TSG-RAN Working Group 3 meeting #4
Warwick, UK, June 01-04, 1999

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Agenda Item: 12

Source: Mannesmann Mobilfunk GmbH

Title: TS 25.412 v2.0.0 UTRAN Iu Interface Signalling Transport

Document for: Approval

The purpose of the contribution is to proposes the modification of the technical specification in a minor item.

The changed item is 4.3 Signalling Bearer for Packet Switched Domain. A new sentence was added in the first section related to figure 2.

TS 25.412 V2.0.0 1999-04

Technical Specification

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

Reference

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Keywords

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Contents

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Foreword

This Technical Specification has been produced by the 3GPP.

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:

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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 Iu Interface. Iu Interface is a logical interface between the RNC and the UTRAN Core Network. This document describes how the RANAP signalling messages are transported over Iu.

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 coordination 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. Rytina I., "Framework for generic Common Transport Protocol," draft-sigtran-rytina-generic-framework-00.txt,

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 Mode
CS	Circuit Switched
CTP	Common Transport Protocol
IP	Internet Protocol
MTP3-B	Message Transfer Part
PS	Packet Switched
RANAP	Radio Access Network Application Part
RNC	Radio Network Controller
SAAL-NNI	Signalling ATM Adaptation Layer – Network Node Interface
SSCF	Service Specific Co-ordination Function
SCCP	Signalling Connection Control Part
SSCOP	Service Specific Connection Oriented Protocol

4 RANAP Signalling Bearer

4.1 Introduction

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

The following requirements on the 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.

4.2 Signalling Bearer for Circuit Switched Domain

The following figure 1 illustrates the protocol model having Broadband Signalling System No.7 as the signalling bearer for RANAP over the Iu interface that fulfils the requirements. Figure 1 shows, for the CS domain, the point at which the service primitives are invoked. The SAP provides the SCCP primitives.

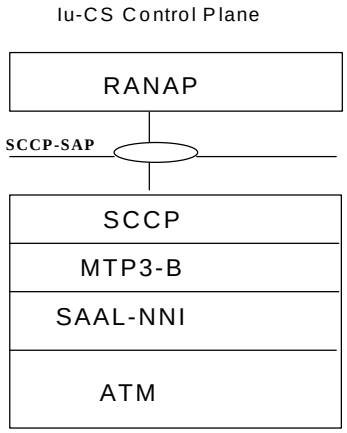

Figure 1 SAP between RANAP and its transport for Iu - CS Domain

-1 **SCCP** [7] 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.

-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]

4.3 Signalling Bearer for Packet Switched Domain

The protocol stacks for the PS Domain is shown in figure 2. *The SS-7 based signalling shall be mandatory and the IP-based signalling shall be optional.* The standard allows operators to chose one out of two standardised protocol to suites for transport of SCCP messages.

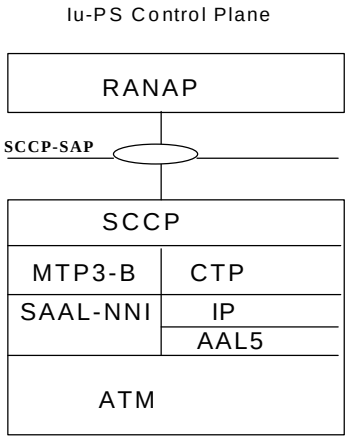

Figure 2 SAP between RANAP and its transport for the Iu -IP domain

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. The figure is not intended to constrain the architecture.

Note: In case CTP Protocol does not become ready, for reference, by September 99, WG3 will re-evaluate the protocol

-1 **SCCP** [7] 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.

-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.

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-4 **ATM** [5]

-5 **CTP** [14] is a generic term used to describe the protocol being developed by the Sigtran working group of the IETF for the purposes of transporting various signaling protocols over IP networks.

-6 **IP** [13] is supported by AAL5 [6] and ATM [5]

4.4 Services Provided by the Signalling Bearer

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

5 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.
V1.0.1	April 1999	Editorial Changes: Statements stating FFS is removed, Example Sequences Removed; Section for CS and PS Domains are added. Iu PS Domain reflects the SA2 Decision taken in April Meeting. This reflects the wg3 response to LS from SA2 regarding the protocol stack for IP domain. This reflects the editing decision by the Draft Editing Group.
V1.0.2	April 1999	Update after the discussion with SWG3 group: Editorial Changes, Abbreviations are added. Need for table Containing the primitives in this spec was questioned and now a reference to it is provided in the section 4.4.
V2.0.0	April 1999	WG3 requested editorial changes. References from 7 to 12 are added. Introduction at the beginning and bibliography at the end is removed.

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