Asus 90SF00H1-M00080 Manual

4u rackmount server

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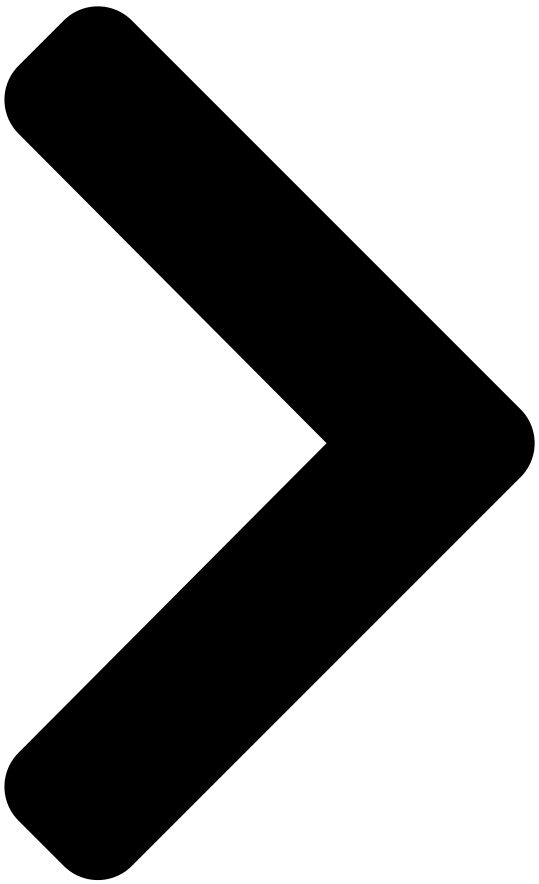

ESC8000 G4

4U Rackmount Server User Guide

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Summary of Contents for Asus 90SF00H1-M00080

Page 1 ESC8000 G4 4U 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 8: 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 9: 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 10 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 11: 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 12: System Package Contents

2 x CPU coolers 1 x Rail Kit 16 x VGA power cables 8 x ASUS CPU 8-pin Power cables 4 x CPU carriers (2 for Intel Xeon processor Scalable, 2 for Intel Xeon processor with Omni-Path Architecture) One Row SYS FAN (Redundant FAN-Optional)

Page 13: 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 14: System Specifications

1.3 System specifications The ASUS ESC8000 G4 servers features the ASUS Z11PG-D24 Series server board that ® ® supports Intel LGA 3647 Xeon processor Scalable family. Model Name ESC8000 G4 2 x Socket P0 (LGA 3647) ® ® Intel Xeon processor Scalable family Processor /

System Bus ®...

Page 15

Operating temperature: 10°C ~ 35°C Environment Non operating temperature: -40°C ~ 70°C Non operating humidity: 20% ~ 90% (Non-condensing) • Specifications are subject to change without notice. • Refer to www.asus.com for the latest OS AVL update. ASUS ESC8000 G4...

Page 16: Front Panel Features

Message LED 2.5-inch Bay 1-8 Storage Device Access LED 1.5 Rear panel features The LAN ports and system power socket are located on the rear panel of the server. Half-length/Low-profile expansion slot Full-length/Full-height expansion slots Power cord connector and Redundant power supply The Dedicated Management LAN port is for the ASUS ASMB9-iKVM only. Chapter 1: Product Introduction...

Page 17: Internal Features

(supports up to 22110) ASUS HFI-OMNI card bracket (supports up to two optional ASUS HFI-OMNI cards) 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 18: Led Information

1.7 LED information 1.7.1 Front panel LEDs ESC8000 G4 Location button with LED Power button with LED LAN2 LED Storage Device Access LED LAN1 LED Message LED Icon Display status Description Power button System power ON with LED Storage Device No activity Access LED Blinking Read/write data into the storage device System is normal; no incoming event Message LED A hardware monitor event is indicated Normal status...

Page 19: Lan (Rj-45) Leds

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 Data activity GREEN 1 Gbps connection ASUS ESC8000 G4...

Page 20: Storage Device Status Led

1.7.3 Storage device status LED Red LED Green LED SATA/SAS Storage Device LED Description GREEN SATA/SAS storage device power ON Storage device has failed and should be swapped immediately GREEN/ Blinking RAID rebuilding GREEN/ Blinking Locate GREEN/ Storage device not found GREEN Blinking Read/write data from/into the SATA/SAS storage device 1-10 Chapter 1: Product Introduction...

Page 21: 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 22: 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 23

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 ESC8000 G4...

Page 24: 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 five screws. Lift the CPU air duct to remove it from the motherboard. Chapter 2: Hardware Setup...

Page 25 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 the five screws removed earlier. ASUS ESC8000 G4...

Page 26: 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 27 Align the coolers in the correct orientation, then place the coolers on top of the CPU sockets. The CPU and CPU Carrier fits in only one correct orientation. DO NOT force the CPU and CPU Carrier into the socket to prevent damaging the CPU pins on the socket. ASUS ESC8000 G4...

Page 28 Twist each of the four screws with a screwdriver just enough to attach the cooler to the motherboard. When the four screws are attached, tighten them one by one in a diagonal sequence to completely secure the cooler. The cooler screws are T30 models. A torque value of 12 inch-lbf is recommended. Connect the FAN cable from the cooler to the CPU_FRNTFAN1 (CPU_FRNTFAN2 for the second cooler) connector on the motherboard.

Page 29: System Memory

System memory 2.3.1 Overview The motherboard comes with 24 Double Data Rate 4 (DDR4) Dual Inline Memory Modules (DIMM) sockets. The figure illustrates the location of the DDR4 DIMM sockets: ASUS ESC8000 G4...

Page 30: Memory Configurations

64GB and 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. • Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.

Page 31 DIMM_K2 DIMM_K1 DIMM_L2 DIMM_L1 DIMM_M2 DIMM_M1 2 DIMMs 4 DIMMs • • • 8 DIMMs 12 DIMMs • • • 16 DIMMs • • • • • • • • • 20 DIMMs 24 DIMMs • • • • • • ASUS ESC8000 G4 2-11...

Page 32: Installing A Dimm On A Single Clip Dimm Socket

2.3.3 Installing a DIMM on a single clip DIMM socket Ensure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components. Unlock a DIMM socket by pressing the DIMM notch retaining clip outward.

Page 33: Storage Devices

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 ESC8000 G4 2-13...

Page 34 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 35: Expansion Slots

Remove the two (2) screws that secure the riser card to the chassis. Firmly hold the riser card, slide the riser card towards the front of the chassis to unlock it, then pull it up to detach it from the chassis. ASUS ESC8000 G4 2-15...

Page 36 Remove the screw from the metal bracket on the riser card (A), then remove the metal bracket from the riser card (B). Prepare the expansion card. Before installing an expansion card, read the documentation that came with it and ensure to make the necessary hardware settings.

Page 37 Secure the riser card and expansion card assembly with the two (2) screws that you

removed earlier in step 1. ASUS ESC8000 G4 2-17...

Page 38: Installing An Asus Pike Ii Card

2.5.2 Installing an ASUS PIKE II card Remove the two screws on the ASUS PIKE II card bracket (A), then remove the ASUS PIKE II card bracket (B) from the chassis. ASUS PIKE II card bracket Prepare the ASUS PIKE II card.

Page 39 Connect the mini-SAS HD cables to the ASUS PIKE II card (A), insert the ASUS PIKE II card and the ASUS PIKE II card bracket into the PCI-E slot on the motherboard (B), then secure it with the two screws that you removed earlier (C).

Page 40: Installing An Asus Hfi-Omni Card

Scalable Processors Family Series with OMNI-PATH ® FABRIC, you can install an ASUS HFI-OMNI card and enjoy all the benefits of the 100G Intel Omni-Path Architecture. Remove the two screws on the ASUS HFI-OMNI card bracket (A), then remove the ASUS HFI-OMNI card bracket (B) from the chassis.

Page 41 Remove the two screws on the ASUS HFI-OMNI card (A), remove the ASUS HFI- OMNI card bracket (B), then connect the internal OMNI-PATH cables (C) and the OMNIP cable to the ASUS HFI-OMNI card (D). ® ® Connect the other end of the internal OMNI-PATH cable into the Intel...

Page 42 GPU_FAN3 OCUPCIE14 MSD1 Z11PG-D24 CPU1 CPU2 CATERR1 CPU_FRNTFAN1 CPU_FRNTFAN2 BPPWR1 VROC_KEY1 OMNIP1 OMNIP2 PCIE11 COM1 AUX_PANEL2 VPP_I2C1 PWR_M2 OMNIP1 connector OMNIP2 connector Secure the ASUS HFI-OMNI card to the chassis with the four bundled screws. 2-22 Chapter 2: Hardware Setup...

Page 43 (optional) To install a second ASUS HFI-OMNI card, repeat steps 2 to 7, then secure the second ASUS HFI-OMNI card to the underside of the ASUS HFI-OMNI card bracket with the four bundled screws. Insert the ASUS HFI-OMNI card(s) and the ASUS HFI-OMNI card bracket into the chassis (A), then secure it with the two screws that you removed earlier (B).

Page 44: Installing An M.2 Expansion Card

2.5.4 Installing an M.2 expansion card You can install an M.2 expansion card on the provided M.2 slot onboard (supports up to 22110). To install an M.2 expansion card: Remove the screw on the M.2 socket and put it aside. Prepare your M.2 expansion card.

Page 45 Secure the M.2 card with a screw to complete the installation. • Please pay attention when removing the screw, the stand screw might be removed together with it. • Ensure that the M.2 card is positioned between the screw and the stand screw before securing it. ASUS ESC8000 G4 2-25...

Page 46: 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 motherboard connectors. Motherboard VGA_SW1 PSUSMB1...

Page 47 PCIE SKU board ESC8000-SKU-PLX8796 SLMPCIE6 SLMPCIE8 SLMPCIE5 SLMPCIE7 PWR_CON3 PWR_CON2 SLMPCIE2 SLMPCIE1 SLMPCIE4 SLMPCIE3 PWR_CON1 SATA/SAS backplane ASUS ESC8000 G4 2-27...

Page 48 Pre-connected system cables 8-pin BPPWR1 power connector (from motherboard to SATA/SAS backplane) Panel connector (from motherboard to front I/O board) Auxiliary panel 1 connector (from motherboard to front I/O board) OCU-USB to USB connector (from motherboard to front I/O board) OCU-PCIE to PCIE connector (from motherboard to SATA/SAS backplane) OCU-LAN to LAN connector (from motherboard to rear I/O board) 20-pin SSI power connectors (from power distribution board to motherboard)

Page 49: Removable/Optional Components

Set the fan aside. Repeat steps 1 to 2 to uninstall the other GPU fans. To reinstall the GPU fans, insert the fan into the fan cage. Ensure the fan connector is seated firmly within the cable

holder. ASUS ESC8000 G4 2-29...

Page 50: Redundant Power Supply Units

2.7.2 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 51 (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 ESC8000 G4 2-31...

Page 52: Installing Gpu Cards

Installing GPU cards • Use both of your hands in performing the following steps. • Read the documentation that comes with your GPU card before installing them. • When installing more than one GPU card, it is recommended to install the card on PCIE1 slot first.

Page 53 CPU-12V or above GPU cards, prepare the GPU card dongle or power cable. Nvidia CPU-12V GPU card dongle ASUS CPU 8-pin power cable A dongle may be required to connect the The ASUS CPU 8-pin power system's GPU power cable to the GPU cable may be used to connect to ®...

Page 54 CPU-12V or above GPU cards with power cable and Nvidia CPU-12V GPU card dongle Power cable ® Nvidia CPU-12V GPU card dongle ® Nvidia CPU-12V or above GPU cards with ASUS CPU 8-pin power cable ASUS CPU 8-pin power cable 2-34 Chapter 2: Hardware Setup...

Page 55 Notch for the power cable (or power cable and dongle) From inside the air duct, secure the air duct to the GPU card with two screws. Notch for the cable ASUS ESC8000 G4 2-35...

Page 56 Attach the other end of the power cable (6-pin power connector) to an available 6-pin power connector on the middle of the server system (A), align and insert the golden fingers of the GPU card into the PCIE slot on the PCIE SKU board (B), then secure the GPU card with the two (2) screws that you removed earlier in step 1 (C).

Page 57: 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 58: 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 59: 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 ESC8000 G4...

Page 60 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 61 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 ESC8000 G4...

Page 62 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 63 ESC8000 G4 Front View ASUS ESC8000 G4...

Page 64: Cable Management Arm (Optional For 1200 Mm Rack Rails)

Cable management arm (optional for 1200 mm rack rails) You can install an additional cable management arm (CMA) to the rack rails to help you manage the cables from your server system. The CMA is designed with movable parts that allow you to move the server system along the rack rail without the need to remove the CMA. Outer receptor Hook and loop fasteners Inner receptor Pivot receptor Cable fasteners 3.2.1 Attaching the cable management arm Installing the cable management arm To install the cable management arm: 1.

Page 65 The installation steps in this section uses a Left pivot configuration as an example, the installation steps for a Right pivot configuration is similar. Align and connect the inner receptor on the CMA with the connector on the inner rail. Align and connect the outer receptor on the CMA with the connector on the intermediate rail. ASUS ESC8000 G4...

Page 66 Align and connect the pivot receptor on the CMA with the connector on the other intermediate rail. Pass the cables from the server system through the hook and loop fasteners and the cable fasteners on the CMA to complete. Hook and loop fasteners Cable fasteners 3-10 Chapter 3: Installation Options...

Page 67: Chapter 4: Motherboard Information

Chapter 4: Motherboard Information Motherboard Information This chapter includes the motherboard layout and brief descriptions of the jumpers and internal connectors.

Page 68: Z11Pg-D24 Motherboard Layout

Z11PG-D24 Motherboard layout Chapter 4: Motherboard Information...

Page 69 4-18 VROC_KEY connector (4-pin VROC_KEY) 4-20 System Management Bus (SMBUS) connector (5-1 pin SMBUS1) 4-24 IPMI SW setting (3-pin IPMI_SW1) ME firmware force recovery setting (3-pin ME_RCVR1) PCH_MFG1 setting (3-pin PCH_MFG1) Micro SD card slot (MSD1) 4-19 ASUS ESC8000 G4...

Page 70: Jumpers

Jumpers Clear RTC RAM (3-pin CLRTC1) 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 71 This jumper allows you to enable or disable the onboard VGA controller. Set to pins 1–2 to activate the VGA feature. IPMI SW setting (3-pin IPMI_SW1) This jumper allows you to select which protocol in the GPU sensor to function. ASUS ESC8000 G4...

Page 72 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 73 DDR4 thermal event setting (3-pin DIMMTRIP1-2) These jumpers allow you to enable or disable DDR4 DIMM thermal sensing event pin. PCH_MFG1 setting (3-pin PCH_MFG1) This jumper allows you to update the BIOS ME block. ASUS ESC8000 G4...

Page 74 Smart Ride Through (SmaRT) setting (3-pin SMART_PSU1) 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. DMLAN setting (3-pin DM_IP_SEL1) This jumper allows you to select the DMLAN setting.

Page 75: Internal Leds

The illustration below shows the location of the onboard LED. BMC LED (BMCLED1) The BMC LED lights up to indicate that the on-board BMC is functional. ASUS ESC8000 G4...

Page 76 CATT LED (CATTERR1) The CATT LED indicates that the system has experienced a fatal or catastrophic error and cannot continue to operate. 4-10 Chapter 4: Motherboard Information...

Page 77: Internal Connectors

The SLMPCIE23 connector supports two PCIe x4 and two sSATA signals. Mini-SAS HD connector (ISATA1-2; REARIO1) 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. ASUS ESC8000 G4 4-11...

Page 78 Hard disk activity LED connector (4-pin HDLED1) This LED connector is for the storage add-on card cable connected to the SATA or SAS add-on card. The read or write activities of any device connected to the SATA or SAS add-on card causes the front panel LED to light up. TPM connector (20-1 pin TPM1) This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data.

Page 79 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! ASUS ESC8000 G4 4-13...

Page 80 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 81 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 (USB power and OC pin) These leads are for the USB ports on the front or rear panel. ASUS ESC8000 G4 4-15...

Page 82 SSI power connectors (24-pin PWR1-2) These connectors are for the 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 83 This connector is for the power supply plugs that connects to the PCIE SKU board. 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. ASUS ESC8000 G4 4-17...

Page 84 M.2 board power connector (4-pin PWR_M2) This connector is for the power supply plugs that connects to the M.2 board. 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. Rear LAN panel power connector (4-pin LAN_PWR1) This connector is for the power supply plugs that connects to the rear LAN panel.

Page 85 Memory Card, then reboot the system to access the Memory Card. Some memory cards may not be compatible with your motherboard. Ensure that you use only compatible memory cards to prevent loss of data, damage to your device, or memory card, or both. ASUS ESC8000 G4 4-19...

Page 86 This connector allows you to connect a KEY module to support Intel VMD RAID function. OMNIP connector (24-pin OMNIP1-2) These connectors allow you to provide sideband signals from the fabric CPU to a HFI-OMNI supported ASUS card. 4-20 Chapter 4: Motherboard

Information...

Page 87 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). The USB port module is purchased separately. ASUS ESC8000 G4 4-21...

Page 88 OCUPCIE connectors (OCUPCIE13-14) Connects the PCIE signal to the front riser card or NVME port on the backplane. OCULAN connectors (OCULAN1) Connects the PCIE signal to the LAN port on the back panel. 4-22 Chapter 4: Motherboard Information...

Page 89 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. VGA connector (16-pin VGA_HDR1) This connector supports the VGA High Dynamic-Range interface. ASUS ESC8000 G4 4-23...

Page 90 System Management Bus (SMBUS) connector (5-1 pin SMBUS1) This connector controls the system and power management-related tasks. This connector processes the messages to and from devices rather than tripping the individual control lines. Serial port connector (10-1 pin COM1) This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.

Page 91 This port functions only when you enable ASMB9 Management card. Dedicated Management LAN port (DM_LAN1) LED indications Activity/Link LED Speed LED Status Description Status Description No link 10 Mbps connection ORANGE Linked ORANGE 100 Mbps connection BLINKING Data activity GREEN 1 Gbps connection ASUS ESC8000 G4 4-25...

Page 92 PCIE expansion slot (PCIE11) The onboard PCIE11 slot provides one Gen3 x8 link. This slot supports HBA/RAID cards and various server class high performance add-on cards. 4-26 Chapter 4: Motherboard Information...

Page 93: 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 94: 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 95: 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 96: Bupdater Utility

The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be the same as shown. The BUPDATER utility allows you to update the BIOS file in 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. Download the BUPDATER utility (BUPDATER.exe) from the ASUS support website at support.asus.com 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 97 The utility verifies the file, then starts updating the BIOS file. ASUS Tek. EzFlash Utility Current Platform New Platform Platform : Z11PG-D24 Platform : Z11PG-D24 Version :

0201 Version : 0202 Build date: 02/20/2017 Build date: 03/12/2017 Start Programming Flash. DO NOT SHUTDOWN THE SYSTEM!!! Write 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.

Page 98: 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 99: Bios Menu Screen

For changing the event log settings For changing the server mgmt settings Server Mgmt Security For changing the security settings Boot For changing the system boot configuration Tool For configuring options for special functions Save & Exit For selecting the save & exit options 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 ESC8000 G4...

Page 100: 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 (Advanced, Platform Configuration, Socket Configuration, Event Logs, Server Mgmt, Security, Boot, Tool, and Save & Exit) 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>. 5.2.5 Navigation keys At the bottom right corner of a menu screen are the navigation keys for the BIOS setup program. Use the navigation keys to select items in the menu and change the settings. 5.2.6 General help At the top right corner of the menu screen is a brief description of the selected item.

Page 101: 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 ESC8000 G4...

Page 102: Ai Tweaker

Ai Tweaker The Ai Tweaker menu items allow you to configure overclocking-related items. Be cautious when changing the settings of the Ai Tweaker menu items. Incorrect field values can cause the system to malfunction. The configuration options for this section vary depending on the CPU and DIMM model you installed on the motherboard. Ai Overclock Tuner [Auto] This item allows you to select the CPU overclocking options to achieve the desired CPU internal frequency. Select any of these preset overclocking configuration options: [Auto] Automatically optimizes the BCLK frequency. [Manual] Manually adjust the and BCLK frequency. [OC Tune] If you install memory modules supporting the eXtreme Memory Profile (XMP) Technology, choose this item to set the profiles supported by your memory modules for optimizing the system performance. The following item appears only when you set Ai Overclock Tuner to [Manual]. BCLK Frequency [100.0] This item allows you to set the BCLK (base clock) frequency to enhance the system performance. Use the <+> or <-> to adjust the value.

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Higher levels of the load-line calibration can get a higher voltage and better overclocking performance, but increases the CPU and VRM thermal production. Select from levels 1 to 9 to adjust the CPU power voltage from 0% to 125%. Configuration options [Auto] [Level 1] - [Level 9] The actual performance boost may vary depending on your CPU specification. DO NOT remove the thermal module. The thermal conditions should be monitored. CPU1-2 Current Capability [Auto] The CPU current capability adjusts the total power range for CPU overclocking. A higher value provides a wider total power range and extends the overclocking frequency range simultaneously. Configuration options: [Auto] [100%] [110%] [120%] [130%] [140%] Configure higher values when overclocking or under a high CPU loading for extra power support. ASUS ESC8000 G4 5-11...

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CPU1-2 Power Phase Control [Auto] This item allows you to set the power phase control of the CPU. [Auto] Automatically set the phase control mode. [Extreme] Set to the full phase mode. DO NOT remove the thermal module. The thermal conditions should be monitored.

CPU1-2 Thermal Control [120] This item allows you to configure the thermal control value. A higher temperature provides a wider CPU power thermal range and extends the over clocking tolerance to enlarge the overclocking potential.

Page 105: Advanced Menu

Optimized Performance Settings [Default] This option allows you to select a recommended BIOS setting to optimize performance. System Topology [Single Root] Allows you to switch the system PCI-E topology. Configuration options: [Single Root] [Dual Root] Asus Turbo Ratio Lock (ATRL) [Disabled] Allows you to keep the processor operating at the turbo highest frequency for maximum performance. Configuration options: [Disabled] [Enabled] ASUS ESC8000 G4...

Page 106: Trusted Computing

5.5.1 Trusted Computing Configuration Security Device Support [Enabled] Allows you to enable or disable the BIOS support for security device. Configuration options: [Disabled] [Enabled] 5.5.2 ACPI Settings Enable ACPI Auto Configuration [Disabled] Allows you to enable or disable the BIOS ACPI Auto Configuration. Configuration options: [Disabled] [Enabled] The following item appears only when you set Enable ACPI Auto Configuration to [Disabled].

Page 107: Smart Settings

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. Configuration options: [Auto] [IO=3F8h; IRQ=4;] [IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;] [IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;] [IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;] [IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;] ASUS ESC8000 G4 5-15...

Page 108: Serial Port Console Redirection

5.5.5 Serial Port Console Redirection COM1 / COM2 Console Redirection [Disabled] Allows you to enable or disable the console redirection feature. Configuration options: [Disabled] [Enabled] The following item appears only when you set Console Redirection to [Enabled]. Console Redirection Settings This item becomes configurable only when you enable the Console Redirection item. The settings specify how the host computer and the remote computer (which the user is using) will exchange data.

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The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit. Configuration options: [1] [2] 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] Allows you to enable the VT-UTF8 Combo Key Support for ANSI/VT100 terminals. Configuration options: [Disabled] [Enabled] ASUS ESC8000 G4 5-17...

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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 redirection. Configuration options: [Always Enable] [Bootloader] Legacy Console Redirection Settings Legacy Serial Redirection Port [COM1] Allows you to select a COM port to display redirection of Legacy OS and Legacy OPROM Messages. Configuration options: [COM1] [COM2] Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS) Console Redirection [Disabled] Allows you to enable or disable the console redirection feature.

Page 111: Onboard Lan

Onboard I350 LAN Configuration Intel LAN1 Enable [Enabled] Allows you to enable or disable the Intel LAN. Configuration options: [Disabled] [Enabled] The following item appears only when you set Intel LAN1 Enable to [Enabled]. Intel LAN ROM Type [PXE] Allows you to select the Intel LAN ROM type. Configuration options: [Disabled] [PXE] [iSCSI] ® Due to Intel limitations, both Intel LAN ROM Type options should be the same when [PXE] or [iSCSI] is selected. ASUS ESC8000 G4 5-19...

Page 112: Apm

Intel LAN2 Enable [Enabled] Allows you to enable or disable the Intel LAN. Configuration options: [Disabled] [Enabled] The following item appears only when you set Intel LAN2 Enable to [Enabled]. Intel LAN ROM Type [Disabled] Allows you to select the Intel LAN ROM type. Configuration options: [Disabled] [PXE] [iSCSI] ® Due to Intel limitations, both Intel LAN ROM Type options should be the same when [PXE] or [iSCSI] is selected. 5.5.7 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...

Page 113: Pci Subsystem Settings

This option enables or disables SIngle Root IO Virtualization Support if the system has SRIOV capable PCIe devices. Configuration options: [Disabled] [Enabled] PCI Express Settings PCI Express Device Register Settings Relaxed Ordering [Enabled] This option allows you to enable or disable PCI Express Device Relaxed Ordering. Configuration options: [Disabled] [Enabled] ASUS ESC8000 G4 5-21...

Page 114 Extended Tag [Disabled] This option allows Device to use an 8-bit Tag field as a requester when set to Enabled. Configuration options: [Disabled] [Enabled] No Snoop [Enabled] This option allows you to enable or disable PCI Express Device No Snoop option. Configuration options: [Disabled] [Enabled] Maximum Payload [Auto] This option allows you to set the Maximum Payload of PCI Express Device or allow System BIOS to select the value.

Page 115 If supported by hardware and set to Enabled, this permits setting the number of ID-Based Ordering (IDO) bit (Attribute[2]) requests to be initiated. Configuration options: [Disabled] [Enabled] LTR Mechanism Enable [Disabled] If supported by hardware and set to Enabled, this enables the Latency Tolerance Reporting (LTR) Mechanism. Configuration options: [Disabled] [Enabled] End-End TLP Prefix Blocking [Disabled] If supported by hardware and set to Enabled, this function will block forwarding of TLPs containing End-End TLP Prefixes. Configuration options: [Disabled] [Enabled] ASUS ESC8000 G4 5-23...

Page 116 PCI Express GEN2 Device Register Settings Target Link Speed [Auto] If supported by hardware and set to Force to X.X GT/s, for Downstream Ports, this sets an upper limit on Link operational speed by restricting the values advertised by the Upstream component in its training sequences. When Auto is selected HW initialized data will be used. Configuration options: [Auto] [Force to 2.5 GT/s] [Force to 5.0 GT/s] [Force to 8.0 GT/s] Clock Power Management [Disabled] If supported by hardware and set to Enabled, the device is permitted to use CLKREQ# signal for power management of Link clock in accordance to protocol defined in appropriate form factor specification.

Page 117: Network Stack Configuration

Ipv6 PXE Support [Disabled] Enables or disables the Ipv6 PXE Boot Support. If disabled, Ipv6 PXE boot option will not be created. Configuration options: [Disable] [Enable] Ipv6 HTTP Support [Disabled] Enables or disables the Ipv6 HTTP Boot Support. If disabled, Ipv6 PXE boot option will not be created. Configuration options: [Disable] [Enable] PXE boot wait time [0] Set the wait time to press ESC key to abort the PXE boot. Use the <+> or <-> to adjust the value. The values range from 0 to 5. Media detect count [1] Set the number of times presence of media will be checked. Use the <+> or <-> to adjust the value. The values range from 1 to 50. ASUS ESC8000 G4 5-25...

Page 118: Csm Configuration

5.5.10 CSM Configuration CSM Support [Enabled] This option allows you to enable or disable CSM Support. Configuration options: [Disabled] [Enabled] The following items appear only when you set the CSM Support to [Enabled]. GateA20 Active [Upon Request] This allows you to set the GA20 option. [Upon Request] GA20 can be disabled using BIOS services.

Page 119: Nvme Configuration

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 Allows you to select the mass storage device emulation type for devices connected. Configuration options: [Auto] [Floppy] [Forced FDD] [Hard Disk] [CD-ROM] ASUS ESC8000 G4 5-27...

Page 120: Iscsi Configuration

5.5.13 iSCSI Configuration Allows you to configure the iSCSi parameters. Platform Configuration menu The IntelRCSetup menu items allow you to change the platform settings. Take caution when changing the settings of the Platform Configuration menu items. Incorrect field values can cause the system to malfunction. 5.6.1 PCH Configuration PCH Devices Board Capability [DeepSx] [SUS_PWR_DN_ACK] Send. [DeepSx] Show DeepSx Policies. Chapter 5: BIOS Setup 5-28...

Page 121 Allows you to identify the SATA port connected to Solid State Drive or Hard Disk Drive. Configuration options: [AHCI] [RAID] Support Aggressive Link Power Management [Enabled] Allows you to enable or disable the Support Aggressive Link Power (SALP) Management. Configuration options: [Disabled] [Enabled] SATA Port 1-8 Port 1-8 Allows you to enable or disable the SATA port. Configuration options: [Disabled] [Enabled] ASUS ESC8000 G4 5-29...

Page 122 PCH sSATA Configuration sSATA Controller [Enabled] Allows you to enable or disable the sSATA Controller. Configuration options: [Disabled] [Enabled] The following item appears only when you set sSATA Controller to [Enabled]. Configure sSATA as [AHCI] Allows you to identify the SATA port connected to Solid State Drive or Hard Disk Drive.

Page 123: Miscellaneous Configuration

DCI Auto Detect Enable [Disabled] When enabled, it detects DCI being connected during BIOS POST time and enables DCI. Configuration options: [Disabled] [Enabled] 5.6.2 Miscellaneous Configuration Active Video [Offboard Device] Allows you to select the video type. Configuration options: [Onboard Device] [Offboard Device] PMTT ACPI Table [Disabled] Allows you to enable or disable PMTT ACPI Table for DDR4 only. Configuration options: [Disabled] [Enabled] ASUS ESC8000 G4 5-31...

Page 124: Server Me Configuration

5.6.3 Server ME Configuration Displays the Server ME Technology parameters on your system. Navigate to the second page of the screen to see the rest of items in this menu by pressing the Up or Down arrow keys. To quickly go to the last item of the second page, press the Page Down button. Press the Page Up button to go back to the first item in the first page. 5.6.4 Runtime Error Logging Displays the Server ME Technology parameters on your system.

Page 125: Socket Configuration Menu

Navigate to the second page of the screen to see the rest of items in this menu by pressing the Up or Down arrow keys. To quickly go to the last item of the second page, press the Page Down button. Press the Page Up button to go back to the first item in the first page. Hyper-threading [ALL] [Enabled] This item allows a hyper-threading processor to appear as two logical processors, allowing the operating system to schedule two threads or processors simultaneously. Configuration options: [Disabled] [Enabled] ASUS ESC8000 G4 5-33...

Page 126 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. Configuration options: [Disabled] [Enabled] Hardware Prefetcher [Enabled] This Item allows you to turn on/off the mid level cache(L2) streamer prefetcher. Configuration options: [Disabled] [Enabled] Adjacent Cache Prefetch [Enabled] This Item allows you to turn on/off prefetching of adjacent cache lines. Configuration options: [Disabled] [Enabled] DCU Streamer Prefetcher [Enabled] This Item allows you to enable or disable prefetcher of next L1 data line.

Page 127: Common Refcode Configuration

5.7.3 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] Link0p Enable [Auto] Configuration options: [Disabled] [Enabled] [Auto] Link1 Enable [Auto] Configuration options: [Disabled] [Enabled] [Auto] ASUS ESC8000 G4 5-35...

Page 128: Memory Configuration

Directory Mode Enable [Enabled] Configuration options: [Disabled] [Enabled] SNC [Disabled] Configuration options: [Disabled] [Enabled] [Auto] KTI Prefetch [Enabled] Configuration options: [Disabled] [Enabled] Local/Remote Threshold [Auto] Configuration options: [Disabled] [Auto] [Low] [Medium] [High] Stale AtoS [Disabled] Configuration options: [Disabled] [Enabled] [Auto] LLC dead line alloc [Enabled] Configuration options: [Disabled] [Enabled] [Auto] 5.7.4 Memory Configuration Enforce POR [Auto] Allows you to enforce POR restrictions for DDR4 frequency and voltage programming. Configuration options: [Auto] [POR] [Disabled] Memory Frequency [Auto] Allows you to select the memory frequency setting.

Page 129 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] UEFI ARM Mirror [Disabled] Allows you to enable or disable UEFI ARM Mirror. Configuration options: [Disabled] [Enabled] Memory Rank Sparing [Disabled] Allows you to enable or disable Memory Rank Sparing Configuration options: [Disabled] [Enabled] Patrol Scrub [Enabled] Allows you to enable or disable Patrol Scrub. Configuration options: [Disabled] [Enabled] ASUS ESC8000 G4 5-37...

Page 130: Iio Configuration

5.7.5 IIO Configuration Socket1 Configuration This item allows you to configure settings related to the corresponding PCIE port. Intel® VT for Directed I/O (VT-d) Intel® VT for Directed I/O (VT-d) [Enabled] Allows you to enable or disable the Intel Virtualization Technology for Directed I/O. Configuration options: [Disabled] [Enabled] IIO-PCIE Express Global Options PCI-E ASPM Support (Global) [Per-Port] Allows you to enable or disable ASPM support for all downstream devices.

Page 131: Advanced Power Management Configuration

CPU C6 Report [Auto] Allows you to select CPU C6 Report. Configuration options: [Disabled] [Enabled] [Auto] OS ACPI Cx [ACPI C2] Allows you to select OS ACPI Cx Report. Configuration options: [ACPI C2] [ACPI C3] Package C State Control Package C State [Auto] Allows you to select Package C State. Configuration options: [C0/C1 state] [C2 state] [C6(non Retention state)] [C6(Retention state)] [No Limit] [Auto] ASUS ESC8000 G4 5-39...

Page 132 CPU Thermal Control CPU T State Control Software Controlled T-States [Disabled] Allows you to enable or disable Software Controlled T-States. Configuration options: [Disabled] [Enabled] CPU - Advanced PM Tuning Energy Perf BIAS Power Performance Tuning [OS Controls EPB] Configuration options: [OS Controls EPB] [BIOS Controls EPB] The following item appears only when you set Power Performance Tuning to [OS Controls EPB].

Page 133: Event Logs Menu

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] 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] 5.8.2 View Smbios Event Log Press <Enter> to view all smbios event logs. ASUS ESC8000 G4 5-41...

Page 134: Server Mgmt Menu

Server Mgmt menu OS Watchdog Timer [Disabled] This item allows you to start a BIOS timer which can only be shut off by Intel Management Software after the OS loads. Configuration options: [Disabled] [Enabled] The following items are configurable only when the OS Watchdog Timer is set to [Enabled]. OS Wtd Timer Timeout [10 minutes] Allows you to configure the length for the OS Boot Watchdog Timer.

Page 135: System Event Log

When SEL is Full [Do Nothing] Allows you to choose options for reactions to a full SEL. Configuration options: [Do Nothing] [Erase Immediately] 5.9.2 BMC network configuration The sub-items in this configuration allow you to configure the BMC network parameters. Navigate to the second page of the screen to see the rest of items in this menu by pressing the Up or Down arrow keys. To quickly go to the last item of the second page, press the Page Down button. Press the Page Up button to go back to the first item in the first page. ASUS ESC8000 G4 5-43...

Page 136: View System Event Log

Configure IPV4 support DM_LAN1/ Shared LAN Config Address source [Previous State] This item allows you to configure LAN channel parameters statistically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase. Configuration options: [Previous State] [Static] [DynamicBmcDhcp] [DynamicBmcNonDhcp] Configure IPV6 support DM_LAN1/ Shared LAN IPV6 Support [Enabled] Allows you to enable or disable LAN1 IPV6 Support. Configuration options: [Disabled] [Enabled] Config Address source [Previous State] This item allows you to configure LAN channel parameters statistically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase. Configuration options: [Previous State] [Static] [DynamicBmcDhcp] [DynamicBmcNonDhcp] 5.9.3 View System Event Log This item allows you to view the system event log records.

Page 137: Security Menu

Administrator Password To set an administrator password: 1. Select the Administrator Password item and press <Enter>. 2. From the Create New Password box, key in a password, then press <Enter>. 3. Confirm the password when prompted. To change an administrator password: 1. Select the Administrator Password item and press <Enter>. 2. From the Enter Current Password box, key in the current password, then press <Enter>. 3. From the Create New Password box, key in a new password, then press <Enter>. 4. Confirm the password when prompted. To clear the administrator password, follow the same steps as in changing an administrator password, but press <Enter> when prompted to create/confirm the password. ASUS ESC8000 G4 5-45...

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User Password To set a user password: 1. Select the User Password item and press <Enter>. 2. From the Create New Password box, key in a password, then press <Enter>. 3. Confirm the password when prompted. To change a user password: 1. Select the User Password item and press <Enter>. 2. From the Enter Current Password box, key in the current password, then press <Enter>. 3. From the Create New Password box, key in a new password, then press <Enter>. 4. Confirm the password when prompted. To clear a user password: 1.

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This item will allow the image to run in Secure Boot mode. Save All Secure Boot Variables This item will ask you if you want to save all secure boot variables. Select Yes if you want to save all secure boot variables, otherwise select No. Platform Key (PK) Configuration options: [Save to File] [Set New] [Erase] Key Exchange Keys / Authorized Signatures / Forbidden Signatures Configuration options: [Save to File] [Set New] [Append] [Erase] Authorized TimeStamps Configuration options: [Set New] [Append] OsRecovery Signatures Configuration options: [Set New] [Append] ASUS ESC8000 G4 5-47...

Page 140: Boot Menu

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system. • To select the boot device during system startup, press <F8> when ASUS Logo appears. • To access Windows OS in Safe Mode, please press <F8> after POST. Hard Drive / CD/DVD ROM / Floppy Drive / BBS Priorities These items appear only when you connect SATA ODD or hard drive to the SATA ports and allow you to set the booting order of the SATA devices.

Page 141: Tool Menu

IPMI Hardware Monitor Allows you to run the IPMI hardware monitor. Start EzFlash Allows you to run ASUS EzFlash BIOS ROM Utility when you press <Enter>. Refer to the ASUS EzFlash Utility section for details. 5.13 Save & Exit menu The Exit menu items allow you to save or discard your changes to the BIOS items.

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Boot Override These items displays the available devices. The device items that appears on the screen depends on the number of devices installed in the system. Select an item to start booting from the selected device. Launch EFI Shell from filesystem device This item allows you to attempt to launch the EFI Shell application (shellx64.efi) from one of the available filesystem devices.

Page 143: Chapter 6: Raid Configuration

Chapter 6: RAID Configuration RAID Configuration This chapter provides instructions for setting up, creating, and configuring RAID sets using the available utilities.

Page 144: 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. 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 145: Installing Hard Disk Drives

Rapid Storage Technology ® 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 ESC8000 G4...

Page 146: Intel ® Rapid Storage Technology Enterprise

® Intel Rapid Storage Technology enterprise SATA Option ROM Utility The Intel Rapid Storage Technology enterprise SATA 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 147: 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 ESC8000 G4...

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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 149: 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 ESC8000 G4...

Page 150: 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 151: Exiting The Intel ® Rapid Storage Technology Enterprise

Rebuild completes in the operating system. 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 ESC8000 G4...

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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 153: 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 ESC8000 G4 6-11...

Page 154: 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 155: 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 ESC8000 G4 6-13...

Page 156 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 157: 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 ESC8000 G4 6-15...

Page 158: 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 159: 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 ESC8000 G4 6-17...

Page 160 6-18 Chapter 6: RAID Configuration...

Page 161: Chapter 7: Driver Installation

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

Page 162: 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 drive s®...

Page 163 Click Browse to continue. Locate the driver in the corresponding folder of the Support DVD or USB flash drive and then click OK to continue. Select the RAID controller driver you need from the list and click Next. ASUS ESC8000 G4...

Page 164 When the system finishes loading the RAID driver, Replace the motherboard Support DVD with the Windows Server installation disc. • Remove the USB flash drive. • 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 165: 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 166 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 167 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 ESC8000 G4...

Page 168: 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 169 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 ESC8000 G4...

Page 170: Vga Driver Installation

VGA driver installation This section provides the instructions on how to install the ASPEED Video Graphics Adapter (VGA) driver. You need to manually install the ASPEED VGA driver on a Windows operating system. ® To install the ASPEED VGA driver: Restart the computer, and then log on with Administrator privileges.

Page 171 Click Install to start the installation process. Click Finish to complete the installation. ASUS ESC8000 G4 7-11...

Page 172: Intel ® Rapid Storage Technology Enterprise Installation

® Intel Rapid Storage Technology enterprise installation ® This section provides the instructions on how to install the Intel Rapid Storage Technology enterprise 5.0 on the system. ® You need to manually install the Intel Rapid Storage Technology enterprise 5.0 utility on a ®...

Page 173 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. ASUS ESC8000 G4 7-13...

Page 174 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. 7-14 Chapter 7: Driver Installation...

Page 175: Appendix

Appendix Appendix This appendix includes additional information that you may refer to when configuring the motherboard. ASUS ESC8000 G4...

Page 176: Z11Pg-D24 Block Diagram (Single Root)

Z11PG-D24 block diagram (Single Root) Z11PG-D24 block diagram (Dual Root) Appendix...

Page 177: Changing System Pci-E Topology

Log in to the ASMB9-iKVM utility. Refer to the user manual that came with your ASMB9 management card for the steps on setting up and launching the ASMB9-iKVM Web-based user interface. Navigate to the Settings function, then select System Topology. ASUS ESC8000 G4...

Page 178 Select Single Root or Dual Root to change your System PCI-E Topology, then click Save. Navigate to the Power Control function, select Hard Reset, then click Perform Action to complete. Appendix...

Page 179: Q-Code Table

Recovery process started Recovery firmware image is found Recovery firmware image is loaded F5 – F7 Reserved for future AMI progress codes Recovery PPI is not available Recovery capsule is not found (continued on the next page) ASUS ESC8000 G4...

Page 180 Code Description Invalid recovery capsule FB – FF Reserved for future AMI error codes DXE Core is started NVRAM initialization Installation of the PCH Runtime Services 63 – 67 CPU DXE initialization is started PCI host bridge initialization System Agent DXE initialization is started System Agent DXE SMM initialization is started 6B –...

Page 181 System is waking up from the S3 sleep state System is waking up from the S4 sleep state System has transitioned into ACPI mode. Interrupt controller is in PIC mode. System has transitioned into ACPI mode. Interrupt controller is in APIC mode. ASUS ESC8000 G4...

Page 182: 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 183: Reach

If you require assistance please call ASUS Customer Service 1300 2787 88 or visit us at https://www.asus.com/support/.

Page 184: Asus Contact Information

ASUS contact information ASUSTeK COMPUTER INC. Address 4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan Telephone +886-2-2894-3447 +886-2-2890-7798 Web site https://www.asus.com Technical Support Telephone +86-21-38429911 +86-21-58668722 ext: 9101 Online Support https://www.asus.com/support/Product/ContactUs/Services/ questionform/?lang=en ASUSTeK COMPUTER INC. (Taiwan) Address 4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan...

Page 185 +1-510-608-4555 Web site https://www.asus.com/us/ Technical Support Support fax +1-812-284-0883 General support +1-812-282-2787 Online support https://www.asus.com/support/Product/ContactUs/Services/ questionform/?lang=en-us ASUS COMPUTER GmbH (Germany and Austria) Address Harkort Str. 21-23, 40880 Ratingen, Germany +49-2102-959911 Web site https://www.asus.com/de/ Technical Support Telephone +49-1805-010923 Support Fax +49-2102-959911 Online support https://www.asus.com/support/Product/ContactUs/Services/...

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This manual is also suitable for:

Esc8000 g4