DELLEMC

A new network to power tomorrow's campus

University of North Florida delivers improved system performance and excellent user experiences by replacing legacy technology with software-defined networking

Higher education | United States

Business needs

Faced with an aging network infrastructure, the University of North Florida moved to enhance the performance, usability, security and dependability of systems and applications in the academic environment.

Solutions at a glance

Networking
- Dell EMC Networking S-Series switches
- Dell EMC Networking N3000-Series switches

Consulting Services

NEC solutions
- NEC ProgrammableFlow Controller
- NEC PF5248 switches

Business results

- Allows new LAN provisioning within minutes instead of an hour or longer

- Enables controlled, role-based application access and security

- Ensures system availability

- Offers repeatable model for continuing network modernization

164%

increase in download speeds with Dell EMC and NEC software-defined networking

Provides

consistent, anytime, anywhere

user experience

The University of North Florida (UNF), one of 12 universities in the state's university system, serves close to 17,000 students at its Jacksonville campus. In addition to its many academic programs, UNF offers a wealth of educational and cultural programs and events to the communities in the Jacksonville area. The University employs approximately 4,800 faculty members and staff.

Computing and digital networks at UNF support many different use cases, including research, teaching, learning, business administration and retail. They also meet the computing needs of an on-campus public library and almost 3,500 student residents. Many faculty members and students bring their own devices and connect them to the UNF network. Given the diversity of applications and computing uses, protecting sensitive information and ensuring regulatory compliance are complex tasks.

Network technology and architecture at UNF had not changed in many years even though the number of users and the intensity of their computing requirements had increased dramatically. UNF administrators and the IT team decided to modernize the network to improve user experiences, network performance, availability and cybersecurity. They also wanted to free IT members from some repetitive tasks and simplify administration by reducing the number of networking hardware models and manufacturers.

From roadmap to proof of concept for software-defined networking

Once IT stakeholders had drafted a roadmap and a list of requirements for the University's network, they approached several leading technology vendors and asked them to offer their ideas and solutions. Clay Maddox, assistant director of network engineering at UNF, says, "We chose a joint proposal from Dell EMC and NEC because it reflected a holistic understanding of our goals and didn't introduce needless complications."

After consulting with Dell EMC on software-defined, open networking, UNF decided to perform a four-month, proof-of-concept project to validate a network architecture that combined Dell EMC S4048 aggregation switches, Dell EMC N3000 E-Series switches, NEC PF5248 switches and NEC ProgrammableFlow control software. Maddox says, "We learned how we could get from traditional to software-defined networking in a fantastic collaboration with Dell EMC."

The proof of concept included one campus building, over 50 power users with complex requirements and several classrooms. Dell EMC consultants assisted the IT team in an efficient, smooth replacement of legacy hardware with Dell EMC and NEC solutions. When this first project was deemed a success, UNF extended software-defined networking to additional locations such as the College of Computing, Engineering, and Construction; the College of Education and Human Services; and the Student Union.

> *"We achieved a 164 percent increase in download speeds with Dell EMC and NEC software-defined networking."*
>
> Clay Maddox
> Assistant Director of Network Engineering,
> University of North Florida

D‌ELLEMC

> *"We now have an effective, repeatable model for extending network modernization across UNF—one great advantage of collaborating with Dell EMC."*
>
> Clay Maddox
> Assistant Director of Network Engineering,
> University of North Florida

> *"We can flexibly enable role-based application access and security, along with automated provisioning, on our Dell EMC software-defined network."*
>
> Clay Maddox
> Assistant Director of Network Engineering,
> University of North Florida

More simplicity and transparency for IT

During the proof of concept and the ongoing network modernization, IT managers observed many positive changes. Networking solutions now come from Dell EMC and NEC alone instead of almost a dozen vendors with many hardware models. That greatly simplifies network management and issue resolution.

Network traffic control has become significantly easier, too. IT managers no longer have to access one switch at a time—they just enter a manual command to make changes in traffic routing. Maddox says, "Software-defined networking allows us to determine from a central control console how data travels. We can always see what path between two endpoints data takes and adjust it. For example, if we want to implement a service chain or perform a packet capture, we can simply determine which traffic we want to route to any particular location."

Deploying a new LAN in the software-defined fabric has also become easier, faster and more reliable. "Engineers can provision a LAN and deploy it in a matter of minutes," Maddox says. "Previously, these tasks could take an hour or more."

Ensuring network availability and resiliency

The software-defined network includes multilevel redundancy, which ensures system availability and alleviates stress for IT managers. "We now implement and test changes and upgrades during the day, because the Dell EMC networking environment does not require outages," explains Maddox. "If we need to remove and replace a device so our technical account manager can help us troubleshoot it, that's not an issue. High-availability network architecture allows us to minimize late-night and weekend work and reliably delivers our applications and services."

DELLEMC

Greater flexibility in managing a future-ready network

Such software-defined networking features as authentication with IEEE 802.1X port–based network access control and automated VLAN configuration give IT more options for managing user access and security. They will become even more important when UNF adopts VoIP communications. "We can flexibly enable role-based application access and security, along with automated provisioning, on our Dell EMC software-defined network," says Maddox. "We can allow or restrict peer-to-peer connectivity within a VLAN as required."

The new network technology supports the multicast communications that are so important to UNF. "We rely on multicast when we need to deploy desktop images for large areas and in our emergency broadcast system," says Maddox. "Dell EMC networking enables the throughput and flexibility to use multicast as we like."

> "*Scalable, software-defined networking at the LAN edge only became possible for us with the right strategy and technology from Dell EMC and NEC.*"
>
> Clay Maddox
> Assistant Director of Network Engineering,
> University of North Florida

Performance boost improves the user experience

The network modernization more than satisfies UNF expectations for improvements in network performance and throughput. "We ran thorough speed and performance tests on the old and the new networks," says Maddox. "Along with other performance improvements, we achieved a 164 percent increase in download speeds with Dell EMC and NEC software-defined networking. That helps us meet user expectations and support the increasing workloads we expect in coming years."

UNF's network update also results in an enhanced user experience for faculty, students and administrators. Says Maddox, "We can deliver data and applications consistently, no matter where people are or what devices they use, with better performance across all applications."

Blueprint for continuing network refresh

Network administrators are confident they can continue implementing software-defined networking to progressively replace older technology. "We now have an effective, repeatable model for extending network modernization across UNF—one great advantage of collaborating with Dell EMC," says Maddox.

Maddox appreciates that Dell EMC offered a unique approach to UNF's networking requirements. He says, "Other vendors focused on software-defined WAN connectivity or software-defined data centers. They didn't offer a good response to my concerns regarding the campus network and the LAN edge. Scalable, software-defined networking at the LAN edge only became possible for us with the right strategy and technology from Dell EMC and NEC."
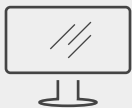
Learn more about
Dell EMC Networking

Contact a Dell EMC Expert

Connect on social

D✕**LL**EMC