FlashDisk® High-Performance Commercial Storage

Highlights

- Purpose built for demanding, high-performance workloads.

- Up to 1.2 million IOPS, 5,500 MB/s throughput, and 576TB capacity.

- Tunable for high throughput, high IOPS, or both.

- FlashD2D non-disruptive, application-consistent disk to disk backups.

- Redundant, hot-swappable controllers, drives, power supplies, fans, and BBUs.

- Carrier-Grade durability (NEBS compliant).

- 3.5" and 2.5" solid-state and hard-disk drive systems and expansions.

- Interface Options:
  - 16 and 8 Gbps Fibre Channel
  - 10 and 1 Gbps iSCSI
  - 6 Gbps SAS
  - Simultaneous Fibre Channel and iSCSI
  - Simultaneous SAS and iSCSI

- Supports any open operating system and clustering software.

- No special host software or drivers required.

- Custom design services available.

- Can be re-badged with your company name and logo.

FX-3000 series 3U system with expansion shelf

Purpose-Built To Perform

Designed from the ground up to deliver extreme performance, durability and efficiency, Winchester Systems FlashDisk embodies decades of experience building storage systems for both commercial and military applications. And with FlashDisk, efficiency also means operational simplicity: a feature that's become all too rare in today's storage products.

The key to FlashDisk performance is lean, purpose-built modular controller design. Unlike competing products based on general-purpose servers and operating systems, FlashDisk combines embedded-systems architecture, streamlined firmware and hardware-acceleration ASICs and to deliver up to 1.2 million I/O operations per second (IOPS) and 5,500 MB/second data throughput.

Each hot-swappable controller module plugs into the back of a purpose-built storage shelf, and presents external host and expansion interface ports. Plugging two controllers into the same shelf creates an active-active redundant configuration, eliminating single points of failure *and* enhancing performance. This modular approach also enables entry-level FlashDisk systems to deliver the same top-end performance as their large-scale brethren.
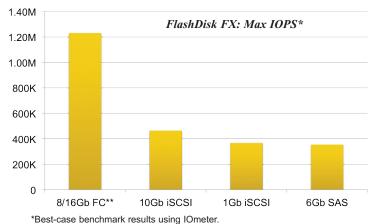
Winchester Systems also leverages its military product experience to enhance FlashDisk commercial-product durability. Heavy-duty air filters, chassis and doors ensure dependable operation in less-than-ideal environments. After serving in their originally-deployed role for years, many FlashDisk systems are re-purposed for backup storage or other tasks.
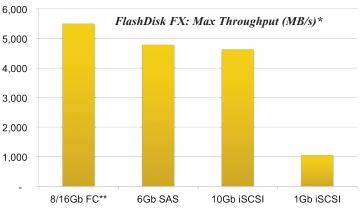
FlashDisk storage services include volume snapshots, mirroring and both synchronous and asynchronous replication. FlashD2D, included in every FlashDisk, enables administrators to schedule regular, *non-disruptive* disk to disk backups using automated *application-consistent* snapshots and mirroring. FlashDisk Global Manager provides centralized, "single pane of glass" management and event notification for all installed FlashDisk storage systems.

At Winchester Systems, we're dedicated to ensuring you have the right storage architecture to support your, or your customer's, workloads. Over 30 years of I/O-performance and data-availability expertise are available to you—at no cost or obligation. Give us your toughest data or I/O challenge, and we'll collaboratively design an optimized storage infrastructure for you. If you choose to purchase from us, you pay only for the equipment!

FlashDisk Specs

FlashDisk FX series systems contain the latest controller technology, and provide the highest possible performance and capacity. For less-demanding workloads, Winchester Systems offers its previous-generation FlashDisk VX.

FlashDisk FX: Max IOPS*

*Best-case benchmark results using IOmeter.
**16Gb using half the number of FC ports.

FlashDisk FX: Max Throughput (MB/s)*

*Best-case benchmark results using IOmeter.
**16Gb using half the number of FC ports.

Both FlashDisk FX and VX come in 2U and 3U rack-mount sizes, and support 2.5" and 3.5" SAS hard disk drives and SSDs. Host interconnect options include 8 or 16 Gbps Fibre Channel, 1 or 10 Gbps iSCSI, and simultaneous Fibre Channel and iSCSI.

FlashDisk Series	FX-2000	FX-3000	VX-2000	VX-3000
Form Factor	2U Rack-mount	3U Rack-mount	2U Rack-mount	3U Rack-mount
Dimensions (H x W x D)	3.5" x 17.5" x 21"	5.1" x 17.5" x 21"	3.5" x 17.5" x 21"	5.1" x 17.5" x 21"
Internal SAS Drive Bays	24 (2.5"), 12 (3.5")	16 (3.5")	24 (2.5"), 12 (3.5")	16 (3.5")
Max # of Drives (same size expansion shelves)	168 (2.5"), 108 (3.5")	144 (3.5")	144 (2.5"), 84 (3.5")	112 (3.5")
Max Capacity (raw)	168TB (2.5"), 432TB (3.5")	576TB	144TB (2.5"), 336TB (3.5")	448TB
8/16 Gbps FC Performance*	IOPS: 1230K; Seq. Read: 5500MB/s, Seq. Write: 3960MB/s		IOPS: 140K; Seq. Read: 2850MB/s, Seq. Write: 1063MB/s	
10 GbE iSCSI Performance*	IOPS: 464K; Seq. Read: 4630MB/s, Seq. Write: 1990MB/s		IOPS: 79K; Seq. Read: 1330MB/s, Seq. Write: 706MB/s	
1 GbE iSCSI Performance*	IOPS: 367K; Seq. Read: 1053MB/s, Seq. Write: 1037MB/s		IOPS: 75K; Seq. Read: 918MB/s, Seq. Write: 585MB/s	
6 Gbps SAS Performance*	IOPS: 354K; Seq. Read: 4791MB/s, Seq. Write: 3102MB/s		IOPS: 116K; Seq. Read: 2616MB/s, Seq. Write: 1187MB/s	
Max Snapshots	4096			
Max Local Mirror/Replicas	256 (from up to 32 source volumes)			
Max Remote Replicas	-		64 (from up to 16 source volumes)	
Automated Thin Provisioning	Yes			
RAID Levels	0, 1, 3, 5, 6, 10, 30, 50, 60			
Cache (per controller)	8GB DDR-III		2-4GB DDR-II	
Cache Backup	CompactFlash			
Redundant, Hot-Swap Controllers	Single or Dual (active-active)			
Redundant, Hot-Swap Power Supplies & Fans	Yes			
Automated, app-consistent snapshots and volume copies	FlashD2D			
Input Voltage	Dual 90-260 VAC, 47-63 Hz (auto switching)			
Power Consumption	Single Controller: 350W, 262-285W typical draw; Dual Controller: 530W, 345-367W draw			
Storage Management	Front Panel LCD keypad, RS-232, Ethernet; FlashDisk Global Manager ("single pane of glass" management of multiple systems)			

*Best-case benchmark results using IOmeter. 16Gb FC is available only on FlashDisk FX; results obtained using half the number of FC ports.

Accessories

Fibre Channel switches and cables
Ethernet Switches and cables
Host-bus adapters

Uninterruptable Power Supplies (UPSes)
Cabinets
Anything else you need? Just ask!

www.winsys.com

WINCHESTERSYSTEMS®
Purpose-Built Storage

*101 Billerica Ave., Bldg. 5, Billerica, MA 01862
800-325-3700 · 781-265-0200 · fax: 781-265-0201*