



Why it's time to forget about flash

by ROBIN HARRIS on THURSDAY, 30 JULY, 2015

Flash has revolutionized storage, but the industry has lost sight of the customer problem: optimizing storage for availability, performance, footprint, power and cost. Industry analysts aren't helping.

Let's forget about flash and remember why we're here

Gartner recently defined a Solid State Array segment. That was questioned by Chris Mellor at the Register, and he got a spirited, if unconvincing, defense by Gartner's Joe Unsworth. The basic issue is simple: are markets defined by technology or application?

First principles

Markets are the aggregate of buyer's decisions looking at vendor offers. Since IT buyers are a herd animal — one of Geoffrey Moore's key points in *Crossing the Chasm* — knowing what others are choosing is helpful for risk-averse buyers.

That's where well-defined market segmentation and analysis can help buyers. That's also where technology-defined segments — like Gartner's SSA segment or IDC's munging of object and file storage — fail buyers.

As I said then:

Done well market segmentation helps to reveal the underlying dynamics of marketplace activity.

As some commenters then noted, it makes sense to segment by customer need, not technology. But when major vendors want bragging rights, Gartner and IDC are happy to oblige with a flattering but useless technology segmentation.

What defines a segment?

Technologies don't define market segments. Take Ethernet.

Ethernet started as CSMA-CD (Carrier Sense, Multiple-Access/Collision Detection) and has evolved through different technologies as speeds have increased. Because the application — local area networking — didn't change, the fact that technology was radically altered made no difference in the market segment.

Application trumps technology

Instead of technology, most product segments are defined by application use: what does the product do for the buyer? In the case of enterprise arrays, the defining characteristics are availability, performance and management.

All-flash arrays (AFA): segment or technology? Companies have hyped SSD-based AFAs as an I/O panacea.

But architecture and implementation still matter. An engineer is someone who do for a nickel what any fool can do for a dollar. Smart choices and quality implementation trump technological determinism every day.

The storage pyramid is an economic fact, not a technical choice. If we had an extremely fast, non-volatile and cheap technology, the storage pyramid would collapse into a single layer.

Our toolkit

- DRAM: fast, with byte addressability and unlimited life, but expensive and power hungry.
- Flash: fast reads, slow writes, large block addressing, limited life, but cheaper than DRAM and more power efficient.
- Disk: limited IOPS, good bandwidth for streaming, small block addressability, unlimited writes, non-volatility, and low cost.

The StorageMojo take

Since the storage pyramid is economic, engineering decisions behind storage architectures are economic too. Buyers should look for the array that offers the highest performance and availability at the best total cost, rather than assuming that any particular technology will offer the “best” solution.

As technologists we are primed to reach for the “solution” be it a pill, a policy or a product. But modern data centers are a bundle of problems and constraints. Flash performance, while helpful, is not a magic bullet.

What we can do is choose the most flexible infrastructure that fits our workloads, data center and budget. Workloads still exhibit locality of reference, both temporally and spatially, so most storage systems — even “all-flash” arrays — use DRAM for caching hot data.

Redundancy — in data and hardware — is the foundation of availability. High density and low power consumption help overstuffed data centers breathe easier. Scalability is important too, since whatever tomorrow brings, there will be a lot of it.

And, finally, affordability, the key to any business use of technology. And when it comes to storage, hard drives are still the lowest cost option for active data.

The bottom line is that storage buyers have more choices than ever thanks to new technologies. But don't buy hype: buy the combination of features and capabilities that is the best fit for your needs. Infinidat believes they've come up with a high-performance array whose modern architecture and triple redundancy puts them well above traditional legacy arrays — and I'm inclined to agree.

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