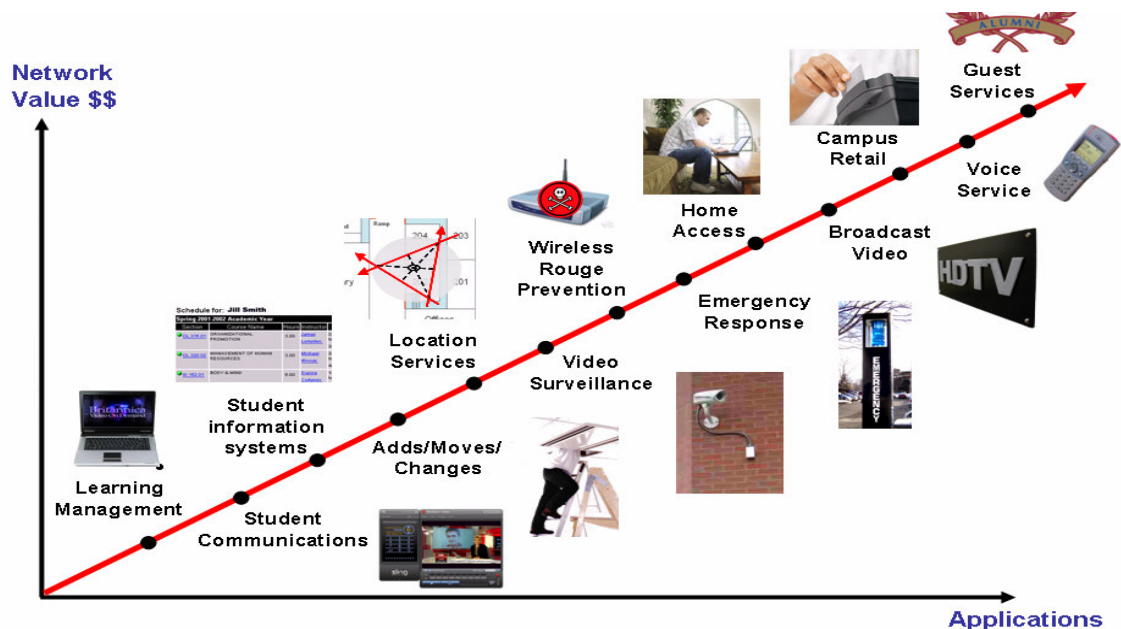


Higher Education Usage Cases for Wireless

In higher education, information technology (particularly network access) drives how a school community lives, works and plays. Higher education is the quintessential example of a mobile society. The reliability and availability of the wireless network is so critical to students that it has become a consideration when applicants choose a school. Wireless use cases extend to classrooms, residence halls, administrative offices, satellite campuses, and outdoor.

A wireless network can provide the flexibility to converge many applications without sacrificing quality or reliability of each service.



These applications are described briefly below.

Converged services – Voice (audio), video, data, physical security, location services and environmental (HVAC) applications have been disparate, requiring separate networks. Yet, these separate islands are ultimately called upon to feed new converged devices that integrate these services into common applications. Aruba provides the ideal infrastructure to support a mix of applications uniformly, across a campus environment. Examples include:

- Voice over IP – Support mobile wi-fi phones for teachers and administrators. Or offer students a service by supporting converged cellular/Wi-Fi devices such as the iPhone on campus for a fee.
- Video – (broadcast & on-demand) Wireless video distribution can be used to support teaching & learning or to deliver pay-for entertainment services to students.
- Mobile messaging – IP based email and IM are the lifeline for student communications on campus. Emerging converged devices offer Wi-Fi as an alternative transport to expensive cellular transport.
- HVAC/physical plant – wireless can extend the reach while dramatically reducing the cost of interconnecting HVAC and other physical plant equipment dispersed across campus.

- Security – IP based security cameras and proximity door locks can be converged onto the network eliminating the need for additional infrastructure
- Vending – Today’s vending machines are “IP literate”, utilizing connections to the Internet to report stocking levels helping to control costs associated with restocking machines. Wireless enables deployment of vending machines in areas where wired network access maybe difficult to reach.

Student communications – In many ways, students are creating their own converged service plan. Students use wireless for social networking and communications with email and sites like Facebook or MySpace. But they also might access remote media devices such as a Slingbox to save on television services costs. Even more common is students that use the network for real-time voice and video services such as Skype. This is especially common among foreign students communicating home. Other uses such as networked gaming and peer-to-peer file sharing are also common network uses for students. Aruba provides an infrastructure that can provide a reliable network for students to use while maintaining performance and preventing mischievous behavior.

A New Paradigm for Campus Radio and Television – The development of low cost Internet radio and television technology has put broadcast communications within everyone’s grasp. Deployment of a Wi-Fi infrastructure enables that same “wireless” paradigm on campus as traditional radio and television without the need for a restrictive and expensive FCC license coupled with expensive, complex transmitters and licensed support personnel. This puts the availability of broadcasting within the reach of every student group or department on campus. The emerging availability of Internet radio and television appliances similar to their traditional counterparts coupled with converged devices like the Blackberry, iTouch or Nokia 880 make Internet radio and television even more available. Plus, unlike traditional radio and television, these broadcasts aren’t restricted to the local geographic area but can be received worldwide.

Learning Management– Wireless also has the potential to greatly enhance teaching and learning. This might include distributed, on-demand learning such as “virtual” language labs or distance learning from “live” remote lectures or on-line course material. No longer is the student restricted to a physical venue with its capacity and time restraints. Learning takes place virtually at anytime from anywhere. Once in virtual form, material can be reviewed as often as desired enhancing the students learning opportunity. With the proliferation of wireless laptops for every student coupled with simple collaboration software, smart classrooms can now be virtualized as well. This dramatically reduces the expense of building such venues while increasing their availability to anywhere Wi-Fi is deployed. The opportunities to use mobile access as a means to enhance the teaching and learning experience are endless.

Student Information Systems - Wireless access to student systems is considered by many organizations a mission-critical application. Access to grades and transcripts, class registration, student services, and any other student information can be available anywhere at any time with wireless.

Guest Services - Guest access provides visible interaction with guests, alumni and any temporary users, making a positive impression about the college. The Aruba guest access system will, first and foremost, provide reliable and high-performance access to the Internet without requiring the guest to negotiate countless hurdles in re-configuring their PC in order to connect. The guest network separates and segregates internal and guest traffic in order to provide iron-clad security for the organization’s LAN and servers.

Location services - Tracking expensive assets and resources is a critical requirement in a college environments. The Aruba infrastructure can be leveraged to automatically track critical assets. For example, leased library laptops can be tagged with an active RFID tag to alarm if it has left a predefined boundary. Shared resources such as carts and projector equipment can also be easily located using the Wi-Fi network. A unique application of locations services on campus is the deployment of “virtual attendants” in place of staff for certain venues. By coupling location with time of day, services can be targeted within a given venue. For example, knowing where a student is (i.e. what room) and the current time, laboratory set-up instructions can be given and results collected for a particular class. As location and or time changes, so can context of the information given or received. By “virtualizing” certain environments such as the lab support described in this example, such functionality can help to reduce the demands on over-burdened staff.

Mobile Access Control – Students and faculty move about the campus, so enforcing role-based access is important to maintaining information security. Aruba’s Mobile access control enables network and application access rights based on characteristics associated with the user, as opposed to the port where a user enters the network. So as users move between faculties and remote campuses, their access rights are fully maintained without requiring new firewalls and without having to rely on VLANs. Aruba’s user-based stateful firewall ensures this level of security and consistency as a user roams. Access control is more important than ever for schools today as they are exposed to the security implications of students that bring many mobile devices with them to campus. Currently the average college freshman brings 9 technology devices with them.

Video Surveillance - Video surveillance systems are essential to assure physical security and overall campus safety. Leveraging the WLAN enables campus-wide and geographically distributed video surveillance both indoor and outdoor. It also provides the flexibility to interconnect any digital IP camera or any legacy analog camera. Aruba provides a secure means to transport video camera feeds back to a central evaluation point, even when the cameras are deployed over Aruba mesh links.

- **First responder** – An Aruba wireless network can provide complete, real-time information about active threats and vulnerabilities, allowing security stakeholders to either anticipate the threat—or respond speedily and appropriately to both minor and major events to any building or outdoor area on campus.

Mesh – Aruba mesh technology enables a converged data, voice, and video network to be deployed or expanded without installing any network cabling. Mesh technology is ideal for outdoor enterprise environments and indoor locations that are tough or expensive to wire. Both indoor and outdoor deployments are supported through the same infrastructure, without requiring disparate solutions that are separately managed and secured for each area.

Campus Retail – The diverse retail requirements of a college typically require some level of mobility and are subject to PCI compliance regulations. Retail stores, ticket sale kiosks, and stadium merchandise retailers will all be subject PCI requirements pertaining to wireless threats and information security, even if they don’t rely on wireless applications such as point of sale handheld devices. Aruba wireless is uniquely positioned to address these PCI requirements and provide a platform for introducing mobility into the retail environment over time.

Adds/Moves/Changes – When voice and data services are all mapped to a mobile WLAN network, adds/moves/changes have almost no affect on the operations of the IT department. When wireless is implemented over an Aruba network, a user is tied to their access profile, not to a port, making it organizational changes very simple. In addition, the cost of wiring is on average three times that for

deploying wireless. With the constant construction and renovation occurring within most Higher Ed institutions, this can result in a huge savings. Wireless also enables a significant reduction in deployment time that not only saves money but reduces the time to occupation.

Home Access – Making information uniformly available everywhere is the end goal of wireless mobility. This level of pervasive access should continue beyond the physical campus boundary to the home of administrators and faculty. An Aruba WLAN can extend to these users homes or remote offices in order to provide an equivalent user experience and security level as on campus.

Wireless Intrusion Prevention – The Wireless threats resulting from improperly configured or unauthorized wireless networks are a growing risk to campuses. Aruba's Wireless Intrusion Detection & Prevention (WIDP) system is designed to detect these threats and neutralize them. This has become a mandatory requirement in education networks for minimizing network vulnerabilities, stopping malicious behavior and meeting compliance requirements.

Wi-Fi as a Laboratory – Being a new paradigm for communications, ubiquitous Wi-Fi offers a unique opportunity to provide a "mobile communications laboratory" for the campus over which emerging mobile technology, applications and services may be developed and tested. Aruba's technology ensures reliable transport for mission critical services while concurrently providing protected spaces in which experimentation can be encouraged.