

Taking Academic Networking to the Next Level with Converged Networking

Kent School District depends on its Cisco network to power rich media applications for students and staff.

EXECUTIVE SUMMARY

Kent School District

- Industry: Education, K-12
- Location: State of Washington, United States
- Number of Employees: 3200

Business Challenge

- Deliver students and staff new applications such as voice, video, wireless networking, and virtualized applications.
- Improve network availability and reliability.
- Enhance network flexibility to support new tools and applications as needed.

Network Solution

- Cisco Catalyst 6500, 3750, 3560, and 2960 Series Switches improve network bandwidth and performance for rich media applications.
- CiscoWorks LAN Management Solution (LMS) simplifies network configuration, administration, monitoring, and troubleshooting.
- Cisco Unified Communications delivers clear phone communication and messaging to all campus sites.

Business Results

- Rich media applications help enhance learning, enable staff to be more productive, and improve public safety.
- Converged voice and data network can be managed more efficiently and cost-effectively.
- Uniform network environment helps increase network availability and eases staff hiring.

Business Challenge

The Kent School District in the State of Washington has a long tradition of innovation. With 27,000 students at 40 schools, the District depends on its network to enrich its learning environment and help instructors and administrators work more effectively.

“Our network supports all of the student systems at our schools, including attendance, administrative tools, and a wide variety of instructional applications,” says Stephanie Wienker, technical systems manager at Kent School District.

To enable its students and staff to take advantage of the latest technologies, the District wanted to prepare its network for applications such as Voice over IP (VoIP), IP video surveillance, wireless networking, and virtualized applications. Although the district had a high-speed wide area network (WAN), limited bandwidth to the desktop hampered network performance. Network management was another roadblock, because the Kent Schools’ edge network was made up of products from several different vendors.

“We had a mixed bag of networking equipment in place that was impossible for us to manage,” says Thuan Nguyen, director of information technology at Kent School District. “We had very little visibility into the entire network, which made troubleshooting a lot more difficult. It was also a challenge to find staff who were familiar with the multiple vendor devices in our infrastructure.”

Kent Schools needed a consistent, uniform network solution for its 40 schools that could be centrally managed by its four network engineers. The solution would need to deliver the performance needed for demanding applications such as voice and video. At the same time, it would have to be flexible to take on new applications when the District required them.

“We chose the Cisco solution because of its superior performance. Having a uniform network all the way from the core out to the edge just gives us that much more flexibility in what we do, and that much more visibility into our environment.”

—Thuan Nguyen, director of information technology at Kent School District.

Network Solution

After considering several options, Kent Schools upgraded the District network with a solution built around Cisco Catalyst® switches.

“We chose the Cisco solution because of its superior performance,” says Nguyen. “Everybody knows that Cisco makes the best core equipment, and having a uniform network all the way from the core out to the edge just gives us that much more flexibility in what we do, and that much more visibility into our environment.”

At the network core, the District installed Cisco 6509 Series Switches, which deliver high port density and superior performance in a flexible platform. At the network edge, Cisco Catalyst 2960, 3560, and 3750 Series Switches deliver 10/100/1000 Ethernet connectivity and Layer 2 switching with intelligent Layer 2-4 services, providing plenty of bandwidth for voice and video applications. The switches also include built-in management tools to ease network administration.

Cisco Catalyst 3560 and 3750 Switches provide Power over Ethernet (PoE) support, using both the Cisco Inline Power standard and the IEEE 802.3af specification.

“PoE was a non-negotiable requirement for our voice system, because we were trying to keep conversion costs down,” says Nguyen. “Our previous phones didn’t require a power outlet, so we needed a solution that would not require additional power or wiring.”

The new high-speed switched network provides support for Cisco Unified Communications, enabling the district to run its phones over a converged IP network.

“Cisco Unified Communications is completely replacing our old phone system,” says Wienker. “We use it for everything, including calls inside and outside schools, fax machines, and intercom systems. We can do four-digit dialing and messaging as well.”

“We are also exploring ways to add videoconferencing and seamless cell phone support to our phone system,” says Nguyen.

Public safety is a top concern for every public school, so the District replaced its aging analog security cameras with a converged IP security solution. The solution lets Kent Schools connect its security cameras to local law enforcement networks, giving police a live video feed from any campus in the event of an emergency.

"Our program has been so successful that the State of Washington held an emergency incident response drill at one of our campuses," says Nguyen. "We were able to simulcast the incident to several different command centers, enabling officers to plan their strategies before going into the building. We worked closely with local law enforcement to make sure that their network and laptops worked smoothly with our security system."

The Cisco network is also improving instruction at the school by providing support for a Cisco Unified Wireless Network. With total wireless coverage, teachers and students can connect with the network anywhere on campus to access the Internet, work on assignments and submit homework from their laptops.

To manage the switched network, Nguyen and his team use CiscoWorks LAN Management Solution (LMS), a suite of powerful management tools that simplify configuration, administration, monitoring, and troubleshooting. CiscoWorks LMS gives the District a centralized system for sharing device information and increasing awareness of the state of the network.

Business Results

Installation of the new network was a smooth process, and the District was able to upgrade its entire infrastructure in a matter of weeks, with minimal disruption to services.

"In less than two months, we were able to replace 6000 network ports at 40 sites, without any major interruptions or installation problems," says Nguyen. "We did all this with our four technical staff members, and several student helpers."

Now that the Cisco networking solution is in place, Kent Schools is taking full advantage of its network to deliver on the promise of converged networking.

"We have been lucky enough to have an extremely robust WAN that gave us Gigabit Ethernet potential for several years," says Nguyen. "Our Cisco solution lets us enhance our local network to match what the WAN is capable of doing—and we're finally there."

By migrating to an IP-based security system and VoIP, Kent Schools was also able to unlock a substantial cost savings compared to its earlier systems.

"We no longer have to worry about separate networks, maintaining ISDN lines for the videoconferencing system and analog lines for the phone system," says Nguyen. "For us, the network pays for itself. It was only possible because of the converged network that we have built."

The new Cisco infrastructure has made network management easier as well. Administrators can easily push out new configurations or update software from a central point, saving time and money. The standardized platform has also made part replacement easier.

"Network maintenance is much easier using a single platform," says Wienker. "If a network component fails, we have spares on site, and we can swap them out as needed."

The network is more reliable than ever, because CiscoWorks LMS helps the District to detect problems before they occur with systemwide, device-specific monitoring.

"We use CiscoWorks LMS for performance monitoring and testing," says Nguyen. "One of the best features of Cisco Catalyst switches is that we can monitor performance from within the switch, without having to add another host onsite."

The District also relies on the Cisco Technical Assistance Center (TAC) to keep its network applications up and running.

"We have a large number of maintenance contracts and Cisco is the most responsive of all our vendors," says Nguyen. "When we have a network issue, we count on their four-hour response time to have the problem resolved."

Migrating to a uniform network environment has also helped the District to staff its IT organization more easily.

"We no longer have to worry about finding someone with a wide mixture of skills in order to support our environment," says Nguyen.

Next Steps

With its end-to-end Cisco network solution in place, the Kent School District is already making plans to take advantage of more rich media applications to improve instruction.

"We will implement streaming video into the classroom over the next year," says Nguyen. "Every classroom will have a video projector and an interactive electronic SMART board when the initiative is complete. We are banking on the scalability of our Cisco network to support new applications."

Because the Cisco network was designed to easily support growth, Kent Schools can continue to build on its foundation and add new capabilities for students, instructors, and staff.

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 Communications Manager
- 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

For More Information

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

To learn more about Cisco Catalyst Switches, visit: <http://www.cisco.com/go/catalyst>

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



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