

University of Nebraska - Lincoln

**DigitalCommons@University of Nebraska - Lincoln**

---

ACUTA Journal

ACUTA: Association for College and University  
Technology Advancement

---

Winter 2012

# ACUTA Journal of Telecommunications in Higher Education

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

---

"ACUTA Journal of Telecommunications in Higher Education" (2012). *ACUTA Journal*. 70.  
<http://digitalcommons.unl.edu/acutajournal/70>

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.

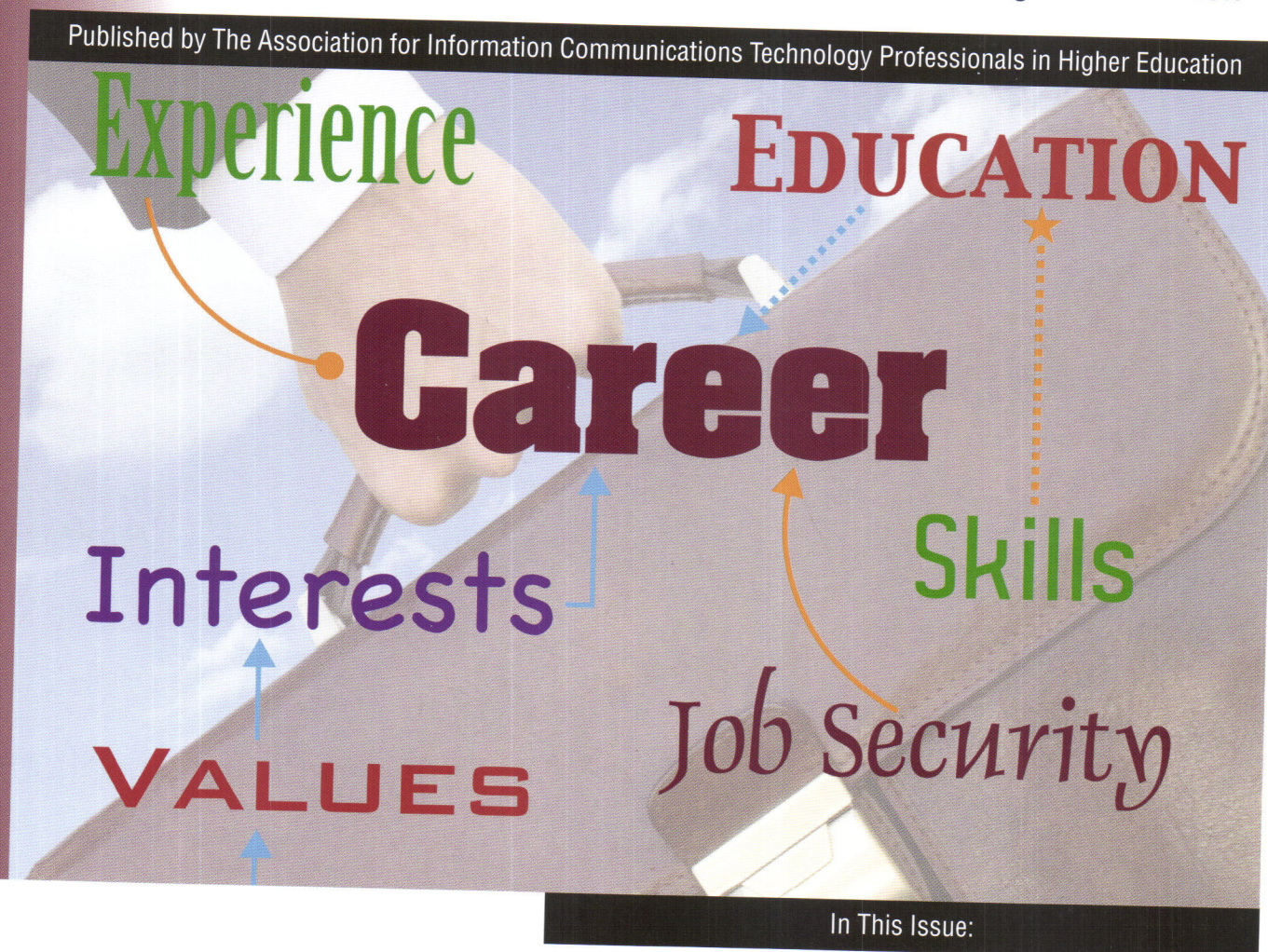


**acuta**

# Journal

of Information Communications Technology in Higher Education

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



In This Issue:

## **The New Face of IT**

Sha Na Na Na... Get a Job!

Titles and Responsibilities Are Revolving

The Changing Skill Set for IT/Telecom

Reinvent Your IT Frontline Capabilities



# Own Your Future

- Best-of-Breed UC Solutions
- Industry Leading Interoperability
- Deploy at Your Own Pace
- Three Decades of Innovation

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.

Visit our educational campus resource center at:  
[www.avst.com/education](http://www.avst.com/education)

Protect your past and define your future with AVST.

**AVST is  
Unifying Communications**

To learn more, visit:  
**[www.avst.com/education](http://www.avst.com/education)**



Applied Voice & Speech Technologies, Inc.  
Phone: (949) 699-2300 Toll free: (866) 368-0400  
[www.avst.com](http://www.avst.com) • [www.avst.com/blog](http://www.avst.com/blog) • [www.avst.com/forum](http://www.avst.com/forum)

Introducing the CX-Series





# Events Calendar

Event	Date	Location
Annual Conference	April 14–17, 2013	Manchester Grand Hyatt San Diego, California
Fall Seminar	October 6–9, 2013	Renaissance Grand Hotel St. Louis, Missouri
Winter Seminar	January 12–15, 2014	Pointe Hilton Tapatio Cliffs Phoenix, Arizona

ACUTA's Mission is to advance the capabilities of higher education communications and collaboration technology leaders.

## 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

**acuta**

The Association for Information Communications  
Technology Professionals in Higher Education



# Contents

Winter 2012 • Volume 16 Number 4  
The New Face of IT

---

## FEATURES

---

12

The Changing Skill Set for IT/Telecom  
Paul Korzeniowski

As changes such as automation and virtualization have been introduced into the technology landscape, the skill sets that universities desire for their IT/telecom departments have been dramatically changing. This article looks at where we've been and where we might be going.

15

Titles and Responsibilities Are Evolving  
Kathleen Murphy

Murphy describes the skills technology department staff needed in the past and then analyzes how things have changed and why. She concludes by providing insight into future-proofing the organization.

19

Campus Connectivity: Building Next-Generation Networks

### ADVERTORIAL

With budgets always tight, it's time to leverage current network infrastructure and cabling, plus make a few strategic investments to create a scalable, ultra-high bandwidth campus network. In this advertorial, ADTRAN covers the innovative technologies that enable this network transformation.

23

Sha-Na-Na-Na...Get a Job!  
Curt Harler

Before you update your resume, you might want to read this article. Harler presents some facts that job seekers need to know in order to land a technology job in today's market.

33

The New Face of IT: More Smiles than Frowns  
Thomas Dolan

In today's culture technology permeates the entire campus and communications takes a seat on the front row of any gathering. Here three campuses talk about changes being ushered in by technology and a new generation that expects unprecedented access to a world of information.

36

Reinvent Your IT Frontline Capabilities  
Jarod Greene & John Rivard

If you've always thought IT service desks were the way to deliver value, read what Gartner says about the potential of the new IT business productivity teams support model.



---

## COLUMNS

---

6

President's Message  
Jennifer Van Horn  
Indiana University

8

From the CEO  
Corinne Hoch, PMP

26

Q&A with the CIO  
Steven Vieira  
The Community College of Rhode Island

---

## ADVERTISERS' INDEX

---

40

Thanks to the companies that support ACUTA by advertising in our journal.



OUR PRODUCTS  
**ENDURE**  
**HARSH**  
CLIMATES.

OUR SUPPORT EXCEEDS HIGH EXPECTATIONS.

ONLY TALK-A-PHONE PROVIDES THE  
DEDICATED SUPPORT YOU NEED FOR  
VIRTUALLY ANY SITUATION — STANDARD.

*"I like that Talk-A-Phones are always changing.  
The company looks at the environments to  
see if there are any special needs within the  
community and then adapts to those needs."*

— Mike Belcher, Director of Public Safety,  
University of the Pacific

Discover the Talk-A-Phone difference.  
Get the full story at [www.talkaphone.com/pacific](http://www.talkaphone.com/pacific)  
or call 773-539-1100.



TALK-A-PHONE CO. EMERGENCY COMMUNICATION | MASS NOTIFICATION | AREA OF RESCUE



TALK-A-PHONE'S VOIP-500 SERIES PHONE  
has tested compatible with Cisco UCM 7.1 and UCM 8.6.  
Go to [www.cisco.com/go/compatibledisclaimer](http://www.cisco.com/go/compatibledisclaimer) for  
complete disclaimer.

TALK-A-PHONE PROUDLY PARTNERS WITH:







If you're a seasoned professional who wants to enhance your value in the eyes of upper management, keep a finger on the pulse of technology on campus so that you know what's coming before someone demands it, and what's on its way out before you support it.

*Paul Korzeniowski, page 12*

## The ACUTA Journal of Information Communications Technology in Higher Education

### *Published Quarterly by*

ACUTA: The Association for Information  
Communications Technology Professionals in  
Higher Education  
152 W. Zandale Drive, Suite 200  
Lexington, KY 40503-2486

PHONE 859/721-1659  
FAX 859/278-3268  
E-MAIL [pscott@acuta.org](mailto:pscott@acuta.org)

*Publisher*  
ACUTA

*Editor-in-Chief*  
Pat Scott, Communications Director

*Contributing Editor*  
Curt Harler

*Advertising Sales*  
Amy Burton, Director, Strategic Relations  
859/721-1653 or e-mail: [aburton@acuta.org](mailto:aburton@acuta.org)

### *Submissions Policy*

*The ACUTA Journal* welcomes submissions of editorial material. We reserve the right to reject submissions or to edit for grammar, length, and clarity. Send all materials or letter of inquiry to Pat Scott, Editor-in-Chief. Author's guidelines are available upon request or online at [www.acuta.org](http://www.acuta.org).

The opinions expressed in this publication are those of the writers and are not necessarily the opinions of their institution or company. ACUTA, as an association, does not express an opinion or endorse products or services.

*The ACUTA Journal* is published four times per year by ACUTA, a nonprofit association for institutions of higher education, represented by communications technology managers and staff.

Contents of this issue of *The ACUTA Journal* are copyrighted: ©2012, ACUTA, Lexington, Kentucky.

ISSN 2151-3767

POSTMASTER, send all address changes to:

ACUTA  
152 W. Zandale Drive, Suite 200  
Lexington, KY 40503-2486  
Postage paid at Lexington, Kentucky.

Learn more about ACUTA at [www.acuta.org](http://www.acuta.org)

### *Membership and Subscriptions*

Subscriptions are provided as a benefit of membership. The publication is available to nonmembers for \$80 per year or \$20 per issue. For information, contact Michele West, Membership Services Director, 859/721-1655, or e-mail [mwest@acuta.org](mailto:mwest@acuta.org).

### ACUTA

#### 2012–2013 Board of Directors

##### *President*

Jennifer Van Horn, Indiana University, Bloomington

##### *President-Elect*

Ron Kovac, PhD, Ball State University

##### *Secretary/Treasurer*

Riny Ledgerwood, San Diego State University

##### *Immediate Past President*

Joseph E. Harrington, Boston College

##### *Directors-at-Large*

Randy Hayes, University of Northern Iowa

Walt Magnussen, PhD, Texas A&M Univ., College Station

Dan McCarriar, Carnegie Mellon University

Sharon Moore, Smith College

Mark Reynolds, University of New Mexico

##### *ACUTA Chief Executive Officer*

Corinne Hoch, PMP

### *Publications/Media Committee*

Jeanne Jansenius, Sewanee: The Univ. of the South, Chair  
Buck Bayliff, PCR

Mona Brennan-Coles, Western University

Giselle Collins, British Columbia Institute of Technology

Keith Fowlkes, University of Virginia, Wise

Mark Herro, Texas A&M

Jeanne Spinosa, Johnson & Wales University

Doug West, University of Richmond

##### *Ex Officio*

Jennifer Van Horn, Indiana University, Bloomington

Corinne Hoch, PMP, ACUTA Chief Executive Officer

Janice Bundy, UCLA, Chair, Social Networking, New Media,  
and Web Resources Subcommittee

Amy Burton, ACUTA Director, Strategic Relationships

##### *Board Liaison*

Walt Magnussen, PhD, Texas A&M Univ., College Station

##### *Staff Liaison*

Pat Scott, ACUTA Communications Director

### *Editorial Review Board*

James S. Cross, PhD, Longwood University (Retired)

Mike Grunder, Vantage Technology Consulting Group

Ray Horak, The Context Corporation

Jeanne Jansenius, Sewanee: The University of the South

Walt Magnussen, PhD, Texas A&M University

Dave O'Neill, SUNY Empire State College

Cindy Phillips, Northern Illinois University

Carmine Piscopo, RCDD, Providence College

Patricia Todus, Northwestern University (Retired)

Pat Scott, ACUTA Communications Director



# Total Mass Notification Solutions Made Easy!

**Valcom Is The Only Company That Designs, Manufactures And Provides ALL The Essential Elements For A Total Mass Notification Solution!**

- IP Centric
- Easy Button
- SMS with Response
- Outbound Calling with Response
- Smart Phone Apps
- Email
- PC Screen Pops
- Broadcast Thru Speakers In IP Telephones
- IP Loudspeakers
- IP Emergency Telephones
- PA Systems In and Around Buildings
- Digital Signage
- Social Media
- Web Portal
- Two Way Radio Integration
- Giant Voice Integration



**Call Us Today! Let Valcom Make It Easy!**

## VALCOM

1.877.427.2166

EMAIL: [ENGINEEREDSYSTEMS@VALCOM.COM](mailto:ENGINEEREDSYSTEMS@VALCOM.COM)

[VALCOM.COM](http://VALCOM.COM) IP CENTRIC MASS NOTIFICATION SYSTEMS



## PRESIDENT'S MESSAGE



JENNIFER VAN HORN  
INDIANA UNIVERSITY  
ACUTA PRESIDENT  
2012–2013

## Building an Immersive Classroom

The focus of this issue of the *Journal*, The New Face of IT, provides me an opportunity to report on a project that our department has undertaken at Indiana University (IU). When I first started in telecom—admittedly, a few years ago—such a project would have been straight out of someone's imagination. But technology has changed our lives in so many ways, including the paths our careers have followed. Read on. You'll see what I mean.

Indiana University embarked on a bold new direction for innovative teaching and learning environments with the development of the "immersive classroom." We were increasingly seeing a shift of focus from the teacher to the student. The process started early in 2011 with the concept of creating an immersive classroom that removes the barriers typically present in traditional videoconferencing classrooms and promotes active engagement by all participants regardless of their location.

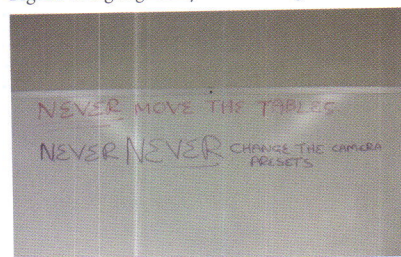
We started with our experience with Cisco TelePresence, which represents the refinement of some key collaboration design concepts. The remote participants are projected exactly life size on the TV monitor, and they appear to be just across the table from you. This is accomplished by specific design dimensions spelled out by Cisco in their installation guidelines. The TV, camera, and table must be a certain size, and are locked in place and don't move.

Of course, typical classrooms come in all different shapes and sizes making it difficult to control the design factors necessary for a successful TelePresence experience. Traditional thinking around classroom design has been the model of rows of seats and other immovable seating configurations along with fixed technology. Videoconference classrooms pose a unique set of challenges with the position of the lectern and where to place the cameras and

monitors to get the best shot of the instructor and for the students to be able to see the instructor's content.

We had signs in one of our videoconferencing classrooms that show how rigid the furniture and cameras were in order to keep the cameras positioned properly. Figure 1 is an example:

Figure 1. Signage relays the message.



The position of the lectern is very problematic in creating a TelePresence experience in the classroom because there are two directions for gazing—the instructor looking in the direction of the students and the students looking back at the instructor. Placing the lectern at the front of the room breaks all the design rules of TelePresence because you would need forward and reverse camera shots to get the instructor and students. Someone would have to select these cameras and zoom them in on the current speaker.

The chief design priority is ease of use. If using the system isn't intuitive, no one will use it. The other critical piece is the camera. Typically a videoconferencing camera has six buttons: up, down, left, right, zoom in, and zoom out. When is the last time you saw someone move the camera during a videoconference? It's usually a boring wide shot of the room because no one wants to bother with it. We also want to bring remote participants forward into the space and try to minimize the "second class citizen" feeling you get from seeing tiny people on a faraway TV screen. A key priority is to somehow promote active engagement by all students



with the instructor and fellow students, which means freedom of movement within the space.

During the research phase of this project, we looked at various solutions and visited a room that Cisco developed in conjunction with GE, called the ACR (Active Collaboration Room). This room (uses a Cisco CTS1300 TelePresence system mounted in the corner of the room to be able to capture the whole room. This system uses three cameras and only displays one third of the room or a third wedge at a time. They use café tables, and one table up front featured a Steelcase Media:Scape unit to allow for multiple participants to plug in their laptop and share their content with the group. We liked the open feel of the room but didn't like that you couldn't see all the remote participants at one time.

We needed to actually build something which synthesized a lot of these design ideas and do it in a space we had set aside for this use. The room dimensions are 24' x 22'—which is only conducive for a small classroom.

Last fall we saw a demonstration of a new product from Polycom called EagleEye Director. Basically this is a combination automated camera-tracking and camera-switching system. There are two cameras mounted on an intelligent base plate. One camera is the face-tracking camera that takes close-up shots of the current speaker. The other camera just takes a static wide shot of the room. What you see is a close-up of one person, then when another person starts talking you see an automatic cut to the wide shot, then you see a cut to the next person talking. There are no buttons for the instructor to push because it is all automatic.

Our final arrangement appears in Figure 2. The two 80" TVs display the remote camera view and the instructor computer content and document camera. The 80" TV gives us that life-size display we were after. This room is on the IU Bloomington campus. We also built a very similar room on our Indianapolis campus. This fall we have three classes being taught in these rooms with students from both campuses in the rooms and the instructor teaching from either the Bloomington or Indianapolis room.

So far, the instructors and students using these rooms have had very positive comments about their experience. One instructor said the experience is pretty close to having the remote students in the room with them. She likes the ease of use and commented that she didn't have to have a second degree in technology because she doesn't need to worry about where she is supposed to be and what buttons to push.

Another instructor feels this room makes him a better teacher because he doesn't have to think about so many different things simultaneously, such as constantly tracking the camera angles. He likes that the students in both rooms can see both his content and him at the same time because it creates a more personal experience. His two favorite parts of the room are the camera auto tracking and the different table heights.

Students commenting about the immersive classroom include one who likes the round tables because it promotes and enhances conversations. Another student likes the camera tracking the person speaking rather than a wide shot of the room because it allows him to get to know the distant students much better and creates a strong connection. My favorite comment was from a student who said that he feels more engaged and he needs to be more prepared for the class because there is more attention on individual students when the camera does a close-up on them when they are speaking.

Figure 2. The final arrangement for the Bloomington classroom

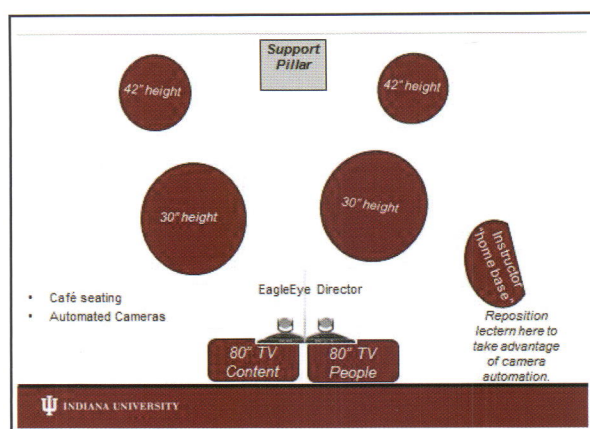


Figure 3. The immersive classroom in Bloomington



Figure 4. Remote students on camera



Figures 3 and 4 are pictures of the immersive classrooms in use. The first picture is the immersive classroom in Bloomington, and the second picture is a view of the remote students whom the Bloomington students see in their room.

Overall, the immersive classroom has been very successful and we have even more classes scheduled in these rooms for the spring semester.



FROM THE EXECUTIVE DIRECTOR



CORINNE HOCH, PMP  
ACUTA CEO

## A CIO Looks at Where We've Been and Where We're Going

The pendulum always swings ... in my 20+ year career in technology I have seen the change from cloud-based provision of telecommunications services to proprietary and now, perhaps to a hybrid cloud-based provision of IT enterprise services. Who knows where we will go next, but isn't it exhilarating to chart the changes?

Yes, our landscape is changing, but I'd like to suggest that we consider the use of topology as the descriptive agent. In my opinion, landscape is the physical result of a multitude of efforts, and topology is the result of convergence, connectedness, and continuity. And that is exactly what is happening on our campuses as we assess our ability to play an important role in supporting the many businesses that comprise higher education, always vigilant of emerging technologies and how they can and should help all facets.

Topology is a branch of mathematics predicated upon transformation. One of the first papers that many of us studied is a problem set forth in Leonhard Euler's *Seven Bridges of Konigsberg*. How do you

cross each bridge only one time? What is the most efficient route to resolution? Well, the surprising answer to the infamous problem is based upon connectivity—which led to the study of graphs, which, in computer science and in a round-about manner, leads us to different organizational structures in information technology.

Do you see your organizational structure depicted in the network architecture types in Figure 1?

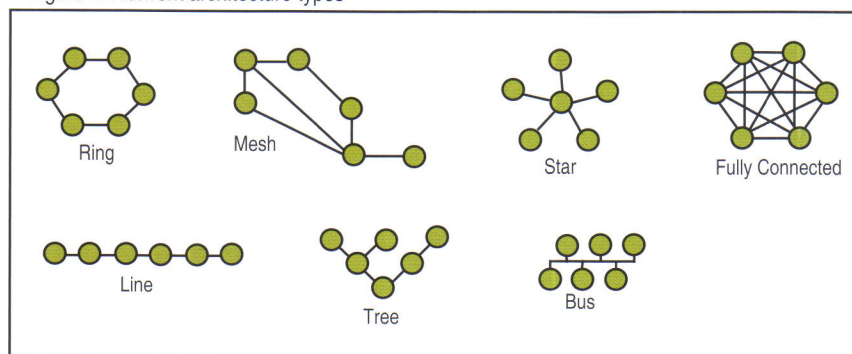
In the following pages of our winter *Journal* you will read about the various stages of resultant topology that is reflected by many different campuses. Where they are today is contingent upon many contributing factors: culture, organization, type of service that works for them, geographical location, and more.

I asked Keith Fowlkes, vice chancellor for Information Technology and CIO at The University of Virginia's College at Wise, to do a "deep dive" into the questions that we attempt to answer in the ensuing pages. Here is his "take":

**Q. Describe, briefly, the merging/converging and leveraging of financials, operations, systems and more within IT.**

A. I believe that this directly relates to the increasing and diversifying role the CIO plays within an institution. In the past, people in technology leadership were called upon to carry out the "techie" duties, run the mainframes, lead programming projects, and manage the networks. Today, it is much more important for top technology leadership to be involved in processes throughout the organization, including business process

Figure 1. Network architecture types



Source: Wikipedia



redesign, financial planning, business continuity planning, and research into new practical technologies that could have a use within the enterprise. Today's CIO has to be prepared both to meet the technology needs and to give input into the overall business needs of the institution. The CIO has to see through the technology and see what the short- and long-term needs of the institution are and how to meet them.

**Q. Address the business and social impact of the anticipated exodus of retirees.**

A. One of my senior technology leadership team retires in the next year. She has been at our college for 35 years and has not only stellar technology skills but a deep knowledge of organizational history, processes, and data. There is no replacing that kind of person who is respected for her expertise, loyalty, and positive relationships. We are planning to overlap her retirement with mentoring a professional for 6-8 months to learn the basics of her position and just a bit of her history on data and relationships. Then, we plan to hire her as a consultant after her retirement as needed. I believe that other groups must look at succession planning like this to address the future and have a grasp on the past. We all need mentors, and it is time that we plan to mentor a new generation without feeling threatened for the sake of our organizations.

**Q. What has been the impact of merging departments and implementing new technologies?**

A. So far in my career in higher education, I've seen IT split apart to specialize, then merge, just to split apart and merge again. The one thing that I've seen over and over is when technology groups are distributed, computing standards and integration of systems tend to go out the door. It always results in greater institutional cost, technology standards that run amuck, and terrible finger-pointing matches.

I believe there is a happy medium in our future. I would call it hybrid distribution of services. So, each department or unit wants its own team of specialists. I say sure, but allow control of this process to be shared. Have IT and departments share certain components of technology services, like user support and systems support/administration. Continue to have centralized network administration, system administration, standards management, and high-level analysis personnel in central IT but also departments to share the hiring, evaluation, equipment/software procurement, and budgeting components. With this approach, some very careful planning, and the right collaborative leadership, organizations might have a shot at meeting needs without breaking the IT bank of the institution.

**Q. What are the main challenges of supporting students, faculty, staff, research, administration, and satellites?**

A. There are so many choices for technology constituents that adhere to so many diverse standards, it is getting very difficult to support and maintain them. That is one of the major problems today that has intensified. An old but good example is electronic mail. A large group of students may like mobile Android technology while a die-hard group of faculty and staff have BlackBerrys while yet another group love their iPhones. The key has to be connection and security standards. If all of these can speak the same language (protocol) with a strong standard security mechanism (encryption), great! But, if someone wants to start using something that only supports POP mail standards or wants to adopt the newest DMARC authentication, then you have to stop and guide the process a bit. Otherwise, it will get messy and costly very, very fast.

The other concern is that with the newest technologies so accessible, everyone becomes a technology "expert" and a cheerleader for their favorite tech of the month. The CIO has to attempt to guide the organization with experience and a deeper understanding of those new technologies and what is best for the long-term success of the organization and the underlying costs associated. One person's beautiful tablet OS could be tomorrow's incompatible door stop.

**Q. What impact will open source, WiMAX and derivatives, and LTE have on how IT provides services?**

A. I'm a cautious advocate of open source. I think that we've seen the impact of open source and its hidden costs enough by now to make a good evaluation of those options. The server and mobile OS, learning management, Web content management, and even VoIP markets have changed, but with little or no serious cost impact to organizations. Organizations are much more hesitant to trust their enterprise resource planning (ERP) software to an open-source solution without heavy in-house support and expertise.

If I knew the true future impact of WiMAX derivatives, I would be a very rich man! LTE is going to be the standard that changes everything after carriers complete a full buildout. The next generation of cellular data technology—6G—will most likely get speeds over 1Gbs. I guess my question is if students have a full 1Gbs connection to the Internet with their smartphone/tablet computer, how can the majority of small/mid-sized institutions economically provide similar service unless the carriers cannot deliver a good quality of service? If providers can provide this level of service, it will drastically change the landscape of institutional technology data service, much



as it has already deeply affected telephone long-distance resale operations.

**Q. Is social media under the umbrella of IT? If not, who oversees and makes decisions?**

A. I believe the public relations people are the best choice to manage the core institutional social media site, but I believe social media will develop into what our institutional websites look like today. Most departments within an institution will have their own social media outlets. The challenge I see for the future is for the social media providers to develop a good way to somehow associate these various pieces.

**Q. Do Web developers work for IT or some other area of the university?**

A. Web administrators and developers should be in IT but content should (and mostly does) belong to some other area of the institution. The key is the establishment of a symbiotic relationship between them. In many institutions, non-IT content providers look at IT as "techie plumbers." That does not go down well with most of the Web administrators and developers with whom I've talked over the years, and it causes lots of communications troubles. Again, this is a good example of an area that could benefit by that hybrid distribution concept. There is definite dissonance today between the new silos being built between the "creative people" and the "technical people." It takes special leaders to tear down those silos and not have serious territorial and/or ego issues.

**Q. Have reductions in budgets resulted in the expansion of the distance education environment and outsourcing?**

A. For UVa-Wise, no for either of those. We have been on hold while looking for a new chancellor, so distance education is holding steady with no growth or changes. I believe that people in higher education are

beginning to see the outsourcing "catch." Outsourced services are definitely cheaper in the short run but, depending on the service, become increasingly expensive with regard to customer satisfaction, organizational mission fit, and overall quality and control.

**Q. How are cloud services bringing changes in staffing, budgets, and bandwidth needs as bandwidth "hogs" are finally outsourced due to unsustainable costs?**

A. Cloud services are definitely having a tremendous impact on bandwidth needs for institutions, but some of that is offset by cost savings in core services. A good example is e-mail outsourcing. UVa-Wise has not outsourced our e-mail services; we are relatively small and the incremental cost of keeping students on our servers is small. On the other hand, our parent institution, University of Virginia, has outsourced its student e-mail services to Google, as have many others. Cost savings reported at many schools have been pretty significant, and that definitely contributes to the mounting need for more bandwidth on campus. I think we will see other similar types of trade-offs in the coming years out of necessity to feed the "cloud monster" for video, audio, file storage, and telephony.

**Q. Have broadcasting and/or video conferencing become the norm for both educational and administrative purposes?**

A. For UVa-Wise, the answer to this question is YES. I see online video as the future replacement for all sorts of services and communication to students, alumni, parents, donors, and others. Streamed event-based video, streaming video on-demand, and instructional online video is the future in my opinion as schedules get tighter and budgets get smaller. We have started a new online video initiative that includes a campus video newsletter production and IT video training "on-demand." This is

all to complement our existing streaming services for our athletic events and college educational cable television channel. We are now using FUZE for Web conferences with inter- and intra-campus meetings just to get everyone in a virtual room to discuss the needs of the institution.

**Q. How are strategic plans across campus including technologies that demand the attention of IT?**

A. One of the major problems that has been developing for a while is the decentralization of technology services on campuses of every size. It seems that every area of the institution has a strategic plan that includes some type of technology. Sometimes, these are formulated without consulting with technology leadership to see if resources are available to support them. UVa-Wise is fortunate in that we are small, but technology leadership in larger institutions is really feeling a pinch and gets left holding the proverbial bag when things do not work. Information technology organizations are having a hard time developing their own strategic plans because of the hundreds of different pockets of "departmental technologists" developing new ways to use central IT resources. The challenge for IT is to bring all the people together on a regular basis to discuss needs and plan resources necessary to provide solid service for all.

**Q. What is the impact of changing technologies, organizational models and financial strategies as we (IT in general) move forward?**

A. I believe that the IT organization will have to evolve into something much different from what it is today. As I noted earlier, technology leadership is going to be forced to become a more synergistic organism in the enterprise. Technology professionals have to become more well-rounded and invested participants in departmental projects. Gone are the days of the IT profes-



sional who sits in front of a desk all day coding projects. Most of us will have to learn to be people-people to some degree, translators, analysts...even therapists!

Senior IT leadership has a tall order to fill. We must be able and willing to help our professional staff groups develop into more well-rounded professionals. In some organizations, this will require the coder to develop a knowledge of databases. Some will need to develop marketing skills. Others will have to improve their grasp of accounting principles.

The tendency of non-technical people today is to pigeon-hole technology professionals into being "techies" without

interests or talents outside technology. We cannot allow that to happen. Senior IT leadership must help their technology professionals grow in other areas of functionality or be forever banished to the basements and data centers of academe without a voice in how to address technology needs in the best ways possible. Senior institutional leadership must help their CIOs understand what business needs have to be addressed and what skills are needed from IT to help address them.

As Keith handled all of the routine operational challenges, Hurricane Sandy intruded forcefully, demanding his atten-

tion in ways that could not be refused. Yet, he responded to our questions thoughtfully, and we appreciate his contribution to this issue of the *Journal*. He is, indeed, an insightful leader who "gets IT"!

I encourage all those who aspire to do great things on their campuses within the realm of technology to attend the 17th Annual ACUTA Strategic Leadership Forum April 15 – 16, 2013, at the Hyatt Regency in San Diego, held in conjunction with the 42nd Annual ACUTA Conference.

Please contact me with any questions or comments at any time: [choch@acuta.org](mailto:choch@acuta.org).



# How to do **MORE** with **LESS**

## PCR°360®

It's all about visibility.

### Enough said.

---

To find out how PCR°360 helps Universities meet the challenge of doing more with less visit [www.pcr.com](http://www.pcr.com)



# The Changing Skill Set for IT/Telecom

Paul Korzeniowski

Wanted: intelligent, quick-thinking, and versatile individual experienced in communications technology and familiar with the higher-education culture to direct campus technology services department. Must be familiar with voice, data, and video technologies, able to strategize for cost-efficient provision of services, and capable of interacting effectively with students as well as faculty and administration. Contract negotiation skills essential, as well as familiarity with budgeting and accounting principles. A lifelong learner who is flexible enough to adjust to constant innovation.

That about covers the requirements of today's IT/telecom professional in higher education. Whew!

On one hand, the fast pace of change in technology often attracts people to the IT field. But new technologies emerge, gain acceptance, and are soon cast aside for something faster or better, so it is not a field for those who depend on routine. Holding an IT position seldom leads to boredom, but neither does it guarantee security. As technologies evolve, mature products and long-standing processes are routinely eliminated, and sometimes experienced individuals are shown the door as well.

To position themselves for professional growth, technology managers and directors need to understand their role in the university as well as which skills are hot and which are not. But with change being so constant, making that determination has become more difficult than ever before. "Many communications professionals are struggling to determine how to position themselves for future professional growth,"

says Tammy Browning, senior vice president for Yoh Services LLC, a technology staffing firm.

Currently, there is both good news and bad for communications managers. Yes, salaries are rising, and people with certain skill sets, such as network engineers, are especially in high demand. However, the requirements typically specified for communications positions have been changing, so executives cannot become complacent. To ensure that their future remains bright, they need to evolve and develop new skills.

## Signs of Hope?

Since the economic downturn in 2008, communications budgets have been constrained, but lately they seem to be loosening. Robert Half International expects IT salaries to rise 4.5 percent in 2012, which is much higher than the 1 percent to 2 percent increases seen in most corporate departments.

Overall, demand for telecommunications professionals and their associated skill sets remains high. In fact, the Robert Half International survey found that network administrator is the most sought-after position: 64 percent of colleges surveyed are looking for people who have those skills. More than one in four universities (28 percent) are looking for telecommunications personnel—and perhaps surprising, such people are in higher demand than techies who understand virtualization technology (22 percent).

Schools continue to invest in individuals running their networks. For instance, network engineers should see their salaries



rise 5.8 percent due to increased demand, and they will range from \$75,000 to \$107,750 per year, according to Robert Half International.

### Security Remains a Hot Area

Universities are also in the market for security professionals. IT security jobs have seen a 50 percent spike in demand compared to 2010, according to the website IT Security Jobs. The site added that average salaries have also seen a substantial rise: 16 percent per annum. Pay increases for these positions will slow down a bit this year but still go up 6 percent.

The influx of mobile phones has created a ripple effect. More of a university's communication load is carried on wireless lines and less on the wired connections. So schools want to hire more wireless network managers: Robert Half International found that 38 percent of companies plan such expansion in 2012, making it the fourth most popular skill. Salaries for wireless network managers are expected to rise 5.9 percent, ranging from \$79,250 to \$108,500.

But the job market also presents some potentially disturbing news for communications professionals. In the past decade, their roles have changed so much that they are barely recognizable. At one time, they were King of the Hill at their university. The telecom department was highly thought of on campus because it generated a lot of revenue by providing in-room phones, individual lines, and long-distance service. But their lofty status began to erode when students started to replace those services with their own cell phones. Now, that revenue stream has essentially dried up.

### VoIP Dramatically Affects Communications Managers' Position

In addition, the advent of voice over IP (VoIP) changed how IT departments were structured. Rather than continue to operate

separate data and voice networks, schools consolidated them. Recently, video communications has been folded into academic networks. In many cases, telecom functions were absorbed by the data group, and the telecom manager moved down a rung on the organization chart.

How universities communicate has changed quite dramatically. Exchanges now take place via texting, e-mail, instant messaging, and videoconferencing. In addition, recently, lines between workplace and personal communication have been blurred by the unprecedented acceptance of social network media, such as Twitter and Facebook. Consequently, the days of plain old telephone service (POTS) as the primary method of information exchange have passed; now, users have a bevy of communication options.

The various changes seem to have diminished the importance of skilled telecommunications techies and managers. Robert Half International expects salaries for telecom managers to increase by 2.0 percent and for telecom specialists by 3.1 percent, about half as much as for other networking job titles.

### The Walls Are Collapsing

Further erosion of the traditional communications manager's bailiwick seems quite possible. A new wave of consolidation is taking shape as the number of hardware components being monitored in the data center has been shrinking. In the past, large university data centers had three groups of techies: server specialists, network administrators, and storage experts. With the advent of unified computing solutions, such as Cisco Systems Inc.'s Unified Computing systems, those different elements are being folded into single devices that perform all three functions. As this occurs, the autonomous fiefdoms, along with their

reporting chains, are being reshuffled. Traditional telecom functions may soon find themselves lumped in with storage and servers as well as data and video networking, meaning fewer rungs on the corporate ladder are open to them.

As these changes have been unfolding, the type of skill sets that universities desire in their telecom managers has been dramatically changing. The rise of automation and virtualization has altered the role of telecom technicians. In the past, much of their work centered on developing a deep understanding of how telecom hardware worked. The majority of their day was spent configuring various devices and then troubleshooting them whenever problems arose, which was quite common. Consequently, the telecom team spent their day running tests and perusing reports all with the goal of improving network and system performance.

But network switches have become much smarter in the past decade. Rather than a tedious, linear process requiring many hours, configuring a system now often takes minutes, with the device itself rather than staff doing the bulk of the work. In addition, network troubleshooting tools have evolved and become much more effective. Previously, communication managers spent time collecting performance data from a variety of sources, and then slicing and dicing it until they found the source of a problem. Now, with the advent of big data analytic tools, much of that work is also done automatically.

### The Desire for Technical Skills Diminishes

As a result of these changes, the skill set for communication specialists is evolving. In the past, the emphasis was on possessing deep technical knowledge about select devices. In fact, not that long ago, professional certifications, such as Cisco Certified



Network Associate or Microsoft Certified Systems Administrator, were passports to high-demand, high-paying jobs. But that outlook has changed. "I don't see colleges requiring certifications now as much as they did in the past," stated Yoh Services' Browning.

A couple of factors may have created this shift. First, the variety of certification programs has grown dramatically. In the past, companies looked for people with specific areas of expertise, say an Avaya Support Specialist, a Cisco Certified Network Engineer, or a Microsoft Certified System Engineer, Communication, which is its Lync 2013 unified communication system. Through the years, these vendors have dramatically expanded their certification programs. In fact, Microsoft now breaks its certification programs into more than a dozen subcategories, each touching upon multiple products. If that is not enough, the company has three levels of certification in each area: Associate, Expert, and Master. So, there are now close to 100 different Microsoft certifications.

Another factor is that the volume of products universities now run on campus has expanded. Currently, virtualization software runs on top of operating systems. A variety of new applications, such as exam management systems, have emerged. To support their systems, many vendors have forged their own certification programs, so one is found for just about every piece of hardware or software.

Another complication is that third parties, such as CompTia, have emerged with their own spin on the certification process. So what was once a badge of honor worn by a select few has become a sticker adorning millions of individuals. As a result, certified technical skills are just not as valuable as they used to be.

### A Growing Emphasis on Business Skills

Consequently, the traditional telecom techie seems to be giving way to the rise of the telecom accountant. "We are seeing a shift from times when university management valued communication managers' deep technical skills to one where staff needs business skills," stated Dr. Ward Ulmer, the associate dean for Walden University's School of Information Systems and Technology.

The curriculum at different universities illustrates this trend. Two years ago, Walden University formed an autonomous college specifically for its IT students. "There was so much demand for IT professionals that we needed to break it out and provide them with the skills needed in today's job market," noted Ulmer.

The university offers two undergraduate degrees. A bachelor of science in information technology enables students to concentrate in areas like networking and operations or security and forensics. A bachelor of science in computer information technology is designed to provide students with experience in group analysis and design projects; the skills to communicate effectively with coworkers, employers, and other professionals; and the ability to use IT management tools.

### No More Technical Deep Dives

Certain courses have a non-techie focus. Walden University's Business Architecture and Processes course examines the structure and operations of organizations from an information-processing point of view, and helps develop students' skills in analyzing, designing, and improving operations. Topics include fundamental business structures; business process design, management, and optimization; decision support and automation; enterprise resource planning; and integration.

At the University of Kentucky, students planning to graduate with a bachelor's degree in telecommunications must start off with a statistics course as well as Introduction to Computing I, Telecommunications I: Mass Communication Systems, and Telecommunications II: Interactive Communication Systems.

In sum, the communications manager career path is in flux. The days when a deep technical understanding of a PBX was a ticket to success are fading away. Time tinkering with bits and bytes has been giving way to time fiddling with spreadsheets. Rather than digging deep into technology, communication managers now are expected to understand the business implications of any technical decision.

So how can communications executives ensure themselves a promising future? According to Dr. Ulmer at Walden, "To be successful, IT professionals need to be flexible because the job market is quite fluid." But there's more. If you're a seasoned professional who wants to enhance your value in the eyes of upper management, keep a finger on the pulse of technology on campus so that you know what's coming before someone demands it, and what's on its way out before you support it. Stay current on trends in peripheral areas, such as security, disaster preparation, and business continuity. Be prepared to speak intelligently about budgets.

With the increase in online coursework likely to accelerate in the near and distant future, the job market for IT/telecommunications professionals looks promising. Just remember that technology today looks for lifelong learners, open to new ideas. Others need not apply.

Paul Korzeniowski is a freelance writer who specializes in communications issues and is based in Sudbury, Mass. He has been writing about these issues for more than two decades and can be reached at paulkorzen@aol.com.



## Titles and Responsibilities Are Evolving

Kathleen Murphy  
NCS Service Manager  
University at Buffalo

We've heard it said that change is inevitable, growth is intentional. I think that is nowhere truer than in the field of higher-ed technology. As technology providers, we are in the business of driving change on campus; and as IT professionals, we must respond to change by constantly updating our skills if we are to deliver value to our customers. The new face of IT continues to possess deep technical skills but adds the benefit of broad business knowledge. The evolution of IT professionals' roles and skills poses a dilemma for organizations that have traditionally prized technical mastery because the advanced skills needed now are typically nontechnical. History has taught us that resistance is futile.

### University at Buffalo—Then and Now

At the University at Buffalo, the IT department has adapted responsibilities and qualifications over time to cope with changes in the business environment. In the mid-1990s,

network engineers at the University at Buffalo were expected to be technical generalists. They shared an on-call rotation and interchangeable job assignments. This approach worked well for backup coverage and workload distribution. The group's small size facilitated knowledge sharing. It was easy for group members to know everyone's business.

At that time, our service portfolio was smaller and the network was less complex compared to today's. Technical skills were highly valued. Job applicants had to possess a bachelor's degree in electrical engineering or a closely related field. Although good communication and interpersonal skills were also job requirements, project management and customer service were just nascent thoughts. The group subscribed to Nike's "Just Do It" philosophy, providing mostly back-office functions with engineers interacting infrequently with external customers. Success was measured by outcomes, not processes. Consumer technology adoption was low, and networking concepts were not widely understood by the general public. As long as we delivered stable services, few challenged our networking authority.

Fast forward a few years. Figure 2 shows a job advertisement that appeared in December 2010 in our local newspaper for a communication systems engineer. The first subtle indication of any shift is the revised position title. With the convergence of voice and data communications, we no longer distinguished roles by technology—at least on paper. In practice, job assignments are still based on skill specializations. The introduction of each new additional technology such as VoIP, wireless, and firewalls fostered conditions that encouraged deep content mastery. The

Figure 1. University at Buffalo





increase to our service portfolio was also accompanied by the addition of staff, which has more than doubled since 1996. The technical generalist model began to show signs of strain, which resulted in a move toward specialization.

Besides technical mastery, the ideal applicant was now also expected to have some project management experience as well as the ability to write requests for proposals. Prior experience working in a team-oriented, collaborative environment was considered a plus. This set of preferred qualifications represented a departure from earlier position descriptions. We recognized that technical skills alone no longer satisfied our emerging needs. Reliance on the network for critical business and academic applications continued to grow in importance. As new service dependencies were introduced, the health of our relationships started to matter more in terms of our shared success. The consumerization of information technology meant that our customers became simultaneously more sophisticated and demanding. Lastly, the increases to our service portfolio and staff roster were accompanied by an increased desire for greater predictability and standardization.

In response to these developments, we focused more of our attention on project management and Information Technology Infrastructure Library (ITIL) process adoption. We appointed communication systems engineers as project managers and process owners. Our experiment met with mixed success for a variety of reasons. Process immaturity and lack of adequate tools contributed to our mixed record. Poor fit was also to blame. Some of our technical appointees lacked either the skills or interests in either project management or process work. Poor fit was not exclusively an engineering phenom-

non, as some administrative staff appointed to similar roles fared no better.

The fact that we underestimated the level of sustained investment needed to transform our operations was probably the single most compelling reason for our tepid results. No one was dedicated to process development; consequently, it was often the first thing to be deferred in favor of other priorities. Recruiting dedicated project managers with a broad understanding of business processes allowed us to begin to address some of our organizational defi-

understandings more quickly than if no ties exist. Access to diverse thinking across formal boundary lines facilitates this outcome. Thus, the addition of boundary spanners in an organization promotes both innovation and agility.

In his paper "The Competent Boundary Spanner," Paul Williams concludes, "Inter-organizational capacity is unlikely to flourish in organizational structures that are based on hierarchical control and power."<sup>22</sup> Consequently, organizations seeking to multiply their opportunities for innovation should start by developing boundary spanners at all levels of the organization.

Influencing, mediating, and negotiating are among the skills needed to become a competent boundary spanner. The University at Buffalo has increasingly engaged outside vendors to help deliver services, including, but not limited to, data center design, incident management process design, dark fiber installation and support, and application installation. Service brokering will become even more crucial as more commodity IT services get outsourced.

While serving as CIO at Pepperdine University, Timothy Chester described a similar progression of duties in the 2009 ECAR report on competency-based career ladders for IT professionals. Chester introduced a new IT versatilist model as an alternative to using a combination of generalists and technical specialists, which he criticized as too expensive and confusing. According to Chester, "Versatile IT professionals combine deep technical skills (the ability to deliver technology) with competencies such as accountability, communication for results, change advocacy, and business process knowledge. Versatilists differ from IT generalists in that they possess deep technical skills. They differ from IT technical

Figure 2. A job advertisement from 2010

**University at Buffalo**  
The State University of New York

**Communications Systems Engineer**

The Communication Systems Engineer is responsible for the design, configuration, documentation and maintenance of complex, current-technology communications facilities and data networking equipment in a 24 x 7 environment. Plans, designs, implements, documents and maintains centrally managed data communications, networking, and wireless equipment in support of the University's Local, Wide Area, and Wireless Networks. Equipment includes, but is not limited to: routers, switches, firewalls, wireless access points, and cable/fiber optic plant. Installs and documents new communications facilities to meet the University's needs as determined by discussions with faculty and staff. The Communication Systems Engineer may be responsible for the supervision of personnel assigned to the various tasks required for implementation of a project.

A Bachelor's degree in a related field, along with a minimum of three years practical experience with the design, installation and maintenance of data communications and networking equipment is required. Additional specialized technical school, military or vendor provided training in RF/Cellular technology, IP networking, including Layer 2 and Layer 3 switching, is also desirable. Experience in writing RFP's and Project Management would be considered a plus. The candidate should demonstrate a high degree of professionalism and possess excellent verbal and written communication skills. Experience working in a team-oriented, collaborative environment is desirable.

**Salary range:** \$65,000 - \$75,000

For more job information and directions on how to apply, please visit our website at: <https://www.ubjobs.buffalo.edu>

**Posting #1000700**

Only applications received through the UB Jobs will be considered. Must apply by 12/31/10.

UB is an Equal Opportunity/Affirmative Action Employer/Recruiter

ciencies but not without an increased cost in coordination.

#### New Skills for the New Order

Hsu, Wang, and Tzeng's research on boundary spanners (components that bridge unlike entities) supports the University at Buffalo's experience demonstrating that a mix of skills and competencies is needed to cope with today's challenges.<sup>1</sup> Interactions among heterogeneous groups lead to new



specialists in that they also possess the local knowledge and competencies necessary to exercise leadership vis-à-vis the effective use of technology.”<sup>3</sup> Adopting a versatelist model positions IT organizations to better meet the rising expectations of the campus community while also reducing costs.

The versatelist professional is reminiscent of another model referred to as the T-shaped professional, which was first introduced by McKinsey & Company and later popularized by Tim Brown, CEO of innovation firm IDEO.<sup>4</sup> T-shaped professionals exhibit two kinds of characteristics. The vertical axis of the T refers to depth of skill, and the intersecting horizontal axis of the T represents disposition for collaboration across disciplines. Brown prefers to staff his interdisciplinary teams with T-shaped professionals.

In Morten T. Hansen’s interview with Tim Brown in 2010, Hansen asked whether an organization could run with a mix of I-shaped (vertical axis of the T) professionals and some integrators. Brown’s response echoed Chester’s reservation of using a combination of generalists and technical specialists. According to Brown, “If you have a company full of T-shaped people, you don’t need the facilitator, because everybody can do it anyway.”<sup>5</sup>

The growth to the service economy has fueled demand for more advanced skills including creativity, problem solving, communications, customer relations, collaboration, and teamwork. The Council on Competitiveness has sounded the alarm in its report, *Thrive. The Skills Imperative*, regarding the shortage of interdisciplinary skills in today’s workforce.<sup>6</sup> The Council on Competitiveness suggests the lack of interdisciplinary skills poses a threat to the nation’s future

economic prosperity and social well-being. If American engineers and scientists fail to add value to the service delivery process, they risk irrelevance due to global competition.

*Engineering for a Changing World*, a report by James J. Duderstadt, president emeritus and professor of science and engineering at the University of Michigan, offers a new paradigm for transforming American engineering education to better meet the needs and priorities of a 21st-century knowledge economy. Contrary to traditional undergraduate engineering

education that focuses on narrow specialization, Duderstadt favors an approach that emphasizes comprehensive integration. A broader exposure to the liberal arts curriculum is expected to promote innovation, entrepreneurship, and global competence.<sup>7</sup> The introduction of service, science, management, and engineering programs at universities is an attempt to expand interdisciplinary skills in support of service innovation. These developments are significant given that higher education and information technology are both service industries.

*“The measure of a man  
is what he does with power”*  
Plato

## How will you power your network upgrade?



PowerDsine® midspans offer:

- Enhanced student information sharing
- Improved campus security
- Lowest total cost of ownership
- Reduced carbon footprint with innovative PowerDsine Green PoE technology



**PowerDsine® PoE Systems**

Learn more at: [www2.microsemi.com/powerdsine](http://www2.microsemi.com/powerdsine)

Or email: [powerdsineusa@microsemi.com](mailto:powerdsineusa@microsemi.com)

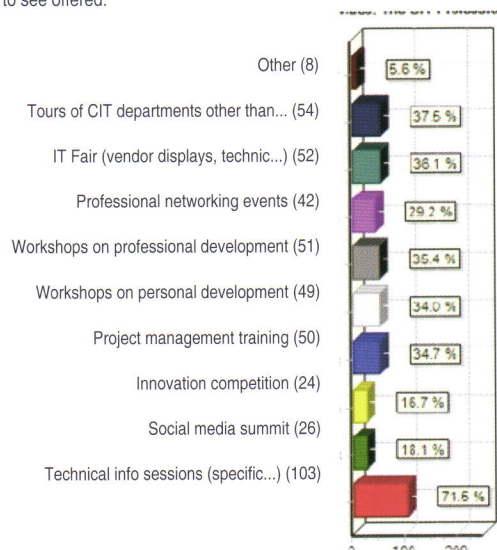
 **Microsemi**  
Power Matters.

© 2012 Microsemi and PowerDsine are trademarks of Microsemi Corporation.



Figure 3. Responses to staff-needs survey at the University at Buffalo, spring 2012

6) Professional Development Activities: The CIT Professional Development Committee is planning a few events in the next few months such as those listed below. Please select which activities you would like to see offered.



### Future-Proofing Your Organization

The role of the IT professional is to help others on campus advance the mission of the institution. Faculty, students, and technology coexist to create value in the form of student education. Within the higher-education landscape, changing student demographics, spiraling costs, and greater demands for accountability will stimulate increased competition among institutions. Information technology could be leveraged to produce competitive advantages, and T-shaped professionals will be needed to lead the innovation agenda.

With institutional survival and organizational relevance at stake, IT organizations must grow their workforce by adapting either their hiring practices (strategy 1) or their formal reward structures (strategy 2).

Evolving trends in undergraduate engineering education could serve as a model for IT organizations and practicing professionals alike. Instead of hiring technologists

from traditional engineering programs exclusively, additional consideration should be given to technologists with broad institutional awareness. Given the reality that most graduates start their careers as specialists, recognizing future T-shaped potential in lieu of experience will become even more critical during the hiring process. Since most formal organizational incentives reward individual contributors with deep functional expertise, new incentives are needed to encourage T-shaped behavior. Both strategies are examples of adjusting expectations for the "new normal" since the skills that served IT professionals in the past are no longer adequate today.

Resource managers are not the only people who need to reset their expectations. Figure 3 shows responses to a staff-needs survey distributed to more than 200 IT professionals at the University at Buffalo during spring 2012. Staff members were invited to indicate what types of col-

laboration and professional development activities most interested them. Technical information sessions were self-selected as the dominant choice of most respondents. In a culture that has historically valued technical mastery, these results come as no surprise. Yet the emergence of new roles including vendor management, process management, and project management demands competency with a new set of nontechnical skills. Organizations that ignore these trends do so at their own peril. According to the EDUCAUSE 2012 annual issues publication, a panel of IT leaders considered updating IT professionals' skills and roles to accommodate emerging technologies and changing IT management and service delivery models as one of the top-10 IT issues facing member institutions today.<sup>8</sup> A new era has arrived!

Kathleen Murphy is NCS Service Manager at the University at Buffalo. Reach her at [kbrown@buffalo.edu](mailto:kbrown@buffalo.edu).

### Notes

1. S.-H. Hsu, Y.-C. Wang, and S.-F. Tzeng, "The Source of Innovation: Boundary Spanner," *Total Quality Management* 18, no. 10 (2007): 1133-45.
2. P. Williams, "The Competent Boundary Spanner," *Public Administration* 80, no. 1 (2002): 103-24.
3. T.M. Chester, R. Canning, and J. McNayr, *Competency-Based Career Ladders for IT Professionals*, EDUCAUSE Center for Applied Research, 2009, p. 13.
4. T. Brown, *Change by Design* (New York: Harper-Collins, 2009).
5. M.T. Hansen, "IDEO CEO Tim Brown: T-Shaped Stars: The Backbone of IDEO's Collaborative Culture," Jan. 21, 2010, retrieved Aug. 14, 2012, <http://chiefexecutive.net>.
6. Council on Competitiveness, *Thrive. The Skills Imperative*, Washington, D.C., 2008.
7. J.J. Duderstadt, *Engineering for a Changing World: A Roadmap to the Future of Engineering Practice, Research, and Education*, University of Michigan, Ann Arbor, 2008.
8. S. Grajek and J.A. Pirani, "Top-Ten IT Issues 2012," *EDUCAUSE Review*, May/June (2012): 36-53.





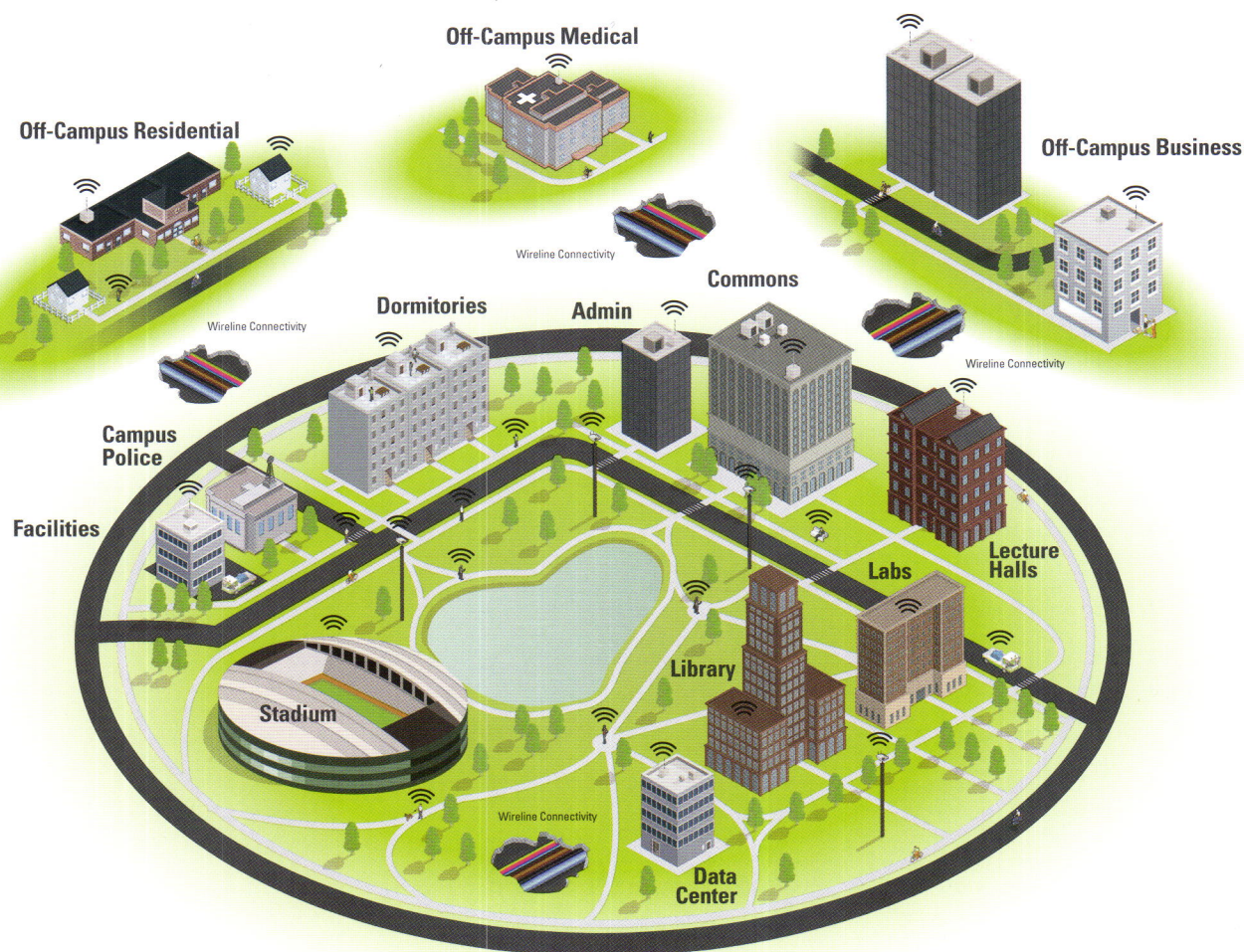
# CAMPUS CONNECTIVITY

Technology for Building Next-Generation Education Networks

Higher educational institutions are experiencing a monumental transformation where learning is really occurring in all corners of the campus 24/7. Advanced technologies offer the tools for break-through research, study, and learning on the constituent side, but present challenges to implement for the IT department. It's no longer a matter of having a few computer labs scattered throughout campus or even planning on one device per student. Students will often be using multiple devices for class, dorm, and personal use. Most of these devices are

Wi-Fi® only, so a wireless network that worked fine a few years might be under enormous strain with each passing semester.

The core network is also stressed with high performance computing, big data analysis research, and high bandwidth needs in dorms, common areas, and learning facilities. With budgets always tight, it's time to leverage current network infrastructure and cabling, plus make a few strategic investments to create a scalable, next-generation, ultra-high bandwidth campus network.

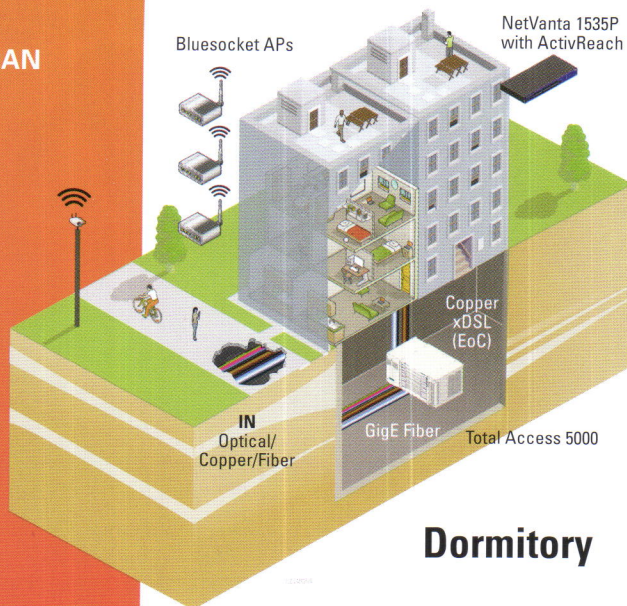


Campus network architectures have to be flexible, with transport options including: •Fiber •Copper •Wireless LAN (WLAN) •Legacy TDM



## Campus Networking Technologies by ADTRAN

- Gigabit Passive Optical Networking (GPON)
- Optical Networking Edge (ONE)
- Ultra Broadband Ethernet (UBE)
- Broadband Digital Loop Carrier (DLC)
- Carrier Ethernet Converged Services
  - Ethernet over Copper (EoCu)
  - Ethernet over Fiber (EoF)
  - Ethernet over TDM (EoTDM)
- Virtual Wireless Local Area Networking (vWLAN)
- Routing and Switching
- Network Security
- IP Telephony and Unified Communications



## Dormitory

flexibility in deployment, which brings cost efficiencies in wiring, warehousing, and spare units.

To help institutions meet the future, the Total Access 5000 is ideal for both building new networks and for revitalizing existing cabinet infrastructure to deploy higher-bandwidth, next-generation services easily and cost effectively. Although fiber transport and access services are a key component required to meet a 1Gbps broadband threshold, it's important to note that the ADTRAN Total Access 5000 provides extensive options for legacy TDM and a variety of Ethernet-over-Copper (EoCu) applications as well.

To learn more, visit [www.adtran.com/access](http://www.adtran.com/access)

### Celebrating Tradition Shouldn't Mean Giving up Modern Conveniences

Many universities/colleges have a rich history, which usually translates into a picturesque campus, buildings with historical significance and vintage architecture, but the cable-plant (wiring) in place is not very amenable to next-generation Ethernet-based applications. To address this constraint, ADTRAN has introduced a revolutionary technology called ActivReach™ now available in the NetVanta 1535P Gigabit Ethernet switch. ActivReach technology

provides a fresh approach to truly unlock the power of Ethernet. Now, higher education institutions around the world can use existing voice-grade cabling to deploy cutting edge IP business applications. This new technology offers three major benefits: network speeds of 100 Mbps across any grade of cabling, enables converged voice, data and Power over Ethernet service delivery, and triples the Ethernet reach to 365 meters (or 1,200 feet).

Many facilities have only CAT3 or voice-grade cabling infrastructure, which is unsuitable for many Ethernet applications. Furthermore, upgrading to CAT5 or higher quality cabling can run hundreds of dollars per drop, not to mention the physical destruction and repairs to the facilities, and the disruption of day-to-day activities. Adding to this, connecting endpoints like access points, IP cameras, or workstations beyond 100 meters (328 feet), requires pulling fiber or additional switch infrastructure that further increases costs. ActivReach breaks down these barriers to enable ultimate flexibility for designing networks across a variety of cable-plant infrastructures and long distances.

### ADTRAN has the widest available portfolio on the market for multi-dwelling units like dorms and college buildings, including solutions for FTTP, ultra broadband, and wireless.

Higher education institutions are then immediately able to take advantage of next-generation Ethernet-based technologies without incurring significant cost to build-out their network infrastructure, or retrofitting their existing facilities.

To learn more, visit [www.adtran.com/activreach](http://www.adtran.com/activreach)

### Start Strong: the Campus Backbone

Campus networking environments are as diverse as their student and faculty populations. This means that any technology solution must be diverse too. The ADTRAN® Total Access® 5000 Multi-Service Access Platform (MSAP) is the perfect foundation on which to build the campus backbone. The fact is that ADTRAN has the widest available portfolio on the market for multi-dwelling units like dorms and college buildings, including solutions for FTTP, ultra broadband, and wireless.

ADTRAN's Total Access 5000 platform supports a full range of services and applications – from legacy TDM to the latest Gigabit Ethernet services. It is a highly scalable, cost-effective solution to begin the transition to ultra-high-speed broadband services without abandoning key services and technologies in use today. The Total Access 5000 also provides unmatched

### Proof Point

The University of Illinois and the cities of Champaign and Urbana partnered with ADTRAN for the UC2B Broadband Stimulus Project. This project will bring high-speed Fiber-to-the-Premises (FTTP) services to K-12 schools, low-income and underserved communities, as well as provide high-bandwidth data services to business customers and Community Anchor Institutions. This is the first phase of the project and is planned to extend services to more than 10,000 residents in the area.

"The UC2B project is very important to the Champaign-Urbana region as it allows a new subset of customers to have access to next-generation broadband services that will provide better connectivity to both public and private institutions such as health care, education, libraries, public safety and social service agencies and senior living centers," said Mike Smeltzer, director of physical infrastructure at the University of Illinois.



### ActivReach – Unlock the Power of Ethernet

- **Supports all grades of cabling:** With ActivReach, networks achieving speeds of 100 Mbps can be designed utilizing four-pair, two-pair, or even a single twisted-pair of CAT5, CAT3, or legacy voice-grade copper.
- **Triples Ethernet reach:** Using ActivReach, copper Ethernet circuits can span distances up to 365 meters (1,200 feet) from the switch without the use of fiber, repeaters, or multiple switches.
- **Delivers high-speed data over existing wiring:** With the ability to deliver PoE and 100 Mbps data to a variety of IP devices, ActivReach enables converged voice, data, and PoE delivery over existing in-building wiring.



## Wireless 24/7: the Internet Generation Goes to College

With tablets being the most adopted electronic device ever, Bring Your Own Device (BYOD) is sky-rocketing and higher education networks are feeling the strain. The diversification of devices and the introduction of tablets, eBook readers, and smart phones present concerns about security, bandwidth, and management. For an increasing number of colleges and universities, ADTRAN's Bluesocket® wireless solutions address these concerns and provide a way to offer a wider range of academic and collaborative services to a highly diverse community of students and faculties across multi-facility, campus-wide environments.

### Proof Point

North Idaho College (NIC) had outgrown its legacy hardware controller-based WLAN. 802.11n data rates and the proliferation of Wi-Fi devices quickly exposed the limitations. NIC deployed the Bluesocket vWLAN solution for VMware®. This enabled NIC to seamlessly integrate the vWLAN control and management software instance onto their current VMware infrastructure. NIC benefited from a reduced total cost of

constraints experienced when using single purpose-built hardware controllers. A single instance of vWLAN can support 48,000 users and 1,500 access points, increasing scalability over traditional solutions 10x.

Scalability does not have to compromise security. Bluesocket intelligent access points provide security at the edge with their included stateful inspection firewall that turns away any malicious traffic before it enters the network. Additional security features, including enterprise-class authentication, data encryption, real-time data monitoring, and RF Intrusion Detection, keep the network and the traffic moving over it secure.

ownership, vast scalability, greater capacity, and exceptional security.

"With vWLAN's distributed architecture, managed and controlled virtually, we get the best of both worlds: a fast and reliable WLAN that is highly cost effective to scale and manage," says Paul Swaim, manager of network technology.

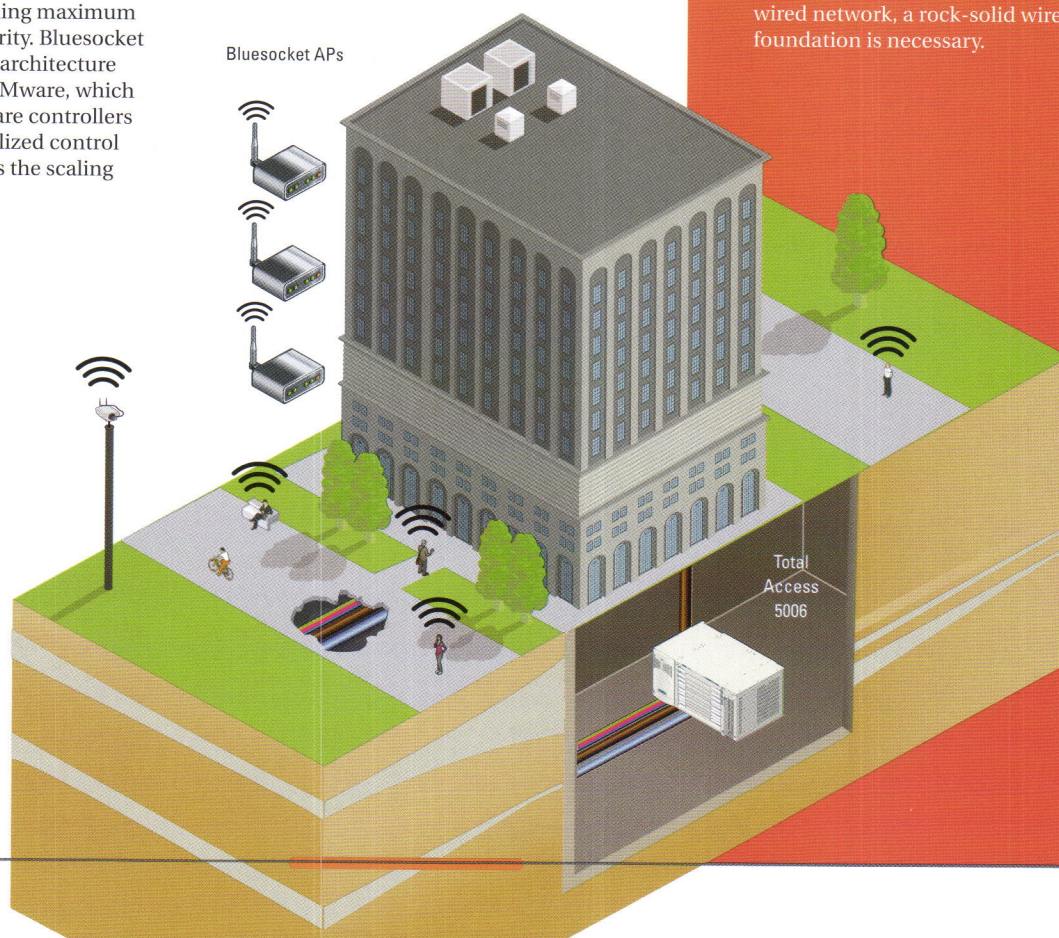


## Four Steps to a Successful BYOD Access Strategy

- **Consolidate and virtualize:** Instead of having data centers scattered across campus, adopt virtualization and consolidate the functionality into one or two data centers. This creates a central location to act as a resource pool to deliver services consistently.
- **Campus-wide decisions:** Make all decisions and implementations at campus level. This creates much greater network efficiency, reliability, and delivers a consistent user experience anywhere on campus.
- **Enable security at the network layer:** The traditional approach of channeling traffic back to a controller to enforce security policies opens up the LAN to hacking threats and DOS attacks. Enforce security at the APs to prevent malicious traffic from even entering the LAN.
- **Enhance the wired infrastructure:** Wi-Fi will be the primary access network for most end-user devices. However, the wired network needs to be enhanced to support increased bandwidth demands from multi-media services such as Voice over IP (VoIP), videoconferencing, and mobile applications. Since the Wi-Fi infrastructure terminates into the wired network, a rock-solid wired foundation is necessary.

Bluesocket virtual Wireless LAN (vWLAN) is an innovative, next-generation approach to wireless networks. This is the industry's first cloud-based virtualized wireless LAN solution that enables control and management of the network via the Cloud – providing maximum scalability, reliability, and security. Bluesocket vWLAN® uses a virtual control architecture running on a hypervisor, like VMware, which eliminates the need for hardware controllers – greatly reducing costs. Virtualized control and management also removes the scaling

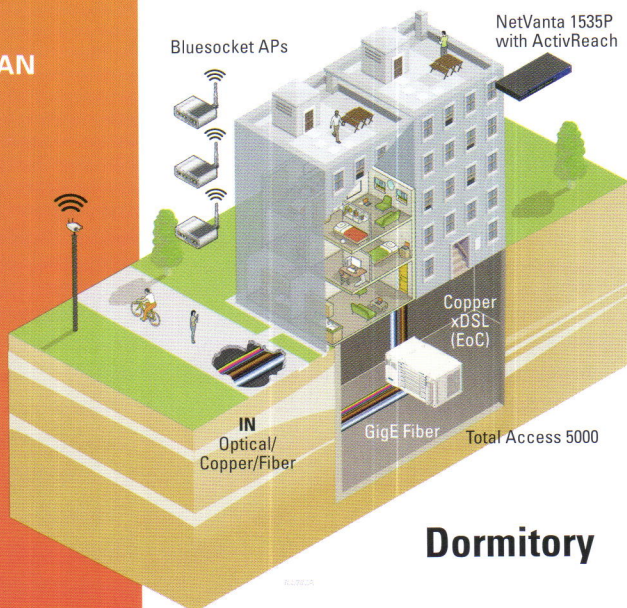
## Commons





## Campus Networking Technologies by ADTRAN

- Gigabit Passive Optical Networking (GPON)
- Optical Networking Edge (ONE)
- Ultra Broadband Ethernet (UBE)
- Broadband Digital Loop Carrier (DLC)
- Carrier Ethernet Converged Services
  - Ethernet over Copper (EoCu)
  - Ethernet over Fiber (EoF)
  - Ethernet over TDM (EoTDM)
- Virtual Wireless Local Area Networking (vWLAN)
- Routing and Switching
- Network Security
- IP Telephony and Unified Communications



## Dormitory

flexibility in deployment, which brings cost efficiencies in wiring, warehousing, and spare units.

To help institutions meet the future, the Total Access 5000 is ideal for both building new networks and for revitalizing existing cabinet infrastructure to deploy higher-bandwidth, next-generation services easily and cost effectively. Although fiber transport and access services are a key component required to meet a 1Gbps broadband threshold, it's important to note that the ADTRAN Total Access 5000 provides extensive options for legacy TDM and a variety of Ethernet-over-Copper (EoCu) applications as well.

To learn more, visit [www.adtran.com/access](http://www.adtran.com/access)

## Celebrating Tradition Shouldn't Mean Giving up Modern Conveniences

Many universities/colleges have a rich history, which usually translates into a picturesque campus, buildings with historical significance and vintage architecture, but the cable-plant (wiring) in place is not very amenable to next-generation Ethernet-based applications. To address this constraint, ADTRAN has introduced a revolutionary technology called ActivReach™ now available in the NetVanta 1535P Gigabit Ethernet switch. ActivReach technology

provides a fresh approach to truly unlock the power of Ethernet. Now, higher education institutions around the world can use existing voice-grade cabling to deploy cutting edge IP business applications. This new technology offers three major benefits: network speeds of 100 Mbps across any grade of cabling, enables converged voice, data and Power over Ethernet service delivery, and triples the Ethernet reach to 365 meters (or 1,200 feet).

Many facilities have only CAT3 or voice-grade cabling infrastructure, which is unsuitable for many Ethernet applications. Furthermore, upgrading to CAT5 or higher quality cabling can run hundreds of dollars per drop, not to mention the physical destruction and repairs to the facilities, and the disruption of day-to-day activities. Adding to this, connecting endpoints like access points, IP cameras, or workstations beyond 100 meters (328 feet), requires pulling fiber or additional switch infrastructure that further increases costs. ActivReach breaks down these barriers to enable ultimate flexibility for designing networks across a variety of cable-plant infrastructures and long distances.

## ADTRAN has the widest available portfolio on the market for multi-dwelling units like dorms and college buildings, including solutions for FTTP, ultra broadband, and wireless.

Higher education institutions are then immediately able to take advantage of next-generation Ethernet-based technologies without incurring significant cost to build-out their network infrastructure, or retrofitting their existing facilities.

To learn more, visit [www.adtran.com/activreach](http://www.adtran.com/activreach)

## Start Strong: the Campus Backbone

Campus networking environments are as diverse as their student and faculty populations. This means that any technology solution must be diverse too. The ADTRAN® Total Access® 5000 Multi-Service Access Platform (MSAP) is the perfect foundation on which to build the campus backbone. The fact is that ADTRAN has the widest available portfolio on the market for multi-dwelling units like dorms and college buildings, including solutions for FTTP, ultra broadband, and wireless.

ADTRAN's Total Access 5000 platform supports a full range of services and applications – from legacy TDM to the latest Gigabit Ethernet services. It is a highly scalable, cost-effective solution to begin the transition to ultra-high-speed broadband services without abandoning key services and technologies in use today. The Total Access 5000 also provides unmatched

## Proof Point

The University of Illinois and the cities of Champaign and Urbana partnered with ADTRAN for the UC2B Broadband Stimulus Project. This project will bring high-speed Fiber-to-the-Premises (FTTP) services to K-12 schools, low-income and underserved communities, as well as provide high-bandwidth data services to business customers and Community Anchor Institutions. This is the first phase of the project and is planned to extend services to more than 10,000 residents in the area.

"The UC2B project is very important to the Champaign-Urbana region as it allows a new subset of customers to have access to next-generation broadband services that will provide better connectivity to both public and private institutions such as health care, education, libraries, public safety and social service agencies and senior living centers," said Mike Smeltzer, director of physical infrastructure at the University of Illinois.



## ActivReach – Unlock the Power of Ethernet

- **Supports all grades of cabling:** With ActivReach, networks achieving speeds of 100 Mbps can be designed utilizing four-pair, two-pair, or even a single twisted-pair of CAT5, CAT3, or legacy voice-grade copper.
- **Triplies Ethernet reach:** Using ActivReach, copper Ethernet circuits can span distances up to 365 meters (1,200 feet) from the switch without the use of fiber, repeaters, or multiple switches.
- **Delivers high-speed data over existing wiring:** With the ability to deliver PoE and 100 Mbps data to a variety of IP devices, ActivReach enables converged voice, data, and PoE delivery over existing in-building wiring.



# SHA-NA-NA-NA . . . Get a Job!

Curt Harler  
Contributing Editor

Your professional life is on the bubble. Maybe the department has been downsized or your job went away. Whether you are 30 years old or 50, there's more to the job search than getting a haircut, a blue suit, and 100 copies of your resume.

The situation differs depending on the worker's situation. Too many older workers define themselves by their job, rather than their skills. Younger workers fret over being able to present the necessary skill sets. Still, there are jobs out there.

If you sang the headline, you are in the "older worker" category. If you are looking for a missing hash tag up there someplace, you probably are a "younger worker."

"Opportunities for information technology (IT) administrators will continue to be strong in college and university job markets," says Isaac Dixon, PhD and SPHR, who is associate vice president and director of human resources at Lewis and Clark College in Portland, Oregon. He is a member of the College and University Professional Association for Human Resources (CUPA-HR) board of directors. "The same is true of telecom but to a lesser degree," Dixon says, adding that technological improvements in telecom make it less people-reliant.

Dixon, who was an IT recruiter for a number of years and says he has never lost interest in technology, believes that a person's skills are what determine their market value and how quickly they find work. "There are 26-year-olds who are highly skilled and many who are not," he says. "Having a bias based on age (or youth) just does not make sense. When hiring, look at the entire package."

There is a perception that someone over 50 is too out of touch or too highly paid to get another job in IT.

"The emphasis should be on 'perception.' It is not necessarily true that just because you are 40, you've lost touch with technology," says Mike Grunder, vice president of Vantage Technology Group, Boston, Massachusetts. A former telecom director for six years at Virginia Tech, 17 years at Yale, and a short time at Harvard, Mike was president of ACUTA in 1989–90. "It is possible to lose touch if you are out of a job for six months or a year. But it depends on what you do," Grunder says.

There is no question in his mind that finding work after age 50 or 52 is difficult. "In my opinion, when you are over 50, the job market changes," Grunder says. "I don't care what the economy is doing. Age is a factor."

No matter what a person's age, most observers would agree with Grunder when he states, "These days, it definitely is a buyer's market—especially due to the economy. It's better if you are younger since you are perceived to be cheaper, more open-minded, and better up on technology."

Some popular magazines have tried to frame the job market as a sort of boxing match between Baby Boomers and Gen X or Gen-Y. HR people at many colleges tend to shy away from such analogies.

"There are definite generational differences in the workplace but a great deal more similarities," Dixon says.

Whether you are a younger worker or an older worker, the game is not totally rigged against you. While there are advan-



tages that go with youth and flexibility, there are counterbalancing advantages that go with age and experience.

### Younger Workers

It is almost always fair to say that younger implies cheaper. There also is the impression among many HR managers and executives that younger people have more energy and more technology skills.

Older workers may concede that younger workers have better technology skills, but they counter that the energy level is an individual thing. Likewise, younger workers might lack the management expertise.

"That younger is cheaper is valid," Grunder feels. He notes the trend in corporate America to laying off a senior individual and then hiring a younger person with a slightly different title to do the same work at half the money.

### Older Workers

The trump card that older workers hold is that they are usually more adept and better practiced on the business side of IT.

If you are a 50-year-old PBX technician, you are ripe to be replaced by a 25-year-old PBX technician. However, if you have moved up the management ladder, your position at your existing job and your attractiveness to a new college both are improved.

"There is a lot more to IT or telecom at a university than just technical skills," Grunder says.

An older worker should be prepared to tell the interviewer that he is not an engineer, that he does not wear a tool belt, that he is not the one to fix the wiring closet.

"Emphasize your experience organizing a department, knowing how IT works, and your ability to interact with other depart-

ments," Grunder advises. "Young people do not have that. Management is more complicated than technology. I think technology is the easy part of the job," he adds. The typical 30-year-old simply lacks the management experience to compete with a 45- or 50-year-old who has 10 or 15 years in the office.

The idea is to work yourself into a job where you are indispensable. "Make yourself the go-to guy," Grunder says. "Network. Go beyond technology into management—management is more lucrative and usually more interesting," he adds.

If you are on the job market, learn to interview well. Watch out for verbal tics like sprinkling "you know" into every other sentence. Play to your strengths, and know the requirements for the job you are seeking. Be able to explain how your experience would be especially valuable in the particular position.

"Be prepared to do some stuff you don't want to do if it helps your family make ends meet," Grunder says. "Be flexible."

Part of that is keeping your skills honed. Do not let your IT magazine subscriptions lapse, your contacts with user groups slip, or your ability to perform special jobs get rusty—even if it means working someplace for free for a while.

"To stay in the game, you cannot sit on the sidelines for 12–24 months," Dixon says. A worker will find it has become too late if he is not keeping his skills up-to-date via project work, classes, and more.

### Moving On

Moving—as in physical relocation—often is part of the package and one of the things many older workers resist. Grunder points out that older workers, who may be close to paying off their home mortgage, might be reluctant to relocate.

"Reluctance to move is a big, important factor," Grunder says. He looks at his own move to the Boston area . . . to a job he acknowledges did not meet his expectations. "I figured I'd be better off in the Boston market, have more prospects, no matter what happened," he says.

"I've always felt you've got to be willing to move around if you want a better job," Grunder says.

Remember that markets matter. Someone moving from the Los Angeles area to Oklahoma or from Boston to Arkansas probably would find housing and the overall cost of living at their new location to be a fraction of what it was before. Of course, the opposite is true, too.

"If you have to take a pay cut, so be it," Grunder says. "Suck it up and do what's best for yourself and your family." Think long term, big picture.

For the worker without a job, Grunder notes the importance of a good support group for backup. He says he was fortunate to have an understanding wife who was behind him all the way.

The pay-cut question varies greatly by region, city, and job skills. "The bottom line, however, is that for the most part it seems to be true," says Isaac Dixon. "Employers do not have to pay what they did in 2008 to get the same talent."

He has a warning for employers, too: "If employers want stable, creative, and consistent employees, then they should pay better—and then the talent sticks. . . . Among technology professionals of all ages, training is the most important investment that a college or university can make in them. It is what keeps them relevant and feeling good about their professional lives," Dixon says.

Moving around in the job market is circumstances based. "There are more



candidates than there are jobs," Dixon acknowledges, "but it varies a great deal based on skill set."

Taking a pay cut is better than being unemployed. "Never quit your current job before you find a new one," Grunder advises.

Not everyone has that luxury. Sometimes it's "any port in a storm," and an out-of-work IT professional might find herself taking a new job at 45 percent of her old salary just to keep the wolf away from the door. On top of that, she might feel trapped by having to perform aspects of the job that she would rather not do. After a tough eight-hour day at the new position, is she really going to want to sit down and start the application process all over again? Or will she settle?

"New media requirements at colleges and universities lead us to search for people with advanced writing and Web skills—something that has evolved over the last few years, so the pool of talent is not as deep as programmers for example," Dixon says.

No matter the job, are workers staying ahead of the financial game? Even those with a job are not getting too far ahead. The CUPA-HR's 2011–12 Administrative Compensation Survey shows that, as the economic recovery continues, many institutions are awarding slightly higher salary increases. According to CUPA, the overall median base salary increase in 2011 was 2.0 percent, up from 1.4 percent in 2010.

Consistent with previous years, CUPA-HR's data show that increases were generally higher at private institutions than at public institutions. For public institutions, the median salary increase was 1.5 percent; for private institutions, the median increase was 2.5 percent. These findings reflect

the salaries for 76,933 job incumbents in public and private institutions nationwide. Salaries were reported by 1,240 institutions for 291 selected positions, mostly at the director level and above.

According to the Bureau of Labor Statistics, the annual Consumer Price Index for all urban consumers in 2011 was 3.2 percent higher than in 2010. Therefore, the median salary increase of 2.0 percent was actually less than inflation for all institutions combined, and also for public and private schools when looked at separately.

"The overall median increase of 2 percent is welcome news for many higher-education employees who have not received salary increases during the last few years," says CUPA-HR president and CEO Andy Brantley.

"Colleges and universities continue to wrestle with tightening budgets, and many employees have assumed multiple roles, changed roles, and/or managed with significantly limited resources during the economic crisis," Brantley says. "It is gratifying to see that institutions are making sacrifices in order to provide salary increases that acknowledge the great work of their employees."

#### Watch for Freebies

While institutions do value their workers, so do the professional associations that support college telecom and IT people.

Stay in touch with the organizations that served you well in the past. Your state or regional IT organization is a good place to "bump into" someone who might know of a job.

"I have been coaching my tech friends for years to volunteer to help nonprofit organizations with their IT work and take

on tasks outside their usual skill set," Dixon says. "If you do this along with classes and certifications, it will make you a much better professional. You learn creativity and flexibility, and in working somewhere you have never been, you learn to adapt to a different culture. These are all great skills that apply in your day-to-day role too!"

Benefits go beyond that. Amy Burton, director of strategic relationships for ACUTA, points out that ACUTA offers a six-month complimentary individual membership available to any former employee of an ACUTA member school or company who has become unemployed. Several other groups have similar grace periods for ex-members (which is a good reason to belong to industry-appropriate associations).

"This new membership level allows an individual to continue communicating with the extensive ACUTA network as well as register for events at the member rate," Burton says. "People who were with an ACUTA member school and lost their position anytime within the last year and are currently still unemployed are welcome to apply for this complimentary membership," she adds.

#### Conclusion

Gone are the days of the 20-year employee who earns the gold watch and rocks on the porch till sunset each evening. But technology keeps on opening new doors. We just have to be ready to face what's on the other side. Sha-Na-Na-Na, Sha-Na-Na-Na-Na.

Curt Harler is a contributing editor for the *ACUTA Journal* and a freelance writer whose specialty is technology. Contact him at [curt@curtharler.com](mailto:curt@curtharler.com).







STEVEN VIEIRA  
CIO / EXECUTIVE DIRECTOR, IT  
THE COMMUNITY COLLEGE  
OF RHODE ISLAND

## Q & A with the CIO

**ACUTA: Information technology's evolution at colleges and universities continues to blend people, processes, and technology to increase productivity, creativity, and innovation. How would you characterize CCRI's success and approach to this evolution, and its impact on campus life, organization structure, the role of the CIO, and IT's role in the decision making?**

**Vieira:** The evolution of IT at CCRI seems to be a blended effort on many fronts to bring together the variety of resources available into a collaborative team of interested parties seeking to move technology forward, delivering better and easier-to-use services to the students, faculty members, and staff at the college. More than an evolution, it is a rebirth of the community spirit to be part of the solution—people working together to make vast improvements in services and opportunities for all.

A key factor in this revolution has been the openness of the department of information technology to embrace the partnership established with functional users, front-line managers, and deans and department chairs. Encouraging input from multiple sources with different and varied experiences has greatly improved the service levels brought forth by IT. Gathering diversified ideas and opinions has increased the knowledge base within which prioritized decisions about IT projects have resulted. Using the available advisory groups and their constituents, the IT Governance process outcome is a list of projects being prioritized determining that priority and which projects get resources assigned.

However, it goes beyond simply assigning projects and tasks to be accomplished. There is a new kindred effort of all requests and new applications being propelled by cross silo, cross function, and voluntary efforts to completion. Where IT was once the leader, facilitator, motivator, and driver of all things technology, today there is a cooperative, collaborative, comprehensive push to integrate technology into everyday and common functions. Not only that, but new initiatives are bubbling up from the front line and advisory groups in greater numbers. While the list of projects to accomplish is significant, the contribution of those previously considered outside of the process enables a far greater promise to finding the best service delivery tools available.

More important, those outside of the department of information technology now understand the role they play in successful implementation of any task. Using the adage that "IT is a participant sport," each venture has stakeholders designated, from both the functional and technical side, either through their interest in the outcomes to be derived or through the particular expertise they bring to that role. The days of IT driving each new process, function, control, or procedure are over; the activities belong to everyone who has an interest in the by-product and its effect on the constituents involved with the college. This ultimate change in the business model of IT can be attributed to the willingness of the department to roll back the "smoke and mirrors" of technology, the constantly



spoken vernacular separating the so-called geeks from the common folks, and enlarging the inner sanctum of IT.

Indeed, one predominant element of the CIO's role in fostering this sweeping change is the evangelism, information bearing, and constant education process of bringing the changing world of technology to the "C level" group and others. Demonstrating and revealing snippets as they are brought to consumers and making them visible and real to those whose primary responsibilities do not center on technology ensures that there is transparency in everything IT does. No longer is there the mystique surrounding information technology, and this has been fashioned deliberately to engage the community. A large commitment has been made to direct communications through the college's Marketing and Communications department for almost every facet of delivery to the folks we support.

Making technology seem more down-to-earth and less foreign is a strategic goal of IT and the CIO. IT needs to ensure that it gets invited to the table in discussions on business process improvement and continuity, whether it involves a technical solution or not. Having IT included in the conversation allows the educational process to continue and possibilities of imbedded technology solutions to grow. The role of the CIO as an advocate, missionary, facilitator, resource librarian, business expert, and evangelist for technology and its application in the performance of the business of the college is an enormous challenge and one that reshapes itself every day.

The key understanding of the importance of all staff, both IT and non-IT, in the pursuit of excellence in regard to service delivery is fundamental. When that is realized with IT as a persuasive resource (not a decision maker, but instead a contributor to

a team whose expertise is shared building on the knowledge base of the group), a truly supportive group is built. The establishment of this working assembly has allowed us to develop an innovative cooperative of technology operators whose combined expertise brings new ideas to satisfy the requirements of business units trying to solve a problem. Collective problem solving enables students, faculty, and staff to create new utilities and processes that emphasize ease-of-use and elimination of manual or repetitive functions.

The evolution of IT has been an education—a learning experience where sharing of ideas, knowledge, expertise, and creativity through every contributor is considered on its merits. Everyone realizes his or her own role in accomplishing great things, and everyone adds to the collective effort. When IT adopts the role of facilitator and promoter of ideas and innovation, it removes itself from the world of utility (e.g., plumbing, electricity, etc.) and instead becomes a business integrator. Getting deeply involved in the success of each of its constituents effectively changes the IT role to one of partner and supporter.

**ACUTA: Technology consumption has increased dramatically on many campuses as IT's evolution moved from the main-frame to PCs to servers to the Internet to tablets to the today's smartphones. In your tenure at CCRI, what are the technology accomplishments you would highlight as noteworthy and of which CCRI is most proud?**

**VIEIRA:** Measuring technology accomplishments is often a case of what is visible, what has been done lately, and what is different from before. Such is the case at CCRI where significant effort has been made to change the manner in which things have always been done. Not different from any other campus, it took a look inward to the

fashion in which services were delivered and a search outward for opinions developed over the years for what IT was doing. The first several months featured meeting after meeting with individuals, departments, and line staff to understand the best of what they had, the most difficult challenges they faced, and the thoughts they had on how things could improve. Common messages expressed themselves on many occasions; repetitive manual processing was predominant, certain utilities purchased were never implemented, and things had to be easier to do than was evidenced. Extraordinarily similar outcomes were derived from within IT as well.

An early win was the utilization of vendor-supplied tools to automate account provisioning for students, faculty, and staff. When someone was entered into the single authoritative database, their accounts (e-mail, registration, financial aid, portal, etc.) took 24 to 48 hours to be enabled. Both IT and the Student Services folks identified this as a major drawback of existing systems because when students appeared for admissions, they could not immediately interact with the college. When considering a community college where all the students commute, it is vitally important to work with them when they are actually on campus in person. The current process needed substantial change, and through a third party engagement, CCRI adopted a new procedure that resulted in almost instantaneous delivery of account information to students while they stood at the counter at enrollment.

As part of that process, all student e-mail accounts were transitioned to a cloud-based delivery system which provided office tools for word processing, spreadsheets, and presentation tools through a Web interface free of charge. Additionally, each student was given a storage area of 25 Gb



for accumulating their portfolio and assignments. This simultaneous development was determined to be superior to what the college could provide due to the storage and free software capabilities that could not be funded adequately for the existing student population.

Transitioning student account provisioning and e-mail account assignment in one simple automated process freed the IT staff to perform other duties while offering Student Services personnel an opportunity to increase their one-stop delivery to students.

Exploration for stakeholders willing to take an active role began as we remained diligent about exploring possibilities where utilities existed but were not employed. We were driven to reduce manual processing significantly. Training was offered openly to anyone interested in report writing, workflow development, end-of-year financial systems processing, and an online Web registration. These systems had been purchased and were fully licensed, but over time they fell to IT to maintain, implement, and support. Each system needed a person with an interest in employing it, and the training enlisted a small, but enthusiastic, sample of candidates. Soon IT fostered partnerships with representatives from multiple departments where "angels" arose; people willing to go the extra mile to bring something good for the students, faculty members, and staff.

The collective members of the CCRI collaborative teams showed outstanding progress in a short period of time, eventually resulting in eleven new workflows for human resources, purchasing, student services, and financial aid from the Workflow Development group. The Enterprise Reporting team took the new reporting software and the operational data store to create multiple data blocks, numerous In-

stitutional reporting instruments, a secure report delivery system, and dashboards for executive consumption using academic analytics/business intelligence. The end-of-year processing took a significant improvement into the last two years due to the controller's office and budget manager's adoption of programs that were always there but never used. Finally, the Center for Workforce Development and Continuing Education has seen true benefit from being able to register and securely collect fees for their thousands of driver's education students online.

In each of these cases, the IT department nurtured involvement at the grass roots level by providing insight into how the existing products worked, third-party training by experts in the field, and guidance on how the tools could be adapted for use at CCRI. Engaging front-line staff and mid-management level leaders in the use of technology to relieve pain points that had been identified increased efficiency and eliminated duplication of effort and manual processing. The results of these efforts have been greater emphasis on innovation using the tools in house to maximum capacity and more participation by a growing number of stakeholders in the development teams.

The use of the learning management system (LMS) grows exponentially through a new support program with multiple delivery mechanisms designed in coordination with direct conversations with faculty members and students. Over the years, adoption of the LMS was slow and filled with commentary about previous systems and how much they had to offer. In a deliberate shift of staff support, four new support mechanisms were built seeking to solve acknowledged issues. The first was a separate learning management help desk where calls concerning use of the system

are dealt with through direct and instantaneous support for both faculty members and staff. The second support mechanism is a team of instructional technologists who schedule appointments and spend planned periods of time with faculty members trying to integrate new features and tools into their courses.

Third, a proactive group works with textbook materials, multimedia, and any other external products that can take advantage of the enhanced streaming, lecture-capture, learning-management system integration, incorporating them into the coursework. Finally, the fourth service is a research and design group that surfs the Web for new products, deliverables, and products that could be introduced to faculty members for their testing and possible adoption in the classroom.

#### **ACUTA: What other recent accomplishments have proven noteworthy for IT at CCRI?**

VIEIRA: Another game changer at CCRI has been the endorsement of server virtualization and the move replacing more than 100 servers with 15 virtual machines offering redundancy, fault tolerance, and load-balanced services. Immediate rewards were felt as this transition took place and administration of individual equipment was substituted with a more manageable solution, meeting the needs of IT. Features such as automated scalability for each application through a distributed resource scheduler, the speed of deployment of new virtual applications, distributed power management, and high availability empower IT to utilize virtual machines for 95 percent of the applications at CCRI.

Virtualization has also been explored and used in virtual storage and networks to a lesser degree but expanding every day. The latest in virtual products brought into production in the past year is the virtual



desktop. With the intention of providing a secure, always-available-from-anywhere environment, no matter what the device, the virtual-desktop initiative satisfies all requirements. Each person has his or her own desktop specifically designed with that individual in mind, having the look and feel of their physical desktop with the added benefit of being able to use it wherever they work. Our intention is to replace as many of the 3,800 computers currently at the four CCRI campuses as possible.

The greatest accomplishment of the virtual desktop initiative to date is that it was never announced to the students, so they sit at computers that are actually housing virtual desktops, they log in as they normally would, and virtualized applications are delivered to them without their knowledge. The systems are faster, the applications load quickly, and all functions normally attributed to a physical desktop are delivered better through the virtual environment.

The infrastructure at CCRI has expanded over the years, and a 10 Gbps connection now exists for future allocation to the other campuses and constituents. Wireless access is ubiquitous on each campus and network access control is in place to protect everyone connected. Bandwidth is monitored and controlled to provide high-quality delivery of services without interruption. Secondary Internet connections have been designed and delivered at the other campuses to ensure Web presence at all times, and a copy of all Web pages is maintained at an out-of-state location in the event that the state of Rhode Island is severely impacted. Disaster recovery and business continuity plans are in place, and an alternative data center is being built at another campus for load balancing and redundancy. An offsite "cloud service," distant from any CCRI campus, is being built to provide true disaster-recovery capabilities

and will be populated through an extensive data-replication system involving mesh networking.

In January 2011, CCRI implemented a truly successful print management system in the four academic computing labs and four libraries for the students. Previous to this system, the labs and libraries were open to anyone to print and so were often populated with non-CCRI students and visitors taking valuable lab space and printing as much as they wanted. The recycling bins would be full of paper that were unintentionally printed on the very expensive

laser printers and dumped when they were unneeded. With the new system, only CCRI students and guests purchasing a print card are allowed to print. Every student has an active directory account and they get a semester allocation of free pages for printing. Visitors pay as they print. The result has been a great reduction in the amount of printing occurring, and the replacement of laser printers with multifunction copiers has greatly reduced the cost of printing. Students use their ID cards to release their print jobs, which are loaded into a queue that allows them to release the print job at

**MiCTA – We Make Buying Easy!**

515 N. Washington Ave.

Suite 405

Saginaw, MI 48607

Toll Free: 888-964-2227

[www.mictatech.org](http://www.mictatech.org)



- *Emergency Notification Services*
- *Telecommunications, Bandwidth and Applications.*
- *Video Integration Services*
- *Mobile Learning and Wireless Solutions*

MiCTA represents all nonprofit entities including educational, governmental, libraries, healthcare, religious, charitable, and public sector with members in all 50 states. MiCTA produces and publishes collaborative RFP's generating agreements that are made available to all MiCTA members in good standing.

Visit our website at [www.mictatech.org](http://www.mictatech.org) for further details regarding our Services.



any printer at any campus. Jobs are kept in queue until they are released or eventually flushed after a period of time.

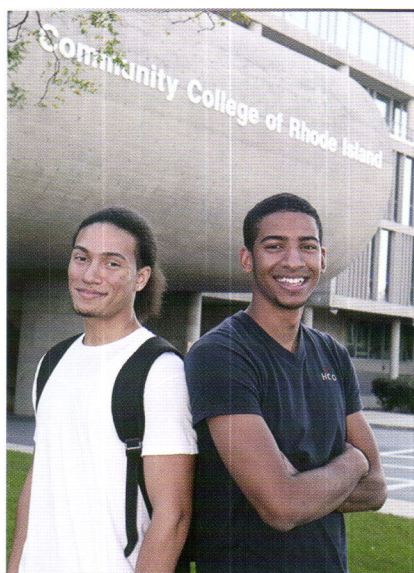
Finally, CCRI, like many other colleges, is entering the mobile world using a third-party engagement to assist in the development of a series of mobile applications to integrate with the learning management system, the content management system, and the administrative database. This agnostic set of apps will be offered this fall for the growing number of students with tablets and smartphones. The mobility of the student population and the need they have to be able to connect and communicate from anywhere provides the incentive for incorporating these features into the offered pool of services.

**ACUTA: Rhode Island is one of the smallest states in terms of land mass but one of the highest in population density with a population of approximately 1.051 million persons. How does CCRI's infrastructure cover the state from the perspective of a virtual campus supporting Rhode Island's transition from a manufacturing to a service-oriented economy?**

Vieira: CCRI has a strong commitment to the people of the state and takes its obligation to be far reaching and available very seriously. As a community organization, CCRI makes the campus libraries and technology available for visitors during normal working hours. The virtual desktop initiative is designed to allow our students to access those applications necessary for study and class work from their homes. CCRI offers more online, hybrid, and distance learning classes than any other Rhode Island college, and the level of quality control is constantly monitored through strict guidelines adopted by the faculty members teaching those courses. With the infrastructure expanding to 10 Gbps and being an anchor institution in both the Knight Campus in Warwick and the

Newport County Campus, the OSHEAN consortium network acquired through a BTOP grant is intended to provide Internet to other anchor institutions throughout the state including municipal, safety, health, education, and libraries.

The college is also exploring grant opportunities to host low cost, neighborhood Internet connectivity through programs designed to increase the digital literacy of the population. In some of the lower-



income areas, CCRI sees this as a service which could further diminish the digital divide. Whether through broadband or Wi-Fi or WiMax, each option is being explored for potential use in the areas surrounding each campus. In contributing to the effort to increase the use of technology throughout the state, CCRI further enhances the possibilities for future communication and information sharing hopefully resulting in an employable populace.

**ACUTA: Financial pressures, budget cuts and technology challenge every campus. How would you characterize CCRI's approach to these pressures in rethinking**

**organization structure, policies, IT's role in how things are done and supporting anywhere/anytime learning for Baby Boomers who are joining the ranks of the retired in increasing numbers?**

Vieira: "A college in transition" is an accurate characterization of CCRI. From its very inception, the institution has been the last choice of most incoming freshman; the "fall back" school when first choices did not accept the student. However, the college has excellent programs, dedicated faculty, and articulation agreements with many universities and colleges enabling transfer credits to follow the educational path.

CCRI currently has a large and growing transfer student population; but interestingly, a new phenomenon has occurred—the concept of the reverse transfer. With the college's low tuition and fees, students uncertain of their career paths and long-term aspirations commonly take courses at CCRI with the intention of transferring to a four-year institution for the advanced degree. A germinating culture have now matriculated at larger universities, found the costs prohibitive, and re-discovered the Community College of Rhode Island. Parents who once considered the community college as a lesser option for their children's post-secondary education now re-evaluate the selection in the light of higher tuitions.

Increasingly, due largely to the economy, CCRI has become the career savior where job seekers and job holders build their skill level and certification holdings to guarantee new positions or maintain existing ones. Workforce development has permeated the course offerings as shifts in types of jobs and skills desired have moved. Many of the distance learning classes offered are filled with returning or already employed workers enriching their knowledge and ensuring employability in the future. Through this cadre of online, hybrid, and distance learning sections, CCRI embraces the anytime/



anywhere opportunities that the students are demanding.

IT takes an active role in increasing bandwidth, beefing up the infrastructure and providing redundant, fault tolerant, always-on systems and services which ensure accessibility no matter the hour. Building an alternative data center and creating a mesh network among the four campuses shows the determination of the department to provide guaranteed service levels to the students, faculty members, and staff.

**ACUTA: Wireless mobility continues to be a game changer in society. IDC projects total smart phone shipments will reach approximately 659.8 units in 2012, up 33.5 percent from the 494.2 million units shipped in 2011. Smartphone shipments are projected to grow at a compound annual growth rate of 18.6 percent until 2016. What steps has CCRI taken to support and take advantage of this projected increased growth?**

Vieira: Mobility is the buzzword of our millennial students; and whether through Twitter or text messaging or whatever social network of choice, the ease of use and the minimal training in this technology are elements that need to be recognized. The explosion of the tablet and smartphone influx and the consumerization of IT must be attributed to its instant gratification, the always-there capability, and its one-touch delivery of desired outcomes. CCRI appreciates and understands the movement toward BYOD to the extent that all Web pages have been rebuilt with a mobile template using HTML 5.0 and CSS 3.0 to be viewable on “smart devices” while supporting the standards for accessibility and meeting ADS requirements for mobile devices.

This fall the college, realizing the potential of mobile, will be working with two separate third-party providers to build a family of apps that can deliver immediate feedback. The mobile developers will be

working with students and staff to make available those apps designed to be most useful bringing students, faculty, and staff what they want in a single touch. Working closely with the learning management system, the authoritative database and all its self-serve functionality, and the other integrated services offered, the mobile app family will provide another means of communicating with students in their medium.

One simple outreach feature designated for the coming semester is the use of a Twitter account for gathering feedback from students concerning all IT offerings and services. Supplementing the help desk and designed to be the single voice of IT for social networking, the Twitter account will be manned by help-desk personnel to answer questions, provide guidance and direction, and collect commentary on the services offered. This voice from the consumers is one area of the help desk that has been lacking and possibly in demand.

**ACUTA: The cloud is envisioned by many as the new norm in the IT environment. How would you characterize CCRI's strategic approach to cloud computing as it relates to administrative, academic, and social applications?**

Vieira: The cloud-based applications adopted by CCRI have been directly related to those areas where the college was not able to offer the service as capably as the supplier chosen. In the past four years, the college has significantly reduced its PCI and PCA compliance risks through the use of “cloud-based” services. Secure connections are made where collection of credit card information or sensitive data might be necessary. Two of these services are the tuition payment system and the alumni development funding system. Student e-mail was moved to the cloud when it was determined that the service provided was more than what CCRI could assemble and

offer to students. CCRI operates under a strict set of guidelines for assessing and utilizing “as a service” functions.

Three central themes surround the use of cloud computing: the predictable nature of the costs per year, the fact that the service is as secure or more secure than what IT could deliver in house, and the fact that the service is managed by the provider and not by CCRI personnel. Obviously another factor in the use of these offerings is the ability to integrate with existing on-campus applications where necessary. These factors are among those of most importance but clearly not all that need be reviewed when adopting any outsourced applications. In considering the disaster recovery/business continuity solution, one additional consideration must be the accessibility of the site through the network or in person in the event of a catastrophe. Where someone can provide a service better than can be done at CCRI, the option is always there.

**ACUTA: With the exponential rise of demand for smartphones, momentum continues to build for deployment of the Long Term Evolution (4G). The LTE standard is an evolution of the Global System for Mobile Communications/Enhanced Data Rates for GSM Evolution and Universal Mobile Telecommunications System/High Speed Packet Access (3G) wireless standards and provides increased capacity and speed. Is migration to the LTE standard to support the new generation of wireless smartphones in CCRI's strategic plan? If so, what has already taken place to implement this standard?**

Vieira: While the migration to the LTE standard is not explicitly in the IT strategic plan, the actions being taken to supplement the existing bandwidth and procedures for metering for quality of service certainly indicate awareness and realization of the need for long-term support of the all-IP network



system. Wireless access at all four campuses is ubiquitous and being upgraded now to the latest 802.11n protocol. Recognizing that the number of “smart” devices brought to the campus is increasing at a rapid rate, IT has adopted this as a key initiative for this coming semester and throughout the year with the overall goal being excellent coverage everywhere.

IT is also working with multiple technology suppliers to provide increased bandwidth to all campuses and creating a mesh network capable of providing redundancy and fault tolerance. Having an outstanding relationship with the OSHEAN consortium and increasing activity with alternate providers, the level of assurance of always-on and ubiquitous availability is foremost in the design. Obviously, convergence of circuit services such as voice, video, and data have been in many discussions, and these coincide with the inclusion of packet services like browsing and instant messaging. Offering all these with an agnostic device in mind has been the driving force toward infrastructure planning.

The use of unified communications on campus has raised the concept of “presence” and real-time information or interactive service and how they can best be utilized at the college. The anytime/anywhere user experience is paramount in our planning, and it needs to be simple to use and easy to access. LTE or 4G promises to improve the resource efficiency and enhance the user experience. Services delivered to our students, faculty members, and staff must be user friendly, always available, and there when needed. The potential of the LTE/4G environment further enables this seamless service provision in a secure wrapper. The key element is maintaining the quality of experience for the end user while preserving service continuity through the provision of substantial network capacity. Everything CCRI does to support the

variety of constituents and their collective devices keeps these factors close at hand.

**ACUTA: Social media has dramatically changed how we interact one-to-one as well how we accomplish our jobs. How would you characterize and describe the impact of social media on CCRI’s employees and their work?**

Vieira: Several years ago CCRI created a Facebook presence, which today represents one of the largest community college populations of followers. Feedback and information are both incoming and outgoing through this medium, and this area is monitored carefully for the conversations and comments that are collected. There is also a Twitter account that is used to interact with those using this tool and its quick and brief content. The department of marketing and communications has assigned resources to monitor and respond to information gathered through these utilities.

The information collected is reviewed to ensure that the voices are heard and that open issues are addressed. However, this source is obviously something quite different from surveys and the information culled there. What is particularly useful is the openness, the opportunity to freestyle comments and to discuss issues of concern rather than directed topics. The marketing and communications staff brings pointed and constructive comments to each department for their consideration and use in designing and re-designing services to the constituents.

Recently the marketing campaign has adopted the use of more video, more links, and more online materials, abandoning lots of text in their materials. This can be directly attributable to the manner in which students communicate through social media. Now a QR code is included in promotional materials that brings people to a website featuring video presentations

surrounding success stories at the college. CCRI is adopting new ways of communicating with the populace and potential students in response to the manner in which they connect.

**ACUTA: Community colleges are emerging as a practical first experience for an increasing number of students. What makes CCRI attractive for the first two years of college?**

Vieira: CCRI has become the place where people change their lives. At a tuition and fee rate that is incredibly affordable, below the national average for community colleges and lowest in the New England area, students can come and discover their path. With a variety of programs and the technology to support each, CCRI offers quality at an affordable price. With many articulation programs with other four-year colleges and universities, credit courses taken at CCRI are transferable to the school of their choice. The number of people who are now reverse-transfers is growing, and that is probably directly related to the economy and the costs of higher education.

If students have any uncertainty as to what they want to study, need to determine whether they are ready for college, or just want to take a course or two for a beginning, CCRI offers openings without restriction. For quality programs at an affordable price offering a wide range of opportunities stretching from one end of Rhode Island to the other, students can find a convenient campus where they can start when they want and control their own schedule. It’s great for the single-course requirements, but also equally appropriate for the degree seeker.

ACUTA thanks Stephen A. Vieira, CIO and executive director of IT at the Community College of Rhode Island, for taking the time to respond so thoroughly to our questions. Reach him at [savieira@ccri.edu](mailto:savieira@ccri.edu).



# The New Face of IT: More Smiles than Frowns

Thomas G. Dolan

Some people think of college campuses as they were decades ago, ivy-covered buildings, musty on the inside, and safe home for all the traditional thinking of the past hundreds of years. Not so in today's culture as technology permeates the entire campus and communications takes a seat on the front row of any gathering.

Here three campuses talk about changes being ushered in by technology and a new generation that expects unprecedented access to a world of information.

## Meeting Challenges through Next Gen Michigan

"Every few years IT goes through a major paradigm shift, and we're going through a major one right now," says Laura Patterson, CIO, associate vice president at the University of Michigan in Ann Arbor. Patterson sums up previous shifts as mainframe sharing to the PC, then from the PC to network computing, followed by the introduction of the World Wide Web.

"We're now in another significant paradigm shift which I call personal computing, sometimes referred to as consumer driven," continues Patterson.

"It's moving away from the model of IT as provider for everyone to the individual selecting the service and device to meet his needs. It's driven by social networking, mobility, and the cloud—access from anywhere and anytime, along with big data, the ability to amass huge amounts of data for analysis in a way not possible 10 to 15 years ago."

Patterson says the University of Michigan has a broad-sweeping initiative across the university called Next Gen Michigan. "This is our effort to move the university to the next generation of technology. To accomplish this, we are rationing and consolidating commodities and infrastructure support. Our goal is to bring costs down significantly so we can reinvest savings into next-generation technology."

One example Patterson cites is the installation of an energy-efficient modular data center, cooled with ambient air, which is significantly more cost-effective than the traditional data center—and it supports sustainability goals.

"Also in this data center we are housing a high-performance computer cluster that is used by our researchers to do data-intensive research, and this cluster is made available on demand," Patterson says. "We are transitioning everyone to the Google platform and Box.com, a cloud-based storage and collaboration system. This combination will enable our faculty, researchers, and students to share files and documents, to work together from any place in the world at any time."

Patterson lists three main challenges. "The biggest is keeping up with and ahead of demand," Patterson says. "We are trying to provide an environment that encourages innovation and then allows us to quickly adapt that innovation to our campus. We also want to introduce new technologies here more rapidly and move them quickly through the enterprise."

"Another challenge, frankly, is bandwidth. The environment in which people want to work requires a lot of bandwidth." ▶

Figure 1. Students at Indiana State and all campuses expect ubiquitous access.





"And the third challenge in this consumer-driven, cloud-based environment is protecting privacy and enabling security."

Patterson believes these challenges can be met. One of the main dynamics, she explains, is that the role of the IT professional is changing from that of service provider to that of service broker.

"Our overarching goal," says Patterson, "is that instead of just passively accepting or cooperating with new technologies, we want to build a robust infrastructure that both encourages and enables innovation."

#### From Lemons to Lemonade in Iowa

At the University of Iowa, Iowa City, a disaster provided opportunity for the IT department. Maggie Jesse, senior director, IT instructional services, explains, "A major flood, the school's biggest disaster, resulted in the loss of several university buildings. Instead of simply rebuilding, we applied for and received stimulus funds and determined to transform the buildings into interactive learning and student engagement centers."

Since this project began about three years ago, Jesse says a "huge focus" has been technology-enhanced classrooms that support active-learning teaching strategies in the classrooms. The concept, called transformed interactive learning and engagement (TILE), originated at the University of North Carolina and has been implemented at MIT, the University of Minnesota, and the University of Iowa.

"We believed that if we increased student engagement, we would increase retention, and that would translate into a substantial increase in revenues," Jesse explains. "Studies have shown that even a small increase in retention results in a good increase of revenues. We've shown that we have been very successful in leveraging

technology to improve learning and so accomplished our goals."

All sorts of different pedagogies and technologies go into the classrooms in which students in teams of three to nine sit at round tables and share laptops and other devices such as a flat-panel monitor, whiteboards, and projectors for screens either on the tables or the walls. So far, there are five of these rooms, with a sixth initiated this fall and the seventh coming in the fall of 2013. The smallest room holds 27 students and the largest 81.

"We have deliberately experimented with classrooms of different sizes to see which ones worked best and which ones not as well," says Jesse. "These classrooms are very expensive, so we are not trying to change every classroom, just provide a new dimension where it will be most helpful. The traditional style of teaching is not going to go away."

Some disciplines, continues Jesse, "such as STEM [science, technology, engineering, and math], are fully aboard, and some humanity and social science disciplines are moving in this direction." She adds that one facility that has incorporated this approach into much of its space is the new \$141 million library, with a 14,000-square-foot learning habitat with the new classrooms, informal study space, and large cafe. "You would not have found us there five years ago," Jesse says.

One amplification on the TILE model that Iowa has initiated has been the training of faculty, helping them make the transformation from lecturers to enablers. In addition to monitoring and controlling much of the technology in the new classrooms, they help the students interact with each other and become more collaborative.

Initially, faculty were set up in cohorts to work together and given three full days

of training. But, says Jesse, "That doesn't work, for they are too busy to take three days off. So we went to shorter workshops of three to four hours, with regular meetings." Now, Jesse says, there is a waiting list of faculty wanting to be trained. For the first five classrooms, there are 75 faculty.

In the works, but not yet accomplished, is translating the large lecture-hall format into the new classroom. But here also, Jesse acknowledges, there will still be a place for the former.

She adds that the transformation from traditional to high-tech learning, even on a selective basis, is not automatic, and it requires real leadership skills to lead the university community in this new direction. Orienting the IT staff in a new direction has not been as difficult as it might first appear, Jesse explains, because the IT department has never been made up exclusively of technical types. "We've had a lot of English majors or people with degrees in business or administration, who have had a fascination with technology," Jesse says. "They have been good consultants and system analysts, and we are providing ongoing leadership training."

#### Changes on Indiana State's Campus

Lisa Spence, EdD, associate vice president for academic affairs and CIO at Indiana State University, Terre Haute, says, "From my perspective, technology is about change, and change is what we're about, so it's a natural progression that we adapt to the many technology changes going on."

The two main technology changes going on at Indiana State, Spence says, relate to virtualization and cloud computing. In terms of virtualization, Indiana State has transformed from the old computer lab with rows of school-provided PCs and total hardware dependence to students working on their own devices from a remote



location. This increases both flexibility and access.

In cloud computing, Spence says they have selectively sought out opportunities that cut back on these costs by outsourcing to cloud providers instead of buying the hardware and software, evolving the applications, and running them themselves. Examples include customer relationship management programs and student e-mails. A central consideration for cloud computing, Spence says, "is that you have to make sure it's run in an environment as secure as if we were doing it ourselves."

Related to this, Spence continues, is cost. On one hand there can be obvious savings in letting a cloud provider store

your data and provide your applications. But, she asks, what happens if you want to make a change, and your cloud provider is not able to make it in as timely and efficient a manner as you like? Or if you decide you want to bring the service back in-house? Or if the provider has a breach of security or a loss of data or goes out of business? You have to consider not just the advantages, but also the worst-case scenarios to make sure your levels of security and quality are not compromised.

Spence says that simply having campus personnel meet with cloud personnel to work things out means involving a greater number of people to get things done, at least initially. And when services are

outsourced, someone must monitor the contract as well as the service levels.

The role of the IT professional is changing, Spence says, to become more adept at business management and analyses, ensuring the provider is going in the right direction, and adapting to new technologies while interacting with faculty, staff, and students.

Is the IT department viable for the future? "Technology will never replace the need for human relationships," says Spence, but no one can ignore the need to change.

Thomas G. Dolan is a freelance writer who specializes in technology topics.



**Introducing**

# CloudReseller

The Voice of **Enterprise Cloud**

**A monthly report on cloud communications  
for the enterprise.**

Visit us at [www.cloudreseller.com](http://www.cloudreseller.com) and [www.telecomreseller.com](http://www.telecomreseller.com)

## **TelecomReseller**<sup>TM</sup>

THE VOICE OF UNIFIED COMMUNICATIONS

NETWORKS • IP/IP-PBX • VOIP • SIP • SOFTWARE • SERVICE • MAINTENANCE



# Reinvent Your IT Frontline Capabilities

Jarod Greene  
John Rivard  
Gartner

As mobility, social interaction, information and the cloud converge, traditional IT service desks are becoming unsustainable. Some CIOs and infrastructure and operations leaders are reshaping their traditional, reactive and technology-oriented ITSDs into proactive business productivity teams.

## Key Challenges

- Many IT service desks (ITSDs) are failing to deliver business value commensurate with their costs. ITSDs are often unconnected to business goals, and focus on demonstrating their productivity, rather than enhancing business user productivity.
- Some leaders are transforming traditional, reactive IT support models to develop proactive, collaborative business engagement from the grassroots.
- The new approaches have significant differences in purpose, operating models, relationships with users, staffing and skills, and success criteria.
- Obstacles to the success of the new models include IT and business readiness, as well as leadership support.

## Recommendations

- Access the potential of the new IT business productivity team (BPT) support model for your organization.
- Work with business stakeholders to identify the business capabilities, functions or processes that would most benefit from partnering within the BPT framework.

## Strategic Planning Assumption

By 2016, 20 percent of IT organizations will have reallocated traditional IT service desk expenses to fund business productivity teams, which is an increase from fewer than 1 percent today.

## Analysis

IT leaders strive to deliver improved business user experiences by funding IT service desks that serve as primary points of contact between the business and the IT

organization. However, increasing business demands, technical and functional system complexity, and consumerization and mobility convergence have combined to outstrip the ability of many IT service desks to meet users' expectations. Therefore, despite a significant increase in IT expenses to fund ITSDs, many IT organizations still struggle to deliver adequate support, with stagnation (or declines) in user satisfaction levels.

How can CIOs and IT leaders rethink traditional approaches to business user support to make a meaningful change to the current experience? One radical approach emerging from Gartner client inquiries replaces the "us versus them" ITSD support model with a proactive, collaborative BPT concept.

## How the ITSD Model Is Failing

From the onset, traditional IT help desks were established to react to issues. As enterprise technology environments became more complex, user issues increased. In response, ITSDs focused on faster reaction, and achieving higher efficiency within the service desk resources. The ITSD value proposition rested on the fundamental assumption that fast resolution equals higher levels of user productivity and customer satisfaction.

As the concepts associated with delivering IT services to the business emerged, ITSDs remained positioned to deliver reactive service support by minimizing the impact of service incidents and outages on business operations. Through experience, ITSDs learned to identify common user issues and restoration techniques. They regularly guided users through those standard restoration procedures, including the well-known "reboot."

Most ITSDs reflect the overall lower levels of infrastructure and operations (I&O) maturity. The average Gartner ITScore for I&O (ITSIO) is 2.35; the highest score available is 5.0. Organizations at this level are exploring industry best practices, and starting to formalize support processes, but have yet to fully establish



efficient operational processes or optimize a tiered support structure. Being a level up from the reactive IT management mode, Gartner's ITSIO ascertains overall I&O maturity in four critical dimensions: people, process, technology, and business management.

ITSIO uses a 1–5 maturity scale, with 5 being the highest rating. Awareness, Committed, and Proactive refer to Levels 1, 2 and 3, respectively. These IT service desks seek to justify expenses by demonstrating incremental improvements of internal performance metrics that are not aligned with business goals and objectives. Rather than measuring higher levels of business-user productivity, ITSD metrics focus on internal call volumes, internal response times, internal cost per call, and internal productivity.

IT generally involves operational costs, rather than grow or transform costs, so ITSDs are often the target of expense reduction efforts. Run-the-business metrics are never about revenue; they're about reducing costs, cutting price-to-performance ratios and lessening risk. "IT Key Metrics Data 2012: Key Infrastructure Measures: IT Service Desk Analysis: Current Year" shows that, despite consuming an average of 7.9 percent of the overall IT budget, most ITSDs are not producing improvements in user satisfaction. Gartner also took a poll at the 2011 Data Center Conference (among attendees of the "Future of IT Service Desk" presentation) and asked, "Which would you indicate as your ITSD's biggest challenge?" A 27 percent plurality responded that providing high levels of customer satisfaction was their biggest challenge. In the worst of situations, the ITSD may be viewed as an inhibitor of business productivity, not an enabler.

The future looks no better for most ITSDs. The megatrends around mobility, social interaction, information, and the cloud are driving the consumerization and democratization of IT, which will provide flexibility

and functionality that shifts command and control from IT to the business user. IT organizations that do not adapt their support models to these trends will continue to ineffectively fund ITSDs that are incapable of consistently demonstrating value and will reinforce the notion that IT is failing to meet the needs of the business.

#### Defining a BPT

BPTs represent a departure from the traditional ITSD model. Whereas ITSD teams react to user issues, BPTs proactively promote productivity by enabling user self-sufficiency, understanding business processes and challenges, and proactively leveraging existing IT capabilities to improve business capabilities. By instilling BPTs with a broad understanding of business processes, they can quickly identify solutions for common business user challenges, ideally before the user realizes there's a problem. To do so, BPTs are radically different from current ITSDs: they have fundamental differences in purpose; operating model; relationship to users, staffing and skills; and success criteria.

Recent client inquiries indicate that some forward-thinking CIOs and I&O leaders are rethinking the traditional, reactive ITSD support model in favor of a proactive, collaborative business engagement BPT approach. Shedding the internal metrics, BPTs have a singular focus on business productivity as a fundamental objective of the IT-business relationship. Instead of providing only reactive support, BPTs transform the service model with proactive approaches that leverage user self-sufficiency and solicit user sentiment as a necessary feedback loop for future IT service enhancements. By 2016, 20 percent of IT organizations will have reallocated traditional IT service desk expenses to fund BPTs; this represents a substantial increase from the current level of fewer than 1 percent. Future BPTs will increasingly play

an advisory role in helping business users make informed technology choices and decisions based on their knowledge of business needs and practices.

#### The Four Key Differences

There are four key differences between traditional ITSDs and BPTs.

##### Difference No. 1: Purpose

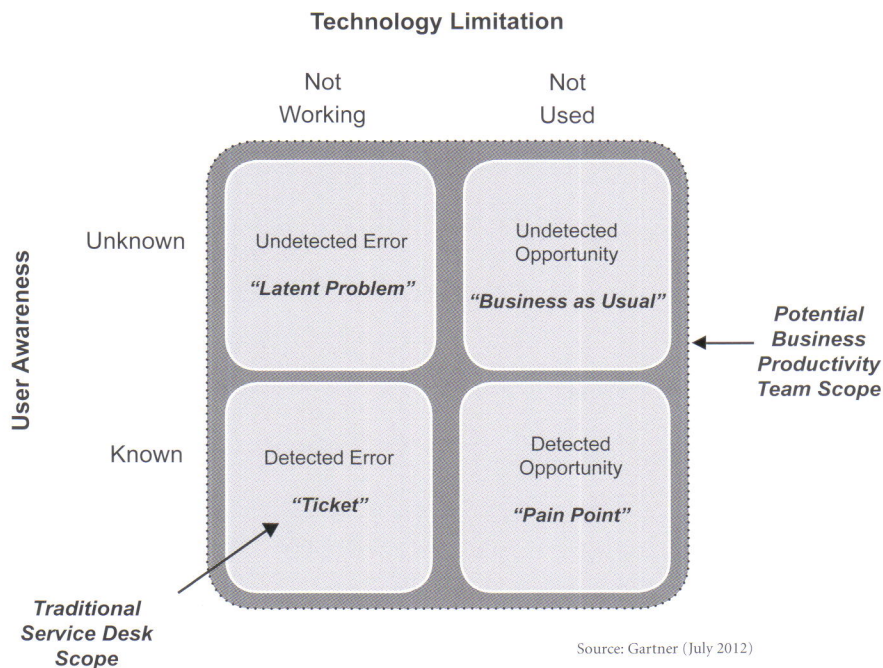
ITSDs exist to facilitate the tracking and closing of tickets captured as a result of user-detected issues, when IT services and systems are not working as expected. The relationship between IT and the business starts when the user contacts the service desk to report an issue. The relationship ends when that issue is resolved. An explanation of "user error" may be readily used to close a ticket and increase comfort across IT that systems availability remains unblemished. ITSDs typically take on an us-versus-them approach to providing IT support. Interactions are transactional, and business user experience can vary according to the ITSD analyst with whom they speak regarding a given issue. Rarely, if ever, is follow-up activity beyond a random customer satisfaction survey conducted to see whether resolution was actually completed or to determine the impact of that resolution on the business user's level of productivity.

BPT members should foster ongoing relationships across the various business process areas to deepen their own understanding, enable collaboration and engage in exploratory discussions. IT BPT members will often initiate the contact and solicit help from the business to better understand business challenges and current business operating practices. Improvements identified should be credited to BPT members and their business collaborators.

Although some BPT/business interactions may mirror an incoming service desk call,



Figure 1. Business Productivity Team Expands Scope of Opportunity



Latent problem situations occur when the user is unaware or has not reported a defect that can hamper business results. Beyond the system defect side, a potentially larger area for deriving value is uncovering the lack of use of existing technologies. With the increasingly diverse and complex set of technology solutions available, the likelihood that capabilities exist to address business "pain points" or improve "business as usual" increases. With each new system deployed, this likelihood increases. Adding these three focus areas is what differentiates a BPT from an ITSD in terms of scope.

Difference No. 2: Place (Operating Model) ITSDs are usually a co-located team in one of several purpose-built call-center environments. The ITSD operation is generally consistent with a business contact center model, where the focus is on the ability to consume high volumes of contacts by keeping transactions limited in scope. Unique tools are typically used to manage issues throughout their life cycles and integrated with IT infrastructure management tools to provide the end-to-end management of IT services. Call-center statistics (average wait times, average call durations, abandonment rates, etc.) are used in conjunction with ticketing statistics—first contact resolution (FCR), incident reoccurrence, incidents associated with changes, etc.—to track ITSD efficiency. Collectively, these statistics directly relate to value delivery. They are reactive in nature, and interactions are user-generated.

BPTs will be teams of individuals that engage the business where the business works. The BPT operation will mirror walk-in interaction and support models, such as Apple's Genius Bar or Best Buy's Geek Squad, in which business users take an active role in the support experience and provide BPTs that uniquely identify challenges and opportunities to improve user productivity. Tools will still focus on incident management, but will also incorporate elements of customer service and support to focus interactions on the needs of the

nonpeak call times could be leveraged to enable proactive BPT/business team interactions, including business area job shadowing, participation in business team meetings and replay of typical call/system interaction recordings, if available. The goal of these engagements is to understand the current business process and the use of technology. Following the initial assessments, identification of opportunities to leverage other technologies, or alter the current use to better facilitate the business process, can be made. One real-life example was the suggestion to provide larger screens and dual monitors to agents in call centers. This simple recommendation resulted in substantial reductions in average call times, with no application changes.

Reactive ITSD-like call transactions also represent broader opportunities when viewed from the perspective of enabling business productivity. These opportunities may range from targeted communications to improve user skills to new uses of unified communications (UC) capabilities. The

desired end result is the same — improve business results by better leveraging current technology investments. One example was uncovering user frustration with a new online procedure manual now in Microsoft Word that reportedly lacked the former system's search option. When users were shown the normal Word document search capability, they quickly dropped the newly adopted practice of paging and scanning and adopted the new system.

Figure 1 illustrates the expansion of purpose of a BPT relative to traditional ITSDs by looking at errors and lack of use as areas to improve. It also differentiates what is known to the user from that which is unknown. From this perspective, it becomes obvious that ITSDs limit focus to "tickets" for which systems are working improperly and are known and reported by users. Despite the high visibility, resolving tickets represents only a fraction of the overall impact that existing technology could have on improving business outcomes.



business user; the next, best action to take with the user; and tracking of the overall experience, preferences, usage patterns and engagement levels. Using this information, BPT analysts will identify improvement opportunities. Value delivery in this model will be seen in the ability to increase levels of business productivity and the ways in which BPTs are working to deliver solutions to the business. These statistics are proactive, and follow-up interactions to promote productivity are IT-generated.

#### Difference No. 3: Staffing and Skills

ITSD analysts retain broad knowledge of the IT infrastructure systems and services and leverage strong technical skills, as well as troubleshooting and problem-solving skills, to resolve or escalate issues effectively. Current ITSD analyst requirements rely heavily on phone and e-mail (verbal and written) communication. Increasingly, ITSD managers are emphasizing customer satisfaction skills, and hiring analysts with strong interpersonal skills and responsiveness. Emphasis is placed on end-user satisfaction, because 50% of a user's perception of IT deals with his or her experience with the ITSD. Therefore, improving ITSD experiences improves the perception of IT. What ITSD analysts often lack is a core business understanding, in terms of IT's role in enabling business processes and the impact of downtime on user productivity tied to business outcomes.

BPTs require personnel who have business understanding, technical domain knowledge and the customer service skills of ITSD analysts. BPTs demonstrate value to the business as a group of technical advisors capable of working with users to identify solutions to business issues. BPT analysts blend the ITSD capabilities with light frontline business relationship management skills that fall short of a liaison-level role. In contrast with relationship managers, BPT analysts should understand SLAs and why they're in place, but not be in a position to negotiate them. Initially, this increases the costs of labor, but the

potential return on investment makes the pilot well worth the limited risks.

To increase interaction, organizations must also leverage mobility and social media to enable BPTs to directly engage the business on a regular basis. IT organizations can look to customer support models, such as Apple's Genius Bar or Best Buy's Geek Squad, that focus on customer productivity enablement through education and promotion, rather than reactive support. Test out BPTs using a subset of ITSD resources aimed at supporting a targeted business area (such as VIP or executive support) or application(s)/service(s). Demand will determine optimal staffing levels and allocation.

#### Difference No. 4: Performance (Success Criteria)

A good day for the ITSD would be:

- User contacts with acceptable abandon, wait, and processing times
- All ticketing closed within targeted FCR and other SLA criteria
- User ticket surveys that meet their targets
- An acceptable ITSD cost per contact

The BPT's sole objective is to enable business productivity. This includes reactive ticket management, but, more importantly, it includes proactive suggestions to increase user efficiency by better leveraging existing system capabilities, advisory communication and training that reduces frequent user behaviors that do not produce the intended results. It should also capture potential system enhancement ideas for consideration in future release cycles. A good day for the BPT would be:

- Actions and recommendations reflecting a 5% year-to-date increase in user productivity
- All key business processes operating within acceptable parameters
- New requests arriving for BPT engagement in a post-system-release usage study

Success criteria for BPTs focuses on delivering value to the organization measured in end-user satisfaction and high levels of IT service availability, whereby BPTs handle the business productivity. For example, traditional ITSD metrics, such as FCR and cost per contact, should be reviewed inversely—where BPTs strive for automation and self-support of routine issues at lower costs, but encourage interaction for complex issues at higher costs. BPTs would demonstrate value in handling the complex, higher-cost issues more efficiently and would initially show low FCR and higher cost per contact, but deliver value back to the business by enabling self-sufficiency, and delivering stable and available IT services.

#### BPT Obstacles

##### Obstacle No. 1: Process (Lack of Maturity)

Developing a BPT in place of your ITSD at lower levels of I&O maturity presents a risk to IT organizations by selling a value proposition on which they are not in a position to deliver. Mature IT organizations (Level 3 ITSIO or above) should strategize to transform their reactive ITSD models to proactive BPTs. Plan to align with I&O maturity road maps for continual improvement. Organizations that have leveraged demonstrated service delivery capabilities derived from integrated service operations and transition processes, process-oriented roles and tools to assess end-to-end transaction response time measures for mission-critical applications will be in position to develop BPTs to demonstrate the proactive capabilities of a more mature I&O organization.

*Mitigation: Leverage Gartner's ITScore for I&O and associated research to attain Level 3 prior to creating a BPT.*

##### Obstacle No. 2: Positioning (Lack of Business Readiness)

For IT to adopt a new proactive support approach, business stakeholders must be prepared and supportive. Although busi-



## Advertisers' Index

★ Indicates ACUTA Corporate Affiliate

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.

- |  |  |
|--|--|
| <p>★ Adtran .....Advertorial 19-22<br/>Rene Lozano (866/273-6658)<br/>901 Explorer Blvd., Huntsville, AL 35806<br/>edu@adtran.com<br/>www.adtran.com/hed</p> <p>★ Avcomm Solutions .....Outside Back Cover<br/>Brent Kraus (866/998-9991)<br/>324 8th St., Aurora, NE 68818<br/>bkraus@avcommsolutions.com<br/>www.avcommsolutions.com</p> <p>★ AVST .....Inside Front Cover<br/>Doug Juntwait (949/699-2300)<br/>27042 Towne Centre Dr., Ste. 200, Foothill Ranch, CA 92610<br/>djuntwait@avst.com<br/>www.avst.com</p> <p>★ Microsemi/ PowerDsine .....17<br/>949/380-6100<br/>One Enterprise, Aliso Viego, CA 92656<br/>www.microsemi.com</p> <p>★ MICTA .....29<br/>Deb Weidman (888/964-2227)<br/>515 N. Washington Ave., Ste. 405, Saginaw, MI 48607<br/>debra.weidman@mictatech.org<br/>www.mictatech.org</p> | <p>★ Professional Computing Resources, Inc. ....11<br/>Bob Glover (616/554-0000)<br/>4635 N. Breton Ct. SE, Kentwood, MI 49508<br/>bglover@pcr.com<br/>www.pcr.com</p> <p>★ Talk-A-Phone Co. ....3<br/>Alex Kireyenka (773/539-1100)<br/>7530 N. Natchez, Niles, IL 60714<br/>info@talkaphone.com<br/>www.talkaphone.com</p> <p>★ Telecom Reseller Magazine .....35<br/>Doug Green (360/260-9708)<br/>17413 SE 28th St., Vancouver, WA 98683<br/>publisher@usernews.com<br/>www.telecomreseller.com</p> <p>★ VALCOM .....5<br/>Linda Bishop (540/563-2000)<br/>5614 Hollins Rd., Roanoke, VA 24019<br/>lbishop@valcom.com<br/>www.valcom.com</p> |
|--|--|

## Maximize Your Advertising Investment with an ad in the *ACUTA Journal*

For complete details contact Amy Burton, Director, Strategic Relationships

Phone: 859/721-1653 • e-mail: [aburton@acuta.org](mailto:aburton@acuta.org)

[www.acuta.org](http://www.acuta.org)

ness leaders may have expressed discontent with IT being “order takers,” they may not be immediately prepared to accept a new level of engagement. Their support is required as the members of the BPT move up the business skills learning curve toward creating an effective BPT.

*Mitigation: A targeted BPT trial in an area with strong business team support creates the “wins” needed to demonstrate the value of the BPT model to earn further organizational credibility.*

Obstacle No. 3: Promotion (Lack of Funding and IT Leadership Support)

After years of striving to minimize the ITSD as an IT cost, the concept of investing for business benefit may be difficult to

sell in the IT organization. Few IT leaders would look to their IT service support structure as a place to transform the IT business relationship. Even fewer would turn to the frontline IT resources. Without strong IT leadership and appropriate funding, the risk of a failed BPT attempt increases significantly.

*Mitigation: Your ITSD resources may not be your best or only source of BPT talent. Re-evaluate the roles and responsibilities of IT-business relationship managers in your organization and consider these individuals for BPT analyst pilot positions.*

### Bottom Line

Progress with traditional ITSDs has stagnated in many I&O organizations. Emerg-

ing trends, including consumerization of IT, are likely to further erode the effectiveness of traditional IT support models. As an alternative, some CIOs and I&O leaders are leaning on a proactive, collaborative approach that Gartner describes as a BPT. Being aware of the key differences and obstacles can increase the success rate for creating an effective alternative to the traditional ITSD support approach.

Thanks to Gartner for allowing us to include this article, which was originally published by Gartner in June 2012. For more information about Gartner, contact Perry Campi at [perry.campi@gartner.com](mailto:perry.campi@gartner.com).





# acuta

## 42nd Annual Conference & Exhibition

April 14–17, 2013

San Diego, California

Manchester Grand Hyatt

“

*“Networking opportunities abound at every ACUTA event. The events are small enough to network, but big enough for big ideas.”*

*Ric Simmons  
Deputy CIO & Executive Director  
Louisiana State University*

*“The ACUTA Conference was a wonderful opportunity for exchanging ideas with peer universities. I think I was able to help other attendees with an issue or two—and I know they helped me.”*

*Sheard Goodwin  
IT Expert  
University of Florida*

*“As travel budgets continue to shrink for both vendors and schools, the ACUTA Exhibit Hall continues to be an excellent place to obtain hands-on knowledge of many products and services. Second only to the educational sessions, the Exhibit Hall is the reason I authorize travel funds for my staff.”*

*Walter Czerniak  
Associate Vice President, IT  
Northern Illinois University*

## 104+ Smart Reasons to Come to Conference

### 3 Keynote Presentations:

- **Envisioning the New IT Organization**  
CIO panel moderated by John Gallant, founder of *Network World*
- **The Collision of Two Worlds, Mobile Voice and Mobile Data**  
Bob Friday, CTO, Cisco Wireless Networking Business Unit
- **Future Technologies**  
Don McMillan, PhD

### 37+ Educational Sessions:

- Communication & Collaboration Technologies
- Emergency Communications
- Finance
- Customer Support
- Legislative & Regulatory Issues
- Network Infrastructure & Management
- ... and lots more!

### 64+ Technology Companies in the Exhibit Hall:

- See the latest technologies
- Meet with multiple vendors who offer a variety of solutions
- Talk to company representatives who understand the unique needs of higher ed
- Win some *really* terrific prizes in the Exhibit Hall!



## And then there's the Networking...

*“Given today's innovative and demanding technology climate, I think every IT/telecom professional who cares about success should be at the ACUTA Annual Conference. The information that will be shared and the professional networking that will happen make this event one of the greatest values anywhere. I hope to see you there!”*

*Joseph Harrington  
Director, Network Services  
Boston College*

Register today! [www.acuta.org/sc13](http://www.acuta.org/sc13)



**Jabra®**  
YOU'RE ON



## Jabra® - YOU'RE ON

Jabra products open the door to a world of hands free, UC communication devices. Jabra's superior sound quality protects both your health and safety by providing Peak Stop™ technology that eliminates sudden sound spikes that can cause damage to the ears. Jabras devices adjust technology to lifestyle needs, and significantly improve ergonomics for both work and leisure applications. Jabra products are your workforce of versatility.

**avcomm**  
solutions inc.  
avcommsolutions.com

"As a trusted Gold Partner of Jabra, Avcomm specializes in developing customized headset programs and pricing based upon our customers specific needs. Call us today to customize a program that's right for you."

866.998.9991 • [www.avcommsolutions.com](http://www.avcommsolutions.com)