

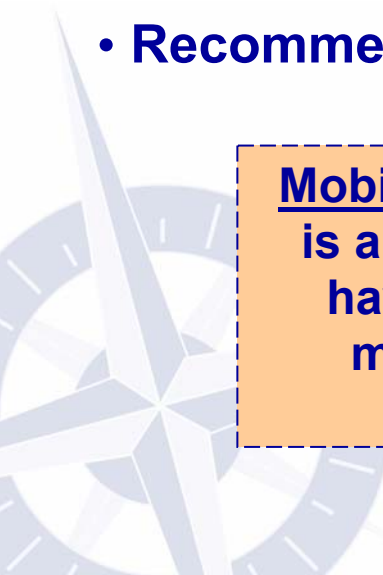


Exploring Higher Education – Mobilizing The Learning Experience

Stephanie Atkinson
Managing Partner & Principal Analyst
satkinson@compass-intelligence.com

Mobility is

- Mobilizing Bandwidth
- Mobilizing E-Learning
- Mobilizing Security/Surveillance
- Mobilizing The Student Experience
- Mobilizing Instruction
- Mobilizing Recruitment/Training
- Mobilizing Backup and Recovery
- Recommendation for IT Professionals



Mobility: Is more about portability and remote access than it is about wireless devices and networks. Mobility includes having access to information and communications from multiple locations, for convenience, and for increased flexibility.

Mobilizing Bandwidth

FACT: University and College Bandwidth is more than doubling on an annual basis

- Higher Education Institutions will spend just over \$9.1 Billion on telecom services and equipment in 2006 and bandwidth is a major growing component
- More than half of all colleges and universities in the U.S. are currently using WLAN or hotspot technology for student, administration, and college employee communications
- Mobility is becoming a huge factor for colleges and universities at multiple levels
 - For classroom instruction (Online learning, Web-based instruction)
 - For physical security and surveillance
 - For person-to-person communications
 - For gathering locales and University “Commons” areas (Hotspots)
 - For administration
 - For leisure and retail activities
- The primary issues and concerns for bandwidth and mobilized bandwidth include security of the network (viruses, hacking, spam), control/mgmt of recreational traffic, and overall IT management of devices and networks.

KEY STATs: An estimated **\$1.3 billion** will be spent on wireless voice and data services by U.S. Colleges and Universities in 2006. This represents an estimated **56%** of total Education wireless spending.

Mobilizing E-Learning

FACT: Online and web-based instruction is becoming a growing trend in colleges and universities, and thus network and communications needs are a big expenditure.

- AKA web-based learning, computer-based learning, virtual classrooms, and digital collaboration
- E-learning courses can be live, instructor-led, interactive educational events that are enabled through the Internet.
- This requires creative educational content that is also secure and reliable. Tools include:
 - Graphics and Creative Presentations/Online documents
 - Audio/Video tape
 - CD-ROM
 - Audio/Video/Web conferencing
 - Interactive TV
- This includes the use of the Internet/Intranet/Extranet, satellite broadcast, and interactive television.

KEY STATS: The Higher Education segment is expected to spend roughly **\$5.3 billion** on applications (Including mobile, software, and content) in 2006. This will grow to **\$6.7 billion** by 2010.

Mobilizing Security/Surveillance

FACT: Colleges and Universities are implementing physical and network security to protect students, administration and faculty

- Surveillance and security is now being implemented over IP and over mobile networks in places such as parking lots, general gathering areas, and in recreational/sports facilities.
- Hotspots and Wireless local area networks are being used for more than just accessing the Internet. Schools are leveraging this existing network for things such as surveillance.
- Requirements or requested features include:
 - Event Recording
 - Digital Encryption of Captured data/video
 - Dome Protocols – to get better views of campuses
 - Alarm notification – via email, phone, and other means
 - To deter theft of equipment and school property
- Surveillance systems generally include the network, video monitors, video cameras, integration into the network, Internet access, alert notification, and remote access.

KEY STATs: Based on a Compass Intelligence survey of Higher Education IT decision-makers, security (especially data security) is one of the **top 3 investment priorities** in 2006. This is expected to remain a trend over the next several years.

Mobilizing The Student Experience

FACT: Student, Administrators, and Educators are using technology to improve and enable the student experience.

- Colleges and universities are utilizing the Web, Internet, and Mobile applications at an increasing rate, and this is expected to continue over the next 3 to 5 years.
- This trend puts greater strain and requirements on the network, security, and usability of solutions.
- Ways that the Student Experience is Improving through Mobility Include:
 - Student Portals for assignments, class materials, and notes
 - Administrative Portals to enroll, sign up for classes, get grades, and more
 - Hotspots to facilitate mobile and remote communications and network access
 - Interactive lectures and more creative learning environments
 - Mobile and remote access to educational content and research
- The more mobile and interactive the educational content, the more the campus will attract students and enable a better learning environment for the changing dynamics of students.

KEY STATs: There are an estimated 17 million students in the Higher Education segment in the United States, of which 76% attend public colleges and universities.

Mobilizing Instruction

FACT: The Web, Internet, and Mobilized Networks are becoming a driving force in lectures, access to educational information, and the overall learning experience.

- Portability and access from anywhere are key drivers of mobilizing lectures, educational content, and even administrative functions for students, educators, and administrators.
- Trends such as web-based learning, mobile application and portal content, as well as more interactive lectures that require a laptop have all increased the need for mobile networks.
- Mobility in the Classroom may include some of the following:
 - Wireless/Mobile Laboratories
 - Wireless laptops or notebooks
 - Mobile phones/PDAs/smartphones with data access
 - Student and Educational Portals
 - Interactive lectures that are enabled via the Internet and Mobility
- Streaming video is also a growing trend that will require greater bandwidth and increased mobile access on and off campuses.

KEY STATs: U.S. Colleges and universities are expected to spend an estimated \$9.1 billion on telecom services and equipment. Annual growth is expected to range from 3% to 7% over the next 4 years.

Mobilizing Recruitment/Training

FACT: Web-based instruction and training is reducing overall training costs and can be performed in multiple locations and even conducted at home.

- Continuing education and training courses for administrators, faculty, and educators can be truly enhanced through a mobile environment and through web-based instruction
- Other technologies such as video and web conferencing can facilitate training for individuals in multiple locations, on varying campuses, and remote buildings.
- The following can facilitate training for faculty:
 - Wireless Laptops and Instruction
 - Video Streaming/Video Conferencing/Web conferencing
 - Web-based/Internet based instruction and training
 - Interactive CD-ROMs and instructional videos
- Recruitment can also be improved through more creative and interactive web sites, administrative websites that can be accessed remotely and through mobile devices, and other solutions to improve the quality of educators and faculty.

KEY STATs: Higher Education spending on IT personnel continues to DECLINE between 3% and 5% per year. IT personnel spending will fall to \$4.3 billion by 2010. Training will be a crucial area for stability for all higher education employees.

Mobilizing Backup & Recovery

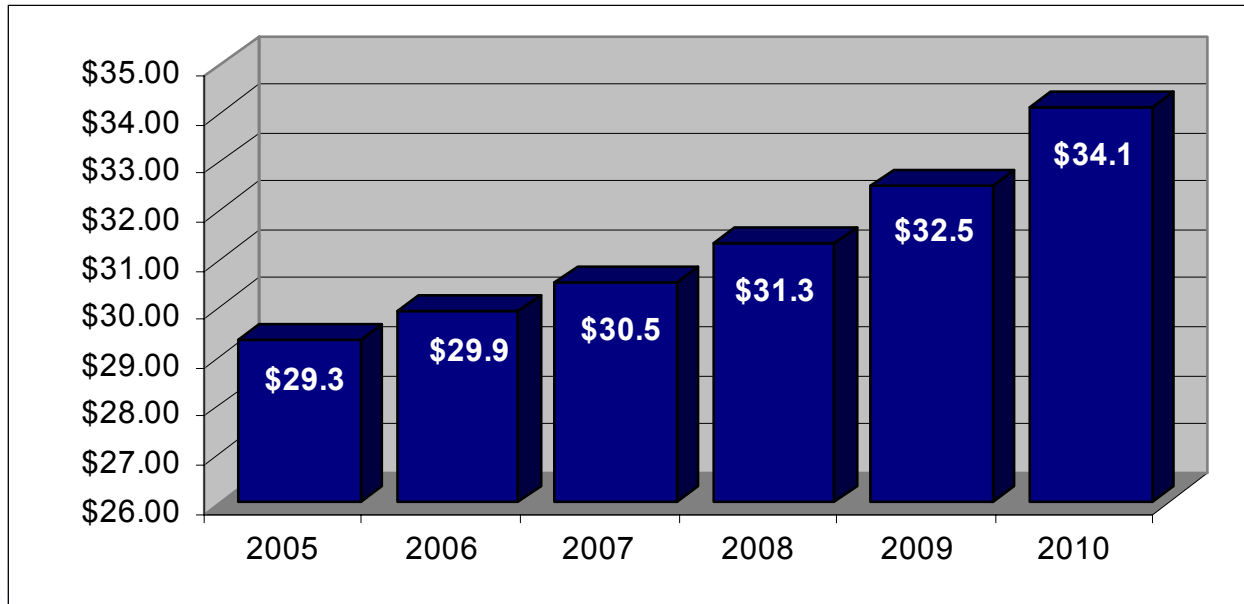
FACT: Remote backup and storage is required for increased security and protection of applications, data, and intellectual property.

- Backup and recovery of data must be performed on a daily or hourly basis and must be implemented off-campus or in remote locations in case of property fire or permanent damage to a facility on campus.
- Remote backup can be implemented with wireless networks and mobile applications.
- Remote and mobile backup is important because:
 - It is more secure and reliable than back up performed on campus
 - It can be accessed remotely or off-campus for round the clock access
 - IT managers can protect data off campus and away from potential on campus dangers
 - Duplication and recovery of data remotely is a more secure method
- Mobilized backup and recovery can be provided by network vendors, IT vendors, and telecom service providers. Existing solutions should be evaluated with multiple vendors.

KEY STATs: Network Hardware spending will reach roughly \$4.0 billion by 2010 in the U.S. Higher Education segment. In addition to backup and storage equipment, there will also be a wide range of hosted storage solutions that will attract Higher Ed IT decision-makers.

Snapshot of US Higher Education

US Higher Education IT Spending (Billions), 2005-2010



Source: Compass Intelligence, 2006

KEY TRENDS

- Bandwidth doubling every 6 to 12 months
- Security, bandwidth, and traffic management
- Wirelessly enabling the Campus (“hotspots”)
- Wireless laptops and devices used as a differentiator and attraction mechanism
- Video and Streaming Video as a tool for instruction and DL
- Multiple Web-based sites for instruction, information, and exchange of class activities

Recommendations

Recommendations for College and University IT professionals:

- **Work with vendors who have dedicated Higher Education Sales, Product Development, and other employees**
- **Work with vendors who have existing channel/partner relationships with top higher education technology vendors (Cisco, IBM, and others)**
- **Get your technology vendor involved with internal IT meetings to facilitate question and answering and to help with overall IT plans and budgeting**
- **Get involved with the numerous technology associations for schools and universities...become members, network and learn**
- **Stay up to date with the latest technology through**
 - **Internal and Ongoing Technology Training**
 - **Consulting with Vendors/Technology Specialists and Colleagues**
 - **Web content such as magazines, tech news, and vendor websites**
 - **Visiting Educational Technology portals and vendor sites**
- **Work closely with your technology vendors in terms of needs/requirements, budget, grants, planning, implementation, and management of networks, solutions, and technologies.**

Higher Education Resources & Links

National Education Association – www.nea.org

Campus Computing Project - www.campuscomputing.net

US Department of Education – www.ed.gov

National Center for Education Statistics – <http://nces.ed.gov>

International Society for Technology in Education (ISTE) – www.iste.org

National Association of State Boards of Education (NASBE) – www.nasbe.org

Center for Digital Education - www.centerdigitaled.com

NetDay – www.netday.org

EDUCAUSE – www.educause.edu

COSTS Project – www.costsproject.org

Quality Education Data – www.qeddata.com

Internet2 and Internet3 – www.internet2.edu

Campus Technology Magazine – www.campustechnology.com

Ed Tech Magazine – <http://www.edtechmag.com/higher/index.html>

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