FlashDisk® RAID — FX-2U12 Series

Affordable 2U Unit Now Supports 8 TB HDD plus SSD & SED Up to 16 Host Ports; 1 Million IOPS; 5,000 MB/sec.; 1,440 TB

FlashDisk FX-2U12 offers enterprise capability at a fraction of the price of competitors. This 2U storage system supports 12 internal HDDs, SEDs or SSDs plus single or dual redundant failover and auto failback controllers. Each controller has four iSCSI 1GbE host ports plus modular plug-in Fibre Channel, SAS, iSCSI 10GbE or additional iSCSI 1GbE host ports that can be inserted and removed as needed. The FX-2U12 supports up to 16 host ports per system, the most in its class, and is a virtual "SAN-In-A-Box" that provides incredible flexibility for both primary storage and replication applications and can eliminate switch costs entirely. Any host port can be configured for either host I/O or remote replication.

FX-2U12 affordably delivers 1,000,000 IOPS - 5,000 MB per sec. - 16 host ports - Hybrid SSD & HDD arrays - automated multi-tiering - 1,440 TB capacity - redundant failover controllers - snapshots & replication.

Low cost, near-line storage - SED Support.

FX-2U12 supports a mix of SSDs, SEDs and HDDs internally and in 12-bay expansion shelves to optimize capacity, performance and price. It expands to 1,440 TB using 8 TB disk drives in 14 twelve-bay 2U expansion shelves.

Optional auto-tiering enables automated, policy-driven data migration between two tiers of storage making it easy to create a "hybrid" array with SSDs for speed and HDDs for capacity and SEDs for encrypted data security at rest while automatically optimizing access and cost.

The FlashDisk Global Manager provides a centralized management pane and event notifications for all FlashDisk FX Series systems installed. This makes it very easy to manage a large, flexible virtual and tiered storage pool including primary storage, snapshot images, mirrored volumes and replicated volumes.

Redundant Controller Systems					
Host Interface	iSCSI 1GbE	iSCSI 1GbE	iSCSI 10GbE + 1GbE	SAS 6Gb + 1GbE	FC 8Gb + 1GbE	FC 16Gb + 1GbE
Number of Host Ports	8	16	4 + 8	4 + 8	8 + 8	4 + 8
RAID 5/6: IOPS (R/W)	367K / 268K	668K / 488K	814K / 390K	598K / 234K	1,046K / 456K	1,055K / 460K
RAID 5/6: MB/s (R/W)	524 / 461	953 / 838	4,165 / 2,218	4,196 / 2,242	4,985 / 3,166	5,009 / 3,183

Single Controller Systems					
Host Interface	iSCSI 1GbE	iSCSI 1GbE	iSCSI 10GbE + 1GbE	SAS 6Gb + 1GbE	FC 8Gb + 1GbE	FC 16Gb + 1GbE
Number of Host Ports	4	8	2 + 4	2 + 4	4 + 4	2 + 4
RAID 5/6: IOPS (R/W)	202K / 180K	367K / 268K	305K / 241K	301K / 194K	567K / 409K	589K / 419K
RAID 5/6: MB/s (R/W)	288 / 254	524 / 461	2,020 / 1,877	2,548 / 1,350	2,530 / 2,382	2,540 / 2,386

Total HDD/SED/SSDs	180
3.5" SAS Disks	15K rpm: 450, 600 GB; 7.2K rpm: 2, 3, 4, 6, 8 TB - *SEDs 7.2K rpm 2, 3, 4 TB*
2.5" SAS Disks	15K rpm: 146, 300 GB; 10K rpm: 600, 900 GB & 1.2 TB; 7.2K rpm: 1 TB - *SEDs 10K rpm: 600, 900 GB; 7.2K rpm: 500 GB, 1 TB*
2.5" SSD Disks	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

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 and 256 volume copies. Mount and read snapshots, restore files and databases. Rollback to selected time. Application consistent snapshot agents are available for Windows and Linux 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.

Thin Provisioning
Create large virtual volumes and auto-allocate physical space as needed.

SEDs & Secure Erase: Self Encrypted Drives (AES-256) with FIPS 140-2 validation, Seagate Instant Secure Erase.

FlashD2D Backup
Scheduled zero-downtime tiered disk-to-disk backup or off-line to tape.

Global Management
Manage multiple FlashDisk systems from one GUI from any browser.

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.

Remote Replication
Hardware-based synchronous and asynchronous replication of host LUNs between arrays, providing another layer of data protection.

Automated Tiered Storage
Automated, policy-driven migration of data blocks between storage tiers.

*The FX-2U12 Series supports up to 1,440 TB
with up to 14 optional 2U expansion shelves.*

*FX-2U12 with 4 Fibre Channel 16Gb ports
plus 8 iSCSI 1GbE ports.*

*FX-2U12 with 8 Fibre Channel 8Gb ports
plus 8 iSCSI 1GbE ports.*

*FX-2U12 with 4 iSCSI 10GbE ports
plus 8 iSCSI 1GbE ports.*

FX-2U12 with 16 iSCSI 1GbE ports.

*FX-2U12 with 4 SAS 6Gb ports
plus 8 iSCSI 1GbE ports.*

FX-2U12 base unit with 8 iSCSI 1GbE ports.

FX-2U12 expansion with four SAS 6Gb ports.

System Options

Advanced Storage Services	Increases snapshots from 64 to 256 per volume; from 128 to 4,096 total and increases volume copies from 64 to 256 total.
LUN Masking	Enables volume protection needed in SAN environment.

FX-2U12 RAID Base Unit

RAID controller	Single/Dual redundant 64-bit, 13th generation controller
RAID levels supported	0, 1, 3, 5, 6, 1+0, 15, 16, 30, 50, 60
Host interfaces	1GbE, 10GbE (copper or fiber), SAS 6Gb, FC 8Gb, FC 16Gb
Expansion shelf interface	SAS 6Gb, 4 lanes - 24Gb per port - up to 48Gb per array
# HDD/SED/SSDs - Total capacity	12 (2.5"/3.5") disks in 2U12 base; 1,440 TB max.; (14) 2U12 expansions
On-line capacity expansion	Automatically adds new drives to existing array - "on-the-fly"
Cache memory capacity	16 GB per controller, included standard
Non-volatile cache	Li-ION battery powered backup to flash memory
Maximum LUN size	512 TB
Maximum number of LUNs	1024 total, 64 per host ID
Maximum number of hosts	8 SAS or 64 Fibre Channel
LUN mapping/filtering	Configurable per logical partition
Host adapters available for	PCI-X, PCI Express
Power supplies and AC inlets	Dual hot-swap redundant 530 W each; dual AC inlets

EX-2U12 Expansion Shelves

Expansion architecture	Dual/Quad SAS (Serial Attach SCSI) bus
Expansion shelf architecture	Multiplexed access to each drive within the shelf
Maximum drives/capacity	12 (2.5"/3.5") disks per 2U12 shelf to 96 TB; up to 14 expansion shelves
Removable drive trays	Hot swappable; individual drive locks
Power supplies	Dual hot-swappable; 530 Watts each; 320 Watts typical draw
Cooling system	Dual hot-swappable fan modules
Active components	No active data path components on the midplane
S.E.S. monitoring controllers	Dual, hot-swappable SCSI Enclosure Services modules

Controls and Indicators

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

Compatibility

Operating systems	Supports Windows, Linux, MAC OS X, AIX and UNIX
Platforms supported	Intel, SUN, HP, IBM RS-6000, Apple, SGI
Cluster support	Supports 9 industry-standards on Windows, Linux and UNIX
Hypervisor support	VMware ESX, Citrix XenServer, Windows Hyper-V, RHEL KVM
Remote monitoring ports	RJ45 10/100 Ethernet
Communication protocols	TCP/IP, SNMP, SSH

Storage Management

Event notification	Automatic event and problem alert notification
FlashAlert call home service	24-hour call center available for immediate action
Manage out of band	Ethernet
FlashDisk Global Manager GUI	Manage storage services of multiple FlashDisks from any web browser

General

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

Warranty & Service

Standard warranty	Three year factory warranty and toll free hotline during business hours
Service contracts	Optional on-site service, spare parts and advance parts replacement
Secure site	Customizable service programs for classified sites
Installation and service	On-site installation; 24x7 service available

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