

ETSI TS 125 422 V3.2.0 (2000-01)

Technical Specification

Universal Mobile Telecommunications System (UMTS); UTRAN Iur Interface Signalling Transport (3G TS 25.422 version 3.2.0 Release 1999)



Reference

DTS/TSGR-0325422U

Keywords

UMTS

ETSI

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Foreword

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ETSI TS | TR 1nn nnn "[Digital cellular telecommunications system (Phase 2+) (GSM);] Universal Mobile Telecommunications System; <title>

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Foreword

The 3GPP have produced this Technical Specification.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

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- x the first digit:
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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification.

1 Scope

The present document specifies the standards for Signalling Transport to be used across Iur Interface. Iur Interface is a logical interface between the two RNC of the UMTS Terrestrial Radio Access Network (UTRAN) for the UMTS system. This document describes how the RNSAP signalling messages are transported between the two RNCs.

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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] Q.2100 (7/94) B-ISDN Signalling ATM Adaptation Layer (SAAL) - overview description.
- [2] Q.2110 (7/94) B-ISDN ATM adaptation layer - Service Specific Connection Oriented Protocol (SSCOP).
- [3] Q.2140 (2/95) B-ISDN ATM adaptation layer - Service Specific Co-ordination Function for signalling at the Network Node Interface (SSCF AT NNI).
- [4] Q.2210 (7/96) Message transfer part level 3 functions and messages using the services of ITU-T Recommendation Q.2140.
- [5] I.361 (11/95) B-ISDN ATM layer specification.
- [6] I.363.5 (8/96) B-ISDN ATM Adaptation Layer Type 5.
- [7] Q.711 (7/96) Functional description of the signalling connection control part.
- [8] Q.712 (7/96) Definition and function of Signalling connection control part messages.
- [9] Q.713 (7/96) Signalling connection control part formats and codes.
- [10] Q.714 (7/96) Signalling connection control part procedures.
- [11] Q.715 (7/96) Signalling connection control part user guide.
- [12] Q.716 (3/93) Signalling Connection Control Part (SCCP) performance.
- [13] IETF RFC 791 (9/1981): Internet Protocol.
- [14] IETF RFC 1483 (7/1993): "Multi protocol Encapsulation over ATM Adaptation Layer 5".
- [15] IETF RFC 2225 (4/1998): "Classical IP and ARP over ATM".
- [16] IETF RFC 768 (8/1980): "User Datagram Protocol".
- [17] R. Stewart et al, "Simple Control Transmission Protocol", draft-ietf-sigtran-sctp-v0.txt (Work In Progress), IETF, September 1999.
- [18] G. Sidebottom et al, "SS7 ISUP Tunnelling", draft-ietf-sigtran-itun-00.txt (Work In Progress), IETF, June 1999.
- [19] ITU-T Rec. I.630 (2/99) ATM Protection Switching.

3 Definitions, symbols and abbreviations

3.1 Definitions

3.2 Symbols

3.3 Abbreviations

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

AAL	ATM Adaptation Layer
AAL5	ATM Adaptation Layer 5
ATM	Asynchronous Transfer Model
IP	Internet Protocol
ITUN	SS7 ISUP Tunnelling (Adaptation layer for ISUP and SCCP for SCTP)
MTP3-B	Message Transfer Part
PLMN	Public Land Mobil Network
RNC	Radio Network Controller
RNSAP	Radio Network Subsystem Application Part
SAAL-NNI	Signalling ATM Adaptation Layer – Network Node Interface
SCCP	Signalling Connection Control Part
SCTP	Simple Control Transmission Protocol
SSCF	Service Specific Co-ordination Function
SSCOP	Service Specific Connection Oriented Protocol
UE	User Equipment

4 ATM Layer

4.1 General

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

4.2 Protection Switching at ATM Layer

If redundancy of pathways at ATM layer between RNCs is supported, it shall be implemented using ATM Protection Switching according to I.630 [19].

5 RNSAP Signalling Bearer

5.1 Introduction

This chapter specifies the Signaling Bearer protocol stack that supports the RNSAP signaling protocol.

The following requirements on the RNSAP signalling bearer can be stated:

- Provide reliable transfer of control plane signalling messages in both connectionless mode and connection-oriented mode;
- Provide separate independent connections for distinguishing transactions with individual Ues;

- Supervise the 'UE connections' and provide connection status information to the Upper Layers for individual Ues;
- Provide networking and routing functions;
- Provide redundancy in the signalling network;
- Provide load sharing.

5.2 Signalling Bearer

This chapter refers to specifications of the Signalling Bearer for the Radio Network Layer protocols. As shown in figure 3, the standard allows operators to choose one out of two protocol to suites for transport of SCCP messages.

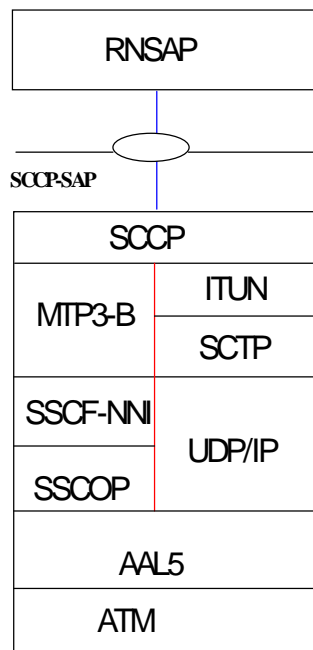


Figure 3: Signalling bearer for RNSAP

1. **SCCP** [7] provides connectionless service, class 0, connection oriented service, class 2, separation of the connections mobile by mobile basis on the connection oriented link and establishment of a connection oriented link mobile by mobile basis.
2. **MTP3-B** [4] provides message routing, discrimination and distribution (for point-to-point link only), signalling link management load sharing and changeover/back between link within one link-set. The need for multiple link-sets is precluded.
3. **SAAL-NNI** [1] consists of the following sub-layers: - **SSCF** [3], - **SSCOP** [2] and – **AAL5** [6]. The SSCF maps the requirements of the layer above to the requirements of SSCOP. Also SAAL connection management, link status and remote processor status mechanisms are provided. SSCOP provides mechanisms for the establishment and release of connections and the reliable exchange of signalling information between signalling entities. Adapts the upper layer protocol to the requirements of the Lower ATM cells.
4. **ATM** [5]
5. **SCTP** refers to the Simple Control Transmission Protocol [17] developed by the Sigtran working group of the IETF for the purposes of transporting various signalling protocols over IP networks. ITUN refers to the SCCP adaptation layer "SS7 ISUP Tunnelling" [18] also developed by the Sigtran working group of the IETF.
6. **UDP** [16] /**IP** [13] over ATM are defined in [14] and [15].

5.3 Services Provided by the Signalling Bearer

When considering the requirements that the upper layers, i.e. RNSAP, have on the Signalling Bearer, there are a number of services it has to provide and a number of functions to perform. These numbers of services that the signalling bearer shall provide, to the upper layers, are stated in the reference [7] to [12].

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 and placed under Change Control
RAN_05	3.0.0	-	-	3.1.0	Approved at TSG RAN #5
RAN_06	3.1.0	001	RP-99753	3.2.0	Approved at TSG RAN #6

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History

Document history		
V3.2.0	January 2000	Publication