



**Provide continuous access to critical business data
with information availability capabilities from IBM**

The toughest data storage challenge for many organizations is information availability, ensuring that the information necessary to the enterprise is available when and where it's needed. In fact, information availability is a prerequisite to having effective information retention and compliance strategies in an information infrastructure. While having a sound information compliance strategy is critical for compliance with regulations and policies governing data integrity, that information must first be available when it's needed. Ultimately, it doesn't matter how carefully archived or well-organized the data is within an organization if the people who need it at any given time can't access it.

To help organizations meet their information availability needs, IBM has built high availability features and technologies into our information infrastructure solutions. These solutions, along with IBM Global Services, are designed to help deliver continuous and reliable access to the information organizations rely on.

What makes it so critical—and, at the same time, so challenging—to provide continuous access to information today? A number of forces are driving the urgency of high information availability.

- *More businesses are operating globally, which creates a complex, distributed IT environment that is characterized not only by vast amounts of data, but also by many types of data in many different places.*

- *The pervasiveness of e-business, along with increased expectations from global customers, has made it unacceptable for certain types of information to be unavailable to customers and partners, even briefly.*
- *Faced with increasing competition in this global marketplace and the ever-increasing speed of business transactions, organizations need high information availability in order to enable business flexibility and quick decision making.*
- *Compliance with various regulations governing the integrity of information requires that information for audits be immediately and easily available.*

The right information infrastructure can help provide a level of information availability that enables organizations to operate more effectively and cost-efficiently in the presence of these driving forces.

Thinking beyond disaster recovery

People often think of information availability as a component of disaster recovery. A disaster that destroys vast amounts of work and data, rendering it permanently unavailable to a business, is without question the most devastating of business events. But it's not the only circumstance that raises issues of availability. The reality is that conditions affecting information availability exist along a continuum. At one extreme is a hurricane, fire, or other disaster destroying a physical environment; at the other is

the prospect of a more limited disruption, such as a power outage or component failure. But each can have an equally debilitating effect on a business—and one is more likely to occur at any given time than the other. For this reason, the information infrastructure must include a strategy not just for disaster recovery, but also for dealing with less dramatic but probably more frequent events that can interfere with information availability.

Just as there is a continuum of conditions affecting availability, there is also a range of types of information to which businesses need access. Some information that is rendered unavailable for a few hours may have more disastrous consequences for a business than other information that is permanently destroyed. The impact of the event is not necessarily aligned with the extent of the disaster; a cup of coffee spilled on a critical server could conceivably be worse than a fire in another area of the facility. The information infrastructure must take into account the relative importance of the data and be able to prioritize it appropriately to better meet high availability requirements.

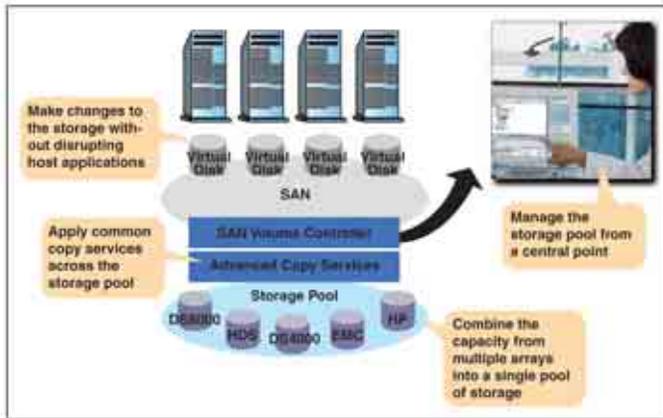
Four key contributors to information availability

Understanding that information availability means more than disaster recovery, IBM has identified four key contributors to information availability—information infrastructure solutions that can help support your high information availability objectives: storage management, storage virtualization, business continuity, and data protection.



Storage management

To effectively manage the significant amounts of data in many organizations today, particularly when they represent wide variations in business priority, the information infrastructure must have extensive management capabilities to help simplify and streamline management tasks. The first step is to centralize the management of data storage at a single point of control, so that no matter how many kinds of data reside in how many places, all of it can be managed effectively from one place. IBM TotalStorage® Productivity Center, IBM's end-to-end disk management solution, enables these centralized storage management capabilities. This integrated information infrastructure management suite allows you to manage capacity utilization, performance and availability of storage systems, file systems and databases, all from a common console.



Storage virtualization

A centralized point of control is the launching point for key capabilities that can directly affect availability in information infrastructures. Chief among these capabilities is storage virtualization, which allows you to pool multiple storage resources as if they were a single storage device. Virtualization makes data easier to manage, enabling more flexibility to respond to changing data requirements. IBM System Storage™ SAN Volume Controller is a storage virtualization system that is designed to support improved resource utilization, improved storage management, and improved information availability. SAN Volume Controller enables you to combine your storage systems into a single reservoir of capacity, and allows you to make changes to the information infrastructure without disrupting the applications that use the data.

IBM also provides tape virtualization through the IBM Virtualization Engine™ TS7700 and IBM Virtualization Engine TS7500, which are virtual tape solutions for mainframe and open systems servers, respectively, that are designed to optimize tape processing. Through the implementation of a fully integrated tiered storage hierarchy of disk and tape, the benefits of both technologies can be leveraged to help enhance performance and provide the capacity needed for today's backup and tape processing requirements.

Storage virtualization delivers better information and application availability in several ways. It makes it possible to move data without disrupting operations, since it helps eliminate the downtime frequently caused by data movement in non-virtualized environments. For organizations planning to use tiered storage to control costs, virtualization makes deployment easier by enabling data to move between tiers without disruption while also providing common management capabilities for all tiers.

When storage is virtualized, access to information does not require knowledge of the physical location of the information. Virtualization separates the logical view of information from its physical location, enabling administrators to focus on information itself and how it can be used, rather than where information is stored.

Business continuity

The goal of business continuity is to enable organizations to continue to operate under any circumstances. A broad spectrum of features, including redundant and hot-swappable components and RAID protection, can help enable continuous operations by eliminating single points of failure, supporting high information availability in the process. IBM's high-performance storage solutions offer industry-leading business continuity features to help support our customers' high information availability objectives.

Mirroring is another key business continuity technology that can help ensure information availability. This technology allows organizations to instantly copy or "mirror" key information from one location to another location. Mirroring data can help ensure continuous business operations, even in the event of a complete data loss. Mirroring technology on SAN Volume Controller includes Metro Mirror capabilities for replicating data to another location in the same "metropolitan" area, and Global Mirror capabilities that support data replication over extended distances. Mirroring technologies are also available on a wide range of IBM enterprise and midrange storage devices including the DS4000, DS5000, DS8000™, XIV®, TS7700 and N series products.

Data protection

Today's organizations face the ongoing challenge of effectively protecting and retaining very large—and growing—quantities of information. This growth drives the need for cost-effective and

energy-efficient storage. Tape-based storage is both highly energy-efficient and a cost-effective way of addressing this challenge. IBM offers a comprehensive tape storage product line, from entry-level to enterprise solutions, providing comprehensive data protection and the lowest power and cooling storage available today.

Assessing your risk

How great is your risk for information availability issues? Best practices call for organizations to frequently take stock of the changing circumstances of the business in order to effectively gauge risk.

- *What information availability issues have you experienced in the past? What strategies are in place to mitigate the potential for similar issues in the future?*
- *What single points of failure exist in your information infrastructure? What critical data is at risk as a result? How might a data availability problem affect business operations?*
- *Have you made provisions for disaster recovery? Have you made provisions for lesser business interruptions?*
- *Have you had any recent mergers or acquisitions that could increase your risk with regard to information availability?*
- *Are there any new legislative and audit requirements relevant to information availability that need to be addressed?*

Steps to information availability

High information availability is within your reach. Depending on your current infrastructure and processes, it may be accomplished easily, or it may require a more concerted effort. To help organizations move toward improved information availability, IBM recommends a phased approach. This roadmap breaks the overarching goal into distinct tasks that build on each other as you move through the process.

Step 1: Architect for resiliency

The first step is to design an information infrastructure that leverages today's best practices in high availability. This architecture may integrate IBM disk and tape solutions that are designed for high availability, with fault-tolerant features that minimize hardware-related risks.

Step 2: Virtualize storage systems

Once the storage components are in place, the next step is to implement a storage virtualization strategy that leverages your existing storage investments. With IBM SAN Volume Controller, you can consolidate your heterogeneous systems into one easily managed pool—and help eliminate information silos that can hinder business activities. Tape Virtualization helps to reduce or eliminate a number of bottlenecks that may be present in a tape environment, which can help to reduce backup and restore times.

Step 3: Centralize management tools

Progressing logically from virtualization of storage systems, the next step is to centralize management of the information infrastructure through a single point of control. Centralized management through IBM TotalStorage Productivity Center offers organizations numerous benefits, including improved productivity, increased flexibility and reduced IT complexity.

Step 4: Automate operational tasks

With a virtualized and fault-tolerant information infrastructure in place, managed from a central point of control, organizations can leverage tools and technologies to automate operational tasks, minimizing human error, improving productivity and enhancing performance. Optimizing the storage environment through automation can help enhance information availability across the infrastructure.

Consulting services to meet your needs

IBM Global Services teams offer flexible services that can help organizations meet a wide range of information availability needs. For example, IBM's resilience consulting can help you identify and fill gaps in your current business continuity strategy and guide you through the complex standards, practices and regulations that affect your business continuity strategy. These teams can work with you to develop and manage a program that is aligned to your specific business needs, resulting in a more productive business environment.

IBM's information protection services provide a range of onsite, offsite and hybrid data protection services, helping you implement a plan based on your priorities for backup, retention and retrieval, so you can have access to the information you need virtually anywhere, anytime. These services deliver high levels of security and availability, helping organizations meet stringent standards for data protection, business and systems continuity, disaster recovery and regulatory compliance.

End-to-end storage solutions

IBM's proven track record and extensive portfolio of offers and services can help organizations better manage, store, secure and share information across the enterprise. IBM's integrated hardware and software solutions can help companies manage a wide variety of content, including documents, databases and unstructured data such as e-mail, to meet each organization's

unique performance needs and budgets. By combining these solutions with industry-leading consulting services, IBM can provide turn-key solutions to help organizations meet a range of information availability requirements. Or we can provide targeted solutions that provide specific capabilities or address a specific need in your infrastructure. Whether you are facing an information availability crisis or simply want to enhance your risk management posture, IBM can help.

For more information

To learn more about how IBM solutions can help your organization meet your information availability needs, contact your IBM representative or IBM Business Partner, or visit ibm.com/storage



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