



WHITE PAPER

# Achieving Cost Savings in Backup with Deduplication

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## Introduction:

### The Paradox of Growing Storage Requirements in a Recession

The environment for all businesses has changed dramatically in the past year. This means significantly increased scrutiny of IT budgets that were already being closely watched. New projects will have to pass the test of clear need and the question will be asked "can you do without." While many IT projects will be reduced along with budgets, one truism remains: the amount of data an organization creates and must retain continues to grow. A recent study of Fortune 1000 companies, by IDC, indicated IT administrators have seen data storage needs grow to more than a petabyte (1,000,000 gigabytes) in the past three years. Fortune 10000 companies typically need up to 100 terabytes of storage. These data requirements represent a five-fold and two-fold increase respectively. Small to mid-sized enterprise companies are also experiencing similar levels of increased data growth.

There are many reasons why storage requirements are growing so dramatically. Communication applications (email, chat, sms, IP telephony) are increasing; business documents (presentations, word processing, spreadsheets) are adding richer content with video and graphics. As all types of information continue to move to digital formats the need for storage and backup capacity also grows in kind. Market research firm eMarketer indicates the annual volume of email in the United States is 2.9 trillion and growing by 300 billion annually. Many organizations, governments and companies, are also moving business processes onto the web which is creating significantly more data that needs storage. The U.S. government has over the years shifted many of its processes to the web, creating much efficiency, but also an increased need for electronic data retention.

Compliance is also a major driver of storage and backup. Implementing the correct policies to comply with both government regulation and corporate policy now requires data to be backed-up and easily retrieved over increasingly longer periods of time. The effect again is an increase in data retention requirements. The data creation forces discussed above are present regardless of the economic climate. In fact, they have a hand in creating even more, not less, data as time goes on. This creates the paradox of a higher burden placed on storage and backup systems especially in difficult recessionary times.

## Sobering Implications for Tape Backups

These large amounts of data are now hammering away at a point in the storage architecture which is most vulnerable--the backup systems. As data increases and more resides on the servers, repeatedly making a successful backup becomes more difficult. Backup applications are now forced to examine millions of files and network limitations can hinder the transfer of data at the speed required to stay within the window using traditional methods. Legacy back-up approaches -- like tape -- are at their breaking point. Tape libraries have failed to keep up, as only 20% of all back-up jobs are completely successful according to research firm ESG. This means that a significant portion of companies and organizations will take a massive performance hit at some point, while in the intervening time risk remains high and unmanaged. The data held in back-up is the last reserve, yet companies are neglecting the back-up systems holding these essential company assets. Many companies require a performance test to ensure in the event of a disaster that backups will meet business requirements. Even those who are testing may feel it won't happen to them -- however the world is littered with companies that didn't consider the ramifications of a failed restore until it was too late.

## Recession Means Making Progress with Tighter Budgets/Fewer Resources

Reduced budgets mean fewer resources to get the jobs that must be completed done. In normal growth years, investments in new technologies brought with them the advantages of greater IT productivity. These productivity gains are necessary for IT organizations to stay above water and to continue to manage the demands of the business without dramatically increasing the staffing levels. The mantra has always been do more with the same or even fewer numbers of people. The fact is every IT staff must continue to increase productivity or they risk missing vital business deadlines. Lean times exacerbate the need to increase productivity as adding headcount and/or resources will be restricted.

New investments will likely be curtailed forcing departments to examine the current spend in order to gain productivity. Management must look at the existing dollars being spent and find better ways to invest the available money. Fortunately for IT organizations there is an obvious place to gain significant productivity, at a cost that is equivalent to what is currently being spent.

## Costs Savings by Moving to Disk with Deduplication for Backup

Examining the budget for tape reveals an opportunity to reinvest for a better outcome. A number of operating costs are associated with maintaining tape libraries. Annual costs for each tape library repository include media replacement, the cost of tape storage, the cost of retrieval, the cost of moving tape to a second location, the cost for tape administration and tape library maintenance. Productivity costs include monitoring during tape back-ups, maintaining equipment such as cleaning heads, loading and changing tapes, labeling and physically transporting to offsite for disaster recovery. All of these must be budgeted and accounted for as they will occur no matter the business environment. In addition, tape libraries age poorly, tape arms will break and the same issues that haunt tape today such as poor security, poor performance, and a lack of data integrity will continue. The question companies are now asking is can the associated dollars and time taken up by the existing tape library be better utilized by moving to disk back-up with deduplication.

## How Back-up with Deduplication Makes Sense in Tight Budgetary Times

The fact is for many environments, particularly for the small to medium sized enterprise, the total cost of tape backup and disk backup with deduplication are equivalent. The key differential typically occurs in the operating costs of tape vs. backup with deduplication. The following are three examples of ExaGrid customers who have experienced clear savings.

### *Federal Mediation and Conciliation Service (FCMS)*

*Federal Mediation is an independent agency whose mission is to preserve labor-management peace and cooperation. FCMS IT is responsible for supporting 500 users in 250 offices throughout the United States. The central issues around backup the IT staff was dealing with were the expenses, time and data integrity associated with backing up to tape. The company had been spending \$800 per month on tapes and \$240 per month to mail the tapes to a DR site. Since installing a disk based back-up system FMCS has been able to reduce its backup costs considerably. "The ExaGrid System was more cost effective than some of the other solutions we looked at. It was less expensive to acquire and we were able to use it along with our existing backup application"*

### ***Morningstar***

*Morningstar is a leading provider of independent investment research with locations in North America, Europe and Asia Pacific. Morningstar was backing up to tape but with significant data growth its backup windows had increased to a point where they were unmanageable. "Tape was cumbersome to deal with and our backups were just taking too long" said James Richmond, Network Administrator. By moving to an ExaGrid System, Morningstar is saving nearly \$3000 per month in tape costs and has significantly reduced transportation and tape storage fees. The company has also reduced the number of man hours spent on managing and administering tape backups allowing staff to gain the productivity they need to stay ahead of the demands of the business.*

### ***Eby-Brown***

*Based in Naperville, Illinois, Eby-Brown is the second largest convenience store products distributor in the United States. In evaluating the move to disk backup with deduplication, Eby-Brown's IT Systems Integrator noted the following about ExaGrid: "Before we went with ExaGrid, we performed a cost of ownership analysis that showed installing the ExaGrid systems would cost us less than tape. When you consider the cost of tape, transportation and the amount of time our IT staff had devoted to managing tape and performing restores, purchasing the ExaGrid system is a no-brainer."*

*The following example is an analysis from an ExaGrid customer as they debated to stay with tape or move to disk backup. The result of the analysis was the company realized a cost savings starting in year 4 with a break-even at year 3.*

**Cost Analysis of a Company considering moving to Disk Backup**

*X represent the cost of a new tape library, all costs are portrayed as % of X*

<b>Continuing with Tape Backup</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
Tape Library Upgrade Costs	X	-	-	-
Media Storage	.15X	.15X	.15X	.15X
Media Transport & Retrieval Costs	.1X	.1X	.1X	.1X
Media Maintenance/Replacement	.1X	.1X	.1X	.1X
<b>Total Tape Environment Costs</b>	<b>1.35x</b>	<b>.35x</b>	<b>.35x</b>	<b>.35x</b>
<b>Investing in Disk Backup</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
ExaGrid Costs	1.5X	-	-	-
ExaGrid Maintenance Costs	.2X	.2X	.2X	.2X
<b>Total Disk Environment Costs</b>	<b>1.7X</b>	<b>.2X</b>	<b>.2X</b>	<b>.2X</b>
<b>Lifetime Costs Savings</b>	<b>-.25X</b>	<b>-.15X</b>	<b>0</b>	<b>+.15X</b>

A Of course based on business policies and current backup environment these factors are unique to each company. However, it's clear from the number of companies now making the switch to disk backup with deduplication that the budget efficiencies to be gained are compelling.

Beyond those operating savings and productivity gains there are other considerations for an organization when moving off tape to data deduplication.

**Tape Deficiencies Eliminated**

- Greater reliability and an ability to verify the data has been properly backed-up.
- Higher security as the data resides in a data center with data center security and is a sealed media
- Shorter back-up windows
- Faster restores

**No Change in Backup Application**

- All major backup applications natively support writing to disk in addition to tape. This means that only the tape library and tapes will be replaced by the ExaGrid back-up system.

## Increased Scalability

- ExaGrid's architecture maintains performance as your data grows. With our Grid model we are able to scale and maintain the performance as more data is backed-up. Tape libraries hit a point where a new library is needed after reaching certain data thresholds.

## The ExaGrid Approach to Backup with Deduplication

The InfoPro, a market assessment firm, recently released a report indicating back-up redesign as the top storage related initiative for the mid-size enterprise market. This same report indicated deduplication is having the greatest impact on their architecture. The reasons behind this surge in interest are cost and productivity savings.

Particularly in these challenging economic times, companies and organizations must look to better leverage their resources. Deduplication technology delivers the most value at the backup infrastructure tier. By significantly reducing the backup window, ensuring the integrity of data backed-up, eliminating manual intervention, and eliminating the time spent with tape, IT staff can significantly increase their overall productivity. The costs associated with running back-ups with tape libraries are budgeted; now IT management has the opportunity to redeploy those dollars and resources to greater effect.

Companies and organizations appreciate ExaGrid's approach of being the leader in providing cost-effective disk back-up solutions with deduplication.

ExaGrid's turnkey disk backup system combines high quality SATA drives with byte-level delta data deduplication. ExaGrid's byte level delta algorithm is a content aware method of deduplication. A key benefit of this "content aware" approach is backup job reporting. This kind of reporting shows customers the deduplication ratio achieved for each of their backup jobs or data types. With this information customers will know which backup jobs meet their targeted standards, enabling more precise data management to achieve the best possible deduplication ratio and efficiency. ExaGrid's byte-level delta deduplication technology stores only the changes from backup to backup instead of storing full file copies, reducing the amount of disk space needed by 10 to 50:1. The other major benefit of ExaGrid's approach is our GRID scalable architecture which means as the data grows system performance is not affected. While other solutions see lower performance and back-up windows stretch as data grows, ExaGrid maintains absolute performance regardless of the data increase.

ExaGrid products are easy to install and use and works seamlessly with popular backup applications, so organizations can retain their investment in existing

software. The ExaGrid solution can be used at a primary site while maintaining tape for offsite, or can be deployed as a two site solution to eliminate offsite tapes with a live data repository or for disaster recovery. When a second site is used, the cost savings can be even greater because ExaGrid's byte-level data deduplication technology moves only changes, requiring minimal WAN bandwidth for off-site data transmission.

## Summary: A Way Out of the Paradox

All evidence continues to point to accelerated data growth and a greater need for fast, reliable backup systems – despite a downward economic spiral. Though the situation appears complex, the facts reveal a relatively simple but powerful solution is at the ready: dollars and time currently consumed by existing tape libraries can be far better utilized by moving to disk back-up with deduplication. Fast, reliable, highly scalable, and exceptionally cost-effective – paradox eliminated.



## About ExaGrid

ExaGrid is the leader in cost-effective and scalable disk-based backup solutions with byte-level data deduplication. A highly scalable system that works with existing backup applications, the ExaGrid system is ideal for companies looking to quickly eliminate the hassles of tape backup while reducing their existing backup windows. ExaGrid's patented approach minimizes the amount of data to be stored by providing standard data compression for the most recent backups along with byte-level data de-duplication technology for all previous backups. Customers can deploy the ExaGrid system at primary sites and secondary sites to supplement or eliminate offsite tapes with live data repositories or for disaster recovery.

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