Asus 90SF0071-M00040 User Manual

2u rackmount server

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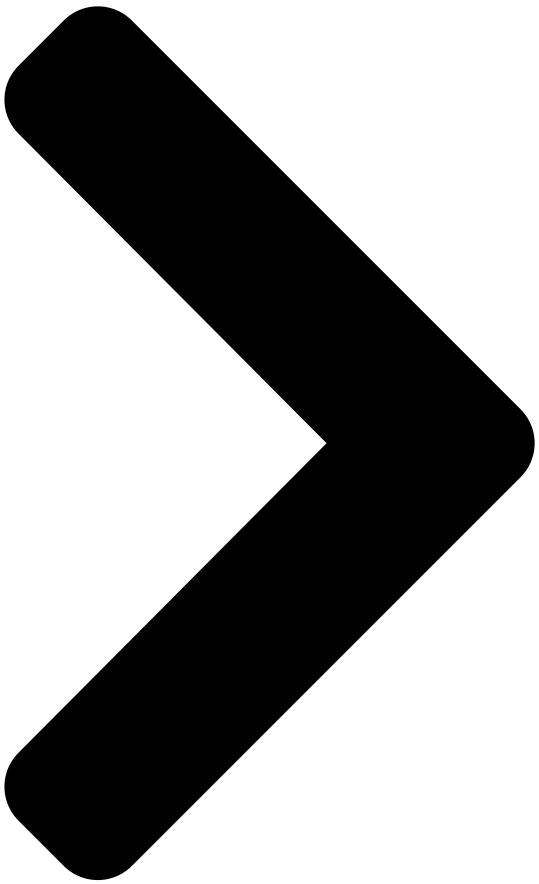

ESC4000 G4 Series

2U Rackmount Server

User Guide

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Related Manuals for Asus 90SF0071-M00040

Server Asus ESC4000 G4S User Manual

(202 pages)

Server Asus ESC4000 G4 User Manual

Esc4000 g4 series. 2u rackmount server (179 pages)

Server Asus AP1720-E2 Configuration And Installation Manual

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Server Asus RS300-E9-RS4 User Manual

1u rackmount server (168 pages)

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Server Asus 90SF00H1-M00080 Manual

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1u rackmount server (196 pages)

Server Asus RS100-E5-PI2 User Manual

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Summary of Contents for Asus 90SF0071-M00040

Page 1 ESC4000 G4 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 Control Center (ACC) 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 hardware and...

Page 13: Chapter 1: Product Introduction

Chapter 1: Product Introduction Product Introduction This chapter describes the general features of the chassis kit. It includes sections on front panel and rear panel specifications.

Page 14: System Package Contents

2 x AC Power Cables 8 x 4-pin VGA Power cables Accessory box 4 x ASUS CPU 8-pin Power cables 4 x GPU air ducts (for Nvidia/AMD) 4 x Mylar for GPU air ducts for AMD GPU 2 x CPU heatsinks...

Page 15: Serial Number Label

1.2 Serial number label Before requesting support from the ASUS Technical Support team, you must take note of the product’s serial number containing 12 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 G4 Series servers features the ASUS Z11PG-D16 Series server board ® ® that supports Intel LGA 3647 Xeon processor from the Scalable family and with Omni-Path Architecture. Model Name ESC4000 G4 ESC4000 G4X ESC4000 G4S 1 x Socket P0 (LGA...

Page 17 (Support software RAID (Support software RAID 0, 1, 10 & 5) 0, 1, 10 & 5) Optional kits: Optional kits: ASUS PIKE II 3008 ASUS PIKE II 3008 8-port SAS HBA card 8-port SAS HBA card SAS ASUS PIKE II 3108 ASUS PIKE II 3108...

Page 18 Server 2012 R2 ® RedHat Enterprise Linux ® SuSE Linux Enterprise Server CentOS OS Support Ubuntu VMware Citrix XenServer * Please find the latest OS support from http://www.asus.com/ Out of Band Remote On-Board ASMB9-iKVM for KVM-over-IP Management Hardware Solution Software Regulatory Compliance BSMI, CE, FCC (Class A) 800mm * 440mm * 88mm (2U) Dimension (HH x WW x DD) 31.50”...

Page 19: Front Panel Features

Refer to the 1.7.1 Front panel LEDs section for the LED descriptions. ESC4000 G4 Q-code/Port 80 LED Location button Internal SAS/HBA/Storage bracket Power button USB 3.0 ports Steel handle Steel handle Front panel LED USB 2.0 ports Hot-swap 3.5-inch HDD Bays Asset tag ESC4000 G4X Steel handle Steel handle Power Location button button USB 2.0 ports USB 3.0 ports Q-code/Port 80 LED Front panel LED ESC4000 G4S Steel handle Steel handle Hot-swap 2.5-inch HDD Bays Power Location button button USB 2.0 ports USB 3.0 ports Q-code/Port 80 LED Front panel LED ASUS ESC4000 G4 Series...

Page 20: Rear Panel Features

ESC4000 G4 / G4X / G4S Half-length / Low-profile expansion slot LAN port 2 LAN port 1 4 Full-length Expansion slots 4 Full-length Expansion slots Power cord connector and Redundant power supply • The rear I/O ports do not appear on the rear panel if motherboard is not present. • *The DM_LAN1 port is for ASUS ASMB9-iKVM controller only. Chapter 1: Product Introduction...

Page 21: 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 G4 Series...

Page 22 ESC4000 G4X Redundant power supply and power fan (hidden) ASUS Z11PG-D16 server board System fans HDD tray (SAS, SATA, and U.2) PCI-E expansion boards (hidden) PCI-E x24 slot with butterfly riser card FAN7 FAN6 FAN5 FAN4 FAN3 FAN2 FAN1 The barebone server does not include a floppy disk drive or an optical drive. Connect a USB floppy disk drive to any of the USB ports on the front or rear panel if you need to use a floppy disk.

Page 23 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 G4 Series 1-11...

Page 24: Led Information

1.7 LED information 1.7.1 Front panel LEDs ESC4000 G4 Location button with LED Power button with LED LAN2 LED HDD Access LED LAN1 LED Message LED ESC4000 G4X Location button with LED Power button with LED LAN2 LED HDD Access LED LAN1 LED Message LED 1-12 Chapter 1: Product Introduction...

Page 25 A hardware monitor event is indicated Function off Location button with Location switch is pressed (Press the location switch again to turn off) No LAN connection Blinking LAN is transmitting or receiving data LAN LEDs LAN connection is present ASUS ESC4000 G4 Series 1-13...

Page 26: Lan (Rj-45) Leds

Description Status Description No link 10 Mbps connection GREEN Linked ORANGE 100 Mbps

connection BLINKING Data activity GREEN 1 Gbps connection Dedicated Management LAN LEDs (for ASUS ASMB9-iKVM and DM_LAN1) ACT/LINK LED SPEED LED Status Description Status Description No link 10 Mbps connection ORANGE Linked ORANGE 100 Mbps connection BLINKING...

Page 27: Hdd Status Leds

Red LED Green LED SATA/SAS HDD LED Description GREEN SATA/SAS HDD power ON HDD has failed and should be swapped immediately GREEN/ Blinking RAID rebuilding GREEN/ Blinking Locate GREEN/ HDD not found GREEN Blinking Read/write data from/into the SATA/SAS HDD ASUS ESC4000 G4 Series 1-15...

Page 28: Q-Code/Port 80 Status Leds

1.7.4 Q-Code/Port 80 status LEDs The Q-Code LED provides a 2-digit display that shows the status of your system. Refer to the Q-Code table of this user guide for more information about the 2-digit codes. Q-Code table Action PHASE POST CODE TYPE DESCRIPTION Progress First post code Progress Load BSP microcode Progress...

Page 29

0xA9 Progress BIOS Setup Utility start 0xAB Progress BIOS Setup Utility input wait 0xAD Progress Ready to boot event 0xAE Progress Legacy boot event 0xAA Progress APIC mode Operating system phase 0xAC Progress PIC mode ASUS ESC4000 G4 Series 1-17...

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1-18 Chapter 1: Product Introduction...

Page 31: Chapter 2: Hardware Setup

Chapter 2: Hardware Setup Hardware Setup This chapter lists the hardware setup procedures that you have to perform when installing or removing system components.

Page 32: Chassis Cover

Chassis cover There are three parts of the chassis cover you may remove. The diagrams in this section are for reference only. The system layout may vary with models, but the installation steps are the same for all models. To remove the rear chassis cover: Release the two (2) thumbscrews on the rear of the chassis.

Page 33

Slide the chassis cover towards the front to disengage it from the chassis and lift the chassis cover to completely remove it from the chassis. A protection film is pre-attached to the system cover before shipping. Please remove the protection film before turning on the system for proper heat dissipation. ASUS ESC4000 G4 Series...

Page 34: Air Duct

2.1.1 Air duct The diagrams in this section are for reference only. The system layout may vary with models, but the installation steps are the same for all models. To remove the air duct: Remove the three screws as shown below. Lift the air duct to remove it from the chassis.

Page 35

Align and replace the air duct to the chassis ensuring that the screw holes on the air duct match the screw holes on chassis. Secure the air duct to the chassis with three screws removed earlier. ASUS ESC4000 G4 Series...

Page 36: Central Processing Unit (Cpu)

Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/ transit-related.

Page 37

CPU Carrier into the socket to prevent damaging the CPU pins on the socket. The heatsink for ESC4000 G4 Series differs between CPU1 and CPU2, please refer to the illustration below for more information on the heatsink and the corresponding CPU socket. ASUS ESC4000 G4 Series...

Page 38

Twist each of the four screws with a screwdriver just enough to attach the heatsink to the motherboard. When the four screws are attached, tighten them one by one in a diagonal sequence to completely secure the heatsink. The heatsink screws are T30 models. A torque value of 12 inch-lbf is recommended. Reinstall the air duct.

Page 39: System Memory

128GB LRDIMMs (3DS) into the DIMM sockets using the memory configurations in this section. • Refer to ASUS Server AVL for the updated list of compatible DIMMs. • When installing only one DIMM in a single CPU configuration, install the DIMM on either A1 or B1.

Page 40 1 CPU Configuration 1 DIMM • 2 DIMMs • • 6 DIMMs • • • • • • • • • • • • • • 8 DIMMs 2 CPU Configuration 1 DIMM • • • 2 DIMMs • • 4 DIMMs 12 DIMMs •...

Page 41 To install two or more DIMMs, refer to the user guide bundled in the motherboard package. • Refer to www.asus.com for vendor lists of the memory modules. Removing a DIMM from a single clip DIMM socket Press the retaining clip outward to unlock the DIMM.

Page 42: Hard Disk Drives

Hard disk drives The ESC4000 G4 series supports 3.5-inch and 2.5-inch SATA/SAS hard disk drives, or U.2 drives. For the ESC4000 G4 system, the hard disk drive installed on the drive tray connects to the motherboard SATA/SAS ports via the SATA/SAS backplane. 2.4.1 Installing the 3.5-inch SATA HDD/SAS HDD ESC4000 G4...

Page 43 Prepare the SATA/SAS HDD and the bundled set of screws. Place the SATA/SAS HDD into the HDD cage. Secure the SATA/SAS HDD with four (4) screws. Connect the SATA and power cable to your SATA/SAS HDD. ASUS ESC4000 G4 Series 2-13...

Page 44 Align and replace the SATA/SAS HDD and HDD cage assembly into the chassis. Secure the SATA/SAS HDD and HDD cage assembly to the chassis using the four (4) screws removed earlier. Repeat steps 1 to 8 to install the other SATA/SAS HDD. 2-14 Chapter 2: Hardware Setup...

Page 45: Installing The 2.5-Inch Ssd/Satad/Sas Hdd/Nvme

Replace the drive tray. Refer to section ESC4000 G4 under 2.4.1 Installing the 3.5-inch SATA HDD/SAS HDD for the steps on replacing the drive tray. Repeat steps 1 to 4 to install the other SSD/SATAD/SAS HDD/NVME. ASUS ESC4000 G4 Series 2-15...

Page 46 (optional) Connect the NVME cable to your NVME device. The NVME cable is optional, for more information about the optional NVME cable, please visit www.asus.com/ support. (optional) Replace the HDD cage. Refer to section ESC4000 G4X under 2.4.1 Installing the 3.5-inch SATA HDD/SAS HDD for the steps on replacing the HDD cage.

Page 47 Release the screws on each side of the storage device tray to release the metal beam. The metal beam supports the storage device tray horizontally to prevent the storage device tray from bending or deforming. ASUS ESC4000 G4 Series 2-17...

Page 48 Place the SATA/SAS storage device into the storage device tray then secure it with four screws. Insert the storage device tray and storage device assembly all the way into the depth of the bay until just a small fraction of the tray edge protrudes.

Page 49: Expansion Slots

The onboard PCI Express slot on the motherboard comes pre-installed with a riser card that supports one x16 slot (x8 Gen3 link) for installing PCI-E x16 low profile cards and one x8 slot (x8 Gen3 link) for installing ASUS PCI-E x8 low profile cards. To install PCI-E expansion cards to the riser card: Remove the two (2) screws that secure the riser card to the chassis.

Page 50 Remove the two (2) screws from the metal brackets on the riser card (A), then remove the metal brackets from the riser card (B). Prepare the expansion cards. Before installing an expansion card, read the documentation that came with it and ensure to make the necessary hardware settings.

Page 51 The expansion card fits in one orientation only. If it does not fit, try reversing it. Secure the riser card with the two (2) screws that you removed earlier in step 1. PCI-E slot riser card and expansion card assembly ASUS ESC4000 G4 Series 2-21...

Page 52: Installing An Asus Pike Ii Card

2.5.2 Installing an ASUS PIKE II card You may install an ASUS PIKE II card to the internal SAS/HBA/Storage bracket located in the front of the system (ESC4000 G4 and ESC4000 G4S only) or the riser bracket located in the rear of the system. An additional Cache Vault Flash Module can also be installed in the ESC4000 G4S server system.

Page 53 Remove the screw from the metal bracket (A), then remove the metal bracket (B). Prepare the ASUS PIKE II card. Remove the two screws on the ASUS PIKE II Card bracket card (A), then remove the card bracket (B). Secure the ASUS PIKE II card and the metal...

Page 54 1 Connect connector 1 on the ASUS PIKE II card to connector 1 on the backplane and connector 2 on the ASUS PIKE II card to connector 2 on the backplane using two mini- SAS HD cables. Install the internal SAS/HBA/Storage bracket and secure it with the screw removed earlier.

Page 55 ESC4000 G4S Remove the default cable from the motherboard and the backplane. Release the four (4) thumbscrews on the Cache Vault Power Module clip holder. ASUS ESC4000 G4 Series 2-25...

Page 56 Remove the Cache Vault Power Module clip holder from the server system. Remove the two (2) screws from the internal SAS/HBA/Storage bracket. Remove the internal SAS/HBA/Storage bracket from the server system. 2-26 Chapter 2: Hardware Setup...

Page 57 (A), then remove the metal bracket (B). Prepare the ASUS PIKE II card. Card bracket Remove the two screws on the ASUS PIKE II card (A), then remove the card bracket (B). Secure the ASUS PIKE II card and the metal...

Page 58 Align the two (2) screw washers to the two screw holes on the ASUS PIKE II card (A), then secure the bundled screws to the screw washers from the bottom of the ASUS PIKE II card (B). Align and install the Cache Vault Flash...

Page 59 Cache Vault Power Module clip holder, then secure the clip with the bundled three (3) screws and three (3) bundled nuts. Align and install the Cache Vault Power Module into the Cache Vault Power Module clip. ASUS ESC4000 G4 Series 2-29...

Page 60 Vault Power Module to the cable from the Cache Vault Flash Module (B). Connect connector 1 on the ASUS PIKE II card to connector 1 on the backplane and connector 2 on the ASUS PIKE II card to connector 2 on the backplane using two mini- SAS HD cables.

Page 61 ASUS PIKE II connector 1 Install the ASUS PIKE II card to the riser card. Ensure that the metal cover is inserted and firmly seated in place. Refer to section 2.5.1 The PCI Express riser card for the steps on installing an expansion card to the riser card.

Page 62: Installing An Asus Hfi-Omni 100G Lan Card

When you install an Intel Xeon Skylake-F product family series processor to CPU1, you can install a ASUS HFI-OMNI card to the x16 slot on the riser card and enjoy all the benefits of ® the 100G Intel Omni-Path Architecture.

Page 63 Connect the internal OMNI-PATH cable (A) and the OMNIP cable to the ASUS HFI-OMNI card (B), install the ASUS HFI-OMNI card into the x16 slot on the riser card (C), then secure it with the screw (D). PCIE x16 slot...

Page 64 Ensure the OMNIP cable is organized so that it fits through the cable hole on the air duct. Refer to the illustration below for more details. Align and insert the riser card and ASUS HFI-OMNI card assembly into the PCI-E slot on the motherboard.

Page 65: 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 G4 Series 2-35...

Page 66: Cable Connections

Cable connections • The bundled system cables are pre-connected before shipment. You do not need to disconnect these cables unless you remove the 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 the power distribution board to the motherboard) 8-pin SSI power connector (from the power distribution board to the motherboard)

Page 67: Sata/Sas Backplane Cabling

SATA/SAS backplane cabling ESC4000 G4 connect to mini-SAS HD connectors 1 and 2 on the motherboard or ASUS PIKE II connectors. With two mini- connects 8-pin plugs from SAS HD cables connected, a total number of 8 SAS/SATA power supply*...

Page 68 8-pin plugs from power supply* connect to mini-SAS HD connectors 1 and 2 on the motherboard or ASUS PIKE II connectors. With two mini-SAS HD cables connected, a total number of 8 SAS/SATA HDDs can be supported 2-38 Chapter 2: Hardware Setup...

Page 69: Removable/Optional Components

Repeat steps 1 to 2 to uninstall the other system fans. To reinstall the system fans, insert the fan into the fan cage. Ensure the fan connector is seated firmly within the cable holder. cable holder ASUS ESC4000 G4 Series 2-39...

Page 70: Redundant Power Supply Units

2.8.2 Redundant power supply units We recommend that you use both of your hands in performing the following steps. To replace a power supply unit (PSU): Lift up the PSU lever. Hold the PSU lever, press the PSU latch (A) then carefully pull the PSU out of the system chassis (B).

Page 71 (e.g. 1 x 1620 W + 1 x 2000 W) may yield unstable results and potential damage to your system. • For a steady power input, use only the power cables that come with the server system package. ASUS ESC4000 G4 Series 2-41...

Page 72: U.2 Drives

2.8.3 U.2 drives ESC4000 G4 For the ESC4000 G4, the U.2 drives may be installed in HDD bay 7 and 8 as shown in the illustration below: HDD bay 7 and 8 To install a U.2 drive: Install the U.2 drive to HDD bay 7 or 8. Refer to section 2.4.2 Installing the 2.5-inch SSD for the steps on installing a 2.5-inch drive to the HDD bay.

Page 73 Ensure to connect OCuLink cable 1 to the OCUPCIE8 connector, and OCuLink cable 2 to the OCUPCIE7 connector. PWR2 PWR1 MSAS_HD2 OCUPCIE7 BPSMB1 BP6LX2LE12 Connect OCuLink cable 2 to OCUPCIE7 FRNT_FAN1 FRNT_FAN2 CON1 FRNT_FAN3 OCUPCIE8 Connect OCuLink cable 1 to OCUPCIE8 ASUS ESC4000 G4 Series 2-43...

Page 74 ESC4000 G4S For the ESC4000 G4S, the NVME drives may be installed in HDD bay 7 and 8 as shown in the illustration below: HDD bay 7 and 8 To install a U.2 drive: Install the U.2 drive to HDD bay 7 or 8. Refer to section 2.4.2 Installing the 2.5-inch SSD for the steps on installing a 2.5-inch drive to the HDD bay.

Page 75 Connect the OCuLink cables to the corresponding slots located on the backplane. Ensure to connect OCuLink cable 1 to the OCUPCIE8 connector, and OCuLink cable 2 to the OCUPCIE7 connector. Connect OCuLink cable 1 to OCUPCIE8 Connect OCuLink cable 2 to OCUPCIE7 ASUS ESC4000 G4 Series 2-45...

Page 76: Installing Accelerators

2.8.4 Installing Accelerators Follow the steps below to install the optional accelerator to the system. Locate and remove the two screws at the rear of the chassis. Locate and loosen the thumbscrew in front of the accelerator bracket. Firmly hold the bracket then pull it up to detach it from the motherboard then set it aside.

Page 77 The Nvidia CPU-12V GPU card will not work, or may even cause damage to the system, if the dongle is not used. The ASUS CPU 8-pin power cable may be used to connect to the GPU card and 6-pin power connector.

Page 78 From inside the air duct, secure the air duct to the accelerator with two screws. Connect the GPU power cable, dongle, or ASUS CPU 8-pin power cable to the connector on the accelerator as shown. For Intel/AMD/Nvidia GPU card installation...

Page 79 Ensure the card is completely seated on the slot. Secure the rear end of the accelerator to the bracket with two screws. Secure the air duct and accelerator assembly with a screw. opening on the bracket ASUS ESC4000 G4 Series 2-49...

Page 80 Repeat step 4-13 if you need to install a second accelerator to the bracket. Align and insert the golden fingers of the accelerator bracket into the card slot on the motherboard. Ensure the bracket is completely seated on the slot. Secure the thumbscrew in front of the accelerator bracket.

Page 81: Chapter 3: Installation Options

Chapter 3: Installation Options Installation Options This chapter describes how to install the optional components and devices into the barebone server.

Page 82: Rail Kit

Rail Kit The rail kit package includes: 2 x 1200 mm rack rails (or 2 x 1000 mm rack rails) Rack rails Rear end Front end 4 x M4X4L screws 4 x #6-32X4L screws 8 x #10-32 screws 8 x ø17.1 screws (or 10 x #10-32 screws for 1000 mm rack rails) 2 x M5X20L screws •...

Page 83: Attaching The Rack Rails

Installing the rack rail To install the rack rails into the rack: 1. Select a desired space on the rack. A 1U space consists of three square mounting holes with two thin lips on the top and the bottom. Align and insert the front end of the Front rack post Front end of rack rail appropriate rack rail (left and right) into the front rack post. ASUS ESC4000 G4 Series...

Page 84 Press the spring lock on the rear end Rear rack post of the rack rail and insert the studs into Spring lock the selected mounting holes on the rear rack post. Rear end of rack rail Slide the intermediate rail out of the outer rail until it clicks to a stop. Intermediate rail Outer rail Slide the inner rail out of the intermediate rail until it clicks to a stop. Slide the white release tab outwards and remove the inner rail completely from the intermediate rail. Inner rail Intermediate rail Blue release tab White release tab The blue release tab is available on 1200 mm rack rails. This blue release tab is used to further extend or retract the inner rail. Repeat steps 2 to 5 for the other rack rail.

Page 85 Align the inner rails with the studs on both sides of the server system, install the inner rails to the server system, then slide the inner rails toward the rear of the server system until it locks in place. Secure the inner rails on both sides of the server system using the #6-32X4L screws. ASUS ESC4000 G4 Series...

Page 86 Align the server system and gently insert it into the rack rails. 10. (optional) Use the M5X20L screws to Front rack post Front end of rack rail secure the rack rails to the rack post. 11. Gently push the server system until it is completely installed into the rack rail. (optional) For 1200 mm rack rails, if the inner rail clicks to a stop while you are installing the server system into the rack rails, slide the blue release tab outwards and gently push the server system until it is completely installed into the rack rail. Inner rail Intermediate rail Blue release tab White release tab The blue release tab is available on 1200 mm rack rails. This blue release tab is used to further extend or retract the inner rail.

Page 87 ESC4000 G4 Front View ESC4000 G4X Front View ESC4000 G4S Front View ASUS ESC4000 G4 Series...

Page 88 Chapter 3: Installation Options...

Page 89: Chapter 4: Motherboard Information

Chapter 4: Motherboard Information Motherboard Information This chapter gives information about the motherboard that comes with the server. This chapter includes the motherboard layout, jumper settings, and connector locations.

Page 90: Z11Pg-D16 Motherboard Layout

Z11PG-D16 Motherboard layout Chapter 4: Motherboard Information...

Page 91 15. VPP_I2C1 connector (10-1 pin VPP_I2C1) 4-19 16. USB 3.0 connectors (OCUUSB1) 4-19 Onboard LEDs Page Standby Power LED (SBPWR1) 4-20 Baseboard Management Controller LED (BMCLED1) 4-20 Hard disk activity LED (HDDLED1) 4-21 Message LED (MESLED1) 4-21 Location LED (LOCLED2) 4-22 ASUS ESC4000 G4 Series...

Page 92: Jumpers

Jumpers Clear RTC RAM (CLRTC1) This jumper allows you to clear the CMOS memory system setup parameters by erasing the CMOS Real Time Clock (RTC) RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

Page 93 1–2 to activate the VGA feature. LAN controller setting (3-pin LAN_SW1, LAN_SW2) These jumpers allow you to enable or disable the onboard Intel I350-AM2 Gigabit LAN ® 1/2 controllers. Set to pins 1-2 to activate the Gigabit LAN feature. ASUS ESC4000 G4 Series...

Page 94 ME firmware force recovery setting (3-pin ME_RCVR1) This jumper allows you to quickly recover the Intel Management Engine (ME) firmware when it becomes corrupted. Baseboard Management Controller setting (3-pin BMC_EN1) This jumper allows you to enable (default) or disable on-board BMC. Ensure to set this BMC jumper to enabled to avoid system fan control and hardware monitor error.

Page 95 This jumper allows you to enable or disable the Smart Ride Through (SmaRT) function. This feature is enabled by default. Set to pins 2-3 to disable it. When enabled, SmaRT allows uninterrupted operation of the system during an AC loss event. ASUS ESC4000 G4 Series...

Page 96 PCH_MFG1 setting (3-pin PCH_MFG1) This jumper allows you to update the BIOS ME block. DMLAN setting (3-pin DM_IP_SEL1) This jumper allows you to select the DMLAN setting. Set to pins 2-3 to force the DMLAN IP to static mode (IP=10.10.10.10, submask=255.255.255.0). Chapter 4: Motherboard Information...

Page 97 IPMI SW setting (3-pin IPMI_SW1) This jumper allows you to select which protocol in the GPU sensor to function. ASUS ESC4000 G4 Series...

Page 98: Internal Connectors

Internal connectors Mini-SAS HD connector (ISATA1-2) This motherboard comes with mini Serial Attached SCSI (SAS) HD connectors, the storage technology that supports Serial ATA. Each connector supports up to four devices. OCUPCIE connectors (OCUPCIE1-2) Connects the PCIE signal to the front riser card or NVME port on the backplane. Chapter 4: Motherboard Information 4-10...

Page 99 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 G4 Series 4-11...

Page 100 Fan Wafer connector (10-pin FAN_WAFER1) This connector connects to the backplane and or FPB depending on the model, and allows you to control the fan speed and control signals. Chassis Intrusion (2-pin INTRUSION1) These leads are for the intrusion detection feature for chassis with intrusion sensor or microswitch.

Page 101 TPM connector (14-1 pin TPM) This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity. ASUS ESC4000 G4 Series 4-13...

Page 102 Power Supply SMBus connector (5-pin PSUSMB1) 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. M.2 (NGFF) card connector (NGFF1) This connector allows you to install M.2 devices.

Page 103 The system may become unstable or may not boot up if the power is inadequate. • Ensure that your power supply unit (PSU) can provide at least the minimum power required by your system. ASUS ESC4000 G4 Series 4-15...

Page 104 System panel connector (20-pin PANEL1) This connector supports several chassis-mounted functions. System power LED (3-pin PLED) This 3-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

Page 105 These leads are for the locator button on the front panel. This button queries the state of the system locator. LAN activity LED and USB port (2-pin LAN3_LED, LAN4_LED, USB ports) These leads are for the Gigabit LAN activity LEDs and USB ports on the front panel. ASUS ESC4000 G4 Series 4-17...

Page 106 This connector allows you to connect a KEY module to support Intel VMD RAID function. OMNIP connector (24-pin OMNIP1) This connector allows you to provide sideband signals from the fabric CPU to a HFI-OMNI supported ASUS card. Chapter 4: Motherboard Information 4-18...

Page 107 USB 3.0 including faster data transfer speeds of up to 5 Gbps, faster charging time for USB-chargeable devices, optimized power efficiency, and backward compatibility with USB 2.0. (OCUUSB1 connector is used for the front USB panel by default). ASUS ESC4000 G4 Series 4-19...

Page 108: Onboard Leds

Onboard LEDs Standby Power LED (SBPWR1) The motherboard comes with a standby power LED. The green LED lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component.

Page 109 The read or write activities of any device connected to the onboard SATA, or SATA/SAS add-on card causes the rear panel LED to light up. Message LED (MESLED1) This onboard LED lights up to red when there is temperature warning or a BMC event log is generated. ASUS ESC4000 G4 Series 4-21...

Page 110 Location LED (LOCLED2) This onboard LED lights up when the Location button on the server is pressed or when triggered by a system management software. The Location LED helps visually locate and quickly identify the server in error on a server rack. Chapter 4: Motherboard Information 4-22...

Page 111: Chapter 5: Bios Setup

Chapter 5: BIOS Setup BIOS Setup This chapter tells how to change system settings through the BIOS Setup menus and describes the BIOS parameters.

Page 112: Managing And Updating Your Bios

BIOS in the future. Copy the original motherboard BIOS using the BUPDATER utility. 5.1.1 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 113: Asus Ez Flash Utility

5.1.2 ASUS EZ Flash Utility The ASUS EZ Flash Utility feature allows you to update the BIOS without having to use a DOS-based utility. Before you start using this utility, download the latest BIOS from the ASUS website at www.asus.com. To update the BIOS using EZ Flash Utility: Insert the USB flash disk that contains the latest BIOS file into the USB port. Enter the BIOS setup program. Go to the Tool menu then select Start EzFlash.

Page 114: Bupdater Utility

The BUPDATER utility allows you to update the BIOS file in the DOS environment using a bootable USB flash disk drive with the updated BIOS file. Updating the BIOS file To update the

BIOS file using the BUPDATER utility: Visit the ASUS website at www.asus.com and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable USB flash disk drive. Copy the BUPDATER utility (BUPDATER.exe) from the ASUS support website at www.asus.com/support to the bootable USB flash disk drive you created earlier. Boot the system in DOS mode, then at the prompt, type: BUPDATER /i[filename].CAP where [filename] is the latest or the original BIOS file on the bootable USB flash disk drive, then press <Enter>. A:\>BUPDATER /i[file name].CAP Chapter 5: BIOS Setup...

Page 115

DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure! The utility returns to the DOS prompt after the BIOS update process is completed. Reboot the system from the hard disk drive. The BIOS update is finished! Please restart your system. C:\> ASUS ESC4000 G4 Series...

Page 116: Bios Setup Program

If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Press <F5> and select Yes to load the BIOS default settings. • 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. Chapter 5: BIOS Setup...

Page 117: Bios Menu Screen

For changing the event log settings Server Mgmt For changing the Server Mgmt settings For changing the security settings Security Boot For changing the system boot configuration Tool For configuring options for special functions For selecting the exit options Save & Exit To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted. ASUS ESC4000 G4 Series...

Page 118: Menu Items

5.2.3 Menu items The highlighted item on the menu bar displays the specific items for that menu. For example, selecting Main shows the Main menu items. The other items (such as Advanced) on the menu bar have their respective menu items. 5.2.4 Submenu items A solid triangle before each item on any menu screen means that the item has a submenu. To display the submenu, select the item then press <Enter>.

Page 119: Main Menu

Main menu When you enter the BIOS Setup program, the Main menu screen appears. The Main menu provides you an overview of the basic system information, and allows you to set the system date, time, language, and security settings. 5.3.1 System Date [Day xx/xx/xxxx] Allows you to set the system date. 5.3.2 System Time [xx:xx:xx] Allows you to set the system time. ASUS ESC4000 G4 Series...

Page 120: Advanced Menu

Advanced menu The Advanced menu items allow you to change the settings for the CPU and other system devices. Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction. 5.4.1 Trusted Computing Configuration Security Device Support [Enabled] Allows you to enable or disable the BIOS support for security device. Configuration options: [Disabled] [Enabled] Chapter 5: BIOS Setup 5-10...

Page 121: Acpi Settings

Allows you to enable or disable the ability of the system to hibernate (OS/Sleep State). Configuration options: [Disabled] [Enabled] This option may be not effective with some OS. 5.4.3 SMART Settings SMART Self Test [Enabled] Allows you to enable or disable running SMART Self Test on all HDDs during POST. Configuration options: [Disabled] [Enabled] ASUS ESC4000 G4 Series 5-11...

Page 122: Super Io Configuration

5.4.4 Super IO Configuration Serial Port 1 Configuration Allows you to set the parameters of Serial Port 1. Serial Port [Enabled] Allows you to enable or disable Serial Port. Configuration options: [Disabled] [Enabled] The following item appears only when you set Serial Port to [Enabled]. Change Settings [Auto] Allows you to choose the setting for Super IO device.

Page 123

Flow Control [Hardware RTS/CTS] Flow control can prevent data loss from buffer

overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. Once the buffers are empty, a “start” signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. Configuration options: [None] [Hardware RTS/CTS] VT -UTF8 Combo Key Support [Enabled] This allows you to enable the VT -UTF8 Combination Key Support for ANSI/VT100 terminals. Configuration options: [Disabled] [Enabled] ASUS ESC4000 G4 Series 5-13...

Page 124 Recorder Mode [Disabled] With this mode enabled only text will be sent. This is to capture Terminal data. Configuration options: [Disabled] [Enabled] Legacy OS Redirection Resolution [80x24] This allows you to set the number of rows and columns supported on the Legacy OS. Configuration options: [80x24] [80x25] Putty Keypad [VT100] This allows you to select the FunctionKey and Keypad on Putty. Configuration options: [VT100] [LINUX] [XTERMR6] [SCO] [ESCN] [VT400] Redirection After BIOS POST [Always Enable] This setting allows you to specify if Bootloader is selected than Legacy console...

Page 125: Onboard Lan Configuration

Allows you to enable or disable the Intel LAN. Configuration options: [Disabled] [Enabled] The following items appear only when Intel LAN2 Enable is set to [Enabled]. Intel LAN 2 ROM Type [Disabled] Allows you to select the Intel LAN ROM type. Configuration options: [Disabled] [PXE] [iSCSI] ASUS ESC4000 G4 Series 5-15...

Page 126: Apm

5.4.7 Allows you to configure the Advance Power Management (APM) settings. Restore AC Power Loss [Last State] When set to [Power Off], the system goes into off state after an AC power loss. When set to [Power On], the system will reboot after an AC power loss. When set to [Last State], the system goes into either off or on state, whatever the system state was before the AC power loss. Configuration options: [Power Off] [Power On] [Last State] Power On By PCIE [Disabled] [Disabled] Disables the PCIE devices to generate a wake event. [Enabled] Enables the PCIE devices to generate a wake event. Power On By Ring [Disabled] [Disabled] Disables the Ring devices to generate a wake event. [Enabled] Enables the Ring devices to generate a wake event. This item functions only if there is a serial port (COM1) connector on the motherboard. Power On By RTC [Disabled] [Disabled] Disables RTC to generate a wake event.

Page 127: Pci Subsystem Settings

This option allows you to enable or disable the PCIe slots. Configuration options: [Disabled] [Enabled] CPU1_PCIE1-4 Slot OpROM [Enabled] This option allows you to enable or disable the PCIe slots. Configuration options: [Disabled] [Enabled] CPU2_PCIE1-4 Slot OpROM [Enabled] This option allows you to enable or disable the PCIe slots. Configuration options: [Disabled] [Enabled] ASUS ESC4000 G4 Series 5-17...

Page 128: Network Stack Configuration

5.4.9 Network Stack Configuration Network stack [Disabled] Enables or disables the network stack feature. Configuration options: [Disable] [Enable] The following item appears only when Network stack is set to [Enabled]. Ipv4 PXE Support [Disabled] Enables or disables the Ipv4 PXE Boot Support. If disabled, Ipv4 PXE boot option will not be created. Configuration options: [Disabled] [Enabled] Ipv4 HTTP Support [Disabled] Enables or disables the Ipv4 HTTP Boot Support. If disabled, Ipv4 HTTP boot option will not be created. Configuration options: [Disabled] [Enabled] Ipv6 PXE Support [Disabled] Enables or disables the Ipv6 PXE Boot Support. If disabled, Ipv6 PXE boot option will not be created.

Page 129: Csm Configuration

[Postponed] Execute the trap during legacy boot. Boot Option filter [Legacy only] This option allows you to control the Legacy/UEFI ROMs priority. Configuration options: [UEFI and Legacy] [Legacy only] [UEFI only] Network / Storage / Video [Legacy] This option allows you to control the execution of UEFI and Legacy PXE / Storage / Video OpROM. Configuration options: [UEFI] [Legacy] Other PCI devices [Legacy] This item determines the OpROM execution policy for devices other than Network, Storage, or Video. Configuration options: [UEFI] [Legacy] ASUS ESC4000 G4 Series 5-19...

Page 130: Nvme Configuration

5.4.11 NVMe Configuration This page will display the NVMe controller and drive information. 5.4.12 USB Configuration Legacy USB Support [Enabled] Allows you to enable or disable Legacy USB device support. Configuration options: [Enabled] [Disabled] [Auto] USB Mass Storage Driver Support [Enabled] Allows you to enable or disable the USB Mass Storage driver support.

Configuration options: [Disabled] [Enabled] Mass Storage Devices AMI Virtual CDROM0 / Floppy / HDisk0-1 1.00 [Auto]...

Page 131: Iscsi Configuration

5.4.13 iSCSI Configuration Allows you to configure the iSCSi parameters. 5.4.14 Intel(R) Virtual RAID on CPU Allows you to manage Intel(R) Virtual RAID on CPU. Platform Configuration menu The IntelRCSetup menu items allow you to change the platform settings. ASUS ESC4000 G4 Series 5-21...

Page 132: Pch Configuration

5.5.1 PCH Configuration PCH Devices Board Capability [DeepSx] [SUS_PWR_DN_ACK] Send disabled to PCH. [DeepSx] Show DeepSx Policies. DeepSx Power Policies [Disabled] Allows you to configure the DeepSx Mode configuration. Configuration options: [Disabled] [Enabled in S5] [Enabled in S4 and S5] GP27 Wake From DeepSx [Disabled] Allows you to enable or disable GP27 Wake From DeepSx. Configuration options: [Disabled] [Enabled] PCI Express Configuration PCI-E ASPM Support (Global) [L1 Only] Allows you to select ASPM support for all downstream devices. Configuration options: [Per individual port] [L1 Only] PCH DMI ASPM [Platform-POR] Allows you to configure the PCH DMI ASPM.

Page 133 Allows you to enable or disable USB 3.0 pins or on a per pin basis. Configuration options: [Select Per-Pin] [Disable all pins] [Enable all pins] USB Per-Connector Disable [Disabled] Allows you to enable or disable each of the USB physical connectors. Once a connector is disabled, any USB devices plugged into the connector will not be detected by BIOS or OS. Configuration options: [Disabled] [Enabled] ASUS ESC4000 G4 Series 5-23...

Page 134: Miscellaneous Configuration

The following items appear only when USB Per-Connector Disable is set to [Enabled]. USB HS Physical Connector #0-13 Disable [Enabled] Configuration options: [Disabled] [Enabled] USB SS Physical Connector #0-9 Disable [Enabled] Configuration options: [Disabled] [Enabled] Security Configuration SMM BIOS Write Protect [Enabled] Allows you to enable or disable SMM BIOS Write Protect. Configuration options: [Disabled] [Enabled] DCI Auto Detect Enable [Enabled] When this item is set to [Enable], it detects DCI being connected during BIOS post time and enables DCI, else it disables DCI.

Page 135: Runtime Error Logging

5.5.4 Runtime Error Logging Runtime Error Logging System Errors [Enabled] This item allows you to enable or disable System Errors. Configuration options: [Disabled] [Enabled] Whea Settings Whea Support [Enabled] This item allows you to enable or disable the WHEA support. Configuration options: [Disabled] [Enabled] Socket Configuration menu The IntelRCSetup menu items allow you to change the socket settings. ASUS ESC4000 G4 Series 5-25...

Page 136: Processor Configuration

5.6.1 Processor Configuration Hyper Threading [ALL] [Enabled] Allows you to enable or disable the Hyper-Threading Technology function. When disabled, only one thread per activated core is enabled. Configuration options: [Disabled] [Enabled] Execute Disable Bit [Enabled] XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, Redhat Enterprise 3 Update 3). Configuration options: [Disabled] [Enabled] Enable Intel(R) TXT [Disabled] Forces the XD feature log to always return 0 when disabled. Configuration options: [Disabled] [Enabled] VMX [Enabled] Enables the Vanderpool Technology. Takes effect after reboot. Configuration options: [Disabled] [Enabled] Enable SMX [Disabled] Enables the Safer Mode Extensions.

Page 137: Common Refcode Configuration

This Item allows you to enable or disable the extended APIC support. Configuration options: [Disabled] [Enabled] AES-NI [Enabled] This Item allows you to enable or disable the AES-NI support. Configuration options: [Disabled] [Enabled] 5.6.2 Common RefCode Configuration Numa [Enabled] This item enables or disables the Non uniform Memory Access (NUMA). Configuration options: [Disabled] [Enabled] ASUS ESC4000 G4 Series 5-27...

Page 138: Upi Configuration

5.6.3 UPI Configuration UPI General Configuration UPI Status This item displays information about the UPI status. Link Speed Mode [Fast] This item allows you to select the UPI link speed as either the fast mode or slow mode. Configuration options: [Slow] [Fast] Link Frequency Select

[Auto] This item allows for selecting the UPI link frequency. Configuration options: [Auto] [9.6 GB/s] [10.4 GB/s] [Use Per Link Setting] Link L0p Enable [Auto] Configuration options: [Disabled] [Enabled] [Auto] Link L1 Enable [Auto] Configuration options: [Disabled] [Enabled] [Auto] Stale AtoS [Disabled] Configuration options: [Disabled] [Enabled] [Auto] LLC dead line alloc [Enabled] Configuration options: [Disabled] [Enabled] [Auto]...

Page 139: Memory Configuration

Page Policy Allows you to configure Page Policy settings. Page Policy [Auto] Configuration options: [Auto] [Closed] [Adaptive] Memory Map IMC Interleaving [Auto] Select different IMC interleaving setting. Configuration options: [Auto] [1-way Interleave] [2-way Interleave] Channel Interleaving [Auto] Select different channel interleaving setting. Configuration options: [Auto] [1-way Interleave] [2-way Interleave] [3-way Interleave] Rank Interleaving [Auto] Select different rank interleaving setting. Configuration options: [Auto] [1-way Interleave] [2-way Interleave] [4-way Interleave] [8-way Interleave] ASUS ESC4000 G4 Series 5-29...

Page 140 Memory RAS Configuration Mirror Mode [Disabled] Allows you to select Mirror Modes. Mirror Mode will set entire 1LM/2LM memory in system to be mirrored, consequently reducing the memory capacity by half. Enabling Mirror Mode will disable XPT Prefetch. Configuration options: [Disabled] [Mirror Mode 1LM] [Mirror Mode 2LM] Mirror TADO [Disabled] Allows you to enable Mirror on entire memory for TADO. Configuration options: [Enabled] [Disabled] Enable Partial Mirror [Disabled] Partial mirror mode will enable the required size of memory to be mirrored. If rank sparing is enabled partial mirroring will not take effect. Mirror Enable will disable XPT Prefetch.

Page 141: Iio Configuration

Intel® VMD for Volume Management Device on Socket 0-1 Allows you to enable or disable the Intel(R) VMD for Volume Management Device Technology on a specific stack. Configuration options: [Disabled] [Enabled] IIO-PCIE Express Global Options Pcie Relaxed Ordering [Enabled] Allows you to enable or disable PCIE relaxed Ordering. Configuration options: [Disabled] [Enabled] ASUS ESC4000 G4 Series 5-31...

Page 142: Advanced Power Management Configuration

5.6.6 Advanced Power Management Configuration CPU P State Control Boot performance mode [Max Performance] Allows you to switch between Boot performance mode. Configuration options: [Max Performance] [Max Efficient] [Set by Intel Node Manager] Energy Efficient Turbo [Enabled] Allows you to enable or disable Energy Efficient Turbo. Configuration options: [Disabled] [Enabled] Turbo Mode [Enabled] Allows you to enable or disable Turbo Mode. Configuration options: [Disabled] [Enabled] Hardware PM State Control Hardware P-States [Native Mode]...

Page 143: Event Logs Menu

The Event Logs menu items allow you to change the event log settings and view the system event logs. 5.7.1 Change Smbios Event Log Settings Press <Enter> to change the Smbios Event Log configuration. All values changed here do not take effect until computer is restarted. Enabling/Disabling Options Smbios Event Log [Enabled] Change this to enable or disable all features of Smbios Event Logging during boot. Configuration options: [Disabled] [Enabled] ASUS ESC4000 G4 Series 5-33...

Page 144: View Smbios Event Log

The following item appears only when the Smbios Event Log is set to [Enabled]. Erasing Settings Erase Event Log [No] Choose options for erasing Smbios Event Log. Erasing is done prior to any logging activation during reset. Configuration options: [No] [Yes, Next reset] [Yes, Every reset] 5.7.2 View Smbios Event Log Press <Enter>...

Page 145 BIOS phase. Configuration options: [Previous State] [Static] [DynamicBmcDhcp] [DynamicBmcNonDhcp] IPV6 DM_LAN1/ Shared LAN IPV6 Support [Enabled] Allows you to enable or disable LAN1 IPV6 Support. Configuration options: [Disabled] [Enabled] View System Event Log This item allows you to view the system event log records. ASUS ESC4000 G4 Series 5-35...

Page 146: Security Menu

Security menu This menu allows a new password to be created or a current password to be changed. The menu also enables or disables the Secure Boot state and lets the user configure the System Mode state. Administrator Password To set an administrator password: Select the

Administrator Password item and press <Enter>. From the Create New Password box, key in a password, then press <Enter>. Confirm the password when prompted. To change an administrator password: Select the Administrator Password item and press <Enter>.

Page 147 Secure Boot can be enabled if the system is running in User mode with enrolled platform Key (EPK) or if the CSM function is disabled. Configuration options: [Disabled] [Enabled] Secure Boot Mode [Custom] Allows you to set the Secure Boot selector. Configuration options: [Custom] [Standard] ASUS ESC4000 G4 Series 5-37...

Page 148 Key Management This item only appears when the item Secure Boot Mode is set to [Custom]. The Key Management item allows you to modify Secure Boot variables and set Key Management page. Provision Factory Defaults [Disabled] Allows you to provision factory default Secure Boot keys when the system is in Setup Mode. Configuration options: [Disabled] [Enabled] Install Factory Default keys This item will install all Factory Default keys. Reset to Setup Mode This item appears only when you install the Factory Default keys. This item allows you to clear all reset to Setup Mode. Enroll Efi Image This item will allow the image to run in Secure Boot mode.

Page 149 Save to file This item allows you to save the db to a USB storage device. Set New This item allows you to load the downloaded db from a USB storage device. ASUS ESC4000 G4 Series 5-39...

Page 150 Append This item allows you to load the additional db from a storage device for an additional db and dbx loaded management. Erase This item allows you to delete the db file from your system. Configuration options: [Yes] [No] The db file must be formatted as a UEFI variable structure with time-based authenticated variable. Forbidden Signatures (DBX) The dbx (Revoked Signature database) lists the forbidden images of db items that are no longer trusted and cannot be loaded. Save to file This item allows you to save the dbx to a USB storage device.

Page 151: Boot Menu

BBS Priorities / Network Device BBS Priorities These items appear only when you connect Floppy / SATA ODD or HDD to the SATA ports and allow you to set the booting order of the SATA devices. ASUS ESC4000 G4 Series 5-41...

Page 152: Tool Menu

<Enter> to display the submenu. IPMI HWM Allows you to run the IPMI hardware monitor. Start EzFlash Allows you to run ASUS EZ Flash BIOS ROM Utility when you press <Enter>. Refer to the ASUS EZ Flash Utility section for details. 5.12 Exit menu The Exit menu items allow you to save or discard your changes to the BIOS items.

Page 153: Chapter 6: Raid Configuration

Chapter 6: RAID Configuration RAID Configuration This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

Page 154: Setting Up Raid

Setting up RAID ® The motherboard supports the Intel Rapid Storage Technology enterprise Option ROM Utility with RAID 0, RAID 1, RAID 10, and RAID 5 support (for Windows OS and Linux). 6.1.1 RAID definitions RAID 0 (Data striping) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks.

Page 155: Installing Hard Disk Drives

® if you installed Serial ATA hard disk drives on the Serial ATA connectors supported by the Intel C621 chipset. ® Refer to the succeeding section for details on how to use the RAID configuration utility. ASUS ESC4000 G4 Series...

Page 156: Intel

® Intel Rapid Storage Technology enterprise SATA/SSATA Option ROM Utility The Intel Rapid Storage Technology enterprise SATA/SSATA Option ROM utility allows you ® to create RAID 0, RAID 1, RAID 10 (RAID 1+0), and RAID 5 set from Serial ATA hard disk drives that are connected to the Serial ATA connectors supported by the Southbridge.

Page 157: Creating A Raid Set

]-Prev/Next [TAB]-(M)aster [SPACE]-(R)ecovery [ENTER]-Done Use the up/down arrow keys to move the selection bar then press <Space> to select a disk. A small triangle before the Port number marks the selected drive. Press <Enter> when you are done. ASUS ESC4000 G4 Series...

Page 158 Use the up/down arrow keys to select the stripe size for the RAID array (for RAID 0, 10 and 5 only) then press <Enter>. The available stripe size values range from 4 KB to 128 KB. The following are typical values: RAID 0: 128KB RAID 10: 64KB RAID 5: 64KB...

Page 159: Deleting A Raid Set

<N> to return to the DELETE VOLUME menu. DELETE VOLUME VERIFICATION ALL DATA IN THE VOLUME WILL BE LOST! (This does not apply to Recovery volumes) Are you sure you want to delete volume “Volume0”? (Y/N): ASUS ESC4000 G4 Series...

Page 160: Resetting Disks To Non-Raid

6.2.3 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: From the utility main menu, select 3. Reset Disks to Non-RAID and press <Enter>. Press the up/down arrow keys to select the drive(s) or disks of the RAID set you want to reset, then press <Space>.

Page 161: Exiting The Intel ® Rapid Storage Technology Enterprise

Select the port of destination disk for rebuilding (ESC to exit): Port Drive Model Serial # Size XXXXXXXXXXX XXXXXXXX XXX.GB]-Previous/Next [ENTER]-Select [ESC]-Exit Select a destination disk with the same size as the original hard disk. ASUS ESC4000 G4 Series...

Page 162 The utility immediately starts rebuilding after the disk is selected. When done, the status of the degraded RAID volume is changed to “Rebuild”. Intel(R) Rapid Storage Technology enterprise - SATA Option ROM - 3.6.0.1023 Copyright(C) 2003-12 Intel Corporation. All Rights Reserved. MAIN MENU 1.

Page 163: Setting The Boot Array In The Bios Setup Utility

Use up/down arrow keys to select the boot priority and press <Enter>. See the Boot menu section of Chapter 5 for more details. From the Exit menu, select Save Changes & Exit, then press <Enter>. When the confirmation window appears, select Yes, then press <Enter>. ASUS ESC4000 G4 Series 6-11...

Page 164: Intel ® Rapid Storage Technology Enterprise (Windows)

® Intel Rapid Storage Technology enterprise (Windows) The Intel Rapid Storage Technology enterprise allows you to create RAID 0, RAID 1, RAID ® 10 (RAID 1+0), and RAID 5 set(s) from Serial ATA hard disk drives that are connected to the Serial ATA connectors supported by the Southbridge.

Page 165: Creating A Raid Set

Click Next. • If you do not want to keep the data on one of the selected disks, select NO when prompted. • If you want to Enable volume write-back cache or Initialize volume, click Advanced. ASUS ESC4000 G4 Series 6-13...

Page 166 Confirm the volume creation, than click Create Volume to continue. This process could take a while depending on the number and size of the disks. You can continue using other applications during this time. Wait until the process is completed, then click OK when prompted. You still need to partition your new volume using Windows Disk Management before adding any data.

Page 167: Changing A Volume Type

RAID 0: 128KB RAID 10: 64KB RAID 5: 64KB We recommend a lower stripe size for server systems, and a higher stripe size for multimedia computer systems used mainly for audio and video editing. ASUS ESC4000 G4 Series 6-15...

Page 168: Deleting A Volume

6.3.3 Deleting a volume Be cautious when deleting a volume. You will lose all data on the hard disk drives. Before you proceed, ensure that you back up all your important data from your hard drives. To delete a volume: From the utility main menu, select the volume (ex.

Page 169: Preferences

Allow you to set to show the notification area icon and show system information, warning, or errors here. E-Mail Preferences Allow you to set to sent e-mail of the following events: • Storage system information • Storage system warnings • Storage system errors ASUS ESC4000 G4 Series 6-17...

Page 170 Chapter 6: RAID Configuration 6-18...

Page 171: Chapter 7: Driver Installation

Chapter 7: Driver Installation Driver Installation This chapter provides instructions for installing the necessary drivers for different system components.

Page 172: Raid 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 the instructions on how to install the RAID controller drivers during OS installation. 7.1.1 Creating a USB flash drive with RAID driver When installing Windows...

Page 173 Click Browse to continue. Locate the driver in the corresponding folder of the Support DVD then click OK to continue. Select the RAID controller driver you need from the list and click Next. ASUS ESC4000 G4 Series...

Page 174 When the system finishes loading the RAID driver, replace the motherboard Support DVD with the Windows Server installation disc. Select the drive to install Windows and click Next. Setup then proceeds with the OS installation. Follow screen instructions to continue. Chapter 7: Driver Installation...

Page 175: 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 the latest updates on software and utilities.

Page 176 7.3.1 Drivers menu tab The Drivers Menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices. 7.3.2 Utilities menu tab The Utilities menu displays the software applications and utilities that the motherboard supports. Chapter 7: Driver Installation...

Page 177 You need an internet browser installed in your OS to view the User Guide. 7.3.4 Contact information menu The Contact menu displays the ASUS contact information, e-mail addresses, and useful links if you need more information or technical support for your motherboard. ASUS ESC4000 G4 Series...

Page 178: Intel ® Chipset Device Software Installation

Intel chipset device software installation ® This section provides the instructions on how to install the Intel chipset device software on ® the system. You need to manually install the Intel chipset device software on a Windows operating ® system. To install the Intel chipset device software: ®...

Page 179 Read the License Agreement and click Accept to continue the process. Read the Readme File Information and click Install to start the installation process. Click Restart Now to complete the setup process. ASUS ESC4000 G4 Series...

Page 180: Installing The Intel ® I210 Gigabit Adapters Driver

® Installing the Intel I210 Gigabit Adapters driver This section provides the instructions on how to install the Intel I210 Gigabits Adapter ® Driver on the system. To install the Intel I210 Gigabit Adapters Driver on the Windows operating system: ®...

Page 181 Tick I accept the terms in the license agreement and click Next to continue. From the Setup Options window, click Next to start the installation. By default, Intel(R) PROSet for Windows Device Manager and Windows PowerShell Module are ticked. ASUS ESC4000 G4 Series 7-11...

Page 182 Click Install to start the installation. When the installation is done, press Finish to complete the installation. 7-12 Chapter 7: Driver Installation...

Page 183: Vga Driver Installation

ASSETUP.EXE from the BIN folder. Double-click the ASSETUP.EXE to run the support DVD. Click the ASPEED AST2500 Display Driver to begin installation. From the installation window, click Next to start the installation. ASUS ESC4000 G4 Series 7-13...

Page 184 Click Install to start the installation process. Click Finish to complete the installation. 7-14 Chapter 7: Driver Installation...

Page 185: Intel ® Rapid Storage Technology Enterprise 5.0 Installation

Insert the motherboard/system support DVD into the optical drive, and navigate to the Utilities menu. ® Click the Intel Rapid Storage Technology enterprise to begin installation. ® The Intel Rapid Storage Technology enterprise window appears. Click Next to start the installation. ASUS ESC4000 G4 Series 7-15...

Page 186 Read the Warning message and click Next to continue. Read the License Agreement and click Accept to continue the process. Select the destination folder and click Next to continue. 7-16 Chapter 7: Driver Installation...

Page 187 Tick the features that you would like to install and click Next to continue. Click Install to start the installation process. Click Restart Now to complete the setup process. ASUS ESC4000 G4 Series 7-17...

Page 188 7-18 Chapter 7: Driver Installation...

Page 189: Appendix

Appendix Appendix This appendix includes additional information that you may refer to when configuring the motherboard. ASUS ESC4000 G4 Series...

Page 190: Z11Pg-D16 Block Diagram

Z11PG-D16 block diagram CPU TDP: ESC4000 G4: 150W ESC4000 G4X/G4S: 165W Appendix...

Page 191: Asus Contact Information

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Service (Russia and CIS) г.Москва, ул.

Page 194 Appendix...

This manual is also suitable for:

Esc4000 g4Esc4000 g4xEsc4000 g4sEsc4000 g4 series90sf0071-m0033090sf0071-m00340