



KEY HIGHLIGHTS

INDUSTRY: TECHNOLOGY

**CHALLENGE**

Beef up the efficiency and flexibility of applications running on JBoss middleware

SOLUTIONS

Transform the JBoss architecture with VMware technology, consolidating servers and improving both application manageability and customer service

VMWARE AT WORK

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VMware Infrastructure 3 Enterprise, featuring:

- VMware ESX 3.5
- VMware vCenter
- VMware VMotion
- VMware High Availability
- VMware Distributed Resource Scheduler (DRS)
- VMware Virtual SMP
- VMware Consolidated Backup
- VMware Workstation

DEPLOYMENT ENVIRONMENT

- VMware ESX 3.5, update 3, running on five Dell PowerEdge 2950s in two configurations: either 16GB dual-core CPUs with a mirrored 146GB SAS drive or 32GB quad-core CPUs with a mirrored 146GB SAS drive
- NetApp 3050C storage: Dual Active/Active High Availability configuration with 2 tier disk-to-disk snapshots/backups
- Guest operating systems: Debian GNU/Linux, Red Hat Enterprise Linux 4, Windows Server 2003
- Mission-critical software running in production in virtual machines: JBoss middleware, Oracle and PostgreSQL databases, Zope, monitoring systems, logging systems and mail systems

"By migrating JBoss to run on VMware VMs, we not only consolidated servers, we isolated the applications that run on JBoss. That means we can individually customize them for clients--without having to worry about any negative side effects impacting other customers."

Dennis Lauder
Director Technical Services, Devis

Development InfoStructure, Inc.

Development InfoStructure, Inc. (Devis) is an IT consulting firm for federal, state and local governments, as well as the international development community. VMware software is a vital part of the infrastructure that Devis deploys to provide fast, nimble and cost-effective Web-site support and other solutions to its clients, who range from members of Congress to aid workers in Africa.

The Arlington, VA-based company began using VMware Workstation in 2002 to make application development faster and more efficient. Based on that success, Devis decided to expand its VMware arsenal by deploying VMware ESX for testing and production. "We started with ESX 2.0 in 2005 and we've been gradually migrating servers and applications ever since," says Director of Technical Services Dennis Lauder. "At this stage, we're running ESX 3.5 and our data center is 97 percent virtualized."

Devis uses open-source software whenever practicable, so when it initially decided to virtualize, it considered the Xen hypervisor. "Xen had limitations, though," Lauder says. "For instance, the management tools weren't as robust as VMware ESX." Besides being technically superior, VMware technology was a proven commodity at Devis. "We were very happy with VMware Workstation," Lauder reports. "And the fact that we could take a Workstation image and tweak it a bit to convert it into the ESX environment was a big plus."

A key piece of Devis's virtualized infrastructure is Red Hat JBoss, middleware that supports the Web sites that it builds and maintains for clients. "Generally, they're sites that provide government information to the general public," explains Director of Development Services Tom Jenkins. An example is DisabilityInfo.gov, a resource for information on disability law and programs for the disabled.

"Under our old architecture, we had a cluster of several servers with web-presentation middleware, and then we'd add database servers," Lauder recalls. "We'd wind up putting application after application on those servers, steadily increasing management complexity. By migrating JBoss to run on VMware VMs, we not only consolidated servers, we've simplified and improved management."

Devis's JBoss installation, which currently includes 11 instances, has been virtualized for more than three years. The virtual machines containing JBoss run with about 1 GB of memory and one to two virtual CPUs. The maximum memory setting for JBoss is 768 MB, leaving 256 for the operating system. "We trim our virtual machines down to just what we need, using as little as possible for the operating system so we can give memory that's leftover to JBoss," Jenkins explains. "The more memory you can give JBoss, the better."

Benefits

Because Devis is focused on giving its clients what they need when they need it, one of the biggest benefits the company has seen from running JBoss in a VMware-virtualized environment is the ability to respond to user requirements quickly. “We appreciate the flexibility that VMware technology enables,” Lauder says. “That’s a big plus, both for us and our customers.” In the past, it could take up to a month to provision new physical servers, a process that’s been reduced to four hours or less by using templates to expedite the creation of virtual machines. “And if we need to build another front end for our clients, we just clone the current server and make a few configuration changes,” he adds.

Another way VMware software improves Devis’s customer service is by allowing it to separate customers’ applications so that each one runs on its own individual VM. “VMware technology allows us to isolate applications running on JBoss, so we can address one client’s needs without worrying about creating problems for others,” Lauder says.

The ability to make the most of physical hosts by running multiple VMs on them means not only significant server consolidation, but also easier management. “Right now we’re running 70 virtual machines on five servers, so there’s been considerable consolidation,” Lauder reports. “In fact, thanks to VMware Infrastructure, we were able to take out a server rack we were renting because we didn’t need it anymore. We now have five servers where we used to have 12, which adds up to a fair amount of savings. We also have much better isolation which is also important. And I can move VMs from one host to another whenever I’d like, which means that I can phase out older servers without having to go through a complete rebuilding process.”

Another management benefit Devis is seeing, in its JBoss implementation and across its virtualized data center, comes from VMware High Availability (HA). “HA lets us migrate across a bevy of ESX servers and allows us to build in redundancy without the complexities and possible problems of a clustering environment,” Lauder says.

VMware VMotion is also a popular tool in Devis’s data center. “We recently upgraded to update 3 of ESX 3.5,” Lauder says. “Thanks to VMotion, we were able to do that with little to no downtime. It was incredibly helpful.”

As Devis’s clients have come to appreciate the benefits of virtualization, the company’s use of VMware technology has become a selling point. “There’s been a fundamental shift in the last two years, and many of our customers—especially those in the federal space—have embraced virtualization,” Lauder observes. “In the very beginning, we virtualized quietly, delivering VM-based solutions almost like a black box service. But now that the benefits of virtualization are better understood, we present the fact that we’re using VMware Infrastructure to our clients. It doesn’t scare them; it reassures them.”

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Results

- Applications running on virtualized JBoss are easier to manage and more robust—and the fact that they're housed on standalone VMs means changes to one clients' application won't impact others
- Data center is 97 percent virtualized
- Application provisioning time reduced from roughly four weeks to four hours
- Software upgrades with little or no downtime
- Availability of key applications ensured with VMware HA

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