



Enabling Better Business Continuity

Backup, disaster recovery and archiving are all key to keeping resources available in a nonstop business world.

TABLE OF CONTENTS

- 1** Executive Summary
- 2** Backups and Beyond
- 4** Identifying Objectives
- 5** Weighing Technology Options
- 6** E-mail, Mobile Access and More
- 8** CDW: Business Continuity Partner

Executive Summary

The modern enterprise faces a dizzying array of business and IT challenges. But none looms larger than managing data and ensuring that it is secure and available in the event of human error or natural disaster. Consequently, business continuity has emerged as an essential component in any business strategy. The ability to keep operations intact and data available when confronted with a system, human or natural disruption is paramount.

Cornerstones to a successful plan are backup, disaster recovery and archiving. While focused more on day-to-day anomalies, backup includes making copies of originals for restoration purposes when needed. Disaster recovery — or high availability — is the replication of entire systems to offsite locations to enable failover in the event of disruption. And archiving is the systematic approach to providing structure to unstructured data while serving as the foundation for e-discovery.

Fortunately, lower-priced products and enhanced technologies are making backup and recovery processes more affordable, effective and efficient. This includes robust hardware and software — from leading vendors — that's more accessible and easy to implement than at any point in the past.



Backups and Beyond

It's impossible to anticipate everything that could go wrong with a business IT infrastructure. Still, with some planning, it's possible to handle a hurricane, flood, acts of nature, a hard disk failure, malware, corrupt software, a stolen server or even a spilled beverage.

The objective of backup is to restore a computer system to a previous state at a given time. For example, if a hard disk crashes, IT needs the means to restore it. The same holds true if something as simple as a file is accidentally deleted.

Computer backup systems also play a key part in a firm's business continuity and disaster recovery planning. This is because they safeguard the pertinent data that keeps a business operating should a system failure occur.

Adding to the challenge is the sobering reality that the volume of data contained within a typical organization is growing at a robust 50 to 60 percent annual rate. Still, businesses must find ways to integrate systems and business processes in order to protect digital assets and reduce risk.

As a solution, a growing number of firms are turning to newer technology to boost performance and transform what has traditionally been a huge challenge into a competitive advantage. And the best practice organizations are transforming backup and recovery into a centerpiece for organizational IT planning.

Disaster Recovery

Business continuity and disaster recovery help businesses prepare for disruptions large and small. Of course, these could include floods or fires. But they also include the most typical form of disruption, equipment failure. As might be expected, backup and recovery are key components of effective BC/DR planning.

BC is a broad term encompassing a logistical plan to ensure that a business can function following an extended disruption. This includes not only IT systems and data but also things like identifying crisis management personnel, staff roles and responsibilities, copies of insurance contracts, etc.

On the other hand, disaster recovery — or high availability — is typically a subset of business continuity. Here an organization replicates entire IT systems and data to offsite locations to ensure a certain degree of operational continuity in the event of disruption or disaster.

When a power failure, attempted security breach, technology failure, human action or natural disaster takes place, an enterprise lacking protection might face crippling circumstances. This can include losing customers to better-equipped and more efficient competitors.

Effective Backup Strategies

It's essential to protect data stores from potential failure. For this IT chiefs need to articulate a strategy for completing effective backups and restores. Often a combination of solutions will produce the best results. Today, a number of highly effective strategies are in use including:

DISK-TO-DISK-TO-TAPE (D2D2T). These systems manage computer storage, backup and archiving by initially copying data to a shared storage device on the network and later to a tape backup system.

The advantage of this approach is that it's possible to back up data quickly — and then restore it equally fast, if needed. Disk-to-disk transfers typically take place at four-to-five times greater speed than tape-to-disk methods.

D2D2T is increasingly used within virtualized storage environments where a high level of flexibility and control exists. Within such an environment, it's often easier to automate and enforce storage policies without regard to physical machines.

TAPE BACKUP. For years, tape has been the de facto standard for data backup and recovery. Being portable and slightly more economical than disk storage, it serves as an ideal medium for long term, offsite backup. While tape is no longer the one-size-fits-all answer for every backup situation, it still has a place in keeping data safe.

CONTINUAL DATA PROTECTION (CDP). The ability to automatically save a copy of every change made to data can go a long way toward meeting strict recovery points and reducing risk. This technology, also referred to as continuous backup or real-time backup, allows an administrator to restore systems and data to any point in time. By capturing data and storing it at a separate location, an organization can ensure that the data is accessible and secure.

CLIENT-LEVEL BACKUP. In many enterprise environments, a large amount of critical information is stored on desktop and notebook hard drives. Therefore, it is essential to design a strategy to back up data stored on client systems. A basic strategy consists of mirroring data from non-homogeneous clients to servers and backing up servers once a day.

DATABASE BACKUP. Businesses increasingly rely on application data including Microsoft Exchange and SharePoint or BlackBerry Enterprise. The result is new demands for faster and more granular recovery of data not available from traditional backup approaches. Granular recovery is an advanced technology allowing IT organizations to complete file- and image-level recovery in seconds from a single backup.

And the task isn't getting any simpler. Data stores wind up scattered on devices across the enterprise and mobility initiatives take hold. What's more, as organizations rely on data in new and different ways — and it becomes intertwined among multiple systems, devices and tools — it's increasingly difficult to determine what is mission-critical.

Although the cost of storage arrays has dropped markedly in recent years, simply adding more storage for backup and disaster recovery isn't adequate. Instead, what is needed is a sound framework for efficiently storing, managing, retrieving and discarding data.

Improving data backup and recovery ranked third in top IT priorities for 2010 at medium- and large-sized companies, behind only server virtualization and information security initiatives.

Source: ESG Research Report, 2010 Data Center Spending Intentions, January 2010

More Data to Copy

The complexity of today's business and IT environments — including 24x7 business operations, mobile computing and tools such as cloud computing — make it increasingly difficult to rely on conventional approaches, such as seven to 14-day backup rotations, with monthly, quarterly and annual data slotted into an archive.

"There is more data than ever before to copy, move through the network and store," says Richard Harrison, senior manager of product management at Symantec. "The massive amount of data is forcing companies to find ways to get data backed up faster and more securely."

Because businesses are so dependent on technology, data stores and automated processes, the recovery time objective (RTO) — the amount of time a company can afford for a system or application to be offline — has shrunk dramatically. Likewise, the recovery point objective (RPO) — how much data a business can afford to lose since its last backup — has gotten tighter.

In fact, in some instances, an application's RPO might be zero. For instance, an e-commerce database restored without the transactions completed the moment before it went down means lost sales, upset customers and potentially legal liability.

"In most organizations, expectations for recovery are much greater than they were before because businesses are far more dependent on their IT systems for functioning," says Mathew Lodge, senior director at Symantec.

Tips for Data Backup

There are more considerations than ever when choosing a backup strategy. Here are some tips from the pros:

- **Provide full visibility into the environment.**
That means making sure that a backup suite includes monitoring and reporting tools, or buying standalone tools.
- **Use a tiered approach.** By taking a one-size-fits-all approach, critical data may be unprotected and low-priority data overprotected.
- **Make sure data is encrypted at the drive level.**
Because security is paramount, also encrypt at the network level.
- **Base backup choices on business processes and needs.**
Don't be wowed by the newest technology.
- **Think about both operational and capital expenditures.** Data backup involves more than acquisition cost. It's also about the people to get the job done.
- **Build your backup infrastructure with room for expansion.** The amount of data to capture will continue to skyrocket.
- **Don't overlook solutions for specific requirements.**
While data backup suites provide significant benefits, don't overlook point solutions such as deduplication.
- **Consider making backup changes at network inflection points.** These can include a shift to virtual servers, an application upgrade or new hardware.
- **Don't overlook the cloud.** Consider the cloud a cost-effective option for lower priority storage.

"Even e-mail, which used to be considered somewhat trivial, has become mission-critical."

Virtualization has also added to today's backup demands. It has created a dramatic change in the number of servers there are and where they're located. This has made it more difficult and more complicated to do backup and recovery because now there is a blend of physical and virtual servers.

Today's companies are also challenged with heightened regulatory and legal oversight regarding their information management initiatives. Compliance with regulatory mechanisms such as Sarbanes-Oxley (SOX) or the Health Insurance Portability and Accountability Act (HIPAA) has drastically increased the data that needs to be saved and the degree of accessibility.

Backup Best Practices

Once a revised recovery time objective (RTO) and recovery point objective (RPO) have been developed, based on an updated review of the needs of the enterprise, these basic tips can help a company move toward accomplishing backup goals:

- Plan to move toward a single system to manage backup and archiving
- Deploy archiving systems to deal with growth
- Start by addressing systems like Microsoft Exchange and e-mail
- Employ data deduplication processes to reduce redundant data
- Replicate to a second data center and send data to tape and offsite as well
- Adopt technology specific to virtualization
- Put all clients in virtual machines

Source: Symantec

Identifying Objectives

In today's world, information is power, data is king. So the maintenance, protection and availability of that data are of the utmost importance.

One of the first things companies need to do when planning backup and recovery and an overall continuity strategy is analyze business needs. This includes examining the role information plays in day-to-day operations.

Take the time to assess the data: from e-mail to mission-critical. Determine what data is most important. To get there, complete a full business-requirements review. However, keep in mind, not all data requires the same level of protection.

Data can be categorized as: mission-critical, business-critical and less-than-critical.

MISSION-CRITICAL — These include stores where the business would be at a complete standstill if the information were not online. This often includes data used in key business processes or customer-facing applications.

BUSINESS-CRITICAL — Loss of these stores would disrupt a business, but not shut it down.

LESS-THAN-CRITICAL — It does not require 24x7 availability and can be preserved by physical backup to tape, and transporting the backup tapes to an offsite location.

After conducting a business-impact analysis, firms can rank the most critical data, then look at the best technologies and weigh that against the cost of deploying it. It is also important to discover any interdependencies data has with the application to ensure those applications are protected as well.

In a perfect world, with unlimited resources, every bit of data and every application would be considered a top-level critical asset. This would demand that data would be duplicated in real time so that restoration could bring back the last byte of information on demand.

However, in the real world, instant restorations become expensive. This is especially true as the number and size of data applications increase.

High Availability

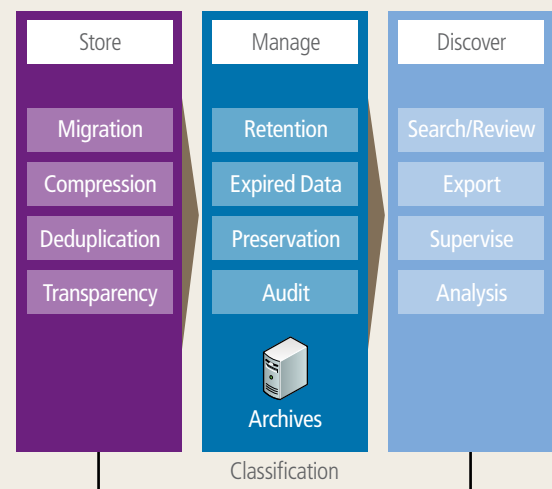
Even the most optimized RPO or RTO is useless if an organization suffers damage to a primary physical location and essential data isn't available. Some businesses turn to a dedicated offsite facility for replicating data — or rely on branch offices.

A best-practice approach consists of sending replicated data to a remotely located device or service. It's important to remember, however, that replicating the data isn't adequate alone. It must be sent to an offsite location in a timely manner.

For example, consider an organization that backs up data every night. However, if the organization only sends the tapes off at the end of the week, it risks losing a week's worth of data.

Data Archiving Platform

An effective archiving platform allows for information storage, management and discovery.



For many companies, it makes economic sense to use a secondary storage center hosted by a vendor than to own one. For this, a growing number of enterprises are turning to collocation sites to streamline disaster recovery.

Hosted data backup is attractive because it provides instant failover in the event of a disruption. It also allows an enterprise to share highly secure data center space — typically rack space, cages or entire rooms.

In addition, collocation allows scalability as organizations can expand and contract space as needed. And it frees IT staff from managing systems and instead allows them to engage in more strategic work required by the enterprise.

Data Archiving

Businesses are accumulating data in the terabytes and beyond. Therefore, it's important to develop a long-term strategy for managing it and making the right data available at the right time.

Archiving is considered the systematic approach to providing structure to unstructured data. It enables the storing, managing, retrieving and eventual discarding of data throughout its lifecycle. Archiving can be also considered the foundation for e-discovery and a way to help meet compliance regulations.

Typically, the process begins with policy to define the value of company data. Just as important, the firm needs to determine the time and effort needed for storing data and how quickly it may need to be retrieved.

Data Archiving: Best Practices

Corporations depend on the flow of information to conduct business. Protecting that information from unexpected disasters is not only prudent, in many cases, it's mandatory for legal and regulatory reasons.

To effectively protect its information, the enterprise must balance the cost of the protection against the value of the information. The right approach involves a synthesis of appropriate practices that help provide the highest ROI including:

POLICIES — Organizations need to plan in advance for disasters or fall prey to them. Their policies should define where archival data should be stored.

PROCEDURES — The organization needs to implement procedures that are simple to administer and maintain.

PERSONNEL — Staff should be empowered to monitor the system centrally with minimal effort and training.

PRODUCTS — The product chosen to support the archival system should meet the organization's needs. The architecture should support the full range of operating systems (OSs) and applications used by the organization.

Source: "Best Practices for Data Archiving," Realtime Publishers, Sponsored by CA, May 2009

Information that may be useful for research is less likely to be accessed if it is difficult to retrieve. And information that is stored because of regulatory compliance issues must be available upon request.

Effective processes should be formulated to implement the company policy. It must also ensure that security is a prerequisite. Furthermore, IT staff must be given specific responsibilities and empowered to design, launch, operate and maintain those processes.

While archives themselves should be backed up, the frequency of backup is much less than that for online data. And once archival information has been moved off the active tiers of storage, it is no longer included in the standard, high-frequency backup schedule.

Weighing Technology Options

With a sound backup and recovery strategy in place, an enterprise can finally select the right technology components and build a robust and flexible disaster recovery platform. For most organizations, this means combining legacy equipment with a variety of new technology systems including:

VIRTUAL TAPE LIBRARY (VTL). The technology uses data storage virtualization to present storage devices such as hard disk systems as tape libraries or tape devices. This makes it possible to use existing tape libraries or tape drives with other systems and software.

The benefit is faster backup and recovery processes. Most VTL systems rely on lower-cost Parallel ATA (PATA) or Serial ATA (SATA) disk arrays as the primary storage component. In addition, this approach provides a high level of scalability while eliminating many of the problems that plague tape systems, including slower transfer speeds and an inability to write effectively when there's a substantial differential in transfer speeds between technologies.

Fortunately, it's possible to integrate VTL's with other systems, such as D2D2T. Combining the two into a single system is referred to as VTL D2D.

DATA COMPRESSION. The volume of data and the size of files are both expanding rapidly. This is particularly true for various types of unstructured data — including video and audio — as it becomes an important part of enterprise computing.

Data compression techniques and compression appliances reduce demand on the network, improving storage utilization, and providing more seamless and transparent integration of storage devices. Ultimately, this contributes to higher availability.

DATA DEDUPLICATION. This represents a specific form of data compression where duplicated data is eliminated. The technology promises benefits such as reducing storage disk for backup and restore of data, increasing performance and reliability, and cutting storage costs.

Deduplication works by identifying variable-length blocks or segments of data across different files and file types. It then stores unique blocks a single time, replacing redundant blocks with “data pointers.”

OFFSITE STORAGE. Many organizations with immediate data restoration requirements opt for dedicated facilities to store replicated data. For smaller firms, a branch office or other space may be adequate. Medium and larger organizations might require building an offsite facility or identifying a specialized recovery site supplier.

These facilities usually encompass a variety of tools and technologies. These can range from tape drives (still popular due to their low-cost, fail-safe qualities) to storage area networks (SANs).

HOSTED BACKUP. Collocation facilities manage IT systems from numerous organizations within a single facility. This approach appeals to a growing array of companies looking to tap into specialized expertise while minimizing internal resources and capital expenditures.

Collocation provides a high level of flexibility as organizations can add or remove systems and bandwidth as necessary. Although collocation relies on a shared infrastructure, a firm’s data remains separate and secure.

Block-Level Backup

The ability to identify mission-critical data and ensure that it is available seamlessly is paramount. It’s vital to use appropriate underlying technologies and protocols in order to make certain that processes unfold as efficiently as possible.

Although many backup systems rely on file-level data (files that contain an imposed structure), more sophisticated solutions use block-level data structures to access raw data. These block transfers are a more efficient way to write to disk and much less prone to errors that frequently occur with file-level backups.

No less significant is the fact that block-level backups aren’t affected by open files and any database that’s in use. Simply put, the block-level image is an exact replica of the source server.

Block-level data management allows organizations to improve DR processes by allowing network and database administrators to control where the enterprise stores data. This, in turn, positively affects performance.

Network-attached storage (NAS) devices rely on file-level data, and may play an important role in an overall backup framework (particularly for managing certain data tiers). Still, faster and more sophisticated SANs, that use block-level transfers, are ideal for mission critical tasks. They do not use file systems and there’s no network overhead.

E-mail, Mobile Access and More

Many companies consider e-mail and BlackBerry communications an integral part of the IT infrastructure. Therefore, having a backup and recovery plan in place for Microsoft Exchange Server and BlackBerry Enterprise Server is critical.

For example, a company might find that it’s essential to protect and preserve e-mail and ensure the highest level of continuity. With failover systems in place for Microsoft Exchange Hosted Continuity, workers can use Internet-based support for e-mail to obtain messages during and after network outages. In addition, it provides a searchable message store for quick and simple recovery.

Mobile and wireless technology also drives disaster recovery. BlackBerry, for instance, provides a robust platform for coping with major disruptions such as an earthquake, hurricane, malware attack or act of terrorism.

Even if a primary facility goes offline and other communication systems fail, individuals can exchange e-mail and other messages via smartphones. The secure platform also provides reporting capabilities that assist with regulatory compliance and post-event analysis.

Microsoft SharePoint can serve as a critical element for backup and recovery as well. The platform provides continuous but transparent scheduled synchronization and mirroring, it offers instant switchover to a standby environment while redirecting users through a simple Domain Name System (DNS) change, and it avoids distance and proximity requirements. As a result, it’s possible to implement a standby environment in any data center worldwide.

Robust Hardware Foundation

Over the last few years, the widespread use of disk-based storage has changed the stakes. Some systems, such as Serial-Attached SCSI (SAS), now make the distinction between disk and tape largely transparent.

As prices for sophisticated systems drop, organizations are turning to these solutions to improve the efficiency and speed of data transfers. SAS, for example, provides backward compatibility and performance levels comparable to commonly used SATA drives.

Likewise, disk staging technology, which incorporates D2D2T, is gaining widespread adoption as organizations look to increase performance of small, random-access restores, increase overall backup and restore performance, and boost utilization levels for tape drives. In some cases, organizations can drive utilization efficiency increases of 25X or more through the use of these systems.

NAS and SAN technologies are evolving too. NAS remains an attractive option for certain situations or businesses — particularly those with fewer computers and local backup and restore needs. At the same time, SAN serves as an ideal way to manage large-scale backups and disaster recovery by moving large blocks of data over a Fibre Channel or iSCSI connection.

This makes it faster and more reliable than NAS. Moreover, because the technology relies on clustering, it avoids a single point of failure.

In fact, many businesses now opt for a solution that uses SAN and NAS together. NAS appliances with Fibre Channel or iSCSI connections can be integrated into a SAN, which provides both the file-serving control and manageability of NAS up front with the backup speed, availability and scalability of the back-end SAN.

Multiple NAS appliances can be clustered on a SAN to enable automated failover. In fact, some businesses even combine NAS, iSCSI SAN and Fibre Channel SAN into an all-encompassing solution.

Software and Systems

Today, a multitude of vendors offer an array of backup and recovery solutions. Leading vendors in this space, including CA, Symantec and NetApp, offer software solutions that maximize performance and ROI.

Symantec NetBackup, for example, ensures greater business continuity through a solution that unifies desktop, remote office and data center protection spanning the entire enterprise. Moreover, the application provides advanced disk-based data protection features — including data deduplication, new VTL controls, support for third-party disk appliances and more snapshot capabilities.

CA ARCserve Backup unites leading-edge data deduplication technology, powerful storage resource management (SRM) reporting and robust security measures. This makes for a secure, reliable and efficient method of protecting the information residing on physical and virtual servers.

ARCserve Backup's built-in data deduplication reduces storage requirements. RTO is also improved by storing a greater number of backups on disk.

NetApp offers cost-effective, disk-based solutions to enable continuous availability and disaster recovery. For example, the firm's FAS2000 Series storage system integrates NAS and SAN data access, intelligent

management software and data protection capabilities in a cost-effective package. NetApp's FAS3100 Series storage system offers additional redundant array of independent disks (RAID) and snapshot capabilities.

Other applications address various other tasks, including the ability to build business continuity plans; analyze and inventory systems; conduct e-discovery; provision systems; manage SANs and other networked storage devices; test, audit and monitor software; and provide essential security.

Better Backup Now

The combination of storage technologies, which have become more available and less expensive, has created an environment perfect for the enterprise considering backup modernization. The ability to deploy highly reliable technologies at affordable prices means any business can move toward modernized combined backup, disaster recovery and archive systems.

The advantages of lower-priced storage devices, cloud services and bandwidth, if deployed properly, can help address the new realities of expanding data stores, increased demand for quicker RTO and regulatory compliance.

Companies that have already adopted tiered-storage plans are likely well on their way toward deploying current practices for managing backup and recovery. For those entities, the next step may require plans such as implementing a cloud-based archival system or virtualizing their storage environments.

Organizations that have not yet adopted the basic strategies associated with managing data lifecycles will need to start the process of modernizing backup and recovery systems. This can begin by reassessing RTO and RPO guidelines, classifying data and application and reviewing what new technologies can bring to bear on their efforts.

Consider backup and recovery another facet of a business's uniqueness. And don't be afraid to revisit the issue as the business grows. Organizations — and requirements — evolve. So should data protection.

Backup strategies are determined based on the needs of the organization as a whole. The benefits of a holistic view to backup are clear. Reduced management time, lower storage needs, and a simplified interface mean less staff time devoted to running the system, and that can mean lower operational costs.

CDW: Business Continuity Partner

Companies are looking to trusted partners to develop a viable disaster recovery plan, identify the right systems and build out optimal infrastructures. CDW offers an array of services and equipment to address even the most demanding requirements.

With expertise in all areas of backup, disaster recovery and archiving, CDW assembles a comprehensive IT framework that maximizes efficiency, minimizes costs and alleviates risk. An account manager, working with a team of specialists, can address all aspects of a business continuity plan.

A comprehensive backup, disaster recovery and archiving strategy encompasses numerous and far-reaching parts of an organization, including computers, network, phones, employees and customers. In the end, an IT department that's equipped to cope with issues as they occur, has clear RPO and RTO objectives, and understands how to manage and contain disruptions, is poised for superior results.

Getting Started with Business Continuity

Your CDW account manager and certified storage specialists are ready to assist you with each and every phase of choosing the right disaster recovery solution for your IT environment. Our approach includes:

- An initial discovery session to understand your goals, requirements and budget
- An assessment review of your existing environment and definition of project requirements
- Detailed vendor evaluations, recommendations, future environment design and proof of concept
- Procurement, configuration and deployment of the final solution

When you partner with CDW, you partner with the best in the business.



In today's economic and competitive climate, businesses cannot afford downtime, whether it's due to system crashes, planned and unplanned outages, or natural disasters. Many small- and medium-sized businesses have limited budgets and IT resources. So how can your business plan for the unexpected? A managed services solution can help provide a robust business continuity and disaster recovery plan that can be rapidly deployed and eliminates capital investment, management and support for additional hardware and software. Learn how you can quickly and easily give your business the protection it deserves while avoiding impact to business productivity, sales and customer service with CDW and CA.

CDW.com/ca »



To remain viable in difficult circumstances, an organization must identify its essential business processes and protect them. Because IT information system downtime causes external inaccessibility and invisibility, it can seriously threaten the entire organization. Prolonged downtime creates risk to clients, branding and image, and exposes the business to litigation and market share loss. Increasingly, organizations are beginning to discover that business partners only want to do business with organizations that can persuasively demonstrate that they have effectively provisioned themselves for IT disaster recovery according to sound business continuity management (BCM) practices. CDW and Symantec can show you how.

CDW.com/symantec »



Traditional approaches to data backup and archiving force your organization to purchase different systems to meet their different needs. This results in a high level of complexity and often results in poor disk utilization levels and stranded silos of capacity and performance that cannot be shared or reallocated. NetApp's unified storage approach means that your organization can use the same hardware, software, people and processes for all your storage and data management requirements, regardless of tier, protocol or task. Talk to your CDW storage specialist about how NetApp's unified storage platform can increase coworker productivity, decrease errors and increase response times at a lower cost.

CDW.com/netapp »