ESG WHITE PAPER

Tintri Virtual Desktop Infrastructure Solution: An Economic Investigation

Customers Confirm the Significant Economic Benefits of Tintri VMstore Intelligent Infrastructure Technology

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Introduction

Having an anytime-anywhere workforce has become a necessity for running a modern business. The rise of this type of workforce means the IT organization must not only ensure that operations are running smoothly, but also accelerate its own activities to keep pace with business objectives.

ESG research into the opinions of line-of-business (LOB) executives highlights the pressures that business units are placing on their companies' IT organizations today. Only 6% of LOB executives surveyed said they regard their company's IT group as a competitive facilitator/differentiator for the business, while 25% actually consider IT to be a business inhibitor.[1]

Not surprisingly, virtual desktop infrastructure (VDI) plays an essential role for anytime-anywhere workforces, offering an efficient, secure, and cost-effective end-user computing (EUC) environment. However, the infrastructures supporting VDI do not always work as intended, often making it difficult to achieve the desired levels of scalability, performance, and cost control.

That is problematic. IT needs to deliver a consistent experience even when VDI-related performance demands fluctuate. End-user productivity shouldn't be negatively affected by events such as boot storms (when many users launch their operating systems nearly simultaneously), virus scans, or denial-of-service situations. Leveraging public cloud resources—which has become an option for addressing many modern IT challenges—often fails to deliver the desired results, in terms of cost and performance.

IT needs an alternative approach. To identify the best solutions for VDI-related problems, ESG spoke with Tintri customers, capturing their firsthand experience with the ways that Tintri VMstore technology is delivering benefits to their environments.

The Complexity of Modern IT Infrastructure for VDI environments

VDI environments can be hampered by a lack of insight, analytics, and overall intelligence. Organizations should seek out **intelligent infrastructure** to help them close the increasing gap between VDI growth and complexity on one side, and the limited IT resources available to manage such environments on the other side. For example, among IT organizations surveyed by ESG, 32% reported a problematic skill shortage specifically related to IT architecture and planning.[2]

But what fuels VDI complexity? As with most enterprise environments, the complexity seems to stem from the ever-increasing breadth of solutions required by the business. Nearly two-thirds (64%) of the IT organizations ESG surveyed view IT as being more complex today than just two years ago.[3]

One common driver of IT complexity in VDI environments, identified by 26% of respondents, is the growing number and type of endpoint devices that must be managed, which indicates increasing end user demand. This complexity can be exacerbated by the broad range of end-user behaviors and the unpredictable impact this has on VDI performance. The infrastructure itself, therefore, must "get smarter" to mitigate this volatility and close the IT resources gap in managing complex, multifaceted environments. In order to address this requirement, many organizations are seeking to implement more infrastructure-level AI and autonomous operations. For example, 25% of surveyed IT decision makers reported that increasing their use of IT infrastructure automation tools is a top data center modernization investment priority for their organizations, and 23% identified leveraging artificial intelligence (AI) and machine learning (ML) to help with systems

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[1] Source: ESG Master Survey Results, *2019 Technology Spending Intentions Survey*, March 2019.
[2] Source: ESG Research Report, *2020 Technology Spending Intentions Survey*, February 2020.
[3] ibid.

management tasks, putting both of these initiatives among the top four most commonly identified data center modernization investment areas.[4]

Additionally, the need for VDI-supporting infrastructures to offer simplified management and fast, deep insight is also fueled by an industry shift toward employing more IT generalists rather than specialists. When ESG asked storage decision makers to identify their organization's expected staff openings and hiring plans in the area of storage infrastructure management, a majority (62%) indicated that they were looking at bringing on IT generalists, while only 36% preferred domain specialists, such as storage administrators.[5] The takeaway is that VDI-related infrastructure management needs to be "generalist friendly."

The public cloud is not a VDI panacea either (see callout box).[6] On top of these statistics, survey results revealed that over a quarter (26%) of respondents who experienced an increase in overall IT complexity identified the integration of public cloud resources as a factor driving that increase.[7] The idea that enterprises can simply lift and shift their operations to the cloud and achieve all its benefits, while offloading complexity and reducing costs, is a notion that usually evaporates quickly.

Cloud Storage Infrastructure Challenges

- Sizing workloads properly for cost (identified by 24%).

- Difficulty managing a rapidly evolving environment (identified by 24%).

- Sizing workloads properly for performance (identified by 23%).

Tintri Intelligent Infrastructure for VDI

The Tintri VMstore technology used to support VDI environments is a two-rack-unit storage system. It scales out to a maximum of 64 nodes, provides more than 40 PB of capacity, and supports up to hundreds of thousands of desktops, all manageable as a single storage pool. Notably, Tintri VMstore is capable of integrating and interoperating with VMware View and Citrix XenDesktop environments.

ESG was recently granted access to two Tintri customers. Through those conversations, as well as insight into Tintri's technology, ESG identified several Tintri-specific differentiators that are delivering a valuable positive economic impact to those organizations:

- **High-performance, enterprise-level, yet economical storage**, possessing excellent operational characteristics and offering cost predictability.

- **Generalist-friendly administration**, which, according to Tintri, can reduce the time to manage thousands of desktops to just minutes per month. That claim was validated by the customers, who reported reduced admin time.

- **Autonomous, real-time tuning** to self-optimize and automatically handle resource contention issues without admin intervention, while reducing over-provisioning of hardware.

- **Accelerated operations** that are marked by intelligent, real-time issue isolation and resolution, and predictive analytics for better VDI service performance and consistency—all of which reduce support and management demand on IT. This benefit translates to lower costs and faster business results.

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[4] Source: ESG Master Survey Results, *2020 Technology Spending Intentions Survey*, January 2020.
[5] Source: ESG Master Survey Results, *2019 Data Storage Trends*, November 2019.
[6] ibid.
[7] Source: ESG Research Report, *2020 Technology Spending Intentions Survey*, February 2020.

- **An ability to scale** without sacrificing either performance or management simplicity.

Tintri Customer Conversation #1—Leaving Behind an Unmanageable, Unscalable, Inefficient VDI Environment

ESG spoke with a VP of architectural VDI engineering who manages a global enterprise VDI environment. His organization made the switch to Tintri VMstore because the previous storage environment was not manageable or scalable, and didn't work efficiently enough. "Tintri hit a lot of the pros that we were looking for," he said. "We wanted to use Hyper-V, and using Tintri meant one less thing that we would need to hire for. We need to be able to manage this environment with our existing employees. We can't hire 40 to 50 people."

The company had investigated using a public cloud storage service but determined that route would be cost-prohibitive. Using Tintri enabled this organization "to beat what Microsoft and Amazon offered by a considerable amount … equating to a couple bucks per month per virtual machine," the VP said. That adds up. Right now, the organization has about 35,000 virtual machines and is aiming to scale up to 60,000. "When you scale at that level, it can get very expensive, very quickly. Every dollar we can save is valuable," the VP said.

> **"We were able to beat what Microsoft and Amazon offered by a considerable amount … equating to a couple bucks per month per virtual machine."**

Economic-, Performance-, and Support-related Benefits

The IT organization has been running Tintri storage systems in its production environment globally for three and a half years. It has observed that using Tintri makes it easier to allocate activities to generalists and frees up IT staff's time. The VP said, "We didn't have to hire anyone—no additional personnel."

Tintri also helped this organization scale vertically rather than horizontally, "so we didn't have to expend a bunch of extra effort to get it set up in-house. The setup time was very fast and efficient," the VP said. "We started with a small, tightknit group of three to four people to oversee establishment of the architecture. Using Tintri freed us to do our normal day jobs, rather than only managing the VDI environment," said the VP. "It's almost a set-it-and-forget-it device."

Overall, the VP reports that Tintri "has saved us a few million dollars for sure, not even including the cost for additional employees." And in terms of performance and support, he said, "It has exceeded our performance expectations."

Tintri Customer Conversation #2—Seeing 'Astounding Performance'

ESG spoke with the lead IT solutions architect at a firm that provides services for the US federal government. The company switched to Tintri VMstore because its prior solution's warranty was nearing expiration, and the next warranty would be extremely expensive. They put one Tintri system in-house and ran it as a demo for two weeks. "We were just astounded by its performance," the IT architect said.

The company deployed a workload on it to determine what deduplication level could be achieved and thereby how much capacity it would need to buy. "We were like, OMG, this is amazing," said the IT architect. "We were able to go with one unit that was two rack units high. It meant that we were able to scrap the other vendor and, in the process, reclaim almost two entire racks of space. With Tintri, we're getting double the storage space for the same cost as one year of maintenance for our previous system vendor."

The organization's first driver toward Tintri centered on cost. Tintri simply offered better economics. But the second factor centered on performance. The IT architect said, "We did benchmark testing, and none of the alternatives came anywhere close to what Tintri was giving us. All the others were at least 50% less high-performing."

The IT organization also is evaluating public cloud services, but already reports that it is not seeing what it expected with regard to savings. "It's about 20% to 25% more expensive," the IT architect said.

Saving Time, Money, and Power

The power- and density-related savings this organization has achieved are impressive. "Just by turning off all those hard drives we saved in the first year about $63,000 in power alone," the architect said. "Our power usage for storage has shrunk from more than 8.5 kilowatts down to 0.49 kilowatts."

In this specific environment, one VMstore unit supports 870 virtual machines—servers and desktops—and it allows IT to run entire development environments for 200 developers in multiple instances. "And we're only 75% utilized right now," the architect reported.

"With Tintri, after two years, it was like having free storage."

Interestingly, when the organization switched to Tintri, it found that the cage temperature in the data center dropped by 26 degrees Fahrenheit. The architect said, "That means the rest of our hardware now runs much cooler, too. And failure rates have dropped for all our other gear, which I am very happy about."

Like many IT organizations, this one runs lean. Admins are busy and wear many hats. The IT architect said, "From an administrative point of view, what used to take me four hours [to stand up], I now get done in 15 minutes… we've been able to save a bunch a money, along with time."

The organization is required to use encryption which, with Tintri, involves just a nominal charge and click of a button. Staying with the previous vendor would have required a much more costly license, and would have taken a much longer time to implement and operate.

Accelerating Business Operations and Development

For this organization, after two years of using Tintri, "it was like having free storage," the architect said. "We expanded our environment by leveraging those cost savings—scaling it for our company's next seven years of use and delivering a more robust environment. Now, instead of developers working on desktops that were struggling at best, they are tickled pink and happy. And we were able to do that just thanks to the cost savings from the maintenance fees alone."

Life is better all around. IT now recovers VM snapshots from the Tintri storage system, which is simpler than going to vCenter. It even means IT can handle more projects. "We just don't tell end-users 'no' anymore because of the space savings we have achieved with Tintri," the architect said. "Our satisfaction ratings are up because we have the capability and space to give them what they need now."

The benefit is crystal clear: Code development has accelerated dramatically. "They have cut their development time in half," said the architect.

Before deploying Tintri, whenever IT applied patches, the process would sometimes interrupt desktops. "We would have to recreate that desktop, and the developers would twiddle their thumbs for a couple hours," the architect said. "Now if developers blow up their desktops, I can go into Tintri's site and restore it. I click a mouse button, and then they can log right back in again."

The Bigger Truth

Tintri, with its VMstore Intelligent Infrastructure for VDI, appears to be offering something as close as possible to a "no-risk" solution. Tintri's technology also exemplifies why on-premises solutions are still valuable—and in some cases, far more effective than cloud-only alternatives from both a business-operation and a cost-specific standpoint. We should note, however, that Tintri offers both on-premises and hybrid cloud solutions that interoperate with public cloud offerings from Amazon Web Services (AWS) and other vendors for backup, disaster recovery, archive storage, and more.

Tintri has designed the VMstore system from the ground up to satisfy the demanding requirements of today's VDI environments. Plainly speaking, because Tintri built the system specifically for a virtualized environment, it offers capabilities that conventional storage simply can't provide.

End-users want a consistent experience and no downtime. IT administrators want simple, intelligent management, complete with analytics and automation. And senior IT leaders want a solution that helps them control and avoid all sorts of operational expenses, including over-allocating capacity. Tintri VMstore Intelligent Infrastructure is a win for all stakeholders.

Enterprise Strategy Group is an IT analyst, research, validation, and strategy firm that provides market intelligence and actionable insight to the global IT community.

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