# 2016 STATE OF STORAGE

FOR

## Cloud Service Providers

Presented by Tintri

## In this report:



## Storage is more important than ever

As a CSP, you operate in a competitive market, and you've got to know how you stack up against your peers. So in December 2015, we surveyed 78 CSPs and followed up via 1:1 conversations to identify the pains and priorities that define their businesses. We've summarized the results here in our State of Storage 2016 for CSPs report. Dig in and you'll learn:

- The three features CSPs use to create differentiated services
- The three biggest storage challenges that all CSPs face today
- The one major pain point that doesn't appear as a purchase criteria

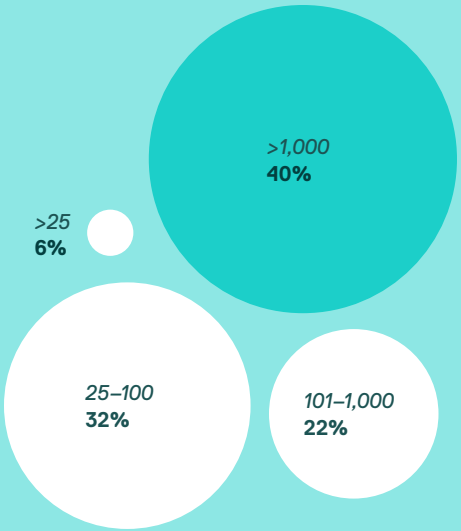
The report focuses on storage because it's so central to CSP success. In our study, nearly one-third of respondents spend more than 10 percent of their revenue on storage. With 75 percent of respondents having virtualized over 80 percent of their environments, CSPs must look for storage built for their virtual workloads. To wit, the fastest-growing CSPs actively use storage to unlock new efficiencies and deliver differentiated services to their customers. It's clear that for CSPs, selecting storage can be a make-or-break business decision.

01 DEMOGRAPHICS

The CSPs that responded to the State of Storage study spanned sizes and services. Here's a brief picture of the companies that participated.

## Company Size

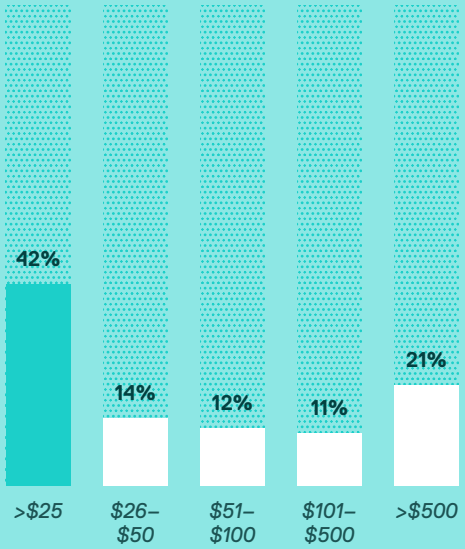
*number of employees*




40 percent of respondents come from larger companies (with over 1,000 employees), while 38 percent of respondents come from small companies (fewer than 100 employees). Since these two sizes are often at different stages, in the remainder of the report we'll point out when results differ substantially by company size.

## Annual Revenue

*in millions*

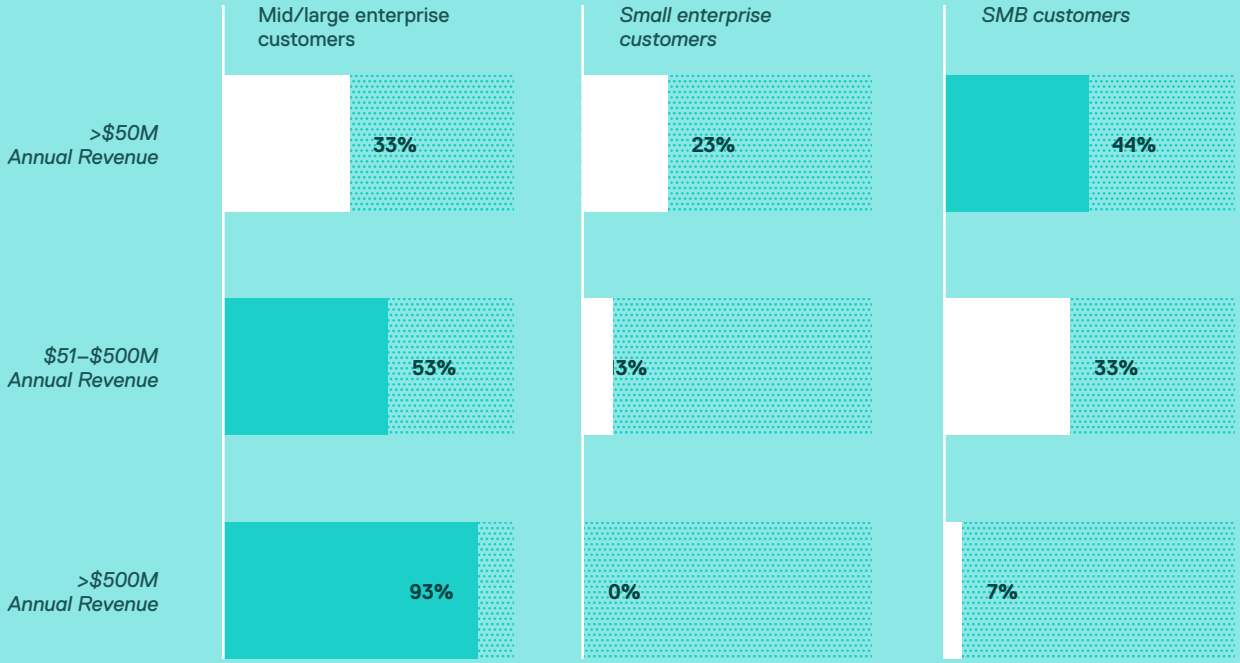



Despite 40 percent of respondents coming from large companies (with over 1,000 employees), only 21 percent of respondents' companies have over $500 million in annual revenue. In contrast, 56 percent of respondents' companies have annual revenue under $50 million. This percentage is greater than the 38 percent of respondents coming from small companies (fewer than 100 employees).

**Between the lines**

Some of the larger CSPs that responded to our study generate less revenue than their peer set. Those CSPs may be missing opportunities to expand services and generate incremental revenue with high efficiencies. Smaller CSPs face a similar challenge—in a crowded and very long-tailed market, they depend on differentiated services to grow their business.

## Customer Base by CSP size




The smallest CSPs (with revenue below $50 million) sell to a core customer base of SMBs (44 percent), likely due to their regional and/or specialized operations. That customer base is followed by mid/large enterprises (33 percent) and small enterprises (23 percent).

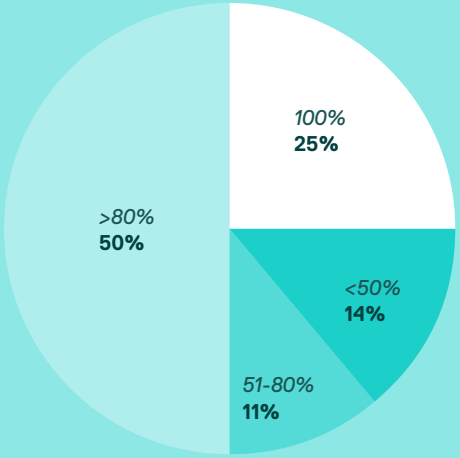
Meanwhile, the largest CSPs (with revenue of over $500 million), who can more readily scale their services up and down to meet customer expectations, almost exclusively focus on mid/large enterprises (93 percent) with very limited SMB focus.

**Between the lines**

The smallest CSPs have a more diverse customer base than their larger peers. As CSP size increases, the customer base skews towards mid/large enterprises, which tend to provide more reliable demand for CSPs.

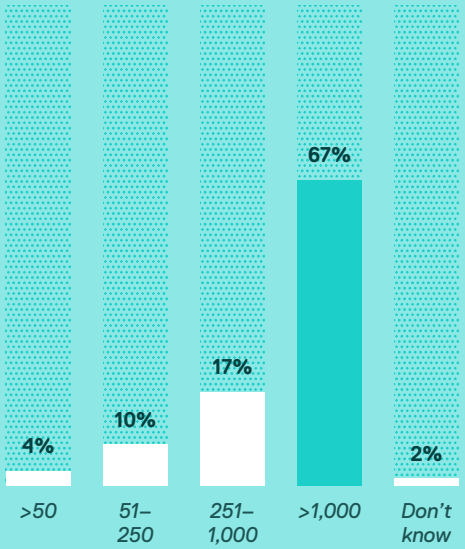
Over the last decade virtualization has swept through the data center, and CSPs are among those leading the charge. Cloud is built on virtualization, and the CSPs in our study operate highly virtualized environments.

## Percentage of environment virtualized




CSPs live or die by the services they offer, powered by virtualized applications. 75 percent of CSPs have already virtualized over 80 percent of their applications. Looking further, 25 percent already operate a 100 percent virtualized footprint.

## Total number of VMs

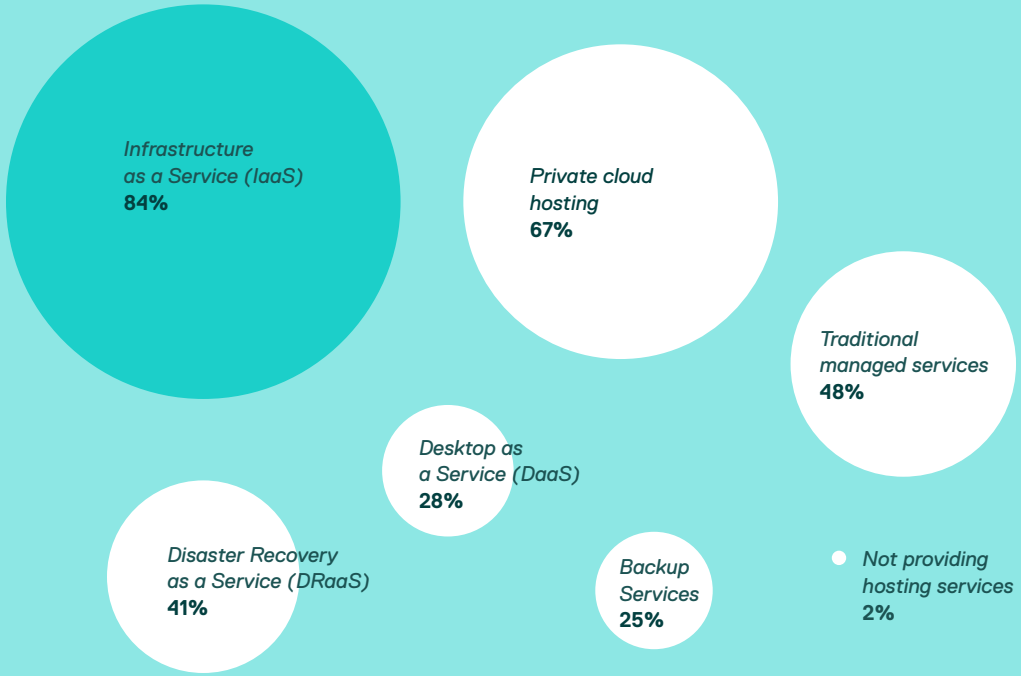



67 percent of CSPs have over 1,000 virtual machines (VMs), and 84 percent have over 250 VMs. But the scale of VMs is not limited only to the largest CSPs. 38 percent of CSPs with revenue below $50 million say their infrastructure needs to support over 1,000 VMs.

**Between the lines**

Distressingly, CSPs' current storage vendors may not serve virtualized workloads very well, as CSPs run into scale and performance issues much earlier than most enterprises. The need for storage appliances to feature high VM density and powerful VM management is clear. Ideal CSP storage solutions must overcome performance degradation and maximize capacity.

## Services provided




We asked respondents to categorize the top three services they provided to their customer base. The results highlight a more diverse set of services offered by smaller CSPs, though the predominant remain infrastructure as a service (IaaS) at 84 percent, private cloud hosting at 67 percent and more traditional managed services at 48 percent.

More granular data show that larger CSPs have a much stronger holding in managed services while smaller CSPs have marched into disaster recovery as a service (DRaaS).

**Between the lines**

Larger CSPs likely went through a journey from VAR to MSP to CSP while smaller CSPs entered the cloud market offering newer, differentiated services. Offering these specialized services is important to smaller CSP's ability to compete in a crowded market.

## Multiple hypervisors

95%
VMware vSphere

33%
Microsoft Hyper-V

31%
OpenStack

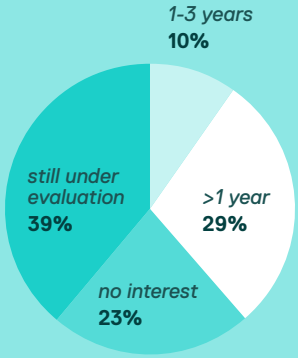
11%
RHEV

9%
Citrix Xenserver

5%
Other (KVM)

CSPs overwhelmingly use VMware vSphere (95 percent), though multi-hypervisor strategies already prevail in most environments. Microsoft Hyper-V came in second at 33 percent, and OpenStack third at 31 percent, with RHEV at 11 percent, Citrix XenServer at 9 percent, and others (KVM) at 5 percent.

When broken down by company revenue, companies with over $500 million in revenue were much more likely to have integrated Microsoft Hyper-V alongside VMware vSphere.




Given that CSPs are often early adopters it's not surprising to see OpenStack gaining some traction. 29 percent of CSPs plan to adopt OpenStack in less than 1 year. Still, the majority (62 percent) either have no timeline for OpenStack deployment or no current interest.

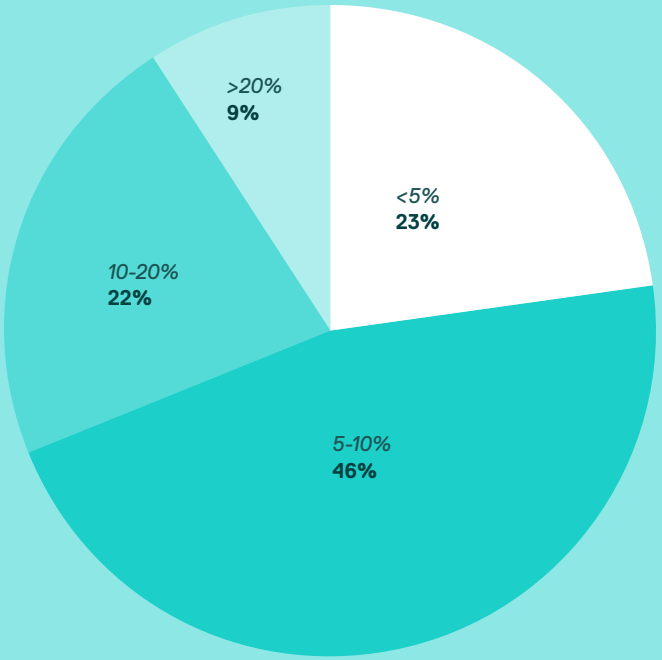
The cost to maintain your OpenStack footprint can be resource-intensive, especially if it requires separate storage needs to procure and manage. Keep your eyes out for storage systems that can handle OpenStack side-by-side with other hypervisors to allow for experimentation.

**Between the lines**

CSPs' hypervisor environments are largely simple and dominated by vSphere. Therefore, storage integration with VMware tools is key. Larger CSPs are looking for alternatives like Hyper-V to bring down costs.

Storage can make or break a CSP's business. It represents an area of significant investment—both money and time. As we've seen above, the highly virtualized environments that CSPs operate depend on storage to serve as an enabler rather than a bottleneck.

## Storage spending



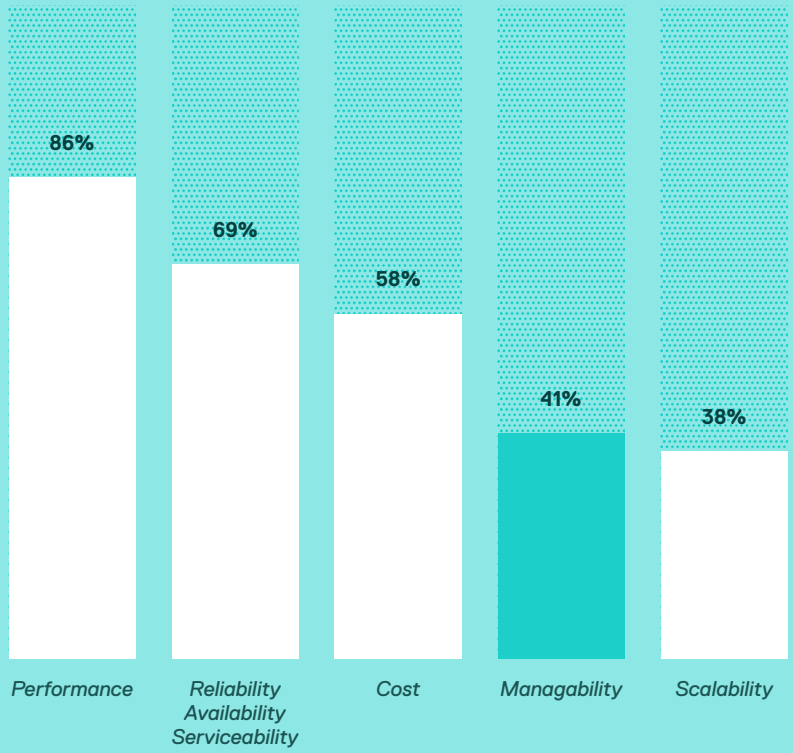

Nearly one-third of CSPs spend more than 10 percent of their revenue on storage—making it one of (if not the most) significant cost outlays. Another 46 percent of CSPs spend between 5 and 10 percent of revenue on storage, while 23 percent have contained spend to less than 5 percent.

**Between the lines**

CSP storage spend is much higher (as a percentage of revenue) than that of enterprises, which tend to spend between 2 and 3 percent on storage. That's one reason why storage selection is so critical to CSP success.

## Buying criteria

The top three criteria CSPs use to evaluate storage are diverse, but performance stands head and shoulders above the rest, with 86 percent of CSPs considering it a top criterion. Next, 69 percent considered reliability/availability/serviceability a top criterion, and 58 percent include cost as a top factor. Below those criteria, 41 percent cited manageability, and 38 percent cited scalability.




The fourth criterion—manageability—has a huge impact on performance and reliability that CSPs may underestimate. In an open-ended question, we asked respondents to describe their problems with existing storage. The most frequently quoted words were Performance, Scalability, Management, Monitoring, Reporting and Troubleshooting, which point to manageability as a pain point sitting right below the surface of more obvious performance pains.

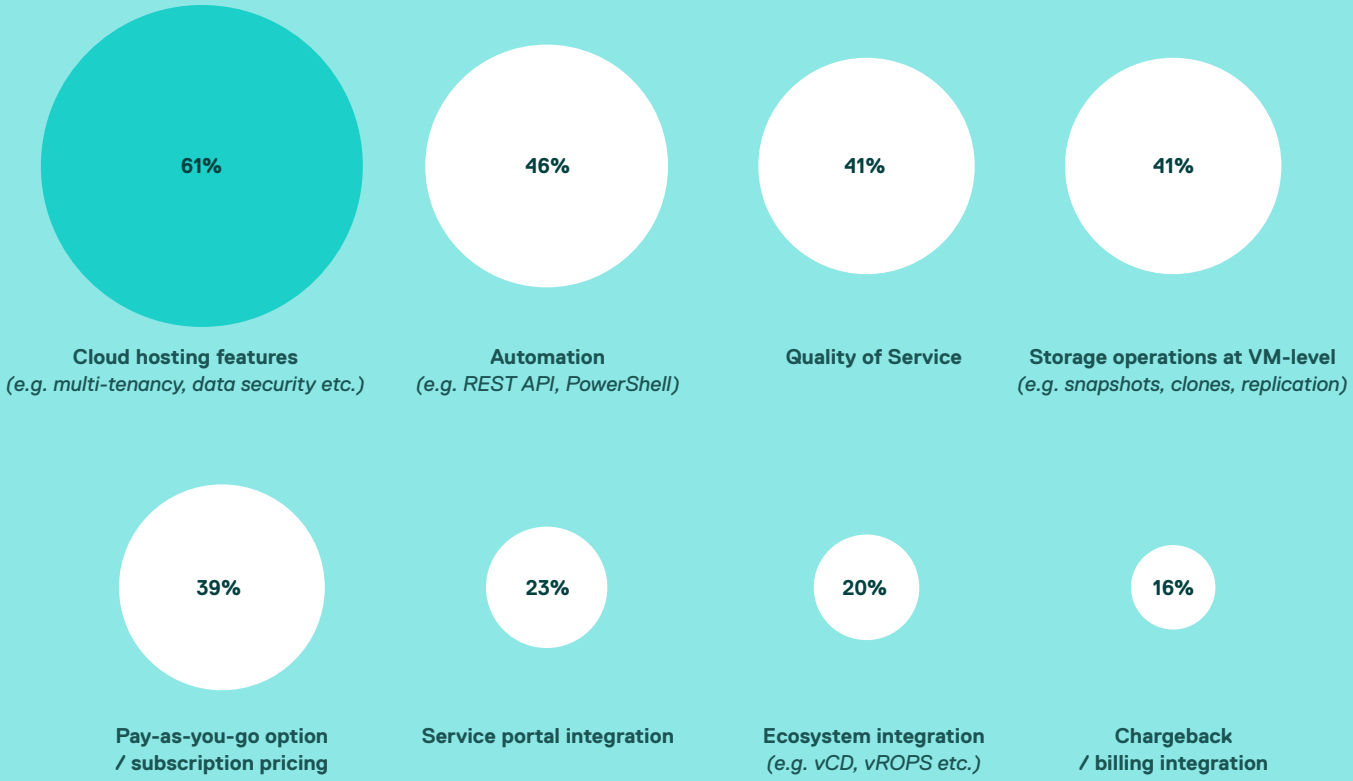
While storage performance certainly seems the end-all be-all of buying criteria, VM performance—and the ability to manage that performance—is just as critical, especially when considering the relative loss of performance such mundane actions as maintaining spreadsheets and tuning LUNs can incur.

**Recommendation: We suggest CSPs that have virtualized over 50 percent of their data center's workloads look for manageability as a secondary, if not primary, criterion to performance, anticipating scale-out of their VMs and virtual workloads—and the time needed to manage them.**

**Between the lines**

There's a disconnect in CSP data centers. Conventional LUN and volume-based storage is a poor fit for their virtualized applications. That creates three major pain points: poor and unpredictable performance, lack of reliability and spiraling costs—both CapEx and OpEx.

## Requested features

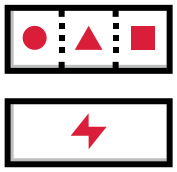



When asked which three features they needed most, 61 percent of CSPs cited cloud hosting features (such as multi-tenancy and data security), 46 percent cited automation (such as REST API and PowerShell) and 41 percent cited quality of service (QoS).

## Spend less time and money on storage in 2016

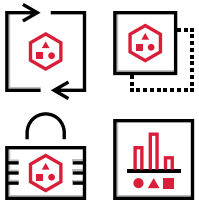
As indicated in this report, CSPs are highly virtualized with complex environments, and Tintri has three recommendations to help them compete more effectively and grow their businesses.

### Align storage with virtualization



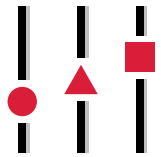
While conventional storage is highly effective for physical workloads, that utility stops there. LUN and volume-based storage architectures have little benefit to offer a highly virtualized footprint. CSPs cannot afford to lose time shuffling virtual machines between LUNs. And they cannot have low ceilings imposed on their ability to manage a large and growing number of VMs. That's why CSPs need storage specifically built for virtualization that can offer density and simple management.

### Compete on differentiated services



Given the heavy competition in cloud services, CSPs need to stand apart (and expand margins) by offering highly differentiated services. Today, that's often accomplished by procuring different tiers of storage. Looking ahead, CSPs need to build on storage that allows them to isolate virtualized applications and set different Quality of Service tiers on a single device. That way CSPs can help their customers step up into higher-revenue services, and to guarantee the performance of customer applications.

### Think manageability

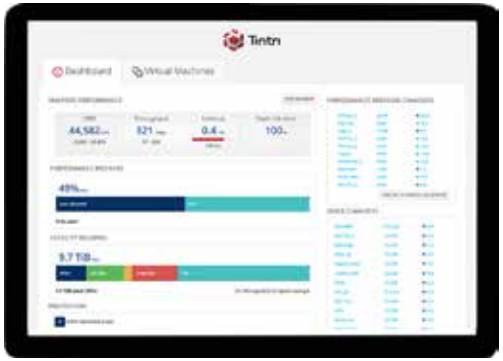


According to our report, CSPs by and large cite performance as their biggest pain point, which makes sense: above all, CSPs want to provide the best possible services to their customer base. But poor application and VM manageability drastically hinder storage performance—not to mention the CSP's bottom line. CSPs don't need more boxes—they need greater automation and better troubleshooting visibility in order to scale profitably.

## For CSPs, selecting storage is a make or break business decision.

We'd like to show you how Tintri VM-aware storage—built specifically for virtualization and cloud—can help you reduce your management effort and add highly differentiated services. Get ahead of the competition. Try Tintri today.

**Check out Tintri's UI**




Tintri

Tintri VM-aware storage is the simplest for virtualized applications and cloud. Organizations including GE, Toyota, United Healthcare, NASA and 6 of the Fortune 15 have said "No to LUNs." With Tintri they manage only virtual machines, in a fraction of the footprint and at far lower cost than conventional storage.

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