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IT Leadership >>
The Road Ahead
Three IT veterans weigh in on what it means to be “chief information officer” and what the future holds for IT in higher education.

View on demand through March 3:
Campus Technology 2009 Virtual Conference
www.campustechnology.com/virtual
Make Me Do It!

Students will participate in campus emergency notification systems—you just need to make it mandatory.

People are always looking for incentives to do something that’s not at the top of their pleasure list, whether it’s to join a gym to lose weight or make a bet with a fellow smoker on who can quit first. Yet, incentives were not the first choice of college students surveyed by CDW-G in the spring of 2009 about how to get 100 percent participation in emergency notification systems associated with their college or university. The number one response from students was: “Make it mandatory.”

This is but one of a number of interesting results from the report, “Potential Mass Notification Reach in Higher Education” (www.cdwg.com/mass notification; also see this month’s Trendspotter, page 42). The student responses were particularly fascinating. Business has long known that one of the key factors in ensuring success is to listen to clients. Higher education is beginning to do a better job with that, as colleges and universities install CRM systems that track students from their first pre-admission inquiries through their lives as alumni (which we’ll talk about in depth next month). The next step beyond tracking is to actually listen to the clients—in this case, students—not only to find out how satisfied they are with their experience, but also to find out how to make various systems more effective. And, what more important system is there than emergency notification, which could make a life-and-death difference in the event of a weather emergency or disaster such as a campus shooting?

So when students say, “Make me do it,” we should pay attention. We should also listen to their other suggestions on how to guarantee 100 percent participation in these systems. Incentives certainly can play a role: Students said that providing an opportunity to win an iPod as a spur to sign up would be effective. They also offered blatantly obvious ideas like making sign-up a part of orientation.

Another common-sense idea was enlisting faculty to tell students about the emergency notification system during the first week of class. Providing faculty with core information about the system to impart to students would create a secondary benefit of ensuring the faculty are fully aware of the system themselves. According to the CDW-G survey, 13 percent of faculty reported that they did not know if their school had an emergency alert system in place. This is a significant contrast to the IT staff, only 6 percent of whom were unaware of their school’s alert system.

Students also thought their peers would be motivated to sign up if they knew that alert systems would inform them when classes are cancelled due to weather. Apparently the desire to sleep in during a snow day is more powerful than the threat of a disaster.

The folks who did the survey proposed that colleges assess how parents will get information in a crisis, and then leverage parents to improve sign-up. College students may not respond very well to parental pressure, but they still are subject to the one thing parents can dish out better than anyone—guilt. That’s one way to make ’em do it! CT —Geoff Fletcher, Editorial Director

We want to hear from you! E-mail us at editors@campustechnology.com.
Lumens Ladibug Document Cameras proves to be the favorite tool in new world classrooms.

21st Century Teachers
Hampton City Schools handpicked 40 teachers, one from each of its K to 12 schools, and awarded them with the moniker of “21st Century Teachers.”

These teachers were trained and given the latest technology-based teaching tools, including Lumens document cameras, Flip video cameras, white boards, blue tooth pen-based tablets, projectors and PCs. When asked which piece of technology was indispensable, the teachers unanimously responded that their Lumens document cameras were the most useful of the tools given them for the study.

“Students today are digital kids,” said Cheryl Grobel, District Instructional Technology Teacher for Hampton City Schools, a district that includes four high schools, six middle schools and 30 elementary schools. “Teachers, knowing this, are very open to getting away from paper-based teaching. They know that they can do so much more—annotating visuals, saving materials, and demonstrating lessons in new ways. It lets them teach the way kids need to learn.”

Lumens valued best product
After integrating the technology into their teaching, the instructors universally valued the Lumens visual presenters, which were selected as the product of choice from among a pool of potential vendors’ products for clarity, ease of use and rich feature set. “We surveyed them and asked what equipment they would keep, in addition to the computer, if they could only choose one,” said Clint Rick, District Instructional Technology Teacher for Hampton City Schools. “Every single one of them chose the digital presenter.” The Lumens digital presenters quickly became a seamless part of classroom interactions, from illustrating math problems with real world materials to giving students a close look at science examples, teachers reported. “The document camera allows teachers to create lesson that encourage students to use reasoning and work together to figure out solutions rather than promoting rote memory,” said Rick.

“With a document camera, you can take any lesson and bring it alive,” added Grobel. “The days of overhead projectors are gone...this is the way schools are going now.”

With Lumens you bring your lesson alive
In the 21st classrooms, students use the visual presenters in their learning as well. “Today’s students are visual learners,” said Rick. “It’s no longer the norm to have teachers sitting in front of the room and demonstrating material... Instead, kids are coming up and working with the equipment as well.”

Teachers also appreciated that visual presenters allow them to save prep time and allow them more time to focus on students. For example, instructors reported that they could create a single lesson prep and use it in multiple classes, and then save it for later use in material review, said Rick.

Visual learning
The 21st Century Classrooms were so well received that Hampton City Schools intends to create more of them. In each of its Title One Schools, the district hopes to have a visual presenter in each classroom this fall, and eventually in every academic classroom.

For more information on Lumens Document cameras, visit: www.MyLumens.com or call toll-free 866-600-0988
UPCOMING EVENTS

January

**JAN 10 - 18**
The SANS Institute
SANS Security East 2010
(www.sans.org/info/47659)
New Orleans, LA

**JAN 15 - 19**
American Library Association
2010 Midwinter Meeting
(www.ala.org/midwinter)
Boston, MA

**JAN 19 - 21**
Edumuse Learning Initiative
ELI 2010 Annual Meeting
(www.edumuse.edu/el10)
Austin, TX

**JAN 20 - 23**
Association of American Colleges and Universities
2010 AAC&U Annual Meeting
(www.aacu.org/meetings/annualmeeting/index.cfm)
Washington, DC

**JAN 24 - 27**
Association for Information Communications
Technology Professionals in Higher Education
2010 ACUTA Winter Seminar
(www.acuta.org)
New Orleans, LA

**MAR 6 - 15**
The SANS Institute
SANS 2010
(www.sans.org/info/49508)
Orlando, FL

**MAR 12 - 15**
National Association of College Stores
CAMEX 2010
(www.camex.org)
Orlando, FL

**MAR 12 - 17**
Association of College & University Auditors
2010 Midyear Conference
(www.acua.org)
Reno, NV

**MAR 28 - 31**
League for Innovation in the Community College
Innovations 2010
(www.league.org/2010)
Baltimore, MD

April

**APR 7 - 11**
American Society for Information Science
and Technology
IA Summit
(www.iasummit.org)
Phoenix, AZ

**APR 11 - 13**
The Community College Foundation
TechEd 2010
(www.techedevents.org)
Pasadena, CA

**APR 12 - 14**
Edumuse/Internet2 Higher Education
Information Security Council
Security 2010
(net.edumuse.edu/sec10)
Atlanta, GA

**APR 17 - 20**
Association of American Colleges
AACC 90th Annual Convention
(www.aacc.nche.edu/convention)
Seattle, WA

**APR 18 - 20**
University of Illinois at Chicago
Sloan-C Workshop on Blended Learning
and Higher Education
(www.uic.edu/depts/oebl/blended/workshop)
Oak Brook, IL

**APR 18 - 21**
National Association of Campus Card Users
NACCU 17th Annual Conference
(www.naccu.org/2010/index.htm)
Phoenix, AZ

For more events, go to:
www.campustechnology.com/calendar
To submit your event:
Send an e-mail to Rhea Kelly
(rkelly@1105media.com)

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Features

Is Cloud Computing a Credible Solution for Education?
Can cloud computing live up to its hype, or is it just another empty promise designed to create demand and liberate more funds from already-strapped IT budgets? How practical is cloud computing to education?
www.campustechnology.com/features

Security Focus

Poor Staff Collaboration and Complexity of Software Hamper Security Efforts
Nearly a third of organizations report that collaboration between IT security and IT operations people is non-existent, and more than half believe collaboration between security and operations can be improved. Read more at www.campustechnology.com/articles/2009/12/01/poor-staff-collaboration-and-complexity-of-software-hamper-security-efforts.aspx

Viewpoint

Teacherless Classrooms: Can We?
If you could have a choice between a “teacherless classroom,” where chunks of knowledge are packaged and pushed out to potential learners by technology, or a “classroom full of teachers,” where students are included in the teaching/learning conversation via technology, which would you pick?
www.campustechnology.com/viewpoint

WEBINARS

Real-World SaaS Success at Western International University
A growing number of campuses are moving applications to a SaaS-based model. Here’s how Western International University (AZ) made the transition and why it may be time for you to get on board as well.

Emergency Communications: Prepare, Respond, Recover
Communicating to your campus community in an emergency is not only critical but now a federal law. Our expert panel shares strategies for effective communication before, during, and after an emergency.

Nonstop Wireless Networking for Higher Education
Best practices for implementing realistic security policies and provisioning bandwidth appropriately while on a tight budget.

In Box

“Technology can be a great tool or a great distraction. More and more, it is becoming a distraction.”
—Anne, Massachusetts
Read this and other reader comments at www.campustechnology.com/articles/2009/11/03/students-unimpressed-with-faculty-use-of-ed-tech.aspx

Top Stories

One-Third of Online IT Support for Students Deals with Login Questions
Syracuse U (NY) Constructs Green Data Center
rSmart Adds Support for Open Source Kuali Financial System
Alma College (MI) Overhauling Administrative Systems
Thomas Edison State College (NJ) Gets Grant to Expand Variety of Distance Learning Modes
Georgia Tech Researchers Attack Cell Phone Malware
www.campustechnology.com/topstories

Campus Focus

Purdue U Brings Social Networking to the Classroom
Professors at Purdue University (IN)—especially those who teach in large lecture halls—have come to embrace social networking as an instructional aid. Read more at www.campustechnology.com/articles/2009/11/18/purdue-u-brings-social-networking-to-the-classroom.aspx

need to know

Tactics for Successful Grant Writing
For most universities, it’s enough to get one grant award within one week’s time. Mount Ida College of Newton, MA, tripled its luck last year by taking home three grants totaling more than $2.1 million. Combined, these monies represented the largest award ever received by the 1,450-student independent college.

The largest of the grants was a $1.72 million award from the United States Department of Education. Issued under the Strengthening Institutions Program, which was established in Title III of the Higher Education Act, the grant will fund major improvements to the college’s technology infrastructure; the expansion of staff and resources in the college’s Center for Excellence in Learning and Teaching; faculty-development programs; and overall student retention. Read more at www.campustechnology.com/articles/2009/11/05/tactics-for-successful-grant-writing.aspx.
NEVER

ERP PARTNERSHIP. In an effort to save money and improve efficiency, the University of North Carolina at Chapel Hill and North Carolina State University are partnering to share the human resources and finance components of their enterprise resource planning (ERP) systems. Both campuses will invest equal resources—equipment and staffing—to upgrade to the latest version of Oracle’s PeopleSoft software by 2013. Four task committees are exploring the collaboration possibilities for the technical infrastructure, the chart of accounts, and the overall human resources and financial systems. For instance, staffer are considering PeopleSoft’s eProcurement module for early implementation; the system includes a commodity-tracking function that may help support efforts at both schools to negotiate better prices.

CAMPUSWIDE WIMAX. This past fall, Northern Michigan University launched a mobile WiMAX network built with Motorola wireless broadband infrastructure. The new high-speed campuswide wireless broadband service coincides with the 10th anniversary of the school’s laptop program; the university gives WiMAX-enabled laptop PCs to all students as part of their tuition, as well as to all faculty and staff. NMU’s local community also will benefit: The school is providing WiMAX access to local school and municipal offices within a 30-mile radius. The mobile network currently consists of four sites, with plans to expand to seven locations. Backhaul for the WiMAX network is provided by Motorola’s point-to-point wireless broadband solution.

A FORTRESS FOR DATA. In November, Indiana University formally dedicated its new $32.7 million Data Center. The 88,000-square-foot structure houses the university’s core IT infrastructure, including the supercomputers Big Red and Querry, as well as the Bloomington hub of Indiana’s statewide I-Light network. To help ensure the continuity of essential and critical IT services for the university community, the building is designed to withstand an F5 tornado, with just one low-slung, disaster-resistant story above ground. The Data Center houses three machine rooms—the Enterprise, Research, and Future Research pods—plus a centralized “war room” and an operations center. Any data written on any device in a Data Center machine room is also written automatically to a comparable device at the Informatics and Communications Technology Center, a peer facility on the Indiana University-Purdue University Indianapolis campus, mitigating the risk of lost or destroyed data.

TELEPRESENCE FOR BUSINESS EDUCATION. The University of South Carolina’s Darla Moore School of Business is using Cisco’s TelePresence technology to deliver a range of global executive-education and graduate-level business and management courses. The high-definition conferencing will provide students and executives around the world with a live learning and meeting environment, enabling a variety of blended learning options for participating in business-education programs. Via the TelePresence system, participants will be able to collaborate with each other in a life-size, high-definition environment, as if they were meeting in the same room.

HPC AT BROWN. Brown University (RI) and IBM are sharing investment in a multimillion-dollar supercomputer at the school’s Center for Computation and Visualization. The high-performance computer can perform 14 trillion calculations per second—nearly 50 times faster than what previously had been available at the university—and will be used by researchers statewide to tackle research on climate change, education, energy, and health. The core system has 166 compute nodes, each with two Intel Xeon E5540 (quad-core Nehalem) processors, 24GB RAM, and a QDR (40 Gbps) Infiniband network interface. Read more at www.campustechnology.com/articles/2009/12/01/brown-and-ibm-power-up-supercomputer.aspx.

For daily higher ed tech news, go to campustechnology.com/articles/list/news.aspx
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MOBILE FUNDRAISING. Texting “$2000” and the code “HT” on a cell phone will forward $5 to Huston-Tillotson University (TX) as part of a new mobile giving campaign. Through technology from mobile-billing infrastructure vendor Wireless Factory, each $5 contribution is charged directly to a subscriber’s cell phone bill. The program was designed to attract and encourage giving from recent graduates.

CLOUD COLLABORATION. IBM has launched the IBM Cloud Academy, a global forum for educators, researchers, and IT personnel from the education industry to pursue cloud computing initiatives, develop skills, and share best practices. George Mason University (VA), Georgia State University, Marist College (NY), New York University, North Carolina State University, and the University of Maryland-Baltimore County are among 17 educational institutions around the world participating in the Cloud Academy. Participants will be able to collaborate via the internet using an IBM-managed cloud, work jointly on technical projects across institutions, and share research findings. The Cloud Academy also hopes to further advance cloud computing by preparing education-focused open source software for clouds, integrating cloud provisioning and de-provisioning services, validating content for compliance with accessibility standards, and leveraging IBM cloud offerings for teaching, learning, research, and administration.

GIVING BACK WITH WIRELESS. As part of its efforts to revitalize the local community, Wayne State University (MI) will supply the technical, strategic, and systems support to provide high-speed WiMAX and WiFi internet access for residents in two low-income Detroit neighborhoods. The project is being funded by an $810,000 grant from the John S. and James L. Knight Foundation. The university is undertaking the initiative under the auspices of the Community Telecommunications Network, a Detroit consortium created in 1990 to manage a group of cable channels shared by school districts, public television, and other organizations in the area. Read more at www.campustechnology.com/articles/2009/11/19/wayne-state-goes-off-campus-to-help-deliver-high-speed-wireless.aspx.

IN CASE OF EMERGENCY, GO ONLINE. As part of its emergency-preparedness plan, Ancilla College (IN) has set up OPEN (Online Preparation for Emergency Needs), a system from online-education provider Learning House that allows course offerings to be administered in an online environment in the case of a pandemic or natural disaster. When disaster strikes, all the college’s courses and programs move to 100 percent online delivery within 24 hours, to ensure that learning is not disrupted. OPEN operates on the Moodle learning management system and serves as an emergency portal with pre-loaded course shells, enrollment information, and easy access to instructor, school, and student contact information. Once operational, the portal is made available until two weeks following the end of the term.

GREEN POWER DEAL. The San Diego Community College District (CA) recently approved a 20-year agreement with solar power contractor Borrego Solar Systems to construct and maintain a photovoltaic system that will provide about 2.4 megawatts of green energy annually at six locations in the district. Borrego Solar will build, operate, and maintain the solar power system, and sell the generated solar energy back to the district at discounted rates—allowing the district to access and use solar-generated energy without upfront capital costs or operational expenses. Read more at www.campustechnology.com/articles/2009/11/19/san-diego-community-colleges-go-solar-without-capital-investment.aspx.

SOCIAL LEARNING. Howard Community College (MD) has selected ConnectYard’s social-learning service to enhance academic support and build a greater sense of community among students. ConnectYard’s QuickConnect Widget for Blackboard allows students to ask and respond to lecture and homework questions via popular social networking sites such as Facebook and Twitter, as well as via text message. Tutors from the college’s Academic Support Services department can join the discussion via e-mail, without the need to log in to Blackboard or a social networking site. The ConnectYard service also allows students, staff, and tutors to interact with each other through both Facebook and Twitter, without the need to “friend” or “follow” one another, thus avoiding potential privacy or security concerns.

TRAINING FOR IT. Western Governors University (online) has announced its membership in the Microsoft IT Academy program. WGU has incorporated Microsoft training curricula, coursework, and certifications into its competency-based IT degree programs; all of the school’s bachelor’s degree programs in IT include at least one Microsoft Certification. CT
Indian University and Campus Management are making history. Making history of fragmented communications and systems, incomplete profiles of students, alumni and donors, and separated campuses. Instead, they are building a lifetime communications solution, a platform for Constituent Relationship Management (CRM) that will span the student and endowment lifecycle and unite every campus.

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End the Paper(less) Chase

Moving to outsourced document-imaging services can improve efficiencies and make digital document management more secure.

SIX YEARS AGO, if you had walked through the Northeastern University (MA) admissions department in December, you would have seen something approximating chaos. The Boston private university was seeing a tremendous spike in applications. To manage them, the school was using part-time workers and expanding into makeshift office space. Conditions were cramped. Budgets and staff morale were strained, recalls Pamela Brennan, senior associate director of operations for undergraduate admissions.

“We were doing it,” Brennan says of processing student applications. “But we knew it could be better. We were managing to get decisions out, but we couldn’t get our heads around what the applicant pool looked like.”

In 2004, looking for a comprehensive solution to its admissions needs, Northeastern decided to outsource its document imaging and management. Now, instead of arriving at the campus, applications are sent directly to an offsite production center, run by document-imaging and web-hosted document-management firm DataBank IMX. There, documents are sorted, scanned, and indexed before being uploaded for processing by partner company FolderWave, which provides Software as a Service (SaaS) document management for college and university admissions departments. DataBank handles the actual paper documents coming in from applicants, records and indexes them into digital files, and then uploads them to be processed by FolderWave’s software, which is what the university staff interacts with via the web. FolderWave also serves as a workflow system for the admissions staff.

The result: Northeastern’s admissions department has become a very different place. The department no longer needs to rely on part-time processors, and morale is greatly improved. In December, at the height of the application season, “if you walked into the admissions office, you’d never believe we’re in the throes of our busiest cycle,” Brennan enthuses.

The faster processing time also has given admissions staff a clearer picture of what the overall applicant pool looks like, which allows them to make better decisions for the university, she adds.

Northeastern isn’t alone in its move toward a hosted document-management solution. Traditionally, most schools have opted to purchase document-management software, but a growing number of colleges and universities are turning to hosted and SaaS solutions, says Dan Dillon, marketing manager for Perceptive Software, whose
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ImageNow document-imaging, management, and workflow software is used by more than 400 colleges and universities. To help manage the barrage of paper and electronic documents associated with moving students into and through the higher education system, universities are looking to firms providing various outsourcing options for document imaging and management. Such companies offer a buffet of choices, from taking on the entire process of processing and storing documents on their own servers, to tackling key pieces of the document-imaging and management puzzle. Solutions such as DataBank and ImageNow integrate with student information systems, allowing users to access documents through their existing software. And each offers a range of options based on how much schools want to outsource their document-imaging and management needs.

**Starting With Admissions**

The admissions department often is the first place where universities look to implement document-imaging and management solutions. For good reason: In 2008, for the third year in a row, about three-quarters of US colleges and universities reported that they had seen an increase in applications for admission, according to the National Association for College Admission Counseling. While most students apply online, many of the supporting documents, such as transcripts and letters of recommendation, continue to be on paper, and schools need a way to integrate all those documents for review by admissions counselors.

**St. John’s University**, a 20,000-student university in New York City, started using DataBank IMX about three years ago in its admissions department. “We, like many schools, were undergoing a significant increase in undergraduate applications,” St. John’s Associate Vice President of IT Maura Woods states. In a five-year period, the number of undergraduate applications had climbed from about 15,000 per year to about 25,000.

Using paper files with a folder for each student was cumbersome, and documents sometimes were misfiled or misplaced. The school had been using SunGard Higher Education’s Banner solutions for more than a decade, and initially was looking to establish an in-house system for processing documents via the Banner Xtender document-imaging module. After calling in DataBank as a consultant to develop the in-house system, St. John’s instead decided that it might be more efficient to outsource its document imaging altogether. “It was more than we were willing to take on,” Woods says of the prospect of processing all the department’s incoming documents.

Now, mail for St. John’s admissions department goes to a post office box established by DataBank, which also fields faxes and other document deliveries. At its regional processing center, DataBank scans and indexes documents. Because St. John’s opted to store its information on its own servers, documents are uploaded nightly to a secure FTP server. The school’s Banner software then matches documents according to students’ identification numbers, or holds them in a staging area if an applicant doesn’t yet have an ID number. Because DataBank records each item as it comes in, it is also easier to find answers if a document is missing or if an applicant says it has been sent, explains Woods. Staff can check the file digitally, rather than having to sort through paper documents.

Since the school started using DataBank, the number of applications it receives has shot up to about 50,000 per year, but the admissions department has been able to handle them without an increase in staff, she says.

The increased efficiency also has helped the school reach its admissions goals, Woods boasts. Students receive responses faster, which allows university staff to spend more time following up with students, taking those who were accepted and turning them into enrolled students.

**Moving Into Other Services**

Many schools are looking to take hosted document-imaging services beyond admissions departments to manage and coordinate information in other areas, including financial aid, invoice processing, student health clinics, and other document-intensive applications. When necessary, departments are able to share access to relevant documents.

At the California Institute of Technology, Associate Director of Payment Services Michelle Thompson knew that the admissions department had used ImageNow’s hosted document-management services to streamline its processes. In admissions, implementing ImageNow boosted productivity by 40 percent, which enhanced recruiting and student service, according to the university. Thompson wondered what it could do for her department, which manages all campus invoices.

So in 2007, the payment services department adopted ImageNow. The transition has turned the department into a mostly paperless environment, according to Thompson. Employees scan invoices upon receipt; the software’s workflow component then routes them to the appropriate place. Meanwhile, the ImageNow printer allows users to create a TIFF image of any web page or document, eliminating the need for paper copies.

The St. John’s admissions department now is able to handle double the applications without an increase in staff.
A Greater Level of Security

For Thompson’s department, which has to comply with federal laws designed to safeguard against identity theft, security was a key consideration when making a decision about document-management services. St. John’s had similar concerns about securely handling admissions documents, which contain confidential student information, adds Woods.

Administrators from each school say they feel hosted or outsourced services offer a greater level of security than they could provide themselves. DataBank, ImageNow, and FolderWave all rely on SAS 70 certification, which assesses the internal controls of outsourcing services, such as hosted data centers. At its processing centers, DataBank also has in place physical security measures to control access to documents. As university officials point out, that’s a huge security improvement over the mass of paper documents typically handled by college temporary staff during peak processing times, which leaves information vulnerable.

In addition, vendors’ online document-management tools regulate who has access to documents, offering a variety of access levels based on what information employees require to do their jobs. In dealing with student records, such measures help schools comply with the Family Educational Rights and Privacy Act. These kinds of security measures “made a big difference in our decision” to outsource document imaging at St John’s, relates Woods.

Ultimately, for St. John’s, the positive changes that occurred when the school started using DataBank have led to a review of the university’s entire business process. Woods says St. John’s administrators now are scrutinizing all the paper they use and analyzing what documents could be made electronic and which ones must remain in paper form. “It’s forced us to analyze everything we do.”

Sara Stroud is a freelance writer based in Oakland, CA.

Resources

DataBank IMX: www.databankimx.com
FolderWave: www.folderwave.com
ImageNow (Perceptive Software): www.imagenow.com

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OF ALL THE SECURITY responsibilities facing the campus IT team, handheld-device security may be the most difficult. Students and staff alike receive frequent warnings to secure their data and passwords and report device theft. Yet few mobile device users take the time to protect their handhelds on a regular basis, and IT security policies are hard to enforce, particularly on college campuses where mobile devices such as cell phones are not university property and users can’t be mandated to comply with security requirements.

It’s a tough problem for IT directors to tackle in perhaps the most threatening cybersecurity environment in years. In the study, “Emerging Cyber Threats Report for 2009,” published by the Georgia Tech Information Security Center (GTISC), IT administrators from Georgia Tech and other organizations warn that cybercriminals will unleash attacks on an unprecedented scale in the coming years. Malware and botnets, so far largely the domain of computers, will make their debut in cell phones and other mobile devices, the report warns.

“Malware will be injected onto cell phones to turn them into bots,” cautions Patrick Traynor, an assistant professor in Georgia Tech’s School of Computer Science and a member of GTISC. “Large cellular botnets then could be used to perpetrate a DoS [denial-of-service] attack against the core of the cellular network.”

Traynor and his colleague, Jon Giffin, recently became the recipients of a three-year, $500,000 National Science Foundation grant to research, test, and create guidelines for mobile phone network security that cell phone companies can develop. The team will set up miniature cell networks using femtocells (small mobile phone receivers connected by broadband) and donated phones, and then will simulate attacks on the network and try to find ways to repair it.

Facing Stiff Obstacles
The mobile-security project is the first of its kind in the US, and Traynor readily admits that he’s facing some big challenges. To begin with, it’s difficult to secure the handheld devices themselves. “Security for PDAs is significantly less mature than that for desktops,” he says. “There are additional risks on these platforms. There are antivirus programs available, but they’re not necessarily the right solution. Cell phones are battery-constrained devices. For the user, if the decision is between running an antivirus program or making one more phone call, the
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MOBILE COMPUTING

phone call would tend to win out.”

In addition, the effectiveness of antivirus programs has been decreasing over the years, says Traynor. “There hasn’t been widespread exploitation of mobile devices yet, but there will be in the future,” he warns. “Already, we’ve seen malware on Symbian OS-based phones that could generate botnet behavior.”

Network separation is one weapon in the war against cyberattacks. A common practice on campuses is to set up a secure internal network for faculty and students, requiring authentication for access, and an unsecured network for external users. But that won’t work for long, in Traynor’s view. “Our ability to argue that we have separate networks is going out the window as we increase the number of mobile networks, which are hard to administer on a large scale,” he says. “Also, a mobile device still gives you access to most things inside the network. For example, my cell phone has access to e-mail on the internal network. If my phone is lost, and there’s a piece of malware on it, outsiders can get into the network. Real network separation is going away.”

That’s why Traynor and his academic research team are investigating not so much what can be done to prevent attacks as how to fix the ensuing damage. The answer, he thinks, may lie in remote repair. “What do we do when infection happens? How do we clean up afterward? One way would be for the cell phone network itself to interact with the mobile device and bring it back to a safe state. It would be amazing if a service provider could do this remotely,” he enthuses. “The user may not even be aware of what’s happening. The device may be exhibiting some kind of behavior that the network picks up. The network can then ‘talk’ to the device and help figure out the problem.”

By not involving the user, remote repair would bypass the thorny issue of IT-security policy enforcement—about which Traynor doesn’t mince words. “Compliance is already very difficult and it is only going to become even more so,” he declares.

A Remote Chance of Remote Control

Remote repair capability, however, is not the same thing as having remote control over a device, the way some businesses have, for example, over a company-issued Blackberry. Higher ed technologists seem to be in agreement that remote control of the device is not a likely solution for campuses that don’t provide phones to students and staff—which is most campuses. “It would be hard for a university to say, ‘We’re not paying for your phone, but we have control over it,’” Traynor says.

Andrew Korty agrees that “applying direct controls to devices you don’t own is a tough sell.” Korty is CIO at Indiana University and also acts as deputy information security officer in the Office of the Vice President for Information Technology. He points out there are even limits to remote-control security: Any mobile-device user information that IT administrators collect can, if stolen, also compromise the device’s security. “That leaves you with education and user awareness,” he says. “You also can provide and promote services and software that students can opt to use. Licensing software that encrypts sensitive data and passwords, sometimes called a password vault, is one example.”

Educational campaigns have had some positive impact at the University of Saint Francis (IN), where Randy Troy, director of technology security and compliance, has launched a focused initiative to make security-related information available to faculty and students. “The first thing we do is that, once we have a policy written, we get that message out to the campus at large. We do a presentation, we send e-mails, we hold forums, we get our faces out on campus. That seems to get most of the people on board with it.”

Troy also has put up an extensive amount of information on the IT department’s website. Written for the most part in non-technical language, the site contains the full text of the university’s security policies along with plenty of examples, news, alerts, discussion of the legal implications of violations, and tips for compliance. “I try to write these policies so they are easy to understand,” says Troy. “I don’t want to baffle people with the terminology. Our main goal is that if users can read it and understand it, they’re more apt to abide by the rules. People are busy and will not follow up if they don’t understand what they’re supposed to do.”

Troy reports that users have been largely receptive to the information on the website. Still, he knows that there is no foolproof way to avoid security breaches, especially for mobile devices. “The softest link is always going to be the human element,” he notes. Which unfortunately leaves campus IT directors in a mostly defensive position. “The mindset now in the IT community is not a question of if a violation is going to happen, it’s a question of when it’s going to happen,” he insists. IT administrators have no choice, Troy suggests, but “to try to get the landscape set” to perhaps not prevent, but at least mitigate, the effects of what seems to be the inevitable. CT

Rama Ramaswami is a business and technology writer based in New York City.

Resources


University of Saint Francis Information Technology Security Policy: www.sf.edu/sf/uts/tsc/policies-and-procedures/security-policy
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A LARGE NUMBER of computer intrusions involve some form of malicious software (malware), which finds its way to the victim’s workstation or to a server. When investigating the incident, the IT responder typically seeks to answer questions such as: What actions can the malware specimen perform on the system? How does it spread? How, if at all, does it maintain contact with the attacker? These questions can all be answered by analyzing the offending malware in a controlled environment.

A simple analysis toolkit, built from free and readily available software, can help you and your IT team develop the skills critical to responding to today’s security incidents. The steps below will help get you started. We’ll focus on malware analysis in a Windows environment, since that platform is particularly popular among malware authors.

Step 1: Allocate physical or virtual systems for the analysis lab

A common approach to examining malicious software involves infecting a system with the malware specimen and then using the appropriate monitoring tools to observe how it behaves. This requires a laboratory system you can infect without affecting your production environment.

The most popular and flexible way to set up such a lab system involves virtualization software, which allows you to use a single physical computer for hosting multiple virtual systems, each running a potentially different operating system. Free virtualization software options include:

- VMware Server (www.vmware.com/products/server)
- Windows Virtual PC (www.microsoft.com/windows/virtual-pc)
- Microsoft Virtual Server (www.microsoft.com/windowserversystem/virtualserver)
- VirtualBox (www.virtualbox.org)

Running multiple virtual systems simultaneously on a single physical computer is useful for analyzing malware that seeks to interact with other systems, perhaps for leaking data, obtaining instructions from the attacker, or upgrading itself. Virtualization makes it easy to set up and use such systems without procuring numerous physical boxes.

Another useful feature of many virtualization tools is the ability to take instantaneous snapshots of the laboratory system. This way, you can record the state of the system before you infect it, and revert to the pristine environment with a click of a button at the end of your analysis.

If using virtualization software, install as much RAM into the physical system as you can, as the availability of memory is arguably the most important performance factor for...
virtualization tools. In addition, having a large hard drive will allow you to host many virtual machines, whose virtual file systems typically are stored as files on the physical system’s hard drive.

Because malware may detect that it’s running in a virtualized environment, some analysts prefer to rely on physical, rather than virtual, machines for implementing laboratory systems. Your old and unused PCs or servers can make excellent systems for your malware-analysis lab, which usually doesn’t need high-performing CPUs or highly redundant hardware components.

To allow malware to reach its full potential in the lab, laboratory systems typically are networked with each other. This helps you observe the malicious program’s network interactions. If using physical systems, you can connect them with each other using an inexpensive hub or a switch.

Step 2: Isolate laboratory systems from the production environment
You must take precautions to isolate the malware-analysis lab from the production network, to mitigate the risk that a malicious program will escape. You can separate the laboratory network from production using a firewall. Better yet, don’t connect laboratory and production networks at all, to avoid firewall configuration issues that might allow malware to bypass filtering restrictions.

If your laboratory network is strongly isolated, you can use removable media to bring tools and malware into the lab. It’s best to use write-once media, such as CDs, to prevent malicious software from escaping the lab’s confines by writing itself to a USB key. If using a USB key, which is more convenient than a CD, get a model that includes a physical write-protect switch.

Some malware-analysis scenarios benefit from the lab being connected to the internet. Avoid using the production network for such connectivity. If possible, provision a separate, and usually inexpensive, internet connection, perhaps by dedicating a DSL line to this purpose. Avoid keeping the lab connected to the internet all the time to minimize the chance of malware in your lab attacking someone else’s system on the internet.

If virtualizing your lab, be sure to keep up with security patches released by the virtualization-software vendor. Such software may have vulnerabilities that could allow malware to escape from the virtual system you infected and onto the physical host. Furthermore, don’t use the physical machine that’s hosting your virtualized lab for any other purpose.

Step 3: Install behavioral analysis tools
Before you’re ready to infect your laboratory system with the malware specimen, you need to install and activate the appropriate monitoring tools. Free utilities that will let you observe how Windows malware interacts with its environment include:

- **File system and registry monitoring:** Process Monitor (technet.microsoft.com/en-us/sysinternals/bb896645.aspx) and Capture BAT (www.nz-honeynet.org/capture-standalone.html) offer a powerful way to observe in real time how local processes read, write, or delete registry entries and files. These tools can help you understand how malware attempts to embed into the system upon infection.
- **Process monitoring:** Process Explorer (technet.microsoft.com/en-us/sysinternals/bb896653.aspx) and Process Hacker (processhacker.sourceforge.net) replace the built-in Windows Task Manager, helping you observe malicious processes, including local network ports they may attempt to open.
- **Network monitoring:** Wireshark (www.wireshark.org) and SmartSniff (www.nirsoft.net/utils/smsniff.html) are network sniffers, which can observe laboratory network traffic for malicious communication attempts, such as DNS resolution requests, bot traffic, or downloads.
- **Change detection:** Regshot (sourceforge.net/projects/regshot) is a lightweight tool for comparing the system’s state before and after the infection, to highlight the key changes malware made to the file system and the registry.

Behavioral monitoring tools can give you a sense for the key capabilities of malicious software. For further details about its characteristics, you may need to roll up your sleeves and perform some code analysis.

Step 4: Install code-analysis tools
Examining the code that comprises the specimen helps uncover characteristics that may be difficult to obtain through behavioral analysis. In the case of a malicious executable, you rarely will have the luxury of access to the source code from which it was created. Fortunately, the following free tools can help you reverse compile Windows executables:

- **Disassembler and debugger:** OllyDbg (www.ollydbg.
de) and IDA Pro Freeware (www.hex-rays.com/idapro/idadownfreeware.htm) can parse compiled Windows executables and, acting as disassemblers, display their code as Intel x86 assembly instructions. These tools also have debugging capabilities, which allow you to execute the most interesting parts of the malicious program slowly and under highly controlled conditions, so you can better understand the purpose of the code.

**Memory dumper:** LordPE (www.woodmann.com/collaborative/tools/index.php/LordPE) and OllyDump (www.woodmann.com/collaborative/tools/index.php/OllyDump) help obtain protected code located in the lab system’s memory and dump it to a file. This technique is particularly useful when analyzing packed executables, which are difficult to disassemble because they encode or encrypt their instructions, extracting them into RAM only during run-time.

**Step 5: Utilize online analysis tools**

To round off your malware-analysis toolkit, add to it some freely available online tools that may assist with the reverse-engineering process. One category of such tools performs automated behavioral analysis of the executables you supply. These applications look similar at first glance, but use different technologies on the back end. Consider submitting your malware specimen to several of these sites; depending on the specimen, some sites will be more effective than others. Such tools include:

- **Anubis** (anubis.iseclab.org)
- **CW Sandbox** (www.cwsandbox.org/?page=submit)
- **Joebox** (www.joebox.com/submit.php)
- **Norman Sandbox** (www.norman.com/security_center/security_tools/submit_file/en)
- **ThreatExpert** (www.threatexpert.com/submit.aspx)

Another set of potentially useful online tools provides details about websites that are suspected of hosting malicious code. Some of these tools examine the sites you specify in real time; others provide historical information. Consider submitting a suspicious URL to several of these sites, because each may offer a slightly different perspective on the website in question:

- **Real-time threat assessment:** Finjan URL Analysis (www.finjan.com/content.aspx?id=574), McAfee Site Advisor (www.siteadvisor.com), and Wepawet (wepawet.iseclab.org)
- **Historical reputation data:** Norton Safe Web (safeweb.norton.com) and WOT (Web of Trust; www.mywot.com)

**Next Steps**

With your initial toolkit assembled, start experimenting in the lab with malware you come across on the web, in your e-mail box, on your systems, and so on. You may find this one-page cheat sheet convenient: www.zeltser.com/reverse-malware/reverse-malware-cheat-sheet.html.

Begin analysis with the tools and approaches most familiar to you. Then, as you become more familiar with the inner workings of the malware specimen, venture out of your comfort zone to try other tools and techniques. The tools I’ve listed within each step operate virtually identically. Since they’re all free, you should feel free to try them all. You’ll find that one tool will work better than another, depending on the situation. And with time, patience, and practice, you will learn to turn malware inside out.

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Melding IT With Campus Safety

As technology plays a greater role in physical security solutions, IT staffs are working with public safety teams—and together improving security on and off campus.

AS MORE CAMPUS security solutions—from video surveillance to access-control systems—involve the campus network, IT leaders are by necessity gaining more expertise about security systems.

University officials also are finding that overcoming cultural barriers between physical security staff and IT employees can be as challenging as the technological issues. Two groups that haven’t had much in common in the past now find themselves working together on a regular basis.

“There has been a migration in which IT has become more heavily involved in the decision-making,” says Robert Grossman, an electronic-security consultant in Egg Harbor Township, NJ. But in one sense, he adds, it doesn’t matter whether IT owns the project or public safety does. “You have to get IT involved,” he stresses. “If you’re going to hop on the network, you have to know if you’re going to cause problems. Video-surveillance installations use more bandwidth than data. Can the network handle it?”

In some cases, IT departments are increasingly taking responsibility for security on campus. For instance, the network technicians’ role in public safety at Michigan Tech University has grown to such an extent that Dan deBeaubien, director of information technology services and security, is considering sending his staff to evidence-handling school. When a crime on campus is suspected, often it is IT staffers who are the first to review tapes, looking for suspicious activity, so deBeaubien believes it’s important that those tapes are handled in such a way that the footage is admissible in court.

The IT team at Michigan Tech, based in Houghton, MI, became deeply involved in public safety in 2005 as deBeaubien sought to upgrade surveillance of the university data center. Public safety officials told him they were dissatisfied with the existing cameras on campus, which were monitored in a piecemeal fashion with no central system coordination. They asked deBeaubien to take charge of a project to upgrade and/or replace the current system. As with other IT projects, he did a needs assessment and helped public safety figure out its requirements. As long as cost, security, and accessibility requirements were met, deBeaubien reports, Michigan Tech’s public security staff “didn’t really care about the underlying technology, whether it was IP-based or digital or analog.”

AT MARQUETTE U, the creation of a command information center to monitor 400+ on- and off-campus security cameras challenged public safety and IT leaders to work together in ways they hadn’t previously.
With an IP-based telephone system and a campuswide Ethernet network already in place, deBeaubien decided a network of IP-based cameras was the way to go. The system now uses IP cameras from several vendors in conjunction with Video Insight monitoring software. DeBeaubien says that the IT staff runs and maintains the system for public safety, whose officials have a fully functional console so they can view live and recorded video. IT staffers function as video techs for public safety, helping them learn to use the system and to find and process footage properly.

To ensure that both departments’ priorities are being addressed, the two groups jointly author policy for sharing of and access to surveillance footage, camera placement (to balance between privacy and security), who has access to the footage, and other concerns.

Another issue the two teams are continually working on is how to fund the expansion of camera locations. For example, public safety pays for cameras in areas the department is concerned about, such as certain parking lots and high-priority outdoor areas, but residence halls pay for cameras out of their own budgets. “That funding issue is one thing we need to work on,” deBeaubien says, adding that the relationship is an ongoing process. “We continue to work closely with [public safety] about strategy issues.”

An IT Team of Its Own
In 2006, as the University of Texas at San Antonio police department began to upgrade the technological infrastructure supporting its security efforts, it also saw the need to make some organizational changes to better manage its resources and to communicate with the university’s Office of Information Technology (OIT).

OIT already had a somewhat decentralized model, with an IT person in each department designated to support staff and work on IT security. But the police department previously had never felt a need to hire an internal IT staffer until it started making technology-infrastructure investments that impacted the campus network.

Its first hire in 2007 was Cynthia Govea, who came to work as a technician with vendor Reverse 911, to help install an enhanced phone/e-mail campus emergency system. It was soon obvious to the executives overseeing the security upgrades that she could be a valuable member of their team. “We knew we needed someone full-time on our staff rather than relying solely on IT for support,” says Capt. Daniel Kiley, support services division commander.

Govea explains that “part of my job here is to be the liaison and develop very close relationships with the IT guys upstairs, so that they are involved in decisions about any new equipment or anything that might affect the network.” Govea adds that she also spends a good deal of her time translating IT decisions into lay person’s terms for the police department staff.

She believes that a clear IT department structure facilitates strong relationships and communication. The OIT team is broken down into role-specific groups, so she knows exactly with whom to speak when an issue comes up, and whom to include in strategic discussions when departmental projects are proposed. It’s also clear to her “where the division of labor is,” Govea says. She knows she is responsible for supporting the servers and specific applications the department runs, and that OIT will support the network and campuswide applications.

In 2009, the UTSA police department hired David De Los Santos as the director of security systems, to oversee issues related to information technology, security cameras, and access services. He reports that among his responsibilities is “getting involved in construction projects in the planning stage.” As more new buildings are planned, incorporating cameras and card-reader technology into the design of projects is cost-effective, he says.

In addition to Reverse 911, UTSA has installed a Cooper Notification system, designed to deliver indoor/outdoor mass notifications in an emergency. UTSA also has replaced outdated black-and-white cameras with color cameras from DVTel that possess greater visual and pan-tilt-zoom capabilities, along with video-management software from Salient Systems. To augment its traditional foot and vehicle patrols, the university now has more than 400 cameras on campus, each with at least 30 days’ worth of video stored on a server, so detectives can travel back in time electronically to review physical locations where a crime may have been committed.

Donovan Agans, UTSA director of business continuity and emergency management, calls these separate installations the “technological cohesion in policing” project.
because he sees it as a concerted effort to use all of UTSA's public safety technology and employees to form a united approach to crime prevention. "To do this, we had to have greater team cohesion internally, but we also had to reach out to engage the university community," he says, "especially those in IT to help us look at these technologies."

Reaching out Into the Community

Lt. Brian Joschko uses the term "force multiplier" to describe some of the ways technology upgrades have enhanced security at Marquette University (WI).

As the support services coordinator for the Milwaukee campus's department of public safety, Joschko is enthusiastic about the university’s 2007 expansion of video surveillance to the neighborhood surrounding campus. Twelve cameras have been added on a wireless network, using Cisco's outdoor wireless mesh network solution.

"The idea is to expand the students' overall comfort level and supplement officers on the street," he explains. "We thought we could minimize cost by adding cameras to off-campus areas. It's like having an officer on patrol 24/7 who doesn't blink and who is always recording information. And, with the accompanying signage about video surveillance, it's a crime deterrent."

The outdoor wireless network project, and another to create a command information center to monitor more than 400 cameras located on and off campus, challenged public safety and IT leaders to work together in ways they hadn't previously. But Dan Smith, senior director of IT services, credits a disciplined project-management methodology for keeping the project on track.

"When we implemented PeopleSoft a few years ago, we set up a project-management office, and we realized one of the success factors was having a partnership between an IT staffer and a functional team leader," Smith recounts. "That carried over to this project, so the department of public safety defined the requirements, and the IT people reviewed what that would mean for the access points, the campus network, and looking at the vendors." For the outdoor wireless network, staffers chose Cisco equipment because they believed integration with the existing Cisco network infrastructure would be smoother, and that maintenance of the infrastructure would be easier with a homogeneous vendor.

The project did present some challenges and surprises, both managerial and technical. For example, the two system integrators hired both were purchased by larger companies during the middle of the project, but Smith says that turned out not to be a big problem because the staff assigned to the Marquette project did not change. On the other hand, Marquette officials say they were surprised at how readily members of the local community welcomed the equipment on their properties, nearly all were enthusiastic, and many were even willing to commit to providing electrical power.

On the technical side, the first generation of outdoor wireless access points were not adequate and had to be replaced, and some network switches had to be upgraded. During deployment, there were issues with throughput and resolution. "You had to adjust the settings on the components and make compromises on resolution to get adequate speeds," explains Sean Samis, a project manager in IT services.

"Before this project, Marquette had cameras in and outside residence halls and other public buildings, but [the wireless network] allows us to integrate our camera system with our access-control system," Samis adds. The command information center features digital video recorders and network video recorders that display on a programmable 134-inch "video wall" in the public safety dispatch area. The video is integrated on-screen with information from a C-Cure 800/8000 access-control system.

Marquette officials say they already have seen tangible results, including recording an attempted robbery at an off-campus business. Video surveillance was used to capture the perpetrators' vehicle, which ultimately led to a confession by the suspects.

As Joschko notes, the use of video surveillance on urban campuses is not unique to Marquette, but the ability to extend its reach to off-campus locations is unusual and has received applause both from students and from people who live in the neighborhood, as well as from the Milwaukee police department. More cameras are being added both on and off campus. "We looked at adding more officers," he says, "but this is like adding an officer who never sleeps." CT

David Raths is a Philadelphia-based freelance writer.

Resources

Cisco (wireless mesh network solution): www.cisco.com/web/go/outdoorwireless
Cooper Notification (mass notification system): www.madah.com
DVTel (security cameras): www.dvtel.com
Reverse 911 (phone/e-mail emergency notification systems): www.reverse911.com
Salient Systems (video-management software): www.salientys.com
Software House (C-Cure 800/8000 access-control system): www.swhouse.com
Video Insight (video-monitoring software): www.video-insight.com

www.campustechnology.com
Just What the Doctor Ordered:

Business Continuity in Flu Season
Three savvy universities are leveraging technology to inoculate their campus operations against potential pandemic. by dian schaffhauser

AS INFLUENZA ACTIVITY
throughout the United States continues its gradual rise, H1N1 in particular has been the risk-management topic of the season for most colleges and universities. Among the questions being asked: Can we continue operations in the event of a campus closure? What if a faculty member is too sick to teach? What if students refuse to come to class for fear of flu exposure? While swine flu may not become the pandemic it initially was projected to be, many institutions are leveraging technology—including systems already in place—to keep campus operations going in the event of a flu closure or other emergency.

Pandemic-Planning Test Run
When a residential student at Jackson State University (MS) was diagnosed with the H1N1 virus last fall, Curtis Johnson, director of the Office of Accountability and Coordination, saw a ready chance to test out the university’s pandemic preparations.

The student was moved to an on-campus hotel that will be used in the event of a pandemic for housing sick people whose homes are outside the area. Campus physicians and the health center were on call for medical care. For meals, the student could review the online menu for the day and send an e-mail to a designated person who then arranged for meal delivery. Meals were charged against the student’s meal plan.

It doesn’t stop there. The university, which has about 8,300 students (most commuters), a staff of 1,200, and a faculty of 450, also has identified the least populated residence hall as a backup facility, should the hotel fill up. If sick students lack computers but feel well enough to get online, the university is ready to supply laptops. Many of Johnson’s staff—which includes campus operators, the events manager, customer-care people, and emergency-management personnel—have had their PCs outfitted with webcams to enable face-to-face conversations with others should physical interactions not be possible.

Johnson and campus leaders began planning shortly before the start of the school year. Although H1N1 was only in a few states at the time, it appeared to be “on the rise,” he explains. “I convened teams to talk about how prepared we were. I asked, where is each unit in its preparations for H1N1? I asked the teams to submit to me what would happen in their units if they’re exposed to the virus.”
Johnson put out a request to the academic provosts asking that they plan for extra class sessions at night or on the weekend, to help recovered students catch up. If a large number of faculty members become sick, but not so ill they can’t teach, Jackson State is ready to move classes online through the university’s Blackboard Learning System CE (formerly WebCT) implementation. And if they’re too sick to teach, adjunct professors are ready to step in as temporary replacements.

In the event that staff must work from alternative locations, Johnson made reciprocal arrangements with universities in Mississippi, Arkansas, Tennessee, and Alabama to provide office space. In the works is a 12-seat call center on campus to handle incoming calls should a major outbreak or some other emergency occur.

Should a student suspect his or her roommate is ill but not doing anything about it, the university has implemented Red Flag, an incident-reporting system from RiskAware that allows for anonymous reporting.

And the preparations continue. As recently as September 2009, the university adopted the Everbridge Aware emergency notification system. Like most such services, this one provides for web-based alert initiation; sends messages in a multitude of formats, including e-mail, instant messaging, text messaging, and fax; allows for pre-recorded messages and notifications to groups of participants; and gives near real-time feedback on broadcast results. But Johnson chose the system particularly for its polling capabilities. “For example,” he explains, “if I send out a campuswide alert—‘Press one if you’re experiencing flu-like symptoms; press two if you’re not’—then the system will tabulate that for me when people respond.”

Eventually, he says, the notifications will be integrated with other on-campus mechanisms, including alarm systems, call boxes, loudspeakers, and electronic messaging and digital signage.

Those alerts also will go to nearby residents, if Johnson has his way. Plans include outfitting each neighborhood association in the vicinity of the campus with a computer and encouraging them to get members to sign up for the alerts. “If we have a pandemic, I’m going to make sure that the community knows,” he insists. “I don’t want any guessing going on out there. You want to guide what’s said.”

For Johnson, in his role as chief accountability officer, technology provides the critical link between intention and realization of emergency planning around events like an H1N1 outbreak. “Those of us in institutions of higher learning must understand the importance of having a good technological infrastructure and people who are knowledgeable about technology,” Johnson advises. “People must understand there are many, many ways to infuse technology into the challenges you have.”

If a Jackson State University student suspects his or her roommate is ill, an incident-reporting system allows for an anonymous tip-off.

Medical Lectures on Tap

To help with pandemic planning at the Penn State College of Medicine, Russell Scaduto, Jr., an associate professor of cellular and molecular physiology as well as director for the college’s education technology office, recently polled the members of an IT student committee. He asked them: “In case of a pandemic, if you feel somewhat sick and don’t want to come in, what should we do to keep you actively engaged?”

Their responses: Give us access to e-mail, access to course materials through the college’s Angel Learning Management Suite, and access to lectures through Mediasite, a lecture capture system from Sonic Foundry. Mediasite—which captures video, audio, and computer screens and makes them available for playback on a PC or mobile device—has been in use at the university for about five years and in the medical curriculum for about three years. During that time, the medical college has built up a repository of more
than 4,000 recorded hours of materials, including seminars, lectures, and medical grand rounds.

Now the college records about 700 lectures a year—every course that’s offered to medical students. That process has been facilitated by automation behind the scenes. Lecture capture is initiated without the faculty member having to turn anything on. “It’s all on a schedule,” Scaduto says. “We know that at 1 pm Dr. Smith is giving a lecture. [Mediasite] turns on on the hour, then shuts off five minutes before the hour. So it’s a 55-minute recording. Then it’s automatically published. The only thing we have to be absolutely sure of is that the professor is using a microphone.”

Even in that event, if the professor forgets to pick up the microphone or fails to wear a lavalier mic, students remind the faculty member to do so. Without audio, Scaduto points out, the recording of the lecture is useless. And failure isn’t an option. “Our tolerance for error is no tolerance,” he says.

Scaduto also notes, “We have a very small group of people who never show up [to class]. But we’ve always had that,” he explains, adding that a couple of years ago, the student who was number one in one particular class never went to any lectures in person. What’s of greater interest to Scaduto is another group of students that’s beginning to surface: those who, if they don’t like going to a class, know the lecture is going to be there in Mediasite. “It’s put a burden on us to make sure we have zero failures. We have to make sure these work.”

The Mediasite installation already has proven itself in a health-related emergency, though one unrelated to H1N1. As Scaduto explains, during the last school year a professor became seriously ill about a week before he was scheduled to deliver lectures to about 150 first-year medical students. With the faculty member’s permission, the lectures he had delivered in the previous year’s class were made available for the current year. “Then what we did was put another faculty member in the room. He mentored those lectures,” Scaduto recalls. “He was there to try to answer questions. If he didn’t know an answer, he’d find it out.” The lectures also were available online before and after the scheduled class.

But the college’s concerns for pandemic preparation don’t stop at making sure Mediasite is up and running. The IT organization has increased the institution’s bandwidth capability, in the event that more people need to work from home. “The bandwidth utilization for Mediasite is fairly low,” Scaduto says. “It’s probably around 200 to 250 kilobits per second—it’s not a lot. But if you multiply that times 150 [students], it could get pretty high. That’s assuming that everybody is watching [a recording] at the same time, which is unusual.”

All of the pandemic planning that encompasses technologies such as lecture capture is built around the assumption that students who have the flu will get online and do work from home. “We’re telling people here, if you feel sick and you think you’re sick, stay home. Don’t come [to school] because you’re endangering others. Under those conditions, people would at least keep up with e-mail and watch a lecture now and then,” Scaduto insists. “Because catching up is hard.”

As he points out, “The first year of medical school is nothing short of hell. It’s very, very intense. It’s nonstop. You can’t just take a week off and get away with it like you could when you were an undergraduate. So students appreciate everything you can provide to them to help them in their environment. We look at Mediasite as a part of a larger portfolio that we use for education. It has become an integral part of the fabric of that portfolio.”

Resources

Angel Learning: www.angellearning.com
Blackboard and WebCT: www.blackboard.com
Everbridge: www.everbridge.com
RiskAware: www.riskaware.com
Mediasite: www.sonicfoundry.com
SunGard Higher Education Banner: www.sungardhe.com

Getting Faculty up to Speed

George Washington University (DC) is operating under three assumptions regarding its response to H1N1 and seasonal flu, according to P.B. Garrett, assistant vice president and deputy CIO for academic technology. First, conti-
MANAGING THE PANDEMIC RISK

ANTHONY HERNANDEZ, managing director with Smart Business Advisory and Consulting (www.smartgrp.com), which consults with colleges and universities on risk management, offers four tips for how to approach business-continuity planning around a pandemic scenario or any other cataclysmic event that could beset your institution.

1. Cross your functions. Hernandez sees business-continuity planning being led primarily by people in IT and facilities planning. And while it may begin there, it shouldn’t end there. Make sure to include administration, advancement, finance, and other departments. “Ideally somebody from the president’s office or somebody very senior can be the champion and delegate. It can’t become the responsibility of one department if the entire university needs to be considered as part of the planning,” asserts Hernandez.

2. Don’t reinvent the wheel. The institutions Hernandez consults with are all at different stages of the planning process—and some, he says, are “pretty far along.” He recommends looking to peer institutions for advice and guidance.

3. Don’t become mired in technology. Hernandez says many clients have the mindset that because an important function is handled through an application or some automated process, downtime must be minimal. Yet going down the path of automation—which often requires fault-tolerant systems—can get quite pricey. “You’d be amazed,” he says, “at how easy business continuity becomes if you remove that constraint.” He encourages institutions to ask themselves: “Could we perform this function at the university without technology for a certain amount of time—a week or two—using manual forms and a paper process?”

4. Assume not all risk is equal. Like much of institutional planning, risk management should prioritize risks. As Hernandez explains, “Most people think about [risk management] in terms of technology. But it’s not [about] your most important technology. It’s about figuring out what your most important business processes are, and then what technologies support those.”

EDUCATION TECHNOLOGY

Facility training on George Washington U’s Blackboard system not only prepares the campus for a pandemic event, but also ensures continued use of the CMS—and thus a return on that investment.

Yordanos Baharu, director of GW’s Instructional Technology Laboratory, offers tips for how to approach business-continuity planning around a pandemic scenario. The use of Blackboard, which started at GW in 2002, allows students and faculty—showing flu symptoms to stay home but still continue participating in courses at some level. “The Blackboard platform is a core component of our academic-continuity preparedness plan,” explains Yordanos Baharu, director of GW’s Instructional Technology Laboratory. “Which makes sense since so many use it on a daily basis.”

Yet, in any institutional setting, unless it’s mandated (and even then), getting faculty to use a CMS isn’t guaranteed. Baharu estimates that, in any given semester, about 70 percent of faculty members have an active Blackboard course. That’s not a bad participation rate, but it’s not high enough in the case of a health pandemic. So Baharu and his staff set about getting more faculty into the Blackboard fold with a redesigned training program.

Although the IT lab offers workshops on the use of the CMS every year—the latest release in use is Blackboard Learn version 8—in response to pandemic planning in 2009, Baharu and his staff focused the offerings to be very specific and ran more of them during a concentrated period. Also, to make sure the workshops targeted what faculty wanted to learn, they put out a self-assessment survey to gauge faculty training needs.

“Part of what we’re doing in training is getting faculty to think about Plan B. With this plan, we’re confident that we can mitigate potential disruptions and provide students and faculty the support they need to continue teaching with Blackboard’s system.”

During the month of September, the focus was on level-one training for people who had never used Blackboard and needed to get to minimum usage requirements. That introductory training encompassed two two-hour sessions. The first focused on teaching how to post course materials or reading materials for students. The second session taught participants how to use the built-in communication tools to customize the course; post documents; and effectively communicate with students, using the e-mail functionality within Blackboard or the discussion boards.

Initially, discussion boards were considered an advanced topic. However, the self-assessment survey helped the IT lab reassess the contents of the level-one workshop by establishing that respondents considered discussion boards an important part of introductory training.
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THE ROLE OF THE CIO IN HIGHER EDUCATION

has expanded over time as technology has worked its way into our daily lives, altering forever the way we work and learn, and becoming ubiquitous on our campuses. IT is now critical to the business of education, and the CIO has stretched his or her influence to span key operational areas and diverse programs, often providing input to top institutional leadership and sometimes to the comprehensive strategic plan. Does that mean CIOship in higher education is a booming business? We got some perspectives from three experienced higher education professionals who have been tracking the higher ed CIO for years:

Bruce Maas, CIO at the University of Wisconsin-Milwaukee, reflects on implications stemming from what he considers to be the biggest change factor for CIOs today: the economy. Maas presents widely at national conferences on issues relating to the role of the CIO, where he argues the permanence and impact of these changes.

In response, Mely Tynan, recently retired CIO from Tufts University (MA), considers which leadership areas the CIO should focus on. Now a consultant and leadership coach, Tynan provides organizational- and technology-leadership consulting and seminars, and she conducts strategic planning and IT organizational reviews for university leadership.

We close with Wayne Brown, vice president for information technology at Excelsior College (NY), who brings data from his 2009 Higher Education Technology Leadership Study that could call into question the very existence of the CIO role in higher education.

THE ROAD AHEAD

Three higher ed IT leaders weigh in on what it means to be ‘chief information officer’ now and in the future.
What is, right now, the biggest factor influencing change in the higher ed CIO role?

Bruce Maas
CIO, University of Wisconsin-Milwaukee

The current economic conditions are likely to constrain us for quite some time. The way we went about doing business in the past has changed, and I believe it will be changed permanently, moving out into the future. With constrained resources, you have to be extremely careful about how every dollar is spent. And it’s not that any university has not been frugal or attentive to that, but there’s a new level that’s in place, of paying attention to the dollars. It’s no longer possible to get by while having some inefficiencies.

One of the areas I am looking at regarding the role of the CIO is the relationship with the chief business officer. While that has always been important, at this point it becomes almost acute. The CBO and the CIO have many, many common intersection points. One example is budgeting methodologies. When you move forward, for example, with projects that are considered to be of strategic importance, it is absolutely essential that those projects be fully costed with the total cost of ownership over time. Exit strategies, too, are always difficult because you have stakeholders who are reliant on technology. We are in a new position now where it’s very important to have agreement on how you form your business cases and how you cost things out.

Another thing with the chief business officer is that many of the university’s business processes really do run through the CFO or CBO. As CIOs we’re in a natural position to work as fully collaborative partners with those executives, because IT has a well-established methodology of developing requirements that has worked over many years. While there are aspects of [those requirements] which formerly have been thought of as only applying to IT, I think the concept of requirements works well broadly. On our campus we’ve used the IIBA—International Institute of Business Analysts [www.theiiba.org]—body of knowledge as part of that methodology, and doing that has yielded a remarkable level of agreement. This is a natural place for the CIO to develop into a slightly different role than we may have had in the past.

Another important area relates to the issue of where technologists reside organizationally and how they work together, as well as how they work with their business counterparts. One of our big challenges in higher ed is that the staff in central IT and staff in distributed areas don’t always have the same view of the world. Often we see some overlap that occurs. In part there may be role ambiguity, or there may be a lack of clarity about who should be doing what, under what circumstances, and so on. The role of the CIO needs to include helping to break down those barriers.

On my campus, the model that we use to talk about this is called service layers. As you move through the different services—for example, desktop support—you’ll find more of those functions are actually occurring closer to the faculty member, so they are more “edge”: That is, they are tailored for particular needs in disciplines and areas. All of that is worth talking about, because the same practices should not apply to every unit on campus.

I believe the CIO is the person who should be driving that kind of a discussion, because the role of CIO is not just to supervise or direct the central division of information technology, but to represent the broader needs of the campus community. The CIO needs to establish and create an environment of trust where you can have those discussions in a productive, collegial, and meaningful way.
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Amelia (Mely) Tynan, Consultant and Retired Tufts University CIO

The concept that comes to me as a big takeaway for leadership is context. It’s very important to understand the current context in which you are leading. As we know, colleges and universities are complex enterprises with tremendously distributed authority, and the structure is pretty diverse. Constituencies are diverse; you have a lot of people to satisfy. So it is important to understand the context for planning, decision-making, and resource allocation at your own institution. We are in tough budget times right now but this can vary across campuses, so for you it could be transparent or very opaque. Cost-cutting is a focus for almost everyone right now, but the usual issues and frictions of central versus decentralized organizations continue to be important and are not likely to disappear.

The other thing that one has to be sensitive to as a CIO is understanding your local politics. You must able to navigate that—and local politics can change suddenly, by the way. Change could be triggered by a directive from the chair of the board, or the departure of a senior administrator, or a crisis, or—right now—the economy, or a new technology for that matter. A smart CIO will sense and respond to these changing dynamics, and be flexible enough to ensure that alignment is always there.

With changing scenarios in IT—and the pervasiveness of technology is everywhere, it’s not just in the IT shop—we cannot assume constancy of support for our IT initiatives, so flexibility is very important. Seeking feedback often and throughout the institution is critical.

Maybe related to that, we sometimes still underrate or overlook the importance of relationships. I know we always say that, but to us it should mean taking a lot of actions: reaching out, having more energy to create, nurture, and manage relationships. I know for me, visiting deans and departments is very important. Even if they’re not necessarily interested in technology, a lot of times it’s about understanding where they are coming from, listening, learning, engaging them in all kinds of conversations, because you ultimately are seeking opportunities for technology to be of benefit to them.

A question I’m often asked is, “What is your vision of IT?” In many ways there is no such thing as a standalone IT vision, because it must be hitched to a larger picture and it must yield benefits to the broader institution. It is important to understand that the idea or the real power of vision is unleashed only when a community has a shared sense of direction.

“If you think about it, everything that is happening—and it’s not just true for campuses, but also in business organizations—everything is touched now by technology. So there are very few pure central IT projects or pure IT projects. It is both an opportunity and a complex management gray area because we are always managing intersections—it’s not just the simpler IT of the past where you were in the central computer center and you defined, developed, and delivered services. Now, it’s really using the nature of new technologies and identifying the opportunities in the collaborative context of removing barri-
IT LEADERSHIP

IT is a very good vehicle for removing barriers and creating opportunities in teaching and learning, and in operations.

In terms of understanding the changing CIO role, it’s simple: It means that whereas you once were a sole provider, you are now working with many co-providers. This really is the thrust of the need for partnership. CIOs and other service providers on campus have to connect our customers’ or stakeholders’ self-interest to our efforts. In other words, ask, in what way does this new visualization lab or the new streaming media advance your success as a school or as a department? Think of building more of that type of link to the purposes of the user, in order to serve something bigger than the IT purpose.

Wayne Brown, Vice President for Information Technology, Excelsior College

Forty-five percent of CIOs are going to retire in the next 10 years from higher education. That’s been a pretty consistent number across versions of the research that I’ve done [at the Center for Higher Education Chief Information Officer Studies (CHECS); www.checs.org]. That got me thinking about who the replacements are. I think the majority of them will come from that next layer down in the organizational chart. My concern prior to the [2009 CHECS] survey—and something that I heard from other CIOs—was that we didn’t think people in that group wanted the job. The survey data reveals, fortunately, that isn’t the case. If you continue looking 10 years out, 59 percent of the [second-tier] people I surveyed are interested in the CIO job. And there are more of them than there are CIOs—there are probably at least two people on that level at an institution of any size, and in some cases at some of the larger institutions there are 13 or 14 of them.

The disturbing result of the survey was, however, when I asked who’s helping these potential CIOs get ready for a CIO role, the number one answer was no one. Thirty-eight percent of the people who said they wanted the job had no one helping them prepare. So mentorship is becoming very important. What do we need a CIO to know? What experiences should they have had? What education should they have had?

If you ask 10 CIOs the career path they took to get to the job, you’ll probably get 10 different answers. So when you think about the people in the next layer down, and what they are doing or what they think they need to do to get ready to become a CIO, it’s a rather cloudy career path. Part of what CIOs need to do is reach down and help people in that next layer, whether it’s people who work for them or people from another institution. We have to mentor and provide opportunities for those people in the next layer down to get ready to become a CIO, if that’s what they want to do.

But the nature of the CIO job itself is in question for the future. In the CIO research that I do, I ask a variety of questions that put the CIO into different roles. They cover all the different jobs that the CIO does, from making sure that there’s a responsive help desk and computers on

“The foundational things that we’re best at, the things that are considered most important by us and by the institutional management, can be easily outsourced. That’s a bad recipe for the long-term viability of the CIO.”
desks, to being a partner in strategy. And everything in between. Consistently across versions of the study, when I ask the CIO, the university management, and the CIO’s peers and supervisors—in what role is the CIO most effective?—they say that the most effective roles are foundational rather than strategic: putting PCs on desks, answering help desk phones, and those kinds of things.

Yet the roles that I think are more important, and that I believe most CIOs would rather do, such as being involved in the strategy of the institution, evangelizing for technology, and making sure that the management team is educated on the possibilities of technology—those strategic roles consistently are viewed as the least important and the place where the CIOs are least effective, according to themselves and according to the management team.

This sets us up for a diminished CIO job, given the possibility that foundational roles can be outsourced. There are companies that will provide help desks, and I know there are a number of institutions that outsource the help desk. That’s a dangerous place for us to be, where the thing that we’re the best at, and the thing that’s considered the most important by us and by the institutional management team, can be easily outsourced. That’s a bad recipe for the long-term viability of the CIO.

I think there are a couple of different scenarios for the future. One is that we do outsource those foundational roles, and CIOs ascend to the strategy level. That’s possible if you’re on that level already and you have strategic roles. But if you’re focused on foundational things, if you’re not a member of the management team, and you’re not reporting to the CEO—then maybe you just get outsourced. And we don’t need a CIO just to manage contracts because there’s a purchasing department to do that. I’m not saying this is something that would happen tomorrow, but that’s definitely one possibility, especially when you consider that only 34 percent of CIOs report to the CEO, and only 56 percent are members of the management team. So if you’re not there now and you don’t have that visibility, if you’re not seen as somebody who should be at the table for strategy, and then those foundational things lead you to outsourcing—that’s one scary possible future.

Strategic conversations regarding IT are going to take place whether there’s a CIO at the table or not. Are the [conversations] going to be well-informed? They are awfully expensive and important to any institution to take place without somebody who understands [technology] at the table. But those conversations are taking place, and they are taking place without us. These things concern me about the future of the profession.

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EMERGENCY PLANNING

continued from page 30

Level-two training covered advanced usage of discussion boards, as well as accepting electronic submissions of assignments and homework, using testing features and the gradebook within Blackboard, creating blogs and wikis within the Blackboard environment, and other topics having to do with other classroom technologies, such as lecture capture.

At the same time, members of the staff—particularly administrative assistants and graduate assistants—also attended training, as Baharu says, “to broaden the support structure we have on campus.”

The effort has paid off. The university estimates that about five percent more faculty have begun using Blackboard in their courses since the fall training initiative.

“We did have some faculty in the beginning say, ‘I don’t need to come to a Blackboard workshop, because I’m teaching dance and I don’t see how it could help me,’” recalls CIO Garrett. Nevertheless, the university convinced “some of those folks [to] come and learn about the communication features” to make their course management tasks more convenient, says Garrett. These tasks included pulling student e-mail addresses from the SunGard Higher Education Banner student information system in lieu of the manual entry some faculty had been doing; posting a syllabus for instantaneous availability to all students; and canceling a class and immediately notifying each student.

But it shouldn’t take the threat of a pandemic to get institutions to bring value out of their technologies, Garrett points out. “The truth is, these learning management systems are not inexpensive. You might get one-time funding for a pandemic-type event [because] everyone is concerned. However, the major impact of H1N1 to a university may be gone [within a few months]. Yet Blackboard is considered a mission-critical application and thus it doesn’t go away. You need to always keep a large percentage of your faculty trained and adopting and continuing to use your learning management system, to get your ROI on your investment.”

Baharu echoes Garrett, explaining that, for the IT lab, the complete utilization of the school’s technological infrastructure is “not just about the pandemic. Our plan is set more within the broader context of business continuity at the university.”

Dian Schaffhauser writes about technology in higher ed for Campus Technology and CampusTechnology.com.
Furniture for Collaboration

CBT/SmartDesks has introduced Collab learning studio pods, interactive conference tables shaped for the group dynamics of collaborative learning. The pods feature six flipIT laptop safes, which allow permanently installed laptops to remain connected and charging at all times, and can stow and lock laptops out of sight when not in use. For students who wish to use their own laptops, a pop-up data/power port in the center of the table features four RJ45 and four 110-V outlets. All power and network connections are housed in an 18-inch steel column, which both supports the pod tables and provides easy access to wiring via an 8-inch by 20-inch access hatch. MSRP starts at $6,000. www.smartdesks.com.

Next-Gen Learning Environment

Pearson has announced Pearson LearningStudio, a SaaS learning environment that combines the Pearson eCollege and Fronter platforms. Three licensing levels—Campus Edition, Blended Edition, and Online Edition—allow institutions to build the system that best aligns with their academic mission and goals. Pearson’s MyLab study and assessment tools are integrated and customizable, giving faculty instant access to data and analytics on student performance. Social networking functions allow the creation and use of student personas, wikis, blogs, user-generated content, and more. A host of learning tools provide functionality in coursework, learning, collaboration, publishing, and administration. Contact vendor for pricing. www.pearsonlearningstudio.com.

Mobile Clickers

Acadium has announced the mClk, an SMS-based classroom-response system that allow students to use their cell phones as response devices. To use the service, instructors set up a free account at www.mclkonline.com, and students sign up for the mClk service via text message. Students text poll responses to a designated short code, and the data is tallied instantly on the mClk website. Pricing is available on a per-student basis ($9.99 per student per month) or via a subscription plan (starting at $135 per month for 50 participants). www.acadium.com. CT
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All may not be equal on college campuses when it comes to emergency notification systems. According to a 2009 CDW-G nationwide survey of higher education institutions*, community college denizens are less likely to know if their campus has a modern notification system than faculty, students, and IT staff at four-year schools. (The survey defined a “modern” system as one that uses a combination of mass e-mail, text-messaging, loudspeakers, and sirens.)

Sixty-two percent of community college survey respondents reported that their campus has some kind of campus emergency notification system, compared to 85+ percent of respondents from public and private four-year institutions. That could mean that fewer community colleges actually have these systems, or that community colleges are doing a lesser job of making their constituencies aware that these systems exist (or a little of both).

Community colleges also lag behind when it comes to participation in these systems. Of the 62 percent of community college respondents who said their campus has emergency notification, only 66 percent acknowledged participating in the system. The reported participation numbers for four-year public and private institutions are much higher.

Furthermore, when it comes to the actual use of technologies, four-year institutions are more likely to utilize mass e-mail and text-message notifications than their two-year-college colleagues, according to IT staff respondents to the survey.

About three-quarters (76 percent) of community college IT staff reported that their school uses e-mail alerts for emergency notification, compared to 90+ percent of four-year public and private school IT staff respondents. There’s an even larger discrepancy in the use of text messaging: 66 percent of community colleges send text-message alerts, compared to 80+ percent of four-year publics and privates.

The lower usage levels of e-mail and texting may be particularly unfortunate for community colleges—since their students spend so much time off campus, it would be beneficial for their alert systems to reach students wherever they are.

The goal, of course, is to achieve 100 percent participation in emergency notification systems on all campuses. That can only happen with better communication from campus administrators about the systems that are in place. See page 4 for some creative suggestions the study gathered from students about how schools can boost awareness and participation among campus constituents.

*The March 2009 online survey canvassed 400 students, 303 faculty, and 314 campus IT professionals at community college, four-year public, and four-year private institutions. For more info, go to www.cdwg.com/massnotification.
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