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*Technical Specification*

# Universal Mobile Telecommunications System (UMTS); UTRAN Iur and Iub Interface Data transport & Transport Signalling for DCH Data Streams (3G TS 25.426 version 3.1.0 Release 1999)

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# Foreword

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# 1 Scope

The scope of this Technical Specification is to specify the transport bearers for the DCH data streams on UTRAN Iur and Iub interfaces. The corresponding Transport Network Control plane is also specified. The physical layer for the transport bearers is outside the scope of this TS.

# 2 References

[1]     TS UMTS 25.427: UTRAN Iur and Iub User plane Protocol for DCH Data Streams

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

[3]     ITU-T Recommendation I.363.2 B-ISDN ATM Adaptation Layer type 2 (9/97)

[4]     ITU-T Recommendation I.366.1 Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2 (6/98)

[5]     Draft new ITU-T Recommendation Q.2630.1 AAL Type 2 signalling protocol (Capability Set 1)

[6]     ITU-T Recommendation E.191 B-ISDN numbering and addressing (10/96)

[7]     ITU-T Recommendation X.213 Information Technology – Open Systems Interconnection – Network Service Definition (11/95)

[8]     ITU-T Recommendation Q.2110 B-ISDN ATM Adaptation layer – Service Specific Connection Oriented Protocol  (SSCOP) (7/94)

[9]     ITU-T Recommendation Q.2130 B-ISDN Signaling ATM Adaptation Layer – Service Specific Coordination Function for Support of Signaling at the User Network Interface  (SSCF at UNI) (7/94)

[10]    Draft new ITU-T Recommendation Q.2150.2 AAL Type 2 Signalling Transport Converter on SSCOP

[11]    ITU-T Recommendation Q.2210 Message transfer part level 3 functions and messages using the services of the ITU-T Recommendation Q.2140 (7/96)

[12]    ITU-T Recommendation Q.2140 B-ISDN Signaling ATM Adaptation Layer – Service Specific Coordination Function for Support of Signaling at the Network Node Interface  (SSCF at NNI) (2/95)

[13]    Draft new ITU-T Recommendation Q.2150.1 AAL Type 2 Signalling Transport Converter on MTP-3B

[14]    IETF RFC 791 (09/1981) Internet Protocol

[15]    IETF RFC 1483 (7/1993): "Multiprotocol Encapsulation over ATM Adaptation Layer 5"

[16]    IETF RFC 2225 (4/1998): "Classical IP and ARP over ATM"

[17]    IETF RFC 768 (8/1980): "User Datagram Protocol".

[18]    R. Stewart et al, "Simple Control Transmission Protocol", draft-ieft-sigtran-sctp-v0.txt (Work In Progress), IETF, September 1999

[19]    G. Sidebottom et al, "SS7 ISUP Tunneling", draft-ietf-sigtran-itun-00.txt (Work In Progress), IETF, June 1999

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

# 3   Abbreviations and Definitions

## 3.1 Abbreviations

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

| | |
|---|---|
| AAL2 | ATM Adaptation Layer type 2 |
| AESA | ATM End System Address |
| ATM | Asynchronous Transfer Mode |
| CPCS | Common Part Convergence Sublayer |
| CPS | Common Part Sublayer |
| DCH | Dedicated Channel |
| ITUN | SS7 ISUP Tunnelling (Adaptation layer for ISUP and SCCP for SCTP) |
| MTP | Message Transfer Part |
| NNI | Network-Node Interface |
| NSAP | Network Service Access Point |
| SAAL | Signalling ATM Adaptation Layer |
| SAR | Segmentation and Reassembly |
| SCTP | Simple Control Transmission Protocol |
| SSCF | Service Specific Co-ordination Function |
| SSCOP | Service Specific Connection Oriented Protocol |
| SSCS | Service Specific Convergence Sublayer |
| SSSAR | Service Specific Segmentation and Reassembly sublayer |
| STC | Signalling Transport Converter |
| UNI | User-Network Interface |

## 3.2 Definitions

ALCAP is a generic name for the transport signalling protocol used to setup and tear down transport bearers.

# 4   ATM Layer

## 4.1   General

ATM shall be used in the transport network user plane and transport network control plane according to I.361 [2].

## 4.2   Protection Switching at ATM Layer

If redundancy of pathways at ATM layer between RNCs or RNC and Node B is supported, it shall be implemented using ATM Protection Switching according to I.630 [20].

# 5   I$_{ur}$ and I$_{ub}$ Data Transport for DCH Data Streams

## 5.1 Introduction

The Frame Protocol for DCH data streams [1] is the user of the transport layer specified in this Technical Specification.

## 5.2 Transport Layer

Asynchronous Transfer Mode (ATM) [2] and ATM Adaptation Layer type 2 (AAL2) [3, 4] are used as a transport layer for DCH data streams on Iur and Iub interfaces. Service Specific Segmentation and Reassembly (SSSAR) sublayer for AAL2 is used for the segmentation and reassembly of AAL2 SDUs.
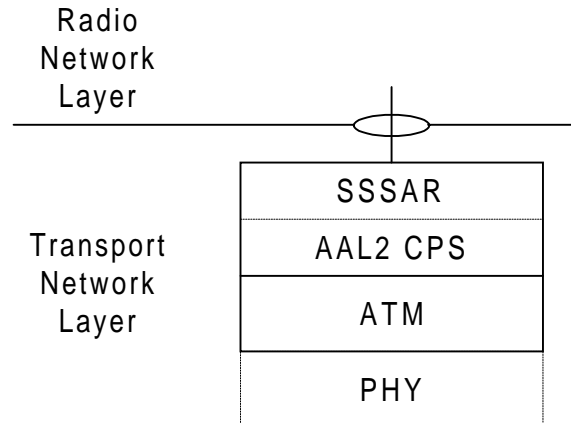


Figure 1.  Transport network layer for DCH data streams over Iur and Iub interfaces.

# 6  Transport Signalling Application for DCH Data Streams

## 6.1 ALCAP

AAL2 signalling protocol Capability Set 1 [5] is the signalling protocol to control AAL2 connections on Iub and Iur interfaces.

Binding ID provided by the radio network layer shall be copied in SUGR parameter of ESTABLISH.request primitive of [5].

User Plane Transport bearers for Iur interface are established and released by the ALCAP in the Serving RNC. The binding identity shall already be assigned and tied to a radio application procedure when the first ALCAP message is received over the Iur interface in the Drift RNC.

User Plane Transport bearers for Iub interface are established and released by the ALCAP in the Controlling RNC.

AAL2 transport layer addressing is based on embedded E.164 or AESA variants of the NSAP addressing format [6, 7]. Native E.164 addressing shall not be used.

# 7  Signalling Bearer for ALCAP on I$_{ub}$ Interface

## 7.1 Introduction

This chapter specifies the signalling bearer for the ALCAP on Iub interface. Signalling bearer is used for the conveyance of the ALCAP messages between the peer UTRAN nodes.

## 7.2 Signalling Bearer

SAAL-UNI [8, 9] is used as a signalling bearer for the AAL Type 2 Signalling protocol on Iub interface. Signalling Transport Converter for SSCOP is applied [9]. The following figure shows the signalling bearer protocol stack for the ALCAP on Iub interface.
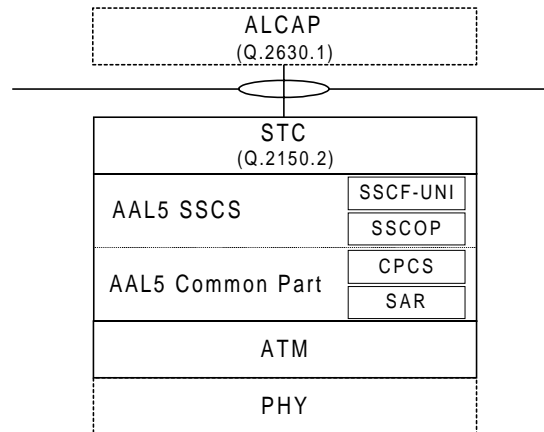
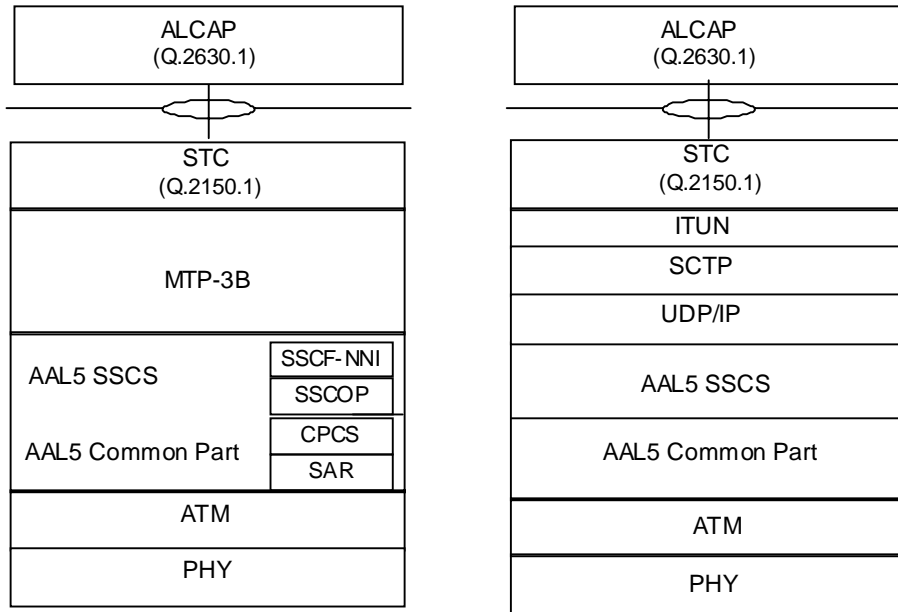Figure 2: Signalling bearer for ALCAP on Iub interface.

# 8  Signalling Bearer for ALCAP on I$_{ur}$ Interface

## 8.1 Introduction

This chapter specifies the signalling bearer for the ALCAP on the Iur interface. Signalling bearer is used for the conveyance of the ALCAP messages between the peer UTRAN nodes.

## 8.2 Signalling Bearer

There are two protocol stacks specified for Iur ALCAP Signalling Bearer – one based on MTP-3B [11] and SAAL-NNI [12, 8] and the other  based on SCTP [18]. Signalling Transport Converter for MTP-3B is applied [13]. SCCP Adaptation Layer for SCTP is applied [19].  The following figure shows the signalling bearer protocol stacks for the ALCAP on Iur interface.

MTP-3B based Iur ALCAP Signaling Bearer

IP based Iur ALCAP Signaling Bearer

Figure 3: Signalling bearers for ALCAP on Iur interface.

# 9 History

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