

## Building a Media-Ready Network

By planning for bandwidth and QoS, Cisco IT is ready for more video traffic on the corporate network.

From video downloads on an Internet site to company broadcasts to live meetings, video traffic is increasing on many corporate networks. Cisco has long transported many varieties of video traffic, along with data and voice, across its converged IP network.

In the mid-1990s, Cisco began broadcasting company meetings and executive announcements to global employees. These live IPTV broadcasts originated from studios at Cisco headquarters in San Jose, California, and were streamed across the Cisco IP WAN using multicast to Cisco offices worldwide. Cisco began to use more video for employee training, sending large video files from servers at Cisco headquarters over the WAN to local sites, where the files were stored on content servers for faster access by employees. Cisco transported these early video applications on its IP data network, which had a client/server architecture.

Cisco also transported most of its intersite voice traffic between private branch exchanges (PBXs) across the IP WAN by converting the analog voice signal into IP before transport. However, in the late 1990s, much of the voice traffic that did not travel between major Cisco sites was sent over the public switched telephone network (PSTN). In addition, Cisco used digital switched services over the PSTN to support ISDN videoconferencing and transported security camera video within campus LANs across separate, dedicated fiber paths.

By 2001, the costs of supporting these separate networks were increasing as traffic volumes grew. Also, the potential of IP telephony and the collaborative potential of shared desktops and video conferencing encouraged Cisco IT to consider consolidating these separate networks. Clearly, the traditional client/server WAN architecture was no longer adequate to serve Cisco's communications needs.

In 2001, the original hub-and-spoke design of the Cisco WAN across North America had grown in size but was no longer adequate to support voice, video, or other collaborative, peer-to-peer services because the design was optimized for client/server applications. All Cisco data traffic from PCs and other clients in North and South America needed transport to and from Cisco's San Jose data center, so the network was designed with the shortest possible path from more than 100 locations to the one hub site.

The average site-to-hub-and-back circuit length for any traffic across the WAN was 1800 miles. This was an excellent design for client/server applications but a poor design for the new peer-to-peer applications such as voice and video, where an IP data connection would be needed between any two or more people in any location. With the previous WAN architecture, all peer-to-peer connections had to travel through San Jose, which increased the delay for voice and video traffic to unacceptable levels.

Cisco network managers needed a new architecture to converge voice, video, and data onto a single IP network. The new architecture would also benefit video and unified communications because voice and video traffic have many of the same characteristics and network requirements: low-latency paths,

sufficient bandwidth, multicast support for large streaming broadcasts, and quality of service (QoS) protection for all voice and video traffic to avoid delayed or dropped packets.

Find out how Cisco IT built a media-ready network, the business benefits realized, and lessons learned from its experience supporting networked video services in the newly published case study:

[http://www.cisco.com/web/about/ciscoatwork/unified\\_comm/Media\\_Ready\\_Network.html](http://www.cisco.com/web/about/ciscoatwork/unified_comm/Media_Ready_Network.html)



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