TSG-RAN Meeting #12
Stockholm, Sweden, 12 - 15 June 2001

TSGRP#12(01) 0403

Title: **Agreed CRs to TS 25.401**

Source: **TSG-RAN WG3**

Agenda item: **9**

Tdoc_Num	Specification	CR_Num	Revision_Num	CR_Subject	CR_Category	WG_Status	Cur_Ver_Num	New_Ver_Num	Workitem
R3-011796	25.401	030	1	Proposed draft CR to 25.401 on showing the A-GPS SMLC	F	agreed	4.0.0	5.0.0	LCS-INTF

3GPP TSG-RAN WG 3 Meeting
Busan, Korea, 21-25 May 2001

Tdoc R3-11796

CR-Form-v3

CHANGE REQUEST

⌘ **25.401** **CR** **CR-030** ⌘ rev **1** ⌘ Current version: **4.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Proposed CR to 25.401 on showing the A-GPS SMLC
Source:	⌘	R-WG3
Work item code:	⌘	LCS-INTF
Date:	⌘	2001-05-21
Category:	⌘	**B**
Release:	⌘	Rel. 5

Use one of the following categories:
F *(essential correction)*
A *(corresponds to a correction in an earlier release)*
B *(Addition of feature),*
C *(Functional modification of feature)*
D *(Editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	For A-GPS positioning, sufficient functional separation exists with RNC functions to justify the opening the interface towards a standalone SMLC.
Summary of change:	⌘	A new interface is here proposed. It would be analogous to the Lb interface defined in the GSM LCS specifications with the exceptions that the positioning messages are terminated at the SRNC and mapped to release 99 RRC messages and that the positioning messages also support broadcast of LCS assistance data in support of the RRC broadcast messages. The addition of the interface should be compatible the release 99 Iu, Iur and Iub and radio interfaces. The addition of this interface does not preclude the A-GPS to be supported in the SRNC. The following changes are also added - Change GPS assistance data to GPS related data in definition of SAS. - Modify the paragraph for Figure 4a as suggested by the group - Incorporate other editorial comments from the group
Consequences if not approved:	⌘	Discontinuity between GSM LCS and UMTS UP. This CR is backward compatible.

Clauses affected:	⌘	Version, Contents, 3.1, 3.2, 6
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

3 Definitions and abbreviations

3.1 Definitions

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

[…]

RRC Connection: A point-to-point bi-directional connection between RRC peer entities on the UE and the UTRAN sides, respectively. An UE has either zero or one RRC connection.

Standalone A-GPS SMLC: A logical node that interconnects to the RNC over the Iupc interface via the PCAP protocol. This node provides GPS related data to the RNC and may perform the position calculation function.

User Equipment: A Mobile Equipment with one or several UMTS Subscriber Identity Module(s).A device allowing a user access to network services via the Uu interface. The UE is defined in ref. [8].

[…]

3.2 Abbreviations

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

ALCAP	Access Link Control Application Part
BM-IWF	Broadcast Multicast Interworking Function
BMC	Broadcast/Multicast Control
BSS	Base Station Subsystem
CBC	Cell Broadcast Centre
CBS	Cell Broadcast Service
CN	Core Network
CPCH	Common Packet Channel
CRNC	Controlling Radio Network Controller
DCH	Dedicated Channel
DL	Downlink
DRNS	Drift RNS
FACH	Forward Access Channel
FFS	For Further Study
GTP	GPRS Tunnelling Protocol
MAC	Medium Access Control
NAS	Non Access Stratum
NBAP	Node B Application Part
PCH	Paging Channel
QoS	Quality of Service
RAB	Radio Access Bearer
RACH	Random Access Channel
RANAP	Radio Access Network Application Part
RNC	Radio Network Controller
RNS	Radio Network Subsystem
RNSAP	Radio Network Subsystem Application Part
RNTI	Radio Network Temporary Identity
SAB	Service Area Broadcast
SAS	Standalone A-GPS SMLC
SMLC	Serving Mobile Location Centre
SRNC	Serving Radio Network Controller
SRNS	Serving RNS
TEID	Tunnel Endpoint Identifier
UE	User Equipment
UL	Uplink

UMTS	Universal Mobile Telecommunication System
USIM	UMTS Subscriber Identity Module
UTRAN	Universal Terrestrial Radio Access Network

[…]

6 UTRAN Architecture

The UTRAN consists of a set of Radio Network Subsystems connected to the Core Network through the Iu.

A RNS consists of a Radio Network Controller ~~and,~~ one or more Node Bs and optionally one SAS. A Node B is connected to the RNC through the Iub interface.

A Node B can support FDD mode, TDD mode or dual-mode operation.

There are two chip-rate options in the TDD mode: 3.84Mcps TDD and 1.28Mcps TDD. Each TDD cell supports either of these options.

A Node B which supports TDD cells can support one chip-rate option only, or both options.

An RNC which supports TDD cells can support one chip-rate option only, or both options.

The RNC is responsible for the Handover decisions that require signalling to the UE.

A RNC may include a combining/splitting function to support combination/splitting of information streams (see subclause 7.2.4.3).

Inside the UTRAN, the RNCs of the Radio Network Subsystems can be interconnected together through the Iur. Iu(s) and Iur are logical interfaces. Iur can be conveyed over direct physical connection between RNCs or virtual networks using any suitable transport network.

The UTRAN architecture is shown in figure 4.

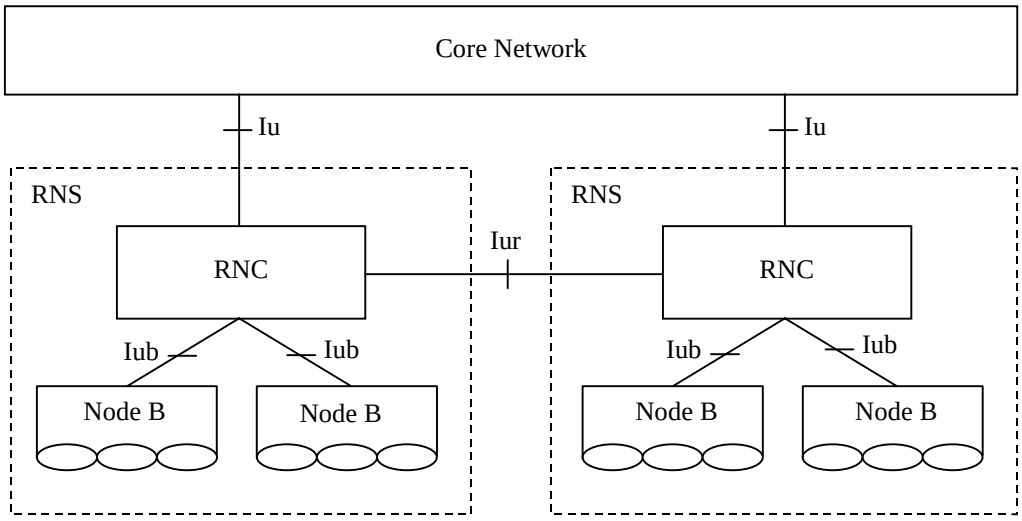

Figure 4: UTRAN Architecture

Regarding the A-GPS positioning method, the RNC may have full internal support for this function and/or may be connected to one SAS via the Iupc interface. The following picture illustrates the resulting UTRAN architecture when the Iupc interface is adopted.

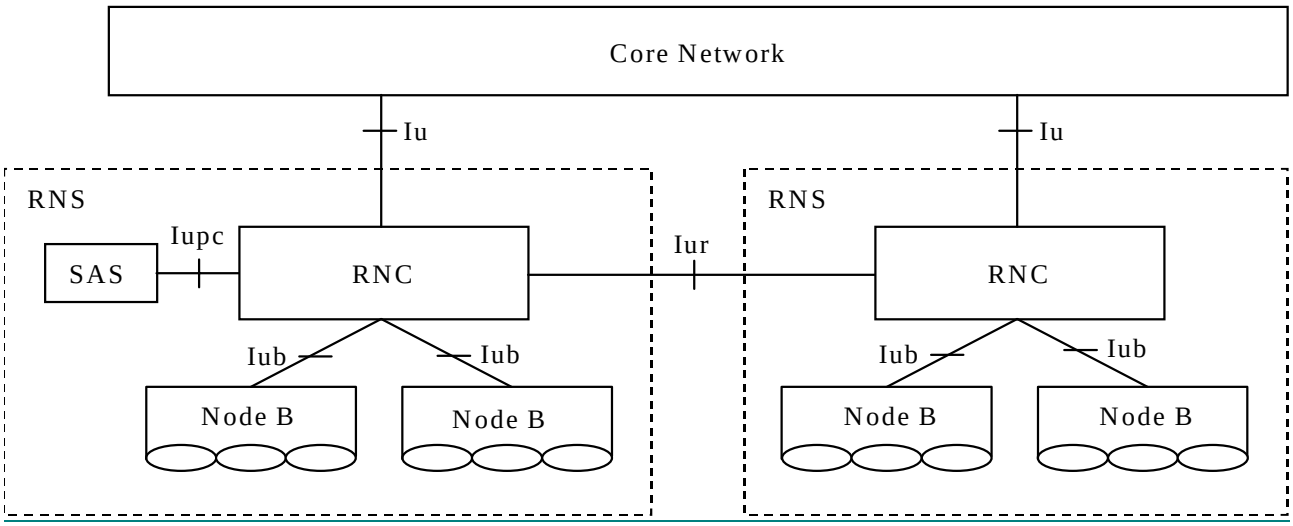

Figure 4a: UTRAN Architecture with the Iupc option

Each RNS is responsible for the resources of its set of cells.

For each connection between User Equipment and the UTRAN, One RNS is the Serving RNS. When required, Drift RNSs support the Serving RNS by providing radio resources as shown in figure 5. The role of an RNS (Serving or Drift) is on a per connection basis between a UE and the UTRAN.

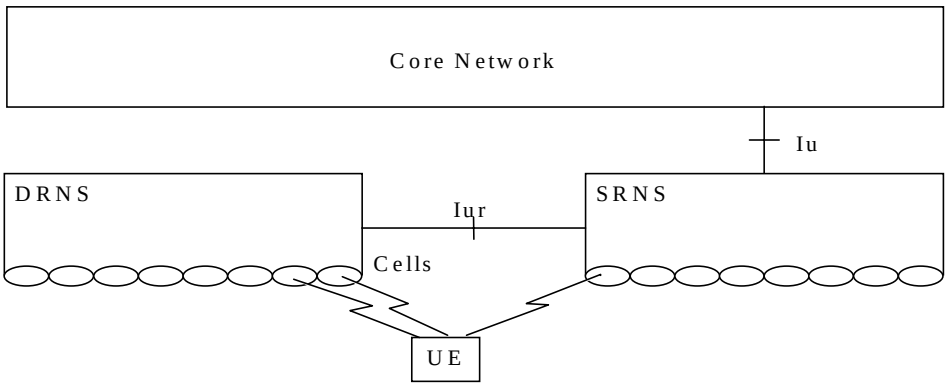

Figure 5: Serving and Drift RNS

The UTRAN is layered into a Radio Network Layer and a Transport Network Layer.

The UTRAN architecture, i.e. the UTRAN logical nodes and interfaces between them, are defined as part of the Radio Network Layer.

For each UTRAN interface (Iu, Iur, Iub, Iupc) the related transport network layer protocol and functionality is specified. The transport network layer provides services for user plane transport, signalling transport and transport of implementation specific O&M.

An implementation of equipment compliant with the specifications of a certain interface shall support the Radio Network Layer protocols specified for that interface. It shall also as a minimum, for interoperability, support the transport network layer protocols according to the transport network layer specifications for that interface.

The network architecture of the transport network layer is not specified by 3GPP and is left as an operator issue.

The equipment compliant to 3GPP standards shall at least be able to act as endpoints in the transport network layer, and may also act as a switch/router within the transport network layer.

For implementation specific O&M signalling to the Node B, only the transport network layer protocols are in the scope of UTRAN specifications.

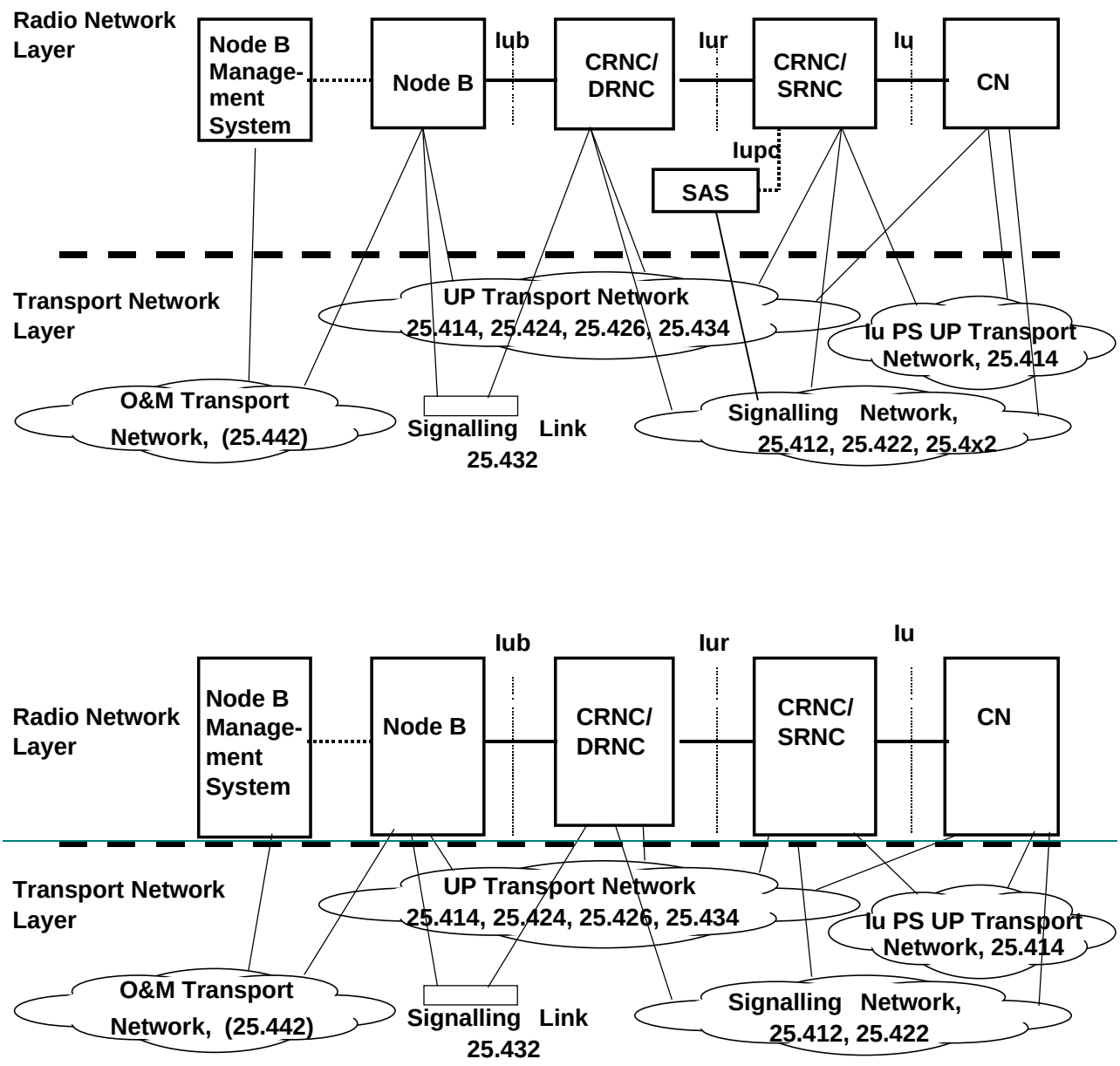

Figure 6: Protocol layering

Figure 6 illustrates which parts of the ~~R99~~ transport network layer that may be (but are not mandated to be) configured by the operator as transport networks, i.e. the radio network layer provides a destination address, namely:

- Transport network for implementation specific O&M traffic
- Signalling network for Iu~~, and~~ Iur and Iupc
- Transport network for Iub, Iur and Iu CS user plane connections
- Transport network for Iu PS user plane connections

The signalling link for Iub signalling as seen by the radio network layer cannot be configured as a network (no address provided).

A transport network for UTRAN may be configured by the operator to be used also for other traffic than UTRAN traffic.

[…]