Cisco Systems

Imagine The Possibilities For 21st Century Higher Education.

Now Imagine A Way To Actually Achieve Them.

IMAGINE A UNIVERSITY...

Imagine a university...
...that provides its students, faculty, and staff with twenty-four hour access to information and resources from classrooms, libraries, gyms, lounges, dorms, and virtually any location on or off campus.

Imagine a university...
...that encourages flexible, collaborative learning, enabling students to create their own studies program based on individual needs and feedback from their assessments, interests, learning style, and evaluation methods.

Imagine a university...
...that virtually brings down its classroom walls—and brings in leading thinkers, professors, world leaders, and global resources—through distance learning tools.

Imagine a university...
...that enables students to select courses from renowned universities, libraries, galleries, and museums all over the world, for a truly multicultural, multilingual education.

Imagine a university...
...that makes education exciting, relevant, creative, and memorable, by offering an interactive, media-rich, future-oriented curriculum, using computers, television, electronic libraries, and the Internet.

Imagine a university...
...that not only offers students the tools they'll be using in their professional lives, but will continue to be a resource for them when they change jobs and require training, promoting true lifelong learning.

Each of these scenarios offers a vision of how higher education can be transformed through the use of technology, to ultimately provide a dynamic, individualized education for all students. At Cisco Systems,® we offer not only the vision, but a plan that every college and university can use to achieve it.

This plan is called Cisco Connected Learning. It's a step-by-step approach that enables any college or university to make the transformation to a globally-focused, student-centric institution of the 21st century.

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Higher Education: An Institution In Transition

Today, higher education is facing a variety of new challenges. Global demand for the top students and faculty is increasing, and institutions must create comparative advantages to attract and retain the best and brightest. Budget cuts, fewer endowments, and lack of government support have forced colleges and universities to find new ways to reduce costs while continuing to provide a high-quality education.

In addition, the very student population that higher education serves is changing rapidly. Colleges and universities must now deal with a rise in the number of multicultural and global students, returning students, and students seeking continuing education opportunities. Even after graduation, more students are seeking lifelong education for their professional and personal development, in flexible formats that fit their lifestyles.

Moreover, many colleges and universities have been slow to respond to the needs of students who expect and demands technology in their daily lives. This new generation of visual and kinetic learners simply aren't being offered the engaging, learn-at-your-own-pace higher education that technology can provide. Since much of today's workforce uses Information Technology (IT) in their jobs, and others will need retraining to stay qualified, the demand for technology skills is more compelling than ever.

So how can higher education overcome these challenges, and give students the technology-based learning and expertise they require? Forward-thinking institutions are embracing new learning options and are creating open, connected campuses, to move beyond the Information Age into the Imagination Age.

ENABLING TRANSFORMATION

STEP 1: **Build a global campus that ensures physical and virtual secure access to educational research resources and personnel**

STEP 2: **Move to student-centric teaching and learning**

STEP 3: **Expand innovation to create a true 21st century university, a lifelong "campus without walls"**

Building The Campus Of The Future

In many institutions throughout the world, educators are making the transition to 21st century learning by following a step-by-step plan with these three basic guiding principles:

STEP 1 **Build a global campus that ensures physical and virtual secure access to educational research resources and personnel.** The evolution of higher education starts with a reliable foundation: a converged IP network that can support future growth. This includes routers and switches in new and existing buildings, to create local-area networks (LANs) and wide-area networks (WANs) and provide Internet access. A secure wireless network improves collaboration and enables access to information and resources by students, faculty, and staff—anywhere, at any time.

This network supports integrated back-office applications and hardware, including:

- **Automated services and processes,** such as Human Resources (HR), and enterprise resource planning (ERP) for real-time data sharing
- **A single integrated portable student information system,** which includes grading and personal data
- **Facilities-based systems** for parking, campus monitoring, maintenance, and more
- **Integrated physical and network security,** to protect people, property, and information
- **IP Communications,** including IP telephony, unified communications, IP audio and video conferencing, video streaming, and contact center applications, all of which enable more efficient interactions among students, faculty, administration and alumni,

CONNECTED UNIVERSITY PROFILE

BRYANT UNIVERSITY, RHODE ISLAND, USA: Extending Technology Throughout The Campus—And Beyond

Technology is an important part of the education of Bryant University's 3,093 undergraduate and 472 graduate students. The school has deployed a converged IP network based on technology from Cisco,® and gives every incoming student a state-of-the-art laptop. Bryant has also installed voice-over-IP (VoIP) technology, enabling students to receive telephone calls in their dorm rooms over the IP network, which reduces telecommunications costs. To improve campus communications, broadcast notices are delivered over the phone system. Bryant can connect up to four sites for videoconferencing and streaming video. Its faculty can work with students outside the classroom through a Web-based course-management system. The benefits of these technology improvements go beyond the campus, as Bryant's network is available to students and staff of other regional educational institutions, local and national businesses, small-business development centers, the Rhode Island Export Assistance Center, the Higher Education Library Information Network, and chambers of commerce.

and provide the foundation for a collaborative academic environment

- **LAN Management,** to simplify configuration, administration, monitoring, and troubleshooting of campus networks
- **iPortals,** which include a campus-wide website, department-specific websites, and even class websites
- **Storage area networks,** which improve information accessibility and reduce total cost of ownership
- **Server virtualization solutions,** to support high-end applications, simulate real world environments, and facilitate research projects

Move to student-centric teaching and learning. As the converged campus takes shape and more applications are added, the focus now shifts to providing a customized education for each student. Through "smart," connected classrooms, dormitories, auditoriums, and libraries, students and faculty can access resources from anywhere they live and work. Teaching can then move to a "neo-style," which encourages visual learning through video as well as blended learning through interactive resources. Students can learn in their own timeframes, using rich media, information retrieval and analysis, online personal assessment and remediation, with easy access to faculty and global expertise. Online professional development can be made available to students in the workforce. Learning tools for faculty and students include:

STEP 2

- **A new generation of hand-held devices,** including cell phones, PDAs, laptops, and iPods, which will enable students to access all class work, schedules, messages, and more from anywhere
- **Applications,** such as Web design, presentation development, multimedia production, digital media asset management, calendaring, student assessment, special education software, and word processing.
- **A campus TV network** that takes advantage of the robust IP infrastructure to deliver high-quality video and television programming across campus
- **Collaboration applications,** for meetings, training sessions, and presentations, using voice, video, and Web conferencing
- **A curriculum Web site,** where students can access assignments, resources, and faculty members
- **Distance learning programs,** to extend each institution far beyond the reaches of its physical campus
- **Blended learning offerings,** including tools for auditory, reflective, visual, and hands-on learners
- **Simulations and virtual environments,** which enable students to interact with life-like, realistic events and situations, using computers and media

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STEP 3

Expand innovation to create a true 21st century university, a lifelong "campus without walls." Once the transformation is complete, students and faculty can access information and resources from anywhere, twenty-four hours a day, since information will be more ubiquitous than ever. Students and faculty alike can connect with leading thinkers, professors, and other classrooms from around the world on a daily basis. Professors can also collaborate with businesses and other outside organizations, to bring additional expertise into the classroom. They can also extend their expertise to anywhere, through video on demand, streaming video, and collaboration tools. The network can be expanded to the surrounding community, providing a high-bandwidth metropolitan network that can be a boost to local businesses and the economy. Technologies included in this final step include:

- **Supercomputing to the desktop,** which enables collaborative, interdisciplinary research
- **An alumni portal,** which provides online access to campus news, upcoming events, fundraisers, and more
- **Lifelong skills training,** which connects students and alumni to a university through continuing and adult education programs, so they can acquire additional knowledge and skills as their careers evolve

CONNECTED UNIVERSITY PROFILE

BRUNEL UNIVERSITY, UK:
Earning High Marks For Its Technology Investment

With some 13,500 students and 2,500 staff spread across four campus sites in West London, Brunel University sought to improve communications and administrative processes, and wanted to build a cost-effective foundation for introducing new technologies. The university upgraded its network to a Cisco converged IP network running Cisco IP Telephony solutions. Now, faculty, staff, and post-graduate students are enjoying the benefits of improved communications. With IP telephone extension mobility, for instance, a staff member can log into a phone anywhere on campus, and have access to his or her personal number, individual phone settings, and personal directories on that handset. IP telephony has introduced additional communication efficiencies, including the ability to work from home, for a more flexible working environment. The new network is providing an excellent return on investment (ROI), and will pay for itself in an estimated five years. In the future, Brunel will also be able to extend video conferencing and wireless communications across all four campus sites—easily and cost-effectively.

Cisco's Role In This Transformation

Only Cisco Systems has the solid expertise to offer you the vision for education transformation through technology—and the step-by-step plan to help you realize it. For years, we've been the leading provider of IP networking for colleges and universities. In addition, we have the unmatched experience in deploying technologies to improve academic and administrative performance.

This vision for the colleges and universities of the 21st century is fully supported by our vision for the networks of the future. It's called the **Cisco Intelligent Information Network, or IIN.** It's a roadmap that details the evolution of network computing over the next three to five years and shows how it will transform the way people work and communicate.

The Cisco IIN starts with an integrated, converged network, which will feature integrated services with embedded security, mobility, IP Communications, voice-video streaming, and videoconferencing. As this network evolves, it will run—and become aware of—rich, context-based applications. With this intelligent network running integrated applications, operating expenses will be reduced, network management will be simplified, and new services and capabilities will be easily introduced.

In addition to thought leadership for tomorrow, we offer proven network architectures that are available today. Based on the Cisco Intelligent Information Network and taking advantage of our extensive vendor partnerships, these enterprise-wide architectures are packaged and validated. They provide colleges and universities with design guidance for data centers, remote offices/campuses, and WAN connectivity. What's more, they offer the security and integration of advanced technology systems and applications across the entire IT infrastructure, to enable every campus to protect, optimize, and grow its capabilities as a connected campus.

Cisco Connected Learning has a wide range of solutions and programs that improve and protect academic excellence and equity, including:

- **Cisco Campus Secure,** which protects wired and wireless networks and endpoints, through secure connectivity, threat defense, and trust and identity management
- **Cisco Virtual Classroom,** a rich media solution that enables voice, video, and Web conferencing, for better collaboration and interaction regardless of location
- **Cisco IP/TV,®** for high-quality video broadcasts over enterprise networks, enabling distance learning, professional development, and more through live video, scheduled video, and video on demand
- **Cisco Networking Academy,** a dynamic educational program that teaches students relevant technology skills, with high-quality, standards-based IT curriculum that's instructor facilitated, with hands-on labs and online assessments
- **Cisco Academic Research and Technology Initiatives,** which provide research, development, and collaboration opportunities to identify emerging network technologies and solutions
- **Data Center Networking,** reduces operating costs and improves efficiency with centralized and virtualized Cisco Storage Area Networks. Create GRID computing clusters with Cisco InfiniBand solutions

Although change is never easy, the time for change is now, and if undertaken step-by-step, every college and university can achieve it.

CONNECTED UNIVERSITY PROFILE

NATIONAL UNIVERSITY OF SINGAPORE: Melting The Campus Walls

To better serve its 23,000 undergraduate and 9,000 graduate students, National University of Singapore (NUS) implemented a program to help all students and staff purchase notebook computers. However, their functionality was limited, as NUS was unable to equip its campus lecture theaters with a sufficient number of wireless access points for all students, due to perceived high deployment costs. This, in turn, limited the degree of interactivity that lecturers were able to build into their presentations. Subsequently, the university implemented a Cisco high-speed wireless LAN, to cost-effectively extend access to all lecture theatres, as well as to other areas on campus that had been too difficult or expensive to reach. This deployment resulted in the creation of one of the largest wireless networks in the Asia-Pacific region. Now, every student with a notebook computer can enjoy fast, reliable network access simultaneously, and can reach the NUS intranet from anywhere on campus.

- **Cisco IP Communications** places IP phones in every classroom and office, to enhance communications, increase security, boost productivity, and save time and money
- **Cisco Connected Real Estate for Education** enables one converged network for all building control systems, resulting in cost savings and operational efficiencies

At Cisco, we offer the twenty-four hour service and online technical support your college or university needs to make this transition. What's more, our relationships with many third-party technology vendors ensure that you have the right equipment and applications for your unique campus requirements.

Ready To Help You Manage The Change

Those colleges and universities that have begun the transformation in education will gain a decided advantage over institutions that have not. Although change is never easy, the time for change is now, and if undertaken step by step, every college and university can achieve it. Through a connected campus and "classrooms without walls," your institution can provide a more effective personalized learning experience for each student, and tap into education resources that are virtually limitless.

At Cisco, we stand ready to help your college or university take these important steps—with Cisco Connected Learning. Join us, and become an agent of change for the betterment of your students, your faculty, and your community.

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