TSG-RAN Meeting #12 ***RP-010293***
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(R3-011841, copy TSG-RAN WG2) Response to LS (BRAN22d115) on HIPERACCESS

Source: **TSG RAN WG3**

Title: **Response to LS on HIPERACCESS**

To: **ETSI Project BRAN**

Copy: **TSG RAN**

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Introduction

3GPP TSG RAN WG3 thanks the Chairman of ETSI Project Broadband Radio Access Network (EP BRAN), Dr. Jamshid Khun-Jush, Ericsson Eurolab Deutschland, for the letter of April 6, 2001, including an LS from EP BRAN to TSG RAN WG3 with the topic “Response to LS (RP-010279)” which was presented to RAN WG3 meeting #21 in Busan, Korea, May 21-25, 2001, as document R3-011429.

This incoming LS referred to the previous outgoing LS from RAN#11 to EP BRAN (RP-010279) which was the answer to the original incoming LS from EP BRAN (RP-010198) to TSG RAN meeting #11, which addressed the potential of using a Hiperaccess PMP radio link system for connecting UTRAN nodes, and in particular as a transport system for the Iub interface between RNC and Node B.

RAN WG3 treated this incoming LS and the included items on Monday, May 21, and asked Mr. Achim v. Brandt, Siemens, to summarise the conclusion of the discussion in an outgoing LS to EP BRAN. The following statements could be made.

Statements relating to the items in the LS

1) Suitability of a PMP microwave system as UMTS backhaul.

RAN WG3 is confident that a PMP radio link system can in principle serve as a physical transport system for the Iub interface. However, RAN WG3 does not have the resources for a detailled feasibility study which would be required for verification whether the Hiperaccess PMP system can meet the requirements for a transport layer for the Iub interface in all aspects.

2) Priority sorting among the several physical layer interfaces

The suitability of physical layer technologies for implementing the Iub interface may depend on:
- QoS figures provided (signal transmission delay, bandwidth, bandwidth on demand etc.)
- Reliability, availability of the links (is there any risk of blocking or congestion?)
- Deployment costs etc.

A radio interface may have advantages in one aspect (e.g. deployment speed, cost) while wire-based physical layers may have advantages in other aspects (e.g. bandwidth). Since the criteria are depending on the application scenario, RAN WG3 is not able to provide a ranking between the several physical layer technologies.

3) QoS requirements for the connections to be provided by the PMP radio system.

From the UTRAN specifications point of view, the Transport Network Layer of the Iub interface must be able to provide socalled “Transport Bearers” with different features, including:

- transport bearers for the “Frame Protocol” connections carrying “Radio Bearers” (u-plane data). These frame protocols typically impose time-critical requirements on the Transport Bearers, not only in case of real-time end user services (such as speech and video streaming) but also in case of Non Real-Time services, because also for these services, the UTRAN performance depends on tight interactions between RNC and Node B. The traffic within these frame protocol connections can be continuous or bursty, depending on the service.
- Transport bearers for signalling between RNC and Node B. This is less time-critical but the traffic load can vary depending on the situation.

In addition, the Iub interface can share its physical layer with additional applications which may be required by the UTRAN operator, including:
- means to provide clock and/or phase synchronisation from the RNC to the Node B via the physical link carrying the Iub interface. This may impose strict requirements on the Layer 1 signal transmission delay and jitter of the link, be it a wired link or a radio relay or a PMP radio system.
- Transport of implementation specific O&M commands via the Iub interface link.

So there is a variety of service and QoS demands to be fulfilled by the Transport Network Layer of the Iub interface. Since the Transport Network Layer is based on the Layer 1 (e.g. a PMP system) and the “Layer 2” mechanisms on top of Layer 1 (e.g. ATM based or IP based mechanisms), the requirements to Layer 1 depend on the detailled function split between these layers. Therefore the requirements to the Layer 1 cannot be easily specified.

However, in general the current Transport Layer signalling specified for the Iub interface expects a high degree of physical layer availability.

As to the allowed signal transmission delay of the Layer 1 links of the Iub interface, it may be stated that the allowed delay figures are in the range of a fraction of a millisecond, up to several milliseconds, depending on the class of transport bearer in question.

An additional source of material on the transmission delay in the UTRAN is provided by the 3GPP Technical Report TR 25.853 “Delay budget in the Access Stratum, version 3.1.0”, compiled by RAN WG3 as a guideline for UTRAN interface performance requirements. The doscument is available in the 3GPP server (ftp://ftp.3gpp.org/).

We also want to make EP BRAN aware of the current Work Item in TSG RAN of specifying an IP based Transport Network Layer solution for the UTRAN interfaces (Iu, Iub, Iur). This is in addition to, or as an alternative to ATM based transport. This work is still ongoing - the current status is documented in the Technical Report on “IP Transport in UTRAN”, in 3GPP TR 25.933. It may be possible that the requirements to the physical layer, or the “services expected from the physical layer” on the Iub interface, depend on the protocol stack used in the Transport Network Layer, so the physical layer requirements may change due to the ongoing “IP Transport option” work.

4) Capacity partitioning requirements

It is currently hard to predict, which mix of service requirements will have to be carried over the Iub interface in real-world UTRAN networks. Therefore, a document specifying the rules for Physical Layer capacity partitioning in support of UTRAN services can not be provided by 3GPP at this time.

Summary

With this LS, RAN WG3 provided additional information on the Iub interface physical layer requirements to EP BRAN. However, RAN WG3 would like to notify EP BRAN that the question of feasibility of a PMP system for the Iub interface is considered to be out of the scope of the RAN WG3 standardisation group. Therefore, RAN WG3 would like to encourage EP BRAN in its effort to continue with the study to bring the requirements of UTRAN and the capabilities of HiperAccess together.