



VMware Virtual Infrastructure Saves Monster From Horrors of Server Sprawl

Monster Takes a Bite out of Hardware Costs and Increases System Reliability With VMware Software

RESULTS

- Retired 75 under-utilized servers
- 10:1 server consolidation
- Fast, simple deployment
- Increased data center capacity
- iSCSI support enables backup and recovery in case of hardware failure
- Decreased provisioning time from days to hours
- Faster hardware and operating system updates
- More reliable, scalable and manageable production environment

Data Center Was Getting Scary

Monster.com is the 14th most visited site on the Internet, with over one million job postings and 28 million unique visitors each month (according to comScore Media Metrix). Supporting sites in 23 countries in the world, 200,000 member companies and over one million unique job postings, the Monster Network requires vast computing resources.

Since its beginning in 1994, Monster has been on a fast track for growth, establishing itself as the leading global online careers website. In 1999, Monster's revenues were \$125 million, up twenty-fold from 1996. By June 2002, Monster's data center was packed. "We were at capacity with 230 racks of gear," says Brian McCarthy, director of operations analysis for Monster. "It was too hot and consumed too much power. We also had computers being shipped to us from other sites, including 8-CPU and larger servers."

"When you do a job search, you access one of fifty 4-CPU Xeon servers," McCarthy explains. "Each part of Monster is separated by function. We needed separate QA environments for each different product running at the same time. That entailed about 30 servers for each QA environment. So I had about 12 racks of QA gear. The maximum CPU utilization was three percent. It made it a prime candidate for virtualization."

After researching their options, McCarthy and his team found that the VMware GSX Server™ would meet Monster's needs, enabling them to do a direct IP migration of each physical server onto a virtual machine, and keep multiple virtual machines on each physical server. "We saw that it had the capability of multiple VLANs for each server so we could easily migrate our servers. So we bought GSX Server, tested it and migrated our QA environments to GSX on Windows platforms." The goals for the project included:

- Consolidation of 70-80 servers onto virtual machines;
- Rapid deployment to QA and development;
- Capitalizing on existing knowledge of Windows and Ethernet;
- Offering direct IP migration due to application licensing;
- Providing system redundancy and recovery options.

"Our company is dedicated to providing people with the resources, products and services to enable them to achieve their career goals. With a virtual infrastructure in place, we have the computing resources to fully test, develop and provide tools that will be valuable to our customers."

Brian McCarthy
Director of Operations Analysis, Monster



VMWARE VIRTUAL INFRASTRUCTURE AT WORK

- GSX Server on 2-CPU Dell PowerEdge 1650 and 2650, 4 GB RAM
- Intrasa iSCSI SAN storage used in development
- Host Operating System: Microsoft Windows 2003 Server
- Guest Operating Systems: Windows 2000, Windows 2003 Server, Red Hat Linux, Windows NT
- ESX Server, VirtualCenter and VMotion on 2- and 4-CPU HP DL 585s
- EMC CLARiiON CX600 SAN
- Applications in virtual machines include: Web servers, Citrix servers, domain controllers, chat servers, e-mail gateway servers, deployment/compilation servers, administrative servers

Successful, Fast Implementation Leads to Monstrous Benefits

The project was deployed in two months by a team of three people. "It was relatively easy to set up," says McCarthy. The team evaluated a physical server hosting 15 virtual machines for about a year. One senior administrator was able to document and script all setup procedures and create sample machine configurations. "It is amazing how stable the GSX platform is. We had nearly no maintenance, and hardly had to reboot except to reboot the operating system," he says, adding that it took approximately 90 man-hours to set up the project.

After the success of the trial phase, Monster migrated its QA environment onto virtual machines. "Now our entire QA environment – what used to be 52 servers – is on four servers," McCarthy says. "There are fewer hardware issues to deal with, including operating system maintenance and patching, plus BIOS updates."

McCarthy also says GSX Server's iSCSI support was important for Monster's consolidation strategy. It enabled them to easily and safely migrate applications, saving important client information. Monster uses Intransa iSCSI SAN storage to snapshot volumes and backup current virtual machines, transmitting data through its LAN. "On VMware software with iSCSI, we get instant failover in case of host hardware failure," McCarthy says. "With iSCSI, we get the benefits of having a SAN without the high cost."

Since its successful initial deployment of GSX Server, Monster has continued to expand its virtual infrastructure, including the addition of more GSX Servers, ESX Server™, VirtualCenter and VMotion. "Going forward, our plan is to take more demanding applications that require more resources and higher availability and put them on ESX Server," says McCarthy. "GSX is the right thing to use for our QA environment, but we plan to utilize ESX Server, VirtualCenter and VMotion to build out our virtual infrastructure."

Monster has realized a number of benefits from having a virtual infrastructure, including:

- **Cost Savings.** In its initial deployment, Monster was able to save \$275,000 in hardware costs.
- **Server Consolidation.** Monster was able to retire 75 underutilized servers in the initial deployment. Now, Monster averages a 10:1 server consolidation ratio, increasing its data center capacity.
- **Faster Server Provisioning.** Deploying virtual machines is far easier than deploying physical servers. "Now, we are able to deploy new servers in hours instead of days," McCarthy says. "It's even faster and easier with VirtualCenter and ESX Server. We can deploy servers from a centralized point, and it's instant."
- **Faster Updates.** Because there is less hardware, McCarthy says it is easier to keep systems updated. "With VMware software, server firmware and BIOS updates are less time consuming."
- **More Scalable, Easily-Managed Production Environment.** Monster is now deploying multiple ESX Servers connected to an EMC CLARiiON CX600 SAN, building a reliable, scalable production environment. ESX Server enables us to provide a stable, reliable and flexible infrastructure.
- **High Availability With VMotion.** Using VMotion, Monster is able to migrate virtual machines across different physical servers without any downtime. "It's incredible to take live Citrix servers with users attached from one physical host to another without disruption."



Monster Enjoys Invisibility

McCarthy says that although VMware software has brought noticeable results of decreased costs, better manageability and space savings, users cannot tell that they are using applications running on virtual machines instead of physical servers. "When a developer needs a machine for a new project, I can set it up for them in an hour, and they don't even know it's a virtual machine," says McCarthy. "They just know they have a computer with a name and it doesn't have any problems."

Visitors to Monster also work on virtual machines without realizing it. "If you go on Monster to a forum where you can chat with other members, it is happening on GSX Server, clustered between our Maynard and Indianapolis applications," McCarthy says. "It works great. We also have virtual machines supporting Exchange, Blackberries, Treo, Web Integration, QA and the creative process."

Supporting Monster's Growth

Using VMware software, Monster has the computing resources in place to support the company's success and growth. "Our company is dedicated to providing people with the resources, products and services to enable them to achieve their career goals," McCarthy says. "With a virtual infrastructure in place, we have the computing resources to fully test, develop and provide tools that will be valuable to our customers."

About Monster

Monster is the leading global online careers property. A division of Monster Worldwide, (NASDAQ: MNST) Monster works for everyone by connecting quality job seekers at all levels with leading employers across all industries. Founded in 1994 and headquartered in Maynard, Mass., Monster has 25 local language and content sites in 23 countries worldwide. More information is available at www.monster.com or by calling 1-800-MONSTER. To learn more about Monster's industry-leading employer products and services, please visit <http://recruiter.monster.com>.

www.vmware.com

VMware, Inc. 3145 Porter Drive, Palo Alto, CA 94304 USA
Tel 650-475-5000 Fax 650-475-5001