

Highlights from a recent webcast on Flash Storage

TEGILE: THE ROLE OF FLASH STORAGE IN VIRTUALIZED ENVIRONMENTS

Tegile's all flash and hybrid storage arrays are the right fit for optimizing the performance and efficiencies of the mixed workloads that characterize today's increasingly virtualized data centers.

Virtualization is significantly impacting enterprise storage architectures. Approximately 75% of images today are deployed as virtual machines, according to Gartner. So, the practice of pairing discrete application workloads with their own disk architecture silos to ensure IOPS performance requirements are met has largely given way to pooling resources for virtual mixed workload environments. End result: Disk storage performance can degrade thanks to the I/O blender effect, leading to increased application latencies. Virtualization also has created its own data silo issues, with application workloads categorized according to their requirements for performance or capacity.

High-performance flash-based solid state drives are the game-changers in this environment. SSDs with flash don't have to struggle when I/O processes become random under heavy virtual machine workloads, as do spinning disk architectures with lots of moving parts. They can reliably provide premium performance for the virtual applications that need it most, such as Tier 1 mission-critical workloads.

When it comes to flash architectures, though, it's key to realize that not every SSD flash array is equal. Many vendors are focused only on meeting the demands of one virtual data tier, for instance.

Tegile is an exception to these cases, aggregating the most complete suite of critical enterprise capabilities in its all flash and hybrid storage arrays.

Flash Options Considered

Ideally, IT administrators will serve their companies best if they choose a flash storage approach based on a strong understanding of their particular virtual application workloads, performance and capacity requirements and service level agreements. But they should be careful not to be too far drawn into limited use case options that lead them to purchasing solutions that service only niche problems.

OLTP database administrators, for example, may think it appropriate to use server-side flash as a disk replacement for servicing these demanding applications, enabling critical information to reside as close to them as possible for high performance. But on the downside, in the absence of a shared backend storage approach, there's no way to pool SSD flash resources in one server with those in another, in order to efficiently replicate data in support of the high availability one would expect to have in place for such a Tier 1 app.

A Tegile flash array could be a better fit, accommodating the database performance requirements while

eliminating the risk of downtime and data loss. With Tegile flash arrays, for example, enterprises gain the unique ability to build high-performance flash and hard disk drive-based storage pools and replicate between them, to support uptime as well as cost-savings for disaster recovery scenarios.

All-Flash and Hybrid Flash Arrays

Tegile's all-flash arrays and hybrid arrays were designed from the ground up with flash in mind so that they can make optimal use of the technology, and they were built with native support for block and file protocols to aid workload consolidation. These are among the many capabilities that make them the choice for addressing a broad set of virtual mixed workloads.

High-performance all-flash arrays, for example, are excellent fits for a range of Tier 1 data center workloads. Enterprise-grade multi-level cell (eMLC) memory for extreme performance and strong data reduction features to stretch capacity are key elements in Tegile all-flash arrays, as well.

In the hyper-consolidated data center, the idea of using multiple purpose-built storage arrays for different application tiers' service level requirements is replaced by the concept of consolidating applications in a single platform to achieve the best balance of

performance and capacity in a flexible storage architecture. In these settings, Tegile's hybrid arrays are especially appropriate, as they can leverage flash for performance and hard drives for capacity. (Since Tegile's all flash arrays and hybrid arrays use the same architecture, all flash arrays can add hard disk capacity down the road, as well, should that become necessary.)

Tier 2 workloads, like a virtual data warehouse that needs high performance access to certain blocks of data but isn't necessarily a mission-critical system, benefit from SSD flash, while HDDs on the back end can store infrequently accessed information like backup copies. A Tegile hybrid array delivers the best of both worlds from a cost per IOPS and cost per gigabyte standpoint.

Tegile Innovations

Tegile's hybrid arrays are a giant step beyond the band-aid option offered by some legacy storage vendors, which simply retrofit hard disk arrays with some flash storage. Legacy solutions' OS and file systems were written before SSD devices came on the scene and can't fully take advantage of them.

By contrast, Tegile offers real-time caching in its next-generation flash storage architecture, a boon in high-intensity virtual environments in that there's no need to wait for infrequently accessed blocks of data that become in demand to move up to the high-performance flash tier.

Leveraging this approach depends on application SLA requirements, of course. And, depending again on application SLA, it may make sense for performance reasons for companies to exercise

Tegile's patented metadata acceleration capabilities, which automatically separate metadata from the rest of the data and places that metadata on the low latency media--SSD and DRAM.

In any case, budgets can be opened up to buying more flash to accommodate performance requirements when array vendors make strong data reduction capabilities a part of the picture to drive significant savings in storage use and costs, as Tegile does with its compression and deduplication capabilities for SSDs and HDDs. Its inline compression and deduplication can shrink an enterprise storage footprint up to 90%.

Reaching Out to Virtualization Platforms

It's increasingly the case that virtualization managers in IT organizations also function as storage administrators, and they aren't looking to get bogged down in the minutiae of establishing best practices around storage. Rather, they want to work with vendors who can help them with their jobs by automating the provisioning for different application workloads. Tegile, for example, provides wizards to expedite storage provisioning, accounting for assigning block and LUN sizes, compression types, dedupe status, and more.

In most cases, virtualization managers also would prefer that their flash array vendors integrate their software with their virtualization environments, such as VMware vCenter and Microsoft System Center VM Manager. Tegile provides that capability, as well as makes it possible for administrators to script and automate repetitive storage tasks via RESTful APIs.

Flash Array ROI

Being able to gain the advantage of running key business applications faster, especially as density increases exponentially in a virtualized datacenter, without a huge increase in spending, thanks to growing price parity between SSD flash and disk capacity, is a message with built-in appeal for most virtualization managers. Tegile furthers that appeal not just with features like inline compression and deduplication for reducing capacity demands and their associated costs, but also with flat support and maintenance over the lifetime of the array.

One customer, software developer and application lifecycle management tools vendor CollabNet, turned to Tegile's flash architecture for its development platform-as-a-service solution. That service today runs in 100% virtual mode for all customer requirements, and CollabNet has seen its storage footprint reduced by 50% and its operating expenses cut in half – even as it has seen a five times improvement in performance.

The road ahead for flash-based solutions lies with increasing both performance and capacity. The opportunity that exists for every enterprise is to improve its own performance, response times, efficiencies and costs in its ever-more virtualized environment with Tegile's all flash and hybrid storage arrays.

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