



The John Marshall Law School

Manageable, Reliable Wireless Networking for Law School Uses Cooperative Control Wireless LAN from Aerohive

Challenges

- Required ease of management - each access point (APs) in the current WLAN had to be individually programmed whenever changes were needed
- Required a WLAN that could resolve issues with interference caused by thick walls
- Needed a wireless LAN architecture able to handle the dramatic increase in traffic caused by increasing user population
- Wanted a controller-less WLAN due to bottlenecks caused by existing controller-based system

Results

- Deployed Aerohive's cooperative control access points (HiveAPs) running 802.11n technology
- Without controllers to limit growth, Aerohive offered the ability to scale, hence enabling the law school to add HiveAPs one by one as needed
- Utilizing Aerohive mesh technology to extend campus Wi-Fi coverage and HiveManager for centralized management
- Able to easily set up separate SSIDs for students, faculty and staff and guests

The John Marshall Law School, founded in 1899, was one of the first independent law schools established in the United States. In addition to JD, LL.M., and MS degrees, it also offers the only graduate program in employee benefits in the nation, one of the earliest information technology and privacy law programs, and one of the few programs in real estate law. Serving 1600 students, its campus consists of two adjacent turn-of-the-last-century buildings in downtown Chicago, Illinois.

In 2003, John Marshall became the first law school in Chicago to deploy a campus-wide wireless local area network, providing mobile Internet access to its student body. Over the next two years, however, the school outgrew that solution as the number of wireless users quadrupled. Amish Patel, systems operations engineer for the

school, replaced the legacy system with one from Airspace, acquired by Cisco Systems.

The Case for a New WLAN Approach

Although this new solution was a vast improvement over the first one, it fell short in several areas. In spite of a central management feature, each of the access points had to be individually programmed whenever changes were needed. The environment also posed a challenge. The old buildings had thick masonry walls that required spacing access points more closely, leading to interference and channel issues. "The system couldn't tell me where the interference was," says Patel. "I was in the dark, trying to guess where to adjust power or change channels."

As with the first wireless LAN, the second system succumbed to a dramatic increase in traffic as the number of users quadrupled again over a four year period. "As traffic grew, we began to see the network slow down and we had connection problems," says Patel.

"I didn't like the fact that this was a controller-based architecture where all the traffic flowed through the controllers. I saw that as a bottleneck."

"We were able to replace, power up, and configure the fully functioning Aerohive network in just a day and a half... The learning curve was nonexistent."

—Amish Patel

Systems Operations Engineer, The John Marshall Law School

These issues came to a head in late 2008 as the Cisco controllers approached their end of life. Just to upgrade the controllers would have cost \$20,000. "If we were going to spend that kind of money and not even get new access points, let's look at some alternatives that might be a better investment," says Patel.

Debating the Alternatives

Patel began researching wireless solutions. The short list would eventually include Aruba, Meru, Xirrus, and Aerohive. Aruba was eliminated because queries to a listserv Patel participated in returned few positive recommendations. In addition, Aruba relied on a controller-based architecture, similar to what the school was replacing.

Although Meru also utilized a controller, the company promised high-density access points with virtual cell technology and a single-channel architecture, which interested Patel. After a demo by a Meru engineer, however, Patel was not convinced that the vendor could deliver a solution that would meet the school's needs.

Xirrus was up next. While the demo went well, Patel concluded that the Xirrus arrays were best suited for large open areas without walls. "We're not in that type of environment," says Patel. "It wasn't the right fit for us."

Cooperative Control Architecture from Aerohive

Through the listserv, Patel learned of Aerohive Networks. Arranging for a demo, he was told that setup would take about ten minutes. Patel was skeptical. "In fact, the engineer had it up and running in about 15 minutes," says a surprised Patel. "And not only up and running, but students could connect to it and use it just like our production wireless setup. That was key, to be able to test it on the production side of the network."

The more Patel tested the Aerohive solution, the more he liked what he saw. One of the features that impressed him was Aerohive's cooperative control access points (HiveAPs) running 802.11n technology, which require no network controllers or overlay networks. Instead, software in the HiveAPs enables them to self-organize into groups called Hives. The result is enterprise-class network management and security without the cost, performance, and availability issues associated with controller deployments.

Without controllers to limit growth, Aerohive offered true scalability, allowing Patel to add HiveAPs one by one as needed. "The other thing I liked about Aerohive was there is no licensing," adds Patel.

One feature that Patel liked was Aerohive's wireless mesh capability. "It was one more feature that really put Aerohive at the top of the list," says Patel. The feature can establish a wireless mesh connection between neighboring HiveAPs using the second radio in the AP. "If I need to extend coverage to an area I can just pop the HiveAP up there, plug it in and we're ready to go. There's no Ethernet cabling to run."

The Ultimate Spring Break; Deployment in One Week

Feeling confident that Aerohive was the right choice, Patel swapped out the Cisco access points with HiveAPs on a one-to-one basis over spring break when the school was closed. "We were able to replace, power up, and configure the fully functioning Aerohive network in just a day and a half," says Patel.

Aerohive gave Patel the ability to easily set up separate SSIDs for students, faculty and staff, and guests. The previous wireless LAN relied on Cisco Clean Access, running on the back end, to provide user authentication for students. Aerohive was able to support the same configuration. "It was great," says Patel. "If students returning from break didn't know we had changed wireless LANs, they never would have guessed."

Students primarily use the wireless LAN to connect to the Internet and Web-based applications. With their own SSID, thanks to Aerohive, it is now easier for faculty and staff to access network shared drives and applications such as Outlook from wherever they are. The separate SSID for guests allows Patel to utilize the Quality of Service (QoS) feature in Aerohive to limit bandwidth and ensure guest usage doesn't impact performance for other users.

Once the network was up and running, Patel engaged Accuvant, a wireless and security consulting organization, to review the network configuration to make sure it was set up optimally. An engineer from Accuvant also spent time mentoring Patel in managing the network.

To identify potential interference issues, Accuvant additionally performed a thorough post-site survey, which Patel will use to reposition access points for maximum efficiency.

A Nonexistent Learning Curve

Ongoing management is provided by the HiveManager. "One of the things that struck me was how easy it is to maneuver through the HiveManager," says Patel. "The learning curve was nonexistent."

Configuration changes are quick and easy. Unlike the previous wireless network that had to be updated one access point at a time, Patel can modify the configuration and push it out to all HiveAPs within seconds.

Preparing for the Future

While not an immediate requirement, Patel felt that support for 802.11n was important. The fact that Aerohive offered it today was yet another reason why Aerohive was the best choice. "I know that at some point in time, without it, students would be asking why they couldn't use 802.11n," says Patel.

Another technology that may likely be deployed at The John Marshall Law School some day is wireless Voice over IP (VoIP). "That's something we'll be looking toward," says Patel. "And Aerohive will be able to support it."



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

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