



Comet SATA-II 24eF4



Overview

The Comet SATA-II 24eF4 is built around Caen's next-generation custom-built ASIC400 with XOR engine. Boasting a 4GB internal bandwidth, the architecture features the 133MHz 60x bus from the CPU with the dual PCI/PCI-X buses for I/O transactions.

The Comet SATA-II 24eF4 subsystem combines two 4Gbps Fibre host channels with 24 drive bays for SATA-II drives in a smartly managed enclosure. High throughput is available by segregating I/O traffic across the dual PCI-X buses, while IOPS performance is delivered through the 512KB buffer on the XOR engine with the help of intelligent firmware algorithms.

High Performance

Featuring a 64-bit 400MHz data bus, the subsystem's high data throughput is more than sufficient for small-to-medium sized servers or workstations. Robust functionality and adaptive algorithms facilitate chip-level operation that is already fast and flexible. For example, a timeout can be configured for individual drive response time. If a specific disk drive fails to respond in time, the firmware accumulates data from the adjacent stripes of the array to satisfy applications that require rapid transfer of data.

When processing I/O requests of diverse characteristics, adaptive write caching is dynamically engaged to optimize array performance. If the firmware recognizes sequential strings of write requests, write caching is automatically disabled. Write caching is automatically enabled when receiving random requests.

These adaptive designs assure sufficient throughput for a wide range of applications for Windows 2000/2003/XP, Linux workstations, or Unix-based servers. Ideal applications include disk-to-disk backup, Video on Demand, CCTV, stream editing, and others.

Enclosure Management

The Comet SATA-II 24eF4 subsystem incorporates massive storage capacity in a safe environment where a variety of hardware and firmware mechanisms ensure the highest level of data availability. In addition to RAID protection for the disk drives, the PSUs and cooling modules come implemented as redundant/hot-swappable modules. Even the battery module can be replaced online.

Features

- Two (2) FC-4G Host Channels, transfer rate up to 400Mbps per channel
- Compatible with the latest 3.0Gbps, SATA-II disk drives
- ASIC400 architecture that supports hardware RAID 5 and RAID 6 engine.
- Market leading I/O performance
 - Sustained RAID 5 Read / Write at 658/460 MB/sec.
 - Sustained RAID 6 Read / Write at 651/411 MB/sec.
- Highest density 4U chassis providing up to 24TB storage capacity
- Optional Hot Swappable Cache Battery Backup design
- Dual-speed fans to reduce system noise
- Embedded RAIDWatch software for effortless RAID management
- SANWatch storage management software now available
- Expansion via SFF-8470 SAS Wide links

The rotation speed of the enclosure's dual-speed fans is controlled by the firmware. In critical conditions, e.g., PSU or fan failure, the fan rotation speed is raised to a higher level. Control over caching behaviors is a user-configurable option. In the event of component failures, such as UPS failure or low battery charge, the firmware stops caching write requests in cache memory.

Intelligent Drive Handling

If two bad blocks occur on two member drives of an array, the integrity of the stored data will be endangered. Media Scan is an innovative Intelligent Drive Handling function that retrieves data from degraded or damaged hard drives and handles low quality drives in both the degraded mode and during the rebuild process. For further data security, other intelligent drive management features include the transparent resetting of non-responsive hard drives, power-failure management, and bad-drive handling during LD expansion.

Media Scan has a unique function that helps repair media errors on drives. By combining the Task Scheduler with Media Scan, the scanning operation can be scheduled to begin at a specified start time and repeated at configured intervals. This hands-free operation allows each such schedule to be defined to operate on individual hard drives, all drives of a certain class, all member drives of a specified logical drive, or all member drives of all logical drives.

Caen Engineering, Inc.

675 N. Eckhoff St, Unit G · Orange, CA 92868
Phone: (714) 456-0800 · Fax: (714) 456-0805
www.caeneng.com · Email: sales@caeneng.com



Comet SATA-II 24eF4

RAID

- Multiple arrays configurable with dedicated or global hot spares
- RAID levels supported: RAID 0, 1 (0+1), 3, 5, 6, 10, 30, 50, 60, and NRAID
- Online expansion by:
 - Adding new drives
 - Copying and replacing drives with drives of larger capacity
- Automatic background rebuilds
- Configurable stripe size and write policy per array
- Intelligent drive handling:
 - In degraded mode: skips irreparable blocks to continue rebuild
 - In normal operation: data-block verification and repair

Subsystem Components

- Single controller configuration provides full RAID functionalities
 - One (1) Comet enhanced 4U enclosure
 - One (1) RAID controller module
 - One (1) 512MB DDR RAM DIMM module (pre-installed on the controller modules)
 - Three (3) hot-swappable, redundant, 406W power supply units (PSUs)
 - Three (3) redundant, dual-fan cooling modules running in high/low speeds
 - One (1) optional BBU
 - Twentyfour (24) hot-swappable drive trays
 - Two (2) front handles

Host Interface

- Two (2) 4G-FC host channels with embedded bypass to four (4) Fibre Ports
- Auto-negotiate FC-AL, point-to-point, or switched fabric
- Concurrent I/O commands
- Tagged command queuing up to 256
- Variable stripe size per logical drive
- Optimization setting for random or sequential I/Os

Drive Interface

- Twentyfour (24) hot-swappable 3Gbps SATA-II (3Gbps) drive trays that accommodate 1-inch pitch, 3.5-inch SATA-II (3Gbps) or SATA-I disk drives
- Automatic bad-sector reassignment
- Dedicated bandwidth to each connected drive

SAS Expansion Port

- SAS Wide port (SFF-8470), expandable to 12 or 16 Bay SAS to SAS/SATA JBOD unit (RSS12J-001 or RSS16J-001)

Interface Connections

- Four (4) SFP ports that receive SFP optic transceivers
- Two (2) COM ports on each controller module for RS-232C (Audio Jack) serial port connectors (38400, n, 8,1) and UPS support
- One (1) 10/100BaseT Ethernet port

Management

- Firmware-embedded utility via LCD keypad or RS-232C port
- Host-side SES emulation with pass-through to back-end SES emulation
- VT-100 terminal emulation via RS-232C
- Telnet access via onboard Ethernet port
- 10/100 BaseT Ethernet for out-of-band management
- Two (2) COM ports for local access to firmware-embedded utility and UPS connectivity
- Firmware-embedded Java-based RAIDWatch® manager:
 - Graphical user interface
 - Local/remote management; in-band or out-of-band via TCP/IP
 - Centralized management to monitor and administer multiple RAID units on one screen
 - Secure link over SSL
- Configuration Client for easy access to the configuration utility screen
- SNMP 2.0 MIBs with get and set commands

SAN Management

- Up to 1024 LUNs (if sufficiently large memory is used with the proper settings)

Indicators

- Onboard alarm is triggered when one of the following fails:
 - RAID controller module
 - Cooling module
 - Power supply unit
 - Hard drive
 - BBU module
- Module failure alert through I2C bus
- Event notifications sent over email, fax, LAN broadcast, SNMP traps, MSN messenger, SMS short messages
- System alerts through Java-based RAIDWatch manager

Enclosure Dimensions

- Chassis without handles: 445(W) x 174.4(H) x 498.2(D) mm (17.5 x 6.86 x 19.6 inches)
- Chassis with handles: 482.6(W) x 174.4(H) x 514(D) mm (19 x 6.86 x 20.2 inches)
- Package: 520(H) x 580(W) x 780(D) mm (20.5 x 22.8 x 30.7 inches)

System Weight

- Net weight: 38kg
- Gross weight: 41kg (without disk drives)

Caen Engineering, Inc.

675 N. Eckhoff St, Unit G · Orange, CA 92868
Phone: (714) 456-0800 · Fax: (714) 456-0805
www.caeneng.com · Email: sales@caeneng.com