Washington School District Unwires the Classroom Experience

Kent School District's wireless network gives students and teachers access to learning inside and outside the classroom.

<table>
<tr><td colspan="1">EXECUTIVE SUMMARY</td></tr>
</table>

EXECUTIVE SUMMARY

KENT SCHOOL DISTRICT
- Education, K-12
- State of Washington, United States
- 3200 employees

BUSINESS CHALLENGE
- Bring innovative digital educational content and the Internet into the classroom
- Overcome inflexible system of dedicated computer labs and limited wireless connections
- Reduce IT staff effort in maintaining access points

NETWORK SOLUTION
- Deployed flexible wireless network across entire school system to support new educational tools and modes of learning

BUSINESS RESULTS
- Provided highly manageable, easy-to-use, pervasive network connectivity
- Built a highly flexible, continually scalable wireless network foundation
- Created a state-of-the-art learning environment that allows students and teachers to fully embrace technology in the classroom

Business Challenge

Kent School District is the fourth-largest school district in the state of Washington, with 40 schools serving 27,000 students. The district has long recognized the important role technology can play in enriching the learning environment. "It is important to prepare our students for the challenges of higher education, the work force, and life in general," says Thuan Nguyen, Director of Information Technology at Kent School District. "Technology is an important component of that preparation."

District leaders developed a detailed plan for equipping every one of the district's seventh-through 12th-grade students with laptops that allow them to wirelessly connect to school information systems and the Internet anywhere, and to use state-of-the-art learning technologies in the classroom. District leaders recognized, however, that the computer labs and limited wireless connectivity that had been used previously in some schools could not provide the flexibility that students and teachers needed to truly take advantage of technology in the classroom.

"With computer labs, technology use was isolated because teachers had to take students out of the normal learning environment," says Nguyen. "Teachers had to know beforehand that they would be using the lab and how long the lesson would take. That required a cost-benefit analysis and an all-or-nothing approach that often worked against the use of technology. It was often easier to just remain in the classroom."

Some schools were equipped with mobile computer carts, but using them required a time-consuming and sometimes confusing setup process, with teachers having to connect a wireless access point in the classroom to use the computers. And, whenever a wireless software or security update was required, IT staff had to manually configure each access point. To lay the foundation for the district's ambitious technology vision, Kent School District leaders realized they needed to rethink the way they were using wireless technology.

Network Solution

The first step in the district's plan was to put in place a truly pervasive wireless network that would allow students and teachers to connect from classrooms, libraries, and anywhere else on school grounds. The network would have to be highly secure. It would have to be standards-based to support a wide range of clients, access points, and wireless-enabled laptops. And, it would need to be scalable enough to allow the district to continually expand the network and deploy new applications and services over time. After considering several wireless LAN options, district IT leaders chose the Cisco® Unified Wireless Network.

"We like dealing with Cisco, and all of our core network gear is Cisco," says network engineer Aaron Hanson, who is responsible for the operation and management of the wireless network at the Kent School District. "We had confidence in Cisco's maintenance and service and in the company itself, and we knew Cisco would continue to develop the technology over time. We felt that Cisco was the right direction to go."

Kent School District initially deployed 1200 access points, running on a number of wireless LAN controllers, to cover all 40 schools and the district's two administrative buildings with a wireless LAN. With total wireless coverage, teachers and students can simply boot up their computers and easily connect with the network.

"Our buildings now have several wireless laptop carts, each equipped with 30 laptops," says Nguyen. "Teachers can check out a few laptops at a time or the whole cart. This allows for greater flexibility and for more project-based learning and individualized instruction."

Next, Kent School District selected one middle school to pilot the district's "1:1" program, issuing a wireless-enabled tablet for every student. The program began with three seventh-grade classes and was expanded to another grade level the following year. By 2007, a second school in the district had begun to implement the 1:1 program as well.

Throughout the rollout process, the IT team continuously deployed additional wireless access points to support growing usage requirements. IT engineers are able to easily and centrally manage all of the access points and LAN controller appliances with the Cisco Wireless Control System (WCS).

> ## "This is an important step to fully integrating technology into the classroom in a way that prepares students for the increasing use of technology in the real world."
> **—Thuan Nguyen, Director of Information Technology, Kent School District**

"Instead of having to touch each access point and configure it manually, we can configure all settings dynamically with the Cisco WCS," says Hanson. "That has made this process tremendously easy for us. With the manpower we have, it would not be possible to deploy and manually configure this many access points."

Kent School District also takes advantage of the location services available in the Cisco Unified Wireless Network solution. Using the Cisco Wireless Location Appliance, the district's IT department can maintain a continuously updated picture of all users on the wireless network. "It provides us with great visibility into the network," says Nguyen. "We can easily determine how many users there are, what demands those users are placing on the system, and how the system is being used. As a result, we can predict our future needs with more accuracy."

Business Results

Today, Kent School District is achieving the state-of-the-art learning environment that district leaders envisioned, in which all students can benefit from technology. Students are able to access their assignments and submit homework using file-sharing applications over the wireless network. Teachers are taking advantage of state-of-the-art Blackboard e-learning tools and the Internet, and delivering dynamic presentations and streaming video materials in the classroom.

"The wireless technology has dramatically changed the way computers are utilized in the classroom," says Nguyen. "We no longer need dedicated, costly labs or regimented student lab time. Now, teachers have the flexibility to integrate technology into their lesson plans. This is an important step to fully integrating technology into the classroom in a way that prepares students for the increasing use of technology in the real world."

PRODUCT LIST

Routing and Switching
- Cisco Catalyst® 6509 Series Switch
- Cisco Catalyst 3750 Series Switch
- Cisco Catalyst 3560 Series Switch
- Cisco 2800 Series Integrated Services Router

Security and VPN
- Cisco ASA 5500 Series Adaptive Security Appliance

Voice and IP Communications
- Cisco Unified CallManager
- Cisco Unity® Voice Mail

Wireless
- Cisco 4400 Series Wireless LAN Controller
- Cisco Aironet® 1000, 1130 and 1230 Series Access Points
- Cisco Wireless Control System
- Cisco 2700 Series Wireless Location Appliance

In addition to providing new capabilities, the Kent School District wireless network is also much more accessible and easy to use than the district's previous wireless solutions. "Things like power and network ports are no longer major considerations for the teaching staff," says Nguyen. "The teachers and students can focus on teaching and learning instead of how to make the technology work."

Even more important than the new ways in which teachers can deliver education is the ways in which students can receive it. At the schools implementing the 1:1 program, the ability to access information from a laptop anywhere on campus is fundamentally changing the way students learn and work.

"Having a reliable wireless network allows students to learn just about anywhere," says Nguyen. "We have observed kids doing school work in hallways, cafeterias, and on the outdoor campus. Students are consistently showing up to school early and hanging around the perimeter of the building so that they can access the wireless network and do school work. It offers great flexibility for students and teachers in terms of when, where, and how to use technology."

Next Steps

The IT team is currently piloting a voice-over-wireless LAN solution that will allow employees to communicate from anywhere on any district campus using wireless IP phones. The team also plans to use the network's location services to track district equipment using radio frequency identification (RFID) tags.

As part of the district's most ambitious project yet, school district leaders also plan to extend the Cisco wireless network to students' homes. Kent School District already partners with the local Internet service provider to subsidize Internet access for employees and students. Now, district leaders and municipal governments are planning an outdoor wireless network that would connect residents throughout the entire district.

For More Information

To find out more about the Cisco Unified Wireless Network solution, visit: http://www.cisco.com/go/unifiedwireless.

To find out more about Cisco education solutions, visit: http://www.cisco.com/go/education.

For more information on the Kent School District, visit: http://www.kent.k12.wa.us.