

BEYOND THE BUZZWORD

FLASH STORAGE

A Softchoice guide to separating the
buzz from the business value

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What's all the buzz about?

It might not seem like a buzzword, since flash storage has been around for decades, and is already popular across a specific set of industries.

But something buzz-worthy is certainly happening in recent years with flash. Organizations of all sizes are looking for a way to give their mission-critical applications a speed boost, as they seek to innovate their business models, cut operating costs, and revolutionize their services to end customers in the digital era. Flash can often help organizations achieve those goals.

IBM reports the percentage of organizations “extensively” using-all flash storage will double to 68 in the next two years. IDC says the flash storage market grew 55 percent, year over year, in the first quarter of 2018.

As with all buzzwords, caution is needed. Flash might be gaining in popularity for a variety of economic and strategic reasons — everything from good timing, evolving data centers and the need for speed. But that doesn't necessarily mean it's the right fit for your business. It's also no panacea; it's just one key ingredient of a larger, agile infrastructure initiative. Knowing exactly how flash can help you is why we've created this guide.

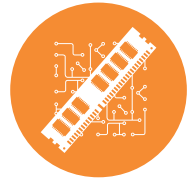
What is flash, really? Why would you want to use it? Who is it for? When should you adopt it? And, most importantly, how will you make your decisions and move forward?

Get the answers and find out what all the buzz is about!

“The flash storage market grew 55%, year over year, in the first quarter of 2018.”

– IDC

What is flash, really?



All it takes is four seconds of extra loading time to scare away 90 percent of web visitors, according to Google. The digital revolution has created an insatiable need for speed, a need that is being driven by employees and end customers, everywhere. Coupled with endless new demands for big data, analytics and compute power, flash is one of many emerging solutions to address those needs.

From a technical perspective, flash promises to address the decades-old speed constraints of hard disk drives (HDD) and tape. Unlike its spinning-disk counterpart, solid-state drives (SSD) use flash memory for persistent storage. Because it has no moving parts, it yields a much higher read-write performance. As an added bonus, flash is also safer, eliminating the vulnerabilities to heat, humidity, shock and vibration.

From a storage perspective, it's all about the IOPS

The highest-end spinning disk media have a hard ceiling speed at 15,000 RPMs — which often impacts the performance, and stability, of today's data-heavy applications. Flash storage overcomes the performance limitations of spinning disk by design. It stores and accesses data directly from a semiconductor, rather than a disk or magnetic tape. As a result, it's common to see flash perform an impressive 25x faster than spinning disk in input-output operations per second (IOPS).

“HDDs deliver hundreds of IOPS. Flash clocks in at hundreds of thousands of operations per second.”

Buzzkill: Why IT resists flash storage

Here are some of the most common concerns we hear when speaking with clients about flash:



Fear: We can't afford it.

Reality: Upfront costs must be balanced with a long-view of the strategic gains made with more speed, efficiency and agility. The cost of flash keep decreasing year over year, in some cases on par with 15,000 rpm spinning media. You need a clear calculation of its true value to your business, first.



Fear: We have no time to plan and execute this properly.

Reality: Organizations are juggling multiple competing priorities. A move to flash requires much upfront planning to achieve business goals. Picking the right moment (such as end-of-life for major applications) and teaming up with an experienced partner can help you through this.



Fear: The status quo is working just fine.

Reality: A strategic move to flash can create new opportunities for IT to optimize services and deliver cutting-edge new ways to serve the business. People's expectations are changing, if 4 seconds is too long for a website to load, how long will they wait for mission critical line of business apps?

Why are businesses moving to flash storage?

“Making applications run faster is the biggest single catalyst for investing in flash storage.”

– IBM



Flash is much faster than spinning disk — but it is frequently seen as much more expensive. Which is why organizations need a good reason to make the transition from HDD. From gaining an edge on the competition, to bringing performance and reliability to mission critical applications, a move to flash can help unlock numerous benefits, especially when implemented as part of a larger, holistic infrastructure modernization project:

Speed and innovation: From big banks, to online retailers, businesses are increasingly dependent on the ability to process vast amounts of data and serve up millions of transactions in an instant. Flash is the most reliable foundation for modern organizations with low tolerance for downtime or delays in service delivery resulting in user interruptions. If your mission-critical applications (or components like data bases that may power multiple apps) are performing too slowly, flash is a good way to improve the overall performance, offering up to six-fold improvements in reliability and availability.

Growing storage and complexity: Physical limitations of spinning disk often force organizations to over provision (ie more spindles = more performance) by more than 25 percent – all to make up for the growing demands exacted by mission-critical workloads. Simply allocating more hardware might solve an immediate need but introduces more risk due to increased complexity as well as the costs associated with added energy consumption and management overhead. Flash offers a more optimized way to meet growing storage capacity needs, providing roughly 35 percent savings to admin and operating costs.

Costs and efficiency: While flash is often more costly upfront, that is only half the story. Many businesses actually see flash as an efficiency play, overtime. That’s because flash drastically cuts down on floor space and energy consumption and can be far easier to maintain, especially compared to ageing, out of date HDD arrays. Add to that the innovative potential of boosting your mission critical apps, and it’s easy to see why flash is a business asset, not liability.

Who should adopt flash storage?



Flash has long been heavily adopted at the high end in certain industries, where the businesses have a pronounced need for high speed and reliability. Take for example an investment bank, running a trading application on its servers. A few milliseconds of added efficiency, on thousands of trades a day, could have a significant impact on the bottom line. Similarly, one minute of unplanned downtime could cost thousands, if not millions in damage. Major online retailers, insurance providers, emergency preparedness organizations — any organization demanding extremely high SLA's — all require flash to achieve performance goals.

Emerging IT trends are pushing the need for flash to mid-market

That's not to say flash is only fit for large-scale, enterprise markets. Flash can enhance the immediate performance of databases and applications for even small to mid sized organizations. Emerging technologies such as machine learning, artificial intelligence and the Internet of Things all promise enormous potential to business of all sizes. But they also drive up exponential data, storage and compute demands. To keep up, mid-sized organizations are looking to flash to help them adopt new technologies, while maximizing performance and unlocking new business models.

Common use cases for flash:

- Migrating off of end of life database technologies like SQL Server 2008 as an opportunity to upgrade underlying infrastructure
- A performance boost for adopting emerging tech, such as AI, ML, IoT
- High availability for mission critical applications such as banks, insurance, or trading application

- Running frequent, data-intensive diagnostics, as with test and development teams and DevOps
- Service providers competing on superior performance
- Retail applications with a web presence
- Public sector applications requiring high availability, like emergency preparedness

Self-Assessment Worksheet:

	1 POINT	2 POINTS	3 POINTS	SCORE
How often does your organization worry about latency, bottlenecks and performance degradation on mission-critical applications?	Rarely	Occasionally	Frequently	
How often is storage for mission critical applications over-provisioned by at least 25 percent?	Rarely	Occasionally	Frequently	
How often is your team occupied with maintenance, and 'fixing up' ageing storage infrastructure?	Rarely	Occasionally	Frequently	
Are you having virtualization performance issues in your environment?	Rarely	Occasionally	Frequently	
Is your ability to serve growing business demands being hampered by slow provisioning speeds and cumbersome ongoing management?	Rarely	Occasionally	Frequently	
How often does your business worry about unplanned downtimes and interruptions to the business?	Rarely	Occasionally	Frequently	

How did you do?

If you scored 10 points or more, flash is strongly indicated for your mission critical apps.

When should you consider a move to flash?

“It is the perfect time to conduct a cost/benefit comparison of status quo to flash.”



Timing is everything. In our experience, our clients face a few opportune moments in the natural infrastructure life cycle where the transition to flash storage makes the most sense, provides the most compelling business value, and will have the least interruption to the business. To maximize your chances of success, look for these time-sensitive factors to prioritize a move to flash.

Are you preparing for major end-of-life for mission critical apps?

As your mission-critical software environments reach their natural end of life and end of service, you might have a great opportunity to consider a move to flash. One recent example is with the coming end-of-life for **Microsoft SQL Server 2008**.

SQL Server is a critical component to delivering many mission-critical applications. With SQL Server 2008 end of life on the horizon, IT is forced to upgrade due to compliance and security risks. It is the perfect time to conduct a cost/benefit comparison of status quo to flash.

The recent sunset of vSphere 5.5 caused organizations to review their entire underlying infrastructure in order to even support the latest version.

Major hardware, infrastructure and cloud initiatives

Similarly, organizations considering a major hardware upgrade, infrastructure project or even the move to cloud, should take this opportunity to look at flash. Often, flash can be a major component of a software-defined data center play, such as the move to hyper-converged infrastructure. As you consider more virtualization, consolidation and automation of your three-tier management schemes, it's a natural time to analyze your underlying storage and performance needs.

How do you start your flash journey?



Once you determine why you might need flash storage for your mission critical applications, and why it is a fit for your business, now comes the hard part: doing it.

The good news is there is a proven approach every business should take, which will help bring clarity and build the strong business case to implement an upgrade to flash. This approach will allow you to prove the value, bring momentum to your project, and ensure a successful, long-term rollout of the right solution.

Upfront data center audit: As a starting point, organizations must collect data to determine the lifespan and capacity of existing storage and software assets. Use this information to identify upcoming, urgent opportunities to upgrade (such as end of life events). You must also paint a clear picture of your existing usage, understanding where you are likely to exceed capacity, and where you are frequently over provisioned.

Determine need: Next, refer back to why businesses actually need flash. Are you concerned about your ability to drive high-performance mission critical apps? Are you frequently over-provisioning storage? Is your DevOps frequently requiring high-performance storage? Is a small unplanned downtime potentially catastrophic to your bottom line? Survey your teams to get answers.

Identify starting point: We recommend you identify mission critical applications, especially ones affected by upcoming end of life deadlines, as your entry point. But you might want to start smaller and prove flash's performance gains first, such as with your test and dev teams, for example.

Decide on all flash or hybrid: Next, you must also decide between two types of flash arrays: all flash or hybrid. As the name suggests, all-flash stores all data on high speed solid-state drives. Hybrid merges a small number of flash drives for heavy-duty workloads or accelerate read IO operations and spinning disk media for data accessed less often. There are pros and cons to each approach, such as higher performance but also higher costs for the all-flash option.

Cost/benefit analysis: When developing the business, it is essential to assess infrastructure, maintenance fees, environmental (power/cooling), licensing scenario (especially with a looming SQL Server upgrade). In fact, organizations that evaluate technology such as Flash for mission-critical applications in a comprehensive manner often find cost parity and see up to 20 fold increase in performance over the long-term

- **Pro tip: Avoid myopic cost analysis and look to the future**
Most organizations assess the value of flash incorrectly, leading to the perception that it is cost prohibitive or that it's a panacea to solve all of their performance problems. They collect inputs from specialized team members who provide independent (yet disconnected) requirements to support mission critical applications. The result is a flawed business case based solely on a legacy storage sizing requirements for capacity and performance, not what the application actual needs.
- **To avoid this, keep in mind the impact of new technology.** Flash brings extreme performance and supports deduplication capabilities, allowing it to meet the needs of an application much more efficiently than traditional storage solutions. At the same time, flash has a significant impact on reducing the hidden costs of supporting the infrastructure such as maintenance, power/cooling and licensing. The challenge is, with a lack of resources to compile and present a meaningful end-to-end business case, most organizations become stuck in the status quo, putting the delivery of mission-critical services at risk.

Partnering with Softchoice

Build your comprehensive business case based on mission-critical application performance demands.

There is a lot to sort out on the journey to flash, and the technology alone will not solve all your infrastructure challenges. When you work with Softchoice, you will gain a comprehensive view of your application and storage needs – including underlying compute, storage and network architectures – to clearly understand the costs and benefits of modernizing your storage. Armed with data-driven insights to evaluate vendor solutions, you will create a strategy that goes beyond building the business case to include adoption of the technology itself. With ongoing mentorship, you will accelerate innovation and improve quality of service while continuously optimizing the performance of your applications.

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Data Center TechCheck

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- **Hyper-Converged Infrastructure:** Find out if your data center belongs in a box — and how to do it.
- **Infrastructure Automation:** Find out if automating your most common data center processes has revolutionary potential for your business.