3GPP TSG CN Plenary Meeting #23 **NP-040057**
10th – 12th March 2004 Phoenix, USA.

Source: TSG CN WG4

Title: Corrections on Multimedia Broadcast and Multicast Service

Agenda item: 9.8

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.060	484		N4-040155	Rel-6	Change to the definition of GTP Tunnel for MBMS	F	6.3.0
29.060	485		N4-040156	Rel-6	Removal of the GGSN address for Contorol Plane in the Delete MBMS Context Request	F	6.3.0
29.060	480	1	N4-040255	Rel-6	Introduction of the MBMS Support Indication extension header	F	6.3.0

3GPP TSG CN WG4 Meeting #22 **N4-040155**
Atlanta, USA, 16th – 20st February 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.060** **CR** **484** ⌘ **rev** **-** ⌘ Current version: **6.3.0** ⌘

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

Title:	⌘	Change to the definition of GTP Tunnel for MBMS
Source:	⌘	CN4
Work item code:	⌘	MBMS
Date:	⌘	6/2/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

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

Use one of the following releases:

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:	⌘	The definition of the GTP Tunnel for MBMS is ambiguous in current GTP specification.
Summary of change:	⌘	It was clarified that in case of MBMS, a GTP Tunnel in the GTP-U plane is defined for each MBMS service and a GTP Tunnel in the GTP-C plane is defined for each combination of PDP address which includes IP Multicast address and APN (for UE Specific MBMS messages) or for each MBMS service (for Service Specific MBMS messages).
Consequences if not approved:	⌘	The definition of the GTP Tunnel for MBMS is ambiguous. This may lead to different implementations of TEID allocation to the GTP Tunnel for MBMS.

Clauses affected:	⌘	3.1			
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:
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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.

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 ~~not related to Tunnel Management~~). 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.

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.

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Atlanta, USA, 16th – 20st February 2003

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CHANGE REQUEST

⌘ **29.060** **CR** **485** ⌘ **rev** **-** ⌘ Current version: **6.3.0** ⌘

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

Title:	⌘	Removal of the GGSN address for Contorol Plane in the Delete MBMS Context Request
Source:	⌘	CN4
Work item code:	⌘	MBMS ***Date:*** ⌘ 6/2/2004
Category:	⌘	**F** ***Release:*** ⌘ Rel-6

Use one of the following categories:
F *(correction)*
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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: ⌘ In the latest Rel-6 GTP specification, the GGSN address for Contorol Plane information element is present in the Delete MBMS Context Request messge and acompanying text says that this information is used

'If the MBMS context to be deactivated (indicated by the multicast address within the IGMP/MLD leave message) resides on a different GGSN from that which the IGMP/MLD leave message is received'

However the SGSN received and stored the same information in the Create MBMS Context Response during MBMS service activation procedure.

Futhremore following sentence is also found in the same text.

The GGSN shall include a GGSN Address for control plane. The SGSN shall store this GGSN Address and use it when sending Delete MBMS Context Response messages to the GGSN.

However according to section 10.1.2.2 of TS29.060, the IP Destination address of the Delete MBMS Context response message shall be copied from the IP Souce address of the corresponding Detele MBMS Context request message.

Therfore the GGSN address for Control Plane information element is not necessary in the Delete MBMS Context Request message. This is also in line with the existing Delete PDP Context Request message.

Summary of change: ⌘ The GGSN address for Control Plane information element was removed.

Consequences if ⌘ Unnecessary information is conveyed by GTP message.

not approved:	

Clauses affected:	⌘	7.5A.1.9			
Other specs affected:	⌘	**Y**	**N**		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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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.1.9 Delete MBMS Context Request

A Delete MBMS Context Request can be sent either from a SGSN node to a GGSN node as part of the GPRS Detach procedure or from the GGSN node to the SGSN node as part of the MBMS Context Deactivation procedure initiated by the UE by the sending of an IGMP/MLD leave message. If the deactivation of the MBMS context results in no more users being registered within the GSN for the Multicast Service, the SGSN may initiate the MBMS deregistration procedure. (For further information see 3GPP TS 23.246 [26]).

A GSN shall be prepared to receive a Delete MBMS Context Request at any time and shall always reply regardless if the MBMS context exists or not. If any collision occurs, the Delete MBMS Context Request takes precedence over any other Tunnel Management message.

An SGSN initiated Delete MBMS Context Request shall only include the NSAPI which shall uniquely identify the MBMS context to be deactivated and the optional Private Extension contains vendor or operator specific information.

If the MBMS context to be deactivated (indicated by the multicast address within the IGMP/MLD leave message) resides on the same GGSN as which the IGMP/MLD leave message is received, a GGSN initiated Delete MBMS Context Request shall only include the NSAPI which shall uniquely identify the MBMS context to be deactivated and the optional Private Extension contains vendor or operator specific information.

If the MBMS context to be deactivated (indicated by the multicast address within the IGMP/MLD leave message) resides on a different GGSN from that which the IGMP/MLD leave message is received, a GGSN initiated Delete MBMS Context Request shall contain the IMSI, TEID Control Plane, End User Address, APN, ~~GGSN Address for Control Plane~~ the optional Private Extension contains vendor or operator specific information. This message will then trigger the SGSN to send a SGSN initiated Delete MBMS Context Request for the identified MBMS context toward the GGSN hosting the MBMS context.

The IMSI shall unambiguously identify the user. The End User Address information element contains the PDP type and IP Multicast PDP address that the GGSN shall request the SGSN to de-activate. The IP multicast address shall be the one included by the UE in the Leave request.

The Access Point Name information element further identifies the access point of packet data network that the SGSN will use to identify which MBMS context to deactivate. The APN and End User Address information element shall uniquely identify the MBMS service.

~~The GGSN shall include a GGSN Address for control plane. The SGSN shall store this GGSN Address and use it when sending Delete MBMS Context Response messages to the GGSN.~~

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

Table 7.5A.9: Information Elements in a Delete MBMS Context Request

Information element	Presence requirement	Reference
IMSI	Conditional	7.7.2
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14
NSAPI	Conditional	7.7.17
End User Address	Conditional	7.7.27
Access Point Name	Conditional	7.7.30
~~GGSN Address for Control Plane~~	~~Conditional~~	~~7.7.32~~
Private Extension	Optional	7.7.46

*** *For Information* ***

Excerpt from TS 23.246

8.7 MBMS Multicast Service Deactivation

The multicast service deactivation is a signalling procedure between the UE and the network. The procedure removes the MBMS UE Context from the UE, SGSN and GGSN for a particular MBMS multicast service. The multicast service deactivation can be initiated by:

- The UE;
- The GGSN;
- The BM-SC; or
- The SGSN

All these cases are contained in the procedure illustrated in figure 13. The UE initiated Multicast Service Deactivation starts with step 1), the BM-SC initiated Multicast Service Deactivation starts with step 3), the GGSN initiated Multicast Service Deactivation starts with step 4), and the SGSN initiated Multicast Service Deactivation starts with step 5) or 8).

At GPRS detach, all MBMS UE contexts of the UE are implicitly deactivated in the UE, SGSN and GGSN, i.e. the SGSN performs the deactivation procedure starting with step 8).

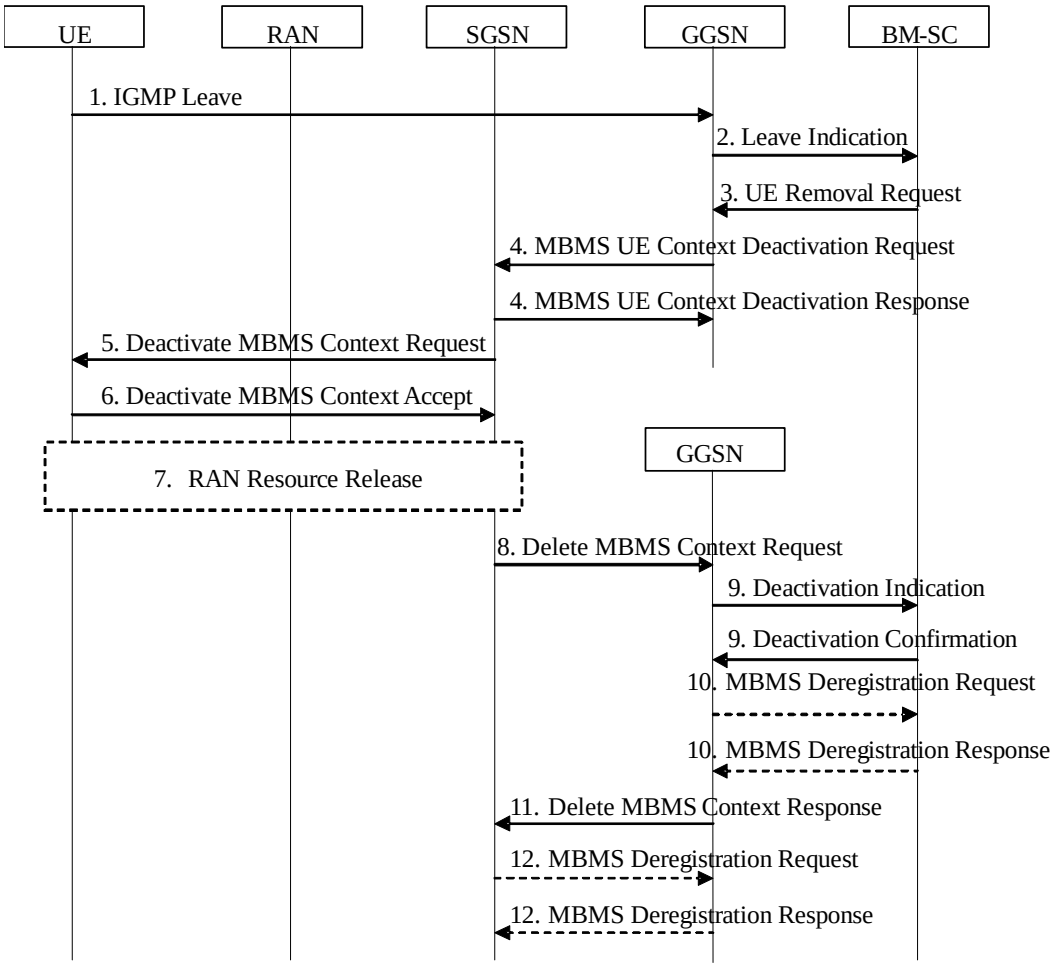

Figure 13: MBMS Multicast Service Deactivation

1. The UE sends an IGMP (IPv4) or MLD (IPv6) Leave message over the default PDP context to leave a particular multicast service identified by an IP multicast address.
2. The GGSN sends a Leave Indication (IP multicast address, IMSI) to the BM-SC, indicating that the UE is requesting to leave the multicast service identified by the IP multicast address. The exact nature of the signalling between GGSN and BM-SC is however FFS in general.

3. Upon reception of the Leave Indication, the BM-SC verifies that the IP multicast address corresponds to a valid MBMS bearer service and sends a UE Removal Request (IP multicast address, APN, IMSI) to the GGSN that originated the Leave Indication. The APN shall be the same that was provided during service activation (see "MBMS Multicast Service Activation"). The exact nature of the signalling between GGSN and BM-SC is however FFS in general. The BM-SC may also initiate the deactivation of an MBMS UE Context for service-specific reasons (e.g. the service is terminated but the UE has not yet left the multicast group) by directly sending a UE Removal Request message to the GGSN.

4. Upon reception of the UE Removal Request or for other reasons (e.g. Error cases), the GGSN sends an MBMS UE Context Deactivation Request (IP multicast address, APN, IMSI) to the SGSN. The IP multicast address, APN and IMSI together identify the MBMS UE Context to be deleted by the SGSN. The APN is the one received in step 3. The SGSN acknowledges reception of the MBMS UE Context Deactivation Request by sending an MBMS UE Context Deactivation Response to the GGSN.

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

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

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

8. Upon reception of the Deactivate MBMS Context Accept or for other reasons (e.g. due to missing periodic updates) the SGSN sends a Delete MBMS Context Request (NSAPI) to the GGSN that holds the MBMS UE Context. This GGSN may be different from the GGSN that receives IGMP Leave request in step 1.

9. The GGSN deletes the MBMS UE Context and sends a Deactivation Indication to the BM-SC to confirm the successful deactivation of the MBMS UE Context. The BM-SC, after receiving the Deactivation Indication, deletes the MBMS UE Context and sends a confirmation to the GGSN. The exact nature of the signalling between GGSN and BM-SC is however FFS in general.

10. If the GGSN does not have any more users interested in this MBMS bearer service and the "list of downstream nodes" in the corresponding MBSM Bearer Context is empty, the GGSN sends a MBMS De-Registration Request to the BM-SC. The BM-SC responds with a MBMS De-Registration Response and removes the identifier of the GGSN from the "list of downstream nodes" parameter in its MBMS Bearer Context. See subclause "MBMS De-Registration Procedure".

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

12. If the SGSN does not have any more users interested in this MBMS bearer service and the "list of downstream nodes" in the corresponding MBMS Bearer Context is empty, the SGSN sends an MBMS De-Registration Request to the GGSN. The GGSN responds with an MBMS De-Registration Response and removes the identifier of the SGSN from the "list of downstream nodes" parameter in its MBMS Bearer Context. See subclause "MBMS De-Registration Procedure".

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Atlanta, USA, 16th – 20st February 2003

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CHANGE REQUEST

⌘ **29.060** **CR** **480** ⌘**rev** **1** ⌘ Current version: **6.3.0** ⌘

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

Title:	⌘	Introduction of the MBMS Support Indication extension header
Source:	⌘	CN4
Work item code:	⌘	MBMS
Date:	⌘	20/02/2003
Category:	⌘	**B**
Release:	⌘	Rel-6

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

Reason for change:	⌘	The GGSN needs to be aware of the SGSN support of MBMS to optimize MBMS support performance
Summary of change:	⌘	The introduction of the MBMS Support Indication extension header is performed by mandating the SGSN to include such Extension Header in all Create PDP Context Requests and Update PDP Context Requests.
Consequences if not approved:	⌘	The GGSN would not be aware of the SGSN support of MBMS.

Clauses affected:	⌘	6

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

Other comments:	⌘	

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6 GTP Header

The GTP header is a variable length header used for both the GTP-C and the GTP-U protocols. The minimum length of the GTP header is 8 bytes. There are three flags that are used to signal the presence of additional optional fields: the PN flag, the S flag and the E flag. The PN flag is used to signal the presence of N-PDU Numbers. The S flag is used to signal the presence of the GTP Sequence Number field. The E flag is used to signal the presence of the Extension Header field, used to enable future extensions of the GTP header defined in this document, without the need to use another version number. If and only if one or more of these three flags are set, the fields Sequence Number, N-PDU and Extension Header shall be present. The sender shall set all the bits of the unused fields to zero. The receiver shall not evaluate the unused fields.

The GTP-C and the GTP-U use some of the fields in the GTP header differently. The detailed use of such fields is described in the sections related to GTP-C and to GTP-U.

Always present fields:

- Version field: This field is used to determine the version of the GTP protocol. For the treatment of other versions, see clause 11.1.1, "Different GTP versions". The version number shall be set to '1'.

- Protocol Type (PT): This bit is used as a protocol discriminator between GTP (when PT is '1') and GTP' (when PT is '0'). GTP is described in this document and the GTP' protocol in 3GPP TS 32.215 [18]. Note that the interpretation of the header fields may be different in GTP' than in GTP.

- Extension Header flag (E): This flag indicates the presence of a meaningful value of the Next Extension Header field. When it is set to '0', the Next Extension Header field either is not present or, if present, shall not be interpreted. When it is set to '1', the Next Extension Header field is present, and shall be interpreted, as described below in this section.

- Sequence number flag (S): This flag indicates the presence of a meaningful value of the Sequence Number field. When it is set to '0', the Sequence Number field either is not present or, if present, shall not be interpreted. When it is set to '1', the Sequence Number field is present, and shall be interpreted, as described below in this section.

- N-PDU Number flag (PN): This flag indicates the presence of a meaningful value of the N-PDU Number field. When it is set to '0', the N-PDU Number field either is not present, or, if present, shall not be interpreted. When it is set to '1', the N-PDU Number field is present, and shall be interpreted, as described below in this section.

- Message Type: This field indicates the type of GTP message. The valid values of the message type are defined in clause 7.1 for both GTP-C and GTP-U.

- Length: This field indicates the length in octets of the payload, i.e. the rest of the packet following the mandatory part of the GTP header (that is the first 8 octets). The Sequence Number, the N-PDU Number or any Extension headers shall be considered to be part of the payload, i.e. included in the length count.

- Tunnel Endpoint Identifier (TEID): This field 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.

Optional fields:

- Sequence Number: This field is an optional field in G -PDUs. It is used as a transaction identity for signalling messages having a response message defined for a request message, that is the Sequence Number value is copied from the request to the response message header. In the user plane, an increasing sequence number for T-PDUs is transmitted via GTP-U tunnels, when transmission order must be preserved.

- N-PDU Number: This field is used at the Inter SGSN Routeing Area Update procedure and some inter-system handover procedures (e.g. between 2G and 3G radio access networks). This field is used to co-ordinate the data transmission for acknowledged mode of communication between the MS and the SGSN. The exact meaning of this field depends upon the scenario. (For example, for GSM/GPRS to GSM/GPRS, the SNDCP N-PDU number is present in this field).

- Next Extension Header Type: This field defines the type of Extension Header that follows this field in the GTP-PDU.

Octets	Bits 8	7	6	5	4	3	2	1
1	Version			PT	(*)	E	S	PN
2	Message Type							
3	Length (1st Octet)							
4	Length (2nd Octet)							
5	Tunnel Endpoint Identifier (1st Octet)							
6	Tunnel Endpoint Identifier (2nd Octet)							
7	Tunnel Endpoint Identifier (3rd Octet)							
8	Tunnel Endpoint Identifier (4th Octet)							
9	Sequence Number (1st Octet) 1) 4)							
10	Sequence Number (2nd Octet) 1) 4)							
11	N-PDU Number 2) 4)							
12	Next Extension Header Type 3) 4)							

NOTE 0: (*) This bit is a spare bit. It shall be sent as '0'. The receiver shall not evaluate this bit.
NOTE 1: 1) This field shall only be evaluated when indicated by the S flag set to 1.
NOTE 2: 2) This field shall only be evaluated when indicated by the PN flag set to 1.
NOTE 3: 3) This field shall only be evaluated when indicated by the E flag set to 1.
NOTE 4: 4) This field shall be present if and only if any one or more of the S, PN and E flags are set.

Figure 2: Outline of the GTP Header

The format of GTP Extension Headers is depicted in figure 2. The Extension Header Length field specifies the length of the particular Extension header in 4 octets units. The Next Extension Header Type field specifies the type of any Extension Header that may follow a particular Extension Header. If no such Header follows, then the value of the Next Extension Header Type shall be 0.

Octets	1
1	Extension Header Length
2 - m	Extension Header Content
m+1	Next Extension Header Type (note)

NOTE: The value of this field is 0 if no other Extension header follows.

Figure 3: Outline of the Extension Header Format

The length of the Extension header shall be defined in a variable length of 4 octets, i.e. m+1 = n*4 octets, where n is a positive integer.

Bits 7 and 8 of the Next Extension Header Type define how the recipient shall handle unknown Extension Types. The recipient of an extension header of unknown type but marked as 'comprehension not required' for that recipient shall read the 'Next Extension Header Type' field (using the Extension Header Length field to identify its location in the GTP-PDU).

The recipient of an extension header of unknown type but marked as 'comprehension required' for that recipient shall:

- If the message with the unknown extension header was a request, send a response message back with CAUSE set to "unknown mandatory extension header".
- Send a Supported Extension Headers Notification to the originator of the GTP PDU.
- Log an error.

Bits 7 and 8 of the Next Extension Header Type have the following meaning:

Bits 8	7	Meaning
0	0	Comprehension of this extension header is not required. An Intermediate Node shall forward it to any Receiver Endpoint
0	1	Comprehension of this extension header is not required. An Intermediate Node shall discard the Extension Header Content and not forward it to any Receiver Endpoint. Other extension headers shall be treated independently of this extension header.
1	0	Comprehension of this extension header is required by the Endpoint Receiver but not by an Intermediate Node. An Intermediate Node shall forward the whole field to the Endpoint Receiver.
1	1	Comprehension of this header type is required by recipient (either Endpoint Receiver or Intermediate Node)

Figure 4: Definition of bits 7 and 8 of the Extension Header Type

An Endpoint Receiver is the ultimate receiver of the GTP-PDU (e.g. an RNC or the GGSN for the GTP-U plane). An Intermediate Node is a node that handles GTP but is not the ultimate endpoint (e.g. an SGSN for the GTP-U plane traffic between GGSN and RNC).

Next Extension Header Field Value	Type of Extension Header
0000 0000	No more extension headers
0000 0001	MBMS support indication
1100 0000	PDCP PDU number
1100 0001	Suspend Request
1100 0010	Suspend Response

Figure 5: Definition of Extension Header Type

6.1 Extension headers

6.1.1 PDCP PDU Number

This extension header is transmitted, for example, at SRNS relocation time to provide the PDCP sequence number of not yet acknowledged N-PDUs. It is 4 octets long, and therefore the Length field has value 1.

	Bits							
Octets	8	7	6	5	4	3	2	1
1	1							
2	PDCP PDU number							
3	PDCP PDU number.							
4	Next Extension Header Type (note)							

NOTE: The value of this field is 0 if no other Extension header follows.

Figure 6: PDCP PDU number Extension Header

6.1.2 Suspend Request

This extension header is transmitted at inter-SGSN handover, when a DTM capable MS has an ongoing circuit call and it moves to a cell that does not support DTM, under the domain of a new 2G SGSN. When the new SGSN receives a "Suspend" message from the BSS, it sends a SGSN context request with this additional extension header to the old SGSN. The old SGSN shall reply with a SGSN context response, including the Extension Header described in subclause 6.1.3. The SGSN Context Request message shall not be handled other than for the purpose of implementing the Suspend functionality as described in 3GPP TS 23.060 [4]. The "SGSN context request" message shall not include the "IMSI", "packet-TMSI", "packet TMSI signature" and "MS validated" IEs.

Octets	Bits 8	7	6	5	4	3	2	1
1	1							
2	0xFF							
3	0xFF							
4	Next Extension Header Type (note)							

NOTE: The value of this field is 0 if no other Extension header follows.

Figure 7: Suspend Request Extension Header

6.1.3 Suspend Response

When a SGSN receives a SGSN Context Request with the extension header "Suspend Request" described in subclause 6.1.2, it shall perform the actions specified in 3GPP TS 23.060 [4] and it shall return a SGSN Context Response with this extension header included. The SGSN Context Response message shall not be handled other than for the purpose of implementing the Suspend functionality as described in 3GPP TS 23.060 [4]. The "SGSN context response" shall not include the "IMSI", "Radio priority SMS", "Radio priority", "packet flow ID", "MM context", "PDP context" and "SGSN Address for control plane" IEs.

Octets	Bits 8	7	6	5	4	3	2	1
1	1							
2	0xFF							
3	0xFF							
4	Next Extension Header Type (note)							

NOTE: The value of this field is 0 if no other Extension header follows.

Figure 8: Suspend Response Extension Header

6.1.X MBMS support indication

This Extension Header shall be included by an SGSN supporting MBMS in all Create PDP Context Request messages and in all Update PDP Context Request messages.

A GGSNsupporting MBMS receiving this Extension Header in a Create PDP Context Request or in an Update PDP Context Request shall assume the SGSN originating the message supports MBMS in the handling of all subsequent MBMS-related procedures. If this Extension Header is not received in a Create PDP Context Request or in an Update PDP Context Request, then the GGSN shall assume that the SGSN originating the message does not support MBMS in the handling of all subsequent MBMS-related procedures

Octets	Bits 8	7	6	5	4	3	2	1
1	1							
2	0xFF							
3	0xFF							
4	Next Extension Header Type (note)							

NOTE: The value of this field is 0 if no other Extension header follows.

Figure X: MBMS support indication Extension Header