

Spoon River College Graduates to High-Speed E-Learning Capabilities

To meet increasing demand for e-learning solutions, Spoon River College turned to Motorola's wireless Point-to-Point (PTP) technology for increased bandwidth, reliability and cost savings



Situation: the need for reliable, high bandwidth connectivity to support e-learning initiatives at a multiple-location community college.

One of the oldest community colleges in west central Illinois, Spoon River College serves over 4,000 full-time and part-time students. Its facilities include four widely spaced locations over an area of more than 832 square miles. The school is facing fast-rising demand from students and faculty for a variety of new interactive e-learning capabilities — such as distance learning, streaming video and VoIP service — across all four locations. With the major objectives of providing more bandwidth, increasing reliability and lowering costs, the college looked for a more cost-effective, more reliable alternative to its legacy T1-based system.

Solution: Motorola PTP wireless broadband technology solutions in the 5.8 GHz frequency band that increase performance, reliability and control.

After exploring a number of technology options, the college partnered with STL Business Technology Solutions (BTS) to design and implement a wireless network utilizing Motorola's PTP 500 and 600 series technology. The Motorola solution was chosen for its ability to provide the higher throughput necessary to deliver e-learning programs, plus its reliability over long distances. Together, BTS and the college IT department designed and implemented a wireless "ring" network that connected — and provided redundancy for — all four locations, including a 160-acre main campus, an expanding second campus and facilities in two other communities.

Result: Increased throughput that enables bandwidth-intensive e-learning applications, increased reliability, network redundancy and substantially lower costs.

Meeting the school's mandate to have the network up and running by the beginning of the fall semester, the system went live in August, 2009. The network is now delivering average throughputs of 30-40 Mbps system-wide, greatly improving on the 1.54 Mbps typical of previous T1 connections. In addition, the system is enabling the school to take advantage of a grant for providing bandwidth-hungry interactive video for online classes and distance learning programs. It is also providing VoIP service between all four locations, dramatically reducing telephony costs. Reliability has been excellent, without a single failure, even during a winter with excessive amounts of snow, wind and cold weather.

CUSTOMER PROFILE

Enterprise

Spoon River College,
Canton, Illinois

Industry

Multiple-location
community college

Motorola solution

- PTP 58500 and PTP 58600 wireless Ethernet bridge solutions

Solution features

- Video-based interactive learning
- High-speed connectivity between four locations over an area of 832 square miles
- Supports 4,000 full- and part-time students
- System-wide throughput of 30-40 Mbps
- Wireless loop installation to provide redundancy

Benefits

- Excellent performance in unlicensed 5.8 GHz spectrums
- Fast, easy deployment
- Cost savings of hundreds of dollars a month
- ROI in four years

Today's E-Learning Innovations Demand Higher Grades of Bandwidth and Reliability

Spoon River College is located just south of Peoria, in the area of western Illinois that provided the inspiration for Edgar Lee Masters' classic *Spoon River Anthology*. Now, more than four decades later, Spoon River College offers its 4,000 students in a five-county area a different kind of anthology: a wide selection of educational opportunities, including two-year programs in career and technical education, business and industry training, pre-professional academic courses, community education and more.

The college works closely with other area schools such as Western Illinois, Illinois State and Bradley University and communities including Canton, Macomb, Havana and Rushville. All are experiencing a rapidly increasing demand — from both students and the community — for today's innovative new e-learning content and capabilities, ranging from high-speed Internet access to in-classroom interactive video to online classes for collaboration and distance learning.

Wide Footprint

Sprawled out over an area of more than 832 square miles, Spoon River College has four locations. Its main site is a 160-acre campus in Canton; it is also in the process of building out a large-scale secondary campus in Macomb, about 36 miles away. In addition, there are facilities in the communities of Havana and Rushville. The challenge of providing high performance e-learning connectivity to all these sites was the impetus for the institution to explore new high-speed alternatives to its costly, often underperforming T1-based system. In a mainly rural area with limited services, multiple telephone companies and multiple vendors, the old infrastructure was simply incapable of meeting the burgeoning demand for new educational technology solutions.

Needs: Bandwidth and Reliability

Meeting student and community demand was one of the major goals of the initiative. "I was looking for bandwidth," explains Raj Siddaraju, Spoon River College's chief information officer, "and trying to increase bandwidth has traditionally come with a huge price tag, so cost was a major consideration." The school needed higher throughput for its advanced e-learning applications, and also for providing less costly telephony solutions and connectivity with the school's ERP system, which, according to Siddaraju, "is a bandwidth hog in and of itself." The old network was both inefficient and ineffective. "We had T1s running all over connecting our two main centers and remote sites," continues Siddaraju. "It was very expensive, costing us about \$7,000 per month." The system also had reliability issues. Working with multiple telecommunications vendors, the college experienced some major availability problems. "In one instance, it took our vendors two full days to find and correct a mistake that caused major network outages," notes Siddaraju. That was unacceptable.

More Cost-Effective Broadband

To help determine the college's network alternatives, Siddaraju chose STL Business Technology Solutions (BTS) of Bloomington, Illinois, working with Project Manager Tom Blumenshine and Senior Network Engineer Sean Mikel. "We assessed the current T1 system," says Blumenshine, "with regard to what the school needed: data, voice and, in response to a new grant, interactive video for online classes." BTS recommended a wireless solution. "I had some initial reservations about wireless because of concerns about reliability," admits Siddaraju.





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BTS eliminated those concerns by designing a wireless broadband network using a mixture of Motorola's PTP 500 and PTP 600 series equipment operating in the unlicensed 5.8 GHz band.

Using Motorola's PTP LINKPlanner design tool, BTS put together a network plan that showed the Spoon River's IT team the solution's exceptional cost savings, and also demonstrated the system's superb reliability. "You can't beat the price of the system," says Siddaraju, "and BTS showed me I could get 5-to-6 nines reliability. The combination of cost and reliability convinced me and enabled me to make the case to our CFO, president and the board of trustees."

Ring Configuration

Spoon River College wanted the network to be in service before the beginning of the fall term in August, 2009. That left approximately three-and-a-half months for network design and deployment. BTS proposed building a network loop, connecting all four major sites in a ring configuration to provide both high performance and the built-in redundancy that ensured the 24/7 connectivity the school needed. Even though the area is relatively flat topographically, the team still encountered a number of environmental deployment obstacles.

Deployment Challenges

One major challenge was the long distances between links: 36 miles between Canton and Macomb, 24 miles between Macomb and Rushville, 19 miles from Rushville to Havana and 23 miles back to Canton. The network consists of six links, including two relay points. Aside from distance issues, the most challenging link proved to be a 19-mile hop to a relay point on the way to Havana over terrain that proved to be an exceptionally challenging radio environment. The

signal had to travel across the Illinois River and over Dixon Mounds, a densely forested bluff. In addition, the link path traversed a major electric company installation and had to cope with an active and noisy wireless environment in Macomb.

How did BTS solve these challenges? To reduce the length of the hops, the network plan included two relay points, one between Canton and Macomb, the other between Rushville and Havana. The hop from Macomb to Rushville is 26 miles. Notes Mikel, "To make this long link more stable, we used high performance antennas." What about the difficult terrain of the link to Havana? "We used the Motorola PTP 600 series equipment to provide a greater bandwidth for that link," continues Mikel. For BTS, the choice of Motorola systems was an easy one. "Motorola radios are so good," says Mikel, "that at one point during deployment we had radios pointing up at the sky and we still had a connection. That's astounding."

Community Commitment

Thanks in large part to its excellent relationships with the communities it serves, Spoon River College was able to install its network quickly and relatively inexpensively. "We were very fortunate to have the cooperation of local businesses and organizations that took the opportunity to 'give back' to the college by offering space for our equipment at very little cost," says Siddaraju. "Midwestern Grain Marketing, for example, provided us with space on the tops of their grain elevators and silos — some that were 140 ft. tall — giving us the height we needed while saving us significant dollars in installation costs." The communities themselves also contributed by providing space for installations on the tops of public safety buildings.

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- Raj Siddaraju, chief information officer, Spoon River College

The Speed of e-Learning

How is the new wireless broadband network performing? For users of the system, throughput has increased dramatically. “Our PTP connections are now providing, on average, throughput of 30-40 Mbps compared to 1.54 Mbps on average with T1 connections,” says Siddaraju. “We now have the bandwidth to accommodate interactive video, and we currently have five distance learning classes this semester.” For both the college and students, the ability to offer online classes across all four locations means that since many students can participate in a class via video, fewer classes are being cancelled due to low registration.

In addition, the system has revolutionized inter-campus phone communications. The school replaced T1 lines with VoIP service that now serves more than 300 users with four-digit-dialing to and from all facilities. This is resulting in significant savings in telephony costs with no loss of call quality. What about reliability? “So far, even with all the bad weather we had during the

winter, we didn’t drop a single connection and haven’t had a single problem,” says Siddaraju. If and when there is an issue, “we now have control over our whole network,” he continues. “If there’s a problem, we can find it and fix it ourselves. We don’t have to rely on anyone else.”

High-Speed ROI

Return on investment has been both immediate and impressive. The difference between monthly T1 leasing costs and wireless system costs brought the college almost \$500 a month in savings from the very start. But monthly savings are only a part of the big picture. Spoon River College’s innovative CFO Brett Stoller funded the system with a debt certificate over four years, so in addition to saving money in leases each month, the school will own its system outright in just four years, when ROI will skyrocket.

Looking to the Future

The school has plans for a variety of future network functionalities. Foremost among them are a wireless network build-out to local K-12 school districts and for community outreach. “We hope to use our video capabilities to offer online classes and interactive distance learning to high school students and members of the community,” says Siddaraju. “Our faculty, as well as subject matter experts from other schools’ faculties, can teach video classes to help meet the exponential demand for high-speed e-learning content and solutions.”

Spoon River College is excited about its new Motorola network, the benefits it is already offering now and those it will offer in the near- and long-term future. “If you plan it right, this is the system to go with,” sums up Siddaraju. “I’m very impressed with our Motorola PTP wireless broadband solution and I’m very happy we went with it. For performance, reliability and cost, you can’t beat it.”

STL BTS: WIRELESS NETWORKING SOLUTIONS AND BEYOND

Located in Bloomington, Illinois, STL Business and Technology Solutions is a Motorola partner offering the wireless communications knowledge and experience to help plan, install and maintain network infrastructures that deliver high-speed performance, business continuity, security and support services with exceptional cost-effectiveness. Additional core competencies include professional services, commercial staffing and data center operations ranging from simple co-location to providing public and private cloud computing solutions.



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