

# Aledo Independent School District (ISD)

*“The more money we can save on the IT side, the more money goes into educating these kids. That’s why we’re here. VMware datacenter and desktop virtualization solutions enable us to slash costs, accommodate district growth, and deliver outstanding customer service to students, faculty and administrators—all without increasing the size of our IT staff.”*

–Brooks Moore,  
DCS Technology Help Desk Manager,  
Aledo Independent School District (ISD)

## KEY HIGHLIGHTS

### Challenge

Control costs of growing school district while providing high quality educational services.

### Solution

- Virtualize desktops using VMware View.
- First deployment outfits new ninth-grade building with 350 virtual desktops.
- Second deployment replaces 700 desktops/laptops with virtual machines at the high school.
- Gradual migration of entire district to virtual desktops.
- Datacenter virtualization launched, with goal of 100% migration.

### Results

- Utility cost savings of USD \$50,000 in first year.
- Savings compound over time as datacenter and more desktops are virtualized.
- District accommodates growth of student population without increasing its IT staff of seven.
- Zero-client monitors with PCoIP deliver high quality end user experience with resource-intensive multimedia educational applications.

## Aledo ISD Controls Expansion Costs, Delivers High-Quality Education through Desktop, Datacenter Virtualization

### Cost Savings Return Vital Funds to School Coffers

When planning the IT infrastructure for the Aledo Independent School District (ISD) of Texas, Technology Help Desk Manager Brooks Moore did a little math of his own: growing demand + commitment to excellence × limited budget = desktop virtualization with VMware View.

Aledo ISD contracts all of their Information Technology needs to Dallas County Schools as a managed service. Moore manages an IT staff of eight which, due in part to fiscal constraints, is not expected to rise in number any time soon.

Meanwhile, the district population is projected to perhaps double over the next 10 years, and Aledo recently built a new ninth-grade building for 370 students.

The new school provided a perfect opportunity to introduce desktop virtualization at Aledo. The implementation has been a resounding success: easier infrastructure management, excellent desktop performance and utilities cost savings equivalent to a teacher’s salary in the first year alone. Now Aledo plans to migrate all district desktops to VMware View over time, and also virtualize its datacenter with VMware vSphere.

“As technology managers, we need to think about how to stretch school district dollars and at the same time provide a high-quality technological experience for our children, Moore says. “Virtualizing with VMware solutions gives us that ability.”

### VMware Provides Preferred Virtualization Solution

Based in Aledo, Texas, Aledo ISD provides K-12 education to a student population of approximately 4,600, with 280 teachers and 145 administrative staff in nine schools. Before introducing desktop virtualization, Aledo used PCs in its computer labs and classrooms. However, these were prone to failure and costly to maintain. When the local community passed a bond initiative for schools, Moore took advantage of the opportunity to introduce virtualization as a more economical and agile infrastructure model.

Aledo considered several virtualization vendor solutions. It chose VMware for a number of reasons, including management simplicity and escalating cost savings over time. “The Microsoft and Citrix products haven’t quite matured to the level of VMware View, and therefore didn’t fit with what we were trying to do,” Moore says. “We decided VMware was the platform for us.”

Moore worked with VMware and its partner Sigma Solutions, Inc., to architect and implement the solution. In the datacenter, Aledo uses Cisco Unified Computing System (UCS) Servers and EMC storage. The operating system is Microsoft Windows XP. On student desktops are Samsung Zero Client PC-over-IP (PCoIP) Integrated Monitors.

## VMWARE AT WORK

**VMware vSphere™ 4.1**

- VMware vMotion®
- VMware High Availability (HA)
- VMware Fault Tolerance (FT)
- VMware Distributed Resource Scheduler (DRS)

**VMware View™ 4.5****VMware vCenter™ Server**

## DEPLOYMENT ENVIRONMENT

**Primary hardware**

- Cisco UCS C210 Rack-Mount Servers
- EMC Celerra NS-120 NAS Storage Device
- Samsung NC190 PCoIP monitor

**Guest Operating Systems**

- Microsoft Windows XP

**Primary software**

Used by students: Microsoft Office Suite; Internet streaming video; SMART Board Notebook whiteboarding software

Used throughout enterprise: Microsoft Exchange; Microsoft SQL; business-office applications; student-information systems; print servers; gradebook software

## Desktop Virtualization Simplifies IT Management

The ninth-grade school uses the district's first 350 virtualized desktops. Six computers labs have 30 thin clients each. Four of these are flex labs, with classes rotating in as needed; the other two labs are dedicated to particular business-oriented classes. In addition, each classroom—for subjects such as math, science and English—has four thin client devices. Another 20 virtual desktops are for administrative staff. Aledo Learning Center also has a computer lab with 30 virtual desktops. Students use the devices to write and view documents, conduct research over the Internet, view streaming video and collaborate with the aid of SMART Board Notebook whiteboarding software.

Samsung zero-client monitors with PCoIP are ideally suited for these tasks, Moore says. The devices have no CPU, operating system or device drivers. This strengthens information security, since no data is stored onboard. The PCoIP protocol, meanwhile, delivers a high quality end-user experience with the resource-intensive applications typically used in an educational setting. "With PCoIP, students get great desktop performance even with Adobe Flash, high-definition video and multimedia," Moore says.

Aledo currently is virtualizing an additional 700 high school desktops and laptops with thin client devices. Moore hopes in coming years to virtualize all of the district's computers—including teachers' laptop devices—as legacy PCs reach end of life.

"The more of the desktop infrastructure we can bring to the datacenter, the better off we'll be financially, and we'll be able to turn around technology requests quicker," he says.

The VMware View solution provides fast application deployment and imaging flexibility to suit Aledo's institutional needs. The district uses persistent images for faculty and administrative staff; settings and changes are preserved to allow end users to retain modifications made to the virtual desktop. Student devices use non-persistent images; all changes are deleted at logout and each user gets a fresh image every time he or she logs on.

Centralized management in the datacenter and the use of zero client endpoint devices allows Moore to deliver great customer service without increasing IT staff.

"There are so many single points of failure in the traditional desktop PCs, such as fans, hard drives, RAM, system boards and processors," he says. "In contrast, there's hardly a single point of failure with the zero clients; they're solid state pieces of equipment. We won't have to devote IT staff time to running around troubleshooting device failures. And with VMware View, the more zero clients we have out there, the more we can manage devices centrally from the Technology office."

Another benefit of high importance to school-district officials is reduced power consumption. Zero-client monitors use less electricity than PCs, and don't generate heat. Aledo calculates the district will save \$50,000 in utility bills alone during its first year with desktop virtualization.

"The Superintendent likes to see savings on a utility basis," Moore says. "Instead of having 400 PCs sucking power on campus, we'll instead put six or eight servers in the datacenter. That saves \$50,000 the first year. Looking 5 and 10 years down the road, the utility, capital and management cost savings continue to magnify as we virtualize more desktops, and our datacenter too."

## Datacenter Virtualization Extends Benefits

Most organizations virtualize their datacenters first, then their desktops. Aledo did it the other way around because of the immediate need for desktop devices at the new ninth-grade school. Now the district is aiming for 100 percent datacenter virtualization on the

VMware vSphere platform. This includes mission-critical applications such as Microsoft Exchange, Microsoft SQL, business office applications, student information systems, web servers and gradebook software. Right now the district has 50 servers, some physical and some virtualized on a non-VMware platform. Migration to VMware vSphere will reduce the number of servers—delivering additional utility cost savings—and simplify system management.

“We’ll be able to take advantage of all the VMware vSphere features such as vMotion, DRS (Distributed Resource Scheduler), High Availability and shared storage,” Moore says, referring to features built into vSphere that simplify system maintenance, protect uptime and optimize utilization.

### **A Model for Educational Institutions**

Aledo’s success with virtualization has attracted the attention of other education IT administrators. Moore advises them to plan thoroughly and make sure their districts have the needed network capacity. Take advantage of shared storage, he tells them, and work with a vendor you can trust. Both VMware and Sigma assisted Aledo to design and implement a customized solution of the right size and capacity, Moore says.

“I’ve had quite a few peers come, look at our environment and ask questions,” he adds. “People want more for less but don’t want to sacrifice the end-user experience. I tell them to be clear about their goals. Do they want to save energy? To consolidate? They can succeed with virtualization. It’s an exciting time for us in the technology world. Everything is getting better every day.”

For the future, Moore is looking into using Cisco blade servers in its datacenter, to add another layer of redundancy and ease infrastructure expansion. As Aledo continues to virtualize its 3,000 desktops, the district intends to evaluate VMware ThinApp to simplify application virtualization.

Ultimately with virtualization, Aledo is taking money that would have evaporated in consumption of electricity, hardware and maintenance time, and plowing it back into building an enterprise-class IT infrastructure—with funds left over for vital educational purposes.

“Virtualization not only makes my IT job easier, it delivers savings into the district’s general fund,” Moore says. “Our job is to provide the best possible education in this community. The more we save on the IT side, the more we can help these kids. That’s why we’re here.”

