

IT Transformation Trends:

Flash Storage as a Strategic IT Asset

For decades, enterprise storage has been widely viewed as—let’s face it—an important but largely commoditized IT necessity. After all, every application needs storage. But following a highly innovative period in the 1980s and ‘90s, advances in enterprise storage slowed to a crawl compared with other IT functions. In fact, storage vendors’ products all evolved to be quite similar in terms of capabilities.

That fact shouldn’t be surprising, as the key building block of enterprise storage—the disk drive—has itself only seen incremental improvement in that time, mainly in increased capacity and density. Performance, on the other hand, has actually declined tremendously during that same period when viewed on a per-GB basis, because per-drive capacities have increased while per-drive performance has remained roughly flat.

Consequently, organizations have been treating storage as a cost-oriented commodity purchase, with IT leaders delegating product evaluations to junior staff and evaluating proposals largely in

terms of the cost per GB. Procurement has appropriately taken on a large role. Simply put, IT leaders freed themselves up to focus on other strategic decisions that had the potential to significantly and positively affect their stakeholders—typically by speeding up line-of-business applications and processes.

This approach has long made sense, as IT performance and agility are, after all, core drivers of business performance. And because storage hasn’t traditionally driven major improvements in either area, IT leaders moved their attention farther up the stack, adding more and faster servers and networking capabilities, as well as virtualization software. All these areas have contributed greatly to IT and business competitiveness. At the macro level, IT leaders want a new operating model that enables self-service with high performance and high agility, but that does so securely and cost-effectively. Put another way: they want the self-service agility of the public cloud combined with the security, performance, and cost-effectiveness of a private cloud.

Thanks to flash storage freeing up employees’ time, “we’ve been able to start deploying new applications and working on projects that probably weren’t on our road map a year ago. Now they’re already in production.”

— Jack Hogan,
CTO, Lifescript

But in the last few years, a dramatic change has been disrupting the status quo, making enterprise storage a strategic asset once again.

The Rise of All-Flash Storage—and the Decline of Cost

The disk drive—the building block of legacy storage—is finally giving way to a new and powerful form of media: flash. This is the same flash media that’s powering a consumer revolution with smartphones and myriads of other devices, as well as solid-state drives (SSDs) for personal computers. It’s also transforming enterprise storage in data centers everywhere, whether they’re operated by organizations, hosting and public cloud providers, or software-as-a-service (SaaS) providers.

Over the last few years, new enterprise-grade storage arrays that are purpose-built to take advantage of flash’s unique characteristics have come to market. These all-flash arrays (AFAs) are revolutionizing storage with cloud-like application consolidation and agility features that serve as catalysts for both IT and business transformation.

Flash media offers about 10 times the performance of traditional storage arrays with roughly a tenth of the power consumption. Although these capabilities initially came with a premium price tag, flash media prices have fallen dramatically in recent years—which, in turn, has driven huge economies of scale and volume to satisfy consumer (and now enterprise) demand. Today, all-flash arrays (AFAs) are typically less expensive in the long run than the storage solutions they replace.

Consider the following example: Lifescript, a Newport Beach, California-based publishing company, has been using flash to dramatically reduce overall operating expenses. This savings, in turn, helps cover the cost of introducing more and more flash

into the environment, says Lifescript chief technology officer (CTO) Jack Hogan. At first glance, flash “is perceived to be expensive,” he acknowledges. “But when you start to look at what you gain from it, it is absolutely going to become, or already is, a really ubiquitous environment to be able to put long-term data storage on. We’ve seen that.”

Meanwhile, the storage industry is experiencing more innovation than it’s seen in years. Today’s marketplace includes a broad range of products from large and small vendors alike, offering a variety of capabilities and maturity levels. Ultimately, the right storage choice not only benefits the business, but also dramatically lowers the total cost of ownership for IT. In contrast, the wrong choice can lead to loss of competitiveness, higher costs, and devastating downtime.

And experts say this trend is only likely to continue: by 2021, “the cost of data center storage will be 40 times lower than today [and data centers] will be flash only,” David Floyer, Cofounder and CTO of Wikibon, an IT research and peer-advice community, [predicted in 2015](#).¹ “The IT infrastructure and business transformation that AFAs enable will be strategic in the successful companies of the future,” Eric Burgener, research director, Storage Systems at IDC, [has said](#).²

The bottom line is: for the first time in decades, the evaluation and purchase of enterprise storage is not simply a function to be delegated downward. Purpose-built all-flash storage is a genuine asset that demands the full attention of IT leadership, and, for that reason, both IT and business teams must think about storage strategically.

Storage with a Difference

Applications—along with the infrastructure that supports them—need to be easily scalable. But all too often, storage isn’t. Specifically, traditional disk arrays create bottlenecks (one storage expert has

100%
Percentage of customers interviewed who are interested in moving more of their workloads to flash

SOURCE: IDC MARKETSCOPE: WORLDWIDE ALL-FLASH ARRAY 2015–2016 VENDOR ASSESSMENT

Flash media offers about 10 times the performance of traditional storage arrays with roughly a tenth of the power consumption.

estimated that disk storage is more than 1,000 times slower than everything else in the data center). Meanwhile, disk storage typically requires a painful “rip-and-replace” upgrade every few years, a time-consuming, expensive process that usually requires downtime and painstaking data-migration projects.

Some purpose-built AFAs are upending this tradition by enabling fast, easy upgrades that don’t require downtime or data migration, providing a cloud-like ownership and operating experience.

And the marketplace is an impressive one. According to the report “IDC MarketScape: Worldwide All-Flash Array 2015–2016 Vendor Assessment,” AFAs generated about \$2.53 billion in revenue in 2015, and by 2019 this revenue is expected to exceed \$5.5 billion and account for 60 to 70 percent of all primary storage. “It is clear that customers are thinking more and more about [AFA] platforms’ ability to serve as general-purpose primary storage platforms hosting a variety of mixed workloads,” the IDC researchers noted. “Customers love the performance and ease of use that AFAs bring to the table...and 100 percent of the customers interviewed by IDC about their AFA experiences expressed an interest in moving more workloads to flash over time.”²

For IT directors, AFAs simplify operational strategy and improve productivity by eliminating many of the repetitive administrative and maintenance activities that typically dominate IT staffers’ workloads. Consequently, IT directors can reassign those staffers to work on other, more strategic projects.

That’s exactly what happened at Lifescript. “Freeing up the IT operations employee work cycle allows them to work on bigger and more ambitious projects,” Hogan says. “We’ve been able to start deploying new applications and working on projects that probably weren’t on our road map a year ago. Now they’re already in production.”

Maurice Blackburn Lawyers, a large Australian law firm, no longer worries about storage, according to Brett Johnstone, the firm’s CIO. “We can now focus on more value-adding technology, platform programs, and other components that will make a real difference,” Johnstone says.

LinkedIn, the global social-media network, is using flash to improve site speed and response time to better satisfy its user base. “Member experience is really important to us,” says Neil Pinto, vice president of product engineering operations for the Mountain View, California–based company. After deploying flash, LinkedIn noticed “phenomenal response-time improvements”—for instance, query response time dropped from 30 milliseconds to just 2. Pinto says of response time: “I don’t need to worry about that anymore. We unlocked the bottleneck that was there.”

By extension, AFAs’ simplicity, speed, and reliability even help improve employees’ personal lives. “From the administrative side of things, you get your weekends back,” says Peter Dunn, director of communication and services for Lamar Advertising, an outdoor advertising service based in Baton Rouge, Louisiana. “You get your nighttime back. You don’t have to worry about coming in during the early hours of the morning or giving up your Saturday morning or Sunday morning.”

Pure Transformation

If there’s one company that understands the cloud and flash revolution, it’s Pure Storage.

“As the result of the convergence of flash and cloud, we are seeing the biggest disruption the storage industry has seen in over 20 years,” Scott Dietzen, CEO of the seven-year-old Mountain View, California–based company, noted in a recent blog post. That disruption is good news for Pure customers, who are transforming their data centers—and their businesses—with the company’s all-flash, cloud-ready platform.

**\$2.53
BILLION**

**Amount of revenue
generated by AFAs in 2015**

SOURCE: IDC MARKETSCAPE:
WORLDWIDE ALL-FLASH ARRAY
2015–2016 VENDOR ASSESSMENT

For the first time in decades, the evaluation and purchase of enterprise storage is not simply a function to be delegated downward. Purpose-built all-flash storage is a genuine asset, and IT and business teams must think about storage strategically.

Pure's benefits include a 100-percent flash-memory platform that brings the simplicity of a public-cloud user experience to storage, providing better performance at a lower cost, out-of-the-box compatibility with existing infrastructure, and an "evergreen" model that allows for non-disruptive upgrades with no downtime.

Industry analysts say those benefits distinguish Pure from the pack. The IDC MarketScape report praised "Pure's comprehensive ability to cost-effectively and non-disruptively perform in-place upgrades across technology generations" and its "unprecedentedly high level of customer satisfaction, as evidenced by its extremely high Net Promoter Score [(NPS)]." (The NPS is a widely used and accepted customer-loyalty indicator based on the likelihood of customers recommending a particular product or service to friends or colleagues.) In fact, Pure Storage's NPS of 79 is far above the average global high-technology score of 16 and even higher than [the Apple iPhone's score](#) of 63.³ In commenting on those results, IDC noted that "Pure Storage has implemented a culture that highly prizes customer satisfaction, using NPS as a touchstone for this program, and that this presages the levels of customer satisfaction that storage companies of the future will need to consistently deliver to their customers to succeed."

Conclusion: Develop an AFA Strategy

There's no question about it: purpose-built all-flash storage is an exceptional catalyst for improving data center operations and supporting the transition to the cloud operating model. AFAs' highly strategic role in both IT and business underscores the need to move storage purchase discussions and decisions beyond the storage team. IT leaders who want to see their organizations reap AFAs' benefits—performance improvement, productivity gains, and cost savings, among others—should actively define their AFA strategies and oversee storage-related decision making, thus treating storage like the newly strategic asset it has become.

To learn more, visit purestorage.com/cloud.

REFERENCES

1. "Evolution of All-Flash Array Architectures," by David Floyer, Wikibon. July 2015.
2. "IDC MarketScape: Worldwide All-Flash Array 2015–2016 Vendor Assessment," by Eric Burgener, Ashish Nadkarni, and Eric Sheppard, IDC. Document #US40721815. December 2015.
3. 2015 Net Promoter Score Global B2B Benchmarks, Satmetrix. November 2015.

**\$5.50
BILLION**

**Projected amount of
revenue generated by
AFAs by 2019**

SOURCE: IDC MARKETSCAPE:
WORLDWIDE ALL-FLASH ARRAY
2015–2016 VENDOR ASSESSMENT

**After deploying
flash, the global
social-media
network
LinkedIn
noticed
"phenomenal
response-time
improvements."
For instance,
query response
time dropped
from 30
milliseconds
to just 2.**

About MIT Technology Review Custom

MIT Technology Review Custom produces world-class print, online, and live-event solutions that align clients with a trusted 116-year-old brand. www.technologyreview.com/media

Copyright © 2016, MIT Technology Review. All Rights Reserved.