Creating a connected university

experience for a US Military academy

Challenge
- Improve the learning experience by providing a quality WiFi experience in a campus environment

Solution
- Connected and highly reliable private sector university experience delivered as a managed service

Results
- Improved student and staff experience with better WiFi coverage.

Overview

Outsourcing IT functions is a key strategy for creating flexibility in government programs. Yet, government functions have unique needs for reliability and security that have fostered cultural prerogatives around control and extensive deliberation over any changes in operations.

The US military is a prime example of an institution with this mandate for change while respecting its unique needs. Starting with a combat unit would be far too high risk.

However, the military operates collegiate academies that are largely geared toward education rather than military operations per se. They provide a platform for proving out a managed EITaaS approach that could be replicated at military bases. One of the military academies took up the mission to modernize its IT services with an eye to providing a model for others to follow.

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Challenge: Improve the learning experience to compete for the best students and faculty and by providing a quality WiFi experience in a campus environment.

Today's universities compete for the best students and the best faculty and military institutions are no exception. To attract the best, the campus experience must be as good as the number one university in the nation.

That campus experience is driven by technology that is both ubiquitous and transparent to the users. The best students expect streaming media, the ability to work from anywhere on campus and the smallest number of restrictions on their online activity. It is the experience they have grown up with. As a university serving 4,000 students, the academy also competes for the best faculty who expect their own version of that freedom and service.

Faculty expect unfettered access to research tools and th ability to collaborate with colleagues at institutions half a world away.

One major barrier to that flexibility was the academy's status as part of the ".mil" domain. The academy was working on a move to the ".edu" domain which would open up collaboration and information sharing with other educational institutions. These changes would need to be reflected in any network porting on campus and the active duty military personnel stationed there would still need a way to securely access the .mil network.

The move out of the military domain would increase bandwidth demands on the local network. The incumbent provider had experienced outages and serviced the campus from sites geographically removed from the from the location. In addition to the reliability concerns, this remote provisioning raised concerns over latency issues as increased use of new services such as streaming media are latency sensitive. Reliability and latency reduction were top priorities for the academy.

Like many college campuses, WiFi provides the primary network interface for student and faculty life. Improving the quality of WiFi was a clear need that touched on all aspects of student and faculty experience. The WiFi network was a source of many complaints. It had not been well planned, with somewhat random coverage. In some cases, points of access often competed with one another for connections to a given device disrupting data flow.

Solution: A connected and highly reliable private sector university experience delivered as a managed service

To provide bandwidth to create that top-ranked user experience, Lumen designed a 3-node fiber ring around campus with direct on net connections in three different buildings. Each connection operates independently, providing resilience against outages in addition to boosting bandwidth.

Campus lifestyles are untethered, so the mobile user experience needed a significant upgrade. Lumen architects worked with Cisco to redesign the WiFi coverage, reconfiguring more than 3,000 access points across campus to optimize coverage and remove the instability issues.. In addition to Lumen's well-established partnership with Cisco, the local installer was also a Lumen partner.

For the domain transition from .mil to .edu, Lumen ensured network connections were properly configured to support the changeover including DNS and DHCP configurations. This made sure the full .edu user experience was available immediately for users on both wired and wireless connections. To address the need for some personnel on campus to securely interface with the .mil domain, Lumen configured a VPN service that allowed entry through the .edu domain.

With an eye toward establishing a model that could be replicated elsewhere, academy leadership asked Lumen to take on the project management to make sure communication and accountability went smoothly. This relieved leadership of many operational management burdens and addressed one of the issues any military institution would have with this kind of effort. Academy leaders are posted with the primary role of teaching and shaping new generations of leaders. Administration, including the IT function, is assigned as part of "collateral duties," support functions spread across the leadership team in addition to their primary roles. Managing a ground-breaking modernization program proved complex as a collateral duty, potentially introducing risk. By using a lead provider like Lumen, other military bases and institutions could learn from the academy's experience.

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Results and future plans: Modeling a new way to do business

The student and staff experience improved with better WiFi coverage and greater flexibility in connecting with outside resources through the .edu domain and the high bandwidth backbone. Students and faculty can effectively work on any project on any device, in any setting – just as they are used to in their private lives.

The project was designed in three phases to match the budgetary needs of the academy's funding cycles. The first phase focused on the student residences and most importantly in immediately eliminating the outages, which has occurred. The second phase focused on the academic buildings. The third phase is in the planning stages currently with more buildings on campus as well as the potential for additional services. As the work approaches completion, Lumen is also preparing to manage the whole solution for the academy with assigned staff and a dedicated Network Operating Center (NOC). This focused team will ensure smooth functioning for the academy on a managed services basis, reducing any further management needs on academy staff.

The academy is well on its way to be a model for outsourcing IT functions for the US military. The project provided lessons in understanding what core competencies to look for in partners and how to assemble the team. That will prove to be valuable experience as other bases and institutions look to build their own projects.

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