

4 Ways a VDI Storage Solution Can Save (or Cost) Money



As virtual desktop infrastructure (VDI) has become more common, companies are benefiting from the flexibility it offers. Virtual desktops deliver a more secure, easier to manage, and less costly computing experience than physical desktops.

But storage performance remains an issue for VDI. Legacy systems, which rely on traditional spinning disks, fall short in adequately serving VDI systems. Even hybrid storage systems struggle to feed the voracious IO appetite of VDI systems.

It is possible to meet the demands of a VDI system while cutting both operational and deployment costs. This eBook will discuss four ways to find savings in VDI storage — both by moving to an all-flash model and by finding the right flash solution.

A Brief Architectural Overview

Citrix XenDesktop is the current industry leader in desktop virtualization. How does it work? The architecture of XenDesktop consists of five layers:

- Users
- Access
- Resources
- Management & Control
- Hardware

These architectural layers work in symbiosis to better align the application with user requirements. They also dictate the flow by which a desktop is delivered to a user.

Modern VDI architecture is an astoundingly fast, comprehensively capable tool. But all too often VDI is deployed in environments that limit the capabilities of the tool. Of particular interest is the storage methodology that is coupled with a VDI.

That brings us to the four ways that a storage solution for VDI can save — or cost — money:

1. Performance,
2. Total Cost of Ownership,
3. Mission-Critical Resiliency, and
4. Deployment and Management Simplicity.

Read on to learn more about each of these ways in more detail.

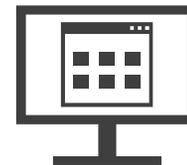
Five Layers of XenDesktop Architecture



Users



Access



Resources



Management & Control



Hardware



1. Performance

Storage systems with traditional spinning disk technology are often used in conjunction with VDI. But spinning disk systems — and even hybrid systems — cannot adequately support virtual desktop infrastructures.

Virtual desktops are avid consumers and producers of data. A VDI can easily overwhelm a legacy spinning disk or hybrid storage system with a perfect storm of hundreds of thousands of IOPS. Peak performance simply is not going to be attainable.

The predictable result? Slow performance and plummeting user productivity.

Case in point: the Judson Independent School District in Texas. Judson installed a Citrix XenDesktop environment to support a user base of more than 25,000 students and teachers.

The initial results looked great, but it became clear that storage was a serious issue.

At the beginning of each class period, thousands of students would attempt to log on. The storage system could not keep up. Log-on waits of up to 15 minutes were not uncommon, wasting a third of each 45-minute class period.

Pure Storage FlashArray provided a solution, reducing log-on waits by 95 percent. The FlashArray's powerful deduplication and compression capabilities also provided the school district with a 10:1 data reduction rate, which reduces the amount of storage required for purchase and ongoing maintenance, as well as reduces the footprint required in the datacenter.

The result? Students and teachers are now able to spend up to 33 percent more time on learning activities.

It is a perfect testament to the powerful, synergistic potential offered by a Citrix XenDesktop and Pure Storage FlashArray partnership.



Judson Independent School District



Log-on waits were up to 15 mins. with spinning disk or hybrid systems



Pure Storage FlashArray reduced log-on waits by **95%**

2. Total Cost of Ownership (TCO)

Flash storage systems can be more expensive up front than legacy spinning disk or hybrid systems. Executives sometimes fail to look at key technologies that lower the price of all-flash systems as well as higher costs than can occur beyond the initial purchase.

The truth is that the initial purchase of all-flash with the right data reduction technology can bring the cost down below that of disk. Pure Storage offers the most granular and complete data reduction in the industry, which brings the cost of flash below that of disk.

Additionally, after the initial purchase, the inadequacies of a legacy system will cost money over its operational life. A Pure Storage FlashArray system, conversely, will continuously deliver operational savings throughout its service life.

Here is why...

The data workload of a VDI is highly reducible. Pure Storage FlashArray typically delivers a 10:1 data reduction rate — as experienced by the Judson ISD.



The data reduction rates offered by an all-flash storage system set off a cascading chain-reaction of cost-saving benefits:

-  • Less storage capacity
-  • More storage density
-  • Lower power and cooling costs
-  • Simpler management
-  • Fewer management mistakes
-  • Easier and cheaper upgrades

FlashArray provides all of these benefits— including data reduction, protection, and replication — without extra cost. In fact, Pure's data reduction capability is double that of most competitors.

Data reduction rate of **10:1**

Real-World FlashArray Savings Quantified by Forrester

Forrester Consulting measured the total savings St. Luke's Healthcare System in Duluth, Minnesota, realized by using Pure Storage FlashArray in conjunction with Citrix XenDesktop over a three year period.

The savings were broken down as follows:

Increased productivity: \$1,074,320	Simplified deployment and management: \$116,324	Air conditioner capital cost avoidance: \$193,182
Legacy storage cost avoidance: \$290,909	Power and cooling savings: \$17,982	'Forever Flash' flexibility option: \$99,211

In addition to the nearly \$2 million St. Luke's saved, the return on investment was 234 percent and the payback period was just three months. To learn more, see "Total Economic Impact™ Of Pure Storage FlashArray Storage Solutions for VDI," March 2016.

<http://www.purestorage.com/resources/type-a/forrester-tei-vgi-stlukes.html>.

ROI 234%

3. Mission-Critical Resiliency

Flash is the superior storage solution for VDI such as Citrix XenDesktop. Although flash is superior to hybrid and spinning disk models, not all flash storage solutions are equal.

One key differentiator: Upgrades.

Upgrades are an unavoidable fact of life. But an approaching upgrade can send chills of dread down the spines of administrators because upgrades frequently cause disruptions to performance and productivity.

Downtime is costly for any company. That makes Pure Storage's non-disruptive upgrades a huge money saver. Additionally, with Pure's Evergreen™ Storage ownership model, customers receive free controllers for non-disruptive upgrades while under support maintenance. Citrix XenDesktop users relying on Pure Storage FlashArray experience no performance impact while upgrades are performed.

In fact, the average uptime for Pure customers is greater than 99.999 percent. That equates to a total per-customer downtime of less than five minutes per year.



Non-disruptive upgrades



Average uptime

“We can do upgrades with no downtime in a production setting — that’s phenomenal.”

Chris Dean
Judson ISD Network Director,

“Applications response times are better and Citrix log-ins are quicker. Pure magically made everything work better,”

Mark duBarry
VP and Director of Technology
Wilson Bank and Trust.

4. Deployment and Management Simplicity

Deployment of a VDI with an all-flash system can be orders-of-magnitude faster and easier. Judson ISD, for example, deployed Citrix XenDesktop with Pure Storage FlashArray in just two hours. Chris Dean, the district’s network director, put it this way: “We can do upgrades with no downtime in a production setting — that’s phenomenal.”

A converged infrastructure (CI) is the key to enabling a quick and simple deployment. Pre-tested and validated for XenDesktop, Pure’s [FlashStack Converged Infrastructure](#) helps customers rapidly deploy their VDI environments with confidence. A faster time-to-market saves companies money over the long run.

The fast deployment lowers costs and headaches. But the simplicity of deployment is projected forward with a set-and-forget system designed for easy management by VDI administrators.

A Citrix and Pure Storage customer put it best. “Applications response times are better and Citrix log-ins are quicker. Pure magically made everything work better,” said Mark duBarry, VP and Director of Technology at [Wilson Bank and Trust](#).

Cloud-based access enables management from anywhere, at any time. Pure’s predictive support monitors your system and alerts you to potential issues before customers become aware of it.



citrix.com/ready

A Perfect Partnership

When searching for a VDI storage infrastructure, it is important to find a solution that will save money over the long term, but also deliver a consistent end-user experience and simplicity of management.

The combination of Pure Storage FlashArray and Citrix XenDesktop represents such a win-win for consumers.

Visit [Citrix Ready Marketplace](#) to learn more.

For more information about Pure Storage FlashArray, call 800-379-7873 or visit: www.Purestorage.com.

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About Citrix Ready

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About Pure Storage

Pure Storage (NYSE:PSTG) accelerates possible, transforming businesses in ways previously unimagined. The company's disruptive, software-driven storage technology combined with a customer-friendly business model drives business and IT transformation for customers through dramatic increases in performance and efficiency at lower costs. Pure Storage FlashArray//m is simpler, faster and more elegant than any other technology in the datacenter. FlashArray //m is ideal for the move toward big data and for performance-intensive workloads such as cloud computing, database systems, desktop virtualization, real-time analytics and server virtualization. With Pure's industry leading certified NPS score of 79, Pure customers are some of the happiest in the world, and include large and mid-size organizations across a range of industries: cloud-based software and service providers, consumer web, education, energy, financial services, governments, healthcare, manufacturing, media, retail and telecommunications. With Pure Storage, companies push the boundaries of what's possible to become faster, smarter and more innovative.