Asus PCI-DA2200 User Manual

Pci-to-ultra2 scsi raid controller

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

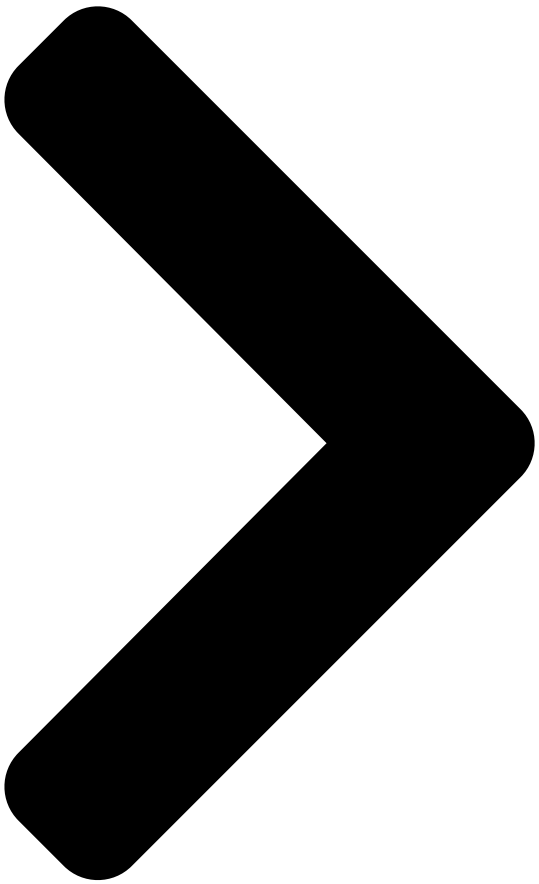
Table of Contents

-

Troubleshooting

-

Bookmarks



PCI-DA2200

PCI-to-Ultra2 SCSI RAID Controller

User's Manual

Version 1.2

Table of Contents

Next Page

1
2
3
4
5

Chapters

Related Manuals for Asus PCI-DA2200

Network Router Asus PCI-DA2100 User Manual

Pci-to-scsi ultrawide raid controller card (410 pages)

Controller Asus LSI 8300XLP User Manual

User manual (64 pages)

Controller Asus AAEON BOXER-6614 User Manual

Fanless embedded box pc (112 pages)

Controller Asus AAEON BOXER-6843-ADS User Manual

Fanless embedded controller (149 pages)

Controller Asus AAEON AIOT-MSSP01 User Manual

Mini ssp vending control board (62 pages)

Controller Asus OC STATION Quick Installation Manual

Rog oc controller (49 pages)

Controller Asus AAEON AHP-1154 User Manual

Industrial hmi touch panel (78 pages)

Summary of Contents for Asus PCI-DA2200

Page 1 PCI-DA2200 PCI-to-Ultra2 SCSI RAID Controller User's Manual Version 1.2...

Page 2: Copyright Information

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Page 3: Contact Information

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Page 4: Federal Communications Commission Statement

FCC & DOC Compliance Federal Communications Commission Statement This device complies with FCC Rules Part 15. Operation is subject to the following two conditions: • This device may not cause harmful interference, and • This device must accept any interference received, including interference that may cause undesired operation.

Page 5: Table Of Contents

Page 6 Installing Driver During OS/2 2.x or 3.0 Installation..A-22 Installing Driver in an Existing OS/2 2.x/3.0 System ..A-22 Updating ASUS PCI-DA2200 OS/2 Device Driver ..A-23 ASUS PCI-DA2200 OS/2 Driver Command-Line OptionsA-23 Driver Installation for SCO OpenServer and UnixWare..A-25 Installing the SCO OpenServer Driver .....

Page 7: Chapter 1 Introduction

RAID 0, 1, 3 or 5 capability to any host system equipped with a Little Endian PCI Local Bus interface. All the RAID functions of ASUS PCI-DA2200 are performed by an AMD 5x86 CPU coupled with high-speed DRAMs and firmware in flash memory. In effect, it endows the host system with the high-performance and fault-tolerant disk storage operation of RAID technology.

Page 8 This page is left intentionally blank. ASUS PCI-DA2200 User's Manual...

Page 9: Chapter 2 Features

ü All channels are Ultra2-Wide-SCSI (downward compatible to SCSI-1) ü Compatible and will automatically match any SCSI hard disks with SCSI-1, SCSI-2 or (Ultra)-Wide-SCSI (1 or 2) specification ASUS PCI-DA2200 User's Manual...

Page 10 DRAM ü EDO DRAM supported for enhanced performance ü Up to 128 Mbytes of intelligent Read-Ahead/Write-Back cache ü Firmware resides in easy-to-update Flash Memory ü GUI RAID Manager and Text RAID Manager interfaces for RAID management ASUS PCI-DA2200 User's Manual...

Page 11: Chapter 3 Functional Description

The advantages of RAID are: Availability, Capacity and Performance. Choosing the right RAID level and drive failure management can increase Availability, subsequently increasing Performance and Capacity. The ASUS PCI-DA2200 RAID controller provides complete RAID functionality and enhanced drive failure management. RAID Management RAID stands for Redundant Array of Independent Drives.

Page 12 Minimum Disks required Capacity Redundancy JBOD stands for Just a Bunch of Drives. The controller treats each drive as a stand-alone disk, therefore each drive is an independent logical drive. JBOD does not provide data redundancy. ASUS PCI-DA2200 User's Manual...

Page 13: Disk Mirroring

RAID 1 mirrors the data stored in one hard drive to another. RAID 1 can only be performed with two hard drives. If there are more than two hard drives, RAID (0+1) will be performed automatically. ASUS PCI-DA2200 User's Manual...

Page 14 RAID 3 performs Block Striping with Dedicated Parity. One drive member is dedicated to storing the parity data. When a drive member fails, the controller can recover/regenerate the lost data of the failed drive from the dedicated parity drive. ASUS PCI-DA2200 User's Manual...

Page 15: Drive Failure Management

Logical Drive Assigns one Local Spare Logical Drive Drive to a logical drive Global Spare Drive does not only serve one specified logical drive. When a member drive from any of the logical drive fails, the Global ASUS PCI-DA2200 User's Manual...

Page 16 Logical Drive 0 Logical Drive 1 Logical Drive 2 The ASUS PCI-DA2200 RAID controller provides both Local Spare Drive and Global Spare Drive functions. On certain occasions, applying these two functions together will better fit various needs. Take note though that the Local Spare Drive always has higher priority than the Global Spare Drive.

Page 17: Identifying Drives

That is, the read/write LED of the failed hard drive will light. This LED will prevent you from removing the wrong drive, and is also helpful when locating for a drive. ASUS PCI-DA2200 User's Manual...

Page 18 Selected SCSI Drive" function, use "Flash All SCSI Drives". The "Flash All SCSI

Drives” function will light LEDs of all the drives except LED Steadily ON the defective one. LED Steadily ON LED Steadily ON 3.2.3 Automatic Rebuild and Manual ASUS PCI-DA2200 User’s Manual...

Page 19: Automatic Rebuild

(i.e., a check time interval has been selected), the controller will detect whether or not the failed drive has been swapped (by checking the failed drive’s channel/ID). Once the failed drive has been swapped, the rebuild will begin immediately. ASUS PCI-DA2200 User’s Manual...

Page 20: Manual Rebuild

Once the failed drive has been replaced by a new drive/used drive, it starts to rebuild using the replaced drive. If there is no available drive for rebuilding, the controller will not try to rebuild again until the user applies another forced-manual rebuild. 3-10 ASUS PCI-DA2200 User’s Manual...

Page 21: Disk Array Parameters

Rebuild Priority Rebuilding time will depend on the capacity of the logical drive. The ASUS PCI-DA2200 RAID controller provides background rebuilding ability. Meaning, the controller is able to serve other I/O requests while rebuilding the logical drives. The rebuilding process is totally transparent to the host computer or the operating system.

Page 22

Each method can be enabled or disabled individually. Hard drives will perform Verify-after-Write according to the selected method. 3-12 ASUS PCI-DA2200 User’s Manual...

Page 23

3-13 ASUS PCI-DA2200 User’s Manual...

Page 24: Cache Parameters

The ASUS PCI-DA2200 RAID controller provides the options to optimize for large-sequential I/O or optimize for small-random I/O access. “Optimization for Sequential I/O” provides a larger – 128K – stripe size (or “block”...

Page 25

3-15 ASUS PCI-DA2200 User’s Manual...

Page 26: Drive-Side Scsi Parameters

Up” in Drive-Side SCSI Parameters. Power off all hard drives and controller, and power them on again. All the hard drives will not spin-up at this time. The controller will then spin-up the hard drives one by one at four seconds interval. 3-16 ASUS PCI-DA2200 User’s Manual...

Page 27

3-17 ASUS PCI-DA2200 User’s Manual...

Page 28: Scsi Reset At Power Up

The default setting for “SCSI I/O Timeout” is 7 seconds. It is highly recommended not to change this setting. Setting the timeout to a lower value will cause the controller to judge a drive as failed a drive 3-18 ASUS PCI-DA2200 User’s Manual...

Page 29: Chapter 7 Bios Configuration Utility

SCSI cables. The presence of a SAF-TE device will be detected and its presence will be displayed in the BIOS configuration utility, Text RAID Manager and the GUI RAID Manager programs. The RAID 3-19 ASUS PCI-DA2200 User’s Manual...

Page 30

The default setting is “Disabled,” meaning that that the controller will not Auto-Detect the swap of a failed drive. To enable this feature, select a time interval. 3-20 ASUS PCI-DA2200 User’s Manual...

Page 31: Dynamic Logical Drive Expansion

Mode 1 Expansion involves adding more SCSI hard disk drives to a logical drive, which may require that the user obtain an enclosure with more drive bays. The data will be re-striped onto the original and newly added disks. 3-21 ASUS PCI-DA2200 User’s Manual...

Page 32

Replace, the logical drive will still be available for access. Unused The figure above

illustrates expansion of the same 4-Gigabyte RAID 5 logical drive using Mode 2 Expansion. Drives are copied and replaced, one by one, onto three higher-capacity drives. 3-22 ASUS PCI-DA2200 User's Manual...

Page 33 4 GB RAID Expansion RAID 5 (8GB) RAID 5 (4GB) After the RAID Expansion, the additional capacity will appear as another partition. Adding the extra In use capacity into the existing partition requires OS Unused support. 3-23 ASUS PCI-DA2200 User's Manual...

Page 34 3-24 ASUS PCI-DA2200 User's Manual...

Page 35 Extend Volume Set function; Windows NT Workstation does not have this feature. 2. The system drive (boot drive) of a Windows NT system cannot be extended. 3. The drive that will be extended should be using the NTFS file system. 3-25 ASUS PCI-DA2200 User's Manual...

Page 36 The following example demonstrates the expansion of a 900MB RAID 0 logical drive. The Text RAID Manager software that comes with the ASUS PCI-DA2200 is used to communicate with the RAID controller. You can view information about this drive in the Windows NT Server's Disk Administrator.

Page 37 Place the cursor on Disk 1, right-click your mouse, and select "Properties." You will see that the total capacity for the Drive E: is just under 900MB. 3-27 ASUS PCI-DA2200 User's Manual...

Page 38 Follow the steps described in section 8.2.8 to add SCSI disk drives and perform Mode 1 Dynamic Logical Drive Expansion. The 900MB logical drive has become a 1800MB logical drive. Place the cursor on that logical drive, and then press <Enter>. 3-28 ASUS PCI-DA2200 User's Manual...

Page 39 Host LUN. The new partition must be mapped to a host LUN in order for the HBA (host-bus adapter) to see it. Once you have mapped the partition, reboot Windows NT. The HBA should be able to detect an additional "disk." 3-29 ASUS PCI-DA2200 User's Manual...

Page 40 Return to Windows NT Server's Disk Administrator. There now exists a Disk 2 with 900MB of free space. Click on Disk 2 to select it. From the "Partition" menu, select "Extend Volume Set." 3-30 ASUS PCI-DA2200 User's Manual...

Page 41 The screen will display that volume set of Drive E: has been extended by the 900MB in Disk2. Move the cursor to "Commit Changes Now" to confirm that you want the free space to become a part of the same logical drive. 3-31 ASUS PCI-DA2200 User's Manual...

Page 42 Logical Drive E: is now composed of two 900MB partitions with a total volume of 1800MB. To see this, hold down on the <Ctrl> key and select both Disk 1 and Disk2; then right-click your mouse and select "Properties." 3-32 ASUS PCI-DA2200 User's Manual...

Page 43 Drive E: now has a capacity just under 1800MB. 3-33 ASUS PCI-DA2200 User's Manual...

Page 44 This page is left intentionally blank. 3-34 ASUS PCI-DA2200 User's Manual...

Page 45: Hardware Installation

LED Connector for Hard Disk Drive Activity Indicator Symbol Type Description +5V voltage input BUSYLED Front panel LED:"BUSY" BUSYLED Front panel LED:"BUSY" +5V voltage input C Connector Symbol Type Description I2CCLK C clock Signal ground +5V voltage input I2CDATA C data ASUS PCI-DA2200 User's Manual...

Page 46: Installing Dram Simm

Installing DRAM SIMM IMPORTANT: The ASUS PCI-DA2200 requires a minimum of 8 Mbytes of DRAM in one SIMM (with or without parity function) installed in SIMM socket to operate. The controller is normally delivered without any DRAM installed. The following are guidelines with regards to DRAM: Use 72-pin 60ns DRAM or 60ns EDO RAM SIMM modules.

Page 47: Basic Operational Set-Up

Drives connected to channel 0 and/or 1. SCSI nodes on the same channel have unique ID number. The SCSI ID 7 is reserved for the ASUS PCI-DA2200 adapter and thus no drives should use ID 7. Both ends of all SCSI cables are properly terminated. Terminate the SCSI cable by installing an external terminator on the end connector.

Page 48: Configuration Examples And Termination Settings

Embedded LVD Terminator Both the drive SCSI channels on ASUS PCI-DA2200 are Ultra2 Wide LVD channels. Each channel has two SCSI connectors, one for internal connection, the other for external connection. Each SCSI drive channel has embedded Ultra2 Wide LVD terminators. The termination on each...

Page 49 All devices (including SCSI drives, cables and terminators) should be Ultra2 Wide LVD SCSI compliant. It is not recommended to connect any Single-ended devices to the LVD drive SCSI bus directly. ASUS PCI-DA2200 User’s Manual...

Page 50 All devices (including SCSI drives, cables and terminators) should be Ultra2 Wide LVD SCSI compliant. It is not recommended to connect any Single-ended devices to the LVD drive SCSI bus directly. ASUS PCI-DA2200 User’s Manual...

Page 51 The cable length and maximum devices should follow Single-ended standard if the bus is operating in Single-ended mode. IMPORTANT: Changing any settings in “View and Edit SCSI Channels” requires a system reset to take effect. ASUS PCI-DA2200 User’s Manual...

Page 52 This page is left intentionally blank. ASUS PCI-DA2200 User’s Manual...

Page 53: Chapter 5 Quick Setup

NOTE: A "Logical Drive" is a set of drives grouped together to operate under a given RAID level and appears as a single contiguous drive. The ASUS PCI-DA2200 is capable of grouping connected drives into 8 logical drives, each operating on the same or different RAID levels. The logical drive can be further divided into a maximum of 8 "Partitions".

Page 54 RAID level and press [Enter]. The spear drive assigned in this item is Local Spare drive, not Global Spare drive. The controller will start initialization and automatically map the logical drive to LUN 0 of the first host channel. ASUS PCI-DA2200 User’s Manual...

Page 55: Chapter 6 Configuring Raid

Logical Drive Logical Drive (System Drive) When power is turned on, the ASUS PCI-DA2200 RAID controller scans all the hard drives that are on all the drive channels. If a hard drive was connected after the controller completes initialization, use the "SCAN SCSI DRIVE"...

Page 56 ASUS PCI-DA2200 User’s Manual...

Page 57 A “Logical Drive” is a set of drives grouped together to operate under a given RAID level and appears as a single contiguous drive. The ASUS PCI- DA2200 controller is capable of grouping connected drives to as many as 8 logical drives, each configured on the same or different RAID levels.

Page 58: How Does The Raid Controller Work

Each cabinet (SCSI ID) can have up to 32 drawers (LUNs). Data can be stored into one of the LUNs of the LUN 2 SCSI ID. Most SCSI host adapters treat a LUN like another SCSI device. ASUS PCI-DA2200 User’s Manual...

Page 59 PCI-DA2200 RAID Controller The physical connection should be similar to the one shown above. Install the ASUS PCI-DA2200 RAID controller into a vacant PCI slot in the host system, connect the drives to the SCSI channels on the ASUS PCI-DA2200.

Page 60 Logical Drive 0 Partition 0 4.5GB Host SCSI Channel ID 0 ID 1 ID 2 ID 3 ID 4 ID 7 1.5GB ASUS PCI-DA2200 Logical Drive 0 Logical Drive 1 RAID Controller Partition 1 Partition 1 ASUS PCI-DA2200 User’s Manual...

Page 61: Bios Configuration Utility

FW : shows the firmware version number of ASUS PCI- DA2200. The ASUS PCI-DA2200 BIOS waits 3 seconds for a keystroke. You can press [Ctrl-I] to enter the configuration utility, or press Q to skip waiting for a keystroke. If [Ctrl-I] is pressed to enter configuration utility, the main menu will appear.

Page 62 If option "Support for Disks > 1 GB" is enabled, For disk size <= 1GB, BIOS uses SectorsPerTrack = 32, TotalHeads = 64. For disk size > 1GB, BIOS uses SectorsPerTrack = 63, TotalHeads = 255. Support for Disk > 1 GB Press <Space> to toggle between Yes or No. ASUS PCI-DA2200 User's Manual...

Page 63 Disk Access Delay on Power-up (Sec) ISA Emulation Mode If you are going to use ASUS PCI-DA2200 device driver distributed by Infortrend, you MUST set the IO port address to "Disabled". You can select an IO Port address from a list by pressing [Enter].

Page 64 Yes Yes Yes Yes Yes Yes Yes Yes Please refer to Appendix D, Sync. Clock Period & Sync. Clock Frequency, for the Sync. Transfer Period calculation. Enable Wide SCSI Use this option to enable/disable wide SCSI. ASUS PCI-DA2200 User's Manual...

Page 65: Color/Monochrome

8, Text RAID Manager User Interface, for complete details on the use of the BIOS RAID Manager. 7.1.5 Reset to Defaults If this option is selected, all the configurations are reset to the manufacturer's defaults. Color/Monochrome Switches display mode between color and monochrome. ASUS PCI-DA2200 User's Manual...

Page 66 This page is left intentionally blank. ASUS PCI-DA2200 User's Manual...

Page 67: Chapter 8 Text Raid Manager User Interface

Chapter 8 Text RAID Manager User Interface To operate Text RAID Manager, simply put the ASUS PCI-DA2200 driver diskette into your floppy disk drive. Change the directory to RAIDMAN. You will see directories for various operating systems. Change to the directory that corresponds to your operating system.

Page 68: Main Menu

8.1.1 Main Menu Use the arrow keys to move the cursor bar through the menu item, then press ENTER to choose a menu, or ESC to return to the previous menu/screen. ASUS PCI-DA2200 User's Manual...

Page 69 The logical drive was created with "Optimization for Random I/O", but the current setting is "Optimization for Sequential I/O". The logical drive is in good condition. GOOD DRV FAILED A drive member failed in the logical drive. ASUS PCI-DA2200 User's Manual...

Page 70 Failed drive member in the logical drive. #Fail Logical drive name. Name 8.1.4 SCSI Drive's Status Slot number of the SCSI drive. Slot The SCSI Channel of the connected drive. The SCSI ID of the drive. Drive Capacity. Size (MB) ASUS PCI-DA2200 User's Manual...

Page 71 Failed drive. Drive does not exist. ABSENT MISSING Drive once exist, but is missing now. Spare drive missing. SB-MISS The vendor and product model Vendor and Product ID information of the drive. ASUS PCI-DA2200 User's Manual...

Page 72 The default setting of the SCSI channel is ??.?M ??.? Mhz in Synchronous mode. Async The default setting of the SCSI channel is Asynchronous mode. Default SCSI Bus Width: DefWid Wide 16-bit SCSI Narrow 8-bit SCSI ASUS PCI-DA2200 User's Manual...

Page 73 Reset the system for the changes to take effect. Current SCSI Bus Width: CurWid Wide 16-bit SCSI Narrow 8-bit SCSI The default SCSI bus width has changed. (empty) Reset the controller for the changes to take effect. ASUS PCI-DA2200 User's Manual...

Page 74: Viewing The Current Setting Of Each Function

WARNING: Using hardware restart or shut down (using buttons or switches on the chassis) will

result in data loss if write-back cache is “Enabled.” ASUS PCI-DA2200 User’s Manual...

Page 75 The current setting of “SCSI Motor Spin-Up” is “Disabled”. The current setting of “SCSI Reset at Power-Up” is “Enabled”. The current setting of “Disk Access Delay Time” is “15 seconds”. The current setting of “Maximum Tag Count” is “32”. ASUS PCI-DA2200 User’s Manual...

Page 76: Viewing And Editing Logical Drives

Choose a logical drive number that has not yet been defined, then press [Enter]. A prompt “Create Logical Drive?” will appear. Select “Yes” and press [Enter]. 8-10 ASUS PCI-DA2200 User’s Manual...

Page 77 A list of supported RAID levels will appear. Choose a RAID level for this logical drive. 8-11 ASUS PCI-DA2200 User’s Manual...

Page 78 [Enter]. Press [ESC] when done. To exit this menu, press [ESC]. A prompt to confirm the changes will appear. Select Yes to create the logical drive, or No to cancel. 8-12 ASUS PCI-DA2200 User’s Manual...

Page 79 When a fault-tolerant RAID level (1, 3 or 5) has been selected, the controller will start initializing parity. A progress indicator will be displayed on the screen. After initialization is done, the created logical drive is also complete. 8-13 ASUS PCI-DA2200 User’s Manual...

Page 80: Viewing Logical Drives And Drive Members

To view the SCSI drive members of the logical drive, choose the logical drive by pressing [Enter]. Choose “View SCSI Drives”. The member drive information will be displayed on the screen. Refer to section 8.1.3, SCSI Drive’s Status, for the detailed descriptions of each item. 8-14 ASUS PCI-DA2200 User’s Manual...

Page 81 Choose “Delete logical drive”. Choose Yes when prompted to confirm. 8.2.4 Partitioning a Logical Drive Choose the logical drive you wish to partition, then press [Enter]. Choose “Partition logical drive”, then press [Enter]. Choose Yes to confirm. 8-15 ASUS PCI-DA2200 User’s Manual...

Page 82 The screen will display a partition table of up to 8 partitions with the last partition selected. Press [Enter] and type the desired size for the selected partition, then press [Enter]. The remaining size will be allotted to the next partition. 8-16 ASUS PCI-DA2200 User’s Manual...

Page 83: Deleting A Partition Of A Logical Drive

Partition 0 - 100MB partitions will be added to Partition 1 - 200MB the last partition. Delete Partition 2 - 300MB Partition 1 - 300MB Partition 1 Partition 3 - 400MB Partition 2 - 600MB 400 + 200 8-17 ASUS PCI-DA2200 User’s Manual...

Page 84 8-18 ASUS PCI-DA2200 User’s Manual...

Page 85: Assigning A Logical Drive Name

The current logical drive name will be displayed on the screen. You may now enter the new logical drive name in this field. Enter the logical drive name, then press [Enter] to save the new name. 8-19 ASUS PCI-DA2200 User’s Manual...

Page 86: Rebuilding Logical Drive

Choose the logical drive that has a failed member drive, then press [Enter]. Choose “Rebuild logical drive”, then press [Enter]. When prompted with “Rebuild Logical Drive?”, select Yes. The rebuilding progress will be displayed on the screen. 8-20 ASUS PCI-DA2200 User’s Manual...

Page 87 When rebuilding has already started or the logical drive has been automatically rebuilt by a Local Spare Drive or Global Spare Drive, choose “Rebuild progress” to view the rebuilding progress. 8-21 ASUS PCI-DA2200 User’s Manual...

Page 88 8-22 ASUS PCI-DA2200 User’s Manual...

Page 89 From the main menu, select “View and Edit Logical Drives.” The logical drive that you wish to expand will be displayed. Move the cursor to that logical drive (if there is more than one) and press [Enter] to select it. 8-23 ASUS PCI-DA2200 User’s Manual...

Page 90 Drives,” and then press [Enter]. SCSI drives that are available for ‘adding’ will be displayed. Select drives by highlighting them and then pressing [Enter]. An asterisk *] is displayed by each drive selected. When you are finished selecting, press [Esc] to confirm. 8-24 ASUS PCI-DA2200 User’s Manual...

Page 91 You will be prompted to confirm that you would like to add the SCSI drives to the logical drive. A bar will appear displaying the progress of adding the SCSI drives 8-25 ASUS PCI-DA2200 User’s Manual...

Page 92 8-26 ASUS PCI-DA2200 User’s Manual...

Page 93: Viewing And Editing Scsi Id Map

Viewing and Editing SCSI ID Map 8.3.1 Mapping a Logical Drive to an ID/LUN Choose “View and Edit SCSI ID Map” in the Main Menu, then press [Enter]. When prompted to “Map Logical Drive?”, select Yes. 8-27 ASUS PCI-DA2200 User’s Manual...

Page 94 Choose the SCSI ID you wish to map, then press [Enter]. 8-28 ASUS PCI-DA2200 User’s Manual...

Page 95 LUN (one not mapped yet) by moving the cursor bar to the LUN, then pressing [Enter]. A list of available logical drives will be displayed on the screen. Move the cursor bar to the desired logical drive, then press [Enter]. 8-29 ASUS PCI-DA2200 User’s Manual...

Page 96 A partition table of the logical drive will be displayed on the screen. Move the cursor to the desired partition, then press [Enter]. 8-30 ASUS PCI-DA2200 User’s Manual...

Page 97: Viewing And Deleting The Lun Mappings

3 of logical drive 0 will map to LUN 0 of SCSI ID 3 on channel 0. 8.3.2 Viewing and Deleting the LUN Mappings Choose the channel and SCSI ID of the LUN mapping you wish to view or delete. 8-31 ASUS PCI-DA2200 User’s Manual...

Page 98: Viewing And Editing Scsi Drives

A list of the current LUN mapping will be displayed on the screen. Move the cursor bar to the LUN mapping you wish to delete, then press [Enter]. Select Yes to delete the LUN mapping, or No to cancel. Viewing and Editing SCSI Drives 8-32 ASUS PCI-DA2200 User’s Manual...

Page 99: View And Edit Scsi Drives

Choose a drive and press [Enter]. Choose “Scan SCSI drive”, then press [Enter]. The menu may vary according to the drive status. Choose the drive channel and SCSI ID of the drive you wish to scan, then press [Enter]. 8-33 ASUS PCI-DA2200 User’s Manual...

Page 100: Viewing Drive Information

Choose the SCSI drive you wish to view, then press [Enter]. Select “View drive information”. The revision number, serial number and disk capacity (counts in block; one block refers to 512K) of the drive will be displayed on the screen. 8-34 ASUS PCI-DA2200 User’s Manual...

Page 101: Adding A Local Spare Drive

Move the cursor bar to a logical drive, then press [Enter]. The unassigned SCSI drive will be assigned to this logical drive as the Local Spare Drive. When prompted with “Add Local Spare Drive?”, choose Yes. 8-35 ASUS PCI-DA2200 User’s Manual...

Page 102: Adding A Global Spare Drive

8.4.5 Deleting a Spare Drive (Global / Local Spare) Move the cursor to a Local Spare Drive or Global Spare Drive, then press [Enter]. Choose “Delete Global/Local Spare Drive”, then press [Enter] again. Choose Yes. 8-36 ASUS PCI-DA2200 User’s Manual...

Page 103: Viewing And Editing Scsi Channels

Viewing and Editing SCSI Channels Choose “View and Edit SCSI Channels” in the Main Menu. A list of all the channels will be displayed on the screen. Refer to section 8.1.4, SCSI Channel Status, for detailed information. 8-37 ASUS PCI-DA2200 User’s Manual...

Page 104 8.5.1 Viewing and Editing a SCSI ID / Channel Choose a channel, then press [Enter]. Choose “SCSI ID”. A list of the existing ID(s) will be displayed on the screen. 8-38 ASUS PCI-DA2200 User’s Manual...

Page 105 8-39 ASUS PCI-DA2200 User’s Manual...

Page 106 8.5.2 Setting a SCSI Channel’s Terminator Choose the channel you wish the terminator enabled or disabled, then press [Enter]. Choose “SCSI Terminator”, then press [Enter]. A dialog box will appear. Choose Yes, then press [Enter]. 8-40 ASUS PCI-DA2200 User’s Manual...

Page 107 8-41 ASUS PCI-DA2200 User’s Manual...

Page 108: Setting A Transfer Speed

Transfer Clock”, then press [Enter]. A list of the clock speed will appear. Move the cursor bar to the desired speed and press [Enter]. A dialog box “Change Sync Transfer Clock?” will appear. Choose Yes. 8-42 ASUS PCI-DA2200 User’s Manual...

Page 109 8-43 ASUS PCI-DA2200 User’s Manual...

Page 110: Setting A Transfer Width

8.5.4 Setting a Transfer Width Move the cursor bar to a channel, then press [Enter]. Select “Wide Transfer”, then press [Enter]. A dialog box “Disable Wide Transfer?” or “Enable Wide Transfer?” will appear. Choose Yes. 8-44 ASUS PCI-DA2200 User’s Manual...

Page 111 8-45 ASUS PCI-DA2200 User’s Manual...

Page 112 IMPORTANT: Every time you change the SCSI Transfer Width, you must reset the system for the changes to take effect. 8-46 ASUS PCI-DA2200 User’s Manual...

Page 113 8.5.5 Viewing and Editing SCSI Target / Drive Channel Move the cursor bar to a Drive channel, then press [Enter]. Select “View and Edit SCSI Target”, then press [Enter]. 8-47 ASUS PCI-DA2200 User’s Manual...

Page 114 A list of all the SCSI targets and their current settings will appear. Press [Enter] on a SCSI target and a menu list will appear on the screen. Slot Number Slot Number is reserved from use. 8-48 ASUS PCI-DA2200 User’s Manual...

Page 115 Choose “Maximum Sync. Xfer Clock”, then press [Enter]. A dialog box will appear on the screen. Enter the clock, then press [Enter]. Please refer to Appendix D, Sync. Clock Period and Sync. Clock Frequency, for more information. 8-49 ASUS PCI-DA2200 User’s Manual...

Page 116 Wide Transfer Choose “Wide Transfer”, then press [Enter]. Choose Yes in the dialog box to confirm the setting. 8-50 ASUS PCI-DA2200 User’s Manual...

Page 117 Parity Check Choose “Parity Check”. Choose Yes in the dialog box that followed to confirm the setting. 8-51 ASUS PCI-DA2200 User’s Manual...

Page 118 Disconnecting Support Choose “Disconnect Support”. Choose Yes in the dialog box that followed to confirm the setting. 8-52 ASUS PCI-DA2200 User’s Manual...

Page 119 Choose “SCSI I/O Timeout”, then press [Enter]. A list of available timeout intervals will appear. Move the cursor bar to an interval, then press [Enter]. Choose Yes in the dialog box that followed to confirm the setting. 8-53 ASUS PCI-DA2200 User’s Manual...

Page 120 Choose “Maximum Tag Count”, then press [Enter]. A list of available tag count numbers will appear. Move the cursor bar to a number, then press [Enter]. Choose Yes in the dialog box that followed to confirm the setting. 8-54 ASUS PCI-DA2200 User’s Manual...

Page 121 8-55 ASUS PCI-DA2200 User’s Manual...

Page 122 IMPORTANT: Disabling the Maximum Tag Count will disable the internal cache of the SCSI drive. Disabling Tag Command Queuing will disable the Write-Back cache built in the hard drive. 8-56 ASUS PCI-DA2200 User’s Manual...

Page 123 Idle Drive Failure Detection From the “Drive-side SCSI Parameters” menu, select “Periodic Drive Time – Disable” and then press [Enter]. Choose the desired interval for idle drive failure detection. 8-57 ASUS PCI-DA2200 User’s Manual...

Page 124 8-58 ASUS PCI-DA2200 User’s Manual...

Page 125 SAF-TE Enclosure Monitoring From the “Drive-side SCSI Parameters” menu, select “Periodic SAF- TE Device Check Time – Disabled” and then press [Enter]. Use the arrow keys to choose the desired SAF-TE status check interval. 8-59 ASUS PCI-DA2200 User’s Manual...

Page 126 (i.e., the controller checks the same drive channel and ID at the assigned interval.) Once the drive has been replaced with another drive, the controller will automatically start to rebuild to that replacement drive. 8-60 ASUS PCI-DA2200 User’s Manual...

Page 127 Restoring the Default Setting for Target Choose “Restore to default setting”, then press [Enter]. Choose Yes in the dialog box that followed to restore all the settings of the SCSI target. 8-61 ASUS PCI-DA2200 User’s Manual...

Page 128: Viewing And Editing Configuration Parameters

Choose “Caching Parameters”, then press [Enter]. Select “Write- Back Cache”, then press [Enter]. “Enabled” or “Disabled” will display the current setting of the Write-Back Cache. Choose Yes in the dialog box that followed to confirm the setting. 8-62 ASUS PCI-DA2200 User’s Manual...

Page 129 8-63 ASUS PCI-DA2200 User’s Manual...

Page 130 IMPORTANT: Every time you change the Cache Parameters, you must reset the system for the changes to take effect. 8-64 ASUS PCI-DA2200 User’s Manual...

Page 131 Choose “Optimization for Random I/O” or “Optimization for Sequential I/O”, then press [Enter]. The “Random” or “Sequential” dialog box will appear, depending on the option you have selected. Choose Yes in the dialog box that followed to confirm the setting. 8-65 ASUS PCI-DA2200 User’s Manual...

Page 132 8-66 ASUS PCI-DA2200 User’s Manual...

Page 133 IMPORTANT: Every time you change this setting, you must reset the system for the changes to take effect. Refer to “3.4.1 Optimal for Sequential or Random I/O” for more information. 8-67 ASUS PCI-DA2200 User’s Manual...

Page 134 Queued I/O Count”, then press [Enter]. A list of available selections will appear. Move the cursor bar to an item, then press [Enter]. Choose Yes in the dialog box that followed to confirm the setting. 8-68 ASUS PCI-DA2200 User’s Manual...

Page 135 8.6.3 Drive-side SCSI Parameters Choose “Drive-side SCSI Parameters”, then press [Enter]. The Drive- side SCSI parameters menu will appear. SCSI Motor Spin-Up 8-69 ASUS PCI-DA2200 User’s Manual...

Page 136 SCSI Reset at Power-Up Choose “SCSI Reset at Power-Up”, then press [Enter]. Choose Yes in the dialog box that followed to confirm the setting. Please refer to section 3.5.2 for more information. 8-70 ASUS PCI-DA2200 User’s Manual...

Page 137 Move the cursor bar on a selection, then press [Enter]. Choose Yes in the dialog box that followed to confirm the setting. Please see section 3.5.3 for more information. Maximum Tag Count 8-71 ASUS PCI-DA2200 User's Manual...

Page 138 [Enter]. Select Yes in the dialog box that followed, then press [Enter] to confirm the setting. Please see section 3.5.5 for more information. 8.6.4 Disk Array Parameters Choose "Disk Array Parameters", then press [Enter]. The Disk Array Parameters menu will appear. 8-72 ASUS PCI-DA2200 User's Manual...

Page 139 Rebuild Priority Choose "Rebuild Priority", then press [Enter]. A list of the priority selections will appear. Move the cursor bar to a selection, then press [Enter]. Please see section 3.3.1 for more information. 8-73 ASUS PCI-DA2200 User's Manual...

Page 140 Choose "Verification on Writes", then press [Enter]. Move the cursor bar to an item, then press [Enter]. Choose Yes in the dialog box that followed to confirm the setting. (Refer to section 3.3.2 for more information.) 8-74 ASUS PCI-DA2200 User's Manual...

Page 141 8-75 ASUS PCI-DA2200 User's Manual...

Page 142 IMPORTANT: Every time you change this setting, you must reset the system for the changes to take effect. Refer to "3.5.2 SCSI Reset at Power-Up" for more information. 8-76 ASUS PCI-DA2200 User's Manual...

Page 143 8.6.5 Controller Parameters Controller Name Choose "Controller Parameters", then press [Enter]. The current controller name will be displayed. Press [Enter]. Enter the new controller name in the dialog box that followed, then press [Enter]. 8-77 ASUS PCI-DA2200 User's Manual...

Page 144 From the "Controller Parameters" menu, select "Password Validation Timeout" and then press [Enter]. You may select an interval for password validation, "Always check," or "Disabled." Press [Enter] and then select Yes to confirm your selection. 8-78 ASUS PCI-DA2200 User's Manual...

Page 145: System Functions

System Functions Choose "System Functions" in the Main Menu, then press [Enter]. The System Functions menu will appear. Move the cursor bar to an item, then press [Enter]. 8.7.1 Mute Beeper 8-79 ASUS PCI-DA2200 User's Manual...

Page 146: Change Password

Once the controller's password has been set, regardless of whether the Text RAID Manager or the GUI RAID Manager is used, the user can only configure and monitor the RAID controller by providing the correct password. 8-80 ASUS PCI-DA2200 User's Manual...

Page 147 8-81 ASUS PCI-DA2200 User's Manual...

Page 148 "Password incorrect!", then go back to the previous menu. If the password is correct, or there is no preset password, it will ask for the new password. Setting a New Password 8-82 ASUS PCI-DA2200 User's Manual...

Page 149 To disable or delete the password, press [Enter] only in the password column that is used for entering a new password. The existing password will be deleted. No password checking will occur when entering the Main Menu from the Initial screen. 8-83 ASUS PCI-DA2200 User's Manual...

Page 150: Reset Controller

8.7.3 Reset Controller This function is not supported. The controller is reset when the system is reset. 8.7.4 Shutdown Controller 8-84 ASUS PCI-DA2200 User's Manual...

Page 151 Controller Maintenance This function is not supported from within the Text RAID Manager. Controller maintenance functions – such as downloading new firmware – can be performed from the start-up menu of the Text RAID Manager. 8-85 ASUS PCI-DA2200 User's

Manual...

Page 152: Viewing System Information

Total Cache Size The total DRAM size installed in the controller. The version of the firmware. Firmware Version The version of the boot record. Bootrecord Version Serial Number The serial number of the controller. 8-86 ASUS PCI-DA2200 User's Manual...

Page 153: Chapter 9 Remote Administration

Remote Administration The ASUS PCI-DA2200 RAID Controller can be administrated remotely. When there is an event, warning or controller notification happened, the ASUS PCI-DA2200 can inform the administrator to take measure in time. GUI RAID Manager Using SNMP Service Internet...

Page 154 Click on the select button in front of "Host Bus Interface" to select. Choose "0" if there is only one ASUS PCI-DA2200 RAID controller installed in the remote host computer. Press "OK" to establish the connection.

Page 155 "0" should be chosen. When more than one ASUS PCI-DA2200 RAID controller installed in the same host computer, the second ASUS PCI-DA2200 controller found by the host computer is numbered as "1", and the third controller found by the host computer is numbered as "2".

Page 156 This page is left intentionally blank. ASUS PCI-DA2200 User's Manual...

Page 157 Index ASPI, A-1 automatic rebuild, 3-9 bad sector reassignment, 2-1 basic operational set-up, 4-3 beeper mute, 8-79 BIOS RAID Manager, 5-1, 7-5, 8-1 BIOS configuration utility, 7-1 building a RAID system drive, 6-1 cable specifications SCSI, B-1 cache disable write-back during OS installation, A-1 display of RAM type and size, 7-1 enable write-back, 8-62 cache parameters, 3-13...

Page 158 controller parameters, 8-77 CPU, 1-1, 2-2 Ctrl-I, 7-1 data cache, 2-2 data rebuilding, 2-1 DC resistance, B-1 DEC Alpha/Windows NT installing driver during NT v4.0 installation, A-17 installing driver in existing NT v4.0 system, A-18 default setting restoring, 7-1, 8-61 delay skew, B-1 Device #, 7-1 disable...

Page 159 deleting, 8-36 hardware installation, 4-1 hot swap, drive detection of followed by auto rebuild, 8-60 hot-swapping, 2-1 How does it work? logical drive expansion, 3-20 SAF-TE, 3-18 the RAID controller, 6-4 I/O port base address, 7-1 identifying drives, 3-7 idle drive failure detection, 8-57 impedance, B-1 installation...

Page 160 drivers and utilities for SPARC platform, A-34 installing Red Hat, A-29 installing SlackWare, A-30 making floppy disks for Red Hat, A-27 making floppy disks for SlackWare, A-28 Text RAID Manager, A-31 local spare drive, 3-5 adding one, 8-35 deleting, 8-36 logical drive, 2-1 assigning a name, 8-19 creating, 8-10...

Page 161 NetWare v4.0x installation, A-5 v4.1 installation, A-5 v4.11 installation, A-5 NRAID, 3-2 optimization for sequential or random I/O, 3-13 OS/2 command-line options of IFT-2101U2 OS/2 driver, A-23 driver installation, A-21 installing driver during v2.x/3.0 installation, A-22 installing driver in an existing v2.x/3.0 system, A-22 updating IFT-2101U2 OS/2 device driver, A-23 parameters cache, 3-13, 8-62...

Page 162 queued I/O count maximum, 8-68 quick setup, 5-1 RAID (0+1), 3-4 0, 3-3 1, 3-3 3, 3-4 5, 3-5 a definition, 3-1 configuring, 6-1 RAID level, 5-2 RAID levels, 3-1 RAID management, 3-1 random I/O optimization for, 3-13, 8-65 rebuild automatic, 3-9 manual, 3-9 rebuild priority, 3-11, 8-73...

Page 163 SCSI drive record of settings, G-2 scanning a new one, 8-33 status, 8-4 viewing and editing, 8-32 viewing information, 8-34 SCSI drive channel viewing and editing, 8-47 SCSI ID, 6-4 viewing and editing, 8-38 SCSI ID map viewing and editing, 8-27 SCSI motor spin-up, 3-15, 8-69 SCSI parameters, 8-68 drive-side, 8-69...

Page 164 RAID 0, 3-3 striping with dedicated parity disk RAID 3, 3-4 striping with interspersed parity RAID 5, 3-5 striping with mirroring RAID (0+1), 3-4 synchronize transfer

clock maximum, 8-49 synchronous clock frequency, D-1 period, D-1 system functions, 8-79 system information record of settings, G-4 viewing, 8-86 tag command queuing, 8-54...

Page 165 Windows 95 driver installation, A-19 updating device driver, A-21 Windows NT example of RAID expansion, 3-24 installing driver during DEC Alpha v4.0 installation, A-17 installing driver during v4.0 installation, A-15 installing driver in existing DEC Alpha v4.0 system, A-18 updating device driver in v3.1/3.51 system, A-14...

Page 166 GUI RAID Manager For ASUS Disk Array Controllers User's Guide Revision 1.5...

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Page 170 Table of Contents About this Guide..... v Overview of the User's Guide .....vi Introduction..... 1 System Description..... 2 Feature Summary.....3 Feature Highlights .....6 Installation.....1 System Requirements .....2 Hardware Setup.....3 In-band SCSI..... 8 Software Setup.....22 Upgrading Firmware .....

Page 171 ASUS GUI RAID Manager: Table of Contents 4.17 Redundant Controller .....50 Notification Configuration.....1 Introduction .....1 Before You Begin.....2 Notification Levels .....9 Configuring Notification Options ..... 11 Configuring a Pager Notification ..... 13 Configuring a Fax Notification.....21 Configuring an E-Mail Notification.....

Page 172: About This Guide

About this Guide Congratulations on your decision to use ASUS' GUI RAID Manager disk array management program. This management program allows you to control and monitor disk array systems, either from a local host, or from a remote station connected through a local area network (LAN), telephone line, or the Internet.

Page 173: Overview Of The User's Guide

ASUS GUI RAID Manager: About this Guide Overview of the User's Guide Chapter 1, Introduction. Provides information about the GUI RAID Manager, including the system description, feature summary, and feature highlights. Chapter 2, Installation. Discusses how to install the GUI RAID Manager to your computer.

Page 174 ASUS GUI RAID Manager: About this Guide Chapter 6, Running in Demo Mode. Provides information on how to run the GUI RAID Manager in demo mode. You can use the demo mode as a tool for learning the basics of disk array system management and for demonstrating the GUI RAID Manager functionality without connecting to a real disk array.

Page 175: Introduction

Introduction This chapter provides information about the GUI RAID Manager management program. These include the following topics: System description Feature summary Feature highlights...

Page 176: System Description

The ASUS' GUI RAID Manager is a Windows-based program specifically designed for use in managing disk array systems implemented using any of ASUS' line of PCI-to-SCSI or SCSI- to-SCSI controllers (GUI stands for graphic user interface.) The GUI RAID Manager provides a user-friendly interface that...

Page 177: Feature Summary

The list below summarizes the GUI RAID Manager features. User-friendly graphical interface running under the Windows NT or Windows 95/98 environment Supports the entire new line of ASUS' SCSI-to-SCSI and PCI-to-SCSI RAID controllers Communicates with the controllers via the RS-232 cable,...

Page 178 ASUS GUI RAID Manager: Introduction logical drives; rebuilding logical drives; defining spare drives; creating, deleting, and partitioning logical volumes; and mapping logical

volume partitions to specific host channels/LUNs Enclosure management functions, including defining multiple customizable enclosures, dimensions, and number of drives; monitoring physical drives, power supply, fan, and temperature status;...

Page 179 ASUS GUI RAID Manager: Introduction Optional notification retransmission until addressee responds locally at the console or remotely over the Local Area Network (LAN), Internet, or modem Configurable latency time between notification retransmission; can be set to different values at different times of the day Ø...

Page 180: Feature Highlights

ASUS GUI RAID Manager: Introduction Provides password protection for guarding against unauthorized modification of disk array configuration. Provides Demo mode for use as a learning tool and for demonstration purposes. perform experimentation on various disk array configurations and monitor the performance of the system under such conditions.

Page 181 ASUS GUI RAID Manager: Introduction per row and column, and drive orientation. Once an enclosure is defined, drives can be dragged and dropped into their respective drive bays corresponding to their actual locations. In this way, drives can be monitored in an enclosure-relative context.

Page 182 1.3.4 Remote Management via SNMP or Modem The GUI RAID Manager supports remote management of the ASUS' disk array controllers over a LAN using SNMP, or over the telephone line using a dial-up modem. Management over the LAN is achieved through the exchanges of SNMP management packets between the remote GUI RAID Manager station and the SNMP agent on the Windows NT or Windows 95/98 local host.

Page 183 ASUS GUI RAID Manager: Introduction and then sends back a reply to the requesting manager. The following figure shows a typical SNMP connection: Network RAID Controller Local Host GUI RAID with SNMP Agent Manager Station Alternatively, for management at even greater distances, the RS-...

Page 184: Password Protection

ASUS GUI RAID Manager: Introduction 1.3.5 Password Protection The GUI RAID Manager comes with password protection to prevent unauthorized users from maliciously modifying the configuration of the disk array system. This security feature is put into effect the first time an attempt is made to modify the...

Page 185 ASUS GUI RAID Manager: Introduction 1-11 Feature Highlights...

Page 186: Installation

Installation This chapter contains information about software setup and hardware setup for local and remote management. following topics are discussed: System requirements Hardware setup Software setup Downloading new releases of the GUI RAID Manager program...

Page 187: System Requirements

FAX/modem (if FAX event notification is desired) SNMP service for Windows NT (if SNMP remote management is desired) Local host running ASUS' SNMP agent (for SNMP remote management only) IBM-compatible 386 or above running Windows NT or Windows 95/98...

Page 188: Hardware Setup

ASUS GUI RAID Manager: Installation Hardware Setup The GUI RAID Manager supports both local and remote management of the ASUS' disk array system. Local management refers to management of the disk array from a local host management transactions traverse the PCI bus (for PCI-to- SCSI controller) or an RS-232 cable (for SCSI-to-SCSI controller) connected between the controller and the host's serial...

Page 189: Local Management

ASUS GUI RAID Manager: Installation 2.2.1 Local Management For local management, the controller is either installed in (for PCI-to-SCSI controller) or connected to (for SCSI-to-SCSI controller) the host. The following figure illustrates a typical setup for a PCI-to-SCSI controller: GUI RAID...

Page 190 ASUS GUI RAID Manager: Installation 4 4 Setting up a SCSI-to-SCSI controller using RS-232 1. Connect the RS-232 port of the SCSI-to-SCSI controller to a null modem using the appropriate RS-232 cable. Do the same to the serial interface of the local host. If your local...

Page 191: Remote Management

ASUS GUI RAID Manager: Installation 2.2.2 Remote Management You can set up your hardware two ways in remote management: network and telephone. Network setup provides a faster data transfer rate than the telephone setup for it utilizes the network bandwidth of 10 Mbps (million bits per second) for Ethernet, 100 Mbps for Fast Ethernet, and so on;...

Page 192 ASUS GUI RAID Manager: Installation Local Host RS-232 SCSI Bus RS-232 GUI RAID Modem/Fax SCSI-to-SCSI Manager Station Modem/Fax Modem/Fax (Windows 95, Windows NT) RAID Controller Telephone Line To manage the disk array system, just dial in the number of the modem connected to the SCSI-to-SCSI controller.

Page 193: In-Band Scsi

RAID controller just as it could before via RS-232C. (Note: It is assumed that users of In-band SCSI possess the following: a third- party SCSI adapter and a channel on their ASUS RAID controller that can be designated as a host channel.) Both of these are required for In-band SCSI communication between the host and the RAID controller.

Page 194 ASUS GUI RAID Manager: Installation controller and to the host computer's SNMP settings before the two can communicate using SCSI commands. (Note: The SNMP settings must be changed prior to installation of the GUI RAID Manager. See SNMP Settings below for a detailed explanation.) The RAID controller settings can be changed using the Front Panel.

Page 195 ASUS GUI RAID Manager: Installation Peripheral Device Type Parameters Reference for Various Operating Systems: Operating Peripheral Peripheral Device System Device Device Support Applicability Type Qualifier Removabl e Media NT 4.0 connected disabled All Undefined LUNs NT 5.0 connected enabled All Undefined...

Page 196 ASUS GUI RAID Manager: Installation Peripheral Device Type Settings: Device Type Setting No Device Present Direct-access Device Sequential-access Device CD-ROM Device Scanner Device MO Device Unknown Device Processor Type Example: Settings for Windows NT 4.0 The settings for Windows NT 4.0 are provided here as an example.

Page 197 ASUS GUI RAID Manager: Installation (For this example, we assume that Device Type - No Device (0x7f) there are currently no peripheral devices.) Set Device Type? Press t or s to choose "Unknown Unknown (0x1f) Device - 1f". Press <Enter> to confirm the selection. Now that we have changed the Peripheral Device Type, let us set the Peripheral Device Qualifier.

Page 198 ASUS GUI RAID Manager: Installation "Disabled." reads "Enabled," press <Enter> and you will be prompted to accept a change. If the screen reads “Disabled,” press <Esc> to return Host-side SCSI submenu’s. Press select "LUN LUN Application- All Undefine LUN Application"; and then press <Enter>.

Page 199 ASUS GUI RAID Manager: Installation have been completed. For remotely accessing the host computer, further adjustments must be made (see section 4.10.3.2, Remote Connection — SNMP Required). 2.3.2 Using In-band SCSI in GUI RAID Manager Local Connection — SNMP Not Required If you are using the GUI RAID Manager on the host computer that is using In-band SCSI -- ie., ‘local access’...

Page 200 RAID controller via a SCSI cable. The "Manager Site" is a Windows NT system with the GUI RAID Manager. The Agent Site could be running an operating system other than Windows NT. ASUS provides the In-band SCSI SNMP agents for the following operating systems: Windows NT...

Page 201 ASUS GUI RAID Manager: Installation The Manager Site should be a Windows NT Workstation or Server with SNMP service and the GUI RAID Manager installed. Basic Procedures to Establish the Connection The following criteria must be met for the Agent Site and Manager...

Page 202 Checklist for Manager Site 1. The system is running Windows NT (Workstation or Server) and has SNMP Service installed. 2. The ASUS GUI RAID Manager was installed with the

"SNMP Manager Site" option selected. 3. The GUI RAID Manager is running.

Page 203 ASUS GUI RAID Manager: Installation The Properties window appears. Choose the "Service" tab. If the SNMP Service is already installed, please go ahead to step called "Install the SNMP Agent and GUI RAID Manager." If the SNMP Service is not yet installed, click on "Add" and choose "SNMP Service"...

Page 204 ASUS GUI RAID Manager: Installation 2. Install the SNMP Agents and GUI RAID Manager. The GUI RAID Manager can install the In-band SCSI SNMP Agent during installation. During GUI RAID Manager installation, be sure to select both the "SNMP Manager Site" and "SNMP Agent Site"...

Page 205 ASUS GUI RAID Manager: Installation 2. The "Setting of SNMP Interface" window appears. Enter the IP address and community name of the Agent Site. For "Agent-site Communication Type," choose "SCSI Bus Interface." The "Controller Index" refers to the sequence of the RAID controller which is going to be administrated.

Page 206: Software Setup

ASUS GUI RAID Manager: Installation 3. After the connection is established, all of the operations in the GUI RAID Manager are the same as before (please refer to the GUI RAID Manager User Guide for complete details on its operation.)

Page 207 ASUS GUI RAID Manager: Installation Ensure that your system meets the minimum hardware and software requirements listed in the System Requirements section. Ensure that the disk array system is installed properly. For the installation procedure, see the documentation that came with the controller.

Page 208 ASUS GUI RAID Manager: Installation 3. If you are currently running other applications, close them first before proceeding with the setup process. This will minimize the possibility of encountering system errors during setup. Then, click OK to continue. 4. To accept the default destination directory, click on the setup button at the top left portion of the screen;...

Page 209 ASUS GUI RAID Manager: Installation 5. Select the appropriate option for the type of system on which you are setting up the GUI RAID Manager. If you are setting up on a host where array management will be performed, you only need the Local Manager Site option (selected by default);...

Page 210 You can download the latest GUI RAID Manager program from ASUS' FTP sites at ftp.ASUS.com in the U.S.A., or ftp.ASUS.com.tw in Taiwan. For more information about this service, call ASUS or call the local distributor or dealer in your area. 2-25...

Page 211: Upgrading Firmware

New releases of the firmware are available in the form of a DOS file, which is located in the "pub" directory of ASUS' FTP site or on a 5.25" or 3.5" diskette. The file available at the FTP site is usually a self-...

Page 212 Upgrading the firmware using In-band SCSI + GUI RAID Manager The In-band SCSI connection and the ability to upgrade the firmware via In-band SCSI are supported in ASUS GUI RAID Manager, version 1.61B and later versions. This version of the GUI RAID Manager is for use with the firmware 2.11.

Page 213 ASUS GUI RAID Manager: Installation Upgrade Both Boot Record and Firmware Binaries 1. Double click on the controller panel to get the menu appears. Choose "Controller Maintenance" > "Advanced Maintenance" - > "Download Boot Record and Firmware". 2. Provide the boot record binary filename, the GUI RAID Manager will start to download the boot record binary to the controller.

Page 214 ASUS GUI RAID Manager: Installation Upgrade the Firmware Binary Only 1. Double click on the controller panel to get the menu appears. Choose "Controller Maintenance". If both boot record and firmware are desired to upgrade, choose "Download Firmware". 2. Provide the firmware filename to the GUI RAID Manager. It will start to download the firmware to the controller.

Page 215: Basic Operations At Startup

Please refer to the appropriate section below for information. 4 4 Starting the GUI RAID Manager under the Windows 95/98 or Windows NT 4.0 environment 1. From the Start menu, select Programs à ASUS GUI RAID Manager. -or-...

Page 216 Array System section of this chapter. 4 4 Starting the GUI RAID Manager under the Windows NT 3.5x environment 1. Open the ASUS GUI RAID Manager group window from the Program Manager, if not yet open. 2. From the ASUS GUI RAID Manager group window, double-click on the ASUS GUI RAID Manager icon.

Page 217 3. Run the GUI RAID Manager on the remote station. If you are using Windows 95/98 or Windows NT 4.0, follow these steps: 3a. From the Start menu, select Programs à ASUS GUI RAID Manager. -or- Double-click on the ASUS GUI RAID Manager icon.

Page 218: Connecting And Disconnecting From A Disk Array

ASUS GUI RAID Manager: Basic Operations at Startup 3. When a link is established, connect to the disk array system. For information on how to connect, see the Connecting and Disconnecting from a Disk Array System section of this chapter.

Page 219 ASUS GUI RAID Manager: Basic Operations at Startup Click on the Connect/Open command button. following submenu appears on the screen: Note that there will be one PCI Bus entry for each PCI-to- SCSI controller installed. If none are installed, then no PCI Bus entries will be displayed.

Page 220 ASUS GUI RAID Manager: Basic Operations at Startup 2. Select RS-232. The Settings of RS-232 Interface dialog box appears: 3. From the COM Port# drop-down list box, select which COM port on the local host is connected to the controller via the RS-232 cable.

Page 221 ASUS GUI RAID Manager: Basic Operations at Startup Management. For information about the console interface, see the documentation that came with the controller. 5. Click OK. The enabling of the toolbar buttons signifies a successful connection. 4 4 Connecting to a PCI-to-SCSI controller from a remote station (via network) 1.

Page 222 ASUS GUI RAID Manager: Basic Operations at Startup 3. In the Agent Name or IP Address text box, type in the IP address of the local host where the target disk array system is connected. Alternatively, you may specify the host name of the local host.

Page 223 ASUS GUI RAID Manager: Basic Operations at Startup arrow button at the right of the box, then select the option you need. 6. Click OK. The enabling of the toolbar buttons signifies a successful connection. 4 4 Connecting to a SCSI-to-SCSI controller from a remote station (via network) 1.

Page 224 ASUS GUI RAID Manager: Basic Operations at Startup 3. In the Agent Name or IP Address text box, type in the IP address of the local host where the target disk array system is connected. Alternatively, you may specify the host name of the local host.

Page 225 ASUS GUI RAID Manager: Basic Operations at Startup From the COM Port# drop-down list box, specify which COM port on the local host is used to connect to the disk array system. To select, click on the down-arrow button at the right of the box, then select the option you need.

Page 226 ASUS GUI RAID Manager: Basic Operations at Startup 2. Select RS-232. The Settings of RS-232 Interface dialog box appears on the screen: 3. From the COM Port# drop-down list box, select which COM port on your GUI RAID Manager station you connected the modem.

Page 227: Setting Up Security

ASUS GUI RAID Manager: Basic Operations at Startup Setting Up Security The GUI RAID Manager provides password protection to prevent unauthorized modification of the system configuration. This protection, which is implemented on the GUI RAID Manager station, prompts a user for the station password the first...

Page 228: Displaying And Hiding The Toolbar

ASUS GUI RAID Manager: Basic Operations at Startup controller or card layout for a PCI-to-SCSI controller). The Controller Settings dialog box appears: 3. Check the Change Password check box. 4. Type in the password you want in the New Password text box taking note that the password is case-sensitive.

Page 229 ASUS GUI RAID Manager: Basic Operations at Startup You have the option to display or hide the toolbar depending on your specific needs. If you need bigger working space for viewing the various disk array elements or for executing various management operations, hide the toolbar;...

Page 230: Displaying And Hiding The Status Bar

4 4 Unhiding the toolbar From the View menu, click on Toolbar until a check mark “ “ appears next to this command. The toolbar is displayed back in the ASUS GUI RAID Manager main window. Displaying and Hiding the Status...

Page 231 4 4 Unhiding the status bar From the View menu, click on Status Bar until a check mark “ ” appears next to this command. The status bar will reappear in the ASUS GUI RAID Manager main window. 3-17 Displaying and Hiding the Status Bar...

Page 232: Working With Windows

This section describes how to work with the GUI RAID Manager windows. 3.6.1 Using the Main Window After starting the GUI RAID Manager, the ASUS GUI RAID Manager main window appears on the screen. All management operations pertaining to the disk array system will be performed within the main window.

Page 233 ASUS GUI RAID Manager: Basic Operations at Startup operations. Most commonly used commands such as Statistics and Event Log come with command buttons to facilitate their execution you can either select the command from the menu, or click on its respective command button on the toolbar.

Page 234 ASUS GUI RAID Manager: Basic Operations at Startup Ø The Tile In-Sequence command button arranges the displayed windows next each other, with arrangement based on their uses, and each window reduced to fit all elements within its width. This button, however, only affects the Enclosure, Physical...

Page 235 ASUS GUI RAID Manager: Basic Operations at Startup Ø The Event Log command button displays the Event Log window for viewing the contents of the log file. This button provides the same function as the Event Log command in the Open menu.

Page 236 ASUS GUI RAID Manager: Basic Operations at Startup 3.6.2 Using the Enclosure Window The Enclosure window appears when you click on the Enclosure command button or select the Enclosure command from the Open menu. The Enclosure window allows you to define customizable enclosures for creating an exact replica of the disk array’s drive bays, displaying the exact location of the...

Page 237 ASUS GUI RAID Manager: Basic Operations at Startup NOTE: The Physical Drives window also provides you with a real-time report on the drive status, using the same symbols and colors to represent various conditions. What you see on the Enclosure window is also reflected on the Physical Drives window.

Page 238 ASUS GUI RAID Manager: Basic Operations at Startup 3.6.3 Using the Physical Drives Window The Physical Drives window is where you view and modify the configuration of the controller and manage physical drives. This window provides almost the same function as the Enclosure...

Page 239 ASUS GUI RAID Manager: Basic Operations at Startup reflects what appears on the actual front panel of a SCSI-to-SCSI controller. Also shown in this window are the physical drives and hosts (for SCSI-to-SCSI controllers only) connected to the controller. How they are connected and configured, including their current status (for drives only), are all depicted on the screen.

Page 240 ASUS GUI RAID Manager: Basic Operations at Startup number, channel mode (that

is, host or drive), SCSI ID, the default and current transfer clock rate, and the default and current transfer width. Letting the mouse pointer hover over a drive displays a table...

Page 241 ASUS GUI RAID Manager: Basic Operations at Startup Fault Bus is a proprietary enclosure management interface. It will warn the user if a dangerous situation occurs within the RAID system. Fault Bus gathers the failure signals from the cooling fans, redundant power supply, enclosure temperature sensor and UPS device.

Page 242 ASUS GUI RAID Manager: Basic Operations at Startup The user is given the choice of enabling or disabling failure signals. In addition, each signal must be configured as either High or Low (refer to your 3rd-party circuit's manual for the proper settings.)

Page 243 ASUS GUI RAID Manager: Basic Operations at Startup SAF-TE Support RAID Front Panel UPS Failure Controller error alert Signal Input SAF-TE SCSI Chipset Cooling Fan Failure Signal Input GUI RAID Manager Power Supply error alert Drive Status Temperature Alert Failure...

Page 244 ASUS GUI RAID Manager: Basic Operations at Startup SAF-TE is configured by selecting the "SAF-TE Polling Period" under the "SCSI" menu. Intervals ranging from .05 to 60 seconds are available. The default polling period is "Disabled." 3-30 Working with Windows...

Page 245 ASUS GUI RAID Manager: Basic Operations at Startup 3.6.4 Using the Logical Drives Window The Logical Drives window is where you perform management on the logical drives of the disk array system. Logical drives are combinations of physical drives, which are used to create logical volumes.

Page 246 ASUS GUI RAID Manager: Basic Operations at Startup If you need information about a particular logical drive, just let the mouse pointer hover over its corresponding icon. A table similar to the following will appear: This table displays the ID number of the logical drive, the RAID...

Page 247 ASUS GUI RAID Manager: Basic Operations at Startup Logical volumes are a grouping of multiple logical drives combined together into one large unit. This unit is, in turn, mapped entirely or by parts (that is, by partitions) to various host LUNs.

Page 248 ASUS GUI RAID Manager: Basic Operations at Startup Logical volumes that have been partitioned appear with dotted lines on them. The relative position of a dotted line indicates the location of the boundary between partitions within the volume. Moving this line will change the location of the boundary thereby changing the size of the partitions so bounded.

Page 249 ASUS GUI RAID Manager: Basic Operations at Startup To display the Host LUN Assignment window, you can either click on the Host LUN Assignment command button or select the Host LUN Assignment command from the Open menu. A window similar to the following appears on the screen:...

Page 250 ASUS GUI RAID Manager: Basic Operations at Startup For information on mapping logical volumes and/or partitions to host LUNs, and deleting existing mappings, see Chapter 4, Array Management. 3.6.7 Arranging Windows The Window menu provides you with commands for rearranging the displayed GUI RAID Manager windows (excluding the main window) in various ways.

Page 251: Exiting Gui Raid Manager

ASUS GUI RAID Manager: Basic Operations at Startup 4 4 Arranging windows using the Tile Horizontal command From the Window menu, select Tile Horizontal. 4 4 Arranging windows using the Tile Vertical command From the Window menu, select Tile Vertical.

Page 252: Array Management

4 Array Management This chapter describes the steps on how to manage a disk array system. The topics include the following: Background information about disk array management Defining enclosures Setting controller configuration Setting channel configuration Scanning in drives Creating logical drives Assigning spare drives Deleting logical drives Rebuilding logical drives...

Page 253 ASUS GUI RAID Manager: Array Management chapter, Background Information, to get basic information about disk array management. You will need this basic knowledge to be able to effectively use the GUI RAID Manager. Background Information...

Page 254: Background Information

Appendix C, RAID Levels, gives information about these levels, including the benefits of each. ASUS disk array controllers support hot-swapping where a failed drive can be replaced while the disk array system continues to function. Spares can also be assigned so that, as soon as a drive fails, the spare will be automatically configured into the array and reconstruction will commence.

Page 255 ASUS GUI RAID Manager: Array Management immediately commence. Spare drives appear in darker (shaded) colors than normal drives. Replacement drives. These are physical drives that are manually configured into the array to replace failed drives. In the absence of spare drives, you will need to use replacement drives to replace defective drives before rebuilding can be performed.

Page 256: Operation Without Spare Drives

ASUS GUI RAID Manager: Array Management If a spare drive exists in the same logical drive, the controller will automatically mount the spare drive and start data rebuilding in the background. Depending on the design of the system external to the...

Page 257 ASUS GUI RAID Manager: Array Management same logical drive. A defective drive must be promptly replaced and data rebuilt. CAUTION: When performing hot-swapping, be sure to remove only the defective drive. Removing the wrong drive will result in unrecoverable data loss. Use the Enclosure or Physical Drives window to locate the exact location of the failed drive.

Page 258: Before You Start

ASUS GUI RAID Manager: Array Management Before you Start The GUI RAID Manager station comes with password protection that prevents unauthorized modification of the disk array configuration. During first attempts at modifying the system configuration after starting up the GUI RAID Manager or after the GUI RAID Manager comes back from a period of inactivity, the configuration will be password protected.

Page 259: Defining Enclosures

ASUS GUI RAID Manager: Array Management Defining Enclosures You create custom enclosures to facilitate management of the physical drives in the disk array system. These enclosures can replicate closely real enclosures with real drive bays, depicting the exact locations and positions of the physical drives. When a...

Page 260 ASUS GUI RAID Manager: Array Management 4. Resize the enclosure icon to display the exact number of drive bays you need. To resize, place the mouse pointer on the bottom-side or right-side of the icon and press and hold the left mouse button. When the mouse pointer changes to a double-headed arrow, drag the mouse pointer until the desired number of drive bays is displayed.

Page 261 ASUS GUI RAID Manager: Array Management 1. Double-click on the target drive bay. The following menu will appear on the screen: 2. Select Remove Bay from Enclosure. 4 4 Moving an enclosure 1. Place the mouse pointer on the left-side or top-side of the enclosure icon and press and hold the left mouse button.

Page 262: Setting Controller Configuration

ASUS GUI RAID Manager: Array Management Setting Controller Configuration The GUI RAID Manager enables you to modify the configuration of the disk array controller from your manager console. You can enable or disable the write-back cache of the system, set whether or not the controller will reset the SCSI bus during power-on, stagger the drives'...

Page 263 ASUS GUI RAID Manager: Array Management Change Password. This parameter allows you to modify the current password of the GUI RAID Manager station. This password prevents any unauthorized modifications on the system configuration. For more information about the station password and other security issues, see the Setting Up Security section of Chapter 3, Basic Operations at Startup.

Page 264: Setting Channel Configuration

ASUS GUI RAID Manager: Array Management enable the write-back cache, select Enabled; to disable, select Disabled. 4. If you want a SCSI bus reset to be issued on the drive channels every time you power on or reset the disk array system, set the SCSI Reset on Power-Up parameter to Enabled.

Page 265 ASUS GUI RAID Manager: Array Management channel operation mode to host or drive, enable or disable the channel termination, set its SCSI ID, set the transfer clock rate for synchronous communication, and select the transfer width. The following describes the user-configurable parameters: Channel Mode.

Page 266 ASUS GUI RAID Manager: Array Management assigned as the default value for host channels, and 7 for drive channels. Default Sync Clock (MHz), Default Xfer Width. These parameters set the data transfer clock rate for synchronous communication over the SCSI bus, and enable or disable wide transfer, respectively.

Page 267 ASUS GUI RAID Manager: Array Management wide transfer may need to be disabled, forcing the controller to use narrow transfer mode with that device. 4 4 Setting the configuration of a channel 1. Display the Physical Drives window by clicking on the Physical Drives command button or selecting the Physical Drives command from the Open menu.

Page 268: Scanning In Drives

ASUS GUI RAID Manager: Array Management 4. From the Termination drop-down list box, specify whether to enable the channel termination or not. To enable, select Enabled; to disable, select Disabled. 5. If you want to assign a different SCSI ID to the selected channel, specify the new ID in the SCSI ID drop-down list box.

Page 269 ASUS GUI RAID Manager: Array Management 4 4 Scanning in a drive 1. Display the Physical Drives window by clicking on the Physical Drives command button or selecting the Physical Drives command from the Open menu. 2. From the Physical Drives window, double-click on the connector corresponding to the SCSI ID of the drive being scanned.

Page 270: Creating And Deleting Logical Drives

ASUS GUI RAID Manager: Array Management Creating and Deleting Logical Drives You can create logical drives by simply combining physical drives together. The GUI RAID Manager provides you with two options for creating logical drives: automatic and manual. In the...

Page 271 ASUS GUI RAID Manager: Array Management 4 4 To create a logical drive 1. Display the Logical Drives window by clicking on the Logical Drives command button or selecting the Logical Drives command from the Open menu. If you intend to use...

Page 272 ASUS GUI RAID Manager: Array Management 5. From the Physical Drives window, click on the target drives. Be sure to select only unassigned drives (those that appear in gray). The Number of Drives Selected field displays the number of selected drives.

Page 273: Assigning Spare Drives

ASUS GUI RAID Manager: Array Management 3. Select Delete. Assigning Spare Drives You can assign spare drives to a logical drive to serve as backups for failed drives. In the event of a drive failure, the spare drive will automatically...

Page 274 ASUS GUI RAID Manager: Array Management NOTE: Adding a spare drive can be done automatically by selecting the 1+Spare, 3+Spare or 5+Spare option from the Logical Drive Selection dialog box when creating a logical drive. These options however only apply to RAID 1, RAID 3, and RAID 5 levels respectively.

Page 275: Rebuilding Logical Drives

ASUS GUI RAID Manager: Array Management 4.10 Rebuilding Logical Drives Depending on whether or not there is a spare drive, rebuilding is initiated automatically or manually. In the presence of a spare drive, the system automatically rebuilds onto the spare drive.

Page 276: Creating And Deleting Logical Volumes

ASUS GUI RAID Manager: Array Management 4.11 Creating and Deleting Logical Volumes You can create and delete logical volumes from your GUI RAID Manager station. Logical volumes are created by simply combining unassigned logical drives together. You can combine logical drives with different capacities and RAID levels into one logical volume.

Page 277 ASUS GUI RAID Manager: Array Management 6. Select Volume. Then, from the next menu, select Create The logical volume is now created. You may now define its partitions. See the Creating and Deleting Partitions section of this chapter. 4-26 4.11...

Page 278 ASUS GUI RAID Manager: Array Management 4 4 To delete a logical volume 1. Display the Volume window by clicking on the Logical Volume command button or selecting the Logical Volume command from the Open menu. 2. Double-click the right mouse button on the target logical volume.

Page 279: Creating And Deleting Partitions

ASUS GUI RAID Manager: Array Management 4.12 Creating and Deleting Partitions Depending on your specific needs, you can either partition a logical volume into smaller sizes or just leave it at its default size (that is, one large partition covering the entire volume). If you intend to map the entire logical volume to a single host LUN, then partitioning becomes irrelevant;...

Page 280 ASUS GUI RAID Manager: Array Management 4. Select Create Partition. A table similar to the following will appear displaying the current partition layout: 5. Adjust the partition size using the vertical scroll bar on the displayed table. Click OK when the desired size is achieved.

Page 281 ASUS GUI RAID Manager: Array Management 7. After defining the desired partitions, double-click the right mouse button on the current logical volume. 8. From the displayed menu, select Partition. Then, select Set Partition. The logical volume is now ready for mapping to host LUNs. See the Mapping Logical Volumes/Partitions to Host LUNs section of this chapter.

Page 282 ASUS GUI RAID Manager: Array Management 4. Select Delete Partition. 5. Repeat the same procedure to delete the other unwanted partitions. 6. After deleting partitions, double-click the right mouse button on the current logical volume. 7. From the displayed menu, select Partition. Then, select Set Partition.

Page 283: Mapping Logical Volumes/Partitions To Host Luns

ASUS GUI RAID Manager: Array Management 4.13 Mapping Logical Volumes/Partitions to Host LUNs After creating a logical volume, you can map it as is to a host LUN if you prefer; or, if partitions are set, you can map each partition to specific host LUNs.

Page 284 ASUS GUI RAID Manager: Array Management window, click on the Host LUN Assignment command button or select the Host LUN Assignment command from the same menu. 2. From the Volume window, position the mouse pointer on the partition you wish to map and press and hold down the left mouse button.

Page 285: Displaying The Event Log

ASUS GUI RAID Manager: Array Management 4.14 Displaying the Event Log The GUI RAID Manager keeps a log file for documenting all events that occurred in the disk array system ranging from simple notifications, to warnings, to alerts. The GUI RAID Manager saves the system log into a file named EVENT.LOG in the GUI RAID Manager directory.

Page 286 ASUS GUI RAID Manager: Array Management 2. To scroll through the list, use the vertical scroll bars. 4-35 4.14 Displaying the Event Log...

Page 287: Monitoring Statistics

ASUS GUI RAID Manager: Array Management 4.15 Monitoring Statistics The GUI RAID Manager comes with a statistics monitoring feature to report on the overall performance of the disk array system. This feature provides a real-time report on the current throughput of the system, displaying the number of bytes being read and written per second.

Page 288: Dynamic Logical Drive Expansion

ASUS GUI RAID Manager: Array Management 4.16 Dynamic Logical Drive Expansion What Is It and How Does It Work? Before Dynamic Logical Drive Expansion, increasing the capacity of a RAID system using traditional methods meant backing up, re-creating and then restoring. Dynamic Logical Drive Expansion (a new feature of firmware version 2.11) allows users to add new SCSI hard disk...

Page 289 ASUS GUI RAID Manager: Array Management Mode 1 Expansion involves adding more SCSI hard disk drives to a logical drive, which may require that the user obtain an enclosure with more drive bays. The data will be re-striped onto the original and newly added disks.

Page 290 ASUS GUI RAID Manager: Array Management Mode 2 Expansion, on the other hand, requires the same number of higher-capacity SCSI hard disk drives for a given logical drive. RAID Expansion - Mode 2 (1/3) 2 GB 2 GB 2 GB...

Page 291 ASUS GUI RAID Manager: Array Management RAID Expansion - Mode 2 (2/3) 4 GB 2 GB 2 GB 4 GB Drive RAID 5 (4GB) Copy and Replace the other member drives one by one until all the member drives have been replaced Copy and Replace each member drive.

Page 292 ASUS GUI RAID Manager: Array Management IMPORTANT: The increased capacity from Mode 1 Expansion of a logical drive will be a new partition. At the time of this printing, Firmware version 2.11 does not support the "Copy and Replace" function that is required for Mode 2 Expansion.

Page 293 ASUS GUI RAID Manager: Array Management The Example: The following example demonstrates the expansion of a 900MB RAID 0 logical drive. The GUI RAID Manager is used to connect to the RAID controller. You can view information about this drive in the Windows NT Server's Disk Administrator.

Page 294 ASUS GUI RAID Manager: Array Management Place the cursor on Disk 1, right-click your mouse, and select "Properties." You will see that the total capacity for the Drive E: is just under 900MB. 4-43 4.16 Dynamic Logical Drive Expansion...

Page 295 ASUS GUI RAID Manager: Array Management Three new drives are scanned in (see section 4.7 for details on scanning in new drives.) To add the drives to the logical drive, first right-click on the logical drive icon, and then select "Add SCSI Drive."...

Page 296 ASUS GUI RAID Manager: Array Management From the menu, select Partition Logical Drive. You will see that the 1800MB logical drive is composed of two 900MB partitions. Follow the directions in section 4.13 to map the new partition to a Host LUN. The new partition must be mapped to a host LUN in order for the HBA (host-bus adapter) to see it.

Page 297 ASUS GUI RAID Manager: Array Management From the "Partition" menu, select "Extend Volume Set." 4-46 4.16 Dynamic Logical Drive Expansion...

Page 298 ASUS GUI RAID Manager: Array Management The screen will display that volume set of Drive E: has been extended by the 900MB in Disk2. Move the cursor to "Commit Changes Now" to confirm that you want the free space to become a part of the same logical drive.

Page 299 ASUS GUI RAID Manager: Array Management Logical Drive E: is now composed of two 900MB partitions with a total volume of 1800MB. To see this, hold down on the <Ctrl> key and select both Disk 1 and Disk2; then right-click your mouse and select "Properties."...

Page 300 ASUS GUI RAID Manager: Array Management Drive E: now has a capacity just under 1800MB. 4-49 4.16 Dynamic Logical Drive Expansion...

Page 301: Redundant Controller

ASUS GUI RAID Manager: Array Management 4.17 Redundant Controller Redundant Controllers For the SCSI-to-SCSI controllers, the GUI RAID Manager is capable monitoring redundant controller configuration. 4-50 4.17 Redundant Controller...

Page 302 ASUS GUI RAID Manager: Array Management The failed controller will display a red "X". Primary and Secondary controllers must be configured using the front panel. Please refer to your RAID controller instruction manual for details. 4-51 4.17 Redundant Controller...

Page 303: Notification Configuration

Notification Configuration This chapter discusses how to configure notifications. topics include the following: Description of the notification function Notification levels Configuring notification options Configuring a pager notification Configuring a fax notification Configuring an e-mail notification Configuring a broadcast notification Introduction A management program is almost useless without reporting or notification function ability.

Page 304: Before You Begin

ASUS GUI RAID Manager: Notification Configuration The GUI RAID Manager provides four methods of sending notifications: Pager E-mail Broadcast You can use any of the notification methods mentioned above; be reminded though that before you can use a particular method,...

Page 305 ASUS GUI RAID Manager: Notification Configuration 5.2.2 Pre-configuring the Fax Service in Windows NT 4.0 Microsoft Windows NT 4.0 ships without fax service. Administrators who desire fax notification have two choices: one, installing a MAPI-compliant fax software; or two, obtaining the file FAX_I386.EXE from Microsoft, which –...

Page 306 ASUS GUI RAID Manager: Notification Configuration 1. From the Windows Start bar, run the file FAX_I386.EXE. Enter information regarding your desired fax configuration as prompted. 2. Open the Control Panel and click on the Mail icon. Before You Begin...

Page 307 ASUS GUI RAID Manager: Notification Configuration 3. The Windows Messaging Settings Properties window will be displayed. The profile now displays two new services – Fax Address Book and Fax Mail Transport. Before You Begin...

Page 308 ASUS GUI RAID Manager: Notification Configuration 4. The format of the fax can be configured by selecting Fax Mail Transport and clicking on Properties. The user can select whether or not to include a cover page as well as the fax's font and size.

Page 309 ASUS GUI RAID Manager: Notification Configuration The following are instructions for installing the Internet Mail service in Windows NT 4.0: 1. Open the Control Panel and click on the Mail icon. 2. The Windows Messaging Settings Properties window will be displayed.

Page 310 ASUS GUI RAID Manager: Notification Configuration 3. Select "Internet Mail," and then click on "OK." 4. Fill in all of the fields with the settings for your Internet account, and then click on "OK." Before You Begin...

Page 311: Notification Levels

ASUS GUI RAID Manager: Notification Configuration 5. Repeat steps 1 through 3, selecting "Personal Address Book" and "Personal Folders" at step 3. Please see section 5.7 for complete details on Configuring an E-Mail Notification. 5.2.4 Pre-configuring Broadcast in Windows NT 4.0...

Page 312 ASUS GUI RAID Manager: Notification Configuration Rebuild Initiated Rebuild Complete Rebuild Failed Logical Drive Initialization Started Logical Drive Initialization Complete Logical Drive Initialization Failed Level 2 Sample Events SCSI Target Select Timeout SCSI Target Phase/Signal Error SCSI Target Unexpected Disconnect...

Page 313: Configuring Notification Options

ASUS GUI RAID Manager: Notification Configuration Level 3 Sample Events SCSI Drive Failure You select the notification level from the RAID Manager Options dialog box. Selecting a relatively low level also selects the level(s) above it; thus, selecting Level 1 events, for example, will also select Levels 2 and 3 events.

Page 314 ASUS GUI RAID Manager: Notification Configuration 2. To enable the notification function of the GUI RAID Manager, select the Enable option button in the Event Notification field. To disable, select the Disable option button. 3. From the RAID Event Level drop-down list box,

select the notification level.

Page 315: Configuring A Pager Notification

ASUS GUI RAID Manager: Notification Configuration user-configurable time interval, you can stop subsequent transmissions with this check box. Be reminded though that this will only affect the current event; for succeeding events, this check box will revert to its default state of disabled (no check mark).

Page 316 ASUS GUI RAID Manager: Notification Configuration 5.5.1 Selecting the Destinations You can configure the pager notification function to send a notification to multiple pagers. This is achieved through the pager address book provided by the GUI RAID Manager. From this book, you can add and remove entries, and select which of these entries will receive notification from the system.

Page 317 ASUS GUI RAID Manager: Notification Configuration 3. In the Full Name text box, type in the name of the notification recipient. This only serves for reference purposes in the address book. 4. Enter the pager number in the Pager Number text box, including the area code.

Page 318 ASUS GUI RAID Manager: Notification Configuration 6. To enable pager notification for this particular entry, select the Enable option button. To disable, select the Disable option button. 7. If you want to check the reachability of the specified destination, click on the Test button. Then, check whether or not the notification is received successfully on the pager.

Page 319 ASUS GUI RAID Manager: Notification Configuration NOTE: The prescheduled pager notification does not affect in any way the configured pager notification prescheduled pager notification is triggered by time, while configured pager notification is triggered by events based on the selected notification level.

Page 320 ASUS GUI RAID Manager: Notification Configuration 3. Click on the Period button. The Scheduled Period for Calling Pager dialog box appears: 5-18 Configuring a Pager Notification...

Page 321 ASUS GUI RAID Manager: Notification Configuration 4. In the From and To text boxes, specify the time ranges you want. 5. For each time range, specify the notification frequency in the respective Period (Min) text box. For example, if you want...

Page 322 ASUS GUI RAID Manager: Notification Configuration retransmissions for a particular destination, or for all destinations. 4 4 To stop any on-going pager notification to a particular destination 1. From the list box in the Address Book for Pager Notification dialog box, select the target entry, then click on the Properties button.

Page 323: Configuring A Fax Notification

ASUS GUI RAID Manager: Notification Configuration 2. If there is on-going pager notification and you want to stop subsequent retransmissions, check the Stop In-Progress Event Notification check box. 3. Click OK. You can also stop on-going pager notification for all destination pagers through the RAID Manager Options dialog box.

Page 324 ASUS GUI RAID Manager: Notification Configuration 5.6.1 Selecting the Destinations You can configure the fax notification function to send a notification to multiple users. This is achieved through the fax address book provided by the GUI RAID Manager. From this book, you can add and remove entries, and select which of these entries will receive notification from the system.

Page 325 ASUS GUI RAID Manager: Notification Configuration 3. In the Display Name text box, type in the name of the user that will receive a fax notification. If you specify a name that does not have an account on Fax Exchange yet, the program will prompt you to create one for this particular user.

Page 326: Configuring An E-Mail Notification

ASUS GUI RAID Manager: Notification Configuration 9. Repeat the same procedure to add the other entries you want. 10. If you want to delete an entry from the address book, select it from

the list box and then click on the Remove button.

Page 327 ASUS GUI RAID Manager: Notification Configuration 5.7.1 Selecting the Destinations You can configure the e-mail notification function to send a notification to multiple users. This is achieved through the e- mail address book provided by the GUI RAID Manager. From this book, you can add and remove entries, and select which of these entries will receive notification from the system.

Page 328 ASUS GUI RAID Manager: Notification Configuration 3. In the Display Name text box, type in the name of the user that will receive an e-mail notification. Typing the e-mail address directly may work; it all depends on the e-mail program that you are using. You can enter the destination e- mail address in this box if you are using the Microsoft Internet Mail service.

Page 329: Configuring A Broadcast Message Notification

ASUS GUI RAID Manager: Notification Configuration on how to proceed from here, refer to your Windows manual. 9. Repeat the same procedure to add the other entries you want. 10. If you want to delete an entry from the address book, select it from the list box and then click on the Remove button.

Page 330 ASUS GUI RAID Manager: Notification Configuration is necessary to first execute on that system. WINPOPUP is located in the Windows directory. WINPOPUP 5.8.1 Selecting the Destinations You can configure the broadcast message notification function to send messages to multiple users. This is achieved through the broadcast message address book provided by the GUI RAID Manager.

Page 331 ASUS GUI RAID Manager: Notification Configuration The list box on the left of this dialog box displays the current contents of the broadcast message address book. 2. Click on the Add button to add a new entry. The Personal Information: Broadcast dialog box will appear: 3.

Page 332: Message Notification

ASUS GUI RAID Manager: Notification Configuration 7. Click OK to add the specified entry to the address book. 8. Repeat the same procedure to add the other entries you want. 9. If you want to delete an entry from the address book, select it from the list box and then click on the Remove button.

Page 333 ASUS GUI RAID Manager: Notification Configuration The list box on the left of this dialog box displays the current contents of the broadcast message address book. 2. From the list box, select the target entry, then click on the Properties button.

Page 334 ASUS GUI RAID Manager: Notification Configuration 4. In the From and To text boxes, specify the time ranges you want. 5. For each time range, specify the notification frequency in the respective Period (Min) text box. For example, if you want...

Page 335 ASUS GUI RAID Manager: Notification Configuration message reception by the intended administrator. If, however, the destination computer is off-line, you can terminate subsequent message retransmissions to cut back in the processing time of your computer, and also to lessen traffic on the network.

Page 336 ASUS GUI RAID Manager: Notification Configuration 2. If there is on-going broadcast message notification and you want to stop subsequent retransmissions, check the Stop In- Progress Event Notification check box. 3. Click OK. 5-34 Configuring a Broadcast Message Notification...

Page 337: Running In Demo Mode

6 Running in Demo Mode This chapter provides information on how to run the GUI RAID Manager in Demo mode. These include the following topics: Introduction about the Demo program Starting the Demo program Failing a drive Exiting the Demo program...

Page 338: Introduction

ASUS GUI RAID Manager: Running in Demo Mode Introduction The GUI RAID Manager provides a Demo program for use as a learning tool and for demonstration purposes. This program allows you to experiment with various disk array configurations and check how the system responds

and operates under various conditions.

Page 339: Starting The Demo Program

ASUS GUI RAID Manager: Running in Demo Mode Starting the Demo Program You can use the Demo program any time, even without a real disk array system (that is, a controller and SCSI drives) installed in your computer. Since the Demo program only simulates management of a disk array system, you will not need any of these devices.

Page 340 ASUS GUI RAID Manager: Running in Demo Mode 4. In the Controller Type section, select the type of controller you want to use. To use a PCI-to-SCSI controller, select the Host Adapter option button; to use a SCSI-to-SCSI controller, select Target Controller.

Page 341: Failing A Drive

ASUS GUI RAID Manager: Running in Demo Mode 6. If you selected Host Adapter in step 4, proceed to the next step; otherwise, select the channel mode for each enabled Channel x Mode section. To configure the channel as a host channel, select the Host option button;...

Page 342 ASUS GUI RAID Manager: Running in Demo Mode During a drive failure, the system responds differently depending on the current array configuration. The following describes the possible scenarios: If there is a spare drive assigned to the selected logical drive, the virtual controller will automatically start data rebuilding in the background onto the spare drive.

Page 343 ASUS GUI RAID Manager: Running in Demo Mode 4 4 To fail a drive 1. Display the Logical Drives window by clicking on the Logical Drives command button or selecting the Logical Drives command from the Open menu. 2. From the Logical Drives window, double-click the right mouse button on the target logical drive.

Page 344: Exiting The Demo Program

ASUS GUI RAID Manager: Running in Demo Mode Exiting the Demo Program If you are done with the Demo program and you want to manage the real disk array system installed in your computer, quit from the Demo program and then connect to your disk array system.

Page 345: A Command Summary

Command Summary This appendix describes the available commands in the GUI RAID Manager disk array management program. These commands are presented either in menus or command buttons. Menu Commands This section lists and explains in tabular form the commands available from the menus in the menu bar. Keyboard strokes for commands that can also be executed from the keyboard are indicated in the tables inside angle brackets.

Page 346 ASUS GUI RAID Manager: Command Summary Open Menu Commands Command Description Enclosure <E> Displays the Enclosure window. This command has the same function as the Enclosure command button found on the toolbar. Physical Drive <P> Displays the Physical Drives window.

Page 347 ASUS GUI RAID Manager: Command Summary Command Description Logical Drive <L> Displays the Logical Drives window. This command has the same function as the Logical Drives command button found on the toolbar. Logical Volume Displays the Volume window. This command <V>...

Page 348 ASUS GUI RAID Manager: Command Summary Tile In-Sequence A command specifically designed for disk array <S> management. This command arranges the displayed windows horizontally based on their uses, with each window reduced to fit all elements within its width. Has the same function as the Tile In-Sequence command button found on the toolbar.

Page 349 ASUS GUI RAID Manager: Command Summary Options Command Command Description Options This command allows you to configure the system notification function. From this command, you can enable or disable the notification function, select the event severity, specify the event countdown limit, and stop all on-going pager notifications.

Page 350: Command Buttons

ASUS GUI RAID Manager: Command Summary Command Buttons This section describes the various command buttons provided by the system to facilitate execution of commonly used

commands. These buttons can be found on the toolbar. Tile In-Sequence Logical Volume Physical Drives...

Page 351 ASUS GUI RAID Manager: Command Summary Command Button Description Tile In-Sequence A command button specifically designed for disk array management. This button arranges the displayed windows horizontally based on their uses, with each window reduced to fit all elements within its width.

Page 352 ASUS GUI RAID Manager: Command Summary Command Button Description Statistics Displays the Statistics window. Has the same function as the Statistics command in the Open menu. Command Buttons...

Page 353: B Troubleshooting

Troubleshooting This appendix provides troubleshooting tips for common problems you may encounter while using the GUI RAID Manager. These include the following topics: Startup errors Notification errors SNMP errors...

Page 354: Startup Errors

ASUS GUI RAID Manager: Troubleshooting Startup Errors Error Message1: Error encountered during OPEN: Unable to Connect to Controller Cause1: The GUI RAID Manager was not able to establish a link with the target disk array system. This may be caused by one (or...

Page 355: Notification Errors

ASUS GUI RAID Manager: Troubleshooting Error Message4: Error in loading DLL Cause4: The GUI RAID Manager cannot find one of its components. Solution4: Re-install the GUI RAID Manager. Notification Errors Error Condition1: Pager notification does not work Cause1: This error can be caused by one (or more) of the following:...

Page 356 ASUS GUI RAID Manager: Troubleshooting the message number. If your pager number is 1234567, for example, and the message you want to send is 911, you can specify one of the following: 1234567,,, (in the Pager Number text box) -or- ,,,911 (in the Message text box) You can specify as many commas as you want;...

Page 357: Snmp Errors

ASUS GUI RAID Manager: Troubleshooting Error Condition4: E-mail notification does not work Cause4: This error can be caused by one (or more) of the following: the Microsoft Exchange, Microsoft Mail and/or Microsoft Internet Mail is not properly installed in your system, there is problem with your Internet connection, E-mail address is not correct, or the recipient’s Mail Server is not active.

Page 358 ASUS GUI RAID Manager: Troubleshooting Solution1: Install the appropriate SNMP service for the environment you are using for the local host or the remote manager station. You can get this service from the software provider; that is, Microsoft for Windows NT and Windows 95, and Novell for NetWare.

Page 359: Craid Levels

RAID Levels This appendix provides a functional description of Redundant Array of Independent Disks (RAID). This includes information about RAID and available RAID levels. RAID Description Redundant Array of Independent Disks (RAID) is a storage technology used to improve the processing capability of storage systems.

Page 360 ASUS GUI RAID Manager: RAID Levels would create a single logical drive with a total disk capacity of 4GB. Disk spanning is considered non-RAID due to the fact that it neither provides redundancy nor improves performance. Disk spanning is inexpensive, flexible, and easy to implement;...

Page 361: Raid 1

ASUS GUI RAID Manager: RAID Levels multiple disks. Furthermore, for I/Os that do not span more than one drive, read/writes to different drives can be processed concurrently. Logical Drive Physical Disks Block 1 Striping Block 2 Block 1 Block 2...

Page 362: Raid 1(0+1)

ASUS GUI RAID Manager: RAID Levels Logical Drive Physical Disks Block 1 Mirroring Block 2 Block 1 Block 1 Block 3 Block 2 Block 2 Block 4 Block 3 Block 3 Block 5 Block 4 Block 4 Block 6 Block 7...

Page 363: Raid 3

ASUS GUI RAID Manager: RAID Levels Physical Disks Logical Drive Striping Block 1 Block 2 Block 3 Block 4 Block 1 Block 5 Block 6 Block 2 Block 7 Block 8 Block 3 Block 4 Block 5 Block 6 Mirror 1...

Page 364: Raid 5

ASUS GUI RAID Manager: RAID Levels Logical Drive Physical Disks Dedicated Parity Block 1 Block 2 Striping Block 1 Block 2 Parity (1,2) Block 3 Block 3 Block 4 Parity (3,4) Block 4 Block 5 Block 6 Parity (5,6) Block 5...

Page 365 ASUS GUI RAID Manager: RAID Levels Logical Drive Physical Disks Block 1 Striping + non-dedicated Parity Block 2 Block 1 Block 2 Parity (1,2) Block 3 Parity (3,4) Block 3 Block 4 Block 4 Block 6 Parity (5,6) Block 5...

Page 366 Index —A— —D— address book 1-4, 1-5, 1-8, 5-14, data traffic 4-36 5-15, 5-16, 5-17, 5-22, 5-23, 5- data transfer clock rate 4-15 24, 5-25, 5-26, 5-27, 5-28, 5-29, dedicated parity C-5 5-30, 5-31 deleting partitions 4-31 disk mirroring C-3 disk spanning C-1 —B—...

Page 367 ASUS GUI RAID Manager: Index Firmware Logical Drives command button 3-20, 3-31, 4-20, 4-21, 4-23, 4- upgrading 2-27 24, 4-25, 6-7, A-3 Logical Drives window 3-20, 3- front panel 3-13, 3-24, 4-12 31, 4-4, 4-20, 4-21, 4-23, 4-24, FTP sites 2-26...

Page 368 ASUS GUI RAID Manager: Index rebuilding logical drives 1-4 —P— Redundant Controller 4-50 pager notification 5-1, 5-2, 5-11, remote management 1-3, 1-8, 2-1, 5-12, 5-13, 5-14, 5-16, 5-17, 5- 2-2, 2-3, 2-6, 2-7, 2-23, 3-2, 3-3 19, 5-20, 5-21, A-4, A-5, B-4...

Page 369 ASUS GUI RAID Manager: Index —V— —W— Volume window 3-20, 3-33, 4- wide transfer 4-15, 4-17 25, 4-27, 4-28, 4-30, 4-32, 4-33, windows display area 3-15, 3-16, A-3, A-7 3-21 Index-4...