

Birds on a Wireless Network

Cardinals Fly High With Technology Test Bed

By Matt L. Ottinger

It's no secret that when it comes to technology, Ball State University is often looked at by other academic institutions and businesses as a local – and national – leader. In fact, in 2005, the university was named the nation's top wireless campus by Intel Corporation (in conjunction with the Center for Digital Education).

That's why it may not be surprising to learn Ball State was the first college to launch a WiMAX network, and its test bed project is making strides to change how information is communicated – and received.

According to Robert Yadon, Ball State professor and director of the Applied Research Institute, WiMAX is to miles what WiFi is to yards; he notes that WiFi is internal to buildings, while WiMAX is external. He explains WiMAX signals can go beyond those of typical WiFi, and that Ball State's research study on the technology is focused on enhancing wireless connections on mobile devices.

By serving as a test bed, Ball State has helped private companies like Cisco Systems, Alvarion, Telamon Corporation and DigitalBridge Communications perfect their technologies.

Student participation

The BSU WiMAX Student Usability Study included 150 student testers, whose experiences were monitored to gauge the speed and distance of the signal, which works within two miles of campus. Administrators also observed how students used the devices and software – and whether problems arose.

The project was overseen by graduate student Ryan Lasure, who completed his master's degree in July. He collected data from each student – many of whom were provided free WiMAX and USB dongles (small pieces of hardware that connect to a computer to authenticate software) – about their experiences.

"We asked them to do surveys, speed testing, tell us about locations where they could receive the signals beyond our field testing – just get us feedback on usability," Lasure explains. "And then the software test results were reported back to the vendors of the USB dongles."

When asked what skills he's learned from the project, Lasure says there are several.

"Though I understand the technology, I'm doing more work on the people side," he remarks. "(Overseeing 150 people) helped my organizational skills, and I learned proper techniques on testing human subjects, as well as the importance of confidentiality."

Lasure, a Michigan native, says Ball State's advanced facilities and the efficiency of its program lured him to Muncie.

"The Ball State opportunity with CICS (Center for Information and Communication Sciences) is exciting; you can do a master's program in 11 months," he reports. "It normally takes two years, so the speed is interesting."

Lasure also earned a graduate assistantship in crisis communications via the Department of Homeland Security and sees a correlation between his work with wireless broadband and public safety.

"I see mobile communications playing a major role in crisis communications," he contends. "In the event of a disaster where the power is out, but wireless and smart phones may work, sites like Facebook and Twitter become very important. There is also a communications infrastructure that needs to be created in case of a disaster. In the future, we will see more of a developed plan with these devices serving as backup for emergency responders."

Yadon adds that enhancing WiMAX capabilities at Ball State is based on providing better Internet service to students. However, he also believes other benefits may result.

Providing enhanced wireless communications is among the benefits of Ball State's WiMAX test bed system.





Ball State has several pieces of leading-edge technology designed to distribute wireless broadband to areas surrounding the campus. The best location is atop the 10-story Teachers College building, the tallest structure in Delaware County. Also, advisors and grad students install an antenna for Cisco.

“WiMAX could eventually be used for much more – such as administration,” he offers. “Just one example would be that it could be used to run security cameras around campus.”

Beyond BSU

Yadon points out that importance is added to Ball State’s work because the Federal Communications Commission has imposed a 2011 deadline on universities holding 2.5 GHz licenses to demonstrate substantial use or face losing their license rights.

“These licenses are extremely valuable to those communities to provide wireless broadband services,” he asserts.

Ball State’s efforts have also benefited other educational institutions – namely the University of Wisconsin. Ball State is looked at as such an innovator in the field that Wisconsin has turned to the school to host its WiMAX test bed remotely. This allows Ball State to learn processes of running a system two states away, and allows Wisconsin to keep its WiMAX license by demonstrating use.

“It’s much more economical to run this from one location, instead of other (institutions) setting up a back end,” Yadon notes. “Also, there is generally not a high demand for this because most schools don’t have people trained to run the WiMAX environment, whereas we have two certified WiMAX engineers on campus.”

Cisco Systems, one of several companies involved in the initiative, began benefitting from Ball State’s ability to test its broadband wireless technology in 2008.

“We wanted to test in an academic environment,” explains Karen Mangia, Cisco Systems director of partner experience. “We wanted to work with students who had exposure to this type of technology, and Ball State already had a curriculum in place so it worked well for us. This type of project is a great way for students to take it beyond just learning from a book.”

Yadon adds that the school’s work will ultimately benefit

people everywhere.

“It’s important for us to share this information nationally,” Yadon relates. “It’s a global mission and certainly a domestic one.”

Mangia adds that not only can superior technology be found in Muncie, but active and eager minds are ultimately lighting the fuse that sparks the process.

“One observation I have is that when I go to campus, I’m impressed at how closely the students are following Cisco as a business,” she observes. “They’ll ask us about acquisitions we’ve made and how that could impact this field. What started as a technical project is helping students learn about business as well; that’s sort of an unexpected bonus.

“This partnership has been a testament to how well those partnerships can work for both the companies and the educational institutions.”

Additionally, Lasure authored a blog on Cisco’s Service Provider Mobility web site to further enhance the relationship and exposure.

Cisco recently announced it’s exiting the WiMAX market, but Mangia says Ball State’s capabilities will help the school remain a key partner for the company.

“We will continue to work with Ball State in a variety of ways,” she shares. “(BSU) will continue to be a Cisco Network Regional Training Academy. We are also evaluating other joint project opportunities and will continue to hold interviews for graduating students.”

Yadon concludes that the school is eagerly working to forge new partnerships with colleges and companies on this revolutionary project.

INFORMATION LINK

Resources: Robert Yadon and Ryan Lasure, Ball State University, at www.bsu.edu

Karen Mangia, Cisco Systems, at www.cisco.com