



UNIVERSITY SCALES TO SUPPORT NORTH CAROLINA'S PROMISE TO INCREASE ACCESS TO HIGHER EDUCATION



INDUSTRY

HIGHER EDUCATION

LOCATION

CULLOWHEE, NORTH CAROLINA

KEY CHALLENGES

- Meet expected 50 percent increase in enrollment driven by NC Promise Tuition Plan
- Keep data centers on the cutting edge of technology to deliver better services
- Maintain strong security and high service quality with fluctuating IT budgets

SOLUTION

Western Carolina University wanted to maintain its focus on technology and high-value education as enrollment increases rapidly. The university is using a combination of VMware solutions, including VMware vSphere, VMware NSX, VMware vRealize Operations, and VMware Horizon, along with a VMware technical account manager, to improve service quality while reducing costs.

North Carolina has made a bold and exciting promise to its residents: Beginning in fall 2018, the North Carolina Promise Tuition Plan will dramatically reduce tuition costs at three state universities. Western Carolina University (WCU) is one of these schools, and it expects the promise of \$500 tuition to boost enrollment by approximately 50 percent, bringing in 5,000 more students over the next five years.

WCU has a reputation for being a technology-focused school, offering VMware vSphere® administration classes and using VMware Horizon® to provide always-on digital workspaces. To scale its two data centers for this unprecedented increase in demand, WCU upgraded to vSphere 6.5 and began using VMware NSX® for network virtualization and micro-segmentation. The university also deployed VMware solutions for operations management, log insight, and site recovery, helping its IT team be more proactive and improve disaster recovery (DR) for WCU and potentially other UNC schools.

Located near the Great Smoky and Blue Ridge mountains, WCU is the western-most institution in the University of North Carolina (UNC) system. With more than 10,800 students, WCU has been consistently ranked as one of the top 15 public regional institutions in the southern United States. The school provides more than 115 undergraduate majors and concentrations and more than 60 graduate programs.

The Challenge

Not only must WCU prepare for growth, it's also constantly working to expand the scope and capabilities of the technology services it offers. Recently, it launched a virtual "front door" to all the university's apps based on VMware Workspace ONE™, and is extending digital workspaces with Horizon to simplify application access and management. "WCU has always been a very progressive university, and it's very important to us to keep our technology up to date," says Patrick McGraw, Virtual Infrastructure and Tier Three Engineer, Western Carolina University. "We were an early adopter of VMware, and we like to take advantage of new features and products as soon as they come out. We appreciate that VMware gets new features to market faster than anybody else." As with any state university, WCU's technology budgets fluctuate, and resource planning can be a challenge for IT. To keep availability and service levels high without adding staff, the university wanted more tools for security, intelligent operations, and DR.

"Over the past 10 years, VMware has saved us more than \$1.5 million in hardware, power, and cooling," says McGraw. "Looking ahead, especially with the growth we're expecting, we wanted to continue to use VMware solutions to modernize our data center operations so we can be as efficient as possible."

"WCU is a place where students can get a very high-quality education for their dollar, and we couldn't offer that kind of value without VMware."

PATRICK MCGRAW
VIRTUAL INFRASTRUCTURE & TIER THREE
ENGINEER
WESTERN CAROLINA UNIVERSITY

BUSINESS BENEFITS

- Scaling data centers for expected growth in virtual desktops and other services
- Being able to provide high availability and disaster recovery for WCU and other UNC schools
- Saving \$1.5 million+ in hardware, power, and cooling over 10 years

The Solution

As a first step, WCU upgraded its end-user computing and production servers to vSphere 6.5U1, which offers a new HTML5-based client, new encryption features, and a VMware vCenter® Server® Appliance™ that replaces Windows-based management for reduced operational complexity. "With VMware, every release gets better, and vSphere 6.5 is no exception," says McGraw. "The vCenter server upgrade was seamless and only took about 45 minutes using the built-in vCenter Server Appliance Migration tool, compared with several hours to do upgrades previously. We can install updates to the appliance in less than 15 minutes, and we don't have to worry about Windows patches, saving a minimum of 12 hours of staff time per year. It's a big time saver."

With virtual machine-level disk encryption and encrypted VMware vSphere vMotion®, WCU can enhance security and compliance while protecting data in motion. "We have a health center, a police force, and government-funded research, so our security officer loves that VMware is giving us more ways to protect data," says McGraw. In its Horizon virtual desktop environment, WCU is using vRealize Operations to capture metrics and for proactive troubleshooting. "vRealize Operations helps us deliver consistent performance and uptime by alerting us to issues that might cause problems in the future," says McGraw. "We can avoid impact to end users and have more productive, metrics-driven conversations with leadership."

WCU also wanted to use network virtualization to enable more flexible and easy-to-provision security, a challenge that it hopes to solve with VMware NSX. By using NSX for micro-segmentation and attaching networking and security policies to associated workloads, WCU will save time for network administrators while making its environment fundamentally more secure. It will also save hundreds of thousands of dollars by using NSX to replace physical firewalls when they reach end of life.

"From what we've seen so far in our pilot, we're going to be using NSX a lot more," says McGraw. "It gives us a lot more visibility into our network, and we have the comfort that workloads are secure even if we move them between data centers. Combined with the encryption features in vSphere 6.5, NSX will help with PCI and HIPAA compliance while opening up new opportunities for us to host data and disaster recovery services for our sister universities." To protect the university from downtime, WCU uses VMware Site Recovery Manager™ to automate recovery. "With VMware Site Recovery Manager, we can offer a 20-minute recovery time objective for any tier A application," says McGraw.

WCU benefits from a VMware technical account manager (TAM), whose services it shares with other state universities. "We love our TAM, and he helps us get the most value from our VMware solutions," says McGraw. "For example, he recommended we use VMware vRealize Log Insight and VMware vRealize Network Insight to gather additional metrics for reporting, which helps us make better decisions."

Business Results & Benefits

WCU is now in a position to absorb the expected 50 percent growth without building another data center, avoiding millions in costs. It can also host virtual desktops and provide disaster recovery services for other state universities in North Carolina, helping the state better manage costs to make the NC Promise a success.

VMWARE FOOTPRINT

- VMware vSphere 6.5U1
- VMware NSX 6.3.3 (in pilot)
- VMware vRealize Operations 6.4.0
- VMware vRealize Log Insight™ 4.5
- VMware Site Recovery Manager 6.1
- VMware Horizon 7.2
- VMware Workspace ONE 2.1.1
- VMware technical account manager

APPLICATIONS VIRTUALIZED

- Approximately 88 percent of data center virtualized: 250+ applications, including Ellucian Banner ERP, Microsoft SQL Server and Oracle databases, and an emergency management system

PLATFORM

- For vSphere: Cisco UCS (18 hosts/320 virtual machines in production)
- For Horizon: Cisco UCS (11 hosts with NVIDIA GRID vGPU cards)
- NetApp all-flash storage
- Juniper network

“VMware is the market leader for the software-defined data center, bringing new features to market a lot faster than its competitors,” says McGraw. “By adopting those features early on, we get the most benefit, continually improving the performance, redundancy, and manageability of our data centers.” As more students come to WCU, they can expect enterprise-class security and technology services. Students can gain hands-on experience with vSphere, Microsoft SQL Server, and other industry-standard technologies they will encounter after they graduate, making them more marketable in the workforce.

“WCU is a place where students can get a very high-quality education for their dollar, and we couldn't offer that kind of value without VMware,” says McGraw. “Virtualization has changed the game for our developers as well. They can quickly get the resources they need to develop, test, and launch new services that benefit our students, faculty, and staff, such as the app portal we just deployed.”

Looking Ahead

In the near future, WCU plans to use REST-based APIs in vSphere 6.5 to pull data from VMware into a unified management dashboard. The university is also making its Horizon environment more resilient with a Cloud Pod Architecture and hopes to use VMware Cloud on AWS to expand its network into the public cloud. “VMware gives us so much of what we need, all backed by responsive, single-vendor support,” says McGraw. “Without VMware solutions, it would be very difficult for us to grow and move the university's technology forward.”

