

“ALWAYS-ON” DATA PROTECTION FOR SMALL AND MID-SIZE BUSINESSES

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Most businesses begin operation with very humble roots. Many start in either a home or an inexpensive office space, utilizing the minimum equipment necessary to get the job done. However, as the business begins to succeed and grow, it must make investments in key areas to drive it to the next level. Employees are hired and computers, servers and other assets are purchased. Eventually, policies and procedures are developed that protect the integrity of the emerging infrastructure of the business.

One area where the business’s growth is evident is in its storage infrastructure. During the initial phases of the company’s existence, “storage” usually means that data is saved on the business owner’s laptop. But as the company gains traction, the owner begins to realize that files and other business-critical information need to be shared, backed up and protected against theft, disk failure, or any other event that would render the data inaccessible.

HUMBLE STORAGE BEGINNINGS

The company’s early storage methods may include external hard drives or other direct attached storage (DAS) devices, or physical CDs—anything to produce a backup of the data, thereby protecting against data loss in the event of a system failure, theft, or other catastrophe. Unfortunately, these methods rely on manual processes and offer little in terms of true data protection. Therefore, they fall well short of what would be considered appropriate protection for business-critical data.

Physical CDs, for example, require a manual process of physically inserting CDs into the drive and selecting each file the user wishes to copy to the CD. Even the most committed business owner is unlikely to administer this form of backup on a consistent basis.

External hard drives or other DAS devices are also subject to error. Some external hard drives include backup software that enables the user to schedule the time and interval for the backup, as well as to determine what files and folders will be included in the backup. Once the setup is complete, the backup theoretically occurs in the background at the scheduled time. However, this backup method typically requires that the low-end drive always perform exactly as it should, and that the host computer be turned on and connected to the drive at the specified time. If the backup is scheduled for every night at 9:00 pm, but the computer is turned off or is disconnected from the external drive at that time, the backup fails. And even when the computer is turned on and connected, the backup frequently fails anyway, with no alarm state or any other feedback provided to alert the user to the failure.

MINIMUM PROTECTION REQUIREMENTS

True data protection requires that the “human factor” be removed from data storage procedures and replaced with a solution that ensures consistency and reliability. As a result, automation must be at the center of the company’s data protection strategy, assuring that all data is protected immediately, persistently and according to company policy—each time, every time.

Another essential aspect of the company’s data protection strategy is the centralized management and control of the entire storage system. A robust Web-based management console enables the storage administrator to monitor and manage all storage assets from any location on the network, making it easy to monitor and



redistribute storage, schedule backups, perform manual backups in cases of server downtime, and receive notifications of problems with any storage assets.

Because disk failures can occur, the data must be stored in a protected configuration such as a Redundant Array of Inexpensive Disks (RAID) protection. There are multiple levels of RAID available, each with specific trade-offs between data protection scheme, space availability and performance. Once configured for a specific RAID level, all files written to the storage device will automatically follow the specified RAID format, and will therefore be instantly and continuously protected.

“ALWAYS ON” PROTECTION

An effective storage solution must be up and running at all times—constantly monitoring files and immediately backing up any changes. This “always on” protection ensures that all data is immediately and continuously protected, preventing loss in the event of a computer or server failure. Scheduled updates, although certainly a step in the right direction, still leave business-critical data vulnerable to loss, since any changes between the last scheduled backup and a system failure will be irrecoverable.

Always-on protection effectively eliminates data vulnerability, protecting data the moment it is written or modified, and persistently thereafter. Because the backup is automatic, the human element is removed, so data is never at risk because somebody “forgot” to perform the backup. Similarly, no critical data written during the day will be at risk waiting for the nightly backup to be completed. However, this level of protection is only possible if the storage device is always directly accessible by every client on the network, without relying on a network or application server that is subject to downtime, thus rendering the storage unreachable.

NETWORK-ATTACHED STORAGE—FOR DIRECT, CONTINUOUS ACCESS

A network attached storage (NAS) server is a computing device that can be attached anywhere on the company network, independent of network and application servers. Possessing its own IP address, a NAS server is accessed by clients directly, eliminating the need to use the network server as an intermediary. As a result, NAS maintains “always-on” data protection, even in the event of network downtime. And since it runs independently of the network server, the storage remains accessible during network server outages.

Increased Efficiency

Unlike DAS systems, which require hands-on management of each storage device, NAS solutions enable a single storage administrator to effectively manage all storage assets from anywhere on the network, via a simple Web interface. Using the NAS central management console, from a single location the administrator can view the entire network to monitor and redistribute storage, schedule backups, perform manual backups in cases of server downtime, and receive notifications of problems with any storage assets.

Affordability

Data is the company's most important asset, and protecting that asset should be a top priority. But when budgets are tight, business owners may be tempted to choose an inexpensive option, such as DAS. Before



making this decision, however, it’s important to consider a number of factors that will impact the total cost of ownership of a storage system. The first step is to use the following questions to assess the company’s storage environment:

- ▶ How many users must the storage device serve?
- ▶ Over how many servers is the data spread?
- ▶ Is there only one physical location, or are there branch offices?
- ▶ How much data is currently being stored, and what are the prospects for future growth over the next 12 months?
- ▶ How much does the NAS solution cost, versus the alternative that is under consideration?
- ▶ How much will it cost to administer each type of device?
- ▶ What is the cost of downtime to the business? How much downtime is likely with each type of storage device?

Using a return-on-investment calculator (www.iomega.com/NAS), it is possible to develop an apples-to-apples comparison of the alternatives. When answering the questions above, it is important to consider the cost differences between the different types of systems in three key areas—storage administration, operational downtime and business efficiency.

STORAGE ADMINISTRATION

NAS offers significant storage administration benefits as compared to physical media or DAS devices.

Physical media such as CDs and DVDs are simply not a viable option for any business that has more than one computer, since the personnel demands of such a method would greatly outweigh any cost benefits it would provide. Similarly, although most DAS devices are initially less expensive than an equivalent NAS solution, each storage device needs to be administered locally and individually, which can create a significant administrative burden.

NAS, in contrast, offers significant economies of scale in terms of administrative burden. NAS solutions generally include an intuitive management console that can be accessed from any Web browser on the network, enabling a single storage administrator to manage the entire storage network efficiently and effectively from a central location. As a result, NAS solutions require less administrative overhead than competing solutions.

OPERATIONAL DOWNTIME

Another critical component to consider is the anticipated downtime each storage system may present. Downtime can be exorbitantly costly to small businesses—particularly if the downtime occurs during business hours. Though the costs will vary widely by industry and by individual business, some experts estimate them to be in the thousands of dollars per hour. This high cost, coupled with the fact that more than half of all network downtime is caused by storage-related problems, underscores why regular network server traffic should be physically separate from that of the storage device. Doing so will not only reduce the instance of network server failures and dramatically improve the stability of the network, but also will increase day-to-day network bandwidth.



One last consideration regarding operational downtime is that in a DAS configuration, the storage is attached directly to the network server. Therefore, the storage cannot be accessed if the server is down for any reason, whether it’s planned maintenance or a system failure. Bringing the server back online and completing all necessary reconfigurations to once again work properly with the storage device can take hours. Conversely, server downtime in a NAS environment has no effect on the storage. Since NAS devices are independent of the network server, all files remain accessible during the downtime. And when the server is brought back online, no time-consuming re-configuration process is necessary.

BUSINESS EFFICIENCY

Personnel costs are the most significant expenses in nearly every company. The amount of time, effort and resources required to manage the storage environment is a significant consideration for any business that has business-critical data that is spread across multiple servers on the network or resides in multiple offices that are geographically dispersed.

In a DAS setup, each storage device must be administered locally and individually. Since these physically separate devices do not allow for any economies of scale for the administrator, the administrative burden is equal to the amount of time (and corresponding expense) required to administer one server, multiplied by the number of servers the company has. This administrative overhead can become significantly larger when the servers are geographically separated.

Conversely, in a NAS setup, a single storage administrator could effectively manage all storage assets from anywhere on the network, using a simple Web interface. Since all storage devices can be simultaneously viewed and administered, the price of administration drops dramatically as the number of storage assets increases.

CONCLUSION

Most businesses begin with the bare minimum of resources. There are few processes in place, and the most important factor in the purchase decision for new equipment is price. The manual performance of many tasks is acceptable and expected. However, as the business begins to grow, these methodologies simply cannot scale. They quickly become inefficient and can therefore add significant costs to the company’s operations. To flourish, these companies must find new, more streamlined methods for accomplishing the same goals.

The storage and protection of the company’s business-critical data is no exception. As companies begin to grow and mature, it becomes abundantly clear that files and other business-critical information need to be backed up and protected. Though there are several options for achieving this protection, employing a NAS solution for “always-on” protection has become the clear choice, offering advantages over rival methods in three key areas: storage administration, operational downtime and business efficiency.

Iomega NAS solutions provide an unmatched combination of enterprise-class performance, reliability and expandability; easy installation, protection, and management; lots of useful features and capabilities geared for the small business; and Iomega’s trademark ease of use. For more information on Iomega’s NAS solutions, visit www.iomega.com/NAS.

