

Impact of Poor Wireless Coverage on a College Campus

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The communication ecosystem of today's college campus is far different from even a few years ago, when it was common to find hard-wired phones in most student rooms and pay phones scattered across the campus. Today, the dorm-room phone—once a revenue stream—is now a financial drain on universities, and many have been removed. Pay phones have met a similar fate.

Many colleges are now faced with a growing challenge:

How do you improve campus safety for a highly mobile student body solely reliant on their wireless devices as a primary means of communication?

The Clery Act (1990) requires colleges to provide annual statistics for on-campus crimes that occur in residence halls, non-campus buildings, nearby public property and independently-owned facilities used primarily by campus faculty, staff and students or for other institutional purposes. This data must be reported to the U.S. Department of Education, which hosts a dedicated website where users can review and download campus crime statistics.¹

How schools comply with these broad guidelines has been a subject of ongoing debate. A 2007 report from the International Association of Emergency Managers (IAEM) recommended that emergency management plans should be:

1. **Comprehensive:** Covering all potential hazards
2. **Progressive:** Anticipating future disasters and building a disaster-resistant, disaster-resilient community
3. **Risk driven:** Using sound risk management principles to assign priorities and resources
4. **Integrated:** Ensuring a more united effort between officials at campuses, communities and local governments
5. **Collaborative:** Sustaining broad levels of trust, engagement and communication among all stakeholders
6. **Coordinated:** Aligning the efforts of all stakeholders
7. **Flexible:** Using innovative approaches to address disaster-related challenges
8. **Professional:** Using a science- and knowledge-based approach to planning and sustaining emergency management protocols

Then, in 2008, weeks after a mass shooting at Virginia Tech, the International Association of Campus Law Enforcement Administrators (IACLEA) synthesized various reports from the tragedy. They highlighted the following contributing factors:

- Unmanaged mental health issues
- Easy access to firearms
- A lack of reliable wireless communication within campus buildings
- Erroneous interpretation of federal laws with respect to the Family Educational Rights and Privacy Act (FERPA) and the Health Insurance Portability and Accountability Act (HIPAA)

In the past decade, a series of safety-related events at several universities has prompted school administrators to re-examine the role technology could play in campus safety. They realized that being able to communicate directly with all students and staff in an emergency must be mandatory. Initial efforts involved the use of campus-wide texting services that "pushed out" emergency messages to cell phones. This proved to be only partially effective, however, as many students and staff are often located in buildings or areas that prevent them from receiving the radio signals.



The second wave of security tactics involved the installation of emergency phones across campus. “Blue phones” were intended to be a lifeline to students in need of help. However, given the size of the typical university campus and limited number of blue phones, the coverage was inadequate to provide immediate access when and where needed.

With the widespread adoption of smartphones, schools have recently turned to “crisis applications” to support whole campus safety. Tools like In Case of Crisis enable administrators to create mobile applications that enable students and staff to access safety information during an emergency. As with emergency text notification, this solution falls short due to the large percentage of indoor locations where lack of cellular service prevents mobile phones from receiving notifications.

Cumulative effects on the school

While each attempt at developing a reliable and comprehensive campus security solution has met with partial success, none has satisfied the original objective: to communicate directly with all students and staff in an emergency. In each case, the issue is the lack of reliable and comprehensive wireless coverage—indoors and out. This inability is costing schools and administrators in terms of:

- Safety and security
- Image
- Added expense
- Lost revenues

Safety and security

The primary concern regarding poor or nonexistent indoor cellular coverage is the effect on the safety and security of students and staff. Specifically, in the event of an emergency, how do those in need of assistance contact first responders? How will first responders be able to locate potential victims? How do administrators communicate critical information to the entire campus population in case of a school-wide lockdown? Without a comprehensive solution that ensures reliable communications to all locations on campus, the safety and security of all are at risk.

Image

The school’s inability to provide immediate and comprehensive communications during an emergency can result in a public relations nightmare. Within a matter of days, the school’s reputation—whether built on academic excellence, athletic achievement and/or research success—can be seriously tarnished or altogether destroyed based on reports that it was unprepared and placed students’ welfare at risk. In the resulting domino effect, some parents will second-guess their decision of where to enroll their children while others will pull their children out immediately, opting instead to place them in a school that they feel can better protect their kids.

Expenses and revenue

The financial fallout from a lack of adequate on-campus security can be significant and take the school years to reverse. Campus security has become an important factor in the college selection process. Should enrollment begin to decline, revenues would start to drop. If an on-campus tragedy should occur, private and corporate donors would be likely to rethink their contributions, afraid of the damage caused by their association with the school. Expenses, especially those associated with increasing safety at the school, typically escalate. These can be compounded by potential fines for non-compliance to building codes, government ordinances, or corporate liability.



Getting at the cause and developing a solution

Obviously, none of these outcomes is acceptable for any school that prides itself on excellence. The fact is, there are difficult challenges to providing the type of blanket wireless coverage necessary to ensure a safe campus.

For starters, the cellular networks upon which billions of individuals rely were not designed to provide indoor coverage. Radio signals broadcast from the cell towers—even if they are located nearby—are impeded as they attempt to pass through exterior walls and windows with low-E glass. Though the user may still have service, the chances of reliably placing or receiving a call in an emergency is decreased.

Even outdoors, coverage can be spotty, as students may often find themselves in “dead zones” between cells, where calls are often dropped. One reason is that wireless providers are currently focused on building out new network capacity as opposed to optimizing coverage within existing markets. With the cost to construct an additional cell tower in order to boost coverage estimated at \$250,000-\$750,000,² they are hesitant to invest that money in “in-fill” coverage.

Compounding the issue is the explosion of bandwidth-hungry data traffic that is pushing today’s cellular networks to their capacity limit. Driven by the widespread adoption of smartphones, mobile data requirements are expected to increase by 1,800 percent over the next four years.³

The solution to the current communications limitations on security deployment on campus is the implementation of a multicarrier neutral-host distributed antenna system (DAS) that can support multi-operator networks and public safety systems by providing reliable indoor wireless coverage and capacity.

In 2000 campuses began deploying dedicated wireless communication systems capable of covering all areas. A DAS eliminates the problem of unreliable cell coverage by creating a dedicated on-campus network that provides ubiquitous coverage outside, indoors and even underground. A network of stationary and compact antennas is located throughout the campus—including inside buildings, dorms and parking garages. The antennas serve to boost existing cell coverage wherever needed, providing a lifeline to students and staff. A DAS safety solution addresses two of the eight principles recommended from the a 2007 report from the International Association of Emergency Managers emergency management plans.

CommScope ION[®]-B DAS for campuses

As a world leader in providing in-building coverage and capacity solutions, CommScope was among the first to help universities improve communications with DAS. With more than three decades of experience in providing complex RF distribution systems, CommScope remains the only company able to provide a total, end-to-end DAS solution. Systems like our ION-B low-power DAS are providing students and staff a new level of security, productivity and success.

CommScope’s ION-B is a fiber-optic DAS that is ideal for complex indoor structures that have poor indoor cellular service. It provides students, staff and administrators excellent coverage and signal strength regardless of where they happen to be. Instead of replacing security initiatives like emergency texts and crisis applications, the ION-B DAS enables them to work as they should. “Blasts” of emergency events can be sent out to an entire college population and delivered to the mobile device the students carry. Calls to student mobile devices can be delivered anywhere within the buildings on campus.

An effective DAS solution gives administrators the freedom to select the security response tools that are best suited for their campus and student populations, knowing that they have a reliable network solution to support them. The result for the university is a more secure environment, which promotes an enhanced public image and, ultimately, helps drive revenues and decrease expenses.

Safe, secure success

Insufficient public safety at college campuses is a well-documented problem. Current options do not provide a comprehensive solution due to the limitations of poor indoor cellular coverage. A comprehensive multicarrier DAS solution, like CommScope's ION-B, can improve the effectiveness of a school's existing safety solutions and more thoroughly address the communication needs of a college during an emergency.

1 *Chronicle of Higher Education* (Lipka, 2009)

2 *Cell Site Deployment Process at AT&T Wireless Services* (professional paper)

3 Point of View: *Wireless Point of Disconnect*, Michael Kleeman, Global Information Industry Center, Reaching Point of Disconnect, October, 2011.



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