IBM Smarter Storage, an integral part of IBM Smarter Computing

A strategic approach to storage that enables businesses to focus on information value

Highlights

- Get more from your storage technologies than ever before, leveraging large volumes of data to build a compelling business advantage

- Gain storage capabilities that help overcome the challenges of cost and complexity inherent with the rapidly growing volumes of data

- Adopt storage systems that are designed to let you take advantage of "the next big thing" in storage—from cloud, to analytics and beyond

The traditional approach to storage is no longer sustainable. Simply adding disks to contain huge and rapidly growing volumes of data has consequences that no organization should carry. And soon it will reach a level that no organization *can* carry. The traditional approach runs up hardware costs and gobbles up data center square footage. It racks up power and cooling bills as it wastes energy resources. It burdens IT staff with its complexity. Meanwhile, storage budgets remain flat, making hardware, real estate, utilities and staff harder than ever to come by.

A better approach controls storage growth with virtualization that shares disk resources. It controls costs with automated data placement that locates less important data on less expensive media—saving more expensive disks to provide fast access for business-critical data. It shrinks real estate and power use with compression and deduplication that slow the growth in the numbers of required storage devices. It increases the productivity of staff with management tools and interfaces that make storage easier to handle.

IBM Smarter Storage is a strategic approach built on years of storage industry leadership, innovative and forward-looking technology design, a comprehensive portfolio of advanced storage technologies and a clear vision of what enterprise storage should be. With IBM Smarter Storage, you can get more from your storage technologies than ever before. And you can leverage even the largest volumes of data to build a compelling business advantage.

The time is now for a new approach to storage

On today's smarter planet, where organizations and their IT infrastructures are more instrumented, interconnected and intelligent than ever before, data growth and the intrinsic value of data are gaining visibility. Data from entirely new places, such as video and social media, and data from traditional business sources is accumulating at a new, faster rate. Already, the digital universe contains more than 1.8 zettabytes (1.8 trillion gigabytes), and the volume has been increasing more than 40 percent year to year, rocketing toward 8 ZB by 2015.[1]

Data is valuable to business, and user expectations and demands increase all the time. Yet this explosion of data threatens to consume IT resources including people, budgets, power, cooling and data center floor space. The inflexibility of IT architectures, with provisioning that can take days or weeks, and the inadequacy of management processes that were designed to cope with much smaller volumes of data, make meeting growth challenges difficult. The escalating complexity of storage environments, with islands of information and a wide range of storage systems, each with unique, system-specific requirements, can become a roadblock to unlocking the value of data.

Clearly, a new approach is necessary—an approach where storage efficiency and ease of use are integral, where storage devices can analyze work and tune themselves for peak performance, and where storage administrators can manage ever-increasing capacity. Such an approach can make data more useful than ever before, using analytics tools to unlock new intelligence that lies hidden and to fundamentally transform business with the insights and capabilities that data-driven knowledge makes possible.

A three-part vision points the way to real success

IBM Smarter Storage delivers the vision, the tools and the know-how to harness the value of stored data. As businesses embrace new technologies such as social media, analytics and cloud-based computing, they must extract insights out of stored information to better serve customers and distance themselves from competitors. From thousands of client engagements and its own internal experience, IBM has made real its vision to help organizations optimize storage, improve service levels and prepare for the challenges ahead.

IBM Smarter Storage for Smarter Computing
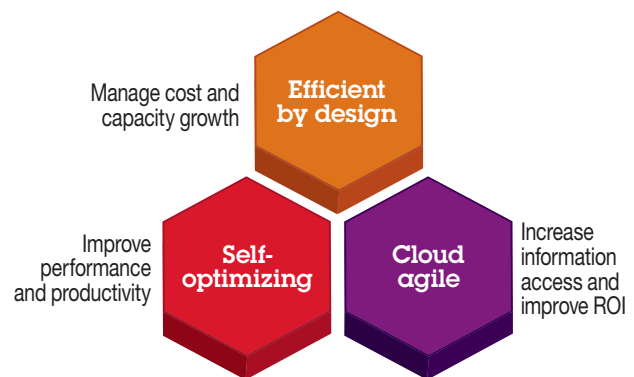
IBM Smarter Storage has three central components that are key to harnessing today's huge amounts of data for business insight and success.

The strategic IBM approach to the design and deployment of storage starts with innovative research on intelligent algorithms, automation, virtualization and information sharing. It builds on best practices to control costs and reduce the rate of storage growth: reclaiming unused storage space; tiering storage; backup/restore and disaster recovery; storage governance; and archiving, retention and compliance. Importantly, it identifies three attributes—efficient by design, self-optimizing and cloud agile—that storage solutions must have to overcome current and future storage challenges.

Efficient by design

For many organizations, the explosion of data has meant a constant, long-term pursuit of increased storage efficiency. But widespread use of efficient technology has been hampered by the complexity of deployment, inconsistencies across products, potential tradeoffs in performance and other drawbacks. Truly efficient storage should have advanced features pre-installed and ready to deploy to help shrink capacity needs and improve productivity. IBM Smarter Storage includes technologies built into storage products to deliver effortless efficiency. With IBM Smarter Storage, efficiency of management is also addressed through administrative interfaces that are intuitive and easy to use. Examples include:

- **Real-time Compression**, built into IBM Storwize® V7000, IBM System Storage® SAN Volume Controller and the IBM Real-Time Compression Appliance™, can reduce storage space requirements up to 80 percent. Patented IBM Real-time Compression works in real time on primary active data, and integrates with other features to further increase efficiency.
- **Deduplication** technology, designed to meet disk-based data protection requirements, can significantly reduce capacity needs and enable infrastructure cost reductions with fast, reliable, efficient and easy-to-deploy backup and recovery solutions. With IBM ProtecTIER® deduplication, files can be stored in 1/25th the space normally required.
- **Tape** solutions continue to be the most cost-effective, flexible and scalable medium for high-capacity storage backup, costing up to 10 times less than disk. Tape can also help you address "write once, read many" compliance requirements. IBM has more than 50 years of tape industry knowledge and a commitment to continued innovation.
- **An advanced administration interface** is integrated across IBM storage systems, including Storwize V7000, SAN Volume Controller and IBM Tivoli® Storage Productivity Center, all of which can manage legacy storage systems. It is also the interface for the IBM XIV® Storage System, IBM Scale-Out Network-Attached Storage (SONAS) and IBM System Storage DS8000®. With this intuitive interface, you can administer a storage system in almost half the time and with 30 percent less complexity, compared to EMC UniSphere.[3] This kind of management efficiency can help administrators keep up with the demands of storage growth.

Self-optimizing

Performance tuning and cost management can take considerable time and effort. Administrators can be caught in a continuous cycle of predicting demand, provisioning storage and migrating data to balance performance and cost. But storage designed to be self-optimizing can analyze data access patterns and automatically adapt to balance performance and cost. Self-optimizing storage can operate at the speed of business—faster and more accurately than manual performance tuning—with automation that frees IT professionals for other tasks.
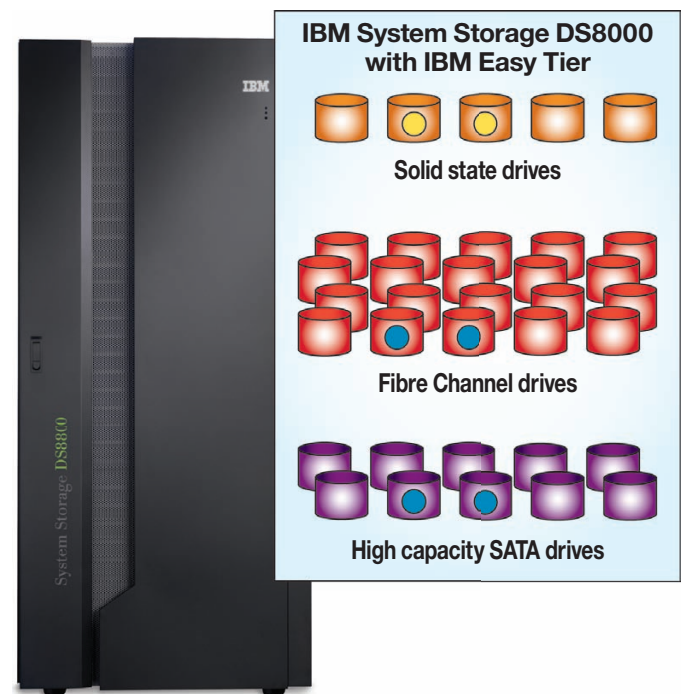
IBM Easy Tier® technology, shown here with the System Storage DS8000, automatically sends data to the most appropriate type of disk based on its frequency of use and importance, helping save money in disk purchases and enabling a more efficient use of storage resources.

Keeping data storage processes in line with business and IT policies can also be a challenge. But self-optimizing technologies incorporated into IBM Smarter Storage can make compliance easier. Both "policy aware" technologies (implementing business rules for quality of service and data protection) and "application aware" technologies (aligning storage systems with the unique requirements of core applications) make it easier for administrators to set policies and let the storage do the work. Examples include:

- **Automated data distribution** employed by IBM XIV Storage System takes advantage of internal virtualization to automatically self-tune and place data across system resources for balanced, consistent performance, supporting quality of service management, self healing and flash optimization.
- **Automated tiering** through IBM Easy Tier technology uses built-in intelligence to automatically move data to the right storage for cost savings and improved performance. Easy Tier is a key self-optimizing technology on the IBM System Storage DS8000, Storwize V7000 Unified and SAN Volume Controller. Planned Easy Tier enhancements[2] will extend outside the storage boundary to support placement of hot data in solid-state drive (SSD) server cache and other workload optimizations enabled through communication with the application server.
- **Policy-based automated backup and recovery** supported by IBM Tivoli Storage Manager can help align disaster recovery priorities with recovery center capabilities.

Cloud agile

Why is there so much interest in cloud technologies? Because cloud can provide the opportunity to reinvent information technology and transform service delivery. Business is demanding technologies that enable easier service delivery with better

quality that can be accessed when and where clients want it. Storage virtualization is critical for improving agility because it enables online data migration and easier storage provisioning. Storage virtualization improves cloud economics by enabling higher utilization, automating storage administration tasks and improving flexibility for managing unpredictable workloads.

IBM Smarter Storage is designed with virtualization capabilities built in—not as stand-alone capabilities or afterthoughts—to simplify administration, boost utilization and improve flexibility. A key benefit to IBM storage virtualization is its ability to eliminate storage bottlenecks that can occur as virtual server deployments scale. Examples include:

- **Naturally agile advanced functions** are built into storage that was originally designed with virtualization in its core such as IBM XIV Storage Systems and Storwize V7000 Unified. With systems that have virtualization built in, thin provisioning is faster, snapshots are smaller and remote mirroring is simpler.
- **Data fluidity** across storage tiers and even between facilities[2] based on policy will be supported by IBM Active Cloud Engine™, enabling easy creation and automated movement of files.
- **Virtualized management of IBM and non-IBM systems as a single pool** is made possible with SAN Volume Controller and Storwize V7000. Legacy storage systems inherit advanced efficiency capabilities such as auto-tiering, Real-time Compression and remote mirroring—even if the systems were not originally designed to have them— extending the systems' useful lives and enabling higher storage utilization.

IBM enables analytics, cloud and "the next big thing"

The explosion of information, increased IT complexity and inflexibility of old IT infrastructures can prevent organizations from gaining business insights from data. Storage systems need to take a different approach if they are to gain advantages from "the next big thing." They need a strategic approach that can help them make sense of disparate data, build better customer relationships, expand to new markets, create new competitive advantages—and successfully go where business and technology advances demand.

With real-time analytics workloads increasing significantly each year, organizations must make better use of their massive data. IBM leverages its industry-leading understanding of storage environments to align analytics capabilities and data needs with resources through storage that is policy-driven and automated. To handle today's data volumes, IBM delivers high performance, high availability, and virtualization through storage that is efficient by design, self-optimizing and cloud agile.

In cloud environments, where connectivity is universal and availability and accessibility are essential, the strategic IBM approach simplifies cloud storage for users and administrators with automated provisioning and tiering. IBM solutions are also optimized for cloud applications through built-in virtualization capabilities.

Why IBM?

IBM Smarter Storage enables better implementation of storage-related initiatives to unlock insights and drive revenue. Designed as an integral part of the IBM portfolio of products, services and capabilities, these storage solutions deliver management capabilities to help organizations overcome the challenges of cost and complexity that come with today's—and tomorrow's—rapidly growing volumes of business data.

For more information

To learn more about IBM Smarter Storage, please contact your IBM sales representative or IBM Business Partner, or visit:
ibm.com/systems/storage

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[1] IDC Predictions 2012: Competing for 2020 Document # 231720, December 2011

[2] All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. The information in the above paragraphs is intended to outline our general product direction and should not be relied on in making a purchasing decision. The information is for informational purposes only and may not be incorporated into any contract. This information is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of any features or functionality described for our products remains at our sole discretion.

[3] Edison Group. Competitive Management Cost Study: IBM Storwize V7000 vs. EMC VNX5500 Storage Systems. April 2012. Retrieved May 4, 2012, from http://public.dhe.ibm.com/common/ssi/ecm/en/ tsw03132usen/TSW03132USEN.PDF

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