

F/C	SAS	iSCSI	SCSI
Host Type			

F/C	SATA	SAS	SCSI
Drive Type			

FlashDisk® COTS Rugged RAID RX-3400 Series

High Performance RAID at COTS Prices Up to 224 TB - 8 GB Fibre Channel - RAID 6 Data Protection

Now with 8 Gb Fibre Channel ports and 2 TB disks, FlashDisk COTS Rugged disk arrays are designed to protect data from certain environmental perils - at COTS prices. Far less expensive than fully rugged systems, the FlashDisk RX-3400 Series provides up to 32 TB of SATA storage in the base unit, expandable to 224 TB, and is protected against dust, moisture, shock and vibration not offered on standard commercial units. The US Army approved these units for field use and has deployed them worldwide in HUMVEE communication trailers in harsh environments. The front door is crafted of sturdy milled aluminum that provides rigidity and structural integrity. It also houses a heavy-duty dust filter to constrict particle flow and provide a moisture shield to protect internal components. The LCD front panel is easily viewed by field personnel, is EMI protected and uses long life pushbuttons. The door features a dust and raindrop seal. Optionally, the US Army mounts the unit to a chassis using five bolts secured, in a triangulated pattern for strength, to a rugged heavy-duty base plate.



FlashDisk RX-3400 Series disk arrays with single or redundant controllers are ideal for mobile field applications and provide significant field reliability and data protection at COTS prices.

The RX-3400 Series with 2U shelves offers up to 32 TB in the base unit with 2 TB disks and up to 224 TB of tiered SAS and SATA mission-critical storage with up to six 2U expansion shelves.

The FlashDisk RX-3400 Series offers single and redundant controllers and supports SAS 4x wide, 1 Gb Ethernet and 8 Gb Fibre Channel hosts. RAID 6 provides dual parity to protect against two drive failures and to help ensure that critical disk rebuilds after a drive failure are successful - especially important with today's large arrays. RAID 6 dual parity offers 500 to 30,000 **times** longer MTDL (Mean Time To Data Loss) than RAID 5 - key in deployment of mobile field units.

Model	RX-3402S	RX-3404R	RX-3484S	RX-3488R	RX-3414S	RX-3418R
Number of Controllers	Single	Dual Redundant	Single	Dual Redundant	Single	Dual Redundant
Host Interface	SAS 4x Wide	SAS 4x Wide	iSCSI	iSCSI	8 Gb Fibre Channel	8 Gb Fibre Channel
Number of Host Ports	2	4	4	8	4	8
Number of Expansion Shelves	4	3	4	3	6	8
Number of Total SAS/SATA Disks	80	64	80	64	112	112
RAID 5: IOPS (R/W)	39K / 29K	80K / 41K	58K / 34K	59K / 37K	73K / 57K	117K / 57K
RAID 6: IOPS (R/W)	39K / 29K	79K / 41K	58K / 34K	60K / 36K	72K / 56K	114K / 56K
RAID 5: Throughput MB/s. (R/W)	753 / 534	1,514 / 931	416 / 308	718 / 309	1,319 / 846	1,893 / 824
RAID 6: Throughput MB/s. (R/W)	764 / 470	1,506 / 833	416 / 297	720 / 290	1,265 / 729	1,848 / 813

FlashDisk RX-3400 Series

Rugged Features

- Sturdy milled aluminum door with hinges
- Easy to operate thumbscrew door locks
- Dust/moisture seals - door top and bottom
- Heavy-duty dust filters - easy to replace
- Chassis lock-down mounts to 1U tray
- Rugged strain reliefs for host cables

Reliability & Serviceability

- RAID 6 dual parity data protection
- Hot-swappable drives, power supplies, fans, BBUs, AC inlets, optional controllers
- Hot spares with automatic drive rebuilds
- Supports drive path failover & load balancing
- No single point of failure configurations

Compatibility

- Supports any open O/S
- No host software or drivers needed
- Cluster: Windows, Novell, UNIX, Linux . . .

Centralized & Remote Management

- FlashView embedded RAID management
- Managed out-of-band via Ethernet, Telnet, FlashConsole management appliance option
- Automatic event and alert notification
- FlashAlert 24-hour "call-home" service

3U RAID Base Unit

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

3U Expansion Shelf

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

SAS/SATA Disk Drives

SAS disk drives
SATA disk drives

RX-3400 Series supports expansion shelves

Single/Dual redundant 64-bit RAID controller
0, 1, 3, 5, 6, 1+0, 15, 16, 30, 50, 60
SAS 4x wide, 1 Gb Ethernet, 4 Gb Fibre Channel ports
SAS 4x wide
16 drives/32 TB in base - 224 TB total with expansion
Automatically adds new drives to existing array
2 GB per controller
Li-ION battery - minimum 72 hours
1024 total, 64 per host ID
4 SAS or 64 Fibre Channel
Configurable per logical partition - Fibre Channel only
PCI-X, PCI Express
Dual hot-swap redundant 530 W each; dual AC inlets

RX-3400S/RX-3400R - JBOD expansion shelves

Single/Dual SAS (Serial Attach SCSI) bus
Multiplexed access to each drive within the shelf
16 SAS or 16 SATA disk drives only
16 TB SAS or 32 TB SATA per shelf
Hot swappable; individual drive locks
Dual hot-swappable; 530 Watts each
Dual hot-swappable fan modules
No active data path components on the midplane
Dual, hot-swappable SCSI Enclosure Services modules

Enterprise Class SAS/SATA Disk Drives

146/300/450/600 GB 15k; 600 GB 10k; 1 TB 7.2k rpm
1 TB/2 TB 7.2k rpm; 80/160 GB SSD

RX-3400 Series base unit shown with one RX-3400S expansion shelf



The RX-3400 Series supports up to 112 SAS and/or SATA disk drives and scales to 224 TB with six disk-only (JBOD) expansion shelves.

RX-3400 systems are available for SAS hosts, iSCSI hosts or Fibre Channel hosts.

Rear view of Fibre Channel, SAS and iSCSI Base Systems and common SAS Expansion Unit.

<p>Controls and Indicators LCD front operation panel LED indicators Alerting Component failure LCD front operating console</p>	<p>2 x 16 character display, push button controls. LED power, battery, controller, and system status. Audible and visual alerts. Failure indication through LCD, RS-232C, and GUI. View and edit logical RAID/physical drives, setup hot-spare drives, map hosts, check parity, enable write-back cache, rebuild failed drive, view logs...</p>
<p>Compatibility Operating systems Platforms supported Cluster support Remote monitoring ports Communication protocols</p>	<p>Supports 14 Operating Systems including Windows, Linux, and UNIX Intel, SUN, HP, IBM RS-6000, Apple, SGI Supports 9 industry-standards including Windows, Linux, and Veritas RJ45 10/100 Ethernet, dual RS-232 TCP/IP, SNMP, SSH</p>
<p>Options FlashNAS Appliance XOssoft WANsync</p>	<p>High performance NAS filer with snapshots; supports CIFS/NFS/AFP; NSPF option Replication over IP for disaster recovery</p>
<p>Storage Management FlashView and FlashConsole FlashAlert call home service Manage out of band Centralized management</p>	<p>Automatic event and problem alert notification 24-hour call center available for immediate action Ethernet, TELNET via FlashConsole Manage from any LAN workstation with web browser and no additional software</p>
<p>General Uninterruptible power supply Redundant AC/DC power Power Consumption RAID unit dimensions RAID unit weight Operating temperature Cooling System Compliance</p>	<p>Required when using write-back cache Dual 90-260 VAC Inlet, 47-63 Hz or dual 24-400 VDC 100 VAC @ 9A; 240 VAC @ 4.5 A; 530 W with PFC 5.1"h x 17.5"w x 19.2"d Approximately 77 lbs. fully loaded with drives 0° to 40° C Two dual hot-swap, ball bearing blowers; <51 dB-A FCC, UL, CE, CSA</p>
<p>Warranty & Service Standard Warranty Installation and service</p>	<p>One year, next day on-site and toll-free hotline On-site installation; 24x7 service available</p>



RX-3414R base unit holds 16 drives and offers four 8 Gb F/C, host connections to create a virtual "SAN-In-A-Box."



RX-3488R base unit holds 16 drives and offers 8 iSCSI ports to provide storage for all servers on the LAN.



RX-3404R base unit holds 16 drives and offers 4 SAS 4x wide host connections to create a virtual "SAN-In-A-Box."



All RX-3400 Series products use SAS expansion shelves, each with 16 SAS or SATA disks.

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