

F/C	SAS	iSCSI	SCSI
Host Type			

F/C	SATA	SAS	SCSI
Drive Type			

EcoRAID™ SAS/SATA Expandable ER-2300 Series

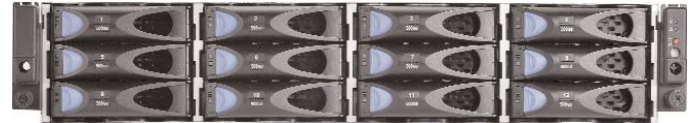
Economical SAS/SATA Storage to 96 TB - FC, SAS & iSCSI Hosts Now Available with CA ARCserve® Replication

EcoRAID is a truly easy-to-use storage array for the small to medium organization that needs the capacity, reliability and flexibility of the enterprise storage products but not the price - or complexity. Just create volumes and place them into groups for easy LUN assignment and management. EcoRAID delivers high value at low price and offers two CA ARCserve Replication licenses to protect availability of systems, applications and data for overwhelming value.

EcoRAID tiered storage expands to 96 TB with three expansion shelves and fits right into your current SAN, NAS or directly attached environment with four 4 Gb Fibre Channel, 3 Gb SAS or 1 Gb iSCSI ports. It offers a low entry price and inexpensive expansion increments with up to 12 SAS or SATA disks in each 2U high shelf. It supports RAID 1, 3, 5 and dual parity RAID 6 for added reliability needed with today's large disks. Add replication option for local or remote copies.

EcoRAID supports SAS and SATA disks to 2 TB each. Storage intensive applications including backup, snapshot, archive, disaster recovery, virtual tape library, data acquisition, imaging, video and audio require inexpensive secondary storage - and EcoRAID is a perfect fit.

EcoRAID supports a base unit with dual redundant controllers with mirrored cache, multipathing and up to three expansion shelves totaling 96 TB. With four Fibre Channel or iSCSI ports it can be attached to a switch on the SAN fabric to store data for a large number of servers. Firmware is upgraded live - no downtime.



EcoRAID supports SAS and SATA disks and expands to 96 TB with 48 disks using a base unit and three expansion shelves.

It is ideal for typical departmental applications and especially economical for backup, archiving, disaster recovery and video applications and connects to Fibre Channel, SAS or iSCSI.



Hot swappable parts, live firmware upgrades and embedded web browser makes storage easy to manage.

Model	ER-2302S	ER-2304R	ER-2322S	ER-2324R	ER-2312S	ER-2314R
Number of Controllers	Single	Dual Redundant	Single	Dual Redundant	Single	Dual Redundant
Host Interface	3 Gb SAS	3 Gb SAS	1 Gb iSCSI	1 Gb iSCSI	4 Gb Fibre Channel	4 Gb Fibre Channel
Number of Host Ports	2	4	2	4	2	4
Number of Expansion Shelves	3	3	3	3	3	3
Number of Total SAS/SATA Disks	48	48	48	48	48	48
RAID 5: IOPS (R/W)	25K / 13K	38K / 12K	28K / 13K	43K / 12K	45K / 35K	68K / 33K
RAID 6: IOPS (R/W)	25K / 17K	38K / 15K	29K / 14K	44K / 13K	44K / 35K	66K / 32K
RAID 5: Throughput MB/s. (R/W)	580 / 416	1,290 / 926	201 / 174	446 / 386	415 / 228	923 / 507
RAID 6: Throughput MB/s. (R/W)	583 / 414	1,293 / 923	201 / 174	446 / 388	334 / 183	741 / 407

EcoRAID ER-2300 Series

Compatibility

- Supports VMware, Citrix, Microsoft Virtual Servers and Applications
- Supports any open O/S
- No host software or drivers needed
- Cluster: Windows, Novell, UNIX, Linux . . .

Connectivity, Capacity & Scalability

- Create, expand and delete virtual volumes
- Up to 48 SAS/SATA disks, scales to 96 TB
- Up to 4 Fibre Channel, SAS or iSCSI ports
- Up to 4 GB of cache per controller
- Native MPIO: Red Hat & Suse Linux, Solaris

Reliability & Serviceability

- Non-disruptive firmware upgrades
- 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

Centralized & Remote Management

- Embedded EcoRAID Global Manager™
- Automatic event and alert notification
- FlashAlert™ 24-hour "call-home" service

2U RAID Base Unit

- RAID controllers
- 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

ER-2300S/ER-2300R - Supports expansion shelves

- Single/Dual redundant auto failover/failback & multipath
- 0, 1, 3, 5, 6, 1+0, 15, 16, 30, 50, 60
- 4 Gb Fibre Channel, 3 Gb SAS or 1 Gb iSCSI ports
- 3 Gb SAS
- 12 drives/12 TB in base - 96 TB total with expansion
- Automatically adds new drives to existing array
- Up to 4 GB per controller
- Li-ION battery - minimum 72 hours
- 256 total, 32 maximum concurrently
- 32 Fibre Channel
- Configurable per logical partition
- PCI-X, PCI Express
- Dual hot-swap redundant 500 W; dual AC inlets

2U SATA 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

ER-2300S/ER-2300R - JBOD expansion shelves

- Single/Dual SAS (Serial Attach SCSI) bus
- Multiplexed access to each drive within the shelf
- 12 SAS or 12 SATA disk drives only
- 24 TB SAS or 24 TB SATA per shelf
- Hot swappable; individual drive locks
- Dual hot-swappable; 500 Watts each
- Dual hot-swappable fan modules
- No active data path components on the midplane
- Dual, hot-swappable SCSI Enclosure Services modules

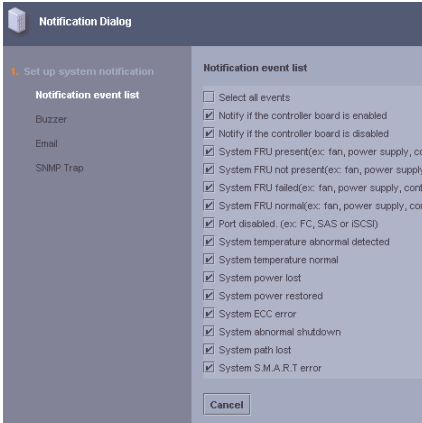
SAS/SATA Disk Drives

- SAS disk drives
- SATA disk drives

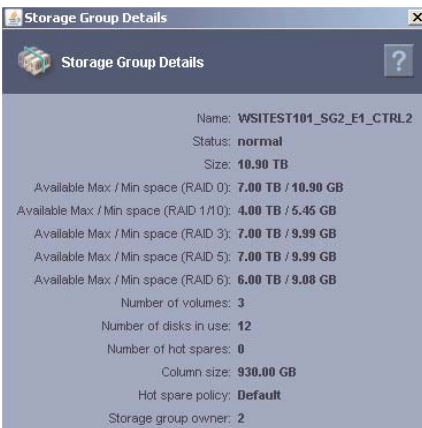
Enterprise Class SAS/SATA Disk Drives

- 300/450/600 GB 15k; 1 TB/2 TB 7.2k rpm
- 1 TB/2 TB 7.2k rpm;

**EcoRAID Global Manager
embedded web browser
for storage management**



EcoRAID Global Manager monitors the disk array and reports status and generates alerts if problems are found.



EcoRAID Global Manager lets you monitor storage usage and add, delete or increase volume size.

<p>Management and Indicators Global Manager web browser Storage functions</p> <p>LED indicators Alerting Component failure</p>	<p>Simple and intuitive for ease of storage management View and edit logical RAID/physical drives, setup hot-spare drives, map hosts, check parity, enable write-back cache, rebuild failed drive, view logs... LED power, battery, controller, and system status. Audible and visual alerts. Failure indication through alerts and mgmt. interface</p>
<p>Compatibility Operating systems</p> <p>Platforms supported Cluster support</p> <p>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 TCP/IP, SNMP</p>
<p>External Hardware/Software FlashNAS™ Appliance</p> <p>CA ARCserve Replication</p>	<p>High performance NAS file with snapshots; supports CIFS/NFS/AFP; NSPF option Protects availability of systems, applications and data</p>
<p>EcoRAID Global Manager Event notification 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 Manage from any LAN workstation with web browser and no additional software</p>
<p>General Uninterruptible power supply Redundant AC power Power Consumption RAID unit dimensions RAID unit weight Operating temperature Cooling System Safety Compliance Electromagnetic Interference</p>	<p>Required when using write-back cache Dual 100-240 VAC Inlet, 50-60 Hz 100-240 VAC @ 9A 3.44" h x 17.67" w x 22.86" d Approximately 65 lbs. fully loaded with drives 0° to 35° C Two dual hot-swap blowers UL, CUL, TUV, CB, BSMI, CCC, EU RoHS FCC Class A, CE, VCCI, CCC, BSMI, C-TICK</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>

Rear view of base unit and SAS expansion unit.



ER-2314R holds 12 drives with redundant controllers and 4 Fibre Channel ports to create a virtual "SAN-In-A-Box."



All ER-2300 Series products uses SAS connected expansion shelves.

Global Manager intuitive menus are designed for ease-of-use and simplify storage management.



Monitor hardware functions.



Completely visible end-to-end data path makes it truly easy to use.

www.winsys.com

WINCHESTERSYSTEMS®

Storage Without Complexity