



Learning blossoms on legacy systems

Socorro Independent School District delivers modern computing capabilities on 10-year-old desktop computers using VDI technologies



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*Hector Reyna, Director of Technology Services,
Socorro Independent School District*

Customer profile



Company	Socorro Independent School District
Industry	Education K-12
Country	United States
Students	44,600
Faculty and Staff	7,000
Web site	sisd.net

Institutional Need

Socorro Independent School District was running a mix of desktop computers, including some that were up to 10 years old. Performance of the legacy systems limited their usefulness for teachers and students.

Solution

The district deployed a Citrix®-based Dell™ Desktop Virtualization Solution that runs on Dell PowerEdge™ blade servers supported by Dell EqualLogic™ storage and Dell PowerConnect™, Dell Force10 and Brocade switches.

Benefits

- Increased utilization of computer labs with legacy hardware
- Windows® 7 and Microsoft® Office 2010 run on computers up to 10 years old
- Threefold more VDI desktops than new physical computers for same investment
- 1:4000 ratio of technicians to VDI desktops, vs. 1:2400 in legacy environment
- 10 minutes to deploy changes to 3,600 desktops across 43 campuses

Solutions Featured

- BYOD
- Data Center Virtualization
- Desktop Computing
- Desktop Virtualization
- Networking
- Storage

Services

- Deployment Services
- Support Services
- Training Services

In a corporate setting, computers tend to be retired as they reach end of life. In an educational setting, that is not always the case. "We really don't retire computer hardware," says Hector Reyna, director of technology services for Socorro Independent School District in El Paso, Texas. "We may move legacy systems around, but as long as they're running, we keep using them in some capacity."

Repurposing older hardware may benefit the short-term budget, but it often leads to challenges. Some of the desktop computers at Socorro ISD are up to 10 years old. "We used to hear frequent complaints about some of the older systems," says David Akers, team leader, technical support services, for the district. Software such as the Accelerated Reader assessment program performed poorly on the legacy systems. And the sluggish performance of some instructional applications inhibited students' ability to complete assignments. "We had reached the point where aging hardware was causing problems in our classrooms that were impacting education," Akers says.

In addition, IT repairs interrupted class time. "Our staff was continuously traveling to schools to troubleshoot issues," Akers says. "We have 24,000 desktop computers across 43 campuses and 5 support facilities. Over half of them are out of warranty, so support was becoming a pain point for our 10 desktop support technicians. We could have hired more staff, but that wouldn't make the computers any faster." Socorro ISD solved these problems with a virtual desktop infrastructure (VDI).

Bigger educational impact on a broader scale

Socorro ISD was working on a bond initiative that would provide funding for a technology update. "The bond could have funded around 3,000 new computers," says Oscar Dominguez, manager, systems administration, for the district. "The more we looked into VDI, the more we saw an opportunity to take the same money and make a bigger impact on a broader scale across our campuses."

The district already worked closely with Dell. More than half of its desktop computers and printers are Dell systems, ranging

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Technology at work

Solutions

Dell™ Desktop Virtualization Solution

Services

Dell Deployment Services

Dell Education Services

Dell Support Services

- Dell ProSupport™ Mission Critical with four hour onsite response
- Dell ProSupport Technical Account Manager (TAM)
- Dell Remote Advisory Services

Hardware

Brocade VDX6720 switches

Dell EqualLogic™ PS6510X iSCSI storage area networks (SANs)

Dell Force10 S4810 switches

Dell Latitude™ laptop computers

Dell OptiPlex™ 9010 All-in-One desktop computers

Dell PowerConnect™ M8024 switches

Dell PowerEdge™ M620 blade servers with Intel® Xeon® processors E5-2600 series

Dell PowerEdge M710HD blade servers with Intel Xeon processors

Dell PowerEdge M1000e modular blade enclosures

Software

Citrix® Provisioning Services

Citrix XenDesktop®

Citrix XenServer®

Microsoft® Office 2010

Windows® 7



from Dell OptiPlex GX110 systems to Dell OptiPlex 9010 All-in-One desktop computers and Dell Latitude E-series laptops. The district has also recently begun purchasing interactive projectors from Dell to replace broken interactive whiteboards.

When Socorro ISD began considering VDI solutions, Akers says, "some vendors brought us bits and pieces of a solution, but the only vendor that offered a complete solution—from servers, storage and switches to support and deployment services—was Dell." A team from Socorro ISD visited the Dell Solution Center in Round Rock, Texas, to see Dell's complete VDI solution in action. As a result of that trip, Akers adds, the district realized that Dell Desktop Virtualization Solution includes everything the district needs to run VDI.

Socorro ISD engaged Dell Deployment Services to roll out Dell OEM Citrix software. The first round of host servers that the district deployed were 16 Dell PowerEdge M710HD blades within a PowerEdge M1000e modular blade enclosure. The district then rolled out six more blade enclosures, each housing 16 PowerEdge M620 blades. "Moving to the 12th-generation blades brought a lot of advantages," Akers says. "They can host more virtual desktops than the previous generation, and they boot faster, which can make a difference when we're doing maintenance on all 112 blades."

For storage, the blades connect to four Dell EqualLogic PS6510X iSCSI storage area networks (SANs). "Scalability is a major benefit of Dell EqualLogic storage," Akers says. "We started with one SAN, then added three more. Standing them up was straightforward, and adding capacity is no problem. I'm able to stand up the storage for a new blade enclosure within 10 minutes—including installing the hardware, setting up security for the storage, setting IP addresses and getting it running. It's a point-and-click process that requires no downtime for our virtual desktops."

The district is equally pleased with ongoing management of the storage. "Since setup, the Dell EqualLogic storage has required very little management or monitoring," Dominguez says. "The only management we've had to do is set up new LUNs for the new enclosures, which takes 15 to 20 minutes. We occasionally check on the health of the SANs, but for the most part, this storage solution has been 'set it up and forget it.'" Adds Akers: "When I compare the EqualLogic storage with our EMC VNX arrays, the EqualLogic SANs are simple to use."

VDI actually decreases WAN utilization

The VDI initiative coincided with a network upgrade that the district already had planned. "We were seeing some pretty high saturation on the network during peak times, when a lot of students are surfing the Internet for research papers or streaming multimedia content," Akers says. "We needed to accelerate network performance to support the VDI infrastructure."

Socorro ISD was running both Fibre Channel and iSCSI. "Instead of upgrading our Fibre Channel to 8-Gigabit, we decided to try 10-Gigabit iSCSI," Akers says. "It's very cost-effective, and at this point it's been working great for eight months." Dell Force10 S4810 switches provide 10-Gigabit connectivity for the EqualLogic iSCSI SANs. The blade enclosures use Dell PowerConnect M8024 switches, and Brocade VDX6720 switches route IP traffic.

"According to our networking staff, the VDI initiative hasn't increased bandwidth utilization on our wide area network—only within the data center," Dominguez says. "In fact, we've seen a decrease in WAN utilization. Video, multimedia software and other applications are called from server to server now. We've eliminated the one-off streaming of applications from servers to desktops."

Better instruction via VDI

Today the district runs 3,600 virtual desktops, with the hardware and software licensing capacity to increase that number to 8,200—nearly threefold more desktops

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than the 3,000 physical computers the bond issue might have purchased. Most of the computers through which users access the virtual desktops are six or more years old. "This initiative has enabled our campuses to repurpose a lot of older equipment," Akers says. "We're running Windows 7 and Microsoft Office 2010 just fine on computers that couldn't support them without our Dell-based VDI platform."

The virtual desktops substantially improve performance of these systems. "Booting some of our computers took 10 to 20 minutes before, but the VDI initiative has reduced that to around 2 minutes," Dominguez says. "And our new environment enables applications to load and run much faster than they would on our legacy hardware without VDI."

In the past, some of the district's computer labs saw little use. "If hardware is slow to boot or performance is poor, kids and teachers tend to become frustrated," Akers says. "A middle school teacher told me she hadn't used a particular computer lab in two years because the hardware 'didn't work.' Since the VDI rollout, our older computers are being used. In fact, sometimes teachers can't tell which labs have new hardware and which are running VDI on older systems. We are helping teachers provide better instruction with the VDI environment that Dell helped us build."

Nearly twofold more desktops per support technician

Although the older systems will inevitably have hardware issues from time to time, VDI streamlines software management. "We recently needed to add an Internet link to every VDI desktop across all 43 campuses," Akers says. "It took us 10 minutes to set up, then we asked our VDI users to reboot at their convenience. When they rebooted, the link was there. Making this type of change to 3,600 traditional client computers would have taken us months. More important, with

VDI we didn't have to interrupt classroom instruction to make the update."

This type of efficiency improvement enables one support technician to manage all of the district's virtual desktops. "Before, we had a ratio of 1 technician to 2,400 desktop computers," Akers says. "I'm hoping with VDI, we'll achieve a ratio of 1-to-4000, even with our legacy hardware. If we were rolling out new thin clients, we could easily get to a 1-to-6000 ratio. Ultimately, when we've standardized on VDI, IT will spend more time on innovation and less time on keeping the lights on. I'm looking forward to being proactive rather than reactive."

Now the district is considering extending VDI to enable a Bring Your Own Device (BYOD) initiative. "Our district can't afford to buy a computer for every student," Reyna says, "but students are already carrying mobile devices. VDI may enable us to give students mobile access to all the educational content we make available to them in classrooms and computer labs."

"Fantastic" support from end-to-end vendor

Socorro ISD eliminated the possibility of finger-pointing in the event of a VDI issue by deploying the Dell OEM version of Citrix XenDesktop on all-Dell hardware. "We definitely recommend deploying the Dell Desktop Virtualization Solution stack, rather than trying to build a VDI platform yourself," Dominguez says. The district engaged Dell Education Services to provide onsite training for its 10 desktop support technicians. "I highly recommend onsite training for any organization that needs to bring several people up to speed on a Dell technology," Dominguez adds.

Socorro ISD contracted with Dell ProSupport Mission Critical for four-hour onsite response and with Dell Remote Advisory Services, which provides flexible,

fast and cost-effective support for specialized applications from a certified expert. Dominguez believes both services are well worth the investment.

"Our VDI platform experienced a failure on the first day of school," Dominguez says. "It's working great now, and it worked great during our tests over the summer, but as soon as all 3,600 virtual desktops started logging on, there was a compatibility issue between Citrix Provisioning Services and a third-party appliance we use for DHCP and DNS resolution. We were extremely happy with the efforts of Dell Support Services to resolve the issue. They were fantastic."

In fact, Akers adds, the district's Dell ProSupport Technical Account Manager (TAM) reduced significantly the time required to resolve the issue. "Our TAM got all the right people involved, and she got them on the phone within 5 or 10 minutes," he says. "At one point, we thought it might be a switching issue, and she got Brocade, Force10 and PowerConnect support staff on the line at once, along with Dell's Flex Computing group and Citrix."

Repurposed hardware revamps education

Today, students across the district have access to new, high-end software that legacy computers in classrooms and labs wouldn't be able to run without VDI. Instructional applications perform well, heading off frustrations and fostering students' enthusiasm for using them. And teachers now think it's worthwhile to take classes down the hall to computer labs with 10-year-old hardware.

"As students, teachers and administrators get hands-on experience with VDI, we're getting buy-in from a lot of people outside our department," Reyna says. "The virtual desktops powered by Dell are enhancing the educational environment and improving student learning across our district."

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