

California Schools Extend Cost-Effective Connectivity

Merced County Office of Education uses Cisco Smart Install to simplify deployments and reduce costs.

EXECUTIVE SUMMARY	
Customer Name:	Merced County Office of Education (MCOE)
Industry:	Education
Location:	California, United States
Number of Employees:	Nearly 1,000 staff members serving more than 55,000 students
BUSINESS CHALLENGE	
	<ul style="list-style-type: none"> • Providing cost-effective wired and wireless connectivity to county schools • Reducing total cost of ownership, including installation and maintenance costs • Accelerating deployment of network components
NETWORK SOLUTION	
	<ul style="list-style-type: none"> • Standardized on Cisco network, using Cisco Smart Install • Cost-effectively deployed improved wired and wireless access for schools with limited or no previous wireless infrastructure
BUSINESS RESULTS	
	<ul style="list-style-type: none"> • Provided comprehensive, stable, and cost-effective network solution • Accelerated setup and deployment of routers, switches, and wireless access points in geographically disparate locations • Reduced installation and maintenance costs for local districts

Business Challenge

Educators are increasingly turning to technology to enhance student learning. For some school districts, extending the latest, greatest technology to geographically dispersed students is a tall task; it is equally time-consuming and costly.

Such is the case for the Merced County Office of Education (MCOE), an organization dedicated to supporting local school districts in central California by offering outsourced or partially outsourced IT functions. MCOE works with more than 20 school districts, serving more than 60,000 students. Some districts have enrollments of more than 10,000 students, but the majority are smaller, rural districts with outdated infrastructure and limited funds for upgrades.

As states move toward digitizing standardized testing and teachers seek new ways to engage students in the classroom, the need for immediate, reliable access to online educational resources grows. Schools need additional bandwidth to support hundreds of students being online concurrently to complete mandatory testing. At the same time, teachers want access to videos, presentations, websites, and other curriculum resources that can augment instruction and enhance student engagement and learning.

“The need for technology upgrades is there, but the financial flexibility is often not, because the basic infrastructure is lacking,”

says Dr. Steven E. Gomes, superintendent of MCOE. “Many of the smaller rural schools were not wired for Internet connectivity, so we needed a solution that could reliably bring wired and wireless access to schools throughout the county without major investments in physical infrastructure.”

“Cisco Smart Install has enabled us to quickly deploy a large number of switches in schools countywide and support them remotely with fewer resources, reducing the burden on schools.”

— Brian Yost, Senior Network Engineer, Merced County Office of Education

In addition to limited funds for hardware and software, resources for hiring expert technical personnel were restricted as well. Merced County schools turned to MCOE for assistance, using grants from the Federal Communications Commission's (FCC's) Schools and Libraries Program (E-Rate) to obtain discounted services. Given the geographic footprint, number of facilities, and various levels of need throughout area schools, MCOE needed an efficient way to plan, deploy, and manage such large-scale projects.

"We have limited staff, but districts need more and more help. So we needed an efficient and cost-effective way to execute the upgrade plans," says Linda Burk, director of IT for MCOE. "We wanted to find a solution that could streamline installation and administrative tasks to free up school personnel to focus on the classroom."

Network Solution

Among recent recipients of MCOE's assistance was the Atwater School District, which includes nine school sites and an administrative office. Bringing the district up to date on communications technology required deploying, from the start, a full-scale wired and wireless network standardized on Cisco products. Doing so cost-effectively meant finding a smarter way to manage the deployment, and that meant Cisco® Smart Install.

Deploying dozens of switches can be a complex, time-consuming process. MCOE used Cisco Smart Install to streamline the process to save time and valuable fiscal resources. With Smart Install, the first step is configuring a "director" switch, which serves as a single management point for Cisco IOS® Software images and configurations. New switches are automatically identified, and the correct software image and configuration file are available for downloading. Smart Install can allocate an IP address and host name to a network switch as well as perform on-demand configuration and software image updates of a switch or a group of switches in the network.

"Teachers can now leverage greater student engagement through the use of technology, since they have faster connectivity in classrooms and access to a wide variety of impactful learning content through the Cisco network."

— Dr. Steven E. Gomes, Superintendent, Merced County Office of Education

MCOE opted to use Smart Install to pre-configure its Cisco switches in its lab using the Cisco Catalyst 3560-E Switch as the director switch. It then delivered the configured switches to the school sites for quick and easy, "near plug-and-play" installations. "Smart Install takes an intricate, multifaceted process and boils it down to a few simple steps," says Brian Yost, senior network engineer for MCOE.

Next, MCOE used Cisco Auto Smartport technology to simplify the configuration of Cisco devices that are plugged into the network, as it immediately identifies the devices and applies appropriate quality of service (QoS) and other policies. "Now we can build in macros on the switches and configure ports that are connected to access points or VoIP phones. It really simplifies the configuration and saved us a lot of time and effort," Yost says.

At the heart of the school district's new network are a Cisco Nexus® 7000 Series Switch and a Cisco ASR 1000 Series Aggregation Services Router. The data center hosts a Cisco Catalyst® 6513 Switch, and some of the larger school sites use Cisco Catalyst 4500 or 6500 Series Switches to manage data traffic to and from the sites. Voice traffic is managed by Cisco Unity® Connection (CUC), enabling employees to remain in contact with colleagues from virtually anywhere using advanced tools to send and receive voice messages to virtually any platform or device.

Each school's office employs a Cisco Catalyst 4510 Aggregation Switch, with Cisco Catalyst 2960-S Switches placed in each wiring closet and Cisco Aironet® 3502 wireless access points providing on-site wireless connectivity for a truly borderless network. The wireless access points are powered with Cisco Power over Ethernet (PoE) capabilities, reducing the need for power outlets where the access points are installed.

"We wanted a solution that we were familiar with and knew would work," says Yost. "Cisco routers, switches, and wireless access points provide all the networking power we need without taking up valuable limited space in schools' wiring closets or necessitating the installation of new electrical outlets."

PRODUCT LIST	
Routing and Switching	
	<ul style="list-style-type: none">• Cisco Nexus 7000 Series Switch• Cisco Catalyst 6500 Series Switches• Cisco Catalyst 4510 Aggregation Switch• Cisco Catalyst 3560-E Switch• Cisco Catalyst 2960-S Series Switches• Cisco ASR 1000 Series Aggregation Services Router
Wireless Access	
	<ul style="list-style-type: none">• Cisco Aironet 3502 Wireless Access Points with CleanAir Technology
Voice	
	<ul style="list-style-type: none">• Cisco Unity

Business Results

With ongoing budget cuts and greater scrutiny on how funds are allocated, Merced County schools have to do more with less. One way that they can now do this is by relying on the expertise and support of MCOE to deploy a cost-effective, efficient, and secure Cisco network. Outsourcing IT support responsibilities to MCOE allows school districts to focus resources on improving academic programs and student learning opportunities, while enabling MCOE to manage network deployments and overall, day-to-day operations from a single location, with limited staff.

"Cisco Smart Install has enabled us to quickly deploy a large number of switches in schools countywide and support them

remotely with fewer resources, reducing the burden on schools," says Yost. "It allows us to reduce overall costs while being more responsive to the needs of school administrators and teachers and provide them with the tools they need to facilitate a better learning environment for students."

MCOE's Cisco network provides a stable infrastructure to enable wired or wireless connections to schools that previously had limited, if any, Internet capabilities. Upgrading to the Cisco Nexus 7000 Series Switch in the data center and other switches across the infrastructure has brought greater bandwidth capabilities, up to a gigabyte in some cases, that enable high-bandwidth applications in the classroom, including streaming video and other content, as well as to mobile devices such as Apple iPad tablets as part of an aggressive mobile platform initiative.

"Teachers can now leverage greater student engagement through the use of technology, since they have faster connectivity in classrooms and access to a wide variety of impactful learning content through the Cisco network," says Gomes. "This gives students a more enriched environment where they can interact directly with web pages or other content individually, instead of having to wait for the teacher to navigate for them, so they're more engaged in the learning process. Without the Cisco backbone, none of this is possible."

As MCOE continues to extend infrastructure upgrades to other schools in the area, Cisco Smart Install will play a critical role in the process. Vern Alvarado, network infrastructure supervisor, is already anticipating more of these projects in the future. "We have several more schools to build out. When the plans and funding are approved, we need to be able to move quickly," Alvarado says. "Cisco Smart Install will help with making sure costs are contained while accelerating how quickly we can deploy this optimal solution to get schools up and running."



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