Established in 1905, Northwest Missouri State University offers 135 undergraduate and 36 master’s degree programs to more than 7,000 students. The business, education, geography and agriculture departments graduate the largest number of students at the university each year.

The university is a true advocate of hands-on experience. For example, in its Horace Mann Lab School, students majoring in education get an inside view of what teaching is all about, while other opportunities for hands-on experiences include internships, the University Farm for agriculture majors, on-campus radio and television stations, and volunteer work. With a student-to-teacher ratio of 21-to-1, students consistently receive personalized attention from faculty. University sports are also an important part of the culture at Northwest Missouri State University; the university has won the NCAA Division II National Football Championship four times in the last 16 years: in 1998, 1999, 2009 and 2013.

As part of its continuing focus on creating and maintaining learning environments that attract top students and faculty, Northwest Missouri State University prides itself in providing state-of-the-art information systems to meet current and future requirements. Among the university’s most important initiatives is improvement of classroom communication, testing and students’ access to information. These initiatives are directly supported by the rollout of a pervasive and high-performance wireless network throughout the campus using Xirrus Wi-Fi access points and Arrays.

Wireless network covers over 90 percent of campus
Before installing Xirrus, the university had a very limited wireless network that had been built over time, covering the library, residence halls, administrative and academic offices and some facility and maintenance buildings. The network did not cover classrooms and large venues such as the Bearcat Arena, which houses the basketball and volleyball games and 2,500 spectators. The network included a single controller in the basement of the library, and this controller was the gateway to the Internet for the entire wireless network.

Infrastructure requirements included:
- No centralized architecture and no single point of failure
- Reliable wireless connectivity in classrooms and high-density areas of campus
- Easy installation and management
- Scalable network to handle increased capacity
- Upgradability to meet future wireless needs

The Xirrus solution provided:
- Distributed intelligence in each Array, with no central controller
- A modular platform for simplified capacity expansion and field upgrades
- High scalability so network can adapt as students acquire Wi-Fi enabled devices without sacrificing performance
- Greater coverage, bandwidth and higher user density support compared to legacy solution

Benefits
- Dynamic learning environment through the use of streaming video, social media and other interactive tools
- Wireless capacity to support thousands of students, faculty and staff throughout the campus
- Continuous uptime and consistent performance across the campus, including outdoor areas and classroom hallways
- Rapid expansion of Wi-Fi coverage to 90 percent of classrooms, including Bearcat Arena and the university library
It also represented a single potential point of failure that could bring down the entire network. A single controller through which the entire wireless traffic passed also proved to be a performance bottleneck – unable to handle the scale and demands of a growing university wireless network. As the network continued to grow to support the increasing number of devices such as laptops, smartphones and tablets, the university searched for a more flexible and powerful solution.

In its selection of Xirrus, the university highlighted the integration of the controller with every Xirrus access point and Array eliminating the single potential point of failure and the performance bottleneck that had prevented expansion of the former network. Additionally, each Xirrus Array utilizes directional antennas that cover a wider area over various environments, as compared with traditional APs. The multi-radio platform enabled the university to support twice as many devices than the former solution – for optimal efficiency, value and simplicity.

One of the most notable successes of the university’s IT department and of the Xirrus wireless network occurred with the deployment of pervasive Wi-Fi to 160 classrooms. This deployment supported university-wide online testing, which all departments implemented simultaneously. The deployment proved the scalability and administrative ease of Xirrus Wi-Fi technology – which makes easy to create a single classroom profile and deploy it to all classrooms at once. Following the deployment, the university was able to support a 100-percent increase in device connections.

Pervasive Wi-Fi has also improved classroom communication because teachers are no longer limited to standing in front of the classroom with their computers connected via fixed Ethernet cables. Teachers can now move freely throughout the classroom with their devices and work with students while remaining online. Additionally, students can move freely between lecture buildings and other venues while remaining connected. After bringing pervasive Wi-Fi to classrooms, the university’s IT department forged ahead with its vision to bring pervasive Wi-Fi to Bearcat Arena and to additional administrative and maintenance buildings. The wireless network now covers more than 50 buildings and more than 90 percent of the campus with 400 access points and Arrays, and has thus far served 3,000 simultaneous users during peak loads.

“Xirrus provides the scalability, the distributed architecture, the ability to upgrade, and most importantly the performance that delights our students and faculty,” said Timothy Carlyle, director of network computing and senior UNIX administrator at Northwest Missouri State University. “All of this greatly contributes to our ultimate goal of providing the best learning environment and experience possible. With Xirrus, we have a wireless network that performs consistently, deploys and expands rapidly, provides insight into user density and devices across our campus, and has won our complete confidence in its ability to deliver optimal service and to support our changing needs in the future.”

The Xirrus Advantage

With the explosion of smartphones and tablets, mobility has become ubiquitous. People expect to connect wirelessly wherever they are. Organizations depend on high bandwidth to send and receive voice, video and data, from any device to anyone. And no one delivers better than Xirrus. Our Array-based solutions are unique. They draw from cellular tower design principles to provide wired-like reliability, increased user density and capacity plus superior security. They perform under the most demanding conditions and have lower infrastructure requirements. When integrated with business and IT objectives, they help you do more than ever before.

At Xirrus, we apply the “best practices” of wired networking to wireless infrastructures by distributing the intelligence to the edge and outfitting the Array with dense, multi-state radios in the same manner as a wired switch. That’s how Xirrus delivers the best performing, most scalable wireless solutions in the industry. It’s a strategic IT infrastructure advantage that fuels organizations. Because Xirrus does wireless networks right.

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TIMOTHY CARLYLE, Director of Network Computing and Senior UNIX Administrator at Northwest Missouri State University