Solution Showcase

Dell EMC Isilon Makes Its Efficiency Story Even Stronger

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Abstract: In the data-driven economy, file data can no longer simply be restricted to the slow, cold archives of traditional IT. Unlocking the business potential in file data requires the performance of all-flash hardware. Given the massive capacities common to modern file environments, inline data reduction becomes essential. With its newest OS and hardware, Dell EMC Isilon is delivering this transformational file storage infrastructure. As a result, organizations can improve efficiency, save money, and strengthen their competitive positions.

Overview

"Data capital" has been playing an increasing role in determining business competitiveness. Digital information is a corporate asset as valuable as any other—in some cases, more so. Using digital information creatively, effectively, and efficiently can help a company differentiate itself in the marketplace. That achievement, in turn, reduces the company's risk profile and creates new revenue opportunities.

Simply put, in a modern data-driven economy, business success—or conversely, business struggles—can equate directly to how well a company maximizes the value of its data, especially its file data. According to ESG research, 30% of senior business decision makers cite **difficulty accessing data they need for business operations and analysis** as a technology challenge that negatively impacts productivity—it was the most frequently selected response. Looking at this data according to how those business decision makers rate their IT organizations, for those that consider their IT organization to be a business inhibitor, the number is 43%.[1]

However, modern workloads (analytics is a prime example) do drastically alter the demands on a file storage environment, so it has become necessary for file storage infrastructures to evolve. Businesses today need low-latency, high-performance access to the vast bulk of their corporate file data, not just subsets of it. File storage no longer has to be just big; it must be *big, fast, and efficient*.

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The requirements associated with massive capacity scaling plus high performance can strain IT budgets, even in light of recent price declines in flash storage. It is a situation [Dell EMC Isilon](#) is now addressing with an all-flash platform—the Isilon F810—and a new release of the Isilon OneFS operating system.

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[1] Source: ESG Research, *2019 Technology Spending Intentions Survey*.
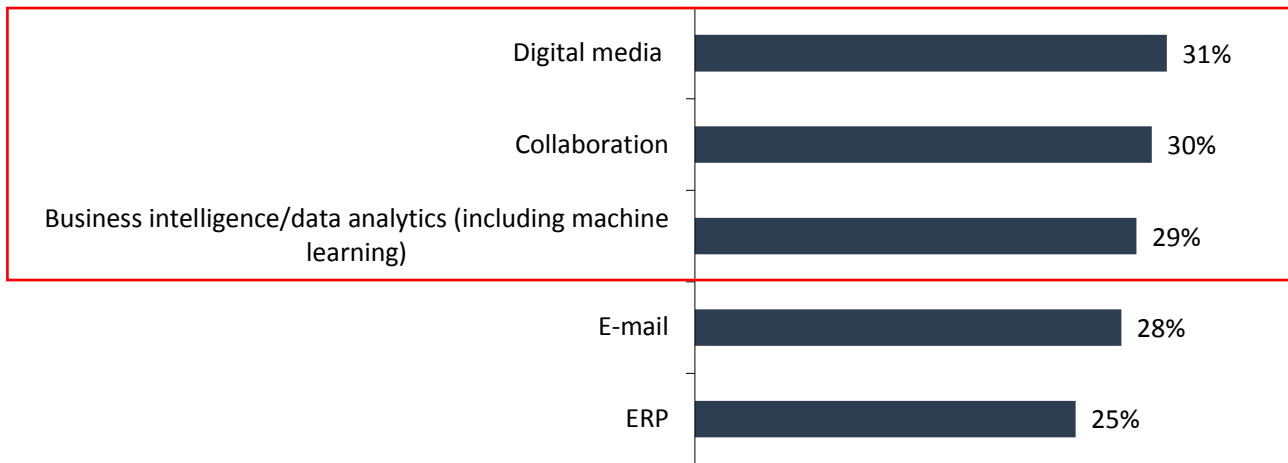
These solutions come with an innovative inline compression and deduplication capability to deliver high-performance access to files while minimizing the storage footprint and costs traditionally associated with an ultra-fast, high-capacity, business-critical file environment.

If You Want to Maximize the Value of Your Digital Assets, You Need High-performing File Storage

According to ESG research, file data now appears to be the leading driver of enterprise data growth. In 2017, ESG surveyed several hundred IT managers responsible for evaluating, purchasing, and managing storage, asking them to identify the workloads and applications they believed would most significantly impact their organizations' storage growth in the following two years. All of the top three most-cited workloads—digital media, collaboration, and business intelligence/analytics—are file-based in nature (see Figure 1).[2]

Figure 1. Top Five Workloads Responsible for Data Growth

Which applications/workloads do you believe will be responsible for your organization's storage growth over the next 24 months? (Percent of respondents, N=356)

Workload	Percent
Digital media	31%
Collaboration	30%
Business intelligence/data analytics (including machine learning)	29%
E-mail	28%
ERP	25%

Source: Enterprise Strategy Group

Connections exist between this file growth, increases in file-related business value, and the success or failure of company-wide digital transformation programs. Consider how important business intelligence/analytics has become to the success of modern businesses. Analytics provides actionable insights to internal analysts and decision makers in near-real-time—a great example of how one workload will spearhead the need for IT to deploy high-performance file storage.

Equally important examples of file-related business value are other workloads requiring extreme performance and scalability, such as those associated with artificial intelligence or electronic design automation (EDA). They also benefit from increased levels of efficiency. (An EDA example is discussed later in this paper.)

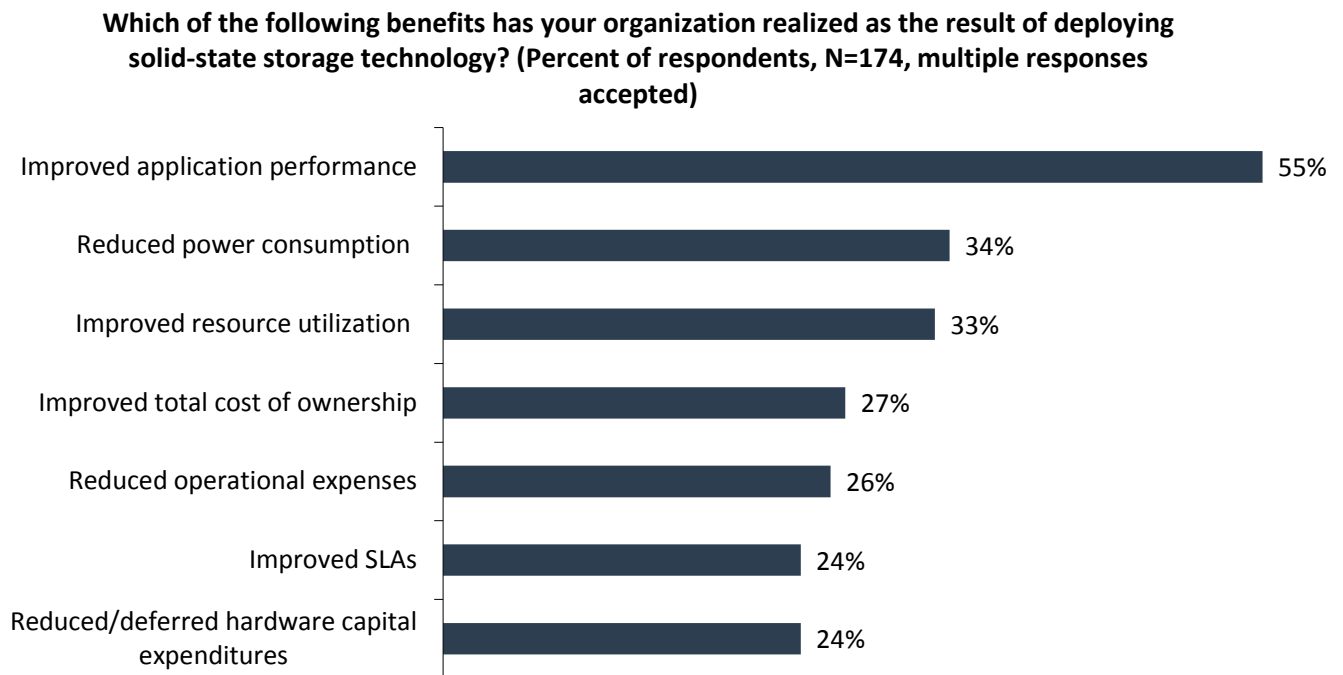### Modern Workload Demands Have Transformed File Storage Requirements

No company wants to be left behind, and no company wants to be limited by a traditional file storage system unable to keep pace with the demands of a digital business. But traditional file storage hardware and operating systems focus mostly on delivering scale. The general assumption has been that only a small percentage of file data is going to be "hot" or active, with the bulk being cold and inactive. Expectations for traditional file storage are tied to the assumption that file accesses would be rare, and even when they did occur, they would predominantly be read-only operations. Often, performance is an afterthought.

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[2] Source: ESG Master Survey Results, *2017 General Storage Trends*, November 2017.

Analytics has really upended that scenario. Insight is now perishable, so to speak. Business intelligence has a short shelf life and must be harnessed in real- or near-real-time to gain benefit. Therefore, ESG believes *file storage that supports analytics needs flash*.

Flash storage was initially invented mainly to support speed-needing OLTP environments, but today it is also transforming file environments. Flash storage provides numerous benefits, including the ones shown in Figure 2.[3]

Figure 2. Benefits of Flash Storage Usage

Which of the following benefits has your organization realized as the result of deploying solid-state storage technology? (Percent of respondents, N=174, multiple responses accepted)

Benefit	Percent
Improved application performance	55%
Reduced power consumption	34%
Improved resource utilization	33%
Improved total cost of ownership	27%
Reduced operational expenses	26%
Improved SLAs	24%
Reduced/deferred hardware capital expenditures	24%

Source: Enterprise Strategy Group

In addition to the expected benefits of improved application performance (55%), the efficiencies gained by moving from disk-based storage to flash have helped reduce costs as well. For example, respondents identified improved TCO (27%), reduced operational expenses (26%), and reduced/deferred hardware capital expenditures (24%) as three cost-centric benefits they experienced. These benefits can be further improved if the flash storage infrastructure leverages inline data reduction to minimize the capacity required.

Transform File Storage with the Isilon F810 and Inline Compression and Deduplication

A solution coming to the rescue is the Dell EMC Isilon F810 All-Flash scale-out NAS storage array with inline compression and deduplication technology, which is powered by the latest version of the OneFS operating system.

An Impressive Efficiency Story

Isilon already was an efficient option for companies due to its utilization capabilities, tiering capabilities, post-process deduplication, and other features. Now, Dell EMC has added inline compression and deduplication to the new all-flash Isilon F810, which makes the efficiency story stronger. According to Dell EMC's testing, organizations could see up to 33% more effective storage per terabyte of raw storage capacity and increased storage density for a lower effective dollar

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[3] Source: ESG Master Survey Results, *2017 General Storage Trends*, November 2017.

amount per terabyte (see Figure 3).[4] Notably, the Isilon F810 provides up to 139 PB of effective storage capacity in a single cluster.

Data reduction is an important feature of all-flash storage technology. Sometimes it comes in the form of dedupe; other times, it is in the form of inline compression (or in the form of both dedupe *and* compression). Depending on the data set and workload type, compression can offer greater efficiencies than deduplication.

Many businesses are moving to all-flash architectures (fast file storage) because again, they must maximize the value of their data if they want to thrive. In this way, the F810 brings "effective" capacity benefits: namely, organizations improve efficiency and save money.

Figure 3. Isilon F810 Overview and Competitive Comparison

	Typical Competitor	Isilon F810 All-Flash
Raw Capacity*	1.0 PB	1.0 PB
Storage Utilization**	60%	80%
Usable Capacity	600 TB	800 TB
Data Reduction Ratio***	3:1*	3:1*
Effective Capacity per 1 PB of Raw Capacity	1.8 PB	2.4 PB

- Up to 3:1 data compression
- Dell EMC 2:1 Storage Data Reduction Guarantee
- Up to 139 PB of effective storage capacity in a single cluster
- Up to 33% more effective storage capacity per TB than major competitive offerings

*1 PB is used for comparison purposes only. Actual raw capacities will vary by storage configurations.
** Storage utilization for traditional storage platforms typically range between 50-60%
***Data reduction ratios varies by data set. 3:1 data reduction ratio used in example is typical for some data sets but can vary widely.

Source: Dell EMC

The all-flash F810 node fits into existing clusters. Powered by the latest version of Isilon OneFS, the scale-out NAS array is likely going to be close to ideal for supporting unstructured data workloads that demand extreme performance and efficiency. Notably, the operating system requires no configuration, is default-on, and provides continuous compression/decompression on the F810. Compression and deduplication can be enabled or disabled cluster-wide with a single command.

The F810 and its new OS do not replace the current F800. They augment it. F810 hardware integrates easily into existing Isilon clusters with other node types including Isilon F800 all-flash, Isilon Hybrid storage (Isilon H400, H500, H600, and H5600), and Isilon Archive storage (Isilon A200 and A2000).

Use Case Example: EDA Workloads

The F810 scale-out NAS solution is ideal for supporting unstructured data workloads requiring extreme performance and efficiency. One example of such a workload relates to chip design for smartphones, tablets, and laptops. That kind of development effort relies heavily on the use of electronic design automation (EDA) software, and it tends to involve many concurrent jobs generating a lot of huge files. As a result, EDA environments have long been burdened by performance bottlenecks centered on the storage controller. And those bottlenecks always worsen at scale.

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[4] Dell EMC's test results have not been independently validated by ESG. Additionally, compression ratios vary by data set, sometimes greatly. The 3:1 data ratio in Dell EMC's example is typical but may vary.

The F810's flash architecture takes care of the performance issues, while the OneFS operating system evenly distributes data among the nodes using inline compression and deduplication and other algorithms to maximize storage efficiency. This system continuously reallocates data to conserve space and eliminates much of the need for reserve capacity overhead that EDA systems traditionally had to have in order to function well. This efficient space utilization reduces the total cost of ownership with benefits to both capital and operational expenses.

The Bigger Truth

By offering the F810 with inline compression and deduplication, Dell EMC is actively and directly addressing the challenges of modern file storage demands, not only the hardware costs resulting from rapid file data growth, but also maximizing the low latency performance potential.

For modern file environments, those where analytics workloads play a role, data reduction is not just about cost efficiency, it is about viability. Without storage efficiency capabilities, such as those offered by Dell EMC's Isilon F810, deploying and managing massive, high-performance file storage quickly becomes unwieldy, expensive, and unsustainable.

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