



VMware Virtual Infrastructure Quenches Welch's Thirst for Low-Cost Business Continuity and High Availability

Welch's Runs Mission Critical Applications in VMware Virtual Machines, Reducing TCO by 20-30 Percent

RESULTS

- Reduced TCO by 20-30 percent
- Saved more than \$100,000
- Saved \$75,000 this year in switch costs
- Expect to save \$250,000 by the end of the year
- CPU utilization increased from 5-10 percent to 50-60 percent
- Reduced deployment time from 4-6 hours to 15-20 minutes. Server procurement also used to take 2-4 weeks
- VirtualCenter cut costs and maximized ease of server management
- Achieved high availability with VMotion
- Implemented effective disaster recovery solution on VMware virtual machines

Bunches of Servers Were Squeezed

Welch's – the world's leading producer of juice, jam, and jelly products made from Concord and Niagara grapes – needs high performance, reliable servers to host its enterprise applications and data. The \$700 million company was running its applications on standalone servers, which was costly.

"We were running too many applications on standalone servers," says Carmine Iannace, manager of IT architecture for Welch's. "CPU utilization was low, and the servers took up too much space and required quite a bit of electrical power and cooling."

The IT group evaluated server consolidation strategies to increase the efficiency and reliability of its IT infrastructure, while reducing costs and space requirements. "We looked at some workload management possibilities, but vendors required different servers," Iannace says. "We chose virtualization with VMware software because it was the only solution that met our needs."

George Scangas, IT infrastructure analyst for Welch's, said the company was ripe for change. "We chose to do this knowing there was an element of risk as whatever we put in place would heavily affect development and production," he explains. "But we saw it as 'managed risk' because we knew the benefits and results would outweigh potential exposure."

A Satisfying Taste Test

Iannace went to the VMware Web site to download the software and evaluate consolidation options in early 2002. "I downloaded VMware Workstation, tried it on laptops, showed it to members of the architecture team, and thought it looked very promising," says Iannace. "We ran the Workstation evaluation for a few weeks and then looked at the server product."

Welch's evaluated VMware GSX Server™, loading a server up with virtual machines. They started with less important applications that could be rebuilt if they failed, and then moved to more critical applications. "We ran Windows 2000 Server and multiple applications in test mode," says Iannace. "We tried some parts of Plumtree Portal, network monitoring, McAfee, EPO and Microsoft Database to see how it would react while it was running. We were impressed with what we saw."

The IT group began its deployment with GSX Server but soon purchased several VMware ESX Server™ licenses because ESX Server allowed for more granular control and minimized resource contention. The company used ESX Server for databases, including Oracle 9i, webMethods, Microsoft SQL Server, antivirus network monitoring and Plumtree Portal.

The company also took part in VMware's beta program for P2V Assistant™ – a tool that helps migrate physical servers onto virtual machines – using the tool to migrate larger servers. "We migrated a large number of servers into VMware virtual machines," Iannace says. "We saw how well the applications performed, and we never looked back. At this point, all new programs are built using VMware software. It's become our server hosting platform of choice."

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Manager of IT Architecture, Welch's*



VMWARE VIRTUAL INFRASTRUCTURE AT WORK

- A total of 86 virtual machines running on eight physical servers
- GSX Server on IBM x350 with 2 CPUs, 16 GB RAM
- ESX Server on Dell PowerEdge 6650s, 6600s with 4 CPUs, 32 GB RAM
- VMware Workstation on Dell Latitude D600 laptops
- SAN storage: EMC Clariion CX 600
- GSX Server host OS: Microsoft® Windows® 2003 enterprise edition
- ESX and GSX guest OSes: Windows 2000, Windows 2003, Linux® RedHat AS 2.1, AS 3.0, Whitebox
- Workstation host OSes: Windows 2000 Professional, XP
- Guest OSes: Windows 2000 Professional, XP, 2003, Linux
- Applications running in virtual machines include: webMethods®, Oracle® 9i, 11i and 10g, Microsoft SQL 2000, Microsoft Exchange, Plumtree® Portal, Computer Associates®, Ringwood Trove, CVS repository

VMware Software Yields a Huge Crop of Benefits

Welch's now uses VMware software at its corporate office as well as its research and development facility, and its more than 1,400 employees use applications running in virtual machines every day. The company has also added VirtualCenter and VMotion™ to complete its virtual infrastructure. VirtualCenter allows the company to control its virtual computing resources through a single management interface, and VMotion enables the IT group to maximize server resources, moving virtual machines across physical servers without any downtime. Welch's is also planning to move ESX Server into the plants in 2005.

The benefits of this comprehensive virtual infrastructure solution include:

- **Server Consolidation.** The IT group has been able to achieve at least a 15:1 server consolidation ratio, with 15-20 virtual machines per physical server. "We did a cost analysis standardizing on 4-CPU servers," Iannace says. "We found that we could put even more servers on, stretching it to 25, but for production, we've found that 15-20 is our sweet spot."
- **Reduced Costs.** Instead of buying separate servers for each application, Welch's buys fewer, higher-power servers. "From a cost perspective, a 5:1 consolidation ratio is our breakeven point in terms of hardware costs," Iannace says. "So we save by not having to buy hardware. We also save other costs: air conditioning and cooling, electrical usage, network ports; if we didn't have VMware software, we would have run out of ports. This year it would have cost \$250,000 to upgrade and add enough network ports to support our server infrastructure. We spread the cost over two to three years, so that means we saved \$75,000 this year to defer the upgrade."
- **Improved CPU Utilization.** Welch's has increased CPU utilization from 5-10 percent to 50-60 percent per server.
- **Reduced Server Deployment Times.** Instead of taking four to six hours to set up a new server, it takes 15-20 minutes with VMware software. "Now people are comfortable knowing that we can meet their requests so quickly," Scangas says. Normandin adds "In terms of server procurement, ordering a new server could take weeks. With VMware, since it's all virtual, we can deploy right away."
- **Eased Management With VirtualCenter.** With VirtualCenter, the team can view dashboards monitoring virtual machine statistics, including CPU utilization and bandwidth, from a central point. "Now we have VirtualCenter, it limits the need to gather memory or CPU functions," Iannace says. "Without it, we would have had to purchase a large network suite like Unicenter to manage our servers."
- **Better QA and Development Environments.** Now with VMware software, due to ease of server deployment and management, Welch's is able to provide virtual machines to meet QA and development needs with simpler and faster rollouts.
- **High Availability, Disaster Recovery with VMotion.** "We use VMotion to move application loads off physical servers while we do maintenance, minimizing downtime," Iannace says. "It gives us flexibility and disaster recovery because we can restore servers quickly; the complexity of the restore process has been reduced quite a bit."



Keeping the Information Flowing

The company has about 90 virtual machines on five physical servers running a variety of enterprise applications, with plans to grow. Production applications running in virtual machines include Electronic Data Interchange (EDI-INT) software and webMethods for application integration, Microsoft Exchange, Plumtree Portal, which manages Web deployments, CVS repository, and anti-virus software. The company also has Oracle 10g, 9i, Windows 2000 Domain Controllers, Astaro firewall software and a seasonal processing application.

Welch's even keeps its world famous, top-secret juice formulas in a database in Ringwood® Trove™ software on a virtual machine. "Each year, the sweetness of the grapes varies due to the weather," Iannace says. "Of course, we would not want to lose that valuable information. There are different formulas and recipes to achieve a consistent level of quality and taste, no matter how the weather affects the grapes."

Because VMware software provides automated system and application failover and recovery, consolidation of target recovery and redundant hardware, Welch's has a reliable, highly available IT infrastructure. "We can restore servers much more quickly in the event of a disaster," Iannace says. "We tested our recovery to see how long it would take to get all of the virtual machines back up. It was greatly shortened, and complexity of the task has been reduced. What used to take at least a day now takes three hours."

The company's original goals in implementing VMware software focused on server consolidation and reduction of space requirements for servers, but the IT group also hoped to increase efficiency and reliability. The results of the project have surpassed these goals.

"We get so many benefits, we're very happy with the software," says Iannace. "We get rapid rollouts; it's easy to get machines up and running. We also now have solid QA and development environments, centralized management, reporting, performance and high availability."

On top of these benefits, Welch's has lowered its costs. "VMware has saved us over \$100,000 in capital costs since we started this project," Scangas says. "Overall, it's a 20-30 percent savings over using physical servers. By the end of this year, we will have saved \$250,000."

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