

Giving Students and Faculty Reliable High-Speed Coverage and Confidence



"We recognize that in today's competitive, quickly evolving educational environment, it is crucial to provide high-speed wireless Internet access in every part of our campus to meet the needs of our teaching and learning community."

- Brother James Gaffney, FSC, President, Lewis University

Situation: Need For Reliable Wireless Network

Lewis University is a rapidly growing Catholic and Lasallian institution with a student population of 5,600, about 80 percent of whom live off-campus. "Several years ago, we were looking for a way to allow students to collaborate with each other anywhere on campus," says John Dalby, Chief Information Technology Officer, Lewis University.

The University's need for faster, more advanced applications had outgrown its existing wireless network capabilities. "It really wasn't a very good experience," admits Helene Chmielewski, Director of Instructional Technology and End User Services. "We had connectivity issues. We had slowness. It really turned more into a burden than a benefit for us. Students, faculty and staff stopped using it because it wasn't reliable."

Solution: Motorola Wireless LAN and Mesh Network

When the University's first wireless network provider was acquired by Scientel Wireless, a thorough evaluation determined issues with the existing infrastructure. "We quickly discovered that the University's current wireless network was overgrown and virtually inoperable," says Dennis Broderick, Engineering Manager, Scientel Wireless. Scientel recommended redesigning the network based on Motorola's 802.11n WLAN product portfolio.

Results: More Efficient, More Reliable Connectivity

The new Motorola wireless broadband network is now providing more reliable high-speed connectivity throughout the campus. Students and faculty are responding with enthusiasm. "We've actually quadrupled our wireless network utilization over the last year," says Dalby.

"It's being used by our students in the classroom, in their residence halls, in the library or sunbathing on the green," says Dalby. In addition, the faculty are using the network not only in the classrooms but also to keep in closer contact with students.

Lewis University:

- Private, Catholic and Lasallian University
- Located 30 miles southwest of Chicago
- Undergraduate and Graduate degrees
- 5,600 students
- 200 faculty, 350 staff members
- 380-acre campus
- Five regional campuses
- Lewis University Airport

Motorola Solution:

- 802.11n WLAN
- AP300, AP-5131, AP-7131, RFS6000 technology
- MOTOMESH™ Duo outdoor mesh network
- Canopy 5.4 GHz point-to-multipoint solution
- One Point Wireless Suite LANPlanner and MeshPlanner

Results:

- Provided indoor/outdoor campus-wide coverage
- Increased reliability, connectivity and security of information
- Offered comprehensive management of all wireless network equipment
- Enhanced usage of advanced course management applications
- Improved campus safety and security



“Having the new wireless on campus has enabled students to study in a different way. They no longer have to be tethered to a wired connection. They can study as groups outside, inside.... it’s really been very beneficial.”

- Helene Chmielewski, Director of Instructional Technology and End User Services



“The previous wireless network just wasn’t dependable. Sometimes you would login and it would log you right back off. Images wouldn’t upload quickly. There was constant freezing. It would always disconnect.”

- Monica Aguero,
Graduate Assistant

No Confidence in Previous Vendor’s Wireless Network

“Our initial way of doing wireless was to put hot spots throughout the University, primarily in academic areas,” said Dalby.

But lack of campus-wide coverage wasn’t even the biggest problem. It was reliability. Students and faculty alike experienced issues that were more than merely annoying. “We often take online tests on the University’s Blackboard application,” says graduate student Richard Conley. “These tests are timed, and you’d be typing the answers when your connection would go down. You’d be locked out of the test, and have to make calls to try to get the test reset. It was just very inconvenient to be kicked off the Internet when you were actively using it.”

University Network Requirements

Lewis University knew it needed a new wireless solution and knew what it wanted. “Our ideal wireless network would have high-speed coverage across the entire University,” says Dalby. “It would be separate from our wired network. We didn’t want to have people using the wireless network as a way of getting into the wired network to actually steal identities from our students, alumni, faculty or staff. The solution also had to be fast enough so that the students were getting excellent service throughout the University, and above all, it had to be reliable. Reliability was of utmost importance.”

At first, the University thought they simply wanted more radios to provide better coverage, but “we found it was better to start over, develop an RF [Radio Frequency] plan, and redeploy a new vendor’s wireless network that would be more appropriate for the entire University community,” explains Scientel’s Broderick.

“They wanted both indoor and outdoor service for voice, video and data. They were looking for 95 percent or better coverage throughout every building that they had, including classrooms, residence halls, common areas, as well as Lewis University airport, and outdoor sporting arenas for various sporting events.” That called for more than just adding radios.

Redesigning the Network

“Our recommendation was to change the technology direction and redesign the network using the enterprise-class Motorola Wireless LAN product line,” says Nelson Santos, Executive Vice President, Scientel Wireless. The network included the Motorola Point-to-Multipoint solution, MOTOMESH™ Duo and Wireless LAN technology including the AP300, AP-5131, AP-7131 and the RFS6000 wireless switch.

“Every building has its own Point-to-Multipoint link to a central tower on site that connects their indoor access points. We used AP300 and AP-7131 indoor access points enabled with 802.11n throughout the buildings. For outdoor coverage, we used Motorola’s outdoor mesh radios,” says Broderick.

Scientel reduced outdoor infrastructure by 50 percent and indoor infrastructure by 30 percent. “Some may equate the reduction in infrastructure with a reduction in coverage. In fact, it isn’t an exact correlation. It is really about proper RF planning. Our coverage actually increased not decreased with the reduction in units,” says Santos.

Adds Broderick, “One of the reasons why we selected the Motorola product was that it offered both an indoor/outdoor solution.”

Unique RF Challenges

From an RF perspective, the University presented some unique challenges involving interference from nearby radar installations, which include: Lewis University Airport's aviation radar system, a Doppler weather radar system within three miles of the University and operated by a local TV station, and the National Oceanic and Atmospheric Administration's (NOAA) Doppler weather radar which is located within line-of-sight of the University's wireless broadband network.

"In addition to those, we have some older buildings. We have buildings that were built in the '30s, '40s, and the '50s, as well as newer structures. Each of those have a different construction, whether it be all metal, all brick, very thick walls, everything that would basically challenge us to really provide wireless service anywhere on campus," says Dalby.

Scientel and Motorola worked together to create a solution that was compliant with DFS radar requirements while mitigating radar-driven interference. "With the features and RF Design Software engineering tools that were made available for us through the Motorola product line," notes Santos, "we were able to combat the University's significant RF issues."

Educational Content and Collaboration

Having the new wireless network on campus has enabled students to study in different ways and allows faculty members to make maximum use of the University's course management system, Blackboard.

"Now that we have reliable wireless access, I am using my PDA much more than before," says Associate Professor of Mathematics and Computer Science Dr. Ray Klump. "I'm getting calls and e-mails and accessing the Internet wherever I happen to be. You'd be surprised how many students are instant messaging me for help, and now I can access and answer those questions from anywhere on campus."

"As a student, particularly nowadays, the Internet is extremely intertwined with almost everything that we do. I conduct my research online and keep in contact with my classmates through social sites such as Facebook and MySpace," says graduate student Richard Conley.

Improved Campus Safety and Security

The University is also using the wireless network to improve security, especially with wireless video surveillance. "What excites me about wireless is our ability to improve video monitoring and access control capability throughout the whole campus," says Charles Stein, Director of Campus Security.

"Our security officers are already looking at putting laptops and cameras in their cars, providing real-time video surveillance to improve campus security and safety as well as improve our communications with the Village of Romeoville police and fire departments," says Dalby. "Without increasing our manpower, we will be able to access areas of the campus more efficiently, quickly and in real-time," says Stein.



"The Internet has become very integral to my teaching...assignments are posted and turned in online exclusively. Having connectivity everywhere is very important and what traditionally required me to meet with a student one-on-one in my office, I can do anywhere."

- Dr. Marne Bailey, Assistant Professor of Biology



"It is important to provide the same quality of Internet service at our various auxiliary campuses throughout the Chicago region. Everyone gains when it is reliable, omnipresent and rapid."

- Brother James Gaffney, FSC, President, Lewis University



Athletic Connectivity

The new Motorola wireless network is improving communications beyond the classroom to the athletic fields. Lewis University is an NCAA Division II institution, sponsoring 18 men's and women's sports. "Anytime we host an event, we have to have Internet access to deliver real-time statistics and information over the Web," explains Dan Schumacher, Director of Athletics.

Key to the program's bigger picture exposure was having many media outlets to hear about Lewis Athletics. "Since most of our games are not televised, we offer Web streaming to anyone wanting to follow the action on the radio or online," says Schumacher. "It's also now an NCAA requirement that the press boxes have Internet access and it's more cost effective for us to have wireless than to hard wire a press box 300 yards away from the nearest building. Wireless is the answer."

The Future

The University is already using or planning to use the new high-speed wireless network in numerous other ways, going beyond network access into operational improvement. "As we move forward, we can save money using our wireless network," says Dalby. "We plan to expand our wireless network to other uses on campus, such as controlling our heat, ventilation, air conditioning and lighting."

"We are adding wireless network capabilities into our five regional campuses," he continues. "Because we've kept the wireless network separate from our wired network, it can function in emergency or disaster situations as a backup system. That will enable us to continue to function in case the wired system goes down."

Competitive Advantage

The new wireless network is also a major competitive advantage for student and faculty recruitment and retention. "Our enhanced wireless network has added a new dimension to us being able to attract students, retain students and encourage them to continue on to a higher education with Lewis University," says Chmielewski. Monica Aguero, graduate assistant, added, "I decided to continue with my graduate studies here. One of the many reasons was the advanced wireless technology Lewis has."

Dalby concludes: "Our improved wireless network is now another excellent tool to enhance the educational experience for the entire University community. It facilitates our students and our faculty to achieve outstanding successes."

"One of the things that really helped the University is the partnership that we were able to build with Scientel and Motorola. They included us as a full partner in this operation. That really contributed to our success."

- John Dalby,
Chief Information Technology
Officer, Lewis University



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