Application Note

Ethernet Service and Transport Demarcation

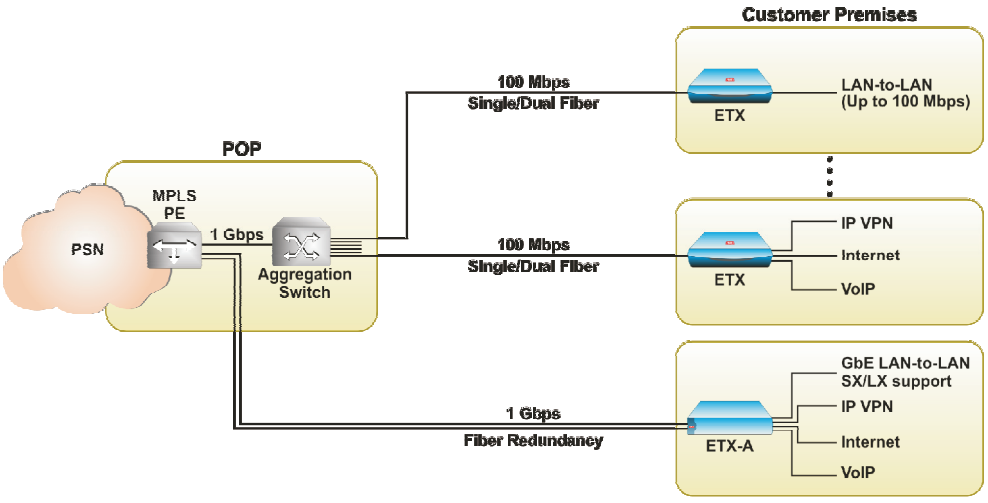
Delivering SLA-based Layer 2 and Layer 3 Business Services with Ethernet OAM and Advanced QoS

Typical Users
- Incumbent carriers
- Alternative carriers and service providers

Typical Applications
- VoIP
- IP VPNs
- LAN-to-LAN (FE/GbE)
- Broadband Internet access

In recent years, Ethernet has become the transport technology of choice for most carriers due to its compatibility with all media, lower cost per Megabit, simplicity, and flexibility. In addition, almost all tier-1 carriers and major service providers are preparing to roll out Layer 2 Carrier Ethernet business services – Ethernet Private Line, Ethernet Virtual Private Line and Ethernet VPNs. The co-existence of Layer 2 and Layer 3 services and the diversity of access technologies are two factors that substantially impact carriers' ability to maintain stringent control over their CapEx and OpEx in an increasingly competitive environment. Added to the mix are customer expectations for low-cost services and verifiable performance, which require service providers to deliver, monitor and enforce SLAs.

This application illustrates how RAD's EtherAccess® ETX-A demarcation devices help wide-area network operators upgrade their fiber to the business offering while converging all voice and data services over a unified transport network and meeting performance requirements. Using a comprehensive Ethernet OAM suite and advanced traffic management capabilities, a single ETX-A NTU delivers IP VPN, VoIP and broadband Internet access over the same physical link as a Layer 2 LAN-to-LAN service, all with Quality of Service (QoS) guarantees.



RAD data communications

Features	Benefits
An all-in-one intelligent demarcation device: • Transport demarcation for Layer 3 services • Service demarcation for Layer 2 services	• Simplify network management and operations • Optimize service delivery over a single, high throughput access link • Minimize the number of CPEs • Reduce costs by improving density and power consumption at operator POPs
Advanced provisioning and traffic management: • Service multiplexing (flow-based) • CIR+EIR bandwidth profiles • EVC.CoS classification • Rate granularity	• Deliver multiple services per port with per-application classification and queuing • Manage network resources efficiently • Introduce new revenue generators (EIR) and charge customers per contracted usage • Tailor services to specific customer needs
Ethernet OAM (Link, Connectivity, Service): • Performance monitoring (Y.1731) • Loopback (LB) testing • Remote fault identification and troubleshooting	• Ensure end-to-end visibility and in-service SLA management • Guarantee Quality of Service in multi-service configuration
Member of the EtherAccess product suite	Ensure consistent user experience over any access by interoperating with other EtherAccess solutions
MEF-9 and MEF-14 certified (EPL & EVPL)	• Maintain service reliability with standardized attributes • Facilitate third-party interoperability
Dedicated management port	Reduce bandwidth overhead and increase throughput

EtherAccess

ETX-201A Carrier Ethernet Demarcation Device

ETX-202A Carrier Ethernet Demarcation Device

CARRIER ETHERNET MEF Certified Compliant

The ETX-A provide **REAL** (**R**eliable, **E**conomical, **A**ccountable, and **L**imitless) Carrier Ethernet fiber access by combining transport demarcation for Layer 3 services with service demarcation for Layer 2 services. Replacing simple single-service Ethernet converters, the ETX-A demarcation devices connect to the service provider's aggregation switch to deliver multiple applications over the same link and free up other switch ports to support additional locations. Alternatively, the ETX-A connect directly to the provider edge equipment, transporting up to 1 Gigabit Ethernet of user throughput with uplink redundancy for SDH/SONET-like performance levels and Five Nines reliability.

Supporting operational visibility and control from the customer premises throughout the entire service path, the ETX-A allow service providers to provision and manage their services remotely and to guarantee priority per user and per service. The ETX-A Carrier Ethernet demarcation devices also permit users to monitor their actual Quality of Service with periodic online reporting tools.

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