

# FlashDisk® RAID 2U/3.5" RV-2300 Series

## Rugged RAID at COTS Prices to 252 TB for Field Deployments Virtual Storage - RAID 6 - Fibre Channel, SAS and iSCSI Hosts

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 RV-2300 Series supports SAS, Fibre Channel, iSCSI hosts and a "Hybrid" system with both Fibre Channel and iSCSI hosts. It supports either (12) 3.5" disks or (12) 2.5" SAS or SSD disks in 3.5" carriers per shelf and provides up to 36 TB of storage in the base unit, expandable to 252 TB. As COTS rugged, it 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, Navy and Air Force mount the unit to a chassis using five bolts, secured in a triangulated pattern for strength, to a rugged heavy-duty base plate for land, sea and air operations.



FlashDisk RV-2300 disk arrays feature SAS and SSD disks to 3 TB each and are ideal for mobile applications - providing field reliability and data protection at COTS prices.

FlashDisk Global Manager™ provides all storage services and a centralized management pane for multiple systems. FlashDisk RV-2300 supports a base unit with single or dual redundant controllers with mirrored cache and up to 6 expansion shelves. RAID 6 provides dual parity for large arrays to protect against two drive failures and to ensure successful disk rebuilds.

Redundant Controller Systems					
Host Interface	SAS 6 Gb	SAS 6 Gb	iSCSI 1 Gb		Fibre Channel 8 Gb
Models	RV-2334R	RV-2338R	RV-2358R		RV-2328R
Number of Host Ports	4	8	8		8
RAID 5/6: IOPS (R/W)	123K / 42K	123K / 42K	91K / 35K		136K / 52K
RAID 5/6: Throughput MB/s. (R/W)	2,295 / 965	2,295 / 965	739 / 473		2,181 / 1,124

Single Controller Systems					
Host Interface	SAS 6 Gb	SAS 6 Gb	iSCSI 1 Gb		Fibre Channel 8 Gb
Models	RV-2332S	RV-2334S	RV-2354S		RV-2324S
Number of Host Ports	2	4	4		4
RAID 5/6: IOPS (R/W)	62K / 42K	62K / 42K	47K / 28K		70K / 51K
RAID 5/6: Throughput MB/s. (R/W)	1,206 / 750	1,206 / 750	367 / 343		1,413 / 858

Number of Total SAS/SSD Disks	84				
3.5" SAS Disks	15K rpm: 300, 450, 600 GB - 7.2K rpm: 1, 2, 3 TB				
2.5" SAS Disks	10K rpm: 300, 450, 600, 900 GB				
2.5" SSD Disks	SLC: 100, 200, 400 GB - MLC: 200, 400, 800 GB				
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. Server flush agent supports Windows and Linux applications.

#### Thin Provisioning Option

Provides dynamic storage allocation and maximizes storage utilization.

#### Remote Replication Option

Storage based replication for business continuity and disaster recovery.

#### 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 back-up. Enables off-line copy to tape.

#### Global Management

Manage multiple FlashDisk RV Series 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.

## RV-2300 Base Unit with Expansion Shelf



The RV-2300 Series supports up to 84 disk drives with six expansion shelves and expands to 252 TB with 3 TB disk drives.

## RV-2300 Models Rear View



RV-2334R with 4 SAS 6 Gb ports.



RV-2358R with 8 iSCSI GbE ports.



RV-2328R with 8 Fibre Channel 8 Gb ports.



RV-2310R expansion with 4 SAS 6 Gb ports.

## System Options

Thin Provisioning  
Remote Replication  
Advanced Storage Services

LUN Masking  
Cache upgrade

## External Options

FlashNAS Appliance  
CA ARCserve Replication

## 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  
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

Enables high storage utilization with virtual storage on demand.  
Available on "multi-protocol" models with added iSCSI replication ports.  
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.  
Expands 2 GB controller cache memory to 4 GB cache.

High performance NAS filer with snapshots; CIFS/NFS/AFP; NSPF  
Protects availability of systems, applications and data

Single/Dual redundant 64-bit, 11th generation controller  
0, 1, 3, 5, 6, 1+0, 15, 16, 30, 50, 60  
6 Gb SAS, 8 Gb F/C, GbE  
6 Gb SAS, 4 lanes - 24 Gb per port - up to 48 Gb per array  
(12) 3.5" or 2.5" disks per base unit - 252 TB maximum  
Automatically adds new drives to existing array - "on-the-fly"  
2 GB, expandable to 4 GB per controller  
Li-ION battery powered backup to flash memory  
1024 total, 64 per host ID  
8 SAS, 64 iSCSI or 64 Fibre Channel  
Configurable per logical partition  
PCI-X, PCI Express  
Dual hot-swap redundant 460 W each; dual AC inlets

Single/Dual SAS (Serial Attach SCSI) bus  
Multiplexed access to each drive within the shelf  
(12) 3.5" or 2.5" disks per expansion shelf - 36 TB per shelf maximum  
Hot swappable; individual drive locks  
Dual hot-swappable; 460 Watts each  
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, indicator, 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 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  
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 @ 8/10A; 240 VAC @ 4/5 A; 460 W with PFC  
3.5" h x 17.5" w x 19.2" d  
Approximately 63 lbs. fully loaded with drives  
0° to 40° C  
Two dual hot-swap, ball bearing blowers; <51 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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