

Supermicro All-in-One Zero-Channel RAID (ZCR) Controller Family

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Supermicro *All-in-One* ZCR Cards

- ❖ All-in-One Zero-Channel RAID Cards second generation:
 - ❖ AOC-LPZCR2
- ❖ Take advantage of onboard SAS/SATA/SCSI onboard controllers to achieve hardware RAID.
- ❖ All-In-One: Support SAS/SATA/SCSI modes by jumper settings. Save cost without buying separate ZCR cards.
- ❖ Replace the old Adaptec SCSI DAC-0007(2000S), DAC-0008(2010S) and SATA AOC-2020SA.
- ❖ Better performance, cost-effective and complete solution.
- ❖ Support SAS mode SES-2 enclosure management functionalities.
- ❖ Available now.

Supermicro AOC-LPZCR2



◆ Highlight:

- ✓ Support SAS, SATA and SCSI operating modes.
- ✓ Intel 600MHz I/O processor w/ 256MB onboard memory.
- ✓ Running up to PCI-X 100 MHz.

◆ AOC-LPZCR2:

- ✓ Support all X6/X7/H8 SATA/SCSI/SAS boards with Green Slots.
- ✓ X6DH3-G2, X6DHP-3G2 (SAS).
- ✓ X6DH8-G, X6DH8-G2, H8DA8 (SCSI).
- ✓ X6DHT-G, X6DHP-TG, X6DAT-G, X6DAL-TB2, H8DAR-T (SATA).

Software Features

Operating Systems:

- Windows: 2000/XP/2003.
- Linux: SuSE 9.0/9.1/9.2, Red Hat 3.0/4.0 .

❖ Key features:

- RAID detection, buildup, delete, error indication.
- RAID Levels 0, 1, 5, 10 and JBOD. (Additional RAID 50 for SAS)
- Disk initialization, verification and fix.
- Hot-spare disk drive support with automatic rebuild.

❖ Management Software:

- Adaptec Storage Manager (ASM), Adaptec Configuration Utility (ACU), Adaptec Flash Utility (AFU).

SCSI SAF-TE Enclosure Management and SES-2: SCSI Enclosure Service 2

- ❖ SCSI Accessed Fault Tolerant Enclosures Industry standard to interface with enclosed components
- ❖ Indicate disk drives failure with alarm and LED.
- ❖ Indicate disk drives rebuild through LED.
- ❖ Avoid human error, such as pulling out wrong disk drives.
- ❖ Temperature monitoring.
- ❖ SAF-TE chips:
 - SCSI controlled by GEM318 firmware and I2C interface
 - SAS controlled by AMI MG9071/9072 firmware and I2C interface. Downward compatible to support SATA disk drives.

Adaptec Storage Manager (ASM)

The screenshot displays the Adaptec Storage Manager (ASM) application window. The interface includes a menu bar (File, View, Remote, Actions, Help), a toolbar with icons for Add, Create, Silence, Properties, Events, Configure, and Help, and the Adaptec logo in the top right corner.

The main area is divided into three panes:

- Enterprise view:** Shows a tree structure with 'Direct attached storage' and 'Networked storage'.
- Physical devices:** Displays 'Controller 1 (Adaptec 4000SAS)' with two enclosures. Enclosure 0 (AMI MG9072) contains slots 0-3 (Optimal/Ready) and an enclosure management device. Enclosure 1 (AMI MG9072) contains slots 4-7 (Optimal/Ready) and an enclosure management device.
- Logical devices:** Shows 'Logical devices (1)' with a single device 'r5 - 101.35 GB, Building/Verifying: 14%'.

A 'Properties' window is open, showing details for the 'Enclosure management device'.

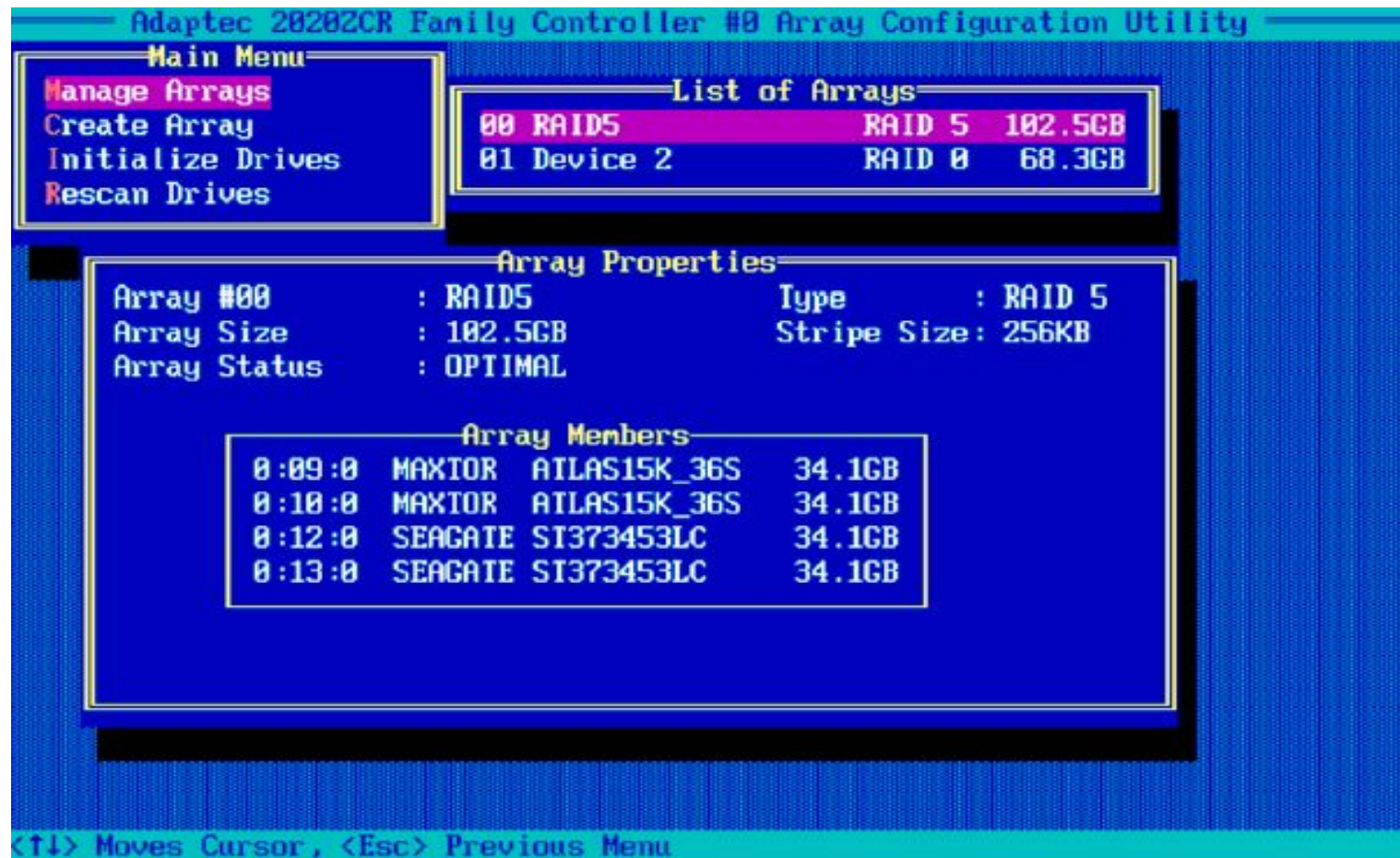
Device	Status
Type	Enclosure management device
Vendor	AMI
Model	MG9072
Firmware level	0003

At the bottom, a log table shows recent events:

Date	Time	Source	Description
03/23/2006	10:47:46 AM PST	localhost	User Administrator logged into localhost with administrative privileges.
03/23/2006	10:47:45 AM PST	localhost	Building/Verifying: controller 1, logical device 1 ("r5").
03/23/2006	10:44:46 AM PST	localhost	Adaptec Storage Manager started on TCP/IP port number 34,571.

Adaptec Configuration Utility (ACU)

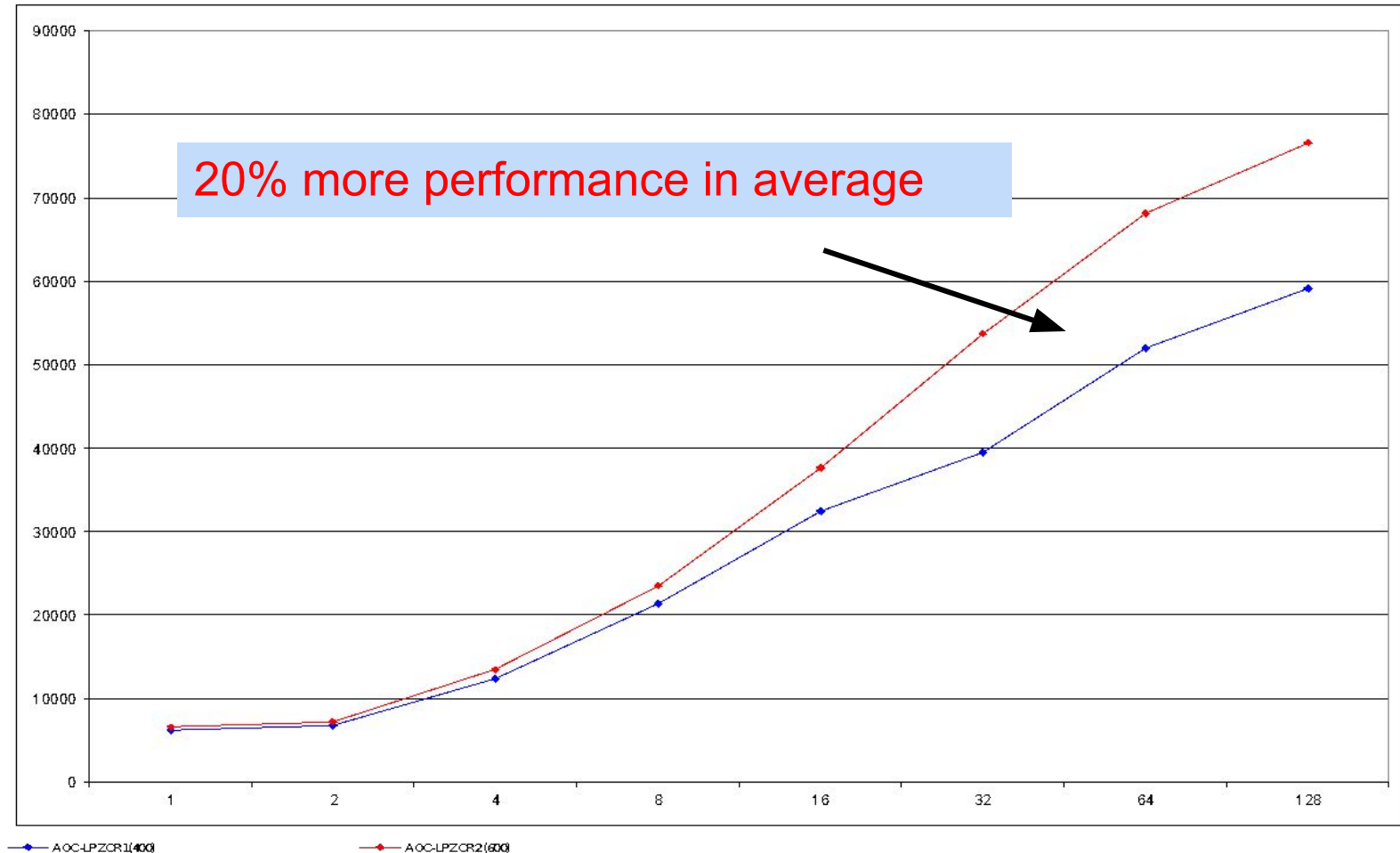
RAID configuration utility initiated from BIOS system boot up <CTL>
A



Performance comparison: Sequence Read 400MHz vs. 600MHz

Sequential Reads: Total IOs per Second By Queue Depth

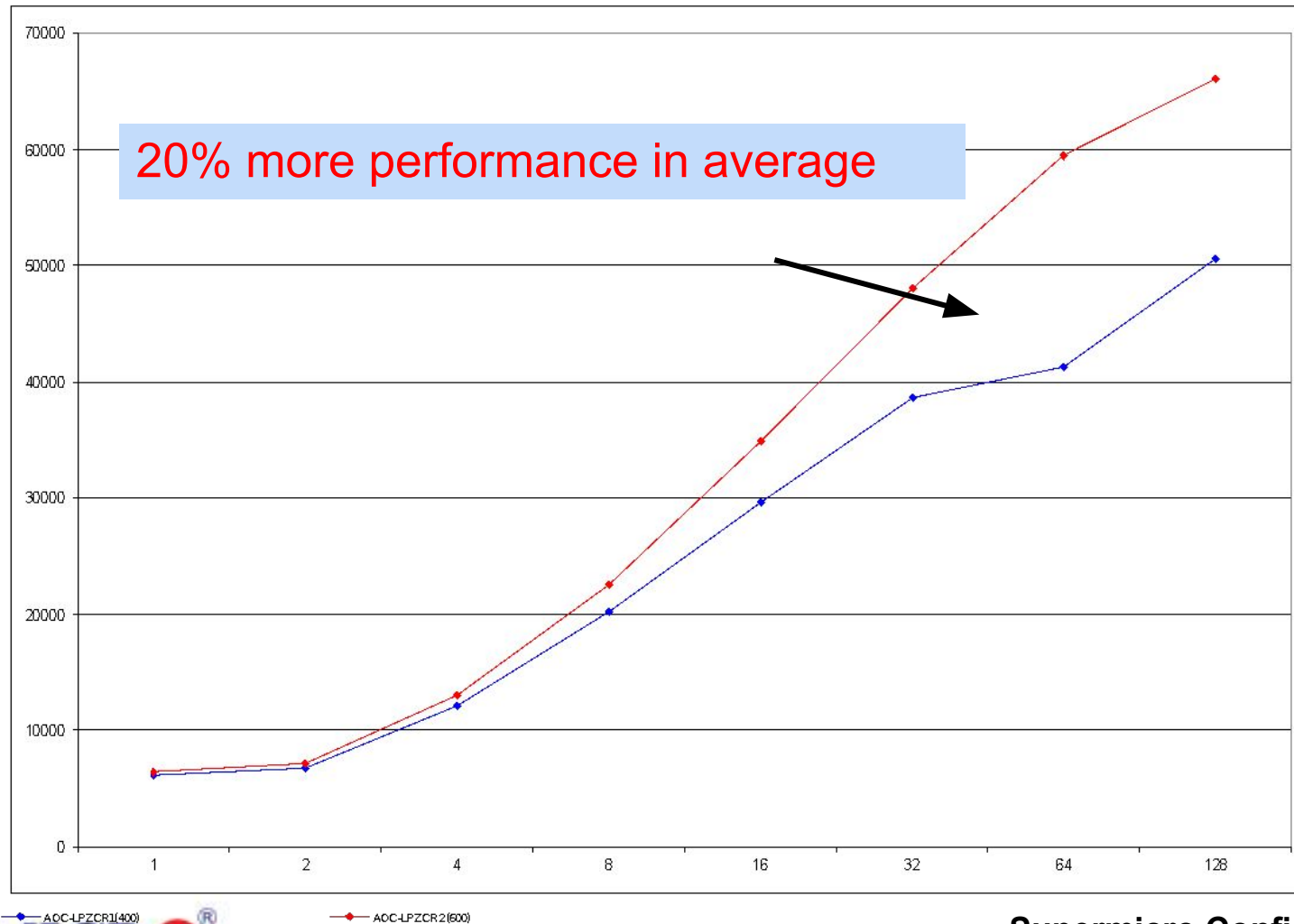
Host: SuperMicro X6DA3-GZ2 x3.6GHz Xeon(XM), 1GB DDR2-400, 800MHz FSB). Windows Server 2003EE w/ SP1
Controller: AOC-LPZCR1-400 + AOC-LPZCR2-600. Fixed Firmware. Read tests W30 R30. Write tests W20 R30.
Drive Configuration: 4 x 36GB Hitachi HUS71B6MLS300 in R5 4dr array(WB, RA)
Request Size = 512B



Performance comparison: Sequence Write 400MHz vs. 600MHz

Sequential Writes: Total IOs per Second By Queue Depth

Host: SuperMicro X6DA3-G2(2 x 3.6GHz Xeon®(EM6), 1GB DDR2-400, 800MHz FSB). Windows Server 2003 EE w/ SP1
Controller: AOC-LPZCR1-400 + AOC-LPZCR2-600. Fixed Firmware. Read tests: W30 R30. Write tests: W120 R30.
Drive Configurations: 4 x 36GB Hitachi HUS73136VLS300 in R5 4dr array(WB, RA)
Request Size = 512 B



Key Points

- ❖ Supermicro offers the first All-in-One ZCR solution to the market
- ❖ Supermicro offers the first SAS with SES2 complete solutions
- ❖ ZCR provides high data protection hardware RAID functionalities with very cost-effective solutions
- ❖ Supermicro second generation ZCR provides high performance (600MHz processor with 256MB cache buffer) – outperform the first generation 20% more
- ❖ Supermicro offers the ZCR solutions for many years – proven technology, mature products – zero risk of adoption