



**ZEBRA**



# Graduating to a More Powerful Wireless Network for K-12

**AN UPGRADE OF ITS ZEBRA WIRELESS LOCAL AREA NETWORK (WLAN) ENABLES THE KENOSHA UNIFIED SCHOOL DISTRICT TO KEEP PACE WITH THE TECHNOLOGY NEEDS OF STUDENTS, FACULTY AND ADMINISTRATION**

The Kenosha Unified School District (KUSD) has always been ahead of the technology curve. The third largest school district in the state of Wisconsin, KUSD has more than 22,000 students, 3,000 staff members and 40 schools covering 3.5 million square feet. Its mission is to provide excellent, challenging, learning opportunities and experiences that prepare each student for success.

## MEETING NEW NEEDS FOR CAPACITY AND CONSISTENCY

In 2010, the district upgraded from what was essentially a patchwork wireless system to a full-scale, integrated Zebra Wi-Fi network to provide coverage for all of its buildings.

The successful network upgrade in 2010 gave staff, students and administrators the

opportunity to begin fully integrating technology into their daily educational and administrative operations across the district – in KUSD’s elementary and middle schools as well as in its three large boundary high schools and various choice programs.

As a result, the number of devices and applications the wireless network now supports has grown exponentially. The continuing push toward online assessment testing at both the state and national levels has increased the demands on the wireless network as well.

Recognizing the need to increase capacity to address its growing connectivity needs, the district recently expanded its network infrastructure to provide additional capacity and coverage.

### SUMMARY



**Kenosha Unified School District**

#### Organization

The Kenosha Unified School District  
Kenosha, Wisconsin, USA

#### Industry

Education

#### Challenge

Wi-Fi access in schools and administration buildings

#### Zebra Solution

- AP 8131 802.11n wireless access points
- AP 7502 802.11ac wireless access points
- AP 7532 802.11ac wireless access points
- AP 7131 802.11n wireless access points
- AP 6532 802.11n wireless access points
- VX 9000 WLAN virtual controller
- WiNG 5 operating system

#### Results

- Flexible, high-performance and robust distributed architecture
- Centralized management, easy to scale and maintain
- Access to more educational tools
- Freedom to teach in new ways
- Improved efficiency and collaboration

## EXPANDING A ROBUST WIRELESS NETWORK

After evaluating request for proposals (RFPs) from more than 20 vendors and conducting comprehensive technical evaluations, KUSD selected Zebra Technologies as the provider of its wireless network. One of the most differentiating features was Zebra’s distributed architecture design. The Zebra WLAN distributed architecture provides controller intelligence locally and at remote locations and allows KUSD to use cloud-based technology to manage the entire solution centrally.

“I was particularly impressed with Zebra’s access points, which could do everything that the other manufacturers’ equipment could do and more – and did it all in a single box,” says Jim Hanrahan, operations and applications support coordinator for KUSD. “It could serve as a stand-alone access point or a managed access point and could drop traffic off locally. Because we are a large district with a lot of different buildings, I didn’t like the idea of all of the traffic being tunneled back to a central controller.”

“With the Zebra equipment, I could also manage thousands of access points through a single pane of glass. I didn’t have to have a bunch of controllers and other devices,” explains Hanrahan. “That was big for me because we are a small shop. I knew one or two people would be managing the whole network. So I needed something that was simple, easy-to-use and robust enough not to require a lot of babysitting or tinkering.”

## MAKING NETWORK EXPANSION EASY

Fast forward to today, and KUSD is thrilled with how easily it has been able to expand and adapt the original network to meet their skyrocketing bandwidth needs.

“We’ve had a pretty big explosion of wireless devices,” says Angie Becker, network manager at KUSD. “We currently support about 17,000 wireless devices.”



To meet this growing demand, KUSD has expanded its wired access network (WAN) to support maximum speeds of 2 Gbps, up from its original 500 Mbps speeds – quadrupling its bandwidth in just a few years. The district is already working on plans to support network speeds as high as 10 Gbps in the very near future.

KUSD still uses its original Zebra 7131 802.11n access points but has taken full advantage of the Zebra equipment’s backwards-capability to add 250 new access points in the last three years – including Zebra AP 8131s, AP7532s, AP 7502s and AP 6532s. The Zebra 7532 and 7502 access points support both 802.11n and 802.11ac technology, making it easy for KUSD to migrate to the newest wireless networking standards.

KUSD’s technical team has been particularly pleased with the coverage and flexibility provided by the Zebra 7502 access points. The 7502 access points fit on the CAT 5 wall plate in the classroom and enable Wi-Fi access. Additional Ethernet jacks on the access point allow for hardwired connections within the classroom. This allows the district to use the classroom’s existing CAT 5 cabling to install the latest wireless technology in minutes.

“We can use one of the existing jacks in the classroom to install the 7502,” says Becker. “That means we don’t have to run additional cabling, which helps us keep costs low.”

**3X**

The amount a typical school district must expand its bandwidth in the next two years to support digital learning needs.

**23%**

The percentage of school districts that do not have the bandwidth they need.

Source:  
Education SuperHighway

## SUCCESS STORY

THE KENOSHA UNIFIED SCHOOL DISTRICT

### EASY NETWORK MANAGEMENT GETS EVEN EASIER

From the beginning, Becker found the network very easy to manage. “If we need to modify settings on just a single access point, it’s easy. If we need to change every access point in one building, it’s still easy. And if we need to change every access point in the district’s 40 buildings, it’s just as easy,” Becker notes. “The network is solid enough that it can be managed by one person.”

According to Becker, network management and deployment became even easier after KUSD installed Zebra’s VX 9000 WLAN virtual controller, which can support up to 10,000 access points and uses dynamic host configuration protocol (DHCP). The VX 9000’s use of DHCP allows the district to deploy or upgrade equipment without any manual access point configuration. This reduces deployment time and allows KUSD to manage its network from a central location.

“Once we moved over to the Zebra VX 9000, we were able to use the DHCP option to streamline deployment,” says Becker. “That’s a huge advantage for us – especially with the large number of access points we have.”

The district is also piloting Zebra’s NSight platform, which will make network management even easier with advanced network and application visibility and control. Using NSight, KUSD will be able to receive real-time alerts on potential coverage issues and rogue devices as well as monitor and analyze current and historical usage. They will also be able to identify the top applications by usage or count at every level of the network from site level to access points and clients.

### A GREAT TOOL TO SUPPORT EDUCATION

The Zebra high-speed wireless network has delivered a whole host of benefits to KUSD – from supporting online testing to ensuring a safer educational environment.

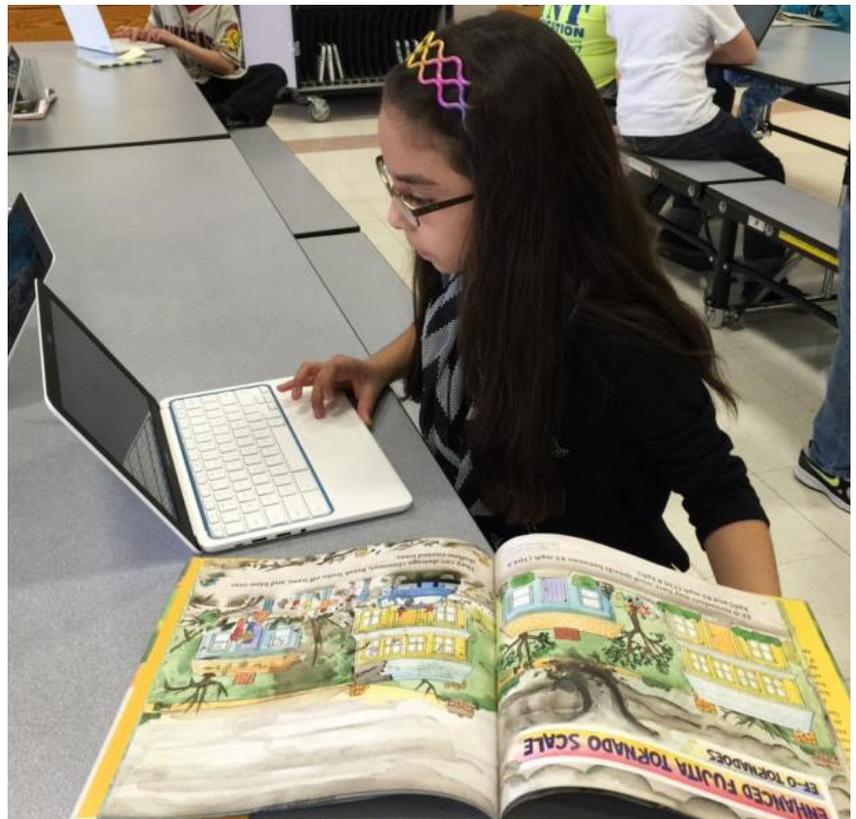
“With online testing, there was a big push to increase capacity in the classrooms where the testing occurred,” says Kris Keckler, Chief Information Officer for KUSD. “But we didn’t want to upgrade our wireless just to support the tests. We wanted to integrate wireless into our students’ education.”

And KUSD has done just that. For instance, the network’s telepresence capabilities allow faculty and students to better collaborate and share information between schools and classrooms. Both students and teachers use applications like Google Apps for Education and Everyday Mathematics eSuite on a regular basis. One school even held a web conference with a school in Guatemala to discuss water filtration issues.

The network has also enabled better security, allowing the district to put a VoIP phone in every classroom (about 2,900) and support more than 150 security cameras as part of a district-wide safety and security initiative.

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### ENABLING A MORE PRODUCTIVE STAFF

The wireless network has enabled better collaboration among administrators and teachers as well. The staff uses cloud software to post agenda items and meeting notes online. They also save time by collaboratively creating documents such as the district calendar online – instead of going through the time-consuming process of consolidating hundreds of items sent via email. The ability to carry their laptops with them improves their productivity as well.

“The staff is a lot more productive than they used to be,” Hanrahan says. “Since I’m running the same system everywhere, they can take the same laptop from building to building and not worry about Wi-Fi.”

### KUSD’S ADVICE: START SMALL AND GROW BIG

When giving advice to other school districts, KUSD recommends doing a small-scale rollout first to gather data on how the network might be used – which can make network deployment and upgrades an easier sell to both administrators and the board.

“We piloted the introduction of our classroom access points in one building, and once we received some data back and saw the success, it was easier to explain the value because we had physical proof,” Becker says.

### A NETWORK DESIGNED FOR INNOVATION

KUSD also points out that the scalability offered by the Zebra network makes it easy to implement a wireless network that supports one building or many.

“If you establish an environment that is conducive to better educational standards and is managed appropriately, it doesn’t matter if it’s one building or 40 buildings or 400 kids or 22,000 kids,” Keckler says.

Of course, it’s important to select equipment that provides consistency throughout the entire district and also allows easy network expansion to meet future bandwidth needs. This is particularly critical given the skyrocketing use of wireless devices in the classroom, which Keckler says has already forced some school districts to limit usage.

“Some districts have to limit the number of devices and applications they support,” says Keckler. “But we aren’t bound by those limitations, so we don’t restrict the types or number of devices that can be used on the network. We don’t want to inhibit the educational innovation that is taking place with our teachers and students.”



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Angie Becker, network manager, KUSD

For more information please visit [www.zebra.com/wlan](http://www.zebra.com/wlan)



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