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SUCCESS STORY

Hitachi Storage Solutions at Work

Shanghai Jiao Tong University

INDUSTRY	Education
SOLUTIONS	Storage Management and Business Continuity/Disaster Recovery

Hardware—Hitachi TagmaStore® Adaptable Modular Storage Model AMS500

Software—Hitachi Copy-on-Write Snapshot, Hitachi HiCommand® Dynamic Link Manager, Hitachi ShadowImage™ In-System Replication, and Hitachi TrueCopy™ Synchronous software and Hi-Track® "call-home" service/remote maintenance tool

"The SAN system with the [Hitachi TagmaStore® Adaptable Modular Storage] model AMS500 as its core has provided high stability, reliability, scalability, and ease-of-management for our storage environment in the Network Information Center."

Mr. Huang Baoqing
Director of Network and Information Center
Shanghai Jiao Tong University

上海交通大學 Shanghai Jiao Tong University

Hitachi Data Systems

Shanghai Jiao Tong University Eases Administration and Enables Growth through Hitachi SAN Solution

As Shanghai Jiao Tong University's data center demands grew, its diverse storage systems were unable to keep up, prompting the university to seek a better-integrated, more expandable storage system. Hitachi Data Systems provided the answer with a solution built on Hitachi TagmaStore® Adaptable Modular Storage and Hitachi software.

Evaluating Storage Demands and Choosing the Solution

Shanghai Jaio Tong University (SJTU) has a mix of server and storage solutions to provision e-mail and network storage—a common scenario. But as demands on those systems grew, the network data center staff realized its diverse resources could not be easily managed. Plus, it was becoming increasingly difficult to support growth in storage and access demands, supply disaster tolerance and guaranteed system continuity, and provide hierarchical storage management for near-line backup.

After much work comparing products and consulting with storage experts, the solution became clear: the university needed a Hitachi storage area network anchored by Hitachi TagmaStore® Adaptable Modular Storage model AMS500.

The complete solution deploys two AMS500 models, one of which has fiber-optic circuit disks while the other has a Serial ATA disk cabinet used for near-line backup. Each AMS500 is configured with Hitachi ShadowImage™ In-System Replication software bundle to replicate the local volume, Hitachi Copy-on-Write Snapshot software to create backup snapshots, and Hitachi TrueCopy™ Synchronous software to implement disaster tolerance. Of the four front-end ports on the AMS500, two are used to connect to the server and two are dedicated to TrueCopy software.

The critical e-mail and network storage space server is configured with a twin-channel host bus adapter (HBA) card and runs the Hitachi HiCommand® Dynamic Link Manager software to balance traffic on multiple server channels and perform automatic transparent switchover of faulty channels. Two McDATA 4500 fiber-optic switches also connect the AMS500 and serve to guarantee that the system has no single point of failure.

Simplified Management, Plus Automatic Optimization

The Hitachi Java-based storage management software, Hi-Track® "call-home" service/remote maintenance tool provides critical configuration management, fault management, alarm and performance management, and information statistics functions. If an error occurs in either AMS500 model, it displays the fault location and informs administrators via e-mail, so they can quickly respond.

The Hi-Track tool monitors and controls the AMS500 systems. This software can also monitor and control third-party fiber-optic switches, collect operating data from these devices, analyze error codes, perform remote diagnosis, and report errors to relevant experts. Its Web interface makes operational reports on device status clear at a glance, providing the exact location of the error so that system administrators can easily monitor and control the entire system remotely.

Because the AMS500 models each support up to 512 servers via their 128 virtual ports, there's capacity to spare and thus no extra costs are incurred when adding new servers. Each virtual port manages its own LUN and can have its own LUN0, making it possible to boot from the SAN. Each server can be allocated multiple virtual ports, making it possible to implement automatic channel switching in concert with the HiCommand Dynamic Link Manager software. Each virtual port can also be allocated to multiple servers, so that the network data center staff can implement server clusters based on shared external storage.

The AMS500 models also automatically optimize I/O based on the specific needs of various operating systems. When creating new volumes, the AMS500 models automatically complete optimization without the need for any human intervention beyond a few basic configuration selections.

A key advantage to the Hitachi Data Systems solution is its support for heterogeneous environments while still providing unified management. For example, the AMS500 systems support connection to a variety of different servers, including the university's original IBM® and Sun Microsystems minicomputers and various x86 servers used at the network data center. The HiCommand Dynamic Link Manager software has versions suitable for different platforms; therefore, the university can couple the AMS500 systems, IBM AIX® servers, and Sun Solaris servers with one another to implement automatic switchover of faulty channels.

Better Disaster Recovery and Data Protection

To achieve continuous operation of the SJTU e-mail system, the network data center relies on TrueCopy Synchronous software for synchronous replication of both the original and remote replica volumes. If a fault occurs on the original volume, the server can quickly upload the duplicate remote volume and guarantee uninterrupted operation of the e-mail system. Once the original volume is restored, TrueCopy software can restore data from the duplicate remote volume back to the original volume.

In the AMS500 systems, faulty parts can be replaced and disk space can be expanded online—without powering down and without affecting server I/O status. When coupled to the operating system's logical volume management functions, the added storage can be allocated as required. The result: guaranteed real-time response and reliability that keeps Shanghai Jiao Tong University at the head of its class.

"We are highly impressed with AMS500's proven ability of supporting multiple hosts running different operating systems. We regard the AMS500 as exactly fit for a modern university environment, and we are planning to add more heterogeneous hosts to our SAN environment."

Mr. Huang Baoqing
Director of Network and Information Center
Shanghai Jiao Tong University

Shanghai Jiao Tong University

Shanghai Jiao Tong University (SJTU), formerly the Nang Yang Public School, was founded in 1896 by Mr. Sheng Xuanhuai. It is one of the oldest universities in China. Today SJTU boasts 20 academic schools—with 60 undergraduate programs, 152 masters-degree programs, 93 Ph.D. programs, and 16 post-doctorate programs—supported by more than 1,420 professors and associate professors, with enrollment of some 38,000 full-time students. Of all the academicians of China's Academy of Sciences and Academy of Engineering, more than 200 are the alumni of SJTU.

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