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The Association for Communications  
Technology Professionals in  
Higher Education

# QNEWS

April, 2003

Vol. 32, No.4

SUPPORTING HIGHER EDUCATION INSTITUTIONS IN ACHIEVING OPTIMAL USE OF COMMUNICATIONS TECHNOLOGIES

## ACUTA Ruth A. Michalecki Leadership Award

The Awards Committee is accepting nominations for the ACUTA Ruth A. Michalecki Award, a program to recognize outstanding leadership among our members. Focusing on leadership is an acknowledgement of the fact that leadership skills are increasingly vital to the communications professional.

The person selected:

- Actively participates in and promotes the education, professional development, and mentoring of other professionals
- Has demonstrated innovation in the establishing, changing, or otherwise materially affecting the existing practices, usage, and/or concepts applied to the telecommunications profession within higher education, i.e. identifying and advancing communications and/or information technology directions for the benefit of higher education
- Has engaged in activities that have produced firm and formal results directly benefitting the ACUTA organization and/or the broader higher education community

"Once again we will focus on applicants who have demonstrated commitment to the high standards of professionalism and vision that Ruth Michalecki exemplified," says Maureen Trimm, Chair of the Awards committee.

The Leadership Award will be presented at the awards luncheon on Wednesday, July 30, at the annual conference in Hollywood, Florida. Previous winners include Michael Palladino of the University of Pennsylvania and Patricia Nelson of Cornell University.

If you would like to nominate someone whom you feel meets the criteria, complete the nomination form online at [www.acuta.org/forms/la.cfm](http://www.acuta.org/forms/la.cfm) or contact Lisa Cheshire at 859/278-3338 for a fax version.

Deadline for nominations is May 16. Nominees must be ACUTA institutional members, associate members, or corporate affiliates.

ACUTA extends appreciation to PaeTec Communications, Inc., for sponsoring this award.

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# Quantum Encryption



## From the President

Jeanne Jansenius  
University of the South

This month I wanted to discuss something a little bit off the beaten path: quantum encryption. As a society we are becoming more and more dependent upon the security of the data we transmit. Hackers continue to find unique ways of breaking current encryption methods. New methods of scrambling data using light to create more complex patterns than just 'on' or 'off' are soon to arrive. Is it possible that quantum encryption will be impossible to break? Before I take a quantum leap in the wrong direction, Ron Kovac, professor at Ball State University, has agreed to share his wisdom and interest on the topic of encryption and quantum encryption.

The first question to ask is, "Why is encryption so important?" In all credible surveys of "Why isn't the Internet more popular?," the answer is always the same: security concerns. As a population we are a bit hesitant to put crucial or financial information out there on the Net. Whether a viable concern or not, it still exists as the number-one reason people are hesitant to use the Internet for business purposes.

One of the primary solutions for this perceived, or real, security flaw in the Internet is encryption. Encryption is a fancy way of coding information into "goobly gook" (a highly technical term) so that *only* the intended receiver can use the information. Just as we did in writing notes to our third grade "crush," we wish to keep the conversation between the two of us.

Today's encryption methods go to great lengths to scramble data sent over the insecure Internet. These encryption methods depend on a secret "key" only known by the receiver and sender. But clever mathematicians or superfast computers can render this key concept useless. Much computing power is put into creating these unbreakable formulas. Unfortunately this computing power is also being used to break the codes. In the fight between bullet and armor, bullet usually wins. Experts fear that the complexity of these algorithms cannot keep up with the speed of the computers set to break them. An additional issue is the ease with which messages can be intercepted while in route. Unless special precautions are taken, a walk into any telecommunication closet or a visit to the local basement can give us easy access to the message as it travels the Net. Couple these two vulnerabilities together, and perhaps no message is resistant to interception and decoding.

Now comes quantum encryption. Quantum refers to the behavior of matter at the atomic and sub-atomic level. There are various strains of quantum, such as quantum mechanics and quantum physics, but here we use the physics of atoms to create unbreakable codes. The variation of quantum encryption being promoted these days uses the concept of quantum entanglement. This is a weird science! First written about by Einstein, it notes that certain particles are intimately and intrinsically linked, no matter what the distance between them, and a change in one will force an instantaneous change in the entangled particle. Photons, or light energy, are particles that subscribe to the concept of entanglement. In our normal life we sometimes hear about these strange entanglements between twins or when a loved one passes away.

Let's say a single photon's position, or polarization, is entangled with another photon's position. This photon's position contains the key for the message encoding. When the key is set in the photon at the transmitter end, the entangled photon at the receiver's end gets changed to the same value, therefore giving each the secret code. Carrying this one step further, not only the key, but also the whole message—a series of photons—can be polarized. If hackers attempt to eavesdrop, the photons carrying the information cannot be observed without altering them. This alteration would immediately tell the receiver that the message was compromised, and the eavesdropper would see altered and therefore unintelligible information.

Two Northwestern University professors have recently demonstrated the concept that entire data streams can be encoded at up to 250 Mbps with a second-generation model to be able to encrypt a 2.5 Gbps stream. Any attempts at reading the data stream will introduce noise to make it indecipherable and will tell the intended receiver the message has been compromised. Not only will this make the data uncrackable (by the laws of physics) but will also speed up the slow process of sending coded messages.



## Quantum...

*continued from page 2*

We still appear to be ahead of the hackers and crackers with our current encryption schemes, but with the advance of state-sponsored terrorism and its worldwide effects, as well as the advance of computer technology, the current schemes could be compromised quickly. Quantum encryption provides a truly unbreakable code that could serve to make communication absolutely secure. Quantum encryption does not rely on any new or exotic technology, but piggybacks on the existing fiber-optic technology and the laws of physics. Quantum encryption, using physics as its base, gives us nothing less than the laws of nature as the information guardians.

"Beam me up Scotty!" But first, I want to thank Ron for this wonderful review. Until next month...

## Students Become Troubleshooting Technicians

by Carol Everett Oliver  
*Everett Communications*

This past Fall, the networking team of an Ivy League university in the Northeast alleviated the headaches of Fall rush by investing in a handheld network tester. The university armed teams of students with a simple networking tester from Fluke Networks (Everett, Wash.) and some network basics training. Within 20 minutes, students were turned into technicians able to perform moves, adds, and changes to campus networks, saving thousands of hours and expense in network troubleshooting.

"With a campus of 194 buildings, 30 of which are dorms for 7,000 students, and only four full-time networking support staff members to support it all, you can imagine the chaos when school starts in September," states Kevin Davis, coordinator of residential computing for the university. "One of the first things incoming dorm residents want to do before unpacking any boxes is to hook up the computer. Internet access has become a major factor in their social world. To them, it is a catastrophe if the connection doesn't work and they might have to wait for days before a networking staff member could get to them."

Most of the networking problems are not with the computer equipment but with the desktop-to-network connectivity, which includes the jacks and patch cords or sometimes just an improper IP address to the network. Each year some 50-75 jacks just in the student residences are initially malfunctioning. Part of the problem is the physical layout of the workstation outlets, which are in surface-mount boxes on the walls that can easily get kicked or knocked off. The answer was to train students as "technicians."

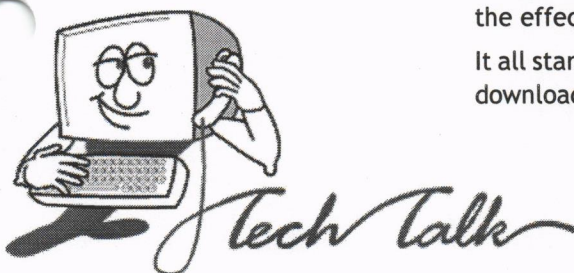
"It made sense to put in place a student-run troubleshooting operation so that we could quickly find, analyze, and fix the problem without even having to call up our networking staff," Davis notes. With a little training and a step-by-step pattern to follow, these student technicians can usually solve any frontline connectivity problems, performing "brightline" tests in seconds to find out if the jack is working or not.

"This campus is using the LinkRunner, which tests for connectivity all the way to the switch and then 'pings' the default router/gateway and DNS server," explains Carl Hohenstein, sales engineer for Fluke Networks ([www.flukenetworks.com](http://www.flukenetworks.com)). Autotest functions identify the jack as active or inactive, test the continuity of the patch cords, identify network duplex mismatches, and conclusively identify the service available on RJs as Ethernet, telco, or token ring. These 70 students now possess the skills to resolve desktop-to-network connectivity problems quickly and conclusively. Within minutes, students can determine whether the problem lies with the PC, NIC card, cabling or the jack itself.

This university, like many, was wired in the late '80s with basic Category 3 and Category 5 four-pair cabling. "Although Category 3 is now used for mainly telephone interconnection and not specified for today's high speed data rates, we have not had any problems with running 10 Mb/s to the switch and 1 Gb/s on the backbone. We are running gigabit fiber between each server closet," notes Davis. Because it was not necessary to rewire, this becomes an efficient solution to increase the reliability and longevity of the network connectivity.

For more information, contact Julie Kuntz at [julie.kuntz@flukenetworks.com](mailto:julie.kuntz@flukenetworks.com).





by Kevin Tanzillo  
Dux Public Relations

## Lead Us Not Into Network Complication... and Deliver Us the Content

With its roots in the ISP realm, the enterprise content delivery network (ECDN for short) may be something that your organization is looking into now, or will be in the near future.

Although it may sound like one of the channels on your cable TV system, ECDN is actually a way to keep frequently needed data highly available to all who request it while minimizing the effects of that data traffic on the overall network.

It all started with the Internet service providers, who found that when everyone wanted to download the latest photo of Britney Spears, they could reduce the traffic load by storing that image on servers closer to the users, rather than store it centrally and make every request traverse the entire network.

It's kind of like your bank. If everyone had to drive downtown to the Big Bank for all their business, the roads would be even more clogged. (Don't even think about the long lines once you got to the Big Bank!) But with branch banks all over, the system is designed to be more convenient.

Now the concept of a content delivery network - combining the data storage, or caching, function with intelligent switching - has moved into the private network side. That concept has also taken a leap forward in utility and complexity, because ECDNs don't focus simply on the most-requested content. They are into "pre-positioning" certain content in caches, anticipating and standing ready for access by users.

What the ECDN can do now for an organization or corporation is to provide easy and efficient access to the most important applications and information. This includes applications such as internal communications, distance learning or online training via streaming media, distribution of large files such as PDF documents or images, Web-enabled customer relationship management or enterprise resource planning, and streamlined access to the Internet, intranet, or an extranet.

With demand for the content and applications scattered throughout the organization, the cache component of the ECDN is what actually functions to meet the demand. Caches are deployed in data centers or satellite offices and handle the distribution. By the way, more efficient delivery of content isn't the only benefit of caches. With them, an organization can forestall bandwidth upgrades and their associated costs.

From an efficiency standpoint, streaming media applications can reduce costs. If you can broadcast something (an executive's speech, for instance) to all your people, or educate them remotely, you can cut the expenses of travel to a central location. The quality of the presentation itself is also enhanced with streaming media applications, whether it is live or on-demand audio and video. Words are great, but the image is king these days and that won't be changing anytime soon.

When it comes time to move to an ECDN, there are many issues to consider, such as:

- Diversity, for support of a large number of applications via an ECDN overlay to the existing network
- Dynamic content delivery, with the ECDN automatically identifying the user's location and delivering content the most efficient way
- Scalability, so the ECDN can handle big traffic loads
- Security, so the right people are seeing no more than what they're supposed to
- Disaster recovery, to ensure that the supply of content is always available
- Guaranteed supply, requiring a highly available server farm and efficient load balancing across the resources
- Consistent data, making sure that users are always seeing the most up-to-date version of anything they view

There are a number of companies providing hardware and software to enable ECDNs, and at least one large service provider is offering an ECDN service. But when you're ready to buy, you may not be able to use your credit card. Remember, it's a "cache" business.

*As always, if there are specific topics you would like to see covered in this space, please let me know via e-mail at [kevin@duxpr.com](mailto:kevin@duxpr.com).*



## Expanded Eligibility for .EDU Domains

The U.S. Department of Commerce and EDUCAUSE have jointly announced that in April 2003, institutionally accredited postsecondary institutions will become eligible to apply for the .edu domain.

Before the decision, only regionally accredited, postsecondary degree-granting institutions were eligible for use of the .edu domain. The newly eligible postsecondary institutions must be accredited by agencies which are on the U.S. Department of Education's list of Nationally Recognized Accrediting Agencies. A school or program within a postsecondary institution may not apply for its own .edu domain. To view the list of approved accrediting agencies, go to <http://www.ed.gov/offices/OPE/accreditation/natl agencies.html>. Be aware that some of the agencies on the list only accredit programs, and to be eligible a postsecondary institution must be accredited by an agency that accredits institutions.

"This expansion will allow a broad segment of postsecondary education providers to benefit from the immediate recognition of the '.edu' tag on an Internet address," states Mark Luke, Vice President of EDUCAUSE. EDUCAUSE was awarded management of the .edu domain by the U.S. Department of Commerce in October 2001.

## Cell Phone Numbers May Soon Be Available via 411 Directory Assistance

Cellular providers are about to make cell phone numbers available through the 411 directory assistance service. This move has been years in the making and will most likely take until 2004 to be put into place.

The centralized database will have a few restrictions:

- It will be off-limits to telemarketers.
- Cell phone owners can choose if they want their number included or not (charges may apply, and this will be determined by individual carriers).

For users who want to maintain their privacy but would like to know when someone is trying to reach them, it may be possible to choose to be unlisted but receive a short text message from someone trying to access their cell phone number.

Wireless operators are in favor of the plan because it will bring in significant revenue stream for them, as they may charge a dollar or so for each directory assistance request. According to CNN.com, this is "an attractive proposition for an industry struggling with high debt and tough competition."

## Board Report March

The ACUTA Board of Directors met via conference call on Thursday, March 6, 2003. Following are highlights of that meeting:

The Board reviewed and accepted the Treasurer's Report.

There was discussion and approval of several proposed changes to the bylaws.

The Board approved complimentary registrations for members of the Program Committee at the Annual Conference.

The meeting concluded with a brief discussion of ACUTA's membership structure, dues structure, and dues revenue. This will be discussed at length during the next Board meeting.

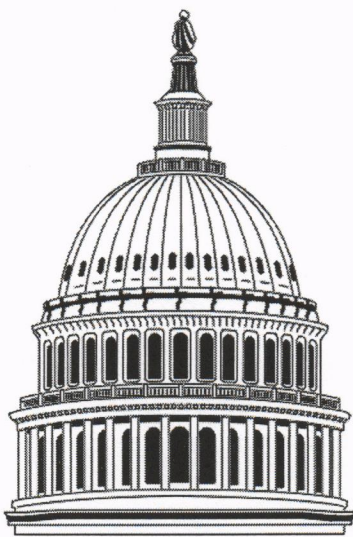
Respectfully submitted,

John Bradley

Rensselaer Polytechnic Institute

ACUTA Secretary/Treasurer





## DC Update

Whitney Johnson  
Northern Michigan University  
(Retired)

### ● For More In-Depth ● Coverage of Legislative ● & Regulatory Issues:

● ACUTA members may read about the  
● latest developments in telecommuni-  
● cations- and Internet-related issues in  
● the most recent **Legislative and**  
● **Regulatory Update**, an electronic  
● newsletter prepared monthly by Wiley,  
● Rein & Fielding. Access this newslet-  
● ter at [http://www.acuta.org/rela-  
tion/DownloadFile.cfm?docNum=309](http://www.acuta.org/relationship/DownloadFile.cfm?docNum=309)

### FCC's Triennial Review

Hoping to persuade Democratic Commissioner Adelstein to vote with him and Commissioner Abernathy, also a Republican, on the Triennial Review issue, FCC Chairman Powell moved a meeting that was scheduled for 2/13 to 2/20 to no avail. Adelstein did not agree with him. Commissioner Martin joined Democrats Capps and Adelstein approving a major state role in overseeing the continued availability of unbundled local switching, which is seen as prolonging the life of the unbundled network element platform (UNE-P). And the Democrats joined Martin in providing ILECs with the sweeping freedom from unbundling mandates that they had sought for their new broadband investments.

The industry will be watching for the FCC to prepare and release the final copy of this Triennial Review order, which is expected to be about 400 pages long and may be weeks or even months in preparation. (*Telecommunications Reports* [TR] 3/1/03)

State commissions will be given broad discretion in switching reviews. The states will end up with control of much of the competition issue related to the UNE-P with the ILECs and the CLECs. There is hope that the states will get together and work out common plans for working with the telcos to increase the level of competition in the industry. It could be a real mess if each of the 50 states plus DC implements its own plan for the LECs to follow. There is also speculation that a lot of these issues will go to the courts in all of the states.

The Review also has provided sweeping deregulation of ILECs' broadband facilities, beyond what even some of the Bell companies had sought. Although there was little controversy over freeing ILECs' fiber-to-the-home deployment from unbundling obligations, there was much more debate over provisions eliminating unbundling obligations for loops consisting of both copper and fiber facilities and ending line sharing. It seems that the ruling stops all line sharing. That may mean that if the telco were to put FTTH in place, the TV cable company could not use that fiber since that would be line sharing. (TR 3/1/03)

Most of the items in the Triennial Review order will take four or more years to complete as the states, the telcos, and the FCC work together to get things in place and working.

#### Cell Phone 'Bill of Rights'

Senator Schumer from New York has introduced legislation that will require all wireless carriers to make local number portability (LNP) available to their customers. If the bill passes the Senate and the House and is signed by the President soon, the date of implementation will be by the November 2003 deadline set by the FCC. According to Sen. Schumer, the lack of number portability creates a major obstacle to an open wireless marketplace. "By forcing cell users to adopt new numbers when they switch providers, wireless companies effectively lock in consumers by artificially raising the costs for switching."

The bill would also require the carriers to provide marketing materials and contracts that clearly describe the terms and conditions of the plan under consideration by the consumer. The bill would also require government authorities to monitor service quality on a nationwide basis and to make this information available to consumers. (TR 3/1/03)

*continued on page 7*



## DC Update

*continued from page 6*

### **Government Owned Carriers**

The Missouri Attorney General has filed a petition for a writ of certiorari asking the U. S. Supreme Court to examine whether the Telecommunications Act of 1996 preempted state statutes barring municipalities from providing telecom services. Section 253 of the Act is under question. Two different Appeals Courts have referred to this section in opposite directions. One case in 1999 in Washington found that section 253 didn't contain a plain statement sufficient to preempt state sovereignty. The D. C. Circuit concluded that the mere possibility that the term "entity" could include municipalities failed to satisfy the preemption requirement. The other court in Missouri issued diametrically opposed interpretations of the very same language. The Attorney General has decided that the only way to get this issue resolved is through the Supreme Court. (TR 3/1/03)

### **Sprint CEO Game**

Last month we noted that there was a battle going on between BellSouth and Sprint over a BellSouth Vice Chairman that Sprint was trying to hire as their CEO. According to The Telecom Manager's Voice Report (VR 2/24/03) both companies have agreed that former FBI head William Webster will arbitrate their dispute. The Vice Chairman had an 18-month non-compete clause in his agreement with BellSouth but the court voided that clause. BellSouth appealed, and the above is the next step in the process.

### **Accounting Rules**

The ILECs have told the federal-state joint board on accounting issues that they should not do anything that might "derail" the FCC's efforts to scale back accounting requirements. On the other side the IXC's have indicated that the FCC should either strengthen its accounting requirements by reinstating some rules that have already been eliminated or at least refrain from eliminating any more rules.

The accounting board was created by the FCC after financial scandals rocked the industry and questions arose about the adequacy of regulatory accounting requirements. In recent years, the FCC has scaled back its accounting mandates, eliminating some in its Phase 2 accounting order and proposing further rollbacks in Phase 3 of the proceedings. The board has asked for comments about whether any of the rules that have been removed in Phase 2 should be reinstated and whether to proceed with Phase 3. The telecom industry has commented, and things seem to fall on two sides of the issue. (TR 2/15/03)

### **VoIP**

The VoIP services industry is in nascent form, and policy-makers have been correct in taking a largely hands-off approach thus far, according to panelists discussing the issue recently at the National Telecommunications and Information Administration. But there's far less consensus about what should be done down the road, when VoIP becomes more of a replacement for switched voice service.

The FCC has two or three categories of service that they put different types of service into, and these categories determine how the service is regulated. Which "box" should VoIP go into? Will it be the same as switched voice, and should it be put into the same box? Should it end up in a box of its own? The FCC may need to enhance the mechanism they use to make decisions like this one. Some industry officials think that the FCC is using an obsolete mechanism and needs to overhaul the system...fairly quickly. (TR 3/1/03)





Jeri Semer, CAE  
ACUTA Executive Director

## From ACUTA Headquarters Progress Report on Telephone Number Database

### Corporate Affiliate Members Take Note: It's Your Turn to Participate

In February, I reported that ACUTA was preparing to launch a database of college and university telephone numbers designed to help curtail incidents of slamming, cramming and other unauthorized charges on institution telephone bills. I am pleased to report that significant progress has been made with this new membership service. The database was launched with an e-mail broadcast to college and university members on March 10.

The response from member institutions in just the first eleven days of this program has been outstanding. As of March 21, 95 different institutions had entered 941 telephone number ranges containing 801,929 individual numbers.

In early April, we will be launching the company side of the database. Companies will be able to subscribe to the database for a very reasonable fee—less than the legal fees and staff time they would have to expend for responding to even one FCC complaint for slamming or cramming!

Companies will be able to download the telephone number information when they agree to several conditions. These conditions are designed to assure institutional members that the information will be used only for the intended purposes, to encourage maximum participation by colleges and universities. Our advisory committee composed of both companies and universities agreed to the following provisions:

- The information will only be used for the prevention of unauthorized charges—not for marketing or other purposes. The companies will agree to establish and maintain reasonable safeguards to prevent unauthorized access to the data or inappropriate use of the information.
- Security provisions will be in place to limit direct access to the database to a primary and secondary subscriber from the company.
- Companies acknowledge that they remain obligated to comply with all Federal, State, and Local laws and regulations regarding slamming, cramming, and unauthorized charges.

Corporate Affiliate members of ACUTA and other companies will be receiving information in early April about how to subscribe. Information will also be available on the ACUTA Web site at <http://www.acuta.org/relation/downloadfile.cfm?docnum=723>.

Institutions that still haven't entered their telephone number ranges should do so as soon as possible, so your institution's phone numbers will be included in the information obtained by subscribing companies. You can complete the simple process online at <http://www.acuta.org/relation/downloadfile.cfm?docnum=718>.

At a time when both companies and institutions need to make the best possible use of their time and financial resources, we are hopeful that this database will provide a valuable service.

Do You Value the ACUTA Network?

Be a Good Neighbor: Tell a Colleague about ACUTA!



## ACUTA NEWS, Vol. 32, No. 4

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## Welcome New Members

### Institutional Members

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[www.fredonia.edu](http://www.fredonia.edu)

Soteris Tzitzis, Director of College Services, 716/673-3257

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**TVC Communications**, Annville, PA

Jere Geib, 717/838-3306

[www.tvcinc.com](http://www.tvcinc.com)

For the past 50 years, TVC has been a key supplier and supporter of the broadband and telecommunications industries. With our extensive vendor relationships and our strategically located stocking and distribution facilities, we are well positioned to provide the product you want, when and where you need it.

## ACUTA EVENTS

### 32nd Annual

**Spring Seminars**

April 27-30, 2003

Norfolk, VA

Sheraton Norfolk Waterside

**Conference & Exhibition**

July 27-31, 2003

Hollywood, Florida

Westin Diplomat Resort & Spa

**Fall Seminars**

Oct. 19-22, 2003

San Diego, CA

Hilton San Diego Resort

**Winter Seminars**

January 11-14, 2004

New Orleans, LA

Sheraton New Orleans