

Library tests wireless networking

Security-related issues cause delay in student access

A year ago, the *Transcript* reported on a pilot program for wireless Internet access at Beeghly Reference Library. Access was to be available to anyone with a laptop and wireless card by the end of spring 2003.

As of this semester, no such access is available.

Of the 59 schools in the Consortium of Liberal Arts Colleges (CLAC), Ohio Wesleyan's is one of three without wireless Internet access on their campus.

CLAC is, according to their website (www.liberalarts.org), "an organization comprising many of the top liberal arts colleges in the United States, chartered to explore and promote the use of information technology in the service of [their] liberal arts educational missions." OWU has been an active part of CLAC since its establishment in 1987.

The library's strategic plan for 2003-2008 includes a list of 10 strategic goals. Number five on this list reads, "Install wireless Internet capability throughout Beeghly Library (\$50,000 including laptops and NIC cards for student checkout)." The money allotted for this project is to come directly out of the library's budget.

A representative study found 94 percent of students surveyed have a computer on-campus, and 43 percent of them have a laptop. Most laptops purchased within the last three years come equipped with a network card already installed, as do some desktops. (This survey was conducted by students of the journalism department for a series of stories concerning InfoSys and the network at OWU. There is about a five percent margin of error.)

Last fall, a test access point was set up in the technical services area of the library. An access point is a box that transmits radio waves to wireless network cards in computers, allowing network access from anywhere these radio waves can be received.

Although this access point was installed more than six months ago, it is not available for students to use “because of the issues,” said Green. “[My] wireless [network] at home is easy to use, this is hard to use.”

These four issues include accessibility problems due to network card compatibility, additional software, registration and the use of a password.

With a wireless network, the access point is connected to the Ethernet lines here at OWU. This box changes the information (called packets) into a signal and sends them out over the air. A laptop equipped with a network card can receive this signal and be connected to the Internet through a wireless system.

After extensive research into wireless networks, the library chose Cisco brand networking systems for their wireless network. Tom Green, associate director of libraries, said Cisco is one of the best wireless systems available.

“[They are a] bigger operation. We’ll have to pay a little more for the quality equipment because of a concern with security issues,” said Green. The test point cost about \$750 to set up.

With wireless networks, there is an especially large concern for security.

The online version of Network World fusion, a weekly news magazine specializing in network and IT (information technology) information, compared four different wireless networking security programs and said, “The Blue Ribbon Award goes to Cisco for its superb technical accomplishments and the depth of its systems' capabilities.”

Green also said Ohio Wesleyan is “Cisco shop,” meaning they give OWU a discount on hardware and software because we use them often.

According to Tony Smith, director of Information Systems, all of the major components of OWU’s network are Cisco products.

“You don’t want to have a lot of different types of equipment that you have to support,” Smith said. Having products from one vendor allows InfoSys to maintain those products more efficiently and to upgrade without much difficulty.

“When you don’t have a lot of employees,” he said, “it minimizes the types of equipment you can have.”

Unfortunately, this test has not been all the library hoped it would.

According to Green, a student would have to have a Cisco brand network card and Cisco software to access the network. Additionally, patrons would have to register their machine address code (MAC), which is part of a computer’s network interface card (NIC) and have a password provided by InfoSys. The NIC is also what connects computers on campus to OWU’s local area network (LAN).

No computer is sold with a Cisco card. Most PC’s have Orinoco cards and most Macintosh’s have Apple Airport cards.

However, Smith said that it’s not only Cisco brand cards that work. Cards that are LEAP (light extensible authentication protocol) enabled work and some brands other than Cisco are LEAP enabled products. He said he could not comment on which cards are currently compatible with Cisco’s LEAP security system.

In her article, Bort said if your card is not LEAP enabled and your access points require it, the access point will be “what a two-hole electrical outlet is to three-pronged plugs.

An article in Network World (5/26/03) titled “The wireless security balancing act” by Julie Bort said, “In February, Cisco announced licenses with eight vendors, including Intel for its Centrino Mobile Technology, which will embed LEAP in a variety of laptops.”

An Internet search found that Apple’s Airport cards are compatible as well as Dell’s TrueMobile WLAN card.

“To make [the wireless network] effective,” said Green, “it has to be set up to use already existing network cards.” He said the library is looking at using software interface that will allow any card to be used with OWU’s network.

Bort’s article looks at schools around the country that are set up for wireless. Some schools, like the University of Akron, chose Cisco’s LEAP, others did not.

California Lutheran University in Thousand Oaks did not because “it does not want to dictate laptop or LAN adapter card choice. ‘We looked at Cisco’s LEAP, but the problem is we’ve got students and faculty bringing in all sorts of different laptops,’ said Zareh Marselian, director of technical services [for CLU]. ‘We want to remain open as a heterogeneous environment’.”

Green’s vision of a wireless network at Beeghly library has access points in the Bashford Lounge and the open study area on the second floor. Wiring has already been installed to these two areas. The signals from these two points will spread out and up to cover most areas of the library where students study. He said the test access point transmits waves to all four floors of the library.

Freshman Dana Owen was excited to hear about wireless networking as a possibility in the library.

“I recently got it at my house,” she said. “It has been a pleasant experience.” She cited speed and reliability of the connection as reasons she has enjoyed it so much.

Green said Information Systems has shown no interest in working on this project, it has been only the library working on it. According to Smith, InfoSys doesn’t have the funding or resources to put wireless networking in the library.

But, InfoSys is very intent on making network security a priority, creating the need for a password to access the wireless network.

“Community members can come in and access the computer lab already, so what’s the big deal?” asks Green.

Smith said the security issues need to be addressed to prevent people from using the library to access the Internet from outside of the library. The computer lab has physical constraints; patrons have to come in and sit at a computer in the lab to access our network. A wireless system has no similar physical restrictions, so security measures have to be taken to limit the public’s use, or at least abuse, of the access.

Requiring registration and the use of a password, said Smith, “[allows InfoSys and the library] to be certain the computer being used belongs to a member of the Ohio Wesleyan community.”

An article on extremetech.com titled “Exploiting and protecting 802.11b wireless networks” said an unsecured network is like letting a stranger off the street walk in and plug their notebook computer into an Ethernet port. This stranger could access the Internet for free, could gain access to other computers on the network and any printers on the network.

Other issues come into play when you factor in the inability to fully control where wireless Internet reaches. Some access points have settings to partially limit the range of the signal, but you can never be completely sure.

“Many people assume that...signals only travel a relatively short distance – maybe 100ft. or so. They actually travel much farther, but they are too weak to be detected by the tiny antennas in laptop cards,” said the extremetech.com article. It said that with a high-power antenna, ranging in price from \$60 - \$160, signals could be picked up from quite far away.

The website conducted a test in which they used a laptop equipped with a high-power antenna and simple hacking software. They were able to stand on top of a business building in Manhattan and pick up 130 access points. A similar test in the MIT, BU and Northeastern University areas located 327 access points.

The goal of this study was not to see how far into a system they could go, but they did mention how unprotected over 50 percent of the located points were. Someone could easily find a signal, gain a valid IP address from a server, crack the password with simple software (or occasionally common knowledge) and have access to free Internet and possibly more.

Also, information sent across airways can be susceptible to hacking. Signals can be intercepted and “secure” information, like passwords and credit card numbers, can be easily accessible.

Owen, like many students at OWU, doesn't think security is a big issue. “I definitely hadn't thought of it,” she said. Security was not an issue for her at home either.

“I have had wireless at my house for a couple of years,” said freshman Kylie Gaughan. “It's faster and easy to use.” She also said her family has not encountered any security problems.

Junior Christine Maddock also has wireless networking at home, and has been using it for about two-and-a-half years. She, however, has encountered some security issues.

“Other people in our apartment were using our Internet,” she said. She also talked about her dad picking up signals from other access points in the building. The problem was easily and quickly fixed, she said. “If you can secure the network, it’s good to go!”

Richard Fusch, professor of geology/geography and associate dean of academic affairs, was originally wary of wireless networking at OWU.

“My biggest concern is security,” he said. But Fusch recently had wireless networking set up in his own home.

“The whole concept of wireless is fantastic,” he said. “The wireless in my home is great, but it’s easy to secure there, only my computer can access it.”

The physical location of someone using on a wireless network is a concern both Fusch and Smith have had. Without proper security in place, someone can sit in the parking lot with their own computer and access the Internet and our network, hacking in without being able to be found.

Because a wireless network is a shared network, it means that someone wanting to be malicious and steal sensitive information can intercept a signal passing through the air. Encryption technology has helped prevent this kind of theft. These concerns must be addressed before wireless can be put into place at OWU.

Smith would not comment further on security issues.

Green doesn’t feel access to a wireless network should be something difficult for students to use.

“Computing services need to be like a utility, like electricity,” he said. “Access should be available to students in more areas on campus.”

Some students think wireless capabilities would be worth a little more.

“I guess I would buy a new card, if it would allow me to go anywhere,” Maddock said. They should look into offering the necessary network cards at a discount through the bookstore or the library, she suggested.

Green said Slocum Reading Room would be another place benefiting from wireless network access. Other places mentioned include Ham-Wil and the Science Center atrium.

Maddock has a laptop, and thinks wireless at OWU would be a great idea. “I would take it [to the library and all over] and use it, but I don’t now,” she said.

Owen does not own a laptop, but said she would have gotten one if she knew OWU had wireless capabilities on campus. “At that point I didn’t know about [wireless],” she said. “There is more incentive now that I know.”

Smith said part of the telecommunications and network study that is being conducted by Elert & Associates is to look at wireless networking at OWU, in specific areas and all over.

According to an email sent out by Smith and Susan Cooperider, director of administrative services and summer conferences, “this study will assist the University with evaluating its current technological status and make recommendations to develop a strategic technology network infrastructure plan for the campus.”

Smith said the goal is to “create an IT system according to the Ohio Wesleyan Community’s wishes.” This study should be completed by the end of this school year, and then the University can begin developing a plan. No one has been able to comment yet on how long this plan will take to be completed.

Smith says OWU has been keeping up with its peer institutions where technology is concerned. "The situation here is very similar to other campuses of our size," he said. "The growth of technology on small campuses creates challenges."

Most schools already have some wireless accessibility on their campuses, and are expanding these services. The University of Akron has wireless network capabilities all over campus. They even transmit waves to their stadium, which is not connected to their main campus.

Looking at the websites of schools in the Consortium of Five Colleges of Ohio, Kenyon College, the College of Wooster, Denison University and Oberlin College all have wireless networking available in some capacity. OWU appears to be the only one without wireless access.

Oberlin has had wireless access for about two-and-a-half years. According to John Bucher, director of computing at Oberlin, 20-25 percent of their campus has wireless capabilities. They have added some wireless areas every year since it was first established in 2001, and will continue to add areas in the future. As of now, Oberlin has access in their student union, the library, some outside common areas and many other public areas on campus. They have yet to get access in their residential buildings or classroom areas of many academic buildings.

Security was on the mind of Bucher when Oberlin first established their wireless network. They purchased a software package that registers each student and faculty computer and gives them separate ID numbers for their wireless cards and permanent Ethernet cards. To access their network, wireless or wired, a computer has to be registered.

This system seems to be working, said Bucher. They have not encountered any security problems he is aware of. "But it's always possible to sniff wireless transmissions if you know what you're doing," he said.

Interest in wireless has grown at Oberlin as the number of students with laptops has grown. They are not a “laptop campus,” said Bucher, like many of the state schools are, meaning they don’t require students to have laptops and don’t provide laptops. Bucher said 90 percent of their students own computers, but they do not have numbers on laptop versus desktop ownership.

“I would guess about one-third to one-half of them are laptops,” said Bucher.

Though wireless network in the library is something the library is very interested in, Green admits the recent implementation of passwords used for printing has been their priority.

“The wireless network issue has been on the back burner because of the printing issue,” he said. The library began looking at a way to reduce the amount of paper they used at the beginning of this school year. They began requiring passwords of students to log into an account and pay for any printing over 400 sheets at the start of the spring semester. They have had to work out bugs in the system over the last few months.

The library staff hopes to refocus on wireless over the summer. The library’s goal is still to have wireless networking readily available for their patrons in the next few years, hopefully by next year.

Green said new students coming to OWU with wireless access in their background are continually asking him about its availability here.

“It’s going to happen,” said Green, “hopefully over the summer. We need to get some people who have influence to pressure InfoSys...it’s going to take a push.”