EonStor® A16F-R2431

3U Profile, Redundant RAID Controller, Four (4) FC-4G Host Channels
16-drive SATA RAID Subsystem

The EonStor A16F-R2431 is designed for always-on, 24x7 high availability operations. The A16F array meets the most demanding needs featuring all necessary fault-tolerance mechanisms, ranging from controller failover/failback, battery-backed synchronized cache, to high-quality, redundant components. Built around the latest ASIC400 with the boost of expanded bandwidth, the array is able to deliver extraordinary performance especially when processing complex parity such as RAID6.

In addition to its full-featured functionalities, the subsystem delivers almost a half more of system throughput via the 4Gbps Fibre Channel interfaces. With up to eight (8) host ports, onboard bypass, and the EonPath™ multipathing drivers, the subsystem comes with superior interoperability with existing SAN environments and additional connection points for path redundancy.

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OVERVIEW

The A16F-R2431 comes in a cableless, backplane-based enclosure with ingenious implementations for business continuity. All major components come in redundant, hot-swappable pairs whose operation statuses are constantly available via comprehensive interfaces such as LCD screen, firmware utility, telnet console, browser-based or Java-based RAIDWatch software. Behind the robust hardware lies a firmware core that sums a decade of storage development. And hence the subsystem is at ease with faults that might jeopardize RAID storage stability, be it related to thermal, hard drive behaviors, or sensitive application characteristics.

In sum, the A16F-R2431 offers good capacity-footprint and cost-GB ratio with capabilities fulfilling every demands of enterprise storage bringing you massive storage capacity, hands-free maintenance, and the ease to fit into SAN environments.

HIGHLIGHTS

- **Dual-active RAID controllers with fault-tolerant features**
- **Two (2) FC-4G host channels per controller**
- **16Gbps aggregated host-side bandwidth**
- **Max. 8 host ports with onboard bypass (onboard hub)**
- **Hardware RAID6 through a dedicated XOR engine**
- **Up to 2GB DDR cache memory per controller**
- **Accommodates sixteen (16) SATA-II disk drives with NCQ**
- **Highest density in a 3U for up to 12TB raw capacity**
- **Embedded, browser-based RAIDWatch manager**
- **Intelligent load-balancing; internally & between host links by EonPath™ multi-path software**

Reliability

The A16F-R2431 fully supports advanced, enterprise-class RAID features. Multiple logical drives or logical volumes co-exist with configuration levels starting from RAID0 to the multi-level RAID60, which has recently become a proprietary addition that features unprecedented protection with the ability to handle the failure of any two disk drives.

EonPath multipathing drivers are now available for application servers running Windows, Solaris, or Linux operating systems. EonPath provides multipath IO function by recognizing and managing the fault-tolerant data paths to an individual RAID volume. Greater reliability is achieved through the path failover mechanism in the event of cabling component failure. The EonPath also comes with load-balancing algorithms which help accelerate the throughput across host-storage data links.

Availability

The A16F-R2431 inherits high availability EonStor architecture with enhancements such as RoHS compliance and redesigned modules. Constructed for component level redundancy, electrical and signal paths are strung across a common backplane and interfaced with critical components using quality connectors. The highly integrated design allows all critical components such as disk drives, RAID controllers, power supplies, cooling modules, sensors and detection circuitry to function as an organic whole. A fault condition triggers reactive and preventive measures, e.g., forcing cache flush, to reduce the chance of data loss or further damage.

Manageability

The subsystem's built-in Ethernet port ensures easy access to the Java-based RAIDWatch Manager for remote configuration, management, and monitoring functions. RAIDWatch Manager provides "Installed Once, Runs Anywhere" convenience with a user-friendly graphical user interface. Additionally, the subsystem can be accessed through the LCD keypad panel, RS-232C terminal, and telnet.

INFORTREND SMART TECHNOLOGIES

Derived from a decade of experience in RAID storage design, our firmware features extremely compact protocol and rich varieties of algorithms to deal with the stringent demands of today's storage applications. The technologies are smart enough to handle various I/O characteristics, drive media defects, and system fault conditions.

IOSmart

The IOSmart technologies consist of specific configuration options that control various I/O characteristics in order to meet the rapidly increasing requirements of today's applications. The functions include adaptable stripe size, adaptive write policy and guaranteed latency I/O which improve sequential write performance and ensure fast and efficient data flow. The AV optimization options provide means to adapt to applications with multi-threaded I/Os and various I/O queue depths.

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 features include Media Scan & Task Scheduler, hot-spare, drive roaming, SMART and manual cloning options, and transparent resetting of non-responsive hard drives.

SysSmart

SysSmart combines enclosure monitoring and firmware management capabilities to minimize the chance of downtime caused by hardware failures. Other SysSmart functions include event-triggered as well as other monitoring utilities and approaches combined with the powerful RAIDWatch manager. Component status, voltage and temperature readings, and system events are instantly revealed through the manager's graphical interface.

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.

SPECIFICATIONS

Subsystem Characteristics

- PowerPC RISC CPU, 1MB L2
- ASIC400 RAID engine
- Default DDR cache memory 512MB
- FC-4G host channels per controller 2
- BBU 2
- LCD keypad panel 1
- COM ports 4
- 10/100 Ethernet port 2
- PSUs 2
- Cooling modules 2
- Diagnostic LEDs on all FRUs

Drive Interface

- Number of disk trays 16
- SATA-II disk drive

Host Connection Ports

- SFP ports to optical fiber 8
- Data single channel bandwidth 400MBps
- Tag command queuing 256
- Multiple target IDs

RAID Configurations

- RAID levels 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60,
- Up to 32 logical drives (varied by memory size)
- Up to 1024 LUNs (varied by memory size)
- Multiple array configurations
- Automatic background rebuild
- Infortrend Smart proactive fault management technologies

High Availability

- Redundant, hot-swappable FRUs
- Subsystem self-diagnostics
- Parity regeneration and Media Scan scheduler
- Li-Ion battery backup unit
- UPS status detection
- Multiple Local, Global, and Enclosure-specific hot-spares

Management Software

- Browser-based or Java-based RAIDWatch GUI software
- Terminal via RS-232C
- Telnet over Ethernet
- LCD keypad panel
- Event notification methods:
  - Email
  - Fax
  - LAN broadcast
  - SNMP traps
  - Cell phone message SMS
  - Instant messages MSN

OS Support

- Microsoft Windows 2000 Server
- Microsoft Windows 2003 Server
- Sun Solaris ver. 9/10
- Red Hat Linux ver. 8/9, 64bit, Enterprise ver. 3
- SuSE: Linux ver. 8/9, 64bit
- Fedora 64bit
- MAC OSX Version 10.4

Requirements

- AC Input:
  100 ~ 240VAC with 530W PFC (auto-switching)
- DC Output:
  12V-32A; 5V-32A; 3.3V-30A
- Relative Humidity:
  5% to 95% non-condensing
- Operating Temperature:
  0°C to 40°C (without BBU)
  0°C to 35°C (with BBU)

Dimensions

- 3U, 19-inch rackmount chassis
- Chassis without handles:
  445(W) x 130(H) x 488.2(D) mm
  (17.5 x 5.1 x 19.2 inches)
- Chassis with handles:
  482.6(W) x 131(H) x 504.3(D) mm
  (19 x 5.1 x 19.9 inches)

Reliable Secure Innovative

SPARE PARTS & ACCESSORIES

Spare Parts

Description	Part Number
Fibre to SATA RAID controller module, for ES A16F-R2431 subsystem, RAID 6	IFT-83AF24RE16
Drive tray, Type-III bezel and Type-II LED light-pipe	IFT-9273CDTray
Trays w/ MUX (for dual-controller config. using SATA drives)	IFT-9273S1DT2S1S
Power supply module, enhanced EonStor 16-bay subsystems, 530W capacity	IFT-9273ECPSU
Cooling fan module for enhanced EonStor 16-bay subsystems	IFT-9273ECFanMod
Left-side forearm handle with LCD panel for 3U RAID subsystems	IFT-9273CHandLLCD
Right-side forearm handle for 3U subsystems; for the left or right side of JBOD subsystems	IFT-9270CHandR
512MB DDR RAM DIMM module for ASIC400 platform	IFT-DDRESCM5
1GB DDR RAM DIMM module for ASIC400 platform	IFT-DDRESCMA
2GB DDR RAM DIMM module for ASIC400 platform	IFT-DDRESCMB
Li-Ion battery cell pack (4 cells), w/ EEPROM for event notification when life expectancy is reached.	IFT-9273CBTE

Accessories

Description	Part Number
Null modem, DB-9-female-to-DB-9-male, wires swapped	IFT-9011
HDD dongle board, 2- to-1 SATA-II MUX kit connersion, dual-controller subsystem	IFT-9273S1N2S1S
Dummy drive tray	IFT-9273CDTrayDmy
RS-232C serial cable, audio-jack-to-DB-9, Y-cable to dual controllers	IFT-9270AYCab
UPS cable, audio-jack to DB-9, Y-cable to dual controllers	IFT-9270CUPSYCab
Agilent Fibre Channel 4.25/ 2.125 / 1.0625 GBd Small Form Pluggable Optical Transceiver, LC, waive-length 850nm, multi-mode	IFT-9270CSFP4GA01
Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 1 Meter	IFT-9270CFCCab01
Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 5 Meters	IFT-9270CFCCab02
Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 10 Meters	IFT-9270CFCCab03
Slide rail assembly for Enhanced EonStor 3U enclosures, 28" to 32" rack depth	IFT-9273Cslider32
Slide rail assembly for Enhanced EonStor 3U enclosures, 32" to 36" rack depth	IFT-9273Cslider36

Infortrend®
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.ap@infortrend.com
support.ap@infortrend.com
http://www.infortrend.com.tw

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

Europe
Infortrend Europe, Ltd.
5 Elmwood, Crockford Lane
Chineham Business Park
Basingstoke, Hampshire
RG24 8WG, UK
Tel:+44-(0)1256-70-77-00
Fax:+44-(0)1256-70-78-89
sales.eu@infortrend.com
support.eu@infortrend.com
http://esupport.infortrend-europe.com
http://www.infortrend.com

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:+86-10-63106188
sales.cn@infortrend.com
support.cn@infortrend.com
http://esupport.infortrend.com.tw
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.jp@infortrend.com
support.jp@infortrend.com
http://esupport.infortrend.com.tw
http://www.infortrend.co.jp

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