

WHITE PAPER

Modern Data Protection with All the Benefits of Flash

How competitively priced Pure Storage all-flash storage solutions safeguard your data and deliver fast, reliable recovery.

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Introduction

Effective data-protection technologies and processes require clear objectives that can be measured, improved over time, and—most importantly—aligned with your business and IT objectives. With more organizations moving to hybrid and data-intelligent infrastructures, it has become even more important for IT professionals to fully understand and meet the real-world data-protection and data-availability service-level agreements (SLAs) that are critical to efficient business operations.

Modern data protection is a critical piece of your data center strategy that encompasses multiple platforms and technologies to deliver efficient protection and restoration of critical data and applications. Ultimately, modern data protection allows you to derive real business value from your data. But there are many factors that impact your ability to better manage your data storage. At the same time, cyberattacks, ransomware attacks, and natural disasters are always a possibility.

Take ransomware attacks, for instance. The frequency of attacks more than doubled in 2021.¹ Over the same period, the average downtime duration following a ransomware attack increased to 22 days.² It gets worse, though: The average cost for rectifying a ransomware attack in downtime, lost productivity, device and network costs, missed opportunities, and—unfortunately—paying a ransom, rose to a breathtaking \$1.85 million last year.³ And that doesn't include costly damage to your reputation.

Plenty of bad actors are trying to breach your defenses and get to your data through malicious means like social engineering, malware, and other attack vectors. Backups are also a growing target for hackers because once hackers encrypt your backups, you no longer have any way to recover your data. That could mean lengthy and unacceptable downtime. In fact, a recent ESG study found that 87% of organizations are concerned that their data backups could become infected or corrupted by a ransomware attack.⁴

More organizations than ever rely on backups for securing data. This emphasis has also made the backup infrastructure a desirable target for cybercriminals because it is a key tool that can mitigate or negate data-related attacks. And, while protecting backup copies is important, the ability to quickly restore data is critical to your business operations.

That's where flash storage makes a difference—it's blazingly fast. Even though flash has a long list of other advantages compared to disk, it is often seen as too costly per gigabyte for data protection and backup.

Now, Pure Storage® changes that equation, simplifying your data protection and ensuring your backups can make use of all the benefits of flash.

¹ Verizon. Data Breach Investigations Report 2021. "Results and Analysis." www.verizon.com/business/resources/reports/dbir/2021/results-and-analysis/.

² Statista. "Average duration of downtime after a ransomware attack from 1st quarter 2020 to 3rd quarter 2021." www.statista.com/statistics/1275029/length-of-downtime-after-ransomware-attack/.

³ Sophos. "The State of Ransomware 2021." April 2021. <https://secure2.sophos.com/en-us/medialibrary/pdfs/whitepaper/sophos-state-of-ransomware-2021-wp.pdf>.

⁴ Enterprise Strategy Group (ESG). "The Long Road Ahead to Ransomware Preparedness." March 2022. www.purestorage.com/content/dam/pdf/en/analyst-reports/protected/_ar-esg-the-long-road-ahead-to-ransomware-preparedness.pdf.



The Case for Data Protection

Based on the statistics we've shared above, making data protection a priority simply makes sense—even if viewed only from a financial perspective. Consider your investment in data protection against a potential \$1.85 million in total costs as the result of an attack. But there are other important reasons to put a focus on data protection, too. Data confidentiality is one; customer information that is exposed by bad actors can damage your reputation beyond repair. Data integrity is another. You need to know that your data is reliable and accurate and that it hasn't undergone any unauthorized changes. You also need to ensure your data-protection practices are compliant with government regulations and industry standards. Finally, with the massive increase in connected devices—from internet of things (IoT) devices to sensors to mobile phones—and associated risks, you need to make sure your data is protected everywhere and always.

Flash versus Disk: Benefits beyond Data Protection

Most IT pros have looked to disk and other aging storage technologies for backup because of costs. But the price you pay for storage isn't limited to the money spent buying drives. A recent study listed annual failure rates (AFRs) for hard-disk drives (HDDs) versus solid-state drives (SSDs) like Pure all-flash storage. The findings were compelling. SSDs had a 1.05 percent average AFR, compared to a 6.41 percent average AFR for HDDs. Even after adjusting the data to account for the fact that the HDDs in the study were older than the SSDs, the flash SSDs delivered a 76 percent lower AFR than the HDDs.⁵

In real-world data centers, 97 percent of Pure arrays purchased six years ago are still in service.⁶ And with Pure Storage Evergreen® Storage architecture, you can continually upgrade array components, eliminating the traditional storage-upgrade approach of dumping existing systems. The longer lifespan offered by Pure Storage DirectFlash® Modules—a proprietary product to Pure—also means you can significantly reduce expensive e-waste.

There are other areas where flash is more cost-efficient than disk. Consider that flash uses less space, enabling higher rack density. And flash reduces your cooling requirements and power consumption, offering ongoing savings with today's high energy costs.⁷ In fact, Pure solutions enable organizations to cut direct carbon usage in data-storage systems by up to 80 percent, compared to competing all-flash systems. The reduction is even more dramatic when compared to HDDs.⁶

Simplified Backup, Data Protection, and Fast Recovery

Backups are under attack today, and most legacy solutions don't deliver the comprehensive data protection and resilience required to prevent these attacks and ensure fast, reliable recovery. That's why Pure all-flash storage includes [SafeMode™](#) for Pure FlashArray™ and Pure FlashBlade® solutions. SafeMode protects data and metadata by creating secure, immutable snapshot copies that can't be deleted, modified, or encrypted, even with administrator credentials. That helps keep your data safe, no matter what.

When you choose Pure Storage solutions, you also get several other powerful data-protection technologies that further make the case for choosing flash for data backups, including:

⁵ Andy Klein. "Are SSDs Really More Reliable Than Hard Drives?" Backblaze. September 2021. www.backblaze.com/blog/are-ssds-really-more-reliable-than-hard-drives/.

⁶ Pure Storage. "2021 ESG Report: Technology and Sustainability." March 2022. www.purestorage.com/content/dam/pdf/en/misc/esg/2021-esg-pure-report-technology.pdf.

⁷ IDC. "Will Flash Penetrate Secondary Storage Environments?" December 2019. <https://blogs.idc.com/2019/12/09/will-flash-penetrate-secondary-storage-environments/>



“We were really limited by the performance and reliability issues of our legacy storage. Backup and restore processes were slow, and we spent all our time containerizing the infrastructure so that if a disk failed, it wouldn’t impact the broader environment. Pure has had a revolutionary impact on the business, completely changing our mindset and how the cloud infrastructure functions.”

— KEITH MARTIN, SENIOR DIRECTOR,
CLOUD CAPACITY ENGINEERING,
SERVICENOW

FlashBlade//S: Restore Data in a Flash

Legacy, purpose-built backup appliances won’t help you meet your data-protection SLAs. Pure Storage FlashBlade//S™ delivers a simplified experience for infrastructure and data management, and it efficiently powers your modern unstructured data needs using an all-QLC architecture. Rapid Restore, powered by the FlashBlade platform, meets the most demanding recovery SLAs by dramatically increasing the data-restoration speeds. With petabyte-scale restore for production, test, and dev workloads, Rapid Restore complements a wide range of data-protection architectures by integrating with a diverse portfolio of backup software partners at three times the performance.⁸

FlashArray//C

FlashArray//C™—the first all-QLC flash array—offers storage capacity without compromise, delivering the NVMe Express (NVMe) performance, hyper-consolidation, and simplified management your data deserves. The all-flash architecture of FlashArray gives you fast backup and restore to overcome the limitations of legacy data-protection architectures by consistently delivering speeds of up to 10TB/hour for backups and 2TB/hour for restores, based on Pure Storage lab testing and validation. FlashArray includes all the features of the Purity//FA operating environment including [Purity ActiveDR™](#) and [Purity ActiveCluster™](#) synchronous replication at no additional cost.

Purity ActiveDR

The Purity ActiveDR solution offers continuous replication to seamlessly protect application data across virtually any distance. Continuous replication enables much lower recovery point objectives (RPOs) than traditional array-based replication processes that periodically perform snapshot differencing to drive replication. Extremely low RPOs allow you to failover to a disaster-recovery (DR) site with minimal data loss.

With single-command failover, intelligent fallback, and non-disruptive DR testing, the ActiveDR solution helps you respond to outages faster. And by simplifying DR and testing without stopping replication, ActiveDR lets you test more often, increasing your confidence in your business’s resilience.

^{8, 8} Based on Pure Storage lab testing and validation.



“Our investment in Pure has more than proven its short-term worth, but we’re in it for the long-term value it provides to our citizens. Pure takes the weight off our shoulders. We know we can retrieve data quickly and safely if we need to, with minimal disruption to services.”

— KIMBERLY LAGRUE, CIO, CITY OF NEW ORLEANS

Purity ActiveCluster

The Purity ActiveCluster solution is a multi-site stretch cluster that makes the highest levels of availability easy and affordable for everyone. With ActiveCluster, you can effortlessly achieve zero RPO and recovery time objective (RTO) between two FlashArray products with true active/active synchronous replication for transparent failover.⁹

ActiveCluster stands out from other active/active solutions because most are actually active/passive at the volume level. ActiveCluster serves reads and writes on a given volume from both sites simultaneously. That means you don't have to worry about the complexity of managing virtual machine (VM) or database instance affinity to a site. And application latency is optimized because reads are served locally. ActiveCluster also maintains storage efficiency between two FlashArray systems with inline compression which enables automatic, non-disruptive failover (zero RPO and zero RTO), in addition to automatic resync and recovery (transparent failover).

Pure Cloud Block Store

Pure Cloud Block Store™ cloud-native block storage gives you seamless data mobility across on-premises and cloud environments while protecting cloud data and delivering fast RTOs and RPOs. With Pure Cloud Block Store block storage, you can replicate to the cloud and between clouds cost-efficiently. It includes always-on encryption and cloud-native cybersecurity, providing a solution that safeguards your data and supports compliance with regulatory and industry requirements while preserving data integrity and supporting continuous uptime.

Benefits beyond Flash with Pure Storage

AI-driven Data Services with Pure1 Cloud-based Management

Pure also helps simplify data protection and management with Pure1®, the artificial intelligence (AI)-driven cloud data services platform for storage management. With a single interface to manage all your storage arrays, Pure1 gives you critical insights into your technology stack, including a topology view to simplify VM troubleshooting.

You also get a global view of your replication policies, where they reside, and whether they are compliant with policies and regulations. And you can manage all your Pure arrays from anywhere via a web browser. Pure1 also monitors Purity ActiveDR and connected FlashArray storage, so you can quickly and

⁹ Pure Storage. "Achieve Continuous Availability: Bring RPO/RTO to Zero." www.purestorage.com/resources/webinars/achieve-continuous-availability-bringing-rpo-rto-to-zero.html.



easily take full advantage of the continuous replication, near-zero RPO, and simplified DR of ActiveDR.

Flexible Storage Consumption

Pure's [Evergreen portfolio](#) of subscriptions gives you the power to choose how you consume and deploy your storage—traditional purchase, flexible pay-as-you-go ownership, or true as-a-service—all based on the non-disruptive Evergreen architecture. Pure allows you to choose the subscription that fits you best, including:

- Evergreen//One™, a single storage service with the economics of public cloud, along with the security and resilience of on-premises deployments. Subscribe to the capacity, performance, and service level you need, when you need it, and where you need it.
- Evergreen//Flex™, a flexible subscription based on storage used, while retaining ownership of your infrastructure. You'll experience increased agility, better utilization, and fleet-wide asset management. You can match spend with need more closely, without disruption or rebuys.
- Evergreen//Forever™, which combines a traditional storage purchase with a subscription to continuous upgrades, giving you agility without disruption or rebuys so you can buy your storage once and run it virtually forever.

Multi-use, Multi-purpose Storage

While most disk-based backup solutions are specifically designed for a single purpose (for example, purpose-built backup appliances and archival storage solutions), Pure all-flash storage is easily redeployed for other uses. That means you can put the performance and benefits of flash to work when and where you need it while scaling seamlessly and non-disruptively.

The Power of Partnership

Pure maintains deep partnerships with other leading data-protection solutions providers, including Veeam, Commvault, Veritas, and Rubrik. These partnerships make it easy to integrate Pure data-protection solutions with your existing infrastructure, giving you flexibility while avoiding forklift upgrades.



Conclusion

Flash storage is quickly becoming more affordable. In fact, Pure FlashArray//C40 and FlashArray//C60 storage solutions are already competitively priced compared to disk. When you consider the cost savings that come with reduced power consumption, lower cooling costs, and a reduced data-center footprint, the differences between flash and disk in terms of the total cost of ownership (TCO) can become negligible—or even non-existent.

Then there is the potential pain of downtime and the substantial costs it brings. Pure all-flash storage can deliver faster RPOs and RTOs that can keep those costs to a minimum. And, from ActiveDR to Evergreen Storage, Pure delivers more value in more places than disks. Add it all up when weighing your options, and it just makes sense to choose Pure Storage for your backup storage solution.

Learn more about [modern data-protection solutions](#) from Pure Storage.

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Pure Storage, Inc.
650 Castro Street, #400
Mountain View, CA 94041

purestorage.com

800.379.PURE

