



University of Michigan (U-M) WiFi Upgrade Project

MISA Fall Conference 2023

Hideko Mills,

University of Michigan ITS, Director of Business Services, Infrastructure

October 19, 2023



INFORMATION AND TECHNOLOGY SERVICES
UNIVERSITY OF MICHIGAN

WiFi Upgrade Project Summary

U-M became the first university in the nation to upgrade campus network to WiFi 6E.

As U-M WiFi equipment reached the end of its supported life, the U-M Infrastructure teams embarked on replacing and significantly improving already ubiquitous connectivity in University of Michigan buildings.

WiFi upgrade project included U-M Ann Arbor and Dearborn campus.



WiFi Project Objectives

- WiFi network to continue to meet the growing demand for fast and secure connections, particularly in densely populated environments.
- WiFi network to provide exceptional and seamless support for both in-person and online collaborations.



WiFi Project Timeline and Scope

- The upgrade took place in the midst of the COVID pandemic and related supply chain issues, starting in June 2021, ending June 2022. Actual deployment began in November 2021.
- The project upgraded more than 16,000 WiFi access points (APs):
 - in more than 225 Ann Arbor campus locations,
 - in all Dearborn campus locations,
 - in less than 9 months.

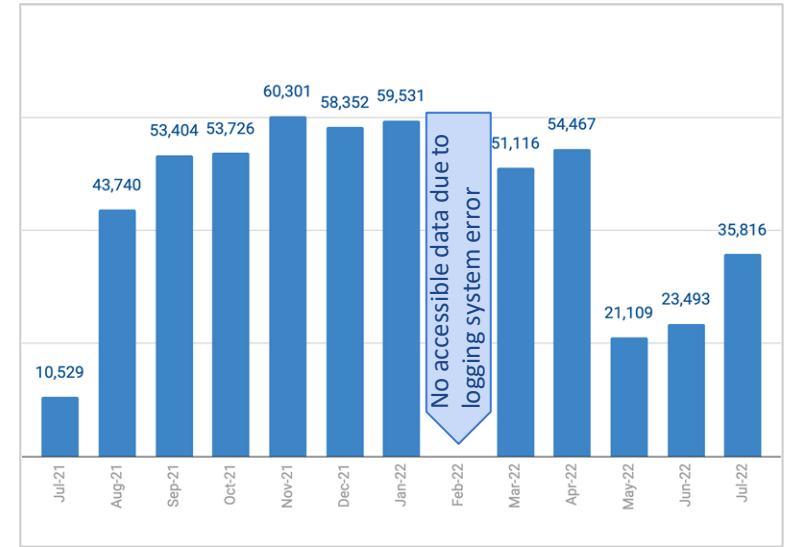


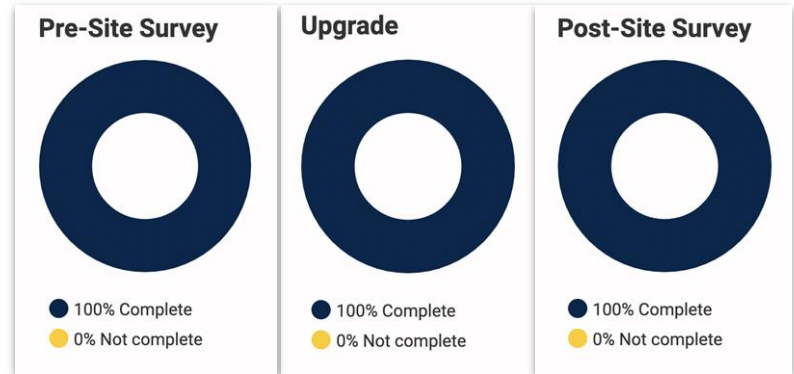
Diagram of the WiFi peak concurrent user numbers (per month) during the WiFi upgrade characterized by hybrid learning environment.



WiFi Project Results

- Reduced WiFi congestion in areas with a high density of wireless devices.
- Provided U-M community members the flexibility to work anywhere on campus with a WiFi connection.
- Allowed the university to reduce the number of wired ports → reduce electronic waste and carbon footprint.

June 2022 WiFi Upgrade Project Status





U-M WiFi Upgrade Project Lessons Learned



INFORMATION AND TECHNOLOGY SERVICES
UNIVERSITY OF MICHIGAN

Lessons Learned Approach

- Interviews with project teams and leaders
 - Within a month after the project completion.
 - Six sessions, each with different teams / individuals.
 - Same set of questions, sent in advance.
 - Interview results documented and validated.
- Quantitative and qualitative analysis of the responses



Lessons: What Went Well

- CIO support in addressing equipment delay issues.
- Automation added a layer of certainty to the project.
- Project Managers' skills in handling the complexity of the project logistics.
- Standardized communications, planning, and project tracking tools.
- Quick issues resolution.



Lessons: What Could be Improved

Beware of the low bid cost: how realistic is it to expect a high level of professionalism.

- Equipment delivery delays: lost summer months, the optimal time for upgrade / installations.
- Intense workload stood in the way of efficient communications.
- Email notifications to students in dorms were not effective - social media would be better.
- Third-party vendor did not understand how large and unique is U-M Ann Arbor campus.
- Better physical and digital inventory management.
- Understand the significance of the role of the facilities manager.



Recommendations for Planning

- Clear project expectations to reflect environment complexity and size of U-M:
 - allow flexibility in planning and execution,
 - include budget and timeline contingencies.
- Include warehouse requirements (e.g. inventory) in RFP.
- Include facility managers early in the project planning / scheduling.
- Keep the quality of the service up by ensuring PMs are dedicated to the project of this size (relieved of service support duties).



Recommendations for Logistics and Communications Management

- Improved social media presence.
- Unit readiness: closer involvement of governance group and stronger leadership advocacy.
- Easy / quick physical access to the buildings.
 - Advanced building escort planning and scheduling.



Recommendations for Third-Party Management

Vendor

- Upfront shared, agreed upon methodology and terminology.
- Definition of the roles and responsibilities, site maintenance, installation standards.
- Mandatory vendor supervisor on site.

Supplier

- Understand supplier product readiness - in RFP, specify penalties to prevent delays.
- Tech team to have direct access to the supplier technical experts.





U-M WiFi Upgrade Project Technical Advantage



INFORMATION AND TECHNOLOGY SERVICES
UNIVERSITY OF MICHIGAN

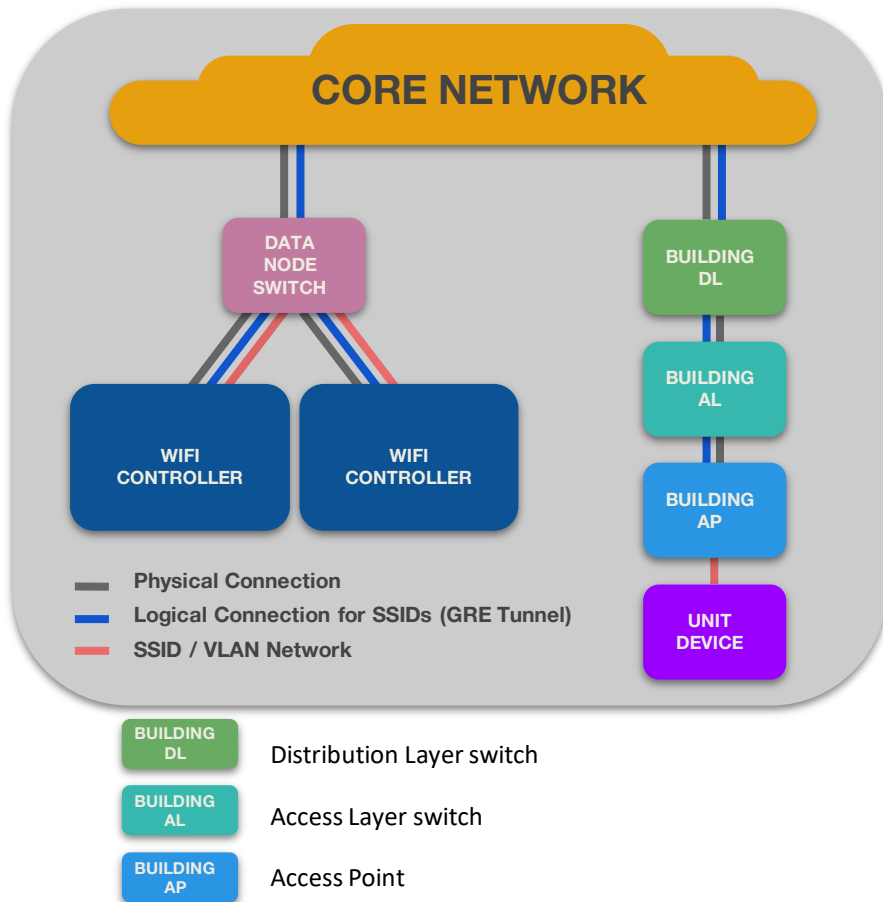
WiFi Design Standards

Standardized Hardware and Software

- Same (controller) version of code and type of hardware across campus.
- Same AP equipment model whenever possible.

Central Management Platform

- Aruba Central platform for monitoring and reporting for entire campus.



New WiFi 6E Technology

6 GHz spectrum approved by the FCC in April 2020

Benefits*

- > doubled number of available channels
- HD video streams in densely populated settings
- Groundwork to provide next generation content sharing technology (mDNS)

** Only WiFi 6E-enabled devices provide full benefits of the new technology*

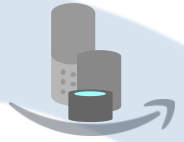


Device Sharing (mDNS*)

* **mDNS** (Multicast DNS) - a way for devices to find each other on the network. Currently, it allows staff and faculty members to connect their devices to certain room projectors without the need for special network configuration.

The goal: enable consumer electronics to work seamlessly and perform in the enterprise environment as well as they do at home.

Roku



Outdoor WiFi

Enabling research, business, events, and more across campus in outdoor



Alexander G. Ruthven
Building walkway



Alexander G. Ruthven / North
University bus stop



Mcity



U-M WiFi Upgrade in Media

- [**The Signal Podcast:** The transformative impact of Wi-Fi 6E on the University of Michigan with Ravi Pendse of the University of Michigan](#)
October 11, 2022
- [**EdTech:** The Technology Behind America's Top Research Universities](#)
August 24, 2022
- [**Wi-Fi- NOW:** University of Michigan deploys colossal Wi-Fi 6E campus network](#)
July 15, 2022
- [**EdScoop:** University of Michigan 'first' university in nation to launch 6E network](#)
July 11, 2022
- [**WDIV - All About Ann Arbor:** University of Michigan becomes first university in country to debut new Wi-Fi technology](#)
July 6, 2022
- [**MLive:** Newest 6E WiFi now available at University of Michigan's Ann Arbor, Dearborn campuses](#)
July 1, 2022
- [**EdTech:** How the University of Michigan Executed a Network Connectivity Upgrade,](#) *April 25, 2022*



Questions?



Feel free to reach out to Hideko Mills (hidekom@umich.edu)
University of Michigan ITS Director of Business Services, Infrastructure



Thank You!

