

# 2016 STATE OF STORAGE

FOR  
**Virtualized  
Enterprises**

Presented by Tintri

## In this report:

01 DEMOGRAPHICS

03 PAIN POINTS

04 REMEDIES

05 PROVIDERS

06 BUYING CRITERIA

07 SUMMARY

## Intro / Exec Summary

In spring, 2016, we conducted the State of Storage for virtualized enterprises study with data center professionals from around the world. The following report is a compilation of feedback on pains, priorities, opinions and concerns around the storage industry—building on a similar State of Storage study conducted last year. In comparing this year’s study, to last, two significant changes surfaced.

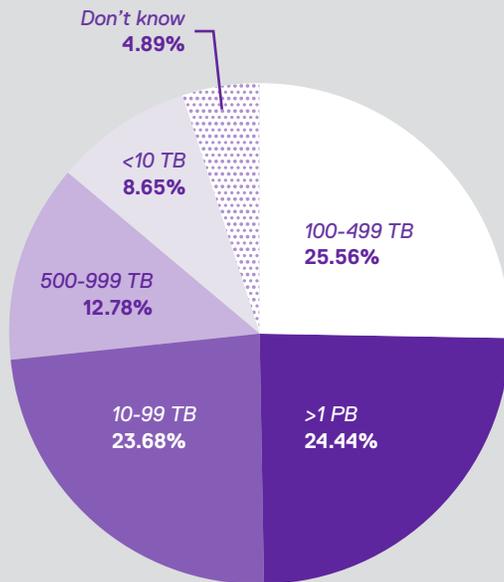
One: unlike 2015, when performance and latency topped the list of storage pains, this year 49% of respondents declared their biggest concern to be manageability—a jump of 10%! You can feel the pain of the one-third of respondents that said they still rely on antiquated spreadsheets to manage and map their VMs. After manageability, the top storage pain points were performance (46%) and scale (42%).

Two: 68% of respondents indicated that they are evaluating new technologies, with 48% evaluating new storage vendors. Of those evaluating new storage vendors, 60% are looking into VM-aware storage and 44% are evaluating all-flash options. Considering these areas of interest, it’s no surprise to see that consideration of legacy storage providers continues to decline—this year by 8%.

Virtualization has changed the way we should manage storage—and the numbers show that respondents are frustrated with legacy providers’ inability to support this shift. Now, more than ever, the right storage can be an enabler and a source of competitive advantage. Now let’s dig further into the State of Storage in 2016.

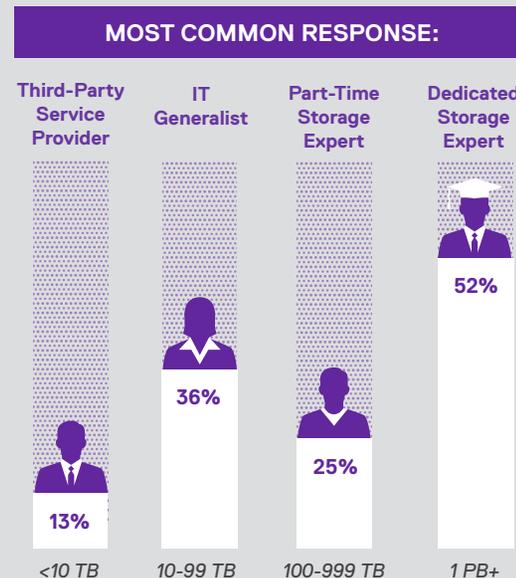
Hundreds of data center professionals completed the annual State of Storage study. But who are these folks?

What is your organization's total storage footprint?



Well, they are largely responsible for Storage (32%) and Server (29%) within their organization. And when it comes to their storage footprint, they're a diverse bunch. One in three manage a footprint that's less than 100TB. One in four manage a footprint that's more than 1PB. And the remaining respondents are spread across the middle.

Question: Who manages your storage footprint based on the size of that footprint?



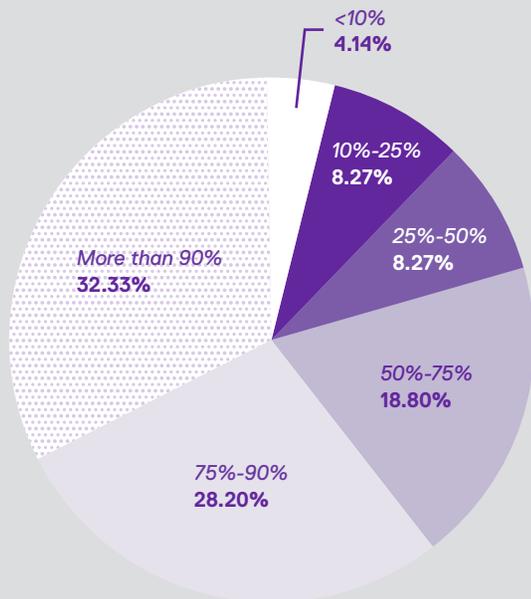
When you've got a lot of storage, it typically requires more management effort. And so 34% of respondents noted that their organizations have dedicated storage experts responsible for ensuring storage performance—tightly correlated with the size of the footprint (i.e. organizations with more than 1PB of storage were far more likely to have dedicated storage experts). Still, 50% of respondents worked for organizations where an IT generalist managed storage as one of their responsibilities.

### Between the lines

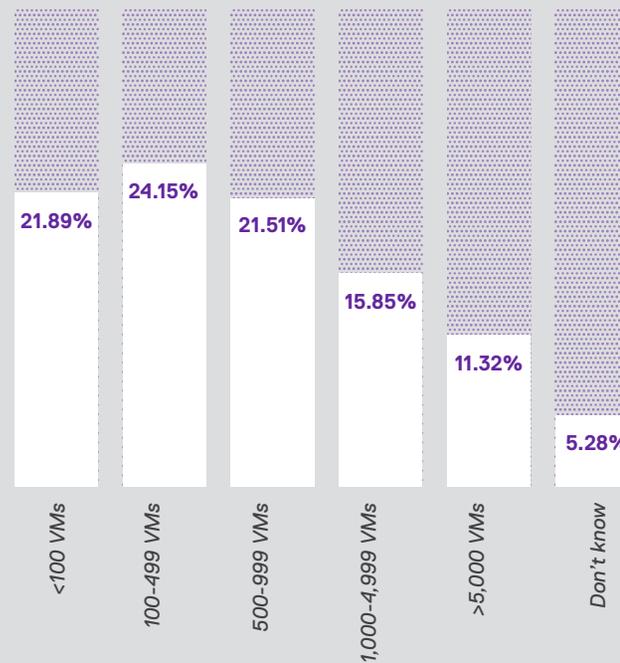
**Does scale necessarily require more storage and more management effort?** Most organizations assume that scaling their storage footprint to match their growing needs means they have to add more capacity, more IOPS, more management effort and more expertise. But that's not always the case. One Tintri VM-aware storage customer manages 3+ petabytes across 8 data centers, spinning up 20,000 new virtual machines each month—all in 4 hours per week (or less). Oh, and he's a Windows Admin. It's proof that in terms of scaling storage, it's possible to do more with less.

Now, there may be a catch or two in using generalists to manage complicated storage LUNs, volumes, queue depths, analytics and more—it's overwhelming. The result? More than one-third of respondents use spreadsheets (29%) or pen and paper (6%) to manage at least some aspects of their storage footprint. Even more are stuck in spreadsheet hell for storage analytics (39% total).\*

*Approximately what percentage of your organization's applications is virtualized?*



*How many virtual machines does your organization manage today?*



Our respondents also have a mighty and growing virtual footprint. Asked what proportion of their applications are virtualized today, one in three were more than 90% virtualized, and four in five were at least 50% virtualized.

That translates into a lot of virtual machines to manage. Half of survey-takers have oversight for at least 500 virtual machines, and more than one-quarter keep watch over 1,000 virtual machines—spinning up tens or even hundreds more every month.

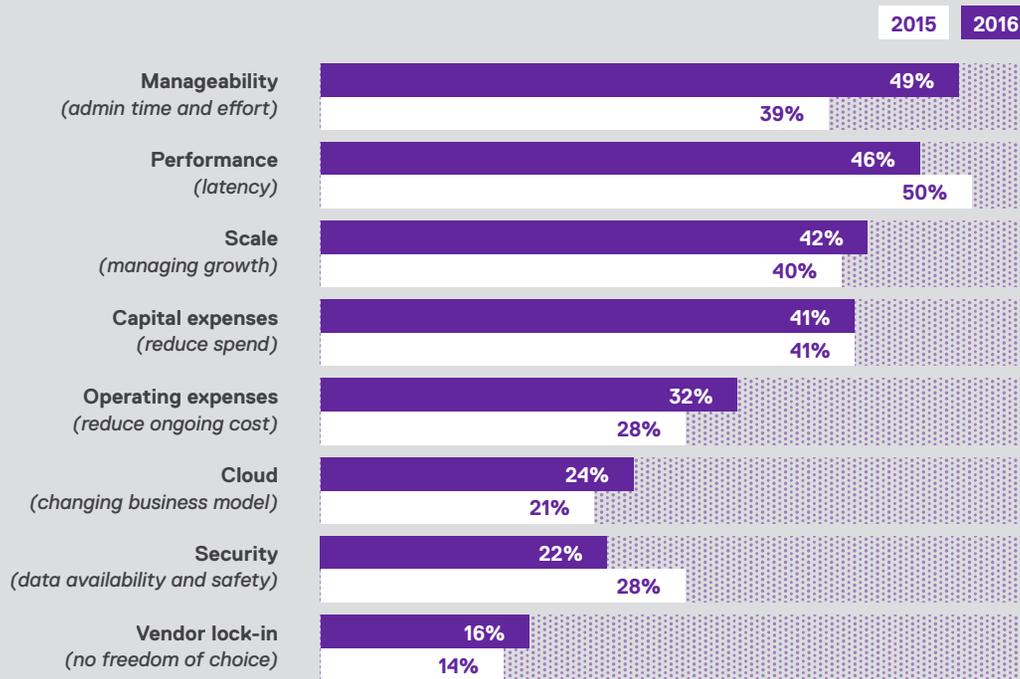
With deep adoption of virtualization and the rate of change of virtual machines in the data center, storage admins and their stakeholders must be accumulating some bumps and bruises.

#### Between the lines

\* **Definition: Spreadsheet hell.** Sound familiar? Spreadsheet hell describes the heat and pressure that comes from managing a growing volume of virtual machines in a LUN-based storage environment. Picture this: overworked admins “mapping” all their virtual machines to their respective LUNs. As they shuffle those virtual machines between LUNs to try and improve performance, they slowly descend into spreadsheet hell keeping track of those changes. The only way out? A better way to manage and analyze storage (without LUNs).]

In last year's State of Storage study, Performance was the top-ranked pain (as it has been in nearly every piece of storage research we've combed), but as you can see in the graphic below, this year it has been leapfrogged. Congratulations storage manageability, you are officially the greatest thorn in a data center's side.

### What are the biggest storage pain points you have today?



Surely there's a plan to deal with all this storage pain. We asked respondents what steps they were taking to address these challenges. In a nutshell, if it's broken, replace it—data center professionals are evaluating new technologies (68%) and new storage vendors (48%).

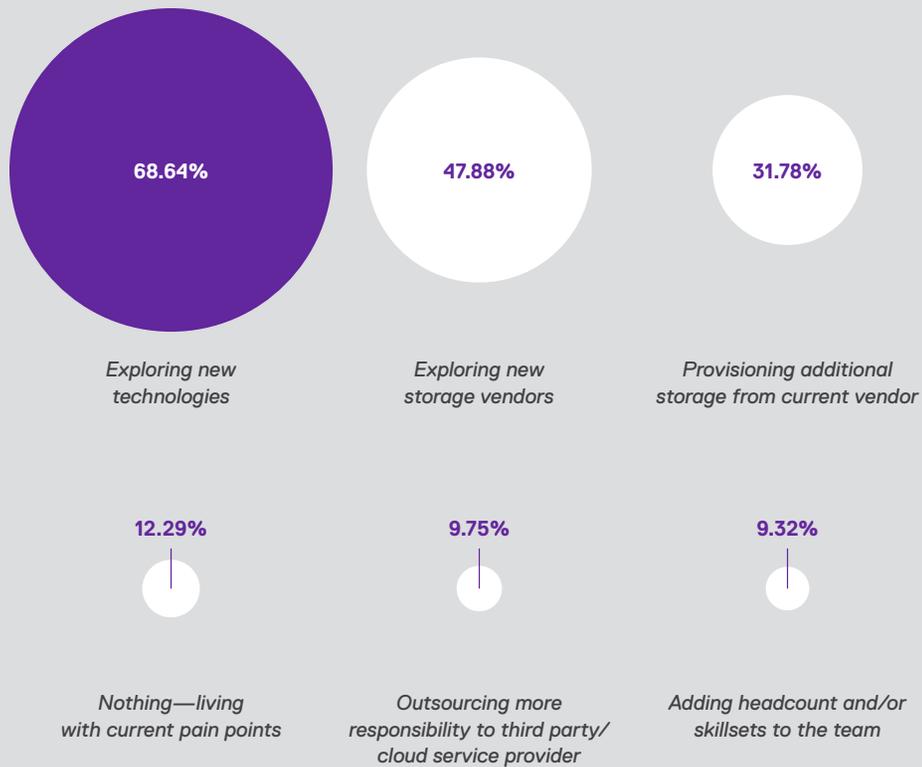
Those individuals scanning the market face a growing volume of technologies and vendor noise. Every vendor promises simplicity and performance—a cure-all to storage ills. And so buyers must invest time and energy validating a wide variety of hardware and software solutions.

Up at the front of the pack are the performance of all-flash (being evaluated by 44% of respondents) and the visibility/control of virtualization-specific VM-aware storage (52%).

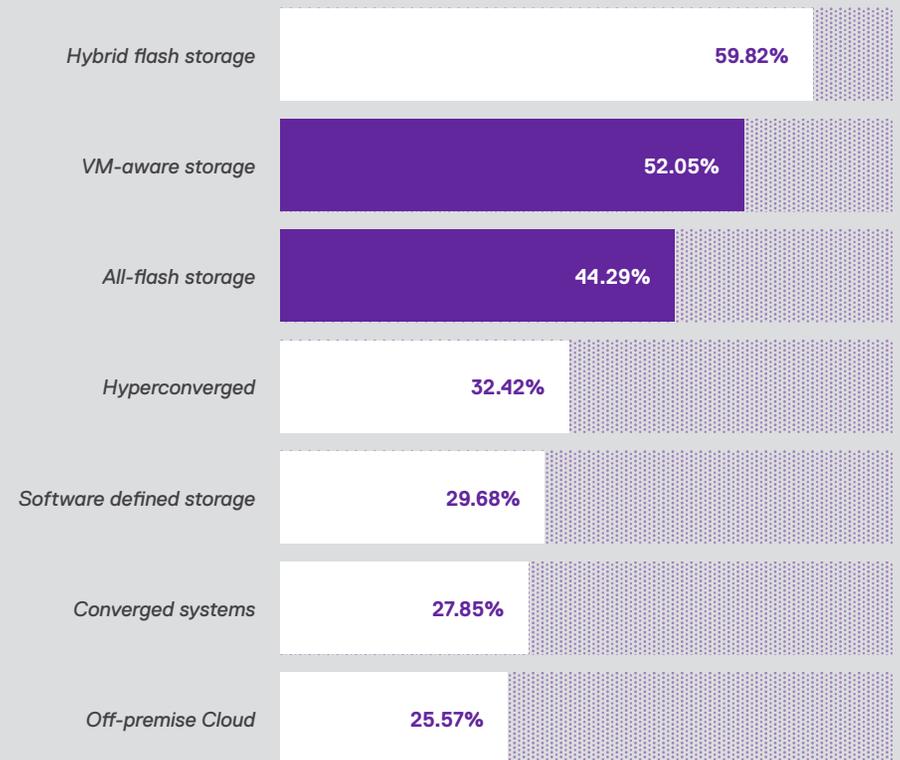
### Between the lines

**Here's a puzzle.** Nearly a third of respondents are problem-solving by provisioning additional storage from their current vendor—even those experiencing heavy manageability pain. If your current storage proves hard to manage, should you buy more of it? It's counter-intuitive, but it's also possibly the path of least resistance. In our experience, we've seen lots of organizations that prefer to throw more terabytes and IOPS at storage pain, rather than address the root cause.

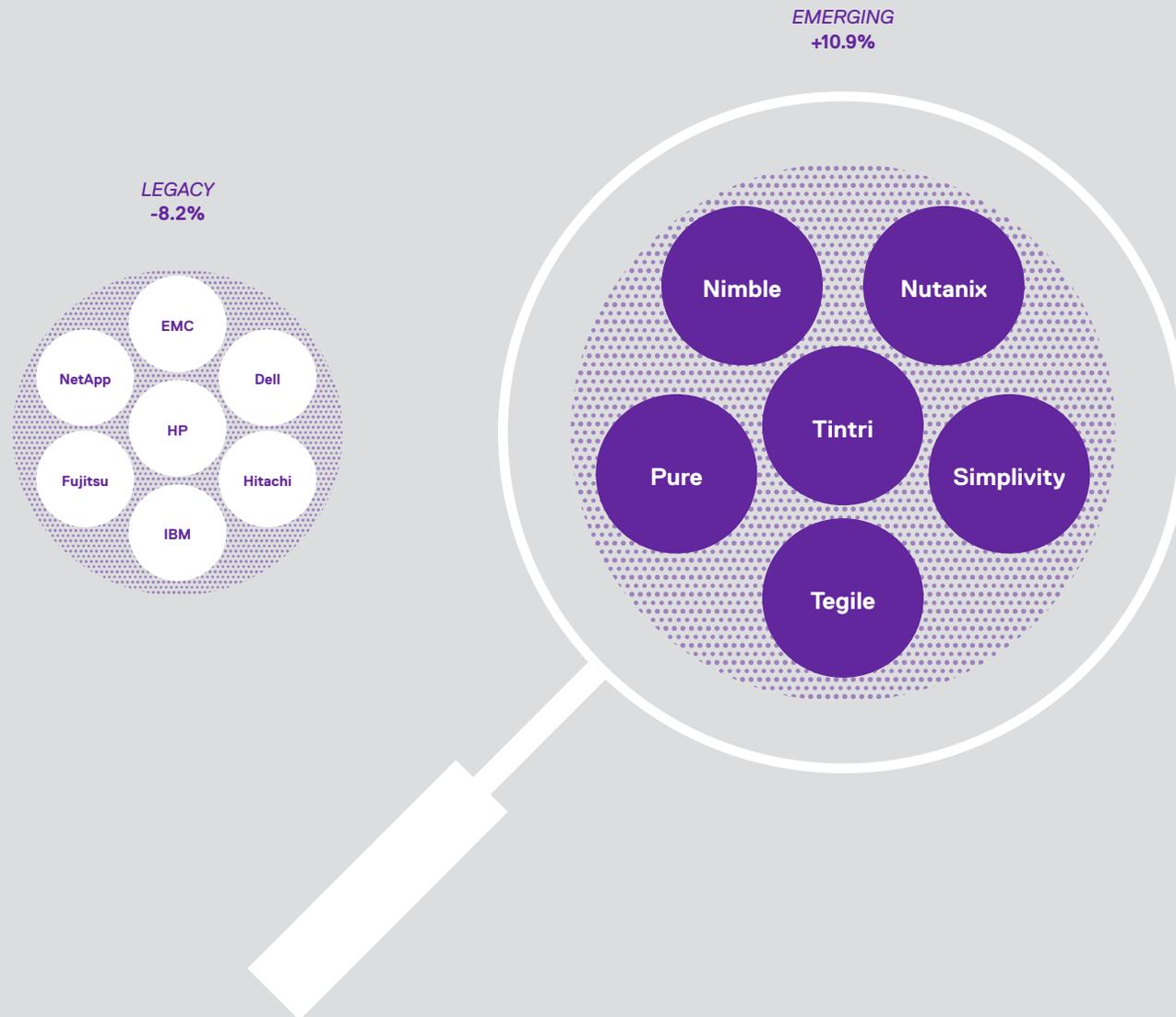
### What steps are you taking to address storage pain?



### What storage technologies are you currently evaluating?



Where are the most compelling storage solutions? Responses indicate that interest in emerging storage vendors is on the rise.

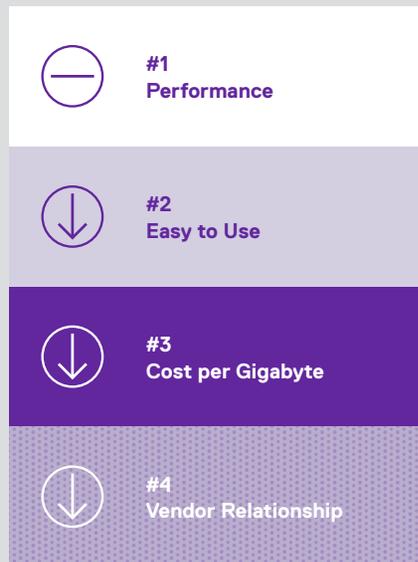


Even more interesting, is which storage vendors are being used now vs. those being evaluated for the future. What we found: consideration of legacy storage providers for future use has declined by 8.2% on average (with NetApp falling a whopping 21.7%). That's an even steeper decline than last year, when consideration of legacy storage providers dropped only 3.7% on average.

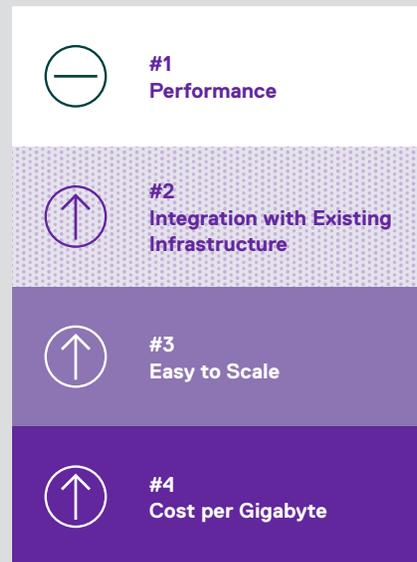
Meanwhile, consideration of emerging storage providers for future use popped 10.9% as compared to current use; that's about the same as in last year's State of Storage study (11.8%).

With so many storage provider options in the market (and plenty more still entering), what criteria are buyers leaning on to make their selection?

2015 Study



2016 Study



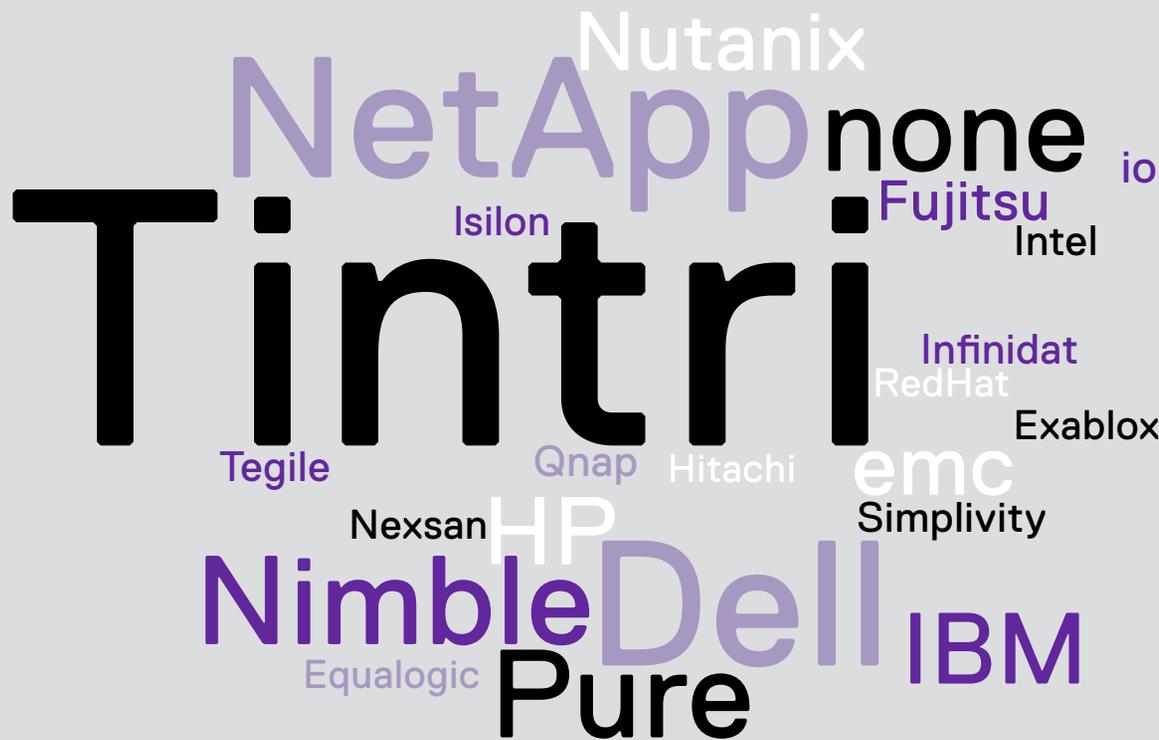
There were some interesting changes compared to last year's study. Performance still tops the list as the number one buying criteria—it certainly feels like a quick solution to any existing latency issues.

But after that, there's a shake-up. Integration with Existing Infrastructure came out of nowhere to rank as the second most important criterion. Close behind was Easy to Scale. The thing is, as organizations grow their virtual footprint, add hypervisors, add more complicated applications and workloads, add supporting technologies ... it all needs to work. Otherwise, organizations face expensive, custom integrations and day-to-day manual interventions to keep their data center operating smoothly.

### Between the lines

**A quick note about integration.** If your hypervisors speak in virtual machines, and your back-up and recovery solution speaks virtual machines, it might be an issue that your storage speaks LUNs. First of all, the technical “translation” (virtual machines to LUNs and vice versa) of these languages can be clumsy and lead to misunderstandings. Secondly, it makes it hard for your people to stay in lock step. When teams speak different languages, it can be difficult to share priorities and support one another's efforts. Hint, hint—find storage that can speak VMs as adeptly as your hypervisor and nothing will be lost in translation.

Finally, we decided to end our survey with something fun—a word association exercise.

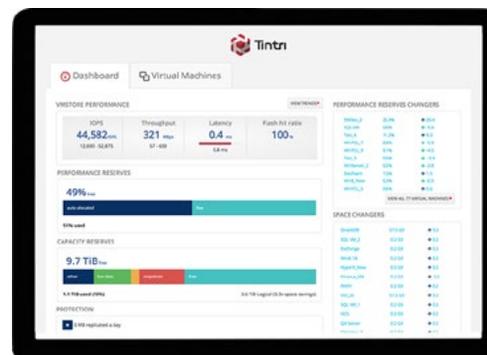


We asked about “fast” and the all-flash players rose to the top. We asked about “cheap”, and aggressive legacy players floated to the surface. And finally, we asked about “simple.” Since organizations deal with rapid growth in virtualized applications, constantly shifting business priorities and more than their fair share of manageability pain, the word “simple” is both timely and telling. Here is the word cloud that emerged—the most frequently mentioned terms represented by the largest font.

And so we’ll wrap up this year’s study on a note that is both partial and proud. If your organization has prioritized virtualization and/or cloud, the only way to keep storage “simple” is with a VM-aware architecture. When your storage can take every action on individual VMs, anyone can manage it in minutes per day, scale it to meet growing demands, and use it to drive business decisions and value. And that is the State of Storage 2016.

We'd like to show you how to Tintri VM-aware storage—built specifically for your virtualized applications—can perform 6x faster, pack 10x more densely and take 98% less management all while saving you time, money and sanity.

Check out Tintri's UI



Tintri VM-aware storage is the simplest for virtualized applications and cloud. Organizations including Toyota, United Healthcare, NASA and 7 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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and follow us on Twitter: [@tintri](https://twitter.com/tintri)