3GPP TSG-CN 4
Charleston, USA, 27-31 March 2000

Document ***N4-000046***

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

29.060	**CR**	**095**		Current Version:	3.4.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑   ↑ *CR number as allocated by MCC support team*

For submission to:	CN#8	for approval	**X**	strategic		*(for SMG*
list expected approval meeting # here ↑		for information		non-strategic	**X**	*use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG   The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

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

Source:	Nortel Networks	**Date:**	22 March 2000

Subject:	GTP Security

Work item:	GTP Enhancements

Category:			**Release:**		
	F	Correction		Phase 2	
	A	Corresponds to a correction in an earlier release		Release 96	
(only one category	B	Addition of feature		Release 97	
shall be marked	C	Functional modification of feature	**X**	Release 98	
with an X)	D	Editorial modification		Release 99	**X**
				Release 00	

Reason for change:	The Security Group (S3) have requirements on the Core Network signalling protocols (MAP and GTP).
	For GTP it is proposed that, since IP is the transport technology used, IP Security techniques may be used. It is assumed that 3G TS 33.102 shall specify the GTP Security Requirements.

Clauses affected:	Clause 4, 13.3

Other specs affected:	Other 3G core specifications	☐	→ List of CRs:	
	Other GSM core specifications	☐	→ List of CRs:	
	MS test specifications	☐	→ List of CRs:	
	BSS test specifications	☐	→ List of CRs:	
	O&M specifications	☐	→ List of CRs:	

Other comments:	

help.doc

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

4 General

This document defines the GPRS Tunnelling Protocol (GTP), i.e. the protocol between GPRS Support Nodes (GSNs) in the UMTS/GPRS backbone network. It includes both the GTP signalling (GTP-C) and data transfer (GTP-U) procedures. It also lists the messages and information elements used by the GTP based charging protocol GTP', which is described in GSM 12.15.

GTP is defined for the Gn interface, i.e. the interface between GSNs within a PLMN, and for the Gp interface between GSNs in different PLMNs. Only GTP-U is defined for the Iu interface between Serving GPRS Support Node (SGSN) and the UMTS Terrestrial Radio Access Network (UTRAN).

The Internet protocol (IP) is the transport network technology used to carry GTP. IP Security techniques such as IPSec may be used to provide secure transport of GTP.

On the Iu interface, the Radio Access Network Application Part (RANAP) protocol is performing the control function for GTP-U.

GTP' is defined for the interface between CDR generating functional network elements and Charging Gateway(s) within a PLMN. Charging Gateway(s) and GTP' protocol are optional, as the Charging Gateway Functionalities may either be located in separate network elements (Charging Gateways), or alternatively be embedded into the CDR generating network elements (GSNs) when the GSN-CGF interface is not necessarily visible outside the network element. These interfaces relevant to GTP are between the grey boxes shown in the figure below.
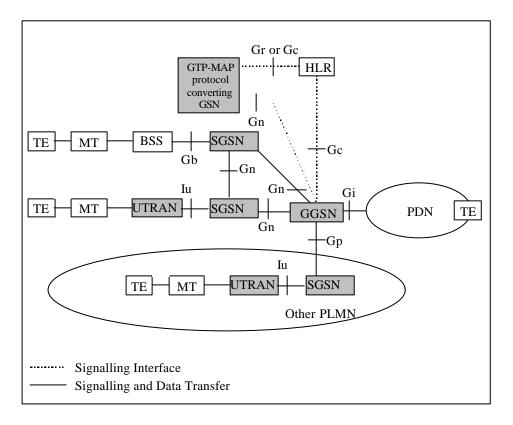

Figure 1: GPRS Logical Architecture with interface name denotations

GTP allows multiprotocol packets to be tunnelled through the UMTS/GPRS Backbone between GSNs and between SGSN and UTRAN.

In the signalling plane, GTP specifies a tunnel control and management protocol (GTP-C) which allows the SGSN to provide packet data network access for an MS. Signalling is used to create, modify and delete tunnels.

In the transmission plane, GTP uses a tunnelling mechanism (GTP-U) to provide a service for carrying user data packets. The choice of path is dependent on whether the user data to be tunnelled requires a reliable link or not.

The GTP-U protocol is implemented by SGSNs and GGSNs in the UMTS/GPRS Backbone and by Radio Network Controllers (RNCs) in the UTRAN. The GTP-C protocol is implemented by SGSNs and GGSNs in the UMTS/GPRS Backbone. No other systems need to be aware of GTP. UMTS/GPRS MSs are connected to an SGSN without being aware of GTP.

It is assumed that there will be a many-to-many relationship between SGSNs and GGSNs. A SGSN may provide service to many GGSNs. A single GGSN may associate with many SGSNs to deliver traffic to a large number of geographically diverse mobile stations.

SGSN and GGSN implementing GTP protocol version 1 should be able to fallback to GTP protocol version 0. All GSNs should be able to support all earlier GTP versions.

*** *Next Change* ***

13.3 GTP Security

In order to provide secure transport of GTP IP Security techniques defined by the IETF may be used, for example IPSec. The requirements on GTP Security are described in TS 3G 33.102 "3G Security; Security Architecture" [18].