



## WESTERN CAROLINA UNIVERSITY EXTENDS DIGITAL WORKSPACE SOLUTIONS CAMPUS-WIDE



### INDUSTRY EDUCATION

### LOCATION CULLOWHEE, NORTH CAROLINA

### KEY CHALLENGES

- Distance education students did not have the same access to computing resources as on-campus students
- The university needed to provide a consistent experience to students who brought a variety of mobile devices to campus

### SOLUTION

WCU uses a suite of digital workspace computing solutions to deliver virtual desktops and apps to the university community. VMware Workspace ONE™, VMware Horizon®, VMware Identity Manager™ and VMware User Environment Manager™ work together to provide a single front door to computing resources with simplicity and security.

### BUSINESS BENEFITS

- Students, faculty and staff can access apps and data at any time, from any place, on any device
- A single portal with single sign-on streamlines access to university computing resources
- Users access software only when they need it, saving money on licensing

Western Carolina University (WCU) is using digital workspace solutions to provide flexible, convenient access to apps and data from residential halls to labs to offices. Through a single portal with a single login, the university community can study and work on any device at any time.

WCU in Cullowhee, North Carolina, near the Great Smoky and Blue Ridge mountains, is the westernmost institution in the University of North Carolina system. With more than 10,800 students including more than 9,000 undergraduate 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 with a focus on high-demand degrees including a variety of programs in engineering, science, healthcare, education, humanities, business and the arts.

### The Challenge

WCU was the first campus in the University of North Carolina system to require its students to bring a computer to school. Now students show up with a variety of devices, from desktop and laptop computers to tablets and smartphones. The university needed a way to provide resources to each student, no matter what kind of device they have or whether the student is on or off campus.

The university started using virtual desktops several years ago as a pilot program for a handful of use cases. “It’s amazing how quickly those use cases accelerate,” said Patrick McGraw, Virtualization and Tier One Engineer. “Once one group sees the technology, everybody wants to jump on board.”

### The Solution

WCU is using digital workspace solutions that allow students, staff and faculty to do their work whenever and wherever it’s most convenient. Each student has access to a virtual desktop. To simplify application access and management, all university-provided applications are available in one place through a common portal.

According to McGraw, VMware Workspace ONE is the “front door” for all of WCU’s apps. “We needed a place where students could go for all their applications,” said McGraw. “With Workspace ONE, students log in once, then they can launch any desktop, RDSH or SaaS applications they have access to. It’s a great help.”

“We’re excited, as a university and as an IT department, to give students a consistent experience and really level the playing field. We’re breaking down barriers and making resources more accessible. We’re excited that we can bring everything together in a very intuitive and easy-to-use package.”

MARK ELLERSICK  
TECHNOLOGY SUPPORT ANALYST  
WESTERN CAROLINA UNIVERSITY

#### VMWARE FOOTPRINT

- VMware App Volumes
- VMware Horizon
- VMware User Environment Manager
- VMware Identity Manager
- VMware vSphere
- VMware Workspace ONE

WCU already had a portal where students could pay tuition and check grades, for example. When the school implemented Workspace ONE, they used SAML (Security Assertion Markup Language) to tie the existing portal to Workspace ONE using VMware Identity Manager. Single sign-on passes users’ credentials to federated apps, so only one login is needed to access apps from Office 365 to specialized programs for academics. “The fact that we can consistently and conveniently offer all this software is a huge benefit to our community,” said Technology Support Analyst Mark Ellersick.

The school also uses VMware App Volumes™ to distribute applications. “With App Volumes, we can customize desktops for individual students based on what classes they’re taking,” said Ellersick. When a student completes the class, or withdraws, they no longer have access to that application. This means that the WCU IT department only has to spend money on licenses for apps that are actually used. If faculty or staff need a new software program, it can be delivered seamlessly and quickly to tailored groups.

WCU students use non-persistent VMware Horizon desktops to access a variety of apps for schoolwork. WCU staff who only need computer access occasionally, for example to fill out time sheets, use thin or zero clients to access non-persistent desktops. Because each iteration of the desktop is destroyed when a user logs out, their information is kept secure. For faculty that have a longer-term need for school-provided apps, a persistent desktop lets them customize the applications they need. App Volumes decouples apps from the operating system, allowing WCU’s IT staff to update software in the background automatically and securely.

With VMware User Environment Manager, dynamic personalization management manages specific experiences around locations or user groups. For example, environmental settings such as networks and printers are mapped and made available based on users’ locations so people don’t have to go through a long list of printers to find the closest available one. User Environment Manager also manages access to electronic locks across campus, so access can quickly be provided to individuals or groups as needed.

To access published apps, the WCU IT staff uses Horizon’s RDS Hosted Applications feature. If someone doesn’t need access to a full desktop – McGraw cites the university’s IT ticketing system as an example – they simply authenticate to Horizon and then launch a published app, save files and use network resources from a remote RDSH server as if it were on their local device. “We can take a tablet out to someone’s location, read the ticket, add to it, close it, do whatever we need to do – and then access the next ticket without having to come back to the office,” said McGraw. “It saves us so much time.”

WCU is also using products from VMware partner NVIDIA for both academic and personal computing. In a pilot program for the engineering department, McGraw and his team added NVIDIA GRID cards to a few servers. These cards bring the power of the NVIDIA graphics processing unit (GPU) to Horizon virtual desktops, speeding graphics performance and rendering for applications such as 3D modeling and computer aided design. “The engineering school absolutely loved it,” said McGraw. “They said that drawings rendered faster in the virtualized environment than they did on a physical machine. Now they don’t have to go out and buy expensive workstations for these graphics-intensive programs – they can run the programs on a laptop.”

To support all the streaming services and videos that students watch in their free time, the WCU IT team is expanding NVIDIA cards to each host box they deploy. "Our students live here too, as well as studying here," said McGraw. "We have to give them a great quality of life experience as well as great academic experiences."

### Business Results & Benefits

Digital workspace solutions and mobility have allowed WCU to expand the distance education programs that are part of its core mission. "VMware has provided the EUC stack that's helped us to level the playing field between our on-campus students and those distance education students," said McGraw. Instead of having to install their own software, distance education students can participate in the same programs as on-campus students, as long as they have an Internet connection. Students on campus benefit as well, said Ellersick. "The great thing about the technology is that students don't notice it. They walk into a lab, log in and do their work. When they walk out of that lab and go home, or even to another town or state, they can access that same resource. Now the lab is open 24 hours a day, 7 days a week."

Enterprise-level security at many levels protects university data. Students in medical fields and employees of the university health service use non-persistent desktops to access patient information, keeping it in the data center instead of the endpoint. Ellersick cites multifactor authentication as an additional security factor that's important when the university processes other types of sensitive information such as credit card transactions.

Software deployment is much easier for WCU with App Volumes. Before virtualization, to get school computers ready for a new year the IT team would "re-image computers for hours and hours ... two weeks straight, 24 hours a day," McGraw remembered. "If a faculty member forgot to request a piece of software on lab computers, we would have to re-image the entire classroom, and that would take a week or more." With App Volumes, new apps are available instantly for an entire class. "The faculty doesn't lose class periods waiting for applications to get installed. It's really sped up the process."

### Looking Ahead

WCU is finding that virtualization is a big help in getting their community acclimated to Windows 10 as the university begins to upgrade. Said McGraw, "Some people are hesitant about adopting Windows 10 because it's a big change. We created a pool of Windows 10 desktops so people can play with the software and get to know it. Then when we upgrade their machine, they're already used to the technology and that makes them happy. We've gotten a lot of positive responses."

Digital workspace technologies are enhancing the university's mission of education for all. Said Ellersick, "We're excited, as a university and as an IT department, to give students a consistent experience and really level the playing field. We're breaking down barriers and making resources more accessible. We're excited that we can bring everything together in a very intuitive and easy-to-use package."

