



Client

Collin County, Texas
www.co.collin.tx.us

Industry

Local government

Challenge

Collin County's data center had grown to 28 racks of servers and storage. Adding each new server was expensive, and typically took a week to provision. And an upcoming upgrade to support their PeopleSoft® application was going to cost nearly \$2 million.

Solution

IBM® BladeCenter® HS21 blade servers, IBM N series storage, Cisco® networking and VMware® virtualization technology combined to create a highly optimized, cost-effective and easily scalable data center.

Why Sirius Computer Solutions

As an IBM Premier Business Partner, Cisco Premier Certified Partner and VMware Enterprise Partner, Sirius was able to provide a complete, integrated solution that would allow Collin County to realize a highly consolidated data center that would reduce costs while improving performance.

Collin County cuts costs, improves services with technology investment



Located just north of Dallas, Collin County is the fastest-growing county in Texas, and one of the fastest-growing counties in the nation. In 2008, Collin County was home to over 749,000 residents, an increase of more than 50 percent since 2000. With low property taxes, high per-capita income, and one of the best public school values in the nation (according to *Forbes* magazine), the county attracts almost 100 new residents every day, and is thriving even during challenging economic times.

In the county seat of McKinney, the Collin County government provides services for this booming area through a technology infrastructure that is consistently among the most sophisticated and successful in the state, as evidenced by the fact that Director of IT Caren Skipworth was named the CIO of the Year in 2008 by the Texas State government.

In 2009, faced with increasing demand on its IT infrastructure and the need to control costs while improving service and performance levels for its constituents, Collin County turned to the experts at Sirius Computer Solutions for help. The result is a solution that has dramatically improved performance and reduced costs, while significantly reducing both the physical and environmental footprint in Collin County's data center.



Key Benefits

- So far, Collin County has been able to eliminate half the racks in its data center, with further reductions anticipated
- PeopleSoft application response times have been slashed from over 10 seconds to less than a second, with further room for improvement
- Collin County now has the ability to quickly create test servers for optimization and trouble-shooting prior to deployment
- Deduplication on the IBM N series 6040 Storage System has reduced backup disk requirements by 60 to 80 percent
- Operating system and database license costs have been dramatically reduced
- VMware HA provides instantaneous server failover

Products

- IBM BladeCenter HS21 blade servers
- IBM BladeCenter H chassis
- IBM N series 6040 Storage System with SnapManager®
- Cisco Nexus® switches
- VMware virtualization technology

“After implementing the BladeCenter solution, we recently put in a new project without having to purchase server clusters or any other hardware except hard disk space. Combined with our Microsoft EA, that meant no additional licensing for Windows or for SQL. And in the current economic climate, that kind of savings is important to our county, and to the citizens we serve.”

– Larry Jones
Senior IT Architect
Collin County



The problem: growing pains

For years, Collin County had been using older rackmount servers for the majority of its applications. Like most organizations, provisioning a new server every time an application was added or more capacity was required meant a week-long process. And as a result of the ad-hoc addition of servers, the data center had swelled to 28 racks crammed with servers and storage.

According to Assistant IT Director Lanette Saetre, that growth wasn't easy, and it wasn't fast. "Every time we upgraded to a new server line meant a forklift upgrade. And provisioning each new server typically took a week."

The challenge reached a tipping point when the organization was planning to invest in new hardware to support Oracle Database for their PeopleSoft application. Saetre says, "We were looking at an Oracle RAC cluster, licensing for the secondary servers, upgrades to the existing servers, new servers and clustering. The upgrade was going to cost us nearly \$2 million, and there was no guarantee we'd see any better performance."

An enterprise-quality solution, with an SMB price tag

Sirius recommended a complete infrastructure solution based on IBM BladeCenter HS21 blades, optimized with VMware virtualization technology and supported with an IBM N series 6040 Storage System.

Senior IT Architect Larry Jones was skeptical. "When we had the first meetings on the blades, I was definitely not a blade fan. As far as I was concerned, blades were toy servers. They were low end, and couldn't be relied upon to run enterprise applications. I soon realized that the IBM BladeCenter blades are absolutely enterprise-quality servers, with architectures, processors and memory configurations that were comparable to any rackmount server out there."

The high performance wouldn't end at the backplane. Sirius recommended a total networking and storage solution that would ensure extreme throughput with no bottlenecks. The blades' back-end switches are 10Gb Ethernet with 10Gb Cisco Nexus switches to the SAN, and a 10Gb switch on the SAN. "The processing throughput is absolutely incredible!"

A cleaner, greener data center

The savings permitted by the combination of IBM BladeCenter blades with VMware virtualization technology has exceeded the County's most optimistic projections. For example, the County's largest application—its integrated judicial system—was consolidated from over 20 servers onto just one BladeCenter blade that's load-balanced with a second blade for redundancy and performance.

In fact, within just six months of the project's start, consolidation will have allowed Collin County to eliminate 14 entire racks—fully half the racks in its primary data center. Some of the decommissioned servers will be used for development, and others will be sold to recover their value.

"When your front-line staff is excited about coming to work every morning, you know you're doing something right."

– Larry Jones

Senior IT Architect, Collin County

Growing just got a lot easier, and a lot less expensive

The new architecture has also cut down the County's procurement process. According to Jones, "We no longer have to specify a certain kind of server to fit a new or upgraded application. We just add servers as needed, but we know we're never adding more servers than we need. From the purchasing perspective, that means there's just one kind of server to order."

Their new approach to software also means it's much less expensive to grow. Because the Windows® Enterprise licensing model is priced per CPU, each two-CPU blade can host any number of virtual servers at an operating system cost of only \$1,800 per blade. And by switching to SQL Server® 2008 for their PeopleSoft database, they've eliminated the need to go to a clustered solution, saving even more money on both licenses and hardware.

The proof is in the numbers

To find the optimum performance for their SQL databases, the Collin County team ran three different SQL builds, and benchmarked them simulating 100 simultaneous users to find out what each would do. They graphed the performance with and without VM, and found to their surprise that the bare-metal HS21 32GB blade outperformed VM for up to 20 users, but with more than 20 users the VM server outperformed. "So when we made our recommendation, we backed it up with graphs and charts. In the old environment, we would have taken our best guess based on our experience and what we'd read, and we'd have built a server. And that server would be used for five years, until it was time to upgrade. That's the typical server cycle."

The results they've seen have been nothing short of remarkable. Continues Jones, "With our old infrastructure, the response time for our PeopleSoft application used to be about 10 to 15 seconds. Now it's under one second, and we're currently analyzing how the hard drives write the data for further improvements. We're pretty sure we can get another 400 percent improvement with the hardware we have, just by tweaking the code."



Better testing, and faster deployment

Because of the speed with which the new servers can be provisioned, and virtualization's ability to safely create test partitions on physical servers, for the first time in its history Collin County can now create test servers. This has had a huge impact in the County's ability to provision new servers, install new applications, and make sure that everything not only works, but works optimally prior to making them available.

Larry Jones puts the value of that in perspective. "When it took a week to build a single server, we certainly didn't have the luxury of building any test servers. For example, we once had a problem with the network load balancing that we knew existed, but we were never able to put our finger on it. With VMware we were able to put four replicated virtual servers in an isolated bubble, find the problem, test the solution and fix it, and implement the final solution without ever taking the applications offline."

That ability also makes it possible to get new servers online much faster, and with greater confidence. Recently, Collin County was able to build 46 Windows servers (22 for production, and 24 for test and development), test them, reconfigure some and re-do others altogether, and bring them online in less than one week. In the past, a similar effort would have taken 13 months.

Deduplication and seamless failover mean non-stop performance for both storage and applications

The new solution has also enabled a degree of business continuity for Collin County that wouldn't have been possible using their old infrastructure. According to Jones, "Before this, it was physically impossible to back up every server we had. We simply didn't have enough physical space to back them up 100%. But with the deduplication on the N series, we can now make complete backups of every server without adding new storage."

Recently the Collin County IT team created a 500GB storage pool to back-up over 25 servers that represented a total of 1.2TB of storage, but with deduplication it only used 39GB of that physical disk space. "Depending on the pool, our ratio has been about 60 to 80 percent savings of hard drive space that you would expect to see consumed. That's a financial win, and it's a backup-and-restore win."

The business continuance advantages extend to the BladeCenter's remarkable failover capabilities when paired with VMware HA. After installation, Sirius' product specialist challenged Jones and his staff to find failure points in the new infrastructure. "A member of my team went into the data center, while another kept pinging the application from another room. The one who was pinging asked when the one in the data center was ready, but he'd already pulled the server out of the chassis. The VMware HA feature had failed over to another server without missing a single ping. And that's with the blade being yanked right out of the chassis, hot and live. We did this again and again, and the application never missed a beat."

The ultimate measure of a successful solution

One longtime IT staff commented to Jones that, with the new infrastructure, he's more excited about what they're doing with technology than he has been in years. "When your front-line staff is excited about coming to work every morning, you know you're doing something right. It doesn't matter if you're an elected official or a manager like myself—looking at the improved business and cost values, and the process improvements, these results are exciting for everybody!"

About the companies

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