject.

The Tunnel Endpoint Identifier Control Plane information element shall be a tunnel endpoint identifier Control Plane selected by the SGSN and shall be used by the GGSN in the GTP header of the corresponding MBMS Notification Reject Response message.

The End User Address information element contains the PDP type and IP Multicast PDP address that could not be activated. The IP multicast address shall be the one requested by the UE in the Join request.

The Access Point Name shall be the same as the Access Point Name of the received MBMS Notification Request message that triggered the reject.

The NSAPI information element is the NSAPI of the PDP context over which the IGMP/MLD join message was received that triggered the MBMS Notification Request

The optional Private Extension contains vendor or operator specific information.

Table 7.5A.3: Information Elements in a MBMS Notification Reject Request

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
Tunnel Endpoint Identifier Control Plane	Mandatory	7.7.14
NSAPI	Mandatory	7.7.17
End User Address	Mandatory	7.7.27
Access Point Name	Mandatory	7.7.30
Private Extension	Optional	7.7.46

********************* 3rd Change *********************

7.7.1   Cause

In a request, the Cause Value indicates the reason for the request. The Cause shall be included in the request message.

In a response, the Cause Value indicates the acceptance or the rejection of the corresponding request. In addition, the Cause Value may indicate what was the reason for the corresponding request. The Cause value shall be included in the response message.

Cause values are shared with the GTP' protocol specified in 3GPP TS 32.215 [18].

'Request accepted' is returned when a GSN has accepted a control plane request.

'Non-existent' indicates a non-existent or an inactive PDP context.

'IMSI not known' indicates a non-existent MM context.

'MS is GPRS Detached' indicates an idle MM context.

'MS is not GPRS Responding' and 'MS Refuses' may be used by SGSN to reject a Network-Requested PDP Context Activation.

'Version not supported' is returned when the recipient does not recognise the version number in the request message.

'Request IMSI', 'Request IMEI', 'Request IMSI and IMEI' and 'No identity needed' are used by GGSN to notify SGSN what to do.

'No resources available' is a generic temporary error condition indicating that some kind of resource is used up for that moment excluding the conditions all dynamic PDP addresses are occupied and no memory is available.

'All dynamic PDP addresses occupied' indicates that the GSN does not have a free dynamic PDP address to allocate any longer.

'No memory available' indicates that the GSN does not have enough memory to use.

'Service not supported' is a generic error indicated that the GSN do not support the requested service.

'User authentication failed' indicates that the external packet network has rejected the user's service request.

'System failure' is a generic permanent error condition.

'Roaming restriction' indicates that the SGSN cannot activate the requested PDP context because of the roaming restrictions.

'P-TMSI Signature mismatch' is returned if either:

-   the P-TMSI Signature stored in the old SGSN does not match the value sent by the MS via the new SGSN; or

-   the MS does not provide the P-TMSI Signature to the new SGSN while the old SGSN has stored the P-TMSI Signature for that MS.

'Semantic error in the TFT operation', 'Syntactic error in the TFT operation', 'Semantic errors in packet filter(s)' and 'Syntactic errors in packet filters(s)' and 'PDP context without TFT already activated' are indications of abnormal cases involving TFTs. The abnormal TFT cases and the use of the cause codes are defined in 3GPP TS 24.008 [5].

'Invalid message format', 'Mandatory IE incorrect', 'Mandatory IE missing' and 'Optional IE incorrect' are indications of protocol errors described in the section Error handling.

'GPRS connection suspended' indicates that the GPRS activities of the mobile station are suspended.

'Authentication failure' indicates that the user authentication failed in the new SGSN.
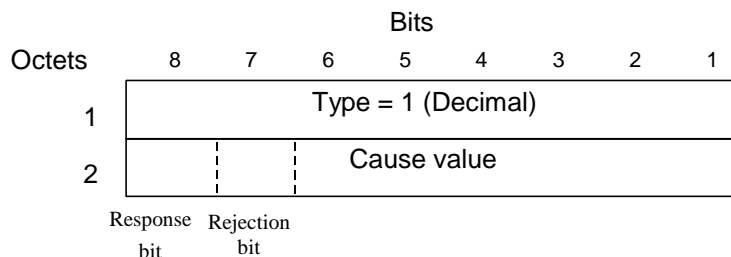
'Context not found' indicates that the PDP Context referenced in an Active Secondary Context Request message was not found in the receiving GGSN.

'Relocation failure' indicates that the SRNS relocation failed in the new SGSN side.

'Unknown mandatory extension header' signals in a response message that the corresponding request included an extension header for which comprehension was required but unknown to the receiving end.

'APN Restriction type incompatibility with currently active PDP Contexts' conveys to an SGSN that a PDP Context was not allowed to be created or moved by the GGSN because if it had been created or moved, the rules for PDP Context coexistence as described in 3GPP TS 23.060 [4], sub-clause 15.4, would have been broken.

'MS MBMS Capabilities Insufficient' is used by the SGSN to notify the GGSN that the MS MBMS Bearer Capabilities are less than the Required MBMS Bearer Capabilities.

Figure 9: Cause information element

Table 38: Cause Values

Cause			Value (Decimal)
request		Request IMSI	0
		Request IMEI	1
		Request IMSI and IMEI	2
		No identity needed	3
		MS Refuses	4
		MS is not GPRS Responding	5
		For future use	6-48
		Cause values reserved for GPRS charging protocol use (see GTP' in 3GPP TS 32.215 [18])	49-63
For future use			64-127
response	acc	Request accepted	128
		For future use	129-176
		Cause values reserved for GPRS charging protocol use (see GTP' in 3GPP TS 32.215 [18])	177-191
	rej	Non-existent	192
		Invalid message format	193
		IMSI not known	194
		MS is GPRS Detached	195
		MS is not GPRS Responding	196
		MS Refuses	197
		Version not supported	198
		No resources available	199
		Service not supported	200
		Mandatory IE incorrect	201
		Mandatory IE missing	202
		Optional IE incorrect	203
		System failure	204
		Roaming restriction	205
		P-TMSI Signature mismatch	206
		GPRS connection suspended	207
		Authentication failure	208
		User authentication failed	209
		Context not found	210
		All dynamic PDP addresses are occupied	211
		No memory is available	212
		Relocation failure	213
		Unknown mandatory extension header	214
		Semantic error in the TFT operation	215
		Syntactic error in the TFT operation	216
		Semantic errors in packet filter(s)	217
		Syntactic errors in packet filter(s)	218
		Missing or unknown APN	219
		Unknown PDP address or PDP type	220
		PDP context without TFT already activated	221
		APN access denied – no subscription	222
		APN Restriction type incompatibility with currently active PDP Contexts	223
		MS MBMS Capabilities Insufficient	224
		For future use	~~224~~225-240
		Cause values reserved for GPRS charging protocol use (see GTP' in 3GPP TS 32.215 [18])	241-255
NOTE: With this coding, bits 8 and 7 of the Cause Value respectively indicate whether the message was a request or a response, and whether the request was accepted or rejected.			

Table 39: Use of the Cause Values

Cause 8	value bits 7	Result
0	0	Request
0	1	For future use (note)
1	0	Acceptance
1	1	Rejection
NOTE: The value '01' is for future use and shall not be sent. If received in a response, it shall be treated as a rejection.		

CR-Form-v7

CHANGE REQUEST

⌘   **29.060 CR 496**   ⌘**rev 1** ⌘   Current version: **6.4.0**   ⌘

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

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

Title:	⌘	Addition of TMGI		
Source:	⌘	CN4		
Work item code: ⌘	MBMS		**Date:** ⌘	30/4/2004
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:	⌘	In the TS 23.246, the TMGI (Temporary Mobile Group Identity) is defined for MBMS notification purpose. However this idetity is missing in TS 29.060.
Summary of change: ⌘		1. New information element 'TMGI' was added to the MBMS Registration Response message and MBMS Session Start Request messge. 2, The definition of new information element was also added. (The encoding of the TMGI refers to TR 29.846 which CN1 is working on. This reference shall be changed to an appropriate specification when CN1 complete their work for MBMS.)
Consequences if not approved:	⌘	The inconsistency between stage2 and stage3 remains.
Clauses affected:	⌘	7.5A.2.2, 7.5A.2.5, 7.7, 7.7.x(new)

		Y	**N**			
Other specs	⌘	**X**		Other core specifications	⌘	CR 23.003-088
affected:			**X**	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:
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Below is a brief summary:

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

7.5A.2.2   MBMS Registration Response

An MBMS Registration Response is sent by an GGSN in response to a received MBMS Registration Request. If the GGSN is already registered for the indicated MBMS service, the GGSN can immediately send back this response, adding the SGSN to it's list of registered nodes for that MBMS service. If the GGSN is not registered for the indicated MBMS service it shall register with the BM-SC as defined in 3GPP TS29.061[27].

~~The GGSN shall include a TMGI if BM-SC allocates new TMGI.~~

The Cause value indicates if a registration has been successful in the GGSN. An MBMS Bearer Context has not been created in the GGSN if the Cause differs from 'Request accepted'. Possible Cause values are:

- "Request Accepted".

- "No resources available".

- "No memory is available".

- "Missing or unknown APN".

- "Unknown PDP address or PDP type".

- "System failure".

- "Mandatory IE incorrect".

- "Mandatory IE missing".

- "Optional IE incorrect".

- "Invalid message format".

The Temporary Mobile Group Identity information element shall be the TMGI allocated by the BM-SC.

All information elements, except Private Extension, are mandatory if the Cause contains the value 'Request accepted'.

'No resources available' indicates that not enough resources are available within the network to allow the MBMS Context to be created. 'Missing or unknown APN' indicates e.g. when the GGSN does not support the Access Point Name. 'Unknown PDP address or PDP type' indicates when the GGSN does not support the PDP type or the PDP address. Within the scope of MBMS message, an unknown PDP address is considered to be unknown mulitcast address / service.

Table 7.5A.2.2: Information Elements in an MBMS Registration Response

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
Temporary Mobile Group Identity (TMGI)	Conditional	7.7.X
Private Extension	Optional	7.7.46

*** *Next Change* ***

7.5A.2.5   MBMS Session Start Request

An MBMS Session Start Request message shall only ever be sent by the GGSN, and will be triggered by the BM-SC when it is ready to send data for the indicated MBMS service. An MBMS Session Start Request shall trigger the SGSN to setup the necessary MBMS user plane resources and indicate to the RAN to setup the appropriate radio bearers.

The End User Address information element contains the PDP type and IP Multicast PDP address of the MBMS service. The Access Point Name information element identifies the access point of packet data network that the GGSN requires

to connect to receive the required MBMS service. The APN and End User Address information element shall uniquely identify the MBMS service.

The Quality of Service Profile information element shall be the QoS required from the MBMS bearer.

The Temporary Mobile Group Identity information element shall be the TMGI allocated by the BM-SC~~The GGSN shall include a TMGI if BM-SC allocates new TMGI~~.

It should be noted that due to the asymmetrical nature of MBMS service, the TEID or GGSN address need not to be included in this message.

The optional Private Extension contains vendor or operator specific information.

Table 7.5A.2.5: Information Elements in an MBMS Session Start Request

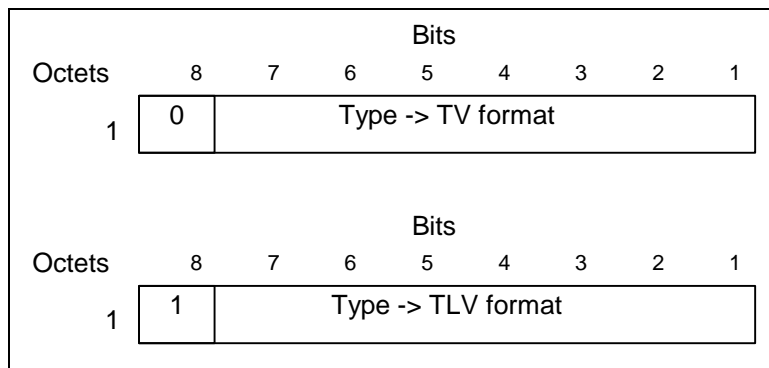| Information element	Presence requirement	Reference
End User Address	Mandatory	7.7.27
Access Point Name	Mandatory	7.7.30
Quality of Service Profile	Mandatory	7.7.34
Temporary Mobile Group Identity (TMGI)	Mandatory~~Conditional~~	7.7.X
Private Extension	Optional	7.7.46

*** *Next Change* ***

7.7   Information Elements

A GTP Signalling message may contain several information elements. The TLV (Type, Length, Value) or TV (Type, Value) encoding format shall be used for the GTP information elements. The information elements shall be sorted, with the Type fields in ascending order, in the signalling messages. The Length field contains the length of the information element excluding the Type and Length field.

For all the length fields, bit 8 of the lowest numbered octet is the most significant bit and bit 1 of the highest numbered octet is the least significant bit.

Within information elements, certain fields may be described as spare. These bits shall be transmitted with the value defined for them. To allow for future features, the receiver shall not evaluate these bits.

The most significant bit in the Type field is set to 0 when the TV format is used and set to 1 for the TLV format.

Figure 8: Type field for TV and TLV format

Table 37: Information Elements

IE Type Value	Format	Information Element	Reference

IE Type Value	Format	Information Element	Reference
1	TV	Cause	7.7.1
2	TV	International Mobile Subscriber Identity (IMSI)	7.7.2
3	TV	Routeing Area Identity (RAI)	7.7.3
4	TV	Temporary Logical Link Identity (TLLI)	7.7.4
5	TV	Packet TMSI (P-TMSI)	7.7.5
6-7	Spare		
8	TV	Reordering Required	7.7.6
9	TV	Authentication Triplet	7.7.7
10	Spare		
11	TV	MAP Cause	7.7.8
12	TV	P-TMSI Signature	7.7.9
13	TV	MS Validated	7.7.10
14	TV	Recovery	7.7.11
15	TV	Selection Mode	7.7.12
16	TV	Tunnel Endpoint Identifier Data I	7.7.13
17	TV	Tunnel Endpoint Identifier Control Plane	7.7.14
18	TV	Tunnel Endpoint Identifier Data II	7.7.15
19	TV	Teardown Ind	7.7.16
20	TV	NSAPI	7.7.17
21	TV	RANAP Cause	7.7.18
22	TV	RAB Context	7.7.19
23	TV	Radio Priority SMS	7.7.20
24	TV	Radio Priority	7.7.21
25	TV	Packet Flow Id	7.7.22
26	TV	Charging Characteristics	7.7.23
27	TV	Trace Reference	7.7.24
28	TV	Trace Type	7.7.25
29	TV	MS Not Reachable Reason	7.7.25A
30	TV	Radio Priority LCS	7.7.25B
117-126	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
127	TV	Charging ID	7.7.26
128	TLV	End User Address	7.7.27
129	TLV	MM Context	7.7.28
130	TLV	PDP Context	7.7.29
131	TLV	Access Point Name	7.7.30
132	TLV	Protocol Configuration Options	7.7.31
133	TLV	GSN Address	7.7.32
134	TLV	MS International PSTN/ISDN Number (MSISDN)	7.7.33
135	TLV	Quality of Service Profile	7.7.34
136	TLV	Authentication Quintuplet	7.7.35
137	TLV	Traffic Flow Template	7.7.36
138	TLV	Target Identification	7.7.37
139	TLV	UTRAN Transparent Container	7.7.38
140	TLV	RAB Setup Information	7.7.39
141	TLV	Extension Header Type List	7.7.40
142	TLV	Trigger Id	7.7.41
143	TLV	OMC Identity	7.7.42
144	TLV	RAN Transparent Container	7.7.43
145	TLV	PDP Context Prioritization	7.7.45
146	TLV	Additional RAB Setup Information	7.7.45A
147	TLV	SGSN Number	7.7.47
148	TLV	Common Flags	7.7.48
149	TVL	APN Restriction	7.7.49
1XX	TLVL	Temporary Mobile Group Identity (TMGI)	7.7.X
239-250	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
251	TLV	Charging Gateway Address	7.7.44
252-254	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
255	TLV	Private Extension	7.7.46

```
                    *** Next Change ***
```

7.7.X   Temporary Mobile Group Identity

The Temporary Mobile Group Identity (TMGI) information element contains a TMGI allocated by the BM-SC. It is coded as in the value part defined in 3GPP TRS 29.846 (i.e. the IEI and octet length indicator are not included).

NOTE: The reference to 3GPP TR 29.846 shall be changed to an appropriate specification when available.

				Bits				
Octets	8	7	6	5	4	3	2	1
1	Type = 1XX (Decimal)							
2-3	Length							
4-9	Temporary Mobile Group Identity							
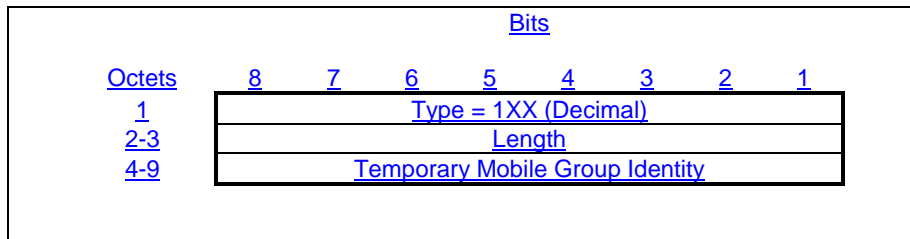
Figure xx: Temporary Mobile Group Identity

CR-Form-v7

CHANGE REQUEST

⌘ **29.060 CR 486** ⌘**rev 2** ⌘ Current version: **6.4.0** ⌘

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

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

Title: ⌘	Support of Inter-SGSN RA update for MBMS		
Source: ⌘	CN4		
Work item code: ⌘	MBMS	***Date:*** ⌘	30/4/2004
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:
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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: ⌘	According to the latest TS 23.246, the MBMS UE Context (which is composed of UE-specific information related to a particular MBMS service that the UE has joined) is conveyed from old SGSN to new SGSN to support UE mobility for MBMS. The existing PDP Context information element can not be re-used to convey the MBMS UE Context since new SGSN must distinguish the MBMS UE Context from the regular PDP Context and the contents of the MBMS UE Context is rather different from that of the regular PDP Context.	
Summary of change: ⌘	1. The definition of the term 'MBMS UE Context' was added. 2. New information element 'MBMS UE Context' was added to the SGSN Context Response message and Forward Relocation Request messge. 3, The definition of new information element was also added.	
Consequences if not approved: ⌘	When an MBMS user moves to another SGSN area, he may not be able to cotinue to enjoy MBMS services.	

Clauses affected: ⌘	3.1, 7.5.4, 7.5.6, 7.7.x(new)	

	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.

3.1   Definitions

For the purposes of the present document, the following terms and definitions apply:

G-PDU: is a user data message, It consists of a T-PDU plus a GTP header

GTP Tunnel: in the GTP-U plane is defined for each PDP Context or each MBMS service in the GSNs and/or each RAB in the RNC. A GTP tunnel in the GTP-C plane is defined for all PDP Contexts with the same PDP address and APN (for Tunnel Management messages and UE Specific MBMS message), for each MBMS service (for Service Specific MBMS messages) or for each MS (for other types of messages). A GTP tunnel is identified in each node with a TEID, an IP address and a UDP port number. A GTP tunnel is necessary to forward packets between an external packet data network and an MS user.

MBMS UE Context: contains UE-specific information related to a particular MBMS service that the UE has joined.

MM Context: information sets held in MS and GSNs for a GPRS subscriber related to Mobility Management (MM) (please refer to the MM Context Information Element)

Network Service Access Point Identifier (NSAPI): integer value in the range [0; 15], identifying a certain PDP Context. It identifies a PDP context belonging to a specific MM Context ID

path: UDP/IP path is used to multiplex GTP tunnels

Path Protocol: protocol used as a bearer of GTP between GSNs or between a GSN and a RNC

Packet Data Protocol (PDP): network protocol used by an external packet data network interfacing to GPRS

PDP Context: information sets held in MS and GSNs for a PDP address (please refer to the PDP Context Information Element)

Quality of Service (QoS): may be applicable for the GPRS backbone and the Iu interface if the path media supports it Separate paths with different priorities may be defined between a GSN pair or between a GSN and an RNC.

GTP-C Message: GTP-C or control plane messages are exchanged between GSN/RNC pairs in a path The control plane messages are used to transfer GSN capability information between GSN pairs, to create, update and delete GTP tunnels and for path management.

GTP-U Message: GTP-U or user plane messages are exchanged between GSN pairs or GSN/RNC pairs in a path The user plane messages are used to carry user data packets, and signalling messages for path management and error indication.

GTP-PDU: GTP Protocol Data Unit is either a GTP-C message or a GTP-U message

Signalling Message: any GTP-PDU except the G-PDU

T-PDU: original packet, for example an IP datagram, from an MS or a network node in an external packet data network A T-PDU is the payload that is tunnelled in the GTP-U tunnel.

Traffic Flow Template (TFTs): used by GGSN to distinguish between different user payload packets and transmit packets with different QoS requirements via different PDP context but to the same PDP address

Tunnel Endpoint IDentifier (TEID): unambiguously identifies a tunnel endpoint in the receiving GTP-U or GTP-C protocol entity The receiving end side of a GTP tunnel locally assigns the TEID value the transmitting side has to use. The TEID values are exchanged between tunnel endpoints using GTP-C (or RANAP, over the Iu) messages.

UDP/IP Path: connection-less unidirectional or bidirectional path defined by two end-points An IP address and a UDP port number define an end-point. A UDP/IP path carries GTP messages between GSN nodes, and between GSN and RNC nodes related to one or more GTP tunnels.

<table>
<tr><td>*** Next Change ***</td></tr>
</table>

7.5.4   SGSN Context Response

The old SGSN shall send an SGSN Context Response to the new SGSN as a response to a previous SGSN Context Request.

Possible Cause values are:

- 'Request Accepted'.

- 'IMSI not known'.

- 'System failure'.

- 'Mandatory IE incorrect'.

- 'Mandatory IE missing'.

- 'Optional IE incorrect'.

- 'Invalid message format'.

- 'P-TMSI Signature mismatch'.

If the Cause contains the value 'Request accepted', all information elements are mandatory, except PDP Context, MBMS UE Context, RAB Context and Private Extension.

If the Cause contains the value 'P-TMSI Signature mismatch' the IMSI information element shall be included in the response, otherwise only the Cause information element shall be included in the response.

The old SGSN shall include a SGSN Address for control plane. The new SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the old SGSN in the SGSN context transfer procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier, which is chosen by the old SGSN. The new SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent control plane messages, which are sent from the new SGSN to the old SGSN and related to the PDP context(s) requested.

The IMSI information element contains the IMSI matching the TLLI or P-TMSI (for GSM or UMTS respectively) and RAI in the SGSN Context Request.

The MM Context contains necessary mobility management and security parameters. An SGSN supporting the 'PUESBINE' feature (see 3GPP TS 23.195 [25] for more information) shall include the IMEISV in the MM Context when transferring the IMEISV from the old SGSN to the new SGSN.

All active PDP contexts in the old SGSN shall be included as PDP Context information elements. The PDP contexts are included in an implementation dependant prioritized order, and the most important PDP context is placed first. When the PDP Context Prioritization IE is included, it informs the new SGSN that the PDP contexts are sent prioritized. If the new SGSN is not able to maintain active all the PDP contexts received from the old SGSN when it is indicated that prioritization of the PDP contexts is applied, the new SGSN should use the prioritisation sent by old SGSN as input when deciding which PDP contexts to maintain active and which ones to delete.

If there is at least one active PDP context, the old SGSN shall start the T3-TUNNEL timer and store the address of the new SGSN in the "New SGSN Address" field of the MM context. The old SGSN shall wait for SGSN Context Acknowledge before sending T-PDUs to the new SGSN. If an SGSN Context Acknowledge message is not received within a time defined by T3-RESPONSE, the old SGSN shall retransmit the SGSN Context Response to the new SGSN as long as the total number of attempts is less than N3-REQUESTS. After N3-REQUESTS unsuccessfully attempts, the old SGSN shall proceed as described in section 'Reliable delivery of signalling messages' in case the transmission of a control plane message fails N3-REQUESTS times.

For each RAB using lossless PDCP context, the old SGSN shall include a RAB Context. If a RAB Context is included in the SGSN Context Response, the new SGSN shall ignore the N-PDU number fields and sequence number fields received in the PDP Context IE.

Radio Priority SMS contains the radio priority level for MO SMS transmission, and shall be included if a valid Radio Priority SMS value exists for the MS in the old SGSN.

Radio Priority LCS contains the radio priority level for MO LCS transmission, and shall be included if a valid Radio Priority LCS value exists for the MS in the old SGSN.

Radio Priority is the radio priority level that the MS uses when accessing the network for the transmission of uplink user data for a particular PDP context. One Radio Priority IE shall be included per PDP context that has a valid radio priority value assigned to it in the old SGSN.

Packet Flow Id is the packet flow identifier assigned to the PDP context. One Packet Flow Id IE shall be included per PDP context that has a valid packet flow identifier value assigned to it in the old SGSN.

Charging Characteristics IE contains the charching characteristics which apply for a PDP context; see 3GPP TS 32.215 [18]. One Charging Characteristics IE shall be included per PDP context IE. If no PDP context is active, this IE shall not be included. The mapping of a Charging Characteristics IE to a PDP Context IE is done according to the sequence of their appearance, e.g. the first Charging Characteristics IE is mapped to the first PDP Context IE.

All MBMS UE Contexts in the old SGSN shall be included as MBMS UE Context information elements.

The optional Private Extension contains vendor or operator specific information.

Table 27: Information Elements in a SGSN Context Response

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
IMSI	Conditional	7.7.2
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14
RAB Context	Conditional	7.7.19
Radio Priority SMS	Optional	7.7.20
Radio Priority	Optional	7.7.21
Packet Flow Id	Optional	7.7.22
CharingCharacteristics	Optional	7.7.23
Radio Priority LCS	Optional	7.7.25B
MM Context	Condition]]al	7.7.28
PDP Context	Conditional	7.7.29
MBMS UE Context	Conditional	7.7.X
SGSN Address for Control Plane	Conditional	7.7.32
PDP Context Prioritization	Optional	7.7.45
MBMS UE Context	Optional	7.7.X
Private Extension	Optional	7.7.46

*** *Next Change* ***

7.5.6 Forward Relocation Request

The old SGSN shall send a Forward Relocation Request to the new SGSN to convey necessary information to perform the SRNS Relocation procedure between new SGSN and Target RNC.

All information elements are mandatory, except PDP Context, MBMS UE Context and Private Extension.

The IMSI information element contains the IMSI of the target MS for SRNS Relocation procedure.

The old SGSN shall include a SGSN Address for control plane. The new SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the old SGSN in the SRNS Relocation procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a tunnel endpoint identifier, which is chosen by the old SGSN. The new SGSN shall include this Tunnel Endpoint Identifier Control Plane in the GTP header of all subsequent control plane messages, which are sent from the new SGSN to the old SGSN.

The MM Context contains necessary mobility management and security parameters. An SGSN supporting the 'PUESBINE' feature (see 3GPP TS 23.195 [25] for more information) shall include the IMEISV in the MM Context when transferring the IMEISV from the old to the new SGSN.

All active PDP contexts in the old SGSN shall be included as PDP Context information elements. The PDP contexts are included in an implementation dependant prioritized order, and the most important PDP context is placed first. When the PDP Context Prioritization IE is included, it informs the new SGSN that the PDP contexts are sent prioritized. If the new SGSN is not able to maintain active all the PDP contexts received from the old SGSN when it is indicated that prioritization of the PDP contexts is applied, the new SGSN should use the prioritisation sent by old SGSN as input when deciding which PDP contexts to maintain active and which ones to delete. In case no PDP context is active, neither of these IEs shall be included.

All MBMS UE Contexts in the old SGSN shall be included as MBMS UE Context information elements.

UTRAN transparent container, Target identification and RANAP Cause are information from the source RNC in the old SGSN.

Charging Characteristics IE contains the charching characteristics which apply for a PDP context; see 3GPP TS 32.215 [18]. One Charging Characteristics IE shall be included per PDP context IE. If no PDP context is active, this IE shall not be included. The mapping of a Charging Characteristics IE to a PDP Context IE is done according to the sequence of their appearance, e.g. the first Charging Characteristics IE is mapped to the first PDP Context IE.

The optional Private Extension contains vendor or operator specific information.

Table 29: Information Elements in a Forward Relocation Request

Information element	Presence requirement	Reference
IMSI	Mandatory	7.7.2
Tunnel Endpoint Identifier Control Plane	Mandatory	7.7.14
RANAP Cause	Mandatory	7.7.18
Charging Characteristics	Optional	7.7.23
MM Context	Mandatory	7.7.28
PDP Context	Conditional	7.7.29
MBMS UE Context	Conditional	7.7.X
SGSN Address for Control plane	Mandatory	7.7.32
Target Identification	Mandatory	7.7.37
UTRAN transparent container	Mandatory	7.7.38
PDP Context Prioritization	Optional	7.7.45
MBMS UE Context	Optional	7.7.X
Private Extension	Optional	7.7.46

*** *Next Change* ***

7.7 Information Elements

A GTP Signalling message may contain several information elements. The TLV (Type, Length, Value) or TV (Type, Value) encoding format shall be used for the GTP information elements. The information elements shall be sorted, with the Type fields in ascending order, in the signalling messages. The Length field contains the length of the information element excluding the Type and Length field.

For all the length fields, bit 8 of the lowest numbered octet is the most significant bit and bit 1 of the highest numbered octet is the least significant bit.

Within information elements, certain fields may be described as spare. These bits shall be transmitted with the value defined for them. To allow for future features, the receiver shall not evaluate these bits.

The most significant bit in the Type field is set to 0 when the TV format is used and set to 1 for the TLV format.
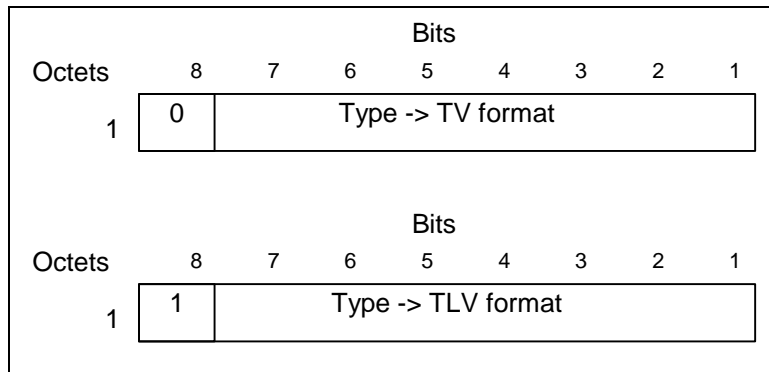
Figure 8: Type field for TV and TLV format

Table 37: Information Elements

IE Type Value	Format	Information Element	Reference
1	TV	Cause	7.7.1
2	TV	International Mobile Subscriber Identity (IMSI)	7.7.2
3	TV	Routeing Area Identity (RAI)	7.7.3
4	TV	Temporary Logical Link Identity (TLLI)	7.7.4
5	TV	Packet TMSI (P-TMSI)	7.7.5
6-7	Spare		
8	TV	Reordering Required	7.7.6
9	TV	Authentication Triplet	7.7.7
10	Spare		
11	TV	MAP Cause	7.7.8
12	TV	P-TMSI Signature	7.7.9
13	TV	MS Validated	7.7.10
14	TV	Recovery	7.7.11
15	TV	Selection Mode	7.7.12
16	TV	Tunnel Endpoint Identifier Data I	7.7.13
17	TV	Tunnel Endpoint Identifier Control Plane	7.7.14
18	TV	Tunnel Endpoint Identifier Data II	7.7.15
19	TV	Teardown Ind	7.7.16
20	TV	NSAPI	7.7.17
21	TV	RANAP Cause	7.7.18
22	TV	RAB Context	7.7.19
23	TV	Radio Priority SMS	7.7.20
24	TV	Radio Priority	7.7.21
25	TV	Packet Flow Id	7.7.22
26	TV	Charging Characteristics	7.7.23
27	TV	Trace Reference	7.7.24
28	TV	Trace Type	7.7.25
29	TV	MS Not Reachable Reason	7.7.25A
30	TV	Radio Priority LCS	7.7.25B
117-126	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
127	TV	Charging ID	7.7.26
128	TLV	End User Address	7.7.27
129	TLV	MM Context	7.7.28
130	TLV	PDP Context	7.7.29
131	TLV	Access Point Name	7.7.30
132	TLV	Protocol Configuration Options	7.7.31
133	TLV	GSN Address	7.7.32
134	TLV	MS International PSTN/ISDN Number (MSISDN)	7.7.33
135	TLV	Quality of Service Profile	7.7.34
136	TLV	Authentication Quintuplet	7.7.35
137	TLV	Traffic Flow Template	7.7.36
138	TLV	Target Identification	7.7.37
139	TLV	UTRAN Transparent Container	7.7.38

IE Type Value	Format	Information Element	Reference
140	TLV	RAB Setup Information	7.7.39
141	TLV	Extension Header Type List	7.7.40
142	TLV	Trigger Id	7.7.41
143	TLV	OMC Identity	7.7.42
144	TLV	RAN Transparent Container	7.7.43
145	TLV	PDP Context Prioritization	7.7.45
146	TLV	Additional RAB Setup Information	7.7.45A
147	TLV	SGSN Number	7.7.47
148	TLV	Common Flags	7.7.48
149	TVL	APN Restriction	7.7.49
1XX	TLV	MBMS UE Context	7.7.X
239-250	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
251	TLV	Charging Gateway Address	7.7.44
252-254	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
255	TLV	Private Extension	7.7.46

*** *Next Change* ***

7.7.X   MBMS UE Context

The MBMS UE Context information element contains UE-specific information related to a particular MBMS service that the UE has joined, that are necessary to transfer between SGSNs at the Inter SGSN Routeing Area Update procedure and Inter SGSN SRNS Relocation procedure.

Linked NSAPI is an interger value in the range [0, 15].

The Linked NSAPI identifies the PDP Context used by the UE to carry IGMP/MLD signalling.

NSAPI is an integer value in the range [0; 15].

The NSAPI points out the affected MBMS UE context.

The Uplink Tunnel Endpoint Identifier Control Plane is the Tunnel Endpoint Identifier used between the old SGSN and the GGSN in up link direction for control plane purpose. It shall be used by the new SGSN within the GTP header of the Update MBMS Context Request message.

The PDP Type Organisation and PDP Type Number are encoded as in the End User Address information element.

The PDP Address Length represents the length of the PDP Address field, excluding the PDP Address Length octet.

The PDP Address is an octet array with a format dependent on the PDP Type. The PDP Address is encoded as in the End User Address information element.

The GGSN Address Length represents the length of the GGSN Address field, excluding the GGSN Address Length octet.

When forwarding the GGSN address to another SGSN (in the MBMS UE Context IE in Forward Relocation Request or SGSN Context Response message), the IPv4/IPv6 capable SGSN shall include GGSN address according to the IP version capability of the receiving SGSN.

The old SGSN includes the GGSN Address for control plane that it has received from GGSN at MBMS service activation or update. If the new SGSN is IPv6 capable and the old SGSN has IPv6 control plane address of the GGSN available, the old IPv4/IPv6 capable SGSN includes the IPv6 GGSN control plane address in the field GGSN Address for control plane. If the new SGSN is IPv4 only capable or the old SGSN does not have any IPv6 GGSN address for control plane, the old SGSN includes the IPv4 GGSN Address in the field GGSN Address for control plane.

The APN is the Access Point Name in use in the old SGSN.

The Transaction Identifier is the 4 or 12 bit Transaction Identifier used in the 3GPP TS 24.008 [5] Session Management messages which control this MBMS UE Context. If the length of the Transaction Identifier is 4 bit, the second octet shall be set to all zeros. The encoding is defined in 3GPP TS 24.007 [3]. The latest Transaction Identifier sent from SGSN to MS is stored in the MBMS UE context IE.

> NOTE: Bit 5-8 of the first octet in the encoding defined in 3GPP TS 24.007 [3] is mapped into bit 1-4 of the first octet in this field.

The spare bits x indicate unused bits that shall be set to 0 by the sending side and which shall not be evaluated by the receiving side.

Octets	8	7	6	5	4	3	2	1
				Bits				
1	Type = 1XX (Decimal)							
2-3	Length							
4	Linked NSAPI				NSAPI			
5-8	Uplink Tunnel Endpoint Identifier Control Plane							
9	Spare 1 1 1 1				PDP Type Organisation			
10	PDP Type Number							
11	PDP Address Length							
12-m	PDP Address [0..63]							
m+1	GGSN Address for control plane Length							
(m+2)-n	GGSN Address for control plane [4..16]							
n+1	APN length							
(n+2)-o	APN							
(o+1)	Spare (sent as 0 0 0 0)				Transaction Identifier			
o+2	Transaction Identifier							

Figure xx: MBMS UE Context Information Element

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** CR **495** ⌘rev **1** ⌘ Current version: **6.4.0** ⌘

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

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

Title: ⌘	Addition of BM-SC initiated De-registration	
Source: ⌘	CN4	
Work item code:⌘	MBMS	**Date:** ⌘ 30/4/2004
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: ⌘	According to the TS 23.246, the BM-SC can initiate De-Registration procedure. However current TS 29.060 doesn't reflect this, i.e. the MBMS De-Registration request message is only sent from the SGSN to the GGSN.
Summary of change:⌘	The definition of the MBMS De-Registration request message was modified to allow the GGSN to send this message. The definition of the MBMS De-Registration response message was also modified to allow the SGSN to send this message. In addition, 'Non existent' was added to possible cause values in the MBMS De-Registration response message.
Consequences if ⌘ **not approved:**	The inconsistency between stage2 and stage3 remains.
Clauses affected: ⌘	7.5A.2.3, 75A.2.4

	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:

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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.

7.5A.2.3   MBMS De-registration Request

An MBMS De-registration Request shall be sent by an SGSN in order to inform an GGSN that it no longer requires to receive session attributes and data for a particular MBMS service. This message shall be sent when the last MBMS UE context for a particular MBMS service is deleted in the SGSN, or when an MBMS De-registration Request is received from an RNC that is de-registering for a particular MBMS service that is currently established in the SGSN that has no MBMS UE context associated. This message is also sent by a GGSN to an SGSN as a part of the BM-SC initiated MBMS De-Registration procedure.

The End User Address information element contains the PDP type and IP Multicast PDP address of the MBMS service for which the sending SGSN is de-registering. The Access Point Name information element identifies the access point of packet data network that the GGSN requires to connect to de-register the MBMS service, if this is the last SGSN that was registered for the MBMS service or if the MBMS De-Registration was initiated by the BM-SC.

If the MBMS De-registration Request is being sent as a result of the last MBMS UE context being deleted on the SGSN, the SGSN shall copy the End User Address and APN information from the MBMS UE Context. If the MBMS De-registration Request is received from an RNC that is de-registering for a particular MBMS service for which the SGSN has no MBMS UE Contexts, the SGSN shall copy the End User Address and APN information from the corresponding message sent by the RNC. If the MBMS De-Registration was initiated by the BM-SC, the GGSN shall copy the End User Address and APN information from the MBMS UE Context.

In case whereWhen the SGSN sends this message, Tthe selection of the GGSN will be dependent on the reason for the de-registration request. If the MBMS De-registration Request is being sent due to the leaving of the last MBMS UE context for a particular service, the SGSN shall send the MBMS De-registration Request to the GGSN address identified in the MBMS UE context. Alternatively, if the MBMS De-registration Request is being sent due to an MBMS De-registration Request that received from an RNC for which the SGSN has no MBMS UE contexts established, the GGSN shall be selected via the address stored during registration.

Table 7.5A.2.3: Information Elements in a MBMS De-registration Request

Information element	Presence requirement	Reference
End User Address	Mandatory	7.7.27
Access Point Name	Mandatory	7.7.30
Private Extension	Optional	7.7.46

7.5A.2.4   MBMS De-Registration Response

An MBMS De-registration Response is sent by an SGSN or a GGSN in response to a received MBMS De-registration Request. In case whereWhen the GGSN sends this message, Iif the SGSN is the last registered downstream node within the MBMS bearer context of the GGSN, the GGSN shall de-register itself with the BM-SC as defined in 3GPP TS29.061[27].

The Cause value indicates if the de-registration has been successful in the sending GGSN. An MBMS Bearer Context has not been created in the sending GGSN if the Cause differs from 'Request accepted'. Possible Cause values are:

-    "Request Accepted".

-    "Missing or unknown APN".

-    "Unknown PDP address or PDP type".

-    "System failure".

-    "Mandatory IE incorrect".

-    "Mandatory IE missing".

- "Optional IE incorrect".

- "Invalid message format".

- "Non existent"

'Missing or unknown APN' indicates e.g. when the GGSN does not support the Access Point Name. 'Unknown PDP address or PDP type' indicates when the GGSN does not support the PDP type or the PDP address. Within the scope of MBMS message, an unknown PDP address is considered to be unknown mulitcast address / service. 'Non-existent' indicates a non-existent MBMS UE context.

Table 7.5A.2.4: Information Elements in an MBMS De-registration Response

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
Private Extension	Optional	7.7.46

CR-Form-v7

CHANGE REQUEST

| ⌘ | **23.003** CR **088** | ⌘**rev** **1** | ⌘ | Current version: | **6.2.0** | ⌘ |

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

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

Title: ⌘	Addition of TMGI	
Source: ⌘	CN4	
Work item code: ⌘	MBMS	***Date:*** ⌘ 30/4/2004

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

Use one of the following categories:
F (correction)
A (corresponds to a correction in an earlier release)
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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: ⌘	In the TS 23.246, TMGI (Temporary Mobile Group Identity) is defined for MBMS notification purpose. However this idetity is missing in TS 23.003.
Summary of change: ⌘	1. The reference to TS 23.246 was added. 2. The definition of TMGI was added.
Consequences if not approved: ⌘	The inconsistency between stage2 and stage3 remains.

Clauses affected: ⌘	1.1.1, 15(new)

	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.

1.1   References

1.1.1   Normative references

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

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

[2]   3GPP TS 23.008: "Organization of subscriber data".

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

[4]   3GPP TS 23.070: "Routeing of calls to/from Public Data Networks (PDN)".

[5]   3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".

[6]   3GPP TS 29.060: "GPRS Tunnelling protocol (GPT) across the Gn and Gp interface".

[7]   3GPP TS 43.020: "Digital cellular telecommunications system (Phase 2+); Security related network functions".

[8]   void

[9]   3GPP TS 51.011: " Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

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

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

[12]   ITU-T Recommendation E.213: "Telephone and ISDN numbering plan for land Mobile Stations in public land mobile networks (PLMN)".

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

[14]   RFC 791: "Internet Protocol".

[15]   RFC 2373: "IP Version 6 Addressing Architecture".

[16]   3GPP TS 25.401: "UTRAN Overall Description".

[17]   3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[18]   RFC 2181: "Clarifications to the DNS Specification".

[19]   RFC 1035: "Domain Names - Implementation and Specification".

[20]   RFC 1123: "Requirements for Internet Hosts -- Application and Support".

[21]   RFC 2462: "IPv6 Stateless Address Autoconfiguration".

[22]   RFC 3041: "Privacy Extensions for Stateless Address Autoconfiguration in IPv6".

[23]   3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes".

[24]   3GPP TS 23.228: "IP Multimedia (IM) Subsystem – Stage 2"

[25]   RFC 2486: "The Network Access Identifier"

[26]   RFC 3261: "SIP: Session Initiation Protocol"

[27]   3GPP TS 31.102: "Characteristics of the USIM Application."

[28]   void

[29]   3GPP TS 44.118: "Radio Resource Control (RRC) Protocol, Iu Mode".

[30]   3GPP TS 23.073: "Support of Localised Service Area (SoLSA); Stage 2"

[31]   3GPP TS 29.002: "Mobile Application Part (MAP) specification"

[32]   3GPP TS 22.016: "International Mobile Equipment Identities (IMEI)"

[33]   void

[34]   void

[35]   3GPP TS 45.056: "CTS-FP Radio Sub-system"

[36]   3GPP TS 42.009: "Security aspects" [currently not being raised to rel-5 – Pete H. looking into it]

[37]   3GPP TS 25.423: "UTRAN Iur interface RNSAP signalling"

[38]   3GPP TS 25.419: "UTRAN Iu-BC interface: Service Area Broadcast Protocol (SABP)"

[39]   3GPP TS 25.410: "UTRAN Iu Interface: General Aspects and Principles"

[40]   ISO/IEC 7812: "Identification cards - Numbering system and registration procedure for issuer identifiers"

[41]   3GPP TS 31.102 "Characteristics of the USIM Application"

[42]   3GPP TS 33.102 "3G security; Security architecture"

[43]   3GPP TS 43.130: "Iur-g interface; Stage 2"

[45]   RFC 2806: "URLs for Telephone Calls"

[46]   3GPP TS 44.068: "Group Call Control (GCC) protocol".

[47]   3GPP TS 44.069: "Broadcast Call Control (BCC) Protocol ".

[48]   3GPP TS 24.234: "3GPP System to WLAN Interworking; UE to Network protocols; Stage 3".

[49]   IETF Internet-Draft: "Network Discovery and Selection within the EAP Framework". draft-adrangi-eap-network-discovery-and-selection-00, work in progress.

[50]   IETF Internet-Draft: "EAP AKA Authentication". draft-arkko-pppext-eap-aka-11, work in progress.

[51]   IETF Internet-Draft: "EAP SIM Authentication". draft-haverinen-pppext-eap-sim-12, work in progress.

[xx]   3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architechture and functional description"

*** *Next Change* ***

14   Numbering, addressing and identification for 3GPP System to WLAN Interworking

14.1   Introduction

This clause describes the format of the parameters needed to access the 3GPP system supporting the WLAN interworking. For further information on the use of the parameters see 3GPP TS 24.234 [48].

14.2 Home network realm

The home network realm shall be in the form of an Internet domain name, e.g. operator.com, as specified in RFC 1035 [19].

When attempting to authenticate within WLAN access, the WLAN UE shall derive the home network domain name from the IMSI as described in the following steps:

1. take the first 5 or 6 digits, depending on whether a 2 or 3 digit MNC is used (see 3GPP TS 31.102 [27]) and separate them into MCC and MNC; if the MNC is 2 digits then a zero shall be added at the beginning;

2. use the MCC and MNC derived in step 1 to create the "mnc<MNC>.mcc<MCC>. 3gppnetwork.org" domain name;

3. add the label "wlan." to the beginning of the domain name.

An example of a WLAN NAI realm is:

IMSI in use: 234150999999999;

Where:

MCC = 234;

MNC = 15;

MSIN = 0999999999

Which gives the home network domain name: wlan.mnc015.mcc234.3gppnetwork.org.

14.3 Root NAI

The Root NAI shall take the form of a NAI, and shall have the form username@realm as specified in clause 3 of RFC 2486 [25].

The username part format of the Root NAI shall comply with draft-arkko-pppext-eap-aka [50] when EAP AKA authentication is used and with draft-haverinen-pppext-eap-sim [51], when EAP SIM authentication is used.

When the username part includes the IMSI, the Root NAI shall be built according to the following steps:

1. Generate an identity conforming to NAI format from IMSI as defined in EAP SIM [51] and EAP AKA [50] as appropiate;

2. Convert the leading digits of the IMSI, i.e. MNC and MCC, into a domain name, as described in subclause 14.2.

The result will be a root NAI of the form:

"0<IMSI>@wlan.mnc<MNC>.mcc<MCC>.3gppnetwork.org", for EAP AKA authentication and
"1<IMSI>@wlan.mnc<MNC>.mcc<MCC>.3gppnetwork.org", for EAP SIM authentication

For example, for EAP AKA authentication: If the IMSI is 234150999999999 (MCC = 234, MNC = 15), the root NAI
then takes the form 0234150999999999@wlan.mnc015.mcc234.3gppnetwork.org.

14.4   Decorated NAI

Editor's note: it is FFS whether selected VPLMN(s) will be indicated in a prefix (i.e.
vplmn1.com/vplmn2.com/username@home realm) or in a suffix format (i.e.
username@vplmn1.vplmn2.home realm). See draft-adrangi-eap-network-discovery-and-selection [49].

xx   Identification of Multimedia Broadcast/Multicast Service

xx.1   Introduction

This clause describes the format of the parameters needed to access the Multimedia Broadcast/Multicast service. For further information on the use of the parameters see 3GPP TS 23.246 [xx].

xx.2   Structure of TMGI

Temporary Mobile Group Identity (TMGI) is used for MBMS notification purpose. The BM-SC allocates a globally unique TMGI per MBMS bearer service.

TMGI is composed of three parts:

1) MBMS Service ID consisting of three octets. MBMS Service ID identifies an MBMS bearer service within the PLMN.

2) Mobile Country Code (MCC) consisting of three digits. The MCC identifies uniquely the country of domicile of the BM-SC;

3) Mobile Network Code (MNC) consisting of two or three digits. The MNC identifies the PLMN which the BM-SC belongs to. The length of the MNC (two or three digits) depends on the value of the MCC.