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THE STANDARD OF EXCELLENCE FOR STORAGE TECHNOLOGY INFORMATION

The SMB Users Guide to Data Protection

By Steven Pofcher

All businesses, regardless of size, run on information. When that information is lost or access is interrupted, the impact on a business can be critical or even fatal. According to Gartner, 40% of businesses suffering a business interruption fail within 5 years.

The extreme impact of data loss on a business puts a premium on protecting and securing critical business information. Small and mid-size businesses (SMBs) are often at a disadvantage when trying to adequately protect valuable business information, as they typically do not have the budgets and internal IT expertise of large corporate enterprises. As a result, SMBs are especially vulnerable to data loss, since they often lack the policies, procedures and equipment for proper data protection. Gartner estimates that less than half of all mid-size businesses and only 25% of small businesses have disaster recovery plans in place.

Smaller businesses face the same fundamental backup and data protection concerns as large businesses: What is the most cost-effective method to reliably protect and recover business-critical information? For many small businesses, the problem is even more difficult because they do not have an IT staff to design, deploy and manage data storage backup and recovery systems.

What Are the Risks?

There are many. Natural disasters such as earthquakes, hurricanes and floods; equipment failure and theft; and external threats such as viruses, worms, hackers and unauthorized users can destroy, corrupt or deny access to critical business information. However, human error is the most common problem, which occurs when computer users inadvertently delete files and/or re-format hard disks.

The Compliance Factor

Ensuring that critical company information is securely stored and protected is not only a good business policy for SMBs but, in some cases, it is now a legal requirement. A focus on records retention to comply with new federal laws has caused many businesses to re-evaluate their data storage infrastructure and data protection, backup and archiving methodologies. The challenge to comply with government regulations such as HIPAA and Sarbanes-Oxley for record keeping can impact small, privately held businesses as well as large publicly traded companies. Business owners should check with legal counsel as to which regulations apply and the liabilities that could be incurred.

Creating a Data Protection Plan

The traditional focus on backing up critical information was to minimize the cost of recreating the information from original paper documents. That model is mostly irrelevant today, as much information exists only in digital form; there is no paper copy. Therefore a proper data protection plan is even more critical for smaller businesses.

A backup and data protection plan needs to encompass desktop and laptop PCs, in addition to network servers. Many businesses may do an effective job of backing up data stored on company servers, but ignore information stored on company desktop PCs and laptop computers, placing a huge amount of critical data at risk. According to a report from International Data Corp. (IDC), more than 300 million business PCs have a combined 109 petabytes of data—about half of all the corporate data residing on PCs and laptops—that is not backed up regularly. Companies with a highly mobile workforce (such as field sales staff) also need to recognize the vulnerability of not backing up information on laptops, which account for 25% of all computer sales, according to Gartner.

As a backup and data protection plan is developed, organizations must include policies and procedures that include regular backups of non-server data. Good software tools can automate this process, utilizing software that recognizes when specific laptops and PCs have missed a scheduled backup operation and then gives backup priority to those computers the next time they attach to the network.

Technology Options

The lack of IT resources, budget constraints and capacity requirements of small- to mid-size business backup bring the technology options into focus. Removability is a key requirement in data protection to physically isolate the information from threats. To satisfy the removable media requirement, the technology options for a smaller business are backup to CD and DVD optical disc and entry-level tape.

CD-R/RW

Recordable CD technology is an appealing backup choice for small business based on its universal availability, low media cost and the popularity of the technology. This ensures data interchange across platforms for easy data recovery. Recordable CD technology has replaced the floppy disk as the standard removable media storage among PCs and entry-level servers. Wired Magazine estimated the installed base in 2004 would be more than 140 million CD recorders, while the International Recording Media Association projected worldwide demand for blank CD-R and CD-RW media to reach 10.48 billion.

CD recording speeds have reached up to 48X and above, enabling a full 700-MB disc to be written in less than three minutes. While faster CD recorders are available, Maxell recommends 48X as the maximum safe recording speed because of physical limitations of the disc at higher speeds. The minimal speed advantage offered by 52X drives is outweighed by the performance and safety issues of operating CD-R media in excess of 10,000 rpm. Research has shown that minute defects or cracks in CD-R discs that are inconsequential at 48X speeds can quickly increase, making discs unreadable, or cause them to break apart at 52X, destroying not only critical data stored on the CD-R media, but potentially damaging or destroying the CD drive.

CD-RW media extends the benefits of CD-R with the addition of rewritability. While CD-R media can support multiple backup operations using the multiple session format, CD-RW functions similar to floppy disks, enabling the discs to be erased and re-written multiple times. This allows CD-RW media to be re-used in a classic backup media rotation routine, while CD-R

media is better suited for straight archival applications for static data.

DVD

Recordable DVD has quickly emerged as a strong competitor for SMB backup applications as the technology has evolved rapidly with recording speeds now at 16X with a huge increase in storage capacity in the works. The installed base of computer-based DVD recorders was expected to reach 74 million units in 2004, according to Strategic Market Decisions, and will double in 2005.

Additionally, the top providers of backup software have moved swiftly to embrace DVD. Dantz Development's Retrospect, NovaBackup from NovaStor, Veritas Backup Exec and Computer Associates BrightStor ARCserve Backup all support backup to recordable DVD media, offering medium sized business users simple yet powerful backup solutions to secure their business-critical data.

DVD is an attractive option for smaller business data protection based on its affordability and versatility to support a range of applications beyond data backup and restore, such as digital video storage and other digital content storage and distribution applications. DVD is also a compelling alternative for compliance applications. Many compliance regulations require that when data records are stored electronically they must be on a storage medium that is permanent and unalterable. Write-once DVD, as well as CD-R media, satisfies this requirement.

DVD-R and DVD+R, the write-once formats, are a good fit for compliance applications and other static and archival data applications. Similar to CD-R and CD-RW media, DVD media is available in both write-once and rewritable formats. Rewritable media is best suited for a typical weekly backup rotation cycle. DVD+RW and DVD-RW media can be erased and re-recorded up to 1,000 times.

The 4.7-GB capacity of the first-generation recordable DVD technology is undergoing a transformation, and the technology will soon be providing capacities of 25GB to 50GB per disc.

The battles between the competing recording formats DVD-R, DVD-RW and DVD+R, DVD+RW have largely been resolved. Many of the recordable DVD drives being sold today are multiple-format and can record with DVD-RW and DVD+RW media. Once a DVD disc has been recorded, the data can be read and/or recovered on most computer DVD drives regardless of format: +R, -R or DVD-ROM. Additionally, these drives are typically downward-compatible with CD-R and CD-RW recording capability. This broad compatibility among DVD formats ensures that data can be quickly and easily recovered in the event of a data loss incident, regardless of format.

The latest improvement in DVD data storage is a new double-layer technology that increases capacity to 8.5GB per disc and is supported by a wide range of backup software. Double-layer DVD media is composed of two recording layers stacked on top of each other. A semi-transparent metal reflector between the two layers ensures that the laser can properly read back data from the inner layer while preventing the laser from writing data to both layers simultaneously.

The first double-layer product is DVD+R media operating at 2.4X speed. This will be followed this year by double-layer DVD-R media, as well as rewritable double-layer media and higher speed products.

Tape Technology

SMBs whose capacity requirements exceed DVD or would prefer a tape backup solution can be initially overwhelmed by the variety of choices. However, considering the cost, capacity and performance sweet spots for the small and midsize market, the 4mm DDS format has become the clear market leader. It has an installed user base of more than 18 million drives and 280 million data cartridges, according to Certance.

The latest generation of DDS technology is the DAT 72 format, providing a capacity of 36 gigabytes per cartridge (72GB with data compression.) DAT 72 offers small and mid-size businesses an optimal mix of capacity, compatibility and affordability. It is fully backward read- and write-compatible with DDS-4 and DDS-3 formats, making it an ideal upgrade for current DDS users. Customers needing even more capacity will benefit from the six-cartridge autoloaders available that provide up to 432GB of automated backup storage capacity.

The leading market position for DDS and DAT 72 technology translates into tangible benefits. DAT 72 drives and media are available from multiple vendors with a history of supporting the DDS platform. Additionally, the DDS Manufacturers Group has developed a roadmap for at least two future product generations beyond DAT 72, ensuring customers a compatible upgrade path that will reach beyond 100GB per cartridge.

Businesses with specialized data intensive environments can consider Super DLTtape and LTO mid-range tape technologies as higher-capacity, higher-performance, but more expensive alternatives to DAT 72. The current generations of Super DLTtape and LTO provide native per cartridge capacities of 600GB and 800GB, respectively, using data compression.

Maintaining Data Integrity

Developing a comprehensive data protection plan and performing regular backup operations are key to protecting critical company data, but there are still issues that SMBs need to be aware of to ensure that their information stays secure.

Use Premium-Grade Media

There may be a temptation to minimize media expenses by utilizing bulk off-brand media for CD and DVD storage. In a comprehensive study by the National Institute of Standards and Technologies, researchers found that name brand media was more reliable and compatible than generic discs. Likewise, recertified or recycled tape cartridges should never be used since the quality cannot be assured. Business users need to keep in mind that it is not the cost of the media that is the issue; it is the cost of the information stored on the media and the cost to the business of re-creating that information if the media fails. Premium-grade media is a bargain when major data loss occurs and data needs to be recovered from the backup media.

For critical archival storage applications SMBs using optical storage solutions should look to products such as Maxell's CD-Pro and DVD-Pro media. These discs include a unique hard coated surface for maximum scratch, dust and smudge resistance and longer archival life. In addition, Maxell's high-quality dye further ensures data integrity and longevity.

Protect the Media

To provide maximum protection of the media and more importantly the information it contains, all tape, CDs and DVDs should be stored in protective cases, minimizing exposure to airborne contaminants, accidental spills and other environmental threats. Maxell tape media includes protective cases, and jewel cases provide an economical and compact method to safely store CD and DVD media. Removable media, if not safely stored, is exposed to the elements, allowing dust and other contaminants to collect on the media and other components of the recording system. When the contamination reaches a threshold, data integrity is compromised with excessive read and write errors. Maxell offers a broad line of maintenance products with cleaning cartridges for computer tape drives that clean debris from the recording head and other components within the tape path. There are also lens cleaners to ensure optimal performance for DVD and CD recorders as well as products that can clean and even repair damage to CD and DVD media.

Conclusion

Small and mid-size businesses that operate without a viable data protection policy are risking the survival of their business. It's been said that there are two types of businesses: Those that have already lost data and those who will. With increasing threats to company data and an ever-increasing amount of information at risk, the best investment an SMB can make to guarantee its future success is in the time, effort and equipment required to develop and deploy a comprehensive data protection policy. **CTR**

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