



THE UNIVERSITY OF CENTRAL ARKANSAS USES DIGIVANCE ICS TO GIVE STUDENTS CAMPUS-WIDE WIRELESS ACCESS

CASE STUDY

THE SITUATION

Like many universities, the University of Central Arkansas (UCA) is surrounded by evidence of life before cell phones, the Internet or Wi-Fi: its buildings. Constructed with concrete block, masonry, steel and copper, these engineering marvels of the 1970s and 80s were built without consideration for future RF signals and fiber optic cables. Their subterranean spaces and bunker-like constructions were ideal for quiet classrooms and high traffic. Who knew they would one day absorb and impede wireless signals?

UCA, located near Little Rock, AR, is one of the most technologically advanced mid-sized universities in the country. Since 2004, it offers a leading-edge distributed computing environment with a state-of-the-art wireless network. With this campus network in place, UCA officials wanted to leverage their technology investment by providing anytime, anywhere coverage for students, faculty and staff members. If wireless coverage in and around buildings was challenging, coverage in highly utilized basement classrooms was nearly impossible.

“Students are growing up in a world of constant connectivity,” says Dr. Ronald B. Toll, who served as Dean of UCA’s College of Natural Sciences and Mathematics as well as special assistant to the President for Technology and Corporate Relations.* “They don’t consider wireless connectivity a luxury. They expect it, the way they expect a library to have books.”



THE PROBLEM

UCA wanted to provide students with ubiquitous laptop access to the UCA network and Internet throughout the campus. In doing so, they would maximize the use of UCA's multi-million dollar wireless network and also create revenue opportunities with wireless service providers.

First, the UCA team had to solve a multitude of issues involving mixing new with old, from putting digital on top of analog to blending equipment from different eras. But a truly ubiquitous network—the one UCA would later leverage with revenue-generating partnerships with wireless carriers — was not possible with the unreliable coverage in and around many of the buildings. A comprehensive outdoor and indoor wireless solution was needed, one robust enough to carry a signal without degrading, neutral to all service providers and scalable to university and carrier coverage and capacity expansion.

THE ADC SOLUTION

The Digivance® Long-Range Coverage Solution (LRCS) and Indoor Coverage Solution (ICS) deliver cellular access digitally over optical fiber, which ensures signal quality, flexibility and overall performance. Typically coverage erodes in and between buildings because of RF-absorbing walls, or because long stretches of fiber cable diminish the antenna's analog signal.

Featuring patented digital radio frequency (RF) transport technology, the Digivance solutions enhanced and extended wireless coverage at key locations around the campus and within buildings. Since the Digivance products are immune to electromagnetic interference, they provided uniform, reliable signal quality throughout the campus and on the various floors of the buildings.

The Digivance ICS' scalable and flexible architecture is designed to meet the growth needs of the university. Coverage areas can be expanded by adding or daisy-chaining system elements that offer a pay-as-you-grow approach to indoor coverage. With its digitized optical RF transport, the ICS also future-proofs in-building wireless infrastructure for higher data rates required to deliver broadband services.

UCA, with the help of the Wireless Emerging Business at IBM Global Services and the technology integrator Stratum Broadband, installed Digivance ICS after studying pedestrian traffic patterns and major congregation areas. The transceivers were placed above the tiles of suspended ceilings or in other unobtrusive areas. Although pleased that they blended in so well, Dr. Toll doesn't mind if such technology is a somewhat visible: "At universities, various aspects of the technology infrastructure can be valuable talking points, a visible representation of what is now available to students, faculty, staff and campus visitors."

BENEFITS REALIZED BY THE CUSTOMER

Enhancing and extending the wireless network had immediate benefits. Wireless carriers partnered with the university to provide coverage, initiating an ROI model that Dr Toll estimates will be achieved in 3-5 years, despite the seven-figure cost of implementation. Student use of cell phones has increased significantly, as well. But the greatest impact has been the extension of the classroom to a 24/7 reality unimaginable to people only a generation earlier.

Dr. Toll calls it "digitally enhanced pedagogical techniques that provide impromptu learning opportunities nearly anywhere, anytime throughout the campus." Rather than limiting traditional learning to scheduled classes in particular locations, he says, UCA provides access to learning,



experimentation, conversation and feedback in asynchronous space. Students sitting under trees can stream web-based information offered prior to class. In class they can conduct web-based research. Their presentations can blend audio and video media forms impossible without wireless. And their instructors can offer them immediate feedback to questions whenever they occur, i.e. late at night or right before a test.

A wireless campus provides a brand new way of experiencing university life with complete wireless access and convenience. And Digivance solutions help to make this a reality by providing enhanced cellular voice and data coverage in places where wireless is traditionally impossible to receive.

*Note: Dr. Toll currently serves as Vice President for Academic Affairs and Dean of Faculty at Lebanon Valley College in Annville, PA.

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