

Storage management solutions  
To support your business objectives



**Tivoli** software

**Protect your data to help maximize business continuity, efficiency and the availability of your business-critical systems.**



**ON DEMAND BUSINESS™**

## A fundamental responsibility

The people who make your business run – your customers, business partners and employees – all count on your enterprise data. So if you're going to be an on demand business, you have to protect your data and maintain service levels to support it. If the people and applications that rely on your data can't access it when they need it, you can harm productivity, the reputation of your brand and revenue.

Threats to your data are real, and they are many:

- *Disk error or failure*
- *Data corruption due to application failure*
- *Human error like accidental file deletion*
- *Natural or infrastructure disasters that cause outages*

Your storage infrastructure, administrators and processes can substantially contribute to your business goals if they can help you reduce:

- *Risk of human error and data loss.*
- *Training required for storage administration.*
- *Difficulty of storage management.*
- *Costs of storage resources and administration.*
- *Time occupied with storage management rather than with high-business-value tasks.*



The problem can't be solved just by allocating more disk storage and IT staff time. According to International Technology Group, server-based disk storage in *Fortune* 500 companies grows exponentially — from an average of seven terabytes at the end of 1996 to 48 terabytes at the end of 2002 — and is projected to be more than 230 terabytes by the end of 2007.\* Most of these organizations have underutilized storage resources that sit idle in one part of the enterprise, while the rest of the storage infrastructure is overloaded — often with large amounts of inactive data. And storage management expenses occupy larger and larger percentages of IT budgets — from 11 percent in 1996 to 17 percent in 2003 — and are projected by International Technology Group to be more than 22 percent in 2007.\* As IT budgets remain flat overall, that means less and less IT staff time is available for initiatives with higher business values.

#### **Adopt a cross-enterprise view**

When you use IBM solutions, you can leverage the capabilities of a partner that has the breadth and depth of storage management solutions to address these business challenges. Within and across storage management solution areas, you can use IBM solutions to identify and consistently execute your best practices:

- Set policies — *both IT and business policies.*
- Define processes *to implement those policies.*
- Identify workflows — *codify the specific tasks that will be automated to execute a process.*
- Share data *to enable processes to seamlessly interact.*
- Automate *execution of your processes.*

*By enabling you to adopt a cross-enterprise view of storage — and the ways it intersects with your other infrastructure management initiatives — IBM storage management solutions help you monitor, adapt and manage your storage resources and processes in ways that respond to the continually changing needs of your business.*

IBM solutions work flexibly to help you automate and integrate within and across the storage management processes you choose, including Information Technology Infrastructure Library (ITIL) processes and your own proprietary processes. By automating and integrating within and across IT processes, you can make them highly efficient, minimally dependent on labor and largely error-free. When you automate and integrate across IT processes, you adopt an end-to-end view of your enterprise to accurately identify problems and business opportunities, and respond accordingly — and rapidly.

#### **Protect the information of your business**

Today, the performance of your organization depends on delivering 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. You can use IBM storage management solutions to deliver information dynamically and thereby take an important step toward becoming an On Demand Business: an enterprise whose business processes — integrated end to end across the company and with key partners, suppliers and customers — can respond with speed to any customer demand, market opportunity or external threat.

Because dynamically delivered information is so valuable — and so costly to store, maintain and protect — IBM has taken a holistic approach to the problem. With IBM storage management solutions that range beyond traditional storage products, you can help:

- *Simplify the underlying IT infrastructure and its management — to help optimize both fixed costs and agility for responding to business needs.*
- *Maximize business continuity, security and data durability — to help prevent any source of threats from disrupting the business.*
- *Manage information efficiently throughout its life cycle — to further help minimize IT costs.*

The following sections describe each of these three areas in greater detail.

### **Simplify your storage infrastructure**

The added complexity that accompanies growth can stand in the way of fully realizing the benefits of IT. Complexity can raise costs, reduce reliability and create dependencies on specialized skills — all of which make it harder to operate as an on demand business.

By simplifying your storage infrastructure, you enable your staff to look at — and optimize — the entire IT operation. The IBM TotalStorage® Open Software Family enables you to implement a number of proven methods for simplifying an IT infrastructure, including consolidation, virtualization and automated management. Each technique can be applied to your servers, storage and networks.



A key tool for simplifying infrastructure management is IBM TotalStorage Productivity Center. To help avoid outages that might disrupt the business, you can use TotalStorage Productivity Center to proactively monitor your storage infrastructure, predict potential outages and rapidly resolve problems wherever they may occur:

- *Fabric*
- *Data*
- *Disks*
- *File systems*
- *Storage area networks (SANs)*

For example, when the thresholds for your file system that you define in IBM TotalStorage Productivity Center for Data have been reached, the software extends the file system to help prevent potential outages. TotalStorage Productivity Center for Data also helps you plan consolidations and classify data for tiered storage environments.

Another important strategy for simplifying your storage infrastructure is virtualization: pooling your storage volumes and file systems — from multiple vendors and across multiple platforms — into a single reservoir of capacity. Within the TotalStorage Open Software Family, you can use IBM TotalStorage SAN Volume Controller to enable applications to access storage pools as if they were virtual disks — enabling you to adjust your storage infrastructure without taking applications down.



When you use IBM TotalStorage SAN File System to consolidate multiple individual file systems into a single shared file system, you can manage files and file systems as centralized IT resources — from a single point of administrative control. Leverage the common, SAN-wide file system to support centralized, policy-based storage management and secure, heterogeneous data sharing.

TotalStorage SAN Volume Controller and TotalStorage SAN File System contribute to your infrastructure simplification initiatives and help you maximize business continuity and manage information throughout its life cycle.

When storage capacity must be provisioned to support your business priorities and respond to dynamic change, you can use IBM Tivoli® Provisioning Manager — included with IBM TotalStorage Productivity Center with Advanced Provisioning — to automatically execute your best practices.

### **Maximize business continuity**

Because an on demand business relies on its IT systems to conduct business, everything must be working all the time. Nothing less is acceptable. A sound and comprehensive business continuity strategy encompasses high availability, near continuous operations and disaster recovery.

Maximizing application availability and business continuity depends on facilitating reliable access to enterprise data. That's why IBM storage management solutions support your business-critical data in a number of ways:

- *Efficiently back up critical data.*
- *Recover enterprise data quickly.*
- *Proactively avoid potential outages.*
- *Align storage resources with your business priorities.*

You can leverage enterprise-class recovery management and advanced copy-services technology in two offerings from the TotalStorage Open Software Family to help keep your critical functions up and running. When needed, IBM Tivoli Storage Manager enables you to quickly and reliably recover enterprise data, helping you meet service level agreements.

The advanced storage replication services in TotalStorage Productivity Center help you maintain nearly instant, highly available access to critical information. And help make your storage infrastructure continually available to support service levels.

Additionally, you can leverage TotalStorage SAN File System to help minimize both backup windows and the chances of losing critical data to virus corruption, user errors, application logic failures and other destructive events. Use TotalStorage SAN File System to provide multiple, space-efficient, online recovery points.

### Manage information throughout its life cycle

Optimizing the storage and management of information based on its value to your business is the primary goal of information life-cycle management (ILM). IBM storage management solutions help you take into account your corporate governance policies, business processes and compliance guidelines as you establish your ILM policies.

As a result, you can use ILM processes to help maximize the business value of information from the moment of its creation to the moment of its disposal. Other potential benefits include optimized risk management, storage utilization, handling of compliance issues and costs.

The TotalStorage Open Software Family helps you establish and optimize your ILM processes to:

- *Perform data clean-up with TotalStorage Productivity Center for Data.*
- *Generate reports in TotalStorage Productivity Center for Data to use during data classification.*
- *Build a tiered storage environment using TotalStorage SAN Volume Controller.*
- *Virtualize and manage your storage environment with TotalStorage SAN Volume Controller and TotalStorage Productivity Center.*
- *Enable hierarchical storage management with TotalStorage SAN File System.*
- *Retain data in accordance with your policies using TotalStorage Productivity Center for Data and IBM Tivoli Storage Manager.*

Additionally, IBM storage management solutions include content and records management applications, as well as nonerasable, nonrewritable media.

### *Classify data effectively to make the most of your storage resources*

In most IT environments, inactive data makes up the bulk of terabytes stored. And it often takes up valuable space on overloaded high-performance storage resources while other resources remain underutilized. By combining virtualization capabilities with hierarchical storage management, IBM storage management solutions help you optimize utilization of storage resources across your enterprise — in alignment with your business priorities.

Hierarchical storage management means storing data on the type of media that best meets:

- *The data's criticality to the business.*
- *Your access speed and availability requirements for the data.*
- *The optimal balance between service quality levels and storage media costs.*

*“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

*“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**

With Tivoli Storage Manager, you can archive inactive and infrequently used reference data to low-cost storage devices. Allocate high-performance storage to frequently accessed data. Plus, use IBM storage management solutions to move data from one storage tier to another when the business needs for the data change.

#### *Address internal and external data-retention requirements*

An increasingly important requirement for storage management solutions is the ability to retain data for a defined lifetime, in accordance with your policies. IBM storage management solutions provide a policy-based automation engine that you can use to keep files for an amount of time you specify, and then expire them from your storage hierarchy. So that you can consistently execute your data-retention policies across the enterprise, IBM solutions work with:

- *Your hardware and software – regardless of the vendor.*
- *Many different types of media, including offsite copies.*
- *Content management and archive applications.*

Additionally, you can easily establish policies in TotalStorage Productivity Center for Data that direct Tivoli Storage Manager to automatically back up or archive key files when unprotected data or illegal files are detected. The results help your storage administrators identify the key corporate data that is at risk for not being backed up or archived.

Tivoli Storage Manager uses an intelligent, progressive backup strategy that only backs up files that have changed or are new. This helps you minimize unnecessary data transfers that rob your network and server performance, as well as the number of devices you need to store your managed data. With progressive backup, you can achieve rapid restores because Tivoli Storage Manager needs to restore only the version of the file requested.

#### **IBM storage management solutions are part of the broader portfolio of IBM infrastructure management solutions**

In addition to integrating with one another to help you automate and integrate within and across IT processes, IBM storage management solutions are also designed to interoperate with other IBM infrastructure management solutions, including:

- *IBM IT service management solutions that include best-of-breed tools for availability, configuration, service level, application and workload management – individually and when integrated together, they help you optimize IT performance to meet service level expectations in the face of volatile business conditions.*
- *IBM security management solutions that enable you to enforce enterprise security policies, protect your IT environment from external threats, comply with business policies and give your users timely access the business assets they need.*

You can use IBM infrastructure management solutions to help your people, processes and resources quickly adapt to business challenges and new business opportunities as they emerge.



### Work with your own processes and resources, at your own pace

To help you address your current needs and rapidly adapt to changes that your business makes in the future, IBM storage management solutions:

- Work with processes that you choose to employ, including your own proprietary processes, ITIL processes and Control Objectives for Information and related Technology (COBIT).
- Fully support open standards such as the Storage Management Initiative Specification (SMI-S) management interface to enable flexible management of your multivendor environment.
- Facilitate automation and integration with other storage and infrastructure management processes that you optimize in the future.

### For more information

The broad range of IBM storage management solutions within the TotalStorage Open Software Family includes best-of-breed tools that you can use to implement centralized, policy-based, automated management of heterogeneous storage resources across your enterprise.

To learn more about IBM storage management solutions and integrated solutions from IBM, contact your IBM representative or IBM Business Partner, or visit [ibm.com/tivoli/storage](http://ibm.com/tivoli/storage)



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\*International Technology Group. *Business Value of Enterprise Storage Management Solutions: Quantified Analysis of Three Industries*. October 2003. Page 1.