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Technical Specification

3rd Generation Partnership Project (3GPP); Technical Specification Group (TSG) RAN; UTRAN Iu Interface Signalling Transport

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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project, Technical Specification Group RAN.

The contents of this TS may be subject to continuing work within the 3GPP and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released with an identifying change of release date and an increase in version number as follows:

Version m.t.e

where:

m indicates [major version number]

x the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

y the third digit is incremented when editorial only changes have been incorporated into the specification.

Introduction

1 Scope

The present document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers.

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.

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
ATM	Asynchronous Transfer Mode
MTP3-B	Message Transfer Part
RANAP	Radio Access Network Application Part
SAAL-NNI	Signalling ATM Adaptation Layer – Network-to-Network Interface
SBC	Signalling Bearer Converter
SCCP	Signalling Connection Control Part

4 RANAP Signalling Bearer

[Editor's Note: This chapter specifies the signalling bearer protocol stack that supports the transport signalling protocol(s). Limitations in usage of options of the protocol should be described]

4.1 Introduction

[Editor´s note: This chapter should e.g. describe Radio Network Layer requirements on Transport Layer protocols.]

Signalling in the control plane shall not depend on the specific choice of transport layers (for ex. ATM &AAL5).

The following requirements on the SB 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 UE’s;
- Supervise the ‘UE connections’ and provide connection status information to the Upper Layers for individual UE’s;
- Provide networking and routing functions;
- Provide redundancy in the signalling network;
- Provide load sharing.

4.2 Signalling Bearer

[Editor's note: TTC/ARIB has agreed to have SS7 as the signalling bearer for RANAP over Iu interface. This has not been agreed in ETSI. This is study item 1(see section 8).]

The protocol stack for Iu reference point control plane for the PSTN/ISDN domain for UMTS release 99 is shown in figure 1. However the protocol stack for further UMTS release is FFS.

The following figure 1, illustrates a protocol model having Signalling System No.7 as the signalling bearer for RANAP over the Iu interface that fulfils the requirements. Other protocol stacks that may fulfil the requirements are FFS.

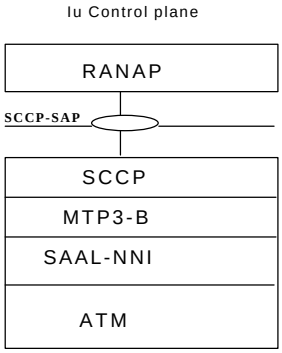

Figure 1 SAP between RANAP and its transport for Iu CS Domain

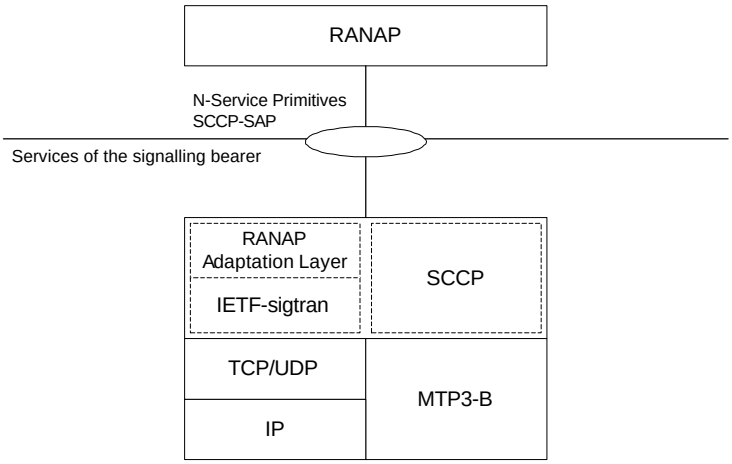

Figure 2 SAP between RANAP and its transport for the Iu IP domain

Figure 1 show, for the CS domain, the point at which the service primitives are invoked.

Figure 2 shows, for the Iu IP domain, the point at which the service primitives are invoked. A single SAP is defined independently of the signalling bearer.

The SAP provides the SCCP primitives.

It is agreed to use the SCCP primitive model between RANAP & its transport on the understanding that only the features of SCCP necessary for RANAP are used.

The figure is not intended to constrain the architecture.

-0 **SCCP** (Q.711 – Q.719)(Signalling Connection Control Part): Provides connectionless service, class 0, connectionless service with guaranteed order, class 1, 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

-1 **MTP3-B** (Q.2210) (Message Transfer Part): 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 FFS.

-2 **SAAL-NNI** (Q.2100)(Signalling ATM Adaptation Layer – Network-to-Network Interface): Consists of the following sub-layers; - **SSCF** (Q.2140) Service Specific Convergence Function, - **SSCOP** (Q.2110) Service Specific Connection Oriented Protocol and – **AAL5** (I.363.5) ATM Adaptation Layer Type 5. 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.

-3 **ATM** (Asynchronous Transfer Mode). ATM is based on the ITU-T recommendation I.361."

4.3 Services Provided by the Signalling Bearer

When considering the requirements that the upper layers, i.e. RANAP, have on the SB, there are a number of services it has to provide and a number of functions to perform.

Table 1 gives an overview of the minimum set of services that the signalling bearer shall provide to the upper layers.

Table 1: **Network service primitives for the Signalling Bearer (SB)**

Primitives	
Generic name	**Specific name**
N-CONNECT	Request Indication Response Confirm
N-DATA	Request Indication
N-DISCONNECT	Request Indication
N-UNITDATA	Request

	Indication
N-STATUS	Indication

5 Example Sequences

6 Bibliography

History

Document history		
V0.0.1	March 1999	First draft
V0.0.2	March 1999	Relevant sections from Merged "Description of Iu Interface" have been introduced.
V0.0.3	April 1999	Section 4.1 is updated according to the content in tdoc R3-99145. Section 4.2 is updated according to the content in conclusion of tdoc S2-122. Editor's note is added to section 4.2. Note describe the raised discussion items to be solved in the next meeting.
V0.0.4	April 1999	Editorial Update. Fig. 1 is updated to show the SAP point. And this figures is renamed as 'SAP between RANAP and its transport for Iu CS Domain'
V0.1.0	April 1999	Mail Approval of version 0.0.4 by TSG RAN WG3.

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