

TSG-RAN Working Group 3 meeting #2
Nynäshamn, Sweden, 15th - 19th March 1999

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Agenda: 13.3

Source: Motorola

Title: Iu Reference Point (User Plane for the IP Domain)

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Date: March 15-19, 1999

Source:  **MOTOROLA**

Key Issue: I_U Reference Point (User Plane for the IP domain)

1 Introduction

This document describes a proposed protocol architecture for the Iu interface IP domain. The protocol architecture is illustrated below. As shown in Figure 1, the GTP-U tunnel from GGSN terminates at the UTRAN. The following section gives more details on this proposed architecture.

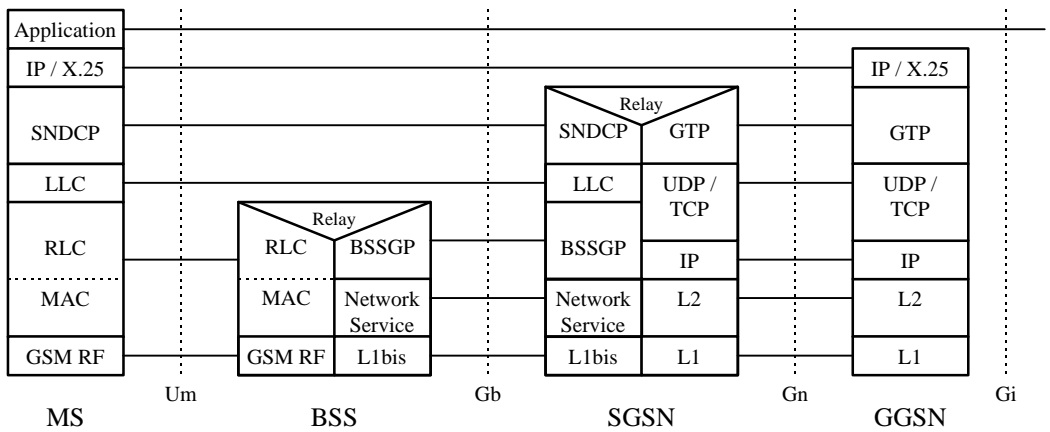


Figure 1: Iu User Plane Protocol Stack

2 Description

Table 1 summarizes the assignment of functions to elements in the logical network architecture (for the user plane shown in Figure 1). **Unless specifically mentioned otherwise, functions and all abbreviations are assumed to be as defined in GSM 03.60 V6.2.0.**

Function	UE	UTRAN	3G SGSN	GGSN
Network Access Control:				
Authentication and Authorisation	X		X	
Charging Data Collection		X	X	X
Routing & Transfer:				
Packet Relay	X	X		X
Packet Routing	X	X		X
Bearer Routing	X		X	
Address Translation and Mapping	X	X		X
Encapsulation		X		X
Tunnelling		X		X
Compression	X	X		
Ciphering	X	X		
Domain Name Server			X	
Circuit Data Interworking				X
Call Control				
Session Control	X		X	
Bearer Control	X	X		X
Streamlining		X	X	X

Table 1: Assignment of Functions to Logical Architecture¹

Definitions

Bearer Routing refers to the routing of the GTP-U tunnel for any given PDP context.

Compression refers to reduction of PDP header data.

Session Control refers to the procedures for the control of PDP session.

Bearer Control refers to the procedures for the control of the GTP-U tunnel.

Streamlining refers to the procedure for changing the serving RNS.

Since, the GTP-U tunnels now terminate at the UTRAN (instead of the SGSN as in GPRS) the UTRAN has to maintain appropriate information on a per PDP context basis. Further, a number of information fields stored for each PDP context at the SGSN in GPRS do not have to be maintained since the user plane does not have to be terminated at the SGSN. Sections 2.1 through 2.3 summarize the key differences in the parameters stored for each PDP context at various elements of the logical network architecture.

2.1 PDP Context at the SGSN

The SGSN will no longer store the following parameter values (when compared to GPRS) for each PDP context:

- Compression
- SND and SNU
- Re-ordering Required

2.2 PDP Context at the GGSN

Not impacted.

¹ Not all functions relevant to the user & control planes are shown.

2.3 PDP Context in the UTRAN

A PDP context is stored in the UTRAN only when the PDP Context is in ACTIVE. Table 2 shows the UTRAN PDP context fields for one PDP Context. Note that the UTRAN will store relevant information on a per UE basis as well (for instance related to Mobility Management and Ciphering).

Field	Description
NSAPI	Network layer Service Access Point Identifier.
QoS Profile Negotiated	The quality of service profile negotiated for this PDP context.
SND	GTP-U sequence number of the next downlink N-PDU to be sent to the UE
SNU	GTP-U sequence number of the next uplink N-PDU to be sent to the GGSN
Reordering Required	Specifies whether the UTRAN shall reorder N-PDUs received from the GGSN.
New RNS Address ²	The IP address of the new RNS where buffered and not sent N-PDUs should be forwarded to.
Access Point Name	The APN requested by the UE.
GGSN Address in Use	The IP address of the GGSN currently used by the activated PDP context.

Table 2: UTRAN PDP Context Example

3 Proposal

It is proposed that:

1. The contents of section 1 of this contribution are added to section 6.1.1 of ref [1].
2. The contents of section 2 are added to the section 11.1.2.1 of ref [2].

4 References

[1] S3.15, Iu Interface CN-RAN User Plane Protocols, v0.0.1

[2] S3.01, RAN Overall Description, v0.0.2

² This assumes that existing procedures to relocate GTP tunnels (as defined in GPRS R 97) are used in UMTS.