

## IBM System Storage SAN Volume Controller Entry Edition



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### Highlights

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- **Enterprise-class storage virtualization in a more affordable package for mid-sized businesses**
- **Designed to help reduce costs and improve data center energy efficiency**
- **Designed to simplify the IT infrastructure and simplify administration**
- **Designed to complement server virtualization and increase the value of server virtualization strategies**
- **Designed to ease and speed storage provisioning**
- **Designed to deliver consistent replication functions regardless of the type of storage being managed**
- **Software pre-installed on Storage Engines for rapid deployment**
- **Supports a wide range of operating system environments including Microsoft® Windows®, UNIX®, Linux®, and VMware**

### Building a simpler, more responsive IT infrastructure

Mid-sized businesses today are faced with the challenge to respond more quickly to a rapidly changing business environment while at the same time controlling IT costs, improving application availability, and improving administrator productivity.

Many mid-sized businesses have been turning to server virtualization technologies such as VMware Infrastructure 3 to help address these requirements. Server virtualization technologies can help improve server utilization, simplify and speed server provisioning, streamline application migration, and deliver greater flexibility in disaster recovery strategies.

Storage virtualization can help deliver similar benefits for your storage. Storage and server virtualization are complementary technologies that help

enable you to build a completely virtualized infrastructure. When used together, server and storage virtualization are intended to enable you to derive greater benefit from each technology than if you deployed them alone.

IBM System Storage™ SAN Volume Controller Entry Edition (SVC EE) is a new storage virtualization system that is designed to deliver enterprise-class capabilities in a package optimized for mid-sized businesses. SVC EE is based on IBM's SAN Volume Controller offering but delivered in a more affordable package.

As shown in Figure 1, storage virtualization with SVC EE helps hide much of the complexity of storage environments both from servers and also from administrators. Servers and administrators are presented with a single type of storage system with a single management interface and common network-based replication functions, regardless of the type of physical storage being used. Storage virtualization with SVC EE helps you focus on using storage as a resource to support your business needs and not as boxes that must be managed.

### Easy to Implement

SAN Volume Controller Entry Edition software is delivered pre-installed on SVC Storage Engines so it is quickly ready for implementation once the

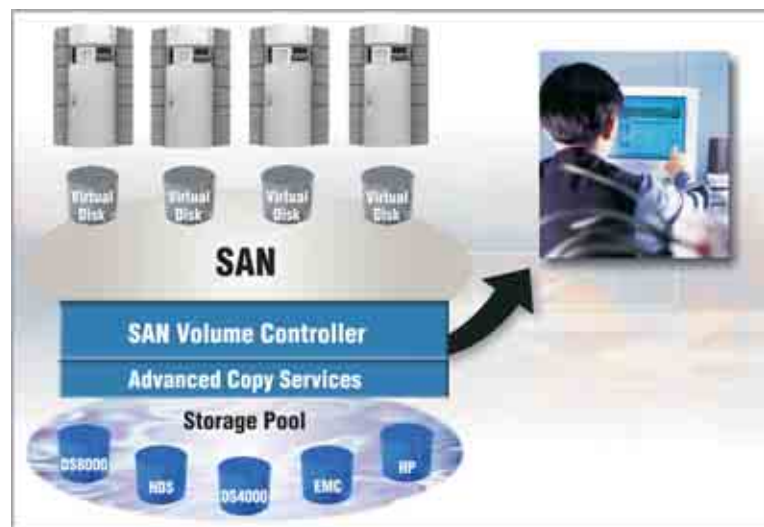


Figure 1. SVC EE is designed to hide complexity in the storage infrastructure from servers and administrators, providing a single storage type to servers and a single management interface to administrators, even in mixed environments.

engines are attached to your storage area network (SAN). SVC Storage Engines are based on proven IBM System x™ server technology and are always deployed in redundant pairs, which are designed to deliver very high availability.

SVC Entry Edition is designed to take control of existing storage, retaining all your existing information. This ability helps speed and simplify implementation while helping to minimize the need for additional storage. Once SVC EE is implemented, you can make changes to the configuration quickly and easily as needed.

### Simplified Provisioning

In the past, users often dedicated storage to individual servers as a way of simplifying configurations. Unfortunately, this approach is also very inflexible and can make provisioning more complex and may limit your ability to use functions such as VMotion. SVC Entry Edition virtually consolidates your storage so that all of your managed storage is potentially available to any attached server, which offers great flexibility but also helps to improve storage utilization by reducing “trapped” unused capacity.

SVC Entry Edition provides a consistent interface for provisioning storage, even if you have a mix of storage types, which helps improve administrator productivity.

Finally, SVC Entry Edition's Space-Efficient Virtual Disks function provides a thin provisioning capability for all supported storage. Thin provisioning can help improve storage utilization but it also helps simplify provisioning by enabling administrators to define virtual disks sized to meet future requirements while SVC EE dynamically and automatically provisions physical disk space as needed.

### **Improve application availability**

Because it hides the physical characteristics of storage from host systems, SAN Volume Controller Entry Edition is designed to help insulate host applications from physical changes to storage. This ability can help enable applications to continue to run without disruption while you make changes to your storage infrastructure, which can help your business increase its availability to its customers.

Moving data is one of the most common causes of planned downtime. SVC EE includes a dynamic data migration function that is designed to move data from one storage system to another while maintaining access to the data. The data migration function might be used, for example, when replacing

older storage with newer storage, as part of load balancing work or when moving data in a tiered storage infrastructure.

### **Replication services**

With many conventional SAN disk arrays, replication operations are limited to in-box or like-box-to-like-box circumstances. Functions from different vendors can operate in different ways, which makes operations in mixed environments more complex and increases the cost of changing storage type. But SAN Volume Controller Entry Edition is designed to enable administrators to apply a single set of advanced network-based replication services that operate in a consistent manner regardless of the type of storage being used.

The FlashCopy® function is designed to create an almost “instant” copy of active data that can be used for backup purposes or for parallel processing activities. Up to 256 copies of data may be created.

SVC EE supports incremental FlashCopy operations, which copy only the portions of the source or target virtual disk that have been updated since

the FlashCopy function was last used, and also “cascaded” operations where the target of one FlashCopy relationship is itself further copied. These abilities could be used to help maintain and update a test environment based on production data.

The Metro Mirror and Global Mirror functions operate between SVC EE systems at different locations to help create copies of data for use in the event of a catastrophic event at a data center. Metro Mirror is designed to maintain a fully synchronized copy at “metropolitan” distances (up to 300 km) whereas Global Mirror is designed to operate asynchronously and so helps maintain a copy at much greater distances (up to 8000 km). SVC EE is also designed to support VMware vCenter Site Recovery Manager to help speed disaster recovery.

### **Reduce storage used for copies**

The new SAN Volume Controller Entry Edition Space-Efficient FlashCopy (SEFC) function is designed to dramatically reduce storage requirements when copying data by using additional physical storage only for the differences between source and target and not for the entire target virtual disk capacity.

This capability can be used to help reduce storage requirements for test environments that are copied from production data. For example, SAP users often maintain multiple copies of production data for testing. Using the Space-Efficient FlashCopy function to maintain these test environments can help significantly reduce the amount of physical storage required.

### **Complement Server Virtualization**

As described above, storage virtualization with SAN Volume Controller Entry Edition complements server virtualization with technologies such as VMware Infrastructure 3.

Server virtualization helps speed provisioning of new server images because provisioning becomes a software operation rather than requiring hardware changes. Similarly, provisioning with SVC EE is achieved with software and with thin provisioning, and becomes an almost entirely automated function. Without SVC EE, server provisioning could be slowed by the need to provision storage.

Functions such as VMotion support application mobility between physical servers. Similarly, SVC EE is designed to support nondisruptive data migration between storage systems. In addition,

SVC EE helps make storage potentially available to all attached servers, greatly increasing the flexibility for using VMotion. Without SVC EE, use of VMotion could be limited by storage being dedicated to specific servers.

Because SVC Entry Edition appears to servers as a single type of storage, server provisioning is also simplified because only a single driver type is needed in server images, which also simplifies administration of those server images. Similarly, SVC Entry Edition eases replacing storage or moving data from one storage type to another because these changes do not require changes to server images. Without SVC EE changes of storage type could require disruptive changes to server images.

Server virtualization helps increase flexibility and reduce cost for disaster recovery by enabling the use of different physical configurations at production and recovery sites. Common virtual server configurations are used on these different physical infrastructures. Similarly, SVC Entry Edition supports the use of different physical storage configurations at production and recovery sites yet helps create the

same virtual configuration at each site. Without SVC EE, production and recovery site physical storage configurations would need to be similar, potentially increasing costs.

Finally, the SVC EE Space-Efficient FlashCopy function can be used to help reduce storage requirements when cloning boot drives for multiple virtual servers. When using this function, additional storage is used only for differences among servers instead of needing storage for each boot drive.

### **Tiered storage**

Deploying tiered storage is an important strategy for controlling storage cost, where different types of storage with different performance and cost characteristics are used to match different business requirements. Until now, however, management and functional differences among different types of storage—even from the same vendor—have made implementing tiered storage operationally complex and have limited deployments. SAN Volume Controller Entry Edition is designed to make it much easier to implement tiered storage because it helps deliver consistent management and function across all tiers of storage, and helps support movement of data between tiers

without disrupting applications.

Because SVC EE also has cache, it can help improve the performance of lower tier storage, enabling it to be used more widely in a data center further reducing costs.

### **Improve energy efficiency**

Many data centers today are focusing on reducing their energy usage to reduce costs and out of concern for the environment. SAN Volume Controller Entry Edition can be a key tool to help you improve the energy efficiency of your data center. It does so in three significant ways:

1. SVC EE is designed to migrate data from older to newer disk systems without disruption to applications, which helps make it easier and quicker for you to implement more energy efficient storage.

2. SVC EE is designed to simplify implementation of a tiered storage infrastructure and improve performance of lower tier storage, which helps optimize the mix of storage you deploy and may enable greater use of lower tier storage.

3. SVC EE can help increase the utilization of storage and reduce requirements for additional storage in the future, which can help reduce the total amount of storage required and so helps reduce energy use. The new Space-Efficient Virtual Disks and Space-Efficient FlashCopy functions are designed to extend this benefit even further.

### **Designed to grow with your business**

SAN Volume Controller Entry Edition is designed to grow flexibly as your business grows. SVC EE supports configurations containing up to 60 disk drives. When using 1TB disk drives, that could be as much as 48 TB of usable capacity. If your needs grow beyond 60 disk drives, SVC Entry Edition configurations can easily be converted without application disruption to the enterprise SAN Volume Controller offering, which supports configurations up to 8 PB in size. You can also add more redundant pairs of SVC Storage Engines to scale the SVC configuration to handle greater I/O loads as your business grows

### **IBM services**

IBM offers services to help speed implementation and improve return on investment (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 System Storage SAN Volume Controller supported environments at a glance**

The table below provides a summary of SVC supported environments. For the most current, and more detailed, information, please visit [ibm.com/systems/storage/software/virtualization/svc/](http://ibm.com/systems/storage/software/virtualization/svc/) and click on "Interoperability."

For the complete and latest support information, visit:

[ibm.com/storage/support/2145](http://ibm.com/storage/support/2145)

## IBM System Storage SAN Volume Controller supported environments at a glance

### Storage systems support

Specific models of the following storage systems:

- IBM TotalStorage® Enterprise Storage Server®, IBM System Storage DS3000, DS4000™, DS5000, DS6000™, DS8000™, N series
- IBM XIV® Storage System
- EMC Symmetrix DMX and 8000-series models
- EMC CLARiiON CX-series models and FC4700
- Hitachi Data Systems Thunder, Lightning, TagmaStore, AMS, WMS, Universal Storage Platform
- Sun StorEdge™ systems, Sun StorageTek™ systems, FlexLine™ 200
- Hewlett Packard MA8000, EMA12000, EMA16000, EVA family, MSA family, XP family
- NetApp FAS
- Bull StoreWay
- Fujitsu Eternus
- NEC iStorage
- Pillar Axiom

### Host multipathing software

- IBM System Storage Multipath Subsystem Device Driver (SDD)
- Symantec/Veritas Volume Manager 3.5 MP3, 4.0, 4.1, 4.3, 5.0
- PVLinks for HP-UX
- MPIO for Windows and IBM AIX®
- MPxIO for Solaris™
- Native NetWare multipathing driver
- Native VMware multipathing driver for VMware ESX 2.5 and later
- Native multipathing drivers for OpenVMS, Tru64, SGI Irix
- RDAC multipathing software for certain DS4000 environments

### Operating system support

- IBM AIX V4.3.3
- IBM AIX 5L™ V5.1, V5.2, V5.3
- IBM AIX V6.1
- IBM z/VSE™ V4.2
- IBM i operating system 6.1 (i5/OS® V6R1) via IBM PowerVM™ Virtual I/O Server (MIO) 1.5.2 and 2.1
- IBM PowerVM Virtual I/O Server 1.2, 1.3, 1.4, 1.5, 2.1 with Linux and AIX clients
- Microsoft Windows 2000, 2003 and 2008
- Microsoft Hyper-V™
- Novell NetWare V6.5
- Sun Solaris 8, 9, 10
- VMware ESX 2.1, 2.5.2, 2.5.3, 3.0.2, 3.5, 3i
- HP-UX 11.0, 11i V1, V2, V3
- Red Hat Enterprise Linux, Advanced Server 2.1, 3.0, 4.0, 5.0
- SUSE Linux Enterprise Server 8, 9, 10
- HP Tru64 5.1A, 5.1B
- HP OpenVMS 7.3-2, 8.2, 8.3
- SGI Irix 6.5.28, Altix SLES 9
- ONStor Clustered NAS Gateway

For information on HBAs and clustering support with these operating systems, visit [ibm.com/systems/storage/software/virtualization/svc/](http://ibm.com/systems/storage/software/virtualization/svc/) and click on "Interoperability."

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## IBM System Storage SAN Volume Controller supported environments at a glance

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### Support for SAN switches—selected models from the following suppliers

- Brocade
- McDATA
- Cisco
- CNT

### Service

- Customer engineer (CE) installation
- Hardware warranty, one year parts and labor
- One year of software maintenance included
- Software upgrades and fix packs available through Web download, may be installed nondisruptively

### IBM Global Services 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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### For more information

To learn more about the IBM System Storage SAN Volume Controller Entry Edition, please contact your IBM marketing representative or IBM Business Partner, or visit:

- [ibm.com/systems/storage/software/virtualization/svc/ee/](http://ibm.com/systems/storage/software/virtualization/svc/ee/)

Additionally, IBM Global Financing can tailor financing solutions to your specific IT needs. For more information on great rates, flexible payment plans and loans, and asset buyback and disposal, visit:

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Route 100  
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February 2009  
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