



CASE STUDY Education

California State University System Utilizes Aruba to Rightsize Campus Networks, Identifies Potential \$30M Savings

Facing a complicated and massive wired network refresh covering 23 university campuses from Humboldt to San Diego, the Technology Infrastructure Services group of the California State University System had few choices. While wireless technology seemed to hold great intrigue and promise, the CSU budget for wireless initiatives was limited. In the absence of wireless, individual CSU campuses were concerned that their need for Ethernet ports and switches would double. “Our multi-campus network undergoes an equipment refresh every three to five years, depending on technology maturation,” said Michel Davidoff, director of Cyberinfrastructure Services for the CSU System. “It quickly became evident that achieving our goal of providing one 10/100 Ethernet connection to 490,000 students, faculty members, and staff, as well as providing adequate capacity for classrooms, libraries, computer labs, common areas and retail centers would be extremely complicated and cost prohibitive.”

Approaching the refresh issue analytically, the TIS staff and campuses began to measure port usage, and to utilize the data to make more informed spending decisions. What they found surprised them: wired ports across all 23 campuses were consistently underutilized. In fact, the data clearly showed that more than half of the networks ports passed no packets during the previous six months. Armed with this data, the team decided to explore a different approach to their planned network refresh.

The Wireless LAN Technology Option

While wireless LAN technology was traditionally viewed as a “nice to have” service on some campuses, CSU’s recent experience led them to conclude that wireless was a reliable, low cost option for delivering pervasive campus connectivity. Several campuses had already deployed some Aruba wireless LAN equipment, mostly for coverage in selected high-usage areas, and San Diego State University had built a relatively large WLAN on their campus. They found the Aruba WLAN to be a highly secure, scalable and reliable enhancement to their wired network, allowing for a refresh approach that only replaced utilized wired ports.

The CSU team assembled a consortium of engineers to produce and issue an RFI to leading wireless LAN vendors. The consortium identified hundreds of functional requirements for the multi-campus wireless network, and solicited input from all engineers across the 23 campus system. From the vendor respondents, three were selected to participate in a comprehensive technology evaluation. This included objective testing – validating provable performance numbers and feature availability – and subjective testing – evaluating the quality of user interface, simplicity of configuration and management, ease of use, etc. Additionally, the evaluation team performed a comprehensive TCO analysis of the vendor proposals, looking at the eight year costs associated with purchasing and refreshing the hardware, staff training, and overall maintenance.

The Right Infrastructure for Network Rightsizing

After thorough analysis of the evaluation results, the team determined that Aruba Networks provided the best value for fulfilling the needs of the CSU technology infrastructure. The engineers determined that Aruba provided the best technology solution for CSU while providing peerless



Requirements:

- Adequate network capacity for classrooms, libraries, computer labs, common areas and retail centers
- Satisfy the hundreds of functional requirements defined in the RFP for the multi-campus wireless network
- Intuitive and feature rich management interface, simplicity of configuration and monitoring, and ease of use

Solution:

- 802.11n-capable indoor access points that can be software-upgraded to full .11n
- Outdoor access points to extend coverage beyond campus buildings
- Centralized Multiservice Mobility Controllers
- Policy Enforcement Firewall, Mesh, Wireless Intrusion Prevention, and Remote Access Point software modules
- AirWave Wireless Management Software

Benefits:

- Operational simplicity to ease deployment and ongoing management
- Powerful wireless network management to quickly resolve helpdesk issues and increase network stability
- 802.11n Future-Proofing to save the CSU system significant capital and labor costs
- Controller capacity and central RF intelligence to provide reliable access on any size campus

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cost of ownership benefits. These benefits included:

Operational simplicity – The Aruba WLAN infrastructure was determined to be easier to deploy and manage than the competition during the evaluation process.

Management – The AirWave Management Platform delivers tremendously useful data that can be used to quickly resolve helpdesk issues and ultimately increase the stability of the network, greatly improving the user experience and substantially lowering support costs

802.11n Future-Proofing – Aruba delivers low-cost 802.11n-capable access points that can be software-upgraded to full .11n when and where this added capacity is needed. With thousands of access points deployed across the multi-campus system, this flexibility will save the CSU system significant capital in upgrade costs, as well as the labor required to physically replace access points.

Scale – The Aruba architecture has the controller capacity and central RF intelligence to provide reliable access across large campuses in the CSU system like San Diego State that exceed 1000 Access Points.

Aruba Networks is now the wireless technology standard across all 23 California State university campuses.

Significant Cost Savings, Better Service

Determined to approach the opportunity analytically and impartially, the Technology Infrastructure Services staff created a database with every telecommunication room in CSU, the number of ports in each room and the number of those ports that are actively used. A formula was developed to determine the refresh requirements of each campus based on this measurement. Applying this formula across all 23 campuses, CSU was able to recognize a savings of approximately \$30 million by reducing the scale of their planned wired network refresh and utilizing Aruba's wireless LAN technology.

While not yet directly measured, CSU is confident that there are other significant operational cost savings from

the transition of some wired ports to wireless, such as maintenance, cooling, power, etc. A corollary benefit is a reduced carbon footprint and improved environmental responsibility that further strengthen the University system's sustainability efforts.

Additionally, the team almost immediately began to see a marked increase in network usage as wireless was deployed. Previous to the upgrade, faculty and university staff were the primary users of the wired network, but that majority shifted to the student body as wireless connectivity became available. With up to 5,000 faculty/staff and 36,000 students per campus, many of whom access the network with multiple Wi-Fi enabled devices, many campuses have seen a nearly five fold increase in network usage with the implementation of pervasive wireless LAN. With this explosion in network usage, plans are underway to utilize the wireless infrastructure for a plethora of new applications, including technology enhanced curriculum, mobile device access in university health centers and campus safety enhancements such as wireless video monitoring.

Summary

With the majority of CSU campuses now deployed with wireless, the benefits of this evaluation process are becoming even clearer. Not only is CSU meeting the needs of its user population with mobile network access, but the overwhelming cost benefits of wireless have allowed the CSU system to utilize financial resources in the most responsible manner.

Organization Overview:

The CSU is a leader in high-quality, accessible, student-focused higher education. With 23 campuses, almost 450,000 students, and 47,000 faculty and staff, CSU is the largest, the most diverse, and one of the most affordable university systems in the country. It offers unlimited opportunities to help students achieve their goals. It prepares graduates who go on to make a difference in the workforce. It engages in research and creative activities leading to scientific, technical, artistic and social advances. And it plays a vital role in the growth and development of California's communities and economy.



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