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Technical Specification

**Universal Mobile Telecommunications System (UMTS);
UTRAN Iur and Iub Interface Data Transport;
Transport Signalling for DCH Data Streams
(3GPP TS 25.426 version 3.7.0 Release 1999)**



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1 Scope

The present document specifies 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 the present document.

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] TS UMTS 25.427: "UTRAN Iur and Iub User plane Protocol for DCH Data Streams".
- [2] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM Layer Specification".
- [3] ITU-T Recommendation I.363.2 (9/97): "B-ISDN ATM Adaptation Layer type 2".
- [4] ITU-T Recommendation I.366.1 (6/98): "Segmentation and Reassembly Service Specific Convergence Sublayer for the AAL type 2".
- [5] ITU-T Recommendation Q.2630.1 (12/99): "AAL type 2 Signalling Protocol (Capability Set 1)".
- [6] ITU-T Recommendation E.191 (10/96): "B-ISDN numbering and addressing".
- [7] ITU-T Recommendation X.213 (11/95): "Information Technology - Open Systems Interconnection - Network Service Definition".
- [8] ITU-T Recommendation Q.2110 (7/94): "B-ISDN ATM Adaptation layer - Service Specific Connection Oriented Protocol (SSCOP)".
- [9] ITU-T Recommendation Q.2130 (7/94): "B-ISDN Signalling ATM Adaptation Layer - Service Specific Coordination Function for Support of Signalling at the User Network Interface (SSCF at UNI)".
- [10] ITU-T Recommendation Q.2150.2 (12/99): "AAL type 2 signalling transport converter on SSCOP".
- [11] ITU-T Recommendation Q.2210 (7/96): Message transfer part level 3 functions and messages using the services of the ITU-T Recommendation Q.2140".
- [12] ITU-T Recommendation Q.2140 (2/95): "B-ISDN Signalling ATM Adaptation Layer - Service Specific Coordination Function for Support of Signalling at the Network Node Interface (SSCF at NNI)".
- [13] New ITU-T Recommendation Q.2150.1 (12/99): "AAL Type 2 Signalling Transport Converter on MTP-3B".
- [14] IETF RFC 791 (September 1981): "Internet Protocol".
- [15] IETF RFC 1483 (July 1993): "Multiprotocol Encapsulation over ATM Adaptation Layer 5".
- [16] IETF RFC 2225 (April 1998): "Classical IP and ARP over ATM".

- [17] IETF RFC 768 (August 1980): "User Datagram Protocol".
- [18] IETF RFC 2960 (October 2000): "Stream Control Transmission Protocol".
- [19] G. Sidebottom et al, "SS7 MTP3 - User Adaptation Layer", draft-ietf-sigtran-m3ua-04.txt (Work In Progress), IETF, September 2000.
- [20] ITU-T Recommendation I.630 (2/99): "ATM Protection Switching".
- [21] ITU-T Implementor's guide (12/99) for recommendation Q.2210 (07/96).

3 Definitions and abbreviations

3.1 Definitions

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

3.2 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 |
| M3UA | SS7 MTP3 User Adaptation Layer |
| MTP | Message Transfer Part |
| NNI | Network-Node Interface |
| NSAP | Network Service Access Point |
| SAAL | Signalling ATM Adaptation Layer |
| SAR | Segmentation and Reassembly |
| SCTP | Stream 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 |

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 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 I_{ur} and I_{ub} interfaces. Service Specific Segmentation and Reassembly (SSSAR) sublayer for AAL2 is used for the segmentation and reassembly of AAL2 SDUs.

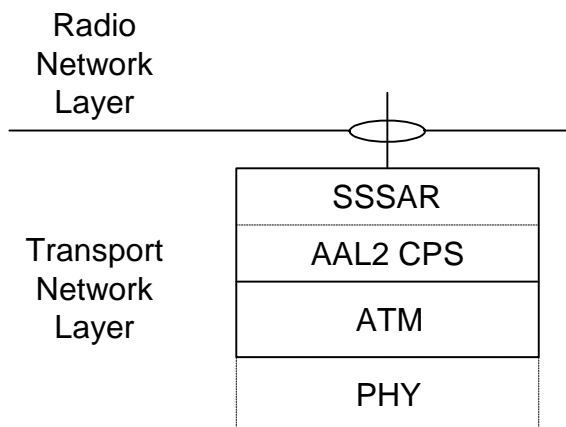


Figure 1: Transport network layer for DCH data streams over I_{ur} and I_{ub} interfaces

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 I_{ub} and I_{ur} 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 I_{ur} interface are established and released by the ALCAP in the Serving RNC. The binding identifier shall already be assigned and tied to a radio application procedure when the first ALCAP message is received over the I_{ur} interface in the Drift RNC.

User Plane Transport bearers for I_{ub} 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.

The AAL2 Link Characteristics parameter (ALC) shall be included in the Establish Request message of AAL2 signalling protocol.

7 Signalling Bearer for ALCAP on I_{ub} Interface

7.1 Introduction

This clause specifies the signalling bearer for the ALCAP on I_{ub} interface.

7.2 Signalling Bearer

SAAL-UNI [8, 9] is used as a signalling bearer for the AAL Type 2 Signalling protocol on I_{ub} interface. Signalling Transport Converter for SSCOP is applied [10]. The following figure shows the signalling bearer protocol stack for the ALCAP on I_{ub} interface.

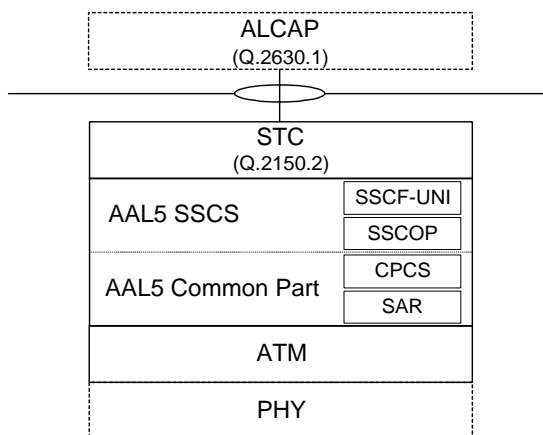


Figure 2: Signalling bearer for ALCAP on I_{ub} interface

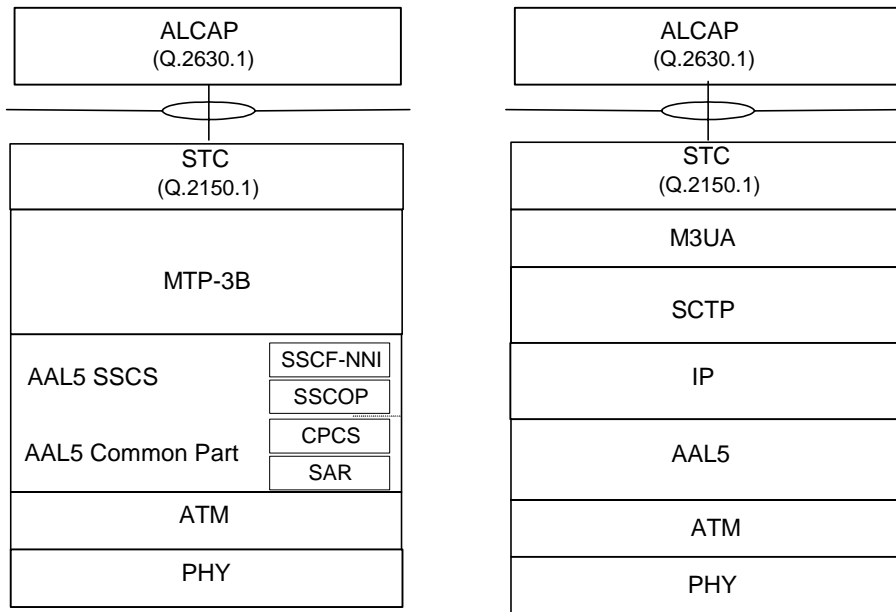
8 Signalling Bearer for ALCAP on I_{ur} Interface

8.1 Introduction

This clause specifies the signalling bearer for the ALCAP on the I_{ur} interface.

8.2 Signalling Bearer

There are two protocol stacks specified for I_{ur} ALCAP Signalling Bearer - one based on MTP-3B [11, 21] and SAAL-NNI [12, 8] and the other based on SCTP [18]. Signalling Transport Converter for MTP-3B is applied [13]. MTP-3 User Adaptation Layer (M3UA) for SCTP is applied [19]. Classical IP over ATM is specified in [16]. Multiprotocol Encapsulation over AAL5 is specified in [15]. The following figure shows the signalling bearer protocol stacks for the ALCAP on I_{ur} interface.



MTP-3B based Iur ALCAP Signalling Bearer

IP based Iur ALCAP Signalling Bearer

Figure 3: Signalling bearers for ALCAP on Iur interface

Annex A (informative): Change history

| Change history | | | | | |
|----------------|---------|-------------------|-----------|-------------|--|
| TSG RAN# | Version | CR | Tdoc RAN | New Version | Subject/Comment |
| RAN_04 | - | - | - | 3.0.0 | Approved at TSG RAN #4 by correspondence and placed under Change Control |
| RAN_05 | 3.0.0 | - | - | 3.1.0 | Approved at TSG RAN #5 |
| RAN_07 | 3.1.0 | - | - | 3.2.0 | Approved at TSG RAN #7 |
| RAN_08 | 3.2.0 | - | RP-000247 | 3.3.0 | Approved at TSG RAN #8 |
| RAN_09 | 3.3.0 | 003 004 006 | RP-000383 | 3.4.0 | Approved at TSG RAN #9 |
| RAN_10 | 3.4.0 | 007 008 009 | RP-000624 | 3.5.0 | Approved at TSG RAN #10 |
| RAN_11 | 3.5.0 | 010 011 | RP-010121 | 3.6.0 | Approved at TSG RAN #11 |
| RAN 14 | 3.6.0 | 014 | RP-010859 | 3.7.0 | Reference corrections |
| RAN 14 | 3.6.0 | 016 | RP-010859 | 3.7.0 | Correction to Figure 3 |

History

| Document history | | |
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| V3.3.0 | June 2000 | Publication |
| V3.4.0 | September 2000 | Publication |
| V3.5.0 | December 2000 | Publication |
| V3.6.0 | March 2001 | Publication |
| V3.7.0 | December 2001 | Publication |