CHANGING THE CONVERSATION FOR CONNECTED 21ST CENTURY EDUCATION

HIGHER EDUCATION STRATEGY GUIDE

Higher education institutions continue to face ongoing challenges in establishing and maintaining an optimal learning environment that will facilitate a clear path to success for students. This paper provides clear strategies on how higher education institutions can cost-effectively increase the value of their communications networks to improve the educational process of the students, embrace and adopt new learning strategies, attract and retain students, and enhance the safety of the campus.

AT THE SPEED OF IDEAS™

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1. INTRODUCTION

Students today graduate from high school seeking a path to success, and they have many options to choose from, including traditional brick and mortar universities, online universities or the emerging hybrid universities that utilize traditional classroom settings combined with online enhancements.

These students are also "digital natives," where everything is within just a few taps of their fingers or clicks of the mouse. They are individuals that have never "dialed-up," believe that the main form of communication is text messaging, and the Internet is accessible wherever they go. They expect to be able to use the same devices for coursework as they do to read novels and view entertainment — in any location.

It is estimated that the cost of a university education has more than doubled since the 1990s. With the rising costs of higher education and today's graduates being more aware of their choices, higher education is under continual pressure to adopt new learning strategies utilizing digital technologies. To maintain headcount and recruiting levels, higher education institutions need to keep up with the technology race while controlling and reducing costs.

At the same time, the importance of providing a safe learning environment is more critical than ever before, creating additional financial pressure on today's campuses. Emergency planning and campus lockdown procedures are a good start, but they fall short when it comes to providing real-time information to those directly affected by the emergency, their family and friends, and outside emergency responders. Further, basic 911 can't pinpoint the location of callers and facilitate the exchange of critical data and video information.

This paper provides clear strategies for how higher education institutions can cost-effectively improve the educational process of the students, embrace and adopt new learning strategies, attract and retain students, and enhance the safety of the campus.

2. STUDENTS – PREPARING FOR SUCCESS

A great higher education means preparing students for future success and their ability to solve real-world problems. To accomplish this, today's advanced communications, tablets and smartphones can create a new learning environment by changing the conversation between students and instructors. Today, successful higher education institutions are radically changing how they communicate and interact with their students, by including the very same habits and technologies that students use outside of school.

Becoming a better student requires broad collaboration and interactive learning — with instructors, expertise and other students. By working with others and being more hands-on, students can learn more and gain real-world perspectives to capture their imagination. They can also extend their interaction and learning outside of the classroom. When instructors, students, staff, administrators and others work more closely together, the student benefits.

"Several major forces today have the power to transform the nation's colleges and universities. Those of us who work in higher education are already all too familiar with those forces: shifting demographics, new technologies, the entrance of commercial organizations into higher education, the changing relationships between colleges and the federal and state governments, and the move from an industrial to an information society. In addition, the convergence of publishing, broadcasting, telecommunications, and education is blurring the distinction between education and entertainment. A variety of knowledge producers will compete to create courses and other educational services, to develop new ways to distribute knowledge, and to engage larger audiences."

The Future of Colleges: 9 Inevitable Changes – *Arthur E. Levine, President of Teachers College of Columbia University*

An exceptional learning experience means digitally connecting with students. Consider the following points: Today's students have never known a world without the Internet, cell phones or laptop computers. "Google" has always been a verb, and text messaging is the de facto form of communication. These students regularly update their Facebook accounts and watch videos online. Dial up is last century, and they won't go near a retailer without a web site. By the time students start kindergarten, they already know how to find Disney.com on the Internet.

Classroom environments that embrace the technologies that students use in their everyday lives have a better chance of engaging students and preparing them for future jobs that demand tech-savvy employees. In order for that to be a viable option, campuses need to adjust their networks to allow those devices to connect securely and safely while enforcing their acceptable use policy (AUP).

Students always perform better when they know they are in a safe environment, and network safety is just one aspect to consider. Higher education institutions spend a lot of time, energy and resources to ensure a safe learning environment for their students, faculty, staff and administrative personnel. Planning, establishing and updating procedures are one part of keeping students and staff safe during emergencies. Campuses also need technologies to increase their awareness of an emergency as soon as it happens. Once detected, they must provide those impacted with real-time notifications and instructions on how to react to the situation. First responders also need access to information, such as the exact location of the caller, and access to voice, data and video communication that will help them improve their response coordination.

As institutions use technologies to provide a better learning experience, improve campus safety and increase student performance, successful institutions will also make sure that they reduce complexity and cost. These institutions will prioritize low total cost of ownership and operational performance to meet ever-increasing demand and include green technology in their technology selection criteria.

3. STRATEGIES FOR CHANGING THE CONVERSATION ABOUT STUDENTS

Higher education institutions need to address today's complex challenges by embracing strategies that transform the way students and instructors communicate and educate. Simply put, they need to change the conversation with students. To do this, today's educators need to balance their mandate to meet the technology and safety needs of their students with the realities of delivering a 21st century education experience while controlling costs. The following four strategies have been developed with these overlapping objectives in mind.

Figure 1. Key connected education solutions

3.1 Strategy #1: Enriching the educational experience

Desktop high-definition video conferencing and interactive multimedia help higher education institutions enrich the educational experience. They can do so by increasing the depth of exposure to needed expertise, both local and remote, facilitating and supporting research projects and accelerating success. Video conferencing breaks down distance barriers to resources, while interactive multimedia is a way to get students more involved.

Collaborative video conferencing can be used for a wide variety of purposes in the higher education setting, including:

- Giving students access to classes they would not normally have because of distance. For example, schools can use video conferencing to include online students and to extend teaching to satellite classrooms.
- Providing students with a broader knowledge base by connecting outside experts.
- Enhancing research opportunities by connecting students to research teams and resources outside the traditional campus setting.
- Increasing the timeliness, ease and frequency of contact for everyone.

Institutions are also discovering the value of using interactive multimedia to make students more active participants in the learning process. Interactive multimedia technology allows two-way interaction unlike traditional lecture formats. Schools can use interactive multimedia to:

- Facilitate student-centered learning where the student has more control over their knowledge acquisition and pace of learning
- Address the different learning styles and levels of preparation in a diverse classroom with the best multimedia approach
- Encourage student interaction, experimentation and collaboration with other students

3.2 Strategy #2: Adopting new learning strategies

Students today are "digital natives" and have never known a world without the Internet, texting or mobile communications. As a result, new learning strategies are required to educate students in the 21st century. Some of the most meaningful tools include the encouragement of student-owned devices, incorporation of digital textbooks and implementing interactive learning portals.

Many higher education institutions have already implemented a "Bring Your Own Device" policy. As a result, they need to continue to improve their ability to protect data and to ensure compliance with IT security and acceptable use policies. As devices proliferate, campuses will need to take additional steps to secure their networks to prevent unauthorized access and use.

Embracing digital textbooks offers many benefits beyond just cost savings. Once students have access to the Internet using eReaders and tablets, they can leverage social networking tools to collaborate on class projects and can more easily obtain large volumes of material from libraries, online newspapers, journals and magazines. Features such as presence, instant messaging and sharing of comments and notes make it easier for students to reach out to instructors and other students. In addition, eReaders promote ad-hoc study because of the ease of downloading digital textbooks.

Learning portals contain links to all types of learning resources and classroom materials that may be customized for a particular student. Through these portals, students can access exams, assignments, syllabi, calendars, recommended books and study materials. Additionally, conferencing and collaboration can be used to facilitate group projects and research to expand their knowledge and awareness. Some of the benefits of these portals are that they are accessible by mobile devices, they can facilitate collaboration and group study, and they promote student participation in instruction content and enrichment.

The paradigm shift to tablets, laptops and smartphones in the classroom does not have to compromise performance, security or acceptable use. Communication solutions offer the latest high-speed transmission standards, as well as automated security and acceptable use policy enforcement, so that connecting to the network is both reliable and safe.

3.3 Strategy #3: Providing a safe learning environment

Early awareness, close coordination and collaboration with first responders, and multi-vector, coordinated emergency notifications are crucial for higher education campuses to minimize injuries, destruction of property and loss of life.

Early awareness can help save the lives of students during emergencies where every second counts. By using high-performance, high-capacity IP networking technology for real-time applications, institutions can integrate communications systems with their access-control alarm systems, such as video surveillance cameras, door and window sensors, smoke detectors and high-volume air-conditioning (HVAC) building control systems. Events can trigger alert notifications that can be sent over the IP network to any number of devices. These notifications can include text and video feed from IP video surveillance cameras near the site of the alarm.

Close coordination and collaboration with first responders, such as local police, fire, rescue and emergency medical staff, are essential for speedy and effective resolution. However, the phone systems of most campuses only transmit the main phone number during a 911 call, not the exact location of the 911 caller. Enhanced 9-1-1 (E911) service provides the exact location of where the call originated and can immediately notify internal staff that a 911 call is in progress. E911 solutions can also integrate with devices that extend beyond traditional telephony, such as Land Mobile Radios or walkie-talkies. In addition, they can provide access to voice, data and video communications that can improve the first responders' understanding of the emergency situation, as well as communicate evacuation and next-step information to campus leadership.

Multi-vector, coordinated emergency notifications help send instructions, such as how to exit safely, to the right set of individuals, across campuses or localized. To reach as many individuals as possible, these notifications need to enable communication on a broad range of devices, including:

- Personal mobile phones using voice mail or SMS
- E-mail
- Digital signage — LCDs/LEDs in common areas
- Campus intercoms — either analog or IP-based
- Instant message.

3.4 Strategy #4: Controlling and reducing costs

Like all enterprises of today, higher education institutions, along with their associated boards, are looking to control expenses. They need to look at solutions that lower the overall total cost of ownership and are power efficient, but still flexible enough to adapt to increasing technology adoption.

With limited budget and IT staff, communications solutions for higher education must offer a simplified architecture and reduced complexity that can be managed easily by only a few network administrators. The infrastructure total cost of ownership must lower acquisition costs by as much as ten to forty percent in order for the technology to be considered a worthwhile investment.

Power-efficient technology solutions reduce energy consumption which, in turn, lowers costs and minimizes negative impacts on the environment. Going green by applying efficient power and cooling solutions lets institutions reduce their infrastructure operational costs and energy bills, purchase less hardware and consolidate physical space.

If an incident occurs in a classroom, an instructor can signal a panic alarm over the network to security staff and administration to instigate lockdown procedures. Users can dial by function to instantly reach "Security" or "Nurse," and the communications system can dynamically find the right person to respond. Or, if the instructor dials 911, emergency responders will know exactly which classroom is experiencing the emergency, and internal staff will automatically know that there is an incident.

In addition, emergency notification can provide visual displays of floor plans, schematics and video surveillance feeds that deliver a real-time, visual understanding of the emergency situation.

4. ALCATEL-LUCENT: CHANGING THE CONVERSATION IN HIGHER EDUCATION

Educators continuously strive to excel in their research efforts, while preparing students to launch into their careers with new teaching methods, techniques and technologies. Alcatel-Lucent Enterprise has successfully supported a number of educational institutions worldwide in meeting those demands by delivering a range of communication and network solutions, including its latest application fluent network vision.

4.1 Enriching through conferencing and collaboration

In the 21st century, more and more daily interactions will be accomplished through conferencing and collaboration techniques. Today's students are already used to using electronic media to engage friends, family and outside resources. Education institutions can easily implement those capabilities on their campuses and many already have. Alcatel-Lucent My Teamwork software, part of the Alcatel-Lucent Unified Communications suite, is a full-featured conferencing and collaboration tool with access across any network, from any location within or outside a campus. One of its core capabilities is the ability to support full multimedia collaboration, as well as conferencing to eliminate the need for outside conferencing services. Additional key capabilities include:

- Presence-based instant messaging and calling, audio and web conferencing with scheduling, recording and desktop/application sharing
- integrated peer-to-peer video and multiparty video conferencing
- Support for mobile devices and smartphones

In addition to My Teamwork, the Alcatel-Lucent video collaboration suite encompasses a complete range of high-definition video solutions to fit any need, from personal to full-scale lecture capture and telepresence.

For the ultimate visual display, the Alcatel-Lucent Interactive Whiteboard solution allows students and instructors to create, review and annotate objects, while sharing in real time among all participants. Users can also write and save notes directly into applications such as Microsoft Word, Excel or PowerPoint, Adobe Acrobat and AutoCAD. The professor can also record and save the lecture, posting the link to Blackboard or other learning management systems. Transforming the learning experience and encouraging collaboration will lead to increased effectiveness, efficiency and performance for the students.

One university has been able to personalize the experience of their students by offering them access to their class schedules, campus alerts and maps, online conversations and outside resources through the Internet, including real-time sharing with the instructors and other students, both in and out of classrooms.

Abilene Christian University (video), a university with an enrollment of 4,500 students in the fall of 2011, has been able to successfully enhance their campus by creating a personalized, virtual experience, joining together traditional classroom settings with Internet and social media access.

4.2 Bringing your own device to campus

Network technology today can easily allow campuses to support students, instructors, staff and administrators to bring their own devices to campus safely and securely. The Alcatel-Lucent Safe Network Access Control (SafeNAC) solution is a comprehensive NAC solution that enables a campus to safely provide controlled access to its network (LAN, WLAN and VPN) and applications. This solution ensures endpoints are free from malware and conform to the institution's acceptable use policy, and it increases an institution's ability to demonstrate security compliance.

Safe Network Access Control continuously monitors the campus network and automatically controls remediation of endpoints. It provides support for a multivendor network without disruption to existing network infrastructure.

One educational institution that understood the value of accepting the "Bring Your Own Device" concept found itself challenged with managing network and data security, exercising a lot of manpower to connect those outside devices to their wireless LAN. After implementing the Alcatel-Lucent SafeNAC solution, they created a number of efficiencies including:

- Full enforcement of their secure access and acceptable use policy for all new endpoints
- Dramatic reduction of support calls
- Remediation of endpoints "on the fly" without having to restrict access to users
- Central management and administration all of these activities.

4.3 Keeping the campus safe

Providing a safe learning environment is a primary focus for all educational institutions. While we all wish the Virginia Tech incident[1] was a single occurrence, the reality is that it isn't. The recent incident at Santa Monica College[2] in California is enough to keep us on notice. Alcatel-Lucent is changing the conversation in this space by creating mass notification systems that leverage devices you own, over infrastructure you control. This solution set includes:

- Audio alerts to telephone handsets, as well as outdoor and overhead speakers
- Video alerts to digital signage and public TVs
- Audio and visual notifications to first responders, and select members of the administration, whenever 911 is called, including a graphical location and full recording of the emergency call
- Computer screen pop-ups for students, faculty, staff and administration whenever the institution needs to communicate emergency information
- Alerts to student mobile devices

The Alcatel-Lucent Safe Campus solution is a blended solution combining the features and functionality of the IP-PBX, My Teamwork's Conferencing and Collaboration, Wireless LAN and the Alcatel-Lucent Enterprise Alert E911 application for enhanced 911 support. With safety and security device alarms integrated into the full solution, education administrators and staff will be able to gain awareness, coordinate responses, deliver notification and share information with first responders and law enforcement, thereby creating a safer campus environment for all.

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[1] http://www.nytimes.com/2007/04/17/us/17virginia.html?ref=virginiapolytechnicinstituteandstateuniversity
[2] http://latimesblogs.latimes.com/lanow/2011/08/report-of-gunfire-at-santa-monica-college-campus-on-lockdown.html

On one college campus facility, a man displayed a handgun at their northwest campus. The local police and sheriff's department responded to the scene. The campus had recently installed an emergency notification system using the OMNIPCX combined with a notification system.

The system was activated by the campus police department, and alerts were sent to all telephones on the campus in response to the emergency event. Thankfully, no one was hurt in the event.

4.4 Maintaining a pulse on campus

It may seem unusual to speak of brand awareness or brand protection in the context of educational environments, but more and more campuses are becoming virtual, giving choices for students and families to receive their education.

Of course, students love to compare notes and openly comment about their experiences, and they do so on a myriad of social networking sites, including Facebook and Twitter. By keeping a pulse on the comments and feedback provided by the students, higher education institutions can have an awareness of the students' attitudes and determine in which areas the institution is doing well and which areas may need adjustment for the highest performance of the students and their success.

Now, more than ever, higher education institutions need to address, immediately, any and all negative or untrue statements posted in to social networking sites lest they incur irreversible damage to their image or their brand.

The Alcatel-Lucent Social Engagement software solution enables the campus to manage the multiple channels of social interaction into one conversation for a more complete view of the campus pulse.

4.5 Going green and managing costs without compromise

Throughout this paper, we have highlighted several ways in which Alcatel-Lucent has successfully changed the learning experience within today's education environment. In order to be able to deliver these services, a campus needs to have a high-performing, high-bandwidth network. Alcatel-Lucent's portfolio of network capabilities has been able to deliver those needed capabilities while reducing the overall total cost of ownership for those campuses. As a result, the Alcatel-Lucent Enterprise Data Center Switching Solution won the 2011 Best of Interop award in the data center and storage category presented by InformationWeek Analytics.

"The ever-expanding IT environment found in today's increasingly virtualized data centers is truly in need of forward-thinking concepts like Alcatel-Lucent's new Data Center Switching Solution."

– Steven Hill, Lead Judge,
  Best of Interop 2011

Some of the benefits our customers enjoy with demonstrated areas of cost savings include:
• Higher performance with a smaller footprint – providing more rack space
• Reduced power consumption by as much as 40 percent – lowering total cost of ownership
• Less waste heat and smaller UPS requirement – which lowers cost of operation

One university Director of Information Technology and Design was able to minimize the number of staff supporting his network across 26 buildings for 10,000 users to only two individuals. Another IT Director at a different institution estimated that savings on energy consumption alone would be approximately $550,000 over five years.

Reducing the ICT cost structure of a given campus will provide additional flexibility to anticipate further enhancements to transform the learning experience. With the tremendous pressure on today's network infrastructure from virtualization, applications and mobile devices, Alcatel-Lucent has the solution.

5. CONCLUSION

Higher education institutions have an incredible opportunity to change the conversation in a way that enriches the educational experience and better engages students with new learning strategies in a safe, productive and cost-effect way. Breaking down distance barriers in education and addressing the digital disconnect in classrooms motivates students to do their very best. Advanced communication solutions improve emergency response, protect data and promote compliance with campus policies. In addition, institutions can meet these objectives while managing their costs and still keeping up with ever-increasing demand. By adopting key strategies and implementing an application fluent network, institutions can look forward to hearing "Wow! That experience really helped me be successful".

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