

Analyzing ROI for File-Based Storage Acceleration Solutions

Introduction

As IT departments come under increasing budget scrutiny it becomes imperative to evaluate the return on investment (ROI) of all IT purchases. Storage capacity is growing at an unprecedented rate and although cost per GB is also dropping rapidly, total storage expenditure is still increasing by a double-digit percentage rate per year.

The Storspeed SP5000 Application-Aware Caching cluster gives customers the ability to reevaluate how file-based storage is deployed through comprehensive storage usage metrics, storage optimization tools, and by scaling performance when needed without unneeded capacity.

This white paper identifies the key elements of ROI and describes how Storspeed addresses each.

Why ROI

Storage usage has skyrocketed in the past 10 years. In 2008 alone, total deployed storage capacity reached over 8,000 petabytes. Spending on storage now accounts for as much as 40% of a company's capital expenditures. While it is difficult to measure a company's operational expense associated with storage management, clearly storage management is one of the hot buttons of a cost-conscious IT department.

ROI is one way that IT groups can get a handle on all of the costs associated with a purchase of new equipment and technology. ROI analysis has now become a standard part of major IT purchases and should be used as a tool when comparing different competitive offerings.

In most organizations the onus of justifying an IT purchase usually falls upon technical experts who are usually not well versed in financial calculations—while the people they usually are “selling” to internally likely have a solid financial backing. By using a few ROI essentials, potential purchases can be evaluated and justified to further an organization's operational goals.

Pieces of ROI

ROI analysis for the SP5000 includes the following benefits:

- Reduced operational activities
- Higher application availability
- Reduced storage footprint
- Preservation of existing storage investment

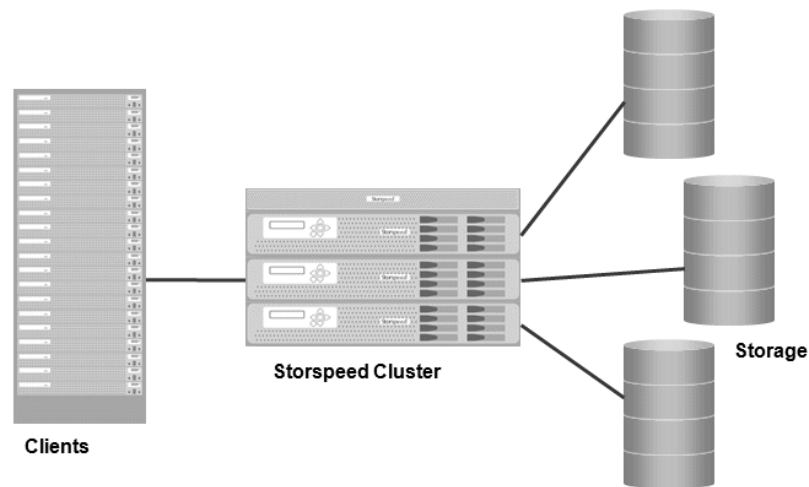
Reduced Operational Activities

In the midst of storage implementation, there is a tremendous amount of operational activity required. Once solutions are installed, there is typically additional maintenance required to keep systems running smoothly or to expand capacity or performance.

A recent Enterprise Strategy Group (ESG) survey of organizations with large, fast-growing file environments found that these organizations employ an average of 6.8 storage administrators for file storage. The U.S. national average cost for system administrator (fully burdened) is US\$99,313. This translates into an average of \$675,328 per year in direct file storage administration costs.

In addition, ESG believes that 25-40% of the time associated with tasks performed by these administrators are directly related to manually performing optimization functions related to performance, load balancing, data/system migrations, etc. that could be potentially eliminated with a solution such as the Storspeed SP5000.

With the SP5000 Application-Aware Caching solution, much of these operational expense (OPEX) costs can be minimized and even eliminated. For starters, the installation process is simple. The Storspeed SP5000 sits in the data path between the clients and network storage and requires no operational or mount point changes. Targeted applications get improved performance immediately and without any configuration.

Typical Storspeed Configuration

Once the Storspeed cluster has been in the environment for a while, the intelligence gathered provides clear visibility into storage usage and user and application activity. This not only allows storage managers to further optimize their SP5000 cluster using a set of simple profiles, but gives them the information required to easily troubleshoot storage bottlenecks and evaluate the effectiveness of their storage infrastructure.

One of the greatest benefits the SP5000 provides, however, is to eliminate the need to manually move data between storage tiers. Most organizations tend to accumulate storage over time. Sometimes, IT groups make a conscious decision to tier their storage by performance and sometimes a natural tiering occurs by simply buying the latest version of technology, especially when these come from multiple storage vendors.

Once Storage Managers identify the “fastest” storage, there is a natural inclination to move the most important data to this tier to ensure the best performance. Rather than being a one-time event though, IT managers find that more and more staff time is spent managing data movement than almost anything else.

The Storspeed SP5000 virtually eliminates the need to move data between tiers by providing a front-end, automatic tiering solution. Using a set of simple profiles, IT managers can ensure that each application gets exactly the performance it needs with the data sets it seeks. This is done even as the active data set changes and requires no movement of data between backend storage systems.

In aggregate, the SP5000 can save operation expenses in two areas:

- Helping diagnose storage bottlenecks for quick-fix results
- Eliminating the need to tier data and manually move data between subsystems

Greater Application Throughput

For many enterprise customers, the issue of ROI is focused less around real OPEX and capital expense (CAPEX) saving and more around improved application performance. For example, in the major animated feature film realm, the ability to complete rendering as quickly as possible allows animators to not only speed up overall production, but in many cases produce a much higher quality of work. In the Oil and Gas industry, the ability to process seismic data quickly and with a higher level of detail contributes directly to the bottom line.

When evaluating ROI, it is important to understand the impact on key applications, both in terms of quality and time. If a new technology deployment can deliver significant performance improvements, then determining the impact on the bottom line should be a piece of the ROI equation.

The SP5000 Application-Aware Caching solution delivers the fastest and most intelligent caching solution in the industry. A 3-node cluster delivers over one million IOPS at a cost-to-performance ratio that is unequalled.

In other environments, simply having the ability to identify application performance bottlenecks as they happen allows IT managers to avoid costly downtime and job restarts. By using the reporting tools in the SP5000 to identify usage patterns, including storage subsystem utilization and latency, it is possible to achieve even more application efficiencies by simply balancing workloads.

In effect, the SP5000 provides a virtual layer of application performance that guarantees optimal application performance based on the organization's business priorities.

Greater application throughput manifests itself as follows:

- Enterprise applications run faster
- Application performance is virtualized
- Storage usage patterns and file-based NAS latency are better understood , allowing optimized performance

Reduced Storage Footprint

One of the biggest impacts that new technology can have on ROI is in its ability to reduce the overall equipment footprint. The obvious CAPEX savings come from simply purchasing less equipment. But there are big OPEX costs associated with over-provisioning equipment. That is the additional power, cooling, and floor space consumed by extra equipment.

Many analysts estimate that enterprise data centers are provisioning on average only 40% of the total storage capacity they own. Some of this excess capacity is simply the pre-purchase of capacity. But a significant amount of over-provisioned capacity goes unused for no other reason than to maintain the I/O performance of any single disk drive.

A few years ago it took up to 8 drives to deploy 2 GB of storage capacity. Today, that capacity can come on a single, low-cost drive. While IT managers are usually unable to take advantage of these larger capacity drives without significantly impacting read and write performance, they are often the drives IT managers purchase due to availability and pricing. This leads to an increasing amount of storage capacity that goes unused with no solution on the horizon. The cost of acquiring and maintaining so much unused capacity is now a significant opportunity for savings.

The SP5000 allows IT managers to separate out two key purchasing decisions. When they need additional performance, they can add nodes to their SP5000 cluster. When they need capacity, they can now scale out their storage with the lowest-cost, highest capacity disk drives available. All of the required storage capacity is now concentrated on a smaller set of lower-cost drives that leads to much lower power, cooling and floor space requirements.

The significant savings by reducing your storage footprint and extending the life of existing storage purchases consists of the following:

- No over-provisioning
- Denser, low-cost drives

Preservation of Existing Storage Investment

Another significant piece of ROI is measuring the useful life of equipment. Obviously the longer that equipment can be used, the better the ROI. In storage, technology changes at a rapid pace. Drive density, controller upgrades and other storage subsystem innovations lead to a less-than-optimal obsolescence window.

By eliminating the need of the subsystem to provide performance, the SP5000 can significantly increase the life of existing storage purchases. Rather than replacing older, slower storage subsystems with new equipment, these systems can be redeployed behind a StorSpeed SP5000 cluster and will deliver the performance improvements needed for new applications and new users. The CAPEX savings go directly the bottom line.

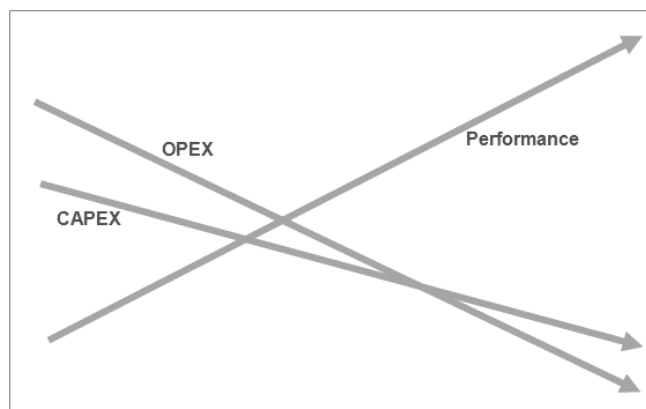
In addition, there is no longer a need to use the fastest Fiber Channel or SSD drives to get maximum performance in your subsystem. And the normal method of adding performance to subsystems through high-priced cache options can now be accomplished with a much larger performance increase and much more efficiently. All of this leads to much lower cost and extended life of storage subsystems.

In addition, consolidating the storage network cache using DRAM and SSDs in an outside-the-subsystem solution like the SP5000 is the best way to deploy these technologies. The SP5000 provides a central location for the intelligent caching, which accelerates critical applications across all of the back-end storage. Conversely, installing SSDs directly in subsystems just isn't practical because not all data needs SSD performance. Furthermore, without knowing what applications need accelerating, SSD caching must be added to all of your storage subsystems in the hope that there will be cache available when a critical application needs it.

The SP5000 preserves your investment in storage by allowing:

- Lower-cost file-based storage subsystems
- Less-expensive drives

StorSpeed ROI Benefits



Summary

Clearly the cost of purchasing storage subsystems is more than just the CAPEX cost of the hardware itself. IT departments need to be aware of the total cost of ownership when considering

a purchase and use a comprehensive ROI model to enable smarter technology purchases that provide longer benefit to the organization.

The Storspeed SP5000 is one of those solutions that addresses much of the need for industrious ROI analysis by helping to lower operational activities, delivering higher application availability and reducing storage footprint, all while providing the best investment protection for your storage subsystem purchases.

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