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Universal Mobile Telecommunications System (UMTS); UTRAN Iur interface signalling transport (3GPP TS 25.422 version 4.2.0 Release 4)



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Foreword

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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. The present 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. 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 (7/94): "B-ISDN Signalling ATM Adaptation Layer (SAAL) - Overview description".
- [2] ITU-T Recommendation Q.2110 (7/94): "B-ISDN ATM adaptation layer - Service Specific Connection Oriented Protocol (SSCOP)".
- [3] ITU-T Recommendation 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] ITU-T Recommendation Q.2210 (7/96): "Message transfer part level 3 functions and messages using the services of ITU-T Recommendation Q.2140".
- [5] ITU-T Recommendation I.361 (11/95): "B-ISDN ATM layer specification".
- [6] ITU-T Recommendation I.363.5 (8/96): "B-ISDN ATM Adaptation Layer specification: Type 5 AAL".
- [7] ITU-T Recommendation Q.711 (7/96): "Functional description of the signalling connection control part".
- [8] ITU-T Recommendation Q.712 (7/96): "Definition and function of Signalling connection control part messages".
- [9] ITU-T Recommendation Q.713 (7/96): Signalling connection control part formats and codes.
- [10] ITU-T Recommendation Q.714 (7/96): "Signalling connection control part procedures".
- [11] ITU-T Recommendation Q.715 (7/96): "Signalling connection control part user guide".
- [12] ITU-T Recommendation Q.716 (3/93): "Signalling System No. 7 - Signalling Connection Control Part (SCCP) performance".
- [13] IETF RFC 791 (September 1981): "Internet Protocol".
- [14] IETF RFC 1483 (July 1993): "Multi protocol Encapsulation over ATM Adaptation Layer 5".
- [15] IETF RFC 2225 (April 1998): "Classical IP and ARP over ATM".
- [16] IETF RFC 2960 (October 2000): "Stream Control Transmission Protocol".
- [17] G. Sidebottom et al, "SS7 MTP3 - User Adaptation Layer", draft-ietf-sigtran-m3ua-04.txt (Work In Progress), IETF, September 2000.

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

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 Mode |
| IP | Internet Protocol |
| M3UA | SS7 MTP3 User Adaptation layer |
| MTP3-B | Message Transfer Part level 3 for Q.2140 |
| PLMN | Public Land Mobile 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 | Stream 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 [5]. The structure of the cell header used in the UTRAN Iur interface is the cell header format and encoding at NNI (see figure 3 of [5]).

5 RNSAP Signalling Bearer

5.1 Introduction

This subclause specifies the Signalling Bearer protocol stack that supports the RNSAP signalling 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 subclause refers to specifications of the Signalling Bearer for the Radio Network Layer protocols. As shown in figure 1, the standard allows operators to choose one out of two protocol to suites for transport of SCCP messages.

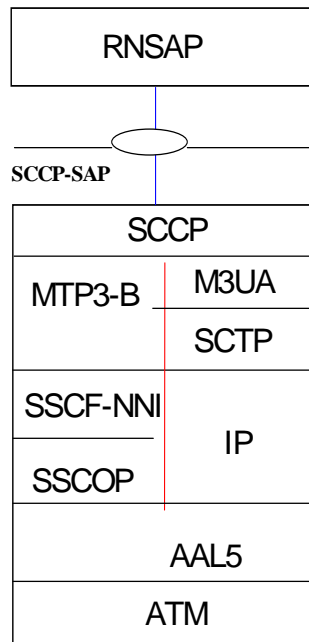


Figure 1: Signalling bearer for RNSAP

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 Stream Control Transmission Protocol [16] developed by the Sigtran working group of the IETF for the purposes of transporting various signalling protocols over IP networks. The checksum method specified in RFC 3309 [18] shall be used instead of the method specified in RFC 2960 [16]. M3UA refers to the SCCP adaptation layer "SS7 MTP3 - User Adaptation Layer" [17] also developed by the Sigtran working group of the IETF.
6. **IP** [13] over ATM is 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 references [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 |
| RAN_07 | 3.2.0 | - | - | 3.3.0 | Approved at TSG RAN #7 |
| RAN_08 | 3.3.0 | - | RP-000240 | 3.4.0 | Approved at TSG RAN #8 |
| RAN_09 | 3.4.0 | - | - | 3.4.1 | Updated rapporteur information |
| RAN_10 | 3.4.1 | 008 | RP-000617 | 3.5.0 | Approved at TSG RAN #10 |

| Change history | | | | | | | |
|----------------|-------|-----------|-----|-----|---|-------|-------|
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| March 01 | 11 | - | - | | Approved at TSG RAN #11 and placed under Change Control | - | 4.0.0 |
| 12/2001 | 14 | RP-010854 | 010 | | Reference corrections | 4.0.0 | 4.1.0 |
| 03/2002 | 15 | - | - | - | Editorial corrections | 4.1.0 | 4.1.1 |
| 09/2002 | 17 | RP-020611 | 013 | 1 | Addition of new reference on SCTP checksum | 4.1.1 | 4.2.0 |
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History

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