High-Availability Mac® Connectivity to IBM® System Storage™ SAN Volume Controller

Apple based storage solutions are evolving into more sophisticated, high-end environments requiring multiple users to share access to large amounts of storage while maintaining the high-throughput performance rates required for the rich media and content applications they serve. With multiple host workstations sharing the same "pool" of storage, manageability, sustained throughput performance, minimal latency, and most importantly – a highly available redundant storage system—are all critical design considerations.

When organizations lose access to their storage due to migrating data needs, changes to the storage infrastructure, hardware malfunctions or basic maintenance, the cost of storage downtime can add up quickly. Businesses concerned with this kind of downtime are moving to higher-end storage solutions that feature redundant components with multiple connection paths between the workstations and the storage.

The Solution

ATTO Technology has developed a high-end, high-performance, completely redundant, Mac storage connectivity solution for the IBM Storage Volume Controller (SVC). The specialized multipathing driver was designed to enhance workflow and increase productivity by keeping content available in real time for multiple users while minimizing administrative needs.
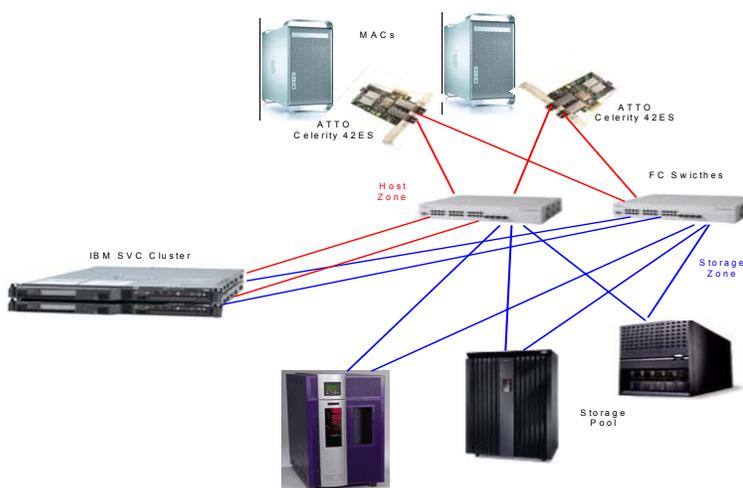
The IBM SVC sits between the workstations and one or more storage systems. It combines the physical storage into a virtual pool, essentially decoupling the workstations from the storage. This allows for changes to occur without disrupting the operation of host applications. Not only does it reduce the cost and complexity of managing storage, it can also help improve business continuity, storage utilization and personal productivity.

The SVC product offers a wide range of configuration options. Multiple SVC nodes can be clustered together to create highly redundant systems. Each node provides four 4-Gb Fibre Channel connections. With the support to scale up to 1024 host servers, room for growth is provided as demanded.

For a completely redundant storage system, multiple paths from the workstations to the storage must be in place. Windows and UNIX operating systems include general support for redundant storage network infrastructures, or multipathing. The Apple operating system also provides capabilities for high-availability systems, although they tend to be proprietary to Apple storage products and limited in its functionality and management capabilities.

The IBM SVC uses a minimum of two nodes per cluster. Virtual storage LUNs are then assigned to this cluster for multipath configurations. An ATTO Celerity dual- or quad-channel host adapter is used to provide Fibre Channel connectivity to the clusters. A custom host adapter driver developed by ATTO allows the Apple operating system to recognize each SVC node controller as an independent device ensuring maximum bandwidth to each controller. During normal operation, load balancing is used to send data through both of the nodes for optimal performance. In the event of a front-end path failure, or if a node needs to be taken off-line for field service, the Celerity host adapter will route all traffic through the

remaining path for continued access to the data. Once the processor is back on-line, data will again be load balanced across ports. All this occurs without the need for user intervention.

ATTO Configuration Tool is the Java based management interface used to configure and monitor the multipathing functionality. It will display every connection path between the workstation and the virtual LUNs available to that workstation. Users can configure each of these paths as (1) preferred (2) alternate or (3) disabled. The following list highlights some of the features of the ATTO multipathing driver for Mac :

- Full LUN level multipathing support - load balancing and failover at the LUN level

- Ability to steer read and writes resulting in significant performance improvements

- User choice of load balancing algorithms—pressure, round robin, queue depth

- Statistics monitoring at a path level. Read/Write throughput (MB/sec), data read/written, command count, error count.

- Statistics monitoring at a LUN level. Status and total transfer count (MB).

- Provides for visual indication of each path state at a LUN and target level (primary, alternate, disabled)

- Path locate feature to help support link diagnostics and troubleshooting

- Reports adapter parameters = WWNN, WWPN, Port ID, link state, topology, etc.

- Reports target parameters = Target ID, WWNN, read state, write state, link state

- Easy set up wizard

- Continued support for the latest versions of the Mac OS X

This high availability storage solution for media also supports multiple workstation SAN environments. Apple's Xsan or Quantum's StorNext software can be used as the share file system. The File System software controls read/write access permissions to the shared LUNs, allowing for collaborative workflow environments.

ATTO's years of digital media industry experience with high-bandwidth environments ensures that Celerity Fibre Channel host adapters are tuned for optimal performance. In the past, digital media customers were forced to choose between; high performance, high-availability or consolidated shared data, when it came to implementing their storage solutions. As the digital media market continues to expand, the requirement to support all of these needs is becoming more prevalent. The combined capabilities of IBM and ATTO Technology deliver a solution to meet highly available, highly scalable, easily manageable and high performance requirements.

Key Components

Celerity FC-41ES, FC-41XS, FC-42ES, FC-42XS or FC-44ES Fibre Channel Host Adapters

- Single-, dual- or quad-channel 4-Gb Fibre Channel Host Adapter

- Specialized FC device driver for use with IBM SVC

- ATTO Configuration Tool for simple installation and management

IBM System Storage SVC

- Enterprise-class storage virtualization solution

- Simplifies management—single point-of-control for heterogeneous storage resources

- Improves storage utilization and application availability

- Designed to avoid single points of hardware failure

- Pools storage capacity of multiple storage vendors on the SAN—over 120 systems from IBM, EMC, HP, HDS, Sun, Dell, NetApp, Fujitsu, NEC, Bull

Requirements

- ATTO Celerity FC-41ES, FC-41XS, FC-42ES, FC-42XS or FC-44ES 4-Gb Fibre Channel Host Adapters

- ATTO custom multipathing Mac driver for IBM SVC (available at www.attotech.com/ibm)

- ATTO Configuration Tool for IBM SVC (available at www.attotech.com/ibm)

- IBM System Storage SAN Volume Controller

- IBM supported storage system

- For multiple workstations: Apple Xsan or Quantum StorNext SAN management software

- Apple Xserve, Mac Pro, or Power Mac G5 workstations

- Mac OS 10.4.X— 10.5.X

ATTO
ATTO Technology, Inc.

For more information or to purchase, visit:
www.attotech.com/ibm