

SOLUTION BRIEF

# Beyond Disaster Recovery - Building Datacenter Resilience

In-region and Out-of-region Data Replication



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## In-region and Out-of-region Data Replication

### Disaster Recovery Is Not Enough

One of the fastest and most certain ways to seriously affect an enterprise today is to cut off its flow of information. Data is the lifeblood of business. An interruption of just seconds to normal data access can result in enormous cost to the business and if lengthy, may impact it to such a degree that it cannot recover.

Planning for disaster recovery is not enough. What is needed, is to ensure that the data is always accessible. By building resilience into the enterprise infrastructure, business value can be increased, operational efficiency improved and potential points of failure removed.

### Key Issues

#### Recovery-Time Objective (RTO)

This is the length of time that specific business functions must be restored to full operation. Expressed another way, RTO answers the questions, “How long can we afford to be out of action following a disaster and/or how long can we go without a specific application?”

#### Recovery-Point Objective (RPO)

This is the time between the last good data written to disk and the time an interruption occurred. In essence, it is RPO that determines the minimum frequency with which backups must be made. RPO answers the question, “How much data can we afford to lose in the event of an interruption?”

Reducing either the RTO or the RPO reduces risk but increases the cost of the data replication solution used to deliver the specified level of resilience.

### Legislation

Around the world, governments are increasingly creating laws or regulations that require all types of organizations to manage the data they collect in line with specified standards. Meeting the demands of such legislation requires some level of resilience within the enterprise infrastructure.

By carefully assessing potential threats to each application in use, the data on which each relies and the risk posed to the enterprise, appropriate levels of protection can then be determined. Mission critical applications will warrant higher levels of protection, often in the form of out-of-region data replication.

### Hitachi Data Systems and Brocade Together

Hitachi Data Systems is the storage vendor of choice for a majority of the top 100 companies on the Fortune 500® list, widely recognized for both quality and performance. Brocade is the networking vendor of choice – the leading provider of storage network solutions, with over 75% of the SAN switching market, helping organizations connect, share and manage their information.

Partners since the mid 1990's, we deliver enterprise-class business continuity solutions that simplify and streamline enterprise IT infrastructure, build high availability into the enterprise fabric and maximize investment through massive economies of scale. The companies work together at all levels, from board to test bench, as best-in-class partners.

Hitachi Data Systems and Brocade have the experience required to analyze an enterprise's business challenges and requirements in order to provide highly robust, resilient and scalable replication-based storage solutions, enhancing operational efficiency and reducing business risk. Customers can count on this partnership for continued innovation.

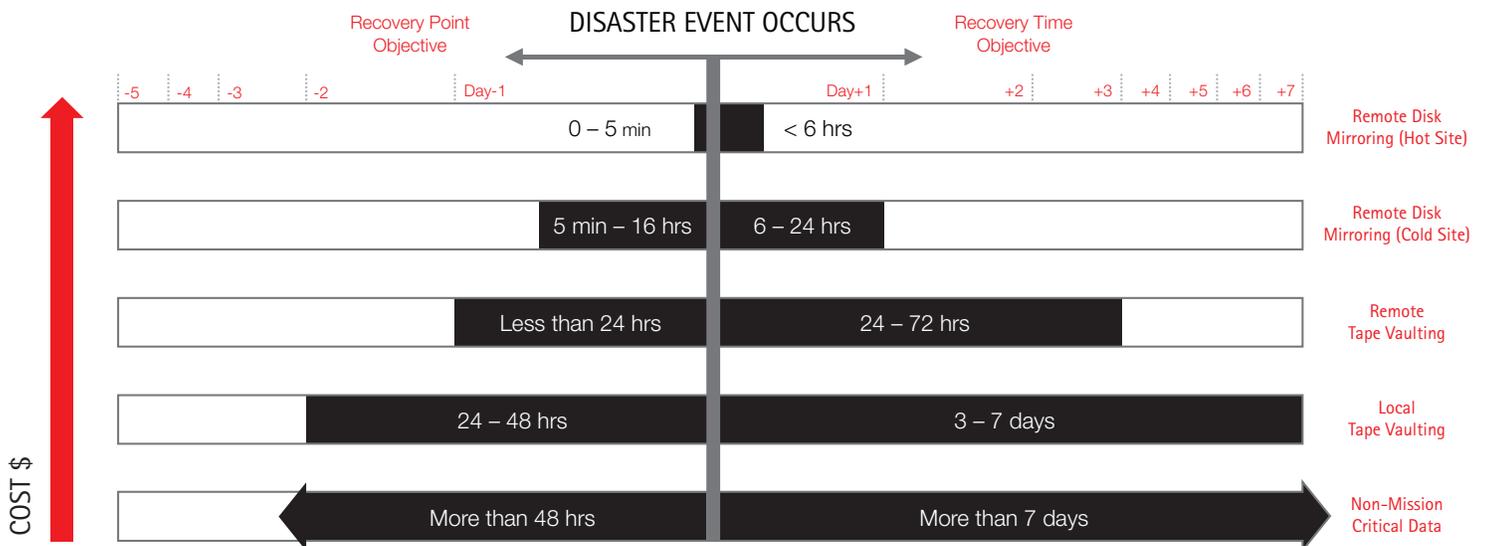


Figure 1. Recovery Operations – RTO and RPO Impact



## Storage Hardware Technology

The Hitachi Universal Storage Platform family with its robust, application-focused architecture enhances operational efficiency. Leveraging its controller-based virtualization, the solution provides data replication services with unique advantages including the ability to handle network outages while maintaining a reasonable RPO.

Unique Hitachi technology enables data replication with high levels of data integrity, especially when asynchronous out-of-region replication is implemented. The fourth generation Hitachi crossbar architecture enables an enormous level of scalability, supporting up to 247 petabytes.

A perfect match for this scalability is Brocade's 4 Gb/sec Fibre Channel routing, trunking, and data management capability. It delivers unprecedented throughput and availability for extended FC and FCIP WAN links. In addition, Brocade's multi-point connectivity offers the highest levels of scalability to support data growth at the lowest cost.

## Hitachi Data Systems Replication Software

Hitachi Universal Replicator software provides operational resilience and efficiency while guaranteeing data integrity. Universal Replicator leads the industry and can deliver very short RPOs over long distances. Shorter RPOs in turn usually mean shorter RTOs, with less data to recreate. Some of our customers talk about how Hitachi Universal Replicator helps them reduce their "disk" RTO, or how long it takes the solution to make the replicated data available to duplicated applications on the recovery or secondary site.

Combined with Hitachi TrueCopy® Synchronous replication software, Hitachi Universal Replicator software also supports the implementation of in-region and out-of-region recovery in three data center configurations with asynchronous out-of-region recovery. These are supported by Brocade's extension technologies that offer market leading data acceleration techniques that enable the highest performing replication over short or long distances. These technologies provide the best out-of-region protection and the flexibility to locate storage wherever needed globally, regardless of distance, achieving the highest performance available.

## SAN Connectivity and Extension

The Brocade 7500 SAN Router provides high speed connectivity to Fibre Channel SAN and storage resources. It interconnects and extends SAN fabrics over distance in support of strategic business objectives such as business continuity and disaster recovery, data migration and global access.

Unique data management and acceleration techniques deliver the highest performance available over any distance, using either native Fibre Channel or Fibre Channel over IP (FCIP) WAN connectivity.

Leveraging Brocade's unique adaptive networking and Quality of Service (QoS) techniques, the Brocade 7500 allows greater resource utilization, network resiliency and simplified management. Its highly scalable Fibre Channel Routing (FCR) capabilities allow organizations to securely share devices across multiple fabrics and to interconnect their remote SAN fabrics while isolating faults to minimize application interruptions.

## The Solution

The combined solution delivers high availability and exceptionally high levels of system redundancy, reliability and performance, and is distinguished by several solution aspects:

Because it is self-healing, the solution is less susceptible to link failures, telecommunications outages or exhaustion of resources at the primary site. If a telecommunications or link failure should occur, transactions for replication are written to disk based journals at the primary site, avoiding the performance degradation that would result if the primary controller's cache becomes full. When the link is restored, the secondary site pulls down the journalled transactions, automatically restarting the replication and allowing the primary site to focus resources on application performance.

This efficient solution manages the bandwidth between the primary and secondary sites: resiliency in the links, intelligent data management techniques and data compression mean that bandwidth can be sized for average loads, rather than peak loads, as is the case with traditional implementations. Since the ongoing operational expense of communications links is invariably the major cost in distance replication scenarios, this results in significant monetary savings for the enterprise.

A variety of data acceleration techniques are also performed to maximize performance and utilization of extended FC and FCIP WAN links. Available for both open systems and mainframe environments, these acceleration techniques reduce backup and recovery times, and improve RPO/RTO for all classes of data.

Time consistent recovery can be delivered across multiple applications and systems, ensuring that interdependent applications can always be recovered to the same recovery point.

Write-fidelity is also ensured. Replicated data is written to remote storage in the same order as it is written to the primary storage array, across multiple applications and arrays.

For these reasons and more, business continuity solutions from Hitachi Data Systems and Brocade for in-region and out-of-region data replication provide efficient and resilient industry leading capabilities upon which customers can rely.

## Further Information

For more detailed information on in-region and out-of-region data replication and related topics, please refer to the following documents:

<http://www.hds.com/solutions/storage-strategies/business-continuity.html>

<http://www.hds.com/products/storage-software/universal-replicator.html>

<http://www.hds.com/assets/pdf/sb-a-blueprint-for-business-resilience-and-operational-efficiency.pdf>

<http://www.hds.com/assets/pdf/business-continuity-universal-storage-platform-network-storage-controller-whitepaper.pdf>

[http://www.brocade.com/solutions/business\\_continuance\\_overview.jsp](http://www.brocade.com/solutions/business_continuance_overview.jsp)

[http://www.brocade.com/solutions/backup\\_restore\\_overview.jsp](http://www.brocade.com/solutions/backup_restore_overview.jsp)

<http://www.brocade.com/products/extension/index.jsp>

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