



North Kansas City Schools

North Kansas City Schools Wipes Out Density Issues with Robust Wireless Solution from Aerohive

Challenges

- Replace cumbersome controller-based network with robust solution to handle high density environment
- Provide Wi-Fi as primary access layer for over 23K students and employees
- Deploy a solution to scale and meet demands of 802.11ac technology and future plans and initiatives
- Enable greater level of control to better understand network use of more than 15,000 laptops connected across 34 sites

Results

- Network management system in place to better control and manage network use
- Guest access is greatly simplified and more secure
- Mobile device management integrated for thousands of Apple devices
- Bandwidth allocation can be monitored and controlled with Aerohive enterprise features

About North Kansas City Schools

North Kansas City Schools (NKC Schools) is one of the largest school districts in the Kansas City, Missouri metro area with 32 schools and over 20,000 students. Offering education for students in grades K-12, the district has 21 elementary schools, five middle schools and four high schools. NKC Schools is proud to offer diverse educational opportunities including Pre-K, gifted and honors programs, career and professional academics and online learning.

The District has a total of 34 buildings spread across approximately 850 acres and more than 3,000 employees, the fourth largest employer in the county. With a budget of \$238M, the District is known for its excellence and innovation and an academically rigorous learning environment.

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—Keith Howe

Director of Network Services, North Kansas City Schools

The Challenge

NKC Schools rolled out its first 1:1 program in high schools several years ago. When the District needed to upgrade older laptop computers for MacBooks, it discovered the existing access points could not handle more than 15 clients at a time. Knowing it was going to need to support density across all schools in the district, and having already purchased the new MacBooks, NKC Schools needed to more broadly evaluate its network requirements.

NKC Schools had a Juniper Networks solution with approximately 30 controllers spread across the district, which created a bottleneck for traffic and made managing and controlling the network very difficult. The IT team had a list of every MAC address in the district and every time there was an update or change, each configuration had to be pushed out manually and listed out to other servers. The IT team juggled over 16,000 MAC addresses, and this created a nightmare for the IT team, making management extremely cumbersome.

After determining it needed to move away from a controller-based solution, the District began to design and plan for accommodating future technology initiatives. Considerations and plans needed to account for new cabling, high density, and providing enough bandwidth to support at least 20,000 devices.

The Solution

After evaluating controller-less Wi-Fi solutions including Aruba and Meraki, NKC Schools chose Aerohive for its simplified network management and superior performance. Further confirming the decision, several sales engineers at Apple had frequently mentioned Aerohive as a solution provider to consider. The District set up a demo to test for density, running 100 notebooks on a single access point, resulting in a unanimous choice to select Aerohive for the network solution.

"We did not have to spend a lot of time to demo network solutions when we saw the performance Aerohive was able to achieve," states Keith Howe, Director of Network Services for North Kansas City Schools. "Deploying and managing the wireless network in all our schools has been greatly simplified with Aerohive. We were also pleased to only have to replace one access point for every other existing access point because of the superior power and higher density capabilities."

The District has rolled out its 1:1 initiative in phases, starting first at the high school level, and will continue its rollout to elementary and middle schools in the year ahead, bringing the total number of laptops in the district to over 15,000. Before deploying Aerohive, not all schools had Wi-Fi access, and the District undertook a cabling project last summer to bring the remaining 12 schools onto the network.

NKC Schools has set up three primary SSIDs for students, staff and guests. Guest access is limited to Internet access only and the District uses Aerohive's Private Pre-Shared Key (PPSK) for secure guest access with unique keys on a 24-hour rotation. The student network has advanced application firewall rules, blocking particular streaming services and applications. The staff network also includes a device classification policy for iOS devices.

The District installed Aerohive AP230, AP330 and AP170 access points. The high schools have Aerohive AP230 802.11ac access points to leverage the latest technology and take advantage of gigabit speeds. An AP330 is also used as a WIPS overlay for scanning and monitoring to provide additional location awareness and device tracking. The AP170 outdoor access points are deployed in school bus parking lots, and the District is currently testing Aerohive branch routers on school buses for seamless network access without having to create a separate SSID. Aerohive branch routers are currently used for the IT team and traveling employees, enabling network access from anywhere.

NKC Schools uses HiveManager on site for robust network management without complexity, and is considering upgrading to HiveManager Online in the near future for cloud-enabled services.

The Results

The District now enjoys robust and reliable Wi-Fi as its primary access layer, which has opened up new learning opportunities in classrooms and schools, and paved the way for all schools to embark on 1:1 e-learning initiatives.

"I really can't think of anything that isn't run on wireless at North Kansas City Schools," explains Keith Howe. "We no longer have concerns with density issues for our network and having an enterprise solution from Aerohive now allows us to focus on ways to use wireless both in and out of the classroom to better serve our students, staff and administration."

NKC Schools uses the Wi-Fi network to access technology and applications like eLockers for file sharing and for teachers to give student feedback on assignments with voice and annotation. Part of the 1:1 curriculum includes Blackboard Learn, a learning management system that helps teachers integrate digital learning for online classrooms. iPads and notebooks can access student schedules, which is helpful for hall monitors if they need to check on a particular student's whereabouts or help with getting to class.

The state of Missouri mandated online testing and all classes will be using Wi-Fi for testing this year. Schools that have not yet migrated to a 1:1 environment will use mobile carts and schools will set up testing classrooms as needed. NKC Schools also offers eCampus, allowing individual schools to expand curriculum by offering an online option for over 30 courses.

From an IT management standpoint, many Aerohive features have allowed the IT team to easily control and monitor the network, saving time and expense. Since the District manages thousands of Apple devices, NKC Schools uses MDM technology from Aerohive solution partner JAMF Software in order to automate onboarding, functionality and management. Aerohive's Application Visibility & Control feature enables the IT team to monitor bandwidth use and block Layer 7 applications as needed.

The PPSK feature streamlines guest access, allowing a seamless and secure process to get on the network. The IT team also has Aerohive branch routers available to check out, enabling staff to easily work remotely. In addition, administrators take branch routers to the local community center to create remote access availability for district meetings and multiple teachers recently attended a conference out of state and had network access with a branch router without need for a VPN connection.

Aerohive's access points are used in conjunction with school buses that are equipped with wireless DVR systems, and the vehicles can access the wireless network to upload video and audio content as directed for increased security.

Planning for the Future

Since the initial deployment is solidified, NKC Schools will now focus on future planning, starting with an initial site survey across the entire district to see what could improve and what additional features are needed. The IT team aims to validate the current design of the network, and ensure the District is well-equipped for the future. This is a crucial and important step as it rolls out a 1:1 environment across all its elementary schools, and as it considers network changes to better meet the e-learning needs of the District.



Contact us today to learn how your organization can benefit from Aerohive wireless LAN architecture.

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