

## VMware Case Study

### Industry

Education

### Location

Shanghai

### Key Challenges

- Inefficient use of IT resources
- High operational management pressures
- Storage could not be easily aligned to changing application SLAs
- Storage cannot be scaled easily
- Rising storage costs

### Solution

By using VMware server and storage virtualization solutions, like vSphere and Virtual SAN, the Shanghai Police College has built a highly efficient and flexible storage platform at a fraction of the cost.

### Business Benefits

- Enable hardware consolidation and lower footprint
- Achieve a dynamic, flexible storage architecture
- Ensure data reliability and security
- Drastically lower TCO



## VMware Enables The Shanghai Police College to Build a High-performance Storage Architecture

Shanghai Police College, founded in 1949, is the only college in Shanghai that offers full-time programs for individuals wanting to join the police force. It is also the only police academy in China to be included by the Ministry of Education and the Ministry of Finance as part of the first cohort in the Model Higher Vocational Colleges scheme. During the past 65 years, more than 34,000 students graduated from this college and started to serve citizens all over China. This College has also provided professional training to nearly 300,000 polices, known as the “cradle and melting-pot of the police force.”

In the early days, the Shanghai Police College faced some IT challenges like inefficient utilize of IT resources, inflexible storage options and high costs as well as high operational management pressures. In 1997, the College became one of the first higher education institutions of China to use VMware storage virtualization solutions for hardware consolidation and rebuilding IT information infrastructure. By using VMware server and storage virtualization solutions, they greatly improved their operational processes, simplified IT management and reduced infrastructure costs.

### Challenges

The Shanghai Police College has focused on improving its IT management in order to enhance work efficiency and business ability. As the College continued to improve its teaching processes and syllabus content, more and more tasks required computer processing. Step by step, the College built some systems related to its own needs. As IT technologies improved, the College become more and more relay on IT. They obtained lots of valuable information assets alone the way, which included more than 160 Dell and IBM servers running Windows and Linux OS. Those servers enabled the operation of various systems used by the College, such as the remote learning system, various training systems, library applications, teaching systems and office-automation systems. Yu Er, senior IT engineer at the Shanghai Police College told us: “As the College joined the public Official HR system, we are facing more stringent requirements and higher personnel costs. We can only assign 1 to 1.5 personnel with the IT management responsibility, and

with the help from 1 or 2 outsourced IT technicians and 1 administrative staff. This small team has no more then five members, but need to manage all the IT operations and basic infrastructure for the entire college. The high rotation and attrition rate among outsourced IT technicians and administrative staff makes already stressful situation even worse.” Under such circumstances, the College looked to emerging IT technologies in order to enhance its management processes and operational efficiency.

Previously, VMware vSphere server virtualization technology has already help the College to significantly enhance server utilization and its operational management. However, the College still facing severe storage problems. Due to the specialty of the education industry, different applications posed different requirements in terms of storage. For instance, to ensure that the College’s teaching activities can proceed smoothly, teaching systems often require a high service-level agreement (SLA), while library applications require more storage space but have normal performance and

## VMware Case Study

*"By using VMware vSphere 5.5 with Virtual SAN, we have simplified our management and operational processes while reducing costs, so we can move a steady step toward SDDC and the 'Educational Cloud'."*

-- IT Office of  
the Shanghai Police College  
Senior Engineer, Yu Er

### Key Software

- VMware vSphere® 5.5 (the virtualization and cloud infrastructure platform)
- VMware® Virtual SAN™ (the software-defined storage software)

### Virtualized Applications

- Teaching and library applications
- Knowledge and case database
- CCTV Video Library

usability requirement. If a unified storage system were to be used with these disparate applications, the College would face high costs and severe resource wastage because the SLA would be based on the highest requirements. At the same time, with only a single functional and performance setup tied to a single piece of storage hardware would not meet the needs of all applications. If different centralized storages were to be deployed for different applications, since administrators had to deal with lots of distributed storages, this would make the management even more difficult. Besides, centralized storage also has its own expansion problem, since the storage capacity cannot be expanded alone with the enhancement of server processing capability. At the same time, when pursuing more centralized storage, the customer may be "kidnapped" by the hardware vendor and losing negotiation advantages.

Hence, the Shanghai Police College required a cloud-based infrastructure and management platform that can improve resource utilization and reduce management burden. Therefore, the College can achieve a high flexible and effective storage architecture.

### Solution

After a detailed survey and evaluation of the market, the Shanghai Police College chooses the server virtualization and storage virtualization solutions from VMware--a mature market player--in order to address its IT challenges.

Before that, the VMware vSphere® server virtualization software has been used by the College to virtualize most of the applications on hand.

This leads to higher resource utilization and bring a new model very different from the traditional physical infrastructure. Besides, they extended their virtualization environment to more applications, and enabled storage virtualization too.

Senior engineer Yu said: "In the very beginning, we just simply believed that VMware has the most innovative virtualization technologies, and it can provide the best technical support to us. Besides, its R&D capabilities can bring us a very bright future. Or in another words, VMware take a very innovative

step to enable the virtualization in PC servers, a concept comes from IBM's minicomputer. Over the time, we have indeed take lots of advantages out of this server virtualization. So when thinking of all the benefits, we are willingly to try software-defined storage, we do trust VMware can help us on this." Finally, by installing VMware vSphere 5.5 Enterprise version in five dual-core servers, the Shanghai Police College manage to extend their environment with more virtualized infrastructures. They also used VMware® Virtual SAN™ to build a storage pool, which can provide disk drive management for servers. VMware Virtual SAN can provide a high-performance new storage layer to optimize the virtualized environment, so the users can benefit from ease of use, high performance, resilient and less TCO. Virtual SAN is the next key component of the Software-Defined Data Center which VMware is trying to accelerate the building process of it now. Different from traditional storage expansion methods, VMware Virtual SAN can set up storage configurations based on application SLAs, manage from a web client, and use the SAS and SSD drives in the ESXi host cluster to pool data storage for VMs.

In this deployment, each server was equipped with 2 SSDs and 10 HDDs, and an SD card to install ESXi. Because Virtual SAN comes with hard drives pre-installed, the end user doesn't have to know all the details before using it. As for the administrators, the Virtual SAN is easy to install and configure. By taking the operations and troubleshooting training provided by VMware, they can certainly provide better user experiences.

### Implementation Result

Up till now, the VMware Virtual SAN project is successfully done, the Shanghai Police College is migrating and verifying several digital library applications and deploying new systems. These systems and applications include the China Knowledge Resource Integrated Database (CNKI), the CCTV Video Library and the PSB Case Database. As the first one in China to deploy VMware Virtual SAN in its production environment, the College can benefit from:

**Configurable storage by means of application SLAs.** By using the storage profiles integrated with Virtual SAN, storage configurations are subject to the SLA and can be automatically adjusted and optimized to maintain load balance on a dynamic basis. The administrator can configure storage settings such as capacity, performance and usability for each VM according to the right policy.

**Scale-out and scale-up ability.** Virtual SAN is a policy-driven product, which allows for the easy expansion of storage capacity by adding hosts to the cluster or disks to the host.

**Enhanced management processes.** The seamless integration of Virtual SAN, vSphere and vCenter enables the user to perform all kinds of managing and monitoring tasks to storage from the vSphere Web Client. Meanwhile, Virtual SAN can automatically perform a number of storage tasks that would otherwise be performed manually. This helps to simplify the storage provisioning and management processes.

**Ensure data security.** The use of distributed RAID and replica redundancy technologies can ensure that, in the event of a disk, host or network failure within the Virtual SAN cluster, there would not be any data loss or VM downtime in such elastic environment.

**Saving significant cost.** By using build-in storage drives in the servers, Virtual SAN can significantly lower the cost of drive procurement and expansion, with TCO reduction up to 50%. Additionally, you can choose a server of any model and any brand, as long as it can be found in the official Virtual SAN compatibility list. This means that you can handle different types of servers in a single system and avoid being tied to a certain hardware vendor.

### Looking Ahead

The Shanghai Police College will continue to extend the use of VMware Virtual SAN in its environment in the future. The College is also considering use software-defined network technologies to build the foundation for its "Educational Cloud", enabling software-defined in compute, storage and network aspects.