

Monroe County Community School Corporation

Virtualization enables consolidation, provides improved performance, room to grow

With growing reliance on technology in education, schools are facing many of the same challenges as IT-driven businesses. At Monroe County Community School Corporation in Indiana, the problem was server sprawl in a data center that was about to burst at the seams.

The solution proposed and implemented by Matrix Integration, an HP Certified Education and Platinum Partner: server consolidation made possible by virtualization. It employs HP ProLiant BL460c Blade Servers virtualized using VMware ESX server software, supported by an HP StorageWorks 4400 Enterprise Virtual Array. Thus far, the school has replaced some 20 of its aging servers, virtualizing them on three BL460c Blades. There's also room to grow.

"Virtualizing our servers with HP blade servers and VMware is probably the best project we've ever undertaken," says Karen Portle, Director of Information Services for the MCCSC in Bloomington, Indiana. "We have eliminated the space problem with a system that delivers greater stability, improved performance and is on track to achieve substantial cost savings. With the help and guidance of Matrix Integration and HP, it's remarkable what the right technology can do for you."

SOLVING SERVER SPRAWL

Monroe County Community School Corporation is the largest school district in Monroe County, Indiana, located less than an hour southwest of Indianapolis. It serves some 11,000 students scattered among more than 20 school buildings.

Like so many organizations where IT has grown dramatically, MCCSC suffered from a bad case of server sprawl. "We kept adding more and more servers, and were quickly running out of space. Some of the servers were end of life. We just kept them running by having spares nearby for spare parts," recalls Portle. The air conditioning couldn't keep up, either. Portle's team began considering knocking out a wall in order to add more space to the data center. "But really, we just needed to re-think our data center from the ground up."

Enter Matrix Integration, headquartered in Jasper, Indiana with offices in Kentucky, Illinois and Ohio. Matrix Integration had worked

CHALLENGES

- Alleviate overcrowding in the data center
- Provide capacity for future growth
- Improve stability and reliability
- Reduce data center cooling needs

SOLUTION

The Monroe County Community School Corporation has deployed an HP BladeSystem consisting of an HP BladeSystem C7000 enclosure with four HP ProLiant BL460c Server Blades, supported by an HP StorageWorks 4400 Enterprise Virtual Array. The server blades are virtualized using VMware software.

RESULTS

- Improved stability, performance
- Redundancy to ensure high availability
- 20 physical servers virtualized on 3 ProLiant blade servers thus far, with room for more additional virtualized servers
- Room for 12 more blades in the single enclosure (quadrupling the BladeSystem's capabilities)

on several other projects with Monroe County Schools over the previous decade, most recently deploying a Cisco wireless environment and HP Compaq 6710b notebook PCs in the district's Bloomington New Tech High School.

Matrix Integration studied the challenges in the existing data center, then brought in experts from HP to do a server utilization study. They collected usage statistics for 45 days, and Matrix Integration used the data in combination with VMware Capacity Planner to develop a design for virtualizing the data center operations.

ROBUST SOLUTION WITH ROOM TO GROW

"We considered proposals from other vendors, too, but decided the HP blade solution developed by Matrix Integration was the most robust for the money," says Portle, "and it offered the best roadmap for future growth."

The design includes an HP BladeSystem C7000 enclosure with four BL460c Blade Servers. One of the blade servers is reserved

for management of the system using VMware software. Close to 20 existing physical application servers have been virtualized on the other three blade servers. But there's enough extra capacity that even if a blade should fail, the remaining three blades can provide immediate fail-over.

"There's great redundancy in the HP BladeSystem with virtualization," notes Michael Keller, a Senior Engineer at Matrix and the virtualization/storage practice manager. "Even if 60-65 percent of the components would fail in this solution there wouldn't be any impact on operations."

In addition, if one of the physical servers should fail, a blade server can create a virtual server using VMware's VMotion technology to eliminate the threat of an outage. VMotion also enables the technology staff to perform hardware maintenance in a live environment. They can migrate an application, while it's running, over to an alternate blade server to free up the first blade server for maintenance or upgrade.

The BladeSystem c7000 enclosure provides all the power, cooling, and I/O infrastructure needed to support modular server, interconnect, and storage components. The enclosure holds up to 16 server and/or storage blades plus optional redundant network and storage interconnect modules.

"When we started deciding which of our existing servers should become virtualized, and with moving them over to the new blades, we found that the applications improved in performance and in reliability," notes Marc Callison of MCCSC's technology staff. "In fact, some of the servers replaced by the new HP blades were seven years old. So in some cases, we're seeing performance gains based on seven years in technology advancements." And automatic load-balancing of the virtual servers on the physical blade servers makes the most of the BladeSystem's capabilities.

Retiring several of the older servers at MCCSC has eliminated a rack in the data center, freed up power outlets, and even helped to cool down the room. The air conditioning is finally capable of cooling the data center below 70 degrees again.

Looking ahead, Callison expects that the next likely targets for virtualization will be a server cluster that hosts Microsoft Exchange, as well as some database servers—perhaps another half dozen servers in all. The school has the capacity to continue virtualizing existing servers, or add new application servers, on the blades it has in place today. And with room for 12 more blades in the C7000 BladeSystem enclosure, MCCSC can quadruple its current capacity in the single C7000 enclosure already in place.

NEW APPLICATIONS DEPLOYED ON VIRTUAL SERVERS

Portle says that as new application servers need to be deployed, they will be hosted by the BladeSystem from the start. "All our new requirements will be taken care of on the HP blades," she notes, "so we won't be facing a space problem again anytime soon."

About Matrix Integration

Matrix Integration, an HP Certified Education Partner/Platinum Business Partner, has been in business for more than 30 years. The company is headquartered in Jasper, Indiana, and maintains offices in Kentucky, Ohio and Illinois. It provides technology solutions to businesses and institutions nationally. The company's offerings span IT infrastructure, security storage, virtualization and consolidation, networking services, telephony, printing and imaging and most importantly, extensive service after the sale. A balance of trusted business advisors, engineers, network designers, service technicians and administrative personnel gives Matrix an edge in creating and implementing data and voice solutions from conception to complete integration.

One of the advantages of the virtualized environment is the speed and ease of deployment for new applications servers. "In the past, we would have to bring in a physical machine, load the operating system and then the software. The whole process would take 3-5 hours," Callison notes. But in deploying the HP BladeSystem, Matrix built a template for a Windows server on one of the blades. So with a right click, the staff can clone the template and create a virtual server that's ready to go online. "I can build a server in about a minute," Callison says with a grin.

With simplified server management, the school system will realize substantial savings in technology staff labor and related costs. Hardware costs are also dramatically reduced compared to the cost of replacing physical servers. Matrix Integration's Michael Keller estimates that long-term, the school system will realize a 10:1 or more cost reduction per server.

MCCSC is also looking toward another type of virtualization—virtualized desktops in schools throughout the system. "Right now we have 4500 desktops deployed throughout the corporation—about one for every four students," Portle notes. The push now is for the school system to approach 1:1 computing for students. "But how can we manage that with limited staff? I think creating virtual desktops, with HP thin clients in the classroom supported by processing back in the data center, is the only way we're going to be able to move in that direction. And it's path for us to afford 1:1 computing."

For that solution, MCCSC will likely again turn to Matrix Integration. "I truly appreciate the professionalism of everyone at Matrix Integration," Portle says. "They're always there for us, from the conceptual stage all the way through to implementation and support. We're not a big enough shop to do it all on our own. We need a partner who can bring to bear expertise we don't have in-house. Matrix Integration always seems to have what we need."