



AES Communications – EMux

Ethernet Multiplex connectivity

Get the ideal 3G backhaul solution combining the flexibility of Ethernet with the quality of a deterministic network.

Description

Connects Node B sites to RNCs in 3G networks, multiplexing several Node Bs to one single RNC port.

AES Com - Emux is based on AES Com's Metro Ethernet network. At node B end, the service inserts a unique VLAN tag that identifies the origin of the frame. At RNC end, frames from several Node B sites are multiplexed and delivered in just one port with the inserted tag, so that the RNC can identify where the frame comes from to give the proper treatment.

Using the concepts of Metro Ethernet Forum, one can say that AES Com - EMUX is all to one bundled at node B end, but multiplexed at RNC end. When a frame enters the network from the Node B, it is tagged with a SP-VLAN (Service Provider VLAN) tag no matter it has a CE-VLAN (Customer Edge VLAN) of its own or not. This is the concept of all-in-one bundling service. At RNC end, several EVC's (Ethernet Virtual Circuits) created by the SP-VLAN's are delivered at the same port, in what can be considered as a multiplex service.

AES Com - EMUX is based on an Ethernet network that operates without oversubscription. This makes possible to provide a "clear channel" Ethernet with 100% guaranteed bandwidth.

Technical Solution

Interconnecting Node B sites with RNCs through the use of SDH presents the inconvenient difficulty in dealing with abrupt growth of bandwidth. Bandwidth increase

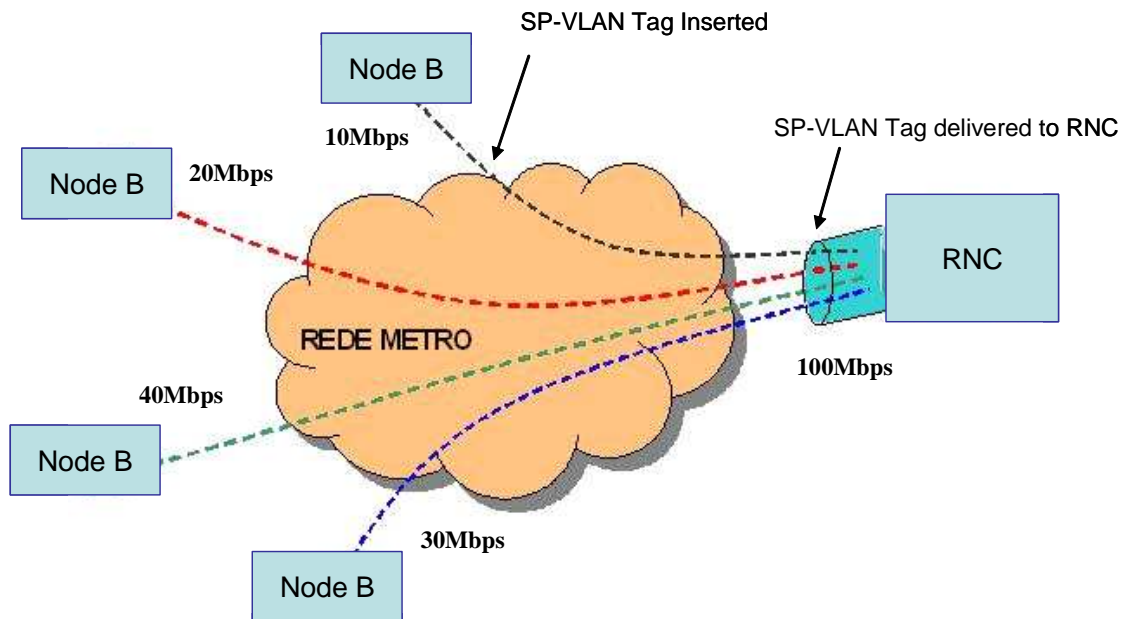
requires installation of additional E1 circuits or an upgrade to E3 or STM-1. Both solutions are costly and slow. Besides cost and time, how to predict the correct number of spare ports at Node B equipment and at RNC to accommodate the bandwidth evolution? The alternative solution was to base the backhaul connections on statistical technologies such as Metro Ethernet or IP/MPLS. Most of times, the traffic profile could not be determined *a priori* and, as a consequence, classes of services for MPLS could not be created in an efficient way. An Ethernet network based on quality of service (QoS) would have the same problem. Furthermore, a classic bundled Ethernet service or even a classic multiplex service wouldn't be able to drive a frame from a Node B to the RNC with the correct origin information.

AES Com - EMUX was developed to overcome all these constraints and to create the perfect solution to the customer:

- Technical Scalability – Bandwidth may grow from the initial 6 Mbps up to 100 Mbps without any additional installation.
- Economical scalability – Price is proportional to the bandwidth delivered.
- Price – SDH quality with Ethernet price.
- Routing – Frames are forwarded to the right RNC port with origin identification without the need of a level 3 integration. through a local Ethernet cable.

Summary

- Layer 2 Ethernet service
- All-to-one bundle at Node B end
- Multiplex at RNC end
- Traffic separated through VLANs
- Bandwidth from 6 to 100 Mbps
- 100% bandwidth guarantee



Technical Information

Bandwidth	6 Mbit/s – 100 Mbit/s
Backbone technology	Layer 2 – 802.1q (QinQ)
Availability	99,95%
Interfaces	Electrical standard Ethernet interfaces: Fast Ethernet – 10/100Base-TX, with RJ45 connector
Monitoring	Proactive 24x7x365
Billing Model	Flat
Supported L2 protocols	802.3 – Ethernet, IEEE 802.1Q – VLANs
Supported L3 protocols	Transparent to any L3 protocol - IP – Internet Protocol, IPX – Internetwork Packet eXchange, AppleTalk – Proprietary Apple layer 3 protocol, and others
Supported topologies	Point-to-point: Standard Ethernet traffic over point-to-point topology IEEE 802.3, Single VLAN transport IEEE 802.1q, Multiple VLANs IEEE 802.1q, L2PT transparency