White Paper

HPE 3PAR Flash Now: Accelerating All-flash Data Center Transformation

How HPE is Addressing Changing Storage Consumption Models to Support Hybrid IT

By Scott Sinclair, ESG Senior Analyst

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Contents

Introduction

Over the past several years, the IT industry has seen solid-state (or flash) technology evolve at a record pace. Early on, the high cost and relative newness of flash meant that it was mainly relegated to accelerating niche workloads. More recently, however, flash storage has "gone mainstream" thanks to maturing media technology. Lower media cost has resulted from memory innovations that have enabled greater density and new architectures such as 3D NAND. Simultaneously, flash vendors have refined how to exploit flash storage's idiosyncrasies—for example, they can extend the flash media lifespan through data reduction and other techniques. As a result, flash now makes economic sense for more workloads— particularly when the equation takes into account consolidation of racks of inefficient legacy storage onto hyper-dense, all-flash arrays with a smaller footprint, lower energy costs, more predictability, and a lower management burden. So, while all-flash arrays are solving performance problems in the data center—of that there is no doubt—the true power of flash goes well beyond performance. In fact, it would be hard to deny that flash is a game-changer.

It is this potential of flash that makes the concept of the all-flash data center important to consider. As flash becomes the "new normal," requirements need to shift to take into account the ripple effects that this technology has across the data center—and can have for your business, if you approach it from a strategic point of view rather than as a product- or point-solution-driven conversation. HPE, a leader in IT technology, claims that it's time to think beyond the box—beyond the all-flash storage array—to the all-flash data center.

Accordingly, HPE has just unveiled a new initiative called HPE 3PAR Flash Now that is designed to help both existing and new customers make the transition to the all-flash data center while addressing a demand for more flexible storage consumption models. In keeping with HPE's "think outside the box" theme, the program helps IT leaders focus on four major requirements for the all-flash data center—*applications*, *operations*, *risk*, and *investments*—as a means to help the entire business reap the benefit of flash storage technology and public cloud convenience and agility. This new initiative helps customers bring together the best of on-premises and public cloud as they undergo hybrid IT transformation by giving the all-flash performance and control plus with the flexibility of new storage consumption models offered by the public cloud.

Flash Changes Everything

To understand the full disruptive potential of the all-flash data center, it is important to get beyond the simple perception that flash storage is only about improving application performance. True, flash storage provides a necessary boost to performance, but it is the cascading impact that this performance boost has on the remainder of the data center and the business that truly "changes the game." As a result, flash has the potential to dramatically impact the overall total cost of ownership and return on investment in IT infrastructure.
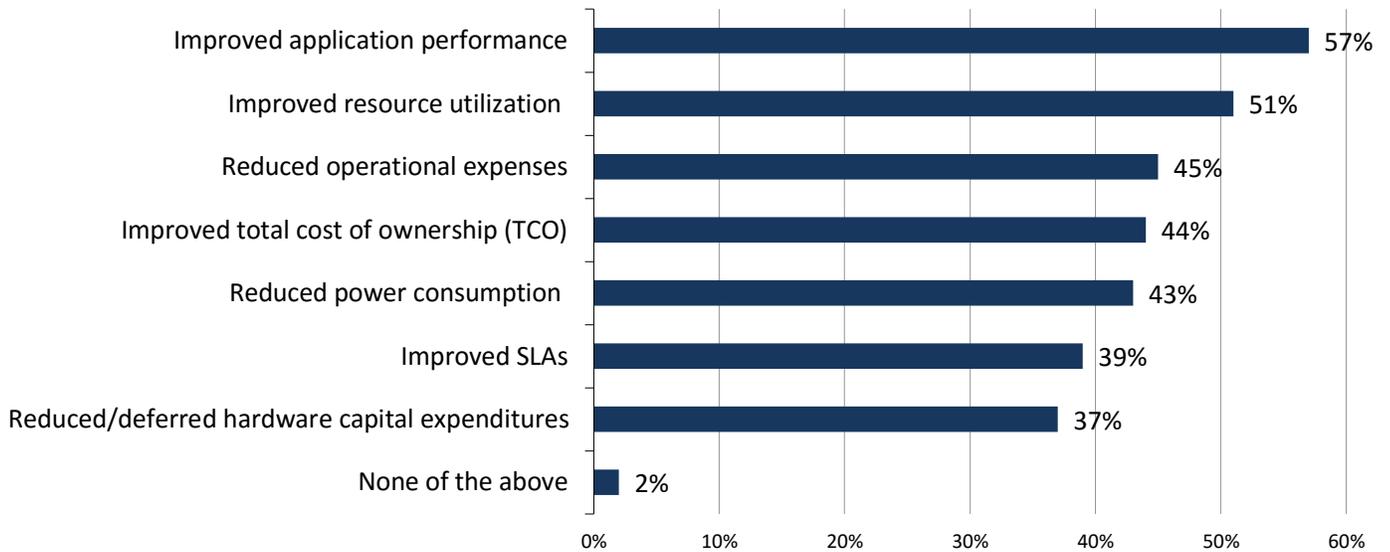
As an example of the TCO consequences, last year ESG surveyed 373 decision makers responsible for their IT organizations' data storage infrastructures, 49% of whom were already using flash and an additional 20% of whom were expecting to deploy it in the following 12 months. Amongst those who had deployed flash, 44% indicated improved TCO as a realized benefit (Figure 1). Additionally, 45% indicated improved operational expenses and 51% experienced improved resource utilization, providing further evidence of the ability of flash storage to deliver dramatic benefits to the larger IT ecosystem. [1]

[1] Source: ESG Research Report, *2015 Data Storage Market Trends*, October 2015.

FIGURE 1. Benefits Realized as a Result of Deploying Solid-state Storage

Which of the following benefits has your organization realized as the result of deploying solid-state storage technology? (Percent of respondents, N=181, multiple responses accepted)
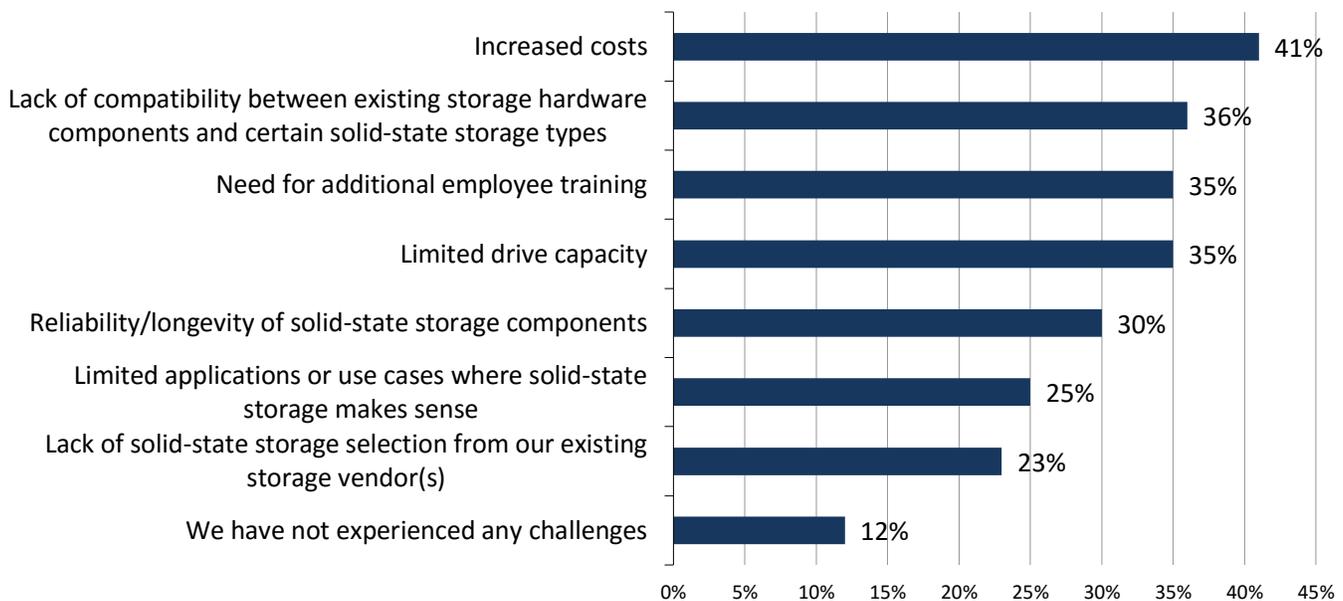
Benefit	Percent
Improved application performance	57%
Improved resource utilization	51%
Reduced operational expenses	45%
Improved total cost of ownership (TCO)	44%
Reduced power consumption	43%
Improved SLAs	39%
Reduced/deferred hardware capital expenditures	37%
None of the above	2%

Source: Enterprise Strategy Group, 2016

However, when storage leaders were asked to identify what challenges, if any, their organization experienced with flash storage, the most commonly identified answer was increased costs at 41% (Figure 2).[2]

FIGURE 2. Challenges Experienced with Solid-State Storage

What challenges – if any – has your organization experienced with solid-state storage? (Percent of respondents, N=181, multiple responses accepted)

Challenge	Percent
Increased costs	41%
Lack of compatibility between existing storage hardware components and certain solid-state storage types	36%
Need for additional employee training	35%
Limited drive capacity	35%
Reliability/longevity of solid-state storage components	30%
Limited applications or use cases where solid-state storage makes sense	25%
Lack of solid-state storage selection from our existing storage vendor(s)	23%
We have not experienced any challenges	12%

Source: Enterprise Strategy Group, 2016

[2] ibid.

What this tells us speaks volumes: customers who deploy flash see its economic benefits, but the ability to realize those economic benefits is still something that must be closely managed. In other words, automatic improvement to TCO with the deployment of flash storage is not a given.

New Rules, New Requirements

So how do you ensure that your organization comes down on the right side of this equation? If you are willing to accept that flash is a game changer, then it follows that there need to be new rules to the game. To be clear, these new requirements, if met, can elevate flash from simply a disruptive new storage media to a game-changing technology with the ability to transform the way you do business. If not met, the results can be an unimpressive return on your flash investment and unattractive TCO.

- **Application and workload performance acceleration**. The benefits of flash with respect to application acceleration are well understood, but one benefit that is sometimes overlooked is predictability of performance—and by performance, we mean not only throughput, but latency. Many of the organizations that have deployed flash report that this predictability is the true transformation to their environment. The impacts of these increases in performance can be severely hindered, however, if performance issues are only shifted from the storage array to the network. For example, deploying an all-flash array on an outdated Fibre Channel SAN that lacks sufficient bandwidth may not yield the application acceleration benefits, or the TCO benefits, that the organization expects. Likewise, the performance of backups can also limit the effectiveness of production applications running on a fast, all-flash array unless the data protection ecosystem is considered.

- **Speeding service delivery through simplicity of operations**. Automation built into the storage platform is one thing, but to speed service delivery and simplify operations, automation needs to be built into the other elements of the data center, such as the network, and managed through intuitive tools such as the hypervisor. For example, consider SAN fabric zoning, which is typically a complicated and time-consuming manual process that requires provisioning, troubleshooting, and change management. Eliminating that complexity frees resources to focus on high priority tasks, reducing costs and helping the business.

- **End-to-end risk management.** Risk management should be approached end-to-end—from the host, all the way to your backup device. Data integrity must be maintained across compute, storage, and networking and provide a way to remove any errors and inconsistencies in a deduplicated and compressed environment. Obviously, this is in addition to the requirement that the solution be resilient enough to enable both data protection and data availability in order to ensure business continuity.

- **Investment flexibility and protection**. Infrastructure and data migrations require investment and resources—people, time, and money. In a hybrid IT world where off-premises cloud co-exists with on-premises infrastructure, the added cost and complexity of migrating data across the WAN only exacerbates the economics. The optimal all-flash data center must comprehend the reality of a hybrid cloud data center and ensure that in addition to solving today's problems, the infrastructure is also well positioned for the future. IT acquisition models are changing and less emphasis is being placed on long-term ownership. When IT decision makers who have deployed flash cite cost as a major drawback, it is highly likely that this is based on a cost per capacity metric. The capital acquisition costs of solid-state storage can be significant, especially when that capacity is procured as part of a traditional multi-year buying cycle, which often requires deploying excess capacity to serve forecasted future data needs.

Shifting Consumption Models and Cost Perceptions

To address shifts in consumption models, IT infrastructure vendors need to take a more flexible approach to ownership and consumption. For example, to reduce TCO and ease the complexity of infrastructure planning, businesses today are looking for any way to reduce costs. One way to do that is to only pay for what they use, and IT organizations are no exception. More flexible consumption models such as subscription-based pricing and leasing are experiencing an increase in interest.

In a recent ESG research study investigating growing interest in software-defined storage, almost three quarters of storage leaders (73%) identified that their organization's preferred payment model was some form of a pay-per-use method as opposed to a traditional storage procurement model.[3] While not specific to flash storage, this data reveals a strong preference to move past the capital-expense-intensive traditional model of procuring storage to something more flexible and efficient.

The Limits of the Public Cloud

While many IT organizations view all-flash storage as costly despite the benefits to TCO, cloud infrastructure enjoys the opposite perception. In a 2016 ESG research study on IT spending intentions involving 633 IT decision makers, respondents asked to identify cost saving measures their organizations would be taking over the next 12 months indicated cloud computing (as an alternative to in-house infrastructure) as the most common savings tactic anticipated.[4]

While in practice the cost of cloud resources as an alternative to on-premises deployments can vary widely based on multiple factors including workload, cloud is generally perceived as a lower-cost alternative. A key element driving this perception is the ability to only pay for the resources you need and only when you need them. Public cloud resources, however, are not right for every workload. The physical isolation introduced by WAN latencies increases the cost and complexity of data movement and access. Data control and security can also be more complex with the introduction of off-premises resources. Ultimately, performance, security, control, and sovereignty issues will continue to demand that organizations retain key workloads and their data on-premises. So the clear conclusion is that there needs to be a way to bring cloud-like flexibility of consumption to on-premises, all-flash storage deployments—in order to address the performance, security, and control requirements for on-premises workloads for customers and control costs as they make the transition to hybrid IT.

HPE and the 3PAR Flash Now initiative

So how do you get cloud-like consumption flexibility and low TCO for the data that must reside on-premises? HPE's answer to this is to offer customers the flexibility to pay for their on-premises IT infrastructure in a manner that's similar to the way they would pay for subscription-based cloud services.

HPE 3PAR StoreServ Storage technology has roots that are inextricably linked to cloud services delivery models, as the platform was originally designed for IT-as-a-service (ITaaS), with a "thin" architecture built for capacity efficiency. HPE 3PAR StoreServ Storage arrays were designed from the start to minimize the amount of capacity that IT organizations are forced to procure and support for their application workloads. Building on that theme, HPE has introduced the 3PAR Flash Now initiative to increase the value of 3PAR technology and improve the agility with which IT organizations are able to procure and deploy flash arrays. The initiative provides a variety of benefits to both IT and service provider organizations, including:

- **Flexible consumption options:** The HPE 3PAR Flash Now initiative offers on-premises, all-flash storage starting at 0.03/GB usable capacity per month. HPE offers two financing options: Flex Capacity and Pre-Provisioning. Flex

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[3] Source: ESG Research Report, *Usage Trends for Software-defined Storage*, to be published.
[4] Source: ESG Research Report, *2016 IT Spending Intentions Survey*, February 2016.

Capacity is a full-service offering that includes IT and support with variable monthly payments aligned to usage for customers that want a "pay-as-you-go" offering. With Pre-Provisioning, HPE delivers quick access to pre-configured 3PAR flash arrays shipped ready for use with no payment due until activation. All-flash infrastructure can be deployed ahead of workload demand, while the business only pays for the capacity currently in use. Storage is billed on a monthly usage rate, simplifying the payment process. HPE even offers a built-in, non-disruptive technology refresh option to keep organizations up-to-date with the latest flash technologies. The result is a stable and optimized storage cost structure that can significantly reduce the capital cost of flash storage resources over time, making flash storage more applicable to a wider variety of workloads.

- **A variety of flexible hardware options extending beyond storage:** The HPE 3PAR Flash Now initiative extends beyond flash storage to incorporate flash-integrated backup and HPE Smart SAN technology, which is designed to dramatically simplify SAN zoning and management by taking advantage of intelligence built into HPE Gen5 (16Gb/s) and Gen6 (32Gb/s) Fibre Channel networking components, including network adapters, switches, and directors. HPE 3PAR Flash Now also provides options to improve service levels and reduce risk such as a six 9s guarantee, embedded data protection, and no-cost data migration services.

- **Reduced lock-in of infrastructure decisions:** The cost and complexity of sending large capacities of data across the WAN to the public cloud effectively locks data sets into using cloud-based resources. As workload demands change or performance requirements increase, the cost of using public cloud resources can increase quickly, while the cost of migrating data inhibits the ability of the business to adapt. 3PAR Flash Now enables a larger portion of data to remain on-premises and on flash storage. The result eases the ability to adjust the underlying storage infrastructure if application requirements change.

The Bigger Truth

The demands placed on IT organizations are constantly escalating. Flash storage has proven its ability to address the ever-increasing demands and ultimately transform the data center, but the benefits of flash storage will continue to be limited if its potential remains "in the box." For IT organizations to enjoy the full extent of the efficiency and TCO benefits that flash storage can provide, they need to consider the implications of flash at the data center level—in terms of all-flash data center requirements. Despite the prevalence of flash, a myriad of hurdles, including increased risk, cost, and complexity, are effectively barring IT organizations from achieving this goal.

HPE's 3PAR Flash Now initiatives specifically targets these hurdles and significantly eases the transition to the all-flash data center, enabling businesses to leverage the latest flash storage technology while only paying for the storage when they use it. By helping address the four key requirements of the all-flash data center, HPE's 3PAR Flash Now initiative demonstrates that the company understands that, for an all-flash data center to be effective, the performance benefits of flash must transcend the storage array and apply to the entire data path, including the storage network, as well as business processes and operations. HPE also understands that any transformation involves risk and cost, and that to help guide its customers through the transition, it must effectively manage the risk while dramatically reducing the cost. This is the heart of HPE's 3PAR Flash Now initiative—to lead customers to the all-flash data center for their on-premises environment as part of a larger hybrid IT transformation, removing all obstacles in the way.

To that end, HPE's model goes well beyond some alternative hardware leasing programs by offering a technology refresh and a reliability guarantee, while also extending the program to other elements of the flash storage ecosystem, such as data protection and networking. Businesses that are investigating when to make the transition to flash technology now have an easier and more cost-effective means to begin making the move. Organizations that are already leveraging flash storage can further reduce the cost of ownership while expending the benefits of flash to a larger share of their workloads.

In other words, HPE's 3PAR Flash Now initiative is changing the economics of flash, and if your organization is still delaying the use of flash technology, you need to give flash storage, and HPE, another look.

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