

VMware Virtualization Helps to Streamline Management of the Guizhou Branch of Agricultural Bank of China



KEY HIGHLIGHTS

Industry: Financial

RESULTS

- After adopting VMware's virtualization solution, server utilization rose from an average of 18% to 70%.
- Front-counter application servers from local branches were centralized to provincial headquarters, reducing the number of technical supporting staff.
- Intel virtualization technology helped VMware virtualization solution to integrate 32 servers into nine.
- Cost savings from the reduced number of servers enabled cold-backup and cross-backup system adoption, increasing the reliability of the front-counter system servers.
- Server and storage integration dramatically reduced data center space and power consumption demands, easing pressure on the recent reengineering of the data centers and allowing for expansion of ABC Guizhou Branch.

"VMware's virtualization technology has enabled us to centralize the upgrading and maintenance of our front-counter systems from local branches to the province headquarters as well as consolidate our servers and significantly streamline management tasks. The result is quick system upgrades and maintenance, reduced data center space and substantial power and cooling cost reduction, all of which have helped us achieve our goals."

Luo Dong-hui

Deputy Director of Science and Technology Department at Agricultural Bank of China, Guizhou Branch

VMware's ESX Server helped the Guizhou Branch of Agricultural Bank of China to centralize management and provision their application servers without increasing capital costs. Maintenance of and upgrades for the front-counter systems have been handed over from local branches to the Guizhou Province Branch. The results are improved server applications integration and increased server utilization, reduced the number of technical supporting staff, saved data center space, and improved customer satisfaction.

Agricultural Bank of Guizhou Requires Centralized Management

Headquartered in Beijing, Agricultural Bank of China (ABC) is a leading commercial bank and an essential part of China's financial system. Strong funds and comprehensive services have not only won the trust of a large base of customer accounts, but the bank has also grown with its customers to become one of the biggest banks in China today, with branches across China in both urban and rural areas. ABC service branches across the country use state-of-the-art technology, and they constructed China's largest electronic financial network as the bank's data center base nationwide, successfully implementing a nationwide networking operation for personal business, settlement business and cash management businesses.

As business expanded, demand for x86 server deployment increased, and server management at the nine district branches in Guizhou Province became increasingly important. Local branches faced technical challenges if they continued operating servers independently, however, establishing consistent control and management standards across the branches was a challenge because of varying technician expertise at each location. Furthermore, with each branch operating servers independently, reliability and availability couldn't be guaranteed. In case of downtime, re-deployment and maintenance caused a significant disruption, yet branches considering backup servers found that cost too high.

Meanwhile, front-counter systems were deployed on SuSE Linux 8.0, which could only support up to 250 counter clerks concurrently, and server utilization was as low as approximately 18%.

Deploying server virtualization applications and centralizing the bank's front-counter systems previously spread across the province solved the bank's problems at once. Distributed front-counter application servers were centralized and concerns about large technical skill gaps across branches have been eliminated. Overall centralized management, upgrading, and maintenance has improved the tech-support standards and guaranteed constant and stable bank operations.

- Centralize provisioning and management of front-counter application servers
- Better server utilization
- Rapid system upgrades and maintenance and reduced downtime
- High availability and system reliability at the lowest possible cost
- Reduce personnel cost by decreasing the dependence of professionals technicians)
- Reduce server numbers to save data center space and reduce power and cooling costs.

ESX Server Makes Server Consolidation a Reality and Streamlines Management

After initial testing and site trials, ABC Guizhou chose VMware's virtualization solutions to address their server consolidation and central management issues.

Intel Xeon Dual-Core Processors provide hardware platforms and expansion opportunities for VMware virtualization, and Intel virtualization technology also provides VMware hardware virtualization support. The Intel Xeon Dual-Core processors combine scalability, hardware-aided virtualization, and the most common industry virtualization software applications, effectively increasing VMware virtualization solution's high availability as well as server utilization.

With relevant data from branch locations centralized, the new front-counter systems now serve as front end application terminals in charge of I/O of the data only, thus having rather simple and uniform architecture. At first ABC Guizhou did not use back-end Storage Area Network (SAN) solutions to provide high system availability and implement relocation, but used a cold-backup and cross-backup for high availability and reliability.

ABC Guizhou used ten Intel Xeon HP DL380 G4 to deploy physical servers for the front-counter systems and installed ESX Server 3.0. Given the sensitivity of the banking system, the bank installed multiple application virtual machines, only some of which are in regular operation. Each server has on average five application virtualization instances installed, of which three are in operation, and the other two are backups. One of the ten physical machines is used as cold backup, its virtual machine deactivated under normal circumstances but which instantly takes over the operation in the instance a physical machine fails. This provisioning strategy offers greater system reliability.

VMware Products in Operation

- VMware ESX 3.0
- VMware Virtual Center
- Operating System: SuSE Linux 8.0, Windows Server 2003
- Virtual Application: front-counter systems
- 10 HP DL380 G4 Servers with Intel® Xeon® Dual-Core Processors
- 32 servers were integrated. 50 business virtual machines were installed. Multiple virtual machines were also deployed in the testing and development systems.
- Increased server utilization from 18% to over 70%

- The front-counter systems are identical aside from different IP configurations. Multiple servers can offer cross-backup for one another, thus increasing server availability.
- With three virtual machines activated on each server, fewer physical servers are required and the overall data center space and resource demands are reduced. In the original structure without virtualization, 32 servers and three cabinets were required for province-wide centralization. Now, with the new solution, only ten servers and one cabinet are required, saving significant space and reducing power consumption and cooling system demands.
- Each local branch previously employed one or two technical support engineers. After virtualization adoption, only 2 support professionals are required for the entire province, significantly saving on labor costs.
- After adopting VMware's virtualization solution, server utilization rose from 18% to 70% on average.
- When the virtualization system officially began operation in July 2007, network operators did not notice any difference which means the adoption of virtualization system did impact on the bank's normal business operations.
- When a server memory error caused a physical server to crash, the VM system on the backup server was activated and it only took 15 minutes for ABC Guizhou to switch over to the new system, avoiding downtime, disruption, and customer complaints.

Technical Essence: Utilizing Server Virtualization Technology, ESX Server Makes Server Consolidation a Reality

For banks, front-counter systems are direct contact point with customers. Although no significant data processing is involved, these systems are critical for maintaining high bank service levels. System stability, operation, maintenance, and upgrading is essential to the entire banking system. Because ABC Guizhou had finished collecting data from all branches, key networking links were ready to be integrated into the front-counter systems. Meanwhile, new systems were mandated by ABC head office without considering legacy systems integration.

Deploying VMware's virtualization solution offered many advantages, including server integration, saving data center space, reduced cost of server maintenance and labor, and increasing system availability and reliability. The past few months of operation have proven that the adopting virtualization technology at ABC Guizhou has been a great success. The transition has been completely transparent to over 500 network operators who felt no impact on in their daily operations, setting an excellent example for the application of server virtualization technology.

The next step for ABC Guizhou will be to further upgrade their systems, adopting back-end SAN storage solution and utilizing advanced VMware ESX Server enterprise-level features such as high availability (HA), online relocation, and disaster restoration and recovery. Luo Dong-hui, Deputy Director of the Science and Technology Department at Agricultural Bank of China, Guizhou said, "We are fully experiencing the benefits of this new technology since it helped us centralize the management of our systems. Furthermore, business continuity is guaranteed during system upgrade and maintenance."

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