


Cisco and Fort Hays state University: Redefining Education



In western Kansas, a regional university is at the center of many of the technological changes now transforming the world of education. “The sixty-four thousand dollar question is how institutions of post-secondary education will evolve in this emerging environment of corporate and technological competition—and whether they can find a way to prosper alongside new educational delivery systems that are designed specifically for a culture of individual empowerment and learning on demand,” says Edward Hammond, President of Fort Hays State University. “As we enter a digital age, we find that our concepts of both campus and its infrastructure must be radically altered.”

The university has responded by upgrading its infrastructure with Cisco’s Content Delivery Networks (CDN) solution. The Enterprise CDN solution is a major component of Cisco’s overall Content networking strategy, enabling distance and e-learning applications. The Enterprise CDN enables Fort Hays to create “smart” classrooms with intelligent delivery nodes that stream rich learning content, and promoting growth of its Virtual College. “We were facing the challenge of how to deliver academic material such as lectures and taped content to the classroom more efficiently,” says Dennis King, Interim Director at Fort Hays’ Center for Teaching Excellence and Learning Technologies. “Our video playback service wasn’t as good as it could be. Rather than having a staff member start and stop each playback, we wanted faculty to be able to control

the process themselves. Since we’re also responsible for providing software training to faculty and staff, we thought that video on demand (VoD) would improve our training. Plus, we needed to deliver content to both our existing group of on-campus students and a growing number of off-campus students.”

Fort Hays State University staff spent 18 months evaluating VoD technologies from several vendors, including Cisco Systems. The list of requirements was rigorous: performance, flexible bandwidth, the ability to create once and publish everywhere, interoperability with the existing Ethernet network, control by end-users, and ease of use. “We needed flexible bandwidth since providing content to students requires compressing video at 4Mbps while training involves streaming at 700Kbps,” says King. The end goal was to find a system that could deliver high quality video, in any file format, at any encoding rate, throughout the campus and simplify the process by creating video assets once and then publishing them everywhere. “Once the video was compressed, we never wanted to worry about content again. We wanted to give control to the end-user. The technology had to work with standard software such as Microsoft’s Media Player that users were familiar with. And we wanted to avoid the need to load client software or special viewers.” Both instructors and students can use the centralized media from any time, any place, and right at the desktop.

Fort Hays chose Cisco for its power, flexibility, and cost. "We provide software training and manage the design and development of our virtual college courses so we're constantly pulled in two different directions," says King. "With Cisco's Enterprise CDN technology, we put a Content Engine in one of the pockets of population in western Kansas where we planned to do a lot of streaming video that semester. So we could create the shortest possible route to the content and give students the most efficient access. At the same time, we could also record our most outstanding instructors, put the content online, and let other instructors go back anytime for refresher training on teaching." Cost was also a deciding factor. "The other finalist was significantly more expensive," says King.

Fort Hays started by installing a Cisco Content Engine 507 and the Cisco 4630 Distribution Manager at the university's computer center. In the coming months, King's staff will add two more content engines: one in the library and another in the computing center. "We'll encode tapes so that students can go to a station in the library and pull up the content online themselves for viewing," says King. Once the university's dorms are upgraded from shared Ethernet to switched Ethernet, students will be able to watch the videos in their rooms. The third Cisco Content Engine will be devoted to streaming audio and video for the Virtual College courses. The campus also has a 100-MB backbone that connects every building; switched Ethernet in most classrooms, offices and conference rooms; and 28 computer labs with more than 450 PCs.

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. Virtual students, meanwhile, tap into much of the same content such as five-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's CDN technology is ongoing, benefits have already appeared across the campus—and beyond. "Cisco CDN technology is a much

more reliable, cost-effective way to deliver content to our on-campus students and to offer virtual college courses," says King. "We can organize and maintain the content much more effectively, maximize our resources, and expand our class offering. Students can review material whenever they want. Both professors and students find the technology extremely easy to use. With the convergence of streaming and our Cisco Networking Academies, our virtual students can use the server on school-related projects independently. And they have the sense that there really is an instructor on the other side of the computer. At the same time, this system allows us to utilize our existing LAN."

Training has also become a different experience. "More people can now attend training sessions that they wouldn't be able to attend otherwise," says King. "When we scheduled training in the past, it was extremely difficult to get even half of our audience to attend because of scheduling conflicts. We had to offer two sessions of each workshop in addition to one-on-one training. The Cisco technology has given all of us a huge amount of flexibility."

Indeed, managing the logistics is now much simpler. "In the past, we had to push carts with televisions, VCRs, and tapes from an AV room to a classroom, plug in the equipment, and wait for staff to push the 'Play' button," says King. "Now we don't spend time trying to work out details such as who has the video cart, why it isn't in the right classroom at the right time, and where the video is. In fact, we will eventually move about 80 percent of our AV playbacks over to our Cisco system. Not only will we be replacing old technology with more powerful technology but—more importantly—we will be expanding the use of effective teaching with rich media."

In the meantime, King's staff can now spend their time on other projects as well. "The biggest benefit for my team is the time saved by the technician who has to press 'Play' and 'Pause' at specific times," says King. "Now the content can be digitized, put on the network, and played anytime. As we move more workshops to VoD, we'll be able to free up the time of as many as three staff members. For a two-hour workshop, we save between four and seven hours of time per staff person. With our standard

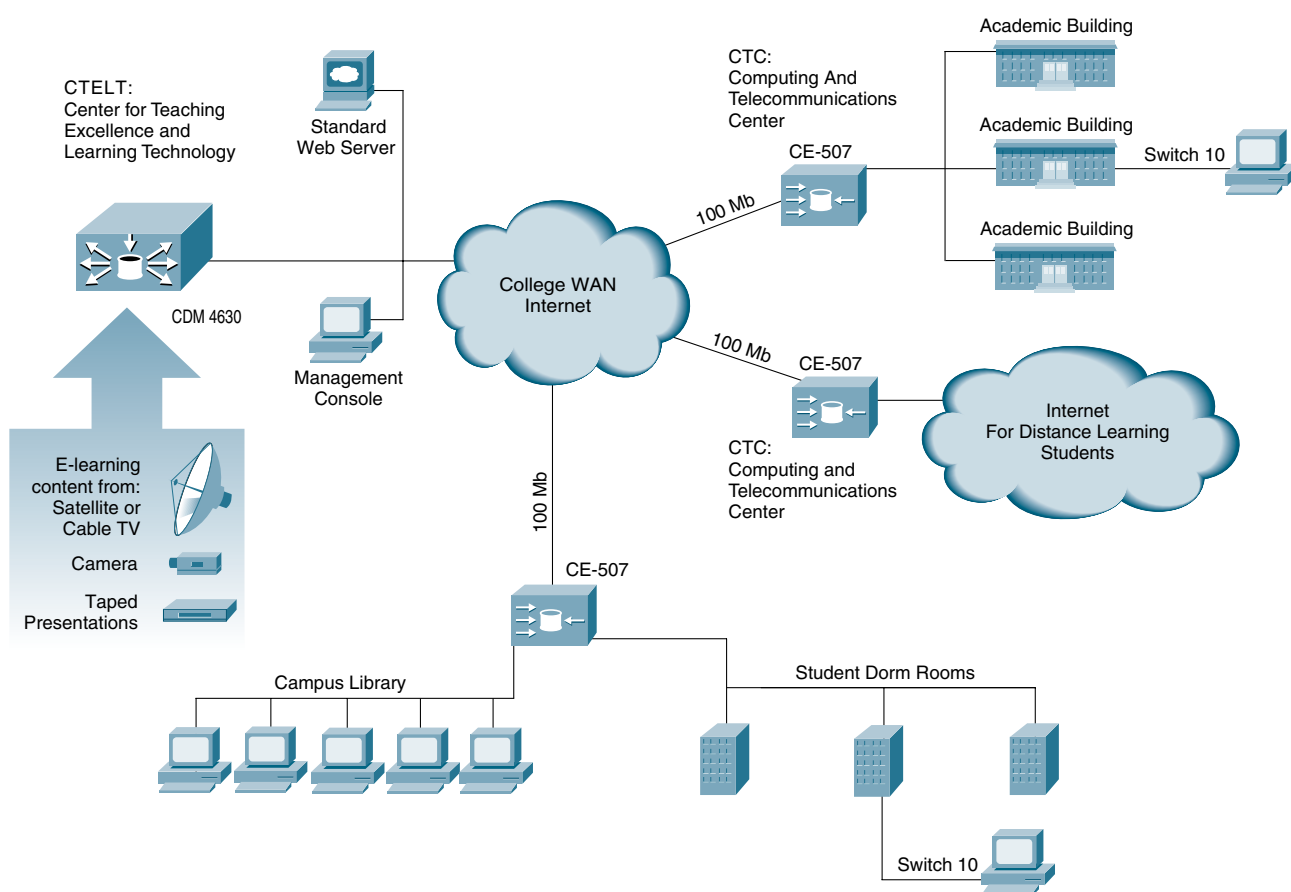


three workshops per week, that translates into a savings of 20 hours per week and approximately \$15,000 per year.”

As the quality of training improves, so will the quality of education. “We’ll spend less time pushing buttons and more time talking about how instructors can design courses and interact more effectively with their students,” says King. “And that will translate into a richer experience for instructors—and ultimately, students. This technology also saves instructors significant amounts of

time because they can prepare for their courses more quickly. And since they can spend more time with students, the educational experience becomes stronger and more vibrant. Students will have more of an opportunity to improve their grades since they’ll be able to review content again and again if they’re struggling in a class and didn’t understand it the first time. Plus, we’ll be able to tout this technology when we’re recruiting students *and* instructors.”

Figure 1



As Fort Hays moves forward with its Cisco CDN implementation, students nationwide are expected to benefit. “We’re one of 15 schools that the Navy has

certified to deliver courses to sailors,” says King. “If we have 1000 students on the East Coast, do we want to deliver content from the Midwest or from a nearby naval

base such as Virginia Beach? I expect we'll look at putting another Cisco Content Engine out there. After all, if we want to continue increasing enrollment, we need to deliver content to other geographic areas efficiently. And the level of quality and reliability that Cisco technology delivers will play a huge role in the future of education.”



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