



archipelago™

## The Archipelago Exchange

*"The combination of reduced capital expenditure and management costs has more than compensated for our investment in VERITAS SANPoint Control and enhances our competitive advantage by enabling us to respond quickly to the dynamically changing requirements of our marketplace."*

Steve Rubinow, CTO, The Archipelago Exchange

### Company Profile

- First open, all-electronic stock exchange in the U.S.
- World's largest all-electronic stock exchange
- Strategic alliance with the Pacific Exchange (PCX)

### Business Needs

- Reliable and cost effective storage solution to support unpredictable storage requirements
- Provide high service levels for key applications

### Environment

- Applications: Exchange, SQL, File Services, Domino
- OS: Windows 2000, NT 4.0, SuSe Linux, NDMP
- Servers: M/M, Hitachi
- Storage: Storage arrays from HPQ, EMC, Hitachi
- Switches: Brocade 12000 with 128 ports in primary site
- Databases: Oracle
- Terabytes: eight

### Products Used

- VERITAS SANPoint Control
- VERITAS Cluster Server
- VERITAS Volume Manager

### Business Benefits

- Improved response time enhances competitive advantage
- On-demand allocation of storage and channel capacity
- Flexibility to add disaster recovery, data replication, and speed enhancements online

### The Situation

The Archipelago Exchange is the nation's first totally open, all-electronic stock exchange and a recent entrant in an industry dominated by firms established more than a century ago. An alliance with the Pacific Exchange has created a marketplace that features all-electronic trading, openness, and speed, leveling the playing field for all investors. In April 2003, Archipelago rolled out OTC symbols and is now the world's largest all-electronic stock exchange.

Archipelago relies on technology to compete effectively and must deliver fast, consistent, and reliable service at minimal cost. Switching cost for clients (brokerage firms, institutional investors, etc.) are low because they can move their business from one provider to another with just a few keystrokes.

Archipelago has 128-port switch capacity for core storage assets across its Chicago and New York infrastructure. Brocade 12000 switch cores are used in Chicago to allow growth and enhance capacity. In addition to existing HPQ and EMC storage arrays, eight terabytes of Hitachi storage run exchange and related processes.

"We realized that SAN complexity could be a barrier to monitoring, management, and disaster recovery," explains Steve Rubinow, CTO at Archipelago.

To meet its storage requirements, Archipelago needed to resolve three major challenges:

- Because key applications require high service levels, the storage solution would need to be extremely reliable, and data would have to be secure at all times.
- The storage solution would have to support dynamic growth of applications, and dramatic and unpredictable increases in storage requirements.
- The storage solution would need to be cost effective in order to preserve competitive advantages.

Archipelago faced several risks in their project. Because products from multiple vendors were used, problem resolution time might be significant, service to customers could be interrupted, and the storage solution might be too expensive to implement, manage, and maintain. Additionally, if problems increased, operational costs would also increase. Finally, implementation of the storage utility implementation would need to be invisible to end-users.

## The Solution

“While many in the storage industry talk about pooling heterogeneous storage on a SAN to increase storage utilization, few companies have actually implemented such a solution,” says Rubinow. “Archipelago has.”

Archipelago chose VERITAS SANPoint Control to provide centralized and scalable storage provisioning and to automate monitoring and management of the storage environment. SANPoint Control’s policy-based management facilities would enable automatic responses to alerts and performance data, and end-to-end path management features would provide troubleshooting capabilities to query storage paths from device to device.

“We mitigated the risks of our project by designing architectures that could scale in near real time while being able to monitor components throughout the trading day,” says Rubinow. Scaling techniques included extending the number of nodes in clusters to handle increasing trading loads, adding disks dynamically to databases as they grow, and adding fibre ports and disks to Hitachi cabinets as requirements dictate. Archipelago also created a SAN-based storage utility using arrays from Hitachi, EMC, and HPQ. The company’s original storage strategy dedicated arrays to applications and server groups, leading to low, uneven storage utilization. By consolidating storage and serving multiple applications from the pool, Archipelago is now able to allocate storage and channel capacity on demand.

## The Success

Since its implementation of VERITAS SANPoint Control, Archipelago has increased storage utilization levels on its Hitachi array from 25 percent to 85 percent: seven terabytes of the current eight-terabyte capacity are allocated. VERITAS SANPoint Control has also enabled Archipelago to automatically monitor allocation levels and purchase additional storage on a “just-in-time” basis.

Other benefits of VERITAS SANPoint Control include ready monitoring and management, storage growth and fiber capacity as needed, zero application downtime, and enhanced disaster recovery capabilities.

“Archipelago relies on strong partnerships with and between its vendors to ensure that its multi-vendor environment operates efficiently and continuously,” says Rubinow. “We are early adopters of hardware and software storage products, and provide valuable input to our vendors, including VERITAS and Hitachi.”

**VERITAS Software Corporation**  
Corporate Headquarters  
350 Ellis Street  
Mountain View, CA 94043  
650-527-8000 or 866-837-4827

For additional information about VERITAS Software, its products, or the location of an office near you, please call our corporate headquarters or visit our Web site at [www.veritas.com](http://www.veritas.com).