



Highlights

- Migrate storage to an agile, cloud-based, software-defined environment without replacing existing storage systems
 - Reduce unit cost for storage with automated analytics-driven data management that enables tiered storage optimization across the data center
 - Boost availability and augment daily backups with advanced data protection capabilities
 - Reduce administration complexity with the advanced IBM storage graphical user interface (GUI)
 - Implement a robust management system to keep your storage infrastructure functioning smoothly
 - Optimize storage provisioning, capacity utilization, availability, reporting and management
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IBM SmartCloud Virtual Storage Center

Efficient virtualization and infrastructure management for cloud and software-defined storage

On today's smarter planet, organizations are becoming more instrumented, interconnected and intelligent. As data volumes increase, rising storage costs threaten to choke new technology and business investments. And with data growth showing no signs of slowing, it is imperative that organizations improve their storage efficiency and reduce administration complexity. With most IT managers already using virtual server infrastructures, it is a natural next step to make the same transition for their storage environments—and to realize the same management efficiencies and cost benefits.

Moving to virtualized storage can improve operational efficiency, provide transparent data mobility and enable common management capabilities, regardless of the hardware used. As a result, it can be much more affordable than traditional storage methods. However, making the transition from a physical to a virtual storage environment can seem daunting, especially in virtualized cloud environments, where users expect immediate service and continuous availability. IBM offers a solution to smooth this transition from traditional to virtual storage while ensuring the safety of the organization's data in this new environment.

IBM® SmartCloud® Virtual Storage Center v5.2 enables IT storage managers to easily migrate to an agile, cloud-based, software-defined storage environment—and manage it effectively. This powerful solution enables organizations to optimize provisioning, capacity, availability, reporting and management for virtualized storage.



Integrating smarter storage

IBM Smarter Storage is a strategic approach built upon decades of storage industry leadership, innovative design, the ability to integrate advanced storage technologies, and a clear vision of what enterprise storage should be. IBM Smarter Storage enables you to get more from your storage than ever before.

IBM Smarter Storage has three central characteristics that are key to harnessing today's massive volumes of data for business insight and success. It is efficient by design, self-optimizing and cloud agile.

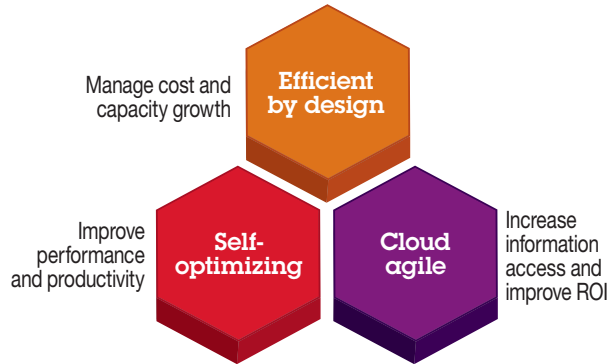
IBM SmartCloud Virtual Storage Center includes core functionality from three top IBM offerings, including data and storage management from IBM Tivoli® Storage Productivity Center, including its advanced functions; external virtualization found in IBM System Storage® SAN Volume Controller and the IBM Storwize® family; and application-aware snapshot backup and restore capabilities from IBM Tivoli Storage FlashCopy® Manager.

IBM SmartCloud Virtual Storage Center enables all three smarter storage characteristics for existing storage infrastructures.

Efficient by design

Organizations need to spend less of their IT budgets on storage and storage administration so that they can spend more on new, revenue-generating initiatives. IBM SmartCloud Virtual

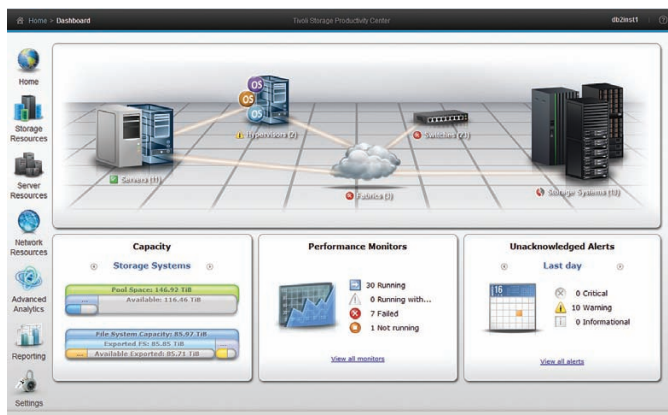
IBM Smarter Storage for Smarter Computing



Storage Center has built-in efficiency features that help users avoid the need to purchase add-ons or additional licenses or deal with complicated integration issues. Its advanced efficiency features include:

- **Storage virtualization:** Virtualization is a foundational technology for clouds and software-defined environments. Without virtualization, storage capacity utilization averages about 50 percent—but virtualized storage enables up to 90 percent utilization by enabling online data migration for load balancing.¹ IBM SmartCloud Virtual Storage Center allows you to virtualize your storage resources from multiple storage systems and vendors. Pooling storage devices enables you to access capacity from any storage system, a significant advantage over the limitations inherent in traditional storage.

- **Simplified user experience:** IBM SmartCloud Virtual Storage Center provides an advanced GUI and a VMware vCenter plug-in to reduce administration complexity. Administrators can perform common tasks consistently, over multiple storage systems—even those from different vendors. The IBM storage GUI enables simplified storage provisioning with intelligent presets and embedded best practices, and integrates context-sensitive performance management throughout.



IBM SmartCloud Virtual Storage Center features an advanced IBM management GUI to help simplify virtual storage administration.

- **Thin provisioning and efficient remote mirroring:** Thin provisioning helps automate provisioning and improve productivity by enabling administrators to focus on overall storage deployment and utilization, as well as on longer-term strategic requirements—without being distracted by routine storage-provisioning requests. IBM Metro Mirror and Global Mirror functions automatically copy data to remote sites as it changes, enabling fast failover and recovery. These capabilities are integrated into the advanced GUI, making them easy to deploy.

- **Near-instant, application-aware backup and restore:** To reduce downtime in high-availability virtual environments, critical applications such as email and databases require near-instant backups that have little or no impact on application performance. Application-aware snapshot backups can be performed frequently throughout the day to reduce the risk of data loss. IBM SmartCloud Virtual Storage Center simplifies administration and recovery from snapshot backups.

Self-optimizing

Self-optimizing storage adapts automatically to workload changes to optimize application performance, eliminating most manual tuning efforts. The self-optimizing features of IBM SmartCloud Virtual Storage Center include:

- **IBM Tiered Storage Optimizer:** IBM SmartCloud Virtual Storage Center uses performance metrics, advanced analytics and automation to enable storage optimization on a large scale. It can optimize storage volumes across different storage system and virtual machine vendors and brands. The Tiered Storage Optimizer feature can reduce the unit cost of storage by as much as 50 percent, based on deployment in a large IBM data center.
- **IBM Easy Tier®:** IBM SmartCloud Virtual Storage Center helps optimize flash storage with automated tiering for critical workloads. Easy Tier helps make the best use of available storage resources by automatically moving the most active data to the fastest storage tier, which helps applications and virtual desktop environments run up to three times faster.²

“This breakthrough technology optimizes storage by dynamically ‘right tiering’ for the optimal combination of cost and performance, given the exploding growth of data.”

—Lynn A. Potter, vice president, application and infrastructure service management, IBM Office of the CIO

Cloud agile

Cloud computing is all about agility. Storage for clouds needs to be as flexible and service-oriented as the applications it supports. IBM SmartCloud Virtual Storage Center can turn existing storage into a private storage cloud with no “rip and replace” required. The solution enables you to adapt to the dynamic storage needs of cloud applications by providing storage virtualization, automation and integration for cloud environments with features that include:

- **OpenStack cloud application provisioning:** IBM SmartCloud Virtual Storage Center includes an OpenStack Cinder volume driver that enables automated provisioning using any of the storage systems controlled by IBM SmartCloud Virtual Storage Center. OpenStack cloud applications can access multiple storage tiers and services, without added complexity.
- **Self-service portal:** IBM SmartCloud Virtual Storage Center can provide provisioning automation for self-service storage portals—such as IBM SmartCloud Storage Access—which enable immediate responses to service requests while eliminating manual administration tasks.
- **Pay-per-use invoicing:** IBM SmartCloud Virtual Storage Center integrates with IBM SmartCloud Cost Manager and other chargeback systems to enable flexible usage accounting for storage resources. IBM SmartCloud Virtual Storage Center can become the single source for usage metrics across storage area networks (SANs), network-attached storage and direct-attached storage.

IBM storage infrastructure optimization

IBM has identified five best practices for storage infrastructure optimization, based on thousands of client engagements.

IBM SmartCloud Virtual Storage Center addresses each best practice and enables users to make improvements without a “rip and replace” of their existing storage infrastructures:

- **Reclamation, rationalization and planning—**Storage resource management and comprehensive storage performance management capabilities automate or eliminate several storage planning tasks. IBM SmartCloud Virtual Storage Center can also identify duplicate data, potentially expired data and storage that is allocated but not in use.
 - **Virtualization and tiering—**The solution enables automated storage tiering and virtualization for storage systems throughout the data center.
 - **Backup, restore and disaster recovery—**The solution helps modernize data protection with software to enable remote mirroring, local and remote clusters, and snapshot management.
 - **Storage process and governance—**IBM SmartCloud Virtual Storage Center helps link application requirements to storage capabilities and can integrate with advanced solutions, such as IBM Intelligent Storage Services Catalog.
 - **Archive, retention and compliance—**The solution enables migration of less active data to lower-cost storage tiers, delivering many of the cost benefits of archiving without disrupting users or applications. In addition, its integration with Tivoli Storage Manager helps implement data retention and compliance policies.
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IBM SmartCloud Virtual Storage Center v5.2 at a glance

Included components	<ul style="list-style-type: none"> • IBM Tivoli Storage Productivity Center storage resource management and SAN fabric management software—includes advanced functions such as storage planners, change management tracking, best-practices gauge, file system scanning, disk optimizer and IBM Tiered Storage Optimizer • IBM System Storage SAN Volume Controller storage virtualization software core components—includes Easy Tier, Metro/Global Mirror and thin provisioning • IBM Tivoli Storage FlashCopy Manager snapshot management and recovery software—includes support for IBM and NetApp application-aware snapshots
Hardware requirements	<ul style="list-style-type: none"> • IBM SmartCloud Virtual Storage Center server and client <ul style="list-style-type: none"> – Intel server running Microsoft Windows or Linux – IBM Power® server running IBM AIX® • Tivoli Storage FlashCopy Manager base system services and Microsoft Management Console Snap-in <ul style="list-style-type: none"> – Intel server running Windows • Storage virtualization hardware <ul style="list-style-type: none"> – SAN Volume Controller – Storwize family storage systems that support external virtualization
Optional components	<ul style="list-style-type: none"> • IBM SmartCloud Storage Access—portal that enables self-service, on-demand storage provisioning and reporting • IBM SmartCloud Cost Manager—uses storage chargeback data to enable accurate billing for services consumed • IBM Intelligent Storage Services Catalog—services offering that enables document application requirements to be more easily mapped to storage system capabilities • IBM Real-time Compression™—patented technology designed to reduce space requirements for active primary data; enables users to store up to five times* as much data in the same physical disk space and can work without impacting performance

Why IBM?

IBM SmartCloud Virtual Storage Center, which comprises both a storage virtualization platform and capabilities for storage virtualization management, helps you quickly migrate to an agile, cloud-based, software-defined storage environment that enables

ample data growth with less complexity. IBM SmartCloud Virtual Storage Center is designed to extend the useful life of—and improve the return on investment for—existing storage systems.

For more information

To learn more about IBM SmartCloud Virtual Storage Center, contact your IBM representative or IBM Business Partner, or visit: ibm.com/software/products/us/en/vsc

Additionally, IBM Global Financing can help you acquire the software capabilities that your business needs in the most cost-effective and strategic way possible. We'll partner with credit-qualified clients to customize a financing solution to suit your business and development goals, enable effective cash management, and improve your total cost of ownership. Fund your critical IT investment and propel your business forward with IBM Global Financing. For more information, visit: ibm.com/financing



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Software Group
Route 100
Somers, NY 10589

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Actual available storage capacity may be reported for both uncompressed and compressed data and will vary and may be less than stated.

*Compression data is based on IBM measurements. Compression rates vary by data type and content.

¹According to IBM storage infrastructure optimization assessments, 2011-2012.

²Benchmark results recorded by the Storage Performance Council, April 2010, measuring the IBM System Storage DS8700 with Easy Tier: http://www.storageperformance.org/results/benchmark_results_spc1#a00092



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