Spring 2011

ACUTA Journal of Telecommunications in Higher Education

Follow this and additional works at: http://digitalcommons.unl.edu/acutajournal

http://digitalcommons.unl.edu/acutajournal/62

This Article is brought to you for free and open access by the ACUTA: Association for College and University Technology Advancement at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in ACUTA Journal by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
Journal of Information Communications Technology in Higher Education

Published by The Association for Information Communications Technology Professionals in Higher Education

QUALITY MANAGEMENT

University of North Texas ▲
Southwestern University ▼

Ithaca College
San Francisco State University

This Issue: Profiles in Quality Management
What do over 950 campuses worldwide have in common regarding unifying their communications?

Answer: AVST

AVST has been enhancing campus communications for three decades. We have extensive experience in making the most of your current infrastructure while providing you with your best options for the future.

Please join us at our educational campus resource center at:
www.avst.com/education

At our resource center, you’ll see for yourself what hundreds of colleges already know.

To learn more, visit:
www.avst.com/education

AVST is Unifying Communications
# Events Calendar

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Conference</td>
<td>April 3–6, 2011</td>
<td>Hilton Bonnet Creek, Orlando, Florida</td>
</tr>
<tr>
<td>Summer Seminar</td>
<td>July 17–20, 2011</td>
<td>Hyatt Regency, Baltimore, Maryland</td>
</tr>
<tr>
<td>Fall Seminar</td>
<td>October 9–12, 2011</td>
<td>Boston Park Plaza Hotel, Boston, Massachusetts</td>
</tr>
<tr>
<td>Winter Seminar</td>
<td>January 22–25, 2012</td>
<td>Renaissance Esmeralda, Palm Springs, California</td>
</tr>
</tbody>
</table>

ACUTA's Core Purpose is to support higher education information communications technology professionals in contributing to the achievement of the strategic mission of their institutions.

ACUTA's Core Values are:
- Encouraging and facilitating networking and the sharing of resources
- Exhibiting respect for the expression of individual opinions and solutions
- Fulfilling a commitment to professional development and growth
- Advocating the strategic value of information communications technologies in higher education
- Encouraging volunteerism and individual contribution of members
## Features

### 10

**Quality Management of Voice, Data, and Video: Not as Simple as It Sounds**

Thomas G. Dolan

Has a model of best practices emerged that ensures the quality management of the delivery of communications technology on campus? Dolan looks at how four campuses approach this challenge.

### 13

**High Demands, Low Resources, and Big Decisions**

Randy Burns, Giselle Simas

Delivering current and next-generation communication and information technologies at the right time, service level, and cost creates specific needs and challenges. This article examines some of the considerations that make it happen.

### 16

**Lessons in IT Leadership: Doing Less with Less and Failing for Success**

Mark Katsouros

To avoid becoming a ticking time bomb due to the expanding demands and expectations of our customers, IT leaders must properly allocate resources, plan and prioritize tasks appropriately, and maintain a positive workplace climate. Katsouros talks about how to accomplish all that.

### 19

**Exploring the Emerging Role of the IT CFO**

Larry Foster

By gaining real-time insight into how and where money is being spent, CIOs can manage their finances in a manner similar to how a CFO would manage the finances of a company. This growing trend of having IT/telecom managers embrace a business perspective of technology is being tagged by industry analysts as the evolution of the 'IT CFO.'

### 28

**Equipping a Learning Studio**

Arthur Brant, Dennis Marquardt

Centrally located within ACU’s Learning Commons, the Learning Studio will function as a lab, studio, and collaborative work space. Read how it could alleviate the barriers to develop and produce rich-media content, thus leveling another digital divide within the academy.

### 31

**Tackling a New Age of Mobile Devices and Virtualization at Dean College**

Robert Warren

IT at Dean College tackled everything at once in the summer of 2010: cable overhaul, VoIP, increased bandwidth, and more. Warren provides a glimpse at how the plans came together.

### 34

**The Building of a Data Center: Management Lessons Learned**

Keith Fowlkes

Fowlkes offers five important lessons learned from the construction of a new data center at the University of Virginia at Wise.

### 37

**2010 Awards**

Bill D. Morris Award

Walt Magnussen, Texas A&M

ACUTA Ruth A. Michalecky Leadership Award

Patricia Todus, Northwestern University

## Columns

### 6

**President’s Message**

Matthew K. Arthur

Washington University in St. Louis

### 8

**From the Executive Director**

Jeri A. Semer, CAE

### 40

**Q&A with the CIO**

Theresa Rowe

Oakland University

## Advertisers' Index

Thanks to the companies that support ACUTA by advertising in our Journal.
snom has joined compatible devices program for Microsoft Lync™

snom 300 desktop IP phone is interoperable with Microsoft Office Communications Server 2007 R2 and any other IP-PBX based on SIP.
A holistic approach to ITFM allows CIOs and IT directors to gain a stronger grasp of the many variables that come into play with information technology. The ability to get a true, 360-degree view of department data leads to the type of management that helps to keep a department out of the red and in the black.

Larry Foster

page 19
If your job is too tough, quit.

Quit worrying, that is.

Instead, count on the team that is absolutely committed to delivering the best products and solutions to you, with the highest level of service and personal attention.

For voice, unified communications, maintenance solutions and more, call us today at 1-800-628-7491. Because, just as you’re in the business of taking care of the infrastructure of higher education, we’re in the business of making your job less tough.

AVAYA
Authorized Dealer
NEC
NEC Corporation of America

OPTUS
Connecting just got easier.

VOICE     UNIFIED COMMUNICATIONS     MAINTENANCE SOLUTIONS     PERIPHERALS

1-800-628-7491     www.optusinc.com
ISO Quality Management Principles

1: Customer focus
2: Leadership
3: Involvement of people
4: Process approach
5: System approach to management
6: Continual improvement
7: Factual approach to decision making
8: Mutually beneficial supplier relationships

The International Organization for Standardization (ISO) has a standard (ISO 9000) for quality management that includes eight quality management principles (listed below) to be used by senior management as a “framework to guide their organizations.” Reflecting on my past, I recognize many of these principles in lessons from my mentors, collaborators, students, and friends. They have proven to be extremely valuable to me throughout my various careers. As a point of reference, these include fast-food restaurant cook (five months), college dorm grill cook (two years), summer camp counselor (ten summers), high school teacher and coach (four years), waiter (two summers), U.S. Army soldier (20 years active duty and reserves, now retired), university IT (22 years), and current ACUTA president (one amazing year).

One of the principles is customer focus, defined by ISO in this way: “Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements, and strive to exceed customer expectations.”

Anyone who has worked as a part-time employee in the service industry has had a taste of “the customer is always right.” Whether I was deep-frying Icelandic cod at the local fast-food fish place or cooking “Gator burgers” at the University of Florida, I was successful only if our customers liked what they ate and came back for more. My manager always wanted to know what students grumbled about while in line for their burgers and fries and how we could make their experience better. When I waited on tables one summer, the time frame between meeting customer expectations and their expressing their satisfaction was pretty thin. As a waiter you live by those expressions—called tips—and hopefully learn from your mistakes, table by table.

During the 17 years I spent building the residential technology services here at Washington University, I spent a lot of my energy convincing our employees (full-time and student) that we were a customer service organization that just happened to support technology. They usually operated under the mistaken belief that we were a technology support organization that wanted to provide good customer service. For the entire time ResTech was under my direction, any services we provided were sold to any students that signed up and paid for them. We depended on our customers and had to understand what they wanted, both right then and in the future. As a technology group providing services, it was too easy to slip into “techno-babble” when explaining to the students how they mess up their network connection. However, as a customer service organization, we made it our goal to make sure that all of our customers had what they wanted from us, when they needed it. Over the years those same employees would get tired of hearing me tell them that if doing things a certain way made it harder on us but easier for our customers, then that was how we should do things.
Another of ISO’s principles is leadership. “Leaders,” it says, “establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization’s objectives.”

One of my first forays into a formal leadership position was as the summer camp assistant director. I had been working at camp for six summers, first as a junior then senior counselor, and thought I was ready to run the day-to-day operations of an international summer camp with 200 kids and 30 or so counselors. Even though I had known most of the counselors and many of the children for years, I was woefully unprepared to be a leader. I knew how to be in charge, but that is different from leadership.

One of the perks of being the ACUTA program chair is getting to introduce the featured speakers at the annual conference. One of the highlights for me was introducing and listening to President John Hitt of the University of Central Florida as he talked about leadership. He clearly stated his vision for his campus in four or five points. It was simple, yet complex enough to give everyone on his campus a path to follow as they planned for the future at UCF. As a noncommissioned officer (NCO) in the U.S. Army, I was taught that the officers set the direction and the NCO made it happen. Effective leaders don’t just manage, they lead—“establish unity of purpose and direction of the organization.” While the two are not mutually exclusive, they do differ.

Another ISO principle is mutually beneficial supplier relationships. “An organization and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value.”

This was an invaluable lesson for me, and my involvement with ACUTA really cemented it. At my first few ACUTA events, I found myself wandering the vendor hall hoping for freebies or for the good fortune to win a drawing or two. It took me a little while to realize that the real opportunity was in establishing relationships with our corporate partners. Only by making such connections could I really broaden my knowledge of what options my university had for a number of different areas. I wasn’t just looking for products that my area needed, but also trying to bring information home to my university and those within my organization.

If you want to learn more about the other quality management principles, visit ISO’s website at www.iso.org/iso/iso_catalogue/management_standards/quality_management/qmp.htm. Quality management is helpful no matter where you are in the food chain. Take the time to understand how to be a better manager and leader. It’s an important component in your professional development that will make you a more valuable employee.
I often wonder if the small but progressive group of college and university telecommunications professionals who got together to form ACUTA in 1970 ever envisioned the state of higher education and information communications technology today. While they may not have envisioned the technological advances, they were right on target in forming an organization that would meet the professional needs of members in this unique and exciting field.

Although the subject matter has changed over the years, beginning with the breakup of the former telephone monopoly to PBXs versus Centrex, student long-distance and other student services, voice over IP, business and financial issues, customer service, physical and network security, cellular phones, wireless data, and a myriad of others, the basic structure of ACUTA has withstood the winds of change and provided a solid support network for all of its members.

Over its 40-year history, even the association’s tag line has changed to reflect our members’ changing scope of responsibilities and the changing technology environment. For those who may be interested in a brief review, here is a listing of our tag lines over the years:

2008–present: ACUTA: The Association for Information Communications Technology Professionals in Higher Education

Even the technologies used by ACUTA to provide member services have changed substantially. This spring, we will celebrate the 15th anniversary of www.acuta.org, when we transitioned many of our services to the Web. The telecom listserv was born during the same time frame, providing an easy and timely method of communication among ACUTA members on issues they face on their campuses. The popularity of this service demonstrated that it met a real need for mutual networking and support.

We will also be celebrating the one-year anniversary of the next evolution of the listserv, the ACUTA Community, which was introduced in spring 2010. The ACUTA Community incorporates many aspects of Web 2.0 and social networking into our online services, including wikis, blogs, communities of interest, and the Telecom Community, the direct descendant of the telecom listserv. If you haven’t signed up for this service yet, I encourage you to explore it at http://community.acuta.org/welcome.htm. ACUTA staff would be happy to provide assistance in navigating this new online space. Just contact IT manager Aaron Fuehrer (afuehrer@acuta.org).

ACUTA has also entered the wider world of social networking with a presence on LinkedIn, Facebook (with pages for ACUTA, ACUTA Young Professionals, the Social Networking Subcommittee, and the Mentoring and Career Development Subcommittee), and Twitter. This is potentially an area of substantial growth for ACUTA as we and our members adopt and use such tools more widely for professional networking.

In addition, over the past two years we have phased in an expansion of our volunteer committee and subcommittee structure, embarking on a path of introducing new products and services to meet the changing needs of both veterans and young professionals in the ACUTA community. Committees or subcommittees on Social Networking, New Media, and Web Resources; Young Professionals; Online Learning and Communities; Event Development; the Journal/eNews; Publications Development; Mentoring and Career Development; and International Outreach have been added. These provide vehicles for focusing our efforts at expanding services in these growth
areas. Opportunities for involvement on these and other ACUTA committees are available at http://www.acuta.org/wcm/acuta/mbr/getinvolved.pdf.

Finally, since mid-2010 we have been focused on reviewing all of ACUTA’s educational offerings. Following two surveys of our members about your professional development needs and preferences, we held a retreat this past summer to develop new educational strategies. The outcome was a clear direction from the membership to emphasize online learning to a greater extent. The board of directors made a commitment to develop a comprehensive education plan, increase online learning opportunities for ACUTA members, develop a comprehensive online education offering, and change our dues structure to include several webinars per year at no additional cost to members. Beginning in 2012, we will reduce by one the number of quarterly face-to-face seminars that we offer, in order to respond to our members’ preference that we expand online programs.

As you can see from these few examples, ACUTA has been far from complacent in its 40-year history. Through the efforts of many, we have continued to evolve to meet—and even anticipate—the professional needs of our members. With the accelerating pace of change, we recognize and welcome the need to continue to transform the association even more rapidly and wisely over the decades to come. We hope you will be an active participant in this process.

---

**Have you heard about the changes coming to ACUTA?**

For the 2011 membership year, ACUTA will include four free webinars with your membership for the first time. This reflects the increased online focus that makes access to information easier than ever.

Specially designated free webinars will be open to any and all appropriate personnel at your school. It’s a tremendous additional benefit of ACUTA membership.

**Changing to Meet Your Needs**

Now you can learn more, network more with other members, and advance your career and your school’s interests with a smaller investment in time and cost, and fewer travel hassles.

Topics for these webinars are still being developed, so we welcome your thoughts on the subjects that mean the most to you and the people you work with. Share your ideas with Donna Hall at dhall@acuta.org.

ACUTA continues to offer additional ways to leverage online tools to help you grow personally and professionally and get the greatest value out of your membership.

ACUTA will always be a value you can count on! Look for more changes in the weeks ahead.
Quality Management of Voice, Data, and Video: Not as Simple as It Sounds

Has a model of best practices emerged that ensures the quality management of the delivery of communications technology on campus?

The short answer is no. But if “no” is black, there are lots of grays along the way.

University of Washington, Seattle

“The traditional model for the delivery of voice, data, and video on campus is, for most schools, no longer operative,” says James Alls, director of engineering/operations, UWTV, University of Washington, Seattle. Alls acknowledges that, for a few schools, the once-standard paradigm still works. He maintains, however, that for most schools change has been necessary. Those that haven’t adjusted are in trouble. Those who have, like UW, have often gone through a painful change.

“In the past, users were charged for the phone services which were used to underwrite data and video activities,” Alls explains. “Then people cancelled phone services and started using cell phones. We started feeling the weight of it in 2005, and the real crisis came in 2006, when we had a big deficit and massive layoffs. We spent a lot of time trying to figure out how to restructure our program. We had to come up with a new pricing model. It was pretty stressful.”

Outside consultants were brought in to help tackle the problem and design a new model. “What resulted was a little strange,” Alls says, explaining that his video staff spun off from voice and data into the campus television station, UWTV. “We spun the video off to external affairs, which wanted to concentrate on content rather than infrastructure,” says Alls.

The video component, now housed in the TV station, is separate from the traditional voice and data still under information services. Yet what this allows, Alls continues, “is we now have broadcast engineers providing a level of expertise not available before, for applications such as two-way interactive video and distance-education facilities. We work as a consulting service to help others on campus create and build these programs,” Alls says.

The reason for the change, of course, was the financial crisis, and the fact that the TV costs are recoverable makes this new model a viable one. Alls acknowledges that it is not easily transferable to other campuses. Not every campus has a TV station, and many of those that do have them run by distinct nonprofit entities. At UW the TV station is actually a part of the university.

Pittsburg State University, Kansas

There isn’t a one-solution-fits-all strategy. Angela Neria, chief information officer at Pittsburg State University, Kansas, describes her hybrid system, explaining that most of the phones on campus are traditional wired phones but some are wireless, and some of both are wired into the LAN. In a new building there is VoIP, with the more up-to-date integration of voice, data, and video.

But in all cases voice is given the priority. “The perception on campus is that the phone is a utility,” Neria says. “The perception is that just as when you turn on a switch the electricity goes on, so too when you pick up a phone, you expect it to work. If your computer goes down, that’s an inconvenience you can somewhat accept, but not picking up the phone and having it dead.”
In terms of going back and integrating all of the voice, data, and video on the same system, Neria says, "We have to leverage our existing investment, and it’s not financially feasible to rip out all we have that has worked in the past. I think most schools are like us and are keeping the original phone wiring in place. So as far as going back, I don’t see that happening. Maybe in the future, but not now."

On the other hand, adds Michael Wheeler, assistant director of systems and networking, "it’s not feasible to keep the hybrid going into the future. Then you’d have to buy two of everything." Moreover, he points out, a phone is no longer simply a phone; new features include a seamless handoff, such as someone participating in a conference call via his cell phone on his way to work. Schools are caught in an awkward middle of technological change. They don’t want to fix what “ain’t broke,” but they must be able to adapt to what is new.

“We’ve been able to stay ahead of the tide in that we have enough bandwidth for the foreseeable future,” says Wheeler, “so if we have to give the network a higher priority, we don’t have to worry about it, or put priorities on one aspect or another.”

In terms of VoIP, Neria says, "Much is still in its infancy, and we’re taking it slow, making sure things work right the first time. If you do VoIP one step at a time, it’s very scalable and is less expensive than the traditional system. But if you try to put in a massive number of phones all at once, it’s not.” Analyzing and evaluating are critical.

University of Northern Colorado, Greeley
Perhaps because it started early, seven years ago, the University of Northern Colorado, Greeley, has successfully converged traditional PBX phones into the data and video network, reports director of technology Ryan Rose. The connections from the vendor port to the phone to the server happen simultaneously with the interaction of data and voice. “We do give voice priority, to avoid quality issues such as jitter or latency in the performance of voice traffic,” Rose says.

With all of this integration in place, Rose sees intriguing new possibilities. “We’re looking at ways of delivering high-definition video along with calls, two-way videos on phones, so I can see you and you can see me,” he says.

Of course, the financial dynamics of making the transition are challenging. Rose recalls, “When we embarked on our pilot program to implement 200 phones with the network technology, we had been given the presidential edict that the new technology would provide either cost avoidance or reduction, but absolutely no cost increase. We had to stay within the existing budget.”

To accomplish this, Rose explains, “Our PBX technology was just coming off its maintenance contract, so, for a time, we allowed that system to continue, without maintenance, while we put those funds historically allocated only for telephony projects into the network. This marked the convergence of our PBX and network maintenance.”

As a part of this process the two separate teams of voice and network engineering were consolidated, along with vendor products. “There was cross-training, but it went very seamlessly,” Rose says.

The implementation of the new system took about two years. With about 3,000
phones in 42 buildings, the University of Northern Colorado is the largest in the state. In making the transition, Rose says, “We’ve significantly reduced telecommunication charges.”

University of Maryland at College Park

An even larger school is the University of Maryland at College Park, with about 36,000 students and 50,000 total customers in about 270 buildings. Yet, according to director of networking and telecommunication services, Trippi Sinha, voice, data, and video are totally integrated in the same network, with the latest technology. The school started with this total integration about 20 years ago and has kept current with each technological change as it has come along.

From the start, Sinha explains, “Quality management has been a fairly elaborate process. All of the many different elements of the processes of services to delivery are categorized as very definite topics, so we follow the work flow from cradle to grave.”

If the first component is having a highly defined grasp of the service offered and how it is delivered, the second is having highly trained and competent personnel to monitor and run the system. The third is what Sinha calls the “soft” component, making sure that users are familiar and comfortable with the technology so that its potential will be realized.

All customer records are incorporated into and analyzed by a management system modeled after ITEI. “We know when a service request has been made, where it is in the flow, where it has been activated, what both the flow and the back-end flow are, as well as the timelines,” Sinha says. “We work very closely and connect with our user base using e-mail and other forms of communication. We keep them informed of any coming changes.”

Over time, Sinha continues, best practices have evolved and have been built upon. “We have to stay current and alert at all times,” says Sinha. “We have to keep up with the new technology and make sure our funding is current. We tweak what we have so it will be ready for what is coming next. Our physical footprint from data to voice to video is quite massive in scale. We are one of the largest public state universities with very large research centers, so we have high expectations for continual uptime.”

Has the system, as envisioned at the start, been an ongoing success? Or have there been breakdowns?

“At times we may lag a step or so behind,” Sinha replies. “But I can’t say that, in our evolutionary process, we’ve ever fallen behind terribly. Right now we’re in harmony.”

Thomas Dolan is a freelance technical and business writer working in the Pacific Northwest.
High Demands, Low Resources, and Big Decisions

Disruptive, IP-driven communication and information technologies are reshaping our world, economically and socially. They are literally changing how we define, manage, deliver, and fund IT services. The nature of the university mission and the stakeholders you serve puts higher-education IT (HE-IT) and communication service providers at the nexus of these changes—leading the way, whether by design or necessity.

As solution consultants with an emphasis in HE-IT, we (the authors) have the opportunity to speak with many CIOs, directors, supervisors, and back-office staff who work in HE-IT. Our discussions often revolve around the strategies and tactics that HE-IT professionals are using to manage these changes to create the business intelligence they need to make good decisions.

These conversations drive home the fact that HE-IT is more important than ever, and we consider ourselves very fortunate to have exposure to how HE-IT is leading the charge.

The 98 Percent Rule

To illustrate how IP-driven changes are reshaping our world, consider the music industry. According to Chris Anderson in The Long Tail—Why the Future of Business Is Selling Less of More (http://www.amazon.com/Long-Tail-Future-Business-Selling/dp/1401302378), the typical brick-and-mortar music department in your favorite retail outlet carries about 10,000 titles. About 20 percent of these titles will generate about 80 percent of the sales, and from that ratio we recognize the traditional standard, the Pareto principle. The sale of the majority of the remaining selections is typically far less than one per quarter.

Then came the IP-driven delivery model. The first IP-driven digital music models offered about 1 million titles (many times that now), and an interesting thing happened. Can you guess how many of the million titles sold at least one per quarter? About 98 percent of the entire inventory sells at least one download per quarter, ergo the 98 percent Rule. As it turns out, the 98 percent rule applies to many digital properties in our IP-driven world. The provider’s catalog caters to demand for popular hits and the tastes of the niche consumers like never before. This “long tail” has changed the industry. Yesterday, limited choices; today, abundant choices—brought about by IP infrastructure.

The 98 percent rule is one simple analogy that describes how IP-driven communication and information technologies are reshaping our world.

Five-year plans of HE-IT organizations today are often peppered with phrases like “Anywhere. Anytime. Any Device.” Arguably, this reality affects HE-IT more significantly than any other service provider on campus. Delivering current and next-generation communication and information technologies at the right time, service level, and cost creates specific needs and challenges.

In this article we will share information we’ve gleaned from these discussions and hopefully inform and provoke further conversation. As many professionals stressed, “It’s an iterative process. We’re learning as we go.” That is our aim here: to share, to learn, and to continue the conversation.
Driving Positive Dialogue with Technology Customers

Parents often send their freshman student off to college with a credit card for “necessary” expenses. In a month or two the first utilization and consumption statement arrives. This time-honored process creates a great opportunity for positive dialogue between adults and young adults around the idea of what is really necessary.

Many IT leaders say that positive customer dialogue is vital in determining what services and service levels can be offered within the fixed economic constraints that are the reality today.

Brenda Helminen from Michigan Technological University said, “Chargeback and utilization reporting are essential for us in order to encourage conservation of university resources and to promote customer conversations about the value of the services we deliver.”

The ability to provide customers with hard data regarding the true cost of services and the customer’s utilization and consumption of services plays a key role in driving positive dialogue. A few practical examples follow:

1. Reclaiming edge access ports
One university told us it provides departmental customers with edge port access for an up-front installation fee but no recurring charge. Their annual budget for refreshing edge equipment is several million dollars. A port-utilization audit revealed that about 30 percent of the ports had not been used at all in the last 90 days. A policy change to reclaim unused ports after 90 days, except in special cases, was proposed, reviewed by customer departmental leaders, and then approved. The institution now spends about 30 percent less refreshing edge ports thanks to data-driven customer dialogue.

2. Accountability for SAN storage
A university purchased SAN storage that should have allowed for five years of growth. The storage was provided at no charge to faculty and staff. It was nearing capacity within one year. A policy change was instituted that provides a specific storage amount at no charge with a usage fee for overage. This economic incentive drove behavioral changes that soon solved the problem.

3. Hybrid funding for wireless access points
Wireless access was like “the wild, wild west” for one major university. Each college selected and installed its own wireless service, and there was no intercompatibility. IT was tasked with developing a solution that would provide compatibility and equal access across campus. It implemented a hybrid funding model in which startup costs were centrally funded and each college pays a fee per access point.

“I get tremendous support for our chargeback/utilization tracking process from our CIO and top fiscal officers because the data help us create a more accurate picture of the true cost of a service, and that leads to better decisions,” said Greg Sparks, North Carolina State University.

Persistent themes underlying these and many other conversations are the necessity of understanding the cost of the services you provide and the ability to track/report service utilization and consumption as a driver for fact-based, positive customer dialogue. This is not limited to usage-based services such as storage and long distance, but applies broadly across a range of other services, especially new, high-demand services. For example, reporting the number of service requests and incidents you handle for an IT customer helps it understand the value HE-IT continues to provide.

In addition to driving positive customer dialogue, service utilization and consumption data provide the information you need to make better choices in the sourcing of technology services.

Choosing the Right Delivery Model for Each Service

A few years ago you had to own it and operate it to provide it. Not so today. Thanks to public and private clouds, the “X as a service” model offers you a wide range of choices. For example, you can choose from among a number of offerings such as:

- Managing the service internally with your own resources
- Accessing hosted services
  1. Infrastructure as a service
  2. Platform as a service
  3. Software as a service
  4. X as a service
- Leveraging a partner to both host and manage services on your behalf
- Creating hybrid combinations of all the above

The range of services and technologies HE-IT offers continues to grow. Internal management of these services and technologies requires skilled staff and resources that are sometimes simply not available or are in very short supply. The need to create flexibility, cut budgets, and lower total cost of service is forcing many IT organizations to rethink how they operate and support their campuses. Market efficiencies are expected. One person we spoke with put it this way, “Ultimately, the internal IT group’s cost per service transaction must be competitive or die.”

A growing number of institutions are choosing to blend the services provided internally with services from external sources to better align with market competitive rates and create the flexibility needed to meet changing demand. Having more choices, however, can sometimes bring more complexity. This applies to both the services you offer and how you support them. A number of leaders stressed the need for effective reporting tools that combine the relevant performance metrics
for both internally and externally provided sources into one holistic view. It's important for HE-IT to own the customer relationship regardless of the mix of service providers you choose.

Institutions have been able to contract with vendors to host their applications or provide software as a service for many years. Complementary IT sourcing is becoming a part of most IT organizations, which gives providers the ability to manage more than just software. This type of hybrid service model can reduce costs and streamline processes, which empowers the institution to improve customer support and deliver enhanced services in a more scalable and efficient way. The question is, which services should you and only you provide?

These choices are important to HE-IT professionals in a number of decision points. This is especially true as you consider how to best meet service demand and deploy your limited resources while creating value for your customers within the fiscal constraints that are the reality today.

It takes good cost-and-utilization data to help you choose whether a service will be operated internally or sourced externally. These decisions will be vital as you build for growth, flexibility, and agility. Your service management software platform should be able to combine and report performance metrics across your service catalog, whether a service is internally or externally sourced.

The process will be much easier for organizations that have the necessary tools and processes in place to capture and report cost-and-utilization metrics across the service catalog.

Moving Forward

HE-IT really is at the nexus of the powerful forces of technology change and unprecedented fiscal constraints. In spite of these challenges, most of the people we talked with were confident that they can and will prevail.

More demand than budget is nothing new to many. This situation is much like the one faced by moms and dads across the country who sit down at the table to plan out how to make the available money go as far as it can. It takes confronting the brutal facts, engaging in positive dialogue, leveraging the best sources, and establishing a plan backed by key stakeholders.

Perhaps the greater question is this: How can institutions leverage each other or partners to choose the optimal solution?

Thank you and kudos to all the great HE-IT professionals who talked with us as we prepared this material. You are leading the way and we are grateful for the opportunity to listen, learn, grow, and share. We look forward to more conversation.

Giselle Simas worked in Information Technology Services at Florida International University for 10 years prior to joining PAETEC in the PINNACLE software group in 2005. She can be reached at giselle.simas@paetec.com, (949) 265-2222.

Randy Burns is a 23-year corporate member of ACUTA. After the merger of Compco and PINNACLE in December, 2010, Randy became a consultant for PAETEC in the PINNACLE software group. He can be reached at randall.burns@paetec.com, (615) 613-0691.

Solutions, Security, Mobility.
What matters to you is our expertise.

Contact Carousel today to learn more about how we’ve helped other colleges and universities with their technology needs.

Carousel

INDUSTRIES®

Call 800.620.2385
Or visit us at www.carouselindustries.com/ACUTA
Lessons in IT Leadership: Doing Less with Less and Failing for Success

Mark Katsouros
Pennsylvania State University

From the title, one might construe this as advocacy for lowering performance expectations and fostering failure. Not at all. The real leadership message is proper resource utilization, task prioritization and planning, and a positive workplace climate.

Ticking Time Bombs

Most of us have felt the pressures building for some time now. The information technology demands and expectations of our customers continue to expand, while available resources, particularly human resources, continue to dwindle. Most IT organizations have become so single-threaded and stressed in so many areas that they resemble ticking time bombs. Some say we are beyond lean and mean; we are anorexic and vicious.

From recent events in the news we see the results of doing more with less: New automobiles with “unintended acceleration” problems, children’s medicines with dangerously higher concentrations of active ingredients than specified, hundreds of millions of eggs potentially tainted with salmonella, and the oil spill in the Gulf of Mexico. In every example, spending more money on quality control and disaster recovery planning would have been so much less costly (in many ways) than the results of not doing so. Perhaps some of these corporations, in order to maximize profits, knowingly gambled that such unlikely events would never occur or would occur so infrequently that the overall financial impact of correcting them after the fact would still be smaller than preventing them in the first place. Whether greed or survival is the driving force, the ticking time bomb of doing more with less will eventually, inevitably explode.

So how can we avoid such ticking time bombs?

Doing Less with Less: Thoughtful Planning and Prioritization

I started my IT career as a software engineer, and it was not long before I realized that effective and efficient application development involved approximately 90 percent planning and 10 percent coding. While that ratio may seem extreme for most undertakings, it is probably not far off the mark. And planning includes anticipating every possible path in the application—intended and unintended—and how to deal with each, proactively. The idea is to provide a reliable end-user experience and reduce the application’s support burden. Thoughtful planning maximizes the efficiency and effectiveness of our resources, and we can ill afford anything less these days.

Most important, finite resources must eventually translate into finite service offerings, toward ensuring that adequate time is available to thoughtfully, thoroughly plan each service, from provisioning to support. For an IT services organization, that means several things:

1. Prioritizing services. Services must align with the institutional mission. If a service is not contributing to that mission, either directly or indirectly, then it is time to consider outsourcing or just eliminating it.
Some look toward communication and collaboration as an area ripe for outsourcing and/or casting out to the cloud, but we must remember that communication and collaboration are at the very core of the higher-ed mission. Controlling those services allows us to more easily integrate them with such things as learning management, student information, classroom technology, research collaboration, and emergency notification systems. But consider services further away from the institution’s mission and establish standards (to the extent possible in higher ed’s diverse environment) to avoid saturating resources with supporting lots of “one-off” services.

2. Keeping services simple. Operational complexities are a resource killer. Services must be architectured toward keeping them as straightforward as possible. That may mean sacrificing features and flexibility for scalability and troubleshooting ease.

This is a huge challenge for technical organizations that are understandably customer-service-focused (wanting to say “yes” to every request) and that have the technical know-how to develop the most complex of solutions. But, as in the standards argument above, extraneous features that don’t serve the broad intent of the service (and the vast majority of its users) tax our finite resources and can greatly diminish our capacity to provide support.

Not too long ago, a group of small-appliance designers tried to figure out a way to keep toasters from burning toast. A hefty combination of various mechanisms and sensors were explored, ultimately increasing the complexity (and cost) of their toaster to the extent that it was too expensive and too difficult to use, and it had too many points of failure. Recently, a far simpler product became available: a clear, glass toaster that allows the user to see when the toast is suitably toasted. As French philosopher Charles Péguy said, “It is the essence of genius to make use of the simplest ideas.”

3. Documenting dependencies. It is critically important to fully understand dependencies among services in order to achieve proper prioritization and simplicity of services, the first two items. Services should be categorized in layers, from base infrastructure to applications, and their dependencies, including startup and shutdown sequences, documented.

This documentation must be readily available during change events, when documented dependencies are necessary to avoid surprises, but it is even more important to have this in the event of a disaster, when time is short and stresses are elevated. During eastern Iowa’s flood of 2008, the University of Iowa’s information technology services department was able to shut down services, starting with the least critical, residing in a data center where uninterruptible power stores and availability became limited. This was accomplished thanks to a predocumented list of critical and important services, and their associated dependencies.

4. Leveraging the browser as the client. Whenever possible, utilize the Web browser as your client platform. This shifts the burden of operating-system nuances (including those of mobile devices) from application developers (your staff) to browser developers (who are already addressing this challenge).

Mobile applications need to be designed specifically for smaller screen sizes, but avoiding platform-specific nuances will aid in keeping your applications browser- (and smartphone-) agnostic.

5. Documenting your vision. It may be a cliché, but a strategic plan is critical to know where your organization needs to be going. Creating a vision with your leadership team and documenting that vision is necessary to ensure that everyone is working toward the same goal(s). A unified team is a productive team.

This is one of the most important undertakings upon which your organization’s leadership can embark. Every decision you and your employees make, including decisions on prioritizing and simplifying services and maintaining standards, should be guided by what has been documented as the direction and priorities of your organization. Otherwise, your organization’s reason for being should, and will, be questioned.

6. Separating engineering and operations. Your strategic plan should be clearly articulated. To make progress, you need to ensure that the burning tactical demands, which must be addressed (operations), are not a constant excuse to ignore what you need to be doing—essentially “engineering” your strategic plan. Leadership gurus call this “managing the important over the urgent,” and it seems obvious that this is much more easily accomplished by explicitly, organizationally separating the two.

IT service organizations seem to be reorganizing fairly frequently these days. Some of these efforts attempt to make customer contact points clearer. Some try to combine like units in an attempt to take advantage of functional overlap and reap greater economies of scale. And some are simply misguided attempts at keeping employees “change resilient,” with no real end benefit resulting from the disruption. By far, the most effective reorganization that an IT services organization can undertake toward making real progress on its strategic plan is one that helps cleanly segregate the operational support side of the organiza-
tion and the side that is responsible for engineering, architecting, and evolving services toward achieving the plan’s goals. One provides service care and feeding, and the other defines the services requiring care and feeding, and how that care and feeding should be performed. ITIL (Information Technology Infrastructure Library) standards and practices provide an excellent framework for this separation.

Failing for Success: Coaching vs. Persecuting

Another critically important aspect of competent leadership is allowing people to fail—not as in the above catastrophic “recent event” failures that are essentially a result of negligence in the form of poor planning, misguided resources, shortcuts, and/or a lack of proper documentation/oversight, but rather as in an individual’s failure in spite of trying to “do the right thing.” And this is in the context of reactive, not proactive, behavior. Obviously, a good leader does not just stand by and let (significant) failure happen when stepping in to help can prevent it. Rather, allowing people to fail, in this context, means not persecuting people for failure after it has occurred.

The most successful people in the world did not succeed because they never failed, but rather because of the powerful lessons they learned from failure itself. You want employees to innovate, take reasonable risks, and leverage their uninhibited creativity. The greatest innovations toward new efficiencies and increased effectiveness, which maximize the resources your organization has, come from employees who are not afraid to take risks.

To create such a culture, you, as a leader, must look for the opportunity in failure. The old expression “Kiss a winner, hug a loser” clearly applies here. Failure provides an amazing leadership opportunity—to embrace the lessons together as coach and coached. A constructive approach to this will yield a positive outcome. Lessons will be learned, remembered, and likely not repeated. A destructive approach will yield a negative outcome. Sure, lessons will be learned, remembered, and likely not repeated, just the same. But the problem is that the innovation, reasonable risks, and uninhibited creativity will end, with their marvelous benefits never to be realized. One approach builds up, the other tears down. One is encouraging, the other is discouraging. One is supportive, the other is undermining. Great leaders maximize the opportunities for learning (and thus improving), focus on the positive, and eliminate the harsh persecutions.

Embracing and learning from failure may be the single most important behavior that a leader can exhibit. It will undoubtedly help define the culture of your organization; directly affect the creativity, confidence, and dedication of its employees; and ultimately mark the difference between a healthy organization and an unhealthy one. The healthy organization is one that continuously evolves and stays relevant, not so much by reorganizing, unless truly necessary/appropriate, but more so as a result of the continuous optimization achieved by employee creativity, confidence, and dedication. The unhealthy organization is one that is likely doomed to fail by creating an environment in which the boundaries of “safe” (i.e., risk-free) activity become so restrictive that sustained progress and evolution are not only impossible, they are also simply, and very dangerously, feared and thus undesired.

Learning from the Leaders of Your Past (and Present)

Learning from past failures is certainly not the only way to succeed as a leader. Most all of us have worked (or do work) for some great leaders and some not-so-great leaders. Think about the attributes of each, and focus on the positive ones. The great leaders are great because they are able to unite and inspire people to work hard toward a single mission. They make expectations clear, and praise often, with genuine appreciation. They are transparent—sharing information, fostering open communication, demonstrating integrity, and building trust. They are positive and have a high emotional intelligence quotient, or EQ—the ability to empathize with others and truly relate to people. They exercise humility over hubris. And they know to use “we” versus “I” in reference to successes.

Happy employees make better, more efficient and effective employees, and are obviously much easier to retain. Happy customers continue to choose your services and often provide free marketing, as people frequently share good experiences with enthusiasm. Your job as a leader is to aggregate viewpoints toward setting the organizational direction, to work on (versus in) the organization in order to get there, and to ensure the happiness and satisfaction, to the best of your ability, of your employees and customers, within the confines of that direction.

In summary, plan, prioritize, forgive, learn, and relate, and your organization, as well as you as a leader, will ultimately succeed.

Mark Katsouros is the director of network planning and integration at Pennsylvania State University. Reach Mark at mark1@psu.edu.
Exploring the Emerging Role of the IT CFO

Technology on a college or university campus is challenging to manage and accurately track due to the sheer number of users, dispersed devices, and disparate operational support systems. But for an IT/telecom department to run at its peak efficiency, IT professionals in higher education need to maintain real-time insight into the usage and consumption of all primary campus technologies. Further, IT directors and CIOs must have a handle on the line-item costs associated with these technologies so that their budgets are allocated appropriately and are proportionate to the usage and overall impact on campuses. The emerging role of IT CFO provides the financial expertise needed to inform and guide decision making.

**IT and Telecom—The Strategic Expense Lines**

The top five expense lines in every organization are payroll, real estate, energy, IT, and telecommunications. Institutions quite often provide detailed insight into the first three categories but exclude IT and telecommunications. One major problem plaguing collegiate IT and telecommunications is lack of real-time insight to make proactive and strategic decisions. Maintaining a reactive perspective on managing technologies leads to waste—wasted funds, wasted purchases, wasted services, and wasted time.

Both IT management and the entire institution’s customer base need information to make strategic decisions that will not only reduce costs, but ensure that they leverage technologies to improve the overall efficacy of the institution as well.

The general consensus among industry analysts’ research data is that 81 percent of IT expenditures go toward maintaining operations, but only 19 percent is used for leveraging the budget to gain efficiencies. Additional breakdown of this analysis reveals that the range of IT spend-per-user for a large institution starts at $1,712 and can balloon up to $11,095, netting to an average of around $6,889.

Without good visibility into the management of daily transactions, there is no way to correlate consumption of services with productivity. That’s why these spending inefficiencies must be addressed for IT/telecom departments to maximize their budget allocations and provide the best service to their customers. Still, even the most successful businesses have waste. This concept has driven corporations and manufacturing for years to adapt processes such as Six Sigma and total quality management. The key is determining the origin of the inefficiencies and taking a pragmatic approach to continually monitoring and measuring against established benchmarks.

In IT/telecom departments at colleges and universities nationwide, there are several common root causes of these spending inefficiencies—starting with legacy procurement techniques, manual-driven provisioning, disparate accounts payable processes, and lack of real-time line-item visibility into how services are consumed and costs are allocated. This phenomenon leads to poor asset management, redundancy of systems, duplication of processes, and misalignment of service levels that further plague the IT departments, resulting in budgets that are not utilized effectively.

**Larry Foster**

PAETEC/PINNACLE
Now is the time for CIOs and IT directors to run their departments as businesses and think like CFOs.

Leveraging IT Financial Management

In short, the principles of IT financial management (ITFM) and IT expense management (ITEM) allow an IT/telecom department to forecast and provide accurate, cost-effective stewardship of assets and resources used in supporting and delivering services. The benefits of these principles allow CIOs to see the big picture of how their department is functioning, along with detailed analytics that are collected. Think of it as a brilliant HD TV screen. From a macro perspective everything can look fine, but as you look closer you can see all of the individual pixels that create the picture when properly arranged. Identifying and tuning an organization cannot be accomplished from a linear, 10,000-foot perspective.

The priorities for enabling financial, operational, and system integration should be directly aligned to the institution's mission. To ensure quality management within the department, proper auditing, reporting, and measurement are vital components that can instill competency and efficiency within a department. Running the department as a business should be a natural derivative of the business processes and systems. It should not create additional overhead.

The most important dimensions of ITFM, which require the most attention, include usage management, vendor/invoice management, chargeback/showback, and financial optimization. Automatically gathering analytics to support these areas allows both back-office managers and department managers to see how their resources are being used and at what capacity, and to quickly correlate associated costs.

By gaining real-time insight into how and where money is being spent, CIOs can manage their finances in a manner similar to how a CFO would manage the finances of a company. This growing trend of having IT/telecom managers embrace a business perspective of technology is being tagged by industry analysts as the evolution of the “IT CFO.”

On campuses across the United States, IT/telecom professionals are assigned the conflicting responsibilities of continually improving and expanding services while reducing costs. A natural trend occurring in the information service industry is the fusing of departments. Where IT and telecom used to function separately, they now work most often under one management structure, with IT being tasked to account for telecom equipment, services, and analysis. This new trend is often labeled the “shared service center” (SSC). This merging of departments ushers in a new paradigm where the entire IT department must run as a self-sustaining service bureau. Telecom operations have historically used a businesslike, SSC model. Telecom managers are well poised to champion new technology service bureau business practices if they are willing to embrace the dynamics of the full spectrum of IT/telecom operations.

In most organizations, IT spends between 3 and 7 percent of the university’s overall budget. Of that, about 20 to 25 percent goes toward telecommunications. For example, a university with a $500 million total budget would have approximately $25 million allocated to IT and consume approximately $6.25 million as telecommunications services.

However, managing vendor invoice expenses represents only one dimension to running your IT organization as a business. There are many rapidly changing dynamics to running an IT operation. CIOs can’t just react to expenses after they have occurred; they must be able to accurately predict financial requirements and baseline against actual consumption. CIOs and IT/telecom managers now require more comprehensive integrated management solutions that provide a holistic and drill-down perspective to enable financial planning and root-cause analysis. The solution for these CIOs is practicing sound ITFM.

Thinking like a CFO is not as easy as it may seem. In fact, it’s surprising how many campuses focus too heavily on the maintenance of equipment. IT professionals have minimal time to spend on managing budgets when they’re buried in day-to-day maintenance and replacement of campus networks and devices. Without integrated tools that provide an automated overall vision of how funds are being spent, departments run the risk of squandering budgets in operations that may not require it. The “squeaky wheel” that complains the most may be the Achilles’ heel that is destroying the institution’s budget. Adopting a pragmatic financial perspective to IT/telecom operations establishes a universal playing field.

Practicing ITFM effectively and efficiently means that departments need to avoid the “general ledger” standpoint when it comes to tracking expenses. This kind of macro analytical format does not provide as clear a picture of assets as it should. Like the pixels, discrete activities within the organization must be managed and studied, and relative costs must be associated with each one.

In the same way corporate CEOs rely on enterprise resource planning (ERP) systems to integrate information about human resources with finance, IT CFOs also need an ERP-type system to provide a complete, integrated perspective of procurements, provisioning activities, vendor payments, consumption, and allocation of services. The fundamental purpose of any ERP...
There are significant changes in the Higher Education landscape surrounding Communication Management Software providers. Are you affected?

We’re the ‘other guys’ who have quietly and consistently been providing Communications Management Software and support to Higher Education Institutions for over 28 years.

We live by our core values of:
Do the Right Thing
Give the Customer What They Want
Provide On Going Value

Perhaps it’s time for us to talk!

For more information contact us at 616.554.0000 or www.pcr.com
system is to integrate two or more business processes. The purpose of an IT-based ERP system is to integrate the management of technology service support and service delivery. Higher education can achieve significant financial benefits by integrating IT service support and service delivery processes.

Defining Metrics for Success

Metrics must be identified and defined in order to determine success in ITFM. The IT CFO should be focused on measuring return on investment and return on assets. The variables that are used to calculate these metrics require IT CFOs to constantly have their fingers on the pulse of their departments: understanding how money is being spent, what it’s being spent on, and the overall cash flow in the department.

Doing this will have a positive effect on the IT department and the overall institution because it will provide insights that lead to cost avoidance—avoiding payment of unnecessary fees—and risk mitigation—predicting what can go wrong, and fixing it before it does.

Next, these financial metrics must be stacked against the technical analytics that are monitored from the equipment and services maintained by the IT/telecom department. These technical analytics are identified as being key performance indicators, meaning that they must be tracked to determine whether a piece of equipment or service is running properly. However, being able to track both of these data categories should not be cumbersome for one department, especially when there are also maintenance tasks to be completed.

ERP systems for IT/telecom are used to manage the entire life cycle of IT/telecom services. This framework is identified as service life-cycle management (SLM). By leveraging the capabilities of SLM, the IT CFO can formulate strategies based on actual data to help simultaneously reduce legacy expenses by a reasonable measurement of 10 percent while expanding service operations. Using the previous example, this could yield an annual cost avoidance measurement of $5 million.

The Strategy for Controlling Your Budget

The strategy for controlling expenses is directly related to the adage “You can’t manage what you don’t measure.” Gartner published a report that delineates the measured contribution to reduce the typical telecommunication costs up to 45 percent. To start saving costs, the three major areas for greatest potential for cost reduction include: eliminating waste (8.6 percent potential savings), aligning service levels with needs (12.6 percent potential savings), and negotiating better prices (15.4 percent potential savings).

By covering areas such as telecom expense management, inventory, and infrastructure management, proper ITFM can provide IT/telecom departments with the necessary analytics that lead to maintaining a balanced budget, while still ensuring the right technology is in place for staff, faculty, and students. Key areas of focus include:

- Usage management. By tracking usage across telecommunication carriers and various network technologies such as storage, printing, and energy, IT departments arm themselves with the ability to proactively manage their decision-making processes based on the ability to discover informative patterns in the collected data. The real-time data allow the IT CFO to perform vital tasks such as competitive cost plan analyses and “what-if” comparisons that have an overarching effect on how the department functions.
- Vendor/invoice management. As institutions adopt various dimensions of subscription-based cloud services, financial management is vital in order to track the variety of invoices and ensure you are paying for what you are consuming. Invoices are linear expense report and do not allow for multidimensional financial analysis. However, the IT CFO can use SLM tools to evolve beyond reactive invoice analysis to having actionable data by examining how services are consumed and substantiate how expenses enable or detract from the institution’s mission.

- Chargeback/showback. The window to expose visibility needs to extend beyond the IT back office. Providing secure and timely financial insight for all fiscal officers is the key to sustaining a collaborative and proactive relationship with your customers. ITFM through automated chargeback or just showback via structured electronic billing presentment and payment is a cost-effective and efficient technology to employ because of its ability to reduce operational costs and provide more in-depth financial information. Without true chargeback capability and the ability to show value back to customers, the fiscal officer and end user have no idea how they are affecting the bottom line. Financial reports can help department managers identify trends and anomalies that can help achieve significant levels of cost avoidance.
- Shared service center. The SSC represents the latest evolution in managing and achieving greater levels of efficacy in IT service support and service delivery. The SSC provides an incredibly efficient and unified framework to deliver highly specialized services on the basis of a service level agreement with transactional cost allocations automatically tracked and assigned. SSCs are deployed for a variety of reasons: to reduce costs of decentralization, to increase the quality and professionalism of support processes for the business, to increase cost flexibility for supporting services, and to create a higher degree of strategic flexibility. Reported cost reductions of services
organized in SSCs are as high as 70 percent of the original costs, but average about 50 percent.

Data should be collected to enable proactive analysis and help quantify user patterns. It is important to identify how services and systems are used and how they allow IT/telecom support to go after any type of performance problems that users could experience, as well as ultimately optimizing the performance activities to their greatest potential.

Black Is Back in Higher Education

As the worlds of IT and telecommunications fuse together, so do the metrics and analytics that are used to measure the successes of technology and services. On university campuses, multiple service providers are common, and monitoring these vendors and the respective services they provide has reached a threshold that cannot be held at bay by manual spreadsheets and disparate databases.

A holistic approach to ITFM allows CIOs and IT directors to gain a stronger grasp of the many variables that come into play with information technology. The ability to get a true, 360-degree view of department data leads to the type of management that helps to keep a department out of the red and in the black. It starts with self-service provisioning with well-defined service catalogs and continues through enabling secure electronic reporting of financial statements.

By building and accessing an integrated unified information repository, IT CFOs enable comprehensive, real-time financial analysis. And by understanding how these variables affect IT/telecom budgets, the IT CFO helps run the department like a business—making sure that all services are up and running, and that the data can demonstrate how internal funds are best being spent.

Whether you call these people IT CFOs, IT financial analysts, or some other title, the financial role of IT/telecom grows more important every day, along with the need for systems that provide vital financial operational data for better decision making.

A former IT director in higher education, Larry Foster is currently the president and general manager of the Pinnacle software division at PAETEC (www.pinnsoft.com). He also is the president of the Telecom Expense Management Industry Association (TEMA). Larry can be reached at Larry.Foster@PAETEC.com.

---

America’s largest telecom monthly. America’s top telecom news site.
Delivered free to your office or visit www.telecomreseller.com

TelecomReseller
UC Networks
The Voice of Unified Communications and Collaboration

Reporting on IP-PBX, SIP, Mobility, Migration, Cloud, Speech, SMB and Enterprise, Avaya, Cisco, NEC, Mitel, Aastra Polycom, snom, Vertical, and more
Making a Case for Managed ResNet Services

Before the advent of the personal computer, life was much simpler for the telecom departments of higher-education institutions across the country. On-campus housing technology in the mid-1900s consisted pretty much of pay phones in common areas of residence halls and was managed in-house without much fanfare.

Fast-forward to 2011: It's easy to be astounded by the dramatic technological leaps we have taken as a society and across higher-education institutions nationwide. We long ago surpassed the limitations of pay phones and landlines and now live in the age of VoIP (voice over Internet protocol), mobile phones, and smartphones. We welcomed computer desktops, then laptops, then the Internet—which spiked the demand for bandwidth access to new applications and services such as university networks, social media sites, peer-to-peer file sharing, high-density video content, gaming consoles, and more.

But as many higher-education IT teams can attest, the pace has not even begun to slow. Today, incoming generations of technology-savvy students and their parents choose colleges based not only on their intended fields of study or the caliber of the faculty. Today, more than ever, students shop for universities that are technologically advanced. They expect around-the-clock IT support for all of their connectivity needs and comprehensive wireless coverage for their laptops and mobile devices, anywhere on campus, but most definitely in their rooms and throughout their residence halls.

As a result, more and more IT departments have found themselves in a perfect storm of servicing student residential networking needs in an environment of unprecedented connectivity demands, shrinking budgets, and uncharted regulatory issues.

Even though an overwhelming majority (more than 90 percent) of higher-education institutions still manage their student residential networking needs in-house, an increasing number of schools are partnering with outside providers for their student housing networks. Four higher-education institutions across the country—Ithaca College, Southwestern University, the University of North Texas, and San Francisco State University—provide snapshots of their lives, before and after partnering for managed ResNet services.

Ithaca College, Ithaca, New York

Founded in 1892, Ithaca College is a privately supported, accredited, residential college with approximately 6,500 students. The institution has a strong liberal arts core, but also offers several preprofessional programs and graduate programs.

In the early 1990s, Ithaca College’s information technology services (ITS) department started building an in-house residential network, allowing students to bring their own computers or laptops to connect into the college network and the Internet for free. As technologies evolved and advanced in the years that followed, ITS faced increased challenges servicing all of the college’s 53 residence halls and 4,400 connections.

Some of the challenges included the following developments:

- The activation of computer and Internet connections became increasingly labor intensive as ITS manually processed thousands of handwritten forms for residential activation.

- The introduction of Napster and peer-to-peer applications led to an explosion in demand for bandwidth, and the challenge to educate students on etiquette and legal
ramifications around the proper use of a shared network, as well as that of dealing directly with copyright holder complaints and student infractions.

- Beyond computers, expectations rose for speedy and seamless connectivity as students also began bringing additional devices to their residence halls: DVD players, gaming consoles, smartphones, and more.

- A virus plagued campus computers. In August 2003, Ithaca College was plagued by a worldwide virus epidemic that coincided with move-in season. It soon became apparent that all a student had to do was plug into Ithaca's ResNet to infect their computer. The college created an emergency response team and activated resident assistants to help individual students clean and patch computers. ITS monitored infection levels at each building and shut down Internet access when infection levels were deemed too high while continuing to work with individual students and turning connection ports on or off. Although the virus problem was resolved by Labor Day weekend, it angered many students, along with their parents, with a few even asking for tuition refunds.

The multitude of issues prompted Ithaca College to question the feasibility of having ITS continue to provide support through its in-house resources, or whether partnering with a third party would be more resource-effective and improve service. Ithaca College decided to implement managed residential services in 2004, and in just four months, they had achieved the goals they set out to accomplish:

- Creation of a tiered Internet service plan, including a no-cost option for students
- On-site technical support and around-the-clock phone support for all students living in the 53 residence halls
- Increased bandwidth that scales as technologies advance and the college continues to grow and expand
- The creation of a network architecture that would not be affected by viruses, worms, and Trojans
- The establishment of a collaborative relationship and partnership with an experienced vendor who understood the academic market and the law

Ed Fuller, director of information technology, summed up their experience this way: "We simply weren't equipped or chartered to be an ISP. Turning that business over was a good business decision for Ithaca College."

**Southwestern University, Georgetown, Texas**

Founded in 1840, Southwestern University is the oldest university in Texas. It is a selective, four-year, independent, undergraduate national liberal arts college that has been consistently ranked among the nation's leading private colleges academically.

When the school's information technology services (ITS) department introduced residential networking for the approximately 1,100 students who lived in the residence halls in the mid-1990s, it had a simple goal: to provide students with e-mail access and a way to surf the limited information-based Internet available at that time.

But in a span of only a few years, students found many new uses for the network, as they began to download rich media (audio and video) en masse and exchange large files through peer-to-peer file-sharing networks. Southwestern's ITS department found itself under constant pressure to provide more and more bandwidth and to take more staff time and resources away from the core IT activities of the university. Mounting challenges prompted Southwestern's leadership to consider in-house residential networking.

CIO Bob Paver summed up their dilemma: "The natural question was, were we focusing on our core strategic mission for the university—to support academics and research—or were we simply an Internet service provider for students?"

Once the pivotal decision was made, Southwestern changed its residential networking model from in-house to managed services in a two-stage process:

1. **Hardware upgrade.** To facilitate bandwidth expansion, Southwestern was able to leverage a no-cost upgrade of its existing network infrastructure, which included a full-scale deployment of core routing and switching equipment. Hubs in the residence halls were replaced with new 10/100 switches, and building links were upgraded from 10 Mbps to 1,000 Mbps.

2. **Move-in and connectivity support.** In previous years, campus housing and ITS offices were overloaded with support needs during the busy move-in seasons. The decision to shift campus housing connectivity and networking issues to the managed ResNet provider's on-site technician and 24/7 support hotline led to a dramatic reduction of calls to the campus help desk, freeing up time for administrators to focus on other issues.

Both Southwestern's ITS department and students were pleased with their new residential networking setup. Reporting on his work life after turning over ResNet, Todd Watson, senior network administrator, said, "I haven't had to look at the bandwidth and data traffic flow since the project came online. I've already had enough time to implement a long-awaited systems project that normally would have been delayed with the start of the semester."

**University of North Texas**

With an enrollment of more than 34,000 students, the University of North Texas (UNT) is the flagship campus of the UNT System and the fourth largest university in...
Texas. More than 6,000 students live on campus in its 14 residence halls, making UNT the largest residential campus in the Dallas–Fort Worth area.

By the spring of 2007, UNT residence halls were feeling increased pressure to stay competitive with the Internet connection speeds to which students were accustomed. Students complained of delays in network connections and increasingly demanded wireless Internet access. At that time, UNT maintained a full-time employee dedicated exclusively to managing ResNet activity, but 75 percent of his time was spent tracking issues, turning ports on and off, and dealing with PCs that were hogging bandwidth. However, he was unable to address the underlying infrastructure upgrades needed to meet the heightened expectations in the residence halls.

The decision to implement managed residential network services at UNT solved the problem on multiple levels.

1. Infrastructure boost. By leveraging managed ResNet services, UNT traded in the costs of maintaining its aging infrastructure for a stable, predictable cost system with built-in technology refreshes. UNT also implemented more infrastructure upgrades, bringing in additional routers, putting up firewalls, and adding software revisions.

2. Enhanced student support. UNT introduced on-site and around-the-clock technical support for its 6,000 resident students, vastly speeding up the response time in troubleshooting any connectivity and bandwidth issues.

3. Savings in labor costs. With technical support now off its plate, UNT was able to save significant staff hours and costs on the residential networking front. Staff and resources could be redeployed to other campus applications to support the school’s larger academic goals. “It’s like adding staff without adding staff,” said Joe Adamo, director of communication services.

   Reflecting on life before and after managed ResNet services, Adamo added, “With the number of connections, we could not keep up in the past. We now have upgraded service packages and a 24-hour help desk.”

San Francisco State University

San Francisco State (SFSU) is a leading urban public university and part of California State University, the largest system of higher education in the country. Enrollment at SFSU had climbed past 29,000 students on its 134-acre campus in southwest San Francisco. With enrollment increasing significantly, SFSU undertook an ambitious project to acquire several large-scale residential communities adjacent to the campus, and along with this, expand its existing housing network to 12,000-plus connections.

   During that period, the university came face to face with multiple challenges: It needed not only to integrate smoothly the new properties with the rest of SFSU, but also to upgrade its existing network and establish new residential networks that would meet rising student expectations for higher bandwidth and wireless connectivity as video streaming and “Internet access everywhere” became the prevalent expectation among students.

   In addition, SFSU faced budget and time constraints and had limitations on what it could spend on new staff or equipment. SFSU determined that its best strategy was to partner with a specialized and experienced network provider and selected a partner with the ultimate goal of achieving a residential network infrastructure so flexible and dependable that it is expected to meet campus technology demands for the next 15 years.

With its new partner, SFSU quickly rolled out the following improvements:

- Full build-out of a new residential network at newly acquired student housing properties, including laying of underground fiber, establishment of server rooms, and wiring for high-speed Internet connections.
- Full infrastructure upgrade and integration of existing and new residence halls, allowing for a scalable, fully integrated voice/video/data network that provided students with high-speed Internet and comprehensive wireless coverage.
- Full-service plans and packages, which were embraced by the student population. They can now count on complete on-site support and maintenance as well as around-the-clock technical support. Technologically advanced students who want higher bandwidth and ultra-high-speed connectivity also have the option to buy into service packages that deliver beyond-basic access.

   Best of all, the university was able to keep the administrative control it wanted. The IT team was able to maintain focus on supporting the university’s expansion and academic goals while handing off the time-consuming, detail-driven job of running and maintaining 12,000-plus connections in the student residential network.

Along with the rest of the country, higher-education institutions are challenged to deliver more with fewer resources during these difficult times. Managed residential networking, while a relatively new trend, is capturing the attention and fascination of an increasing number of administrators as they consider ways to run student housing networks that have the potential to work better and save money.

Charles Brady is founder and CEO of Apogee. Reach him at cbrady@apogeenet.net.
Thanks to Our Exhibitors and Sponsors!

Thanks to these companies that exhibited or sponsored at one, two, three, or all four of our events in 2010. ACUTA members are their potential customers, but representatives from many of these companies have also become our partners in success as well as our friends. As they determine whose events they will attend each year, ACUTA is glad they have chosen ours!

ACUTA Journal of Information Communications Technology in Higher Education  Spring 2011
Equipping a Learning Studio

Arthur Brant
Dennis Marquardt
Abilene Christian University

In February 2008, Abilene Christian University (ACU) launched a mobile learning initiative that provides mobile devices to incoming freshmen students and integrates these devices into the learning environment. In the months since the initiative launched, the university has continued to see dramatic ways in which faculty and students have leveraged mobile platforms to complement, or in some cases alter, the manner in which content is delivered. In August 2010, the university marked a significant milestone as both incoming freshmen and senior classes were given mobile devices. For the first time since launching the mobile learning initiative, all full-time undergraduate students are equipped with mobile devices, and all instructors and professors have the opportunity to integrate them into the learning process.

One of the elements of the vision for ACU’s mobile learning initiative emphasizes the importance of student-contributed content to the learning process. Students’ participation in finding and delivering content, empowered by mobile, unlimited access to the Internet, offers some interesting opportunities to transform the dynamics of a traditional college classroom. One challenge confronting this participatory process is the means to share this information in a compelling and effective manner. This challenge is where the seeds of a Learning Studio have been sown.

The Learning Studio offers students and faculty, across academic disciplines, resources and facilities for experimentation, development, and production of rich-media—enhanced learning materials. Centrally located within ACU’s Learning Commons—which also features a Writing Center, Speaking Center, and Student Technology Support Center—the Learning Studio will function as a lab, studio, and collaborative work space. Staffed with media specialists and leveraging these existing services offered within the Learning Commons, the Learning Studio offers to alleviate the barriers to develop and produce rich-media content, thus leveling another digital divide within the academy.

Collaboration and Content Creation: Guiding Design Theory

According to the June 2010 ComScore Extended Search Engine Rankings, YouTube is the second most popular search engine behind Google with 3.6 billion queries in June 2010 alone. According to YouTube’s own online fact sheet, 2 billion videos a day are viewed, and every minute 24 hours of video are uploaded. Those data validate that digital media is becoming a preferred platform for personal and even institutional expression. One question for the academy, therefore, is, How are students learning to express themselves through digital media in persuasive and professional ways? As digital media and mobile technologies continue to converge and become pervasive, there exists a critical need to teach students how to express their views and opinions persuasively and professionally in video.

One of the fundamental academic forms of honing ideas and content has been the editing and review process (i.e., collaboration). Individual content creation is important, but students and faculty need
to recognize the incredible synergies that can be developed through collaborative content creation. One of the fundamentals of the Learning Studio’s design is to provide spaces that encourage this collaboration. The levels of collaboration that are envisioned are not only student to student, but also faculty to student, and faculty to faculty.

With collaboration as a fundamental design theme, the obvious priority of the space is for it to inherently inspire and have the tools necessary for creating digital video and audio content. Having intentional spaces that provide “touch-and-go” capabilities for producing a podcast, audio recording, or presentation video is a major priority in the Learning Studio design. This easy-access mentality includes the need for these spaces to be close to media specialists who can assist in content creation and technological assistance.

The Learning Studio is designed to be a place for creating varying levels of content. The touch-and-go spaces are likely to be more basic video and audio projects, but there is also a significant need for producing high-end video. To meet this need, a production-level studio and editing lab are in the design as well. These spaces will require staffed personnel to assist students and faculty with high-end video projects.

The final notable theme within the Learning Studio’s design theory is the notion of a “one-stop” resource center. The Learning Studio itself will house a Digital Media Center staff consisting of trained media specialists along with the university’s Speaking Center. Since the Learning Studio is located within the university library, students will be within access to the Technology Support Center and the Writing Center, and will have the library’s research specialists at their service. The hope is that every resource needed for producing compelling and professional video content will be easily accessible by students and faculty within the Learning Studio’s vicinity.

Cost and Resource Analysis
Design theory meets reality during the cost and resource analysis process. Rarely are budgets large enough to provide for a complete project’s design theory. Therefore, prioritizing the overall functional goals of the Learning Studio is an essential task. This task, which is still in process, is requiring collaboration among the Studio’s constituents, the architect, technologists, learning space designers, and the campus building and grounds personnel.

In order to appropriately prioritize the Learning Studio design, each section of the plan is weighed against the overall design theory. The central themes behind ACU’s design include collaboration, varying levels of digital content creation, and the one-stop resource center. Considerable effort is expended to ensure these central themes are not compromised during the cost and resource analysis process.

Three main areas are involved in the prioritization process. The first consists of the functions of the Learning Studio. The second area includes the back-end infrastructure necessary for the Studio to carry out its functions. The third area is the staffing to carry out the functions. Each of these three areas needs to be examined and weighed against the central themes behind the design theory.

The functions of the Learning Studio include collaboration spaces, content creation spaces, and resource spaces. Collaboration spaces include digital diners and small-group rooms. Content creation spaces include podcasting rooms, a digital editing lab, and a high-end video-recording studio. Resource spaces include a Speaking Center and the Digital Media Center. Each space in itself contributes to the foundational themes, but priority has to be placed on the percentage of overall space that each of these areas would take up.

Since collaboration is a major theme within the design theory, digital diners and group rooms were considered essential elements. Keeping digital diners along the north and south boundaries of the Studio is considered a must-have for the design. Originally, every diner booth would feature an LCD monitor with an integrated network and display port so that students could plug in their laptops or mobile devices and display to the entire table. After
a cost analysis it seems more appropriate for half of the diner booths to have the integrated display and half to be without. Space-usage studies can later determine if every diner booth really needs the added display.

Small- and large-group meeting rooms are another vital collaboration element within the design. The small-group rooms are designed to be touch-and-go podcasting rooms for individuals or groups of four or less to have a private space to record presentations. Large-group meeting rooms are designed to be both a meeting space and a space capable of displaying and recording larger group meetings or presentations. The technology decisions being made in group rooms have significant price ranges.

The rooms could feature state-of-the-art technology and control systems or they could merely be rooms with furniture. The cost analysis requires the true functionality requirements of the room to be clearly outlined. This creates a structure of discipline in making final technology decisions. As we examine technology, it is quite clear what meets the functionality requirements and what goes well beyond the intended usage.

At this stage of the decision process, the three or four small-group rooms will be simple podcasting spaces. Each will feature furniture for up to four students, a large-screen display on one side of the room to display a presentation, and a wall-mounted iMac on the other side of the room to record sound and video of the presentation. They will be equipped with a ceiling-drop condenser microphone to pick up the presentation audio. These spaces will also have one full-wall whiteboard for collaborative learning and brainstorming.

Two large-group rooms will feature furniture for six to eight students. A large-screen display will be on the wall with audiovisual connections to the display being mounted within the table. These rooms will also have a full-wall whiteboard and the possibility of rolling in portable whiteboards for extra collaborative space.

As with most learning-space projects, although front-end technology is a necessary investment, it is clear that space design trumps technology. Creating inviting, collaborative environments that inspire students to create new ideas requires a focus on spacial and interior design first. For example, having digital signage every twenty feet within the Learning Studio might provide a “wow” factor, but is it imperative to create the environment desired? Making decisions based on functionality over glitz and glamour is something that takes discipline and constant refocus.

Due to Abilene Christian University’s commitment to mobile learning, certain infrastructure technologies are non-negotiable. Thus, having pervasive wireless coverage in the Learning Studio is designated as a need rather than a want. While Ethernet connectivity is available for the digital diner tables, small-group rooms, and large-group rooms, wireless network connectivity promotes flexibility for collaborative work. The wireless network also serves postproduction functions, by allowing studio constituents to view their finished products on mobile platforms.

The final concern for the Learning Studio’s cost and resource analysis is ultimately sustainability. Any technology that is purchased and installed within the Learning Studio must be accompanied by a plan to upgrade and replace it as well. This same thought process is also being applied to staffing. Developing long-term funding strategies to protect the initial investment in the Learning Studio is no small matter. Getting strategic university commitments and securing funding sources for future upgrades and staffing is a crucial aspect that needs to be in place before construction can begin.

Conclusion

With a fully saturated undergraduate student body with mobile devices and with a clear intent that rich media will function as an effective and compelling medium in the learning environment, ACU recognizes the opportunity to assist in developing the opportunities, making available the tools of production, and encouraging both faculty and students to take advantage of these resources. As cited already, the costs associated with moving from concept and design to execution can be staggering. Having a corporate partner, such as AT&T, who appreciates the vision and challenges associated with the convergence of mobility and rich media, ACU is poised to fully realize the potential of a Learning Studio.

As with any pilot, all eyes are focused on measures to determine the success of this latest tenant in the university’s innovative learning initiative. Measures such as the number of hours, visits, users, and projects will likely make up the metrics of the Learning Studio. However, given the emphasis on collaboration, one of the elements that the university wants to measure is how well the Learning Studio promotes and facilitates relationships. Much as ACU’s mobile learning initiative is not focused on devices, the Learning Studio is not singularly focused on the production of rich media. It’s the process and opportunities that the studio offers to call students, faculty, and specialists together that can result in the creation of rich media. It is these relationships and the collaboration that goes along with these relationships that will solidify the Learning Studio’s success for Abilene Christian University.

Arthur Brant is director, enterprise infrastructure at Abilene Christian University, and Dennis Marquardt is project manager, educational technology. Reach Arthur at branta@acu.edu. Dennis can be contacted at marquadtd@acu.edu.
Tackling a New Age of Mobile Devices and Virtualization at Dean College

Located about 40 miles southeast of Boston, the town of Franklin, Massachusetts, is home to Dean College, a private liberal arts school that today educates 1,200 students each year on its historic 100-acre campus. A walk through Dean College offers views of New England tradition: red-brick buildings, wrought iron gates, and stained glass windows, glimpses of the school as it was when first founded in 1865.

Dean College was also one of the first college campuses in the United States to pioneer campuswide WiFi, a wireless local area network. At a diverse school that prides itself on providing an environment where faculty, staff, and students can thrive, access to the network from wherever they live, learn, and work was key to supporting that goal. Dean's administration in 2001 began the process of connecting students and faculty to the campus wireless network with laptops and wireless cards. The network expanded to connect the school's E. Ross Anderson library, academic course websites, college-provided e-mail, and the school's intranet.

When Russell Prentice joined Dean's IT division as director of infrastructure services in 2008, he found a technology base that in many ways had become a victim of its own success. "Part of our job," he says, "was to look at the infrastructure to see how it stacked up against industry, business, and commercial standards. What we found was a flat network built organically that kept growing because people kept adding things to it." Meanwhile, the popularity of mobile devices and wireless network services was increasing traffic and putting new strains on a technology infrastructure unable to scale with demand.

Prentice remembers the challenges of supporting a network that lacked modern routing and load distribution. "We were seeing a degradation of performance, while at the same time we saw the need to increase the services that we provided. Things could be erratic—high-traffic times brought with them outages, and often a failure in any location meant a failure of the network." With the support of Dean president Paula M. Rooney, CIO Darrell Kulesza and Prentice set out to develop a road map for replacing Dean's internal network with one that could once again stay ahead of the demands placed on it by faculty and students plus support the exponential growth in mobile devices and future media-rich e-learning and collaboration applications.

"A Perfect Storm"

The school partnered with Carousel Industries to design and plan the upgrade to Dean's infrastructure and brought in Aruba Networks for the new 802.11n wireless LAN. The road map they created was a three-year plan. First priority had to be campus cabling: Dean's 23 buildings sported a mix of installed network wiring that, in many cases, dated back to the college's earliest network installations. The decision was made to remove all currently existing network cable across the campus, and replace it with CAT 6 Ethernet cabling. In doing so, they realized that using Ethernet
only where necessary and WiFi everywhere else would both save money and deliver better connectivity.

“We had a perfect storm,” says Kulesza. They learned that by 2010, the school’s NEC phone system would no longer be manufacturer supported and would have to be replaced. Additionally, the September 2009 groundbreaking of a planned 28,800-square-foot performance center and dining hall meant that by October 2010, Dean College’s aging technology infrastructure would be taxed well beyond its breaking point. “And we already had growing network issues on top of that. We had no choice. A three-year road map had to become a one-year plan.”

The team decided to replace the school's obsolete NEC phones with a new campuswide VoIP telecommunication infrastructure. The cable replacement effort would have to come first, however, and couldn’t truly begin while students were still on campus. Because Dean’s student base is 90 percent residential, the residence halls would have to be empty during the construction phase. The process could begin only after commencement in May 2010, and the entire upgrade project would have to be complete in just three months.

What We Did This Summer

“The campus infrastructure itself wasn’t in any state to handle the capacity we needed for a new 802.11n WiFi network,” says Prentice. “First you need the cable to handle it, then you need to have the network infrastructure in place to deliver it. Only then could we install the wireless service upgrades we would need to support the performance hall and expanded college needs.”

The cabling overhaul began just after commencement. Beginning with the outlying buildings, the team moved quickly to tear out existing and outdated network wiring, replacing it with CAT 6 cable and wall sockets. The time crunch meant having to move to new areas as soon as occupants were gone. “As soon as students left after graduation,” says Prentice, “we moved into their residence halls.”

The college’s Internet connection was the next step. The team renegotiated their Internet service contracts in 2009 and 2010, upgrading the school from a single 20-megabit WAN connection to twin 50-megabit lines provided by separate service providers. Significantly increasing the school’s total available Internet bandwidth, the renegotiation and conversion cut the college’s overall Internet cost by 25 percent.

The LAN backbones (totaling 21) connecting Dean’s four main buildings were upgraded to high-capacity 10-gigabit HP data switches. The college’s 20-plus aging LAN servers were replaced with 16 state-of-the-art HP blade servers; discrete disks were replaced with a centralized and secure EMC SAN storage solution. Using sophisticated server virtualization software, the new network architecture now supports the virtual equivalent of 44 pre-upgrade servers and offers significantly more service capacity while dramatically reducing the system’s physical footprint and cutting operational costs for electricity and maintenance.

Next, the new VoIP phone system was installed, and finally, Aruba 802.11n access points were installed spanning the campus. Aruba’s Multimedia-Grade WiFi solution was able to handle current and future student computing needs with the increase in video and voice traffic on the network and the expected inundation of smartphones and tablets. The WiFi network was expected to be the primary network connection for students, guests, administrators, faculty, and staff going forward. It also needed to support the growth in virtualization as more applications were accessed from mobile devices.

Even during the summer, there were still programs and students to consider. “We couldn’t have done any of this without the participation and understanding from everyone on campus,” says Prentice. Summer students and programs had to be carefully navigated to avoid unnecessary disruptions. “Preparation really is everything. We spent a lot of time planning and adhering to the plan. That was critical to our success.”

Students Meet Captain Aruba

Potential support worries weighed heavy on Dean College's network upgrade team.
"We decided that we needed to get kids engaged before they left," Prentice says. Before summer break commenced, the team had consulted with students and with representatives of Dean's student government. Was there a funny, engaging, and effective way to prepare students for such a dramatic change in the fall? "The last thing we wanted to do was issue a dry communiqué from IT."

The solution: a social media campaign built around a cartoon character named "Captain Aruba." Via a Facebook page, periodically the team would issue an announcement: "This is the latest bulletin from Planet Aruba. Captain Aruba is coming!" The lighthearted network hero would then go on to update readers on the progress of the upgrade effort, and on what students would need to know when they returned in the fall.

By the time students returned, the team had completed the network overhaul in record time—and Dean's students came back to their residence halls to find a new WiFi network that was nothing like the one that had been there in May. As the fall semester began, technology team members kept their fingers crossed and waited for problems. They constantly walked the campus, searching for wireless connection failures. They steeled themselves for a wave of support issues that never materialized.

"We kept looking at each other," Prentice says, "and we were worried that the problems were there, and no one was telling us about them. But it turned out that there weren't problems. We went online with students as smoothly as anyone could want."

Down the Road

Dean College's new performance center and dining hall was completed in the fall of 2010. The school's network upgrades were completed and operational in time for both the center's grand opening and the start of the 2010-2011 year.

Having successfully compressed an already ambitious three-year technology road map into a one-year plan executed over a single summer, Dean's technology planners are now focused on the future. "We built this new network to handle our school's needs for the next seven years," says Prentice. "But we're looking down the road."

"Once upon a time, [students] said texting was great. They still do today. But 'FaceTiming' is the next thing—where students are actually talking to each other via mobile video on iPhones. Social networking sites like Facebook are also becoming much more multimedia-heavy with embedded video and photos. The drive to be online with everyone constantly and permanently is only going to drive up the need not only for greater wireless capacity but also for the quality of service to ensure a good experience for students.

The new network infrastructure was planned from the outset to be easily upgraded in the future, where additional network and server capacity can be added as needed, without affecting existing operations. Virtualization will remain a major focus for the school's ongoing network growth strategy, allowing consolidation of existing servers while increasing security, expanding service offerings, and decreasing long-term operational costs. Managing the network as a single virtualized whole rather than as an ad hoc collection of technologies gradually aging into obsolescence is the heart of Dean College's long-term strategy for meeting expanding student requirements.

"We provide an experience when students come to college," says Prentice. "They're coming from their homes, where they have a mobile, high-speed network all to themselves. And now they're coming to a campus where they want to get connected—but they have to compete with more than 1,000 other users and thousands of other WiFi-connected devices. We need to provide them with the ability to do that."

Looking Back

What would the veterans of Dean College's 2010 network upgrade offer as advice to schools facing similar situations? Quality communication—and lots of it.

"We worked hard to involve the user community," says Kulesza of the project's success. "We were engaging teams of users about the projects that directly affected them, giving them ample advance warning about what we were going to do, and when and how. We solicited regular feedback from users to quickly identify 'hot-button' issues. Every step of the way, we carefully planned everything out to avoid any surprises."

Keeping senior management informed was as important as user communication, according to Kulesza. "We made a conscious effort to explain this project to our vice presidents in terms that had meaning for them. How will these upgrades advance the experience of the college? How will the students benefit? How do these technology improvements directly lead to a better, more significant educational experience?"

Prentice agrees. "There were curveballs along the way," he says. "But we were able to work around them. Preparation and communication made all the difference."

For more information about the project, contact Darrell Kulesza at dkulesza@dean.edu or Russ Prentice at rprentice@dean.edu. Robert Warren writes for Carousel Industries. To reach Carousel Industries, contact Kelly Harman at kharman@carouselindustries.com.

ACUTA Journal of Information Communications Technology in Higher Education Spring 2011 33
The Building of a Data Center: Management Lessons Learned

Keith Fowlkes
The University of Virginia's College at Wise

It was only a year ago when we moved into our newly constructed data center and the adjoining beautiful new IT staff offices. The move-in went very well, but it came after lots of planning, discussion, and persuasion. We didn't get everything we wanted, but in these economic times, who does? We did come away with a solid design and some lessons learned, as well as some lessons we are still learning a year later.

This was my third new data center. Every institution I've been a part of over the past 25 years has either built a new facility or moved into a renovated facility. I thought I had seen it all, but times change and so do federal and state regulations, not to mention technology needs.

The standard items are still standard: air conditioning, fire suppression, clean and redundant power. Some things were new such as card and biometric entry systems. Good infrastructure still comes at a cost of time and attention. But for those who might be planning for a new data center, a few lessons from our project management could prove useful.

1. Build strong relationships with construction management and contractors.

It is not magic. People build your building and you pay for inattentiveness to the process. Our construction management was outstanding, and I assigned one of my veteran staff members to be the direct liaison to the construction supervisor. This staff member was in all the meetings, knew all the contractors, and kept me in the information loop on all items of concern. A good construction company will also have a good quality-assurance person on-site, every day. This was the case for our people as outlined in the contracts. Make sure you have this in yours.

It's very important for your construction management to understand that they are meeting your organizational needs and not just fulfilling obligations on paper. Do your best to partner with them and make them feel comfortable to talk with you about any concerns they have in the process of building. Our construction management people felt comfortable to drop into my office multiple times a day to discuss the project, its progress, and any issues that might be concerning them.

Thanks to our architect's office at UVA, the office of information technology was involved throughout the building process, including the selection of the construction management company. It made the difference in catching problems quickly and finding remedies without cost overruns.

2. Be patient and understand the sources and nature of capital funding.

My previous two institutions were private, and funding allocations were much less restrictive. With state institutions, as you may already know, funding sources tend to be less flexible. Within the process, certain funds are allocated for LEED (Leadership in Energy and Environmental Design) compliance, office square footage, façade work, and fire systems before any thought is put into the IT aspects of the building. This makes many IT leaders nervous, and
rightfully so. Spend some time understanding the funding source or sources, what funds are restricted/allocated, and what can be used for changes and necessary enhancements.

As in everything, patience is a virtue here. Choose your battles wisely, and be functionality focused when looking at building design. As the architects, consultants, and construction management people go through standard construction items, raise your concerns with only the things that directly relate to the functionality of the building. This focus on functionality will help you build credibility with them and will make a difference when the final plans are made. The time will come when your voice will be heard to install that extra air-conditioning unit instead of installing those gargoyles on the corners of the building (metaphorically speaking, of course).

3. Physical security is becoming even more important.

Every institution wants to trust its staff, but when you have so many people with access to sensitive areas, it is important to know who was where and when. Even some of the best employees and maintenance staff can make poor decisions in times of stress. Their actions might not be malicious, but knowing details of who comes and who goes through secure areas makes a big difference in tracking many problems.

We have installed ID card-based door access readers for entry through main doors, office suite doors, and engineering doors, and a biometric reader with code and fingerprint entry for the data center itself. Security cameras inside and outside of the data center are also very useful. These resources allow for expanded tracking of staff and facility support personnel through secure areas and can be surprisingly cost-effective.

We decided to relocate the campus telephone and cable television demarcation and terminations location inside our new data center for telecommunications and cable television head-end operations. We worked closely with our telecom providers for their space and cooling needs. We were careful to locate the demarc room very close to our data center. In fact, they are

---

**PART INFO** PLUS **PART IDEA**

**GETTING** **SHARING**

Equals total government connecting.

USA.gov is your official source for federal, state and local government information. From Social Security to product recalls, it's the place to find the info you need. And now you can also share your ideas and opinions with your government. To make your total government connection, visit USA.gov.

A public service message from the U.S. General Services Administration.
side by side. This new demarc location was originally designed to be entered through the data center itself. We realized that this was a serious physical security problem with numerous external contractors working in that room on a weekly basis. Because we were communicating closely with our construction managers, we caught this quickly. We were able to make changes not only in the demarc entry point (to a door outside the data center) but in how the demarc room would be cooled from the data center computer room air-conditioning units through a more secure channel under the floor and walls. Catching this early reduced the cost of the change and gave us a better overall physical security solution. This is just one instance of many that saved the project time and money.

4. Team management and collaboration are important factors.

I cannot stress enough the necessity of having your technology staff involved in the process with the architects, construction management, consultants, and contractors. Our staff worked as a strong team to make our data center facility build a success. I mentioned my staff member who was the liaison between the construction management and me. This staff member was also charged with communicating with the other IT staff members about needs and timelines and possible problems with the building and equipment design. When there were problems that couldn't be resolved, I was involved to see that a good compromise was found among all parties involved.

Again, focus on functionality is paramount. Most all the meetings with our IT staff were focused on space utilization, environmental controls, fire suppression, and power and backup power. Resist the temptation to debate the size of offices, lighting choices, and wall colors. As staff members focus on functionality, they will gain credibility within the planning process. While our staff professionals were interested in the more esoteric aspects of the building, they were well focused on its functionality for the short and long term. This unity was definitely a major key to our success.

5. Minimize your challenges through communication.

Any large project, such as a new facility, will encounter major challenges. One of our biggest issues was the location of our facility. For us, this debate went on for nearly two years before any plans were made. After several very difficult discussions on the topic, someone said, "Why don't you just put it here?" Once again, communications and brainstorming save the day.

As an IT manager, you need an upper management champion, and you must be assertive about your role as an important contributor to the building process. Since you will have to live with the results for many years, it makes sense to have some say in the building's functional design. Also, there were numerous times that we found opportunities to save money in the overall budget by being involved in the planning process.

I cannot overemphasize the need for daily communications between your IT staff and your construction management team and the importance of focusing on facility functionality. These items can help you in ways you cannot imagine in meeting your expectations as the facility owner. The end result will be a building that meets your needs and meets the institutional budget.

Keith Fowlkes is vice chancellor for information technology and CIO at the University of Virginia's College at Wise. Reach him at jd7e@uvawise.edu.
Walt Magnussen, PhD, Texas A&M University

The Bill D. Morris Award is given each year to a member who exemplifies the ideals for which the late president is honored: dedication, vision, professionalism, and leadership.

Walt Magnussen is the director for telecommunications at Texas A&M University and also serves as associate director for the Academy for Advanced Telecommunications and Learning Technology, an adjunct faculty member at Texas A&M, and co-director for the TAMU VoIP Internet2 Technology Evaluation Center.

As a member of ACUTA since 1993, he has served as president, president-elect, immediate past president, and chair of the Publications and the Awards Committees. He is a member of the Journal Editorial Review Board and currently serves as a director at large.

At Texas A&M, he also serves or served as associate director of the Academy for Advanced Telecommunications and Learning Technology, co-director for the Texas A&M VoIP Internet2 Technology Evaluation Center, co-chair of Internet2’s VoIP Special Interest Group and IPTV SIG, a member of the State of Texas Telecommunications Planning Oversight Council, and as a board member for the SIP Foundry, Open Source SIP Organization.

He has assisted with engineering the Trans Texas Video Network, one of the largest distance education networks in the world, and the Lone Star Education and Research Network, a Texas regional optical network; and served as a consultant to distance-education projects in more than 30 countries. Most recently he assumed a partnership role on the United States Department of Transportation grant to demonstrate a next-generation 911 VoIP-based emergency call center.

Walt is a man of accomplishment, but more importantly he is a man of character.

Patricia Todus, Northwestern University

Pat Todus has been a member of ACUTA for 26 years, serving as the representative of Northwestern University since 1984. She has served in numerous leadership positions with ACUTA, culminating with her service as president of the association in 2005-2006.

Even following her years on the Board of Directors, Pat has continued to participate actively in ACUTA as chair of the Higher Education Advisory Panel, which plans the Strategic Leadership Forum and other important projects for the association. Pat is also a willing contributor to our educational programs, serving as a speaker on many occasions. She is always willing to lend a hand to fellow members, and she supports the active participation of other IT professionals from Northwestern in ACUTA.

In addition to her leadership and service with ACUTA, Pat is an active leader within many other higher education and IT organizations. She personifies the values and characteristics of a leader in every way.
Advertisers’ Index

By advertising in the ACUTA Journal, these companies are not only promoting products and services relevant to information communications technology 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 and that you appreciate their support of ACUTA.

Maximize Your Advertising Investment with ACUTA

- *The ACUTA Journal* is regularly read by managers and directors of information communications technology and others responsible for campus technology.
- Ads appear in their original format when we post the issue to our website (on a one-issue delayed basis).
- Each advertiser is listed by company name with complete contact information in the advertisers’ index.
- Corporate affiliates who advertise accumulate points in ACUTA’s point system.
- Advertisers are listed by frequency of their commitment in a thank-you page in the eNews annually.

For complete details contact

Amy Burton, Manager, Membership Marketing and Corporate Relations
Phone: 859/278-3338 x240 • e-mail: aburton@acuta.org
www.acuta.org

---

* Indicates ACUTA Corporate Affiliate
ACUTA: Since higher education seems to be perpetually in challenging budget times, what is your most important financial issue? How are you addressing it on your campus?

Rowe: Our most important issue is sustainability. How can we sustain the systems and services into the future? If we cannot sustain all the current systems and services, what values will we use to evaluate system and service cuts? We believe that there is very little, if any, fluff in our budget. Every cut will now have a significant impact. We are trying to encourage our campus constituents to consider questions about sustainable values and organizational capacity. What is our organizational capacity for providing a given system or service, and what value does it provide to the community? That is the discussion that has to happen before any more budget reductions.

ACUTA: Aside from funding, what issue are you, as the CIO, currently spending most of your time addressing?

Rowe: There are three issues that are important at the moment:

1. Mobility. More on the edge device discussion with a different perspective, recognizing that our students, faculty, and staff are constantly in motion, with a continued expectation to connect to campus technical services but from a variety of networks and locations.

2. Accessibility. We need to do more to make our websites and materials, our systems and services, accessible to those with disabilities.

3. Staffing. Many talented technical people have left our state, and with the economy improving and our salary freeze, we are seeing staff departures. Hiring talented replacements is a challenge and requires a lot of effort.

ACUTA: What is the impact of this issue for your campus? What is your strategy for addressing this issue?

Rowe: It all comes down to having the resources: time, people, funding, knowledge, and space. Our campus discussions need to emphasize that there are many opportunities on which we can spend each dollar. Among all the choices, where do we want to spend each dollar? We will never have all the resources we need, so a constant effort is needed (in my role as CIO):

- Clearly identify strategic priorities.
- Align resources to priorities.
- Train, back-source, outsource, and build business cases to supplement resources.
- Allow priority projects to evolve as resources permit, rather than overhaul all at once (evolution not revolution).

ACUTA: Given that a key function of the CIO’s responsibility is preparing the campus to support future technologies, what technology changes do you see for your campus as you look forward five to seven years?

Rowe: Our university is growing, both in the number of students and in the diversity, depth, and breadth of the programs offered. Our technical resources need to expand to accommodate that growth. I think the issues mentioned earlier—consumer devices, mobility, and accessibility—will result in significant technical changes.

ACUTA: How are you readying the campus for these changes?

Rowe: Much of what we do now is setting the stage. We are talking more about the impact of these trends on our campus technical infrastructure. We are assessing skills and identifying knowledge areas that are under-represented in our department. We are evaluating our organizational structure. As purchases are made, new technical directions developed, or new products evaluated, we are assessing how these decisions match up to consumer devices, mobility, and accessibility expectations. We are always looking on the horizon and resetting our navigation paths to new goals.

ACUTA thanks Theresa Rowe, CIO at Oakland University, for sharing her thoughts with us. Contact Theresa at rowe@oakland.edu.

ACUTA membership is an excellent value.

Do a Friend a Favor: Invite Someone to Join ACUTA Today!

www.acuta.org
Q & A with the CIO

ACUTA: Much of the technology we now support in higher education is driven by consumer electronics. What decisions about your technology infrastructure have been affected by this and how?

Theresa Rowe: We have three general environments that are affected by consumer edge device decisions:

- Academic: devices that show up in the classroom or are used to connect to our LMS or other academic systems and services.
- Lifestyle: devices of broad variety, brought into our residence halls or student centers, by students, guests, and general community members, including gaming devices.
- Administrative: devices that staff members use with the expectation of doing their assigned work.

We need to review all areas and consider impact. What ports need to be open on the network? Can we identify data elements that might be in motion or moved from a protected university environment to a portable device? Are there security concerns? Where is the line for support?

We recognize that consumer electronics, or edge devices, have changed our decision process. There was a time when we selected and acquired devices, tested and evaluated them, and announced recommendations and support guidelines. There are simply too many devices for us to continue in that direction. Our constituents—students, faculty, and staff—select and acquire devices and expect the devices to be usable on campus. We now react and try to accommodate the service that they expect, but within reasonable, secure, and supportable limits. That is a key decision-process change: Instead of being the driver, we are reacting to consumer decisions. We try to make the network accessible and data secure.

We have taken a strong data stewardship role, and work to help the campus make wise decisions about data mobility and storage locations. We try to enable and support the individual’s chosen communication path.

ACUTA: Freshmen at most institutions today are far more extensive users of technology than those of even five years ago. What is the most challenging technical aspect of this presents for your campus?

Rowe: Their expectations, and the expectations of their parents, are very high. Those expectations seem to center on access and speed. Students expect to show up in dorm rooms with several devices (maybe a desktop, a tablet, a smartphone, a gaming system) and have all of them work fast, instantly, and seamlessly. They expect to move the devices freely around campus and still maintain high quality of service. We’ve not seen a deep understanding for how much work this takes and how much this environment costs to implement and maintain.

ACUTA: In what ways has this affected how you deliver support services?

Rowe: We are trying to understand the blending of the 3G/4G cell network with our campus wireless network. We are considering service direction and when to direct an individual to their own network service provider as differentiated from the university network service provision. When do we provide e-mail support for a smartphone and when do we direct the smartphone owner back to their provider?

We are looking at the future and examining the impact of 3G/4G networks under a consumer “bring your own network” model. Some vendors are pushing services to local campus wireless networks. Should we be pushing those services back to the carrier?
Rethink the way you do ResNet.

Gain control of your student network - by controlling less

Increasingly, the role of IT is changing to accommodate the growing demands of student networking. Constant policy enforcement, virus containment and the never-ending pursuit of bandwidth play a larger role now than ever before. Consequently, more universities are finding that the work of being an ISP is overtaking other priorities, and becoming a significant drain on department budgets, staff and time, and a distraction from core pursuits.

That's why so many schools are choosing to join with Apogee as their trusted network partner. Apogee frees you from the growing burden of managing your network and allows you to focus on the mission-critical tasks of the university. Our network solutions are tailored to fit the evolving needs of your campus network, and change as your needs change. We work with you to collaboratively define your service requirements and implement a plan for network development, providing more control over your network and enabling you to position strategically for future growth.

Better service, better support and better administration begin with network partnership.

Hear schools discuss their views on network partnership online at www.apogeenet.net, or call us at 1 (877) 478-8858 for more information.
Why add costly new PoE switches to support high power devices when you can upgrade using your existing Ethernet infrastructure?

The solution: low-cost PowerDsine® Hi-PoE™ Gigabit Midspans

**Easy Installation.** Simply connect HiPoE Midspans to your existing switches to supply up to 72 watts of power for 802.11n access points, pan-tilt-zoom security cameras, IP phones and more. At about $50 a port, you’ll save a bundle — and boost the return on investment from your existing network.

**More Reliable.** Partnered with PowerDsine Midspans, your mission critical switches operate cooler, more reliably handling what they were designed for — communicating data. They won’t require bigger, hotter supplies just to power 802.11n devices.

**Energy Efficient.** PowerDsine Midspans only deliver the power each device actually needs. Only when it’s needed. Our exclusive PowerView Pro™ network management feature enables re-booting, individual port on/off, timed shutdown of unused devices, and much more. All controlled remotely.

Discover for yourself how easy, reliable and affordable HiPoE™ Midspan upgrades can be at:


More power. Less cost.