

Verizon and the OIF - Enabling Broadband Bandwidth On-Demand Services



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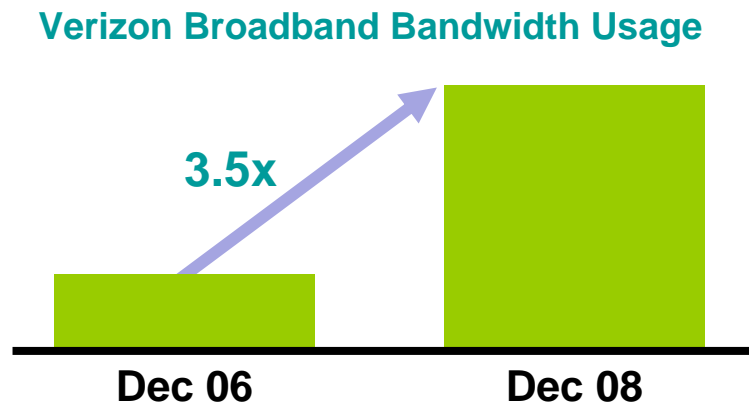


The Trends

- ◆ Users demanding lower cost, converged and personalized services
- ◆ Added complexity in networks, services, vendors and markets
- ◆ Increasing network diversity in:
 - **Industry standards**
 - **Carrier models**
 - **Product architectures**

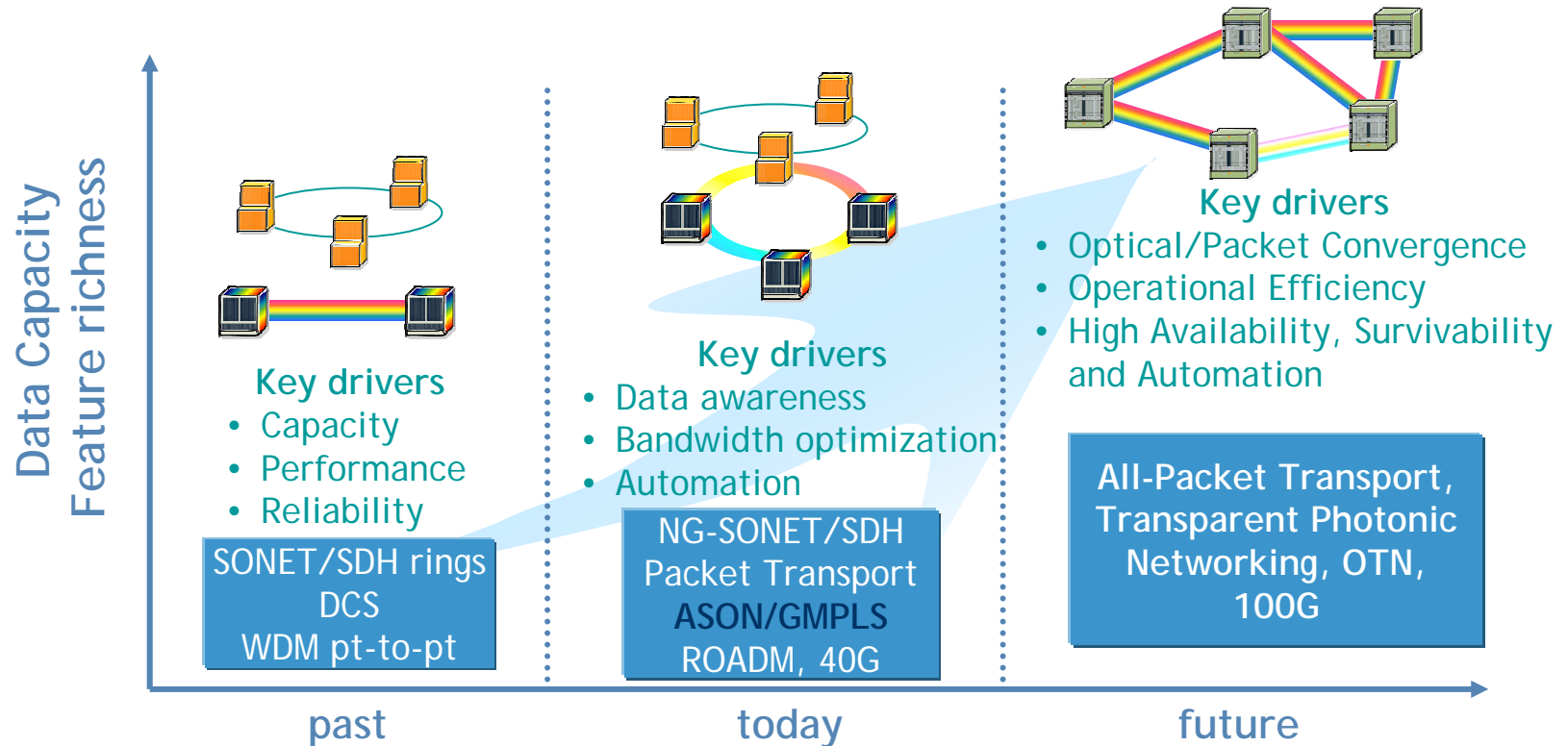
Evolving Internet Applications

- Increase in bandwidth intensive applications
 - Video
 - Virtual Worlds
 - Cloud Computing
- Increase in delay sensitive applications
 - VoIP
 - Video Conferencing
 - Financial Transactions



Transport Evolution

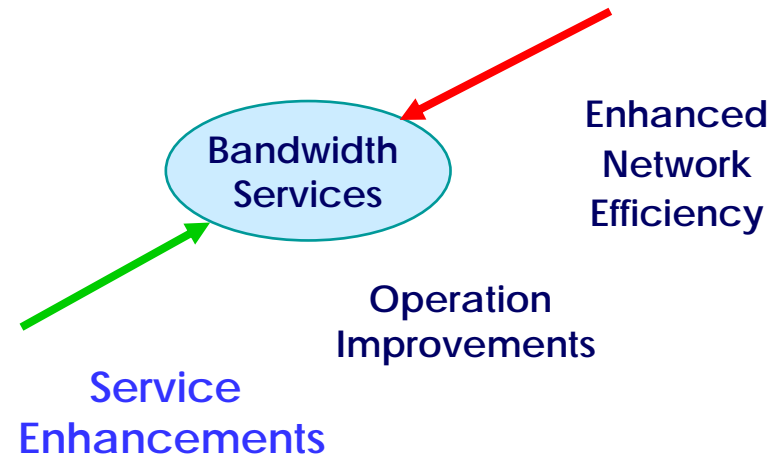
- Optimize performance, minimize TCO, maximize ROI



ASON/GMPLS Control Plane is a key enabler

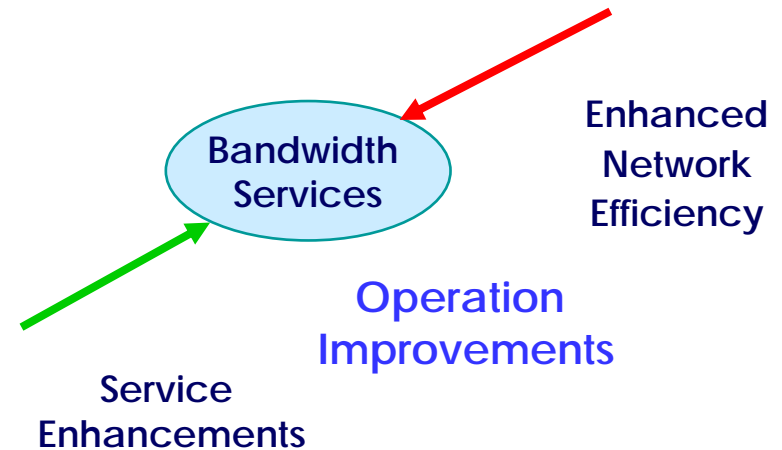
Control Plane Enables - Service Enhancements

- ◆ Improved customer satisfaction
 - **Faster provisioning**
- ◆ New revenue opportunities
 - **New services:**
 - On-demand provisioning
 - Broadband Bandwidth on Demand services
 - Optical VPN
 - **SLA-based performance (QoS)**
 - **Client self-service options**
 - **Provides service differentiators**



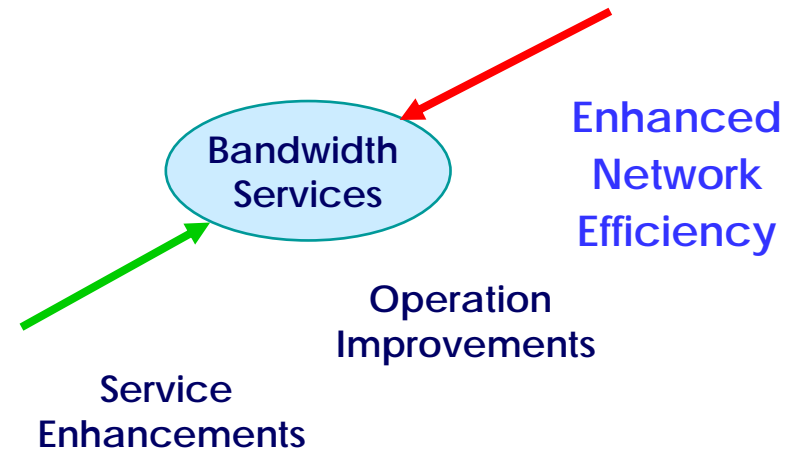
Control Plane Enables - Operation Improvements

- ◆ Faster service provisioning
- ◆ Simplified network design
- ◆ Reduced fallout rates
- ◆ Integrated testing capabilities
- ◆ Higher quality databases (NE to OSSs)
- ◆ Increased automation in operation support



Control Plane Enables - Enhanced Network Efficiency

- ◆ Auto-discovery (auto-recognition)
- ◆ Mesh network topologies
- ◆ Improved network reliability and availability
- ◆ Flexible, robust protection and restoration
- ◆ Aligns with 'convergence' of multi-layer network evolution path



Control Plane Deployment

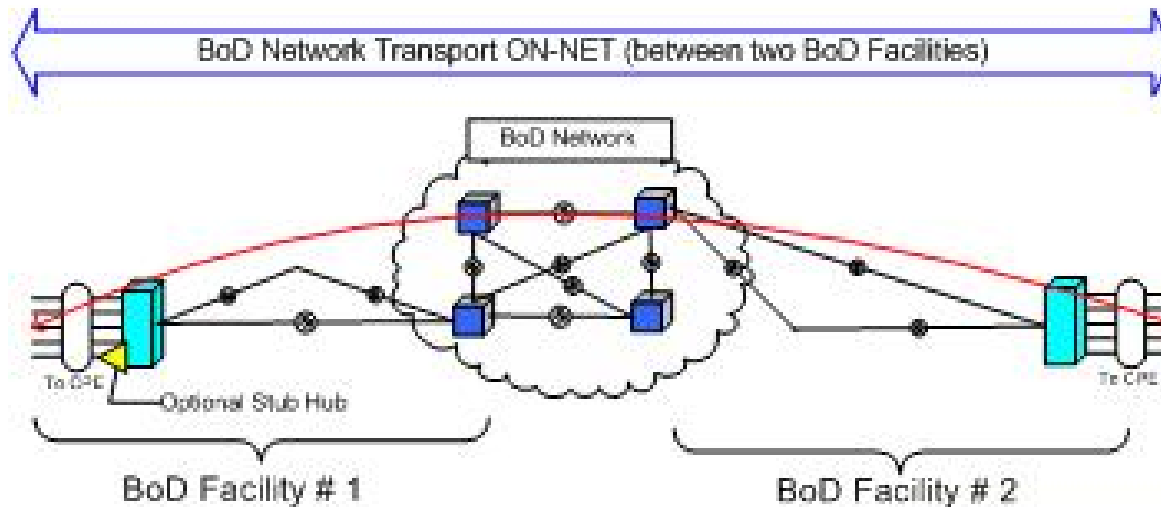


Control Plane is deployed across the globe in major carriers with:

- ◆ Cost savings and faster provisioning through automation
- ◆ New services such as Virtualized On-Demand Bandwidth
 - Example: Verizon Bandwidth on Demand services
- ◆ Mesh Restoration functionality for critical added reliability
 - Example: Trans-Atlantic/Pacific mesh optical networks

Verizon Bandwidth on Demand Service

Bandwidth on Demand Network



- OIF-based control plane technology enables BoD capabilities and JiT service provisioning



Source: Verizon public web site

Verizon Interoperability Activities

- ◆ Active participation in all OIF interoperability activities
 - **2004: Worldwide demonstration**
 - SONET/SDH switched connections over multiple domains enabled by
 - UNI1.0R2 (IA) and E-NNI 1.0
 - **2005: Worldwide demonstration**
 - SONET/SDH and Ethernet switched connections over multiple domains enabled by UNI 2.0 (early draft) and E-NNI
 - **2007: Worldwide demonstration**
 - Ethernet switched connections over multiple domains enabled by UNI 2.0 and E-NNI (incl. seamless bandwidth modification, control plane recovery, auto-discovery)
 - **2009: Worldwide multi-carrier, multi-vendor interop test**
 - OIF Carrier Lab Day at Verizon Laboratory, Waltham, MA, June 19

Interoperability Benefits for Carriers

- ◆ Carriers can provision end-to-end dynamic connections for flexible data services over multiple, control plane enabled transport domains
- ◆ Carriers can deploy at faster pace innovative network technologies
- ◆ Carriers are enabled to select cost effective and innovative network elements, platforms and multi-vendor solutions
- ◆ Carriers are enabled to reduce operations overhead and simplify provisioning of new services

2009 OIF Worldwide Interoperability Demo Verizon Observations

- ◆ Mixed SONET/SDH and OTN I-NNI in a multi-domain network serves as an introduction to NG OTN-based E-NNI control plane enabled networks
- ◆ On-demand data service provisioning on a national and global scale is achievable
- ◆ Global coverage of data services based on SONET/SDH, OTN, and packet transport networks is feasible
- ◆ High reliability based on multiple resilience mechanisms is viable

Summary

Delivering on-demand services over intelligent optical transport networks:

- ◆ ASON-GMPLS functions are becoming mature → carrier deployments are growing
- ◆ Focus on NG transport infrastructure enables cost-effective end-to-end transport of high-speed data
- ◆ Enables dynamic bandwidth services
- ◆ Accelerates time-to-market, service provisioning, and revenue generation
- ◆ Maintains carrier-grade reliability in NG transport networks
- ◆ Supports seamless inter-domain, inter-layer interworking

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For more information on the OIF please visit
www.oiforum.com