POWERSERAYA
UTILITIES

PowerSeraya Sparks Infrastructure Renewal with Virtualization

Anywhere, anytime availability

KEY HIGHLIGHTS

INDUSTRY: **UTILITIES**

CHALLENGE

Facing increasing demand for server resources and wanting to reduce its environmental footprint, PowerSeraya needed a cost-effective infrastructure that could support green programs, contain server sprawl, increase IT resource utilization and help allocate computing resources quickly.

SOLUTION

PowerSeraya turned to VMware to deliver an agile data center with a reduced green footprint.

RESULTS

- Achieved an equivalent server consolidation ratio of greater than 10:1
- Saved energy consumption by an estimated 70% (26,000 kWh) and carbon emissions by 70% (12.5 tonnes) per year
- Increased CPU utilization from 3% on average to 20-50% over a 24x7 period
- Cut server deployment lead time from about four weeks to four hours, including antivirus and backup tasks
- Increased the productivity of the information technology team due to easier management of the PowerSeraya server infrastructure
- Enabled deployment of a dynamic infrastructure for less than half the capital required to deploy a physical infrastructure

"We were able to achieve a similar outcome using VMware virtualization as we would had we deployed physical servers. As a result, we reduced our capital expenditure by more than half the level required had we implemented the same infrastructure using physical servers."

Bernard Lee, Vice President of Process and Innovation
PowerSeraya

Switching on a virtual solution

Headquartered in Singapore, PowerSeraya's business is centered on electricity wholesaling and retailing. PowerSeraya is, however, fast becoming a leading integrated energy company in the region. The organization provides utilities services such as electricity, steam and cooling water. It engages in oil trading and produces water using its own reverse osmosis desalination plant.

PowerSeraya operates one datacenter from its headquarters at HarbourFront in southern Singapore and a second center at oil, gas and petrochemical hub Jurong Island. Each facility operates as a primary datacenter and provides secondary/disaster recovery support for the other.

In 2005, PowerSeraya forecast growth in server numbers from 15 to in excess of 70 by 2007. The organization's IT infrastructure team immediately focused on identifying and evaluating effective physical server consolidation strategies. "Adding another 70 servers to our existing infrastructure would significantly reduce the amount of space needed to house these servers, leaving little room for expansion. Moreover, increases in the rental prices of commercial properties have placed a premium on space at our HarbourFront datacenter," said Bernard Lee, Vice President of Process and Innovation, PowerSeraya. "Our expected growth also threatened to breach the limited cooling and power supply capacity of the existing building infrastructure.

"For every major application we implemented, we needed eight to 12 servers to host development, quality assurance, production and

disaster recovery environments," Lee added. "Our master plan for the next two years highlighted the fact that we would face a high number of server requests from our business solutions team and users."

Better availability, reduced downtime

After conducting initial research and proof of concept work, PowerSeraya decided to use VMware as its platform to implement server virtualization. While not all PowerSeraya production applications were certified to operate on the platform, the benefits of VMware outweighed any concerns and the organization effectively mitigated a significant number of the risks. Most development, quality assurance and disaster recovery servers are hosted on VMware Infrastructure. As a result, virtualization has presented the business with an opportunity to dramatically reduce wasted server hardware central processing unit cycles and memory.

"Once user acceptance testing is completed for an application in test and development, the virtual server can be shut down and resources released to other virtual servers," said Lee. "Depending on the suitability of an application, our preference is to run them first in a virtualized environment. We have not encountered any noticeable performance degradation for these applications running on the virtual platform." In the event of a physical outage, PowerSeraya uses VMotion to move the impacted virtual machines onto other physical hosts, minimizing system downtime and ensuring higher application availability.

PowerSeraya is running about 40 virtual machines on two physical servers with a total of six dual-core CPUs at the HarbourFront datacenter and about 20 virtual machines on two physical servers with a total of four dual-core CPUs at Jurong Island.

PowerSeraya goes green

Deploying VMware across its data center infrastructure has enabled PowerSeraya to take steps towards greening its IT operations. By running 70 virtual servers on four physical hosts rather than the equivalent physical infrastructure, PowerSeraya has saved energy consumption and carbon emissions by an estimated 70 percent each. This translates to savings of about 26,000 kWh and 12.5 tonnes of carbon dioxide per year. Other advantages of using VMware include reducing datacenter floor space and cooling requirements as fewer physical servers are required to operate the PowerSeraya environment.

Improving energy efficiency and reducing its carbon footprint is not new to PowerSeraya as the organization has reduced its carbon emissions by 30 percent over the past decade.

DEPLOYMENT ENVIRONMENT

- ESX Server on one HP DL585 server with four 2.339GHz dual-core AMD Opteron processors and 28GB RAM
- ESX Server on three HP DL385 servers each with two 2.60GHz dual-core AMD Opteron processors and 32GB RAM
- IBM TotalStorage DS4300 Turbo storage system
- EMC CLARiiON CX3-20 networked storage system
- Guest operating systems: Microsoft Windows Server 2000, Microsoft Windows Advanced Server 2000, Microsoft Windows 2003 Standard Edition, Microsoft Windows 2003 Enterprise Edition in 32, and 64-bit flavors
- Virtualized production applications: Microsoft SharePoint Server 2007, data warehousing applications, employee self-service on Domino

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