

SECURE CONVERGED  
NETWORKS FOR  
21<sup>ST</sup> CENTURY CAMPUS  
COMMUNICATIONS

**3Com<sup>®</sup> Solutions for Higher Education**

## ENSURING QUALITY EDUCATION: Solving Challenges with Speed and Economy

### TECHNICAL CHALLENGES

- › Ensuring secure, reliable access to people and information resources
- › Safely extending the physical and time boundaries of learning environments
- › Delivering the system performance needed for rich, multimedia learning experiences
- › Enabling resource access from a wide range of communications devices

### OPERATIONS CHALLENGES

- › Cost-effectively administering communications systems
- › Optimizing IT staff activities
- › Managing single-site and multi-campus secure, converged systems



## SECURITY AND HIGH PERFORMANCE

Total packet inspections and Gigabit speed block malicious traffic and throttle non-critical applications

Today's higher education institutions need networks that can meet the evolving requirements of an increasingly technology-savvy community. To ensure safe, powerful and ubiquitous communications, they require network control that can seamlessly secure information exchanges—inspecting each packet flowing through the system to safeguard data, devices and applications—without slowing communications. Speed and responsiveness must be maintained while the network is protected from cyber attacks that can have potentially devastating consequences on collaboration, instruction, assessment and research activities.

Security capabilities integrated into 3Com® wired and wireless networks and the proactive safeguards of 3Com's intrusion prevention technology deliver unprecedented protection without compromising network speed or clogging valuable bandwidth. Intrusion Prevention Systems (IPSs) can be deployed anywhere on the network to block malicious traffic and initiate quarantine actions. Their advanced management system can provide administration, configuration, monitoring and reporting for multiple IPSs with turnkey, rack-mountable deployment. To maintain the highest level of vigilance, 3Com IPS solutions also include automatic filter updates. Delivered weekly or immediately in urgent situations, they deliver powerful protection for servers and desktops and in virtually every case, fully inoculate them before an attack.



### CASE STUDY

Palacky University withstood external assaults against its walled campus for more than 500 years, but these were nothing like the threats from public communications networks that created significant challenges for the institution in recent years. By 2004 the university's network had become so overloaded with malicious traffic that its servers often lacked disk space for critical applications or software patches. During these periods of attack, safeguarding the interests of 18,000 students monopolized the efforts of the university's 10-person IT staff and impacted a variety of school activities. "Administrators... couldn't buy lab equipment or pay utility bills, professors couldn't schedule classes, and distance-learning students couldn't access streaming video," recalled Petre Volak, director of Palacky University networking services. Then 3Com security solutions came to the rescue, enabling total packet inspections at Gigabit speed to block malicious traffic and throttle non-critical applications.

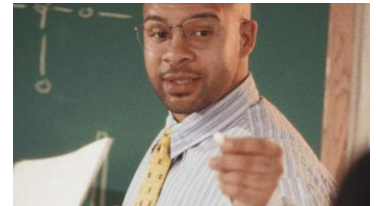
Within the first three months of being implemented, they blocked an average of 14,720 Internet virus attacks per day with switch-like latency. The Digital Vaccine® service updated the IPS, automatically and in real-time, with new security filters to proactively guard against the latest threats in advance of attacks. Its Security Management System provided system administrators with comprehensive reporting and management capabilities. What's more, the security solution integrated seamlessly with pre-existing switches and network management software.

Read more at [www.3com.com/palacky\\_university](http://www.3com.com/palacky_university)

## POWERFUL, COMPREHENSIVE COMMUNICATIONS

Resilience and capacity to support the needs of students, faculty and staff for timely collaboration, reliable communications and in-depth research

Besides the challenges of keeping campus networks secure and always available, universities and colleges must ensure that networking capacity and capabilities match the current and anticipated needs of their academic communities. 3Com standards-based solutions provide easy and economical migration to advanced converged services, cost-effectively replacing aging and often expensive-to-update infrastructure with future-proof, non-proprietary investments. Voice-ready solutions effortlessly support the 3Com Convergence Applications Suite—an integrated set of software modules, hardware platforms and IP phones to match budget and performance needs. These Voice over IP (VoIP) systems let institutions leverage their data network to cost-effectively enhance collaboration and improve communications with advanced IP-based services. System administrators and users can implement configurations from any location on the network via a web-based tool. 3Com IP phones can be deployed without special service technicians by simply plugging them into a network port. If already customized by a user, a move from one port to another leaves settings and functionality intact. Calls can be made over the Internet minus the expense of traditional long-distance service. PCs can act as desktop phones. Voice mail can be retrieved from email attachments. Video and audio conferencing with desktop sharing can be initiated with the click of a mouse. In addition, campus network users can enjoy secure instant messaging with presence capabilities that show the availability of other networked users—a functionality enabled by 3Com’s implementation of Session Initiation Protocol (SIP)-based connectivity, a standard being universally adopted for multimedia converged solutions.



### CASE STUDY

National Autonomous University of Mexico (UNAM), the largest university in Latin America, conducts 50 percent of Mexico’s research and maintains a strong relationship with such private and public clients as PEMEX (the national oil company), the government of Mexico City and the Federal Electricity Commission. To support revenue-generating research and development projects, and to overcome increasing costs and management difficulties with its existing PBX, the school chose a 3Com converged network solution. After extensive research, including various vendor solutions and the positive reviews on other 3Com installations throughout Mexico City, UNAM implemented a 3Com VoIP system in its new Engineering Tower, a ten-story structure with 10,000 square meters of work and office space.

“...Although we wanted world-class performance, we didn’t want the complexity often associated with advanced systems. Our solutions needed to be simple to manage. We didn’t want to invest a lot of money every month in maintaining the institute’s infrastructure,” said Xavier Palomas, Technical Secretary of the Engineering Institute of UNAM. From the outset, the 3Com solution proved itself robust and cost-effective. It not only optimized collaboration and interactions among UNAM’s faculty, students and research clients, it also saved approximately ten percent of the total implementation budget in reduced wiring costs and seamlessly interoperates with the legacy PBXs. For additional savings, administrators only have to manage one standards-based network and can control calling patterns, reducing improper usage such as non-UNAM related long-distance calls.

Read more at [www.3com.com/unam](http://www.3com.com/unam)

## HIGH-VALUE STRATEGIC INVESTMENTS

Flexible, innovative solutions with lasting value, designed to meet the needs of today and the opportunities of tomorrow

The best technology investments are those that continue providing value over time, avoiding obsolescence triggered by fast-paced innovation. That's why 3Com designs standards-based, secure voice and data networks. For long-term investment protection, they enable next-generation applications with straightforward installation and practical management. 3Com implementations can be configured easily to work side-by-side with existing third-party systems and future standards-based acquisitions. Their simple, centralized and remote administration capabilities reduce training, travel and response time. To maximize efficiencies, 3Com management software allows IT staff to maintain LANs, WAN connectivity, VoIP communications and wireless systems with the same tools. Plus, 3Com offers both expert professional design and implementation services to optimize deployment and maintenance support to ensure continuing high-quality performance.

Institutions implementing a 3Com network architecture gain high-value, core-to-edge solutions, featuring intelligent, multilayer modular and stackable LAN switches and a range of state-of-the-art wireless mobility solutions to ensure non-stop availability to critical applications. They also benefit from industry-leading scalability—up to 1.44 Terabits per second capacity—and flexible, high-performance Gigabit and 10-Gigabit secure switching and routing. Platform models with Power over Ethernet (PoE) provisioning deliver the most demanding, next-generation applications with speed and reliability, leveraging existing Ethernet cabling for added economy and convenience.



### CASE STUDY

Penn State University's School of Information Sciences and Technology required a powerful IT infrastructure to ensure performance excellence of its model computer sciences, IT and engineering programs, housed in a new 199,000 square-foot state-of-the-art facility on its University Park campus. To provide for needs of the school's 750 students and 45 faculty members, as well as for future growth, the university chose a 3Com wired and wireless network solution to support the building's computer labs, 155-seat Cybertorium, demonstration laboratory and sophisticated IP surveillance system. Network administrators worked closely with the 3Com consulting services team to smoothly implement critical systems that enable highly public classroom and research activities. The 3Com network delivers the reliable, high-performance connectivity required for major research projects such as one on web search engine technology that was expected to generate four times the current 25,000 hits/day. In addition, the network provides the prioritization, speed and bandwidth for network-dependent studies of gaming technology, web applications and weather forecasting. The school's 3Com infrastructure enables not only important research on campus, but also safe, remote Virtual Private Network (VPN) connectivity for students and faculty to the university's file sharing and database resources, letting important work continue beyond the campus' physical boundaries.

Read more at [www.3com.com/penn\\_state](http://www.3com.com/penn_state)

## UNTETHERED ACCESS TO PEOPLE AND INFORMATION

Academic communities, like global enterprises, need connectivity that spans geographies and time. Faculty and students require the power of high-performance solutions and availability of network resources 24/7 from a range of locations and a variety of communications devices. 3Com wireless networks free users from traditional work locations, enhance interactions and reduce the expense and disruption of extending networks with wired connectivity. Wireless switches and controllers, managed and unmanaged access points, LAN bridges and professional wireless site surveys give universities and colleges the tools they need to cost effectively empower their staff and students and economically extend connectivity on a “pay-as-you-grow” basis.

In a 3Com wireless deployment, multiple controllers and switches, grouped into a Mobility Domain, share user databases to support mobility and security across the entire network infrastructure, including remote offices. Mobile users gain uninterrupted wireless communications and optimized RF performance, allowing them to confidently roam among access points without fear of losing connectivity in the middle of an important activity. Administrators can consistently enforce user and group attributes across the wireless LAN as a user roams, adding a new and particularly effective layer of protection for networked resources. They can also respond to network needs more responsively and work more productively with 3Com wireless LAN Managed Access Points (MAPs). With a few keystrokes, IT staff can change parameters for multiple MAPs, eliminating the time-consuming task of individually configuring each wireless device.



### CASE STUDY

College of Environmental Science and Forestry (ESF), State University of New York, is a venerable institution with 21st-century ideas about education. Though founded in 1911, well before the creation of New York's university system, it has a cutting-edge vision of the benefits of pervasive networking. The college chose 3Com to implement a wireless solution that, without placing a tremendous burden on its three-person IT staff, would enable connectivity to networked resources from the campus or in the field, where students conduct research with the school's 350 faculty and staff members. The 3Com solution enhances collaboration on research projects, lets users roam freely and securely throughout the building from one access point to another without losing network connectivity and creates an infrastructure able to deliver online coursework in the future. With its versatile, standards-based design, the 3Com systems support a range of platforms, including Macintosh computers, PC devices and handheld systems used by students and faculty to collect data in the field. Centralized system management simplifies deployment and enhances performance—the 3Com Wireless Switch Manager automatically adjusts radio frequency coverage among access points and balances traffic to prevent overloading any single device for consistently optimized wireless connectivity. ESF's students and faculty can enjoy the same fast and secure network access from their wireless system as they had from previously deployed 3Com wired solutions.

Read more at [www.3com.com/esf\\_suny](http://www.3com.com/esf_suny)

## ENSURED EXCELLENCE

The hallmarks of 3Com secure, converged networks—experience and vision—are the same pillars on which universities and colleges around the world build creative learning environments supported by traditions of academic excellence. For more details, please visit [www.3com.com](http://www.3com.com).





Visit [www.3com.com](http://www.3com.com) for more information about 3Com secure converged network solutions.

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