# PURESTORAGE®

# 9 Keys to Turbocharging Your SaaS App

*REDUCE CHURN, INCREASE MARKET SHARE, AND LOWER YOUR IT COSTS.*

# APP PERFORMANCE IS PARAMOUNT

When the product you offer customers is a service delivered by your IT infrastructure, the maintenance and updating of that infrastructure is not just an overhead expense but a core cost of doing business. Squeezing every bit of performance out of your systems is not optional—it's a requirement for you to stay competitive in your market.

The performance of your IT infrastructure can have a substantial impact on your competitiveness and your profit margins in at least three ways:

- **Advance service levels.** Better performance allows you to offer — and meet — higher service-level agreements (SLAs) and reduce churn. In the short term, SLA penalties for unmet application performance promises can be expensive. One study found that more than a quarter of software-as-a-service (SaaS) companies had incurred SLA penalty costs averaging more than $350,000.[1] In the long run, however, the loss of existing subscribers, or churn, is the real risk you run by not providing the highest possible level of service.

- **Accelerate time to revenue.** Your ability to gain and keep market share depends on providing reliable application performance to your customers. But it also depends on making your own internal processes — development, testing, bug fixing, and releasing — as agile and efficient as possible. The competitive advantage goes to the SaaS company that can most rapidly find and fix problems and identify and deliver the new features that customers want.

- **Achieve operational advantage.** Because your IT infrastructure is the "factory" where your company creates its product, you spend a high proportion of your revenues on IT, more than most other kinds of businesses. You can't skimp on your IT investment because it's so strategic. Likewise, your success in modernizing your infrastructure to create efficiencies and cost savings is a strategic opportunity for you to noticeably boost business results.
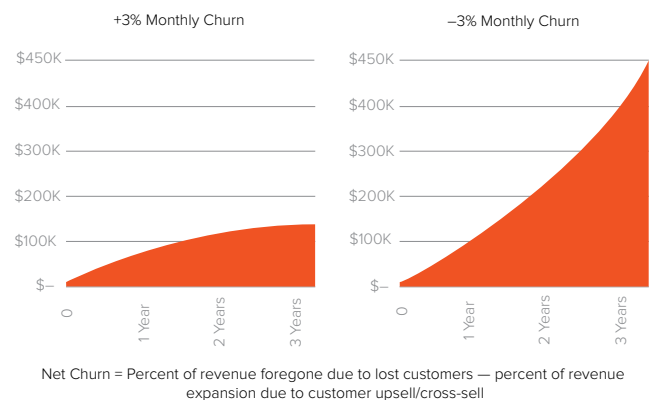


Net Churn = Percent of revenue foregone due to lost customers — percent of revenue expansion due to customer upsell/cross-sell

Figure 1. Significance of differences in churn rate over time[2]

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# RELIABLE, CONSISTENT PERFORMANCE

"Data and data storage is the lifeblood of our business. The technology, the capability, and the pricing that Pure affords us, along with the data reductions, allowed us to make the decision to go all Flash with everything. It's very easy to use, very stable, very resilient and reliable. It just stays up."

*ALEX PATENT //*  VP, Global Infrastructure Architecture, The Nielsen Company[3]

Slow or inconsistent performance can be a significant factor that risks increasing churn. Pure Storage can increase customer satisfaction and reduce churn by providing proven six-nines (99.9999 percent) availability with Pure Storage® FlashArray™ solutions and consistent sub-millisecond latency across mixed block sizes.[4] Pure Storage all-flash arrays can consistently perform hundreds of thousands of 32K input/output operations per second (IOPS) with an average latency of less than 1 millisecond.[4]

Quality of service (QoS) is kept high by always-on QoS to protect workloads against noisy neighbors, plus the ability to configure performance classes, easily allowing for differentiation between Bronze, Silver, and Gold workloads. You can also set policy limits to enable fine-grained control of performance on a per-volume basis, ideal for service-provider and multi-tenant cloud deployments.[5]

Predictive support lets Pure Storage anticipate vulnerability to known issues and take preemptive action to minimize downtime risk. Using a rich set of telemetry data from the more than 10,000 Pure Storage arrays currently deployed, Pure1 Meta™ includes machine learning artificial intelligence (AI) built on a massive collection (7+ PB) of storage-array performance data.[6]

**99.9999%** availability for FlashArray solutions[4]

Less than **1 MS** latency[4]

# EVERYTHING NON-DISRUPTIVE

"Pure has the single best implementation of non-disruptive upgrades, expansions, and repairs of any company we've ever worked with."

*KEITH MARTIN // DIRECTOR OF CLOUD ENGINEERING, SERVICENOW*

Say goodbye to scheduled maintenance windows and service interruptions. Pure Storage is an industry leader in pioneering truly non-disruptive systems for upgrades and maintenance. Reliable infrastructure can help you minimize SaaS customer churn and avoid the magnified and damaging consequences of that churn on the rest of the business.

Pure Storage all-flash arrays utilize a stateless controller architecture that separates the input/output (I/O) processing plane from the persistent data-storage plane. This architecture provides high availability with non-disruptive operations:

- A clustered-controller design allows for the complete failure of a controller or any controller component without impacting operations.
- Flash modules, non-volatile RAM (NVRAM) modules, and controllers are hot-swappable for continuous operation, even when recovering from a failure.
- A stateless-controller architecture means that you can simply unplug a failed controller, cable up a new one, and your FlashArray is back to full availability — all without any impact on performance.

**ZERO DOWNTIME**  +  **ZERO IMPACT**  =  **RESILIENCY**

# RAPID RESTORE FROM BACKUP

"Our backups … placed a very heavy load on the database in terms of I/O. They would take a long time to complete, and we'd have to be very careful in scheduling them. After installing the Pure Storage array, we completely dropped [our old] backups and went to snapshots on a regular basis. There's no impact on performance, and it gives us much more reliability in our backup strategy."

*DAVID CHISHOLM // VICE PRESIDENT OF PRODUCTION MANAGEMENT, ONE NETWORK[7]*

Rapid restore is critically important for SaaS providers given that almost half of customers rely completely on their SaaS providers for all backup and recovery operations.[8]
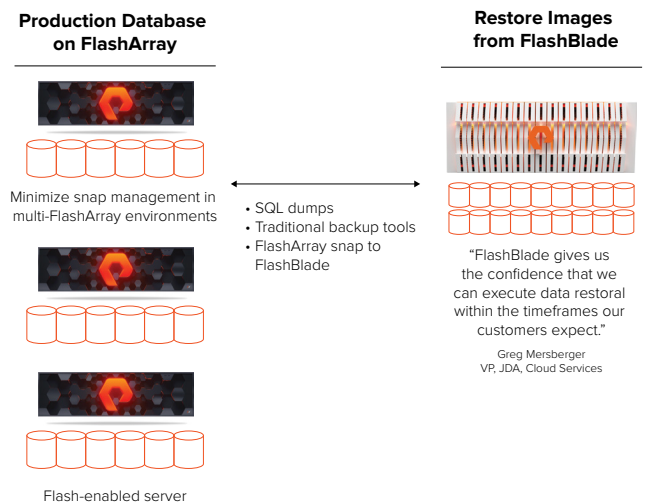
### How organizations protect their data

| Rely on our cloud vendor for backup and recovery | 49% |
|---|---|

Pure Storage snapshots — the technology behind backup and restore — are nearly instantaneous and extremely space-efficient, even when data volumes are large. This allows system administrators to speed the backup and recovery process with minimal effect on production environments. This is especially important in situations where SLAs specify high costs for customer downtime.

The Pure Storage FlashBlade™ product offers an affordable platform for offloading and restoring mission-critical workload data. Utilizing FlashBlade alongside FlashArray for this use case is popular with Pure Storage's SaaS provider installed base.

### FlashBlade for rapid restore

Enable consolidated, domain-isolated restore capabilities for high-SLA databases

**Production Database on FlashArray**

Minimize snap management in multi-FlashArray environments

- SQL dumps
- Traditional backup tools
- FlashArray snap to FlashBlade

Flash-enabled server

**Restore Images from FlashBlade**

"FlashBlade gives us the confidence that we can execute data restoral within the timeframes our customers expect."

Greg Mersberger
VP, JDA, Cloud Services

# RAPID DEVELOPMENT AND TESTING

"[Moving to Pure Storage snapshots] really transformed how we operate in our QA environments…. We are able to keep these environments refreshed more frequently, [which] leads to better products and better outcomes for our customers."

**BRIAN BOOS //** *PAYLOCITY*

Snapshots provide support for DevOps teams to work more efficiently. One way to increase developer productivity is to release developers from the shackles of slow, complex, and difficult-to-provision storage. This helps to avoid a number of pitfalls associated with traditional storage architectures that can hamper developer productivity, including:[9]

• Poor storage performance
• Developers being dependent on infrastructure teams to provision storage because doing so is too complex for the development teams themselves

• Insufficient storage capacity that deprives developers of the ability to develop and test against production-like environments
• Storage that does not lend itself well, if at all, to integration with automated software-development processes

Snapshots are another area in which Pure Storage has been an innovator. Pure Storage FlashRecover Snapshots provide unfettered access to share and move data rapidly across development, testing, quality assurance (QA), and production environments with thousands of instantaneous snapshots that have zero performance impact.[10]



Figure 2. Managing automated snapshots in the Pure1® dashboard
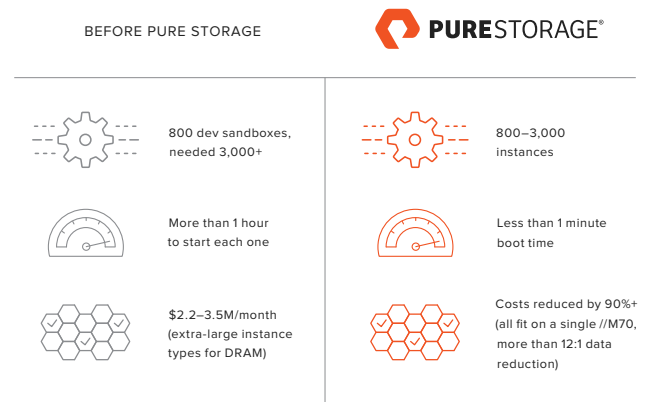
# AGILE, AUTOMATED DEVOPS

"Now we can deliver environments to our development teams in minutes, as opposed to hours or days; we can release as often as we want, and are now able to deliver features and services so much faster — which gives us a big advantage."

*MIKE FINNEGAN // VP PRODUCT OPERATIONS, EMONEY ADVISOR*

Pure Storage enables the agility SaaS providers need by offering a complete and fully RESTful API. PowerShell®, Python®, and Java® software development kits (SDKs) are also available along with integrations with Ansible®, OpenShift®, Docker®, and Kubernetes®.

With Pure Service Orchestrator, you can deliver container storage-as-a-service to empower your developers to build and deploy scale-out, microservices applications. Pure Service Orchestrator is a software layer that allows fleets of Pure Storage FlashArray and FlashBlade storage to be federated together and consumed through a simple storage-as-a-service API. The agility that your developers expect from the public cloud is now possible on premises.

**Automation and acceleration at a major public human-resources SaaS company**

| BEFORE PURE STORAGE | PURESTORAGE® |
|---|---|
| 800 dev sandboxes, needed 3,000+ | 800–3,000 instances |
| More than 1 hour to start each one | Less than 1 minute boot time |
| $2.2–3.5M/month (extra-large instance types for DRAM) | Costs reduced by 90%+ (all fit on a single //M70, more than 12:1 data reduction) |

This SaaS company chose Pure Storage for its test and development environments. Scaling and speeding up infrastructure deployment meant faster time to market with new features and greater developer productivity.

# NEXT-GENERATION ANALYTICS AND INTELLIGENCE

You can accelerate time to revenue and increase market share through better business intelligence and analytics. Pure Storage supports many modern analytics-software platforms with FlashBlade.

AI, in particular, offers transformational opportunities for SaaS firms — from customer-support delivery to end-user personalization. And yet traditional storage media cannot support the rapidly growing compute requirements of AI. Within just two years, the amount of compute required by leading deep-learning algorithms jumped 15x and the compute delivered by GPUs jumped by 10x.[12] While deep learning and GPUs are massively parallel, legacy storage technologies are not.

To address this gap, Pure Storage introduced FlashBlade, a revolutionary scale-out data platform purpose-built for the massively parallel needs of AI. Not only is FlashBlade multi-PB big, but it's also extremely fast and simple to deploy and use.

In addition to its FlashBlade storage solution, Pure Storage has also partnered with NVIDIA to engineer a fully integrated software and hardware solution. AIRI™ provides a simple yet powerful architecture that empowers organizations with the data-centric infrastructure needed to harness the true power of AI. AIRI supports the NVIDIA® RAPIDS software framework, a complete set of open-source libraries for executing end-to-end data-science training pipelines.
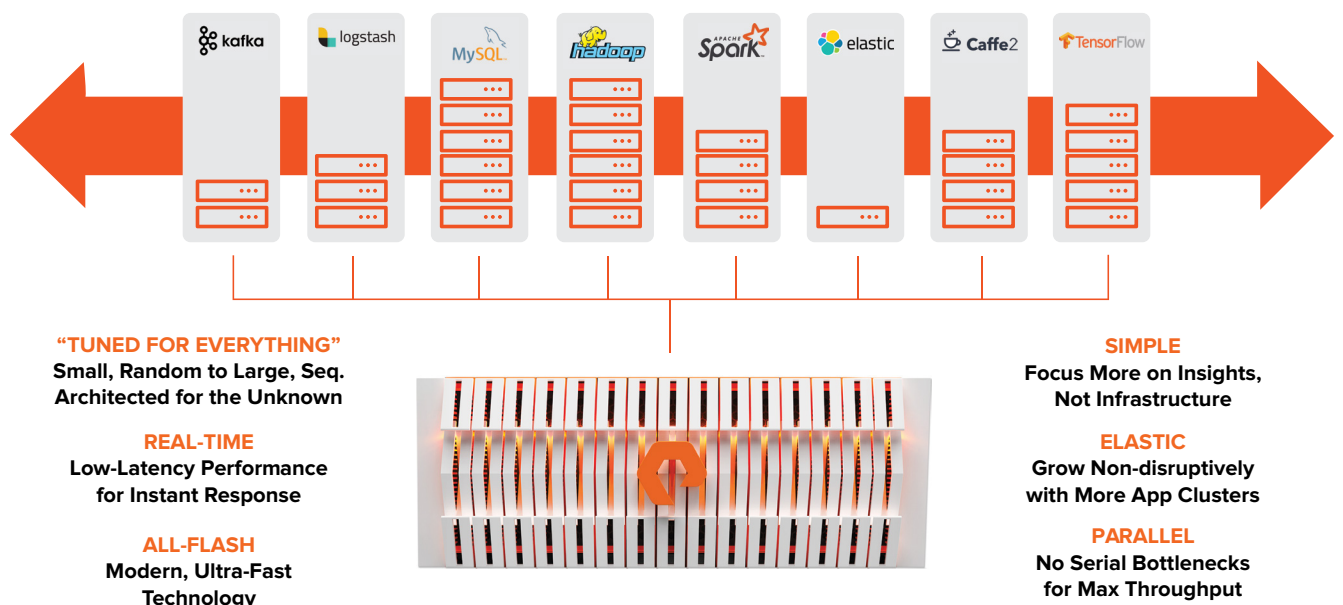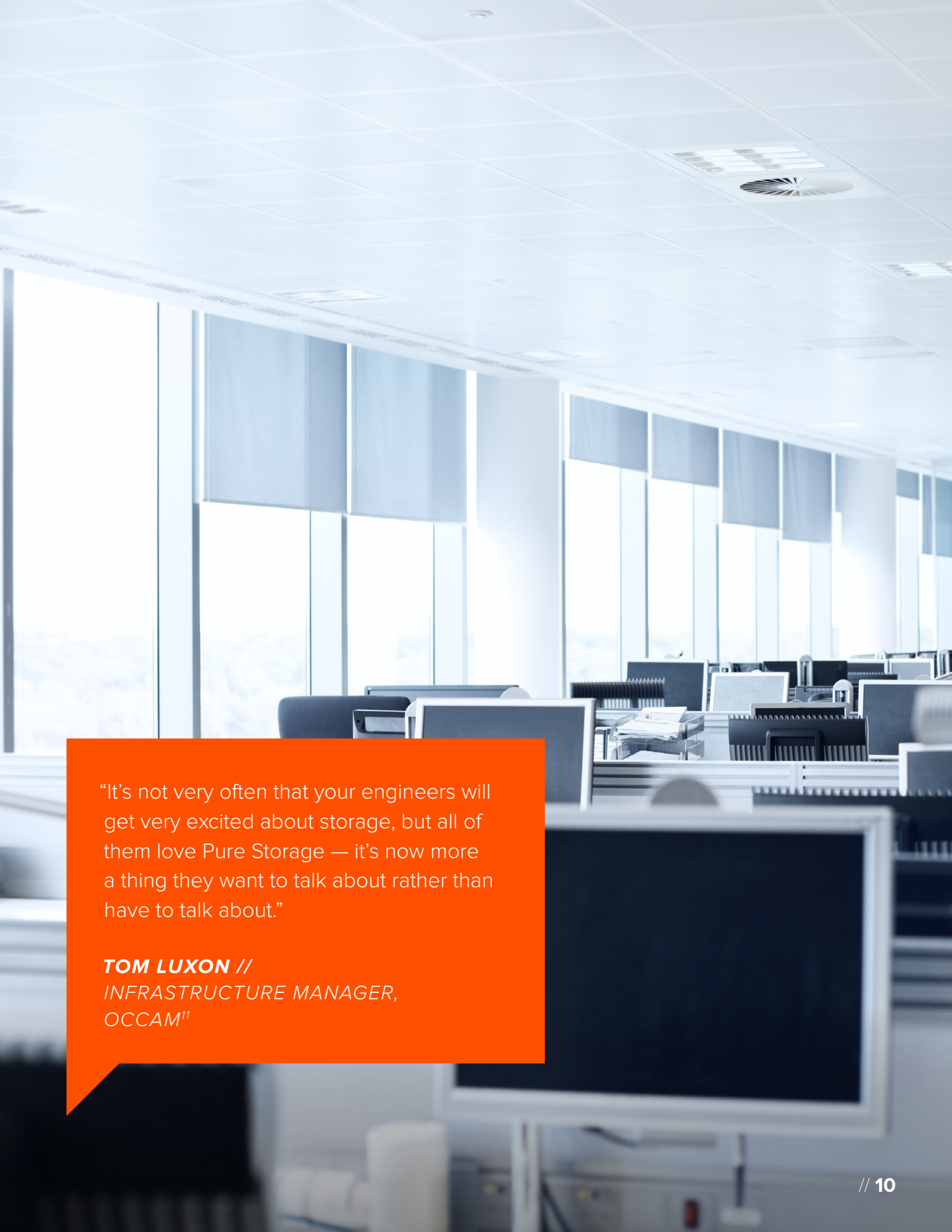
**"TUNED FOR EVERYTHING"**
Small, Random to Large, Seq.
Architected for the Unknown

**REAL-TIME**
Low-Latency Performance
for Instant Response

**ALL-FLASH**
Modern, Ultra-Fast
Technology

**SIMPLE**
Focus More on Insights,
Not Infrastructure

**ELASTIC**
Grow Non-disruptively
with More App Clusters

**PARALLEL**
No Serial Bottlenecks
for Max Throughput

Figure 3. FlashBlade is a data hub for modern analytics

"It's not very often that your engineers will get very excited about storage, but all of them love Pure Storage — it's now more a thing they want to talk about rather than have to talk about."

*TOM LUXON //*
*INFRASTRUCTURE MANAGER,*
*OCCAM[11]*

# PREDICTABLE COSTS

"As our company continues to grow, it is reassuring to know that we have a storage solution that will keep pace with, and indeed enhance, our future development."
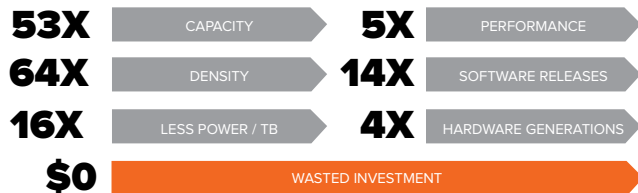
*MARTIN BORJESSON // ICT MANAGER, CENTIRO SOLUTIONS[13]*

Pure Storage continues to disrupt the storage-equipment market with predictable costs through subscription pricing. Pure Storage offers two subscription options: Evergreen™ Storage for easy expansion of capacity and regular updates of controllers, and Pure Storage Evergreen Storage Service (ES2) for true use-what-you-need flexibility.

## EVERGREEN STORAGE

With Evergreen Storage, Pure Storage introduced a new model for purchasing, upgrading, and migrating storage — eliminating data migrations and forklift upgrades. SaaS providers can purchase maintenance contracts that include controller upgrades every three years, providing greater performance, scale, and density. Customers can also upgrade to denser-capacity technologies at any point in the lifecycle, with a trade-in credit

for existing capacity. SaaS customers stay current with the latest hardware and software technology at a fraction of the cost needed to purchase new equipment every three or four years — the traditional lifecycle for storage solutions.

Evergreen Storage lets you deploy once and upgrade as needed for a decade or more. With Evergreen Storage, SaaS applications always run on optimal storage infrastructure.

## EVERGREEN STORAGE SERVICE (ES2)

ES2 is a storage-as-a-service offering that allows customers to gain the operating-expense (OpEx) benefits of cloud computing with the security and data-sovereignty benefits of on-premises storage, whether in your data center or in a colocation facility. Features include:

- 12-month subscription for reserve capacity with auto-renewing — no long-term contract or obligations

- 100 percent OpEx, with no liabilities or assets on the balance sheet[14]

- Pay only for what you *actually* use (dollars per GB per month), not provisioned data[15]

## A TYPICAL FIVE-YEAR JOURNEY WITH EVERGREEN STORAGE

| | | | |
|---|---|---|---|
| **53X** | CAPACITY | **5X** | PERFORMANCE |
| **64X** | DENSITY | **14X** | SOFTWARE RELEASES |
| **16X** | LESS POWER / TB | **4X** | HARDWARE GENERATIONS |
| **$0** | WASTED INVESTMENT | | |

# IMPROVED TOTAL COST OF OWNERSHIP (TCO)

"The analysis points to risk-adjusted benefits of $2,387,062 over six years versus implementation and operating costs of $775,280, equating to a net present value (NPV) of $1,611,782. The risk-adjusted ROI was a very favorable 208% with a quick eleven-month payback period."

*// FORRESTER TOTAL ECONOMIC IMPACT™ STUDY, 2018[16]*

Pure Storage enables significant cost advantages, both in capital expenditures (CapEx) and OpEx, thanks to outstanding data reduction and hardware optimization for minimized space, power, and cooling.

Through inline deduplication and compression — along with thin provisioning, space-efficient snapshots, and clones — Pure Storage arrays can reduce your storage footprint by a ratio of 5:1 or more, depending upon your applications and workloads. This can save you money, improve your systems' performance, and ease the pressure on your backup and recovery resources.

A 2018 Forrester® study looked at a composite company representing a mid-size SaaS company with $2M in annual revenue using Pure Storage flash arrays and the Evergreen Storage subscription plan over a 6-year period.[16] The study quantified the TCO benefits in terms of return on investment (ROI), net present value, and the length of the payback period.

**Operational savings at a major accounting SaaS provider with millions of customers**

| | BEFORE PURE STORAGE | AFTER PURE STORAGE |
|---|---|---|
| **PERFORMANCE** | UNPREDICTABLE | LESS THAN 1 MILLISECOND |
| **RACKS** | 63 | 9 |
| **PROVISIONING** | 2 DAYS | 2 MINUTES |
| **UPGRADE PLANNING/ EXECUTION** | DAYS | MINUTES |
| **DB RECOVERY** | HOURS | MINUTES |

# SIMPLIFIED MANAGEMENT

"Between our last architecture and where we are, I would hazard to say that we probably cut our real expense by 50% — soft and hard."

**GLEN KIMBALL //** *CIO, ECI SOFTWARE SOLUTIONS*

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Pure Storage arrays are virtually plug-and-play solutions that can be installed in less than an hour. They are so easy to deploy that storage administrators typically don't have to worry about configuration tuning and tweaking. In addition, they are simple to scale and upgrade: it's easy to swap older technologies and replace them with newer technologies — online and without impacting performance. You can also manage your Pure Storage solution directly and easily from VMware vCenter®, VMware vRealize®, Microsoft® System Center Virtual Machine Manager, Microsoft System Center Operations Manager, Cisco UCS® Director, and Cisco CloudCenter™.

Pure Storage's automation and orchestration tools integrate tightly with leading virtualization platforms by VMware, Microsoft, and OpenStack®, among other integrations.
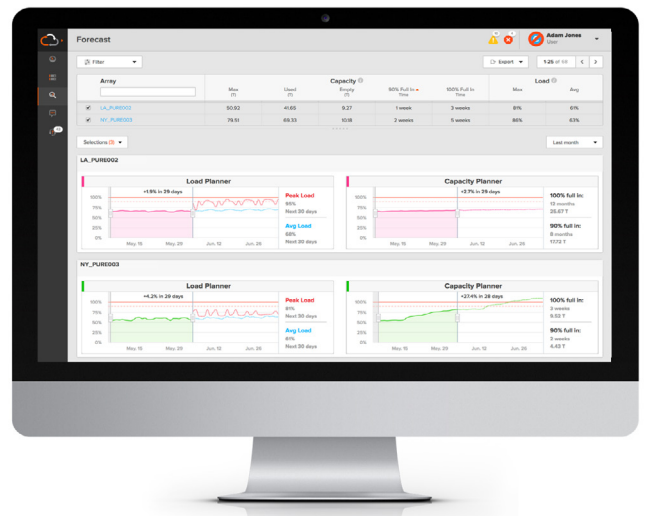


Figure 4. Pure1 Workload Planner

Pure1® is a cloud-based management and predictive-support platform available to all Pure Storage customers. With Pure1 Workload Planner, you can predict capacity/load, model hardware upgrades, and simulate workload changes. And with Pure1 VM Analytics, you get full stack visibility to quickly troubleshoot performance issues.

# BIG GAINS IN YOUR MARGINS

Consider a hypothetical SaaS company with $100 million annual recurring revenue, $80 million gross margin, 10,000 customers, and the following baseline business metrics:

- 1.0 percent monthly churn rate
- 20 percent market share
- 7.8 percent of revenue spent on IT

Now let's say that this company is able to make the following modest improvements to its metrics by switching to Pure Storage solutions and increasing customer satisfaction:[17]

- **Slow the churn rate 0.1 percent** by delivering higher and more reliable levels of service, non-disruptive upgrades, and rapid recovery from backup
- **Increase the market share 0.1 percent** by creating more agile, automated DevOps using snapshots and next-generation analytics and AI
- **Reduce IT spend by 6.5 percent** across the categories of hardware, software, staff, and other

Switching to Pure Storage might result in better results than these, but the table below illustrates how, even with these conservative assumptions, the benefit to your revenues and profits could be significant.

There are, of course, other, less tangible benefits to operating with a high performing, reliable, and easy-to-manage infrastructure. Unplanned outages and service problems can negatively impact your brand reputation in the community, stop the flow of word-of-mouth recommendations, and give a leg up to your competition. An inefficient DevOps environment can damage employee morale and hurt the recruitment and retention of talent. Unnecessary IT spending can make your company less appealing to investors and inhibit growth opportunities. But even just in terms of bottom-line measurable advantages, Pure Storage solutions are well worth the investment.

| ITEM | PURE STORAGE DELTA | $S | % OF REVENUE |
|---|---|---|---|
| STARTING GROSS MARGIN | | 80,000,000 | 80.0% |
| | REDUCE CHURN 1/10TH OF 1% | + $500,000 | + 0.5% |
| | ACCELERATE MARKET SHARE 1/10TH OF 1% | + $500,000 | + 0.5% |
| | REDUCE IT SPEND 6.5% | + $500,000 | + 0.5% |
| ENDING GROSS MARGIN | | 81,500,000 | 81.5% |
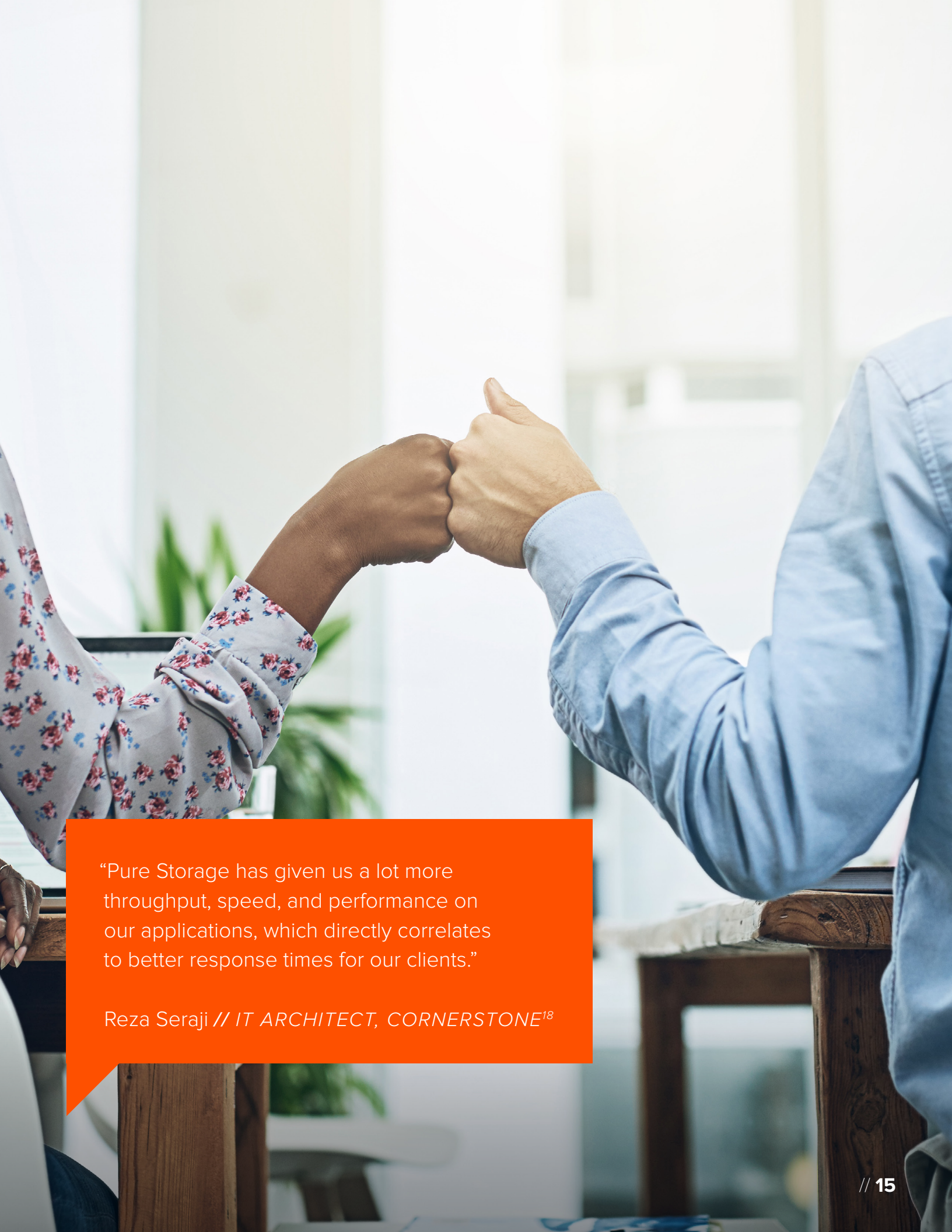
"Pure Storage has given us a lot more throughput, speed, and performance on our applications, which directly correlates to better response times for our clients."

Reza Seraji // *IT ARCHITECT, CORNERSTONE*[18]

**PURE**STORAGE®

# GET STARTED IN A FLASH WITH PURE STORAGE

Call or email using the link below to talk with the Pure Storage sales team
or a Pure Storage SaaS specialist and to request a demonstration of FlashArray//X in action.

**800-379-PURE (7873) // sales@purestorage.com**

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[1] TechTarget surveyed 141 SaaS IT professionals in 2017. Results: 26.7 percent of SaaS IT professionals said their organizations had incurred financial penalties as a result of unmet SLAs related to SaaS application performance. Of those that did suffer financial penalties, the average cost incurred was $359,000 according to respondents. Source: Catchpoint. "2017 State of SaaS Performance: TechTarget Research Report." http://pages.catchpoint.com/2017-State-of-SaaS-Performance.html.

[2] David Skok. "SaaS Metrics 2.0 – A Guide to Measuring and Improving what Matters." ForEntrepreneurs. www.forentrepreneurs.com/saas-metrics-2/.

[3] "The Nielsen Company goes all flash at its 9 global datacenters." https://www.purestorage.com/customers/nielsen.html.

[4] Pure Storage. SaaS web page. www.purestorage.com/solutions/industries/saas.html.

[5] Pure Storage. "Pure Storage QoS: 'Simplicity Is Complexity Resolved.'" June 2017. https://blog.purestorage.com/policy-qos/.

[6] For information on Pure1 Meta predictive analytics, see: Pure Storage. Pure1 Meta web page. www.purestorage.com/products/pure-1/meta.html.

[7] Pure Storage. "Flash Arrays Enable Increased Network Availability." 2017. www.purestorage.com/customers/onenetwork.html.

[8] 451 Research. "Voice of the Enterprise: Storage, Budgets and Outlook." March 2017.

[9] For more information on continuous improvement/continuous delivery (CI/CD) with snapshots, see: Pure Storage. "Accelerating Continuous Integration and Delivery with Modern All-Flash Storage." July 2017. https://blog.purestorage.com/accelerating-continuous-integration-delivery-modern-flash-storage/.

[10] For more information on FlashRecover Snapshots, see: Pure Storage. "FlashRecover Snapshots." 2014. http://info.purestorage.com/rs/purestorage/images/Pure_Storage_Whitepaper_FlashRecover_Snapshots.pdf.

[11] Pure Storage. Occam case study. 2018. www.purestorage.com/content/dam/purestorage/pdf/Case%20Studies/Occam_Pure_Customer_Case_Study.pdf.

[12] Compute required for deep-learning training comparing Microsoft ResNet® in 2015 to Google™ Neural Machine Translation (NMT) in 2017. Compute delivered comparing NVIDIA® Tesla® M40 peak flops against NVIDIA Tesla V100 peak flops. Source: Pure Storage. "Why the AI Industry Needs to Rethink Storage." July 2017. https://blog.purestorage.com/ai-industry-needs-rethink-storage/.

[13] Pure Storage. "Centiro Turns to Pure Storage for Global Support." 2016. www.purestorage.com/customers/centiro.html.

[14] OPEX treatment is subject to customer's auditor review.

[15] Subject to minimum commitment.

[16] Forrester. "The Total Economic Impact™ Of Pure Storage For SaaS Providers." April 2018. www.purestorage.com/content/dam/purestorage/pdf/AnalystReport/total-economic-impact-analyst-report.pdf.

[17] The assumptions are based on IT spend being allocated 25 percent to each of the four categories:

- Hardware, subject to savings: 33 percent of 25 percent related to storage. Estimated savings: 33 percent savings on storage-related (mostly driven by Evergreen Storage).

- Software, subject to savings: 10 percent of 25 percent related to storage. Estimated savings: 50 percent savings on storage-related (mostly from storage software and application licensing reduction).

- Staffing, subject to savings: 10 percent of 25 percent related to storage. Estimated savings: 50 percent savings on storage-related (mostly from simplicity of management).

- Other, subject to savings: 10 percent of 25 percent related to storage. Estimated savings: 50 percent savings on storage-related (mostly from space, power, cooling, and data migrations).

[18] Pure Storage. "High Reliability and Flexibility to Critical Apps." 2018. www.purestorage.com/customers/cornerstone.html.