



**High Plains
DataBank**

Customizable, responsive, and reliable data solutions.

Data Management Solutions for Small to Medium Businesses

*Ensuring Rapid, Complete Disaster Recovery
and Business Continuance with NetApp Technology*



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Mission

*Our mission is simple:
Make technology
an asset for your business not a liability.*

At High Plains Data Bank, we are committed to providing comprehensive and reliable disaster recovery plans with simple, powerful, and highly dependable solutions that deliver data security, high availability, low risk, and—in case of disruption—rapid and complete data recovery.

We work around your business and strive to make technology integrate seamlessly within your organization, so your business can grow.

When your business grows, ours will grow with you.

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Introduction

Implementation of a new and improved grade book system for a large school district resulted in an immediate improvement in performance and reliability, which teachers and staff noticed. As more and more teachers began to use the system, the IT staff was alerted to an unforeseen glitch. This glitch inevitably caused the grade book system to suffer a catastrophic failure. After extensive efforts to revive the system failed, it was clear the system needed restoration from a backup. However, none of the backups had been tested and the recovery inevitably failed. Consequently, all data was lost and was unrecoverable. This resulted in all teachers in the district losing grades for weeks prior to the incident.

Who can forget the devastation and suffering that Hurricane Katrina inflicted on nursing homes? Some 30,000 nursing home residents were evacuated or displaced to other care settings and, tragically, 140 nursing home residents died. For fragile residents, evacuation to safety posed another risk: lack of information. "Records were lost and most of the time, evacuees could not remember nor did they know what medicines they were on or how much" observed one medical volunteer.

How about the data meltdown at a bookmark sharing website one Friday morning? The service lost both its primary store of user data and its backup. The site was taken offline while the team tried to reconstruct its databases, but some users would never see their stored bookmarks again. The failure appeared to be catastrophic and the company couldn't say to what extent it would be able to restore any of its users' data. It also reported that the data failure was so extensive repairing the loss will take "days, not hours."

A school district, a nursing home, and a small internet business each with one thing in common ... total data loss after a disaster. Now, that you've permanently lost your data (contacts, accounting, documents, emails, etc) how will you recover? More importantly, what could you have done to prevent the loss?

At High Plains DataBank, we recognize that data management and disaster recovery planning is vital to the success of your business. That's why we're committed to helping you build and maintain a successful backup and recovery practice by focusing not only on data archiving, but in data management as a strategic asset to your company. Our end-to-end solutions help you recover your data faster than traditional backup and recovery methodologies, and virtually eliminate failures by ensuring that your disaster recovery plan is reliable. We like to think of our solutions as "Recovery Planning". After all, the most important part of your backup plan is the recovery.

What We Do

Many small-to-medium businesses face difficult challenges when considering an effective and comprehensive disaster recovery and business continuance solution. The lack of adequate resources and limited budgets are usually the most common. High Plains DataBank addresses these challenges by providing a data managed solution specifically for your business. We look at your IT environment from a business perspective, identifying critical systems and dependencies. We leverage our expertise to optimize and improve your process, allowing the disaster recovery and business continuance planning effort to move forward at a faster pace while generating positive results. Our service offerings are customized to meet your specific needs and budget. Realizing that the "in-house" disaster recovery plan is often not financially realistic, we help you design a long-term strategy that will meet your short term needs and allow you to scale for future growth.

Commitment to Availability

High Plains DataBank complements your business with a full range of disaster recovery and business continuance solutions to address every need from local data protection to online disaster recovery. Full protection can be achieved for databases and other business-critical applications, as well as file data. Rapid data recovery is considered to be of paramount importance and every High Plains DataBank solution is designed to ensure that data can be restored and operations can resume as quickly as possible. In most cases, data can be recovered in seconds or minutes rather than the hours or days required by other solutions. Available High Plains DataBank solutions include point-in-time images, backup to disk, and asynchronous replication for the greatest data availability and currency.

Disasters and Their Cost

Disaster recovery is the ability to restore “normal” operations after a disaster has disabled or interrupted your operations. The combination of an intelligent disaster recovery plan and a truly dependable “on-call” disaster recovery solution mitigates and minimizes the financial, operational, and business impacts to your organization.

Disaster Recovery Challenges

Even if your company already has a disaster recovery plan and equipment in place, you may still face the following business and technical challenges that a High Plains DataBank disaster recovery solution can solve rapidly and cost-effectively:

Complexity of environment: Today’s typical IT environments are heterogeneous, distributed, and dispersed. Interoperability often is obscure.

Data availability: Your business cannot afford to lose the ability to access and manage mission-critical information. You must be able to resume operations quickly. It would be desirable to resume at the point at which operations ceased, while preserving the last transaction or business process step completed. In order to achieve this, you must keep your most current data and have it available and ready to go on a moment’s notice at a location safely removed from the disaster site.

Government regulations: Governments are mandating that companies protect their data. For example, United States regulations on data protection now apply to health care (HIPPA), financial services (SEC 17a4), corporate accountability (Sarbanes-Oxley Act), life sciences (21 CFR Part II), and government (DoD 5015-2). Around the world the story is similar, from the New Basel Capital Accord (Basel II) globally to RIPA and FAS in the UK and COB in France. Beyond government regulations, investors and even insurers are insisting that businesses put in place feasible disaster recovery plans to protect critical information.

The Costs of Disasters

There are two different effects from a disaster: (a) direct short term costs and revenue loss, and (b) indirect long-term costs of damage to the business. The revenue can be quantified as seen below, but the lingering consequences to the business can be further reaching. Recovering data and highly available information access can help organizations reduce or avoid, at a minimum, direct and indirect costs: Imagine you’re company does \$3 Million per year in revenue. If you take 52 weeks in a year and average a 40 hour week then you would be losing revenue at an average of \$1,442.31 per hour if you encounter a disaster that rendered you company’s data unavailable.



Direct costs also include labor (plus benefits and other loading costs), as well as other resources such as contractors, machinery, facilities, etc. These are the most obvious, but they represent only the beginning of the impact. Indirect costs might include alienating your clients and impacting your long-term business revenue.

Example: \$3 Million per year business

- Losing 2% of your business could equate to \$60,000. It could be more or less, but the impact is very real.
- These impacts can be long-term and not just one-time.

These costs can add up very quickly and do not include the consequences of a true total disaster where your data is lost and unrecoverable. This can include:

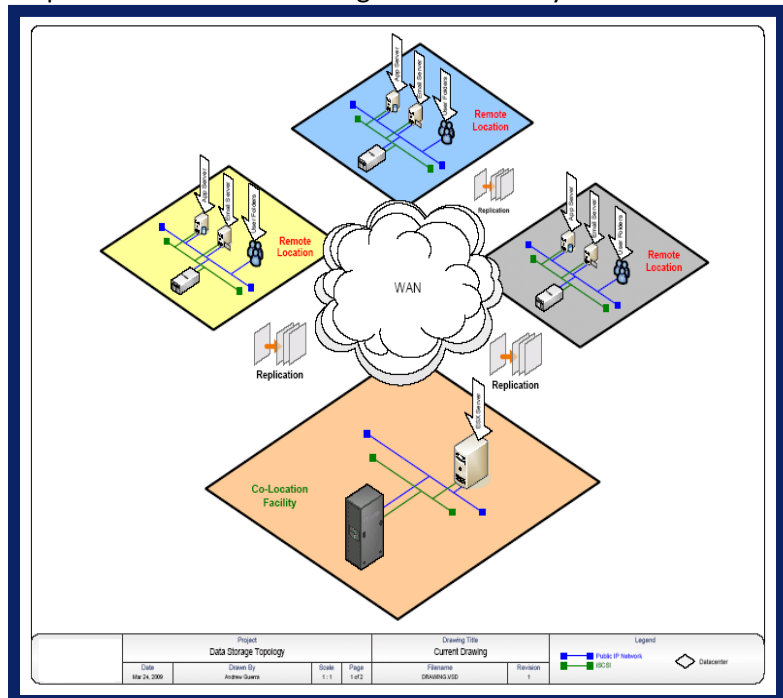
- Inventory records (necessitating an expensive complete re-inventory)
- Client lists and contact information
- Transaction and business records
- Missed deliveries/deliverables, causing more strife and lost business
- E-mail and e-mail records
- All internal company documentation, records, policies, etc.
- Accounting records and IRS documentation
- The list is endless.

It is important to note that only 6% of companies suffering catastrophic data loss survive, while 43% never reopen and 51% close within two years (Hewlett-Packard Development Company, 2007).

Our Solution

Our solution centers on a storage consolidation strategy. By operating at the storage level instead of at the server or application level, we ensure protection while offloading tasks from busy servers and in turn replicate your critical data to our co-location facility. All our solutions operate with simple and consistent interfaces and are guaranteed to work together. We rationalize your disaster recovery and business continuance strategy and help you simplify data management. We greatly improve your recovery times and reduce expensive downtime, protecting you against lost revenue and damaged reputation.

The simplicity of our solutions produces significant cost savings in the deployment and ongoing operation of your disaster recovery and business continuance strategy. This allows you to achieve your business goals while protecting your critical data from planned and/or unplanned events. The diagram above illustrates this idea.



All our solutions are based on NetApp technology. NetApp has built a comprehensive solution for solving numerous disaster recovery and business continuance challenges. The NetApp offering is differentiated by providing simple-to-use, feature-rich, highly reliable products enhanced by High Plains DataBank services. The solution improves recovery time and lowers your management costs.

As shown in the illustration, our co-location site could also fulfill an additional role as a business continuance facility in the event of a catastrophic customer site/system failure due to power outage, equipment failure, severe weather conditions, building damage, etc. Application data, such as email, is instantaneously available from a secondary server with the use of VMware. Files and applications need only to be restored. Moreover, all tape backups would occur at the offsite facility instead of the customer site, reducing costs as well as simplifying and centralizing backup management if you require it.

There are several options in which to choose from. The following are typical examples.

- a. If you are an existing NetApp customer, you can purchase additional shelves of disk to reside at our co-location facility. This option allows you to physically remove your data assets in the event of a contract termination. Basically, you will be leasing processing power and management.
- b. If you are an existing NetApp customer, you can also lease storage space from our co-location facility if you do not want to purchase storage. You cannot remove the disk assets, but can pay for data migration services for disaster recovery and business continuance. Basically, you would be leasing processing power, management and storage space.
- c. If you are not a NetApp customer, High Plains DataBank can provide you with a storage system for your primary site. Essentially, you will lease the equipment while we manage your data at both the primary and co-location sites.

Any of these options will require you to purchase NetApp's SnapMirror/SnapVault Primary licenses for your specific system. The requirement for encrypted data will not include the purchase of an encryption device. Instead, this equipment can be provided by High Plains DataBank, if necessary. Moreover, if you require tape backups, you will need to purchase the LTO-3 media. All of these costs can be rolled into a single operational lease to meet your budget.

Summary

Seamless Business Continuance and Rapid Recovery

Data is the lifeblood of your business. Protecting against data loss is important, but only half the battle. Rapid recovery of data after a failure or disaster is essential. Your disaster recovery and business continuance strategy must cover all important data elements and provide adequate recovery speed for each. High Plains DataBank delivers a comprehensive line of disaster recovery and business continuance solutions to facilitate rapid recovery of your file data, critical applications, and entire sites, facilitating the creation of complete data management strategies. By operating at the storage level rather than that of the server or application, our solution delivers the disaster recovery and business continuance solutions that reduce the load on your critical servers and that are integrated, simple to manage, and highly cost effective.



As your data volume increases over the years, so does its value mainly because so much of your work exists primarily in digital form. Data loss can cripple your business and send everyday users to the edge of despair. With High Plains DataBank data recovery capabilities, despair is unwarranted. Think about what that growing volume of data is really worth to you and let us help you figure out how to safeguard it before it overflows! Disasters may be unavoidable, but with the right tools and strategies you can avoid losing what really matters. Let us help you choose from a variety of options or let us custom tailor one for your environment.

Appendix A: Disaster Recovery Solutions

NetApp has built a comprehensive solution for solving numerous disaster recovery challenges. The NetApp offering is differentiated by providing simple-to-use, feature-rich, highly reliable products enhanced by High Plains DataBank services. The solution improves recovery time and lowers acquisition and management costs. The complete NetApp disaster recovery family of products includes the following hardware and software products:

Fabric Attached Storage (FAS): A scalable suite of highly available, field-proven networked storage systems, NetApp enterprise storage systems are easy to install, configure, and manage and deliver one of the lowest total costs of ownership and highest returns on investment in the industry.

Virtual Tape Library Storage Systems: A highly optimized disk storage system capable of emulating tape libraries. The operating system and data layout is highly tuned to meet the high sustained rate and larger block sizes of tape backup, versus high I/O small read/write capabilities of standard disk systems used for disk based backup. NetApp VTL storage systems work in concert with a tape library to address performance inherent in direct backup to tape.

Snapshot™ Technology: Enables near-instantaneous, transparent, online backup of customer data by storing multiple read-only versions of each data volume. Snapshot requires minimal disk space and causes no disruption of service.

Clustered Failover: Ensures data availability by transferring the data service of an unavailable system to another system in the cluster. Often, the transfer is transparent to end users and applications, and the data service is quickly and automatically resumed with no visible interruption to business operations.

SnapMirror: Policy-based, remote-replication software for NetApp storage that shortens backup windows and reduces network traffic by transferring only changed blocks of data.

SyncMirror™: Software for synchronous data replication for maximum data availability.

MultiStore™: Software solution that enables secure, multiprotocol storage and multiple domain (Windows® and UNIX) consolidation across enterprises. It enables you to partition the networking and storage resources of a single NetApp storage system for simplification of storage consolidation.

DataFabric® Manager (DFM) Business Continuity Module: Simplifies data administration by efficiently managing a storage infrastructure consisting of NetApp enterprise storage systems and NearStore® storage systems. The Business Continuity Module of DFM software allows for SnapMirror relationships in order to help ensure data availability.

Virtual File Manager™: Software for enterprise-level storage management for Windows environments.

MetroCluster: NetApp software that combines failover capability and synchronous data replication to ensure you can recover from disaster—with no loss of data—in minutes rather than hours or days.

Disaster Recovery Metrics

In order to develop and achieve a realistic yet dependable disaster recovery plan, businesses and organizations must assess both the value and the demand for particular types of data and information according to business processes and operations. Consideration must be made regarding the maximum amount of time that can be sustained with inaccessible data. Second, a customer must determine how much they are willing to pay for this level of protection. The essential criteria to consider when evaluating options and selecting the right solution are recovery time objective (RTO) and recovery point objective (RPO) along with the appropriate service-level agreement (SLA) as well as the estimated total cost of ownership (TCO) or return on investment (ROI) of a disaster recovery solution.

Recovery Time Objective (RTO): The point in time following an operational interruption by which a business process or application service must be restored in order to ensure the viability of business operations.

Recovery Point Objective (RPO): The chronological point in time to which computer application data or file system information must be restored, within the established RTO, in order to ensure the viability of business operations.

Service Level Agreement (SLA): An agreement between a service provider, such as an IT department, and a consumer of that service, such as a particular business unit. A service-level agreement defines parameters for measuring the service and states quantitative values for those parameters.

Return on investment (ROI): At its most basic level, ROI compares the investment or input (i.e., the cost of an asset, in terms of both money and resources) to return or output (i.e., the usable benefit resulting from an asset, in terms of both money and resources saved). An ROI comparison aims to identify the solution with the quickest or greatest ROI.

Total Cost of Ownership (TCO): The comprehensive cost of an asset throughout its life cycle, from acquisition to disposal, or over a defined period of ownership. A TCO comparison aims to identify, quantify, and ultimately reduce the overall costs associated with ownership of an asset by including ongoing costs, such as for maintenance, administration, etc., with initial costs.



The NetApp disaster recovery solution effectively addresses all five of these criteria by reducing RTOs, improving RPOs, and bolstering SLAs as well as delivering the lowest TCO with the highest ROI.

Replication Methodologies

Selecting the most appropriate technology depends on specific requirements of the customer. There are several options for replicating data which generally fall into one of two categories: synchronous or asynchronous. The distance of replication versus application performance must be taken into account as well as evaluating the critical replication issues posed by rolling disasters. This includes data consistency and sequence reliability. Using the results of this analysis, a business or organization can select the appropriate data replication technology and disaster recovery solution for its needs. By utilizing the flexibility of SnapMirror®, the NetApp disaster recovery solution offers a choice of replication technologies. Selecting the most appropriate technology depends on the specific requirements.

Mirrored data replication—With NetApp SnapMirror technology, critical data is efficiently mirrored within a single storage system to a separate set of disks, with minimal impact on performance. The mirrored copy is available for very quick partial or complete restores, for offloading tape backups from the primary data set, or for use as a development version of the production data set.

Asynchronous data replication—With NetApp SnapMirror async technology, critical data is efficiently replicated to NetApp filer server in a proposed remote location. Replication is achieved with minimal impact on performance. Changes are recorded as often as once per minute to disks on a backup server. Data on the backup server is available for very quick partial or complete restores, as well as for offloading tape backups from the primary server.

Synchronous data replication—SnapMirror offers a synchronous replication mode, where all data is committed to both sets of storage before the application that wrote the data is informed the data has been written. With sync technology, data is kept up-to-date between sites and the administration costs are kept low due to the simplicity of the solution and the use of existing equipment.

Semi-synchronous replication—Because not all customers want truly synchronous replication, SnapMirror offers a semi-sync mode, where the customer determines how many I/O operations or milliseconds the replicated site can be out of sync with the source. Semi-sync is an ideal tradeoff between getting as close as possible in data updates without affecting performance of the source application.

Multihop replication—SnapMirror supports multi-hop replication, where customer data is replicated in synchronous mode to a destination, from which it is replicated asynchronously to other sites if required.

Appendix B: Disaster Recovery Solution Benefits

NetApp supports customer disaster recovery initiatives with simple, powerful, and highly dependable solutions that deliver data security, high availability, and—in case of disruption—rapid and complete data recovery. Working in concert with an existing network infrastructure, NetApp enterprise storage solutions ensure total disaster recovery. NetApp full-service enterprise storage solutions protect data during disasters, failures, and even extensive downtime due to routine or required maintenance.

NetApp solutions offer industry-leading data availability by simplifying complex problems.

- NetApp solutions prevent business interruption by delivering the highest availability.
- NetApp solutions require minimal administration, significantly reducing the network downtime typically caused by routine maintenance.
- The suite of products enables a customer to select a configuration that fits their needs and environment. By working with multiple protocols ranging from Internet Protocol (IP) to Fibre Channel Protocol (FCP), CIFS to NFS, NetApp products help consolidate and streamline the composition, management, and effectiveness of disaster recovery environments.
- NetApp disaster recovery products allow for easy “fire-drill” testing / audit, ensuring successful execution of the disaster recovery plan when disaster strikes, minimizing production system downtime and IT resource dependencies.

Other Key NetApp Disaster Recovery Solution Benefits Include:

- **Fast Recovery:** NetApp technology provides a synchronous record of customer data at any interval that’s chosen—real time, minutes, hours, or days. When a failure occurs, simply go back to the most recent copy of the data and quickly resume business.
- **Lower TCO, Higher ROI:** NetApp disaster recovery solutions are easy to implement and operate, with minimal demand on IT and network administration resources. A NetApp solution fits smoothly into an existing infrastructure and can be operational almost immediately—without changing the way a network or business works. In addition, NetApp offers a 70% to 80% lower total cost of ownership than competing storage solutions, vastly improving the return on investment (Total Cost of Ownership for Database Storage Solutions, 2001).
- **Superior Reliability:** NetApp solutions are sophisticated and powerful, yet straightforward, logical, and reliable, delivering higher IT staff productivity, virtually no downtime, and 24x7 access to mission-critical data for customers, and partners
- **Range of Choices:** NetApp offers the right solution for a customer’s RPO, RTO, SLA, and cost requirements.
- **Cost-Efficiency:** NetApp solutions integrate with an existing infrastructure, including IP and FC networks, leveraging a customer’s existing investment.
- **Flexibility:** NetApp solutions can transfer data over IP and FC for both sync and async, enabling a customer to further leverage their existing infrastructure for disaster recovery efforts.
- **RAID-DP (double-parity) Protection Without Disk Mirroring:** Fast, simple, and highly reliable!



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