

At-A-Glance

Environment

- Mid-West K-12 School District
- 13,000 Students
- 19 District Locations

Challenge

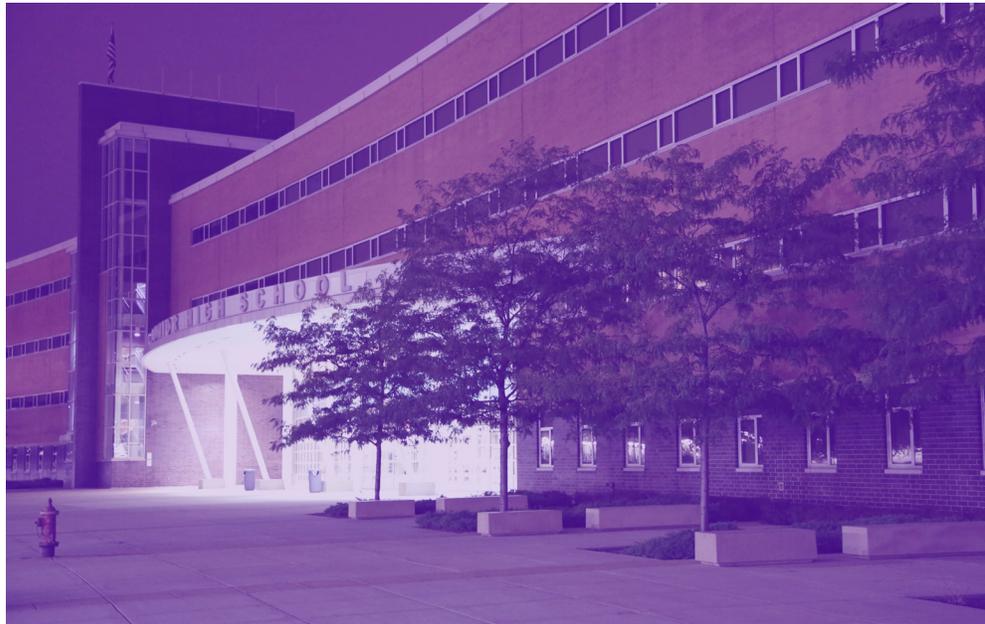
Build a highly resilient network that supports all district services today with the financial and technology flexibility to evolve the network on demand and meet tomorrow's innovative educational opportunities.

Extreme Solution Components

- Extreme MLX Series Core Routers for district-wide core routing
- Extreme VDX Switches for the data center

Results

- Enabled district to acquire equipment today with no upfront capital and the assurance of financial flexibility to meet future network needs with Network Subscription
- Achieved a highly resilient, high-capacity network
- Gained PoE+ capabilities to power a wide range of devices across the campus while maximizing switch port efficiency
- Integrated easily with existing wireless network while retaining the ability to integrate with any vendor's future 802.11ac



Network Acquisition Future-Proofs Network Planning and Deployment at a Mid-West School District

This mid-west school district serves more than 13,000 student. The district's Information Services department is integral to supporting the district's mission of preparing students to become lifelong learners and socially responsible citizens. Its responsibilities span all technology, data and assessment, computer labs, textbook inventory, and media centers deployed in 19 locations across the district.

In the past, the district used its network to enable teachers to occasionally download course worksheets, perform state reporting, or share email. The network was built in an old-style hub-and-spoke configuration of equipment from multiple vendors, and it suffered frequent downtime. In 2006, they upgraded to a core switch and eliminated most of the hubs, which improved uptime and simplified network management.

Since then however, almost all essential operations have migrated to the network. For example, Heating, Ventilation and Air Conditioning (HVAC) systems that were operated manually now are online and controlled remotely. Security cameras were brought online and made accessible to law enforcement. The entire curriculum is now online to support Web-based education. The network also has to support high volumes of video traffic, IPTV, and reporting to the state management system. Even the school lunch system relies on the network.

In addition, wireless traffic represents a dominant portion of network traffic. From PARCC testing to supporting video and curriculum from mobile labs, the new network had to support the existing Cisco wireless network.

“We moved from simply needing Internet connectivity to requiring a mission-critical, high-availability network,” said the Director of Technology and Information Services. “If the network goes down, the students can’t do anything. Lessons are dead in the water. As we looked at our network and the future, we knew that we had to eliminate the network as a single point of failure.”

A Network with Technical Resiliency and Financial Flexibility

The IT team inventoried the district’s current networking needs and projected its future requirements to evaluate suitable replacements. The new network had to provide a resilient, robust core with no single points of failure. It had to provide Power over Ethernet (PoE) to power a wide range of wireless devices today—including wireless access points to support district-wide PARCC Assessment testing—as well as those that the district plans to deploy in the future. The district is also planning to upgrade its wireless network to the 802.11ac Wave 2 standard in the near future, so the new network had to be able to work well with whatever wireless vendor will be chosen and scale to support it as needed.

The flexibility provided by the ability to easily create Virtual LANs (VLANs) without affecting network performance is essential to meeting future business needs.

“We evaluated several leading vendors. We chose the Extreme Networks solution because it allowed us to dramatically improve availability, take full advantage of all ports and bandwidth, and do it cost-effectively.”

Choosing Extreme equipment solved the district’s network performance and resiliency demands.

A Network Built for Anything

The new network core uses Extreme MLX Series Core Routers to meet the district’s reliability and bandwidth demands. Extreme MLX Series Core Routers deliver unprecedented scale and performance, high reliability, and operational efficiency for even the most demanding networks. Extreme Multi-Chassis Trunking (MCT) technology enables the district to create a single logical switch that dynamically load-balances traffic from access layer switches with multiple connections to the core devices. If one chassis fails, trunking automatically moves to the other, achieving nonstop availability.

Extreme VDX 6740 Switches with Extreme VCS Fabric technology are deployed as Ethernet core switches in the data center. They form a scalable, self-provisioning, and automatically healing Ethernet fabric for around-the-clock application and storage availability. They are connected with a 40 GbE connection.

Third party switches are deployed in campus MDFs and IDFs for access and aggregation. They provide high performance and simple expandability with switch stacking technology. They also deliver PoE+ power and data through all ports across network connections.

The Value of High Availability

With redundancy built into the network core and between buildings, the school district achieved its goal of high resiliency. The district was also able to use its supply of dark fiber, which allowed it to deploy multiple 10 Gbps links between buildings and tap Extreme MLX Series Core Routers through the MCT feature for high bandwidth and performance. This first year of PARCC testing was accomplished without downtime.

“How do I put a price on no disruptions for students accessing the curriculum? Everything in our entire budget is to make sure that we maximize the 174 days per year that we have students in seats and in front of teachers.”

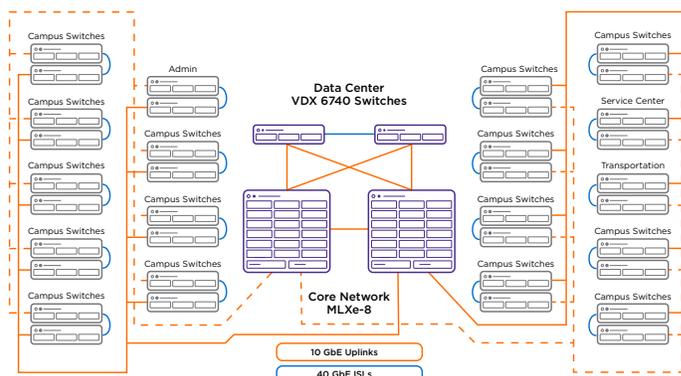


Figure 1: Core and Campus Network

Power On

The new network also delivers far more capacity, ports, and performance than the previous network. With 20 Gbps fiber links, IT now can easily deliver bandwidth-intensive services today and be ready to accommodate any new services, courseware, and applications that emerge over time.

Having PoE+ implemented on every port with full power enables them to power security cameras, physical security and access sensors, and wireless access points across the district. And the fact that the Extreme network will easily support wireless networks using the 802.11ac standard is critical to future wireless deployments.

“The PoE+ capability has been huge for us. The wired network is essential for supporting the wireless network, and PoE+ dramatically reduced cabling while efficiently using all of our switch ports.”

Future Plans

The school district is already looking ahead. Technologies are on the horizon that will enhance the educational experience, as well as the networking solutions that will be needed to support them. One of the primary goals is to support in-classroom broadcasting from tablets to a shared screen in each classroom so that students can share their work and collaborate on lessons more easily.

“We have had an extraordinary experience with Extreme. From helping us understand what was possible, to helping install equipment, the Extreme team is just great. And I am looking forward to whatever the future brings, knowing that we’re covered.”



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