



SOLUTION OVERVIEW

CISCO VIDEO SOLUTIONS IN HIGHER EDUCATION INSTITUTIONS

Cisco Video Solutions Create a Learning Environment Beyond Walls

EXECUTIVE SUMMARY

Colleges and universities are continually striving to enhance collaboration and communication among students, faculty, and staff. An IP video solution can eliminate the barriers of time, distance, and resources, permitting educators and students worldwide to collaborate as if they were in the same room. Cisco Systems® offers a complete IP video solution for the higher education environment, including Cisco® IP/TV® technology for live streaming video, Cisco Application and Content Networking System (ACNS) Software for video on demand (VoD), and a Cisco IP/VC videoconferencing solution.

CHALLENGE

Communication, collaboration, and learning are fundamental building blocks for institutions of higher education. Colleges and universities are continually striving to optimize these processes for better dissemination of knowledge to their primary constituents. Institutions worldwide face the following challenges:

- Students demand the most up-to date technologies and have increasingly become used to using content online rather than in print. According to a recent study by the Pew Internet and American Life Project, 86 percent of U.S. college students have gone online, compared with 59 percent of the population at large. In addition, students are increasingly abandoning library use in favor of Internet research, and they are using the Internet as a social and entertainment medium.
- A diverse and dispersed workforce must be united through common and consistent organizational communications. Large state university systems, in particular, struggle to provide consistent, timely communications to their employees. For example, the University of California system employs more than 114,000 faculty and staff across its 10 campuses, while the University of Texas system employs more than 87,000 faculty and staff across 9 campuses. Unifying employee communications across these dispersed networks poses a significant challenge.
- More institutions worldwide are facing either budget shortfalls due to economic challenges or increased competition to offer high-quality instruction with limited resources.
- Use of distance learning and e-learning is increasing as institutions work to provide richer, more engaging content to both on-campus students and remote learners. Distance learning is a new and potentially significant revenue source for many institutions. According to the National Center for Education Statistics, in 2002 approximately 84 percent of four-year colleges offered distance learning courses.



SOLUTION

Cisco Systems offers a comprehensive IP video solution that is ideal for the higher education environment. Components of the Cisco IP video solution include:

- Cisco IP/TV technology for live streaming video
- Cisco Application and Content Networking System (ACNS) Software for VoD
- Cisco IP/VC videoconferencing products

Cisco IP/TV technology, Cisco ACNS Software, and Cisco IP/VC videoconferencing products effectively eliminate the barriers of time, distance, and resources, permitting faculty, staff, and students worldwide to collaborate as if they were in the same room. Educational institutions can interactively disseminate knowledge anywhere, creating a true “campus without walls.” With bandwidth costs decreasing—and hardware value, quality, and performance on the rise—organizations can harness the power of IP technology to implement IP video solutions.

Cisco IP/TV Solution for Live Streaming Video

The Cisco IP/TV solution is a comprehensive network video-streaming solution that delivers TV-quality video programming to desktop PCs through Cisco IP/TV Software and Cisco IP/TV video servers.

The Cisco IP/TV solution offer the following:

- High-quality video, regardless of available bandwidth—Cisco IP/TV technology safely delivers a wide range of video and audio formats, most commonly MPEG-2 for DVD-quality broadcasts; MPEG-1 for VHS-quality; and MPEG-4, the new ISO-standard format, for high quality at lower bandwidths.
- Integrated event scheduling—Producers are able to set up live or scheduled events using an easy point-and-click browser interface. Scheduled rebroadcast capability allows time-shifted multicasts of the original event, minimizing use of expensive WAN bandwidth.
- Cisco IP/TV program listing—Using a Cisco IP/TV solution, the audience has access to a continually updated program listing, accessible from either a Web browser or the Cisco IP/TV client. This listing is generated automatically and updated whenever events are scheduled or new content is added.
- Synchronized presentations—Content producers can deliver presentations in a separate window, eliminating the need for separate presentation distribution to viewers.
- Question management—Audiences have one-button access to the presenter. Audience members can quickly and easily send one-way instant message inquiries without waiting in a telephone queue.

Cisco ACNS Software for Video On Demand

The Cisco VoD solution is a comprehensive approach for designing, implementing, authoring, and managing VoD. The solution provides the prescriptive architecture, best practices, training tools, and IP infrastructure that an organization needs to deliver high-performance, on-demand video using Windows Media Video.

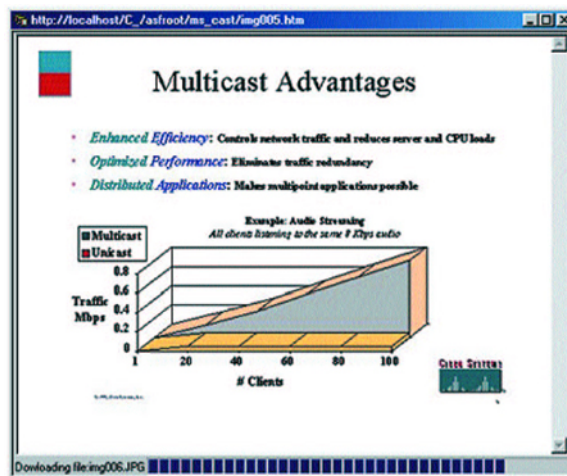
Using the Cisco VoD solution, students, for example, can access lectures, educational videos, guest speaker content, and recorded news and educational television programs on their PCs, on and off campus.

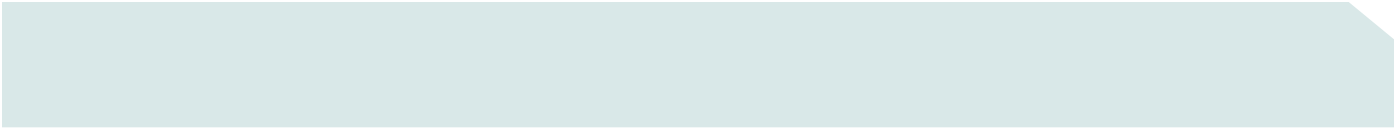
Built on the Cisco ACNS product family for transparent, high-quality delivery of live and on-demand video with total bandwidth control, the Cisco VoD solution features the following:

- Access from any desktop—Faculty, staff, and students can use the intuitive Web interface.
- Ease of content creation and distribution—VoD allows anyone to create rich-media-content courses using a simple Web-based authoring tool. Subsequently, VoD content can be uploaded from the production studio for distribution with a click of a button.
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- Intuitive Web portal interface for content managers—The Cisco VoD solution is based on a Web portal that provides access to a content catalogue and to the applications for producing VoD content.

Cisco IP/VC Videoconferencing

Cisco IP/VC videoconferencing products help institutions improve collaboration in the academic community by bringing geographically dispersed people into a single conference, to facilitate discussions, ideas, and decision making.





Staff and students can use the video network to communicate between colleges and universities for lectures and meetings without spending long periods of time traveling between sites. They can collaborate on projects in ways that previously were not possible. Helping remote faculty and administrators to “meet” can improve the quality of interaction, while reducing the costs associated with travel.

Major features of Cisco IP/VC videoconferencing include:

- Ease of use—Videoconferencing becomes as simple as dialing a telephone number. Individual numbers are set up for virtual conference rooms, and users need only dial the number of that room to join the meeting.
- Extensive conference management—The Cisco IP/VC solution has a Web-based user interface for conference managers or administrators to control various aspects of the meeting. For example, the administrator can lock the video source to a specific location, add new participants, or disconnect current participants, all using a Web browser.
- Ability to capture and stream, beyond point-to-point—When connected to a Cisco IP/TV system through analog video ports, the videoconferencing session can be transmitted live over the entire network or saved for later editing for VoD presentation.

CISCO VIDEO SOLUTIONS ACCELERATE INNOVATIVE APPLICATIONS

Advances in video technology have brought not only the delivery of on-demand video, but also video streaming and videoconferencing. These applications provide opportunities for greater collaboration and sharing of resources, and help to bring additional resources and subject-matter experts to educators. Educators can easily demonstrate concepts and incorporate rich media in their lesson plans.

Cisco IP/TV technology, ACNS Software, and IP/VC videoconferencing can help improve a wide range of educational initiatives.

Academic Distance Learning and Educational Broadcasts

Cisco IP/TV technology and ACNS Software can help your institution to implement a real-time, high-quality, video-based curriculum to reach students both on and off campus. Using Cisco IP/TV technology and ACNS Software, both on-campus students and remote students can view on-demand and live video of lectures at their desktops. In addition, you can deliver rich educational programming to classrooms or desktops. Cisco solutions make it easy for you to:

- Deliver curriculum-integrated digital video clips to PCs in classrooms or dormitory rooms
- Offer additional courses by sharing faculty across multiple campuses
- Deploy distance-learning courses to capture new students and new streams of revenue
- Broadcast live satellite feeds or prerecorded video of sporting events, political events, and more to students
- Transmit live lectures to “overflow” classrooms during crowded lectures

Video-Based Collaboration

Video-based collaboration humanizes distance learning and e-learning education. Administrators, faculty, researchers, and academic experts can use Cisco IP/VC videoconferencing products to collaborate in real time with colleagues at affiliated institutions worldwide. Distance-learning students can use the Cisco video solutions to collaborate on projects and have face-to-face, real-time interactions with other students. Cisco IP/VC videoconferencing products help you:

- Facilitate institutional thought leadership by offering video-over-IP access to important academic lectures and conferences
- Improve the satisfaction and productivity of faculty by helping them to collaborate with colleagues wherever they are located

Professional Development

Incorporating video over IP into staff-development activities can reduce training costs and improve the quality of training. According to *Training Magazine*, organizations save 50 to 70 percent of their overall training costs by replacing traditional training with online delivery. Using Cisco IP/TV technology and Cisco ACNS Software, you can deliver rich e-learning, including TV-quality video perfectly synchronized with Microsoft PowerPoint slides. The Cisco IP/TV solution makes it easy to reduce costs and extend the reach of your message—without sacrificing quality. Benefits include the following:

- Offer staff training online, either live or on demand
- Capture best practices to share across departments
- Scale professional development more effectively by offering training to all employees simultaneously

Administrative Communications

With the Cisco IP/TV solution, you can deliver live, consistent, quality information throughout your institution. You can brief faculty and staff at their desktops on issues such as changes in employee benefit plans, executive announcements, and institutional developments.

Your important messages are just a mouse-click away from every employee. You can use the Cisco IP/TV solution to do the following:

- Conduct effective, interactive campuswide and systemwide meetings with your staff
- Deliver video broadcasts on policies, regulations, and other issues
- Enhance institutional announcements to everyone

In summary, video over IP solutions help higher education institutions optimize and enhance their resources by:

- Enhancing curriculum and staff-development offerings without additional resources
- Providing more convenient access to educators and subject-matter experts
- Attracting new students and creating new revenue streams
- Saving budget dollars
- Saving time

CASE STUDIES

Cisco IP video solutions are already deployed at numerous colleges and universities. The following sections describe examples of some of these implementations.

The University of Oregon

The University of Oregon has long been a leader in the use of computers and the Internet. In fact, the university has appeared twice on Yahoo Internet Life's annual list of "Top 100 Most Wired Colleges." Always looking to the future, the university decided to deliver even more educational and technological services to students and communities everywhere.

"We now have the high-quality video and audio needed in higher education. Cisco IP/TV multicasting capabilities and simple integration make it incredibly network efficient. Because the Cisco solution is a true one-to-many delivery, we don't have to worry about our network overhead at all. And since Cisco is open, we were able to write our own Linux client. We didn't have to do any reverse engineering. Cisco has always done a good job of carrying the torch for standards. Meanwhile, our users are really excited by its high quality and simplicity. Everyone says, 'I want my IP/TV.' The interface is easy enough that anyone can use it. That's why we thought it would be a huge success. And it is."

–Hans Kuhn, Academic User Support Specialist University of Oregon

University staff evaluated technology with several criteria in mind: high-quality video delivery that did not affect network performance, simple implementation, ease of use, interoperability, and cost. Using its existing equipment, the university could only broadcast several streams of "low-quality, herky-jerky video." The university wanted to lay the groundwork for the future and offer distance learning. So the primary requirement was the ability to deliver high-quality MPEG video and audio without exhausting the network.

Over the next three months, university staff implemented six high-performance Cisco IP/TV 3400 Series video servers with robust Cisco IP/TV server software and client software for client PCs. Since implementing the Cisco IP/TV solution, the University of Oregon has realized numerous benefits. Compared to streaming media, which creates a new stream for each viewer, Cisco IP/TV technology uses a single shared stream for one, one hundred, or one million viewers, significantly conserving bandwidth.

The university now broadcasts a variety of special worldwide events to students, such as charity concerts. Closer to home, the university uses a Cisco IP/TV solution to broadcast class content and speeches by visiting researchers. Students can also tune into foreign language programming, access a library of educational materials, and watch taped interviews. Meanwhile, students and other university supporters have watched the football team play for a spot in the Rose Bowl and seen track stars compete in the Prefontaine Classic without having to travel to the events. Access is available from numerous on-campus locations such as the library and language lab as well as students' own computers.

The university's investment in Cisco IP/TV technology has also allowed the school to interact with a broader audience. The university relies on the solution to offer richer course content to students worldwide through distance-education programs. It is also using the solution to provide a variety of resources to K-12 schools, by providing video on topics, such as teaching high school equivalency to migrant farm workers and to remote learners associated with OPEN, the Oregon Public Education Network.

Colorado State University

In late 1999, Colorado State University (CSU) in Fort Collins, Colorado began looking for a network-based approach to delivering course-related video content that could serve as a communications medium for students, teachers, and administrators. CSU wanted solutions that would be cost effective and would take advantage of its existing IP and ATM-based network infrastructure.

The network video solution had to be easily accessible by students using the Web. It also had to enable easy integration with WebCT, the online course software used by the university. IT staff at CSU hoped to make network video features available to the largest number possible of faculty, students, and administrators, so the solution had to be scalable and cost effective. CSU selected the Cisco IP/TV solution to meet these needs.



Using the Cisco IP/TV solution, CSU has moved its video library and closed circuit TV system to the Internet. CSU is using the new multimedia network infrastructure for its e-learning initiative, targeted to computer science, engineering, communications, and information systems majors at the Fort Collins, Colorado campus. The university may also expand access to Cisco IP/TV product applications to students worldwide who study through CSU's distance-learning program, Educational Outreach.

“With video streaming, you can play a video clip that demonstrates how something evolves in three dimensions rather than two. It’s much more compelling. The Cisco IP/TV product has given us a complete, end-to-end network video system that makes this kind of audiovisual aid possible. It effectively replaces our World War II-vintage closed circuit TV and video system.”

–Pat Burns, Director of Academic Computing and Networking Services, Colorado State University

Fort Hays State University

Fort Hays State University, a regional university in western Kansas, is at the center of many of the technological changes now transforming the world of education.

Fort Hays State University staff spent 18 months evaluating VoD technologies from several vendors, including Cisco. The list of requirements was rigorous: performance, flexible bandwidth, the ability to create once and publish everywhere, compatibility with the existing Ethernet network, control by end users, and ease of use. The end goal was to find a system that could deliver high-quality video, in any file format and at any encoding rate throughout the campus, and simplify the process by creating video assets once and then publishing them everywhere. Fort Hays chose Cisco for its power, flexibility, and cost.

“We can organize and maintain the content much more effectively, maximize our resources, and expand our class offerings. Students can review material whenever they want. Both professors and students find the technology extremely easy to use.”

–Dennis King, Interim Director, Fort Hays State University

VoD now plays a central role in the lives of students, faculty, and staff at Fort Hays. On-campus students, for example, can access lectures, educational videos, guest speaker content, and recorded news and educational television programs. After the university’s dormitories are upgraded from shared Ethernet to switched Ethernet, students will be able to watch the videos in their rooms. Virtual students, meanwhile, tap into much of the same content such as 5-minute audio and video clips for a music class. And faculty and staff go through interactive presentations, 50-minute demonstrations, and short lessons on software and teaching practices in their free time. Although implementation of Cisco VoD technology is ongoing, benefits have already appeared across the campus—and beyond. The university is now offering distance-learning courses to two affiliated schools in China, SAIS University of Business and Management and the University of International Business and Economics. Faculty members stream the content from their Blackboard application using Web links. Compared to other delivery methods such as postal mail, which can take up to two weeks, network video delivery has proven to be a fast, high-quality way for Fort Hays State University to deliver curriculum and extend its reach.

Welsh Video Network

During the late 1990s, both the Heads of Higher Education in Wales and The United Kingdom Education and Research Network Association undertook studies of the demand for videoconferencing in Further Education and Higher Education in Wales. These studies revealed a strong demand for an integrated national video network. Furthermore, the studies showed that, while desktop videoconferencing was widely deployed in the higher-education sector, only five higher-education institutions had dedicated videoconferencing studios.

To promote the use of videoconferencing for distance learning and teaching purposes, the Welsh Funding Councils, the organization in charge of funding Higher Education in Wales, is funding the development of the Welsh Video Network. The focus of this project is to provide 80 high-quality networked video studios for all the colleges and institutions in Wales.

Each studio will be equipped with two remote-control cameras, TVs, a projector, an electronic whiteboard, and other types of studio equipment. Initially, most videoconferencing calls will use ISDN. As the project progresses, a transition will be made toward the use of IP for videoconferencing. The Welsh Video Network will rely on Cisco IP/VC products for end-to-end, IP-based video connectivity.

Wales has an irregular coastline with many bays and, with exception for some southwestern, narrow, low-lying coastal regions, Wales is almost entirely mountainous. Given the makeup of the Welsh landscape, travel within Wales can be time-consuming. The deployment of a videoconferencing network in Welsh education means that these travel times and distances can be eliminated. Staff and students can use the video network to communicate between colleges and universities for lecturing and meetings without spending long periods traveling between sites. This has the potential to allow institutions to enter into learning and collaboration projects that previously were not possible.

WHY CISCO

With the advent of video-over-IP solutions, higher education institutions now have a powerful way to communicate with, and educate faculty, staff, students, and other constituents. Cisco IP/TV technology, ACNS Software, and IP/VC videoconferencing products can simplify important processes in higher education. Resulting benefits include more effective employee development, improved distance learning, reduced operating costs, and improved collaboration.

Cisco Systems offers proven network expertise in video over IP, including the following:

- Ease of use through easily deployed solutions with many built-in capabilities, requiring no programming or systems integration.
- Vast experience using Cisco IP/TV technology, VoD, and Cisco IP/VC videoconferencing products for educational purposes. Cisco has already deployed video-over-IP solutions to many colleges and universities worldwide. Its own internal Internet Learning Solutions Group produces more than 500 on-demand videos every month and more than 45 live events. Cisco is sharing this knowledge daily with customers.
- An expansive and highly qualified ecosystem of certified integration partners and go-to-market partners. The Cisco diverse video-over-IP product portfolio will help your institution to deliver video content to students, faculty, and other network users in innovative, exciting, and productive ways.

FOR MORE INFORMATION

- For more information about Cisco video solutions, visit: <http://www.cisco.com/video> or contact your local account representative

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