



**Empower your enterprise with a  
comprehensive, end-to-end storage  
management solution.**

---

## Contents

---

- 2 Executive summary**
- 2 Implement a comprehensive storage solution with IBM storage management offerings**
- 3 Implement information life-cycle management**
- 5 Help ensure continuity to protect your data—and your business**
- 6 Help simplify your IT infrastructure**
- 10 Leverage a superior storage management solution**
- 11 For more information**

### Executive summary

Prospering in today's marketplace means companies must be flexible, responsive and poised to exploit business opportunities. To help achieve these goals, IT executives need to effectively manage and store the increasing amounts of data that are critical to business operations. Implement a comprehensive strategy that simplifies the IT infrastructure and consolidates myriad business processes, while using IT assets already in place. And ensure the infrastructure can handle ever-increasing user demands, and meet critical data-retention and data-protection requirements. Maintaining business continuity is imperative, so an organization must meet these objectives while achieving uninterrupted data availability.

### Implement a comprehensive storage solution with IBM storage management offerings

Success in today's economy means providing information precisely when and where it's needed. Business accountability hinges on it, laws and regulations mandate it, customers demand it and effective business processes rely on it. An on demand business must also respond quickly, and with flexibility, to meet customer requirements, market opportunities or external threats. However, as the amount and complexity of business-critical data continue to increase, so does the cost of storing, maintaining and protecting this data.

To meet these challenges, IBM offers a holistic approach that encompasses more than storage products to help you share, manage and protect your data. Your enterprise can use IBM storage management solutions to help meet the following objectives:

#### ***Manage information efficiently over its life cycle***

To optimize the storage and management of information based on its value to your business, implement information life-cycle management techniques. These technologies rely on your corporate governance policies, business processes and compliance guidelines to help you maximize both data integrity and the value of information – from conception to disposal.

*“Automated Resource Management, provided by IBM Tivoli storage software, has enabled Edith Cowan University to realize significant cost savings, while storage management enables reliable data availability for online student services.”*

– Steve Johnston  
IT Infrastructure Manager  
Edith Cowan University

**Maximize business continuity, security and data durability**

Business applications and information should be available to customers and employees at all times, without interruption. By implementing a comprehensive business continuity strategy, you help provide high availability, near-continuous operations and disaster recovery. At the same time, you help prevent threats from any source that may disrupt the business.

**Simplify infrastructure**

Infrastructure simplification means considering the entire IT operation to find opportunities that minimize the complexity accompanying business growth but can still raise costs, reduce reliability and create dependencies on specialized skills. Simplify your infrastructure to help minimize fixed costs and become highly flexible when responding to business needs. Simplification includes consolidation, virtualization and automated storage management.

As the following sections of this white paper show, you can use the IBM TotalStorage® Open Software Family of products, including IBM Tivoli® storage management software, to deliver a comprehensive storage solution that meets these requirements.

**Implement information life-cycle management**

As your business grows, the IT organization must easily organize and store extensive types and amounts of data, which should be available when employees, partners and customers need it. To maximize efficiency, information should be stored hierarchically – at the appropriate cost structure, according to its value. IT organizations must guarantee data integrity to remain in compliance with increasingly stringent business regulations. IBM information life-cycle management technologies provide superior automated management capabilities for both production data (frequently accessed by end users) and for inactive or archived data (retained for backup, disaster recovery or governance reasons).

The advanced technology in the TotalStorage Open Software Family enables you to automatically respond to the changing value of data within a tiered-service and storage-class approach:

***IBM TotalStorage SAN File System***

TotalStorage SAN File System helps an organization minimize the complexity of managing files within storage area networks (SANs) by deploying a highly available, centralized, policy-based system that supports heterogeneous files. Across UNIX®, Microsoft® Windows® and Linux® servers, it provides a common file structure that uses a single global namespace. To further simplify operations, use the software as a single point of administrative control to view and manage files and file systems.

TotalStorage SAN File System supports both very large and small files – as well as very large numbers of files – without the limitations normally associated with Network File System (NFS) or Common Internet File System (CIFS) implementations. As a result, you can utilize your storage resources efficiently.

Additionally, with TotalStorage SAN File System, you can implement a tiered storage environment that aligns storage cost with data value. For example, by using the date and time information in a database to automatically place the data onto tiered storage that includes Serial Advanced Technology Attachment (SATA) disk, you can reap cost savings associated with new, lower cost disk technologies.

***Manage storage growth with the help of hierarchical storage management software***

Data should be stored based on factors such as how critical it is to the business, how accessible and available it should be, and the cost structures of available devices.

Hierarchical storage management allows an organization to establish policies – based on the data’s age, category and other criteria – and automatically move data across storage tiers to comply with those policies. Capture low-activity or inactive data and feed it into less-expensive storage, and you help control data storage growth and costs, maximize application availability and free online disk space for more important, active data.

Use TotalStorage SAN File System to:

- *Leverage centralized management of a distributed, heterogeneous storage infrastructure to help optimize utilization.*
- *Integrate file aggregation and data sharing of core business systems in an open environment.*
- *Enable information life-cycle management to help align the storage cost to the data’s value.*

In addition to TotalStorage SAN File System, other offerings from the TotalStorage Open Software Family that facilitate information life-cycle management include IBM TotalStorage SAN Volume Controller, IBM Tivoli Storage Manager and IBM TotalStorage Productivity Center. These offerings help you implement an integrated, automated approach to ease the management of backup, disaster recovery, hierarchical storage management and archiving stored copies of data in a tiered approach – to optimize your IT budget.

**Help ensure continuity to protect your data — and your business**

Because protecting your data is a high priority, strong backup and recovery management systems are imperative. To maximize staff productivity, these systems should be as simple and automated as possible. With Tivoli Storage Manager, you can leverage an integrated solution – archive, backup, hierarchical storage and disaster recovery management capabilities – to simplify storage policy administration as well as backup and compliance efforts.

***Efficiently protect data with the help of backup and recovery software***

Recovery time must be balanced in proportion with the cost of downtime. Recovery management software helps an organization create and track reliable recovery points for its most critical enterprise data. Through centralized, Web-based management, you can implement intelligent backup and archiving to help maximize application availability. And match the value of protected data and applications to the most cost-effective media – whether tape or disk storage. Automated, policy-based data movement and intelligent storage techniques help you free the time of IT staff for higher value tasks and projects.

***IBM Tivoli Storage Manager***

Tivoli Storage Manager enables you to protect your organization's data from failures and other errors by storing backup, archive, space management and bare-machine restore data – as well as compliance and disaster-recovery data – in a hierarchy of offline storage. Because it is highly scalable, Tivoli Storage Manager can help you protect computers running a variety of different operating systems, on hardware ranging from notebooks to main-frame computers that is connected together through the Internet, wide area networks (WANs), local area networks (LANs) or SANs. Use the Web-based management, intelligent data move-and-store techniques and comprehensive policy-based automation of Tivoli Storage Manager to help optimize data protection and administration time and costs.

Tivoli Storage Manager can help your organization:

- *Easily manage multiple types of inactive data in a hierarchical repository.*
- *Minimize storage cost by establishing an intelligent storage hierarchy.*
- *Provide centralized, comprehensive management.*
- *Optimize network bandwidth by moving data intelligently.*
- *Leverage policy-based automation to retroactively update already-stored information.*
- *Prepare for disasters with an automated disaster recovery plan.*

**Help simplify your IT infrastructure**

As storage management demands continue to grow in complexity – and budgets continue to tighten – IT executives realize that a “one-size-fits-all” approach is not a cost-efficient, long-term solution. Instead, TotalStorage Open Software helps businesses implement storage solutions that can grow as the business grows.

***Centralize management with the help of storage management software***

To understand and proactively manage a complex, heterogeneous storage infrastructure, administrators need an integrated view of the entire storage environment. It should encompass legacy systems and devices from different manufacturers – disk, SAN fabric, virtualization and data usage in file systems and databases. By leveraging historic, operational and predictive analytics of the storage environment, an organization can optimize storage capacity and network utilization to minimize business outages. Storage management software should facilitate policy-based automation for storage tasks – such as capacity provisioning, performance optimization and data management – to help the business become highly agile while helping to maximize IT personnel productivity.

***IBM TotalStorage Productivity Center***

TotalStorage Productivity Center provides a robust foundation for managing storage infrastructures. Use its central, integrated point of control to help simplify the management of complex storage infrastructures, automate day-to-day storage tasks and leverage a common suite of storage management tools for storage devices, data and storage networks. TotalStorage Productivity Center offers you a flexible approach for managing your entire storage infrastructure using modular, integrated packages through IBM TotalStorage Productivity Center Standard Edition or through modular packages focused on specific storage environments, including IBM TotalStorage Productivity Center for Data for asset and capacity reporting of host resources (such as file systems and databases), IBM TotalStorage Productivity Center for Fabric for your switches and fabric-attached resources, and IBM TotalStorage Productivity Center for Disk for management of the storage systems.

You can further drive IT staff productivity and efficiency by gathering and using useful information about your storage to help optimize your organization's capacity and data-retention capabilities.

***IBM TotalStorage Productivity Center Standard Edition***

TotalStorage Productivity Center Standard Edition offers automation and operation-reporting capabilities that you can use to help optimize storage staff productivity and compliance with data-retention and backup policies. TotalStorage Productivity Center Standard Edition will detect when a user-defined threshold has been exceeded for file systems, fabric and storage resource utilization, and provide problem determination, fault detection and alert notification to the storage administrator for proactive problem resolution. Policies that send alerts when unprotected data or illegal files are detected can be set by the storage administrator. TotalStorage Productivity Center Standard Edition includes TotalStorage Productivity Center for Data, TotalStorage Productivity Center for Disk and TotalStorage Productivity Center for Fabric at a single price.

***Optimize resource utilization with the help of storage virtualization software***

Virtualization technology helps an organization consolidate storage volumes and file systems into a single reservoir of capacity for centralized management and provisioning. This pooled reservoir of storage can include storage capacity from multiple vendors and platforms in heterogeneous environments to give a business great flexibility. Virtualization facilitates policy-based, tiered storage that aligns the class of storage with the data's value, throughout its life cycle. Additionally, you can pool similar storage devices into managed storage groups for each storage tier – to help minimize downtime during hardware reconfigurations, and help maximize application availability and overall business performance.

With TotalStorage Productivity Center Standard Edition, you can drive IT staff productivity and efficiency by gathering and using useful information about your storage to optimize your organization's capacity and data-retention capabilities.

You can obtain better intelligence about archived data and help simplify your compliance efforts by leveraging direct integration with Tivoli Storage Manager and its backup and file-archiving capabilities.

TotalStorage Productivity Center can help you:

- *Manage the capacity of file systems and databases.*
- *Analyze how effectively storage resources are being used.*
- *Automate management of a broad range of devices in a storage network.*
- *Discover resources, monitor events and generate alerts, control zones and predict SAN errors – all automatically.*
- *Centralize management of heterogeneous SAN and storage system environments.*
- *Configure multiple storage devices – and monitor and track the performance of SAN-attached, SMI-S-compliant storage devices – from a single console.*
- *Simplify and optimize the configuration and management of advanced storage replication services on network storage devices, including Metro Mirror and IBM FlashCopy®.*

***IBM TotalStorage Productivity Center with Advanced Provisioning***

Helps you automatically execute the steps for provisioning new servers and applications, and thereby minimize human error and maximize application availability. Leverage the included IBM Tivoli Provisioning Manager storage workflows to easily build and customize your own solution workflows with minimal effort. With TotalStorage Productivity Center with Advanced Provisioning, your organization can move from just-in-case provisioning to intelligent, automated, on demand provisioning.



**Maximize performance with the help of storage orchestration software**

To meet service levels and comply with other business policies, you can use storage orchestration and provisioning. Leverage policy-based, automated workflows for complex, error-prone tasks; hierarchical storage management technology; and real-time monitoring to help minimize human error and application downtime, and help maximize the flexibility of the business when responding to changing storage needs.

Use TotalStorage Productivity Center with Advanced Provisioning to help:

- *Provision storage capacity consistently, in a repeatable and auditable manner.*
- *Maximize responsiveness to the storage needs of applications.*
- *Automate storage capacity provisioning at your organization's own pace.*
- *Provision storage based on preset data life-cycle policies.*

**IBM TotalStorage SAN Volume Controller**

Helps maximize the flexibility of the storage infrastructure by enabling you to change the physical storage with minimal or no disruption to applications. Leverage expanded support for many non-IBM storage systems to implement a tiered storage environment that aligns storage cost with data value. With TotalStorage SAN Volume Controller, you can combine the capacity from multiple disk storage systems into a single storage pool. By managing from a central point, you can ease system management and help optimize utilization. You can further simplify operations by using TotalStorage SAN Volume Controller to apply advanced copy services (replication) across storage systems from many different vendors.

TotalStorage SAN Volume Controller can help you:

- *Enable administrators to reallocate and scale storage capacity – and make changes to underlying storage systems – without disrupting applications.*
- *Minimize the complexity and costs of managing storage networks.*
- *Virtualize storage, optimize utilization of existing capacity and centralize the management of multiple controllers in an open-system SAN environment.*
- *Simplify IT administration by virtualizing the policy-based movement of data between tiers to meet prescribed service level agreements (SLAs).*

***Achieve cost efficiencies with the help of archive management software***

Offline archives of active or inactive data are created at a single point in time to meet regulatory or business compliance requirements. Archive management software helps you minimize costs while archiving, retaining and managing data – including e-mail. Manage data archives for a defined lifetime using a policy-automation engine, as you would with backed-up data. And facilitate rapid retrieval of archived data to effectively extend data storage capabilities without adding expensive online storage capacity.

**Leverage a superior storage management solution**

An organization's data infrastructure should empower the business, not hinder it. By implementing a storage management infrastructure that can sense, respond and adapt to change in ways that align with business priorities, an organization takes important steps toward becoming an On Demand Business.

An industry leader in storage systems, software, services and technology, IBM offers a comprehensive set of solutions to help an organization meet its storage management needs. The TotalStorage Open Software Family:

- *Includes a broad portfolio of disk and tape systems, powerful processors and rich software to facilitate consolidation and implementation of cost-aligned, tiered storage.*
- *Supports open standards to help a business make the most of its IT investment and rapidly respond to changing conditions.*
- *Is designed for robust, on demand collaboration.*
- *Can be combined into next-generation concepts.*

*“We felt that IBM was the only company from whom we could get an integrated, reliable solution from a single source for a reasonable price. IBM has delivered for us a simpler, more reliable storage solution that will provide improved business continuity and reduce our operating costs.”*

— Mr. Markus Herrmann  
Department DV3  
LEWA Herbert Ott GmbH + Co KG

IBM storage management solutions enable an organization to help minimize the cost and optimize the service levels of the IT infrastructure. IBM storage management solutions also integrate with other IBM infrastructure management solutions to help traditional enterprises and any on demand business worldwide manage security, performance and availability, configuration and operations. An integral part of the IBM On Demand Operating Environment, and backed by world-class IBM services, support and research, IBM storage management solutions help an on demand business maximize the value of existing and future technology investments.

**For more information**

To learn more about the IBM TotalStorage Open Software Family – including Tivoli storage management software – and integrated solutions from IBM, contact your IBM representative or IBM Business Partner, or visit [ibm.com/tivoli/storage](http://ibm.com/tivoli/storage)



© Copyright IBM Corporation 2005

IBM Corporation  
Software Group  
Route 100  
Somers, NY 10589  
U.S.A.

Produced in the United States of America  
03-05  
All Rights Reserved

FlashCopy, IBM, the IBM logo, the On Demand Business logo, Tivoli and TotalStorage are trademarks of International Business Machines Corporation in the United States, other countries or both.

Linux is a trademark of Linus Torvalds in the United States, other countries or both.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product and service names may be trademarks or service marks of others.