



Asus ESC4000 G2 User Manual

2u rackmount server

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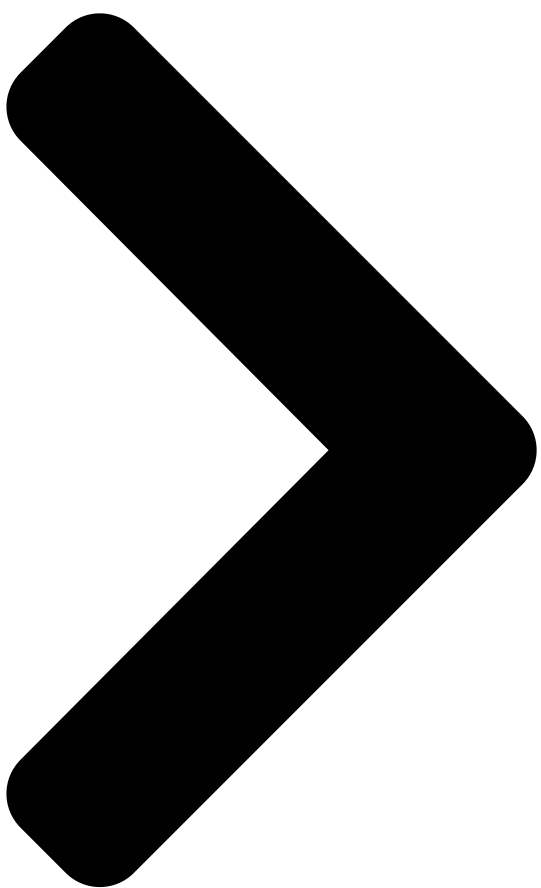
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Summary of Contents for Asus ESC4000 G2

[Page 1](#) ESC4000 Series 2U Rackmount Server User Guide...

[Page 2](#) ASUSTeK COMPUTER INC. ("ASUS"). ASUS provides this manual "as is" without warranty of any kind, either express or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose. In no...

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[Page 7: Notices](#)

Notices Federal Communications Commission Statement This device complies with Part 15 of the FCC Rules. 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 8](#) ASUS REACH website at <http://csr.asus.com/english/REACH.htm>. ASUS Recycling/Takeback Services ASUS recycling and takeback programs come from our commitment to the highest standards for protecting our environment. We believe in providing solutions for you to be able to responsibly recycle our products, batteries, other components as well as the packaging materials.

[Page 9: Safety Information](#)

Safety information Electrical Safety • Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged. • To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system. •...

[Page 10: About This Guide](#)

About this guide Audience This user guide is intended for system integrators, and experienced users with at least basic knowledge of configuring a server. Contents This guide contains the following parts: Chapter 1: Product Introduction This chapter describes the general features of the server, including sections on front panel and rear panel specifications.

[Page 11](#) Refer to the following sources for additional information, and for product and software updates. ASUS Server Web-based Management (ASWM) user guide This manual tells how to set up and use the proprietary ASUS server management utility. ASUS websites The ASUS websites worldwide provide updated information for all ASUS...

[Page 13](#) Chapter 1 This chapter describes the general features of the chassis kit. It includes sections on front panel and rear panel specifications. ASUS ESC4000 Series...

[Page 14: Chapter 1: Product Introduction](#)

1 x Friction Rail Kit 8 x 8-pin power cables Optional Items 1 x slim-type optical drive 1 x PCIe PIKE riser card (for ASUS PIKE RAID card only) 1 x PIKE RAID Card 1 x Trend Micro Server Protect Anti-virus Software CD...

[Page 15: Serial Number Label](#)

14 characters such as xxS0xxxxxxxx. See the figure below. With the correct serial number of the product, ASUS Technical Support team members can then offer a quicker and satisfying solution to your problems.

[Page 16: System Specifications](#)

1.3 System specifications The ASUS ESC4000 Series is a server featuring the ASUS Z8PG-D18 Series server board. The server supports Intel ® LGA1366 Xeon ® series processors with EM64T

technology, plus other latest technologies through the chipsets onboard. Model Name ESC4000 Series...

[Page 17](#) Remote ASMB4-iKVM for KVM-over-IP support (Bundled) Management Hardware Solution Software ASUS ASWM 2.0 Dimension (HH x WW x DD) 750mm x 444mm x 88mm (2U) Net Weight Kg (CPU, DRAM & 18 Kg HDD not included) 1400W (80+) 1+1 Redundant Power Supply (Default...

[Page 18: Front Panel Features](#)

Expansion slot 4 Full-length 4 Full-length Expansion slots Expansion slots • The rear I/O ports do not appear on the rear panel if motherboard is not present. • *The port is for ASUS ASMB4-iKVM controller card only. Chapter 1: Product introduction...

[Page 19: Internal Features](#)

A protection film is pre-attached to the front cover before shipping. Please remove the protection film before turning on the system for proper heat dissipation. *WARNING HAZARDOUS MOVING PARTS KEEP FINGERS AND OTHER BODY PARTS AWAY ASUS ESC4000 Series...

[Page 20: Led Information](#)

LED information 1.7.1 Front panel LEDs LAN1 LED Message LED LAN2 LED Location LED Power LED HDD Access LED Display Icon Description status Power LED System power ON No activity Access Blinking Read/write data into the HDD System is normal; no incoming event Message 1.

[Page 21: Lan \(Rj-45\) Leds](#)

1. Read/write data from/into the SATAII/SAS HDD Blinking 2. Locating (blinking with the HDD status LED) HDD not present HDD Status LED (Red) HDD has failed and should be swapped immediately 1. RAID rebuilding Blinking 2. Locating (blinking with the HDD activity LED) ASUS ESC4000 Series...

[Page 22](#) 1-10 Chapter 1: Product introduction...

[Page 23](#) Chapter 2 This chapter lists the hardware setup procedures that you have to perform when installing or removing system components. ASUS ESC4000 Series...

[Page 24: Chapter 2: Hardware Setup](#)

Chassis cover Removing the rear cover Locate and remove the side screws. Loosen the two thumbscrews on the rear panel. Thumbscrews Firmly hold the cover and slide it toward the rear panel for about half an inch until it is disengaged from the chassis.

[Page 25: Central Processing Unit \(Cpu\)](#)

ASUS will shoulder the cost of repair only if the damage is shipment/transit-related. • Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA1366 socket.

[Page 26](#) Press the load lever with your thumb Retention tab (A), then move it to the left (B) until it is released from the retention tab. To prevent damage to the socket pins, do not remove the PnP cap Load lever unless you are installing a CPU.

[Page 27](#) To prevent contaminating the paste, DO NOT spread the paste with your finger directly. Close the load plate (A), and then push the load lever (B) until it snaps into the retention tab. ASUS ESC4000 Series...

[Page 28: Installing The Cpu Heatsink And Airduct](#)

2.2.2 Installing the CPU heatsink and airduct To install the CPU heatsink: Place the heatsink on top of the installed CPU, ensuring that the four fasteners match the holes on the motherboard. Twist each of the four screws with a Philips (cross) screwdriver just enough to attach the heatsink to the motherboard.

[Page 29: System Memory](#)

For CPU1 configuraton, when installing only one DIMM, install it to the orange slots labeled DIMM_A1, DIMM_B1, or DIMM_C1. • For CPU2 configuraton, when installing only one DIMM, install it to the orange slots labeled DIMM_D1, DIMM_E1, or DIMM_F1. ASUS ESC4000 Series...

[Page 30](#) Memory population table For UDIMM and Quad Ranks RDIMM: CPU 1 Configuration DIMM_A3 DIMM_A2 DIMM_A1 DIMM_B3 DIMM_B2 DIMM_B1 DIMM_C3 DIMM_C2 DIMM_C1 1 DIMM 2 DIMMs 3 DIMMs 4 DIMMs 5 DIMMs 6 DIMMs CPU 2 Configuration DIMM_D3 DIMM_D2 DIMM_D1 DIMM_E3 DIMM_E2 DIMM_E1 DIMM_F3 DIMM_F2 DIMM_F1 1 DIMM 2 DIMMs 3 DIMMs...

[Page 31: Installing A Dimm](#)

DIMM. Remove the DIMM from the socket. Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force. ASUS ESC4000 Series...

[Page 32: Hard Disk Drives](#)

Hard disk drives The system supports eight hot-swap SATAII/SAS hard disk drives. The hard disk drive installed on the drive tray connects to the motherboard SATAII/SAS ports via the SATAII/SAS backplane. spring lock To install a hot-swap SATAII/SAS HDD: Release a drive tray by pushing the spring lock to the right, then pulling the tray lever outward.

[Page 33](#) The drive tray is correctly placed when its front edge aligns with the bay edge. Repeat steps 1 to 6 if you wish to install a second SATAII/SAS drive. ASUS ESC4000 Series 2-11...

[Page 34: Expansion Slot](#)

Expansion slot 2.5.1 Installing an expansion card to the riser card bracket The barebone server comes with a riser card bracket. You need to remove the bracket if you want to install PCI Express x16 expansion cards. To install a PCI Express x16 card Firmly hold the riser card bracket, and then pull it up to detach it from the PCI Express x16 slot on the...

[Page 35: Configuring An Expansion Card](#)

ACPI Mode when used IRQ Holder for PCI Steering IRQ Holder for PCI Steering PS/2 Compatible Mouse Port Numeric Data Processor Primary IDE Channel Secondary IDE Channel * These IRQs are usually available for ISA or PCI devices. ASUS ESC4000 Series 2-13...

[Page 36: Cable Connections](#)

Cable connections • The bundled system cables are pre-connected before shipment. You do not need to disconnect these cables unless you will remove pre-installed components to install additional devices. • Refer to Chapter 4 for detailed information on the connectors. Pre-connected system cables 20-pin SSI power connector (from power supply to motherboard) 8-pin SSI power connector (from power supply to motherboard)

[Page 37: Sataii/Sas Backplane Cabling](#)

SGPIO2/3: Connects power connector of to the SGPIO1/2 the slim-type optical connector on the drive ASUS PIKE Riser Card to support PIKE SAS RAID SGPIO function SGPIO_SEL: Set to pin 1-2 to enable onboard ICH10R SATA SGPIO function (default). Set...

[Page 38: Removable/Optional Components](#)

This section tells how to remove/install the following components: System fans Redundant power supply units ASUS ASMB4-iKVM ASUS PIKE RAID card (optional) NVIDIA ® Tesla™ GPU computing modules (optional) Ensure that the system is turned off before removing any components.

[Page 39: Redundant Power Supply Units](#)

Insert the system fan cable into the cable holder, and then connect the cable to the fan connector on the motherboard. 2.8.2 Redundant power supply units To remove the power supply unit (PSU) Lift up the PSU lever. ASUS ESC4000 Series 2-17...

[Page 40](#) Hold the PSU lever and press the PSU latch. Firmly pull the PSU out of the system chassis. To install a second PSU Hold the PSU dummy cover and press the dummy latch. Firmly

pull the PSU dummy cover out of the server chassis. 2-18 Chapter 2: Hardware setup...

[Page 41](#) PSU hot-swap feature disabled, and the system shuts down if any of the PSUs is removed. • The output power varies with different input voltages. Refer to the table below for details. Input Voltage Max. Output Power (Watt) 100V—140V 1100W 1400W 180V—240V 1400W ASUS ESC4000 Series 2-19...

[Page 42: Installing Asmb4 Series Management Board \(Bundled\)](#)

2.8.3 Installing ASMB4 series management board (bundled) Follow the steps below to install an bundled ASMB4 series management board on your motherboard. Locate the BMC_FW1 header on the motherboard. Orient and press the ASMB4 management card in place. Insert the LAN cable plug to the LAN3 port for server management.

[Page 43: Installing Asus Pike Sas Raid Card \(Optional\)](#)

2.8.4 Installing ASUS PIKE SAS RAID Card (optional) Follow the steps below to install the optional ASUS PIKE SAS RAID card to the ASUS PIKE riser card. Firmly hold the riser card bracket, and then pull it up to detach it from the PCI Express x16 slot on the motherboard.

[Page 44](#) Carefully cut the cable tie on the SATA/SAS cables and SGPIO cables. Connect the SGPIO2 cable (with a green label) to the SGPIO1 connector and the SGPIO3 cable (without a label) to the SGPIO2 connector on the PIKE riser card. Remove the SATA/SAS cables from the onboard SATA1-4 connectors.

[Page 45](#) 11. If you are to install PIKE 1078, 2008, 2008/IMR and 2108 cards, ensure the heatsink latch is completely hooked to the edge of the card slot, and then secure the PIKE card through the screw hole of the riser card to the card bracket. ASUS ESC4000 Series 2-23...

[Page 46](#) 12. For PIKE 1078 SAS RAID card, snap the i Button into the i Button slot on the PIKE raiser card. 13. Move the SGPIO_SEL jumper on the SATA/SAS backplane from pin 1-2 to pin 2-3. 14. Align the riser card bracket to the PCI Express x16 slot on the motherboard.

[Page 47: Nvidia ® Tesla™ Gpu Computing Modules \(Optional\)](#)

Connect the red end of the 8-pin power cable to the power connector on the GPU computing module. Thread the white end of the 8-pin power cable through the airduct of the GPU computing module. ASUS ESC4000 Series 2-25...

[Page 48](#) From inside the airduct, secure the airduct to the GPU computing module with 3 black screws. Thread the white end of the 8-pin power cable through the GPU computing module bracket. Align and insert the golden fingers of the GPU computing module into the card slot on the bracket.

[Page 49](#) 12. Attach the white end of the 8-pin power cable to the 8-pin power connector in front of the GPU computing module bracket. 13. Secure the thumbscrew in front of the NVIDIA ® Tesla™ GPU computing module bracket. ASUS ESC4000 Series 2-27...

[Page 50](#) 14. Secure the GPU computing module brackets to the server chassis with four screws. 2-28 Chapter 2: Hardware setup...

[Page 51](#) Chapter 3 This chapter describes how to install the optional components and devices into the barebone server. ASUS ESC4000 Series...

[Page 52: Chapter 3: Installation Options](#)

Installing friction rail kit items Your friction rail kit package contains: • Two pairs of rack rails (for the rack) • Nut-and-bolt type screws and one pair of server latches Nuts and screws Front rack rails Rear rack rails 3.1.1 Attaching the fixing latches to the server Refer to the image below for the locations to attach the two fixing latches to the two sides of the server with four screws.

[Page 53: Attaching The Rack Rails](#)

Fasten the eight screw you secure in step 2, as shown in the right figure. 10. Repeat steps 6 to 9 to assemble and attach the rack rail on the other side. ASUS ESC4000 Series...

[Page 54: Mounting The Server To The Rack](#)

3.1.3 Mounting the server to the rack To mount the server to the rack: Align the server rails with the rack rails, then push the server all the way to the depth of the rack. Drive two screws on both mounting ears to secure the server in place.

[Page 55](#) Chapter 4 This chapter includes the motherboard layout, and brief descriptions of the jumpers and internal connectors. ASUS ESC4000 Series...

[Page 56: Chapter 4: Motherboard Information](#)

Motherboard layouts Chapter 4: Motherboard information...

[Page 57: Layout Contents](#)

Serial General Purpose Input/Output connector (6-1 pin SGPIO1) 4-12 BMC header (BMC_FW1) 4-13 Power Supply SMBus connector (5-pin JP1) 4-13 SSI power connectors (20-pin PWR1, 8-pin PWR2) 4-14 System panel connector (20-pin PANEL1) 4-15 Auxiliary panel connector (20-pin AUX_PANEL1) 4-16 ASUS ESC4000 Series...

[Page 58: Jumpers](#)

Jumpers Clear RTC RAM (CLRRTC1) This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

[Page 59](#) This jumper allows you to enable or disable the onboard VGA controller. Set to pins 1-2 to activate the VGA feature. ME firmware force recovery setting (3-pin ME_EN1) This jumper allows you to quickly recover the Intel Management Engine (ME) firmware when it becomes corrupted. ASUS ESC4000 Series...

[Page 60](#) LAN controller setting (3-pin LAN_SW1, LAN_SW2) These jumpers allow you to enable or disable the onboard Intel 82574L ® Gigabit LAN controllers. Set to pins 1-2 to activate the Gigabit LAN feature. DDR3 voltage control setting (4-pin LVDDR3_SEL1; LVDDR3_SEL2) These jumpers allow you to adjust the DIMM voltage. Set to pins 1-2 to select 1.5V BIOS control, pins 2-3 to select 1.2V Force or 3-4 to select 1.35V Force.

[Page 61](#) (XXXXXX.ROM) and the AFUDOS.EXE utility. Set the jumper to pins 2-3. Insert the USB flash and turn on the system to update the BIOS. Shut down the system. Set the jumper back to pins 1-2. Turn on the system. ASUS ESC4000 Series...

[Page 62](#) RAID configuration utility selection (3-pin RAID_SEL1) This jumper allows you to select the RAID configuration utility to use when you create disk arrays. Place the jumper caps over pins 1-2 if you want to use the LSI Logic Embedded SATA RAID Setup Utility (default); otherwise, place the jumper caps to pins 2-3 to use the Intel®...

[Page 63: Internal Connectors](#)

If you installed Serial ATA hard disk drives, you can create a RAID 0, RAID 1, RAID 10, or RAID 5 configuration. The actual data transfer rate depends on the speed of Serial ATA hard disks installed. ASUS ESC4000 Series...

[Page 64](#) USB connector (10-1 pin USB45, A-Type USB3) These connectors are for USB 2.0 ports. Connect the USB module cable to connector USB45, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.

[Page 65](#) DO NOT forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. • These are not jumpers! DO NOT place jumper caps on the fan connectors! • All fans feature the ASUS Smart Fan technology. ASUS ESC4000 Series 4-11...

[Page 66](#) LPC debug card connector (14-1 pin LPC1) This is a low pin count interface used to plug in the LPC debug card. Serial General Purpose Input/Output connector (6-1 pin SGPIO1) This connector is used for the SGPIO peripherals for the LSI MegaRAID and Intel Matrix RAID

SATA LED.

Page 67 BMC header (BMC_FW1) The BMC connector on the motherboard supports an ASUS® Server Management Board 4 Series (ASMB4). Power Supply SMBus connector (5-pin JP1) This connector allows you to connect SMBus (System Management Bus) to the power supply unit to read PSU information. Devices communicate with an SMBus host and/or other SMBus devices using the SMBus interface.

Page 68 SSI power connectors (20-pin PWR1, 8-pin PWR2) These connectors are for an SSI power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit. •...

Page 69 BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF. Reset button (2-pin RESET) This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power. ASUS ESC4000 Series 4-15...

Page 70 10. Auxiliary panel connector (20-pin AUX_PANEL1) This connector is for additional front panel features including front panel SMB, locator LED and switch, chassis intrusion, and LAN LEDs. Front panel SMB (6-1 pin FPSMB) These leads connect the front panel SMBus cable. LAN activity LED (2-pin LAN1_LED, LAN2_LED) These leads are for Gigabit LAN activity LEDs on the front panel.

Page 71 Chapter 5 This chapter tells how to change the system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided. ASUS ESC4000 Series...

Page 72: Chapter 5: Bios Setup

AFUDOS utility (Updates the BIOS in DOS mode using a bootable USB flash drive.) ASUS CrashFree BIOS 3 (To recover the BIOS using a USB flash drive when the BIOS file fails or gets corrupted.) Refer to the corresponding sections for details on these utilities.

Page 73 Updating the BIOS file To update the BIOS file using the AFUDOS utility: Visit the ASUS website (www.asus.com) and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable USB flash drive. Write the BIOS filename on a piece of paper. You need to type the exact BIOS filename at the DOS prompt.

Page 74: Asus Crashfree Bios 3 Utility

5.1.2 ASUS CrashFree BIOS 3 utility The ASUS CrashFree BIOS 3 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using a USB flash drive that contains the updated BIOS file.

Page 75: Bios Setup Program

The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen. • Visit the ASUS website (www.asus.com) to download the latest BIOS file for this motherboard. ASUS ESC4000 Series...

Page 76: Bios Menu Screen

5.2.1 BIOS menu screen Menu items Menu bar Configuration fields General help BIOS SETUP UTILITY Main Advanced Server Boot Exit Use [ENTER], [TAB] System Time [12:01:30] or [SHIFT-TAB] to System Date [Mon, 01/24/2011] select a field. Use [+] or [-] to SATA 1 [WDC WD1002FBYS-01A] configure system Date.

Page 77: Menu Items

Down arrow keys or <Page Up> /<Page Pop-up window Down> keys to display the other items on the screen. 5.2.9 General help At the top right corner of the menu screen is a brief description of the selected item. ASUS ESC4000 Series...

[Page 78: Main Menu](#)

Main menu When you enter the BIOS Setup program, the Main menu screen appears, giving you an overview of the basic system information. Refer to section 5.2.1 BIOS menu screen for information on the menu screen items and how to navigate through them. BIOS SETUP UTILITY Main Advanced...

[Page 79: Sata1-6](#)

When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto] PIO Mode [Auto] Allows you to select the data transfer mode. Configuration options: [Auto] [0] [1] [2] [3] [4] ASUS ESC4000 Series...

[Page 80: Ide Configuration](#)

DMA Mode [Auto] Sets the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMMA1] [MWDMMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5] SMART Monitoring [Auto] Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration options: [Auto] [Disabled] [Enabled] 32Bit Data Transfer [Enabled] Enables or disables 32-bit data transfer.

[Page 81: Ahci Configuration](#)

SATA Port1 [Auto] Allows you to select the type of device connected to the system. Configuration options: [Auto] [Not Installed] SMART Monitoring [Enabled] Allows you to set the Self-Monitoring, Analysis and Reporting Technology. Configuration options: [Disabled] [Enabled] ASUS ESC4000 Series 5-11...

[Page 82: System Information](#)

5.3.6 System Information This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu. BIOS SETUP UTILITY Main AMIBIOS Version : 0301 Build Date: 01/28/11 Processor Speed : 2933MHz Count System Memory Usable Size : 2040MB Onboard LAN1 Address...

[Page 83: Advanced Menu](#)

[Enabled] Intel(R) TurboMode Tech [Enabled] Performance/Watt select [Traditional] Intel(R) C-STATE Tech [Enabled] C State package limit setting [Auto] C1 Auto Demotion [Enabled] C3 Auto Demotion [Enabled] ACPI T State [Enabled] v02.61 (C)Copyright 1985-2009, American Megatrends, Inc. ASUS ESC4000 Series 5-13...

[Page 84](#) Ratio CMOS Setting [Auto] Allows you to adjust the ratio between CPU Core Clock and BCLK Frequency. Use the <+> and <-> keys to adjust the value. Configuration options: [Auto] [12.0] [13.0] [14.0] [15.0] [16.0] [17.0] [18.0] [19.0] [20.0] [21.0] [22.0] [23.0] [24.0] C1E Support [Enabled] Allows you to enable or disable Enhanced Halt State support.

[Page 85](#) Configuration options: [Power Optimized] [Traditional] Intel(R) C-STATE Tech [Enabled] The Intel C-State Technology allows the CPU to save more power under idle ® mode. Enable this item only when you install a C-State Technology-supported CPU. Configuration options: [Disabled] [Enabled] ASUS ESC4000 Series 5-15...

[Page 86](#) set the Intel(R) C-STATE Tech The following items appear only when you item to [Enabled]. C State package limit setting [Auto] This item appears only when you set the Intel(R) C-STATE Tech item to [Enabled]. We recommend that you set this item to [Auto] for BIOS to automatically detect the C-State mode supported by your CPU.

[Page 87: Chipset Configuration](#)

Memory Thermal Throttling [Disabled] DDR3 Voltage Level [Auto] DRAM DLL OFF Power Down [Enabled] v02.61 (C)Copyright 1985-2009, American Megatrends, Inc. CSI Links Speed [Full-Speed] Allows you to set the speed of CSI Links. Configuration options: [Slow-Mode] [Full-Speed] ASUS ESC4000 Series 5-17...

[Page 88](#) CSI Frequency [Auto] Allows you to set the CSI frequency. Configuration options: [Auto] [4.800GT] [5.866GT] [6.400GT] CSI Isochronous [Disabled] Configuration options: [Disabled] [Enabled] CSI L1 [Disabled] Configuration options: [Disabled] [Enabled] CSI Power Optimizatin Policy [Static] Configuration options: [Adaptive] [Static] [Bypass] CSI RTID [Default]

Configuration options: [Default] [32_16_40] Memory Frequency [Auto]...

[Page 89](#) Configuration options: [CLTT] [OLTT] [Disabled] [Auto] DDR3 Voltage Level [Auto] Configuration options: [Auto] [Force to 1.50v] DRAM DLL OFF Power Down [Enabled] Configuration options: [Disabled] [Enabled] North Bridge Chipset Configuration BIOS SETUP UTILITY Advanced NorthBridge Chipset Configuration NB Revision Current CSI Frequency :6.400GT ASUS ESC4000 Series 5-19...

[Page 90](#) South Bridge Chipset Configuration BIOS SETUP UTILITY Advanced South Bridge Chipset Configuration Options USB Functions [Enabled] USB Port Configure [8+4 USB Ports] Disabled USB 2.0 Controller [Enabled] Enabled SLP_S4# Min. Assertion Width [1 to 2 seconds] USB Functions [Enabled] Allows you to configure the amount of USB ports to be enabled. Configuration options: [Disabled] [Enabled] USB Port Configure [8+4 USB Ports] This item disappears when you set the USB Functions item to [Disabled].

[Page 91: Legacy Device Configuration](#)

USB 2.0 Controller Mode [HiSpeed] Allows you to set the USB 2.0 controller to HiSpeed (480Mbps) or FullSpeed (12Mbps). Configuration options: [FullSpeed] [HiSpeed] BIOS EHCI Hand-Off [Enabled] Enables or disables the BIOS EHCI hand-off support. Configuration options: [Disabled] [Enabled] ASUS ESC4000 Series 5-21...

[Page 92: PciPnp](#)

5.4.5 PCI/PnP The PCI/PnP menu items allow you to change the advanced settings for PCI/PnP devices. Take caution when changing the settings of the PCI/PnP Configuration menu items. Incorrect field values can cause the system to malfunction. BIOS SETUP UTILITY Advanced Advanced PCI/PnP Settings NO: lets the BIOS...

[Page 93: Power On Configuration](#)

To set the alarm date, highlight this item and press the <+> or <-> key to make the selection. System Time [12:30:30] Use the <ENTER>, <TAB> or <SHIFT-TAB> key to select a field. Use the <+> or <-> key to configure alarm time. ASUS ESC4000 Series 5-23...

[Page 94: Event Log Configuration](#)

5.4.7 Event Log Configuration BIOS SETUP UTILITY Main Advanced Event Logging details View all unread events on the Event Log. View Event Log Clear Event Log View Event Log Press the <ENTER> key to view unread system event log. Clear Event Log Press the <ENTER>...

[Page 95: I/O Virtualization](#)

[N/A]. Fan Speed Control [High Density Mode] Allows you to configure the ASUS Smart Fan feature that smartly adjusts the fan speeds for more efficient system operation. Configuration options: [Full Speed Mode] [Whisper Mode] [Generic Mode] [High Density Mode] VCore1/2 Voltage, +1.5V_P1/2DDR3 Voltage, +1.5V_ICH Voltage,...

[Page 96: Pci Express Configuration](#)

5.4.10 PCI Express Configuration BIOS SETUP UTILITY Main Advanced PCI Express Configuration Enable/Disable PCI Express L0s and Active State Power-Management [Disabled] L1 link power states. Active State Power-Management [Disabled] Enables or disables the PCI Express L0s and L1 link power states. Configuration options: [Disabled] [Enabled] 5.4.11 ACPI Configuration BIOS SETUP UTILITY...

[Page 97](#) BIOS SETUP UTILITY Advanced General WHEA Configuration Enable or disable Windows Hardware WHEA Support [Enabled] Error Architecture. WHEA Support [Enabled] Allows you to enable or disable the Windows Hardware Error Architecture (WHEA) support. Configuration options: [Disabled] [Enabled] ASUS ESC4000 Series 5-27...

[Page 98: Server Menu](#)

Server menu The Server menu items allow you to customize the server features. BIOS SETUP UTILITY Main Advanced Server Boot Exit Configure Remote Remote Access Configuration Access. Select Screen ←→ Select Item ↑ ↓ Enter Go to Sub Screen General Help Save and Exit Exit v02.61 (C)Copyright 1985-2009, American Megatrends, Inc.

[Page 99](#) This item appears only when you set the Terminal Type item to [ANSI] or [VT100]

and allows you to enable or disable the VT-UTF8 combo key support for ANSI or VT100 terminals. Configuration options: [Disabled] [Enabled] ASUS ESC4000 Series 5-29...

[Page 100: Boot Menu](#)

Boot menu The Boot menu items allow you to change the system boot options. Select an item then press <Enter> to display the sub-menu. BIOS SETUP UTILITY Main Advanced Server Boot Exit Specifies the Boot Boot Settings Device Priority Boot Device Priority sequence.

[Page 101](#) Allows you to enable or disable the full screen logo display feature. Configuration options: [Disabled] [Enabled] Set this item to [Enabled] to use the ASUS MyLogo2™ feature. AddOn ROM Display Mode [Force BIOS] Allows you to set the display mode for Options ROM.

[Page 102: Security](#)

5.6.3 Security The Security menu items allow you to change the system security settings. Select an item then press <Enter> to display the configuration options. BIOS SETUP UTILITY Boot Security Settings <Enter> to change password. <Enter> again to Supervisor Password : Not Installed disable password.

[Page 103: Change User Password](#)

Password Check [Setup] When set to [Setup], BIOS checks for user password when accessing the Setup utility. When set to [Always], BIOS checks for user password both when accessing Setup and booting the system. Configuration options: [Setup] [Always] ASUS ESC4000 Series 5-33...

[Page 104: Exit Menu](#)

Exit menu The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items. BIOS SETUP UTILITY Main Advanced Server Boot Exit Exit Options Exit system setup after saving the Exit &...

[Page 105](#) Chapter 6 This chapter provides instructions for setting up, creating and configuring RAID sets using the available utilities. ASUS ESC4000 Series...

[Page 106: Chapter 6: Raid Configuration](#)

Setting up RAID The motherboard comes with the Intel ICH10R southbridge controller that ® supports the following SATA RAID solutions: LSI MegaRAID software RAID Configuration Utility (default) with RAID 0, • RAID 1, and RAID 10 support (for both Linux and Windows OS). Intel Matrix Storage Manager with RAID 0, RAID 1, RAID 10, and RAID 5 •...

[Page 107: Raid Controller Selection](#)

Go to the Main menu > IDE Configuration, and then press <Enter>. Set the Configure SATA as item to [RAID]. Save your changes, and then exit the BIOS Setup. Refer to Chapter 5 for details on entering and navigating through the BIOS Setup. ASUS ESC4000 Series...

[Page 108: L Si Software Raid Configuration Utility](#)

6.2 L SI Software RAID Configuration Utility The LSI MegaRAID software RAID configuration utility allows you to create RAID 0, RAID 1, or RAID 10 set(s) from SATA hard disk drives connected to the SATA connectors supported by the motherboard southbridge chip. To enter the LSI MegaRAID software RAID configuration utility Turn on the system after installing all the SATA hard disk drives.

[Page 109: Creating A Raid Set](#)

Configure View/Add Configuration Initialize Clear Configuration Select Boot Drive Objects Rebuild Check Consistency Defines Physical Arrays. An Array Will Automatically Become A VD Use Cursor Keys to Navigate Between Items And Press Enter To Select An Option ASUS ESC4000 Series...

[Page 110](#) The ARRAY SELECTION MENU displays the available drives connected to the SATA ports. Use the up/down arrow key to select the drives you want to include in the RAID set, and then press <Space>. When selected, the drive indicator changes from READY to ONLIN A[X]-[Y], where X is the array number, and Y is the drive number.

[Page 111](#) Virtual Drive 0 RAID Level RAID = 1 RAID 0 Size = 77247MB RAID 1 DWC = Off = On Accept SPAN = NO Choose RAID Level For This VD Cursor Keys, SPACE-(De)Select F2-ChldInfo F3-SlotInfo F10-Configure Esc-Quit ASUS ESC4000 Series...

[Page 112](#) When creating a RAID 1 or a RAID 10 set, select DWC from the Virtual Drive menu, and then press <Enter>. When creating a RAID 0 set, proceed to step 10. Select On to enable the Disk Write Cache setting, and then press <Enter>. LSI Software RAID Configuration Utility Ver A.60 Jul 30, 2008 BIOS Version A.08.09161344R...

[Page 113](#) Management Menu Configure View/Add Configuration Initialize Clear Configuration Select Boot Drive Objects Rebuild Check Consistency Clear Existing Configuration And Start A New Configuration Use Cursor Keys to Navigate Between Items And Press Enter To Select An Option ASUS ESC4000 Series...

[Page 114](#) Follow step 2 to 7 of the previous section: Using Easy Configuration. Select Size from the Virtual Drive menu, and then press <Enter>. Key-in the desired virtual drive size, and then press <Enter>. LSI Software RAID Configuration Utility Ver A.60 Jul 30, 2008 BIOS Version A.08.09161344R Virtual Drive(s) Configured...

[Page 115: Adding Or Viewing A Raid Configuration](#)

The information of the selected hard disk drive displays at the bottom of the screen. Follow step 3 to 12 of section 6.2.1 Creating a RAID set: Using Easy Configuration to add a new RAID set. ASUS ESC4000 Series 6-11...

[Page 116: Initializing The Virtual Drives](#)

6.2.3 Initializing the virtual drives After creating the RAID set(s), you must initialize the virtual drives. You may initialize the virtual drives of a RAID set(s) using the Initialize or Objects command on the Management Menu. Using the Initialize command To initialize the virtual drive using the Initialize command From the Management Menu, select Initialize, and then press <Enter>.

[Page 117](#) Size #Stripes StripSz Status Configure 154494MB 64 KB ONLINE Init Of VD Is In Process Initialize Objects VD 0 Initialization Complete. Press Esc.. Rebuild Check Consistency | 100% Completed Virtual Drives Virtual Drive 0 SPACE-(De)Select, F10-Initialize ASUS ESC4000 Series 6-13...

[Page 118](#) Using the Objects command To initialize the virtual drives using the Objects command From the Management Menu, select Objects > Virtual Drive, and then press <Enter>. LSI Software RAID Configuration Utility Ver A.60 Jul 30, 2008 BIOS Version A.08.09161344R Objects Management Menu Adapter Configure Virtual Drive Initialize Physical Drive Objects...

[Page 119](#) Initilize Will Destroy Data On Selected VD(s) Use Cursor Keys To Navigate Between Items And Press Enter To Select An Option A progress bar appears on screen. If desired, press <Esc> to abort initialization. When initialization is completed, press <Esc>. ASUS ESC4000 Series 6-15...

[Page 120: Rebuilding Failed Drives](#)

6.2.4 Rebuilding failed drives You can manually rebuild failed hard disk drives using the Rebuild command in the Management Menu. To rebuild a failed hard disk drive From the Management Menu, select Rebuild, and then press <Enter>. LSI Software RAID Configuration Utility Ver A.60 Jul 30, 2008 BIOS Version A.08.09161344R Management Menu...

[Page 121: Checking The Drives For Data Consistency](#)

LSI Software RAID Configuration Utility Ver A.60 Jul 30, 2008 BIOS Version A.08.09161344R Management Menu Configure Initialize Objects Rebuild Check Consistency CC Of VD(s) Use Cursor Keys To Navigate Between Items And Press Enter To Select An Option ASUS ESC4000 Series 6-17...

[Page 122](#) The screen displays the available RAID set(s) and prompts you to select the virtual drive to check. Press <Space> to select the virtual drive from the Virtual Drive sub-menu, and then press <F10>. LSI Software RAID Configuration Utility Ver A.60 Jul 30, 2008 BIOS Version A.08.09161344R Virtual Drive(s) Configured...

[Page 123](#) Select Check Consistency from the pop-up menu, and then press <Enter>. When prompted, use the arrow keys to select Yes from the dialog box to check the drive. When checking is complete, press any key to continue. ASUS ESC4000 Series 6-19...

[Page 124: Deleting A Raid Configuration](#)

6.2.6 Deleting a RAID configuration To delete a RAID configuration From the Management Menu, select Configure > Clear Configuration, and then press <Enter>. LSI Software RAID Configuration Utility Ver A.60 Jul 30, 2008 BIOS Version A.08.09161344R Configuration Menu Easy Configuration New Configuration Management Menu Configure View/Add Configuration Initialize...

[Page 125: Selecting The Boot Drive From A Raid Set](#)

Select Boot Drive Objects Rebuild Check Consistency Select A Boot VD Use Cursor Keys To Navigate Between Items And Press Enter To Select An Option The virtual drive is selected as boot drive. Press any key to continue. ASUS ESC4000 Series 6-21...

[Page 126: Enabling Writecache](#)

6.2.8 Enabling WriteCache You may manually enable the RAID controller's WriteCache option after creating a RAID set to improve the data transmission performance. When you enable WriteCache, you may lose data when a power interruption occurs while transmitting or exchanging data among the drives. The WriteCache function is recommended for RAID 1 and RAID 10 sets.

[Page 127: Intel ® Matrix Storage Manager Option Rom Utility](#)

The RAID BIOS setup screens shown in this section are for reference only and may not exactly match the items on your screen. The utility supports maximum four hard disk drives for RAID configuration. ASUS ESC4000 Series 6-23...

[Page 128: Creating A Raid Set](#)

6.3.1 Creating a RAID set To create a RAID set From the utility main menu, select 1. Create RAID Volume and press <Enter>. The following screen appears. Intel(R) Matrix Storage Manager option ROM v8.5.0.1030 ICH10R/DO wRAID5 Copyright(C) 2003-08 Intel Corporation. All Rights Reserved.

[Page 129: Creating A Recovery Set](#)

Volume0 RAID Level: RAID0(Stripe) Disks: Select Disks Strip Size: 128KB Capacity: Sync: Create Volume HELP Enter a unique volume name that has no special characters and is 16 characters or less. [↑↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select ASUS ESC4000 Series 6-25...

[Page 130](#) Enter a name for the recovery set and press <Enter>. When the RAID Level item is selected, press the up/down arrow key to select Recovery, and then press <Enter>. When the Disks item is selected, press <Enter> to select the hard disk drives you want to include in the recovery set.

[Page 131: Deleting A Raid Set](#)

(This does not apply to Recovery volumes) Are you sure you want to delete volume "Volume0"? (Y/N): Press <Y> to delete the RAID set and return to the utility main menu, or press <N> to return to the DELETE VOLUME menu. ASUS ESC4000 Series 6-27...

[Page 132: Resetting Disks To Non-Raid](#)

6.3.4 Resetting disks to Non-RAID Take caution before you reset a RAID volume hard disk drive to non-RAID. Resetting a RAID volume hard disk drive deletes all internal RAID structure on the drive. To reset a RAID set hard disk drive From the utility main menu, select 3.

[Page 133: Recovery Volume Options](#)

[↑↓]-Up/Down [SPACE]-Selects [ENTER]-Done Use the up/down arrow key to select a drive, and then press <Space> to select. A small triangle marks the selected drive. Press <Enter> after completing your selection and return to the utility main menu. ASUS ESC4000 Series 6-29...

[Page 134: Exiting The Intel ® Matrix Storage Manager](#)

6.3.6 Exiting the Intel Matrix Storage Manager ® To exit the utility From the utility main menu, select 5. Exit, and then press <Enter>. The following warning message appears. CONFIRM EXIT Are you sure you want to exit? (Y/N): Press <Y> to exit or press <N> to return to the utility main menu. 6.3.7 Rebuilding the RAID This option is only for the RAID 1, RAID 5 and RAID 10 sets.

[Page 135: Rebuilding The Raid With A New Hard Disk](#)

SATA Port. Select a destination disk with the same size as the original hard disk. Reboot the system and then follow the steps in section Rebuilding the RAID with other non-RAID disk on page 6-30. ASUS ESC4000 Series 6-31...

[Page 136: Setting The Boot Array In The Bios Setup Utility](#)

6.3.8 Setting the Boot array in the BIOS Setup Utility You can set the boot priority sequence in the BIOS for your RAID arrays when creating multi-RAID using the Intel Matrix Storage Manager. ® To set the boot array in the BIOS: Set at least one of the arrays bootable to boot from the hard disk.

[Page 137](#) Chapter 7 This chapter provides instructions for installing the necessary drivers for different system components. ASUS ESC4000 Series...

[Page 138: Chapter 7: Driver Installation](#)

RAID driver installation After creating the RAID sets for your server system, you are now ready to install an operating system to the independent hard disk drive or bootable array. This part provides instructions on how to install the RAID controller drivers during OS installation.

[Page 139](#) SLES 10 SP2 32 bit SLES 10 SP2 64 bit SLES 10 SP3 32 bit Locate the RAID driver and place a blank, high-density floppy disk to the floppy disk drive. Press <Enter>. Follow screen instructions to create the driver disk. ASUS ESC4000 Series...

[Page 140](#) To create a RAID driver disk in Windows environment ® Start Windows ® Place the motherboard support DVD into the optical drive. Go to the Make Disk menu, and then select the type of RAID driver disk you want to create. Insert a floppy disk into the floppy disk drive.

[Page 141: Installing The Raid Controller Driver](#)

* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER. S=Specify Additional Device ENTER=Continue F3=Exit ASUS ESC4000 Series...

[Page 142](#) Insert the RAID driver disk you created earlier to the floppy disk drive, then press <Enter>. Windows Setup Please insert the disk labeled Manufacturer-supplied hardware support disk into Drive A: * Press ENTER when ready. ENTER=Continue ESC=Cancel F3=Exit Select the RAID controller driver you need from the list, and then press <Enter>.

[Page 143](#) RAID controller driver. If you have only one optical drive installed in your system, eject the Windows OS installation disc and replace with the motherboard Support DVD into the optical drive. Click Browse to continue. ASUS ESC4000 Series...

[Page 144](#) Locate the driver in the corresponding folder of the Support DVD, and then click OK to continue. Select the RAID controller driver you need from the list and click Next. When the system finishes loading the RAID driver, replace the motherboard Support DVD with the Windows Server installation disc.

[Page 145](#) Enterprise RAID driver disk to the USB floppy disk drive, ® select OK, then press <Enter>. Insert Driver Disk Insert your driver disk into /dev/fd0 and press "OK" to continue. Back The drivers for the RAID card are installed to the system. ASUS ESC4000 Series...

[Page 146](#) When asked if you will load additional RAID controller drivers, select No, then press <Enter>. More Driver Disks? Do you wish to load any more driver disks? Follow the onscreen instructions to finish the OS installation. 7-10 Chapter 7: Driver installation...

[Page 147](#) Press <F6>, then select Yes from the menu. Press <Enter>. Boot from Hard Disk Installation Repair Installed System Rescue System Check Installation Media Firmware Test Memory Test Boot Options | File Help Language Video Mode Source Kernel Driver English(US) 1024 X768 Default ASUS ESC4000 Series 7-11...

[Page 148](#) Insert the RAID driver disk to the floppy disk drive. Type the command `acpi=off apic=bigsmc brokenmodules=ahci` in Boot Options field, and press <Enter>. Boot from Hard Disk Installation Repair Installed System Rescue System Check Installation Media Firmware Test Memory Test Boot Options `acpi=off apic=bigsmc brokenmodules=ahci` Help Language...

[Page 149](#) The drivers for the RAID controller are installed to the system as shown below. Please choose the Driver Update medium. sda: USB Floppy sr0: CD-ROM, ASUS DRW-1612BLT sdb: Disk, LSI MEGA RAID sd3: Disk, LSI MEGA RAID Console other device Back Select Back and follow the onscreen instructions to finish the installation.

[Page 150: Intel ® Chipset Device Installation](#)

® Intel chipset device installation This section provides instructions on how to install the Plug and Play components for the Intel ® chipset on the system. You need to manually install the Intel ® chipset software on a Windows Server operating system.

[Page 151](#) Select Yes to accept the terms of the License Agreement and continue the process. Read the Readme File Information and press Next to continue the installation. After completing the installation, click Finish to complete the setup process. ASUS ESC4000 Series 7-15...

[Page 152: Lan Driver Installation](#)

LAN driver installation This section provides instructions on how to install the Intel Gigabit LAN controller ® drivers on a Windows ® Server OS. To install the LAN controller drivers Restart the computer, and then log on with Administrator privileges. Insert the motherboard/system support DVD to the optical drive.

[Page 153](#) Click Next when the Intel(R) Network Connections-InstallShield Wizard window appears. Toggle I accept the terms in the license agreement and click Next to continue. Click the Intel(R) PROSet for Windows Device Manager box, and then click Next to start the installation. ASUS ESC4000 Series 7-17...

[Page 154](#) Follow the screen instructions to complete installation. When finished, press Finish to continue. 7-18 Chapter 7: Driver installation...

[Page 155: Vga Driver Installation](#)

If Autorun is NOT enabled in your computer, browse the contents of the support DVD to locate the file ASSETUP.EXE from the BIN folder. Double-click the ASSETUP.EXE to run the support DVD. Click the ASPEED AST2050 Display Driver to begin installation. Click Next to start the installation. ASUS ESC4000 Series 7-19...

[Page 156](#) Toggle I accept the terms in the license agreement and click Next to continue. Enter the user information and click Next to continue. Select a setup type and click Next to continue. 7-20 Chapter 7: Driver installation...

[Page 157](#) Click Install to start driver installation. When the installation completes, click Finish to restart your computer before using the program. ASUS ESC4000 Series 7-21...

[Page 158: Management Applications And Utilities Installation](#)

The contents of the support DVD are subject to change at any time without notice. Visit the ASUS website (www.asus.com) for updates. 7.5.1 Running the support DVD Place the support DVD to the optical drive.

[Page 159: Utilities Menu](#)

Intel ICH10R and LSI MegaRAID driver disks. 7.5.5 Contact information Click the Contact tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide. ASUS ESC4000 Series...

[Page 161: Asus Contact Information](#)

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This manual is also suitable for:

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