How Dartmouth College improved its campus-wide Wi-Fi

Dartmouth College brought 21st-century wireless infrastructure from Mist Systems to its 18th-century architecture in a highly anticipated update to its campus Wi-Fi.

With a surge of 25,000 devices and counting, Dartmouth College needed its new Wi-Fi to be fast, reliable and as smart as its students. In response, Dartmouth, based in Hanover, N.H., began deploying new campus-wide Wi-Fi from Mist Systems last summer. It expects to complete the project throughout the campus in three to five years, according to Bryan Ward, a network engineer at Dartmouth.

The IT department manages the Wi-Fi through a cloud-based wireless LAN and can already see the benefits of better coverage and easier management. But the team faced difficulties when embedding the new system with Dartmouth’s centuries-old campus architecture, which is less supportive of campus-wide Wi-Fi than modern architecture.

The following interview has been edited for length and clarity.

What were your goals for this deployment?

Bryan Ward: It was time for a holistic upgrade to Dartmouth’s campus-wide Wi-Fi system. We hadn’t upgraded the Wi-Fi system in a number of years, and with the advent of IoT -- all the home devices, like Chromecast and Alexa -- it was time for an upgrade.

We’re also able to do location-based security. For example, you can only access certain network resources in a robotics lab if you’re actually in the robotics lab. You can’t control equipment from your dorm.

What issues did you face with your previous system?

Ward: It was more of an architecture issue. Like a lot of places -- especially in higher education -- Dartmouth added automation technology, such as Ansible, which make the install pretty seamless. Our installers can hang and plug in an AP, and the API does the back-end stuff -- it’s all automated.

Previously, having eight APs in a room was crazy. But that’s the way it’s going: a small cell technology, high-speed, low-power kind of architecture.

When do you plan to fully deploy this system?

Ward: We’re doing full-scale deployments in the Tuck School of Business and the Thayer School of Engineering. For the engineering school, we’ll put around 300 APs [access points] into two buildings, compared to the 50 APs there now. The building is around 200 years old. It’s solid brick and concrete, and the architecture is something I consider as leading edge.

What features did this campus-wide Wi-Fi add to your network?

Ward: The No. 1 criterion for the upgrade was reliable, basic Wi-Fi service. Speed for users will be the No. 1 upgrade everyone asked us to provide for years.

For the incoming student population, we're opting for better coverage over speed. Previously, campus-wide Wi-Fi traffic peaked at about 2 Gbps. Now we’re down, we lose some coverage in a small section of a building. With the previous system, if a controller failed, we lost coverage in many buildings.

If we have any hope of getting 200 buildings upgraded in three to five years, we need to embrace automation. And if we do that from Day One, we can take advantage of those benefits as we move forward. We use a Mist API and automation technology, such as Ansible, which make the install pretty seamless. Our installers can hang and plug in an AP, and the API does the back-end stuff -- it’s all automated.

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