

# Delivering Convergence Across Heterogeneous Networks



MPLScon

May 2006, NYC

## Agenda

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- Introduction
- Global Infrastructure
- Global Management
- Global Security
- A Better Convergence
- Conclusion



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2

## Introduction

### Increasing Critical Role of MPLS



« *The demands of business software applications continue to grow and this places ever-greater demands on networks. In addition we are now increasingly seeing voice and multimedia supported on the same networks as business applications...*

*...MPLS-based VPNs are becoming a de facto standard for enterprise networking to support both business-critical applications and convergence.*

*...most enterprises simply could not continue to do business without very high availability of their business applications and communications networks. »*

**Ovum: The evolution of managed network services in an application-centric world, Jan 2006**



3

## Introduction

### Large Networks Are Still Heterogeneous



- ➔ Companies' international networks are made of mixed technologies
  - MPLS, Frame-Relay, IPSec, Leased Lines, DSL...
- ➔ Still a corporation and service providers' views of THE network
  - Customer-centric versus Product-centric
- ➔ Security in critical sites but not in all locations
  - Distributed security enhances centralized security
- ➔ A mandatory global approach to support Business-Critical and Convergence:
  - A global and consistent **INFRASTRUCTURE**
  - A global and pervasive **CONTROL/MANAGEMENT**
  - A global and consistent **SECURITY**



4

# Global Infrastructure

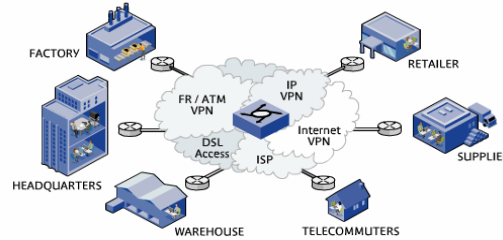
## MPLS – Cornerstone of The Network Solution



### → The Adaptive Network – a Multi-dimension framework

Infrastructure

- WAN transport  
*Technology transparency*
- Access diversity  
*Cost-effectiveness and performance*
- Site management  
*Global management view, advanced router services*
- Business value  
*Design & consulting, customer care, convergence, hosting, security, messaging, business continuity, network optimization for application performance, etc.*



# Global Infrastructure

## Extending The Reach



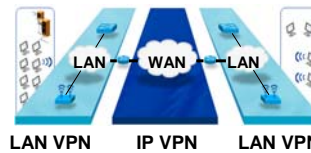
### → One network for all locations

- WAN diversity
- Access diversity



### → One network up to the LAN

- Integrated LAN and WAN design
- Integrated management view



### → One customer edge device

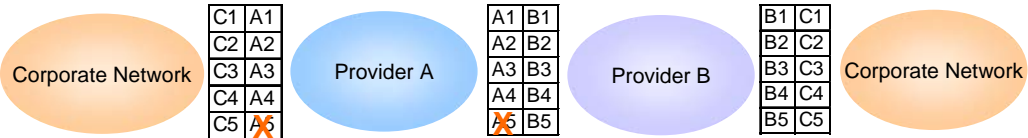
- Security
- VoIP
- LAN



## Global Infrastructure Designing A Multi-Provider Environment



- Fact: Large networks supported by multiple MPLS providers
- Challenge: Gateways between providers must maintain classification
  - DSCP translation maintains the classification as long as it can be reversed
  - Ideally, number of classes should match Service Providers'



- Other translation schemes can impact end-to-end SLAs
  - From more classes to less classes
  - From less classes to more classes



7

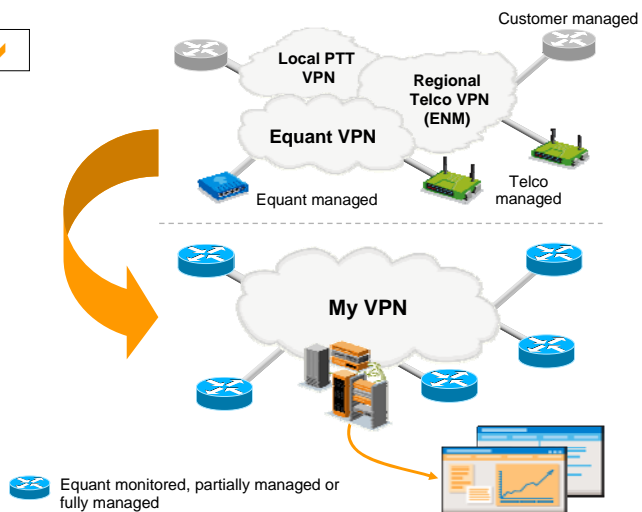
## Global Management Towards a Single View



Control

The enterprise VPN  
*now*

The enterprise VPN  
*with site management*



8

## Global Management

### Optimizing Network Operations

Global control yields resource optimization

- One global help-desk
  - Maximizes support efficiency
  - Reduces down time
- One global supervision
  - Improves events correlation and alarms relevance
  - Reduces down time
- One global end-to-end performance reporting
  - Measures network response time between any network devices
  - Improve performance for critical applications



## Global Security

### Spreading Across The Network

- The security level of an infrastructure equals the lowest level of security of its elements
- Security features now embedded in routers
  - No stand-alone hardware required anymore
- Security feature available on any network site
  - Encryption
  - Firewall
  - Intrusion prevention
  - URL filtering
- Turn them on!



## A Better Convergence Prerequisites



Infrastructure ✓

- Designed to provide consistent Quality of Service
  - Availability, Performance, Prioritization

Security ✓

- Security Everywhere

Control ✓

- A single management view to deliver End-to-End performance

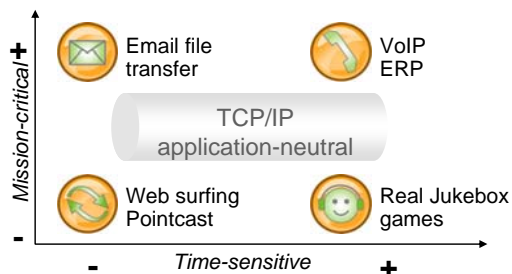


11

## A Better Convergence Required Features



- One IP network to carry different applications
- Application management methodology
  - Dynamic application detection and traffic baseline definition
  - Classification and prioritization
    - DSCP marking, Class-Based Queuing (CBWFQ, LLQ)
  - Application performance degradation detection
  - Application acceleration
  - Compression



12

## Conclusion

- Interoperating?
  - Commoditization of MPLS
  - Economics
  - Climbing up the value chain on service
- Opening MPLS-VPNs to community members
- Standard(s) for QoS across Multi-MPLS providers
- Setting a Measure Framework (Reporting)
  - Need standard across VPNs, providers and vendors
- Integrating Business and Network one step further
  - Transactions in the network?
  - Moving from packets to XML?





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*Either you innovate or you are in commodity hell!*

Sam J. Palmisano



15



**Creating answers together.**