Agenda Item: 20

Source: Mannesmann Mobilfunk

Title: Implementation Specific O&M Transport

Document for: Approval

Rationale

The new technical specification 25.442 UTRAN Implementation Specific O&M transport intends to define a standardised transport mechanism and to clarify the possibilities of the routing of O&M signalling.

The first step to define a transport mechanism is to identify requirements to an appropriate transport protocol.

The following requirements apply to a transport protocol for O&M signalling:

- Common O&M infrastructure for all network elements

- Independence from various data link protocols

- Support of various higher layer protocols and applications

- Secure transmission

- No Impact of O&M transport on traffic transport and signalling

One common transport mechanism that is proved to be independent from different data link protocols is IP. Furthermore IP supports a variety of applications and has been considered by O&M applications and protocols. In order to provide a flexible, independent and future proof O&M transport IP can be used as transport mechanism.

Proposal

The remaining part of this contribution presents the Mannesmann Mobilfunk proposal for section 4 of 25.442:

4 Implementation Specific O&M Transport

4.1 Introduction

As described in [2] the O&M of NodeB is separated in two parts: Logical O&M and Implementation Specific O&M. The former is responsible for the management of logical resources of NodeB while the latter depends on the implementation of NodeB. The purpose of this split is to ensure that the scope of O&M functions over the Iub interface is sufficient to allow a multi-vendor environment to be deployed. In this sense the Implementation Specific O&M part allows the manufacturer to integrate proprietary O&M functions in addition to standardised functions in the logical O&M part. But apart from the Iub O&M functions a standardised transport of the Implementation Specific O&M part is crucial for the realisation of a multi-vendor environment and it is an essential pre-requisite to be supported by the same bearer as the Iub interface. The transport mechanism described in the following should neither limit the vendor's freedom to provide proprietary O&M capabilities nor limit the operator's freedom to design the network in an appropriate manner.
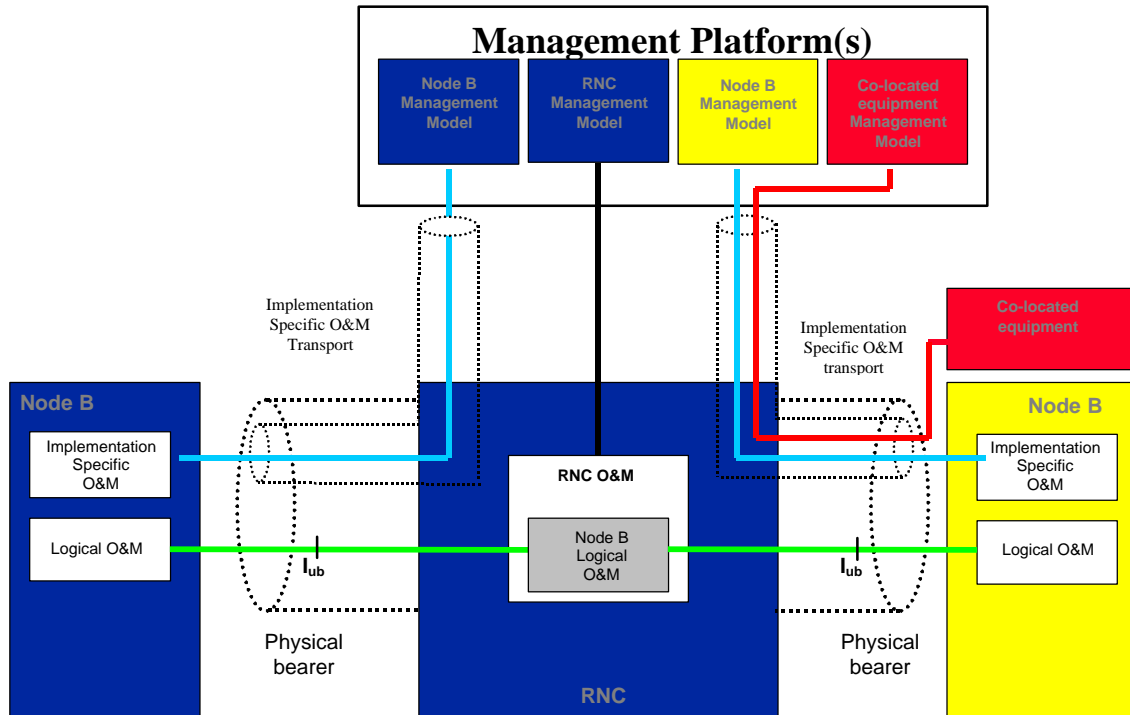
4.2 Requirements

While this specification only addresses the transport of NodeB Implementation Specific O&M signalling, many of the following requirements are derived from generic requirements for O&M of UMTS network elements:

- Common O&M infrastructure for all network elements

- Independence from various data link protocols

- Support of various higher layer protocols and applications

- Secure transmission

- No Impact of O&M transport on traffic transport and signalling

- Re-use of existing transport facilities, i.e. co-existence of Iub and Implementation Specific O&M on the same bearer

4.3 Routing

Since the NodeB is connected to the RNC the routing of the Implementation Specific O&M via the RNC is one solution. In this case it is the responsibility of the RNC to route Implementation Specific O&M signalling traffic. But like any other router the traffic exchanged over this signalling link is completely transparent to the RNC at application level.

The O&M signalling for co-located equipment can be treated as a special kind of Implementation specific O&M. This means that Implementation Specific O&M signalling of NodeB and O&M signalling for co-located equipment should be able to share the same physical transport channels. However both O&M signalling links are completely independent and do not know about each other.

Figure 1: Implementation Specific O&M Transport via RNC

4.4   Transport Bearer

An appropriate transport bearer for Implementation Specific O&M depends on the routing and should consider the requirements listed in section 4.2. IP should be the transport mechanism in order to allow a data link independent support of a variety of O&M applications and protocols for the Implementation Specific O&M of the NodeB. This includes the provision of an IP forwarding function for IP-based O&M signalling for the management of co-located equipment.

In case of routing of Implementation Specific O&M via the RNC IP datagrams containing O&M signalling have to be carried over the same bearer as Iub. Since ATM will be used on Iub, IP over ATM should be the bearer for O&M signalling. In order to minimise the impact of O&M transport on traffic transport dedicated PVCs or SVCs should be used for the transport of the according IP datagrams.

The following figure shows the protocol stack Implementation Specific O&M transport between NodeB and RNC:

IP
AAL5
ATM
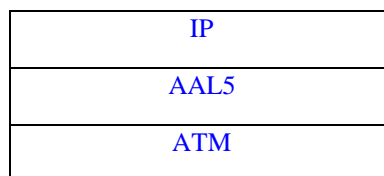
One or several AAL5/ATM permanent or switched VC's should be used as layer 2 resources between RNC and NodeB.