IBM TotalStorage SAN Volume Controller

Highlights

- Designed to combine storage capacity from multiple vendors into a single reservoir of capacity that can be managed from a central point
- Designed to help increase storage utilization by providing host applications with more flexible access to capacity
- Designed to help improve productivity of storage administrators by enabling management of combined storage volumes from a single interface
- Support improved application availability by insulating host applications from changes to the physical storage infrastructure
- Enable a tiered storage environment, in which the cost of storage can be better matched to the value of data
- Support advanced copy services, from higher- to lower-cost devices and across subsystems from multiple vendors

Businesses must manage increasing amounts of information—in the forms of digital content, e-mail, Internet-based applications and emerging technology. At the same time, compliance and regulations are forcing businesses to retain much more of it. How you manage information is your competitive advantage.

IBM® TotalStorage® SAN Volume Controller is designed to allow your business to use storage resources more efficiently to help maximize your return on investment (ROI), improve personnel productivity and increase application availability.

An on demand storage environment
SAN Volume Controller is designed to pool storage volumes from IBM and non-IBM devices into a single reservoir of capacity for centralized management. SAN Volume Controller is a member of IBM TotalStorage Open Software Family—a family comprising comprehensive, flexible storage solutions that can help enterprises better address their storage management challenges.
SAN Volume Controller can be implemented in two ways:

- **SAN Volume Controller combines hardware and software into a comprehensive, modular appliance.** Using IBM® xSeries® server technology in highly reliable clustered pairs, SAN Volume Controller is designed to avoid single points of failure. SAN Volume Controller software is a highly available cluster optimized for performance and ease of use.

- **SAN Volume Controller for Cisco MDS 9000 embeds SAN Volume Controller software into the Caching Services Modules of the Cisco MDS 9000 family of Fibre Channel directors and switches.** SAN Volume Controller for Cisco MDS 9000 can help reduce port count within the SAN fabric and is tightly integrated with the management capabilities of the Cisco MDS 9000 family.

**Storage utilization**

SAN Volume Controller is designed to help increase the amount of storage capacity that is available to host applications. By pooling the capacity from multiple disk arrays within the storage area network (SAN), it helps enable host applications to access capacity beyond their island of SAN storage.

SAN Volume Controller is highly scalable. An I/O group is formed by combining a pair of high-performance, redundant Intel® processor-based servers. Highly available I/O groups are the basic configuration of a cluster, as shown in Figure 1. Adding another I/O group can help increase cluster performance and bandwidth.

At its base level, SAN Volume Controller contains a single I/O group. It can scale-up to support four I/O groups. For every cluster, SAN Volume Controller supports up to 4096 virtual disks.

Global business BT Conferencing installed SAN Volume Controller to address its frustrations with running out of space on one machine, yet having plenty of spare capacity just out of reach on another. “By moving to virtualized storage using [SAN Volume Controller], we have gained the flexibility to allocate storage in the exact quantities required, with no wastage, and we are not subject to individual system capacity constraints,” said Bob Tetstall, Systems Administrator at BT Conferencing.
SAN Volume Controller is designed to help improve administrator productivity by enabling management at the cluster level, and it is designed to provide a single point of control over all the storage it manages.

SAN Volume Controller provides a comprehensive, easy-to-use graphical interface for central management. This simple interface incorporates the Storage Management Initiative Specification (SMIS) application programming interface (API) and further demonstrates the IBM commitment to open standards. With this single interface, administrators can perform configuration, management and service tasks over storage volumes from disparate storage controllers. SAN Volume Controller is designed to allow administrators to map disk storage volumes to virtual pooled volumes to help better use existing storage.

Marshall Motor Group, a growing engineering and automotive organization, implemented a SAN across two sites, each based around SAN Volume Controller. “The principal advantage of virtualized storage is the ease of management,” said Rob Carter, Group IT Technical Manager at Marshall. “You can add or subtract storage, move it around, allocate or deallocate—it’s highly flexible, which is an important aspect in a growing business.”

Application availability
By pooling storage into a single reservoir, SAN Volume Controller is designed to help insulate host applications from physical changes to the storage pool. This helps allow applications to continue to run without disruption, in turn, helping your business to remain up and running.

SAN Volume Controller includes a dynamic data migration function that is designed to help administrators migrate storage from one device to another, without taking it offline. This helps administrators to reallocate and scale storage capacity without disrupting applications.

The solution supports both local area network (LAN)-free and server-free backups. Through the IBM FlashCopy® function, administrators can copy point-in-time mission-critical data to lower-cost storage devices, such as Serial Advanced Technology Attach (SATA) devices. SAN Volume Controller also leverages the IBM TotalStorage Multipath Subsystem Device Driver (SDD). This mature multipathing software is designed to provide failover and load-balancing capabilities.

Finnish investment services company Evli Bank Plc chose to update its SAN and manage it with SAN Volume Controller to create a solution designed to help protect data and maintain availability in the event of a disaster. “All the data for our banking systems is held in the SAN, so we need the utmost security and resilience,” said Ari Kyhälä, Evli CTO. “Once the new SAN is complete, backup will be fully automatic, which will help reduce our administrative burden and improve our resilience to events outside of normal working hours. The IBM solution gives us confidence in the security of our data, both now and for the future.”

Tiered storage
In most IT environments, inactive data makes up the bulk of stored data. SAN Volume Controller is designed to help administrators control storage growth more effectively by moving low-activity or inactive data into a hierarchy of lower-cost storage. And administrators can free disk space on higher-value storage for more important, active data. SAN Volume Controller is designed to enable you to match the cost of your storage to the value of your data.
Cuisines Schmidt, a manufacturer of custom kitchens and bathrooms, implemented SAN Volume Controller to manage growing data volumes as the company pursues its strategy of building market share across Europe.

“The key advantage of the IBM solution was that it offered virtualized storage,” said Vincent Lettler, CIO of Cuisines Schmidt. “[SAN Volume Controller] gives us a single view of all our storage, and enables us to quickly add new capacity of practically any kind. This means that we can grow our capacity at variable cost helping us to align IT expenditure with business needs. For example, we can add low-cost storage for nonessential data and high-performance storage for production data, and even add in systems from other vendors. [SAN Volume Controller] puts us in control of our storage, helping enable us to be highly responsive.”

Copy services
With many conventional SAN disk arrays, copy operations are limited to in-box or like-box-to-like-box circumstances. But SAN Volume Controller is designed to enable administrators to apply a single set of advanced copy services, such as Metro Mirror, across multiple storage subsystems from different vendors. This ability can help simplify the storage environment and reduce the total cost of storage.

BUAK (Bauarbeiter-Urlaubs-und-Abfertigungskasse) in Vienna implemented a SAN built around an IBM TotalStorage Enterprise Storage Server® and SAN Volume Controller. The company handles the disbursement of holiday and redundancy pay to as many as 120,000 workers a year, and aims to deliver all of its services online.

“In the first two months of operation, we have already seen significant improvements in database response times,” said Helmut Fröhlich, Project Leader for the e-management initiative at BUAK. “FlashCopy enables us to back up data without interrupting our operations. We can reallocate capacity with flexibility, so we can manage growing data volumes more easily and cost-effectively than before.”

Technology for an on demand environment
Businesses are facing growing, critical-application data supported by complex heterogeneous storage environments, while their staffs are overburdened. IBM TotalStorage Open Software Family is designed to provide extensive storage automation and virtualization capabilities that can be leveraged to build on demand storage environments. These capabilities can help increase application availability, improve storage resource utilization and improve storage administrator productivity.

IBM services
IBM offers services to help speed implementation and improve ROI. IBM storage specialists are available to conduct storage solution and infrastructure reviews to prepare and speed installation. And IBM Global Services can examine your infrastructure to help determine sizing and performance needs. In addition, you can choose from a range of service and subscription offerings designed to help keep your infrastructure up-to-date and running smoothly.
### IBM TotalStorage SAN Volume Controller supported environments at a glance

#### Storage subsystems support
- Specific models of the IBM TotalStorage Enterprise Storage Server (ESS) and IBM TotalStorage DS Family of disk storage systems
- EMC Symmetrix 8000-series models
- EMC CLARiiON CX200, CX400, CX600 and FC4700
- Hitachi Data System 9200, 9530V, 9570V, 9580V, 9970V and 9980V
- IBM TotalStorage DS4000 EXP100 SATA drive drawers on IBM TotalStorage DS4100, DS4300, and DS4500
- Support for Hewlett Packard EVA3000, EVA5000, EMA12000, EMA16000 and MA8000

#### Host software
- IBM TotalStorage Multipath Subsystem Device Driver (SDD)

#### Operating system support
- Microsoft® Windows® 2000 with SP3, MSCS
- Windows 2003 Standard Edition
- Windows 2003 Enterprise Edition
- Sun Solaris 8, 9 operating environment (64-bit only)
- VMware ESX 2.1 (single-path mode)
- IBM AIX® V5.1, 5.2, 5.3, HACMP™
- HP-UX V11.i
- Red Hat Enterprise Linux®, Advanced Server 3.0
- SUSE LINUX Enterprise Server 8 with IBM xSeries servers

#### Support for SAN switches—selected models from the following suppliers
- Brocade
- McData
- Cisco
- CNT

#### Additional support capabilities
- IBM xSeries BladeCenter™—additional interoperability for hosts running Windows 2000 and/or Red Hat Linux AS 3.0 and using the Integrated Brocade Switch to connect to a Brocade-switched fabric

#### Service
- Customer engineer (CE) installation
- Hardware warranty, one year parts and labor
  - Storage engine
  - Uninterruptible power supply
  - Master console
- Software warranty
  - 90 days
- Software updates
  - Upgrades and fix packs available through Web download, nondisruptively

#### IBM Global Services (IGS) storage services
- Consult and design
  - Backup and continuity planning
  - Performance utilization and capacity planning
- Integrate and deploy
  - Installation, cabling and site preparation
  - Migration and consolidation
  - Education and training
- Operate and manage
  - System support and maintenance
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