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Data Availability Storage Software

MANAGING THE COSTS OF DOWNTIME

CONTINUOUS REAL-TIME DATA REPLICATION & CLUSTERING SOFTWARE: THE NEXT LEVEL OF DISASTER RECOVERY

A White Paper

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Constant Data, Inc. is a member of SunTone and is applying for product certification. The Constant Replicator software product is a RedHat Certified Application, Novell/SUSE Certified Application, comprehensive IBM TotalStorage proven and IBM ServerProven.

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1. Introduction

This document was written to discuss the total costs associated with "downtime" caused by computer system outages and recommends that organizations consider the total cost of system downtime when designing and implementing comprehensive disaster recovery solutions.

The impact of data and service interruptions largely depend on what preparedness plans are put in place by enterprises before a disaster hits. This document offers a different approach for enterprises to manage availability with proactive enterprise-wide business continuity solutions that complement existing disaster recovery solutions.

2. Reasons for Downtime

An interruption of operations and business processes is expensive for any organization regardless of size. This interruption of business data and application IT services, often referred to as "downtime", is always painful for an organization and often disastrous.

There are many causes of downtime for an enterprise. The most common reasons for downtime of critical IT services include the following:

- Hardware Failures
- Power Outages
- Virus Attacks
- Natural Disasters – Hurricanes, Tornados, Earthquakes, Fire, Flood, etc.
- Human Error
- Operating System Errors

Downtime occurs more frequently than most organizations realize. Especially systems located outside the core data center have a higher risk to go down, because of the lack of visibility.

3. Downtime is Expensive

In today's information age, enterprises have become more efficient and increasingly dependent on the critical data that runs their business. Data is knowledge and knowledge is valuable to any organization regardless of its form: ecommerce customer transactions, parts inventory, customer and medical records, seismic or financial data, email correspondence, or employee home directories containing important documents and financial spreadsheets.

Most organizations operate in global environments with a distributed network of offices and/or subsidiaries. Their data storage requirements increase at an exponential rate and the associated impact and costs of downtime becomes greater for these global operating companies. It is important for them that critical data and applications are located both on servers in secure, centralized, data centers and on servers in geographically distributed offices and/or subsidiaries across their IT networks. In addition to the stored knowledge in secure data centers, much of an organizations mission critical data and services reside on remote file servers, email servers, web servers, ERP systems, and database servers, which are on the edge of the enterprise networks and need the same protection as the data in the main data centers.

The knowledge of an enterprise is its collected data and that is one of its most valuable assets. Losing data is catastrophic and replacing lost data is very costly and sometimes too expensive or even impossible to replace. Furthermore, since data storage is growing and changing within an organization, the shear volume of data storage itself often makes replacing lost data impossible.

Companies need to think outside the disaster recovery box and consider proactive solutions for business continuity by developing a strategy that eliminates downtime. A recent survey was done asking organizations about their experiences with system downtime. Of those organizations participating in the 2001 cost of downtime survey:

- **46%** said of each hour of downtime would cost their company up to **$50,000**
- **28%** said each hour would cost them between **$51,000 and $250,000**
- **18%** said each hour would cost them between $**251,000 and $1 Million**
- **8%** said it would cost their companies **more than $1 Million** per hour.

Source: 2001 Cost of Downtime Survey Results, Eagle Rock Alliance Ltd.

Organizations understand that downtime through a loss of critical applications and data is expensive to any organization, but fail to account for the total costs of the impact of downtime. In another report, The Meta Group quantified the hourly cost of downtime by industry:

Industry	Hourly Cost of Downtime	Lost Revenue per Employee
Energy	$2,817,846	$569
Telecommunications	$2,066,245	$187
Manufacturing	$1,610,654	$134
Finance/Brokerage	$1,495,134	$1,080
Information Technology	$1,344,461	$184
Insurance	$1,202,444	$371
Retail	$1,107,274	$244
Pharmaceuticals	$1,082,252	$168
Banking	$996,802	$131
Food Processing	$804,192	$153
Consumer	$785,719	$128
Chemicals	$704,101	$195
Average	$1,010,536	$206

Source: IT Performance Engineering & Measurement Strategies: Quantifying Performance Loss, Meta Group, October 2000

4. The Real Costs of Downtime

Companies evaluate downtime of IT services differently, but the most stated tangible cost are lost revenue and lost productivity since these losses are the easiest to calculate:

- lost revenue
- lost productivity

Companies may agree that an interruption in IT services, due to loss of critical data and applications, is expensive, but most companies underestimate the true impact of the cost of downtime. Lost revenue and productivity only describe the tip of the iceberg, because the long-term results of system downtime are much higher:

- lost revenue
- lost productivity

AND

- cost to replace lost data
- late fees
- penalties
- lost opportunity
- goodwill and brand damage
- lost customer loyalty
- lost investor confidence
- lost competitive advantage
- lost efficiency
- non-compliance
- breach of contractual obligations
- medical costs due to accidents

The true cost of downtime includes many intangibles that are not easily calculated but have a major and long reaching impact on the future success of an organization. One of the most difficult costs to calculate is the lost opportunity associated with downtime. Placing a value on the loss of revenue due to losing a single customer has immediate tangible consequences that are easy to calculate; however, placing a value on lost future revenue is even greater.

New government regulations like HIPAA and Sarbanes-Oxley ("SOX") affect corporate governance and require companies to safeguard more critical data longer than ever. Loss of critical data means non-compliance.

Many organizations believe since they have a disaster recovery plan in place that includes backups they are protected from data loss. However, many companies fail to realize their backups are usually incomplete since they do not capture changing data and are always old since they are probably from last week or yesterday and do not contain a backup of current business data at the time of the system outage. Organization's risk management must take these additional risks factors into account when considering ways of managing availability.

5. Shift in Risk Management Strategy: A Move from Disaster Recovery to Business Continuity

Disaster Recovery Planning is contingency insurance that minimizes the impact of a disaster on an organization. However, the IT technology that provides disaster recovery is designed to recover after a disaster has occurred and assumes an organization has already experienced system downtime.

Most of the current disaster recovery solutions intervene after the disaster has occurred. The most common disaster recovery solutions involve backup technology. Backups minimize data loss by archiving old versions of files but are not an effective and comprehensive data protection solution.

> Disaster Recovery Strategies that rely only on backups do not reduce the risk of downtime and only provide minimal protection from a disaster.

Backups do not continuously capture current data changes. Backups fail to provide comprehensive coverage in the event of a disaster. Disaster recovery strategies that rely only on backups become less effective as an organization grows because backups do not scale with growing amounts of storage. Recovery time increase as storage grows and backups take longer to complete.

Changing the strategy from disaster recovery to business continuity includes shifting the question from "How do we preserve our data in case of system outage?" to **"How can we prevent a system outage and keep our business running?"** The simplest strategy of disaster recovery is to proactively eliminate downtime possibilities.

> Constant Data provides continuous real-time data availability products that proactively help companies to continue business in case of a system outage without any significant business interruptions.

Minimizing or eliminating downtime through business continuity should be an integral part of enterprises risk management against unexpected systems interruptions. It is not a matter of if an interruption will occur; it is a matter of when an interruption will occur, how long it will last and what magnitude and impact it will have on an organization. The impact of data and service interruptions largely depend on what business continuity plans are put in place by enterprises before a disaster hits.

6. The Benefits of Business Continuity

An effective business continuity plan develops and maintains an organizations backup capability for key revenue generating data and systems. Business continuity plans protect the system against unanticipated threats to the security or integrity of business data and maintains a level of operational capability prior, during and post a business interruption event.

The benefits of a business continuity plan in place can be seen through:

- reduction in operational expenditure
- increase in customer satisfaction
- positive increase in public opinion
- leverage to renegotiate insurance rates
- compliance with governmental regulations

Business continuity plans proactively focus on providing continuous operations.

7. Constant Data Provides a Business Continuity Solution

Managed availability through effective business continuity plans includes continuous data replication to complement disaster recovery solutions that include tape backups. Continuous data replication allows an organization to continue to operate by proactively maintaining a hot-standby server with up-to-date data for immediate recovery.

Constant Data offers affordable hybrid data replication solutions that continuously mirror data between existing servers. Enterprise-wide data consistency is maintained by replicating byte-level data changes as they occur using existing networks and over long distances. The solution is simple to install in existing IT infrastructures. Constant Data's application-independent software solution mirrors all data as it changes in real-time regardless of the amount of storage, type of hardware, or applications running on the server.

Constant Replicator is continuous real-time data replication software that installs on critical servers located anywhere on an organization's network to maintain one or more mirror images of critical data secured online and available anywhere. The host-base data availability software solution semi-synchronously mirrors data in existing networks regardless of network latency or distance between replicas.

Constant Replicator allows immediate recovery to the current version of data since an online replica remains online and available. When combined with Constant Data's clustering solution, both data and application recovery becomes automatic.

8. Full-Featured Product Evaluation

Full-featured evaluation copy of Constant Data software products are available for download from Constant Data at www.constantdata.com.