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Subject: Exclusive Subscriber Content: Do You Really Need an All-Flash Array?

Storage Switzerland Newsletter

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At Storage Switzerland we speak to IT professionals all the time who are looking to refresh their storage system. And most of the time, they are at least considering an all-flash array. For most of them the thought of a storage system built exclusively on flash still seems a little crazy. So, the question they ask is "do I really need an all-flash array?"

At the risk of being very unpopular with a few storage vendors, the answer to the all-flash question is probably "no", most data centers probably don't need an all-flash array. For most data centers, their data is not continuously active. We typically find that at least 90% of data hasn't been accessed in over a year, 80% hasn't been accessed in the last 90 days and less than 1% has been accessed in the last 24 hours. If those percentages hold true for you then that means that 99% of your data really shouldn't be on flash.

The problem is if you buy a new storage system that is 99% hard disk drives and only 1% flash, you are going to experience what we describe as a cache miss, and you are going to experience that frequently. A cache miss is a situation that occurs when the data being requested is not on the flash tier and the application has to wait for it to be retrieved from the hard disk tier. The challenge with a cache miss is that the performance delta between flash and hard disk drives is quite significant and users may notice a performance difference.

There is also the problem of flash wear-out. Flash has a very specific lifecycle. That lifecycle is based on the number of writes. The smaller the flash area in the storage system the more often that area is turned over as new data or suddenly active data is moved to it and old data is moved to hard disk drives. We call the cache turnover and if the turnover rate is too frequent the flash storage may wear out.

What's an IT pro to do? The answer is to size the flash in the storage system much bigger

than 1% but not necessarily size it to 100%, which would make it all-flash. If the flash area of the storage system is sized to 10% or even 20% of storage, then the chances of a cache miss drop considerably. Move the percentage to 30% and the chances of a cache miss are almost non-existent. Even at 30% flash, a hybrid storage system will be less expensive than an all-flash system. And remember, if the hybrid array never experiences a cache miss, then it is essentially a all-flash array with a built in archive tier (minus all the compliance and data preservation features).

StorageSwiss Recommends

Our general recommendation is if you can find an all-flash array that is under your budget and meets your capacity needs (we'll make the assumption that it will meet your performance demands) then buy it. If you can't because you don't have enough budget or can't get enough capacity within your budget, then look at a hybrid array with some percentage of flash.

Storage vendors offering both options, all-flash and hybrid systems, tell us that 2017 was the first time that the sales of all-flash systems outpaced hybrid systems. We believe this is more indicative of the influence of the market than a sudden spike in need. Most data centers should be able to purchase a hybrid array at the 30% flash threshold and keep their users very happy.

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We are an analyst firm that spends time in the trenches. We talk to users of storage all the time to provide insight into projects they are undertaking in the storage, virtualization and cloud services markets. Please feel free to contact us for a free one hour session on an area of interest where you feel our independent analysis might be of value.

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