Can I secure, manage and control my education network with fewer resources?

Yes!

Most educational facilities secure their private data from external threats by using WAN firewalls and VPNs. However, independent analyst studies show that up to 90% of security breaches come from inside the network - ranging from users attempting to access restricted data to students and mobile users signing on to the network with a virus they picked up in the outside world.

You need **internal security**
You need **continuous operation**
You need **wireless mobility**

**You NEED Alcatel**

**ALCATEL DELIVERS**

www.alcatel.com/enterprise

800-995-2612 (prompt #5)
### Events Calendar

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Conference</td>
<td>August 1–5, 2004</td>
<td>Sheraton Chicago Hotel &amp; Towers Chicago, Illinois</td>
</tr>
<tr>
<td>Fall Seminars</td>
<td>October 24–27, 2004</td>
<td>Hyatt Regency St. Louis, Missouri</td>
</tr>
<tr>
<td>Winter Seminars</td>
<td>January 30–February 2, 2005</td>
<td>Hyatt Regency San Antonio, Texas</td>
</tr>
<tr>
<td>Spring Seminars</td>
<td>April 3–6, 2005</td>
<td>Wyndham Franklin Plaza Philadelphia, Pennsylvania</td>
</tr>
</tbody>
</table>

**ACUTA's Core Purpose is to:** Support higher education institutions in achieving optimal use of communications technologies.

**ACUTA's Core Values are to:**
- Share information, resources and insight,
- Respect the expression of individual opinions and solutions,
- Maintain our commitment to professional development and growth,
- Advance the unique values and needs of higher education communications technologies, and
- Encourage volunteerism and individual contribution of members in support of organizational goals.
In spite of the pace of campus life and our mostly self-contained infrastructure, we recognized that participating in community collaborations in areas that strengthen the positive ties between the university and community was essential to being a good neighbor.”
Contents

FEATURES

6
Out of the FOG and into the PAN
Dave Barta

Continuing their history of collaboration, the University of Oregon and a group of local public agencies have pooled resources to build a cost-effective public agency network.

12
Campus and Community Collaborate to Form BVCNet
Walt Magnussen, PhD

Texas A & M University initiated the effort to build a "town and gown" team to support a networking collaboration now known as the BVCNet. Technology has improved quality of life, especially for those usually among the underserved.

16
ITS Innovations Help Colgate Build Bridges to Community
Jeanne Kellogg

Over the past 4 years, several major projects have strengthened connections between the village of Hamilton and Colgate University, and the University's ITS team has played an integral role.

30
Is Wi-Fi or WiMax the Way to Extend Wireless?
Michael Finneran

Confused about when to use Wi-Fi and when to go WiMax? Finneran provides a useful analysis of the pros and cons of each.

34
KU Telecom Helps One of Its Own
Jeff Beavers

When a tornado destroyed the home of a KU staffer, the department contributed technology expertise to the reconstruction.

36
Teletechnet: Distance Education at Old Dominion University
Andrew R. Casiello & David Whalen, PhD

Old Dominion makes a case for satellite delivery of distance ed to locations across the state and beyond.

40
Ready to Respond
Mitchell Diggs

Buster Clark, telecom director, and others at Ole Miss are reaching out to communities across the state, training first responders how to handle a disaster.

42
Managing for Success
Dipak Parmar

If your department is understaffed and overworked, read how you, as an effective manager, can make the tough times better.

INTERVIEW

24
with Eduardo Padron, PhD
President, Miami Dade College

COLUMNS

4
President's Message
Walter Czerniak, Northern Illinois Univ.

48
From the Executive Director
Jeri A. Semer, CAE

ADVERTISERS' INDEX

46
Thanks to the companies who support ACUTA by advertising in our Journal.
As I write my last President’s article for the Journal, it seems fitting that the topic is “Town and Gown: Serving the Campus & Community.” My personal interests have always leaned to the technical side (I almost always returned the stuff I took apart back to working order), but providing service with a smile is what truly helped me advance in my field. Our mission statement has always referred to supporting the community in which we live. Universities are about community. Northern Illinois University is very proud that when the vast majority of our students graduate, they stay in-state and support the community that subsidized their education.

It is also reassuring to me that I have been part of making the world a smaller place—more of a community than many disparate peoples. Communications technology has certainly played a critical role in bringing all communities closer together. A few years ago the Information Technology Department loaned out a few of our obsolete—but still working—computers, a printer, some old LAN equipment, and a DSL connection to a group that was trying to eliminate the digital divide. This equipment was placed in a low-income housing project. Volunteers manned and maintained the equipment and helped train and teach essential skills to people who often lack the access to important educational opportunities. Well, you know a program is successful when you actually receive a grant to continue it even when the budget continues to be cut.

While I have only been in the education field for the past 16 years, I continue to be amazed at the service university employees provide to their communities on a volunteer basis. While the press usually picks up the very large projects, it is the constant support of much smaller projects in the community that truly make the universities in this country amazing places to be part of. When the local school district wanted to offer Internet access in the school but had no money or technical staff to get it going, it was a university parent who took a leadership role. He designed a network, leaned on university vendors for donations (equipment and cable), and then organized other parents to volunteer time on weekends to wire the school and connect it to the Internet.

At a retirement party I attended recently, a 43-year employee was asked what she would do with all of her free time. Her comment should not have surprised me, but it did. “I am collecting donations for Habitat for Humanity and plan to be very active in that program. There are also a few other organizations I would like to support if I can find the time.” It seems to me that university employees in general are some of the most giving people—not just money, but more important, their time. It’s what makes a community rich.

I guess in the end that is why I have stayed at the University for a little longer than the two-year commitment I made to the campus and my family when I left the private business sector to put in a little public-service time at a university. It’s a decision I am very happy I made.

Hope to see you in Chicago for our Annual Conference: Learning, Networking and All That Jazz.
PANDUIT® offers the most complete line of non-metallic surface raceway. Pan-Way® Surface Raceway provides maximum flexibility for routing both power and data cabling, seamlessly integrated for a total routing solution.

- Pan-Way Power Rated Raceway Systems provide extreme tamper resistance, yet are accessible for cost effective moves, adds and changes

- Pan-Way Fittings are designed to maintain the TIA/EIA 568-B and 569-A required minimum bend radius for high performance copper and fiber optic cabling systems in data applications

- Pan-Way Snap-On Faceplates and Fast-Snap™ Boxes install without the use of screws for faster installation and superior aesthetics

- Exclusive Pan-Way T-70 Workstation Outlet Center with Snap-On Faceplates facilitate installation, provide maximum cable capacity and can be easily positioned to meet workstation requirements

- The complete line of power rated raceways, fittings, outlet boxes and accessories comply with stringent UL5A and CSA 22.2 No.62-93 approvals for use up to 600V

PANDUIT is a Global Leader Providing Innovative Networking Solutions to Enable Technology.

- Raceway Systems
- Modular Twisted Pair and Fiber Optic Connectors
- Outlets
- Racks and Cable Management
- Fiber Routing Systems
- Physical Layer Management Systems
- Zone Cabling Systems
- Network Identification Systems
- Network Cable Ties and Accessories
- Network Grounding Systems

For more information, reference ad # rs06
800-777-3300 • cs@panduit.com
www.panduit.com/rs06
Out of the FOG, into the PAN

by Dave Barta and Dale Smith
University of Oregon

The University of Oregon (UO), and its fellow public entities in Eugene, Springfield, and Lane County, Oregon, have started out in a FOG and ended up in a PAN, and we couldn't be more pleased. Ten years of collaborative effort have seen the evolution of the Fiber Optic Group (FOG) from a brainstorming band of local network engineers into the Public Agency Network (PAN), a shared dense-wave-division multiplexed (DWDM) network providing members with lambdas (colors of light) capable of carrying gigabit Ethernet or an OC48 from one point in town to another for approximately the price of two T1s.

The PAN is unique beyond the network design, bandwidth, and price. It combines the fiber-optic cable and network engineering expertise of most of the public agencies in the local region under a shared governance and rate structure codified by a complex interagency agreement. In doing so, the PAN has quietly proved that disparate and sometimes competitive public agencies can work together to create an asset much more valuable than the sum of its parts.

The PAN grew from long-term friends and associates developing a collaborative vision of leveraging public-sector networking expertise and installed fiber. The goal has been to create networking options in the community that are unavailable or not affordable through the limited number of vendors willing to compete in a town the size of Eugene.

The key elements that have allowed this collaboration to flourish are trust and faith: Trust that each member will be treated fairly financially and that the individuals are all working toward the good of the larger order. Faith that the investment of time, energy, resources, and money, without a clear measurable return, would ultimately produce real value for each member. So far, we have not been disappointed.

The UO is one of the founding members of PAN, but by no means the biggest beneficiary or contributor of time, fiber, or money. However, as a large and respected member of the community, we have been involved in the development from day one and, at key moments along the way, have leveraged our intellectual and capital assets to move the process along.

In particular, we participated as key parties in the network design stage, and our track record of successful WAN design and management on a statewide level has brought technical assistance and credibility to the PAN design. Our role as primary Internet service provider (ISP) to the community's public agencies has created one of the key uses for the network, and we have also contributed some key physical fiber assets.

This article is the story of how visionary baby steps and faithful collaboration can work.
Early Networking Evolved into NERO

UO has a long history of metro, regional, and statewide networking initiatives. In 1988, the university installed a connection to the Internet through a regional network called NorthWestNet. The university was a founding member and active participant in NorthWestNet. NorthWestNet provided the first dedicated Internet connection in the state of Oregon.

In 1990, the university, along with the seven other public universities that were part of the Oregon State System of Higher Education (OSSHE), installed a T1-based voice and data network connecting all eight institutions into a network called OSSHEnet. This network provided the first Internet connectivity to a number of the smaller OSSHE campuses. When first installed, OSSHEnet dedicated 23 channels of each T1 to voice traffic and only one to data. That ratio was short lived.

In 1994, the Oregon Joint Graduate Schools of Engineering (OJGSE), of which UO was a member, obtained NASA funding to develop a Network for Engineering and Research in Oregon (NERO). This network was initially developed to provide a high-bandwidth wide area network (WAN) providing service to the four institutions of higher education that were members of OJGSE. The original NERO network was a test bed with US West of asynchronous transfer mode (ATM) technology riding on a SONET backbone but reverted to Ethernet on SONET when US West's commitment ended.

Also in 1994, the university applied for and received a U. S. Department of Commerce National Telecommunications and Information Administration grant to construct and operate a network called the Lane Education Network (LEN). LEN provided Internet connectivity to 15 educational, governmental, healthcare, community, and...
and industry partners located in Lane County.

OSSHEnet, NERO, and LEN later evolved into a single network managed by UO. This network has retained the NERO name and is the ISP for virtually all public-sector users in the state of Oregon, including all state universities, most public K-12 school districts, many city and county governments, as well as all state government offices.

Into the FOG

In the early 1990s, technical members of a number of public agencies formed the FOG to discuss the possibility of building a community-owned fiber-optic system. Although this effort did not immediately result in any tangible asset, it did form the initial basis for the relationships and concept of inter-agency cooperation. It also encouraged a number of agencies to begin an investment in fiber-optic systems.

One of those agencies was the Eugene Water and Electric Board (EWEB), the local municipally owned power and water utility. In 1999, EWEB installed 70 miles of fiber to provide connectivity to all of their substations in Eugene. Because they were one of the key parties in the original FOG, they had high awareness that there was a need to provide many more fiber strands than were needed for their electric operation monitoring system.

This fiber backbone provides a fiber presence within one-half mile of virtually any site inside the city of Eugene. EWEB is also a key operator and administrator of the PAN. As a public utility, they are already equipped and prepared to roll crews at all hours to respond to power outages, so establishing a fully equipped crew to maintain fiber assets at all hours was a natural extension of an existing mission for them.

City of Eugene Telecommunications Ordinance

In 1997, the city of Eugene passed an ordinance that taxed telecommunications providers and charged nonproviders for the use of the public right-of-way (ROW). This provided significant revenue for the city, which was used for investment in publicly owned fiber. However, it had a dampening effect on agencies such as the University of Oregon, which now faced right-of-way charges in the $25,000 per-year range. These charges provided significant incentives for the University to find some way to provide some set of services for the city that would be considered to be of comparable worth.

In a fateful meeting in 1999, we proposed a swap of services in lieu of fees with the city but insisted that we should not attempt to quantify the dollar value of every rack unit, foot of fiber, copper pair, or megabyte exchanged. Instead, we would make the shared bold assumption that there was enough value to each party in the partnership to justify it. We all agreed that life was just too short to spend it placing value on minutia and amending contracts every time something changes in this dynamic business. The
city accepted the deal and, about that time, hired a manager of telecommunications and networking with born collaborative instincts.

Arguably, the PAN could not have come about without the support of the city of Eugene, and it has been both a major benefactor and beneficiary of the effort.

**Fiber Extortion**

Some of the best meetings happen on long drives. In 1997, riding back to Eugene from a meeting in Portland with Lane Council of Government’s telecom manager, Dan Mulholland, we learned of a great plot afoot.

Dan said, “We have this creative lawyer who’s using the ROW permitting process to extort fibers instead of franchise fees from fiber companies coming through town along the railroad tracks. The tracks predate our right-of-way at all the streets except one.”

We realized that the railroad tracks and fiber providers pass through our campus, and some years earlier the railroad had sold us some of the same right-of-way under which some of the fiber would pass.

Oregon State law allows municipalities to charge franchise fees to telecommunications providers for right-of-way, irrespective of whether the providers actually provide service in the municipality. As the long-haul fiber providers built their way through western Oregon, the cities on the fiber routes joined together to form consortia that demanded and received dark fiber instead of franchise fees. Long-haul providers who were reluctant to deal with the consortia were easily convinced to do so once they realized there was a city street and some small sections of university property that they needed an easement to cross.

Given the financial difficulties of most of these companies in the past few years, the fiber-for-fees deals have benefited them more than they would have imagined at the time. The consortia have struggled to find ways to economically light the fiber from Eugene to the California border and in the redundant loop to the coast. However, NERO has lit fiber from Eugene to Portland at OC48, and consortium fiber has been key to linking the neighboring cities of Eugene and Springfield.

---

**Gang of Six**

As Williams Communications started the process of their build through the Eugene/Springfield area, the city of Eugene brokered a deal that provided 96 dark fibers through town in addition to 24 consortium-extorted fibers. A group of six public agencies, jokingly referred to as the “gang of six,” helped share in the cost of the installation of this fiber and, in return, were granted the right to use some of the fiber strands. This fiber was initially the only publicly owned fiber running between the cities of Eugene and Springfield.

---

**Xtension Recorder**

Recall every conversation using the power of your PC.

**Features:**
- Capture Caller ID/Dialed Number
- Control from your phone
- Disconnect Alert
- Time & Date stamp
- E-mail
- Password protection
- Store calls locally or on Server

Call Dees with your Nortel recording applications.

The Xtension Recorder simply connects in line with any Nortel PBX or key system telephone and plugs into the USB connector on any PC. Conversations are stored in the same high quality format as your digital telephone system ensuring excellent sound quality.

No sound card required, no handset cord connection, no complex sound card adjustment, simple Digital Connectivity.

Dees 1-800-654-5604
www.dees.com sales@dees.com
PAN

All of these factors (a large quantity of publicly owned fiber, a history and a desire to collaborate, and a strong incentive on the part of the university to provide useful services) culminated in the group of local public agencies working together to agree on a technical design, hammer out an intergovernmental agreement, and actually build a public agency network. The agreement provides for shared governance, shared cost, and shared benefit.

The technical design of the network was based on the clear desire for scalable/unlimited bandwidth, with the characteristic that every agency’s traffic would be kept separate from other agencies’ at a very low, fixed cost. We considered a SONET-based fiber backbone, but found that the cost and complexity of a SONET system was significant. We found that a DWDM system that carried individual circuits as separate colors of light was similar in price, much simpler to manage and install, and met the desire for essentially unlimited bandwidth. So, in 2001, we installed a DWDM system from LuxN. Circuits on this system cost on the order of $500 per month and are capable of carrying up to gigabit Ethernet or OC48 traffic.

Public agencies in the area are using these circuits both to connect remote sites and to provide connectivity to the University of Oregon, which, through NERO, acts as their ISP. As of spring 2004, we’ve deployed approximately 20 circuits to libraries, fire stations, sewage treatment plants, solid waste disposal sites (garbage dump), as well as circuits between public data centers. Since the bandwidth available between sites on this system is equivalent to the LAN speeds, many agencies are rethinking how they deploy services and applications.

Benefits to UO

Ironically, the UO has been a part of this scheming and building since the beginning, but we’re not using a single PAN circuit. However, that doesn’t mean we aren’t beneficiaries. We’ve been enriched in a variety of ways:
Cheap bandwidth. We aren't using any PAN circuits now, but we believe we will. In particular, we have a nontraditional-student housing complex of 404 units located several miles from the campus but within feet of PAN fiber.

Vehicle for deals. The collaborative relationships built through the PAN and efforts leading to its completion have resulted in collaborative projects with the Lane Transit District as they build a Bus Rapid Transit project along our campus and with local school agencies to share fiber and infrastructure as well as rack space in our collocation facility.

Economies of scale. PAN members are significant customers of NERO as well as renters of space in our collocation facility. This has helped us leverage advantageous pricing for bandwidth as well as pay for major electrical and HVAC infrastructure improvements to our network operations center.

Professional development. Every individual involved has benefited professionally from the opportunity to participate in a WAN effort of this scale. None of us individually would likely have had the need to work with DWDM or fiberplant design on this scale, but it has made sense as a group, and we've all learned from it.

Reward for working together. Even in the public sector we typically find more competition than collaboration, and we are usually required to perform ROI analysis on every investment. The PAN has rewarded the members' contributions of existing fiber resources, time, and energy with a tangible benefit that links our community, provides a great network option, and holds promise for more creative collaboration.

Dave Barta is director of telecommunications services at the University of Oregon. Reach Dave at dbarta@uoregon.edu.

Dale Smith is director of network services at the University of Oregon. He can be reached at dsmith@uoregon.edu.
All too often we take for granted the communities in which we live and work. A large campus can get so focused on sustaining the level of activity and functioning day-to-day that it forgets about its relationship to surrounding cities, towns, and neighbors.

Recognizing this issue, in May 2000, Texas A & M University initiated the effort to build a “town and gown” team to support a networking collaboration now known as the Brazos Valley Community Network (BVCNet). Pooling resources with a number of other local entities, we have used technology to improve the quality of life in our community in many ways.

Forming a Coalition

Texas A & M was established in 1876 in College Station, a university-inspired twin to the older, established city of Bryan. Each has a current population of roughly 60,000 residents, and each has its own government, utilities, and infrastructure. With a current enrollment of more than 44,000 students, the campus also maintains its own telephone and cable service, power generation plants, police department, and ambulance service, making it easy to feel and operate as a small municipality within the city boundaries.

In spite of the pace of campus life and our mostly self-contained infrastructure, we recognized that participating in community collaborations in areas that strengthen the positive ties between the university and community was essential to being a good neighbor. Many natural connections for such collaborations exist: For example, university faculty, staff, and administrators frequently serve as community leaders in positions on city councils, school boards, and not-for-profit organizations. Issues of public safety and security are mutual to our resident populations, and knowledge of and lessons learned in the application of the latest technologies in the research environment can be shared for the benefit of the community.

A diversity of organizations, including not-for-profit, educational, governmental, and health-related organizations, joined together to form the BVCNet. Founding partners included the following:

- City of College Station
- City of Bryan
- Brazos County
- St. Joseph’s Regional Health Center
• Texas A & M University System Health Science Center
• Brazos Valley Council of Governments
• Bryan Independent School District (ISD)
• College Station ISD
• Blinn College
• Research Valley Partnership (Economic Development Corporation)
• Texas A & M University

Funding and Management

The BVCNet was initially funded by a former Texas state agency, the Telecommunications Infrastructure Fund Board, receiving $500,000 over 3 years. Members of the network contributed an additional amount of cash and in-kind support in the amount of $300,000 and committed to sustain the program for a minimum of 2 years.

An early issue in building our team was coordination and approval of the proposal. Budget information and signatures were required from 11 partners—each with its own management structure, board or council, and approval process. Key to the success of BVCNet has been the postaward sustainability period.

One reason we feel the project has been so successful is the shared leadership. A board of directors, consisting of representatives from each of the 11 members, meets quarterly. Committees meet each month. Board chairs have been from parties outside the university system and have included leaders in the city government and each of the two member ISDs.

The daily operations and ongoing maintenance of BVCNet products and services are managed through a contracted services agreement with Texas A & M University. BVCNet is now in its fourth year of operation, and we continue to define strategies for expansion and promote additional efforts from this project.

BVCNet Objectives

Our project focused initially on three major objectives:

1. Establish a fiber-optic backbone between the members.

   The fiber-optic backbone was the first project undertaken and completed. A dark fiber connection to each entity, with a minimum of an OC-3 (155 Mbps) connection, allows private peering between all of the entities. (Dark fiber is fiber-optic cable that is either owned by the customer or leased from a service provider; the customer provides the electronics to light the fiber.) Given the broad-based participation, we were able to leverage fiber that had already been installed by the city of College Station and Texas A & M University as well as a new project to install fiber connecting all of the schools in the Bryan ISD.

2. Establish public-access sites at public locations in the community and provide Internet access to under-represented populations.

   Fourteen public-access sites throughout the community now offer a total of 52 computers with Internet access free of charge to underserved populations. For these sites we selected community centers, public housing in each of the cities, boys’ and girls’ clubs, the county health department, and other facilities that would allow public access at flexible times throughout the week. The centers host two to ten computer stations with access to a printer.

Save money and reduce FTEs!

Speech Recognition and “Live Operator” Call Center Solutions

The 1Call Just Say It and Infinity systems:

♦ Automate call processing
♦ Give operators instant access to important information
♦ Help you react quickly to emergencies, disasters, outages, and events when used in conjunction with 1Call’s R.E.D. Alert module
♦ Integrate with your existing IS/IT infrastructure

Your perfect solution for handling:

Inbound/Outbound Fund Raising • Directory Assistance and Switchboard • Alarm Monitoring • Enterprise-Wide Browser-Based Directories • Dispatch • Conferencing

1Call
A Division of US Telecommunications

(800)356-9148 • (608)838-4194
www.1call.com/acuta1
info@1call.com
4800 Curtin Drive • McFarland, WI 53558
These sites are connected to the BVCNet through either a DSL line or dark fiber.

"BVCNet’s public-access site initiative has provided free and convenient computer access to people right in their neighborhood," remarks Jimmy Gilbert, director of the Neal Recreation Center (one of the BVCNet sites). "It has been a real asset for young students to practice their computer skills and do their homework. The project’s goals have exceeded expectations in our community. We reach a broad spectrum of people and have diversified the population that come into and benefit from our community center."

3. Establish a website portal to provide a "one-stop shop" for residents, visitors, potential students, families relocating to the area, and others, with links to all things of interest for life in the BVCNet area.

Each partner is linked to the portal. The dedicated server also hosts not-for-profit sites to help Scouts, neighborhood associations, and sports clubs and connect their members for recruiting, communication, and information exchange. A separate domain was established to support the portal. Security for the network access was designed and implemented, and filters to limit access to inappropriate websites were also installed because many users of the public-access sites are young, school-age children.

Far-Reaching Benefits

The creation of a community coalition within the Brazos Valley has resulted in benefits far beyond those specified as goals of the BVCNet grant proposal. Collaboration and joint ventures between participating organizations have created a new and improved atmosphere within our community as a whole. Some of the value-added benefits to our community are as follows:

- Both cities are now able to share police information via the BVCNet fiber. This offers both cities immediate information on criminal activity and citations never before available.
- Both school districts and the local junior college are now able to supply staff and students with high-speed Internet access at a greatly reduced cost.
- The city of College Station has now located a fire station on the Texas A & M campus. This newly created location is able to communicate with all other city facilities over the high-speed BVCNet infrastructure.
- The Texas Transportation Institute is able to utilize the BVCNet infrastructure to support traffic camera and monitoring devices. This capability has improved the traffic flow within the community and afforded the Institute the opportunity to have real-time, live data for research and simulations.
- The libraries in both cities are now able to share collections and use a common database system over the BVCNet infrastructure.
- The two cities and Texas A & M University each have individual emergency operations centers (EOCs). Each center is able to communicate with other EOCs for video conferencing and direct, dedicated communications, thus improving the emergency preparedness of our entire community.
- St. Joseph’s Regional Health Center has been able to use the BVCNet infrastructure to connect multiple hospital facilities and greatly improve the communications of their internal organization. This infrastructure also has enabled the center to expand its facilities with full awareness for the planning and load requirements in place. This has improved and expanded medical services to the entire community.
• Blinn College students and staff have offered basic computer literacy and computer application training classes free of charge within our community. Some students participating in the program were allowed to charge this activity to community service hours for their study.

• Texas A & M University continues to grow and expand its services into office space throughout the community. The BVCNet infrastructure has provided the university connectivity to all university systems for these satellite locations.

While the proposal process and initial grant funds that brought the BVCNet entities together are long past, the true benefits to our community continue. Organizations within our community take a more global approach to major decisions and expansions. The two cities have now purchased products and services as a single entity, saving taxpayer dollars. School districts have collaborated with their cities on construction projects and facility usage. Texas A & M University is proud to have been a driving force behind this collaboration.

“BVCNet brought the community together,” says former president of BVCNet’s board, Charlie Shear, a charter member of the board who retired from his position with the city of College Station. “Tangibly, it allows governmental and nonprofit organizations to share the fiber-optic network and issue—in real time—communications and to share data to enhance the community’s public health, safety, and welfare. More important, it provides a forum to bring public servant organizations together; several agreements outside the BVCNet scope were a product of this union.”

Less tangible, but more important, are the atmosphere and attitudes resulting from the BVCNet. The project continues to offer unique and collective improvement for the quality of life for all Brazos Valley residents. Beyond the return on investment that has been achieved through the cost savings of the BVCNet infrastructure, BVCNet has been one of the most rewarding projects of my career. When people get together and work for the common good, great things happen!

Walt Magnusen is director of telecom at Texas A & M University. He can be reached at telecom@tamu.edu. Special thanks to Patti Urbina, assistant director of the Academy for Advanced Telecomm and Learning Technologies at A & M, for her help in putting together this information.

---

WHO’S GETTING ON YOUR NETWORK?

*Information is precious - make sure it stays that way*

Securing your networks - Wired and Wireless- just got easier. The Steel-Belted® Radius Appliance secures user access to keep your networks safe! The appliance is the ideal authentication solution for your local area networks (LANS) - it is quick to install, requires minimal support, provides support for most two-factor authentication solutions, delivering a scalable, cost-effective solution for any environment.

Make securing your networks a priority - give Network Engines a call today to find out how to get started.

The Steel-Belted Radius® Appliance secures user access to keep networks safe

**APPLIANCE SALES HOTLINE: 877-638-9323**

Network Engines, Inc., 25 Dan Road, Canton, MA 02021-2817 • Tel: 781-332-1000 • Fax: 781-770-2000
e-mail: sales@networkengines.com • www.networkengines.com
ITS Innovations Help Colgate Build Bridges to Community

Walk into the Barge Coffee House in Hamilton, New York, on a typical afternoon and you'll find local residents, college students, faculty, and others drinking coffee and chatting. You'll also find plenty of people working away on their laptops, accessing their e-mail, and searching websites via a wireless access point. Fairly typical for a coffee house, but this “hot spot” is a key piece in the bridge-building process between the village of Hamilton and Colgate University.

The Barge is a centerpiece of Colgate's initiative to bring together the campus and village communities, the populations of which—2,750 and 2,400, respectively—are roughly equal. Founded in 1819, just 3 years after the village of Hamilton was incorporated, Colgate and the village have grown up together. The relationship has been strained at times, but recent years have seen something of a renaissance of the relationship, primarily due to a Colgate-driven revitalization of the downtown area.

The Hamilton Initiative

Four years ago, the university formed a limited liability corporation (LLC) to provide Colgate alumni and other supporters a way to invest in the revitalization of the downtown while ensuring that the buildings remain on village tax rolls. The organization, called the Hamilton Initiative, LLC, would manage funding for and oversee the improvement of the appearance and functionality of key downtown buildings.

The scope of the projects ranged from simple facade improvement to complete renovation in order to maximize space and invite new business to move in. Because IT systems and services are a key facet of any major renovation project, the Hamilton Initiative team brought in Colgate Information Technology Services (ITS) staff to consult on how best to plan and implement new technologies in the structures.

Over the past 4 years, Rich Grant, Colgate's director of technology planning, has worked closely with Hamilton Initiative staff on key projects, including the running of fiber-optic cable from the campus downtown and the installation of the wireless access points.
A Campus without Borders

In August 2002, Colgate opened the doors to its new bookstore, a three-story facility at the center of the downtown business area. Complete with reading rooms, community space, and a computer store, the bookstore provided another central location for the campus community and the village community to come together and share common space.

The bookstore's opening was complemented by another significant move: Colgate's Office of Development moved to a suite of offices in a building adjacent to the bookstore. The staff of 35 would be the largest contingent of campus staff working at a remote location (although the physical distance is less than a mile).

The ability to connect the bookstore and the development office back to campus via the fiber-optic connection was highly valuable in managing such a significant move. For transactions and communications to work efficiently and effectively, the offices needed to be able to rely on the campus network backbone, not a third-party vendor or an otherwise jerry-rigged system of connectivity.

The fiber connection allowed for a direct connection between the campus and the village offices. It also allowed for the installation of plasma screen displays in the bookstore, which, up to that point, were found only on campus. The screens function as an informational tool, promoting campus events and keeping viewers updated on current news. The bookstore installation presented a new opportunity to bring the village community into the fold, informing them of events and campus news.

The Colgate Inn

The most recent Hamilton Initiative project, a renovation of the Colgate Inn, is one of the most visible. Situated at the center of the village square, the Inn is the most popular place for prospective students to stay with their families when visiting campus.

What could be better than new?

It's not just refurbished - it's remanufactured. 1 Nation's Optimum line of remanufactured telephones and equipment is the highest standard obtainable.

With complete technical servicing, true restoration and all literature and extras, Optimum telephones and parts give you the quality of new without the new price.

Why buy used when you can have Optimum? Contact us today for a complete stock list.
The two-phase renovation, the first of which was completed in March, includes significant upgrades to the building’s technology infrastructure. The fiber-optic connection has been brought into the building, and wireless access points have been added to the first and second floors. The goal is to maintain the Inn’s historical look—it was opened in 1925—while installing “invisible” IT infrastructure.

As with the bookstore, the fiber connection allows direct access to the campus network and also has made it possible to add a plasma screen near the check-in area. The display will allow those checking in to get a sense of the vitality of the campus and will provide a bridge between the campus and the Inn.

A Safe Wireless Connection

The three downtown wireless access points, along with a full complement of hot spots on campus, highlighted the need to secure the network and require some type of authentication process. (Anyone can use the wireless connections downtown to get to the Internet, whether or not they are Colgate affiliated.)

The ITS staff put into place a registration requirement for all machines attempting to log on to the network. All users—guests included—are required to register their computer’s physical address and provide contact information in case there is an issue. If a machine is found to be infected with a virus or otherwise a potential threat to the system, ITS can identify the machine and move it to a quarantine server while the problem is addressed.

This ensures the safety and stability of the network and gives all using it some peace of mind. It is a creative way of providing open access to the network while also ensuring that the network and the users themselves will be secure.

The Upstate Institute

Launched in December 2003, Colgate’s Upstate Institute serves as a resource for organizations and individuals seeking regional expertise or information about upstate New York. A key piece of this initiative is a website that offers access to the studies, reports, and research generated by the more than 40 Colgate faculty and administrators whose work in some way addresses issues of importance to the Upstate community.

David Baird, ITS director for Innovative Technology Solutions for Learning, was brought in to consult with the Upstate Institute and has been involved as the Web presence has developed from idea to creation of a powerful database-driven website.

The ‘Gate Card

In the fall of 2003, Colgate rolled its one-card system, called the ‘Gate Card, out to the campus community as well

---

ACUTA Fall Seminars
October 24–27
St. Louis, Missouri
Hyatt Regency

Track I: Campus Wireless Networks

Topics include wireless security, pricing and support for wireless data implementation, standards, integrated networks, replacing and upgrading wireless infrastructure, handheld devices, policies on use of wireless, and campus-wide coverage.

Track II: Cost Savings and Revenue Ideas

Topics include economizing through collaboration, use of student labor, outsourcing, resource management, leveraging vendor relationships, eliminating fraud or abuse, negotiating good vendor deals, coping with downsizing, locating new revenue sources, and union/HR issues.

To register or for details visit the website at www.acuta.org
as village merchants. Students, faculty, and staff use their 'Gate Cards as an ID, meal card, and debit card for on- and off-campus purchases. Anticipating that the 'Gate Card would become the payment option of choice for those on campus, Colgate offered village merchants the option to accept payment via 'Gate Card as well.

To date, 40 village merchants have signed on and are using card-processing equipment, similar to the machines that process credit-card transactions, provided by Colgate at no cost.

An Undercurrent of Support

The major projects described here have been significant in the tightening of the connection between the village of Hamilton and Colgate University, and the University's ITS team has played an integral role. There are other, more subtle ties that have also had a positive impact on the relationship.

Colgate University hosts the website for the Hamilton Central School (http://hcs.colgate.edu/). Colgate has held video production workshops for area students, providing them with the guidance and equipment necessary to produce high-end clips and movies. Some of the students used their videos as portfolio samples to go along with their applications to college. The Hamilton Theater has been wired for digital presentations and is available for rental. The list goes on.

The effort to bring together the Colgate community and the residents of Hamilton is one that, literally, takes a village. The University's efforts in finding ways to use technology to inform, educate, and bring the village residents into the fold is working. From plasma screens to wireless access points, fiber-optic connections to 'Gate Card readers, the village of Hamilton and the Colgate University community are connected.

Jeanne Kellogg is director of technology communications at Colgate University. Reach Jeanne at jkellogg@mail.colgate.edu.
Universities Extend Wireless to the Community

by Curt Harler
Contributing Editor

Talk to many recent college graduates and they'll tell you one of the biggest
disappointments of life in the "real world" is a loss of the ubiquitous
computing power they enjoyed on campus.

If it is tough for college graduates to stay connected with broadband wireless
access, think how difficult it is for inner-city residents to get state-of-the-
art wireless connectivity in the urban trenches.

Several colleges are trying to change that situation. Schools such as Case
Western Reserve University in Cleveland, Ohio (CWRU), and the University
of Michigan in Detroit are among those reaching out to their communi-
ties to provide wireless access. The Center for Urban Innovation at
Michigan's School of Social Work says it hopes to bring wireless access to Detroit's poor
communities for as little as $100 per year per person.

If that sounds cheap, look at what CWRU has done: Case opened 1,230 public
wireless access points on September 1, 2003. As a part of a larger project called
OneCleveland (www.onecleveland.org), it blankets the entire urban campus and the
surrounding community—with its concert halls, art and history museums,
restaurants, park-like areas, and residences—with free access to wireless.

What is interesting is the difference in approach and support each project
takes.

Traditional Ties

The tradition of college outreach dates back to the mid-1800s, when the Morrill
Act was signed. In creating the land-grant colleges across the country, one of
the Morrill Act's main thrusts was getting agricultural and engineering
research out of college laboratories and into the hands of farmers and designers.

The role of the university has expanded greatly since then. Yet most
people would agree that there is an unwritten contract between a college
and the nearby community to help improve the lives of all those who come
into the school's sphere of influence.

Detroit Project

Rather than bringing new seed to rural folk, the Detroit project began by
bringing computers to city neighbor-
hoods. "There are six Community
Technology Centers (CTCs) in neigh-
borhoods," explains Larry M. Gant,
director of the project (lmgant@umich.edu).

CTCs look like traditional computer
centers, with Internet access, printer
stations, and other computer-related
features. They also give local adults
and traditional students a chance to learn or
hone marketable computer skills. As a part of one project, the students linked the CTCs on a network. However, the dial-up service available at the CTCs soon became a drag.

“Students wanted to upgrade from dial-up to DSL,” Gant says. Gant is an associate professor at the University of Michigan’s School of Social Work. His research focuses on evaluation of small and moderate-size human service and social action organizations in urban communities. Gant has also developed and implemented computer labs in urban schools and foster-care facilities in Detroit.

Gant discovered that high-speed access is easy to get in downtown areas but not in neighborhoods. After a few phone calls, they discovered DSL was not going to happen. “In Detroit, the telecommunications providers had redlined certain parts of the community,” Gant says. He says he believes that the telcos (mainly SBC, in this case) looked at neighborhood zip codes to determine whether there was a sufficient number of people able to pay for DSL.

“Five of six CTCs were in redlined areas of Detroit where getting DSL was not possible,” Gant says.

They looked at cable modem but found it pricey and getting more expensive. “There was a recent 14 percent increase in cable-modem costs. This made it untenable for our use,” Gant says. That left wireless.

Students noted the evolution of hot spots in the downtown area. “They tend to be in chi-chi locations—Starbucks, not McDonald’s,” Gant says.

Moving into the Neighborhood

Looking around, they realized that churches—with their steeples and high roofs—provided great points for community antennas. Churches draw their congregations from the neighborhoods.

Next, they linked up with James Rose and Gigatrans, a wholesaler of broadband signal. Rose (recently deceased) was intrigued by the idea and agreed to provide access to a broadband signal at a reasonable cost.

While homes in a city tend to be at similar heights, there are other challenges, like trees, varying wall materials, and density of residents.

Ironically, it was the Yacht Club at Belle Isle—an island park—that provided the first base station. Located about 4 miles from the Gigatrans antenna, and with the water to give a good signal bounce into the neighborhoods, they were able to work on proof-of-concept. This was in spring of 2003.

“It works like a charm. The signal bounces nicely across the lake,” Gant says. With an 11 Mbps signal, they are able to get 256–280 Kbps service on the mainland.

Their second location is the Family Place, a community center in Detroit. They figure they need 15 subscriber
families in a half-mile radius to make the system work.

The Big View

Gant realized early on that it is not the university’s place to dictate to the city how broadband will be provided. He also wanted to avoid building what he terms “technology ruins”—projects where the technology quickly becomes obsolete and valueless. Nor did he want to infringe on private enterprise.

“We did not want to be in conflict with other companies that wanted to provide service,” Gant says. However, he felt it was clear that telcos were mainly interested in downtown business areas and affluent neighborhoods. The city of Detroit, like many other financially strapped towns, had no model developed for providing communications to citizens. Gant’s group developed an outline and, working with CityConnect, a group that helps develop programs and get funding, moved forward.

Gant says they are basing their Wi-Fi network mainly on Cisco products. He has been pleased with Dell and D-Link, but found that LinkSys is not reliable with their network. “We have to specify kinds of equipment that can be used,” he says. “We don’t want to drive the users nuts.”

Using proven material makes success easier. Also, Cisco has its Cisco Academies in the local public schools. One, at Northern High, is only 2 blocks from a CTC.

OneCleveland Program

The CWRU Gant’s team wireless project is an outgrowth of its broadband initiative. Fifteen years ago, Case brought fiber to the desktop. They started with switched Ethernet, then moved to 155 MBps ATM to the desktop. Now they have gig-Ethernet to the desktop. As part of the project, they extended their fiber backbone to nearby nonuniversity buildings like the Cleveland Institute of Music and the Cleveland Museum of Art. In effect, Case acts as an Internet service provider (ISP) for their access.

On-campus wireless, based on Cisco 802.11b equipment, followed, and the next logical step was to take the wireless into the community.

“We wanted to take advantage of our wireless. It will not replace the high-speed fiber, but it answers mobility issues,” says Dell Klingensmith, vice president and interim executive director for OneCleveland, on loan from Case’s Information Technology Services division.

The original idea was to move on-campus access into common areas and lounges by providing wireless access. That quickly expanded beyond the gyms and the café on North Campus to the nearby town. This happened at the same time they installed the campus gigabit network.

“One thing we decided to do was put the wireless on a separate network environment,” Klingensmith says. OneCleveland’s wireless is open to anyone. Users are not on Case’s network; although their Cisco VPN bridges the two networks, to get into the Case environment one must have appropriate authentication.

“Case chose OneCleveland as the approach to provide free public access to the Internet,” Klingensmith says. The project is part of the mission of OneCleveland. It started with Case’s on-campus network, expanded to the nearby University Circle area (with its museums, parks, and other cultural features), and then moved way beyond campus.

Way Beyond Campus

The OneCleveland wireless network today can be accessed miles from Case’s campus. When the wireless network first came up about 2 years ago, nearby buildings, such as the Cleveland Museum of Art, tied in fast. Case then deployed wireless across the Wade Oval area (a public park) and into the new Cleveland Botanical Gardens. Phased-array antennas, covering an arc rather than a circle, give reach beyond the standard 100 meters.

“Next, we extended the model downtown,” Klingensmith continues. Downtown is 100 city blocks west of campus through some aging industrial neighborhoods. In some of the areas, gentrification is taking place. Others are fairly dilapidated and stagnant. There is little doubt that all of the areas could benefit from wireless.

The logical starting point, however, was at the other end of the Euclid Avenue corridor in the downtown shopping and business area of Cleveland. One wireless island is in the East 9th Street business area. Another wireless island stretches from Public Square to Playhouse Square, a distance of about 13 blocks along Euclid Avenue.

Another 90 blocks back along Euclid Avenue will bring one to Case’s campus and the University Circle area. Eventually, Klingensmith expects, the whole area will be tied together. Like Gant, he sees the network stretching out from nodes here and there and filling in the whole map with wireless access.
There are more than 1,200 wireless access points now made available by OneCleveland. Most are in the University Circle area, of course, but the number of far-off-campus wireless access points is growing like dandelions.

**Down the Road**

"OneCleveland will deploy more wireless access points on the outside of school buildings and other public buildings as the OneCleveland fiber network expands," Klingensmith says.

The city is putting one-way bus lanes, with their traditional islands, along the Euclid Avenue corridor.

"In theory, you will be able to get on the bus and use your Wi-Fi," Klingensmith says.

Both the Detroit and Cleveland projects have questions to answer. Gant says one key to success in Detroit will be avoiding "stovepipe knowledge"—narrow, one-direction knowledge.

With the technology plan for Detroit under development, OneCleveland looked for financial support. In addition, they worked to get the local, city, and state government people together with the private sector.

"It is clear that this needs to have a significant not-for-profit element," Gant says. While for-profit providers will provide the backhaul, for example, continued support from university personnel like himself, churches, and other community institutions will be invaluable.

By early 2005, Gant says he expects to have five or six locations up and running. "High-speed, low-cost, stable Wi-Fi in the neighborhoods," he says, "with the problems of helplines, assistance, best practices solved."

The price for access is $100 to $110 per year, or about $10 a month.

Case's service is free. Currently, OneCleveland is working only with nonprofit groups, such as education, research, cultural, and healthcare organizations, and governmental agencies, churches, and community centers.

As the wireless islands in Cleveland are linked, schools will have high-speed access to art lectures from museum docents, programs from the Rock 'n Roll Hall of Fame, and other city fixtures. Along the bus corridor, people will have free Internet access. Cleveland Public Art artists are expected to develop art for the bus stops, and the Wi-Fi will allow them to use digital art in addition to traditional methods.

The future looks bright—and fast. "We expect to get high-speed networking at 1 Gbps to everyone, no matter the size of their institution," Klingensmith concludes.

Curt Harler is a contributing editor to the ACUTA Journal and a freelance journalist who specializes in technology. Reach Curt at curt@adelphiia.net.

---

**MySoft.net**

*e-telemangement*

**Compco = Results**

**MTSU - Ms. Ronda Vaughtor:** "MTSU is now able to provide online services and consolidate billings using MySoft.net. Not only has our efficiency improved, but we have also reduced billing errors, which in turn provides our customers with the best possible service using the latest technology."

**U. Louisville - Ms. Karin Tyler:** "From our search we determined that Compco suited our needs best due to their years of experience... the support and assistance we have received during implementation assures us of a lasting partnership between UofL and Compco for our Telemangement solution."

**U. Maine - Mr. Les Shaw:** "We have been very satisfied with Compco's host/server product that has served us for 10 years, so we went back to them to find out what was new. The new MySoft.net provides great functionality and will fill our needs well into the future."

**Iowa State U. - Ms. Angela Bradley:** "We evaluated the major telemangement vendors and found that Compco's MySoft.net software is, by far, the best for tracking voice and data networks."

MySoft.net, the only 100% web-based e-business software for managing voice/data services, charge backs, and vendor invoices.
Interview

Eduardo J. Padron, Ph.D.
President, Miami Dade College

Jim Cross: For the benefit of our readers, briefly profile Miami Dade College in terms of enrollment, academic programs, service area, and mission.

Eduardo Padron: “Opportunity Changes Everything” is an axiom that we try our best to realize. It is not only my strong belief but also a clear economic and social necessity that higher education be available to everyone in the community. MDC is now the largest institution of higher education in the nation, enrolling approximately 160,000 students. Eighty-seven percent of the college’s enrollment is minority, including the largest number of Hispanics and second highest enrollment of African-Americans in the country.

MDC offers more than 200 major areas of study. The Associate in Arts degree allows students to transfer to a four-year institution, while the Associate in Science degree prepares students for direct entry to the work force. As well, a full range of short-term programs enhance students’ earning power in new fields and provide professional certification. Over the past 4 years, we have added more than 60 new A.A., A.S., and short-term programs in emerging areas of the work force.

MDC’s Honors College also offers an accelerated option for students who spend their final two years at many of the nation’s finest 4-year schools.

Last but not least, MDC welcomed its first baccalaureate class this past September, with majors in exceptional education and high school science and math.

We pride ourselves on being the “community’s college.” As well as providing academic and career development, the College’s campuses are hubs of civic and cultural programming.

Cross: The global community continues to face many debilitating challenges. To name a few: terrorism, poverty, workplace violence, pollution, and depleted resources. What advice do you offer to various campus leaders about development of students to create the future and being able to deal with these dilemmas? What is the role of technology in this development process?

Padron: My strongest sentiment is that we need to open the door to college ever wider. Today, far too many students who could change their quality of life and contribute to their communities are missing the chance to attend college, despite their demonstrated qualifications. As education leaders, we need to insist with policy makers that they prioritize education as the birthright that it truly is. We need to transcend the financial barriers that make higher education inaccessible to low-income and minority students. To forego the talents of entire segments of our younger generation is a crucial mistake.
STATE AND LOCAL AGENCIES DEPEND ON QWEST

Whether it's public safety tools like the Qwest Emergency Preparedness Network or Internet-based distance learning programs, Qwest provides communities with an invaluable service by helping them help themselves. Communications dependability is our primary goal. So whether we're connecting schools, coordinating help for job seekers, or helping to solve crime, our robust network will be there when you need it. And even when you don't. That's the Qwest Spirit of Service™ in action.

“KNOW WHAT THE CUSTOMER WANTS BEFORE THEY KNOW IT.”

Bob West, Regional Sales Director, Qwest Communications

To find out how we can put the Spirit of Service to work for you, visit us at qwest.com/government or call us at 1 888-879-6460.

Service not available in all areas. Some restrictions may apply. ©2003 Qwest Communications International Inc.
Technology is a standard element in learning today. With the diversity of our students, we see a range of learning styles. Our classrooms and our faculty are equipped to address those differences more effectively than ever.

Our students have grown up in the Information Age. They appreciate the magical potential in communication far better than any generation before them. We need to ensure that our students have access to emerging technology, and, as we all know, it is continually emerging. It is also expensive and necessary to keep pace with learning innovations and comparable developments in the workplace. Today's students will be the leaders who make use of technology to address the problems we face.

**Cross:** Campus transformation is an accomplishment few leaders truly achieve. What have been the key ingredients for your success as a visionary leader at Miami Dade College? What key business processes and practices have been changed by innovative technologies? How have these changes been perceived by various campus constituents? What are the innovative endeavors that you are most proud of?

**Padrón:** I will be the first to tell you that change does not come easy. It cannot be mandated; it always emerges from new understanding and via participation. It has to be real or there will be no ownership. With ownership, we see the creative initiatives that make a difference for students. We have focused honestly on the needs of students. The change is about them, helping them to leave here with the experiences and tools to succeed. That's a rationale for change that resonates with everyone.

We're very proud of the strides we've made. MDC is one of the most effectively wired institutions in all of higher education. We were recognized by Yahoo Internet Life for that accomplishment. We have focused much of our development on student needs. Online, students can complete admission transactions, register for courses, access a database of course descriptions, view their class schedules, and a secure report of their grades and transcripts. They also can log on for live, real-time advising services and tutoring. We have just completed a state-of-the-art online orientation that is one of the most user-friendly portals I've seen. In addition, we are soon to implement a student relations program that uses campus e-mail and our website.

Our Strategic Plan for Technology is an impressive and constantly updated blueprint. By 2005-06, all of our classrooms will be equipped for multimedia across six campuses. As well, we are exploring wireless sites, with large areas of the Medical Center Campus and our new technology training center, the Emerging Technology Center of the Americas (ETCOTA), already in wireless mode.

**Cross:** Economic uncertainty is a major challenge to campus leaders today. How has your campus approached crafting strategy to create value and facilitate student success? What are your views on how we should hold higher education institutions accountable for their success? What advice do you offer to campus leaders struggling with this issue?
Padrón: Economic uncertainty is a concern for both the institution and students as they approach the workforce. Despite the uncertainty, we view our resources as our responsibility. We work hard to communicate our message—repeatedly—to those in a position to affect funding. As well, on a number of fronts, particularly though the work of our foundation, we are committed to developing alternatives to state support.

All of this effort is aimed at providing our students with the best chance to succeed. Student success is our bellwether, and we study our students’ results to identify where the institution can provide critical support. First-year experience is well known to be crucial for community college students, as well as support for developmental students. Our orientation and advisement procedures have been revamped. Our institutional research identified math as a typical stumbling block for entering students, and our faculty—college wide—has embraced the challenge. The result has been math proficiency; but more important, students have gained invaluable confidence and self-esteem.

Accountability is not optional for colleges and universities. At the same time, the measures we establish for student success should be truly relevant to the population of students at a given institution. Because access is fundamental to community colleges, student success manifests in a broader range of accomplishments than traditional measures suggest. A student’s unique triumph and the institution’s focus on that success should be recognized.

**Cross:** Workplace violence continues to be a thorny issue in our society. What policies are in place that detail how MDC deals with workplace violence and threatening situations? How were the policies communicated to various campus constituents? What action has been taken to make campus security more visible on campus and foster better communication among campus constituents?

Padrón: Our college safety officers are very visible and well trained. Because of their demeanor, students acknowledge them as welcome fixtures of the campus environment. We are very thorough in documenting safety and security incidents, and circulating reports to the administrative leaders. We’re focused on prevention, but more important, our students bring a serious intent to campus. Most attend part-time, moving between work, family, and the campus. They both expect and contribute to a conducive environment.

**Cross:** Polls of attitudes about illegal P2P file sharing indicate that most people think it should not be restricted. Given this dichotomy, what advice do you offer to campus leaders struggling with the dilemma? What key issues have been raised at MDC in this area?

Padrón: We have purchased software that immediately identifies high use of...
bandwidth usually required in these instances and brings such usage to the attention of our network personnel. It also allows us to restrict access immediately to specific sites. We have worked individually with students and staff involved in questionable use of copyrights and encouraged them to obtain permission as appropriate. Our policies and procedures require the appropriate use of such materials using college resources.

Cross: Smart campus infrastructures and smart classrooms are increasingly viewed as providing a competitive edge and enabling campuses to do more without sacrificing the quality of education. What is the strategy and master plan for smart classrooms at MDC? What is the basic level of capability that exists across all campus classrooms? What are some of the emerging technologies that will have significance as you look to the future?

Padrón: Four of our six campuses have either all or a significant number of their classrooms equipped as smart classrooms. We have made it a budget priority to fund the two campuses with the fewest smart classrooms to increase their numbers this year. Our goal is to have all classrooms so equipped, as well as provide the infrastructure to support it. What we have found on our campuses is that one-third of faculty leads the way in implementing technology in their classrooms; they then entice and support the remaining faculty. We have a highly utilized College Training and Development program that assists faculty and staff in implementing new classroom and administrative technologies.

Cross: Colleges and universities have tended to be laggards in the deployment of e-commerce/e-payment programs. What advice do you offer to campus leaders considering these technologies?

Padrón: You can enjoy significant savings by adopting such practices—just compare the entire cost in producing a check versus an electronic transfer. We have just rolled out an electronic pay stub for those enjoying direct deposit. At the end of the year, we hope to eliminate the paper pay stub at a cost of about $5 per employee. We are encouraging direct deposit strongly for both full-time and part-time employees. We are looking at all of the ways we do business to uncover benefits through such deployment.

Cross: Enrollment increases, campus growth in terms of new construction and the expense of building new parking facilities continue to exacerbate parking issues at many institutions. What is the strategy and master plan for dealing with parking and traffic congestion at MDC? What role has technology played in the solution?

Padrón: Parking continues to be a challenge for all of our campuses. Our Virtual College programs have assisted in eliminating the need for parking for those taking courses online. However, continued enrollment growth of close to 40 percent over the past 5 years has kept parking needs at the front of our facilities concerns.

ACUTA appreciates Dr. Padrón taking the time to provide us with his insights into these issues from Miami Dade’s perspective.

Do Your Colleagues a Favor: Introduce Them to ACUTA

Discounted Registration • Listserv • Legislative/Regulatory Updates
Professional Networking • ACUTA Journal • ACUTA eNews • Resource Library
LOOK FOR THIS SHIRT AT ACUTA AND LET’S TALK
Visit our booth #616 at the Annual ACUTA Conference

PRODUCTS:

IntelliSPEECH® Speech Recognition
Call and Information Routing
IntelliDESK® PC Based Attendant Console with Enterprise Directory
WebSERVICES Desktop Directory Access to the Enterprise Directory
~ Administration and OnCALL schedules
CSG Custom Solutions Group for Call Centers

"At UNH we have realized many benefits in utilizing the IntelliSPEECH® system. These include expanded hours of service, efficiencies in staffing and quicker connection times within our directory services. After implementing and seeing the success, we are looking at new ways to utilize our operator staff where other resource needs exist."

Tina Sawtelle,
Business Operations Manager
Telecommunications & Client Services
University of New Hampshire

WE WANT YOUR INPUT!

"At SDC we are always looking for new ways, new features, new ideas that help us develop solutions that meet your challenges. For 20 years we at SDC have sought the input and guidance of our most important resource, our customers. Our goal and mission is simple "CUSTOMER COMMITMENT" period! We not only welcome your comments and suggestions, we are seeking them out! Please look for us at the upcoming ACUTA Seminars and Annual Conference. We'll be the ones with the bright shirts! So come by and visit with us, and LET'S TALK!"

Best Wishes,

Joe Jarnutowski
President and CEO
System Development Company of NH, Inc.

SDC Supported Platforms

SDC ~ 835 Hanover Street, Manchester NH, 03104 ~ 603-629-4242 Just say “Sales” ~ www.sdc-nh.com
Is Wi-Fi or WiMax the Way to Extend Wireless?

There is an unspoken assumption today that when we want to extend wireless connectivity from a campus, Wi-Fi will be the technology of choice. No doubt, the relative ubiquity of Wi-Fi-capable laptops and the burgeoning hot spot business fuels this view.

However, this might be a case of grabbing at the first available alternative rather than holding back and waiting for a technology that will better serve our purposes over the long run. Wi-Fi was designed to meet the requirements of a local area network (LAN), not a wide area network (WAN) service. Hot spot providers such as Wayport and T-Mobile find they must provide access, security, billing, and network management capabilities on top of the fundamental Wi-Fi technology to deliver a functional network service.

WiMax, short for worldwide interoperability for microwave access, might be a far more suitable technology for extending Internet access beyond the campus. At some point, it might also be used to augment or replace the existing on-campus wireless infrastructure. Defined in IEEE 802.16 standards, WiMax addresses the wireless problem from the perspective of a carrier rather than a LAN operator. WiMax delivers higher transmission rates and far greater ranges, and, more importantly, scales to hundreds of simultaneous user connections.

While the Wi-Fi Alliance (www.wi-fi.org) has been promoting the 802.11 wireless LAN technology, the WiMax Forum (www.wimaxforum.org) is developing similar interoperability test suites to deliver multi-vendor systems. Internationally, a European Telecommunications Standards Institute (ETSI) initiative called HIPERMAN addresses the same area as WiMax/802.16 and shares some of the same technology.

What’s Wrong With Wi-Fi?

Wi-Fi is a wonderful technology for building local networks. However, Wi-Fi radio-link technology, access protocol, and security features were all designed around the assumption that this would be a private, not a public, network. First, a number of factors support a campus extension architecture based on Wi-Fi hot spots, at least as a near-term option:

• Cost: Wi-Fi cards cost less than $50, and the equipment to establish a hot spot can be had for under $1,000. Current pre-standard WiMax customer equipment is around $300, although that should be dropping once chip-level components are introduced later this year.

• Availability: Many laptops come with built-in Wi-Fi cards, and in those cases, user equipment cost is essentially zero. According to Margaret LeBrecque, marketing manager for the Broadband Wireless Division at Intel Capital and past president of
the WiMax Forum, there are plans for combined Wi-Fi/ WiMax cards for laptops; however, those will likely not be available until 2006.

- Market recognition: Despite its lack of profitability, the hot-spot business has garnered considerable recognition throughout the computer industry. Consumers increasingly recognize the term "hot spot," and prefixing it with "free" will be a great attention getter.

**Security and Control Issues**

As early hot-spot providers or wireless ISPs discovered, Wi-Fi lacks many of the necessary security and control features required for a public network service. Consider the following:

- **Range.** Wi-Fi is designed for transmission ranges up to 100m in indoor environments and possibly twice that outdoors. Range can be increased by using a directional or phased array antennas, but that comes with a price. Also, because the FCC limits the transmission power on unlicensed radio bands, coverage in other directions might be compromised or even eliminated.

- **Indoor operation.** Often, the goal is to extend the campus network to home users. Because of the attenuation created when line-of-sight is lost, reception is only satisfactory if the PC is placed in a window. That is not practical.

- **Back-haul costs.** Each hot spot essentially becomes a micro-cell covering an area of roughly 7.5 acres (assuming a transmission range of 100m). Given the presence of buildings and other obstacles in the environment, effective coverage of the area generally assumed by one hot spot may actually require many. Extending the network to accommodate the increased number of hot spots can represent a significant ongoing operating cost.

- **Security.** The relatively weak security features inherent in Wi-Fi’s wired equivalent privacy (WEP) have been widely recognized. Enterprise users are always cautioned to use VPN secure-tunnel communications when using public hot spots. Providing a network service where users’ private transmissions can be eavesdropped creates a liability for the network provider.

- **Throughput guarantees.** All of the users within the range of an access point or micro-cell will be sharing a single WLAN channel. As the number of active users increases, the throughput per user decreases. The tragedy of commons predicts that, with a free service, you do indeed get what you pay for. Operators of paid hot spots contend that poor performance will cause free services to disappear in favor of paid services or access-controlled services where a retailer provides the service for its customers. In those cases, the operator will ensure that there is adequate capacity to meet the user demand with adequate performance.

See Table 1 for a basic comparison of the Wi-Fi versus WiMax technologies.

### Broadband Wireless Access: Wireless DSL

Wi-Fi was designed to provide mobility in LANs; by contrast, WiMax was developed to provide fixed-location broadband wireless access (BWA), a wireless alternative to cable modems and DSL for high-speed, always-on Internet access. With the development of the 802.16e standard, WiMax will support mobile users as well. WiMax systems could support transmission ranges up to 30 miles, essentially covering an entire metropolitan area. In actual deployments, a typical WiMax “cell” or “hot zone” will have a radius of 1-5 miles. Most importantly, the 802.16 access protocol and security features are designed for carrier services and can scale to hundreds of simultaneous users.

#### Table 1. WiMax versus Wi-Fi

<table>
<thead>
<tr>
<th>Feature</th>
<th>WiMax</th>
<th>Wi-Fi</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.16</td>
<td>IEEE Standard</td>
<td>802.11</td>
</tr>
<tr>
<td>Public</td>
<td>Ownership</td>
<td>Private</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public with Wireless ISPs</td>
</tr>
<tr>
<td>Shared Channel</td>
<td>Overall Network Concept</td>
<td>Shared Channel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Quality of Service</td>
<td>With 802.11e</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With 802.11e Scheduled Multimedia</td>
</tr>
<tr>
<td>256-Sub-channel OFDM</td>
<td>Radio Link Protocol</td>
<td>CCK (802.11b)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>64-Sub-channel OFDM</td>
</tr>
<tr>
<td>Licensed or Unlicensed 2-11 GHz</td>
<td>Frequency Band</td>
<td>Unlicensed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.4 GHz or 5 GHz</td>
</tr>
<tr>
<td>Up to 30 miles (Typically 1-5 miles)</td>
<td>Range</td>
<td>About 100m indoors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to 600m outdoors using directional antennas</td>
</tr>
<tr>
<td>Mandatory: 3DESAES</td>
<td>Encryption</td>
<td>Optional: RC4 (WEP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RC4 Rotating Key (WPA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AES (802.11i)</td>
</tr>
</tbody>
</table>
Like Wi-Fi, WiMax uses a shared radio channel, but has a more bandwidth-efficient modulation scheme. WiMax can carry 70 to 100 Mbps in the same radio bandwidth as 802.11a or g. The WiMax goal is to offer Internet access services data rates between 512 Kbps and 1 Mbps. The key will be to deliver low-cost, indoor-based, user-installable devices. In the late 1990s, Sprint and MCI pioneered this type of service in approximately a dozen markets, using point-to-point radio systems. They subsequently shelved the idea while waiting for a WiMax-type non-line-of-sight radio technology.

In the meantime, dozens of small-scale BWA services have cropped up around the country, using pre-standard WiMax technology. BBWExchange.com lists the top 10 wireless-access suppliers in the United States as of April 2004. The largest is DTN Speed of Omaha, with 5,100 subscribers. The top 10 BWA carriers serve a total of 26,639 subscribers, so they do not represent a major near-term challenge to cable modems or DSL. The WiMax Forum hopes to see that figure grow exponentially when the first low-cost (less than $200), silicon-based, WiMax-compliant products hit the market early next year.

**WiMax Technology**

The WiMax standards include a range of potential implementations to address the requirements of carriers around the world. The original version of the 802.16 standard, released in December 2001, addressed systems operating in the 10-66 GHz frequency band. Those high-frequency systems required a line-of-sight radio path to the base station, which increases cost and limits the customer base. Line-of-sight systems also require professional installers. Existing customer antennas require realignment each time new cells are added to the network.

The 802.16a standard, released in January 2003, is designed for systems operating in bands between 2 GHz and 11 GHz. The lower frequency bands support non-line-of-sight (NLOS), eliminating the need to align the customer unit with the base station. Eventually the 802.16x designations will be retired, and the technology will be referred to as 802.16 or simply WiMax. Table 2 provides a summary of the three major options under WiMax.

Within 802.16a’s 2-11 GHz range, there are three bands in which WiMax systems are likely to be implemented:

- Licensed 2.5-GHz MMDS. In the United States, the FCC has allocated 200 MHz of licensed radio spectrum between 2.5 and 2.7 GHz for Multichannel Multipoint Distribution Service (MMDS). Sprint and MCI used this band for their original point-to-point BWA services.

- Licensed and unlicensed 3.5-GHz band. A swath of licensed spectrum roughly equal to MMDS has been allocated in the 3.5-GHz range throughout most of the rest of the world. In the United States, the FCC is moving to open an additional 50 MHz of unlicensed spectrum in the 3.65 to 3.7 GHz band for fixed location wireless services.

- Unlicensed 5 GHz U-NII band. The unlicensed National Information Infrastructure (U-NII) band provides 555 MHz of unlicensed frequency in the 5.150 to 5.350 GHz and 5.470 to 5.825 GHz bands. That spectrum band is also used for 802.11a wireless LANs. The allocation was increased from 300 MHz to the current 555 MHz by a November 2003 FCC order.

Given the cost involved in acquiring licensed spectrum, university systems would likely employ unlicensed bands. While operators might be leery of delivering a service using an unlicensed band, the WiMax standards incorporate dynamic frequency selection, in which the radio automatically searches for an unused channel.

The 802.16a standards also define three options for the radio link protocol, but virtually all suppliers are adopting a 256-subcarrier orthogonal frequency division multiplexing (OFDM) system. That option also conforms to the European HIPERMAN standard. In an OFDM modulation system, the available radio band is divided into a number of subchannels, and some of the bits are carried on each. Some of the transmitted information is redundant, so the receiver

<table>
<thead>
<tr>
<th>Table 2. Summary of 802.16 Radio Links</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spectrum</strong></td>
</tr>
<tr>
<td>802.16</td>
</tr>
<tr>
<td>10 – 66 GHz</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
</tr>
<tr>
<td>Line of Sight</td>
</tr>
<tr>
<td><strong>Bit Rate</strong></td>
</tr>
<tr>
<td>32 to 134 Mbps (28 MHz Channel)</td>
</tr>
<tr>
<td><strong>Modulation</strong></td>
</tr>
<tr>
<td>QPSK, 16QAM, 64QAM</td>
</tr>
<tr>
<td><strong>Mobility</strong></td>
</tr>
<tr>
<td>Fixed</td>
</tr>
<tr>
<td><strong>Channel Bandwidth</strong></td>
</tr>
<tr>
<td>20, 25, 28 MHz</td>
</tr>
<tr>
<td><strong>Typical Cell Radius</strong></td>
</tr>
<tr>
<td>1-3 miles</td>
</tr>
</tbody>
</table>
does not have to receive all of the subcarriers to reconstruct the information.

Within the 256-subchannel OFDM framework, there are a number of potential options. First, the channel bandwidths are adjustable from 1.25 MHz to 20 MHz. According to Gordon Antonello, chairman of the WiMax Technical Working Group, the radio link incorporates adaptive burst profiles, which adjust the transmit power, signal modulation, and forward error correction (FEC) coding to accommodate a wide variety of radio conditions.

The combination of modulation schemes and error correction coding can yield bandwidth efficiency up to 5 bps/Hertz. That would deliver a 100-Mbps transmission rate on a 20-MHz radio channel. However, because the bandwidth efficiency will decrease as the range increases, a maximum of 3.5 bps/Hertz is more realistic.

Antonello also notes that the radio link incorporates features to take advantage of advanced antenna systems to improve overall range, performance, and indoor operation. An optional space/time coding feature allows the use of two transmit antennas at the base station and a single subscriber unit antenna that can combine the two signal images. Long-term, the working group envisions use of multiple input/multiple output (MIMO) systems to improve overall range and transmission rates.

**MAC Protocol- Quality of Service (QOS) and Security**

The other major difference between these two technologies is the media access control (MAC) protocol WiMax uses to share the radio channel. Unlike the contention-based MAC protocol used in wireless LANs, WiMax uses a request/grant access mechanism similar to cable modem systems. That MAC protocol eliminates inbound collisions and can support both consistent-delay voice services and variable-delay data services for hundreds of simultaneous users.

As with a cable modem system, outbound transmissions are broadcast in addressed frames, and each user station picks off those frames addressed to it. Unlike the question-able privacy afforded by 802.11’s WEP, WiMax transmissions are encrypted using the same 3DES algorithm used with secure-tunnel VPNs. There are also plans to incorporate the new advanced encryption standard (AES) technique used in 802.11i.

Access to the inbound channel is controlled by the base station. User stations wishing to transmit inbound must first send requests to the base station. The base station returns transmission grants allocating time on the inbound transmission channel. As a result, there are no inbound collisions.

With the base station controlling access, the MAC protocol can deliver four different grades of service:

- Unsolicited grant-real time. Consistent delay (i.e. isochronous) service for real-time voice and video, where a station is allocated inbound transmission capacity.
- Real-time polling. Another real-time service that operates like the 802.11 Point Control Function (PCF), where the base station polls each user in turn.
- Variable bit rate–non-real time. Variable-delay data service with capacity guarantees akin to frame relay’s committed information rate for high-priority commercial users.

The entire capacity of the inbound channel can be allocated to one user for a set time period, and there is a unique inbound allocation mechanism for OFDM channels. With OFDM radio links, multiple simultaneous inbound user transmissions (up to 16) can be supported by allocating the different sub-channels to different users.

**Conclusion**

Wi-Fi has been a major success and has introduced millions to the convenience of mobile computing; however, it is not the be-all-and-end-all in wireless. The decision of which technology to use for a campus extension should depend on the goals that are defined for the project, not on surfing the crest of Wi-Fi's current popularity. Wi-Fi is a technology that was designed to meet a particular set of requirements in a particular way. If your goal is to provide a “quick and dirty” Internet-access service for outdoor users on an occasional basis in the near term, Wi-Fi is the ticket.

However, if you prefer to provide a broadband-access service to the surrounding campus community for people to use on a daily basis and your target date is 2005-06, then WiMax should definitely be on the list of options you consider. A single WiMax base station could cover the entire community and deliver a manageable Internet-access service on a large-scale basis with QoS and true voice capabilities. In the longer term, university WLANs might grow to the point where they reach the limits of the Wi-Fi technology. While Wi-Fi has been the rabbit in the wireless race, don’t write off the tortoise.

Michael Finneran is president of dBm Associates Inc., a consulting firm in Hewlett Neck, NY. He can be reached at mfinneran@att.net.
If you've ever seen "The Wizard of Oz" (and who hasn't?), you may recall that Dorothy and Toto were hanging leisurely around the farm, unaware of impending disaster, just minutes before the tornado carried them off to the Emerald City. Welcome to Kansas.

The date could have been May 8, 2003, and the place could have been Lawrence. For Ann Riats and her family, that was when the Kansas wind wreaked havoc with their home. It was senior night for Lawrence High School, and Ann was at the ballpark watching her daughter play softball. The sun was shining, and only a few clouds drifted across the sky.

"Around 6:30 p.m., the sky darkened to the south of Lawrence, and we could see lightning," Ann said, "but we all thought the storm would pass to the east. The local radio station was covering the game, and the broadcast was interrupted with a weather advisory telling us that we were under a thunderstorm watch."

Because she lived only a few blocks from the ballpark, she thought she should go home and shut down her computers. Ann left the ballpark, leaving her daughter with the team. The rains began, and within 15 minutes, the tornado watch became a tornado warning. Upon her arrival at home, neighbors flocked to her house to take refuge in her basement. Just 5 minutes later, Ann's home was destroyed above them.

It came with little warning, but the tornado caused major destruction. In tornado lingo, this was called a "hopper" because it bounced up and down destroying one or two houses here and there. Its path wasn't very wide, but several homes and an apartment complex in a 4- to 5-block area were in its way, and they were torn apart. Amazingly, no one suffered serious injury.

Ann's house was a total loss. The interior walls were moved about a foot. The fire department condemned the house, and what personal belongings could be salvaged had to be removed within 2 days. Most of the furniture was either broken or so riddled with
glass that it could not be saved. On May 22, the house was demolished.

Rebuilding

Ann has been a part of the University of Kansas for 18 years and on the staff of the Networking and Telecommunications Services department for 4 years. As the personnel assistant in her department, she is responsible for entering payroll, setting up travel, assisting with recruitment, advising employees of benefits, and supervising the reception area of her office.

Everyone in the department wanted to help Ann. Dahl Construction was managing the rebuilding of the house, but we wanted to have a part. So we decided to contribute what we knew best—communications technology. We took on responsibility for structured cabling.

We believed we had the expertise to perform the work as well if not better than anyone else. Because we knew the family and telecommunications concepts and standards, we felt like we had a mandate to see that it was done right. We knew that if we didn’t get involved, Ann would have paid for the usual non-standards-based residential installation. It likely would have meant the archaic method of daisy-chaining a few phone lines and a few coaxial drops, all stubbed outside the house. It would have been inflexible—all computers would not have been capable of accessing a single high-speed connection—and it would have offered few options for furniture arrangement. Most locations would have had no connection at all, and the "system" would have been obsolete before the Riats could move back in.

Even if the builder used a minimum of Cat 5, there was no guarantee it would have been installed properly. Many builders have heard of Cat 5 cable, but few are familiar with proper installation methods.

Our goal was to do as much as we could with what few resources were available, but with the hope of persuading local vendors to contribute to the project. We received donated material, including a Leviton Telecom Distribution Panel, Cat 6 cable, cable tray, and lightning protection. The remaining materials were purchased with money from the builder’s budget.

The builder provided a small budget for telecommunications—about $300. This is not sufficient for even a basic standards-based structured cabling system, which may only represent around 1 percent of the price of the house—a small amount but still more than the builder’s allowance.

In addition to myself, installation supervisor Steve Lambert and installation technician James Tumlinson from our staff plus a student, James Hanke, invested about 30 hours of our personal time on Ann’s house. Ann and her children, Diane and Dustin, helped as well, of course.

The Riats have benefited from having more connections where they did not have them before. Family members have already been able to perform simple moves of the system. They have reconfigured rooms and have only needed to move a patch cord rather than string a cord all the way around the room or have the local service provider staple cables to the outside of their new house.

Lessons Learned

A structured cabling package should be a part of every house, regardless of the price of the house. This project provided an opportunity to apply standards-based design and installation methods to provide for an affordable and user-friendly system. It gave the homeowner, the Riats, the capability to distribute voice, video, and data services with limited training and without special tools.

We are thankful for the opportunity to be a part of the rebuilding process. When the Riats moved into their new, technologically superior house at Thanksgiving, they agreed with Dorothy: There’s no place like home, there’s no place like home, there’s no place like home.

Jeff Beavers, RCDD, is a telecommunications engineer at the University of Kansas. Reach him at jbeavers@ku.edu.

Recognition and thanks to these people who contributed to this project: Mark Peterson, RCDD, Stanion Electric; Greg Eddy, NORDX CDT; Jeff Yates, Cablofil; and David Graney, Porta Systems.
Teletechnet: Distance Education at Old Dominion University

by Andrew R. Casiello
Old Dominion University
David J. Whalen, PhD
Artel, Inc.

Institutions of higher education have successfully used satellite technology to provide access to education for the people of their state and throughout the United States for some time. The reliability, flexibility, quality, and increasing cost-effectiveness of this technology make it an extremely important component of the overall distance education programs on a number of campuses. An excellent example of such an effort is the Teletechnet program at Old Dominion University (ODU) in Norfolk, Virginia.

ODU has been engaged in distance-education activities since the early 1980s, using local microwave and, later, occasional satellite broadcasting for engineering and nursing degree programs. Significant growth came in 1994 with the startup of our Teletechnet program, an interactive program that enables students who live in remote locations to earn bachelor’s and master’s degrees from ODU without leaving their areas of residence.

The Teletechnet program began with a 2+2 partnership with the Virginia Community College System to connect our courses to each community college location within the commonwealth of Virginia. Students take their first 2 years leading to the associate’s degree at the community college. Then, they transfer to ODU, but stay at their hometown and take courses via satellite in classrooms located at the same community college. Students at one of nearly 50 sites within Virginia not only see and hear their Teletechnet professors, they take an interactive part in the class, through full-time, live-audio return path back to the studios in Norfolk. More than 3,000 students have earned their degrees this way since 1994.

The program, which continues to experience high growth rates, currently has more than 25,000 registrations per year for credit courses offered via satellite. The program includes video classroom sites in Indiana, Illinois, Washington, North Carolina, Arizona, and Georgia; at community colleges, military bases, and corporate locations throughout the United States; and even ships at sea.

Students may participate at any of 44 locations just in the commonwealth of Virginia, and more throughout the United States—including six Navy ships at sea, which we link with for live, synchronous instruction.
ODU Hardware and Software

Courses originate in any of our 11 classroom studios, each of which is equipped with three very modern, high-quality cameras. In each classroom, an instructor presentation center includes the following:

- Computer
- Microphones
- White board
- Electronic writing tablet

Other origination equipment, such as VCRs and DVD player/recorders and slide and scan converters, are all connected and controllable by the instructor through touchscreen AMX control systems.

Control rooms are located in a large master-control center within the distance-learning facility, ODU’s Gornto Teletechnet Center. Professional control-room operators work with the individual instructors to control cameras, switching, and the other related technologies connecting the classrooms to our transmission system. These operators stay with the instructor for the full semester—sometimes over many semesters—because the operator knows the styles and needs of the individual instructor. Instructors can control some of the local origination equipment, such as switching from an overhead camera to computer via the AMX controller if they so desire.

Students at the remote locations are connected throughout the class session via return audio path to the origination studio. A large audio bridge operated by the commonwealth is used to link all sites throughout all courses. Students in the origination studio also have microphones on their desks so that the remote students will hear their comments and questions.

A large, hybrid, serial digital/analog routing switcher is used to connect the signals from our various control rooms and studios to our transmission center located within the same building. Master-control operators monitor signals direct from studio control rooms, and then on the return side from our satellite backhauls.

ODU operates its own satellite network, using Tandberg System 3000 MPEG2/DVB transmission equipment for transmission and reception. This is a state-of-the-art satellite system with the capability to transmit up to six channels simultaneously. We have full-time space segment on Loral’s Telstar 6 satellite, transponder K6. Our transmission system consists of nine MPEG2 encoders and full redundancy, including the multiplexers, modulators, upconverters, and 400-watt CPI amplifiers. We operate two Ku-Band uplink earth stations, one being a 5.5-meter Comsat/RSI Cassegrain type antenna and the other a 4.8-meter Vertex Cassegrain. The facilities are atop the Gornto Teletechnet Center on the ODU main campus in Norfolk.

A technical support center is located at our headquarters building with toll-free phone lines for any trouble calls and to support new site installations and upgrades. This center is staffed during all broadcast hours.

We plan to expand the number of Teletechnet sites that are part of our network and, in fact, have recently added one at Moraine Valley Community College outside of Chicago. We will add more sites and more space at our existing sites.

---

**Notify thousands in minutes!**

**1Call R.E.D. Alert**

*Response to Emergencies and Deployment*

*Use for everyday notification needs, and those times that you need large-scale notifications!*

- A must when an immediate response is vital
- Send alerts automatically via pager, e-mail, mobile phone, home phone – *any or all!*
- Monitor progress in real time
- Use *Just Say It* speech recognition to automate the communication process

**Your perfect solution for handling:**

- Emergency/Disaster Situations
- Help Desk/Maintenance Dispatch
- Special Conditions and Events
- Outages
- Alarms

**CALL**

A Division of AMTELCO

(800)356-9148

www.1call.com/acuta2

info@1call.com

4800 Curtin Drive

Mcfarland, WI 53558

(608)638-4194
so that we can deliver a greater number of courses to a larger population.

Even with 25,000 registrations to our courses through Teletechnet, the demand currently exceeds our ability to deliver. The bottleneck is not in the satellite system but in the number of available classrooms and seats at our sites. In many cases, the number of students who would like to get into our Teletechnet programs exceeds the capacity the faculty can accept for each class. We’re working hard at ODU to find solutions for these challenges.

Within the commonwealth, we are expecting growth of more than 61,000 additional students who will soon be seeking education through institutions of higher education. A big part of ODU’s plan to assist with that growth will be through expansion of our distance-education programs and expansion of our strong relationship with the Virginia Community College System upon which the TELETECHNET program is based.

ODU has proposed developing 200 courses in asynchronous online format (including several complete degree programs) and expanding the summer session to increase course offerings to match fall and spring semesters.

**ODU’s Decision to Use Satellite Technology**

Although we use a wide variety of technologies, such as online coursework, streaming video, DVD, CD-ROM, and videotape in the process of educating our distance students, our TELETECHNET program would not be possible without the use of satellite technology. While wideband delivery is possible on technologies such as dedicated fiber-optic connection or Internet 2, these technologies are cost prohibitive or simply not available in many of the locations where we have students in need of our programs.

In addition to the other technologies, ODU has a number of locations connected via two-way videoconferencing technology through ATM networks. Many universities have moved to this technology believing that it is less expensive and offers greater interactivity than satellite. What we, and many others, have found, however, is that the reliability of these systems is much lower than that of satellite, and fewer locations can be easily served. With live, interactive coursework connecting top research institutions to students around the country, reliability is a major consideration.

The MPEG2-based satellite system has a very high degree of flexibility and interconnectivity options in comparison to earlier, television-only-based systems. MPEG2, the heart of such high-growth technologies as DVD and digital high-definition television, TIVO, and others, has the capability to be delivered to either a standard television environment or to computer- and IP-based networks. The rapid adoption of these consumer technologies ensures that MPEG2 will be a significant and important platform for many years, with increasing capability and interconnectivity among computer systems, display technologies, and other wired and wireless delivery technologies.

In recent years, the use of compressed digital video systems such as ours, along with higher-powered satellites, has brought the costs of satellite delivery to an all-time low while reliability and performance have hit an all-time high. We don’t just use satellites because we’ve done so for a long time—we’re in this to educate people, and consider ourselves “technology agnostic.” In fact, we are firm believers that “one size does not fit all” and that various technologies should be deployed based on user need and pedagogical implication. However, as we look at all of the other available technologies, nothing currently compares to what satellite technology can do to link our faculty with their students at a distance for live classroom instruction.

Satellite technology was, and still is, the only way to deliver the live educational experience that we demand for our Teletechnet program, including broadcast-quality video and audio, to an audience as large and geographically dispersed as ours. Satellite technology allows us to create those links in a very reliable and high-quality way.

Andrew R. Casiello is assistant vice president in Academic Technology Services at Old Dominion University. Reach Andy at acasiel@odu.edu.

David J. Whalen, PhD, is DSTS-G program manager at ARTEL, Inc. Reach him at dwhalen@artelinc.com. For information about ARTEL, visit their website at http://www.artelinc.com.
ARTEL is your Single Source Global End-to-End Telecommunications Services Provider

- Leased Earth Terminal Services
- Earth Terminal Purchase
- Earth Terminal Operations & Maintenance Services
- Commercial Teleport Services
- Terrestrial Interconnection Services
- Processed Ka-Band Satellite Services
- DAMA VSAT Services
- Cooperative Unit Tracking Services
- Bandwidth-on-Demand Services
- Bandwidth & Service Management
- Host Nation Agreement Negotiating Support
- Systems Engineering Support
- Satellite-Based Business & Enterprise

To learn more about these and other ARTEL services, please call Ron Seward at 703.620.1700
ARTEL, Inc. • 1893 Preston White Dr. • Reston, VA 20191 • www.artelinc.com
Ready to Respond
Campus Volunteers Prepare to Assist in Any Community Crisis

The last major emergency to strike the University of Mississippi (UM) and surrounding Lafayette County came 10 years ago, but a collective of university and community volunteers is making sure the area is better prepared than ever to deal with the next crisis.

More than 60 people have been trained as Community or Campus Emergency Response Team (CERT) members and are ready to search for victims, secure disaster areas, administer first aid, and put out small fires. Had they been organized before the crippling ice storm that hit northern Mississippi a decade ago, they could have helped assess the damage to utilities and other facilities and get aid to families with critical needs.

“We’re not highly trained professionals like emergency medical technicians or firemen,” says Roland “Buster” Clark, telecommunications director at UM. “But we are trained enough to help out until these professionals can get to the scene.”

Mississippi’s First CERT

Clark, along with UM Physical Plant administrators Steve Mauldin and Jerry Kahler, was among the first 25 people trained as CERT members by the Mississippi Emergency Management Agency (MEMA). The CERT program originated in 1986 in Los Angeles, but the Mississippi agency and many others have adopted the plan. Adopted by the Federal Emergency Management Agency in 1993, the program has been implemented in 49 states, three territories, and six foreign countries.

MEMA invited managers from the state’s universities and community colleges to a 2-day “Train the Trainer” session at Eagle Ridge Conference Center in Raymond last fall. Since then, using a $10,000 grant from the agency, Clark and his Ole Miss colleagues have organized CERT classes for university personnel, the city of Oxford, and volunteers throughout Lafayette County.

Each 2-day workshop includes classroom training in eight units: emergency preparedness, fire safety, triage, emergency medical, light search and rescue, CERT organization, disaster psychology, and CERTs and terrorism. Practical exercises offer hands-on experience in skills such as using fire extinguishers, administering first aid, basic search-and-rescue procedures, and reading labels on hazardous materials.

Participants also learn the basics of crowd control in emergencies and how to deal with family members of victims.

“This is stuff that’s not just good to know here on campus,” Clark says. “I’ve learned a lot of things I can apply at my house or wherever I go. If I’m out somewhere and there’s a fire or some kind of accident, I can use what I’ve learned to help out until professional help can get there and take over.”
“The CERT training emphasizes emergency preparedness and planning,” says Dennis Salley, pastor of Calvary Baptist Church in Oxford and a graduate of the program. “It can help us educate people in our communities about which supplies they need to have on hand, the kinds of situations they need to be prepared for, and more.”

Having a pool of trained emergency responders helps the entire community become more self-reliant, says James Allgood, the county’s coordinator of Emergency Management and Homeland Security.

“If we’re hit with a large-scale disaster—like a major tornado or an earthquake or even an ice storm like we had in 1994—we’ve got to be able to stand on our own for 48 to 72 hours, until outside emergency services can get mobilized and move in here to take over,” says Allgood, who completed the CERT class led by Clark and his colleagues in February. “This will allow us to take care of people’s immediate needs and manage the situation until outside help arrives.”

The CERT teams also can continue to assist after professional emergency personnel arrive, Salley says.

“We can help the professionals out by serving as runners, helping to move materials and supplies, and helping to search for people,” he says. “We can provide a valuable service even after they take control of an area.”

A Variety of Volunteers

Besides Allgood and Salley, program participants have come from the Oxford police and fire departments, Lafayette County Sheriff’s department, local electric departments, and public schools, Wal-Mart, North Mississippi Health Services, and Baptist Memorial Hospital. Personnel from the university’s Telecommunications and Physical Plant departments, police department, Student Housing, Honors College, and School of Pharmacy also have completed the training.

By involving volunteers from churches, local government agencies, and the university, the CERT program has strengthened the already-strong sense of community in the area, says Salley, who was a volunteer firefighter in another Mississippi community.

Recognizing the value of the CERT training to the entire community, Oxford Police Chief Steve Bramlett offered the use of his department’s training complex for the sessions.

After completing the 2-day program, CERT volunteers get a certificate and a kit of emergency supplies. The kits, packed in large duffel bags, include a hard hat, vest, goggles, tarp, shovel, tape, and other materials. The idea is to outfit participants to assist in a broad range of emergencies, acting both independently and in teams.

What Lies Ahead?

The goal is to train about 75 responders and then divide them into groups, each with its own command structure and communications.

“We’ll probably have a university team, a Lafayette County team, and an Oxford team,” Clark says. “Everybody will be instructed where to report in case of an emergency to check in and get instructions. The concept is similar to the old Civil Defense teams, but we’re prepared to work in a wider range of situations. This is another example where we are making a cooperative effort to prepare for major emergencies.”

Besides helping close to home, the teams can travel to other areas of Mississippi or to other states to help when disasters happen, Clark says. For example, strong storms 2 years ago caused widespread damage in Columbus, Mississippi, including the campus of the Mississippi University for Women. The situation strained emergency services in the area for days until crews could restore power, tend to dozens of victims, and begin repairs.

“That’s an ideal kind of situation for us to help out with,” Clark says. “We’re familiar with how things work in a college town and on a university campus, so we could have gone over there and helped out, maybe in ways that other teams would not be able.”

Allgood also has another grant from MEMA to conduct more CERT sessions for city and county residents. He hopes the program continues to spread throughout the state and boosts awareness of emergency preparedness and personnel needs.

“As more people get into this, we’re hoping some of them will get interested in being volunteer firemen and volunteer law enforcement personnel,” he says. “It would be great if they enjoy the community service aspect of it enough to step up to the next level.”

Mitchell Diggs is associate director of media and public relations for the University of Mississippi. For additional information, contact Buster Clark, director of telecommunications, at tebuster@olemiss.edu.
Managing for Success

by Dipak Parmar

Human resources are the only assets of a business that become more valuable with the passage of time. Effective managers know how to create a culture that motivates employees to be more productive, more efficient, and more loyal to the organization or employer. Ineffective managers need to take a lesson.

What Motivates Us?

When we accept a job, we bring our expectations with us. Consider the following:

- We expect to contribute to the success of the organization.
- We expect to learn and grow professionally.
- We expect to be accepted and respected by our coworkers.
- We expect to be compensated appropriately.

Although everyone has a different hierarchy of needs (both physical and emotional), a climate that promotes the realization of these needs is considered a motivational climate. Human behavior is influenced by our unsatisfied needs. To the extent that our needs and expectations are not met, we become dissatisfied and unmotivated, and our behavior as employees reflects our frustration.

Everywhere in the world, people approach a new job with enthusiasm and high expectations. In many cases, it doesn’t take long to get discouraged and fall into a pattern of doing only what is required and dreading coming to the office each day.

How can a good manager prevent this?

Creating a Motivating Climate

Even a brilliant manager may not be able to turn the worst of times into the best of times, but there are ways to make tough times more tolerable.

Is your staff overworked? Be sure they know that management, clear up to the highest level, is aware that they are stretched thin. Be up front about why this crunch has happened, what you are doing about it, and how long you expect it to last. Ask them, collectively and individually, if there is anything they need to make their workload more manageable. Re-examine their normal workload and reprioritize nonessential projects.
Be a good communicator. Employees must know what you expect. Never assume someone understands your unstated objectives. Set realistic goals and, whenever possible, invite input from those who will be working to help you achieve them. Listen with both ears. Be aware of potholes—those gaps in communications where what someone says is not what others hear.

Support your staff in subtle as well as highly visible ways. Bring coffee and doughnuts one morning or have pizza brought in for lunch one day. Express your appreciation often for the extra time and effort everyone is devoting to meeting the goals. Be generous with your words of praise—but be genuine. Recognize milestones along the way if you are struggling with a long-term project. Offer incentives or rewards for meeting special goals.

Be a public relations agent for your staff or department. Let the campus—and especially your boss—know that you and your staff are committed to success and are taking extra steps to reach your goals. Whenever possible, publicize your staff’s or department’s accomplishments. Acknowledgement from those outside the department is important, too. Visible or tangible recognition of a job well done is a powerful motivator.

Provide your employees with plenty of opportunity to learn and grow. Anuj Bhargav, chairman of the Bombay chapter of The Institute of Management Consultants of India, says, “When technology changes, not only technology but the people associated with it become obsolete.” To survive in a fast-paced industry like IT and telecommunications, we have to keep ourselves up-to-date. Learning is a very important part of the compensation package. Whatever an organization spends on an employee should be considered an investment, not a cost, which ultimately results in either an increase in profits or a reduction of loss.

Encourage your staff to model excellence in customer service. Invest energy in your customer; he or she is your best spokesperson. If you are providing a service or product to the campus, make your customers feel important. It isn’t possible to please all the people all the time, but it’s important for customers to know that you are doing your best to serve them.

Support your staff’s participation in volunteer activities or other worthwhile causes. When the workload is normal or light, look for a community project the entire department can share. Clean up a playground. Conduct a food drive. “Adopt” a family at Christmas. Build a spirit of unity within your department.

Have high expectations of your staff. People usually live up—or down—to our expectations. If you tell your employees how creative they are, chances are excellent that their creative efforts will increase. If you commend them for their accuracy, they are likely to be more careful in order to preserve their reputation.

Reaping the Benefits

What do you have to gain from creating a motivating climate? In a word, success. It manifests itself in the form of lower employee turnover, improved relations between employees and management, reduced absenteeism, increased efficiency, higher profits, and a surge in innovation and creativity. A good manager recognizes that people are any business entity’s most valuable resource.

In New Patterns of Management (1961), Rensis Likert wrote that “supervisors with the best records of performance focus their primary attention on the human aspects of their subordinates’ problems and on endeavoring to build effective work groups with high performance goals.” Likert defined two styles of managers: Job-centered managers were found to be the least productive. Employee-centered managers were found to be the most effective. Nearly half a century later, Likert’s conclusions are still true.

Dipak Parmar is a freelance writer who lives in India. He can be reached at dipak@journalist.com.
33rd Annual Conference & Exhibition
August 1–5
Sheraton Chicago

- 5 Days of Professional Networking
- 4 Keynote and General Session Speakers
- 50+ Breakout Sessions
- 75+ Technology Companies in the Exhibit Hall
- Awards Presentations

Register today at www.acuta.org

"Attending the ACUTA Annual Conference has become a significant part of my strategy to provide information technology and telecommunications leadership for my institution. It provides sessions to increase my technical understanding as well as opportunities to develop valuable relationships with counterparts at other institutions."

—Dale Lee, Director, IT
Biola University

FEATURED SPEAKERS

"FUTUREVIEW®: A Look Ahead"
Keynote Address
Monday, August 2
Daniel Burrus

"The Young and the Wireless: How Teens Immerse Themselves in Technology"
Tuesday, August 3
Dan Drath
Teenage Research Unlimited

"Legislative & Regulatory Update"
Wednesday, August 4
Jeff Linder
Wiley, Rein & Fielding

"Whose (Phone) Line Is It Anyway?"
Thursday, August 5
Chicago Comedy Company
# Conference Registration Form

## 33rd Annual ACUTA Conference & Exhibition • Aug. 1-5, 2004

### Name

### Title

### Institution/Company

### Address

### City, State/Province, Zip Code

### Phone #

### Fax #

### E-mail Address

### Emergency Contact

### Daytime Phone

### Evening Phone

### Check here if this is your first ACUTA event.

### Check here if you have special needs (accommodations, restricted diet, etc.) during the conference, or call Lisa Cheshire, ACUTA Meetings Manager, 859/278-3338.

### Preconference Seminars

**Half-day seminars, Sunday, August 1, 2004**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Cost: $129 each Includes course materials &amp; coffee break. Space is limited; register early.</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>8:30-11:45 a.m. Stepping into Network Convergence</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>8:30-11:45 a.m. Wireless Data: Design, Management &amp; Security</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>1:15-4:30 p.m. Facilitating Educational Seminars 101</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>1:15-4:30 p.m. Building/Constructing Converged Environments</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>1:15-4:30 p.m. Security and the New Regulatory Landscape</td>
<td></td>
</tr>
</tbody>
</table>

### Conference

**For Early Registration discount, response must be postmarked or received no later than 6/25/04 by 6/25/04 after 6/25/04**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Cost: $595</th>
<th>$645</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>ACUTA Member/NASTD Member</td>
<td>$595</td>
<td>$645</td>
</tr>
<tr>
<td>☐</td>
<td>Nonmember</td>
<td>$725</td>
<td>$775</td>
</tr>
<tr>
<td>☐</td>
<td>Emeritus Member</td>
<td>$395</td>
<td>$395</td>
</tr>
<tr>
<td>☐</td>
<td>Student</td>
<td>$350</td>
<td>$350</td>
</tr>
</tbody>
</table>

### Special Offer to Nonmembers

If you attend the ACUTA Conference then purchase a membership within 90 days, the difference between member & nonmember registration fees will be applied to your initial membership dues.

### One-Day Registration

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Cost: $295 Includes sessions, materials, meals, breaks, and evening events if scheduled for that day.</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>Mon</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>Tues</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>Wed (Check one box only.)</td>
<td></td>
</tr>
</tbody>
</table>

### ACUTA Forum for Strategic Leadership in Communications Technology

This event has a targeted audience. Please check the website or call for details.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Cost: $595/ $645 after 6/25/04</th>
<th>Nonmembers: $725/$775 after 6/25/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>Leadership Forum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Total Due (Add all items in shaded area)

### Companion Fees for Evening Events

Anyone other than registered attendees & exhibitors who have paid a social registration fee must pay to attend the Sunday evening reception ($25), Monday night event ($55), and Wednesday banquet ($60). Please enclose payment (remit to address shown above) or indicate that payment will be made at registration. (Sorry, children under age 16 may not attend.)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Cost: $25</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>Sunday Opening Reception in Exhibit Hall</td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>Monday Evening Dinner Event</td>
<td>$55</td>
</tr>
<tr>
<td>☐</td>
<td>Wednesday Night Banquet</td>
<td>$60</td>
</tr>
</tbody>
</table>

### Total Companion Fees

### Print Name on Card

### Signature Required

Early registrations cannot be processed unless accompanied by check, purchase order, or credit card payment.

- Federal ID #61-1185913
- Confirmation materials will be sent within two weeks of receipt of payment or purchase order. If you have not received confirmation within a few weeks, please check with your Accounts Payable office to confirm processing, then call ACUTA. Direct inquiries to Kellie Bowman 859/278-3338 or e-mail: kbowman@acuta.org.

### Conference Registration Includes:

- All educational sessions
- Course materials
- Access to Exhibits
- Sunday evening reception
- Monday night event
- Wednesday banquet
- Breakfast 4 days, lunch 3 days
- Coffee breaks
- Hospitality Suite

### Cancellation/Refund Policy

- Cancellations received by July 16, 2004: Full refund if notice of cancellation is received in the ACUTA office by July 16.
- Cancellations received July 17-30, 2004: Registration fee must be paid. Credit memo will be issued for any cancellation received July 17-30. Credit must be applied to registration for another ACUTA event in 2004 or 2005.
- Cancellations received after July 30, 2004: are not eligible for refund or credit.
- Cancellations may be mailed, faxed, or e-mailed to Kellie Bowman, 152 West Zandale Dr., Suite 200, Lexington, KY 40503; fax 859/278-3268; or e-mail kbowman@acuta.org.

### For Hotel Information/Reservations, Contact:

The Sheraton Chicago Hotel & Towers, 301 East North Water St., Chicago, IL 60611. Phone 800/325-3535 or 312/329-7000. Ask for ACUTA rate: $165 single/$185 double. Cutoff date is June 25.

---

**REGISTER BY JUNE 25 and SAVE!**

**REGISTER ON THE WEB:**

WWW.ACUTA.ORG
Advertisers’ Index

By advertising in the ACUTA Journal, these companies are not only promoting products and services relevant to telecommunications in higher education, they are also supporting our association. As you have opportunity, we encourage you to mention to these companies that you saw their ad in our journal.

1 Nation
Sales (800/998-9852)
4027 Tampa Rd., #3000, Oldsmar, FL 34677
info@1nationtech.com
www.1nationtech.com

1Call, A Division of Amfac
Matt Every (900) 366-9148
4800 Curtin Dr., McFarland, WI 53558
info@1call.com
www.1call.com

A1 Teletronics
Don Sturiano (800/736-4397)
1010 118th Ave. N., St. Petersburg, FL 33716
acuta@a1teletronics.com
www.a1teletronics.com

Acatel Internetworking Inc.
Bob Colbert (800/985-2672)
100 Main St., Suite 108, Dover, NH 03820
end-enterprise-data-solutions@end.acatel.com
www.acatel.com/enterprise

Allot Communications
Derek Peterson (877/ALLOT-CO)
7684 Golden Triangle Dr., Eden Prairie, MN 55344
edu@allot.com
www.allot.com

Amcom Software
Kathy Veldboom (952/946-7715)
5555 West 79th St., Minneapolis, MN 55439
kveldboom@amcomsoft.com
www.amcomsoft.com

Artel, Inc.
Ron Seward (703/920-1700)
1693 Preston White Dr., Reston, VA 20191
rseward@artelinc.com
www.artelinc.com

Compco
Randy Burns (615/372-3636 x148)
5120 Virginia Way, Brentwood, TN 37027
rburns@compco.com
www.compco.com

Dees Communications
Louis Champan (425/899-1969)
4130 148th Ave. NE., Redmond, WA 98052
lchampan@dees.com
www.dees.com

Dux Public Relations
Kevin Tanzillo (972/889-9577)
5713 Maidstone, Richardson, TX 75082-4970
kevin@duxpr.com

MICTA
Clancy DeLong (989/772-2623 x203)
1500 W. High St., Mt. Pleasant, MI 48858
cdelong@micassetvice.com
www.micta.org

Mutare Software
Ben Crow (847/781-2387)
2401 West Hassell Rd., Ste. 1510, Hoffman Estates, IL 60195
bcrow@mutare.com
www.mutare.com

Network Engines
Erika Battin (617/272-1137)
25 Dan Rd., Canton, MA 02021
sales@networkengines.com
www.networkengines.com

Panduit
800/777-3300
17301 South Ridgeland Ave., Tinley Park, IL 60477
cs@oanduit.com
www.panduit.com

Qwest
Pat Williams (952/848-7611)
4206 Salem Ave., St. Louis Park, MN 55416
patricia.williams@qwest.com
www.qwest.com

System Development Co. of New Hampshire, Inc.
Detta Donoghue (603/629-4242)
835 Hanover St., Ste. 700, Manchester, NH 03104
ddonoghue@sdc-nh.com
www.sdc-nh.com

TMetrics, Inc.
Danielle O’Kearne (704/525-5551)
4321 J Stuart Andrew Blvd., Charlotte, NC 28217
sales@tmetrics.com
www.tmetrics.com

Western Telecommunications Consulting, Inc.
Shelley Hasselbrink (213/859-5314)
801 South Grand Ave., Ste. 700, Los Angeles, CA 90017
shasselbrink@wtc-inc.net
www.wtc-inc.net
active in the emergency response community. The ACUTA staff conducted two surveys of our members to assess the current state of E-911 compliance, in January 2003 and April 2004. The survey results were an important component of comments submitted in April to the FCC.

Over 120 institutions provided detail on their use of MLTS and VoIP offerings and their compliance with E-911. The vast majority of respondents (83 percent) utilize PBX solutions in either residential or business facilities (academic and administrative buildings), or both. Encouragingly, almost 64 percent of these institutions have successfully integrated E-911 solutions that provide location information to public safety agencies. Members that have not yet done so indicate that technical limitations and cost considerations remain the most significant hurdles to providing the requisite location information.

Over 28 percent of ACUTA members utilizing PBX solutions currently provide emergency location information to internal campus police. ACUTA supports the NENA model state legislation, because it would allow flexibility for our member institutions to continue to send E-911 calls to internal campus police agencies when that is the best solution.

The FCC is also examining the E-911 implications of Voice over IP. ACUTA members have reported a significant increase from last year in the number of campuses implementing VoIP solutions in some manner: up from 21 percent to 35 percent. However, only 15 member institutions (12%) report that their VoIP services are E-911 compliant. This is a clear indication of a need for improvement in these systems, and an indication to ACUTA members that reliance upon the E-911 capabilities of VoIP systems is not realistic at this time. The FCC’s current proceeding on IP-Enabled Services (WC Docket No. 04-36) is also addressing E-911 requirements for VoIP systems, and ACUTA will also provide input to the FCC through comments in that proceeding.

In summary, ACUTA urged the FCC to monitor state implementation of the December Order to ensure that states act in a prompt and appropriate manner, providing necessary flexibility to MLTS operators to maximize public safety access; and work with the VoIP and wireless communities on the development of readily available, affordable and reliable E-911 solutions.

Resources:

ACUTA Journal advertisers receive the following benefits:

- The ACUTA Journal is regularly read by telecom/datacom managers, directors, and others responsible for campus communications technologies budgets.
- Each advertiser is listed by company name with complete contact information in the advertisers’ index.
- In the e-mail message we send to our subscribers alerting them that the Journal is in the mail, we list the advertisers and include a link to their website.
- Corporate affiliates who advertise accumulate points in ACUTA’s point system.
- ACUTA members notice which vendors support the association.

For complete details, contact
Amy Burton, Manager, Corporate Relations & Marketing
Phone: 859/278-3338 x240 • e-mail: aburton@acuta.org
www.acuta.org
From the Executive Director

E-911 Policy Under Review in Washington

The Federal Communications Commission (FCC) is once again examining the issue of E-911 for multi-line telephone systems (MLTS). ACUTA has been participating in this process on behalf of our members, conducting a survey of our members in April, 2004 regarding their E-911 readiness and submitting comments to the FCC.

This is an important issue for colleges and universities, as the safety of our institutional communities is a high priority responsibility of telecommunications operations. As technology advances, the capacity of MLTS to transmit location information for 911 calls is increasing, but many public safety answering points (PSAPs) still are not equipped to receive the information. Funding for upgrade or replacement of legacy equipment and software continues to be a challenge for colleges and universities and for PSAPs, but progress is being made on both fronts. In addition, some institutions continue to transmit E-911 information to internal campus police and safety agencies, which are well-equipped to respond to on-campus emergencies.

I would like to share some background with you, summarize the FCC's current proceedings, and share the results of our most recent survey on implementation of E-911 on our member campuses. Finally, I will provide some resources that you may explore for more detailed information on this important topic.

On December 1, 2003 the FCC released an Order in its review of rules to ensure compatibility with enhanced 911 emergency calling systems (CC Docket No. 94-102). The Commission declined to adopt a national requirement for MLTS to comply with E-911. The FCC ruled that, although "The delivery of accurate location and call-back information is vital for emergency response..." "...state and local governments are in a better position to ensure that E-911 is effectively deployed over MLTS in their jurisdiction."

However, the FCC announced its intention to re-examine the issue in one year, and to study whether federal regulation may be necessary if states fail to act. For those states that had not passed legislation, the FCC suggested that they consider model legislation developed by the National Emergency Number Association (NENA) and the Association of Public Safety Communications Officers (APCO).

The Legislative/Regulatory Affairs Committee has assigned a team of ACUTA members to monitor and advise on these matters, including committee members who are knowledgeable on the issues and

continued on page 47
# The T-Metrics TM-2000 IP Platform

The "Next Generation" ACD for Call Centers

## Increase Call Flow

## Improve Customer Service

## Reduce Operating Costs

---

**T-METRICS, INC.**

4321-J Stuart Andrew Boulevard
Charlotte, North Carolina  USA 28217
Voice: +1(704) 525-5551
Fax: +1(704) 525-4886
E-mail: sales@tmetrics.com
Website: www.tmetrics.com
At Allot Communications, we’re committed to helping colleges and universities solve their network traffic management problems. With a few clicks of the mouse, our award-winning appliances can block or control P2P file transfers, dramatically improve network performance, and keep your infrastructure costs in line. The decision is infinitely clear...

- Industry-leading P2P control (music and video downloads)
- Intelligent Layer 1-7 traffic monitoring and reporting
- Advanced QoS for reliable VoIP and video
- Infinite control and optimal bandwidth efficiency
- Frontline protection against malicious worms, viruses and DoS attacks
- Real-time alerts of impending network problems
- Industry-leading performance scalable to 1Gbps

edu@allot.com
877-P2P-GURU
www.allot.com