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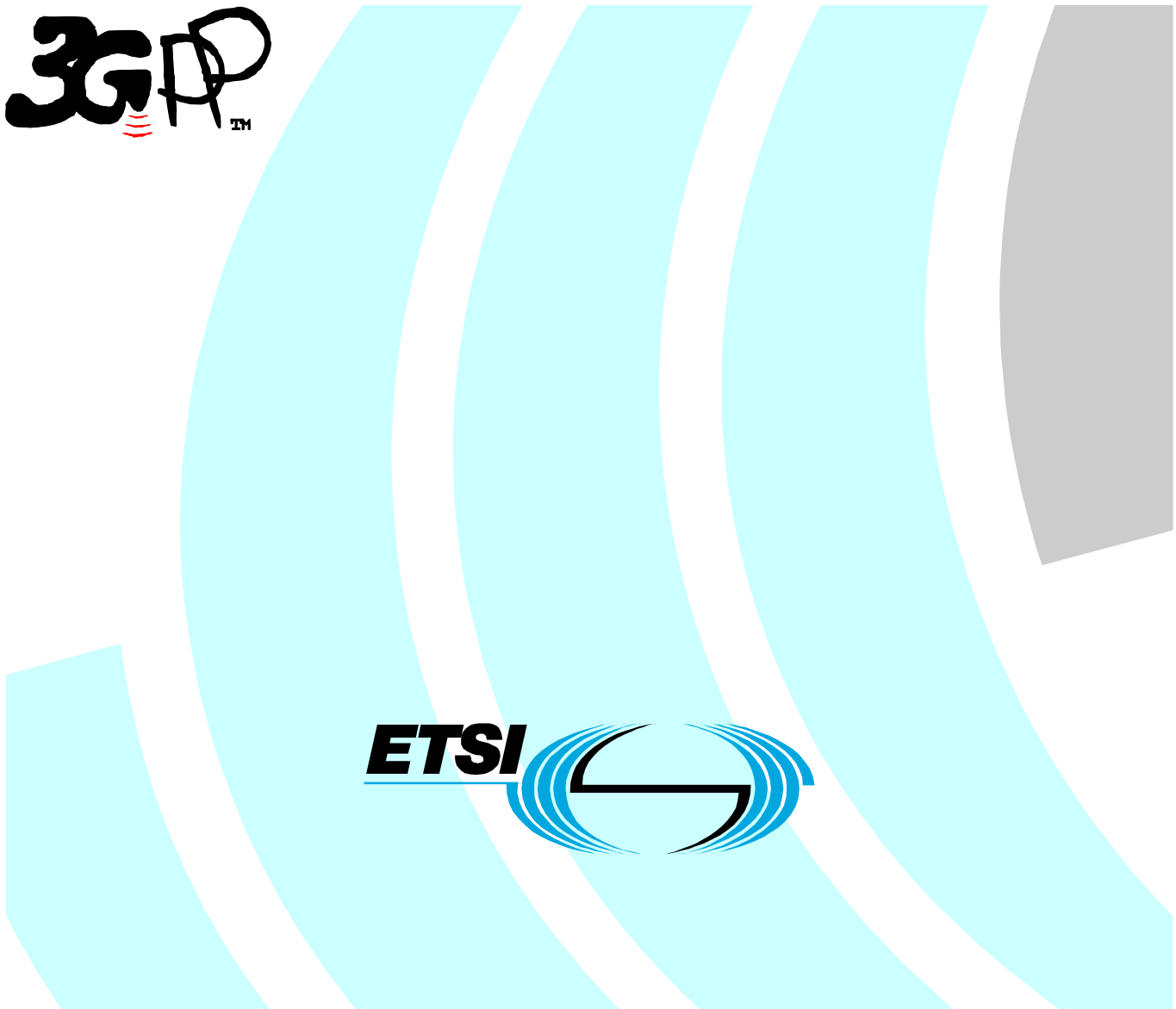
Technical Specification

Universal Mobile Telecommunications System (UMTS);
UTRAN Iub interface: signalling transport
(3GPP TS 25.432 version 7.1.0 Release 7)



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Foreword

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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1 Scope

The present document specifies the signalling transport related to NBAP signalling to be used across the Iub Interface. The Iub interface is a logical interface for the interconnection of Node B and Radio Network Controller (RNC) components of the UMTS Terrestrial Radio Access Network (UTRAN) for the UMTS system. The radio network control signalling between these nodes is based on the Node B application part (NBAP).

2 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] ITU-T Recommendation Q.2100 (07/94): "B-ISDN signalling ATM adaptation layer (SAAL) overview description".

[2] ITU-T Recommendation Q.2130 (07/94): "B-ISDN signalling ATM adaptation layer – Service specific coordination function for support of signalling at the user network interface (SSCF–UNI)".

[3] ITU-T Recommendation Q.2110 (07/94): "B-ISDN ATM adaptation layer – Service specific connection oriented protocol (SSCOP)".

[4] ITU-T Recommendation I.363.5 (08/96): "B-ISDN ATM Adaptation Layer Type 5 Specification".

[5] ITU-T Recommendation I.361: B-ISDN ATM Layer Specification (11/95).

[6] ITU-T Rec. I.630 (2/99): ATM Protection Switching.

[7] IETF RFC 2960, (October 2000): "Stream Control Transmission Protocol".

[8] IETF RFC 2460, (December 1998): "Internet Protocol, Version 6 (IPv6) Specification".

[9] IETF RFC 791, (September 1981): "Internet Protocol".

[10] IETF RFC 2474, (December 1998): "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers".

[11] IETF RFC 1661, (July 1994): "The Point-to-Point Protocol (PPP)".

[12] IETF RFC 1662, (July 1994): "PPP in HDLC-like Framing".

[13] IETF RFC 2507, (February 1999): "IP header compression".

[14] IETF RFC 1990, (August 1996): "The PPP Multilink Protocol (MP)".

[15] IETF RFC 2686, (September 1999): "The Multi-Class Extension to Multi-Link PPP".

[16] IETF RFC 2509, (February 1999): "IP Header Compression over PPP".

[17] IETF RFC 3153, (August 2001): "PPP Multiplexing".

[18] IETF RFC 2364, (July 1998): "PPP over AAL5".

[19] IETF RFC 3031, (January 2001): "Multiprotocol Label Switching Architecture".

[20] RFC 3309: "SCTP Checksum Change".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

IP UTRAN node: An UTRAN Node supporting the IP Transport Option

3.2 Symbols

(void)

3.3 Abbreviations

AAL	ATM Adaptation Layer
ATM	Asynchronous Transfer Mode
HDLC	High-level Data Link Control
IP	Internet Protocol
NBAP	Node B Application Part
PPP	Point-to-Point Protocol
RNC	Radio Network Controller
SAAL	Signalling ATM Adaptation Layer
SCTP	Stream Control Transmission Protocol
SSCF	Service Specific Coordination Function
SSCOP	Service Specific Connection Oriented Protocol
UNI	User-Network Interface

4 Data Link Layer

4.1 ATM Transport Option

ATM shall be used in the radio network control plane according to I.361 [5].

4.1.1 Protection switching at ATM Layer

If redundancy of pathways at ATM layer between RNC and Node B is supported, it shall be implemented using ATM Protection Switching according to I.630 [6].

4.2 Data Link Layer for IP Transport Option

A RNC or Node B supporting IP Transport Option shall support the PPP protocol with HDLC framing [11], [12].

NOTE: This does not preclude the single implementation and use of any other L2/L1 protocols (e.g. PPPMux/AAL5/ATM [17][18], PPP/AAL2/ATM, Ethernet, MPLS/ATM [19], etc.) fulfilling the UTRAN requirements towards the upper layers.

A RNC or Node B supporting IP transport option and having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression [13] and the PPP extensions ML/MC-PPP [14], [15]. In this case, negotiation of header compression [13] over PPP shall be performed via [16].

5 NBAP signalling bearer

5.1 Introduction

The Signalling Bearer for NBAP is a point-to-point protocol. There may be multiple point-to-point links between an RNC and a Node B. As shown in figure 1, the standard allows operators to choose one out of two protocol suites for transporting the NBAP messages.

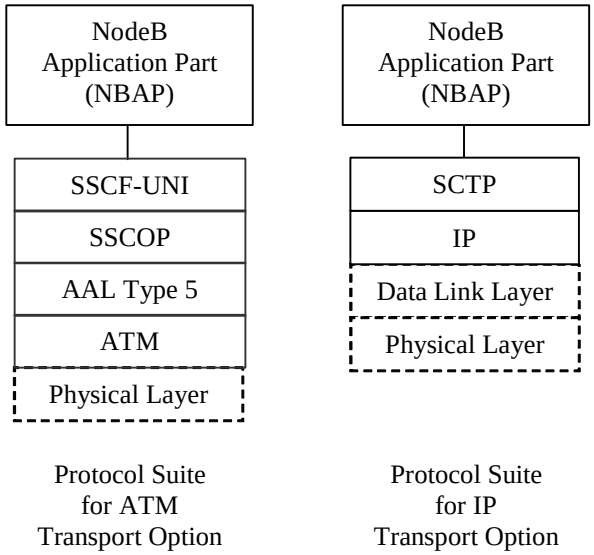

Figure 1: Iub NBAP Signalling Transport

5.2 Signalling bearer in case of ATM Transport Option

The signalling bearer in the Radio Network Control Plane is SAAL-UNI [1] over ATM. The protocols to be used to support NBAP signalling are SSCF-UNI [2] on top of SSCOP [3] and AAL Type 5 [4].

5.3 Signalling bearer in case of IP Transport Option

SCTP [7] over IP shall be supported as the transport for NBAP signalling bearer on Iub Interface. A RNC equipped with the SCTP stack option shall initiate the INIT procedure for establishing association. The data link layer is as specified in chapter 4.2.

The checksum method specified in RFC 3309 [20] shall be used instead of the method specified in RFC 2960 [7].

An IP UTRAN node shall support IPv6 [8]. The support of IPv4 [9] is optional.

NOTE: This does not preclude single implementation and use of IPv4.

IP dual stack is recommended for the potential transition period from IPv4 to IPv6 in the transport network.

Each signalling bearer between the RNC and Node B shall correspond to one single SCTP stream in UL and one single SCTP stream in DL direction, both streams belonging to the same SCTP association.

IP Differentiated Services code point marking [10] shall be supported. The Diffserv code point may be determined from the application parameters.

Annex A (informative): Change history

Document history		
V3.0.0	1999-04	Approved by TSG-RAN by correspondence
V3.1.0	1999-10	CRs approved by TSG-RAN

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
March 01	11	-	-		Approved at TSG RAN #11 and placed under Change Control	-	4.0.0
03/2002	15	RP-020189	001	3	Introduction of IP Transport Option in UTRAN	4.0.0	5.0.0
04/2002	-	-	-	-	Editorial correction to header 4.1 (removed the letter G)	5.0.0	5.0.1
09/2002	17	RP-020611	003	1	Addition of new reference on SCTP checksum	5.0.1	5.1.0
12/2003	22	-	-	-	Introduction of Release 6 specification	5.1.0	6.0.0
03/2006	31	-	-	-	Introduction of Release 7 specification	6.0.0	7.0.0
03/2007	35	RP-070063	006	-	Clarification for Client/Server functionality for SCTP in IP based Transport option	7.0.0	7.1.0

History

Document history		
V7.0.0	March 2006	Publication
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