

University of Michigan boosts connectivity by deploying Wi-Fi 6E



Massive undertaking enhances the education of tomorrow's leaders

In just eight months, University of Michigan upgraded their entire Ann Arbor and Dearborn academic campuses to Wi-Fi 6E, giving 56,000 students, 8,000 faculty members, and 30,000 university staff Wi-Fi® access to the 6 GHz band.



Unlicensed 6 GHz band allows Wi-Fi to offer unparalleled performance and cost efficiency

Until the release of Wi-Fi 6E, all previous Wi-Fi deployments could only utilize the 2.4 and 5 GHz bands. These bands are often congested and unable to fully support emerging technologies such as augmented and virtual reality (AR/VR) — for instance, a medical student performing an operation on a virtual cadaver. With regulators designating the 6 GHz band as available for Wi-Fi, a whole new world of possibilities materialized. Thanks to download speeds up to 750 megabits per second (Mbps) and enough bandwidth to support 70,000 concurrent Wi-Fi connections, University of Michigan is able to accommodate the growing performance demands of its users.

University of Michigan leverages Wi-Fi 6E to promote learning

Research was an important motivator for the university to upgrade its connectivity capabilities using Wi-Fi 6E. The University of Michigan conducts \$1.7 billion in research each year. Much of that research involves analysis of large data sets. It requires an extraordinary amount of bandwidth to transfer these data sets between different researchers. With Wi-Fi 6E, that bandwidth is readily available and no longer constrains researchers' ability to move data that could be the key to, for example, the next great medical breakthrough.

When professors are not conducting research, they are often teaching classes to upwards of 500 students. It has become commonplace for every student to log into Zoom in order to share their screen and give presentations. Operating in the 6 GHz band gives students the ability to learn and discuss without concerning themselves with lagging connectivity. Back in their dormitories, students can use the enhanced speeds to download software necessary to conduct their academics.

Robots have become a special focus of the university, which has dedicated an entire building to their development and operation. Along with supporting the Wi-Fi needs of researchers and staff in that building, the robots themselves must connect to the Wi-Fi network and to a central controller. These robots have high bandwidth requirements as they transport an enormous amount of data across the network. That is where having Wi-Fi 6E is crucial — it provides the capacity for controlling these robots despite the demanding data requirements.

Meeting the demands of a technologically savvy and diverse campus

University of Michigan is one of the largest universities in the United States. The Ann Arbor campus alone sits at around 3,177 acres, and if you include the Dearborn campus, the university has over 225 buildings that required access point (AP) upgrades to Wi-Fi 6E. Overall, the information technology (IT) team completed 16,000 AP installations with only minutes of downtime for students, faculty, and staff.

There were two main aspects of the installation that helped it go smoothly: automation and exceptional collaboration between IT and student affairs.

Regarding automation, the university's Vice President for Information Technology and Chief Information Officer, Ravi Pendse, said, "While the new access point was being deployed, the old access points would continue to work. Once the new access point is deployed, it will self-configure and will be up and running in a few minutes and the old access points will continue working until we physically disconnect them." This self-configuration and switching between APs was key to their deployment strategy, which followed five main objectives:

- Enabling data-informed decision making
- Elevating the customer experience
- Delivering intuitive research computing solutions
- Securing the network while keeping it open
- Building a transformational network

None of these objectives could have been met without tight collaboration and transparency. In fact, the IT team maintained a website that logged each time a building was completed and presented a chart that tracked their total progress. This helped keep everyone aware of the project status and gave the team moments of celebration that helped motivate them.

Wi-Fi helped University of Michigan meet their sustainability goals

According to Pendse, "Only a few years ago — five, six years ago — people primarily used a wired network and they used Wi-Fi if they had to. It's completely turned around now. Everybody wants Wi-Fi." Because the demand for Wi-Fi has risen, it has allowed IT teams to simplify their infrastructure. Fewer wired connections means fewer switches in wiring closets, which means less electronic waste and a lower carbon footprint.

Overcoming challenges along the way

Every project has challenges, and the bigger the project, the bigger the scale of difficulty. First, the University of Michigan is home to a number of historic buildings. The team could not just walk in with drills and put holes in the walls. In order to maintain the aesthetics of the university's buildings, the team had to install access points in attics, behind walls, and on light posts. There were also some issues with the equipment supply chain, but due to exceptional planning and coordination, when the equipment arrived, it was always deployed rapidly. Despite these obstacles, the IT team managed to complete the project quickly and with minimal interruption of the university's day-to-day activities.

Wi-Fi CERTIFIED: Technology to trust

Since 2000, Wi-Fi Alliance has been driving the adoption and evolution of Wi-Fi through the Wi-Fi CERTIFIED program. The Wi-Fi CERTIFIED logo designates products with proven interoperability, backward compatibility, and the highest industry-standard security protections in place. Wi-Fi CERTIFIED devices can communicate with previous and future generations of Wi-Fi technologies, enabling a seamless, interoperable experience with a multitude of other Wi-Fi devices for years to come.



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