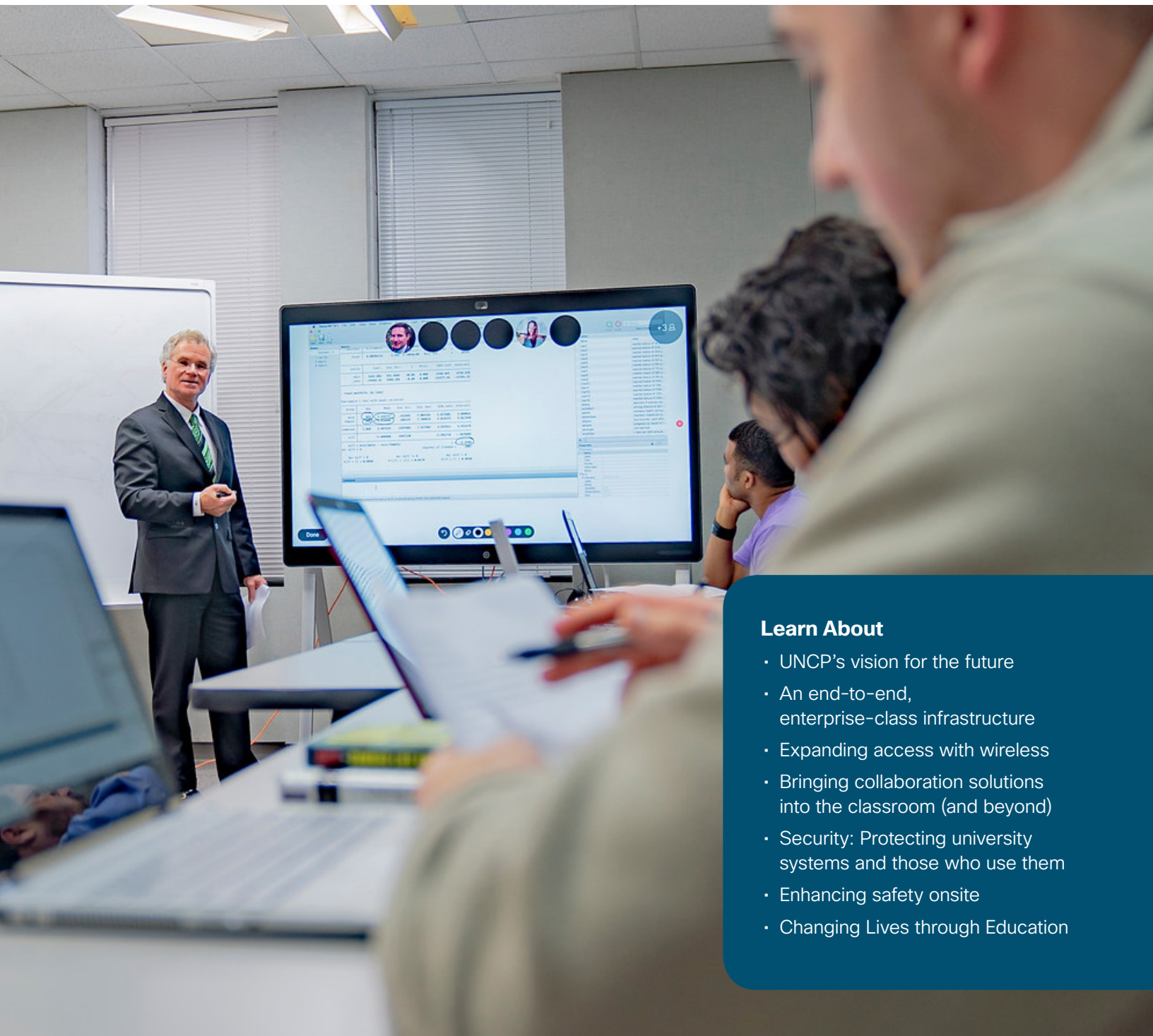


University Expands Opportunities for Students, Changing Lives Through Education Technology

Discover how The University of North Carolina at Pembroke uses Cisco technology to improve access and security, and read some of the school's best practices for success.



Learn About

- UNCP's vision for the future
- An end-to-end, enterprise-class infrastructure
- Expanding access with wireless
- Bringing collaboration solutions into the classroom (and beyond)
- Security: Protecting university systems and those who use them
- Enhancing safety onsite
- Changing Lives through Education

Offering students a world of opportunity

How enabling greater collaboration and communication through technology is transforming the quality of engagement at The University of North Carolina at Pembroke (UNCP).

Founded in 1887 as an American Indian institution to serve the Lumbee people, The University of North Carolina at Pembroke (UNCP) is the nation's only four-year public institution founded by American Indians for American Indians. Today, UNCP remains one of the most diverse campuses in the South and offers a historic and culturally rich environment in which to study in southeastern North Carolina.

Nancy Crouch served as UNCP's associate vice chancellor for technology resources and chief information officer (CIO) from 2015 to January 2019. "The University of North Carolina at Pembroke is a vibrant, growing community of engaged, talented faculty, students, and staff," she says. "We're also home to a diverse population of nearly 900 knowledge workers and more than 7,000 learners, many of whom have been traditionally underserved, which is why we're passionate about our mission: 'Changing Lives Through Education.' It is within our power to make a real difference, to give our students what they need to push through limitations of history or geography or economics and overcome what might otherwise have been barriers to their success."

Kevin Pait, UNCP's director of infrastructure and operations and interim CIO, echoes Crouch's sentiment. "In many cases, the barriers our students faced included limited access to resources for learning. In fact, for many of our students, this is their first real experience with technology," he notes. "Through the careful, planned application of tools and technology, we facilitate the accessibility and collaboration our students need. Anytime one of our users encounters a technical issue, that's another barrier, and our goal is to eliminate anything that impedes teaching and learning."

4 best practices for success

1. **Keep mission in mind.** Everyone at UNCP is committed to Changing Lives Through Education, and the technology strategy the university developed, as well as the services they've deployed, were implemented to help fulfill that mission.
2. **Communicate and collaborate.** UNCP's IT team worked closely with university administrators, faculty, and staff throughout the planning and implementation processes, gathering input and sharing use cases, success stories, and a commitment to being careful stewards of university resources. Through this engagement, key decision makers came to understand the value of the university's new capabilities, as well as the importance of ongoing investments to ensure technology kept pace with evolving needs.
3. **Make your staff the 'secret sauce.'** UNCP's IT team is small but mighty and remembering staff size is a key element of IT strategy. Nancy Crouch says: "It's easy to find a solution that may cost less, but there is no value if we're unable to support that investment ourselves—or if our team can't build their expertise as part of the process. We're always prepared to scale, whether that's to accommodate the thousands of student devices trying to access the network, or whether that's to grow our team's skillset."
4. **Identify a technology-savvy faculty lead.** Faculty may be apprehensive about technology and change but identifying a faculty lead and enabling them to communicate the advantages of a new technology to colleagues can help ease anxiety and allow for broader adoption and acceptance of new teaching tools and resources. Additionally, collaborating with a faculty lead who's comfortable with technology can assist IT in identifying and resolving technology issues in the classroom.

A vision for the future

[A North Carolina Promise Tuition Plan](#) school, UNCP offers reduced student tuition of \$500 per semester (\$2,500 for out-of-state students), saving students at least \$10,000 over their four years. “As we’re seeing growth in our student body because of NC Promise, UNCP is also adding programs to meet the needs of the expanding population,” Crouch adds. “These include a new cybersecurity curriculum and a new College of Health Sciences. We need to make sure that our technology environment supports both the new students and programs.”

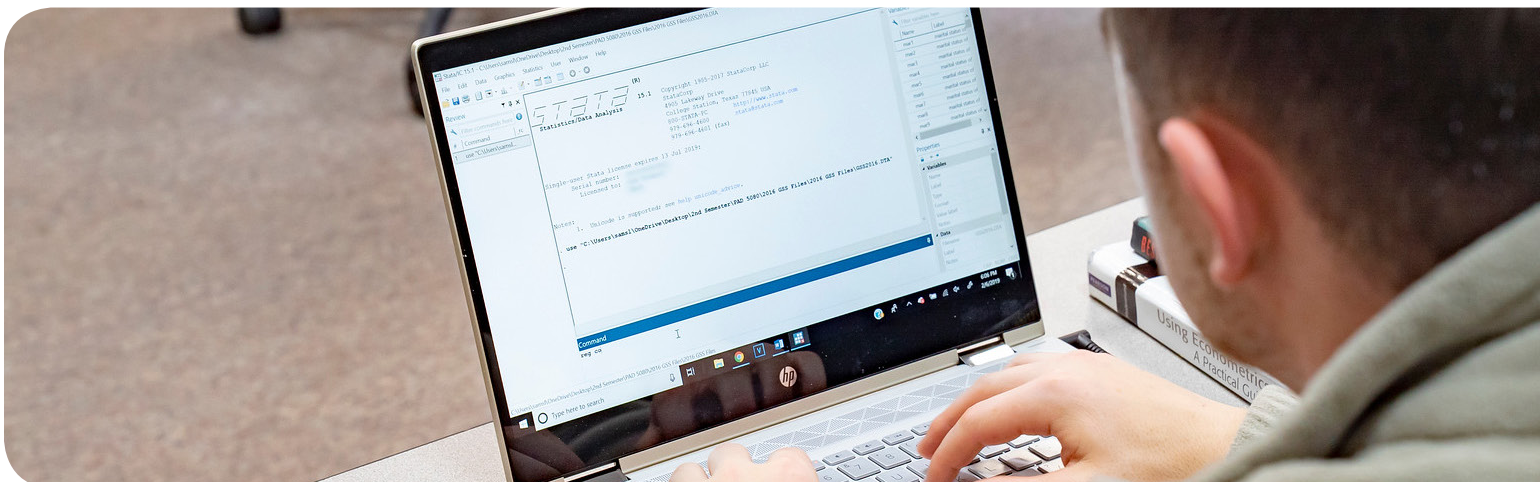
For the past several years, the UNCP IT team has been focused on three primary objectives:

1. Ensuring infrastructure efficiency and building a robust infrastructure to support the university and its evolving goals.
2. Ensuring operational efficiency, implementing tools and processes so that the small IT team can be responsive and effective.
3. Implementing a security strategy to protect systems and everyone who uses them.

At the start, the university relied on a host of disparate solutions, some of which required faculty to use personal technology accounts. “One of the first things I observed when I came to UNCP was that people here are very self-reliant and have a lot of grit,” Crouch says. “We’re located two hours from any major population area in the poorest county in North Carolina. Many of our students and faculty commute from within a 50-mile radius, and another significant population of students attend at distance. Everyone was focused on meeting the needs of students and delivering instruction efficiently, even if the tools they had were limited. Our task was to channel that drive with enterprise-class technology to ensure that students, faculty, and staff could be successful despite all the issues that traditionally have gotten in their way.”

“We’re home to a diverse population, many of whom have been traditionally underserved, which is why we’re passionate about our mission: ‘Changing Lives Through Education.’ It is within our power to make a real difference, to give our students what they need to push through limitations of history or geography or economics and overcome what might otherwise have been barriers to their success.”

— **Nancy Crouch,**
Associate Vice Chancellor or
Technology Resources and
Chief Information Officer (2015
to January 2019), University of
North Carolina at Pembroke



An end-to-end, enterprise-class infrastructure

All work began with careful planning, analysis of bandwidth demands and trends, and input from staff, faculty, and administrators, who sought to be effective stewards of university resources. To enable both infrastructure and organizational efficiency, the university started with an upgrade and update to the campus's technology infrastructure. This provided a stable, sustainable foundation and allowed UNCP to establish a refresh cycle to operationalize technology investments. "We needed a governance model to guide our work. We also needed to be able to predict costs and become more efficient over time," Crouch explains. "Our leadership needed to understand how to anticipate ongoing investments in technology, and we needed to commit to returning savings realized by eliminating duplication and identifying efficiencies." The upgraded infrastructure relies on Cisco Unified Computing Solution in the data center and a Cisco switching and Cisco Meraki wireless network, which provides complete connectivity in academic buildings—and is being expanded onto the residential network.

Expanding access with wireless

"We like to joke that for many students, wireless access is at the top of their 'must have' list," Crouch notes, "but when the time came to deploy Cisco Meraki wireless, we started with academic buildings." For the IT team at UNCP, the first significant advantage of Cisco Meraki was that it was simple to deploy, allowing them to do the work themselves even as the implementation was expanded to residence halls.

In fact, interim CIO Kevin Pait notes that the team can deploy new access points on demand. "Network analysts can deploy Meraki with ease, enabling our team to continue operations, provide quality services, and deploy wireless at the same time," he says. "We have high-density coverage in all of our classrooms and haven't had any performance issues reported since installing Meraki." Pait highlights the solution's performance and ease of management, maintenance, and operations as other significant advantages. "I can't emphasize enough the ease of managing the system. And the flexibility—we've been able to accomplish ubiquitous access with just a few models of access points. Right out of the gate, the student experience was excellent, and our support tickets really dropped."

"Simplified service administration is critically important to us, and we chose the Cisco solutions with the functionality that complemented our mission and goals," Crouch adds. "As we develop our strategy, we keep the size of our staff top of mind. It's easy to find a solution that may cost less, but there is no value if we're unable to support that investment ourselves—or if our team can't build their expertise as part of the process. We're always prepared to scale, whether that's to accommodate the thousands of student devices trying to access the network, or whether that's to grow our team's skillset."

"Through the careful, planned application of tools and technology, we facilitate the accessibility and collaboration our students need. Anytime one of our users encounters a technical issue, that's another barrier, and our goal is to eliminate anything that impedes teaching and learning."

— **Kevin Pait**, Director of Infrastructure and Operations and Interim Chief Information Officer, University of North Carolina at Pembroke

Bringing collaboration solutions into the classroom (and beyond)

Crouch emphasizes that planning conversations also engaged faculty, who helped the IT team understand how technology could enhance their work in the classroom, as well as with students attending at distance, and how it could address challenges such as problems with the learning management system and overall network reliability. For many faculty, using technology to foster connections and encourage engagement both outside and within the school community were especially important.

UNCP lacked a formalized digital collaboration program. Faculty and staff who wanted to use a medium like video to communicate with students, colleagues, and others made the most of what they had, using personal accounts or tools within the university's learning management system. As the university expanded its investments in other online, cloud-based tools, however, Crouch and her team saw an opportunity for a single collaboration platform that could be implemented and managed university wide. "We knew from the start that we wanted to create a single 'collaboration canvas' that could break down barriers for the entire university community," she says. "Cisco Webex allows us to keep the heart of who we are, communicating in a very personal way, without the constraints of space and time. With Webex available onsite and on the desktop, students are collaborating across the geographic and economic barriers that might otherwise have held them back." The university now relies on Webex for Higher Education, with Webex Host accounts and Webex Teams accounts for all faculty, staff, and students.

Adoption of Webex was slow at first, and the IT team actively sought ways to highlight the capabilities of the technology. "One of our first major use cases for Webex was among administrators who were conducting job interviews with remote prospects using personal video collaboration tools," she says. "This gave us the perfect opportunity to offer Webex as an alternative. Users quickly recognized the advantages of Webex: a high-quality, personal connection without the need to share their own account information." (UNCP is exploring ways its career center can use Webex to support students and new graduates who need to interview remotely for internships or new positions.)



Another common Webex use case is for faculty office hours. As Crouch explains, while a faculty member is required to be on campus at designated times, it's not unusual for an in-person visit to be a significant challenge for those students who commute to school or who study remotely. Webex makes faculty more accessible and helps these off-campus students overcome a significant hurdle. (Maintaining on-campus office hours is often challenging for faculty members who commute long distances to work, and the university is evaluating a policy change given the availability of Webex.)

Perhaps the most significant use case for Webex on the UNCP campus is in the classroom. "At UNCP, we understand that everything we offer, including technology, makes a real difference in people's lives," Crouch continues. "In this case, we're changing how students, faculty, and staff interact. We're providing exciting new ways for all users to engage and learn and grow, and we're offering new opportunities to build community where they didn't exist before."

Crouch explains that UNCP began its integration of Cisco Webex solutions in its classrooms by establishing standards and then letting departments and their chairs determine where the technology made the most sense. She calls it a work in progress, noting that the roll-out is underway in phases in about 40 classrooms to date, with all interested faculty members given an opportunity to "test drive" the technology. Clear advocates are emerging, including some who use Webex at every opportunity, in the classroom and in the office.

One such early adopter of the technology is Dr. Joe West, assistant professor of Political Science and Public Administration. West came to UNCP from the private sector, where he worked for more than three decades as an electrical engineer. Today, his research is focused on the effective use of technology and its impact on behavior, especially that of elected officials. What he has learned through his research and years of experience informs the way he uses technology in the courses he teaches and in his personal engagements with students. "Online teaching and learning is a given at UNCP—and at many colleges across the country. Research tells us that the more 'face like' we

"The first benefit we saw after implementation was the increase in visibility. And this was a blessing and a curse. We saw more issues than we thought we had, so it took more time to remediate than planned. Once we had a clean slate and began to take advantage of automation, we were able to see the most significant threats and prioritize on issues...that have the potential to do the most damage, rather than spending time on the smaller 'annoyances.' Automation gave us more hours in our day. Before we might get 20 incident reports each morning; now we get one or two a week."

— **Don Bryant**, Chief Information Security Officer, University of North Carolina at Pembroke



can make these classes, the more students will learn. Face-to-face communications, whether in person or on a screen, are by far the most impactful,” he explains. “Our legislators have learned this: It is becoming more and more common for them to send a message via video when the topic is one that they consider to be important. Inherently, students know this too, and many prefer participating in class using video technology. Some have even asked other professors to begin to use video in their teaching.”

Several years ago, West began using Cisco Webex to provide online students with the face-to-face experience of students who attend classes in person. He also recorded each session and used those recordings to engage further with students who attended class from a distance. Then, West expanded his use of Webex, integrating Webex Teams and the Webex Board into his teaching. “Webex Teams and the Webex Board have taken class engagement to a completely new level, providing interesting and accessible new ways to view course material and interact, and making the experience better for all of us,” he says. “With this technology, I’m able to create a single, yet expansive, learning environment.” In West’s graduate-level quantitative analysis class, for example, many students are working professionals. Fewer than ten students typically attend class in person, with twice that usually logging in online. Now all students benefit from a common experience.

West asserts that Webex—including Webex Teams and the Webex Board—is ideally suited to a range of disciplines and recommends the technology for all colleagues who teach a hybrid or online class. Further, he notes that the more complex the subject matter, the more students can benefit from the technology. “The fact that I can share my screen live or that students can see as I write and annotate on the Webex Board especially benefits the students in my quantitative analysis class,” he adds.



At the start of each semester, West introduces Webex to his students and advises them that the class will be conducted using the technology. Participation in the class's Webex Teams space is mandatory, and West advises that all questions (unless they're personal) are posed in the Webex Teams space rather than sent via email. "Webex Teams is my primary form of digital communication with students. It allows me to engage with my students in real time. Unlike email, when I respond to a question in Webex Teams, everyone in the class can benefit from the answer," West says. "Collaborating using Webex Teams becomes easy for students, even for those who are not digital natives. Any who are apprehensive initially learn to use it and love it. What I appreciate most is that they communicate with each other in Webex Teams, so much so that I leave the spaces active even after the semester ends so that they can continue to engage in their community—something that's particularly important for remote learners who live away from campus." West notes that he has seen a significant drop in the number of emails he receives.

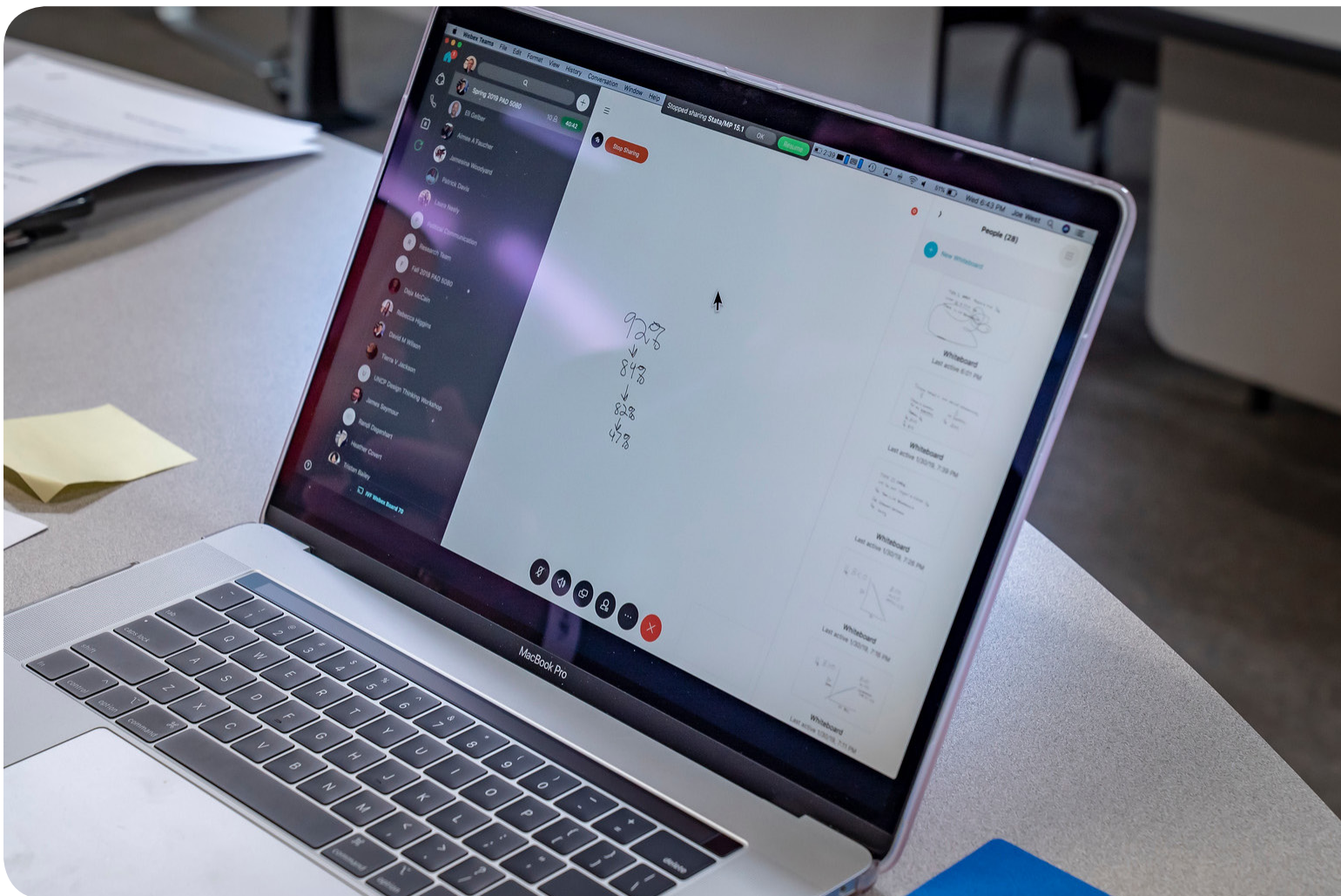
As a research methodologist, West is intrigued by the potential relationship between the use of a collaboration technology such as Webex and student retention and student success. "I don't think we have enough data yet to understand the statistical significance of the relationship," he says, "but we know the value of face-to-face communication and I wouldn't be surprised to learn that the data demonstrates a strong correlation between the two." West (who typically earns high marks from his students) has seen an improvement in the evaluations he's received. "With Webex, I'm able to respond more quickly and increase the times and ways my students and I connect face to face," he says, "so the increase is exactly what I would expect given the importance of this type of communications."

Comments from West's students support his belief. "As an online student who lives five hours away from campus, I really enjoy Webex Teams," says Jessica Edney, a graduate student in Public Administration at UNCP. "Webex gives me the ability to feel a part of the program, and I'm able to connect with other students in individual groups. The responses that we can see in real time have a great benefit for me as I work on assignments and try to understand and learn the material. Being able to be present in a sense in the classroom on live class evenings is wonderful. This is my first course at UNCP that has utilized this software and I can definitely tell a difference in my connection to the university and the class itself."



Portia Pope, a fellow graduate student in Public Administration, agrees. “The live classes [presented via Webex] were an excellent modality to learn difficult subject matter,” she says. Pope, who is a former educator with a master’s degree in Curriculum and Instruction, adds, “The live classes enabled Dr. West to adapt the content for diverse learners using visual, auditory, and tactile styles. We were able to participate and engage in questions and dialogues about quantitative methods, listen to the lectures, independently work out statistical problems, and see demonstrations on how to solve various problems while interacting with the professor and other online and in-person students. Additionally, I love the Webex Teams space that he created. We have immediate contact with the instructor and peers, which has helped with the clarification of assignments. I hope other instructors use this platform!”

West has organized sessions to share best practices with his colleagues, which is especially important given that many of his former students are asking their new professors to use Webex. West also uses the technology with research collaborators, in department faculty meetings when a colleague is unable to attend, and with the executive committee of the faculty senate, as well as with other individuals across campus.



Security: Protecting university systems and those who use them

The UNCP IT team's third goal was implementing an effective security strategy. And when it came to ensuring cybersecurity, UNCP's journey followed a familiar path: There was a will to do things right but not always the resources to make things happen. "We faced real challenges," explains Crouch. "We are a small school with a very small IT team [when Crouch joined the university, there was only one part-time cybersecurity officer], yet we confront the same threats as much larger schools with much larger staffs. We all understand that education institutions are a tempting target, and bad actors are indiscriminate when it comes to identifying those with vulnerabilities."

And in some cases, UNCP had made itself vulnerable. Crouch points to the "get it done" attitude that's prevalent on campus and notes that many of the commercial tech tools faculty and staff used didn't offer enterprise-level security, which opened the campus up to risk. In positioning security as the third goal in their technology plan, Crouch and her team sought to build a culture of security on campus. Crouch notes that this final piece is a balancing act, integral to the strategy, that requires training to build awareness among the school community, helping them understand that even a small school like UNCP is at risk—all without making users afraid. Time educating users on the value of security empowers them to become a part of the solution when something goes wrong, she says.

As it had in other areas, UNCP began with a plan: establishing objectives and then identifying the right security tools. "I challenged my team with assessing the threat landscape and determining what we really need. We chose solutions that would allow us to implement a comprehensive security portfolio over time—and bring our users along with us," Crouch says. "We've recently committed to a security enterprise agreement, which assures cutting-edge security capabilities at a predictable cost. We won't have to prioritize our security investments; we're able to think strategically about other elements of our architecture knowing that the security technology that protects it all is up to date. (The university's enterprise agreement is funded with assistance from [Cisco Capital](#).)

"Most importantly though, our relationship with Cisco gives our team an opportunity to build its skill set," Crouch adds. "We're still lean, but we're talented, and we've been able to scale up the tools to address emerging threats with our existing staff."

UNCP's efforts to build and develop its IT staff led to a unique relationship with the United States Special Operations Command (SOCOM) that brings Wounded Warriors with cybersecurity experience to campus to serve as fellows. The initiative gives retiring servicemembers valuable work

Product List

Network

- Catalyst 6500-E, 3850, and 2960-X switches
- Meraki MR53, MR30H and MR84 access points

Data Center

- Cisco UCS B-Series and C-Series servers
- VMware Hypervisor
- Nexus data center switches

Collaboration

- Webex for Higher Education with Collaboration Meeting Room
- Webex Teams
- Webex Boards
- Webex Room Kit, Webex Room Kit Plus, and Webex Room Kit Pro
- Cisco IP phones

Security

- Security Enterprise Agreement
- Cisco Firepower Next-Generation Firewall with Intrusion Prevention
- Cisco Advanced Malware Protection for Networks and Endpoints
- Cisco Umbrella Security
- Cisco Identity Services Engine
- Cisco Stealthwatch
- Cisco Cloud Email Security
- Cisco CloudLock
- Cisco Threat Response

experience, which they can take with them to future positions in the private sector. The program also provides the university with proven talent that complements existing staff and helps achieve security goals.

The first Wounded Warrior to take advantage of the new program was Don Bryant, who is now the university's chief information security officer (CISO). Bryant retired from the U.S. Army after 24 years of service and accepted the UNCP fellowship opportunity. Bryant's commitment to service, as well as his top-secret security clearance and expertise in cybersecurity and digital forensics, make him an important asset. "The Wounded Warrior program provided me with a unique way to diversify my experience," Bryant notes. "It has been a real privilege to 'pay it forward' with the six other Wounded Warriors who have accepted fellowships at UNCP since I began in the CISO role. They have all been a real asset to the university, and I believe that in return, we've helped them become even more prepared for their future careers."

In addition to his work as CISO, Bryant teaches three undergraduate IT management classes, and like Joe West, Bryant relies heavily on Webex. "Because it combines technology and business concepts, coursework in IT management helps students understand how they will use technology when they begin their careers after graduation. It only makes sense that we use a technology like Webex in the classroom since it's what they'll use in the workplace," he says. "Plus, like many of their counterparts at UNCP, a significant number of my students join classes remotely and rely on Webex Teams to interact and collaborate with their classmates—just like many in the 'real world' do." Bryant's classes are among the first to pilot the integration of Webex and the university's learning management system.

"Of course, security encircles any technology we implement," Bryant adds. "We face an expansive threat landscape that spans everything from serious issues like ransomware, which can literally hold a campus hostage, to smaller challenges like phishing emails, which annoy users and take valuable time to remediate." When Bryant arrived on campus, UNCP had just invested in the Cisco security portfolio, including Cisco Firepower Next-Generation Firewall with Intrusion Prevention, Cisco Advanced Malware Protection (AMP) for Networks and Endpoints, Cisco Umbrella Security, Cisco CloudLock, and Cisco Stealthwatch, but had limited resources to complete the implementation. (The university used Cisco Advanced Services during its Stealthwatch deployment.)

Bryant and his team of two full-time employees, one SOCOM intern, and two student interns rolled up their sleeves and used the implementation project to get "hands on" with the technology. "The first benefit we saw after implementation was the increase in visibility. And this was a blessing and a curse," Bryant says. "From the start, we saw more issues than we thought we had, so it took more time to remediate than planned. Once we had a clean slate and began to take advantage of automation (such as that available with Cisco Firepower and Advanced Malware Protection), we were able to see the most significant threats and prioritize on issues like ransomware or banking trojans that have the potential to do the most damage, rather than spending time on the smaller 'annoyances.' Automation gave us more hours in our day. Before we might get 20 incident reports each morning; now we get one or two a week."

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— **Joe West**, Assistant Professor of Political Science and Public Administration, University of North Carolina at Pembroke

Enhancing safety onsite

The University of North Carolina at Pembroke is beginning to integrate physical security and cybersecurity, and new construction on campus takes both into account, evaluating security technology just as it does other building systems or innovations for teaching and learning. Travis Bryant, the associate vice chancellor for campus safety and operations, sees a partnership between his team and the IT organization, even if systems are not yet fully integrated. “We have a common goal of helping to keep our students, faculty, and staff safe on campus, and anecdotal evidence tells us that our community does feel safe here,” he says. “As we integrate physical and cyber security, streamline threat assessment and response capabilities, improve efficiencies, and facilitate greater interaction across campus, we’ll only get better.” The university currently relies on access control systems, video cameras and analytics, and alert systems, all of which operate on the network, and a pilot of Cisco Meraki security cameras is currently underway.

Changing Lives Through Education

The data and analytics delivered by Cisco solutions are already informing decision making on the UNCP campus. “The value of our investment is supported by the data we’re able to gather,” Crouch explains. “As we build awareness of the threats the institution faces, for example, we’re able to report monthly about data points like threats blocked or time saved through automation. We also mine the news and share stories about the challenges faced by another institution that didn’t happen to us at UNCP because we are secured. This keeps us accountable, demonstrates the impact of our investments, and provides important validation of the work we do.” Crouch looks forward to using data in new ways, especially those that can support student success.

“I’m a big believer in all the tools we deploy,” Crouch concludes. “It just happens that Cisco makes them. We want to be good stewards of our resources, but the solutions we invest in don’t have to be the least or most expensive, they just have to be the right ones for our institution. Technology is the enabler of the larger story: the collective ways UNCP is able to use innovations to make life better for students.”



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