CUSTOMER SUCCESS STORY

INNOVATIVE SCHOOL DISTRICT USES WIRELESS NETWORKS TO BREAK DOWN CLASSROOM WALLS

EXECUTIVE SUMMARY

CUSTOMER

- Fairfax County Public Schools

INDUSTRY

- Education

BUSINESS CHALLENGE

- Virginia's Fairfax County Public Schools (FCPS) is nearly finished with the deployment of a system-wide Cisco Systems Internet Protocol (IP) WAN, which will provide the district with a secure, flexible network architecture capable of supporting data, voice, and video communications, as well as to intelligently deliver the highest levels of network bandwidth where it's needed.

NETWORK SOLUTION

- The network has one of the largest installations of wireless access points—approximately 7,500—in the United States. With wireless connectivity throughout the 242-site school system, students are able to use laptops connected to the Internet for learning outside the classroom. By putting wireless laptops on rolling carts, FCPS can easily deliver computers into any classroom, and the district has converted space previously used to house computer labs—no longer needed—into much-needed additional classroom space.

BUSINESS VALUE

- Cisco networking technology is helping gifted students take higher-level courses online. Meanwhile, students with learning challenges are being identified much sooner, so they get the help they need earlier. Students at all levels are learning to collaborate better and think critically—skills that will help them beyond high school.

The Fairfax County Public School System takes an innovative approach to learning by using a campus wide wireless network to move education *out* of the classroom.

Using computers to enhance education in the classroom is nothing new. But using wireless computers to take education out of the classroom *is*, and the Fairfax County Public Schools (FCPS) system in Fairfax County, Virginia is at the forefront of this budding movement.

By the end of 2005, FCPS will have provided high-speed wireless network connectivity to "every nook and cranny in every school building," in the county, says Maribeth Luftglass, the school system's chief information officer. The project, in which 7,500 Cisco Aironet 1100 Series access points are being deployed throughout FCPS's 242 schools and other facilities, is "one of the biggest wireless installations in the country," Luftglass says.

BUSINESS CHALLENGE

About four years ago, FCPS decided that the Internet could significantly enhance education if it could be made easily available to all students and faculty members through wireless connectivity. In addition, FCPS wanted a network capable of supporting data, voice, and video communications. Among the goals was to enable videoconferencing with students around the world.

At the time, however, FCPS relied upon an unwieldy combination of a variety of network architectures, vendors, and technologies, according to Luftglass. "We constantly faced reliability issues and had to contend with a lack of accountability between vendors when things went wrong," she says. The mixed architecture also limited FCPS's efforts to increase network bandwidth.

FCPS chose Cisco Systems as the single provider of its wide-area network (WAN). "Our rigorous testing showed that Cisco equipment was the most reliable, and its service and support was just what we needed," says FCPS's Cathy Sells.

NETWORK SOLUTION

Today, the Cisco network infrastructure installation is nearly 80 percent completed, according to Sells, with some equipment currently being upgraded to further increase bandwidth.

Two data centers are at the core of the school system's WAN, with Cisco Catalyst 3750 switches at six distribution sites and Cisco 2821 integrated services routers at each school or other district site. The switches located at each site vary between elementary, middle, and high schools. Higher-density Cisco Catalyst 4500 Series switches are deployed at high schools, where the most network bandwidth for e-learning applications is required.

FCPS has been innovative not only in its use of network technology, but in its financing as well. Before most other school districts were even aware of E-Rate, a federal government program providing schools and libraries with financial assistance for Internet and other high tech equipment, FCPS was receiving up to 46 percent rebates through the program, according to Luftglass. FCPS also has developed partnerships with technology companies, including Cisco, which contribute equipment and financial assistance.

FCPS students can now take the Standards of Learning tests online. Results are received within 24 hours, instead of weeks or months.

BUSINESS VALUE

A critical goal of this innovative project is to "break down classroom walls," enabling the county's 165,000 students to learn outside the traditional classroom setting, Luftglass says.

For example, consider a group of students assigned to prepare a collaborative report on butterflies. The students might regularly meet in the cafeteria after lunch hours and research their subject on the Internet with wireless laptops. Or they may meet in the school library, accessing the Internet with their wireless portables while they search for information in library books, magazines, and other materials.

Outside, the students could use digital camcorders borrowed from the school media lab to capture video of butterflies. At home, a student could edit the video on a computer and add it to a Microsoft PowerPoint presentation. The completed presentation could be run from the student's laptop and displayed to the class on the classroom's LCD monitor.

FCPS is using its wireless network in another innovative way—to increase physical space. Like many public school systems, FCPS faces limited resources. But the challenges for FCPS, as the 12th largest school system in the United States, are particularly acute. For instance, FCPS uses 750 trailers throughout the school system to add much-needed classroom space, according to Luftglass.

Wireless technology has allowed FCPS to convert space previously used exclusively as computer labs into much-needed classrooms. With wireless laptops now stowed on portable carts, there is no longer a need to dedicate much-needed space to house computers. Instead, the computers can now move easily into any classroom, allowing students access to the equipment from the classrooms they already occupy. As a result, FCSP gains new classroom space, which helps reduce overcrowding.

FCPS has emerged in recent years as a public-education leader for its innovative use of technology. In Newsweek's list of the top public high schools in the U.S., all 24 of FCPS public high schools were included in both 2004 and 2005, a ranking partly attributable to the district's ambitious use of computers, according to Luftglass.

In addition to breaking down classroom barriers and increasing classroom space, Cisco network technology enables FCPS to innovate—and provide a superior education—in other crucial ways, including the following:

- **Less disruption for gifted students.** Before, a mathematically gifted middle school student who wanted to study Algebra would have had to travel to the nearest high school to take the course. Today, however, she can take Algebra 2 online, inside her own classroom. Gifted students can now access the advanced academic opportunities they deserve, without the cultural disruptions, transportation issues, and social challenges they would have endured under the old system.

- **Improved education for challenged students.** FCPS students can now take the Standards of Learning tests, required by the state of Virginia, online. Results are received within 24 hours, instead of weeks or months. The district can now identify struggling students much sooner in the school year and can get them the help they need earlier, according to Luftglass.
- **More graduating seniors.** Another benefit of the ability of students to take the tests online is an improved graduation rate. Previously, some seniors didn't receive their Standards of Learning test results until graduation day. By then, it was too late for students with poor results to retake tests in order to graduate. Now, with online testing enabling fast results, more students are graduating on time, according to Luftglass.
- **Customized instruction for all students.** Thanks to improved access to online resources, FCPS teachers can create customized, computer-assisted instruction for each student based on his or her needs. Students learn more quickly and advance more easily as a result.

Ultimately, FCPS's innovative use of technology is helping students learn to collaborate better and think critically. And that means they're much better prepared for life beyond high school. Luftglass relates the reaction when the district took a group of sixth graders into the private sector to meet executives. "The executives were impressed," says Luftglass. "They all wanted to know if the six graders could come to work for them."

FOR MORE INFORMATION

Learn more about the complete line of wireless networking solutions from Cisco Systems at:www.cisco.com/go/wireless

To find out more about how Cisco solutions are changing the way teachers teach and students learn, or to find more education-related customer case studies, go to:www.cisco.com/go/education

This customer story is based on information provided by Fairfax County Public School System (FCPS) and describes how that particular organization benefits from the deployment of Cisco products. Many factors may have contributed to the results and benefits described; Cisco does not guarantee comparable results elsewhere.

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