Dartmouth Transforms Campus Experience with AI Insights

Universities are under pressure to meet student expectations for fast, pervasive, and reliable access to the applications they need, no matter where they are on campus. To deliver an amazing service experience, Dartmouth turned to a network powered by AI and automation.

OVERVIEW

Company	Dartmouth College
Industry	Education
Products Used	EX3400, QFX10002, Cloud Services
Region	Americas

CUSTOMER SUCCESS AT-A-GLANCE

10X	**2,000**	**30,000**	**25,000**
Reduction of ticket escalations	APs installed in dorm rooms in two days	Concurrent Wi-Fi connections	Concurrent wired connections

CHALLENGE

Great Wi-Fi Is Part of the College Experience

When Mitch Davis joined Dartmouth College two years ago as CIO, he wanted to better align IT initiatives with the university's mission and strategic plan. Davis calls it "ICT 2.0" for the information, consulting, and technology that will keep the college on the leading edge of technology.

Wi-Fi is a top priority. Students expect fast, pervasive, reliable wireless service just as much as an engaging curriculum, good professors, and a vibrant social life. But digital generation had pushed Dartmouth's campus network to capacity. With 25,000 devices connected and counting, Dartmouth had witnessed a six-fold increase in mobile devices in the last several years. As a result, Wi-Fi was mediocre, especially in historic buildings and large lecture halls.

"We are well over 90 percent residential, so students expect to have full access to the learning management system or classroom technologies," says Felix Windt, director of networking at Dartmouth. "They expect the network to just work, not just in the dorm but anywhere they're meeting."

To reach its goal, the IT team needed to break free from the status quo. Davis set out to offer a best-in-class Wi-Fi experience to students, faculty, and administrative staff. And that meant a complete network refresh, from the fiber to the access points.

SOLUTION

Teamed Up for Best Campus Network

The Mist Platform deployment started in the Tuck School of Business and the Thayer School of Engineering, with plans to eventually roll the new Wi-Fi out to all 200 buildings on campus. Mist provides high-performance 802.11ax and 802.11ac Wi-Fi, Bluetooth LE, and IoT.

Windt developed automation tools to speed deployment. "If you shave one hour off the installation of 2000 access points, that's the equivalent of a full-time employee for a year. That's time we can use to serve customers instead of screwing access points into the ceilings."

Dartmouth's campus network uses an Ethernet VPN-Virtual Extensible LAN (EVPN-VXLAN) architecture to deliver Layer 2/ Layer 3 connectivity with greater scale and efficiency. EVPNVXLAN decouples the underlay network (physical topology) from the overlay network (virtual topology), delivering greater flexibility. "By transforming our network from a simple Layer 2/ Layer 3 network to EVPN, we can significantly increase security zones on campus," Windt says. "Now we can inspect east-west traffic, instead of just at the border."

Juniper Networks® QFX10002 Switch is used in the core network and Juniper Networks EX3400 Ethernet Switch provides cost-effective access networking. Designed for simplicity, Junos® operating system powers all Juniper networking and security. The network is built for reliability and security and automates network operations.

OUTCOME

Students Turn In Rave Reviews

With a Juniper- and Mist-powered network, everyone at Dartmouth is experiencing positive change. The 5 GHz Wi-Fi network, designed for today's high-density mobile environments, lets students easily access the learning management system, collaborate on business presentations, or run engineering simulations. Professors can use their iPads for visual aids in the classroom, and administrative staff have ready access to the resources they need to do their jobs.

Mist includes Marvis, a Siri-like virtual network assistant, that uses natural language processing to provide IT staff with answers to questions such as "How are the access points in Goldstein Hall performing?"

Network operations are also simplified, freeing up IT for more strategic projects. With Mist Wi-Fi, the IT team has newfound visibility into the user experience, including the ability to track Wi-Fi and application usage. For the first time, IT can establish, measure, and enforce defined service levels. For instance, if someone takes more than two seconds to join the library Wi-Fi network, the service desk knows right away—and knows whether it was the device or some specific part of the network that failed. Armed with this information, support staff can solve more connectivity issues on their own, without escalating to the network services team.

Looking ahead, Dartmouth is exploring the possibilities of location-based services. With beacons and Bluetooth Low Energy built into the Mist Platform, the college can provide visitors with turn-by-turn directions to their destinations, automate attendance taking in classrooms, or offer augmented-reality museum tours. With a strong network foundation, Davis and team know the campus is fully prepared for a future of exciting innovations that will keep Dartmouth among the digital elite.

"We are trying to create the best customer experience we can. Mist allows us, through its analytics, to find out where our problems are, even if only two percent are having a problem, and resolve it on the fly. With Mist, we can create that experience for the customer."

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CIO, Dartmouth

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