

## Private School Improves Campus-wide Communication

Punahou School deploys Cisco Unified Communications and Cisco Secure Wireless solutions for high-quality learning and collaboration.



**PUNAHOU SCHOOL**

### Executive Summary

#### Customer Name:

- Punahou School
- O'ahu, Hawai'i, United States
- 3760 students

#### Business Challenge

- Improve communication reliability and quality
- Enhance network security
- Simplify network management

#### Network Solution

- Cisco Unified Communications solutions
- Cisco Secure Wireless Network
- Cisco advanced network security capabilities

#### Business Results

- Gained excellent voice quality and time savings with new capabilities
- Protected network against unauthorized access
- Built foundation for securely expanding student computing capabilities

### Business Challenge

Punahou School was founded in 1841 by Congregational missionaries to educate their children. Today it enrolls more than 3760 students from kindergarten through grade 12 and supports a student body reflective of Hawai'i's ethnic, cultural, and socioeconomic diversity. Punahou School is the largest independent school on a single campus in the United States. The school's Information Technology department is responsible for technologies that support the school's teaching, learning, and communications. In 2000 the IT department upgraded the campus network to support the school's growth and computing goals. In 2006, Punahou School decided to further leverage its network to support a new wireless initiative and to upgrade its telephony capabilities.

A rapidly growing number of wireless access points had been installed wherever users needed them to support wireless computing. However, there was no overall wireless infrastructure plan, and the unsecured access points could not be centrally managed. This presented opportunities for unauthorized access to the school's network and made the network increasingly vulnerable. Punahou School needed a wireless LAN solution that could be centrally managed and monitored, while simultaneously enforcing standards-based security services.

At the same time, the school's telephone cable plant was failing. Voice quality was poor and during rainstorms, some phones did not work at all. Corroded wire pairs required complicated service calls to accommodate moves, adds, or changes, which resulted in extra costs and time delays. In addition, the school's private branch exchange (PBX) system was 10 years old and the analog handsets offered limited functionality.

"Our options for a new telephone system were limited," says David Parrish, chief architect for the IT department. "Pulling new cable and conduit required significant trenching and concrete work and would have cost hundreds of thousands of dollars simply to replicate obsolete technology."

Demands on the network were also increasing. Today, the school's One to One Computing Program provides wireless laptops for students in grades four through nine. Students in kindergarten through third grade, as well as high school students, also have computers available in their classrooms and labs. For the 2008-2009 school year, the laptop program will expand to 10th grade students. As network

Product List
<p><b>Routing and Switching</b></p> <ul style="list-style-type: none"> <li>▪ Catalyst 3750 Series PoE switches</li> <li>▪ Catalyst 3560 Series PoE switches</li> <li>▪ Catalyst 2940 Series switches</li> <li>▪ Cisco 3800 Series routers</li> </ul>
<p><b>Network Management</b></p> <ul style="list-style-type: none"> <li>▪ Cisco Security Monitoring, Analysis and Response (MARS)</li> <li>▪ CiscoWorks LAN Management Solution (LMS)</li> <li>▪ Catalyst 6500 Series Network Analysis Module (NAM)</li> </ul>
<p><b>Security and VPN</b></p> <ul style="list-style-type: none"> <li>▪ Cisco ASA firewalls with IPS modules</li> <li>▪ Catalyst 6500 Series Intrusion Detection System Module (IDSM-2)</li> <li>▪ CiscoSecure ACS servers</li> </ul>
<p><b>Voice and IP Communications</b></p> <ul style="list-style-type: none"> <li>▪ Cisco Unified Communications Manager</li> <li>▪ Cisco Unity Connection</li> <li>▪ Berbee InformaCast</li> <li>▪ Cisco Unified 7900 Series IP Phones</li> <li>▪ Cisco IP Communicator</li> <li>▪ Cisco VG224 Voice Gateways</li> <li>▪ Cisco Analog Telephony Adapters</li> <li>▪ Cisco 2800 Series Voice Gateway routers</li> </ul>
<p><b>Wireless</b></p> <ul style="list-style-type: none"> <li>▪ Catalyst 6500 Series Wireless Services Module (WiSM)</li> <li>▪ Cisco Wireless Control System (WCS)</li> <li>▪ Cisco Airespace Wireless Access Points</li> </ul>

requirements increased, security capabilities needed to be upgraded to protect the network from unauthorized use and potential Internet-based threats.

**Network Solution**

Punahou School conducted a thorough evaluation of new networking providers and technologies to help it deploy a new telephony solution and improve its network security and wireless capabilities. Hawaiian Telcom ranked at the top of the school's vendor list, and the Punahou IT team was confident with their capabilities, having worked with Hawaiian Telcom during its most recent network upgrade.

Hawaiian Telcom recommended a comprehensive solution from Cisco® that would upgrade the core infrastructure to support new wireless LAN and Unified Communications services, deploy new security technologies, and enable centralized monitoring capabilities. The Hawaiian Telcom team developed the network design and implementation strategy, and led the project scheduling, resource coordination, and final implementation efforts. In spite of an aggressive deployment schedule, the new infrastructure was migrated on time with no service interruption for students, teachers, or administrators.

The new data infrastructure provides advanced features and functionality—including Quality of Service (QoS), Power-over-Ethernet (PoE), and integrated security. Core switches were upgraded with Cisco Catalyst® 6500 Series Intrusion Detection, Network Analysis, and Wireless Services modules, as well as PoE to support campus-wide wireless access points and IP phones. New Cisco firewalls with intrusion prevention capabilities replaced older models. Redundant CiscoSecure ACS servers now provide centralized security administration and integrate with the new wireless LAN for wireless user access control. Punahou School was already using Cisco Security Agent, and it continues to play an important role in the school's layered approach to security.

Cisco Security Monitoring, Analysis and Response System (MARS) was implemented to monitor the network's security elements, collecting and correlating data from the network to identify network threats and enable the IT team to mitigate or stop them. Cisco Security MARS greatly simplifies security monitoring, eliminating the need for a staff member to continuously review system logs and correlate huge amounts of data in order to identify threats.

Cisco Unified Communications Manager replaced the PBX system, delivering centralized IP communications capabilities, bypassing the aging voice cabling plant, and supporting scalability and mobility through the voice-ready data network. New Cisco Unified IP Phones offer a range of productivity features while Cisco Unity significantly enhanced the school's voice messaging capabilities.

The new campus-wide Cisco Secure Wireless Network provides students with flexibility and mobility to move in and out of classrooms and throughout the campus's 76 acres with continuous connectivity. Advanced wireless network security provides the same level of security and access control as the school's wired network, and now IT has visibility into wireless traffic traversing the network.

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—David Parrish, chief architect, Punahou School

### Business Results

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The new Cisco Unity voice mail system and Unified IP Phones with message-waiting indicators save time for teachers, administrators, and IT staff. In the past, analog phones had no message indicators, which created inconvenience for users and resulted in many complaints. The system is also easier to manage, saving time and resulting in far fewer help tickets for IT staff. And with redundant Unified Communications systems, the school is far less vulnerable to a telephone line problem. When school started in the fall, accommodating teachers’ office changes and telephone extension moves was much easier. Teachers were able to simply pick up their phones and plug them into the new office with little, if any, work required of the IT department.

The school telephone directory is now available on the Unified IP Phone handsets, making it simple for users to find phone numbers and for the school to keep the directory updated.

Managing wireless connectivity is far easier as well. With the new Cisco Unified Wireless Network, the IT team can immediately identify rogue access points and eliminate them before they create a security risk. In the event that an access point fails, fault management features quickly identify it so that it can be replaced, thereby maximizing wireless availability throughout campus. Reporting features provide summarized views of wireless network usage, which is very useful for capacity planning. The Mobility Group feature allows seamless roaming capabilities between controllers, enabling wireless users to move about the campus and receive continuous wireless coverage with minimal disruption.

“We have approximately 292 access points,” says Parrish. “We can now monitor any specific access point, view them on maps, quickly see coverage areas, and see which users are associated with which access points. The new network components allow us to help ensure that the technology is delivering maximum uptime.”

Wireless QoS features also allow Punahou School to provide different levels of service and bandwidth to the different groups of users. For example, Parrish has segmented campus users onto virtual LANS (VLANS) to maximize performance for academic applications and provide secure communication between various groups of users. The network also supports video streaming, which enabled the Punahou

School's Japanese classes to collaborate with students at a sister school in Japan. Using iChat and Skype, the students composed music and sang together online in real time.

"As parents learn the value of technology in their children's education, Punahou School will maintain its competitive advantage by embracing new technology and finding new and innovative ways to use it in teaching and learning," says Wendi Takemoto, chief information officer of Punahou School. "We are integrating technology into the curriculum at almost every level to engage students better."

### Next Steps

Punahou School is looking ahead to new ways of enhancing teacher productivity, such as Unified IP Phone-based class roster and attendance application. Punahou School is also using Berbee InformaCast, an IP communication solution that sends visual and audible alarms to the IP phones in the event of an e-mail problem or other emergency.

### For more information

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To learn more about the Punahou School, visit  
[www.punahou.edu](http://www.punahou.edu)

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