Optical WAN Migration
How Cisco IT Migrated US WAN to Optical Edge Router Platform

A Cisco on Cisco Case Study: Inside Cisco IT
Overview

- **Challenge - WAN Growth**
  
  Traffic growth, new applications drove Cisco® to higher WAN speeds

- **Solution - Cisco 7600 Series Router for high-speed WAN**
  
  Cisco 7600 Series supports OC-12, STM-4, with good features, performance, migration path

- **Results - Cisco 7600 Series now backbone of global WAN**
  
  10 pairs of Cisco 7600 Series routers deployed globally
  
  WAN availability at all-time high in 2003 (99.999%)
Overview (Contd.)

- Next Steps - Cisco 7600 Series supports new WAN technologies
  
  MPLS VPN, QOS, SSM support added easily
Challenge: WAN Growth

- WAN utilization was growing rapidly
  
  Average total utilization across global WAN links doubling every 9 months

  OC-3 between San Jose and RTP nearing 50% utilization in 2002

- New peer-to-peer applications being added
  
  IP telephony
  IP video
  E-working/collaboration tools
Challenge: WAN Growth (Contd.)

- Cisco® 7200 and 7500 series routers don’t handle above OC-3, STM-1
Solution: Cisco 7600 Router for OC-12 WAN

- New WAN design required OC-12 connectivity
- Underlying LAN platform is Cisco® Catalyst® 6500 Series switch and router
- Cisco 7600 Series Router is based on Catalyst 6500 Series technology, with support for higher speeds and higher OC-x and STM-x port connections
- Cisco 7600 Series supported all required interfaces, with a small footprint, a reliable track record, and a good migration plan
- Cisco IT selected the Cisco 7600 Series Router to support the backbone of our global OC-12 / STM-3 / OC-3 / STM-1 WAN for 2003
Results: Cisco 7600 Series Is Backbone of Global WAN

- Ten pairs of Cisco® 7600 Series routers now in global WAN backbone:
  - Seven pairs in the United States
  - Three pairs in Europe
- Performance and availability have been excellent
  - In 2002, Global WAN links had 99.99% availability
  - In 2003, Global WAN links had 99.999% availability in some quarters
Cisco 7600 Series in Global WAN

- Tokyo
- Sydney
- Chicago
- RTP
- London
- Brussels
- Amsterdam
- Singapore
- San Jose
- Denver
- Kansas City
- Denver
- RTP
- Atlanta
- Kuala Lumpur
- Kanata
- MPLS
- Leased Line (DS-3)
- ATM
- DS-3
- OC-3 / STM-1 SONET
- OC-12 / STM-4 SONET
- Cisco 7600 Router
- Cisco 7200 / 7500
Next Steps: Cisco 7600 Series Supports New Technologies

- **WAN migrated to MPLS VPN in EMEA**
  
  Cisco® 7600 Series routers deployed in Amsterdam, London, and Brussels to handle STM-4 and STM-1 circuits into MPLS provider network

- **QOS supported on the WAN**
  
  Voice, video, control, normal, and batch data traffic
  
  Cisco 7600 Series handling QoS (CBWFQ) traffic marked at edge
Next Steps: Cisco 7600 Series Supports New Technologies (Contd.)

- Source Specific Multicast and IGMPv3 support added to Cisco 7600 Series (and other routers) in WAN
  
  Simplified multicast architecture adds to stability

- Each feature supported in Cisco IOS® Software, required no hardware upgrade
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