



Inside Track Research Note

In association with

**kaminario.**

## **All-flash storage uncertainty and doubt**

Time for suppliers to  
raise their game?

October 2016

About this Inside Track

The research upon which this Inside Track is based was independently designed and analysed by Freeform Dynamics Ltd. Data was gathered via an online survey executed in collaboration with a mainstream IT news site. 187 responses were gathered from business and IT professionals across a range of industry sectors, geographies and organisation sizes. The study was sponsored by Kaminario.

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## In a nutshell

All-flash arrays are arguably coming of age, but in an early market, with lots of vendors jostling for position and making all kinds of promises, you need to be careful when evaluating options. While most of the historical challenges have been largely neutralised or at least made significantly smaller, there are still some uncertainties that need to be taken care of, so it's important to seek the right kind of guarantees.

## So why the buzz around all-flash arrays?

The use of flash storage in the datacentre has been evolving continuously over the last decade. Manufacturers began by incorporating a flash-based cache into traditional arrays to speed up data access. As prices crept down from the 'eye-wateringly extortionate' to simply the 'extremely expensive', vendors started to become more adventurous. This led to the emergence of full hybrid multi-tiered systems which elevated the role of flash to persistent storage, taking the form of a high performance tier of solid state disk sitting in the same box as a pool of high-capacity HDDs.

As prices edged-down more, and flash began to prove itself in an enterprise context, some vendors and their customers then took things a step further; they began populating hybrid arrays totally with flash media. Meanwhile, a bunch of upstart new vendors entered the market with storage arrays designed and optimised from the ground up with all-flash in mind. These were blisteringly fast, but often lacked some of the advanced features found in traditional disk and hybrid arrays. As they still also represented the expensive option, they were deployed for the handful of applications that really needed them, but were considered less suitable for general use.

Bringing us right up to date, we now commonly hear claims that today's all-flash arrays offer performance, reliability and a proper enterprise-level feature-set, all while coming in at a price point that allows them to be used more broadly. It's a nice high-level proposition, and it's the source of much of the current industry buzz, but seasoned practitioners know the Devil is always in the detail. With this in mind, we recently ran an online survey during which 187 IT professionals provided their view.

## Sanity check on the need

When it comes to drivers, the appeal of all-flash solutions still largely revolves around the needs of high performance applications, with VDI being acknowledged as a specific workload driving demand for some (Figure 1).

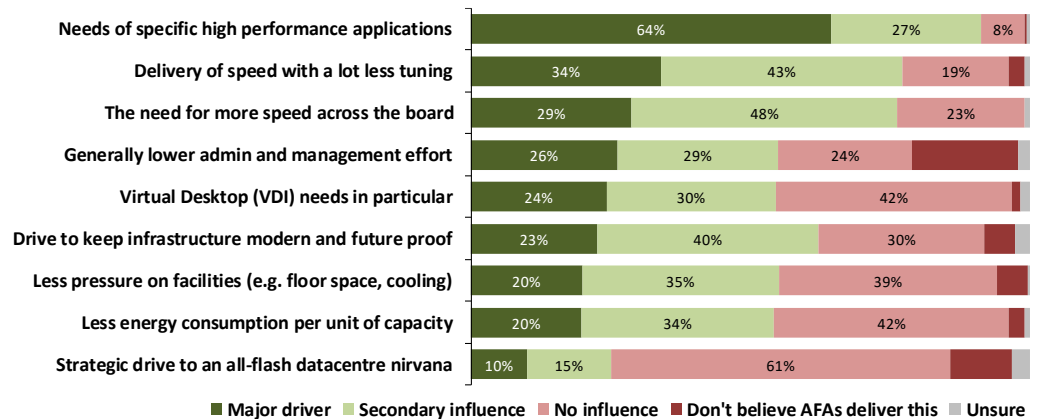


Figure 1  
Why on earth would you consider an all-flash array?

*Many acknowledge the benefits of all-flash arrays.*

*Some of the caution is undoubtedly down to many not totally accepting that all of the historical concerns have been dealt with.*

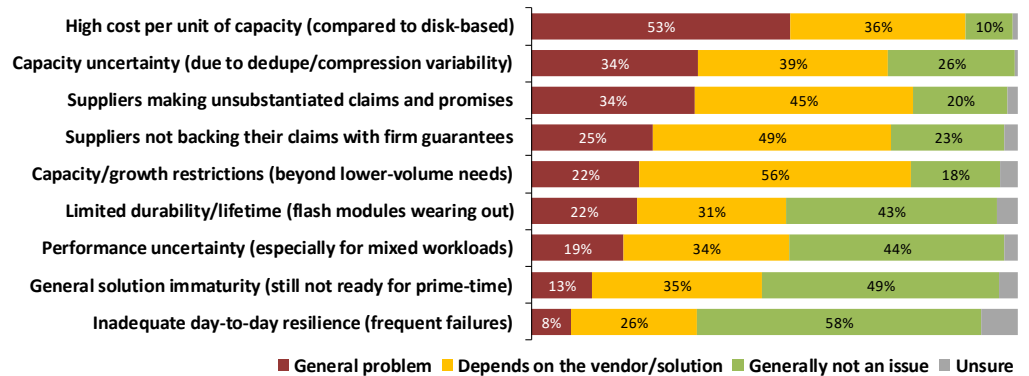
From a datacentre efficiency perspective, the above chart also tells us that many acknowledge the benefits of all-flash arrays in terms of reducing the pressure on facilities – floor space, power, cooling and so on. This stems from the fact that solid-state technology can be packed more densely into racks, has no moving parts, and you don't have to play tricks to make it perform (like breaking your storage out across lots of small capacity spindles). Related to this is the reduction of management overhead. When all parts of the system are inherently low latency and high throughput, you don't need to allocate a lot of time and expertise to tuning. A simpler architecture then means less administration effort in general.

The last point of note in terms of drivers is the notion of 'a strategic drive to an all-flash datacentre' coming out at the bottom of the list. This suggests that IT teams might be generally positive, but not quite to the extent of betting the farm just yet.

## Potential brakes on progress

Some of the caution we are picking up is undoubtedly down to many not totally accepting that all of the historical concerns have been dealt with. The lingering perception of a high cost per capacity stands out prominently at the top of the list. Having said this, there is a clear acknowledgement by a sizeable proportion of our sample base that this depends on the vendor and solution, which by implication suggests that some suppliers at least have been moving in the right direction on this matter (Figure 2).

Figure 2  
How would you characterise the following frequently-cited concerns with AFAs?



Most of the other concerns we see listed relate to uncertainties about the readiness of flash to deal with classic enterprise needs for robustness, durability, and predictability in areas such as performance and capacity. Against this backdrop, the results shown suggest that some suppliers are clearly guilty of - let's just say - extreme optimism when it comes to making claims and promises. Again, however, the evidence is that supplier behaviour varies, so the lesson is to beware of snake oil sales reps.

## When is a terabyte not a terabyte?

One thing to beware of when discussing specifications and pricing with suppliers around all-flash arrays is the genuine problem of figuring out what a unit of capacity quoted actually means. It's rare for the absolute physical capacity of a flash module to be used as a metric, so direct comparisons with spinning disk are generally difficult because you're not comparing like with like.

This is down to a number of factors, e.g. the system will set aside a certain percentage of physical space to deal with degradation of flash media over time. Then, however,

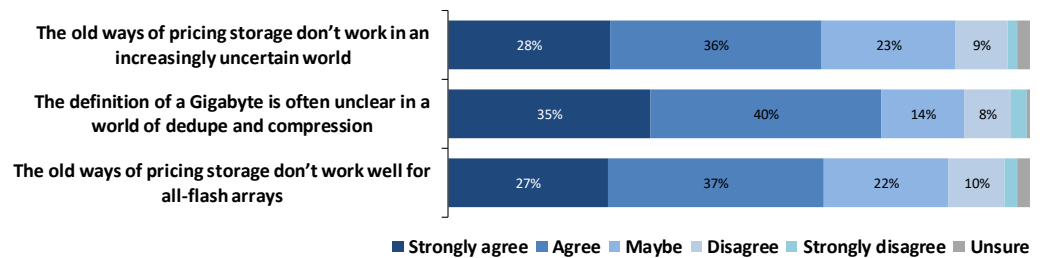
*Direct comparisons with spinning disk are generally difficult because you're not comparing like with like.*

*Many variables are involved in determining 'usable' capacity, not least the exact type of flash media, the mix of data, and the overall design of the system.*

you have to add back an even bigger chunk because very low latency allows you to do in line data reduction (dedupe and compression) without affecting performance. Put this together with the fact that you can push flash media to much higher levels of utilisation (because you don't need to allow headroom to avoid fragmentation slowdown), and the 'effective' or 'usable' capacity is considerably higher than the number you started with.

The problem is that there are so many variables involved in all this - not least the exact type of flash media, the mix of data (which will affect compression ratios), and the fundamental design of the system as a whole (which determines the level of runtime optimisation). Trying to price storage sensibly in line with business value in a dynamic digital environment is bad enough already; throw the 'flash factor' into the mix and it's no surprise that many see a lot of room for confusion and misalignment (Figure 3).

Figure 3  
How much do you agree or disagree with these statements?



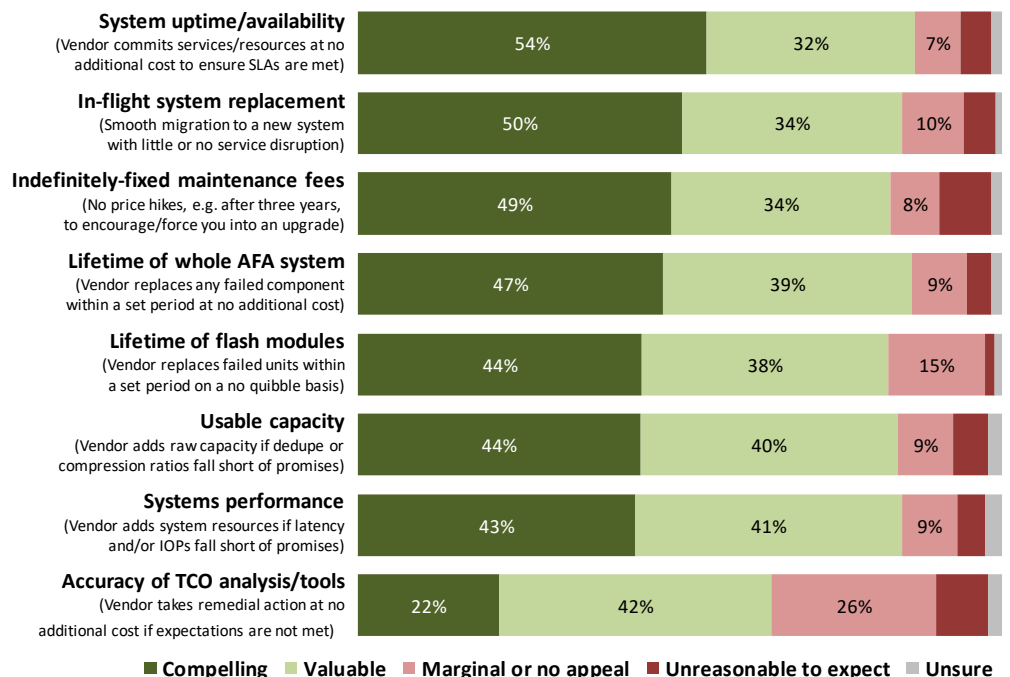
So how can you be sure that you will ultimately get the level of capacity you think you are paying for? And what about promises made in other areas, such as performance, multiple 9s availability, the durability of flash media, or even the lifetime of the entire system and the upgradability and maintenance fees you can expect as it gets older? Vendors frequently make claims on all such things during the buying cycle.

## Put your money where your mouth is

With all of the uncertainty and doubt, many of those participating in our study would clearly like suppliers to back up their promises with firm guarantees (Figure 4).

*Many would like suppliers to back up their promises with firm guarantees.*

Figure 4  
How would you rate the appeal of firm contractual guarantees in relation to the following?



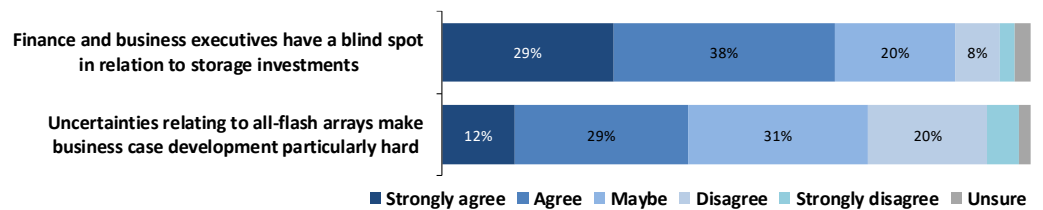
*Very few feel that it is unreasonable to expect vendors to make firm guarantees in common areas of uncertainty.*

What’s interesting about this chart, apart from the relative emphasis on different types of guarantee, is the fact that a relatively small percentage of respondents feel that any of the items on the list are unreasonable to expect.

From the customer perspective, this is totally understandable. Given that the all-flash array market is still relatively young, the majority of buyers will probably not have that much experience. Add to this the rate at which technology is changing at the moment - evolution of flash media, techniques for optimising its use, the design of overall systems, etc - and performing due diligence becomes extremely hard. Suppliers both know the truth about their technology, and have experience of many customers, so it doesn’t seem unreasonable at all that they should be expected to take some responsibility.

For any vendors reading this who are at this point starting to cringe, however, perhaps this next chart will focus your mind (Figure 5).

Figure 5  
How much do you agree or disagree with these statements?



Put simply, those charged with specifying requirements and making investment cases in relation to storage have a hard enough job already convincing those with signoff authority to allocate and approve the necessary funding. If you want IT teams to take that first big step of going down the all-flash route rather than sticking with what they know, you have to help them by eliminating the perceived risk. The imperative here is even more critical if the customer was an early adopter of all-flash solutions and is sitting there looking at a previous investment which didn’t deliver on expectations and is essentially a dead end.

## Bottom line

All-flash arrays have come on leaps and bounds over the last two or three years, and have a lot to offer in terms of both service level enhancement and reduced overheads on IT. And as demands continue to grow, and economics continue to reduce the differential between all-flash solutions and traditional systems, technology in this area will increasingly become a more sensible option. Right now, however, while the opportunity is there, the relatively early market that we’re currently in makes a degree of change and uncertainty inevitable. Against this background, when exploring investments in all-flash solutions, it’s as important to focus on the supplier and the deal they put on the table, as it is on the technology itself.

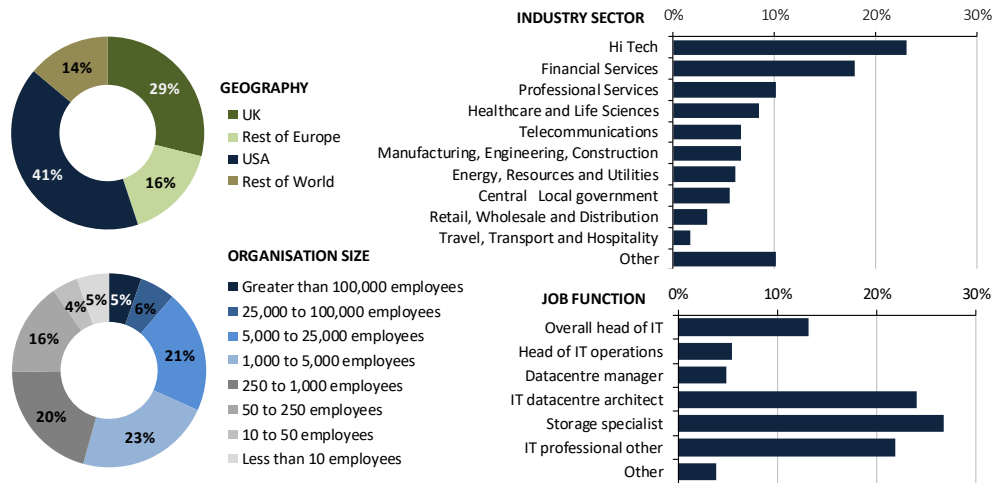
*It’s as important to focus on the supplier and the deal they put on the table, as it is on the technology itself.*

## About the Research

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### OVERVIEW OF SAMPLE

Figure 6  
Online survey conducted in collaboration with a mainstream news and analysis website



Please note that the online methodology used in this study is subject to self-selection bias, so we can expect the data to be skewed towards those with more knowledge and experience of storage technology, and all-flash arrays in particular.

## About Freeform Dynamics

Freeform Dynamics is an IT industry analyst firm. Through our research and insights, we aim to help busy IT and business professionals get up to speed on the latest technology developments, and make better-informed investment decisions.

For more information, and access to our library of free research, please visit [www.freeformdynamics.com](http://www.freeformdynamics.com).

## About Kaminario

Kaminario, the leading all-flash storage company, is redefining the future of modern data centers.

Its unique solution enables organizations to succeed in today's on-demand world and prepares them to seamlessly handle tomorrow's innovations. Only the Kaminario K2 all-flash array delivers the agility, scalability, performance and economics a data center requires to deal with today's cloud-first, dynamic world and provide real-time data access — anywhere, anytime. Hundreds of customers rely on Kaminario K2 to power their mission critical applications and safeguard their digital ecosystem.

Kaminario is headquartered in Needham, Massachusetts, with offices in Israel, London, and New York City.

For more information, please visit [www.kaminario.com](http://www.kaminario.com).

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