

[Tech Field Day VFD3 - Pure Storage and the all-flash revolution](#)

As we close out our first day of presentations here at [Virtualization Field Day 3](#), we are at the office of Pure Storage in Mountain View. Pure Storage is a really neat company for a number of reasons. Their all-flash array is a product that is not an evolution of an existing product which was simply being augmented with a flash tier to accelerate data storage and retrieval. In fact, they launched among our community using great events like Tech Field Day to an avid audience of storage enthusiasts.

✘ **What is the strategy to all-flash?**

How about a simple strategy: Let's deliver an all-flash storage array for a lower price than traditional spinning disk? Wow! That's quite an aggressive tagline, but what Pure Storage does is to work at delivering a performance and consolidation platform that lowers the per-VM cost to bring its customers 0.3-0.7ms data access with 5-10x consolidation through inline de-duplication and compression.

So how do they do this? Very good question, and it is comprised of a lot of features at the hardware and software layer. I couldn't do it justice in a quick post, so please forgive me that I won't dive into the deep technical goodies here, but I wanted to look at some of the other aspects that make Pure Storage interesting in what they do.

The Forever Flash promise

✘ This is really cool! When you bring a Pure Storage product into your data center you will size it as needed and the typical experience is to acquire storage with a long lease cycle because of the high cost to acquire enterprise scale storage.

The challenge is that the same large scale storage really needs care and feeding, and with the aggressive moves happening in storage engineering, it seems counter-productive to sign on for a long lease on large storage.

With the Forever Flash program you can actually upgrade your controllers every 3 years to align with the updates that have been engineered by Pure Storage, and to top it off the rest of your storage in the chassis then has its support cycle re-aligned with the upgraded hardware. Effectively it is as if you just put the product on the floor and started your support contract again.

Incremental upgrades also give the same re-up for your support, so you can continue to grow your Pure Storage environment and stay up to date on features, hardware, software and support, all at the same time.

For info on the Forever Flash program head on over here: [Forever Flash with Pure Storage](#)

Is it really lower cost?

I have to be honest that it sometimes seems like a little sleight of hand when I see all-flash options that can be deployed for a lower per-VM or per-GB than other traditional storage arrays.



Image courtesy of Pure Storage - <http://www.purestorage.com/resources/roi.html>

Looking at the diagram we can see how the overall cost is accounted for with storage and how Pure Storage is able to put storage on the floor at a customer for a per-GB cost that comes in much lower than expected because of compression, power/cooling reduction, and minimal management overhead for the administration.

That being said, there is a real cost to bringing all-flash solutions into the data center. In my opinion, this may not be appropriate for many SMB organizations with moderate workloads. There is a definite target market, and a lot of factors come into play to define where the sweet spot is for moving to an all-flash solution.

The basic deployment is a 2 controller implementation with a half-populated shelf, so there is an entry point that is attainable for many organizations.

The bits matter

Literally. The way that one storage stands apart from another is the way the bits are read, written, replicated, de-duplicated and generally managed. Hardware becomes a genuine question when dealing with flash storage because of the alternatives that are available (MLC, eMLC, SLC) and the Pure Storage goal is to find the balance with performance and reliability with managing the price point to keep their solution as a cost-effective offering.

Since their first array hit production, they have replaced 5 drives altogether and one was for a firmware issue. That's a pretty good track record. We discussed a lot of deep-dive details on hardware, software, and workloads which was eye opening and encouraging.

Pure Storage also built their solution with a 512 byte block default rather than the traditional 4K block size. This has some really slick advantages in how the performance can be increased at many points. In fact, it means that block alignment is no longer an issue because the block sizing eliminates the performance issues that come into play with 4K blocks and certain application/VM features.

I'll be sure to post the videos so that you can see some of the targeted talks on content such as the thick versus thin, eager zero versus lazy zero on SSD. Very interesting info on tactically handling performance in conjunction with your hypervisor features.

My thoughts

I really like the idea of what Pure Storage is doing as a company, and as product creators on both the software and hardware side. It would be great to be able to have an all-flash solution in my data center, and that time may come as my workloads are more able to take advantage of the predictable performance and speed of all-flash arrays.

I see OpenStack in there ☐

There is a current Cinder driver for the Folsom release with an upcoming update to support the Havana build. With an increased customer field growing in the OpenStack space, the team has added that they will be increasing some focus on the platform to align with requirements from the

consumers.

Is Pure Storage right for you?

This one will be something that every organization has to evaluate, but I can say that the people and the product are great here at Pure Storage and it is absolutely worth putting on the evaluation plan to see how it may fit into your data center.

You can be the judge with your particular situation, but make sure to reach out to the team at Pure Storage on Twitter ([@PureStorage](https://twitter.com/PureStorage)) and at their website <http://www.purestorage.com> for more details.

DISCLOSURE: Travel and expenses for Tech Field Day - Virtualization Field Day 3 were provided by the Tech Field Day organization. No compensation was received for attending the event. All content provided in my posts is of my own opinion based on independent research and information gathered during the sessions.