

Mongolia Public Security Department Case Study

Nexenta Enables Expansion of Fully Virtual Private Cloud for Inner Mongolia Public Security

Inner Mongolia Autonomous Region, China
www.nmgat.gov.cn/
Government/Public Organizations/Emergency Services



Summary

Challenge: To meet the growing demand for system resources by using cloud computing and virtualization technology to form an integrated and virtualized storage pool

Solution: NexentaStor High Availability (HA) Cluster Fiber Channel plug-in

Platform: SuperCloud, VMware, Oracle

Use Case: Unified virtualized storage for cloud environment

Benefits:

- Full storage functionality at a TCO 30 percent less than competitors'
- Multiple data protection technologies for full data security
- Freedom from vendor lock-in
- Average latency time of less than 1 millisecond

Business Overview

As the regulatory authority in charge of public security in the Inner Mongolia Autonomous Region, the Inner Mongolia Public Security Department oversees division-level institutions including publicity, police affairs inspection, economic crime investigation, public security management, border management, criminal investigation, immigration, fire, and vigilance and security.

After years of construction of Phase I of its Police Communication Network and Computer Information System called "Golden Shield," the Inner Mongolia Public Security Department established a large-scale hardware platform and multiple application information management platforms.

Challenges

Since the launch of Golden Shield in 2003, the application information management platform has been challenged by the continuous development and growth of business, as well as the tremendous impact of Internet development on business forms. Traditional IT development has been unable to meet the demand, resulting in more and more information silos, a serious shortage of operation and maintenance resources, and an extremely low resource utilization rate.

For the new phase of Golden Shield, the Inner Mongolia Public Security Department needed to integrate infrastructure resources using cloud computing and virtualization technology to form a unified virtualized resource pool that could more efficiently support the network information research and judgment system, the population information management platform, the Web server, middleware server, and other applications, data, and business databases.

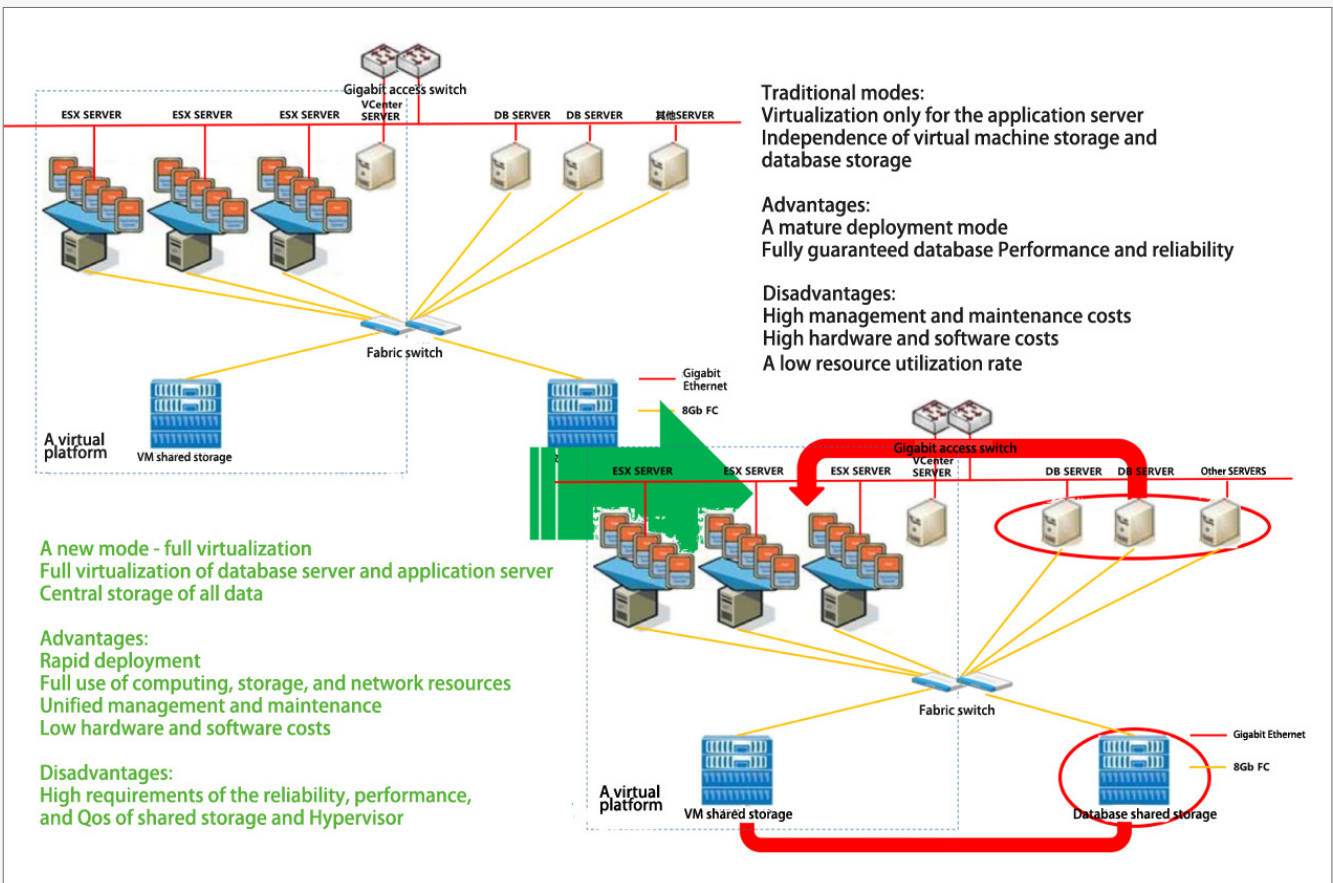
Solution

After comparing and testing a variety of storage solutions, the Inner Mongolia Public Security Department chose NexentaStor unified storage as the central data storage for its VMware virtual machines and Oracle databases to support the stable and efficient operation of its entire private cloud environment. NexentaStor is a highly reliable, high-performance, and cost-effective unified storage system that provides FC, iSCSI, NAS, and other services. As a true enterprise-class storage operating system, it has passed VMware's official compatibility and VAAI hardware acceleration support certification.

Both the Inner Mongolia Public Security Department and the municipal public security bureaus use the SuperCloud E7000 ultra-high-density blade server as their computing environment and deploy VMware ESXi 5.5 as a unified virtual platform to support a number of Oracle database

instances and multiple database applications. All virtual machines, databases, and application data are stored in NexentaStor using high-speed fiber channels for unified storage, management, and access.

By deploying SSD, 15K SAS, and 7.2K NL-SAS disks, NexentaStor provides a highly efficient, high-performance, and cost-effective hybrid storage pool. Hot and cold data are stored in a tiered manner and accessed by SSD acceleration / unloading hot data. It also maximizes data security using data protection mechanisms including RAIDZ, CheckSum, self-healing, and mirroring.



Deployment Topology and Comparison with Traditional Deployment Modes

Benefits

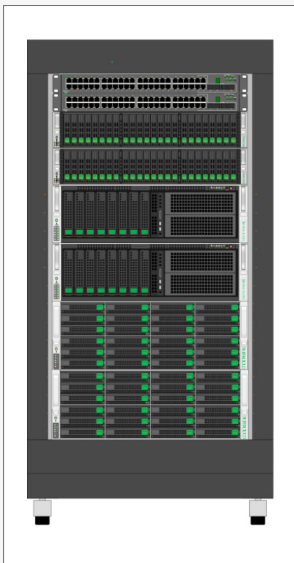
Two years after deploying its new solution, the Inner Mongolia Public Security Department is highly satisfied with the quality of the solution and its operations. To support the fully virtual private cloud environment, NexentaStor delivers services including FC, iSCSI, and NAS, as well as advanced functions such as snapshots, cloning, remote replication, compression, and deduplication – all at a TCO that's 30 percent less than its competitors.

NexentaStor compresses online data, significantly reducing the disk load and accelerating the deployment of virtual machines, cloning, migration, and other operations. This can increase speed by more than 200 percent.

The powerful hybrid storage pool ensures the normal load operation of a variety of business in the most cost-effective way. Random I/O, sequential I/O and mixed I/O all show good performance and stability. The average latency time is less than 1 millisecond.

System Configuration

- Standard 128G enterprise-class memory for all the servers
- Eight 8GB FC cards and four 10GbE network cards
- Forty 600G 15K SAS drives and twenty 3TB 7.2K NL-SAS (enterprise) drives
- Four 200G SSD caches
- Dual-processor control and active-standby mode



Challenges of full virtualization

- How to ensure the stable 7x24 operation of storage services?
- How to ensure data security and integrity?
- How to ensure the performance of critical databases?
- How to meet the performance requirements of different applications?
- How to store different types of data in the most effective way?
- How to use the storage space in a cost-effective way?
- How to achieve unified management in a simple and efficient manner?
- How to ensure future capacity expansion?



Centralized storage needs to effectively solve three key demands: stability and security, high performance, and high efficiency



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