



Enterprise
Protection
Storage

Data Protection for the Legal Profession:

The Business Case for Capacity Optimized Storage

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Many companies say “time is money,” but for the legal profession it’s literally true. Law firms live and die by the number of billable hours—the time spent working for clients—that their attorneys and other staff can charge.

Time spent waiting for a tape library to scan for an old deposition or an accidentally deleted document interrupts or delays billable work, forcing attorneys to hop from project to project instead of finishing—and billing for—their work more efficiently. Law firm office space often comes at a premium cost and is too expensive to be taken up with bulky tape libraries and carts full of tapes. And given the deadline-driven nature of their work, law firms need to be sure their backups work, and the data can be restored quickly whenever it is needed.

For all these reasons, more and more law firms are moving from costly, unreliable tape backup to disk-based backup and network-based disaster recovery (DR) using Data Domain’s Enterprise Protection Storage systems. They’re finding Data Domain disk backup and recovery appliances and arrays provide faster, more reliable backups while dramatically lowering backup costs.

This white paper explains the backup and recovery challenges faced by legal firms; describes the differences between tape-based and disk-based backup; explains how “de-duplication” technology dramatically reduces the amount of data which must be backed up and restored, and demonstrates the cost, reliability and performance advantages of

Data Domain’s Enterprise Protection Storage systems for the legal profession.

Legal Needs

Information is key for legal firms, whether it’s the depositions and other documents needed to build a case or the email, letters and other communications. All these records must be readily accessible for day-to-day operations of the law firm, and be kept secure and readily available even in the event of human error or natural disaster. In this time-sensitive environment, even the temporary loss of a file could affect the outcome of a case.

“In a matter of weeks, we can double our amount of data. With just one new litigation case, our data grew by 1.5 terabytes.”

The storage and backup requirements of a law firm can also balloon quickly as its case load changes. “In a matter of weeks, we can double our amount of data,” said Craig Wilson, IS Manager at Winthrop and Weinstine, a commercial law firm with 85 attorneys in Minneapolis and St. Paul, Minnesota. “With just one new litigation case, our data grew by 1.5 terabytes.”

Givens Pursley, a 30-attorney practice in Boise, Idaho, has seen its annual growth in storage jump from 18 percent to 44 percent since it began scanning every incoming document into a document management system, says IT Director Patti Henderson. As the amount of data she backed up to tape skyrocketed, “The first thing I lost were my backup windows”—the time available to backup files without interrupting or slowing lawyers’ access to them.

The speed and reliability of data recovery is also critical for law firms. “The legal environment is unlike any other I’ve ever worked in,” says John Thomas, IT manager at Troutman Sanders LLP, an Atlanta-based international law firm with more than 600 attorneys and 10 offices. “It’s very demanding. If there’s a document (an attorney) is working on and they accidentally overwrite it, and they need it for a closing or a case, we need to have it back immediately.”

Besides such needs that are particularly important to the legal profession, law firms also share the same requirements as other enterprises. They need to minimize their capital and operational expenses, to keep critical applications and data available during backups, and to assure that backups will in fact work.

Disk To Disk Backup

Historically, many law firms (as well as other organizations) have relied on tape libraries to back up data. This is because tape has always cost less than disk, and tapes can be moved to off-site storage for disaster recovery purposes.

However, tape is often unreliable. Diogenes Analytical Laboratories, an independent testing facility which evaluates IT products and advises IT buyers, estimates that an average of between five and 25 percent of nightly tape-based backup and recovery jobs fail due to lost, damaged or corrupted tapes. Tape-based backup can also be time-consuming and expensive to manage, and prone to human error.

An independent testing facility which evaluates IT products and advises IT buyers estimates that an average of between five and twenty-five percent of nightly tape-based backup and recovery jobs fail due to lost, damaged or corrupted tapes.

Analysts generally estimate the cost of managing an IT product to be five to seven times the initial purchase cost. Tape requires skilled and experienced operators to back up the correct files on the correct tapes, swap out tapes as they are filled, and properly store the tapes on site or at an off-site archive.

Recovering data requires finding the right tapes and restoring data from them in the right order. After faulty tapes, human error is the most frequent cause of failed backup/recovery.

Tape also requires the purchase of additional cartridges as the existing tapes are filled. In addition to the normal growth in the volume of data, new regulations such as Sarbanes/Oxley, SEC 17a, HIPAA and the Freedom of Information Act require that more data be stored for longer times and be readily accessible by an organization. Many analysts predict the amount of data organizations must store, back up and recover will continue to grow between 50 and 100 percent per year.

Disk-based backup (also called “disk to disk” or “D2D” backup) relies on disk drives to read and write data more quickly and reliably than most tape libraries. This effectively slashes the times required to perform backups and recoveries. Disk-based backup avoids the manual swapping of tape cartridges, which like any human intervention raises the possibility of error. Finally, the introduction of newer, lower-cost ATA and Serial ATA disk drives has reduced the price gap between disk and tape. Midrange tape libraries now cost between \$4 and \$11 per gigabyte (GB),

with disk prices in the \$3 to \$11 per gigabyte range. However, sheer drops in the price of disk doesn't tackle the greatest cost factor, which is the rising tide of data that law firms must back up and restore.

A growing number of law firms are meeting that challenge employing unique "data deduplication" technology a technology that erases the price gap between disk and tape. Data Domain systems, using Global Compression™ technology, break a data object such as a file or a network transmission into variable size pieces or segments and identifies those segments that are unique and those that are identical (Figure 1). All unique segments identified are stored only once. Segments that are identical are not stored directly but rather as instructions or "pointers" to existing related data that has already been stored. Therefore, any repeated segments are stored only once, and storing duplicate data requires that nothing be stored except pointers to the existing file. These pointers take up very little space, and dramatically reduce the amount of space needed to back up data. Over time Data Domain Enterprise Protection Storage arrays and appliances reduce storage needs by 20x or more.

Most law firms create only small changes such as minor corrections or updated language in several

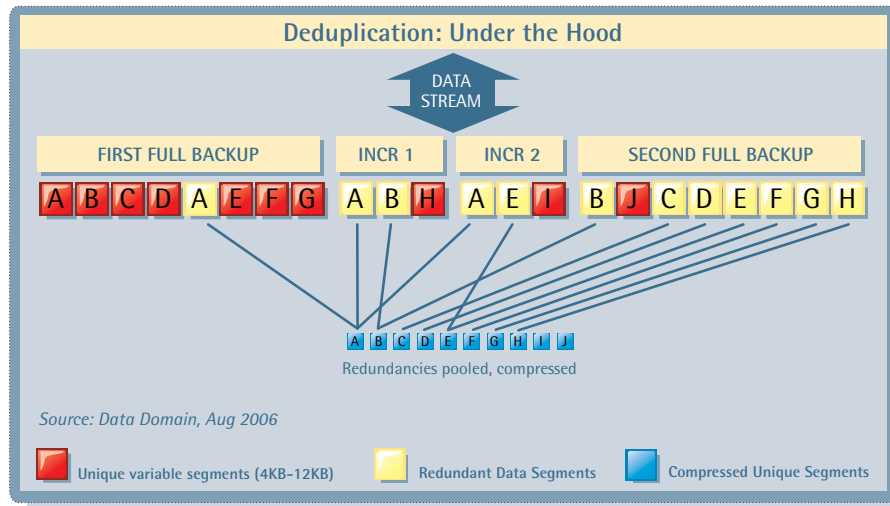


Figure 1: Data Domain Global Compression

pages of a long document, yet then must save and back up the entire document. By deduplicating the data, Data Domain systems store only the unique segments, therefore significantly reducing the amount of data to be stored

and backed up. As this cycle repeats over time, the savings in storage demand increase dramatically.

Data Domain pioneered deduplication technology, and its Enterprise Protection Storage systems offer the most cost-effective and reliable data reduction capabilities in the industry.

Reliable, Fast Backup and Recovery

Real-world experience demonstrates the improved reliability, speed and savings law firms achieve by moving away from tape and towards disk-based backup and network-based DR. For many firms, reliability and speed are as important, or more important, than savings, given the mission-critical nature of the documents, letters, email and other data on which attorneys rely.

Using Data Domain Enterprise Protection Storage systems, "restores are nearly instantaneous," says Thomas. "It takes us longer to drill down in (Veritas) Backup Exec to find the file than it does to actually restore it."

Troutman Sanders backs up 8-10 terabytes (TB) of documents, SQL Server and Exchange files, by replicating data from its remote offices to its Atlanta headquarters, and then replicating that data from Atlanta to its Richmond office. It has also greatly reduced its backup window (the time that production applications might be slowed or disrupted while their data is being backed up). Backing up 100 GB of Microsoft Exchange files to tape, he says, used to take just under 11 hours. Using Data Domain systems, that same backup can be done in 55 minutes, says Thomas.

Restoring documents and other files more quickly for busy attorneys is a major advantage for Henderson of Givens Pursley. Using Data Domain systems, Henderson has a full copy of her monthly backups on hand. If she needs to do a restore, "I don't have to go to our local offsite facility, have them pull a box, and dig through tapes to find it. I can have that information back online for them in less than ten minutes, instead of a day and a half."

The highest priority for Winthrop and Weinstine, a Minneapolis-based law firm, was more reliable backups. It first considered using its existing SAN, but its inability to create snapshots forced them to look for an alternative. The firm decided to evaluate the use of disk-based backup with a pilot test of one Data Domain system at its Minneapolis office.

"We wanted stability out of the box and Data Domain passed with flying colors," says Wilson. "The data is there, easily validated, and we can quickly get it back, which matches the firm's philosophy of high availabil-

ity." Compared with its previous tape-based solution, "Data Domain is more of a guarantee," says Wilson. "I don't have a tape or external component that could fail. In fact, we've never had a failure with Data Domain, whereas we often had failures on tape."

Improved ease of use also makes it possible for less experienced staff members to perform restores, which not only speeds the restoration process but improves

the service Henderson can provide to her attorneys. With tape, "it was too complicated for my office manager to be able to come in and do a restore, if I had to be out of the office," says Henderson.

"With the Data Domain solution, several staff members can access the backup software, find a file, and restore it in five minutes with only a few mouse clicks."

While labor and tape savings might be less important to some larger firms, they can be pivotal for smaller IT staffs. "At Givens Pursley, we've probably gone from having to spend about four hours a week rotating tapes, checking and verifying that backups were done properly, to about half an hour a week," says Henderson.

Tape media savings and tape handling costs can also play a significant role in the disk-based backup value proposition. Winthrop and Weinstine is saving about \$10,000 a year in tape purchases alone, and has cut the amount of time administrators spend retrieving and restoring tapes by vaulting their backup data offsite across their wide-area network to a remote facility instead of relying on tapes and trucks.

"With the Data Domain solution, several staff members can access the backup software, find a file, and restore it in five minutes with only a few mouse clicks."

Because Data Domain’s restorers and replication software utilize its deduplication technology, backup data is reduced significantly enough to transfer it efficiently across the WAN to a remote site, where it is replicated to another Data Domain restorer. In the process, Winthrop and Weinstine has also reduced its liability because it ships fewer tapes offsite, making less likely a tape might be lost or stolen.

Building the Business Case

The move towards disk-based backup may be driven by reasons other than cost, such as the need for more reliable backup and restores and to eliminate the risks associated with moving backup tapes offsite.

However, building a financial case for disk-to-disk backup may help IT managers at law firms secure funding for such a move and an ROI (Return On Investment) calculation may be required by corporate policies for new capital acquisitions. The experience of actual law firms illustrates the benefits, even for firms that aren’t willing or ready to totally abandon tape.

Case Study #1 (see Figure 2) is based on the experience of such a law firm, which used 5,000 tapes to back up 120 TB of data on 800 servers. The IT manager was under pressure to cut tape media costs, and wanted to reduce the administrative costs of the labor-intensive nightly tape backup. While upgrading their tape libraries with higher density, and faster,

Figure 2: Savings and Improvements by Using Less Tape

	Units	Tape Only	D2D Data Domain	% Improvement	Savings over 3 Years
3 Year TCO per TB	Cost / TB	\$8,494	\$6,349	25%	\$1,439,180
Tape Media Cost per TB	Cost / TB / Yr.	\$4,000	\$1,600	60%	\$ 804,960
Offsite Storage & Transportation Costs	Cost / TB	\$ 525	\$ 275	48%	\$ 167,700
Backup Window	Hours	14	4	71%	N/A
RTO (Recovery Time Objectives)	Minutes/ Hours	75 minutes to 1 day	15 minutes	98%	N/A
Data Kept Online	Days/Weeks	2 Weeks	2 Months	329%	N/A

drives would have helped hold down media costs, it would have also required spending on new tape drives and would not address labor costs. Beginning the move from tape to D2D, however, addressed both the media and the labor costs issues.

While the user continues to use tape for archiving purposes, it now retains two months of backup data onsite on a Data Domain appliance. Costs for tape media (measured here in cost per TB per year) were reduced by 60 percent, for a three-year savings of more than \$800,000. Offsite tape storage and transportation costs were reduced by 48%, for a three-year savings of \$168,000, while backup and recovery times were reduced between 71 and 98 percent.

Case Study #2 demonstrates a large organization backing up between 3 TB and 7 TB of critical data from their Microsoft Exchange messaging server. It implemented Data Domain backup appliances to reduce the time required to perform an average of one to two restores per week. They also needed to reduce the time needed to back up data so they can stay within their backup window, and not keep critical systems off-line while their data is being backed up.

This company wanted to continue using tape for long-term archival of data and for disaster recovery. Even so, as shown in Figure 3, this company not

Figure 3: Financial Summary – Faster Backup and Restore

Savings	Year 1	Year 2	Year 3	Total
Direct Savings- Supplies Et Services	\$174,000	\$295,800	\$502,860	\$972,660
Cost Avoidance- HW	\$ 27,600	\$103,600	\$118,600	\$249,800
Cost Avoidance – Labor	\$ 88,000	\$149,600	\$254,320	\$491,920
Total Savings	\$289,600	\$549,000	\$875,780	\$1,714,380
Costs				
Total Incremental Cost of D2D	\$118,000	\$ 73,600	\$ 83,600	\$275,200
Summary				
Total Net Savings of D2D	\$171,600	\$475,400	\$792,180	\$1,439,180
Payback (in Months)				5
ROI (3 Years)				523%

only improved its restore times by 86 % and reduced backup times by 33%, but realized payback in four months and a 176% return on investment, with a net savings of \$183,000 over three years.

Case Study #3 illustrates a company which was ready to go completely tapeless, using DD400 backup appliances both for local backup and for remote replication across a wide area network for disaster recovery. In this case, the greatest savings came from reducing the labor and management overhead of tape backup and media management. Figure 4 shows the increasing percentage of savings coming from labor over the three-year period.

Summary

Legal firms have unique requirements for fast, reliable, and cost-effective back up and restore of the critical data on which their practices rely. Working in a deadline-driven professional services environment, neither attorneys, staff nor customers can afford to wait for information to be retrieved from slow, unreliable tape drives.

That’s why more and more law firms are turning to Data Domain’s Enterprise Protection Storage systems. Data Domain’s deduplication technology reduces the amount of backup data organizations need to manage by 10x-30x or more over time. Its backup and recovery solutions provide onsite backup and extended retention. With Data Domain replication software for offsite disaster recovery and tape consolidation, law firms experience lower cost, greater reliability and operationally feasible WAN vaulting solution.

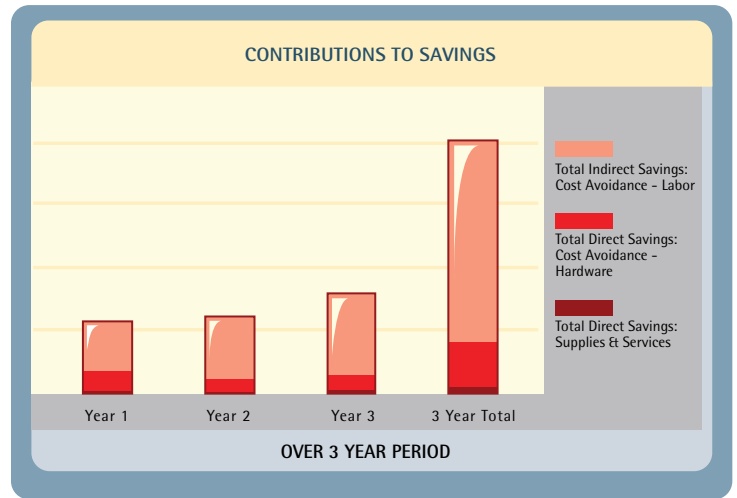


Figure 4: Labor Savings of Going Tapeless



About Data Domain

Data Domain is the leading provider of Enterprise Protection Storage systems for disk backup and network-based disaster recovery. Hundreds of companies worldwide use Data Domain award-winning solutions to reduce backup costs and simplify their data recovery. Data Domain's Global Compression™, data invulnerability and replication technologies offer breakthrough data reduction rates that enable new efficiencies in enterprise data protection. Only Data Domain can deliver the performance, reliability and scalability to address the data protection needs of enterprises of all sizes. Data Domain products and solutions integrate seamlessly into customers' existing infrastructure and are compatible with all leading enterprise backup software products. To find out more about Data Domain, visit www.datadomain.com. Data Domain is headquartered at 2300 Central Expressway, Santa Clara, CA 95050 and can be contacted by phone at 1-866-933-3873 or e-mail at sales@datadomain.com.

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