



# MPLS VPN WAN Migration

How Cisco IT in Europe  
Migrated to MPLS VPN WAN



## A Cisco on Cisco Case Study: Inside Cisco IT

# Overview

- Challenge

  - Replace hub-and-spoke topology connecting 3 core sites, 9 hub sites, 30 partner sites, and 85 satellite sites

- Solution

  - Deploy a Multiprotocol Label Switching (MPLS) VPN, with the core network provided by a service provider, for any-to-any connectivity

- Results

  - Reduced operations overhead costs

  - Simplified acquisitions, moves, and partner connectivity

- Next Steps

  - Transition more network operations to Internet data centers (IDC s)

  - Extend MPLS VPN to more Cisco® locations worldwide

# Challenge: Quickly Improve EMEA WAN

- Acquire more bandwidth capacity
- Improve availability
  - Bringing down a hub site to replace an uninterruptible power supply or upgrade the hardware caused all associated spoke sites to go down
- Gain quality of service (QoS) needed for voice over IP (VoIP)
- Transition quickly
  - London core site would be moving in just four months
  - Moving existing infrastructure would cost US\$2 million
  - Other two core sites—Amsterdam and Brussels—would need to migrate to the new topology at the same time

# Solution: MPLS VPN

- Deploy MPLS VPN

MPLS provides any-to-any connectivity because traffic can reach its destination over the optimal path, which improves the quality of real-time, peer-to-peer applications such as voice and video

- Select primary and backup managed MPLS VPN service provider

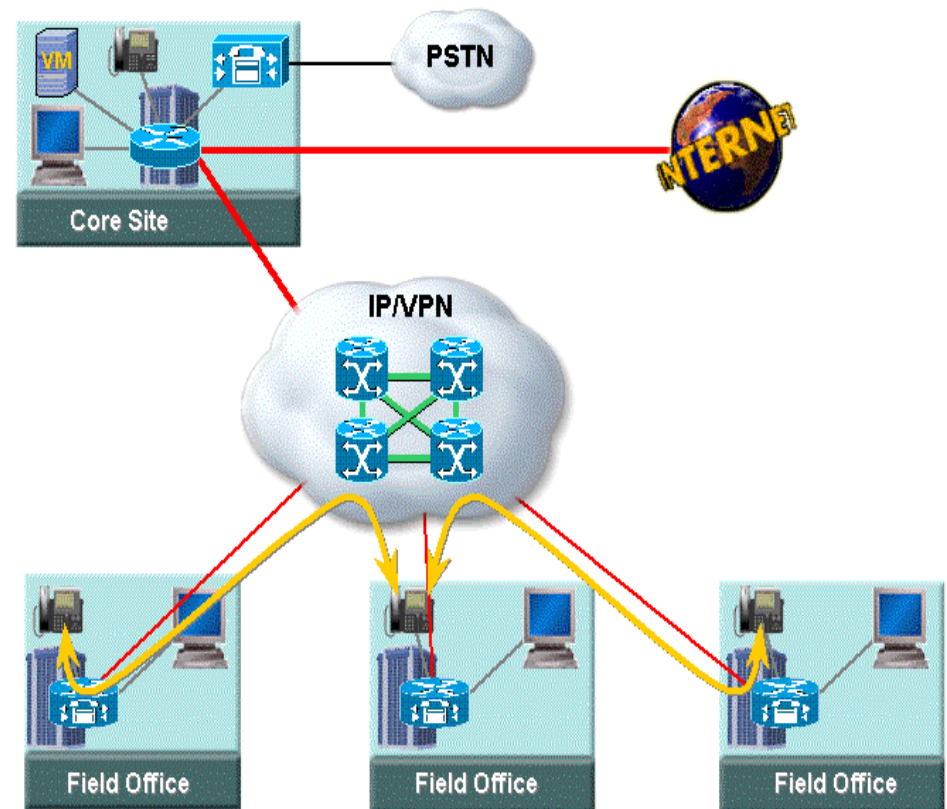
Selection criteria: SLAs, solution transparency, geographical reach, pricing

# Solution: MPLS Topology

- Full-mesh topology
- Core provided by managed MPLS VPN service provider
- Customer premises equipment (CPE) managed internally by Cisco IT:

Satellite site: Two Cisco® 3700 or 7200 series router

Hub sites: Two Cisco 720C Series routers



# Solution: MPLS Deployment

- Ambitious migration schedule

  - London office moving on February 29, 2003

  - Kick-off meeting with primary service provider held in October 2002

  - Four months allowed for service provider to build full MPLS cloud

  - All three offices would need to be changed at one time

- Success—All core offices transitioned in a 36-hour period between February 14, 2003 and February 16, 2003

# Results: Summary (1 of 2)

- Reduced operations overhead costs

Service provider—not Cisco® IT—handles troubleshooting and solving trouble tickets, Layer 3 routing tables, and configuring core WAN router for multicast and other technologies

Five Cisco IT staff members made available for more strategic activities

- Streamlined acquisitions and moves

With no network infrastructure behind each office, Cisco IT only needs to provide connectivity to the cloud, not connections from other offices

# Results: Summary (1 of 2)(Contd.)

- Greater flexibility in connecting partner sites

Partners can connect directly to the cloud; previously they had to connect to one of two hub sites with firewalls, even if geographically distant

# Results: Summary (1 of 2)(Contd.)

- Cost savings

Cisco now pays the same for FOUR TIMES the bandwidth

VOIP allows toll bypass, or else aggregating hop-offs at the same site for volume discounts

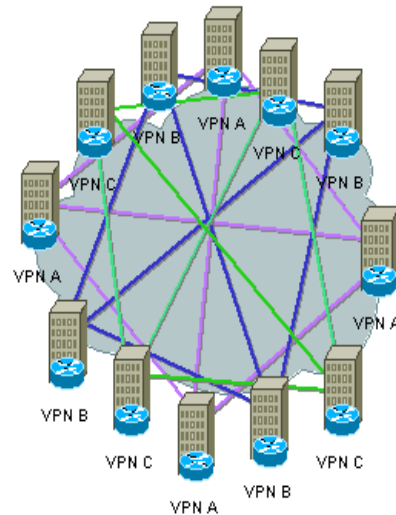
- Increased security and availability

Services reside in the service provider's IDC

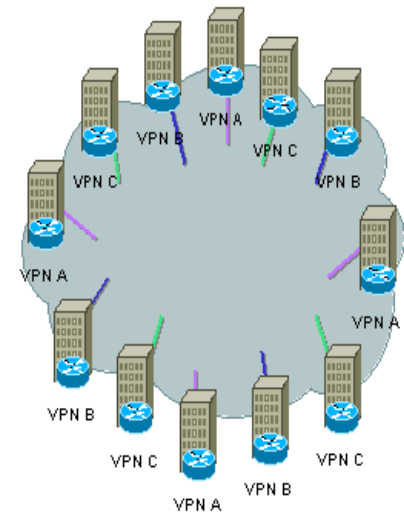
# Results: Summary (2 of 2)

Greater scalability

- With full-mesh topology, 90 sites in EMEA required more than 4000 point-to-point connections
- In the Layer 3 MPLS VPN model, each site needs only one connection to the VPN



Connection-Oriented  
VPN Topology



Connectionless  
VPN Topology

# Next Steps: Summary

- Transition more network operations to IDC s (“Telco hoteling”)
  - No need for onsite personnel
  - Hardened site closet
  - Reduced access line costs
  - More flexibility in moving offices
  - Greater flexibility and scaling, because changes made to a regional hub apply to all connected offices
- Extend MPLS VPN to more Cisco® locations worldwide

To read the entire case study, or for additional Cisco IT case studies on a variety of business solutions, visit Cisco on Cisco: Inside Cisco IT

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