



Hitachi Data Systems and Cisco Systems, Inc. Business Continuity

Solutions Brief

Improving Business Resilience with
Data Replication and Storage Area
Network Extension Technology

Partner Beyond Technology



Executive Summary

Resilience is one of the defining characteristics of today's successful organizations. Interdependent supply chains, 24/7 global markets, and worldwide network connectivity to business applications emphasize the importance of continuous access to a robust information technology (IT) infrastructure.

Engineering resilience into the architecture of an organization's IT backbone is no longer simply a precaution. Resilience not only insulates the organization against the stratospheric cost of application downtime, but also satisfies the growing demand for compliance with legal and regulatory requirements and delivers significant competitive advantage.

Data replication technology is the key to a resilient IT infrastructure and business continuity, as shown in Figure 1. Replication technology provides essential redundancy, protecting the irreplaceable data assets of the organization from loss. Storage area network (SAN) extension technology overcomes the traditional distance limitations associated with storage networks to enhance the protection offered by data replication. Supporting effective replication across networks spanning thousands of miles, SAN extension technology enables critical data assets to be hosted safely out of harm's way, dramatically improving resilience.

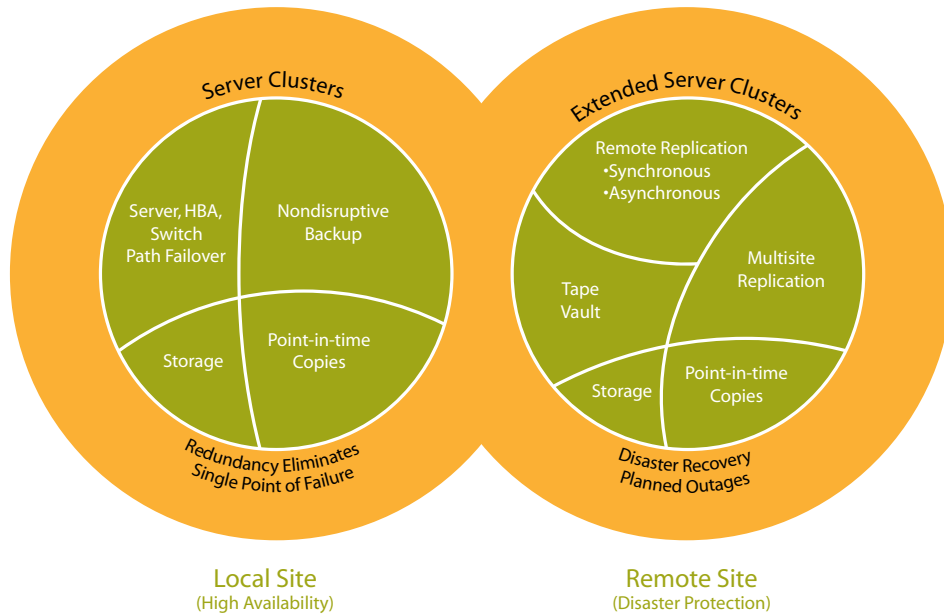


Figure 1: The Hitachi Data Systems business continuity framework provides centralized, automated, policy-based management.

The Cost of Downtime

The cost of downtime is staggering. Research and consulting firm Meta Group (recently acquired by Gartner) estimates that, on average, organizations lose US\$1 million per hour due to system outages. And, for businesses highly dependent on IT, such as retail brokerages, losses can reach US\$6.45 million per hour.

Inadequate business continuity planning can even threaten the existence of an organization. In a study by Binomial International, 50 percent of companies that lost critical business systems for more than 10 days never recovered.

With so much riding on an organization's ability to weather unanticipated outages, insurers, investors, and government regulators have begun to pay more attention to business continuity. Legal and regulatory overseers now dictate mandatory levels of data protection for many organizations. These include:

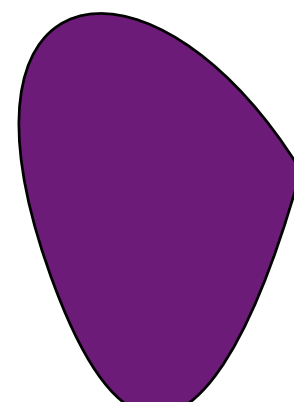
- :: Health Insurance Portability and Accountability Act (HIPAA) (US)
- :: Securities and Exchange Commission (SEC) rule 17a-4 (US)

- :: Sarbanes-Oxley Act (US)
- :: Federal Drug Administration Code of Federal Regulations title 21 part 11 (US)
- :: Department of Defense Directive "Records Management Program," DoD 5015.2-STD (US)
- :: New Basel Capital Accord (Basel II) (EU)
- :: RIPA and FAS (UK)
- :: COB (France)

Risk Assessment

How far an organization must go to safeguard the IT infrastructure from failure is an assessment made on a case-by-case basis. For critical applications, where the risk of an outage is measurable, assessment is relatively straightforward.

For example, if the data center hosting an online trading application is located in a flood zone, it is possible to calculate the probability of an outage and the annualized expected loss from the disruption. A return on investment (ROI) analysis can then determine if the cost of a business continuity solution is worth mitigating the expected losses. This rational risk management approach is essential when determining how to secure business continuity with limited IT resources.



SAN Extension Solutions from Cisco Systems

Complementing the replication solutions from Hitachi Data Systems, the Cisco MDS 9000 Family of fabric switches, directors, and intelligent software offers best-in-class storage networking for business continuity. The modular Cisco solutions provide a high-performance, highly available bridge between a local Fibre Channel SAN and the long-distance IP infrastructure.

With integrated multiprotocol support for FCIP, the Cisco MDS 9000 Family enables replication traffic originating on a Fibre Channel SAN to flow across an IP network connecting local and remote data centers. Support for network quality of service and virtual SANs (VSANs) enables storage traffic to be segregated and independently managed while sharing an IP network infrastructure with conventional data communications.

- :: Extend VSANs
- :: Reduce SAN complexity
- :: Improve network performance, resilience, and security

The Cisco MDS 9000 Family solutions integrate easily into existing networks and are administered using standard Cisco management tools. With support for SAN extension and local fabric switching services from a single platform, the Cisco MDS 9000 Family enables significant consolidation, reducing the cost of the storage infrastructure.

Building Resilience

Inevitably, the most critical business applications have the highest loss potential: the hourly cost of application downtime to the organization. Data replication offers users of critical applications the fastest and most secure method of resuming operations after an outage (see Figure 2).

Data Replication

Data replication—whether in-system or remote, synchronous or asynchronous—creates a duplicate copy of application data for use if the primary copy becomes inaccessible. Although often considered a disaster recovery solution, replication also provides significant returns by eliminating minor downtime from localized data loss and disruption. For example, replication allows critical application processing to switch to an alternate data center during system upgrades and maintenance.

A valuable adjunct to tape-based backup and recovery processing, replication supports a fast return to normal processing following an outage, with minimal, if any, data loss. For applications with the most stringent recovery time and recovery point objectives, data replication provides the cornerstone of a comprehensive business continuity strategy.

Extending Storage Area Networks

Transmitting replication traffic between data centers separated by hundreds, if not thousands, of miles or kilometers (km) requires extending the SAN between the multiple locations. However, depending on the storage protocol being used, the maximum distance between end points in a SAN is likely to be limited.

FICON communications can span up to 60 miles (100km), Fibre Channel up to 54 miles (90km), and ESCON up to 5 miles (8km). Replicating data beyond these distances requires intervention to raise the carrying capacity and integrity of the network.

SAN extension technologies use protocol optimization and other techniques to increase the reach of a storage network without sacrificing transmission integrity or speed. Providing support for multiple storage and networking protocols, SAN extension solutions leverage existing long-distance networks to substantially increase the distance between local and remote storage systems in a data replication configuration.

Solutions from Hitachi Data Systems and Cisco Systems

The effective long-distance protection of today's enterprise data assets requires two fundamental components: replication technology and an extended storage networking infrastructure. Together, these components create a highly available architecture that guarantees access to data no matter what events befall the organization.

Known individually for their commitment to the resilience of enterprise IT infrastructures, Hitachi Data Systems and Cisco offer solutions that replicate application data across long-distance multiprotocol storage networks, delivering unparalleled business continuity.

Hitachi Data Systems replication solutions support a wide variety of implementation scenarios, including combinations of local and long-distance replication using synchronous and asynchronous techniques.

Cisco is uniquely positioned to provide fast and effective any-to-any connectivity across the globally dispersed networks of today's wired enterprise. Supporting a complete

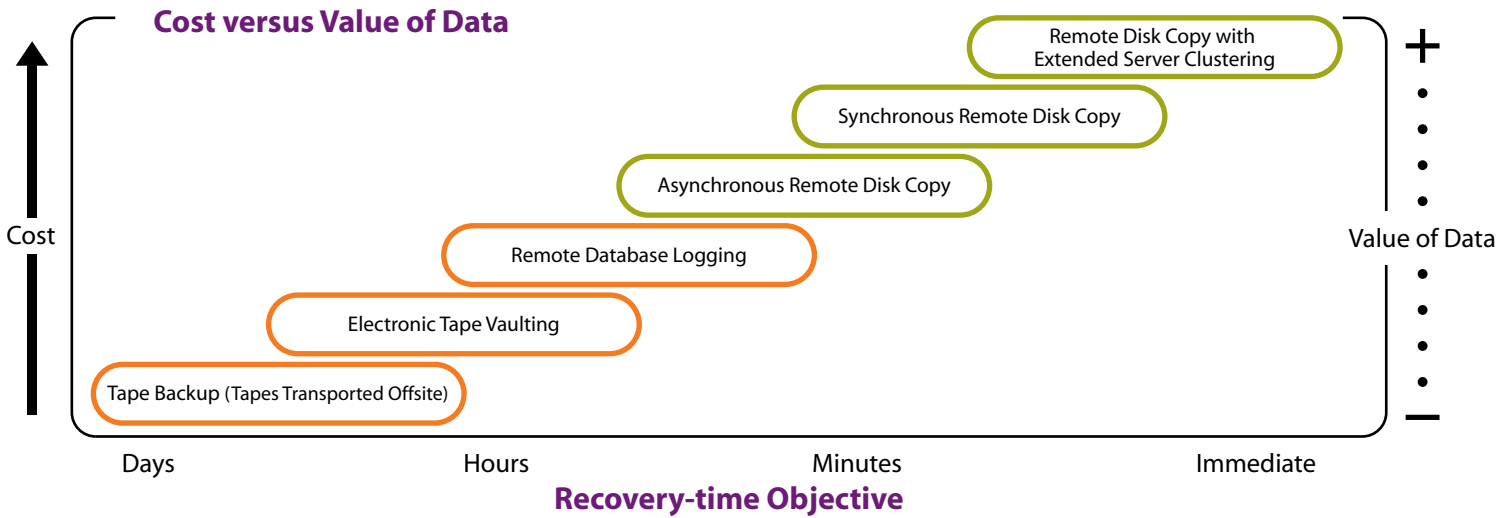


Figure 2: Application recovery-time objectives and recovery-point objectives dictate the cost of data protection.

portfolio of optical transmission platforms, including CWDM, DWDM, and SONET/SDH for native long-distance Fibre Channel and Fibre Channel over IP (FCIP) for IP-based SAN extension, the Cisco solutions eliminate the need for additional devices in the network.

Delivering Long-term Business Resilience

Together, Hitachi Data Systems and Cisco transform the resilience of your business. Delivering a simplified, streamlined, and consolidated high-availability infrastructure, Hitachi Data Systems and Cisco maximize your IT investment and guarantee long-term, enterprise-wide business continuity.

To learn more about how Hitachi Data Systems and Cisco can help you with your business continuity plans and to read more about business continuity visit www.hds.com, or call Hitachi Data Systems at 888 234 5601, ext. 950, to explore an engagement that will result in the solution optimized to your business continuity needs.

Hitachi Data Systems Replication Solutions

Hitachi Universal Replicator Software

Universal Replicator software delivers asynchronous data replication for the Hitachi TagmaStore® Universal Storage Platform and Network Storage Controller. It introduces innovative technology to support advanced business continuity requirements.

Hitachi TrueCopy™ Heterogeneous Remote Replication Software Bundle

TrueCopy software is business continuance software that provides a continuous, host-independent data replication solution for duplicating local data onto one or more physically separated Hitachi storage systems.

Hitachi ShadowImage™ Heterogeneous In-System Replication Software Bundle

ShadowImage software is business continuance software that provides a host-independent data replication solution for duplicating any customer accessible data within a single Hitachi storage system.

Hitachi Compatible Replication Software for IBM® XRC®

Compatible Replication software for IBM XRC is an advanced mainframe business continuity and disaster recovery solution that provides consistent data replication over long-distance networks. The software enables Universal Storage Platform, Network Storage Controller, and Hitachi Lightning 9900™ V Series customers to implement remote copy applications across geographically dispersed locations.

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