



Customer Case Study

School District’s Wireless Initiative Helps Raise Computer Literacy

Cisco Unified Wireless Network makes it easy to bring computer-based education to every student in Florida’s Broward County Public School District.

EXECUTIVE SUMMARY

BROWARD COUNTY PUBLIC SCHOOL DISTRICT

- Education
- Broward County, Florida, United States
- 274,000 K–12 students, 17,000 teachers, 13,000 staff, 264 schools

BUSINESS CHALLENGE

- Increase the integration of technology into the curriculum and make PCs and Internet access available to all students
- Deploy a secure, cost-effective wireless communications system district wide

NETWORK SOLUTION

- Deployed secure, scalable WLANs based on Cisco wireless network solutions in all county schools
- Distributed 2000 mobile laptop carts to schools each with 20 wireless-equipped laptop PCs, wireless access point, and printer

BUSINESS RESULTS

- Improved student grades and attendance
- Increased integration of technology for teaching and learning to meet student needs and provide new web based instructional tools

BUSINESS CHALLENGE

Based in Fort Lauderdale, Florida, the Broward County Public School District (www.browardschools.com) is the sixth largest school district in the United States. The district educates 274,000 kindergarten through 12th grade students, and has 17,000 teachers, 13,000 staff members, and 264 schools.

Like public school districts throughout the country, the Broward County Public School District faces constant pressure to improve student performance. Added to the challenge are state and federal initiatives, such as the National Educational Technology Standards, which urge schools to increase technology-based education and raise student technology literacy. The district determined that wireless LANs (WLANs) deployed in every school could help by providing broader access to web based applications such as the integrated learning systems, which offers individualized tutorial instruction and tracking of student progress and interactive curriculum based tools that maximize the multimedia power of technology for learning.



District officials also believed that they could improve technology literacy and student performance by making wireless-equipped laptop computers available to all students.

“We want our students to be prepared as they go out into the world, and a wireless

environment is an essential part of preparing students to be successful in the 21st century,” says Dr. Jeanine Gendron, Director, Instruction Technology, Broward County Public School District. Additionally, the district concluded that WLANs would enable students to complete assignments in a variety of locations throughout campuses such as libraries, lunch rooms, and common areas rather than just in classrooms.

In 2003, the Broward County Public School District approved a Digital Learning Environment Study (DLES) to determine the feasibility of deploying wireless networks district wide to support the incorporation of web-based instructional tools for learning for every student. As part of the study, the district installed wireless overlay networks in two high schools, one middle school, and one elementary school, and distributed wireless laptops to all teachers and students at each location. The district’s challenge was to implement a wireless environment that could be managed and monitored at a central site with minimal responsibility by on-site school-based staff. If successful, the district would then implement this wireless solution in every other school.

NETWORK SOLUTION

The Broward County Public School District worked in collaboration with Edina, Minnesota-based JDL Technologies to design, implement, and manage a wireless solution. The district wanted a solution by a single equipment vendor that would make it easy to manage and monitor tens of thousands of wireless devices deployed throughout the district's large geographical area. The district also needed a system that would easily support a growing number of students and classrooms. "Because we are such a large district and are continually adding portable classrooms, we wanted a solution that was scalable on an enterprise level," says Doug Pearce, District Network Coordinator. JDL Technologies, a Cisco Registered Partner and longtime network administrator for the Broward County Public School District, provides services exclusively for K–12 schools throughout the United States.

JDL Technologies recommended a Cisco® Unified Wireless Network, which includes Cisco Aironet® 1000 Series lightweight access points, Cisco wireless LAN controllers, and the Cisco Wireless Control System (WCS). All elements work together as a complete system to support critical wireless applications for large campus environments. The system provides the control, scalability, security, and reliability that the Broward County Public School District requires.

In an effort to expand the successes evidenced by the DLES at an affordable cost, the district began a five-year project to deploy and manage wireless networks in all schools. The district determined that all students would receive an equitable technology rich teaching experience through distribution of 2000 mobile carts in the remaining schools during the 2005–2006 school year, each loaded with 20 wireless-equipped Dell or Apple laptop computers, a Cisco Aironet 1000 Series lightweight access point, and a printer. The six-wheel carts can be moved from classroom to classroom and are available for teachers to use as needed.

JDL also deployed one Cisco wireless LAN controller in each school. The controllers manage system wide WLAN functions, such as security policies, intrusion prevention, radio frequency (RF) management, quality of service, and mobility. Cisco WCS deployed in the district's Educational Services Department building in Fort Lauderdale allows JDL and district IT staff to control and monitor all WLANs from a central location, simplifying operations and reducing the total cost of ownership.

JDL designed the solution to enable dynamic load balancing between access points to prevent bandwidth bottlenecks. "When a student powers on a laptop in a classroom, that laptop might connect to any one of three access points," says Paul Del Prete, vice president of technology for JDL Technologies. "The access point could be in the room next door or two rooms over. That provides much better speed and performance than if students only connected to the access point on the cart in their classroom."

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BUSINESS RESULTS

The new wireless network has enhanced the way that students learn and how teachers educate. Many teachers now plan entire course units using lesson plans accessed on the district's online teacher Web portal. Lessons include assignments and research that students can access via the Internet.

"Before, there would be a few PCs in the back of each classroom, which were not enough to give every student a practical learning experience. Now teachers can distribute a laptop to every child and bring the whole classroom on board at once," Pearce says. "Teachers can walk into class and say, 'Students, we are going to do a lesson on the human circulatory system and then you are going to create a PowerPoint presentation. Now visit this Internet site and start reading about circulation.' Even teachers who once were reluctant to use computers in the classroom are now excited." Pearce also says that a large percentage of students can be seen doing homework and research on laptops in common areas throughout campuses.

The new wireless system has impacted schools in other important ways, school officials say. In Attucks Middle School, for example, students who may have once cut class or had other behavior problems now attend class consistently. "Parent involvement and attendance has increased while discipline problems have been reduced," says Angela Coluzzi, Director of Network Integration, Broward County Public School District. As another example, Broward Estates Elementary School went from a "C" rating awarded by the state board of education for the 2003–2004 school year to an "A" in 2004–2005. "Several factors such as parental involvement and strong principal leadership all came into play. But technology was clearly a factor," Gendron says.

The wireless network has also proved to be a benefit for network administrators. With the new centrally managed system, IT personnel can easily control service quality and find and fix problems. Addition of new laptops and access points is easy due to the use of dynamic configuration. And because the solution features products from a single vendor, upgrades and changes can be made quickly, with no disruption in service. "The solution is so scalable and easy to manage that we have been able to grow from 30 or 40 access points in the district to thousands using the exact same IT staff," Pearce says.

PRODUCT LIST

Routing and Switching

- Cisco 2600 Series and 2800 Series routers
- Cisco Catalyst switches

Security

- Cisco PIX Firewalls

Network Management

- CiscoWorks

Wireless

- Cisco Aironet® 1000 Series Lightweight Access Point
- Cisco Wireless LAN Controllers
- Cisco Wireless Control System (WCS)

NEXT STEPS

Broward County Public School District is in the process of deploying a new Web portal for students. Currently on the Website, students can access learning activities, research databases, information about testing, their own achievement reports, educational games, and digital textbooks. More services will be introduced in 2006.

The district is also evaluating whether to integrate voice communications with the wireless network. Deploying RF identification (RFID) technology, combined with location-based services, would make it possible to track the location of devices and staff. And JDL Technologies is looking at installing mesh networks in some schools to improve wireless coverage and deliver service where signal strength has been a problem. Because the district's wireless infrastructure is based on a unified platform, Broward County schools can bring new technology solutions to the student and teacher population quickly and efficiently, and at a cost that the district can afford.

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