



IPmux-155L

Hub-Site Pseudowire Access Gateway

- **High capacity pseudowire gateway, transporting TDM traffic over packet switched networks**
- **Supports IETF, MFA Forum and ITU-T standards for Pseudowire Emulation Edge-to-Edge (PWE3)**
- **Transport a fully populated channelized STM-1 stream or up to 32 E1 channels over PSN**
- **Aggregates 32 Fast Ethernet UTP/SFP connections into four Gigabit Ethernet links**
- **ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)**
- **1U or 2U, 19-inch enclosure**

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The IPmux-155L is a cost-competitive access aggregator, delivering TDM pseudowire and user LAN traffic to packet switched networks. In addition, it performs as a pseudowire termination unit, sending TDM bundles to SDH backbones and Ethernet traffic to packet networks.

Working opposite CPEs, such as the IPmux-2L, IPmux-4L and the IPmux-24, it allows enterprises to replace expensive leased lines with cost-effective packet transport and offers an ideal solution for economical PSTN access and PBX backhaul.

The IPmux-155L includes a wire-speed, non-blocking Ethernet switch. Its high capacity includes the following interfaces:

- 1 + 1 redundant STM-1 ports or 32 E1 ports
- Four Gigabit Ethernet ports
- 32 fiber optic or electrical Fast Ethernet user ports

Advanced pseudowire functionality

Incorporating RAD's new generation of ASIC processors, the IPmux-155L features enhanced pseudowire performance with minimal processing delay, including support for standard SAToP and CESoPSN emulation mode. This allows the extension of TDM services from legacy backbones over greenfield packet networks without affecting service quality or user experience. The IPmux-155L supports separate configuration for up to 63 pseudowire connections. Configurable packet size balances PSN throughput and delay, while a jitter buffer compensates for packet delay variation (jitter) of up to 200 msec in the network.

Timing and synchronization

The IPmux-155L supports various clocking options to ensure synchronization as any standard TDM device. These include loopback timing, external clock source or internal clock, using the device's own oscillator. The IPmux-155L can also recover the original clock with great accuracy, using adaptive clock recovery (ACR). In addition, clock capabilities include holdover and hitless switching.

Ethernet capabilities

The IPmux-155L complies with the IEEE 802.3, 802.1Q and 802.1p requirements. It supports Link Aggregation per 802.3ad, with or without LACP. This enables the operator to use up to four Ethernet links as a single virtual interface, sharing traffic load and providing link resiliency. The device also supports G.8032 ERPS mechanism to protect against link and node failures and ensure sub-50 ms service resiliency.

The IPmux-155L employs Ethernet Link OAM according to IEEE standard 802.3-2005 (formerly 802.3ah), enabling service providers to monitor and troubleshoot the Ethernet network and quickly detect failures.

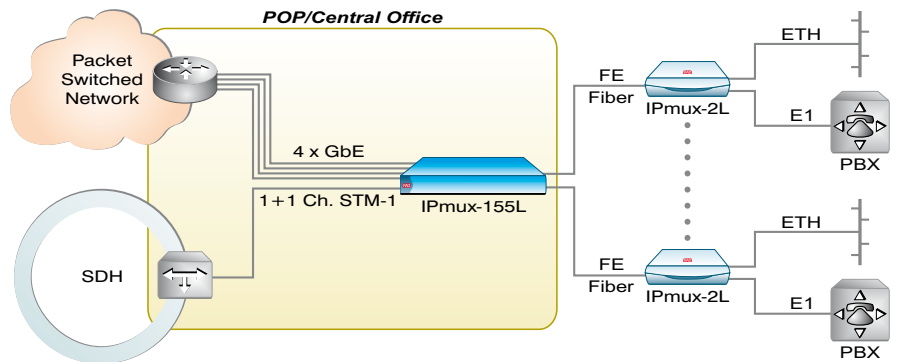
The IPmux-155L includes an internal bridge, operating in either VLAN-aware or VLAN-unaware modes. VLAN stacking (Q-in-Q) can be used for traffic separation between different users or services.

User traffic can be queued and prioritized according to VLAN priority (P-bit) and ToS/Diffserv. Ingress and egress traffic can be rate limited per user and network ports.

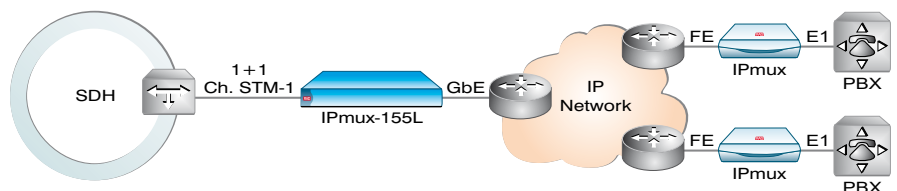
Policing and classification of traffic flows are performed between any ingress and any egress Ethernet port of the device.

EMS management

The IPmux-155L features flexible management capabilities, including local management via an ASCII terminal (RS-232). In addition, remote management can be performed either inband or out-of-band, using the network or user ports, while maintaining separation between management and user traffic via the use of VLANs. Advanced FCAPS (Fault, Configuration, Administration, Performance, Security) and diagnostic tools are provided by RADview-EMS, RAD's carrier-class element management system, via an SNMP-based GUI. The IPmux-155L also supports a variety of access protocols, including Telnet, SNMP, Web server, and TFTP.



IPmux backhaul aggregation and pseudowire termination for E1 and Ethernet traffic over fiber



Remote IPmux aggregation and pseudowire termination over PSN