3GPP TSG RAN Meeting #19 ***RP-030179***
Birmingham, UK, 11th – 14th March 2003

Agenda Item: 9.6

Source: Siemens

Title: IP/ATM Interoperability

Document for: Discussion

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1 Introduction

During evaluation of the Rel-5 WI "IP Transport in UTRAN" (WI Code: ETRAN-IPtrans), one major requirement was interconnectivity between IP- and ATM-Transport Networks (TNLs) in UTRAN. After intensive discussions on existing and planned network topologies, RAN3 agreed that there shall be three alternatives for interworking between IP&ATM-TNLs:

Note: This agreement is reflected in TR 25.933, agreement section as follows: "The IP transport option shall ensure the co-existence of an ATM only UTRAN Node, an IP only UTRAN Node, or an UTRAN Node with both ATM and IP transport options in the UTRAN."

1) **Dual-stack capability:**
   The IP-UTRAN Node provides both TNL interfaces, ATM and IP
2) **Interworking Function as logical part of the UTRAN Node:**
   The IP-UTRAN Node has an internal Interworking Function, providing ATM interface towards other UTRAN Nodes
3) **TNL Interworking Unit (TNL-IWU):**
   An external TNL-Unit, present between the IP-UTRAN Node and the ATM UTRAN Node.

For the "case 3", work has been started in ITU-T SG11 to provide such TNL-IWU. This contribution aims to clarify why Siemens supports this type of interworking and why the expected outcome of ITU-T work will completely cover the requirements of interworking option 3.

2 Requirement for an External TNL-IWU

This section represents a summary of discussions that were held with respect to the third inter-working option (i.e. a remote TNL-IWU). It needs to be reminded that the TNL-scenarios outlined below led to a consensual agreement for the third inter-working possibility.

Today first UTRAN networks are being deployed, based on ATM TNL as defined since Release 99. However in certain areas, depending on the local availability of transport networks, it can be expected that IP is the predominant TNL. In such real-world network topologies, it can not be expected that TNL-areas match with RNC-areas. As a consequence, a remote interworking is required.

Moreover, UTRANs will be subject to continuous expansion and improvement during oncoming years. It can be expected that equipment is removed from one site and re-used at another place. The standardized way for interconnecting ATM/IP with "interworking option 3" is giving more flexibility to network operators, as ATM and IP equipment can be arbitrarily interchanged.

In all these mixed ATM/IP-scenarios, it is important that the TNL can support the QoS required by UTRAN Nodes. A reliable way to setup QoS-aware connections across ATM and IP is necessary. Whilst in ATM ALCAP-Protocols take care for such connection control, UTRAN revealed the need for a corresponding "IP-ALCAP", controlling connections in mixed ATM/IP networks.

3 Ongoing Work in ITU-T

Since Release 99, UTRANs rely on ATM-TNL as provided by ITU-T. When the need for interconnecting IP and ATM UTRANs became obvious, companies supported a corresponding effort in ITU-T to cover this scenario. ITU-T has already informed TSG RAN that interworking between ATM and IP is now subject of Q15 in SG11 (LS in RP-020833).

Today, there are four relevant documents in ITU-T's standardization process:

Type	**SG11 Provisional Number**	**SG11 Working Title**	**SG11 document number** (referring to last SG11 meeting 11/2002)
Requirements	TRQ.IPC.CS1	SIGNALLING REQUIREMENTS FOR IP CONNECTION CONTROL IN RADIO ACCESS NETWORKS CAPABILITY SET 1	TD 71 (GEN)
Protocol	Q.IPC.CS1	IP Connection Control Signalling Protocol (Capability Set 1)	TD 25R1 (WP 4/11)
Requirements	TRQ.AAL2IP.iw	Signalling Requirements for AAL Type 2 to IP Interworking	TD 79 (GEN)
Interworking	Q.AAL2IPiw.CS1	Interworking between AAL type 2 Signalling Protocol Capability Set 2 and IPALCAP Signalling Protocol Capability Set 1	TD 18R1 (WP 4/11)

In our view all these documents have reached a completion level of at least 80% . Additional work will be done at the rapporteur's meeting, scheduled for April 7th to 11th. The technical work should be completed after this meeting. The final approval of these documents is planned at the SG11 plenary meeting, 1st – 11th September 2003.

Already today, these ITU-T SG11 documents specify in a comprehensive manner:

- ?? Interworking Scenarios (framework)
- ?? Resulting Requirements for Connection Setup
- ?? Protocol to Control IP Connections in Interworking Scenarios (Q.IPC.CS1, a.k.a. "IP-ALCAP")
- ?? Interworking Functionality

From the actual content, it is obvious that the resulting solution will perfectly address the "Interworking option 3" as defined in RAN WG3.

6 Proposed Proceeding

It is expected that ITU-T will deliver a fully standardized solution for IP/ATM-Interworking during this year. This solution is expected to completely fulfill the requirement for "Interworking Case 3".

It is proposed that TSG RAN supports this approach of interworking and endorses the ITU-T ATM/IP-Interworking solution for UTRAN Rel-5 IP Transport Networks.