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TECHNICAL SPECIFICATION

Universal Mobile Telecommunications System (UMTS);
UTRAN Iur interface data transport & transport signalling
for Common Transport Channel data streams
(3GPP TS 25.424 version 16.0.0 Release 16)

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Contents

Foreword

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1 Scope

The present document shall provide a specification of the UTRAN RNC-RNC (Iur) interface Data Transport and Transport Signalling for Common Transport Channel data streams.

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 I.361 (1995-11): "B-ISDN ATM Layer Specification".

[2]   ITU-T Recommendation I.363.2 (2000-11): "B-ISDN ATM Adaptation Layer type 2".

[3]   ITU-T Recommendation I.366.1 (1998-06): "Segmentation and Re-assembly Service Specific Convergence Sublayer for the AAL type 2".

[4]   ITU-T Recommendation Q.2630.1 (1999-12): "AAL Type 2 signalling protocol (Capability Set 1)".

[5]   ITU-T Recommendation E.191 (2000-03): "B-ISDN addressing".

[6]   3GPP TS 25.426: "UTRAN Iur and Iub interface data transport & transport signalling for DCH data streams".

[7]   Void

[8]   ITU-T Recommendation Q.2630.2 (2000-12): "AAL Type 2 signalling protocol (Capability Set 2)".

[9]   ITU-T Recommendation X.213 (1995-11): "Information Technology - Open Systems Interconnection - Network Service Definition".

[10]   IETF RFC 1661 (1994-07): "The Point-To-Point Protocol (PPP)".

[11]   IETF RFC 1662 (1994-07): "PPP in HDLC-like Framing".

[12]   IETF RFC 2507 (1999-02): "IP header compression".

[13]   IETF RFC 1990 (1996-08): "The PPP Multilink Protocol (MP)".

[14]   IETF RFC 2686 (1999-09): "The Multi-Class Extension to Multi-Link PPP".

[15]   IETF RFC 2509 (1999-02): "IP Header Compression over PPP".

[16]   IETF RFC 2460 (1998-12): "Internet Protocol, Version 6 (Ipv6) Specification".

[17]   IETF RFC 791 (1981-09): "Internet Protocol".

[18]   IETF RFC 2474 (1998-12): "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers".

[19]   IETF RFC 768 (1980-08): "User Datagram Protocol".

[20]   IETF RFC 3153 (2001-08): "PPP Multiplexing".

[21] IETF RFC 2364 (1998-07): "PPP over AAL5".

[22] IETF RFC 3031 (2001-01):"Multiprotocol Label Switching Architecture".

[23] ITU-T Recommendation E.164 (1997-05): " The international public telecommunication numbering plan ".

3 Definitions and abbreviations

3.1 Definitions

Common Transport Channels are defined as transport channels that are shared by several users i.e. RACH, FACH, DSCH [TDD], USCH [TDD] and HS-DSCH.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AAL2	ATM Adaptation Layer type 2
AAL5	ATM Adaptation Layer type 5
AESA	ATM End System Address
ALCAP	Access Link Control Application Part
ATM	Asynchronous Transfer Mode
CPS	Common Part Sublayer
DiffServ	Differentiated Services
DSCH	Downlink Shared Channel
FACH	Forward Access Channel
HDLC	High level Data Link Control
HS-DSCH	High Speed Downlink Shared Channel
IP	Internet Protocol
IPv4	Internet Protocol, version 4
IPv6	Internet Protocol, version 6
IWF	Interworking Function
IWU	Interworking Unit
LC	Link Characteristics
ML/MC PPP	Multilink-Multiclass PPP
MPLS	Multiprotocol Label Switching
MTP	Message Transfer Part
NNI	Network-Node Interface
NSAP	Network Service Access Point
PPP	Point-to-Point Protocol
PPPMux	PPP Multiplexing
PT	Path Type
QoS	Quality of Service
RACH	Random Access Channel
SAAL	Signalling ATM Adaptation Layer
SDU	Service Data Unit
SSCOP	Service Specific Connection Oriented Protocol
SSCF	Service Specific Co-ordination Function
SSCS	Service Specific Convergence Sublayer
SSSAR	Service Specific Segmentation and Re-assembly sublayer
STC	Signalling Transport Converter
TNL	Transport Network Layer
UDP	User Datagram Protocol
UNI	User-Network Interface
USCH	Uplink Shared Channel

3.3 Specification Notations

For the purposes of the present document, the following notations apply:

[FDD] This tagging of a word indicates that the word preceding the tag "[FDD]" applies only to FDD. This tagging of a heading indicates that the heading preceding the tag "[FDD]" and the section following the heading applies only to FDD.

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[FDD - …] This tagging indicates that the enclosed text following the "[FDD - " applies only to FDD. Multiple sequential paragraphs applying only to FDD are enclosed separately to enable insertion of TDD specific (or common) paragraphs between the FDD specific paragraphs.

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[7.68Mcps TDD - …] This tagging indicates that the enclosed text following the "[7.68Mcps TDD - " applies only to 7.68Mcps TDD. Multiple sequential paragraphs applying only to 7.68Mcps TDD are enclosed separately to enable insertion of FDD and TDD specific (or common) paragraphs between the 7.68Mcps TDD specific paragraphs.

4 Data Link Layer

4.1 ATM Transport Option

ATM shall be used in the transport network user plane and the transport network control plane according to ITU-T Recommendation I.361 [1]. The structure of the cell header used in the UTRAN Iur interface is the cell header format and encoding at NNI (see Figure 3/I.361 [1]).

4.2 IP Transport Option

A UTRAN Node supporting IP transport option shall support PPP protocol with HDLC framing (IETF RFC 1661 [10], IETF RFC 1662 [11]).

Note: This does not preclude the single implementation and use of any other data link layer protocols (e.g. PPPMux/AAL5/ATM (IETF RFC 3153 [20], IETF RFC 2364 [21]), PPP/AAL2/ATM, Ethernet, MPLS/ATM (IETF RFC 3031 [22]), etc.) fulfilling the UTRAN requirements toward the upper layers.

An RNC using IP transport option having interfaces connected via slow bandwidth PPP links like E1/T1/J1 shall also support IP Header Compression (IETF RFC 2507 [12]) and the PPP extensions ML/MC-PPP (IETF RFC 1990 [13]), (IETF RFC 2686 [14]). In this case, negotiation of header compression (IETF RFC 2507 [12]) over PPP shall be performed via IETF RFC 2509 [15].

5 I_{ur} Data Transport for Common Transport Channel Data Streams

5.1 Introduction

This clause specifies the transport layers that support Common Channels (FACH, RACH, DSCH [TDD], USCH [TDD], HS-DSCH) Iur data streams.

There are two options for the transport layer of the Common Channels data streams in Iur and Iub:

1) ATM based Transport (ATM transport option)

2) IP based Transport (IP transport option)

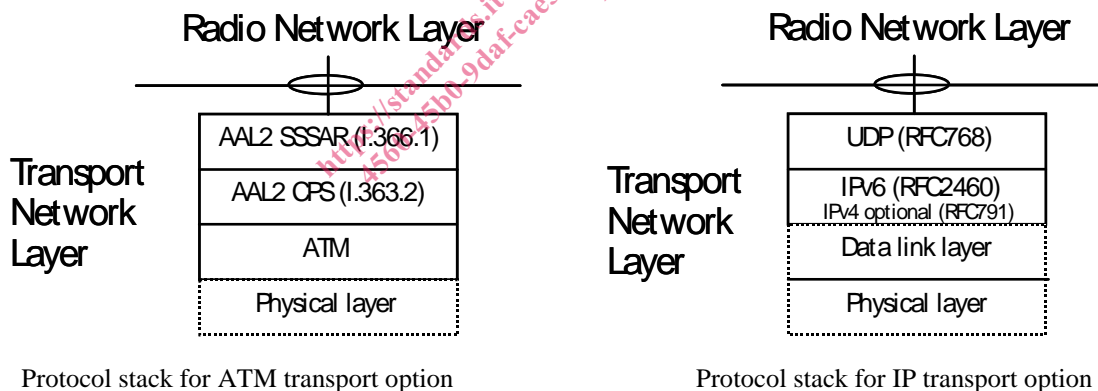The following figure shows the protocol stacks of the two options.

Protocol stack for ATM transport option   Protocol stack for IP transport option

Figure 1: Transport network layer for DCH data streams over Iur and Iub interfaces

5.2 ATM Transport Option

ATM (ITU-T Rec. I.361 [1]), AAL type 2 (ITU-T Recommendations I.363.2 [2] and ITU-T Rec. I.366.1 [3]) is used as the standard transport layer for RACH, FACH, USCH [TDD], DSCH [TDD] and HS-DSCH Iur data streams.

These AAL2 connections are established via the transport signalling protocol described in clause 5.

Figure 1 shows the protocol stack for the transport of RACH, FACH, USCH [TDD], DSCH [TDD] and HS-DSCH Iur data streams using the ATM Transport Option. Service Specific Segmentation and Re-assembly (SSSAR) is used for the segmentation and re-assembly of AAL2 SDUs (i.e. SSSAR is only considered from ITU-T Recommendation I.366.1 [3]).