

**Tivoli** software



**Manage your storage to meet service levels, reflect best practices and deliver measurable business results.**

In enterprises with heterogeneous IT resources, organizational silos and composite applications, configuring and managing the storage environment can be perplexing. Market demands, workloads and service level requirements rise. Data volumes spiral as storage administrators juggle incidents without knowing which is truly the most critical. Data retention requirements mandate better tracking of data throughout its life cycle. New service level requirements impose higher performance and availability expectations on storage devices and services. And documenting relationships among devices to accurately diagnose and resolve failures grows more complex.

To manage your storage environment more efficiently and effectively, you must align storage management activities with top business priorities and establish a way to measure IT in terms of its business value — an approach IBM calls *IT service management*. To ensure your storage environment can deliver real business results in an on demand manner, evaluate it in terms of four key components:

- *Change process management*
- *Incident management*
- *Configuration management*
- *Compliance management*



### **Manage changes to your storage environment cohesively**

As new guidelines or regulations surface, storage administrators receive increasing numbers of requests for change (RFCs) in storage provisioning. Simultaneously, routine changes must be made, such as deploying a new software agent update. To complicate matters, different people develop unique methods for solving problems and implementing changes. The end result of this dizzying variety of uncoordinated changes and change methods is outages: up to 80 percent of business application outages are caused because someone made a change to the IT environment.\*

To minimize outages and maintain high availability of business-critical data, it's crucial to take a formal approach to storage change process management that's aligned with industry best practices. To start, define service level objectives and capabilities for data and servers throughout your storage environment based on:

- *Recovery objectives defined by recovery time and recovery point for data on servers.*
- *Data access objectives defined by speed and resiliency.*
- *Security objectives defined by compliance and security levels on data.*

Next, link your storage change process management to proven industry guidelines such as those contained in the IT Infrastructure Library® (ITIL®), so that a change to your environment will be implemented only after its impact is assessed and appropriate people approve the change. With a structured way to perform ongoing tasks, storage administrators can categorize each RFC correctly and provision an appropriate tier of storage. Higher-performance storage gets devoted to business-critical applications, while lower-cost, lower-performance storage is allocated to less-critical applications.

Compare vendors to find storage management tools that let you:	Vendor 1	Vendor 2
• Establish service levels for corporate data.		
• Map storage into these service levels and to application and business requirements.		
• Correlate service levels to ongoing operational tasks, such as provisioning.		
• Establish a formal change management process.		

### Take control of unexpected incidents

While most businesses use a mix of different monitoring and data protection tools to collect information about the storage infrastructure, administrators may still be uncertain how to respond to unexpected incidents. For example, when multiple incidents occur at once, all may seem to have equal degrees of urgency.

Suppose a storage administrator learns that a fabric switch has stopped functioning. The incident generates a number of questions about which applications are impacted and whether there is a problem with storage. But unless the administrator understands the full context of the situation — such as by understanding the importance of affected applications and systems in relation to business operations — there is no effective way to manage the incident.

By giving storage administrators appropriate tools, you empower them to base their actions on the relative impact of each incident on key business operations or applications. As a result, you can maintain appropriate service levels across operations.



<b>Compare vendors to find storage management tools that let you:</b>	<b>Vendor 1</b>	<b>Vendor 2</b>
• Manage storage incidents based on service levels.		
• Help administrators prioritize incidents based on service levels.		
• Simplify storage environment management.		
• Perform problem determination, root-cause analysis and problem resolution.		
• Establish a central way to manage storage incidents.		
• Monitor key storage operations for incidents, including backups, archives, replication services, and performance and availability issues.		

### **Manage configurations to the storage environment centrally**

Most large enterprises have thousands of storage devices, ranging from Host Bus Adapters (HBAs) to storage area networks (SANs) and storage arrays. But because you collect information about your environment from so many different devices, departments and administrators, you may lack a common way to manage configurations.

For example, SAN configuration management is complex and labor-intensive. So, if an administrator makes an ad hoc configuration change, it's difficult to know what other components of your storage infrastructure are affected or how service levels may change in response. By creating a central location for registering and managing your storage inventory, you can obtain comprehensive configuration information for your environment and determine the relevance of every configuration change that's made.

Compare vendors to find storage management tools that let you:	Vendor 1	Vendor 2
• Monitor and audit unapproved or unplanned changes in the storage environment.		
• Collect information centrally on SAN configuration and backups.		
• Visualize storage infrastructure and related resources.		
• Verify configuration changes.		
• Assist with root-cause analysis.		
• Audit changes to the storage environment related to data protection or storage infrastructure.		



### Facilitate compliance among storage systems

Facing hundreds of regulatory requirements — such as Basel II, Securities and Exchange Commission (SEC) Rule 17a-4 and the Health Insurance Portability and Accountability Act (HIPAA) — few organizations can effectively manage and audit their storage environments. For example, you may need to prove adherence to:

- Security requirements *to protect certain file types against unauthorized access.*
- Data retention requirements *to prescribe appropriate archiving for certain files.*
- Availability and business continuity regulations.

By building a policy-based compliance management system that's linked to service levels, you can get an in-depth understanding of how your storage environment is performing against corporate policies. A policy-based system also lets you audit and monitor these environments in a way that's appropriate for different people.

<b>Compare vendors to find storage management tools that let you:</b>	<b>Vendor 1</b>	<b>Vendor 2</b>
<ul style="list-style-type: none"> <li>• Provide in-depth analysis about how the storage environment is performing against corporate policies for data retention and deletion, security access and business continuity.</li> </ul>		
<ul style="list-style-type: none"> <li>• Monitor archiving success in relation to regulatory compliance.</li> </ul>		
<ul style="list-style-type: none"> <li>• Determine if files that require more stringent security requirements are properly protected against unauthorized access.</li> </ul>		
<ul style="list-style-type: none"> <li>• Present the right levels of information in audit reports to both storage administrators and chief compliance officers.</li> </ul>		

**Use IBM storage management software to build a comprehensive solution**

Although information about the IT infrastructure may be scattered across your organization in different formats, storage administrators need to access and share this information in an on demand manner. With IBM IT Service Management — which includes IBM storage software that provides innovative tools to capitalize on open, industry-standard technologies — you can standardize and share the information uniting all the people, processes, information and technologies that interact with your storage infrastructure. IBM storage software delivers on all the purchasing criteria outlined in this buyer's guide for change process management, incident management, configuration management and compliance management.

**Leverage an industry-standard approach to managing storage systems**

In keeping with its longstanding support for open, industry-standard technologies, IBM is a founding member of Aperi, an open-source community that has designed a common, open-source platform for standardizing storage infrastructure management. Aperi builds on the industry-standard Storage Management Initiative-Specification (SMI-S) from the Storage Networking Industry Association (SNIA).

Utilizing an open-source storage management framework facilitates interoperability across the entire storage environment, and thereby enables greater choice among vendors and lower costs — both for up-front purchasing costs and ongoing maintenance. Other benefits include helping organizations maximize flexibility, speed adaptation to change and minimize the complexity of building and customizing storage solutions.



## Help simplify and reduce the cost of storage infrastructure management

The IBM TotalStorage® Productivity Center suite provides a central console for managing data, helping storage administrators reduce the effort involved in managing the storage infrastructure, improving storage capacity utilization, and enhancing and enforcing service levels. An open solution, IBM TotalStorage Productivity Center lets you configure the storage environment, then monitor ongoing health, availability and performance of storage systems, networks, capacity management and replication services. You can also use IBM Tivoli® Provisioning Manager to automate all the steps needed to provision, configure and deploy your IT environment.

As you make ongoing changes to the storage infrastructure, IBM SAN Volume Controller helps you deliver continuous application availability. Use IBM SAN Volume Controller to modify your storage infrastructure without disrupting business applications as you:

- *Create tiers of storage and enable multivendor strategies.*
- *Change storage on the fly while applications run and automatically allocate more storage to applications.*
- *Combine storage capacity into a single resource from multiple vendors.*
- *Manage a single storage resource from a central point and interface.*



**Rely on proven data protection technology to ensure recoverability**

Because losing business information can cause application outages, delays, diverted resources or regulatory scrutiny, it's essential to protect and ensure recoverability for all of your enterprise data through automated creation, tracking and vaulting of reliable recovery points. With the IBM Tivoli Storage Manager family of products, you can leverage a complete solution for backups, archives, disaster recovery, space management, online database and application protection, and bare machine recovery.

Open and highly scalable, Tivoli Storage Manager lets you manage from platforms including PCs, UNIX® or other midrange servers, and mainframes. The software runs on more than 13 different operating environments and protects more than two million computers worldwide.

For small to midsize businesses, as well as departments and remote workgroups within large enterprises, IBM Tivoli Storage Manager Express offers an entry-priced, disk-based backup and recovery solution. The software features easy installation, high-level reliability and an easy-to-use interface. Furthermore, its simple upgrade capabilities allow you to start small and expand to more advanced data protection and storage management capabilities as your needs grow.





### Maximize business continuity for on demand operations

To drive customer satisfaction, revenue streams and rapid response to changing business conditions, your business depends on the availability of applications and core business data. However, your core business data is spread across the enterprise, from laptops to business-critical servers and storage systems. Using the Tivoli storage portfolio, you can protect data across this full continuum.

- *Use IBM Tivoli Continuous Data Protection for Files to continuously help protect business-critical files and e-mail data files at the laptop and desktop levels. The software is simple to use, including a “set-and-forget” feature for critical files residing on laptops.*
- *Use Tivoli Storage Manager and IBM TotalStorage Productivity Center for Replication as parts of a comprehensive disaster-recovery plan to keep applications and mission-critical data continuously available during planned or unplanned events – while helping to minimize backup times. These tools help you preserve business-critical data throughout its life cycle, speed recovery and automate archival and backup tasks.*

### Utilize storage process management for a standard approach to change

By integrating all the data sources containing details about your servers, storage devices, networks, middleware, applications and data, you can drive process automation and effectively enforce policies. So that businesses can federate and access IT information from complex IT infrastructures, IBM is helping create an industry-standard way to share information between multivendor change management databases (CMDBs) and other data repositories. IBM Tivoli Change and Configuration Management Database is an integrated, federated database that can significantly help reduce incident and problem management costs. The solution delivers the following:

- *Open sharing of configuration items (CIs)*
- *Fully automated application and resource discovery and mapping*
- *A traceable way to manage the change process*
- *An integration point for other IT processes and management data*



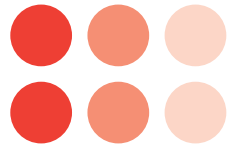
To make Tivoli Change and Configuration Management Database more usable by ensuring that CIs like storage devices, fabric switches and SANs are registered properly, use IBM Tivoli Storage Process Manager to create ITIL-based CIs for your storage objects. Tivoli Storage Process Manager also helps you automate management policies and provides a fully defined model of storage attributes and relationships in Tivoli Change and Configuration Management Database. As a result, you can facilitate standard change, release and availability processes throughout your organization.



#### For more information

A market leader in the storage industry with innovative technology and a broad portfolio of open, industry-standard software, hardware and solutions — IBM can help position your enterprise to efficiently and effectively sense, respond and adapt to changes. To learn more about how IBM storage management solutions can help you leverage IBM IT Service Management to optimize resources as you help minimize complexity and costs — while facilitating compliance — contact your IBM representative or IBM Business Partner, or visit [ibm.com/tivoli/storage](https://ibm.com/tivoli/storage)

<b>Core IBM solutions for storage management</b>	<b>Change process management</b>	<b>Incident management</b>	<b>Configuration management</b>	<b>Compliance management</b>
• Tivoli Storage Process Manager	✓	✓	✓	✓
• Tivoli Storage Manager	✓	✓	✓	✓
• IBM TotalStorage Productivity Center	✓	✓	✓	
• IBM SAN Volume Controller	✓		✓	
• Tivoli Provisioning Manager	✓			
• Tivoli Storage Manager Express	✓	✓	✓	✓
• Tivoli Continuous Data Protection for Files	✓		✓	✓
• Tivoli Change and Configuration Management Database	✓	✓	✓	✓





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\*Source: Tivoli Primary Research 2005