



>THIS IS THE WAY

THIS IS HOW A MAJOR UNIVERSITY ENHANCES MULTIMEDIA
COMMUNICATIONS FOR STUDENTS AND FACULTY

>THIS IS NORTEL™



University of Arkansas

Nortel delivers campus-wide outdoor broadband access with a Wireless Mesh Network solution

Success Story

The scenario

“The essence of learning,” says Nortel’s general manager of wireless LAN solutions Mark Whitton, “is communication.” That statement very nicely sums up why Nortel was so pleased when the University of Arkansas volunteered to be a pioneer provider of its Wireless Mesh Network solution.

“Students need access to their colleagues, to their instructors, to information that’s stored in libraries and databases,” Whitton continues, “and they need this access not only when they’re in their dormitories or classrooms — they need it wherever they may be on campus. They don’t want to be constrained to working in a traditional environment where they might have to sit at a desk.

“That’s why universities are at the forefront in using wireless LAN technology.”

Among those at the very fore is the University of Arkansas. The university’s technology advisory committee — upon which students hold a majority — heard that Nortel was doing some testing of wireless mesh technology with Nicholas Negroponte at the Massachusetts Institute of Technology, and, says Whitton, “When it came time to select a beta test site, the University of Arkansas stepped forward.”

The University of Arkansas campus — located in Fayetteville, nestled in the Ozark Mountains of northwest Arkansas — presented some physical challenges.

“We’ve got a lot of trees on our campus and the terrain is fairly hilly,” says Craig Brown, associate director of the university’s Department of Computing Services, “so we had some issues with getting hard-wired connections to all of the areas where we wanted to provide outdoor wireless coverage. That was the main reason we were looking for an alternative to just trying to blast wireless out through high-gain antennas and things like that with the conventional approach.”

The solution

The University of Arkansas chose the Nortel Wireless Mesh Network solution[†]. This solution provides a cost-effective method for extending WLAN coverage more broadly into end-user markets. It’s ideal for coverage of large open areas, both indoor and outdoor, including areas in which Ethernet cabling doesn’t exist and is prohibitive to install.

The solution comprises:

- › **Nortel Wireless Access Point 7220** — A wireless mesh is formed among multiple Wireless Access Point 7220s by utilizing auto-discovery and self-routing technology. This unit also acts as a WLAN Access Point for user access.

- › **Nortel Wireless Gateway 7250** — The Wireless Gateway 7250 provides user mobility and data traffic security between access points.

- › **Nortel Optivity Network Management System** — The Optivity Network Management System provides centralized facilities for monitoring and managing network operations, including discovery and visualization of the Wireless Access Point 7220 and the Wireless Gateway 7250, fault management, and real-time performance metrics.

Based on unlicensed 802.11 technology, the Wireless Mesh Network solution allows service providers to add wireless broadband services to their portfolio without investing in expensive radio spectrum. The solution capitalizes on the growing acceptance of wireless technology for end-user and business applications, leveraging such inexpensive and readily available consumer products as wireless handsets and personal communications devices. Wireless mesh uses the latest security standards, and is designed to provide the appropriate levels of both security and access while supporting the unrestricted mobility of end users, regardless of where and how they access the network.

The Wireless Mesh Network solution uses wireless links for backhaul, allowing enterprises or service providers to install WLAN with a minimal amount of new or additional Ethernet cabling or other backhaul facilities.

“There were a number of solutions that were available for wireless mesh,” says Terry Davis, the university’s project manager for new network technologies, “but this solution had no points of failure that we could see. Other solutions bridged transport traffic all the way back to one device in the network. This one uses a dynamic routing protocol so that if a node fails, the network can rediscover itself and take care of it — a self-healing network.”

“Of course, we looked at all the other vendors as well,” says Department of Computing Services director Bob Zimmerman. “We need to act like a business, and we have to make business decisions. But we found the technology we wanted.”

The results

The Nortel Wireless Mesh Network solution is extending to University of Arkansas students Internet and e-mail access across very nearly a hundred percent of the campus. Providing ubiquitous wireless access is a significant step in the university’s ongoing efforts to offer the most advanced, comprehensive communications access to everyone on campus.

“Every student and every faculty or staff member is provided with an account when they first arrive on campus,” Brown explains, “and they use that same account for authenticating access, getting to e-mail, and so forth. With that same

[†]The family of SBC companies helped facilitate the sale of Nortel’s Wireless Mesh Network solution to the University of Arkansas.



The Nortel solution provides a cost-effective method for extending WLAN coverage more broadly into end-user markets. It’s ideal for coverage of large open areas, both indoor and outdoor.



environment that they're using for these other computing resources, they're accessing the wireless network."

The Wireless Mesh Network solution is also being used by campus public safety: all patrol cars are equipped with notebook computers. The university also has a bookstore that provides mobile, satellite sales with cashiering functions carried out via the wireless network — yet another means of serving the student body.

Brown recognizes how critical it is that the university be providing wide-ranging communications services: "Kids start using computers and networks at such an early age that they're really pretty sophisticated by the time they get to us; their expectations of connectivity are pretty high. There's a lot of publicity about wireless networks around the country, and so that's just part of what they expect to see here. If we're not providing that for our students, they'll look at other campuses."

"This wireless mesh network," says Zimmerman, "was a combination of a very good product and a vendor who was very helpful to the University of Arkansas. With their support — from the engineering staff through to the sales staff — we were able to bring this network to the campus during the summer, create it, and have it operational within a very short time. It was just the breakthrough technology we were looking for."



Wireless mesh on the campus of the University of Arkansas.



- Wireless AP 7220
- Wireless AP 7220 at Network Access Point



The Nortel Wireless Mesh Network solution is extending to University of Arkansas students Internet and e-mail access across very nearly a hundred percent of the campus.

In the United States:

Nortel
35 Davis Drive
Research Triangle Park, NC 27709 USA

In Canada:

Nortel
8200 Dixie Road, Suite 100
Brampton, Ontario L6T 5P6 Canada

In Caribbean and Latin America:

Nortel
1500 Concorde Terrace
Sunrise, FL 33323 USA

In Europe:

Nortel
Maidenhead Office Park, Westacott Way
Maidenhead Berkshire SL6 3QH UK

In Asia Pacific:

Nortel
Nortel Networks Centre
1 Innovation Drive
Macquarie University Research Park
Macquarie Park, NSW 2109
Australia
Tel +61 2 8870 5000

In Greater China:

Nortel
Sun Dong An Plaza
138 Wang Fu Jing Street
Beijing 100006
China
Phone: (86) 10 6528 8877

Nortel is a recognized leader in delivering communications capabilities that enhance the human experience, ignite and power global commerce, and secure and protect the world's most critical information. Serving both enterprise and service provider customers, Nortel delivers innovative technology solutions encompassing end-to-end broadband, Voice over IP, multimedia services and applications, and wireless broadband designed to help people solve the world's greatest challenges. Nortel does business in more than 150 countries. For more information, visit Nortel on the Web at www.nortel.com.

For more information, contact your Nortel representative, or call 1-800-4 NORTEL or 1-800-466-7835 from anywhere in North America.

This is the Way. This is Nortel, Nortel, the Nortel logo and the Globemark are trademarks of Nortel Networks. All other trademarks are the property of their owners.

Copyright © 2005 Nortel Networks. All rights reserved. Information in this document is subject to change without notice. Nortel assumes no responsibility for any errors that may appear in this document.

