Success Story

Seoul Broadcasting System Satellite TV Goes Digital With Two SANs And LSI StoreAge™

EXECUTIVE SUMMARY

CHALLENGE

- Support end-to-end digital satellite broadcasting by consolidating storage into two SANs
- Meet high throughput and availability requirements using affordable SAN components

SOLUTIONS

- Aggregate the processing power and throughput of multiple storage arrays using LSI StoreAge SVM

RESULTS

- Uses inexpensive storage arrays to provide necessary capacity
- Improved application performance and availability via load balancing and path failover
- Exceeded throughput requirements by striping data across multiple storage arrays

Satellite Broadcaster Achieves High Throughput Using Inexpensive Storage and LSI StoreAge SVM™

In early 2002, the Seoul Broadcasting System (SBS), one of Korea's largest TV and radio broadcasters, was in the process of launching Korea's first end-to-end full digital broadcasting system through its SBS Satellite TV division. Known as the Digital Satellite Automation System (DSAS), the first channels on this new service were to be the Golf and Drama channels.

In order to successfully deliver their new service, SBS knew early on that they would need an advanced data storage solution that could meet their highly demanding requirements in receiving, editing and delivering their broadcasting signals as planned. The key to their IT infrastructure was the ability to share a common data repository among multiple groups of servers, each running different applications.

After evaluating various storage architectures, SBS chose to implement two separate Fibre Channel-based storage area networks (SANs) – one for each channel – and to build the SANs around groups of servers that ran different types of applications. The first server group – known as the ingest servers - receives the satellite signals in MPEG-2I format at up to 60Mbps. Their role is to capture the incoming transmissions in streaming mode. The second server group run the editing applications, which are used to prepare the video and audio content for broadcast. The third and final server group contains the playout servers that transmit the content out over the satellite network for delivery to subscribers.

While the use of SANs was a new approach for SBS, and held the promise of offering the lowest overall cost of ownership, there was still a piece missing. While a SAN would consolidate their data and allow each group of servers to access a common repository of data, it was not possible to achieve the data throughput rates needed using a single storage array. In order to capture, edit and transmit multiple simultaneous streams of data, it was determined that multiple storage arrays would be needed, and that their processing power and bandwidth would have to be aggregated to achieve the desired performance. This threatened to significantly increase the budget allocated for the project. To solve the problem, SBS turned to LSI StoreAge SVM (Storage Virtualization Manager).

The key features of SVM that attracted SBS to the solution include:

- Creating very large volumes (each over 1TB in size), which are considered optimal for use in video applications
- Virtualizing storage across multiple inexpensive storage devices, and striping the data across them to achieve high data throughput and availability

- Providing a centralized management capability across multi-node SAN environments
- Improving server throughput and data availability via I/O load balancing and path failover among multiple Host Bus Adapters (HBAs) in each host

SBS established two separate SANs – one for the Golf channel and one for the Drama channel. Each SAN consists of at least eight servers, four storage arrays with up to 7.5TB of capacity, and two LSI StoreAge SVM™ units for redundancy. Since each server transfers data at 30-60Mbits/sec each, each SAN needs to sustain data throughput rates exceeding 100MB/s. To achieve this with the preferred storage arrays, SBS used SVM to create large volumes between 1.25TB and 1.6TB each by "pooling" the LUNs from each storage array into virtual volumes, then striped the data across the array controllers to achieve maximum throughput. Once captured by the system, the video and audio feeds can be accessed and edited immediately from multiple editing stations, and the finished project can then be played out straight to air. Unlike conventional installations, where the ingest and playout servers use completely separate storage, in the SBS SAN there is no need to transfer material from one system to another. Instead, the servers all access the same material directly from the SAN. Once a clip is aired, it is archived for a pre-defined period of time, then automatically removed to free up space on the disk arrays to accept new material.

Since its debut in March of 2002, the system has been running 24 hours a day without interruption. The key benefits of adding SVM the SBS SANs have been the cost-effectiveness of the overall solution, the ability to meet the high performance requirements, providing fault tolerance and load balancing by supporting multiple HBAs in each host server, and the elimination of any bottlenecks in the SAN that could impede data throughput.

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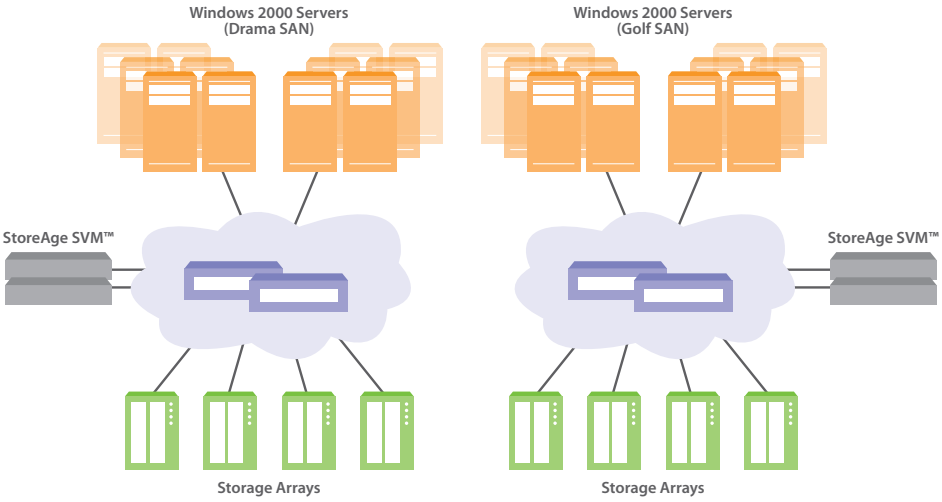

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