University of New Mexico powers advanced services and meets expansion needs with help from HP Networking

Sweeping upgrade delivers network convergence and frees nearly $1.4 million in CAPEX and OPEX for reinvestment

Case Study

THE UNIVERSITY of NEW MEXICO

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— Gil Gonzales, Ph.D., chief information officer, University of New Mexico

Objective

Create a cohesive, standardized network infrastructure to deliver the performance and services required to meet the university's educational and research missions while providing cost containment and operational efficiency

Approach

Evaluated available network solutions and technological trends for more than six months

Business technology improvements

• Upgrade campus edge network to accommodate new and renovated facilities, provide consistent access, and centralizes overall network management

• Provide common operating environment for entire network infrastructure with HP Intelligent Management Center (IMC) software, resulting in increased visibility and control

• Eliminate single points of failure with HP Intelligent Resilient Framework (IRF), to create high availability and redundancy

Business outcomes

• Enable faculty, staff and students to collaborate seamlessly with peers in state, cross country or around the world by providing ubiquitous network access, reliability, security, and performance

• Free up nearly $1.4 million in spending on capital (CAPEX) and operating (OPEX) expenses for reinvestment in other critical areas

• Save approximately $400 for every device that needs to be moved/added/dropped by relying on Power-over-Ethernet Plus (PoE+) enabled switches from HP Networking

The University of New Mexico, established in 1889 in Albuquerque, is a healthy and vibrant research institution that provides undergraduate and graduate education for nearly half of the college students in the state. It also delivers a strong return on investment as a powerful economic engine.

The UNM system includes a 600-acre main urban campus and four branch campuses. It is the state's fifth largest employer and provides an estimated $9 billion in economic benefit in return for less than $300 million in state appropriations. Despite this very positive ROI, the University has absorbed nearly $50M in reductions over the past three years - its share of state-imposed budget cut backs during recent difficult economic times.

At the same time, the UNM campus, programs and information infrastructure have continued to thrive and grow. Like many major colleges and universities, UNM is continually evolving to meet current and projected demands for new services, increased enrollment, new faculty and staff, and increasing collaboration among its campus locations and the world at large.

Investment in future includes state-of-the-art connectivity

Over the past 10 years, UNM has invested over one billion dollars in new and improved facilities, including a new Children's Hospital, Science and Math Learning Center, School of Architecture and Planning, Centennial Engineering Center, UNM Hospital Richardson Pavilion, and Student Union Building. One of the most visible and dramatic projects was the complete renovation of the UNM men's and women's basketball facility, known affectionately as "The Pit".

This $60 million project to update the 46-year old home of the UNM "Lobos" (wolves in Spanish) was completed in the fall of 2010, just in time for the 2010-2011 season. The Pit renovation added more than 60,000 square feet of space with additional concession stands, rest rooms, locker room and training facility upgrades. New digital signage was added with improved web and telephony access for the press and others.

The University planned and implemented a network edge upgrade using HP Networking (3Com at the time) switches and software to meet new and increased demands on its infrastructure, such as the:

- addition and renovation of multiple facilities,
- widespread use of multiple network-dependent devices,
- growth in data generation and transmission, and
- increased dependence on collaboration tools and remote educational resources.

## Network patchwork provides opportunity for improvement

"Our network edge infrastructure had been assembled over a number of years without a cohesive funding source or implementation strategy," notes Gil Gonzales, Ph.D., UNM chief information officer (CIO), who joined the University in mid 2008. "We had departments that had control of their own switches and switches that were multi-tenant, meaning we had the challenge of trying to secure funding from multiple sources. We needed to improve purchasing efficiency, increase reliability and,

essentially, capture the edge to provide the dynamic services required by educators, students and staff."

The challenge was to plan and deliver an improved and expanded edge network environment that would not only deliver higher performance, greater reliability, centralized management, and flexible growth capabilities, but do with so in a way that provides costs savings. As UNM IT was researching and planning the network edge upgrade in 2009, the organization was directed by UNM president David Schmidly to identify areas of cost containment to help offset state funding cuts brought on by the recession.

The UNM edge network infrastructure was a clear target for cost containment, not only in capital expense (CAPEX) through centralized purchasing, but also in operating expense (OPEX) savings through reductions in ongoing support and maintenance costs. At the same time, where edge switches have in the past been considered commodity devices for simple network connectivity, today they are central to delivering the connectivity and other services required by UNM. This includes network security, mobility, Power over Ethernet (PoE), Virtual Local Area Networking (VLAN), connectivity for Voice over IP (VoIP) phones, and unified communications.

Over a nine-month period, UNM network experts evaluated edge networking solutions and technologies from leading vendors such as Cisco, 3Com, HP and Juniper, as well as smaller or start-up firms. "We worked very hard to gain a deep understanding of the networking products on the market and how they
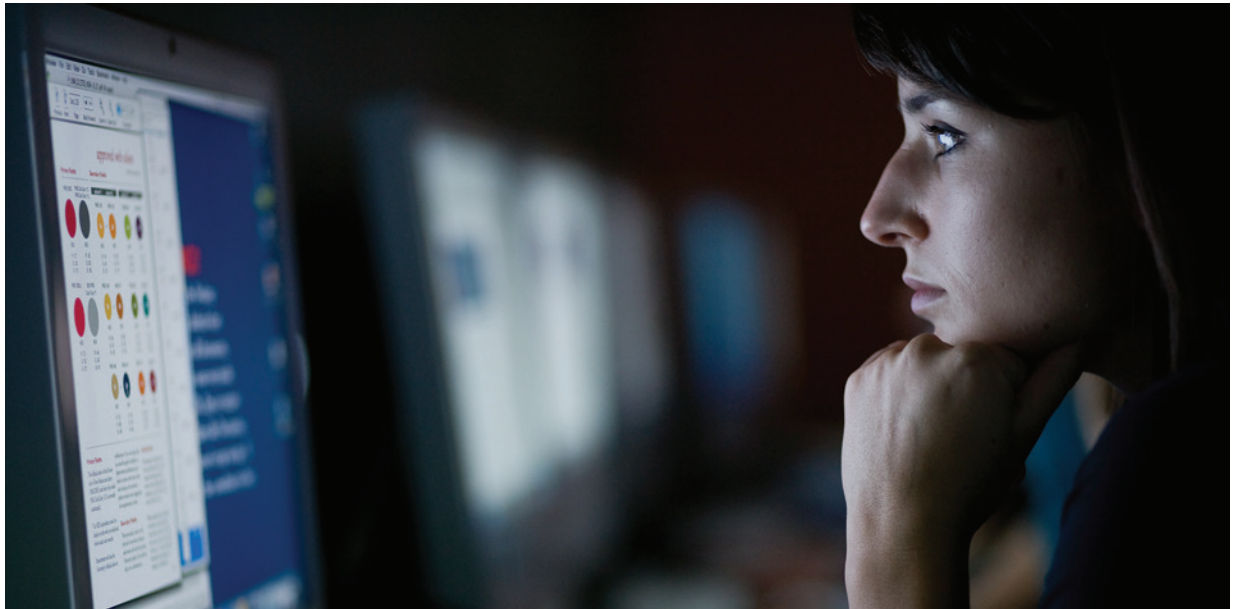
would operate in our environment," Gonzales explains. "We tested and compared numerous products in our production network to verify how they would work and interoperate. Our engineering staff did a great job, making our RFP very focused."

Ultimately, UNM chose the HP Networking 5500 El Switch Series, originally manufactured by 3Com, to deploy in a phased rollout over a two-year period, beginning with the summer semester break in 2010 and culminating with the summer break in 2012. UNM has deployed nearly 1000 HP 5500-24G-PoE El and 5500-48G-PoE El gigabit Ethernet switches, beginning with facilities where switches were nearing end-of-life.

Switches are delivered just-in-time (JIT) by an Albuquerque-based reseller, and configured and installed by the IT networking group. HP Networking edge switches link to UNM's main fiber optic backbone that links the Central Campus with the North and South campuses. Wide-area network (WAN) circuits link the Albuquerque campuses to remote campus locations, in branches across the state and to high-speed research networks.

The UNM network upgrade helps support the overall IT infrastructure that includes over 800 servers and 4,000 desktop computers located in computer labs and lounges for student use. In addition, the edge network and associated wireless access devices provide connectivity for over 100,000 devices, including smart phones, laptops, VoIP phones, digital displays, point-of-sales registers, utility monitors, scanners, and many other network nodes. Among the critical applications that rely on the new HP-based edge network is UNM's Banner

enterprise resource planning (ERP) and Luminis web portal solutions from SunGard Higher Education.

Full-court network upgrade ordered for The Pit

The Pit was among the new facilities where the HP edge switches were initially installed. The facility renovations included new concession stands, skyboxes, lounges, large high-definition LED video displays, LED ribbon boards, and more than 150 LCD televisions throughout the venue. This IPTV network is built on the new HP edge switches, providing the ability to add additional televisions or other devices at network drops. In addition to multi-media digital network, the press area was provided with improved wired and wireless access.

"We found that the HP Networking stackable edge switches met all of our needs and did so at a great price and lower operating costs," notes Gary Bauerschmidt, UNM associate director, Information Technologies. "The fact that the HP switches we selected include a lifetime warranty was also attractive as a way to reduce our recurring OPEX."

More importantly, this edge upgrade and expansion have given UNM the opportunity to implement centralized network management through the use of HP Intelligent Management Center (IMC) software. "We really had very little control over our previous edge environment," Bauerschmidt notes. "HP IMC is, in our opinion, light years ahead of the other network management software we looked at. IMC is helping us modernize and standardize network control and allows us to provide the level of service the university community expects."

New network helps meet cost containment goals

Because UNM has purchased PoE-enabled HP switches, the University saves approximately $400 every time they need to move/add/drop a connection for devices such as VoIP phones, wireless access devices, security cameras, and credit and access card scanners. Rather than pay for a technician or electrician to install an independently-powered outlet or port, UNM networking staff can simply plug into a PoE+-powered port.

In total, officials estimate the standardization of the institution's edge network will save (or help avoid) approximately $1.4 million over the next several years. These savings include initial acquisition costs (CAPEX) and ongoing operational and support costs (OPEX) thanks to the HP Lifetime Warranty, as well as through improved management, reliability and lower licensing costs provided by common management tools, including HP IMC and IRF software. These savings will be reinvested, enabling the continued enhancement of UNM's network infrastructure and capabilities.

"A critical goal for us is to provide a converged network that delivers voice, data and video – everything – on one network infrastructure, simplifying management and service delivery," says Gonzales. "By standardizing our network edge devices with HP Networking, we achieved the best possible outcome. We not only met our goals in support of our educational mission, but also achieved significant purchasing efficiency, and both CAPEX and OPEX savings. At the same time, we have reinvented our network infrastructure to be more responsive to our research community and positioned the network, not only on campus, but regionally and nationally as an environment that supports the University's primary research and teaching missions, including increased use of distance learning, virtual conferences, and greater collaboration."

Customer solution at a glance:

Primary applications
Educational enterprise resource planning, Sungard Higher Education, Oracle®, Microsoft® suite, learning management systems, web content management system, course management systems, anti-virus and security, access control, and network management

HP Services
• HP Networking Lifetime Warranty support

Primary hardware
• 700-900 HP Networking 5500-24G and E5500-48G edge switches
• HP TippingPoint Intrusion Prevention Systems
• Cisco core switches
• Cisco and Aruba wireless access points
• Dell servers (80%)
• Dell desktop & notebook computers
• NetApp storage (main campus)

Primary software
• HP Intelligent Management Center (IMC) Enterprise Edition
• HP Intelligent Resilient Framework (IRF) network virtualization software
• Microsoft applications
• Oracle Database 11g
• Banner 8 ERP from SunGard Higher Education (SunGardHE)
• Luminis web portal from SunGard
• Novell GroupWise
• RedHat Linux Enterprise
• WebCT Vista course management system
• Hannon Hill Cascade Server web content management system

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