Baltimore County Public Schools

Baltimore County Public Schools Selects Aerohive to Enable Award-Winning Education Technology Innovation

Challenges

- Provide enterprise Wi-Fi access to 110,000 students across more than 170 schools
- Upgrade existing infrastructure to pave the way for Wi-Fi, often in buildings with complex physical constraints
- Enable a seamless experience for teachers, staff and students during network upgrade and rollout
- Acquire a wireless solution capable of scaling for future aggressive technology plans

Results

- Secure and robust Wi-Fi deployed across entire district without disruption to teachers and staff
- Comprehensive wireless access unleashes creativity in classroom, reduces behavior problems, and empowers students and teachers
- Support from Aerohive surpasses expectations and helps meet mobile learning objectives
- Centralized network management allows BCPS to easily make changes, manage and control the network across all schools and facilities

About Baltimore County Public Schools

Baltimore County Public Schools (BCPS) is the third largest school district in the state of Maryland, and ranks 25th largest in the nation, providing education to approximately 110,000 students. The District manages a budget of $1.6 billion across its 174 schools and employs more than 18,000 teachers and staff.

At the helm of BCPS is Superintendent Dr. S. Dallas Dance, who has provided assertive leadership for blended learning environments, creating the program S.T.A.T – Students and Teachers Accessing Tomorrow – that will equip all students and teachers with digital devices for personalized learning and a digitally enhanced curriculum by 2016. In addition, Dr. Dance was recently appointed to the Board of Directors for the International Society for Technology in Education,

recognized as one of eight eSchool News Tech-Savvy Superintendents, and named by President Obama as one of 10 national 'Connected Educator Champions of Change'.

The Challenge

Tasked to meet numerous technology milestones over several years, the IT team began to evaluate its infrastructure and wireless network requirements. Under the leadership of Dr. Dance, the 'BCPS Blueprint 2.0' lays out a five-year strategic plan aimed at creating a fully mobile environment to allow teachers to not only employ a digital learning environment, but to also expand mobility across all administrative functions.

Many schools had older Meru technology in place, but Wi-Fi was not extended to every classroom and BCPS recognized the need for an in-depth evaluation to fully replace the aging wireless network to provide comprehensive coverage. The District faced challenges with physical building structure and architecture, with some school buildings dating back to the 1930s, complete with bomb shelters. An upgrade needed to be completely seamless for students and staff as well as provide robust and reliable Wi-Fi to accommodate district-wide technology initiatives and a large number of devices. Before deploying enterprise Wi-Fi, the District would also undergo an upgrade of its fiber-optic cabling.

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> Director of Network Support Services at BCPS

A wireless architecture with single sign-on, as well as centralized network management for all 175 schools, over 20 administrative buildings, and two data centers, as well as extending network coverage at 19 local public libraries to students and staff, made the deployment even more complex. As a result, choosing a solution provider to meet these diverse district requirements was imperative.

The Solution

After a rigorous RFP process and pilot demonstrations in select schools, BCPS chose Aerohive over Aruba and Meru for its superior performance and cost effective solution. Aerohive was also selected for its ease of use, scalability and flexibility, crucial for a district with ambitious plans for integrating wireless into classrooms and operations.

"Aerohive far exceeded what we saw from the competition, and we received outstanding support from both engineering and management to ensure we would not only meet our current goals, but establish a platform for mobility to take us into the future," explains Gregory Vukov, Director of Network Support Services at BCPS.

BCPS has installed various Aerohive access points, including the AP121, AP330, AP350, AP370, AP170 and Aerohive 802.11ac AP230 access points. By the end of the rollout, the District will have over 10,000 access points across all school campuses and administrative buildings. On average the District has 45,000 users connected to the network daily, with anticipated users to hit 100K per day on the network by next year. All students and employees have an active directory account, including employees for food and transportation programs. Aerohive has also enabled BCPS to use RADIUS on the back end for user authentication. BCPS uses HiveManager Virtual Appliance, which has enabled the small IT team to make network changes easily and quickly as needed from one console.

Several SSIDs are established to ensure greater security and ease of network management. Teachers and staff are on a separate network, allowing access to databases and records, while students tap into a separate SSID with only a WAN connection to segregate access to the data center. Guest Wi-Fi is provided to access the Internet while on campus. At local public libraries, students and staff tap into their respective networks through Aerohive APs to access a VPN connection for seamless connectivity during off hours.

Aerohive enterprise features are invaluable for managing technology across the large district. Dynamic airtime scheduling allows the IT team to maximize bandwidth and network performance, Bonjour Gateway enables management of iPads, Apple TVs and AirPlay, and monitoring and reporting tools create efficiency through HiveManager.

Results

The Aerohive solution is one part of the 'BCPS One' charter, giving teachers, students and staff greater mobility across all activities. Evidence of integrating wireless technology is seen throughout the district. Prior to Aerohive, the District had an open network, but now with the ability to set up separate SSIDs to segregate network access, the network is more secure.

When students arrive at school, they swipe a card using scanning software from ScholarChip, and data is recorded to mobile kiosks for mobile attendance. Morning announcements are broadcast over the District's own education TV channel, and schools' production studios are shared by the county government's public information station, which all leverage wireless technologies for production.

Classrooms leverage media resources through content databases such as Safari Montage or Discovery Media, along with many other curriculum resources that integrate technology into the classroom setting. The District is dedicated and committed to helping teachers succeed and has created an Office of Digital Learning to assist educators and equip them for an e-learning environment. The entire district will complete 1:1 initiatives over the next several years.

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Student assignments, grades and records are hosted through Infinite Campus and personalized curriculum is hosted by Engrade, all managed through the cloud and accessed wirelessly. Computer labs are phasing out in place of mobile carts for setting up portable classrooms and online testing areas.

Aside from instruction, the District also uses wireless technology for building automation systems, controlling HVAC and lighting systems in key building spaces such as auditoriums.

Future Mobility to Drive Classroom Creativity

BCPS continues to transform classrooms and learning by embracing technology and blended learning. With the Aerohive platform, teachers, students, parents and staff alike can leverage tools for a completely mobile campus and help the District meet its objective for an all-digital environment.

The District is currently evaluating Aerohive routers and switches, as well as considering many additional plans for wireless technologies across the District. BCPS currently has installed outdoor access points around all buildings to provide Wi-Fi to as great a perimeter as possible. The District will consider the outdoor Aerohive AP1130 with 802.11ac for future upgrades.

Once the deployment is complete, other Aerohive features such as TeacherView and Private Pre-Shared Key (PPSK) will be considered. School buses may also be equipped with wireless access to allow mobile attendance and to maximize student safety. BCPS plans to expand network access to community parks and recreation facilities. Wireless security cameras are also being explored for outdoor areas and TV studios will consider wireless technology to enable live feeds.