Silver Valley Unified School District serves approximately 2,200 K-12 students across 3,300 square miles in California’s high desert region. Because of the district’s vast coverage area, six of its seven schools are connected over a microwave WAN.

In the past, Silver Valley’s IT team had accumulated a myriad of different systems—Windows NT4, Linux, and Mac servers; Novell servers; multiple Extreme Networks switches; HP equipment; and an early Wi-Fi network. Most of the systems were almost a decade old, and maintaining even basic support agreements cost the district up to $60,000 a year. Today’s online coursework, video demands, and wireless bandwidth requirements had pushed the legacy networks to their limits. The district’s WAN links only supported 15 to 20 Mbps of bandwidth to each school. Limited bandwidth combined with poor wireless coverage often resulted in dropped connections and prevented students from using the wireless network, which frustrated teachers and students.

**IT’S TIME TO FUTURE-PROOF**

“We clearly needed more bandwidth,” said Robert Saffel, Director of Technology Services for Silver Valley Unified School District. “We knew that redesigning the network was going to require significant cost and effort. But we had to do it.”

Saffel and Rory Sena, Information Services Specialist for Silver Valley Unified School District, began looking at their options. They evaluated Cisco, HP, Extreme, and Ruckus® network solutions with a list of specific requirements. Their goal was to future-proof the network as much as possible. They wanted switches with high-capacity backplanes that delivered at least 10 Gbps speeds. They wanted new technology that offered features and capabilities for the future, as well as flexibility to grow without having to rip and replace equipment. Finally, they wanted professional, affordable technical support.

“Ruckus had everything we were looking for,” said Saffel. “The company is solid and proven. The ICX® 7000 series of switches are carrier-class with the performance, capacity, and scalability we needed. The fact that they support OpenFlow and SDN is an important part of future proofing. Price was important to us, and so was direct, unlimited support from Ruckus. It was all there.”

* Brocade ICX switches were re-branded as Ruckus ICX switches following the acquisition of Ruckus by Brocade.
FAST, TURN-KEY IMPLEMENTATION

The Silver Valley Unified School District worked with Ruckus partners Teknique and TrulyCreative to procure and implement the new wired network and a wireless network. Teknique IT provides a comprehensive suite of products and services that help customers use IT to achieve their business objectives. TrulyCreative delivers a comprehensive portfolio of managed IT services. Working closely with Ruckus and the Silver Valley IT team, Teknique IT and TrulyCreative conducted an initial proof of concept and planning for the new implementation. Teknique delivered the hardware and TrulyCreative then provided professional services to pre-configure the switches with the district's IP addresses, VLANs, and configurations. All 120+ switches were installed in less than a week.

The new network core is built on ICX 7750 Switches, which provide industry-leading 10/40 GbE port density, advanced high-availability features, and a flexible stacking architecture. The switches offer rich Layer 3 features and Multi-Chassis Trunking (MCT) to achieve an active-active network with load-balanced traffic and minimal downtime. ICX 7750 Switches also support OpenFlow in true hybrid port mode, enabling a smooth transition to Software-Defined Networking (SDN).

The ICX 7450 Switches reside at the network edge, configured with Open Shortest Path First (OSPF) Layer 3 routing back to the core switches. The ICX 7450 Switches also provide industry-leading stacking with a choice of 1 GbE, 10 GbE, or 40 GbE uplinks for ultimate flexibility and “pay as you grow” scalability. The ICX 7450 also enables SDN with OpenFlow support in hybrid port mode.

“The Ruckus switches provide a solid underlay for Silver Valley’s new wireless network, which we deployed simultaneously with the wired network,” said Brock Kartes, Systems Engineer with TrulyCreative. “Integration with the district’s EqualLogic iSCSI SAN and Palo Alto Networks firewalls was also simple. The Ruckus technology made it easier for us to implement a solution that delivered everything Silver Valley needed.”

When everything was completed, Silver Valley had replaced its copper and fiber optic cabling district-wide, increased its Internet link capacity from 100 Mbps to 1 Gbps, and upgraded its microwave WAN backhaul capacity to 500 Mbps. Each site is on a 10 GbE LAN and delivers 1 Gbps speed to desktops.

“This deployment went better than expected,” said Sena. “Just a few tweaks and we were ready to go. It was the best experience I’ve ever had.”

PLENTY OF BANDWIDTH FOR EVERYONE

“The user experience is our primary concern,” said Saffel. “We want our teachers and students to be able to use technology without having to think about it. Now our network is like a well-built race car—everybody can drive it and take it to where they need to go without any issues.”

Problems with wireless network access and demanding applications have disappeared. Teachers easily incorporate streaming video from sources such as Discovery Streaming, YouTube, and the Internet. The district also takes advantage of online educational programs such as Read 180, SuccessMaker, and Scholastic courses.

SIMPLIFIED MANAGEMENT

The district manages the network using Ruckus management software, although Sena says that the network has required very little intervention. He uses it to monitor the switches, configure firmware upgrades, and gain visibility into traffic across the network.

“In the past, changing configurations or removing a switch from a stack was painful,” he said. “With the Ruckus stacking solution, it’s easy peasy. I’m very happy with it. And because everything is now consistent across the district, even staff with minimal network experience can manage a switch without having to relearn everything.”

Ruckus VLAN capabilities have given Silver Valley much more flexibility in supporting the district’s security and traffic management policies. The wired and wireless networks each have their own VLAN capabilities with VoIP phones in one VLAN and printing resources in another. There are several VLANs for Wi-Fi settings and printing resources in another. There are several VLANs for Wi-Fi settings, and the district’s Heating, Ventilation, and Air Conditioning (HVAC) systems are on a separate VLAN. Silver Valley also segmented teachers and students on separate VLANs, eliminating the possibility of ambitious, computer-savvy students internally hacking the network.

With VLANs, Silver Valley also can grant students a new capability: guest access to the wireless network, enabling them to bring their personal devices online. Students have the option of using a user ID and password to authenticate their own devices while on campus.

“Using the Ruckus VLAN features has been painless and made things easier to manage across the network,” said Sena. “It’s easy to spin up or change a VLAN on the fly without having to crack out the book and figure it out.”

* Brocade ICX switches were re-branded as Ruckus ICX switches following the acquisition of Ruckus by Brocade.
CASE STUDY

SILVER VALLEY UNIFIED SCHOOL DISTRICT
Propelling Students To Their Futures

ABOVE-AND-BEYOND SUPPORT

With the previous legacy network, issues emerged that were never satisfactorily resolved—even after several years. Receiving professional support from Ruckus has made a world of difference.

“Ruckus technical support has been awesome,” said Sena. “They’ve gone above and beyond what most other manufacturers have done. And the switches’ serviceability and the reliability have been excellent.”

WHAT’S NEXT?

Saffel and Sena are now excited to explore more advanced network features of the Ruckus switches. One feature they are considering using is OpenFlow-based SDN so that they can customize switch performance for each school. OpenFlow support and SDN features will open all kinds of future possibilities.

“We’ve future-proofed ourselves with the technology, the switches, our reseller, and great support from Ruckus,” said Saffel. “We got everything we wanted and more than we expected.”

For more information, visit www.ruckuswireless.com.

* Brocade ICX switches were re-branded as Ruckus ICX switches following the acquisition of Ruckus by Brocade.