

2U Profile, 12- or 8-bay
Single-controller
SCSI to SATA-II RAID Subsystem

EonStor[®] A12U/A08U-G2421



Designed using Infortrend's custom ASIC266 as a dedicated XOR engine, the EonStor A12U and A08U provide ample margins for flexible load-balancing and multi-pathing algorithms. Providing a twofold performance increase, the dedicated ASIC architecture frees the PowerPC CPU of XOR computing load and features abundant bandwidth sufficient for the subsystem's various data protection procedures with minimum disturbance to host access.

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The subsystem provides two SCSI-320 host channels with 12 or 8 drive bays for SATA-II disk drives in a smartly managed enclosure. The subsystem combines massive storage capacity with SATA-II benefits, such as high performance and dedicated bandwidth, in a safe environment where the highest level of data availability is assured. High throughput is available by segregating I/O traffic across the separate PCI-X buses, while IOPS performance is delivered through the internal buffer on the XOR engine and CPU with the help of intelligent firmware algorithms.

Infortrend's RAID functionality is unmatched in the industry in terms of its wide variety of array configuration, maintenance, and monitoring capabilities. The SCSI-to-SATA series provides IT professionals with versatile options to meet their needs.

■ Highlights

- Two (2) SCSI-320 host channels; transfer rate up to 320MBps per channel
- RAID 5 Configuration end to end I/O performance
 - Sequential Read :328 MB/s
 - Sequential Write :229 MB/s
- Single RAID controller providing complete RAID functionality
- Designed to use 3Gbps SATA-II disk drives; backward compatible with SATA-I disk drives
- Modular, passive backplane, high redundancy enclosure design
- High density 2U chassis providing up to 5TB of storage capacity
- Optional, hot-swappable battery backup units (BBU)
- Dual-speed cooling fans to reduce system noise
- DDR cache memory up to 2GB
- SATA NCQ support
- Real-time event notification by a variety of Methods
- Hardware provider interface ready for third-party management software that supports Windows Server 2003 Virtual Disk Service(VDS)

■ Reliability

The subsystem supports a complete list of RAID configuration levels in the forms of logical drives, logical volumes and logical partitions. Multiple RAID configurations can co-exist within one enclosure, each with distinct write policy, stripe size, and optimization modes. Hot rebuild and numerous fault correction mechanisms ensure the highest standard of RAID protection.

Safe distribution of data is embodied in many ingenious fault-preventive designs. From memory ECC, write-verify, parity regeneration, parity update tracking, Media Scan, to battery backup protection, your data is warded against factors that might cause data inconsistencies. For example, the subsystem is capable of managing storage arrays with fault containment algorithms. If a critical component fails, e.g., a battery module, the subsystem automatically disables its write-back caching and assumes the conservative write-through mode. Algorithms like this guarantees that data is reliably managed and all risk factors are always carefully checked.

■ Availability

The A12U and A08U subsystems are equipped with field-hardened technologies that ensure data protection and a simple, centralized management. The subsystems are managed by firmware developed with sophisticated RAID technologies and redundant component designs. Incorporating various data protection algorithms and featuring RAID levels 0, 1(0+1), 3, 5, 10, 30, and 50, the subsystem actually offers capabilities only seen in enterprise-class solutions.

To ensure a high level of system availability, critical components such as disk drives, power supplies, and cooling fans, are all redundant and hot-swappable. Modules are integrated with the main signal path PCB via board-to-board or interface-specific connectors to eliminate points of failure. Assisted by GUI management software, the operating status of all components can be constantly monitored through a local or remote console.

■ Serviceability

All critical modules are housed in their own removable canister, including hard disk drives, power supplies, battery modules, and cooling fans. In the event of component failure, each can be replaced within seconds. Spring screws, securing latches, and key-locks all help provide easier access to the modules.

A variety of configuration and monitoring methods are available, either locally via the LCD keypad panel and the text-mode RS-232C terminal utility, or remotely through the Java-based GUI manager. All fault conditions, including module failure and abnormal voltage and temperature readings, are instantly reported. A system administrator can choose to be notified via LAN broadcast, SNMP traps, email, fax, SMS, ICQ, and MSN messenger when he is away from the installation site. Even the notification utility can be installed redundantly on two different machines to avoid the chance of blind time due to a simple component failure.

■ Infortrend Smart Technologies

Derived from more than ten years of experience in RAID storage design, our firmware features extremely compact protocol and rich varieties of algorithms to deal with the stringent requirements of storage applications. The technologies are smart for I/O processing, drive handling, and system management.

IOSmart

The IOSmart technologies consist of specific functions and configuration options that control various I/O characteristics in order to meet the rapidly increasing requirements of today's applications. These functions include the adaptable stripe size, Adaptive write policy, optimizations modes, Guaranteed Latency I/O, and the automatically adjusted multi-threaded, predictive read-ahead, sorted, or group writes.

DrvSmart

DrvSmart is comprised of fault-preventive algorithms that ensure data integrity when conditions related to hard drive imperfections occur. DrvSmart mechanisms correct minor defects, increase reaction time, allow

more time to prepare a rebuild, and help minimize performance impact. DrvSmart functions include Media Scan & Task Scheduler, hot-spare, drive roaming, SMART and manual cloning options, etc.

SysSmart

SysSmart combines enclosure monitoring and firmware management capabilities in order to minimize the chance of downtime caused by hardware failures. With SysSmart, Infortrend's subsystems are smartly managed and guarded against extreme operating conditions.

SysSmart functions include the event-triggered, Auto data protection mechanisms and the various monitoring utilities and monitoring approaches combined with the powerful RAIDWatch manager.

Specifications

Subsystem Characteristics

• 400MHz CPU, 256KB L2 cache	
• ASIC266 RAID engine	
• DDR cache memory	256MB
• SCSI-320 host channels	2
• LCD keypad panel	1
• COM ports	1
• 10/100BaseT Ethernet port	1
• Diagnostic LEDs on all FRUs	Yes

Drive Interface

• Number of disktrays	12/8
• SATA-I/II drive support	Yes

Host Interface

• VHDCI SCSI ports	Yes
• Single channel bandwidth	320MBps
• Tagcommand queuing	Yes
• Multiple target IDs	Yes

RAID Configurations

- RAID levels 0, 1(0+1), 3, 5, 10, 30, 50, JBOD
- Max. 16 logical drives
- Max. 128 LUNs
- Multiple array configurations
- Automatic background rebuild
- Intelligent drive handling

High Availability

• Redundant, hot-swappable FRUs	Yes
• Subsystem self-diagnostics	Yes
• Battery backup unit	Yes
• Hot-spare drives	Yes

Management

• RAIDWatch GUI software	Yes
• Terminal via RS-232C	Yes
• Telnet over Ethernet	Yes
• LCD keypad panel	Yes
• Event notification methods	
Email	Yes
Fax	Yes
LAN broadcast	Yes
SNMP traps	Yes
Cell phone message	SMS
Instant messengers	MSN/ICQ

OS Support

- Microsoft Windows NT
- Microsoft Windows 2000 Server
- Microsoft Windows 2003 Server
- Sun Solaris ver. 8/9
- Red Hat Linux ver. 8/9, enterprise ver. 3
- SuSE Linux ver. 8/9

Requirements

- AC Input: 100VAC at 6A; 240VAC at 3A with PFC (auto-switching)
- DC Output: 12V-25A; 5V-25A; 3.3V-20A
- Relative Humidity: 5% to 95% non-condensing
- Operating Temperature: 0°C to 40°C

Dimensions

- 2U, 19-inch rackmount chassis
- Without handles: 446(W) x 88(H) x 490(D) mm (17.6" x 3.5" x 19.3")
- With handles: 482(W) x 88(H) x 505(D) mm (19" x 3.5" x 19.9")



Major Markets and Uses

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



Spare Parts

Description	Part Number
SCSI to SATA RAID controller module, 2 x SCSI-320 host channels, 8 x SATA-II drive channels	IFT-82AU24GD08
SCSI to SATA RAID controller module, 2 x SCSI-320 host channels, 12 x SATA-II drive channels	IFT-82AU24GD12
Drive tray, Type-III bezel and Type-II LED lightpipe	IFT-9273CDTray
Power supply module, EonStor 2U DDR-interface subsystems, 350W capacity	IFT-9272CPSU-0011
Intelligent cooling fan module for EonStor 2U DDR-interface subsystems	IFT-9272CFanModE
Right-side forearm handle for 2U subsystems	IFT-9272CHandR
Left-side forearm handle with LCD keypad panel for 2U subsystems	IFT-9272CHandLLCD

Accessories

Description	Part Number
SCSI external round cable, DB68-to-VHDCI	IFT-9270UHstCab
External SCSI round cable, VHDCI-to-VHDCI *One included in the shipping package	IFT-9270UJBODCab
Battery cell pack, Li-ION battery cells	IFT-9273CBT-C
RS-232C serial cable, audio-jack-to-DB9 *One included in the shipping package	IFT-9270ASCab
Null modem, DB9-female-to-DB9-male, wires swapped *One included in the shipping package	IFT-9011
Enhanced Slide rails assembly for 2U enclosures, 21"~28.5" rack depth	IFT-9272CEslide28
Enhanced Slide rails assembly for 2U enclosures, 23"~36" rack depth	IFT-9272CEslide36



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Americas
Infortrend Corporation
 3150 Coronado Dr, Unit C
 Santa Clara, CA 95054, USA
 Tel: +1-408-988-5088
 Fax: +1-408-988-6288
 sales@infortrend.com
 tsd@infortrend.com
 http://www.infortrend.com

Asia Pacific
Infortrend Technology, Inc.
 8F, No. 102 Chung-Shan Rd, Sec. 3
 Chung-Ho City, Taipei Hsien, Taiwan
 Tel: +886-2-2226-0126
 Fax: +886-2-2226-0020
 sales@infortrend.com.tw
 support@infortrend.com.tw
 http://www.infortrend.com.tw

China
Infortrend Technology, Ltd.
 Room 1210, West Wing, Tower One,
 Junefield Plaza, No. 6 Xuanwumen Street,
 Xuanwu District, Beijing, China. 100052
 Tel: +86-10-63106168
 Fax: +86-10-63106168
 sales@infortrend.com.cn
 support@infortrend.com.cn
 http://www.infortrend.com.cn

Japan
Infortrend Japan, Inc.
 6F Okayasu Bldg., 1-7-14 Shibaura,
 Minato-ku, Tokyo, 105-0023 Japan
 TEL: +81-3-5730-6551
 FAX: +81-3-5730-6552
 sales@infortrend.co.jp
 support@infortrend.co.jp
 http://www.infortrend.co.jp

Europe
Infortrend Europe Ltd.
 5 Elmwood, Crockford Lane
 Chineham Business Park
 Basingstoke, Hampshire
 RG24 8WG, UK
 Tel: +44-1256-70-77-00
 Fax: +44-1256-70-78-89
 sales@infortrend-europe.com
 support@infortrend-europe.com
 http://www.infortrend-europe.com