

University Improves Voice Services While Reducing Costs

West Virginia University enhanced mobility and simplified voice management by replacing its Centrex and PBX systems with a Cisco Unified Communications solution.

EXECUTIVE SUMMARY

WEST VIRGINIA UNIVERSITY

- Higher Education
- Morgantown, West Virginia
- 27,000 students; 7,000 faculty and staff

BUSINESS CHALLENGE

- Reduce voice costs
- Simplify network management
- Improve voice services

NETWORK SOLUTION

- Upgraded network to support new services
- Deployed Cisco Unified Communications

BUSINESS RESULTS

- Eliminated US\$200,000 annual Centrex costs
- Eliminated US\$100,000 annual costs for moves, adds, and changes
- Increased employee mobility and flexibility

Business Challenge

Located in Morgantown, West Virginia, West Virginia University (WVU) has a faculty of 1,800 and more than 27,000 students. The university has 57 buildings on three separate campuses spanning 90 miles. Previously, some buildings received Centrex voice services over an ISDN network, while others had their own private branch exchange (PBX) systems, maintained by the university IT staff. Costs were high: The Centrex services cost US\$200,000 annually, and maintenance costs for the aging PBX services were increasing. In addition, telephone extension moves, adds, and changes for university faculty and staff, who move frequently as their buildings are renovated, cost US\$60,000 to US\$100,000 annually. “We wanted to reduce our

voice system costs and invest the savings in upgrading our IP network to support advanced applications,” says Tim Williams, director of telecommunications and network operations.

The university also wanted to increase the efficiency of its 12 voice and data professionals. “If we continued maintaining separate voice and data networks, we would not have the resources to support our growing student body, increasing research activities, and expanding campus,” says Ed Leatherman, senior voice engineer. “A converged voice-and-data network would make us more efficient.”

Network Solution

The network operations group met its business needs by migrating from ISDN to an IP network and deploying a Cisco® Unified Communications solution. Rather than upgrading the entire voice system at once, WVU decided to upgrade individual departments and buildings when it made financial sense. “Our first priority was to upgrade the ISDN portions of the network to IP because we would immediately begin saving money on leased-line costs,” says Leatherman. Departments using PBX systems would be transitioned as their equipment leases expired.

As the first phase in the migration to VoIP, the network operations group began using Cisco Unified Communications Manager to provide voice services to 70 people in the network operations group and the Health Sciences department, located several miles from the campus data center.

After a successful pilot, the network operations group began introducing Cisco Unified IP Phones in other departments that had ISDN networks, as well as in renovated or new buildings. “We have been converting 10 to 200 phones at a time, for a total of 3,100 users to date,” says Leatherman.

The university coordinated with its carrier so that users could keep their existing five-digit phone extensions. A remote campus at Potomac State College has its own Cisco Unified Communications Manager server serving 500 users, which WVU manages remotely.

“We have a relatively small staff. A single-vendor solution avoids interoperability issues, which has been a major factor in the success of our VoIP [voice-over-IP] projects.”

—Tim Williams, Director of Telecommunications and Network Operations, West Virginia University

When it converts a department or building to Cisco Unified Communications, the IT group first assesses the network to be sure that it has the intelligence to assign priority to voice traffic, as well as the security to protect voice as well as data. To upgrade the network to support voice, the IT group deploys Cisco Catalyst[®] switches with connections to two Cisco Unified Communications Manager servers in different locations. The network is currently being upgraded to 2-Gigabit Ethernet, and an upgrade to 10-Gigabit Ethernet is planned by 2010. After performing any necessary upgrades, the IT group installs Cisco Unified IP Phones and trains employees.

Cisco Unity[®] unified messaging makes it easy for employees to access their voice messages. “Checking both e-mail and voicemail messages from the same interface saves time,” says Williams. Employees can even forward Cisco Unity voice messages to other employees using their Novell GroupWise e-mail client and GW-Unify software from Advanced Logic Industries.

Departments that have caller queues, such as the help desk, university operators, and extending learning office, use Cisco Unified Contact Center Express. People who call the help desk are prompted to press a button to indicate if they need a password reset or another problem, and the call is routed to an available agent with the appropriate skills. The IT group set up agent skills, so that managers can help answer calls when call volume is heavy, such as at the beginning of a new semester. University operators use Cisco Unified Contact Center Express for call queuing, helping just a few operators to efficiently handle hundreds of calls daily. For example, if the caller dialed an 800 number to request someone’s phone number, the operator sees a pop-up message with instructions to provide the phone number rather than transfer the call.

Voice traffic is protected by the same Cisco security features that safeguard the data network from infections and intrusion. For additional security, the network operations group set up a separate virtual LAN (VLAN) for voice, preventing data traffic from touching voice traffic. Cisco Security Agent software on the Cisco Unified Communications Manager server detects and stops anomalous application behavior that could signal a security breach.

Business Results

The West Virginia University IT department has eliminated US\$200,000 in annual Centrex costs and invested the savings in new network equipment. Eliminating service charges for moves, adds, and changes has saved another US\$100,000 annually. What is more, calls between the main campus, the Health Sciences campus, Potomac State College, and Ruby Memorial Hospital now travel over the university WAN instead of the public switched telephone network, eliminating toll charges. “The migration to Cisco Unified Communications resulted in payback in just 18 months for the departments that previously used ISDN,” says Leatherman. “All departments increased their productivity.”

Temporary or permanent moves are easier and less expensive. Employees can connect their Cisco Unified IP Phone in the new location without assistance, avoiding a US\$200 service charge. The savings are significant: the Health Sciences department alone had 1,100 moves, adds, and changes in 2006. Cisco Emergency Responder software automatically registers the new phone location in a database so that if the employee calls 911, the dispatcher can see the caller's current location. "A department with 200 employees recently moved to a temporary building for several months while its permanent building is being renovated and wired for IP," says Leatherman. "We did not have to move a PBX, and employees simply connected their Cisco Unified IP Phones in their temporary offices to become productive immediately. They will be able to do the same thing when they move back to their original building."

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With Cisco Unified Contact Center Express, contact center agents now have the flexibility to work from any location on the network. "When one of the contact centers temporarily needed more staff to handle high calling volume, we were able to quickly add temporary agents in other locations," says Leatherman. The ability to add new contact center agents is part of the university's business continuity plan.

Converging the university's previously separate voice and data groups has created organizational efficiencies in the IT group. "We have a relatively small staff," says Williams. "A single-vendor solution avoids interoperability issues, which has been a major factor in the success of our VoIP projects. In addition, our network operations staff can use their existing skills to manage the voice network." The university did not need to add any employees to support unified communications, and instead retrained its telephony engineers to support the converged IP network.

PRODUCT LIST

Routing and Switching

- Cisco Catalyst 6509 Switch with Supervisor Card
- Cisco Catalyst 3750 Switch
- Cisco 7200 Routers

Security and VPN

- Cisco Security Agent
- Cisco PIX Firewalls

Voice and IP Communications

- Cisco Unified Communications Manager
- Cisco Unified Communications Manager Express
- Cisco Unity
- Cisco Unified Contact Center Express
- Cisco Unified IP Phones

Employees like the productivity-enhancing features of Cisco Unified Communications, such as the employee directory and ability to see missed calls. Caller convenience has increased, as well, because employees can transfer calls over the IP network to other locations, and callers can press 0 to be transferred to any available person in the department.

Cisco Unified Communications Manager helps the university comply with Homeland Security requirements by recording all call detail information, including their origin and duration. The detailed reporting also helps the university staff its contact centers more efficiently.

Next Steps

WVU expects to complete its transition to Cisco Unified Communications within three years and will then begin converting student dorms. In some remote sites, voice services will be delivered over the network from the centralized Cisco Unified Communications Manager servers. In other sites, such as the Fire Training Academy, the university will deploy Cisco Unified Communications Manager Express, which is built into Cisco integrated services routers. The network operations department will centrally manage remote deployments, avoiding the need for IT staff in those locations.

“Our transition to Cisco Unified Communications has been achieved with minimal disruption,” Williams says. “We are not rushing, but rather following a carefully thought-out plan. As we upgrade each department to VoIP, our users benefit from the productivity-enhancing features of their Cisco Unified IP Phones, as well as increased mobility and flexibility.”



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