University Deploys Connected Learning Technology

Wireless and networking solutions help Santa Clara University students collaborate and learn.

EXECUTIVE SUMMARY

SANTA CLARA UNIVERSITY

- Higher Education
- Santa Clara, California, USA
- 8000+ faculty and students

BUSINESS CHALLENGE

- Upgrade outdated network infrastructure to support high bandwidth and wireless standards
- Provide students and faculty with the tools required to learn and collaborate at a competitive level

NETWORK SOLUTION

- Upgraded campus network from 10 Mbps connections to 100 Mbps
- Campuswide wireless network solution
- New technology center/library and a new business center, both outfitted completely with wireless and networking technology, IPTV, digital signage, and VoIP telephony

BUSINESS RESULTS

- Improved network bandwidth and connectivity, enabling students and staff to work and learn with the latest voice, video, data, and Web 2.0 tools
- More interactive and progressive learning environment that better prepares students for the technologies they will use in the working world

Business Challenge

Located in the heart of Silicon Valley, Santa Clara University (SCU) is a 157-year-old Jesuit, Catholic university with some 5000 predominantly full-time undergraduate students and approximately 3500 mostly part-time graduate students. Located in one of the most technologically advanced regions in the United States, SCU generates high expectations for availability of technology resources from students and faculty: graduate students demand an environment similar to what they experience in their work in high technology industries; undergraduate students want exposure to the latest tools, hoping for a future advantage with prospective employers; and faculty are eager to employ those same tools to enhance their teaching and scholarship. SCU's communication infrastructure lacked the capacity to support emerging technologies such as video and web-based collaboration, and did not provide support for mobile communications at all. Students, faculty, and IT staff were all equally frustrated.

Recognizing the pedagogical and competitive benefits of a robust technology infrastructure, SCU administrators resolved to make appropriate upgrades. They were very sensitive, however, to both the initial and ongoing costs of technical resources, and wanted to ensure that the new infrastructure they might provide would meet both current and future needs. To resolve these issues, Santa Clara partnered with Cisco for a technology overhaul of its communication and network infrastructure with a modular, enterprise-based model in mind.

Network Solution

By far the most common complaint about Santa Clara's technical infrastructure was the lack of a wireless network. With Cisco's technical guidance SCU quickly addressed this by installing, in just over three months, 650 wireless drops and transmitters. The resulting network covered all campus buildings and open areas except for athletic and recreation fields. This new resource was enthusiastically welcomed by students and faculty alike, logging connections by nearly 2000 different users in the first month. Because SCU had only two network engineers on staff, Cisco's centralized administration and control capabilities, which allow effective and efficient management of the new wireless network, were essential to successful implementation and operation.

SCU also recognized that to create a connected on-demand learning environment, it needed to remove barriers to communications, streamline campus operations, and provide the tools to enable access and real-time interactions for students and faculty. The second phase of the overhaul focused on a campus-wide upgrade of the SCU wired infrastructure. Limited network bandwidth interfered with in-class use of technologies such as streaming video and web-based simulations. Long latency times interfered with even routine access to network resources such as the library's electronic journals. And the unreliability of the network frustrated everyone, particularly students trying to access class content from the university's learning management system.

To overcome this problem, SCU reengineered its entire network infrastructure, again with Cisco's technical guidance, installing 8000 new wired connections in administrative buildings, classrooms, common areas, and residence halls and dramatically upgrading the aging network core. This new system bumped campus connections to gigabit speeds where wiring allowed, and 100-Mbps connections everywhere else. The network core, and some intra-building connections, was upgraded to 10-Gbps speeds. The resulting network greatly reduced congestion and also provided users with increased connection reliability and consistency in networked access.

The third phase was implemented in conjunction with construction of two signature buildings, a learning commons/technology center/library and a new home for the business school. Both buildings were designed with Cisco® wired and wireless networks, including 10-Gbps trunks between floors. The buildings served as pilot locations for Santa Clara's deployment of Cisco solutions for VoIP telephony, digital signage, and IPTV, which are being expanded in phases to the broader campus. This communications infrastructure also, for the first time at SCU, provides a platform for faculty and students to vigorously employ new collaboration technologies and fully exploit resources available on the wider web to enhance learning and scholarship.

> "We needed to provide the most effective technical environment for our students and faculty to support their efforts at teaching, learning, and scholarship."
> **—Ron Danielson, Chief Information Officer, Santa Clara University**

Business Results

This upgraded network infrastructure has dramatically changed the way faculty and students use technology on a daily basis. SCU can now anticipate and respond to the demand for new teaching and learning approaches and deliver secure, seamless communication and real-time interaction that students and faculty expect.

The wireless network, offering access to information resources from virtually anywhere on campus, has turned the entire campus into a learning environment. Impromptu gatherings of students, clustered around notebook computers, can be found outside enjoying California's weather, in the student center, and especially in the learning commons and business school, where furnishings and architecture have created a variety of spaces to fulfill a range of student needs.

Faculty, freed of concerns about network reliability and performance, are comfortable making use of web-based resources in class, including incorporating Web 2.0 technologies such as blogs and wikis into homework assignments and in-class activities, and spicing up lectures with relevant

YouTube videos. Particularly in the business school, exploration of video conferencing and recording of classroom activities is expanding significantly.

“There’s been a sea change in higher education over the last 10 years, a shift from isolated study to recognition of the importance of working together and learning from one another,” says Ron Danielson, Vice Provost and CIO. “Collaboration is the new buzz on our campus, so for example, in the learning commons, we have 28 collaborative study rooms with display and video recording capabilities, and they’re overbooked most of each academic term.”

PRODUCT LIST

Routing and Switching

- Cisco 3750, 3750e, 6509, and 4948 switches
- Cisco MDS Fibre Channel Switch

Security and VPN

- Cisco ASA
- Cisco NAC Appliance

Video

- Cisco DMS
- Cisco Digital Media Players

Voice and IP Communications

- Cisco Unified Communications Manager (Call Manager)
- Cisco Unity®
- Cisco Unified Contact Center Express
- Cisco MeetingPlace® Express
- Cisco 7921 Wireless Phone
- Cisco Unified Personal Communicator

Wireless

- Cisco 1131 Access Points
- Cisco Wireless Control System
- Cisco Wireless LAN Solution Engine Controller

Santa Clara University is encouraged by the way students and faculty have responded to this investment in infrastructure. The pilot deployments of VoIP, IPTV, and digital signage have been well received, and other campus units are looking forward to access to these rich-media applications. There’s been an upswing in student-generated video content as part of term projects and for documenting students’ community-based learning activities, a technology and learning approach that SCU expects will become more widespread in the near future.

That’s a very positive development in Danielson’s opinion. “With this new infrastructure, we can support and encourage this kind of learning,” he says.

For More Information

To find out more about Cisco and Santa Clara University, go to: http://www.cisco.com/en/US/prod/collateral/video/ps9339/ps7220/scu_cisco_dms_video.html

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