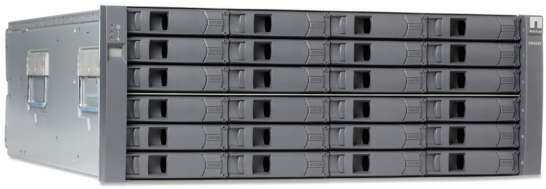

Datasheet

NetApp Flash Pool

Dramatically reduce acquisition, deployment, and operating costs of storage while increasing performance

KEY BENEFITS

Optimize Cost and Performance
Combine solid state drives (SSDs) with hard drives to deliver optimal performance at reduced cost.

Reduce Latency
Hosts hot data on SSDs leading to reduction of overall latency.

Save on Power, Space, and Cooling
Dense deployments using fewer drives or capacity-optimized drives result in operational savings.

Improve Performance and Availability
SSD cache with NetApp® Flash Pool stays hot across planned and unplanned failovers.

The Challenge

IT departments across all industries face two issues: The need for IT to respond to the ever-increasing demand for more aggressive service-level agreements (SLAs) and at the same time reduce costs.

Do More with Less

Reduce costs: Acquisition cost is only a part of the data center challenge. Management, power, and cooling costs, coupled with expensive data center space, all contribute to the total cost of ownership—a constant challenge that IT departments need to deal with.

Improve SLAs: In today's challenging environment, businesses constantly strive to increase their competitiveness. The high-value applications that drive that competitiveness also demand high-performance data access.

There is no doubt that the performance and timely responsiveness of the data center are increasingly critical to the success of an enterprise.

The Solution

Data is not uniformly hot; enterprise workloads have a small subset of the overall dataset that accounts for most of the performance needs of the workload. This subset is called the "working set," "active data," or "hot data."

Data Should be Fast when it's Hot and Lowest-Cost when it's Cold

Flash Pool is a NetApp Data ONTAP® feature (introduced in version 8.1.1) that enables mixing regular HDDs with SSDs at an aggregate level. Flash Pool is a base capability and does not require any additional software license. Flash Pool provides intelligent read and write caching capability to identify and host the subset of the data that is hot on the SSDs. This allows the vast majority of the workload capacity to be hosted on the least expensive media, providing an overall reduction in cost while improving the overall performance (higher throughput and lower response times).

SSD-Like Performance at HDD-Like Prices

The key to achieving SSD-like performance at HDD-like prices is to make sure that the Flash media on the SSDs is used very efficiently. Flash Pool works at a 4KB granularity and is able to pick out the individual hot blocks in real time without dragging cold data along with it.

SHELF	DRIVE CONFIGURATIONS
DS4243	6 x 100G SSDs
DS4243[1,2]	12 x 100G SSDs
DS4243[1]	24 x 100G SSDs
DS4246[1]	6 x 100G SSD + 18 x 1TB SATA
DS4246[1]	6 x 100G SSD + 18 x 3TB SATA

Table 1) Shelf configurations for SSDs.

These shelf configurations include SSDs. Flash Pool can be created with SSDs coming from any of these shelves, mixed with HDDs coming from the same and/or a different shelf (which may not be listed here).

1. These shelf configurations will be available as internal configurations on FAS2240-4 systems.
2. This shelf configuration will be available as an internal shelf on FAS2220 systems.

PLATFORM	MAX CACHE SIZE
FAS6280, FAS6240, V6280, V6240	12TB
FAS6210, FAS6080, FAS6070, V6210, V6080, V6070	4TB
FAS6040, FAS6030, FAS3270, FAS3170, V6040, V6030, V3270, V3170	2TB
FAS3160, FAS3240, V3160, V3240	1TB
FAS2240-4, FAS2240-2, FAS2220	300GB

Table 2) Supported systems and configurations.

- **Limits based on Data ONTAP 8.1.1.**
- **Parity and spare drives do not count against the maximum size limit.**
- **These specifications are for a dual-controller, high-availability (HA) system. Divide the numbers by 2 to get maximums for a single controller configuration, except for the FAS2xxx platforms, where the limit can be split arbitrarily between the two nodes in the HA pair.**
- **The maximum cache size can be applied against a single aggregate or split between multiple aggregates. If the node has Flash Cache, the maximum cache size for Flash Pool is reduced by an equal amount.**

This leverages the superior performance of Flash media for the most frequently accessed blocks, thereby fulfilling performance requirements, while using the lower-cost capacity that HDDs offer for capacity requirements. Flash Pool uses the right media for the right use at the right time.

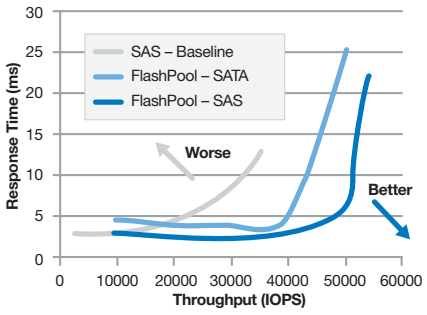

Figure 1) Flash Pool performance benefits—OLTP workload.

Caching, Not Data Migration

Because Flash Pool uses a lightweight caching approach that works in real time and in a data driven fashion, it remains always on. Users are not required to set up complicated policies to define the trigger for data movement between the tiers.

Dynamic changes in the workload are common in shared storage infrastructures hosting a wide variety of applications on the same physical infrastructure. Flash Pool reacts to dynamic changes in the workload in real time, rather than waiting for the next data movement window to arrive, as is the case with some automated tiering solutions.

Simple, Integrated, and Highly Available

Flash Pool integrates well with and leverages the superior data management, data protection, and storage efficiency capabilities of Data ONTAP. No changes to the existing workflows and configurations are required to enable Flash Pool. Flash Pool is "dedupe aware"—single physical block in the cache serves accesses to all logical copies of it—leading to a "cache amplification" effect.

Existing aggregates can be converted into a Flash Pool without requiring any data copy, down time, or disruptions for data access. In the unlikely event of a failover, the cache state is preserved and remains available in takeover mode as well as after giveback.

About NetApp

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