



Streaming Video for Global Communications

How Cisco Designed and
Deployed IPTV for Global
Communications



A Cisco on Cisco Case Study: Inside Cisco IT

Overview

- Challenge

To improve the method of delivering multi-media content in a timely manner to large global audiences.

- Solution

Cisco IP/TV Solution products as part of an ACNS infrastructure, supporting multicast and uni cast end to end. provided a network video solution that delivers high-quality live, scheduled and on-demand video content all in one.

- Results

Saving millions every year in travel costs and strengthening the corporate culture by communicating directly with more people, more often.

- Next Steps

Merging IPTV with ACNS 5.1 network, and adding MPEG-4 support for browser client.

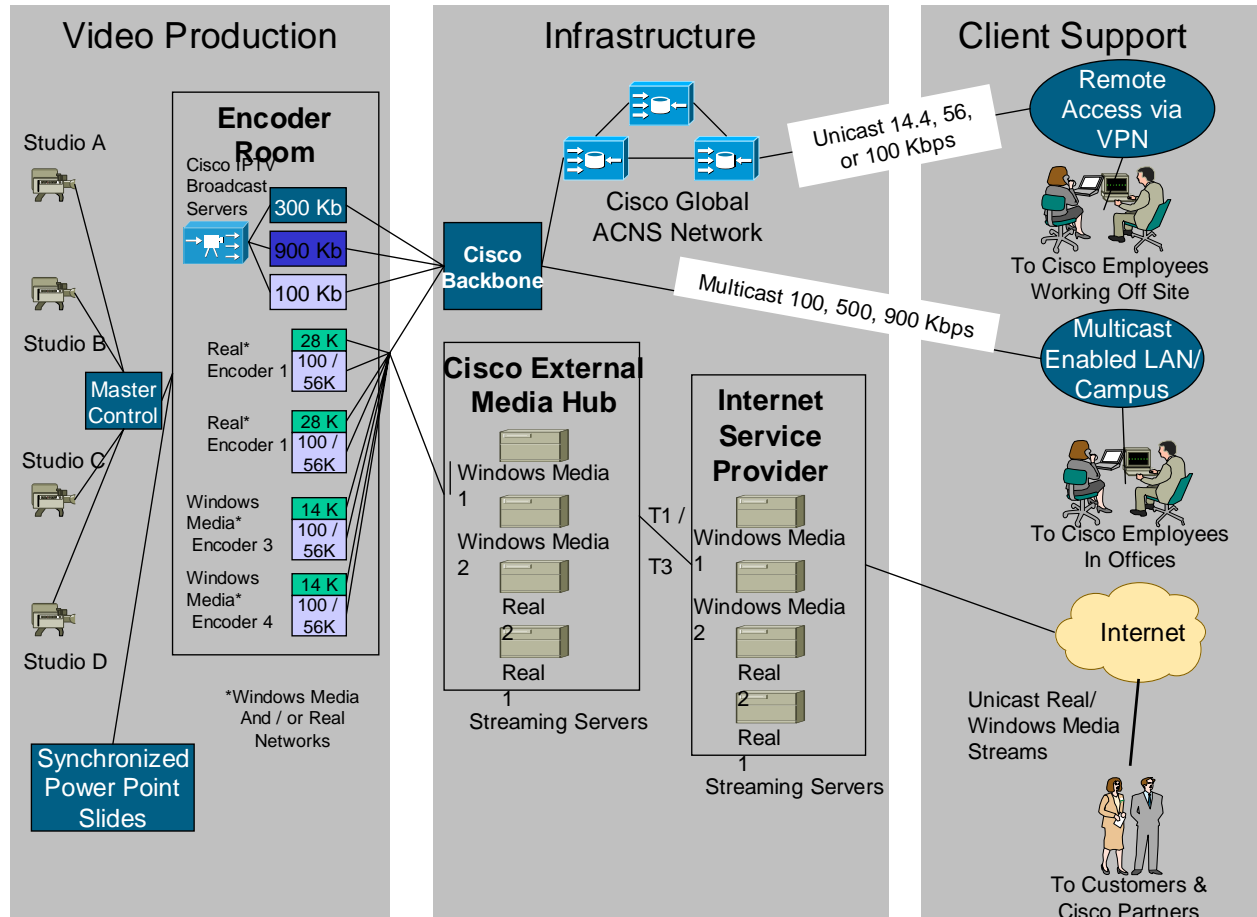
Challenge: Sharing Timely Information

- Cisco needed to provide timely information out to global employees, partners, and tele workers:
 - Corporate news and events
 - New product and process education
- ... while reducing travel costs ...
- ... without overwhelming limited bandwidth WAN links, or critical media servers ...
- ... in a manageable fashion.

Solution: IPTV, ACNS, Multicast and Unicast

- By using Cisco IP/TV products and the Cisco Application and Content Networking System (ACNS), Cisco simultaneously produces IP multicast video streams for employees connected to the Cisco network, and the unicast video streams for telecommuters and external audiences.

Solution: IPTV, ACNS, Multicast and Unicast (Contd.)



Solution: Technical Components

- IP Multicasting over the WAN

Cisco uses IP multicasting to deliver live broadcasts to employees using Windows PCs or UNIX/Linux workstations that are directly connected to the network.

IP multicasts provides a single stream that's available to all desktops on the WAN. This preserves network bandwidth and facilitates scalability because a given broadcast uses the same amount of bandwidth no matter how large the audience.

- IP/TV Content Manager

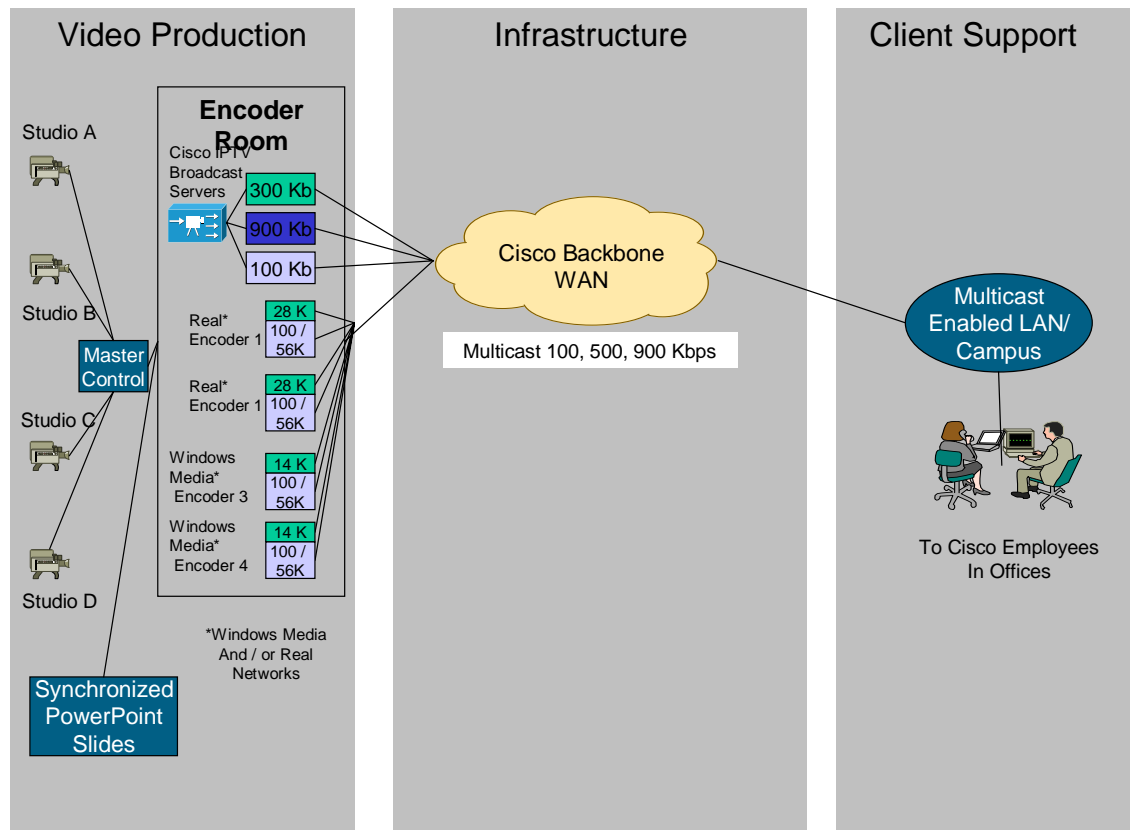
Cisco IP/TV Content Manager is the policy manager that communicates scheduling information and desired video encoding formats to the Cisco IP/TV Broadcast Servers. It also generates a program listing and handles network and device configuration and management.

Solution: Technical Components (Contd.)

- Cisco IP/TV is designed for scalability and addresses the need to deliver high-quality video broadcasts safely across the largest enterprises.

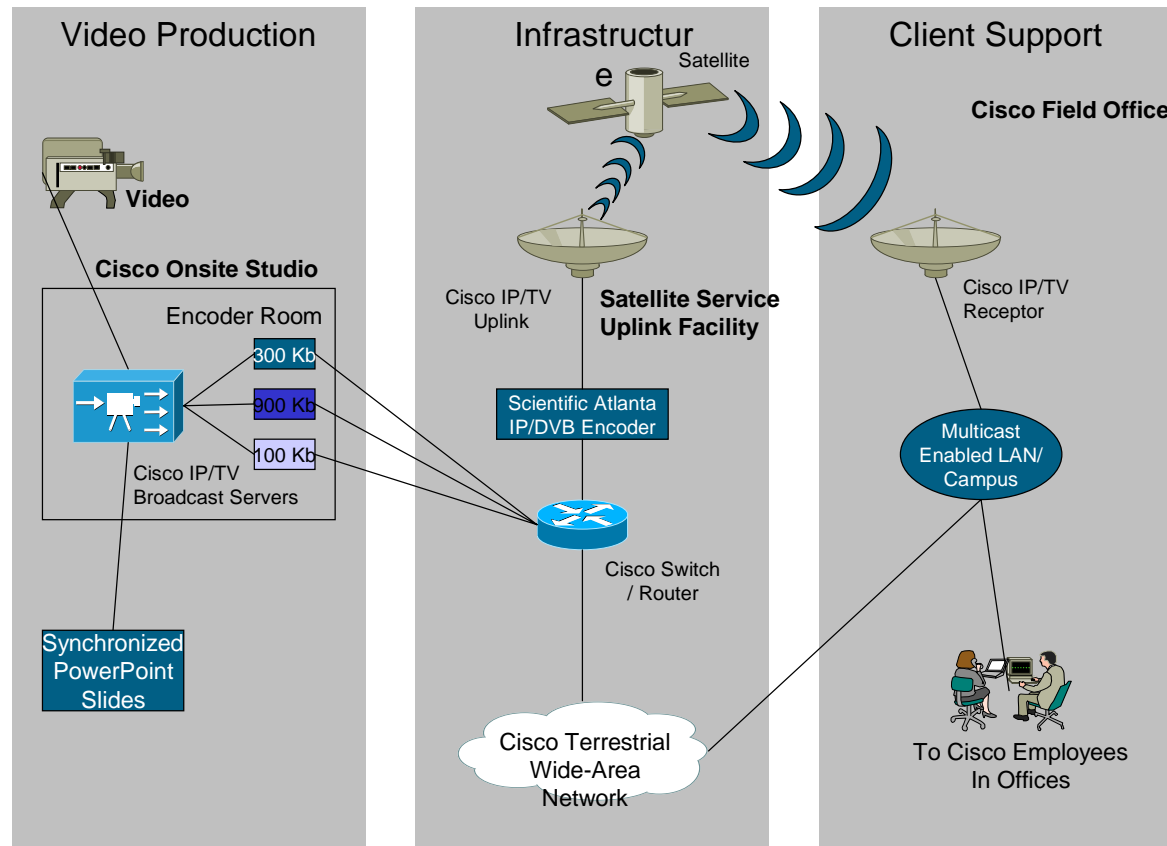
Solution 1: IP Multicast over the WAN

- In 1999 Cisco deployed IP/TV over the IP multicast-enabled WAN.



Solution 2: IP Multicast over satellite

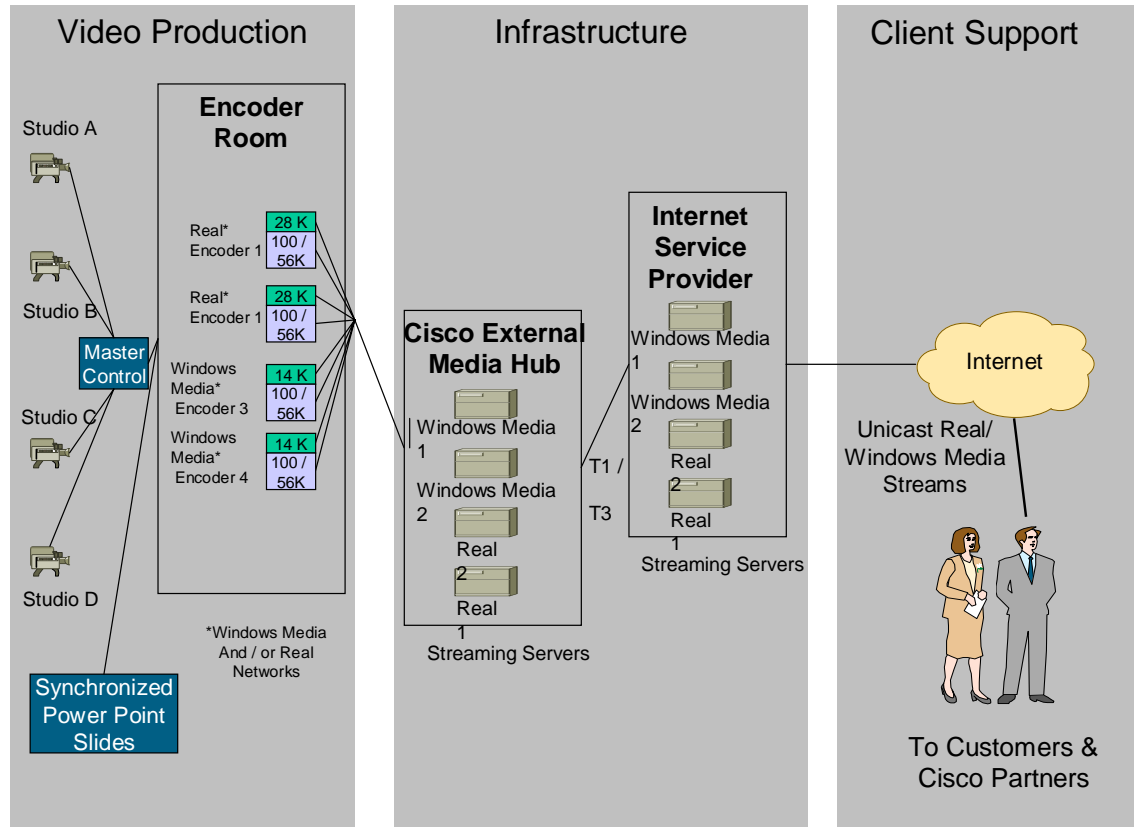
- For sites where bandwidth upgrades would have been prohibitively costly, satellite services were used.



Solution 3: IP Unicasting for Customers & Partners

- In 2000 Cisco decided to extend select IP/TV broadcasts to customers and partners. The Company deployed an IP unicast solution to complement its IP multicast solution. Unicast streams are sent from a single source to a single destination.

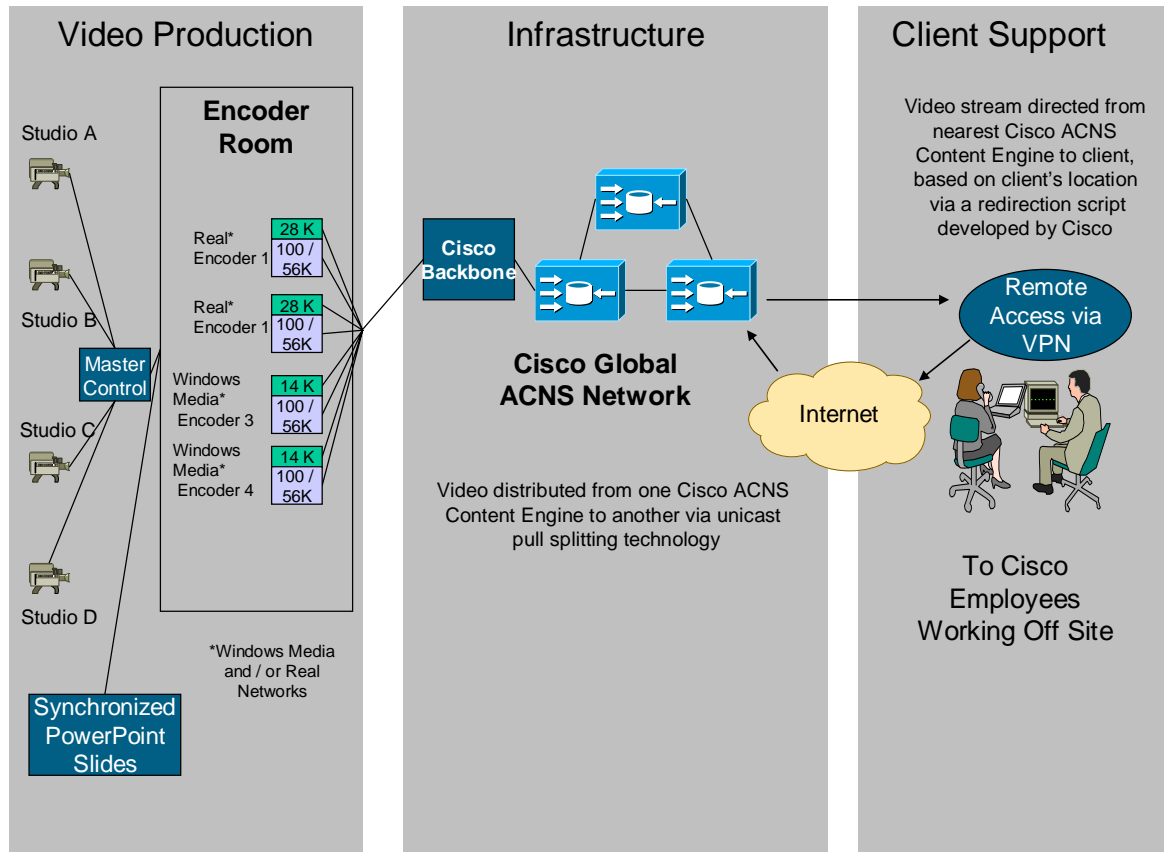
Solution 3: IP Uni casting for Customers & Partners (Contd.)



Solution 4: ACNS and Windows Media IP Unicasting Streaming for Remote Users

- Remote employees connect to a local VPN concentrator via the Internet and are directed to the nearest streaming Cisco ACNS content engine.

Solution 4: ACNS and Windows Media IP Unicasting Streaming for Remote Users (Contd.)



Results: User Experience of IP/TV

- Cisco informs employees, partners, and customers of upcoming live events via e-mail, electronic newsletters, and Web sites. A full schedule is posted on the Cisco broadcast calendar. Users can click a link in the publication to begin viewing the broadcast at the specified time.
- By opening the Cisco IP/TV Viewer on their desktops, employees can search daily, weekly, or monthly programming information, watch the program, or select a stream. The image size of the video is 320 x 240 pixels

Results: User Experience of IP/TV (Contd.)

- Employees who miss the live event can view an on-demand version of the broadcast, often available just 24 hours later.

Results: Summary

- On average Cisco hosts close to 50 live streaming broadcasts for about 11,250 viewers per month

The average number of viewers per broadcast is 250; the largest audience to-date has been approximately 5,000 employees, for a company-wide meeting.

- Productivity Gains

The productivity gains are especially valuable for the sales force, because the travel time they save can be spent with customers.

Results: Summary (Contd.)

- Maintenance of Corporate Culture

For geographically disbursed companies such as Cisco, maintaining a consistent corporate culture presents a challenge. By using IP/TV broadcasts, Cisco can disseminate consistent information, on a timely basis, enterprise wide.

Results: Summary (Contd.)

- Travel avoidance and other costs savings

Since switching to an IP-based video system the cost per broadcast has dropped from approximately \$200,000 to \$8,000.

Next Steps: Migration to ACNS 5.1, MPEG-4

- Cisco intends to incorporate the features of its IP/TV solutions into the Cisco ACNS solution after version 5.1 is released.

The Cisco ACNS solution includes a device called the Content Distribution Manager (CDM), which pushes device configurations to up to 2000 Cisco ACNS devices at a time.

By consolidating the infrastructures for live video and VoD, Cisco IT will reduce both capital expenditure and administrative costs associated with configuration and maintenance.

Next Steps: Migration to ACNS 5.1, MPEG-4(Contd.)

- Cisco also plans to replace both Windows Media unicast and RealMedia multicast with MPEG-4, the new ISO-standard format for high quality at lower bandwidths. With MPEG-4 we'll be able to send out a single, standards-based stream instead of two streams, and anyone with a standard browser will be able to view live broadcast.

Changing the Way our Customers do Business

- To leverage its own experiences with IP/TV for the benefit of its customers, Cisco has partnered with third-party content authoring and management vendors to offer customers a bundled solution.

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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