

# FlashDisk® RAID 2U24 FX-2500 Series

## High I/O Performance Storage Over 1 Million IOPS with Highest Speed 2.5" HDD & SSD

FX-2500 high performance storage offers a convenient 2U RAID unit with (24) 2.5" disks that provides low initial cost and low expansion cost - yet still expands to 432 TB. Expansion shelves support (24) 2.5" disks for higher speed or (12) 2.5" disks for higher capacity. The 24-drive shelves offer more spindles for random access applications in a compact space. It supports both traditional hard disk (HDD) drives and solid state disk (SSD) drives for maximum flexibility to match application performance and storage requirements.



*FX-2500 RAID systems feature a 2U RAID unit with (24) 2.5" disks and supports expansion up to 168 disks delivering over 1 million IOPS.*

The FX-2500 provides performance, reliability, advanced storage services and features FlashD2D - a unique scheduled, zero-downtime disk-to-disk backup. Its FlashDisk Global Manager provides a centralized management pane for all FlashDisk FX Series systems installed and centralized event notifications. This makes it very easy to manage a large, flexible virtual and tiered storage pool including primary storage, snapshot images and mirror volumes.

FX-2500 supports single or dual redundant controllers with mirrored cache. It is a "hybrid" system that supports both Fibre Channel and iSCSI hosts in the same RAID disk array. The FX-2500 is a "SAN-In-A-Box" that can attach to multiple hosts without switches. FlashDisk delivers exceptional performance with nearly 5,300 MB per second data throughput using SAS 6Gb disk drives and 48Gb SAS backend expansion buses. High performance *TrueRAID6* for high speed dual *distributed* parity protects against two simultaneous drive failures and ensures fast and successful disk rebuilds.

Redundant Controller Systems		
Host Interface	Fibre Channel 8Gb + iSCSI 1Gb	Fibre Channel 16Gb + iSCSI 1Gb
Models	FX-2542R	FX-2588R
Number of Host Ports	8 + 4	4 + 2
RAID 5/6: IOPS (R/W)	1,404K Read IOPS / 540K Write IOPS	1,421K Read IOPS / 544K IOPS
RAID 5/6: MB/s (R/W)	5,106 Read MB/s / 2,089 Write MB/s	5,291 Read MB/s / 2,778 Write MB/s
Single Controller Systems		
Host Interface	Fibre Channel 8Gb + iSCSI 1Gb	Fibre Channel 16Gb + iSCSI 1Gb
Models	FX-2546S	FX-2584S
Number of Host Ports	4 + 2	2 + 2
RAID 5/6: IOPS (R/W)	643K Read IOPS / 462K Write IOPS	649K Read IOPS / 467K Write IOPS
RAID 5/6: MB/s (R/W)	2,847 Read MB/s / 1,571 Write MB/s	2,898 Read MB/s / 1,599 Write MB/s
Number of Total SAS/SSD Disks	168 with 2.5" disks in 6 expansion shelves; 120 with 3.5" disks in 8 expansion shelves	
3.5" SAS Disks	SAS: 15K rpm: 450, 600 GB; 7.2K rpm: 2, 3, 4 TB in expansion shelves only	
2.5" SAS Disks	15K rpm: 146, 300 GB; 10K rpm: 600, 900 GB & 1.2 TB; 7.2K rpm: 1 TB	
2.5" SSD Disks	SAS SLC: 100, 200, 400 GB - SAS MLC: 200, 400, 800 GB, 2.0 TB	
Compatibility	Supports any open O/S; Supports VMware, Citrix, Hyper-V	
Reliability	RAID 0, 1, 3, 5, 6, 10, 15, 16, 30, 50, 60; Hot swap components; Hot spare drive; Automatic rebuild; Path failover	
Manageability	FlashDisk Global Manager manages multiple FlashDisk units over network; Automated alerts	
Warranty and Service	One year warranty; On-site service; 24x7 automated "call home" to US call center; Live technical phone support	

### Storage Services

#### Virtual Storage Pools

Create, expand, and delete storage volumes as requirements change to maximize storage utilization.

#### Snapshots

Up to 256 snapshots per volume with 4,096 total snapshots and 256 volume copies. Mount and read snapshots, restore files and databases. Rollback to selected time. Host flush agents are available for Windows applications.

#### Mirroring

Create mirror volumes, split mirrors, fast resync for data redundancy, backup, data mining and analysis.

#### Volume Copy

Reconstitute full volumes from snapshots, create multiple full versions to avoid overloading production.

#### FlashD2D Backup

Scheduled zero-downtime tiered primary to secondary disk-to-disk backup. Enables off-line copy to tape.

#### Global Management

Manage multiple FlashDisk systems from a single, easy to use GUI from any browser on the web.

#### Storage Wizard

Wizard simplifies initial setup and enables advanced settings.

#### Visual Calendar Scheduler

Schedules all storage services including snapshots, volume copies, split mirrors, fast resync and replication easily and intuitively.

## FX-2500 Base Unit with Expansion Shelf



*FX-2500 RAID systems feature a 2U base unit and up to six 2U expansion shelves with a total of 168 disks for maximum random access speed.*

## FX-2500 Models Rear View



*FX-2542R with 8 FC 8Gb + 4 iSCSI ports.*



*FX-2588R with 4 FC 16Gb + 4 iSCSI ports.*



*FX-2510R expansion with 4 SAS 6Gb ports.*

### System Options

Advanced Storage Services

LUN Masking

### External Options

FlashNAS Appliance

### 2U RAID Base Unit

RAID controller  
RAID levels supported  
Host interfaces  
Expansion shelf interface  
Number of drives - Total capacity  
On-line capacity expansion  
Cache memory capacity  
Non-volatile cache  
Maximum LUNs  
Maximum number of hosts  
LUN mapping/filtering  
Host adapters available for  
Power supplies and AC inlets

### 2U Expansion Shelves

Expansion architecture  
Expansion shelf architecture  
Maximum drives/capacity  
Removable drive trays  
Power supplies  
Cooling system  
Active components  
S.E.S. monitoring controllers

### Controls and Indicators

LCD front operation panel  
LED indicators  
Alerting  
Component failure  
LCD front operating console

### Compatibility

Operating systems  
Platforms supported  
Cluster support  
Hypervisor support  
Remote monitoring ports  
Communication protocols

### Storage Management

Event notification  
FlashAlert call home service  
Manage out of band  
FlashDisk Global Manager GUI

### General

Uninterruptible power supply  
Redundant AC power  
Power consumption  
RAID unit dimensions  
RAID unit weight  
Operating temperature  
Cooling system  
Compliance

### Warranty & Service

Standard warranty  
Installation and service

Increases snapshots from 64 to 256 per volume; from 1,024 to 4,096 total and increases volume copies from 64 to 256 total.  
Enables volume protection needed in SAN environment.

High performance NAS filer with snapshots; CIFS/NFS/AFP; NSPF

Single/Dual redundant 64-bit, 12th generation controller  
0, 1, 3, 5, 6, 1+0, 15, 16, 30, 50, 60  
Fibre Channel 8Gb, Fibre Channel 16Gb  
SAS 6Gb, 4 lanes - 24Gb per port - up to 48Gb per array  
(12) 3.5" disks per base unit - 432 TB maximum with expansion  
Automatically adds new drives to existing array - "on-the-fly"  
Max. 8 GB per controller included standard  
Li-ION battery powered backup to flash memory  
1024 total, 64 per host ID  
8 SAS or 64 Fibre Channel  
Configurable per logical partition  
PCI-X, PCI Express  
Dual hot-swap redundant 530 W each; dual AC inlets

Single/Dual SAS (Serial Attach SCSI) bus  
Multiplexed access to each drive within the shelf  
(12) 3.5" or (24) 2.5" disks per expansion shelf - 48 TB per shelf max.  
Hot swappable; individual drive locks  
Dual hot-swappable; 530 Watts each; 320 Watts typical draw  
Dual hot-swappable fan modules  
No active data path components on the midplane  
Dual, hot-swappable SCSI Enclosure Services modules

2 x 16 character display, push button controls.  
LED power, battery, controller, and system status  
Audible and visual alerts  
Failure indication through LCD and GUI  
View/edit logical RAID/physical drives, setup hot-spare drives, map hosts, check parity, enable write-back cache, rebuild failed drive, view logs...

Supports 14 O/S including Windows, Linux, AIX and UNIX  
Intel, SUN, HP, IBM RS-6000, Apple, SGI  
Supports 9 industry-standards including Windows, Linux, and Veritas  
VMware ESX, Citrix XenServer, Windows Hyper-V, RHEL KVM  
RJ45 10/100 Ethernet  
TCP/IP, SNMP, SSH

Automatic event and problem alert notification  
24-hour call center available for immediate action  
Ethernet  
Manage storage services of multiple FlashDisks from any web browser

Required when using write-back cache  
Dual 90-260 VAC Inlet, 47-63 Hz  
100 VAC @ 6/10A; 240 VAC @ 3/5 A; 530 W with PFC; 340 W draw  
3.5"h x 17.5"w x 21"d  
Approximately 60 lbs. fully loaded with drives  
0° to 40° C operating; -40° to 60° C non-operating  
Two dual hot-swap, ball bearing blowers; 60 dB-A  
FCC, UL, CE, CSA

One year, next day on-site and toll-free hotline; Options up to 24x7 on-site  
On-site installation; 24x7 service available

[www.winsys.com](http://www.winsys.com)

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