How Cisco Uses Content Network WAN to Produce Live Event for Multiple Locations

Centrally managed, multilocation broadcast over WAN demonstrates business agility.

Cisco IT Case Study / Video / Video Streaming: When Cisco Systems had just two days to produce a video event for the global sales force, featuring presenters in various locations, the IT group took advantage of the Cisco WAN and streaming MPEG-2 video over IP. This approach avoided the delays and productivity losses that would have resulted if executives had traveled to studio locations, and it also eliminated satellite costs. This case study describes how Cisco produced a centrally managed, live streaming event that included multiple presenters in different geographic locations. Cisco customers can draw on Cisco IT's real-world experience in this area to help support similar enterprise needs.

"The availability, bandwidth capacity, and multicast support of the Cisco backbone made it possible to execute a centrally managed, live event with multiple presenters at different locations."
— Adam Hessler, Operations Manager, Cisco Media Network

CHALLENGE

In April 2005, a major Cisco Systems® competitor made a series of product and marketing announcements that required an immediate and direct response from Cisco® executive management to the worldwide sales force. The Cisco executive team needed to set up a video event as soon as possible. Participants would include Cisco executives in New York and Cisco subject matter experts in London, who would answer audience questions.

Ordinarily, the Cisco video production team produces live video events by asking presenters to travel to a Cisco Media Network studio location—San Jose, California; Research Triangle Park, North Carolina; London, United Kingdom; and Sydney, Australia—and then procuring satellite services to transmit the remote video and audio feeds between the remote studios and the San Jose production center. "For the April 2005 event, we could not afford the delay while the New York executives traveled to San Jose," says Adam Hessler, operations manager for the Cisco Media Network. "We needed an immediate solution for live transmission of audio and video from presenters in London and New York."

SOLUTION

The Cisco video production team avoided travel delays—and the expense of procuring satellite services—by transmitting the audio and video sources over the Cisco WAN. "The availability, bandwidth capacity, and multicast support of the Cisco backbone made it possible to execute a centrally managed, live event with multiple presenters at different locations," says Hessler.

The day before the event, a small production team consisting of a producer and audio and video technicians traveled to New York, the home office of the event's executive host. Another production team was already present in the studio in Cisco's London office, which was the home office of the subject matter experts. During the event, the technicians captured the audio and video sources, encoded them in MPEG-2 format, and transmitted them in a 7-Mbps IP stream to the San Jose studio. The audience used an online Q&A system to submit questions, which were

transmitted directly to the event producer in New York, who directed the questions to the presenters in either London or New York.

The Cisco Media Network studio in San Jose needed to make the audio and video sources from New York and London available to four distinct groups:

The presenters in the New York and London studios—The presenters needed to see and hear each other. To accomplish this, the San Jose Cisco Media Network studio served as the relay point for audio and video streams from New York and London, transmitting the stream from each location to the other location (Figure 1). “With this arrangement, the presenters at both remote locations could see and hear each other with minimal delay,” says Hessler.

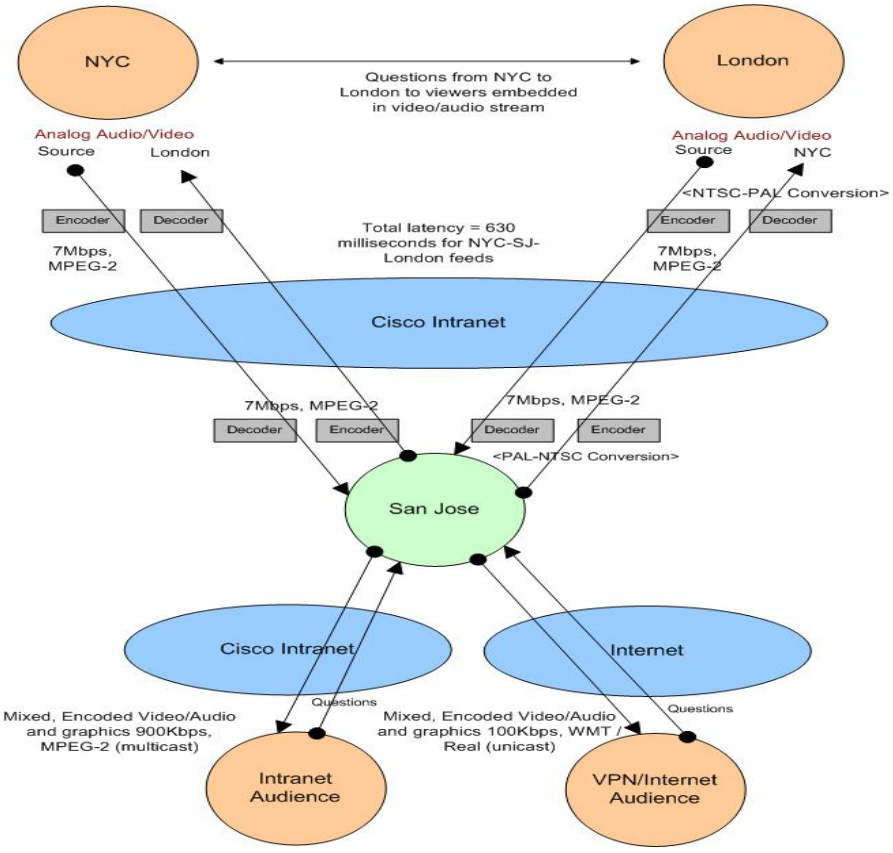
Audience members watching live from Cisco intranet connections—The production team monitored and mixed the two audio and video sources as well as supporting graphics, such as PowerPoint slides, presenting the event in HTML format. The team encoded the audio, video, and graphics into a 900-Kbps, MPEG-2 stream for multicast transmission.

Audience members watching live from Internet VPN connection—The team encoded the audio, video, and graphics into 100-Kbps, Windows Media and Real streams, for unicast transmission.

Sales people who had to miss the event and would need to watch later—Cisco made a video on demand (VoD) available within 24 hours of the event.

The following week, Cisco produced a similar event with presenters in Singapore, transmitting the audio and video sources from the Singapore site to the Cisco Media Network in Sydney, Australia.

Figure 1. Cisco Media Network, Multilocation Live Streaming Event



RESULTS

Producing the live video event over the Cisco WAN provided the following business benefits:

Increased executive productivity—The New York executives avoided the time and expense of traveling to San Jose or another Cisco Media Network studio location. “The ubiquitous nature of the Cisco WAN ‘brings the studio to the executive,’ increasing their productivity,” says Hessler.

Reduced production costs—Use of the Cisco intranet to encode and decode audio and video streams eliminated the need to procure and provision satellite connections, saving approximately US$25,000. “The quality of the audio and video was as least as good as what we typically experience with satellite,” says Patrick Conboy of the Cisco Media Network operations group.

Potential revenue increase—Cisco delivered clear, accurate information to the global sales force by presenting the event in a timely fashion, providing direct access to executives and subject matter experts, and making VoD available to people who missed the live event. “The immediacy of our response to a direct, competitive threat helped Cisco maintain market share and increase revenues,” Hessler says.

NEXT STEPS

The Cisco Media Network group will continue to use video over IP instead of satellite transmission in the following circumstances:

Signaling from the event to the central studio—This type of transmission requires excellent quality. If the event is near a Cisco office with more than 7-Mbps bandwidth, Cisco now sends the signal over the IP network. If the event is broadcast from Cisco locations with less than 7 Mbps of dedicated bandwidth or from off-campus locations, the Cisco Media Network team rents satellite connections instead.

Signaling from the studio to viewers—After the signal has been received at the Cisco studio and encoded, signal quality is less important. Cisco transmits it via multicast to viewers with campus connections as well as via unicast for Cisco partners, customers, and employees with VPN connections. In the past, Cisco used one-way satellite connections to deliver multicast signals to remote Cisco offices without sufficient WAN bandwidth, but the Cisco Media Network team is phasing out satellite connections because of the increasing availability of high-speed, terrestrial connections.

LESSONS LEARNED

Following are some of the lessons learned by the Cisco operations teams that planned and supported this and subsequent events. The team notes that any organization with a properly provisioned IP network can provide high-quality streaming video and audio to and from a central studio.

Use professional audio and video equipment and personnel—Professional audio and video personnel are trained to use proper lighting, correct microphone placement, and camera operations, all of which directly affect the quality of the event. Audio and video crews are available for hire in most metropolitan areas. The Cisco team also recommends central selection, testing, and provisioning of the encoders used at remote locations, to ensure professional-level audio and video connections.

Proceed only with 7 Mbps or more of network bandwidth—7 Mbps is the minimum bandwidth required to deliver the audio and video quality that simulates satellite transmission quality. If the location cannot provide 7 Mbps of dedicated bandwidth—for example, if it only has a public Internet location—consider satellite transmission instead.

Properly provision all network connections—Provision network switch settings at the source locations before the event to ensure that port settings, such as duplex and speed, are configured properly to support the IP encoders.

Test encoders and decoders before the event—Testing should include bit rate, latency modes, and all other settings. Cisco recommends testing settings in both the lab and the production network environment to ensure that desired quality and operational needs are met.

FOR MORE INFORMATION

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Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

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