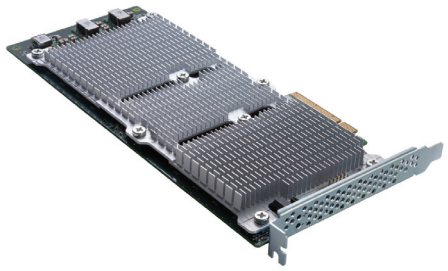


Datasheet

NetApp Flash Cache 2

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

KEY BENEFITS

Optimize Performance
The NetApp® Flash Cache™ 2 modules (with PCIe Gen2 support) improve performance for workloads that are random-read intensive without adding more high-performance disk drives.

Reduce Latency, Improve Throughput
Accelerate access to your data with these intelligent read caches that reduce latency by up to a factor of 10 compared with reading from hard disk drives. Lower latency may also translate into more throughput for random I/O workloads.

Save Storage, Power, and Space
Use our Flash Cache 2 modules instead of extra disk drives to provide I/O throughput. Our solid-state Flash Cache modules use no additional rack space and consume 95% less power than a shelf of 15K RPM disk drives.

The Challenge

Provide the storage performance needed to meet application SLOs 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. But 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.

Flash Cache 2 is a key component of the NetApp Virtual Storage Tier (VST), which allows you to optimize performance and reduce costs without increasing complexity.

The Solution

NetApp Flash Cache 2 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 2 modules to improve performance for workloads that are random-read intensive, such as file services, messaging, OLTP databases, and server or desktop virtualization.

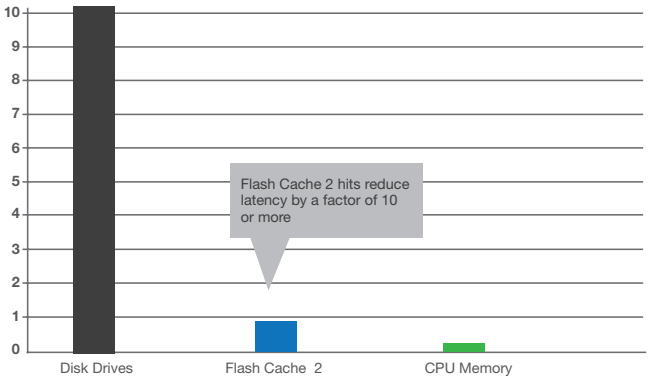
You can also use Flash Cache 2 in combination with capacity-optimized disk drives for many workloads to increase storage capacity without compromising performance.

You can configure up to 24TB of read cache in a storage system by using Flash Cache 2 modules. The capability to cache large quantities of active data makes Flash Cache 2 modules effective across a broad set of workloads.

Automatically Put Active Data Where Access Will Be Fast

Our Flash Cache 2 modules put your active data blocks in the storage controller, speeding access by a factor of 10 or more compared with that of disk.

Flash Cache 2 modules give you the performance of flash technology without creating an additional physical storage tier. Because Flash Cache 2 is based on VST, hot data blocks are promoted to flash automatically without the need for complex tiering policies.



Latency is typically 10ms or higher when accessing data from disk drives. Flash Cache 2 modules reduce latency by a factor of 10 or more compared to that of disk drives when there is a cache hit.

Figure 1) Latency reduction.

You can tune Flash Cache 2 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 quality-of-service software in combination with Flash Cache 2 modules.

Reduce Costs for Storage, Power, and Rack Space

By using an industry-standard benchmark,* we demonstrated that Flash Cache technology 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 high-performance drives to fewer capacity-optimized drives to illustrate a dramatic storage efficiency improvement. The combination of capacity-optimized drives with Flash Cache 2 modules can increase storage capacity by 50% while providing comparable performance.

By eliminating disk drives not needed for storage capacity, Flash Cache 2 modules can reduce the purchase price of a storage system and can provide ongoing savings by consuming less power, cooling, and rack space.

MAXIMUM MODULES, ADDED READ CACHE PER HA SYSTEM [1, 2]

	FLASH CACHE 2 512GB	FLASH CACHE 2 1TB	FLASH CACHE 2 2TB
FAS8080 EX	24 Modules, 12TB	24 Modules, 24TB	12 Modules, 24TB
FAS8060	8 Modules, 4TB	8 Modules, 8TB	4 Modules, 8TB
FAS8040	8 Modules, 4TB	4 Modules, 4TB	2 Modules, 4TB
FAS8020	4 Modules , 2TB	2 Modules, 2TB	
FAS6290, V6290	24 Modules, 12TB	16 Modules, 16TB	8 Modules, 16TB
FAS6280, V6280	24 Modules, 12TB	16 Modules, 16TB	8 Modules, 16TB
FAS6250, V6250	16 Modules, 8TB	8 Modules, 8TB	4 Modules, 8TB
FAS6240, V6240	12 Modules, 6TB	6 Modules, 6TB	2 Modules, 4TB
FAS6220, V6220	8 Modules, 4TB	6 Modules, 6TB	2 Modules, 4TB
FAS6210, V6210	6 Modules, 3TB	2 Modules, 2TB	
FAS3270, V3270	4 Modules, 2TB	2 Modules, 2TB	
FAS3250, V3250	4 Modules, 2TB	2 Modules, 2TB	
FAS3240, V3240	2 Modules, 1TB		
FAS3220, V3220	2 Modules, 1TB		

1 These specifications are for a dual-controller, high-availability (HA) system. Divide the numbers by 2 to get the maximums for a single-controller configuration.
2 Flash Cache 2 modules of different sizes can be mixed in the same controller as long as both sizes are supported with that controller. The maximums must not be exceeded for the number of modules and quantity of added read cache.

Table 1) Supported systems and configurations.

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.

* SPECsfs2008_nfs.v3. For more information, visit http://spec.org/sfs2008/results/sfs2008nfs.html.

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Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value our teamwork, expertise and passion for helping them succeed now and into the future.

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