



BroadNets Panel
**Multi-Service Metro Optical
Transport Technologies**

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Panelists

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The New Metro Optical Transport Landscape

- Customers, large and small, are demanding inexpensive transport and interfaces for packet data services.
- New technologies and industry standards have emerged to enable service providers to deliver cost-effective transport of packet data services.
- However, the number of competing and complementary technologies is creating a busy landscape for carriers to sort through.

New Technology Paradigms for Multi-Service Transport

- **Next Generation SONET/SDH**
 - GFP for multi-service encapsulation.
 - Virtual Concatenation for service granularity.
 - LCAS for service flexibility.
 - Ethernet switching incorporated into SONET/SDH.
- **Resilient Packet Ring (RPR)**
 - Packet add/drop multiplexers.
 - With or without SONET/SDH.

Other New Technologies Can Enhance Metro Optical Transport

- MPLS control plane.
- Layer 2 Transport Protocol, v3 (L2TPv3).
- Packet tagging.
 - Q-in-Q, MAC-in-MAC, etc.
- Pseudo-wire emulation end-to-end (PWE3).
- Circuit emulation over packet networks.

Questions Raised by the New Technologies and Standards

- Which of the technologies and standards are actually useful for service providers?
 - Which are not worth the investment?
- What degree of packet switching is appropriate - or necessary - in metro optical transport?
- Converged networks: more cost-effective, or an operational nightmare?
- Why not simply deploy IP routers over DWDM in the metro?