



VMware Helps China's National Bureau of Statistics Integrate Its Datacenter and Streamline Management

VMware's P2V, ESX and VirtualCenter have helped the National Bureau of Statistics (NBS) migrate applications from numerous old servers to new servers, reducing the number of servers deployed and streamlining the datacenter management. It also had the additional benefit of easing pressure on managers in the datacenter.



KEY HIGHLIGHTS

Industry: Government

RESULTS

- Through deployment of virtualized servers, applications on more than 60 servers were integrated onto 20 physical servers.
- Over 20 virtual machines which meet the needs of business departments were created through virtualization of six physical servers.
- Six applications were created through virtualization of two servers to be used as a model for standardization to be promoted in statistical bureaus throughout China.
- Datacenter management was streamlined and management complexity reduced, thus freeing precious manpower.
- Applications on existing physical servers were migrated to virtual machines using P2V tools in preparation for upgrading and migrating information in the datacenter.
- Server utilization was greatly improved from an average of 1% originally to 80%.

"Through adopting this cutting-edge technology, we have fully experienced the benefits of server virtualization. We are now enjoying better server consolidation and management, faster deployment of new applications and greater work efficiency."

Zhang Fumin

Deputy Director, Computer Center of the National Bureau of Statistics of China

NBS planned to migrate from legacy to new servers, integrate servers and reduce server management complexity

As a government body directly under the supervision of the State Council, the NBS is responsible for national statistics and accounting for China's economy. The NBS computer center is required to provide infrastructure and IT services for numerous departments. Prior to adopting virtualization, NBS needed to manage more than 240 x86 servers and over 30 smaller computers. However, NBS had only four staff on its payroll. As a result, they faced immense management challenges. Many factors also contributed to low utilization of the servers deployed; in fact, average utilization was below 5%, which did not meet the needs of a frugal and energy-saving society. NBS also wanted to migrate its existing datacenter and set up a Disaster Recovery Center to enhance the security of the datacenter.

- NBS needed to consolidate applications running on numerous servers to enhance utilization while also reducing management complexity and managers' workload;
- Business needs also required establishing a highly discreet system environment in which multiple applications were not run on a single system;
- NBS needed to migrate applications from its existing datacenter to virtual machines via P2V tools to achieve simultaneous integration during migration;
- NBS also needed to promote standardized management of applications to unify operating systems of statistical bureaus in provinces throughout China;
- NBS needed to deploy applications which did not demand significant IT resources on the virtual machines in order to achieve more flexible and convenient management.

VMware ESX helps consolidate servers of the National Bureau of Statistics

There were more than 240 x86 servers and over 30 smaller computers running in the NBS Computer Center. Some x86 servers belonged to other business departments and were entrusted to the management of the Computer Center, while some other x86 servers belonged to the Computer Center and were used to provide infrastructural IT facilities for other business departments. As a result, the NBS took a three-step approach to gradually consolidate the servers in its Computer Center.

In order to promote uniform statistical applications, the NBS deployed virtualization on two HP DL580G5 systems equipped with quad-core INTEL XEON processors and installed six applications. Tests had shown operations to be excellent. According to technical personnel in the NBS, the model of using two physical machines to run numerous virtual machine applications would be applied in statistical bureaus in provinces and municipalities. The NBS then provided more than 20 virtual machine services through four DELL PE6850s, which ran business systems for its business departments. Finally, by using P2V tools, the NBS migrated more than 30 applications in the existing datacenter to virtual machines on over 10 physical machines:

- Utilization of the servers was greatly enhanced after the adoption of virtualization. Moreover, there was a significant reduction in the number of physical servers deployed. Server and physical space saved in the datacenter was freed for new applications;
- Applications previously used were neither highly reliable nor secure. Through virtualization and implementation of applications on the virtual machines, the NBS was able to keep the applications on the original physical servers and run them;
- Virtual machines have the unique advantage of being rapidly deployed and duplicated. Through the applications deployed on virtual machines it was possible for the NBS to rapidly promote applications which had been fully tested to provincial and municipal statistical bureaus. Following the official activation of the project, the time it took to promote an application was substantially reduced. At the same time, the level of difficulty for technical applications used by the provincial and municipal departments was also lowered;
- By integrating numerous physical servers, the NBS was able to effectively reduce server maintenance work, easing work pressures in the Computer Center.

VMware Products in Operation

- VMware ESX
- VMware Virtual Center
- VMware Converter
- Operating systems: Windows Server 2000、Windows Server 2003
- Virtual machine applications: Business system; Exchange Server; domain controller, etc.
- Deployment of over 60 virtual machines on numerous Intel quad-core Xeon processor HP DL580s and Intel single-core Xeon processor DELL PE6850 servers, with uniform allocation and management through the Virtual Center.

ESX helped the National Bureau of Statistics streamline management of its Computer Center through virtualization technologies

The NBS Computer Center was under considerable strain as its limited staff had to handle a significant number of servers. The existing servers lacked storage systems at the back-end and each server stored data on various hard disks, which meant that data security could not be guaranteed. With most of servers belonging to different business departments, the budget was insufficient to equip each server with SAN or NAS storage solutions.

In addition, NBS had hoped the new datacenter would use space more effectively to enhance return on investment and provide more room for future expansion. Therefore, to integrate its existing servers, it first needed to integrate applications on those servers belonging to the Computer Center through virtualization. This was to raise server utilization as well as to reduce management complexity.

The NBS was familiar with VMware's virtualization technologies. As a result, it decided to use ESX to implement server virtualization. They deployed numerous applications including Exchange Server; business application systems; real-time enterprise communication servers and more on several Intel quad-core HP DL580 servers and Intel single-core Xeon processor DELL PE6850 servers. Furthermore, the NBS used P2V tools to migrate the applications on more than 30 physical servers to just over 10 physical servers.

Through the three-stage virtualization process described above, the NBS completed its deployment of virtualized servers with a utilization rate of around 80%. The virtualization was so successful that business departments did not notice any disruption. In fact, there have been no problems since the operation began in June 2007.

The NBS staff was able to manage the virtual machines through the Virtual Center management system. As the number of physical machines was reduced, their workload was also reduced considerably and they were able to do more innovative work.

NBS has realized positive results through virtualization, and it is now encouraging other business departments to adopt the technology. It also has plans to centrally procure storage equipment in order to create server farms using existing servers. This would then be followed by deployment of back-end storage to take advantage of the advanced features of VMware ESX such as high availability and downward migration, further enhancing the security and reliability of information within the datacenter.

As a result of its deployment of VMware ESX virtualization technologies, the NBS was able to effectively integrate its servers, reduce staff workload and achieve more flexible server management. According to Wang Jue, an engineer in the NBS Computer Center, "The greatest benefit is that through the server integration, our management has been streamlined and we can be more flexible with our staff allocation."

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