NetApp®
Go further, faster

Systems

NetApp Flash Cache (PAM II)

Optimize the performance of your storage system without adding disk drives. Grow while conserving power, cooling, and space.

THE CHALLENGE

Provide the storage performance needed to meet application SLAs while cutting costs
The cost of delivering IT services is under more pressure than ever. Hard constraints on budget and staff collide with expectations for more and better.

Networked storage systems are a case in point. Providing enough capacity is easy. Keeping pace with performance demands can be difficult because, while they are getting bigger, disk drives aren't getting any faster.

As a result, large numbers of "short stroked" disk drives are commonly used to deliver the I/O throughput demanded by many workloads. This approach wastes storage capacity, rack space, and electricity.

Solid state disks (SSDs) have the potential to solve this problem. But for most applications it's hard to justify the cost and complexity of SSDs.

Fortunately, there is more than one way to use solid state technology for storage. There's a way that optimizes performance, reduces costs, and doesn't increase complexity.

THE SOLUTION

The NetApp Flash Cache (PAM II) modules give you a new way to optimize performance
We created these intelligent read caches so you can reduce latency and improve I/O throughput without adding more high-performance disk drives. Use Flash Cache modules to improve performance for workloads that are random read intensive such as file services, messaging, OLTP databases, and server/desktop virtualization.

You can also use Flash Cache in combination with SATA drives for many workloads to increase storage capacity while maintaining a high level of performance.

You can configure up to 8TB of read cache in a storage system by using Flash Cache cards. The ability to cache large quantities of active data makes Flash Cache cards effective across a broad set of workloads.

AUTOMATICALLY PUT ACTIVE DATA WHERE ACCESS WILL BE FAST

Our Flash Cache (PAM II) modules put your active data blocks in the storage controller, speeding access by a factor of 10 or better compared to disk.

Flash Cache modules give you performance that is comparable to that of SSDs without creating another storage tier. You don't need to move data from tier to tier for the best performance. It's all automatic because every volume and LUN behind the storage controller is subject to caching.

You can tune Flash Cache to match your specific workload by using software settings that let you choose from three modes of operation.

You can also give caching priority to your most important volumes and LUNs when the load is heaviest by using NetApp FlexShare® quality of service software in combination with Flash Cache modules.

REDUCE COSTS FOR STORAGE, POWER, AND RACK SPACE

Using an industry standard benchmark[1], we demonstrated that Flash Cache can eliminate up to 75% of the disk drives in a storage system with no change to I/O throughput and with better response times.

We also switched from 15k RPM Fibre Channel drives to fewer, larger SATA drives with Flash Cache in these tests. The combination of SATA drives with Flash Cache cards increased storage capacity by 50% while providing comparable performance.

By eliminating disk drives not needed for storage capacity, Flash Cache modules can reduce the purchase price of a storage system and can provide ongoing savings by consuming less power, cooling, and rack space.

PREDICT YOUR RESULTS

You can use a software feature of the NetApp Data ONTAP® operating system to determine whether the performance of your storage system will improve with the addition of one or more caching modules. Predictive Cache Statistics generate data that indicates whether caching modules will help and how much additional cache is optimal for your workload.

ABOUT NETAPP

NetApp creates innovative storage and data management solutions that deliver outstanding cost efficiency and accelerate performance breakthroughs. Discover our passion for helping companies around the world go further, faster at *www.netapp.com*.

Figure 1) Latency reduction.
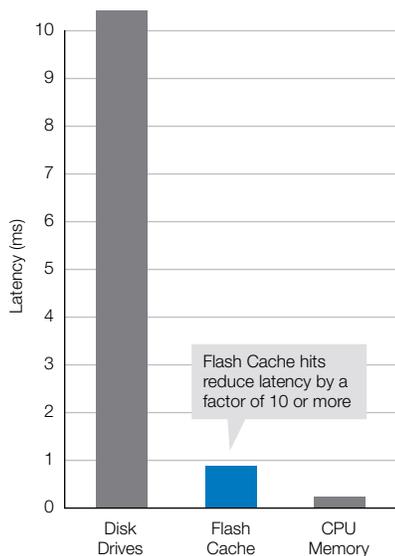
Latency is typically 10ms or higher when accessing data from disk drives. Flash Cache modules reduce latency by a factor of 10 or more compared to disk drives when there is a cache hit.

Table 1) Supported systems and configurations.

	MAXIMUM MODULES, ADDED READ CACHE PER HA SYSTEM	
	Flash Cache 256GB	Flash Cache 512GB
FAS6280, V6280, SA620	—	16 modules 8TB
FAS6240, V6240	—	12 modules 6TB
FAS6070, V6070, FAS6080, V6080, SA600	—	8 modules 4TB
FAS6210, V6210	—	6 modules 3TB
FAS3170, V3170, FAS3270, V3270, FAS6040, V6040, SA320	—	4 modules 2TB
FAS3240, V3240	4 modules[2] 1TB	2 modules[2] 1TB
FAS3070, V3070, FAS3160, V3160	4 modules 1TB	—
FAS3140, V3140, FAS3210, V3210	2 modules 512GB	—

Note: These specifications are for a dual-controller, high availability (HA) system. Divide numbers by 2 to get maximums for a single-controller configuration.

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