Lake Land College

PROFILE

Industry
Education

Corporate Headquarters
Mattoon, Illinois

Employees
320

Students
20,000+ (7,500 FTEs)

Website
http://www.lakeland.cc.il.us/

THE NUMBERS

- One main campus and four locations
- 1,400 PCs being replaced with 1,800 thin clients powered by 18 servers
- $80,000 annual savings in electricity
- $250,000 in HVAC costs avoided in one building remodel
- Technology refreshed in 7–8 years vs. 3–4 doubled

IN BRIEF

Objective
- Become carbon-neutral by 2016
- Support remote locations without adding IT staff
- Satisfy end users' rising computing demands

Solution
- Consolidate servers (5:1)
- Implement desktop virtualization

Business Impact
- Slash energy costs
- Extend technology refresh cycle
- Bolster student engagement and recruitment
- Support faculty innovation and mobility
- Improve backup and recovery functions
- Shift IT focus from repair/configure/backup to global
- Enhance college's green leadership reputation

VMware Desktop Solution Helps Community College Satisfy Users' Soaring Demands, Slash Energy Use

"VMware virtual desktops are the answer to so many issues: supporting remote locations without adding IT staff, allowing faculty mobility and flexibility, and meeting all users' need to run resource-heavy applications."

— Lee Spaniol, Director of Information Systems and Services, Lake Land College

At Lake Land College, the vision is as vast as the Great Plains across which the five-location institution sprawls. For nearly a decade, the community college has positioned itself as a technology leader, in both curriculum and operation.

Aiming to meet the skyrocketing demands of more than 20,000 end users, including employees, Lake Land is leveraging VMware® ViewTM and vSphere® to cement its tech leadership position and to achieve its loftiest goal: becoming carbon-neutral by 2016. Lake Land is also using VMware solutions to manage remote locations without adding IT staff, bolster student engagement and recruitment, and support faculty innovation.

Ambitious Energy-Conservation Goals

"There's no one green thing we're doing better than everybody else, but we're doing everything," says Lee Spaniol, the college's Director of Information Systems and Services, "from implementing VMware solutions to revamping the curriculum to prepare students for careers in green technology."

Winner of the Innovation Award from the Illinois Council of Community College Administrators, Lake Land runs hybrid vehicles and biodiesel equipment. Building remodels feature Daystar lights and low-power geothermal pumps. Wind turbines are being installed, and 10 tons of electronics have been recycled.

About four years ago, Lake Land identified virtualization as a crucial step toward achieving sustainability. Spaniol's team considered Citrix, Sun, Parallels and NComputing options but chose VMware technology for its energy-conservation attributes and functionality. Lake Land has since virtualized 90 percent of its datacenter, including the servers that run building automation systems.

But consolidating servers—from about 150 to a target of 30—was only the beginning of Lake Land's journey. The next step was implementing desktop virtualization, whereby applications and data reside not on a user's device but in a centrally managed and secure datacenter. Last fall, the college began replacing 1,400 physical PCs with 1,800 virtual desktops, which Lake Land users access either via campus thin clients or the users' own devices.

Thin clients cost less up front than PCs and last twice as long—up to eight years, Spaniol says. In addition, Lake Land is saving $80,000 annually by running 30-watt thin clients where they used to run 160-watt PCs.

And because thin clients run cooler, ongoing HVAC costs drop proportionately. Spaniol describes one classroom that could be cooled only to 86 degrees in summer, when the

"With fully implemented VMware virtualization, every course becomes online-capable. This technology will make the online-only student whole."

Lee Spaniol, Director of Information

outdoor temperature might reach 100. Now equipped with thin clients, the room can be cooled to 74 degrees. Such improvements also lead to lower expenditures on HVAC systems for remodels. In one recent case, Lake Land saved $250,000 in construction costs by installing downsized HVAC equipment.

Deploying VMware technology also has cut gasoline costs by reducing IT staff's need to drive to the main campus and four locations, some an hour's drive from Mattoon.

Enhancing Student Engagement and Access

Expanding training for careers in green technology is a big push for Lake Land, Spaniol says, where wind, solar and geothermal components are being added to the curriculum. The college also blends recruitment and recycling goals by introducing prospective students to Lake Land's technology through donations of used equipment to local high schools.

While attracting and engaging students is central to Lake Land's mission, those students' interest comes at a cost—the need for Spaniol's team to support new, resource-intensive features despite severe budget and staff limitations.

"In today's world, developers don't worry about how much memory, paging and disk I/O is needed to support an application," Spaniol says. "So everybody is adding bells and whistles that expand the CPU, memory and video-card requirements. The effectively engaged college student today doesn't merely want but needs high speeds and feeds, and Web 2.0 technologies such as full-motion video, online meetings and webinars."

Programs like AutoCAD, Photoshop and Rural Geospatial Innovations (RGIS) mapping are notorious resource drains. Lake Land's goal of allowing many students to smoothly access the same applications simultaneously has driven the deployment of VMware technology, which Spaniol's team expects to improve resource delivery.

Lake Land also is mindful of some students' struggle to afford new technology. The college does not require students to own a computer, and a recent campus survey suggests that 25 percent do not. Any student can log in to one of 1,000 thin-client workstations now available across the campus (at least 800 more are planned) and can access the Internet from any common area.

Virtualization also cuts students a break by providing software and the horsepower to run it, rather than requiring students taking an AutoCAD class, for example, to purchase a $600 software license and a new computer.

Supporting Faculty Innovation and Mobility

Instructors, too, are driving innovation as they seek new ways to engage students. Spaniol tells of an instructor who teaches a programmable logic controller (PLC) course online but allocates to his students a virtual desktop for programming and completing other coursework.

"Faculty who teach at several locations or who take work home are enjoying the mobility benefits of virtualization at Lake Land," says Bill Warfel, Chief Network Administrator. Any room with a thin client can support the instructor's virtual desktop; faculty no longer need to transport laptops or flash drives with their grade books or teaching materials.

Another perk is the newfound ability to teach multiple versions of the same software—Microsoft Office, for example—in the same classroom.

"With the VMware virtual desktop infrastructure," Spaniol says, "we can define three separate virtual machines—one for each of those classroom configurations. Instead of trying to untangle all of the software conflicts, we quickly spin up another set of virtual machines with that product set, and inform the instructor how to log in to Office 2007 to teach the 8 a.m. class, Office 2003 for the 9 a.m., and Office 2010 for the 10 a.m."

"A year from now, when VMware desktop virtualization is fully implemented, our work will change significantly: We'll never have to leave our office to fix anything. When we need to deploy a product, we'll build the project with ThinApp and deploy to a group of virtual desktop machines."

Lee Spaniol, Director of Information Systems and Services, Lake Land College

Warfel cites another benefit: "If I have new software that needs to be deployed or I change the settings on a classroom machine, it's pretty simple to redefine that image in a new classroom." A task that used to require two days and a lot of pain now might take only two hours.

Reducing Risk and Reallocating IT Resources

Implementing VMware technology has revamped the IT department's role in multiple ways, improving datacenter functions such as disaster recovery and maintenance.

"We now have multiple layers of security that we didn't have before implementing vSphere," Warfel says. "We take a snapshot of the SAN in the background, and everything is backed up and recoverable." Such redundancy supports Lake Land internally and helps the college comply with laws requiring the safeguarding of data and support for law-enforcement investigations.

VMware technology also has "opened maintenance windows," Spaniol says. "We can put a virtual server into maintenance mode and perform updates during the day, rather than at 2 a.m."

Looking Ahead

Gradually, virtualization is shifting Lake Land's IT staff focus from repairing hardware and configuring software to embracing a more global perspective that advances the college's strategic goals.

Upgrades to View and vSphere are expected to provide the USB 2.0 camera, microphone and isochronous support to successfully run Skype and other popular programs, Spaniol says, while improving video processing. Lake Land also has begun testing VMware ThinApp™ 4.6 for streamlining application deployment.

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But it's the difference that the end user will notice that truly excites Spaniol: "We look forward to the day when a student enrolls and automatically receives not only a user ID and email address but also a virtual desktop that will follow him throughout his Lake Land career. Whenever he registers for a class, the necessary software—configured to the instructor's preferences—will show up on his desktop, and will disappear when the class is completed."

IMPLEMENTATION OVERVIEW

VMware Technology

- VMware View 4.6
- VMware vSphere 4.1.1
- VMware ThinApp 4.6 (test environment only)

Applications:

- AutoCAD
- RGIS
- MicroStation
- Adobe Creative Suite
- Microsoft Office Suite
- Skype

Platform:

- Dell R710 servers (two quad cores,144GB memory)
- Dell EqualLogic PS6000s (~4.7TB usable)
- HP P4000 (formerly LeftHand)
- Enterasys switches (N series chassis, platinum and diamond blades)
- Dell FX100 thin clients
- Samsung NC190 monitors

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