

<h2 style="margin: 0;">CHANGE REQUEST</h2>		Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.	
12.15	CR	A019	Current Version: 7.4.0
rev 2			
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team	
For submission to: SA#7	for approval <input checked="" type="checkbox"/>	strategic <input type="checkbox"/>	(for SMG use only)
list approval meeting # here ↑	for information <input type="checkbox"/>	non-strategic <input type="checkbox"/>	

Form: CR cover sheet, version 1.1 for 3GPP and SMG The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CRF-11.rtf

Proposed change affects: (U)SIM ME UTRAN Core Network
(at least one should be marked with an X)

Source: Nokia **Date:** 17-03-2000

Subject: GTP' header length fixing, r2

Work item: Charging

Category:	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input checked="" type="checkbox"/> D Editorial modification <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input checked="" type="checkbox"/> Release 99 <input type="checkbox"/>
(only one category shall be marked with an X)		(releases phase2, 96, 97 and 98 apply only to GSM specifications)	

Reason for change:

A corresponding R99 CR was approved by TSG-SA#7 (CR 32.015-A002). A technically identical R98 CR, to TS 12.15, was however not approved by TSG-SA#7. Current situation is not acceptable to the industry since this means two variations of the same version of GTP' protocol. This makes interoperation of 2G and 3G networks impossible. One main target of 3GPP has been the evolution of core network protocols from 2G to 3G.

The current situation however leads to deviation of 2G and 3G charging protocol development. The intention of R98 and R99 CRs was to keep GTP' in R98 and R99 identical. For these reasons CR to TS 12.15 should also be approved in this TSG-SA#7. Delay in approval of the R98 CR to the next TSG-SA meeting will mean that version 2 of GTP' protocol can not be used as a basis for sensible implementation, neither in R98 nor in R99.

The technical aspect of the proposed modification to R98 was approved by SA5. All manufacturers at the meeting agreed with the proposed solution. This modification in R98 is a one time fix that makes R98 based systems interoperable with all later releases.

Category of this CR has been changed from F (Correction) to C (Functional modification of feature) since R98 itself does not have a fault that should be corrected. Some modifications are however needed in order to guarantee interoperability of R98 and later releases. SA5 agreed that small modification of R98 is the best approach to fix the problem. This allows R98 based network entities to coexist with network entities that are based on later releases. The impact of its implementation to existing systems is minimal (a few unused bytes dropped from the header).

Technical content of this CR Nokia is submitting as a company contribution is exactly same as the one proposed by S5. The reasons provided by SA5 is attached below to facilitate the readers.

Reason for change from SA5

The GTP header length which previously had always fixed length, has been changed after the GSM 09.60 specification stabilisation to have in e.g. 3G TS 29.060 3.3.0 a variable length. Now it is not possible for CGF (which does not even use GTP) to know how long the GTP' header should be, if the GTP' header would still be stated in GSM 12.15 / 3G TS 32.015 specifications to be "the same as in GTP". Therefore the GTP' header length should be defined to be just what it really is: 6 octets long. (By so far the GTP' header has been defined to have so many dummy octets after the 6 needed octets, that the total header length would be the same as in GTP. Anyhow, such assumption does not any more work, since the GTP header length is not any more always 20 octets.) The GTP' version becomes thus v2 and the GTP' Version bits are correspondingly set binary '010' in the header. Advantages: Compatibility and interoperability problems avoided. Better bandwidth usage as the previously carried dummy octets 7-20 are avoided. The CGFs can be independent of the generation (GPRS/3G/XX) and GTP subversions. Operators can get CGF service and redundancy with a lower price, as the CGFs can simultaneously serve different generation GSNs.

Clauses affected: 7.2.1, 7.3.2

Other specs affected:

Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:
Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:
MS test specifications	<input type="checkbox"/>	→ List of CRs:
BSS test specifications	<input type="checkbox"/>	→ List of CRs:
O&M specifications	<input type="checkbox"/>	→ List of CRs:

Other comments:

This CR revision is an update of SP-000158.



help.doc

<----- double-click here for help and instructions on how to create a CR

7.2.1 Usage of GTP Header in charging

The start of the GTP header defined in GSM 09.60 is reused. In GPRS charging, only the signalling plane of GTP is partly reused.

Bit 5 of octet 1 of the GTP header is the Protocol Type flag and is '0' if the message is GTP'.

The Version bits indicate the GTP' protocol version when the Protocol Type flag is '0'.

LFN flag (LLC Frame Number flag) Bit 1 of octet 1 is not used in GTP' (except in v0), and it is '0' in the GTP' header.

The Length indicates the length of payload (number of octets after the GTP' header).

The Sequence Number of the packet is part of the GTP' header.

LLC Frame Number in GTP' header is always set to 255 by the sender and shall be ignored by the receiver.

TID is the tunnel identifier that points out MM and PDP contexts. In GPRS charging, it is not used, and it is always 0.

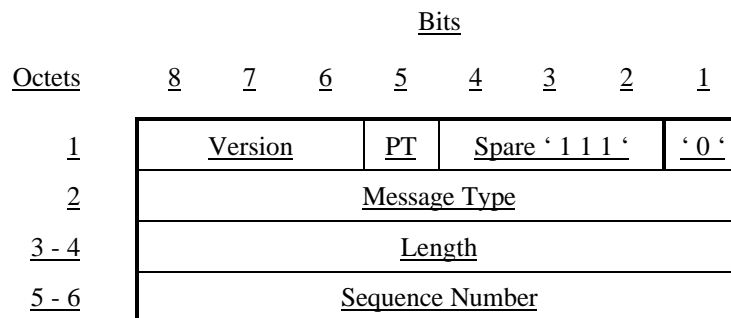
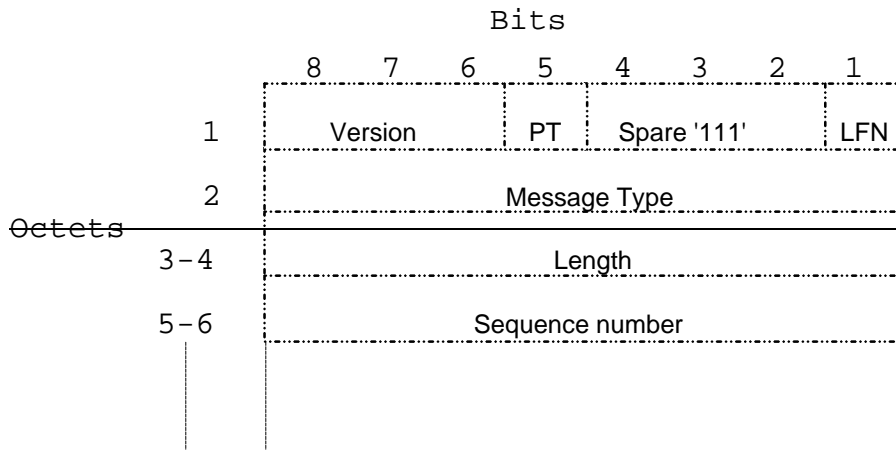


Figure 12: ~~Start of the GTP/GTP' header~~

7.3.2 Reused GTP message types

The existing **Echo Request** and **Echo Response** messages defined in GSM 09.60 are also used in GPRS charging. They may be used by the CDR generating nodes SGSN or GGSN, or by the CGF for checking if another GSN or CGF is alive. If this specification and GSM 09.60 differ in their description then the GSM 09.60 is to be taken as the latest specification status of the related Information elements. If the path protocol is TCP, Echo Request and Echo Response messages are not required.

The **Version Not Supported** message in the GTP' resembles much the corresponding GTP message. It indicates the latest GTP' version that the GTP' entity can support. If a receiving node receives a GTP' signalling message of an unsupported version, that node shall return a GTP' Version Not Supported message indicating in the Version field of the GTP' header the latest GTP' version that that node supports. The received payload data of the GTP' packet shall then be discarded.

The Version bits in the GTP' header have currently the following possible values:

GTP' version 0 (binary '000') is the GSM 12.15 v7.0.0 (October 1998) level, with the following Message Type values: 3 = Version Not Supported , 4 = Node Alive Request, 5 = Node Alive Response, 6 = Redirection Request, 7 = Redirection Response. In Chapter 7.3.4.6 the Requests Responded information element has Length field in place of the Number of Requests Responded field, to make that TLV IE to be handled like normal TLV IEs. If the GTP' v0 is used in parallel to GTP' v2 or a newer version, then a 6 octet header length (with no trailing dummy octets) is used also with v0 (like in GTP' v2). The mark of the usage of GTP' v0 with 6 octet header (instead of the original 20 octet long header) is then the version bits being 0 and the bit 1 of octet 1 being '1' (instead of '0').

GTP' version 1 (binary '001') is the same as version 0, but with the duplicate CDR prevention mechanism, introduced in this specification version.

GTP' version 2 (binary '010') is the same as version 1, but the header is just 6 octets long. No unused trailing octets.