

StellarFlash® Hybrid

ProphetStor powered StellarFlash Hybrid arrays are based on certified Intel-based commodity storage server platforms, delivering a powerful, flexible and unparalleled user experience. ProphetStor's "Smart Cache" technology can dynamically or statically allocate available hardware resources such as flash and hard drives to satisfy the changing needs of business-critical applications.

A Compelling Alternative to All-Flash Array

If IT Budget and cost were not an issue, then enterprises would most likely choose to deploy an all-solid-state storage infrastructure for all storage requirements. Whilst this might be over-kill for many requirements it would be one way (albeit an expensive way) to ensure that storage I/O capacity is unlikely to be saturated, ever. The reality is that most corporations do not have the luxury of unlimited IT budgets. As a result, most require that some kind of storage-equivalent of statistical multiplexing is needed. After all, flash is still multiple times more expensive than spinning disks.

Every StellarFlash Hybrid array ships with ProphetStor's Federator SDS, an enterprise grade storage software that allows users to compose hybrid storage pools to better serve the different demands of critical applications on the fly. Databases and virtual machines can be allocated more SSD at times they are driving intensive reads and writes on storage. In addition Federator SDS provides a unified graphical user interface to manage and monitor the entire storage environment from a single pane of glass.

Hybrid Storage Composition

Every StellarFlash Hybrid array can fully leverage the installed server-side solid state drives to dynamically change the storage I/O throughput for an application. Take VDI as an example. The starting assumption with a VD installation is that the demands of the application will require all flash. The reality is that the IOPS demands of VDI differs dependent on time. As an example in the morning when multiple users are "logging in and booting up" the application may need all flash performance, this may not occur at lunch time when usage may be lower. With StellarFlash Hybrid the VDI application sees the same disk volume which is presented by the Federator array, but underneath, the storage is accelerated by entirely different amounts of SSD cache. During the peak hours, a much larger portion of SSD is given to the VDI volume to handle the high I/O demands. When VDI traffic decreases, the extra SSD capacity can be given to another application.

StellarFlash Hybrid array not only can dynamically adjust the SSD/HDD ratio in a given provisioned volume, but also optimize the caching mechanism in the SSD. For example, "hot" data can be selectively kept on SSD to improve random reads speed, while random writes are always cached and serialized before they are written to the HDD. These functions are critical to the general performance of a storage array, they can and should be incorporated into Hybrid Array, Federator SDS ensures this is so.

Data Protection

Data protection is built into every StellarFlash Hybrid array, eliminating the inefficiency associated with managing primary and backup storage tiers. StellarFlash Hybrid arrays use advanced data protection features including frequent point-in-time snapshots, replication, active-active controller failover, on-wire encryption and RAID.

Efficiency and Utilization

Not only do applications require different storage bandwidth at different time frames, but their priority levels vary as well. ProphetStor's patent pending Traffic Modeling Module (TMM) and Elastic Resources Control (ERC) leverage advanced big data analytics and machine learning technologies to analyze all I/O usage patterns and preemptively adjust available storage resources to optimize the overall system performance according to the administrator-defined policies. With TMM/ERC turned on, StellarFlash Hybrid Arrays can avoid over-provision storage resources for workloads, and are 45~51% efficient than average hybrid storage servers in the market today.

Smart Cache

Smart Cache is ProphetStor's patent-pending technology. Instead of a hefty pool of cache, Smart Cache provides virtual disk and volumes with different cache policies and resources on demand. By leveraging TMM/ERC, Smart Cache can predict the pattern of read and write for each workload, and dynamically assign the best cache policy, including size and pattern, to those virtual disks and volumes attached to the workload. With the cache policy, StellarFlash Hybrid can meet the variable requirements of read and write in real environment. For example, if StellarFlash Hybrid predicts the pattern of 100% random read will be used by the workload, Smart Cache will automatically drop those data that were recently read to increase the hit rate on cache.



PROPHETSTOR

Hybrid Storage Composition

- 5x faster than HDD
- SSD as Cache on demand

Hybrid



Features

- iSCSI & Fibre Channel
- Multi-path support
- RDMA
- IOPS guarantee
- High availability
- Thin provision
- Inline compression
- Inline deduplication
- RAID
- Replication
- Snapshot
- Encryption

Performance


- UP TO 230K IOPS
- @Read



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Specifications

Hardware Specification	Series	StellarFlash Hybrid 1000 series			
Category	SH-1000 series	Description	SH-1100A	SH-1200A	SH-1200B
Front View		Controllers	2	2	2
Raw Capacity	Up to 320.4TB with expansion shelves	Raw capacity (TB)	10.8	16.2	32.4
Controllers	Dual controllers with high availability	Flash cache (TB)	2.88	2.88	2.88
		Expansion	2	2	2
		Ethernet (iSCSI)	4 x 10Gbps	4 x 10Gbps	4 x 10Gbps
		Fibre Channel	N/A	4 x 8Gbps	4 x 16Gbps
		Ordering Info	A-SH03-1100A-HM03	A-SH03-1200A-HM03	A-SH03-1200B-HM03

3Y HW warranty, 3Y SW support

Software Specifications		Series
Category		StellarFlash Hybrid
Connectivity	Physical Interfaces	Ethernet (10G) / FC (8G,16G)
	Connection Protocols	iSCSI / FC
	Storage Interfaces	SAS 3 (Raw capacity: 320.4TB with 2 JBOD)
	Hypervisor Supports	ESXi / Hyper-V / KVM (OpenStack)
	Operation Offloading	VAAI
Host OS Supports		Linux / Windows
Data Reduction	Thin Provisioning	Y
	Inline Deduplication	Y
	Inline Compression	Y
Data Protection	Snapshots	Y (Redirect on Write; 1,024 per volume; 10,000 array)
	Clones	Y (10,000 clones, replicas or snapshots per array)
	Replications	Async (scheduler support)
	Controller High Availability	Active-Active
Data Services	Storage Virtualization	Y (16 pools per array; 1,024 volumes per pool, 16EB per volume)
	IOPS Provisioning	Y
	Smart Cache	Y
	Analytics and Prediction	Y
Management	Rest APIs	Y
	Single-pane of Glass Management	Y
	Monitoring & Metering	Y

Expansion Shelves

Description	SH-EX24A	PSH-EX24B
Raw capacity (TB)	72	144
SAS3 Connectivity	4	4

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