

# EonStor<sup>®</sup> SAS-to-SAS Series RAID Subsystem

High Performance SAS RAID  
ASIC400 platform  
Flexibility with SAS or SATA Drives



## OVERVIEW

The RAID subsystem provides multi-lane Serial Attached SCSI (SAS) host interface that overcomes the limitations of parallel SCSI to achieve enhanced performance, high availability and reliability. With the SAS wide links, the subsystem can be flexibly expanded with enterprise-class SAS devices or cost-effective SATA drives.

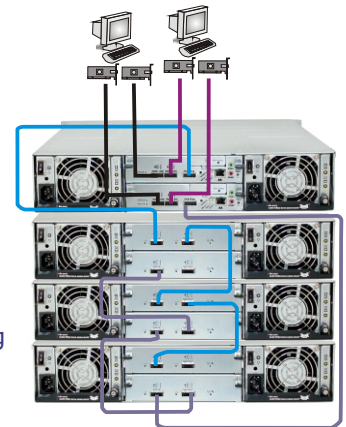
The subsystem is equipped with redundant and hot-swappable components to ensure continuous and reliable operation. The sophisticated firmware functionality, along with the EonPath and RAIDWatch software, offer comprehensive manageability and optimal performance.

## APPLICATIONS

Infortrend products are widely applied in disk-to-disk backup, server-attached and network data storage and in major industries such as data-mining, medical imaging, scientific research, security/CCTV, and digital media including video-on-demand, stream editing and more.

## HIGHLIGHTS

- ▣ Redundant or Single RAID controller configuration
- ▣ Fault-tolerant enclosure modules
- ▣ 4 or 2 SAS 4x wide host ports
- ▣ SAS or SATA-II (3Gbps) disk drives
- ▣ Infortrend's 5th-generation ASIC400 RAID engine
- ▣ RAID6 to withstand simultaneous drive failures
- ▣ SAS SFF-8470 or SFF-8088, SAS interfaces connectors
- ▣ Max. 80 drives (1 RAID + 4 JBODs)
- ▣ S.M.A.R.T. and NCQ support
- ▣ EonPath<sup>®</sup> software for path redundancy & load-balancing
- ▣ Expansion: RAID & corresponding JBODs



RAID	→	JBOD	RAID	→	JBOD
S16S-R1030		S16S-J1000-R	S16S-G1030		S16S-J1000-S
S12S-R1032		S12S-J1002-R	S12S-G1030		S12S-J1000-S

### High Availability

- \* Hot-swappable enclosure modules
- \* Component redundancy
- \* Intelligent reactive & preventive mechanisms
  - Automated cache flush
  - Automated Media Scan
  - Auto rebuild on hot spares
  - Automated caching mode

### Advanced RAID Features

- \* RAID levels 0, 1 (0+1), 3, 5, 6, 10, 30, 50, 60
- \* RAID Parity regeneration
- \* 3 spare disk types: dedicated, global, enclosure-specific
- \* Instant array availability
- \* Stripe size and caching mode configurable per logical drive
- \* Online array expansion by adding drives or copying & replacing drives
- \* Online disk cloning

### Management

- \* Browser-based RAIDWatch manager
- \* Java-based RAIDWatch manager
- \* LCD keypad panel
- \* Terminal console via RS-232C
- \* Telnet

### Monitoring

- \* S.M.A.R.T. status pooling
- \* Voltage, module presence, temperature monitoring
- \* Automated FRU status pooling

### Operation Robustness

- \* Intelligent read algorithms
- \* Write cache threshold purge
- \* Bad sector reassignment
- \* Configurable task priority
- \* Multiple, co-existing RAID arrays w/ variable stripe sizes
- \* RAID level migration
- \* Drive roaming

### JBOD Characteristics

- \* Single or dual expander controllers
- \* SAS 4x wide ports (SFF-8470/8088) with RAID systems
- \* Path redundancy through separate SAS domains
- \* Fault-tolerant hardware
- \* Diagnostic LED panel
- \* In-band enclosure management service



## AVAILABLE MODELS

1 channel = 4 combined PHYs

Model	Controller	Host Channels	Drive Bays	Expansion Port	JBOD Expansion	SAS connector
S16S-R1030	Redundant	4	16	2	3 (48 HDD)	SFF-8470
S16S-G1030	Single	2	16	1	4 (64 HDD)	SFF-8470
S12S-R1032	Redundant	4	12	2	3 (36 HDD)	SFF-8088
S12S-G1030	Single	2	12	1	4 (48 HDD)	SFF-8470



S16S



S12S

## SPECIFICATIONS

### RAID

#### CHARACTERISTICS (per controller)

- RISC CPU
- Default DDR cache memory 512MB
- SAS host ports 2
- SAS 4x wide link expansion 1
- BBU Optional for G models
- LCD keypad panel 1
- COM ports 2
- 10/100 Ethernet port 1
- PSUs 2
- Cooling modules 2
- Diagnostic LEDs on all FRUs

#### DRIVE INTERFACES

- Intermixed SAS/ SATA II
- Number of disk trays 16 or 12
- Proprietary enclosure service via in-band SAS links

#### HOST CONNECTION PORTS

- Data single channel bandwidth 12Gbps
- Tag command queuing 256

#### RAID CONFIGURATIONS

- RAID levels 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60
- Up to 32 logical drives (varies by memory size)
- Up to 64 LUNs (varies by memory size)
- Up to 2GB cache per controller
- Multiple array configurations
- Infortrend Smart, proactive fault management technologies

#### HIGH AVAILABILITY

- Redundant, hot-swappable FRUs
- Subsystem self-diagnostics
- Li-Ion battery backup unit
- UPS status detection
- Multiple local, global, and enclosure-specific hot-spares

#### MANAGEMENT SOFTWARE

- Browser-based and Java-based RAIDWatch software
- Terminal console via RS-232C
- Telnet over Ethernet
- Event notification methods:  
E-mail/ Fax/ LAN broadcast/ SNMP traps/ SMS/MSN

#### APPROVALS

- RoHS
- China RoHS
- Microsoft WHQL-Windows Server 2003

#### EMC

- CE
  - EN 55022: 1998/A1: 2000/A2: 2003
  - EN 61000-3-2: 2000/A1: 2001
  - EN 61000-3-3: 1995/A1: 2001
  - EN 55024: 1998/A1: 2001/A2: 2003
- FCC (FCC Part 15, subpart B)
- BSMI (CNS 13438)

#### Safety

- UL (60950-1: 2003)
- BSMI
  - CNS 14336: 1993
  - IEC 60950-1, First Edition

#### OS SUPPORT

- Microsoft Windows 2003 Server
- Microsoft Windows 2000 Server
- Sun Solaris ver. 9/10
- RedHat Linux ver. 8/9, 64-bit, Enterprise ver.3
- SuSE: Linux ver. 8/9, 64-bit
- Fedora 64-bit
- Mac OS X version 10.4

#### REQUIREMENTS

	AC input	DC output
3U	530W max. 100V@9A; 240V@4.5A	12V-32A, 5V-32A, 3.3V-30A
2U - R1032	530W max. 100V@10A; 240V@5A	12V-43A, 5V-25A
G1030	460W max. 100V@8A; 240V@4A	12V-24A, 5V-36A, 3.3V-32A

- Relative Humidity: 5% to 95% (non-condensing)
- Operating Temperature: 0°C to 35°C (40°C w/o BBU)

#### DIMENSIONS

- 19-inch rackmount chassis

	w/o handles	W/ handles
3U	445W x 130H x 488.2D mm (17.5 x 5.11 x 19.2 inches)	482W x 131H x 504.3 mm (19 x 5.15 x 19.8 inches)
2U	446W x 88H x 498D mm (17.5 x 3.46 x 19.2 inches)	482W x 88H x 516 mm (19 x 3.46 x 20.3 inches)

#### Shock & Vibration

Shock - half sine	Vibration
Operating: 5G peak, 11ms duration	operating: 0.5oct/min, 5 to 500Hz, sine wave, 0.2G
Non-operating: 15G, 11ms	non-operating: 0.5oct/min, 5 to 500Hz, sine wave, 1.0G

### JBOD

#### CHARACTERISTICS

- Redundant or single expander controller
- SAS 4x wide port per controller 2
- PSUs 2
- Cooling modules 2
- Diagnostic LED panel
- Path redundancy via separate SAS domains
- Connectors:  
SFF-8470 Infiniband type: S16S-J1000-R/S S12S-J1000-S  
SFF-8088 Mini-SAS: S12S-J1002-R

#### DRIVE INTERFACE

- Intermixed SAS/ SATA II
- Number of disk trays 16 or 12

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