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From the President

Jeanne Jansenius
University of the South

Convergence Adds Value on Sewanee Campus

Last month I mentioned how the CFO (Chief Financial Officer) and the CIO (Chief Information Officer) need to consider working together when planning expansion and maintenance funding for infrastructure demands as well as equipment upgrades and enhancements. It is also necessary for voice and data professionals to begin discussions on shared networks in order to reduce costs while at the same time increasing bandwidth requirements. Dave Barta, Manager, Telecom Services at the University of Oregon states, "IP telephony should be viewed by both the telecommunication and data communications organization on campus as a way to collaborate and add value and service to the institution."

Increased demands on the processing power of the desktop, Web pages becoming more complex, and expanding demands for remote building sites continue to impact the traditional LAN requirements making it nearly impossible to meet user bandwidth requirements within current budget constraints. Due to the lack of flexibility and scalability, the traditional private circuits with fixed bandwidths cannot survive in today's university environment. How can we afford more bang (bandwidth) for the buck? Convergence using ATM, frame relay, or TCP/IP along with a voice compression technology that converts voice traffic into digital data could be the solution for your campus.

IP continues to be the driving force of our data networks and convergence seems to be the wave of the future. Communications professionals Walt Magnussen at Texas A&M University and Mike Enyeart at Indiana University in conjunction with Internet2 are experimenting with VoIP on their respective campuses. You might want to take a look at their Web site: <http://www.internet2.edu/voip/>. VoIP is now available in a variety of flavors topped off with ever-expanding applications.

What about latency, redundancy, and security issues? A few years back, VoIP was not the medium of choice and did not appear to have a bright future due to broken or delayed speech patterns. The only sure method for quality of service (QoS) was a dedicated circuit—and even that was questionable. The issue of delayed conversations is being addressed today by using a bandwidth reservation system that prioritizes voice traffic over data. The combination of VoIP and VPNs in the form of IP-VPNs protocol addresses most of the major security issues. QoS can now be guaranteed for a variety of traffic

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Convergence...

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types by using multi-protocol label switching (MPLS) as MPLS systems can be switched by ATM switches as well as IP switches.

Currently at the University of the South, we are experimenting with the idea of a combined network for voice and data via a Media Gateway. A Media Gateway Controller allows voice traffic to be passed between the IP infrastructure and the PSTN providing a conversion of the information carried on our telephone circuits via the IP-PBX and the data packets carried over the IP network. With the appropriate gateway, this VoIP traffic can easily interconnect with the traditional PSTN. This will not only reduce our domestic calls pricing structure, but also drastically reduce our international calling plans, thus allowing us to become more competitive with the cellular and prepaid offerings. During the off peak times, we will be offering special plans to our end users in hopes of increasing revenues. For redundancy, we are planning to divert calls to the PSTN if bandwidth becomes unavailable. Local 911 issues are being addressed by originating all our calls via the IP-PBX where internal caller ID is passed through to our campus police.

We are currently negotiating this VoIP opportunity with our long distance carrier. Voice calls will remain on the carrier's private IP network until it reaches the destination point at which time it is passed off to the LEC. This particular setup keeps us from needing to invest in IP phones for the student environment (sets range in price from \$500 to \$800) and provides an end-to-end managed IP network that ensures business class voice quality.

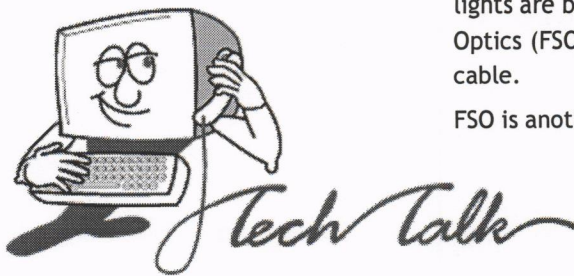
As I stated earlier, this is just one variety of VoIP. This setup requires very little capital outlay on our part but provides immediate network and long distance cost reductions as well as the ability to stay current with technology changes and increased functionality. Future expansions will include IP phones to the desktop and wireless applications using ITG (Internet Telephony Gateway) cards via our Nortel PBX. We are planning for a slow migration, potentially adding several disparate parts along the way.

Brief listing of some identified facts:

1. Necessity of implementing a security policy and development of a contingency plan in case of a power outage or security breach.
2. Necessity of identifying accurate usage trends—providing and planning for scalability and flexibility in order to address the issues of QoS and optimal network productivity.
3. Long-term reduction in capital investment by providing a single network infrastructure that is flexible and scalable.
4. Immediate reduction in long-distance charges, as there is a predictable pricing model. Pricing is based upon available bandwidth instead of per-call pricing.
5. Long-term enhancements to the help desk. This is due to the migration of all technical expertise into one network infrastructure, which optimizes help desk staffing issues.
6. Increased buying power when negotiating infrastructure and network costs.
7. Increased ability to leverage idle bandwidth.

If you would like to learn how other institutions are addressing VoIP, plan to join us at ACUTA's Winter Seminar **January 12-15, 2003 in Tempe, Arizona**, where your colleagues will provide updates on technologies that are evolving such as IP Telephony, IP video, speech recognition, and unified messaging. Visit the ACUTA Web site at <http://www.acuta.org> for more details.

Until next month...



by Kevin Tanzillo
Dux Public Relations

Free Space Optics: Not Really Free, but Certainly Less Expensive

Put on your dark glasses, because today we're talking about fiber-optics, and those little lights are bright. Actually, it's more like fiber-free optics, since the concept of Free Space Optics (FSO) involves sending through the air the same light that zips through fiber-optic cable.

FSO is another one of those technologies that isn't exactly new, but is definitely emerging in terms of adoption. This technology dates to the 1970s, but was used primarily in military applications. Now it is moving into the public network.

Like microwave radio, FSO is a line-of-sight technology designed to fill gaps, in this case in the metro network. Where it is difficult or costly to install fiber, FSO uses lasers to provide fiber-like transmission rates (all the way up to 2.5 gigabits per second) for up to 4,000 meters, which to us Americans is 13,123 feet, or about 2.5 miles. FSO's selling points are its high bandwidth, quick network setup time, no sunk-in-the-ground investment, and lack of any requirement for a permit.

Telephone companies are and will continue to be the biggest users of FSO technology and equipment, but there are clearly applications out there for campus or enterprise usage. Need a lot of bandwidth for video for a big on-campus special event, for instance? Get yourself 2.5 Gbps extended out to the remote site, and you'll have bandwidth to spare.

FSO uses either light-emitting diodes or lasers to transmit pulses of light between and among a network of optical transceivers. We're talking the same equipment that transmits over fiber-optic cable; in fact, even wavelength division multiplexing (WDM) - putting several communications channels over one optical wavelength - can operate over-the-air.

Each FSO system uses a high-power optical source plus a telescope to transmit and receive the data-bearing lightwaves. The telescopes connect to fiber, which brings everything back into our more familiar terrestrial network at that point.

OK, you ask, so we're beaming light from building to building, either from rooftops or windows. What happens if a bird flies through the beam, or it's a rainy day? Does data transmission come to a halt? Does the bird explode?

First, the FSO people want to assure you that the light beam is safe. Sure, we all remember that scene in "Goldfinger," where a manacled James Bond is spreadeagled on the table as a laser beam cuts closer and closer. But it's not like that. FSO advocates discourage the unlikely activity of staring through the telescope at the light source, but otherwise, our bodies will be safe. Then again, we're supposed to know enough not to stare at the sun, either. So there.

But back to the question of interference. The bird's feathers won't even be ruffled, although it may interrupt data for a millisecond. Built-in data transmission checking can overcome that blip. Transmitting using spatial diversity (several identical beams for redundancy) keeps even that millisecond interruption from happening.

Rain isn't really an issue, although fog is. If you're in a foggy area, you can use FSO, but you have to configure the network differently to overcome the effect of the water droplets. Building sway can also be an issue, but this too can be overcome with network fine-tuning. One piece of advice, though, if you're in an area where the buildings are swaying a lot: Don't invest in an expensive home on the hillside. If you remember only one thing from this column, let that be it.

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.

Cabling: Asset or Liability?

Diane Santarelli
wireville.com

Today, the demand for faster networks is intense. Communication cabling is constantly undergoing changes and upgrades. Managing the MAC activity (moves, adds and changes), can be a real nightmare. In most cases cabling records are "as built" only. Cabling is an asset without established value or records. New codes and standards will force most users to improve their specifications, management techniques, and records, or pay a severe penalty.

The 2002 NEC (National Electric Code) requires that abandoned cable shall be removed from return-air plenum and riser areas, to reduce the fuel load and smoke in case of a fire. What is considered an abandoned cable? Article 800.2 of the NEC code defines Abandoned Communications Cable as: "Installed communications cable that is not terminated at both ends at a connector or other equipment and not identified for future use with a tag." A clear explanation of this code and its implementation remains elusive.

Plenum cables deserve special attention since they must pass the most stringent fire safety test, NFPA 262/UL 910 Steiner tunnel test. A recent report by NFPA (National Fire Protection Association) revealed that there is a significant accumulation of fuel load in the plenum. Communications cables are the single largest contributor to plenum fuel load. Re-cabling occurs on average every three years and the old cabling is usually left in the plenum.

In 1991, there were approximately 5 billion feet of plenum cable in place. One industry expert noted that in 1997 the estimated length was 30 billion feet of plenum cable, and by 2000 the estimated growth showed the potential of 45 billion feet. And it keeps on growing.

Plenum-rated communication cable (CMP), is primarily insulated with FEP and jacketed with fire resistant polyvinyl chloride (FRPVC). FRPVC became the dominant jacketing material during a shortage of FEP almost 15 years ago. Recently, concerns over FRPVC have prompted risk assessment research. The vinyl chloride industry is heavily regulated from an environmental, health, and safety perspective.

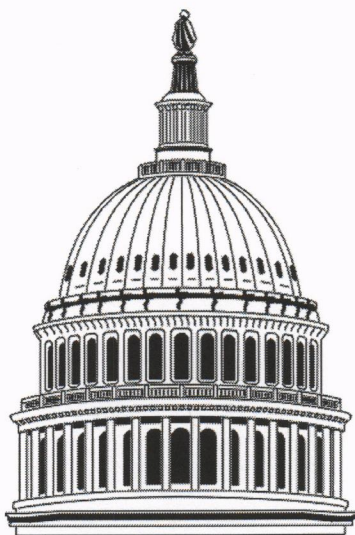
FRPVC was found to contain high levels of lead, as well as plasticizers with harmful phthalates. Additionally, FRPVC generates dioxins (a known carcinogen), when burned. Recycling efforts have made major progress, however, they still cannot remove the lead. Lead compounds make up 2- 5% by weight in cable insulated or jacketed with PVC. The plasticizers / phthalates used to make the PVC flexible are carcinogenic and harmful to the environment. If landfilled, PVC eventually releases its harmful additives, threatening ground water. We predict additional life-cycle costs will be added to PVC in the future.

FEP (Fluorinated ethylene propylene) is an ultra stable material that requires 95% oxygen to burn (at approximately 1550 degrees F). Remember air contains only 20% oxygen. From an environmental and health safety point of view, unlike PVC, FEP contains no lead, no phthalates, and is not a carcinogenic material. FEP is also a highly efficient electrical insulator, which makes it well-suited for high-speed data cable. As far as a fuel hazard is concerned, FEP ranks right in with concrete. Today, we see a new limited combustible safety cable (LCC) in production by most of the major manufacturers. The burn tests are even more stringent than the CMP requirements. Most LCC safety cable is insulated AND jacketed with FEP, and it is 100% recyclable. This new classification is additive and has been established to provide users with an option for more fire and environmental safety when selecting plenum cables.

In the world of higher education, cabling is a big responsibility. Removal can cost almost as much as installation. Ignorance is not bliss. Know what type of cabling is being installed in your facility.

For more information visit our Web site at <http://www.wireville.com> or <http://web.anixter.com/Marketing/wirecableweb.nsf/Technical+Library?OpenPage>

Environmental, Health and Safety Issues in the Coated Wire and Cable Industry, Technical Report No. 51. A report by The Massachusetts Toxics Use Reduction Institute at the University of Massachusetts-Lowell. http://www.turi.org/publications/institute_pub.htm



D C Update

Whitney Johnson
Northern Michigan University
(Retired)

ACUTA members may read about the latest developments in telecommunications- and Internet-related issues in the most recent **Legislative and Regulatory Update**, an electronic newsletter prepared monthly by Wiley, Rein & Fielding. Access this newsletter at <http://www.acuta.org/relation/DownloadFile.cfm?docNum=309>

FCC

Last month we noted that Jonathan Adelstein had been nominated to fill the vacancy on the FCC. The nomination has not yet been confirmed by the Senate. "A recent vote by the Senate Judiciary Committee to reject Texas Supreme Court Justice Priscilla Owen for a federal appeals court seat could complicate other nominations, including that of Jonathan Adelstein to join the FCC," according to *Telecommunications Reports* (TR 9/15). The committee vote on Sept. 5 to reject Ms. Owen was along strict party lines, 10 to 9.

The same article says, "Senate Minority Leader Trent Lott (R, Miss.) told TR last week that the vote on Ms. Owen does not necessarily mean that Mr. Adelstein's nomination is dead. 'People have been asking that,' Sen. Lott said. 'I haven't suggested that anybody would be confirmed or not be confirmed. All I said was there was a terrible miscarriage of justice once again, this time for [Priscilla] Owen.... I'm sure that it's going to make it hard to get many things done around here.'"

FCC Chairman Powell made a couple of staff announcements after the open meeting on September 12. First he noted that Peter Tenhula, his Senior Legal Advisor, was leaving that position to become co-director of the Spectrum Policy Task Force. Powell then announced that Bryan Tramont will become his Senior Legal Advisor. Tramont has been working in Commissioner Abernathy's office. John Brascome from the Commercial Wireless Division will be assigned in the interim to Commissioner Abernathy's office to advise her on wireless issues.

Tramont spoke at the ACUTA Annual Conference in Reno, and his presentation on wireless and other FCC issues was interesting and well-received. We'll hope to hear more from him in the future.

FCC Chairman Powell met with a Senate Commerce Committee and urged them to give the FCC "more authority to trump bankruptcy courts and force carriers to maintain service." He also "reiterated his call 'to put some teeth in our enforcement authority' by increasing maximum fines to \$1 million/violation from \$120,000 and to \$10 million for a continuing violation from \$1.2 million." (*The Telecom Manager's Voice Report* (VR) 8/12)

In some cases where the carriers have been in violation of FCC regulations it is cheaper for them to continue with the violations and pay the low fines than to spend the money to fix the problem.

Antennas

Three environmental groups along the Gulf of Mexico are taking aim at about 6,000 antennas that have been installed in the area that they say were approved by the FCC without considering their harmful impact on migratory birds. These antennas are all 200 feet or more in height. In a petition dated August 26 the three groups "asked the FCC to order the owners of 5,797 antenna structures in the gulf coast region to draft environmental assessments 'disclosing the direct, indirect, and cumulative impacts of their structures on migratory birds.'"

"Each of the subject structures has been constructed in a manner inconsistent with U. S. Fish and Wildlife Service guidelines for mitigating the impacts of antenna structures on migratory birds, and each of the subject structures has been unlawfully registered by the FCC without environmental assessments required by the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations implementing NEPA, and the FCC's NEPA regulations, the groups said in their petition." (TR 9/12)

This will be interesting to follow because there are antennas all over the country that could fall into the same level of environmental problems. This may have an impact on the wireless industry which uses many of the towers.

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DC Update

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Verizon Settles Merger

Verizon has entered into a consent decree with the FCC's Enforcement Bureau ending an investigation into its compliance with conditions imposed when the Commission approved the Bell Atlantic Corp. - GTE Corp. merger that created Verizon. Verizon has agreed to make a 'voluntary contribution' of \$260,000 to the U. S. Treasury and to implement a 'compliance plan' adopted as part of the consent decree.

There were two audit reports filed with the FCC on June 1, 2001 addressing Verizon's compliance with the merger conditions. Both auditing companies had found segments of the merger conditions that had not been properly handled by Verizon. For the compliance plan that has been released, Verizon will have to establish one or more vice presidential steering committees to review the accuracy of performance and service quality reporting. They must also do the following: (1) implement a performance metrics error prevention process; (2) provide "refresher training" to all data providers; (3) communicate the importance of "retaining relevant information"; (4) establish a "data warehouse" for reporting data; and (5) "reinforce in writing and orally with Verizon managers...the requirement for timely provision of Genuity transactions to Verizon's Genuity audit management group." (TR 8/26)

Use of Cell Phone While Driving

In 2001 New York passed a law making it illegal to drive while using a hand-held mobile phone. A first-time offender can be fined \$100, a second offense carries a fine of \$200, and the fine is \$500 for each additional offence. The Governor of New Jersey is urging the state's lawmakers to pass legislation next year that mirrors New York's ban. Officials expect to debut the legislation no later than January 1, 2003. (TR 9/15)

Such legislation has been considered in several states and most likely will become the law across the country in many states during the next few years.

Bad-Debt Tariffs

Verizon and SBC have both filed tariff plans with the FCC to allow them to "expand the circumstances under which they require security deposits or prepayments from other carriers. Verizon and SBC had told the FCC that new protections against bad debt were necessary because of the growing number of telecom bankruptcies." (TR 8/26)

These tariff proposals have been suspended for five months by the FCC. The carriers are working with the FCC to come up with a plan that can be put into use. Some of the CLECs are concerned about these tariffs and have asked the FCC to look at them very carefully to see whether or not they violated any FCC rules. Due to the FCC investigation the five-month suspension was put in place.

"SBC's tariff proposal would allow its operating units to require a two-month deposit or prepayment if a customer had a late payment history, had no established credit, or had 'impaired creditworthiness.' SBC's proposed tariffs would also provide that if a customer subject to the more stringent payment requirements failed to pay bills on time, SBC could shorten from 30 days to 15 days the period for it to refuse to process new orders or to discontinue service." (TR 8/26)

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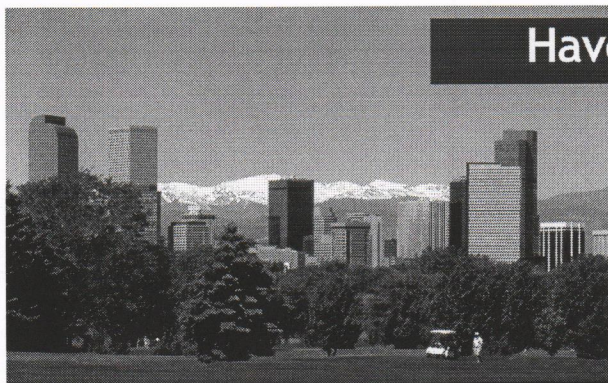
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Courtesy of Denver Metro CVB, Richard Grant, Photographer



Jeri Semer, CAE
ACUTA Executive Director

From ACUTA Headquarters

Higher Education's Contribution to Cyberspace Security

The higher education community has played an active role in the development of the "National Strategy to Secure Cyberspace," which was released by the White House on September 18. As many, if not all, ACUTA members will be involved in implementing the strategy on their campuses, I thought you would be interested in a summary of the key points.

A full copy of the draft National Strategy is available on the Web at <http://www.whitehouse.gov/pcipb/cyberstrategy-draft.pdf>. An explanation of the document and procedures for providing feedback are at <http://www.whitehouse.gov/pcipb>.

The National Strategy contains approximately 70 strategies overall, including a section specific to higher education (beginning on page 33 of the document). Higher education organizations at the presidential level through the Higher Education Information Technology Alliance have agreed upon the following framework for action, as stated in the draft:

- Make IT security a priority in higher education.
- Revise institutional security policy and improve the use of existing security tools.
- Improve security for future research and education networks.
- Improve collaboration among higher education, industry, and government.
- Integrate work in higher education with the national effort to strengthen critical infrastructure.

The document contains two recommendations for specific actions that government and nongovernmental entities can take to promote cyberspace security:*

(R3-13): Each college and university should consider establishing a point-of-contact, reachable at all times, to Internet service providers (ISPs) and law enforcement officials in the event that the school's IT systems are discovered to be launching cyber attacks.

(R3-14): Colleges and universities should consider establishing together: (a) one or more information sharing and analysis centers (ISACs) to deal with cyber attacks and vulnerabilities; (b) model guidelines empowering chief information officers (CIOs) to address cybersecurity; (c) one or more set of best practices for IT security; and (d) model user-awareness programs and materials.

**Note: The feasibility and cost effectiveness of these recommendations will vary across entities. Individual entities should take into account their particular and changing circumstances in choosing whether to apply them.*

This fall, there will be a series of four workshops sponsored by EDUCAUSE and funded by the National Science Foundation to further develop the higher education contribution to the national cyberspace security effort. ACUTA will closely follow the results of these workshops and disseminate information on the outcomes to our members.

Board Report September

The ACUTA Board of Directors met via conference call on Thursday, September 5, 2002. Following are highlights of that meeting.

- The consent agenda consisting of financial and committee reports was accepted without discussion.
- President Jansenius praised the ACUTA staff for the webinar and teleconference, both of which were very successful.
- Jeri Semer reported that she will be visiting with the presidents of Bridgewater State and Berklee School of Music to present the ACUTA Institutional Excellence Award.
- It was suggested that the Bylaws Committee review several elements of bylaws and return recommendations for change by year-end.
- President Jansenius informed the Board that they will be discussing Goal B of the Strategic Plan regarding data professionals at the Denver Board Meeting.

Respectfully Submitted,

John Bradley
Rensselaer Polytechnic University
ACUTA Secretary/Treasurer

ACUTA NEWS, Vol. 31, No. 10

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Vibes Technologies (<http://www.vibestech.com>) is a leading provider of telecom and data equipment remanufacture and repair services specializing in PBX systems, phones, data, and other telecommunications components.

We appreciate the participation of these two companies in ACUTA events and projects and encourage members to remember these and all our corporate affiliates when you need to renew contracts or purchase products and services.

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