Lone Star College System

"While most organizations were focusing on the recent economic crisis, Lone Star took calculated bold steps to build the technology infrastructure to support our vision of becoming the nation's premier community college system. VMware provides flexibility and high availability while reducing operational costs."

— Shah Ardalan
Vice Chancellor/CIO
Office of Technology Services
Lone Star College System

KEY HIGHLIGHTS

- Reduced new service deployment times from three to four weeks to only a few hours
- Significantly reduced power, cooling and datacenter space to support green IT initiative
- Reduced operational expenditures by $70,000 per year
- Obtained ROI payback in just 3.25 years
- Reduced recovery time for site failures from days or weeks to just minutes
- Achieved a 7:1 server consolidation ratio
- Enabled remote management of the centralized, virtual server environment
- Eliminated future capital expenditures of more than $600,000 in hardware replacements

Lone Star College System Virtualizes 14 Campus Datacenters, Slashes IT Costs and Improves Disaster Recovery

VMware Enables Large Community College to Reduce OPEX by Over $70K/Year, Obtain High Availability for All Tier-I and Tier-2 Apps, and Achieve ROI in Only 3.25 Years

Providing Quality Education in the Greater Houston Area

Lone Star College System (LSCS) is a publicly funded two-year community college located in Houston, Texas. LSCS is currently the largest institution of higher education in the greater Houston area and third largest community college system in Texas.

LSCS's 62,000 "traditional" students are pursuing two-year associate degrees in the arts, teaching, science and applied science from its five main campus locations. In addition to the students pursuing two-year degrees, the college also provides educational opportunities to 23,000 "nontraditional" enrollees from the Houston area with a wide variety of nondegree courses and adult education programs for academic, professional, occupational and cultural enhancement.

Coping with Difficult IT Challenges

College enrollment was ramping quickly at LSCS, up from 45,000 students in 2005 to more than 85,000 today. As a result, LSCS was facing several significant IT challenges. Each of the college's six campuses was running as an autonomous technology site. In addition to its five main campuses, LSCS's IT team was supporting eight smaller satellite centers that needed access to the college data but either couldn't afford or didn't require their own datacenters. Most of these secondary sites were using end-of-life or cast-off hardware reclaimed from the college's six main datacenters. Not only was the infrastructure outdated, the brands varied greatly from site to site, with a mix of Dell, HP, Gateway and white-box servers. Managing this heterogeneous environment had become extremely inefficient and complex for the college's IT team, and maintenance costs on the outdated hardware systems were skyrocketing.

Link Alander has been with the Lone Star College system since 2004. As the Associate Vice Chancellor for Technology Services, he is responsible for overseeing all of the college's network and servers from the technical side and providing operational support and financial and budgeting services for LSCS's vast IT operations. "We have been VMware customers for over five years now," Alander explained. "Our initial VMware installation was completed in 2005, with just eight VMware ESX hosts. We stepped up the pace of our virtualization initiative in February of 2008 when our new CIO, Shah Ardalan, came on board. Instead of supporting a confederation of multiple sites, he wanted us to move to a consistent, centralized model for all IT services. Virtualizing the majority of our physical servers was critical in order to efficiently manage the centralized environment and provide high availability for our key campus applications. We are now in the middle of over 30 strategic technology initiatives, and one of the most important of those is the virtualization of our critical systems."

"Getting executive buy-in isn't always easy in an educational environment. But when it comes to virtualization—especially with VMware—it's a much easier sell. VMware's track record both within our organization and across the industry speaks for itself in terms of the huge cost savings and gains in operational efficiencies we were able to achieve."

— Link Alander
Associate Vice Chancellor
for Technology Services
Lone Star College System

VMWARE VIRTUAL INFRASTRUCTURE AT WORK

- VMware vSphere platform
- VMware High Availability
- VMware Distributed Resource Scheduler
- VMware vMotion and Storage vMotion
- VMware Site Recovery Manager
- VMware vCenter Lifecycle Manager

Choosing the Right Virtualization Partner

Before choosing VMware, the Technical Services team, evaluated several other industry virtualization solutions. "We looked briefly at Microsoft and Hyper V, since we have a volume licensing agreement with Microsoft. But the Microsoft technology was very immature compared to what was available with VMware vSphere. Hyper V didn't have the high availability features we needed. It just couldn't compete with the power of VMware Distributed Resource Scheduler. We were also looking at creating a secondary datacenter to serve as a backup facility, so the functionality provided by VMware Site Recovery Manager was also very important for us." Lone Star then completed a virtualization assessment to evaluate the consolidation opportunities and calculate the potential savings across its 14 campus datacenters and remote facilities.

Obtaining Management Buy-In

After gathering the data and calculating the potential savings from the virtualization assessment, everyone in the college's IT department quickly became strong supporters of the expanded virtualization initiative. The next step was for Ardalan to convince the college's purchasing managers and board of trustees to support and fund the project. With the information obtained from the assessment, Alander was able to build a strong business case with detailed metrics, showing exactly how much the college could save on operational costs by consolidating physical servers and eliminating expensive maintenance contracts on the older equipment.

Implementing the VMware Solution

After reviewing the assessment report and ROI projections, the college's board of trustees gave a thumbs-up for the virtualization project. Alander and his team started centralizing the rest of the physical servers immediately. "With the expansion of our VMware footprint, the move up to vSphere was a logical progression. We had excellent experience with the VMware technology and had the trained staff on hand, so we knew we could move all of our campuses to the vSphere platform quite easily," explained Alander. "We are now 75 percent virtualized, and our goal is to be 95 percent virtualized by the end of next year."

Achieving High Availability

LSCS is committed to guaranteeing "five nines" availability for all of its Tier-1 applications. "VMware was the only solution that could provide the high availability we needed for our IT environment," explained Cory Bradfield, Senior Systems Administrator for the Lone Star College System. "We are now virtualizing the majority of our Tier-1 and Tier-2 applications, including our new ERP system, Active Directory, Exchange, SQL and our course management solution. We had originally outsourced that application because we were unable to provide the level of service we needed in-house. We are now bringing that app back onsite, and there's no way we could have achieved this level of service without VMware."

Running Oracle and PeopleSoft ERP in a Virtual Environment

"A few months after the VMware virtualization project was finished, we started an ERP implementation of Oracle and PeopleSoft," Bradfield continued. "We brought in Oracle VM to run that solution, but after trying to utilize the Oracle VM solution for three months we had made absolutely no progress. The performance and management capabilities of vSphere are far superior to the Oracle VM environment, so we gave up on Oracle VM and moved the Oracle and PeopleSoft application and Web tiers back to the vSphere platform."

"By consolidating 75 percent of our servers, we have significantly reduced the amount of power, cooling and datacenter space we are using. VMware is without a doubt the cornerstone of our districtwide datacenter consolidation and green IT initiatives."

— Cory Bradfield
Senior Systems Administrator
Lone Star College System

Achieving Impressive Benefits

- **Improved operational flexibility and efficiency**—One of the biggest benefits LSCS has realized from the VMware vSphere implementation is the improved management capabilities of the centralized environment. "Before VMware, all of our campuses were working independently. We did not have the ability to see a centralized view of operations," explained Bradfield. "Now, with vSphere, we are able to see performance data and hardware health and obtain console access to all virtual machines from any location, at any time of the day or night."
- **Improved environmental savings**—"By consolidating 75 percent of our servers, we have significantly reduced the amount of power, cooling and datacenter space we are using," noted Bradfield. "VMware is without a doubt the cornerstone of our campuswide green IT initiative."
- **Dramatically reduced deployment times**—Before virtualizing its datacenters, the college's end users had to wait three or four weeks for IT to deploy new services while hardware orders were processed and new equipment was shipped and delivered to each site. "Our customers don't know how our new virtualized environment works," explained Bradfield. "All they know is what used to take weeks now only takes a few days at the most. With one customer, the product review cycle actually took longer than the virtual server implementation. Once we determined what they needed and they approved the plan, we implemented the new service in only a few hours."
- **Achieved high availability**—The college's IT team can now perform hardware maintenance on all virtualized servers with almost no impact to end customers. "Everything is running in HA and DRS clusters," explained Bradfield. "If we have a hardware failure, we are looking at only a couple of minute's downtime for HA to restart the VMS on another node in the cluster. vMotion enables us to do proactive maintenance at virtually any time of the day."
- **Improved disaster recovery**—Having the storage solution on the back end enables LSCS to take snapshots of the operating system, followed by a snapshot of the virtual machine, to create solid-state backups of all virtual machines at any campus or datacenter. The snapshots are shipped back nightly to LSCS's primary datacenter. "If we had a site or hardware failure before, we could have been down for days or weeks as we waited for new hardware or site repairs," Bradfield noted. "Now we can recover from site failures in a matter of hours."
- **Achieved significant savings in power, space and cooling**—"By consolidating physical servers into virtual machines, we have been able to dramatically reduce the number of physical servers we need to support," stated Bradfield. "For every three full racks, we have been able to consolidate that down to just one 10U blade enclosure, on average."
- **Obtained ROI in just 3.25 years**—"We evaluated what the TCO was before, as far as energy consumption for power and cooling, and were able to document a savings of over $70,000 in operating costs per year," explained Alander. "Our ROI is just 3.25 years for a $560,000 investment."
- **Reduced CAPEX**—The datacenter consolidation project has yielded great savings in hardware and capital equipment costs. "We started with about 250 to 300 physical servers and have now consolidated to about 600 virtual servers. We estimate that has saved us over $600,000 in replacement costs for hardware that was decommissioned but not replaced," noted Alander.

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