



Abacus International Cuts Server Costs as First Singapore-Based Firm to Implement VMware Virtual Infrastructure Software

VMware ESX Server, GSX Server, VirtualCenter and WorkStation Achieve a 19:1 Server Consolidation, Accelerate Legacy Applications Migration and Enhance Productivity with Automated Testing and Development Processes

RESULTS

- 19:1 server consolidation ratio—consolidated 38 servers onto two servers with ESX Server Licenses
- Cost savings—saved 40 man-hours per day for automated testing processes
- Cut server provision time from half a day to 30 minutes
- Improved server management and reduced administration costs using VirtualCenter
- Centralized administration control with a single point of view with VirtualCenter
- Increased flexibility and responsiveness
- Reduced maintenance and server acquisition costs
- Saved data center resources—including space, power and cooling costs

Abacus International Pte Ltd is Asia Pacific's leading travel facilitator with more than 10,000 agency locations in 22 markets. Headquartered in Singapore, Abacus provides computer reservation systems for travel agency bookings and desktop solutions for managing mid- to back-office operations, from ticketing and billing to accounts reconciliation.

To date, Abacus invested over US \$35 million in localizing and developing its solutions. Assistant Manager of Abacus's Implementation and Support Department Fred Qian says, "The company relies on us for the critical IT infrastructure support to Abacus' Integrated Development and Testing Center (IDTC), which consists of developers, product analysts and testers. It is our job to provide them with access to the right IT resources and software tools to help them create innovative solutions for the travel industry."

Space Constraints and Server Proliferation Slows Down Development Work

Abacus' success hinges on rapid time-to-market with new features and functionalities for its travel solutions. With over 60 servers and 70 PCs for testing and troubleshooting of software solutions, the company's server proliferation became a major maintenance burden and development bottleneck.

Qian explains that something had to be done right away, "The IT infrastructure simply could no longer meet the demands of our developers and testers for more server resources. We were unable to use our PCs to access multiple systems for testing. Everything including our testing processes was being done manually. There were no automated test tools that could reduce our server setup time."

Yeo Siow Keong, senior engineer support agrees, "Server sprawl was a huge problem. We had four rooms full of PCs, printers and servers and were rapidly running out of space. Everyone wanted more hardware and power. It was getting really disorganized. To top it off, we had to deal with large power and cooling costs as well."

To reduce the installation time of the different operating systems (OSes), Qian and team tried other options which worked well but were unable to provide the results desired. "We used Norton Ghost, which captured the image of the server to setup our server. However, that didn't speed things up by much. It still took us on average half a day to roll out a complete server set-up," says Yeo.

"As a forward-looking company, we constantly seek out innovative solutions and take bold steps to revolutionize the way we work. Innovation is VMware's hallmark and their software gives us an added competitive edge. With a full VMware virtual infrastructure in place, we can now match the right virtualization tool to the required application performance. This flexible and nimble approach helps us maintain our leadership in a competitive marketplace and meet our present and future business needs. We view VMware as a long term strategic partner."

*Seetoh Hon Chew,
Vice President of Solutions Development*



VMWARE VIRTUAL INFRASTRUCTURE AT WORK

- 28 Workstation, 2 VMware GSX Server, 2 ESX Server, 2 VMotion Nodes, 2 SMP Nodes, 1 VirtualCenter
- VirtualCenter on DELL 270 single CPU with 512MB RAM
- ESX Server on IBM 445 4-CPU's with 8G RAM, 36GB storage, 2 Gb NIC cards
- GSX Server on IBM 345 2-CPU's with 4G RAM, 210GB storage, 2 Gb NIC cards
- Workstation on DELL 270 single CPU running Windows 2003/2000/XP, Red Hat Linux 9.0
- Host operating system on GSX Server: Windows 2000
- Guest operating systems on GSX and ESX Servers: Windows 2003, 2000, NT4.0, Red Hat Linux 9.0
- Storage: IBM FastT600, 1TB disk storage for VMware servers backed up to IBM tape library
- Applications in virtual machines include: Source Safe server, file server, Web server and Abacus' mid-office and back-office desktop solutions
- Test applications: solutions developed in-house

Solution for Server Consolidation, Centralized Management and Multiple OSes Support Sought

Qian and team wanted a server consolidation and management solution for easy IT administration, support for rapid application development and to speed up the migration of its legacy applications. The solution also needed to address space limitations, high power consumption, and better use of server and storage resources.

In 2003, Abacus approached their long-term vendor and partner JOS Technologies (JOS) for recommendations on a best-of-breed solution. In late 2003, Abacus selected VMware as the solution of choice as it was the only vendor that provided a comprehensive suite of virtual machine technologies that enabled server consolidation, centralized management and rapid application development through virtual machines.

With its purchase of VMware's full suite of virtualization software including ESX Server, GSX Server, SMP Nodes, VirtualCenter, VMotion™ and Workstation, Abacus broke new ground as the first Singapore-based company to have a full virtual infrastructure in place to meet all of its current and future business needs.

VMware ESX Server Exceeds Expectations for Flexibility and Performance

Before implementation, Abacus conducted a rigorous proof of concept (POC) testing of VMware solutions over a two-week span. "We needed to be sure that everything would work reliably, as it was a critical part of our infrastructure," says Yeo. Working jointly with JOS, the company tested ESX Server on a repurposed dual-CPU Compaq server and created four virtual machines on Windows 2000 file server and Linux server with Web applications.

Qian was impressed by the test results, "We found that VMware provides powerful virtual machine software that catered well to our products. We were able to rapidly test our products in multiple operating systems and multiple language environments. Switching easily across English, Traditional Chinese and Simplified Chinese versions of Windows 98, 2000 and XP."

VMware GSX and ESX Server Enabled Server Consolidation With P2V Assistant, Ensuring Smooth Migration

With the success of the POC, Abacus took the next step and engaged JOS to begin implementation in early 2004. Stretching over a five-month period, the project rollout was done in phases in conjunction with a printer and storage consolidation initiative.

Abacus renovated its data center, creating three dedicated rooms to house its printers, as well as 12 servers and 28 PCs used for user acceptance testing (UAT). The company then installed two GSX Server licenses and created 10 virtual machines on it. Next, using the latest VMware P2V Assistant technology, Abacus successfully migrated all legacy and current applications from 38 servers into two ESX Server boxes. Workstation was subsequently installed on half of the PCs in the UAT room. The last step was to do a final testing to make sure everything worked before retiring the old servers.

Using VMware virtual infrastructure software, Abacus now has over 60 virtual servers running on two servers with GSX Server licenses and two servers with ESX Server license. Today, over 100 developers and testers access these servers both locally and remotely to develop and test new applications and replicate customer PC environments for product support. Backup of virtual machine images is done using a third-party Perl script onto a Linux file server and later moved to an IBM tape library.



VMware Enables Abacus To Go The Distance With Ease

Building a virtual infrastructure with VMware software has helped Abacus meet both its business and technical goals, providing benefits including:

- **Efficient Server Consolidation.** Abacus eliminated server sprawl by consolidating three rooms of servers into one. "Server consolidation has paid off for us," Qian says. "We've reduced the total cost of ownership, increased room for expansion and greatly simplified the management of our computing infrastructure."
- **Faster and Smooth Migration.** "With P2V Assistant, the migration process was completely automated. I am glad we didn't have to spend any time on configuration, as it is tedious and difficult to do well. It reduced the migration time by 50 percent and took about 15 days to complete," says Yeo.
- **Significant Cost Savings.** With VMware software in place, Abacus was able to realize significant cost savings in reducing hardware investments, software licenses, and recurring costs for items such as administration, annual maintenance, power consumption and manpower.
- **VMware Saves 40 Man-Hours Per Day.** "Developers and testers no longer need to physically move from one machine to another to test software on different operating systems," says Yeo. "In the past, we had to constantly build or re-image a PC, and install the different operating systems. It took up to two hours per machine. With GSX Server, we now save about 40 man-hours per day (20 developers x 2 hours per day) instead of wasting time installing operating systems and rebuilding machines."

- **Increased Flexibility and Responsiveness.** Both Qian and Yeo agree that with VirtualCenter, the company now enjoys increased flexibility in server management and resource provisioning to meet individual requirements. "It is great because now I can manage the entire infrastructure from a single view," says Yeo. "No more walking around or carrying heavy servers for me. Remote control is a big plus for meeting urgent needs. Even when I am out of the office, I can still login remotely to manage our resources."

"Once I had received a request from a manager for an urgent server set-up and I did it within an hour to his great surprise," adds Yeo. "With literally just a few clicks, we can add RAM, storage and assign resources. VirtualCenter makes administration so much easier."

- **Faster Application Testing and Development.** With Workstation, testers can boot up their preferred operating system in multiple language versions within minutes and easily replicate the customer environments for testing purposes. Qian says, "Productivity has improved and we now have a better workflow as developers and testers can access virtual machines both locally and remotely."

The Future Looks Bright When You Are Using VMware Software

"Currently we are not using VMotion or SMP Nodes extensively. These two solutions will come in handy when we scale up our infrastructure to meet growing demands," says Yeo. "As more virtual machines are created, our storage requirements grow as well. We plan to add another 1TB to our storage capacity for backing up the virtual machine images."

"Overall, we are very pleased with our decision to put in place a VMware virtual infrastructure and are keen to find out different ways to leverage our investment," Qian says. "For example, we see Linux as a major industry trend and are likely to move towards open source. With our VMware infrastructure, we never have to worry about the management of a multiple operating system environment. It gives us added confidence to try out new applications and strive for further innovation."

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