NAPERVILLE SCHOOL DISTRICT ENHANCES THE LEARNING EXPERIENCE WITH ONE-TO-ONE COMPUTING ENABLED BY JUNIPER NETWORKS

Summary

Company: Naperville Community Unit School District 203

Industry: K-12 Education

Challenges: Enhance the student's learning experience by providing instructional technologies while ensuring secure network access for personal and district-owned computing devices

Selection Criteria: A cost-effective, flexible, and secure solution that supports a "bring your own mobile device" initiative

Solution:
- Unified Access Control (UAC), including the IC6500 appliances
- ISG Series gateways
- EX Series switches
- STRM Series managers
- Network and Security Manager

Results:
- Allowed the district to move toward one-to-one computing, including allowing students to bring their own devices to school
- Ensure high-performance, secure campus and data center networks
- Support administrative applications on the same infrastructure as student-owned mobile devices

Located 28 miles west of Chicago, Naperville, Illinois, consistently ranks as one of the most desirable communities in which to live. In keeping with its reputation, Naperville Community Unit School District 203 has long recognized that technology in the classroom is a must-have to keep today's students engaged and prepare them for the future.

The school district's success is nationally recognized. Naperville's two high schools were rated in the top 3 percent of public high schools in the nation by U.S. News & World Report in 2008 and 2009. The district met 99 percent of the Annual Yearly Progress (AYP) indicators for No Child Left Behind for the 2008-2009 school year.

School District 203 educates 18,000 students and employs nearly 2,500 staff. Its operations span 25 locations, including two high schools, five junior high schools, 14 elementary schools, an early childhood center, as well as administrative offices.

Challenges

As the need for and use of instructional technology expanded at the Naperville Community Unit School District, so did the computing devices. The number of networked devices more than doubled in the past three years. The district anticipates that it will have 17,000 laptops, tablets, PCs, projectors, interactive whiteboards, e-readers, iPod touch devices, and other computing devices by the end of 2011.

The Naperville Community Unit School District is taking a bold approach toward achieving the benefits of one-to-one computing for students. By developing the technical infrastructure to allow students and staff to bring their own laptops, tablets, smartphones, and other computing devices to school, the district will be able to more effectively work with its teaching and learning function to integrate these technologies into the curriculum to provide classroom benefit while at the same time decreasing the need to purchase additional end user devices.

"We're a progressive district," said Rich Fiore, director of IT for the Naperville school district. "To move from success to significance, we need to find a controlled approach to integrating technology in the classroom."

But allowing students, teachers, and staff to use their own mobile devices to access the school's applications and resources would only be successful if the school district could provide seamless access, strong security, and operational efficiency. The school district decided to offer secure guest access via wireless LAN (WLAN) as the first step, followed by a campus-wide rollout of network access control (NAC). The district also saw the opportunity to improve the performance of campus and data center networks to support the performance demands of technology-immersive education while reducing cost.

"The technical solution and support from Juniper Networks has created a foundational capability for our District," said Roger Brunelle, chief Information officer. " This now moves the discussion to focus on how our curriculum and classroom management processes can be adapted to best reap value from the influx of technologies. Having a stable and secure technical environment allows us to have those key discussions."

Selection Criteria

The Naperville school district began exploring its options. With the help of Arlington Computer Products, its solution provider, the school district issued a Request for Proposal for secure network access.

One major requirement was that the Naperville school district's network had to be upgraded seamlessly without interrupting classroom instruction or district operations. In addition to supporting classroom activity, the district's network is the underpinning of all key administrative applications including those that support school and back office operations, such as student information systems, data warehousing and analytics, finance, human resources, and transportation. Physical security, including IP-based video surveillance cameras and key cards, depend on uninterrupted network operations. Similarly, the phone system, paging system, and E911 system depend on the network. Critically, any technical missteps might mean that teachers would not willingly embrace the new technologies—defeating the district's goal of using instructional technology in the classroom.

By selecting Juniper Networks, the Naperville Community Unit School District changed the economics of its network. The school district chose Juniper for its solutions that offer network protection, operational simplicity, networking performance, flexibility, and total cost savings.

> "We want to move the pillar of learning from the classroom to anywhere in the building and beyond. With Juniper Networks, we have the performance and availability we need to do that. Juniper eliminated the bottlenecks."
>
> Rich Fiore,
> Director of IT infrastructure, Naperville Community Unit School District 203, Naperville, Illinois

Solution

The school district deployed Juniper's network and security solutions to support its 21st century learning environment. The school district has a private gigabit fiber network that connects its schools, administrative buildings, and primary data center. A secondary data center, Naperville North, is also connected by fiber.

In the first phase of its "bring your own mobile device initiative," the Naperville school district is offering wireless guest access. Students, teachers, and staff can use their personal and district-owned laptops and other mobile devices on the school's WLAN while the district's security policies are enforced. It uses Juniper Networks® Unified Access Control (UAC) to create a dynamic network access policy for each user that is based on the user identity, device security state, and network location.

In the second phase, the school district is rolling out network access control (NAC) with Juniper Networks infrastructure. "As we move forward with NAC, we will follow our security model," said Fiore. "We have a methodology that has proven to be safe and reliable and has allowed us to run core systems, such as IP paging and the bell system, keycards, video surveillance and many critical operations over the same network. If we didn't have strong security, we couldn't support both classroom and administrative applications on the same infrastructure."

The Naperville schools use the Juniper Networks UAC solution, including the Juniper Networks IC6500 Unified Access Control Appliance. The IC6500 is a hardened, centralized network access policy management server that delivers scalability, performance, and redundancy.

The IC6500 UAC Appliance, through the UAC Agent or UAC's agent-less mode, gathers user information, endpoint security state, and device location data to define dynamic network access policies, which it then distributes to enforcement points across the network. Enforcement points may include 802.1X-enabled access points and switches, including the Juniper Networks EX Series Ethernet Switches, as well as Juniper Networks firewalls.

Naperville Community Unit School District chose the ISG Series gateways for NAC enforcement. The Juniper Networks ISG2000 Integrated Services Gateway is a fully integrated firewall, VPN, and intrusion detection and protection (IDP) system with multi-gigabit performance, a modular architecture, and rich virtualization capabilities. It delivers up to 4 Gbps of firewall throughput.

The district also implemented Juniper Networks STRM Series Security Threat Response Managers as part of its NAC deployment. The STRM Series provides a converged point of network performance and security management, including integrated logging, and threat and compliance management for Juniper Networks environments, including UAC.

The Juniper Networks EX Series Ethernet Switches provide access-layer connectivity for 23 buildings on the Naperville school campuses. The single rack unit EX2200 line of Ethernet switches provide a compact solution for crowded wiring closets and access locations where space and power are at a premium, delivering a level of functionality and performance normally associated with higher cost solutions.

The Naperville school district deployed the Juniper Networks line of EX4200 Ethernet switches at the core of the network of its primary and secondary data centers. "The core network now is 100 percent Juniper Networks," said Fiore.

The EX4200 switches include Virtual Chassis technology, which allows up to 10 interconnected switches to operate as a single, logical device. With Virtual Chassis technology, the EX4200 delivers a high-performance, scalable solution for data center and campus environments that combines the availability and reliability of modular systems with the economics and flexibility of stackable switches.

The EX4200 and EX2200 switches run Juniper Networks Junos® operating system, a reliable high-performance OS for routing, switching, and security. Junos OS reduces the time necessary to deploy new services and decreases operating costs.

The IT staff uses Juniper Networks Network and Security Manager to centrally manage its network. "NSM is a great tool to manage our network remotely," said Fiore. NSM improves IT network management, lowers costs, and maximizes network performance and security. It provides unified and centralized device management for the Juniper network and security devices. It provides network device lifecycle management, granular policy configuration, and tools for monitoring, investigating, and reporting.

Results

Naperville's schools have benefited from Juniper Networks' experience and economics. The new network for its campus and data centers supports the enhancement of the learning experience for all students in a way that is cost-effective for the school district—which is essential in today's uncertain economy.

"We want to move the pillar of learning from the classroom to anywhere in the building and beyond said Fiore. "With Juniper Networks, we have the performance and availability we need to do that. Juniper eliminated the bottlenecks."

The new network can readily support the instructional technology favored by the students and the district. It can stream video to every classroom and allow teachers to teach from tablets. Every core district classroom has a wireless projector, so students are heads-up in learning, not heads-down in static textbooks and worksheets. And more special education students can use computer-based learning, which is a critical part of their individualized education plans (IEPs).

Moving to a one-to-one computing model also saves money. "We anticipate that over the next few years as more personal devices are used by students and teachers and are secured by Juniper Networks, we will see less demand for district-owned devices," said Fiore. "If we can reduce the number of district-owned devices by one-third, we will realize a huge savings in capital costs, time, and personnel."

With Juniper solutions delivering secure network access, the school district can ensure that its security standards are addressed and enforced, and that its compliance obligations are met. "With Juniper, we can bring personally-owned devices into the network in a controlled manner, so that our IT staff is not worried that a student who connected to Limewire at home could inadvertently compromise the school's network," said Fiore. "We know that the dissolvable client in Juniper's UAC agent-less mode is checking for patches and enforcing our security policies."

"We had a fantastic experience with Juniper, and our reseller partner, Arlington Computer Products, has been wonderful," said Fiore. "They, along with our own network technical staff – Manager Sue Kamba and Engineers Al May, Bob Wawrzon and Jeri Stodola – fulfilled a seamless transition. The network never stopped and we continue to move forward seamlessly."

Next Steps and Lessons Learned

The district isn't finished. "We're looking at virtual desktop infrastructure, or VDI," said Fiore. "Our plan is to offer applications to non-district devices through a virtual desktop infrastructure which will be enabled by our high-performance network."

The relationship with Juniper has more than paid off. "As we continue to work with Juniper, they have shown that they'll be a partner with us," said Fiore.

For More Information

To find out more about Juniper Networks products and solutions, visit **www.juniper.net**.

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at **www.juniper.net.**

3520403-001-EN   Aug 2011   ♺ Printed on recycled paper