

Communications Technology Trends in Higher Education



The technology and bandwidth needs of colleges and universities are growing exponentially to meet the demands of administrators, educators, staff and students in a wide variety of applications.

Introduction/Overview

Technology trends are greatly impacting higher education today and changing the landscape for the years ahead. Though this is an exciting transformation, it also comes with challenges. Higher education institutions must keep pace while maintaining security and staying within budget.

Key trends in communications technology for institutions of higher education include:

- **Expanded opportunities for enhanced student learning** — engaging students with virtual education technologies, multimedia and collaborative tools both on and off campus
- **Growth of BYOD (bring your own device) on campuses** — enabling multimedia communication across devices with more robust connectivity and data security
- **Communication and collaboration between faculty and students** — increasing staff and instructor productivity with better tools
- **Technology's role in keeping campuses safe and secure** — using a more proactive approach to both warning and emergency response
- **Transporting and storing data files** — improving the security of personal data as well as proprietary research

Technology is transforming curriculum, classrooms, interaction and safety. In order to keep up with “always on” demands, technology needs to do more than ever before both on campus and off. This white paper will explore these key trends and help higher education leadership and IT administrators address the challenges that come with them.

Institutions must meet these needs with ever-shrinking budgets. Efficiency is the key to improving student experience and improving faculty and staff productivity with technology, and thanks to integrated technology and cloud solutions, that's no longer such a tall order.

Smartboards, e-learning, telepresence, virtual communications technologies—the future of higher education is here. Data networks are in demand and under stress 24/7. How does your school's technology stack up?



Expanded Opportunities for Enhanced Student Learning

Higher education has escaped the bounds of traditional brick-and-mortar campuses and quickly grown in scope to include new models of education. Real-time (synchronous) and anytime online instruction, gamification and project-based learning are just a few of the new opportunities for students seeking a college degree today. All of these new methods of teaching and interacting require one common thing: up-to-date technology.

Technology Developments Worth Noting

- **Video chat and instant messaging** – Interaction between instructors and students has changed dramatically in recent years. Long gone are the days of strict, in-person office hours. Students can now not only email instructors, but instant message them and videoconference with them. Office hours have gone online and become virtual meetings that can happen anytime and in any place with an Internet connection. This also includes online tutoring, virtual meetings between students for group projects and additional one-on-one instruction from educators.
- **Course supplements** – The tools instructors use to educate students have also expanded beyond books and lectures. Technology has allowed educators to use pictures and videos to get lessons across through websites like Moodle and Blackboard. These sites also enable students to contribute to the conversation by uploading their own media. Communication is now a multimedia experience.
- **Expanded locations** – Classrooms and auditoriums have their place, but they are no longer the *only* place students can receive higher education. Web-based platforms enable instructors to interact with students, and students to interact with one another, outside of the traditional classroom setting. This has facilitated remote learning, virtual (anytime) lectures and digital assignment delivery. Maybe most importantly for more tentative, introverted students, virtual classrooms encourage discussion by eliminating the social pressure that accompanies raising their hand in-person.
- **Interactive textbooks** – Classrooms aren't the only things that have expanded beyond traditional educational boundaries. Textbooks have also broken those bounds. Not only have e-books become powerful educational tools, but

supplemental digital material now extends the education experience. In fact, according to a recent survey conducted by CourseSmart and Wakefield Research¹, college students find the interactive textbook to be their most useful technological tool. Nearly 30 percent of students surveyed listed their laptop as the most important item in their bag, while only 10 percent listed their physical textbook.

Keep Online Learning Focused Around Mission

Today's higher education institutions and students can especially benefit from online learning. To get the most return on investment, however, leaders should keep their online learning programs focused around their institutional mission.

To avoid chasing market trends, get clarity on your intended audience. Then develop an organizational model for your online learning program that aligns with your mission. This could mean your entire campus is online, each department has an online program or you have an entirely separate institution dedicated to online learning.



¹<http://www.coursesmart.com/media#pr9214>

Growth of BYOD on Campuses

The number of mobile-connected devices exceeded the world's population in 2014.² The shift to mobile communication is most apparent on college and university campuses worldwide as young people adopt newer, faster and more innovative technology.

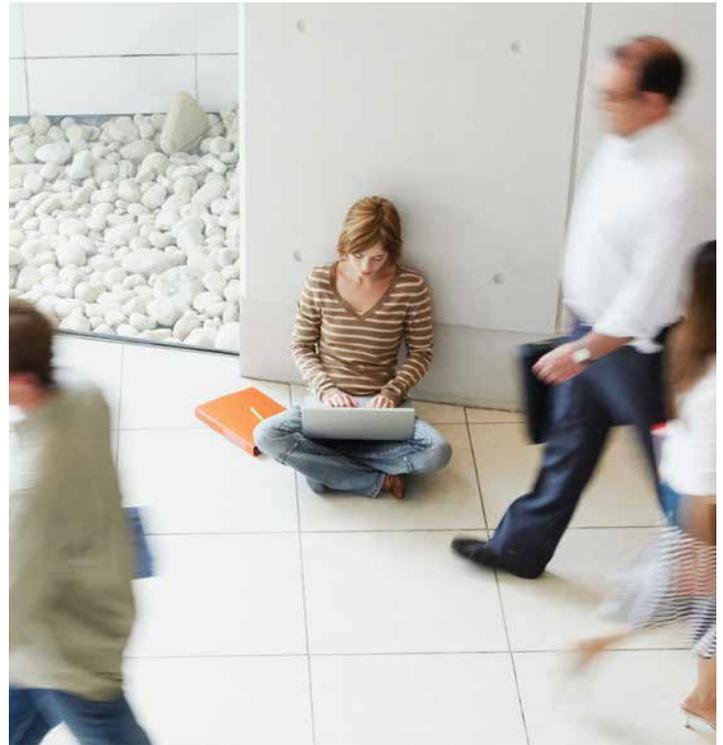
Classroom instruction just scratches the surface of higher education today. Learning can happen anywhere there is an Internet connection. Higher education institutions have virtual extensions through a growing number of devices on campus. The endless amounts of information that are passed through smartphones, tablets and laptops connect instructors to students and students to one another—and ever more bandwidth is required to enable it all.

Education isn't the only thing happening through devices on campus, however. Students and faculty also watch TV, chat with each other and play games from their devices. The demand for network resources is growing. Creating an accessible but secure network that can accommodate the increasing BYOD trend will foster learning, increase engagement and ensure campuses remain cutting-edge enough to continue attracting new students.

Important Statistics to Know

The Ipswitch Network Monitor recently conducted a survey that uncovered some startling statistics around BYOD on campus today³.

- 67 percent of students have between 2-4 devices connected to their campus networks.
- 63 percent of students noted their top campus network concern was slow Wi-Fi connection time.
- Only 27 percent of students could correctly identify what the "D" stands for in BYOD, and a mere 23 percent of students were aware of a campus-wide BYOD policy.
- 94 percent of students surveyed use their wireless devices for coursework.
- 63 percent spend 1-4 hours a day streaming media (e.g. Netflix and YouTube).



Planning for the Bandwidth Burden

The demand for network services is only growing. It's now critical to plan for the BYOD influx, invest in the infrastructure to handle it and learn to support this more connected culture on campus. As your IT department creates their strategy and sets their policies, they should consider the following:

- Who is connecting to the campus network?
- What types of endpoint devices are connecting (tablets, smartphones, gaming consoles, IPTV, etc.)?
- What specific applications will be allowed and which will be prohibited?
- Who is using the devices and what are the remediation policies for unrecognized profiles?
- Which operating systems will the school support?

²http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html

³<http://web.archive.org/web/20141026075710/http://www.whatsupgold.com/resources/press-releases/byod-2014/Ipswitch-BYOD-Survey-Report.pdf>

Communication, Collaboration and Campus Security

Advancing Your School's Objectives With Improved Technology

Communication and collaboration happens both inside the classroom and outside. Voice communication, email, chat, videoconferencing and web-based platforms enable staff, educators and students to connect and collaborate anytime, anywhere.

Every institution relies on a network of traditional voice lines to operate every day. But to advance a school's objectives, the education environment requires many more communication tools than just telephony. Here are four increasingly important technologies to consider:

- **Instant messaging** – Instant messaging is a quick and efficient way to share information. It allows instant communication and cloud-based file sharing that can drive collaboration, communication and teamwork.
- **Mobile access to campus resources** – Millennials spend more time browsing the Internet on their mobile phones than on their desktops⁴. Secure mobile access to online services is essential to attract and retain today's students and top educational talent.
- **Web-based enrollment** – Whether enrolling in the school or enrolling in a class, if the web-based platform can't handle increased usage or the user interface is outdated, students suffer. Equally as bad, the institution loses face in a market of increased competition for new students.
- **Online curriculum** – Flexible online learning programs meet students where they are. Whether they're taking classes at home or learning from an online supplement to a traditional classroom lecture, students need up-to-the-minute connection and user interface.

Better technology will help attract new students, retain existing students and provide a learning environment that meets modern needs. They also increase productivity across departments, enable secure communication and boost network resiliency.

This also means, however, that college and university data networks experience high volume 24-hours a day across campus. Consider dedicated data lines to help ensure high speed no matter the data volume.

Technology's Role in Campus Safety and Security

Student and staff safety is top-of-mind for most leaders in the higher education space. Incidents of violent attacks and natural disasters have increased in recent years, prompting a more proactive approach to both warning and emergency response.

A recent survey by the National Campus Safety & Security Project⁵ found the following:

- 85 percent of the colleges and universities surveyed had an emergency preparedness plan.
- Only 25 percent of respondents reported that an audible broadcast could be communicated in all the residence halls or in all their academic and administrative buildings.
- 93 percent of public 4-year institutions have security cameras, compared with 85 percent of public 2-year colleges and 81 percent of independent institutions.

Emergency notification helps prevent injury and loss of life—when it is enacted in time. The average active shooter incident lasts 8-12 minutes⁶, and every second counts when it comes to warning students and staff.

A campus's Emergency Communications System (or Critical Response Notification system) might be the most significant use of today's technology. Done right, it can unite the following into a comprehensive warning system:

- Telephone
- Fire alarm
- Text messaging
- Instant messaging
- Email
- Public address
- Digital signage
- Warning siren

This system can send mass warnings simultaneously through each individual system through a single mouse click. It can be used to disseminate critical information in the case of attacks or natural disasters.

⁴<https://www.domo.com/news/press/tomorrows-workers-want-mobile-but-are-employers-ready>

⁵<http://www.nacubo.org/Documents/Initiatives/CSSPSurveyResults.pdf>

⁶http://www.campusafetymagazine.com/docs/details/how_to_plan_for_active_shooter_incidents/technology

Transporting Data Files

College and university data networks experience high volume, all day, every day, all over campus. Even the strongest network can get bogged down by faculty and graduate research, hefty workloads, transferring huge files and the use of multiple applications and systems at once.

With the amount of data requests campus networks receive each minute, higher education institutions increasingly need secure, private networks that also improve high-speed Internet performance. Especially if they are conducting sensitive data transfers between servers.

Most schools need extra help to protect student records, financial information and intellectual property during data transfers, at minimum. Cybercriminals are becoming more adept at nabbing sensitive information as it moves through the system. But faculty, staff and students still need ready access to this data on a daily basis.

Data that hackers often target within the higher education system include:

- Personal information
- Medical records
- Payment information
- Research
- User credentials
- Intellectual property

Add to this the BYOD issue, and colleges and universities face a huge challenge today. Often sensitive information is stored on devices, and when a device is lost, sensitive information can be exposed. Thanks to cloud technology, however, this problem is decreasing as information is stored more often in data centers versus on a physical device.

Enhancing on-campus data safety starts with establishing a more robust system for protecting data files during digital transport. The right solution will keep a campus's network strong and fast, while providing better security.



Increase Security With a Private Network

Data breaches at higher education institutions everywhere are on the rise. In 2015 alone, the following universities all suffered hacks that compromised the personal information of students, staff, educators and alumni⁷:

- Penn State
- Harvard University
- University of Chicago, Auburn
- University of California, Berkeley

Many institutions have networks as complex as any corporation, but few invest in the same privacy protections that corporations do. An IP-based Virtual Private Network is one way higher education leaders can create more secure, private data transport for sensitive information. It enables a secure connection.

⁷<http://www.pri.org/stories/2015-08-06/cyber-ed-how-higher-education-re-evaluating-growing-threat>

Planning Considerations for Communications Technology

Higher education institutions need a trusted technology partner today more than ever. That trusted partner should:

- Understand the higher education environment.
- Have experience working with colleges and universities.
- Offer a full portfolio of solutions to meet all data and communication requirements.
- Back up its products and services with expert maintenance and support.



Frontier: Experts in Higher Education Technology Solutions

Frontier provides technology solutions that help university leadership and IT administrators not only provide quality education, streamline administration operations and facilitate quality learning, but also keep professors, staff, students and their partners connected.

Our portfolio of technology solutions for higher education includes:

- **Wi-Fi solutions** – Frontier's Managed Wi-Fi solution provides campus-wide broadband wireless Internet

coverage for a variety of devices including laptops, netbooks, tablets and smartphones. Our wireless networks enable multiple voice, video and data solutions for students, faculty, staff and administrators.

- **Voice and communication equipment and services** – A VoIP solution can ease your facility's budget concerns and improve the quality of calling services. We can provide the network, installation and equipment needed for campus communication, and all support is provided by locally based tech support teams.
- **Secure data networking** – Whether you have multiple campuses or need a secure connection with another institution, IP VPN provides a cost-effective, virtual, private network in which to transfer and receive sensitive information. Frontier can design a solution to provide the security and privacy of a private network at a cost comparable to using a shared network infrastructure.

Frontier Provides End-to-End Solutions

Our sales executives are experts in higher education and the technology solutions institutions need to compete in today's marketplace. Frontier's growing portfolio of solutions for colleges and universities help higher education leadership connect their campuses, enable collaboration, engage students and improve data security.

When it comes time to upgrade communication and networking systems to meet today's reality, set up an appointment with one of our experts. We'll help you meet those challenges head-on while working within your budget constraints and providing you with a well-rounded solution that's perfect for your campus.

To find out what Frontier can do for your college or university, please visit us at frontier.com/businessedge.

