

# Once Written, Twice Shy

IT teams once burned by flash storage are giving the hardware another look as new approaches arrive.

BY CHRISTINE CIGNOLI

**FLASH STORAGE SEEMED** poised to grab the spotlight five or so years ago. But slow write speeds, coupled with higher costs compared to hard drive arrays, scared many enterprises away from using flash or solid-state storage. (The terms are often used interchangeably, though they're not exactly the same thing.)

Now, however, many organizations are beginning to take a fresh look. What's changed? Well, costs continue to drop. And vendors are experimenting with flash in various incarnations, be it in all-flash arrays, hybrid flash/hard-drive arrays, on PCIe cards, as memory cache or even as software. Some are betting that it has a definite place in the data center, too: VMware Inc.'s upcoming VSAN, a software-defined storage tier that pools direct-attached

storage resources, will require at least one solid-state drive (SSD) per host, and the company has added its flash read cache (vFRC) capabilities to vSphere 5.5.

Despite being a pricey option, flash is so much faster than solid-state drives that enterprises are willing to consider it for removing storage bottlenecks and improving IOPS—especially in an age of VDI and applications that require high throughput.

## WRITE WITH KID GLOVES

Flash hasn't been without its operational shortcomings, however. "Slow write speeds is what comes to mind for people," with regard to flash storage, said David Reynolds, systems manager at Rhode Island Blood Center, who's interested in flash but wary of its high cost.

Solid-state storage media can handle additional read operations more quickly than it can write operations, and allows a finite number of possible writes. That "write cliff" of solid state often led to degraded performance when the technology first appeared.

"The write cliff was an issue for two reasons," said Steve Turgeon, systems engineer at Violin Memory Inc. "You couldn't process I/O fast enough or couldn't manage garbage collection. Someone's got to clean the SSD arrays up." Violin's arrays organize flash dies into units called memory modules that do the cleanup, he added.

Home

Editor's Letter

Cloud First,  
On-Prem Later

Survey Says

Second Look: Once  
Written, Twice Shy

IT in the Time of  
Consumerization

Overheard:  
IBM Pulse 2014

DaaS vs. VDI:  
Pick Your Poison

The Next Big Thing:  
Database Performance,  
the IT Way

End-User Advocate:  
Windows, Post VDI

In the Mix:  
Beware Unknown  
Unknowns

Home

---

Editor's Letter

---

Cloud First,  
On-Prem Later

---

Survey Says

---

Second Look: Once  
Written, Twice Shy

---

IT in the Time of  
Consumerization

---

Overheard:  
IBM Pulse 2014

---

DaaS vs. VDI:  
Pick Your Poison

---

The Next Big Thing:  
Database Performance,  
the IT Way

---

End-User Advocate:  
Windows, Post VDI

---

In the Mix:  
Beware Unknown  
Unknowns

---

Write speed hasn't been an issue for the National Council on Crime and Delinquency, which uses a Violin flash array for its Oracle processing databases. "I don't think it's talked about anymore," said Joel Ehrlich, director of information systems at the NCCD. "That was 10 years ago."

The technology and its write speeds have improved simply due to better engineering of the media over the years, he noted. "I had heard that solid state would never move beyond memory sticks," Ehrlich said, "but obviously engineers thought differently."

Still, in many cases, flash products today are only working as read cache. "There's a lot of danger involved in write caching," said Tim Antonowicz, senior architect at Mosaic Technology Corp., which resells flash software from PernixData. The PernixData FVP software creates a flash layer running on the vMotion network, and caches writes that are then streamed back to the storage area network.

### WHEREFORE FLASH?

"The magic ingredient for all I/O acceleration is write cache," said Pete Koehler, IT manager and virtualization architect for Tecplot Inc., which develops software focusing on data visualization.

Adopting flash was more appealing than adding more spindles for Tecplot's high-write workload. Koehler had done the necessary research and testing to know that they'd likely need to buy another storage array to speed up code compiling—but cost-wise, it wasn't an optimal prospect. Instead, after a pre-GA test of Pernix, he chose to buy some SSDs and implement the flash virtualization

platform software, which lists at \$7,500 per host, or less in the SMB Bundle that supports up to four hosts for \$9,999, said Mosaic's Antonowicz.

"Virtualization works so well that you have bigger and bigger workloads and storage is overtaxed," Koehler said. Flash lets IT design infrastructure in new and different ways, he said, and also "showcases that storage is the chokepoint of most infrastructures."

The NCCD, which supports child and welfare state agencies, moved to solid state after severe memory problems on its Oracle databases started slowing down nightly analytical runs and affecting the service levels it promises to state agencies. "Agencies used to have a dearth of data," Ehrlich said, "but now we're swimming in it. We were looking at a real challenge in getting information out in a timely manner."

Spending about \$200,000 on an all-flash array turned out to be the best cost-to-performance option for Ehrlich and his team. They also considered adding a storage node or changing databases. For the rest of NCCD's infrastructure, a traditional SAN will continue to do just fine, he said.

Flash's niche is in these case-specific uses for now. It remains to be seen how the market will shake out, with more than a dozen vendors on the scene, Koehler said. "How do we approach incorporating flash technology? [Vendors have] defined the what," he said, "but it's making the decision on the how that's behind the secret sauce." ■

**CHRISTINE CIGNOLI** is managing editor for Modern Infrastructure. Contact her at [ccignoli@techtarg.com](mailto:ccignoli@techtarg.com).