# SUPERSERVER®

8048B-TR4F
8048B-C0R4FT
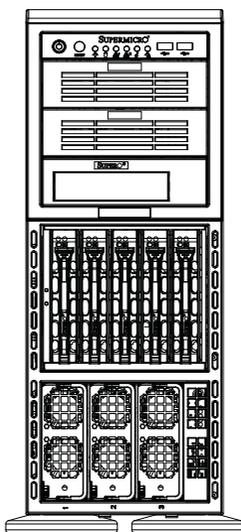
USER'S MANUAL

Revision 1.0a

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Manual Revision 1.0a
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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 8048B-TR4F/C0R4FT Installation and maintenance should be performed by experienced technicians only.

The SuperServer 8048B-TR4F/C0R4FT is a high-end server based on the 748TQ-R1K43B tower/4U rackmount chassis and the X10QBL-4(CT) quad processor serverboard. The only difference between the two server models is that the 8048B-C0R4FT server contains both SATA and SAS connections and 10G LAN Ports, while the 8048B-TR4F server only has SATA connections and 1G LAN Ports..

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X10QBL-4(CT) serverboard and the 748TQ-R1K43B tower/4U rackmount chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 8048B-TR4F/C0R4FT into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 8048B-TR4F/C0R4FT.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X10QBL-4(CT) serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the 748TQ-R1K43B server tower/4U rackmount chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS/SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility for the X10QBL-4(CT) serverboard.

Appendix A: BIOS Error Beep Codes

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Chapter 1

Introduction

1-1   Overview

The SuperServer 8048B-TR4F/C0R4FT is a high-end server comprised of two main subsystems: the 748TQ-R1K43B tower/4U rackmount chassis and the X10QBL-4(CT) dual processor serverboard. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the SuperServer 8048B-TR4F/C0R4FT, as listed below:

- Four (4) 2U passive CPU heatsinks (SNK-P0048PS)

- One (1) air shroud for SC748 (MCP-310-74806-0B)

- Chassis Fans
  Three (3) 92x92x38 mm, 9.7K RPM, PWM fans for SC748 (FAN-0146L4)
  Three (3) 80x80x38-mm 11K RPM, PWM fans for SC748 (FAN-0148L4)
  One (1) 80x80x38-mm 11K RPM, PWM fan (MCP-340-00042-0N)

- One (1) 77-cm USB 2.0 10p to 10p cable (CBL-0263L)

- One (1) 50-cm round 16-to-16-pin ribbon front panel control cable (CBL-0087)

- SAS/SATA Accessories
  One (1) SAS/SATA backplane (CSE-SAS-M35TQ-O-P)
  Two (2) 5.25" drive trays without rail (horizontal pattern) (MCP-220-00010-01)
  One (1) 5.25" drive tray without rail (FDD opening) (MCP-220-00059-0B)
  8048B-C0R4FT
  Two (2) 50-cm mini-SAS HD to 4 SATA cables (CBL-SAST-0616)
  8048B-TR4F
  Two (2) 60-cm 8pin to 8pin cables for SGPIO (CBL-0157L-01)
  Five (5) 60-cm SATA cables (CBL-0044L)

- Optional Rail Sets:
  26.5" to 36.4" rail set (MCP-290-00059-0B)
  Short rail set (MCP-290-00058-0N)

Note: For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: http://www.supermicro.com/support/manuals/

- Product drivers and utilities: ftp://ftp.supermicro.com

- Product safety information:
  http://www.supermicro.com/about/policies/safety_information.cfm

- If you have any questions, please contact our support team at:
  support@supermicro.com

1-2   Serverboard Features

At the heart of the SuperServer 8048B-TR4F/C0R4FT lies the X10QBL-4(CT), a quad processor serverboard based on the Intel PCH C602J chipset. Below are the main features of the X10QBL-4(CT). (See Figure 1-1 for a block diagram of the chipset).

Processors

The X10QBL-4(CT) supports four Intel E7-8800 v3/v4 or E7-4800 v3/v4 Series processors in Socket R1 type sockets. Each processor supports three full-width Intel QuickPath Interconnect (QPI) links (Data Transfer Rate of up to 9.6 GT/s per direction) Please refer to our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X10QBL-4(CT) has thirty-two (32) single/dual/tri/quad channel 288-pin DIMM sockets that can support up to 1TB of Registered (RDIMM) or 4TB Load Reduced (3DS LRDIMM) ECC DDR4 1866/1600/1333 MHz speed SDRAM in a two-channel memory bus. Memory sizes of 4GB, 8GB, 16GB, 32GB, 64GB and 128GB size @ 1.2V voltages are supported. Please refer to Chapter 5 for installing memory.

Note: 128G can only be supported with 3DS LRDIMM's.

Serial ATA

An on-chip (Intel PCH C602J) SATA controller is integrated into the X10QBL-4(CT) to provide a six-port SATA subsystem (two SATA 3.0 and four SATA 2.0 ports), which are all RAID 0, 1, 5 and 10 Windows/LINUX supported. The SATA drives are hot-swappable units.

Note: You must have RAID set up to enable the hot-swap capability of the SATA drives. Documentation on RAID setup guidelines can be found on our web site.

SAS (8048B-C0R4FT Server Only)

A LSI® 3008 SAS controller is integrated into the serverboard to provide an eight port SAS (Serial Attached SCSI) subsystem, which is RAID 0, 1 and 10 supported. The SAS drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hotswap capability and RAID function of the SAS drives.

Onboard Controllers/Ports

The color-coded I/O ports on the X10QBL-4(CT) include two COM ports (one header and one port), a VGA (monitor) port, six USB 2.0 ports (includes three (3) rear access I/O panel, two (2) dual port connectors and one (1) Type-A connection for the two front panel ports), two gigabit (X10QBL-4) or 10G (X10QBL-4CT) Ethernet ports and one dedicated IPMI LAN port.

Note 1: For more information on IPMI configuration, please refer to the IPMI User's Guide posted on our website at http://www.supermicro.com/support/manuals/

Graphics Controller

The X10QBL-4(CT) features an integrated ASpeed AST2400 BMC (Baseboard Controller) for a graphics controller.

Other Features

Other onboard features that promote system health include onboard voltage monitors, auto-switching voltage regulators, chassis and CPU overheat sensors, ACPI/ACPM power management, PECI (Platform Environment Configuration Interface) 2.0 support, AC power loss recovery, Wake-on-Ring (WOR) & Wake-on-LAN (WOL) support, Main switch override mechanism, Intel® Intelligent Power Node Manager 3.0, CPU Thermal Trip support, Fan status monitoring via IPMI connections. Pulse Width Modulation (PWM) fan control, UID (Unit Identification)/ Remote UID, APM 1.2, ACPI 3.0/4.0, USB keyboard, Plug & Play (PnP), BIOS rescue hotkey, riser card auto-detection, RTC (Real-Time Clock) wake-up, PCI Firmware 3.0, SPI dual/quad speed support, and SMBIOS 2.7 & later and virus protection and BIOS rescue.

1-3   Server Chassis Features

The SuperServer 8048B-TR4F/C0R4FT is built upon the 748TQ-R1K43B tower/4U rackmount chassis. Details on the chassis and on servicing procedures can be found in Chapter 6. The following is a general outline of the main features of the chassis.

System Power

The 748TQ-R1K43B tower/4U rackmount chassis features a redundant 1400 Watt Platinum level digital power supply consisting of two power modules. The system does not need to be shut down when replacing or removing a single power supply module.

Note: The power supplies are both redundant, hot-plug.

Hard Drive Subsystem

The 748TQ-R1K43B tower/4U rackmount chassis was designed to support five 3.5" hot-swap SATA or SAS hard drives in a M35 mobile rack, with an additional five 3.5" hard drives available with a second optional M35 mobile rack installed.

Mobile Rack

The SC748 tower/4U rackmount chassis includes a CSE-M35BP mobile rack. The chassis contains a space in the front for an additional mobile rack to be installed also. For detailed specific to your mobile rack, information, see the appendices at the back of this manual.

Peripheral Drives

Each SC748 tower/4U rackmount chassis provides three 5.25" peripheral drive bays for DVD-ROM/CD-ROM drives, or additional hard drives. One of these drive bays may be used for a slim floppy drive.

PCI Expansion Slots

Four PCI expansion card slots are available in the rear of the chassis for Two (2) PCI-E 3.0 x16 slots (CPU1 Slot1, CPU2 Slot 3) (CPU1 Slot1, CPU2 Slot3) and Two (2) PCI-E 3.0 x8 slots (CPU2 Slot2, CPU2 Slot4) (CPU2 Slot2, CPU2 Slot4). See our web site for details (http://www.supermicro.com/products/nfo/UIO.cfm). See section 5-6 for further details.)

Front Control Panel

The control panel on the SuperServer 8048B-TR4F/C0R4FT provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, system overheat and power supply failure. A main power button and a system reset button are also included. In addition, two USB ports have been incorporated into the control panel to provide front side USB access.

I/O

The 748TQ-R1K43B tower/4U rackmount chassis provides four standard-size add-on card slots, one COM port, a VGA port, USB 2.0 ports (three rear plus two via headers and one Type A), a dedicated IPMI LAN port, two gigabit (10G in 8048B-C0R4FT) Ethernet ports and a UID switch.

Mounting Rails (Optional)

The SC748 can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual.

Cooling System

The 748TQ-R1K43B tower/4U rackmount chassis has an innovative cooling design that includes three front 8-cm and three rear external 9.2-cm hot-plug system cooling fans. An air shroud channels the airflow from the system fans to efficiently cool the processor area of the system. The power supply module also includes a cooling fan.

Note: The fans in this system are NOT redundant, but are hot-plug.

1-4 Advanced Power Management

Intel® Intelligent Power Node Manager (NM)

The Intel® Intelligent Power Node Manager (IPNM) provides your system with real-time thermal control and power management for maximum energy efficiency. Although IPNM Specification Version 1.5 is supported by the BMC (Baseboard Management Controller), your system must also have IPNM-compatible Manageability Engine (ME) firmware installed to use this feature.

Manageability Engine (ME)

The Manageability Engine, which is an ARC controller embedded in the IOH (I/O Hub), provides Server Platform Services (SPS) to your system. The services provided by SPS are different from those provided by the ME on client platforms.

Figure 1-1. Intel PCH C602J Chipset:
System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.
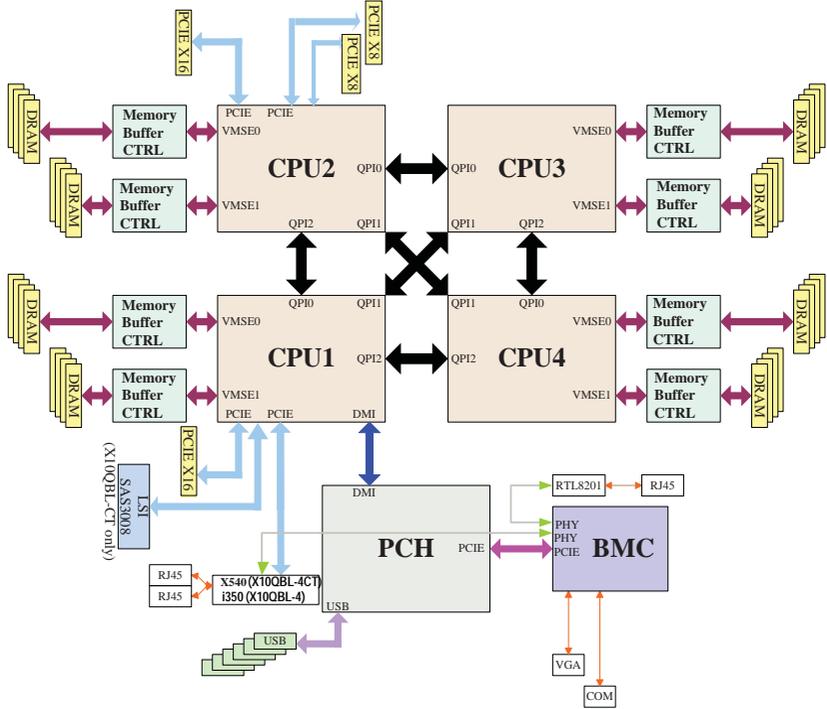
1-5   Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc.
	980 Rock Ave.
	San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information)
	support@supermicro.com (Technical Support)
Website:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V.
	Het Sterrenbeeld 28, 5215 ML
	's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)
Website:	www.supermicro.nl

Asia-Pacific

Address:	Super Micro Computer, Inc.
	3F, No. 150, Jian 1st Rd.
	Zhonghe Dist., New Taipei City 235
	Taiwan (R.O.C)
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3992
Email:	support@supermicro.com.tw
Website:	www.supermicro.com.tw

Chapter 2

Server Installation

2-1   Overview

This chapter provides a quick setup checklist to get your SuperServer 8048B-TR4F/C0R4FT up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2   Unpacking the System

You should inspect the box the SuperServer 8048B-TR4F/C0R4FT was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 8048B-TR4F/C0R4FT. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3   Preparing for Setup

The box the SuperServer 8048B-TR4F/C0R4FT was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

- This product is not suitable for use with visual display work place devices according to §2 of the German Ordinance for Work with Visual Display Units.

2-4   Warnings and Cautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.

- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.

- Always make sure the rack is stable before extending a component from the rack.

- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.

- Determine the placement of each component in the rack *before* you install the rails.

- Install the heaviest server components on the bottom of the rack first, and then work up.

- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.

- Allow any hot plug drives and power supply modules to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Warning! To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-5 Installing the System into a Rack

This section provides information on installing the SC748 tower/4U rackmount chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

NOTE: The outer rail is adjustable from 26" to 38.25".

⚠ **Warning:** Do not pick up the server with the front handles. They are designed to pull the system from a rack only.

⚠ **Stability Hazard:** The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

⚠ **Warning:** Slide rail mounted equipment is not to be used as a shelf or a work space.

Warning: When initially installing the server to a rack, test that the rail locking tabs engage to prevent the server from being overextended. Have a rack lift in place as a precaution in case the test fails.

Warning: In any instance of pulling the system from the rack, always use a rack lift and follow all associated safety precautions.

Removing the Feet

The SC748 tower/4U rackmount chassis is shipped with the chassis cover and feet pre-installed. Both the feet and cover must be removed for before installing the rails (see Figure 2-1).

Removing the Chassis Top Cover

1. Locate the chassis cover lock (blue lever) at the rear of the chassis cover.

2. Slide the chassis cover lock to the right and push chassis cover forward.

3. Lift the chassis top cover off the chassis.

Removing the Chassis Feet

1. Place the chassis on its side with the chassis side cover facing upward.

2. Remove the screw holding the chassis foot in place.

3. The foot lock is a tab located in the center of the foot that prevents the foot from sliding. Using a flat head screwdriver, **gently** lift the foot lock upward and slide the foot toward the rear of the chassis.

4. Repeat steps 2 and 3 with each remaining foot.

Figure 2-1: Remove the Chassis Cover and Feet

Chassis Cover

Chassis Feet

Chassis Cover Lock
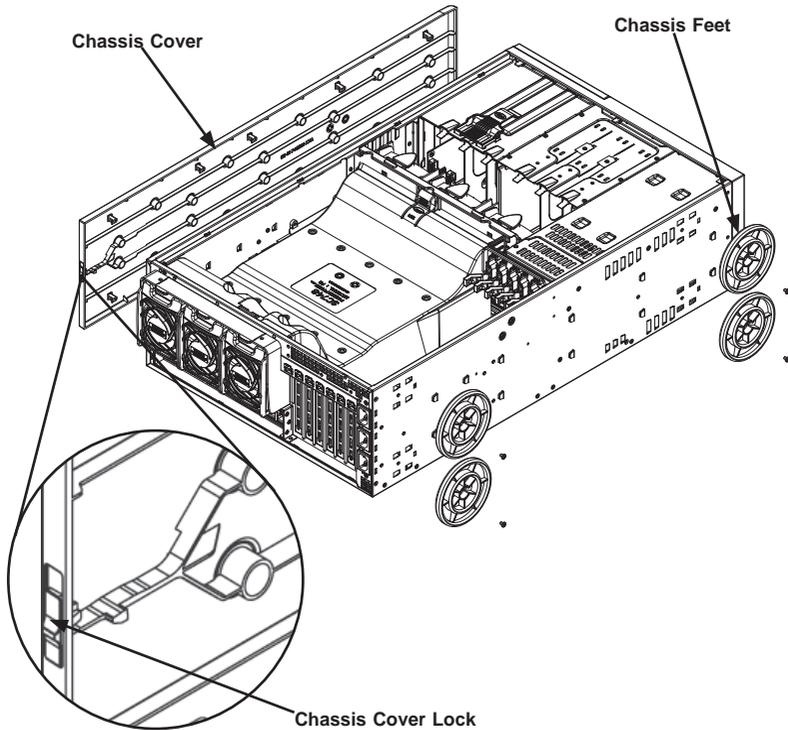
Identifying the Sections of the Rack Rails

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself (see Figure 2-2 for details).

Figure 2-2: Identifying the Inner Rails

Chassis Handle Screw

Chassis Rail Screw

Inner Rails
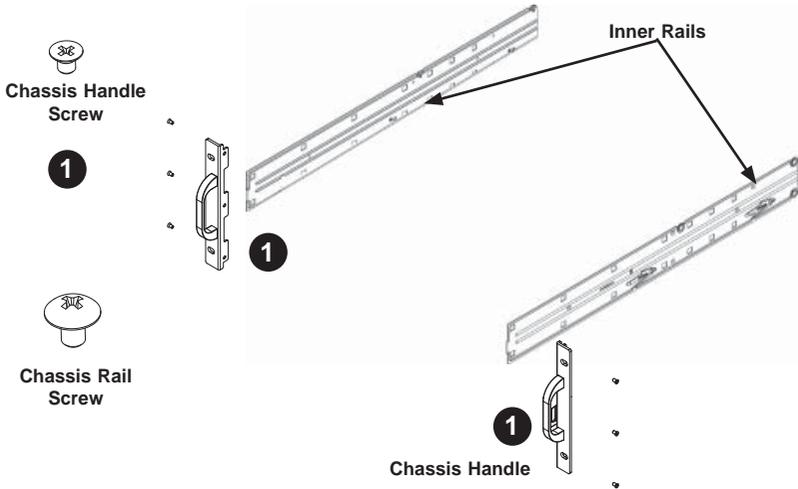
Chassis Handle

Installing the Chassis Handles and Inner Rails

1. Locate the chassis handles (2) and handle screws (6) (Figure 2-3).

Figure 2-3: Identifying the Chassis Handles
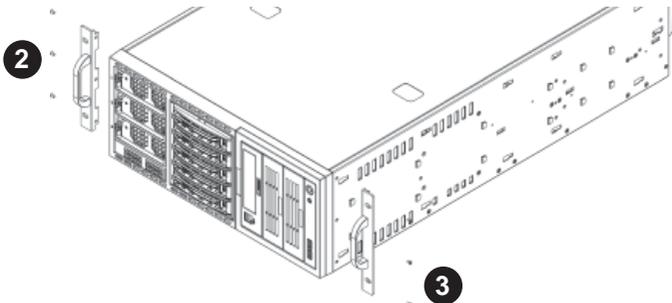
2. Align the chassis handle with the front of the chassis and secure with the three chassis handle screws.

3. Repeats steps 1 and 2 with the other handle.

4. Locate the inner rails (2) and screws (12) in the shipping package.

5. Align the inner rails against the chassis, as shown in Figure 2-4. Confirm that the rails are flushed against the edge of the chassis.

Figure 2-4: Installing the Inner Rack Rails
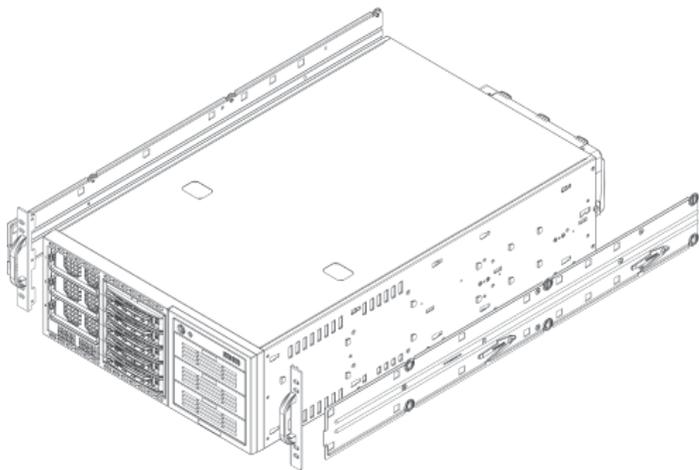
6. Tighten the screws. Do not over tighten.
7. Repeat steps 5 and 6 with the other inner rail.

Installing the Outer Rails to the Rack (Figure 2-5)

1. Attach the front and rear short brackets to the outside of the long bracket. Both bracket ends must face the same direction.

2. Adjust both the brackets to the proper distance so that the rail fits snugly into the rack.

3. Secure the front side of the outer rail with two M5 screws and the rear side of the outer rail with three M5 screws. **NOTE:** The outer rail is adjustable from approximately 26" to 38.25".

4. Repeat steps 1-3 for the left outer rail.

Figure 2-5: Assembling the Outer Rails

Secure to the Rear of the Rack

Attach to Rear Bracket

Secure to the Front of the Rack
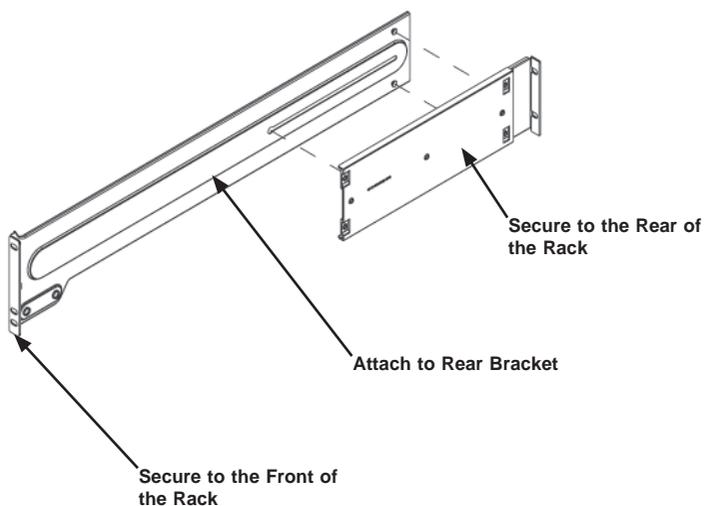
Installing the Chassis into a Rack

1. Confirm that chassis includes the inner rails and the outer rails.

2. Line chassis rails with the front of the rack rails (Figure 2-6).

Figure 2-6. Installing the Rack Rails
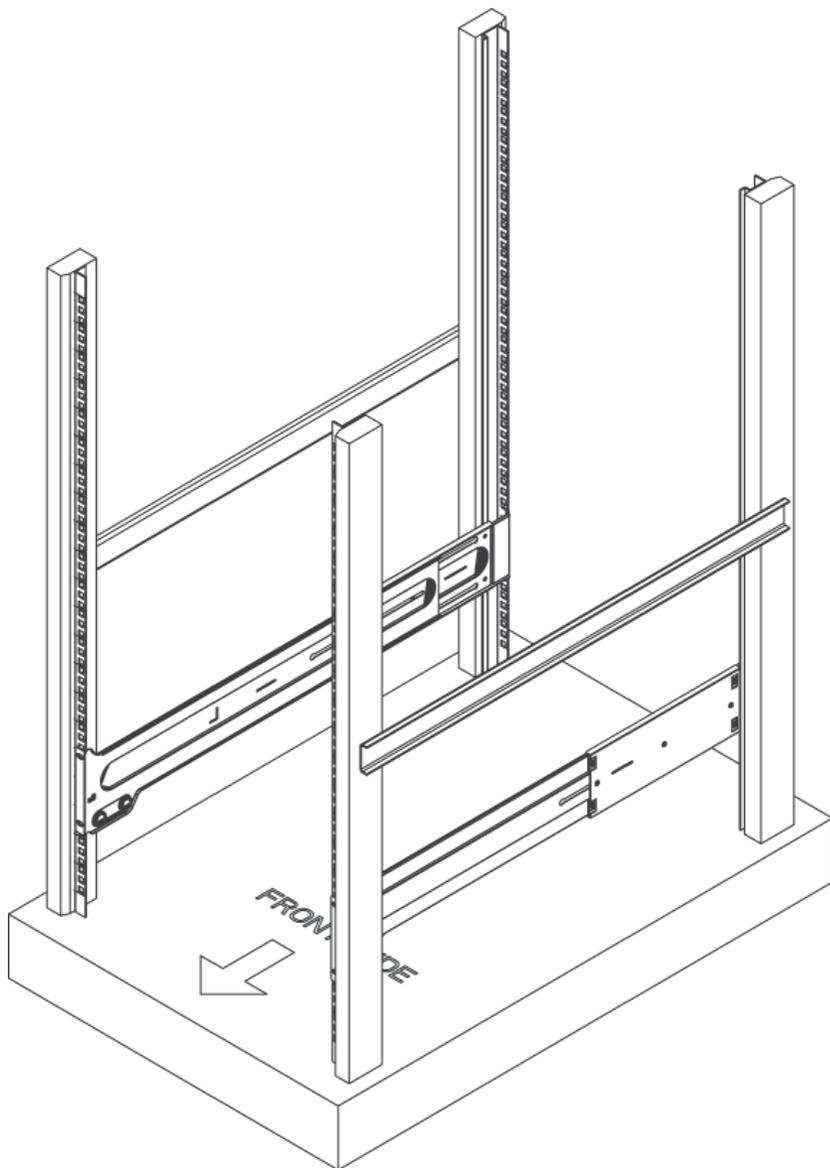
3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs "click" (Figure 2-7).

Figure 6-7: Installing the Chassis into a Rack
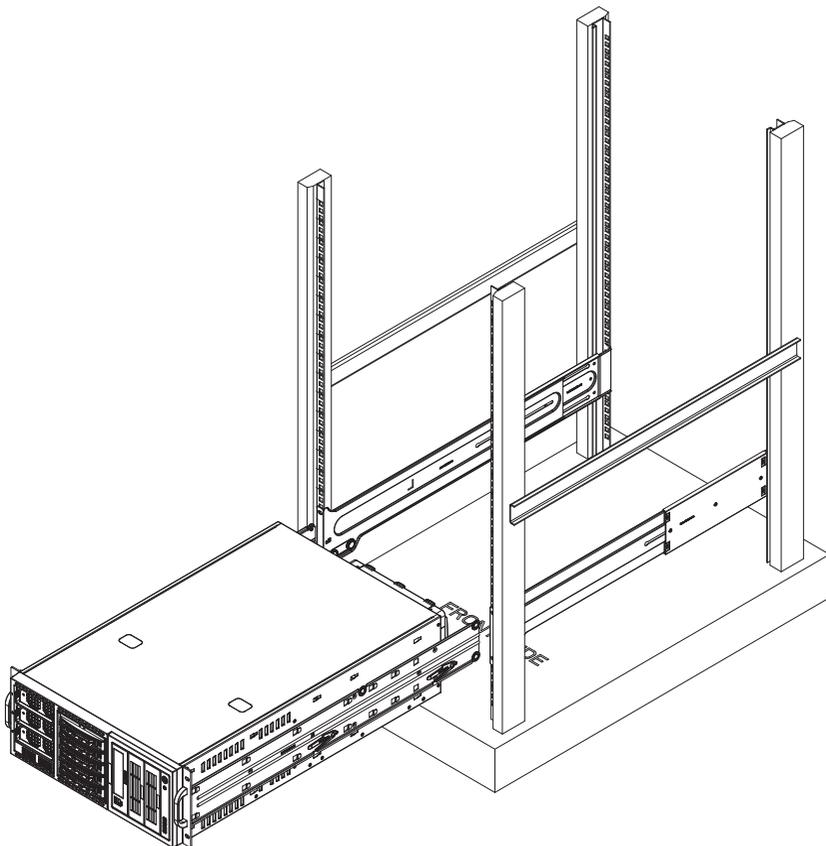
Note: The figure above is for illustration purposes only. Always install servers to the bottom of the rack first.

2-6   Tower Configuration Instructions

The SC748 tower/4U rackmount chassis is shipped with the chassis cover and feet pre-installed. To use the chassis as a desktop server, no other installation is required.

Use the instructions in this section if you have converted the chassis for rack use and need to return the chassis to tower mounting.

Installing the Chassis Cover

1. Remove the rack mount ears.

Figure 2-8: Adding the Chassis Feet and Top Cover
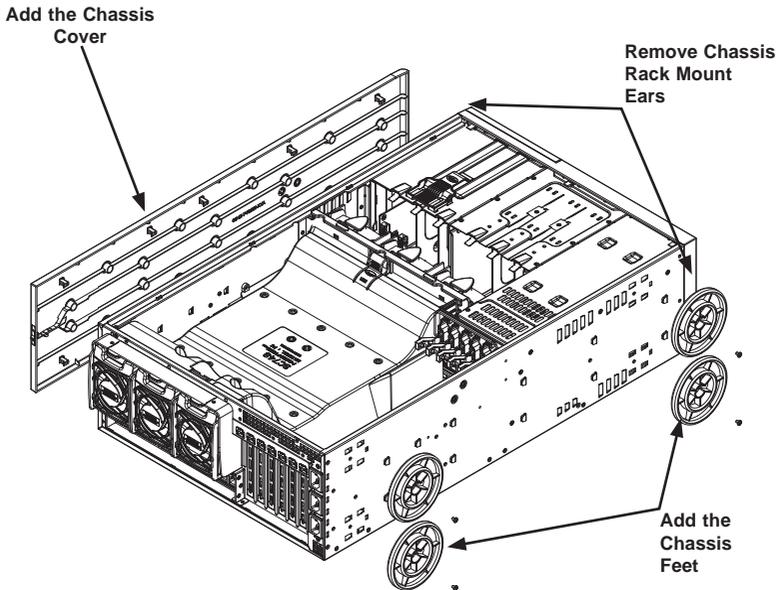
2. Align the cover post with the corresponding holes on the top of the chassis and place the cover on top of the chassis. The cover should overhang

approximately one-half inch over the front of the chassis (Figure 2-8).

3. Slide the chassis cover toward the rear of the chassis to lock the cover into place.

Placing the Chassis Feet (Figure 2-9)

1. Place the chassis foot in the foot receptacle and slide the foot toward the front of the chassis. The foot should lock into place.

2. Secure the foot to the chassis using one screw enclosed in the packaging.

3. Repeat steps 1 and 2 for the remaining three chassis feet.

Figure 2-9: Placing Chassis Feet
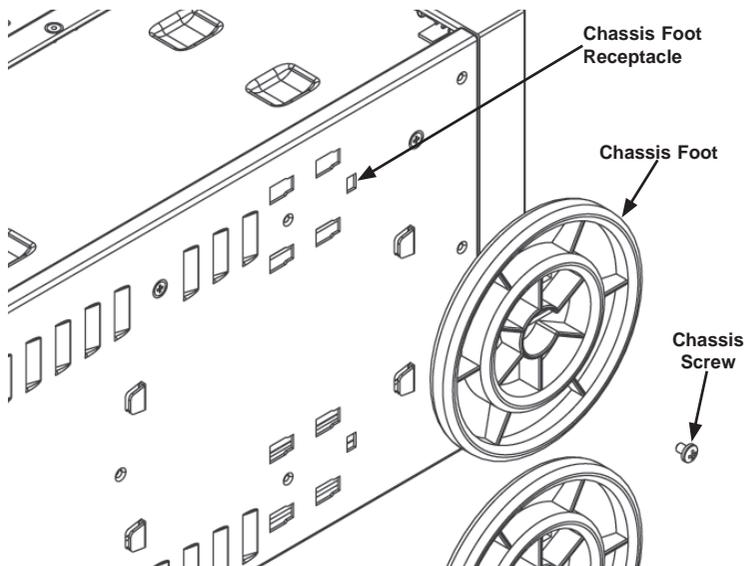
2-7   Checking the Serverboard Setup

After you setup the 8048B-TR4F/C0R4FT (in the rack or tower configuration), you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

Removing the Chassis Cover (Figure 2-10)

1. Unplug the chassis from any power source

2. Remove the two screws securing the cover to the chassis.

3. Press the release tabs simultaneously.

4. Slide the cover forward.

Figure 2-10: Removing the Chassis Cover

Remove Screws
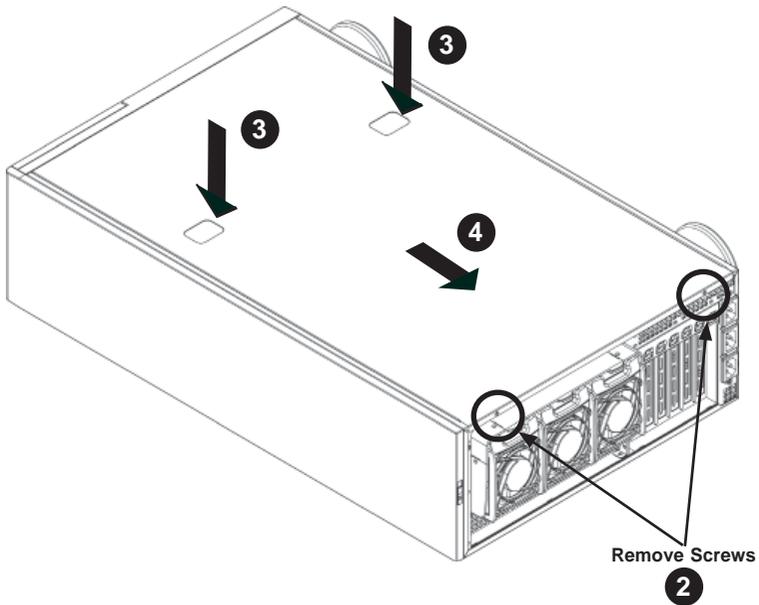
Checking the Components and Setup

1. You may have one or two processors already installed into the serverboard. Each processor needs its own heat sink. See Chapter 5 for instructions on processor and heat sink installation.

2. Your 8048B-TR4F/C0R4FT server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

3. If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.

4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. Also make sure that no cables are positioned in front of the fans. See Chapter 5 for details on cable connections.

2-8   Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SAS/SATA drives have been properly installed and all connections have been made.

Checking the Drives

1. All drives are accessible from the front of the server. For servicing the DVD-ROM, you will need to remove the top chassis cover. The hard drives can be installed and removed from the front of the chassis without removing the top chassis cover.

2. A slim DVD-ROM may be preinstalled in your server. Refer to Chapter 6 if you need to install a DVD-ROM drive to the system.

3. Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install hard drives, please refer to Chapter 6.

Checking the Airflow

1. Make sure there are no objects obstructing the airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.

2. Do not operate the server without drives or drive trays in the drive bays. Use only recommended server parts.

3. Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

Providing Power

1. Plug the power cord(s) from the power supply unit(s) into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

2. Depress the power on button on the front of the chassis.

Chapter 3

System Interface

3-1   Overview

Most SC748 tower/4U rackmount chassis models have two buttons on the chassis a control panel; a reset button and an on/off switch.

Figure 4-1: Front Control Panel

Front Control Panel
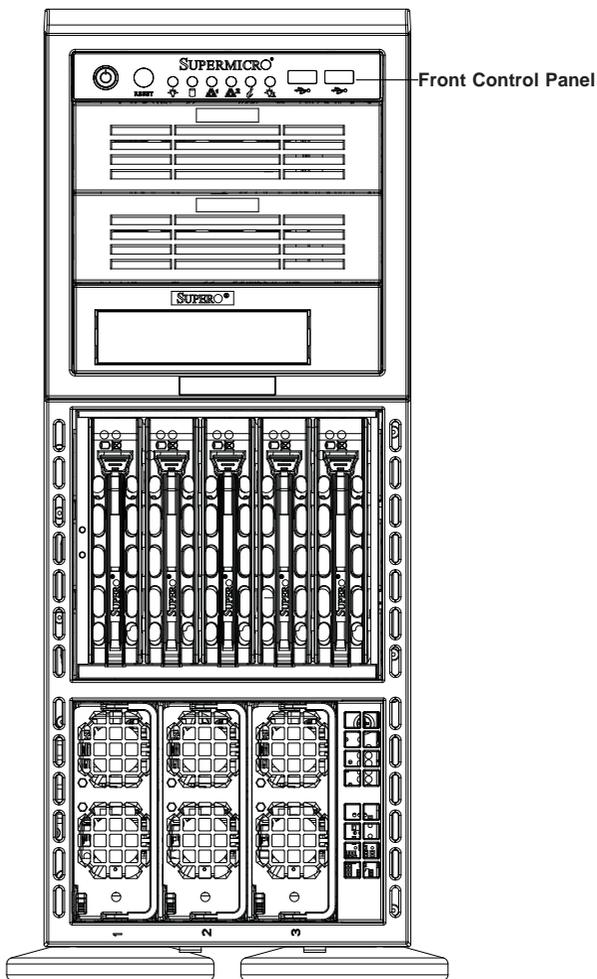
3-2   Control Panel Buttons

There are two buttons located on the front of the chassis: a reset button and a power on/off button.

Power

The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

RESET

Reset

Use the reset button to reboot the system.

3-3   Control Panel LEDs

The control panel located on the front of the chassis has several LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Power LED

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

Universal Information LED

See the following table for the status shown by this LED.

Universal Information LED	
Status	**Description**
Continuously on and red	An overheat condition has occurred. (This may be caused by cable congestion.)
Blinking red (1 Hz)	Fan failure: check for an inoperative fan.
Blinking red (0.25 Hz)	Power failure: check for an inoperative power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack environment.
Blinking blue (300 msec)	Remote UID has been activated. Use this function to locate the server from a remote location.

HDD LED

This indicates the IDE channel activity. It also indicates SAS/SATA drive, SCSI drive, and/or DVD-ROM drive activity when flashing.

NIC2 LED

Indicates network activity on the LAN2 port when flashing.

NIC1 LED

Indicates network activity on the LAN1 port when flashing.

Power Fail LED

This indicates a power failure to the system's power supply units.

3-4 Drive Carrier LEDs

The SC748 tower/4U rackmount chassis includes externally accessible SAS/SATA drives. Each drive carrier displays two status LEDs on the front of the carrier.

	LED Color	State	Status
Activity LED	Green	Solid On	SAS drive installed
	Green	Blinking	I/O activity
Status LED	Red	Solid On	Failed drive for SAS/SATA with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive for SAS/SATA with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for SAS/SATA with RSTe support
	Red	On for five seconds, then off	Power on for SAS/SATA with RSTe support
	Red	Blinking at 4 Hz	Identify drive for SAS/SATA with RSTe support

Chapter 4

Standardized Warning Statements for AC Systems

4-1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our web site at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition

 Warning!

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

警告の定義
この警告サインは危険を意味します。
人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、
電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。
您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

此警告符號代表危險。
您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

Warnung

WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

تحذير!هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .
قبل أن تعمل على أي معدات،كن على علم بالمخاطر الناجمة عن الدوائر
الكهربائية
وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

Installation Instructions

⚠️ **Warning!**

Read the installation instructions before connecting the system to the power source.

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前，请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

Circuit Breaker

 Warning!

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V,20A。

警告

此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於250V,20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-A 20 ,V 250

هذا المنتج يعتمد على معدات الحماية من الدوائرالقصيرة التي تم تثبيتها في
المبنى
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에
의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지
않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische
installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan
220V, 20A.

Power Disconnection Warning

Warning!

The system must be disconnected from all sources of power and the power cord
removed from the power supply module(s) before accessing the chassis interior to
install or remove system components.

電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセス
するには、

システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り
外す必要があります。

警告

在你打开机箱并安装或移除内部器件前，必须将系统完全断电，并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de systéme.

אזהרה מפני ניתוק חשמלי

אזהרה !
יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل
الوصول إلى المناطق الداخلية للهيكل لتثبيت أو إزالة مكونات الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 섀시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

Equipment Installation

 Warning!

Only trained and qualified personnel should be allowed to install, replace, or service
this equipment.

機器の設置

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可
されています。

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem,
qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la
maintenance de ces équipements à des personnels qualifiés et expérimentés.

‏אזהרה !‏
‏צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.‏

‏يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتركيب واستبدال أو خدمة هذا الجهاز‏

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수
있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

Restricted Area

 Warning!

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזור עם גישה מוגבלת

אזהרה !
יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת
כלי אבטחה בלבד (מפתח, מנעול וכד׳).

تم تخصيص هذه الوحدة لتركيبها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
قفل ومفتاح أو أي وسيلة أخرى للالأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치
및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang.
Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te
maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

Battery Handling

Warning!

There is the danger of explosion if the battery is replaced incorrectly. Replace the
battery only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions

電池の取り扱い
電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメー
カーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従
って処分して下さい。

警告

电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更
换原有电池。请按制造商的说明处理废旧电池。

警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有
電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

אזהרה !

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية
فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة
تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontploffingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

Redundant Power Supplies

⚠️ **Warning!**

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

冗長電源装置
このユニットは複数の電源装置が接続されている場合があります。
ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein trom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אם קיים יותר מספק אחד

אזהרה !
ליחדה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן
את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에
전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle
aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

Backplane Voltage

 Warning!

Hazardous voltage or energy is present on the backplane when the system is
operating. Use caution when servicing.

バックプレーンの電圧
システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。
修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche
Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso.
Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

מתח בפנל האחורי

אזהרה !
קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.

هناك خطر من التيار الكهربائي أوالطاقة الموجودة على اللوحة عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생합니다. 서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

Comply with Local and National Electrical Codes

Warning!

Installation of the equipment must comply with local and national electrical codes.

地方および国の電気規格に準拠
機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告
设备安装必须符合本地与本国电气法规。
警告
設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y

nacionales.Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

תיאום חוקי החשמל הארצי

אזהרה !
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

경고!
현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

Product Disposal

Warning!

Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄
この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה !
סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

경고!
이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

Hot Swap Fan Warning

 Warning!

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

ファン・ホットスワップの警告
シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告

当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告

當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Los ventiladores podran dar vuelta cuando usted quite ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

אזהרה !
כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש
להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

من الممكن أن المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي
وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

섀시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

Power Cable and AC Adapter

 Warning!

When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

電源コードとACアダプター
製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。

警告

安装此产品时，请使用本身提供的或指定的连接线，电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品，电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告

安裝此產品時，請使用本身提供的或指定的連接線，電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品，電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

Warnung

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

חשמליים ומתאמי AC

אזהרה !
כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרקמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل،والكابلات الكهربائية ومحولات التيار المتردد
التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق. تم توفيرها لك مع المنتج
الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL معتمدة من قبل
لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro
(التي تحمل علامة UL/CSA)

경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the X10QBL-4(CT) serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1   Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

5-2   Connecting Cables

Now that the serverboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). See the layout on page 5-9 for connector locations.

Important! Make sure the cables do not come into contact with the fans.

Connecting Power Cables

The X10QBL-4(CT) serverboard has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there are four 8-pin secondary power connectors (JPW2-5), which must be connected to your power supply.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Chapter 5 for details and pin descriptions.

Figure 5-1. Control Panel Header Pins

	20	19	
Ground	○	○	NMI
X	○	○	X
FP PWRLED	○	○	3.3 V
HDD LED	○	○	UID Switch
NIC1 Link LED	○	○	NIC1 Activity LED
NIC2 Link LED	○	○	NIC2 Activity LED
OH/Fan Fail/ PWR Fail LED)	○	○	UID LED
Power Fail LED	○	○	3.3V
Ground	○	○	Reset — Reset Button
Ground	○	○	PWR — Power Button
	2	1	
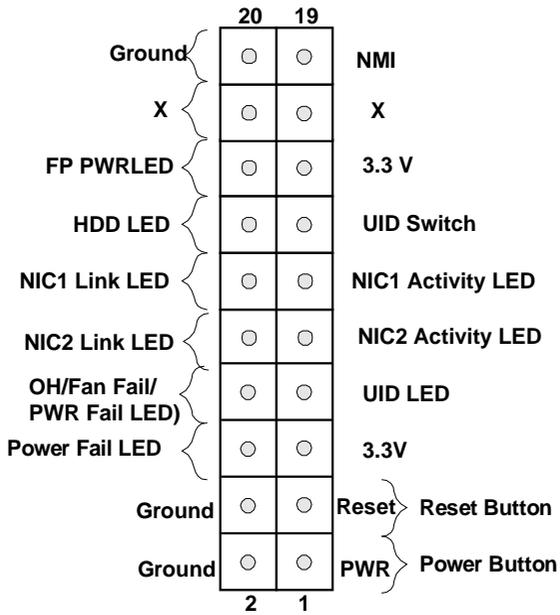
5-3   I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports
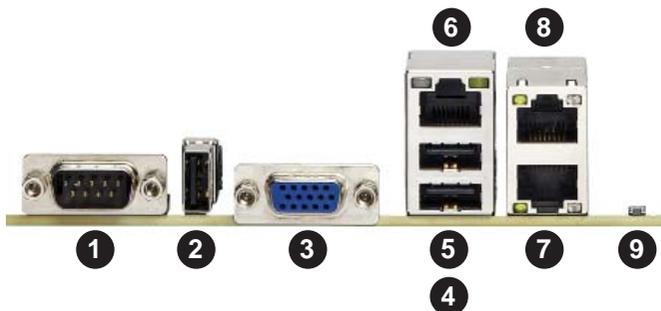
I/O Ports	
1	COM Port 1
2	Back Panel (Vertical) USB 2.0 Port 2
3	VGA (Blue)
4	Back Panel USB 2.0 Port 0
5	Back Panel USB 2.0 Port 1
6	IPMI_LAN
7	Gigabit_LAN 1 X10QBL-4 10G-LAN (TLAN) 1 (X10QBL-4CT)
8	Gigabit_LAN 2 (X10QBL-4), 10G-LAN (TLAN) 2 (X10QBL-4CT)
9	UID Switch/UID LED (LED1)

Note: The X10QBL-4 serverboard supports Gigabit LAN ports, while the X10QBL-4CT serverboard instead supports 10-Gigabit LAN ports.

5-4   Installing the Processor and Heatsink

Warning: When handling the processor package, avoid placing direct pressure on the label area. Also, improper CPU installation or socket/pin misalignment can cause serious damage to the CPU or the serverboard and may result in RMA repairs. Be sure to read and follow all instructions thoroughly before installing your CPU and heatsink.

Notes:

1. Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

2. If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.

3. Make sure to install the serverboard into the chassis before you install the CPU heatsink.

4. When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place, and none of the socket pins are bent; otherwise, contact your retailer immediately.

5. Refer to the Supermicro website for updates on CPU support.

6. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

7. Close the load plate with the CPU inside the socket. Lock the lever labeled 'Close 1st' first, then lock the lever labeled 'Open 1st' second. Use your thumb to gently push the load levers down to the lever locks.

Installing the Intel E7-8800 v3/v4 or E7-4800 v3/v4 Series Processor

There are two load levers on the processor socket. To open the socket lever, first press and release the load lever labeled 'Open 1st'.
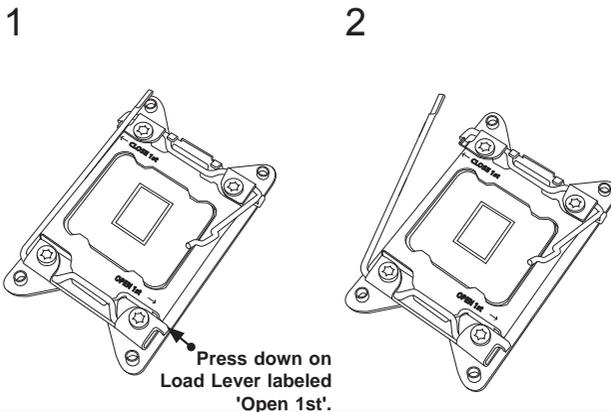
Press down on Load Lever labeled 'Open 1st'.

Note: All graphics, drawings and pictures shown in this manual are for illustration only. The components that came with your machine may or may not look exactly the same as those shown in this manual.

1. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position.
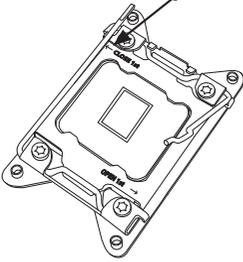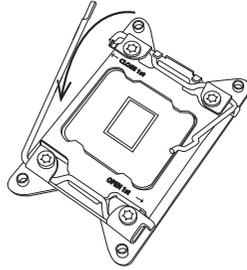
2. With the lever labeled 'Close 1st' fully retracted, gently push down on the lever labeled 'Open 1st' to open the load plate. Lift the load plate to open it completely.
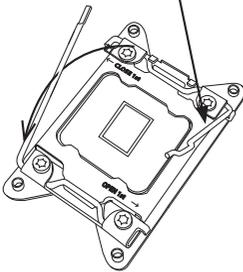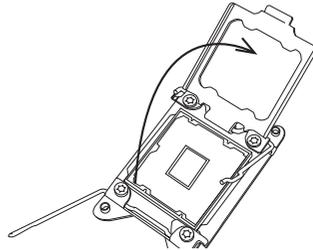
Note: All graphics, drawings and pictures shown in this manual are for illustration only. The components that came with your machine may or may not look exactly the same as those shown in this manual.

4. Use your thumb and the index finger to loosen the lever and open the load plate.
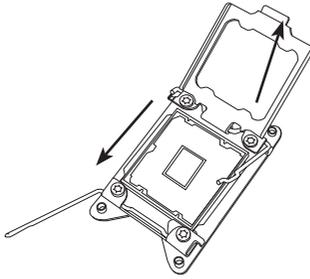
5. Using your thumb and index finger, hold the CPU on its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.
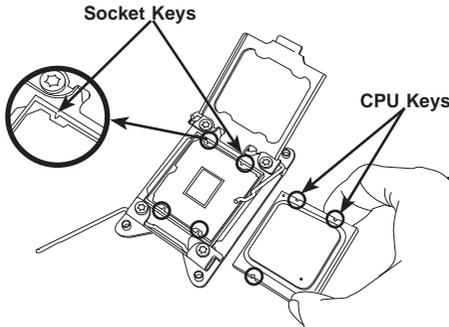
6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)
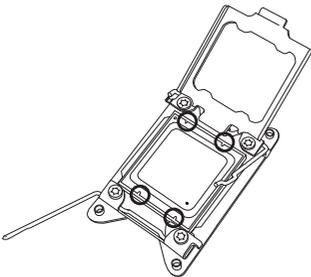
Warning: You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again to make sure that the CPU is aligned properly.

7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

1 **Gently close the load plate.**
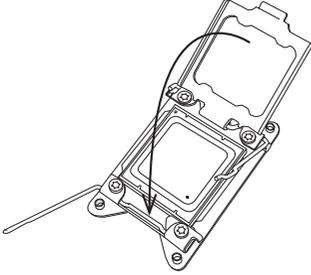
2 **Push down and lock the lever labeled 'Close 1st'.**
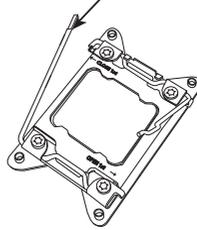
8. Close the load plate with the CPU inside the socket. Lock the lever labeled 'Close 1st' first, then lock the lever labeled 'Open 1st' second. Using your thumb gently push the load levers down to the lever locks.

3

Lever Lock

Push down and lock the lever labeled 'Open 1st'.

4

Lever Lock
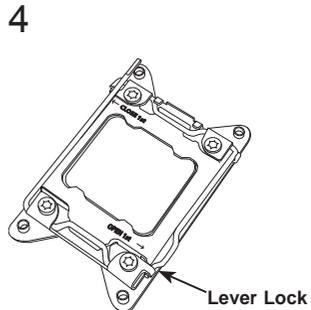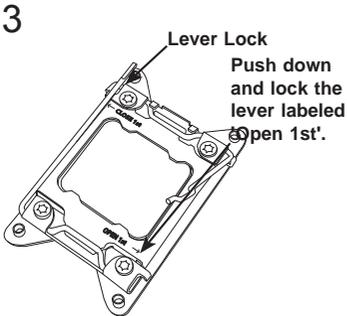
Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the serverboard and the heatsink bracket underneath.

3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (-do not over-tighten the screws to avoid possible damage to the CPU.)

4. Finish the installation by fully tightening all four screws.
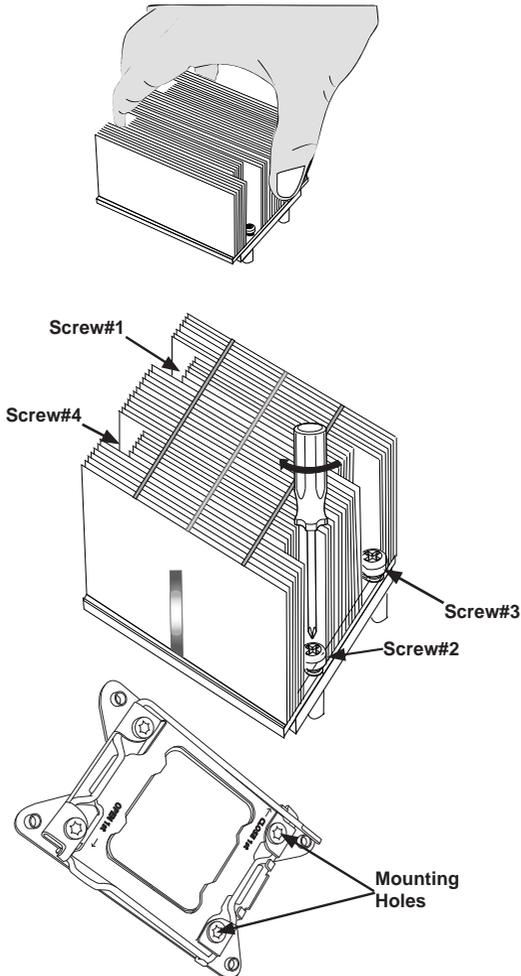
Removing the Heatsink

Warning: We do not recommend that the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to uninstall the heatsink to prevent damage done to the CPU, the CPU socket or the heatsink.

1. Unscrew the heatsink screws from the serverboard in the sequence as shown in the illustration below.

2. <u>Gently</u> wriggle the heatsink to loosen it from the CPU socket. (Do not use excessive force when wriggling the heatsink!)

3. Once the heatsink is loosened from the socket, remove it from the CPU socket.

4. To reinstall the heatsink, remove the used thermal grease and clean the surface of the CPU and the heatsink, reapply the proper amount of thermal grease on the surface before reinstalling the heatsink.
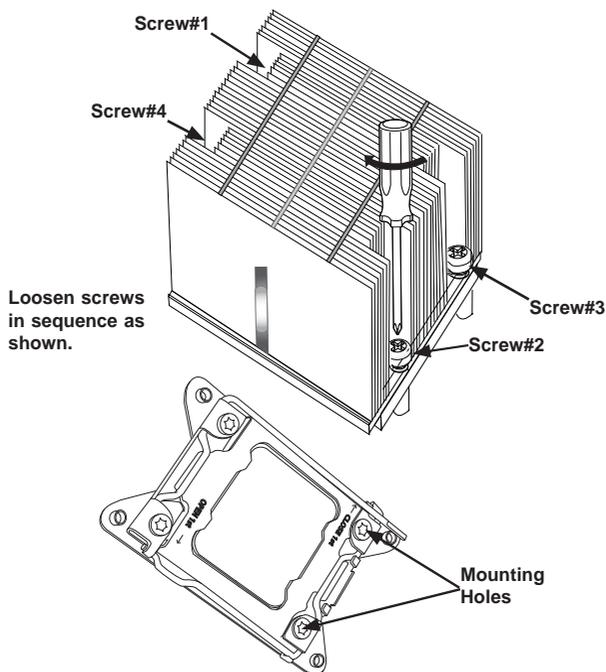
Note: All graphics, drawings and pictures shown in this manual are for illustration only. The components that came with your machine may or may not look exactly the same as those shown in this manual.

5-5   Installing Memory

Caution! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Installing Memory Modules (Figure 5-3)

1. Insert the desired number of DIMMs into the memory slots, starting with P1M1-DIMMA1. (For best performance, please use the memory modules of the same type and speed in the same bank.)

2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

Figure 5-3. Installing DIMMs
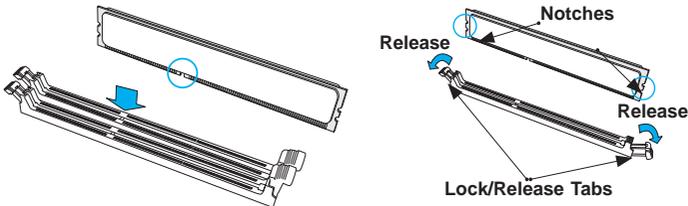
3. Align the key of the DIMM module with the receptive point on the memory slot.

4. Align the notches on both ends of the module against the receptive points on the ends of the slot.

5. Use two thumbs together to press the notches on both ends of the module straight down into the slot until the module snaps into place.

6. Press the release tabs to the locking positions to secure the DIMM module into the slot.
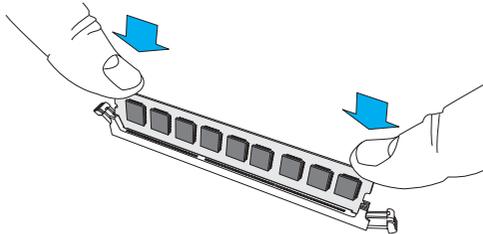
Removing Memory Modules

Press both notches on the ends of the DIMM module to unlock it. Once the DIMM module is loosened, remove it from the memory slot.

Memory Support for the X10QBL-4(CT) Serverboard

The X10QBL-4(CT) has thirty-two (32) 288-pin DIMM sockets that can support up to 1TB of Registered (RDIMM) or 4TB of Load Reduced (3DS LRDIMM) ECC DDR4 1866/1600/1333 MHz speed SDRAM in a two-channel memory bus. Memory sizes of 4GB, 8GB, 16GB, 32GB, 64GB and 128GB size @ 1.2V voltage are supported. Use memory modules of the same type, speed, timing and same on a serverboard. For the latest memory updates, please refer to our website a at http://www.supermicro.com/products/serverboard.

Note: 128GB can only be supported with 3DS LRDIMM's.

Processor & Memory Module Population Configuration

For memory to work properly, follow the tables below for memory installation.

Fully-Populated Configuration

Please follow the instructions below to populate all DIMM slots:

Processors and their Corresponding Memory Modules			
CPU#	Corresponding DIMM Modules for Full-Populated Configuration		
CPU 1 (P1M1-)	P1M1-DIMM A1/B1	P1M1-DIMM C1/D1	P1M1-DIMM A2/B2	P1M1-DIMM C2/D2
CPU2 (P2M1-)	P2M1-DIMM A1/B1	P2M1-DIMM C1/D1	P2M1-DIMM A2/B2	P2M1-DIMM C2/D2
CPU3 (P3M1-)	P3M1-DIMM A1/B1	P3M1-DIMM C1/D1	P3M1-DIMM A2/B2	P3M1-DIMM C2/D2
CPU4 (P4M1-)	P4M1-DIMM A1/B1	P4M1-DIMM C1/D1	P4M1-DIMM A2/B2	P4M1-DIMM C2/D2

Half-Populated Configuration

Please follow the instructions below to populate half of the DIMM slots:

Processors and their Corresponding Memory Modules	
CPU#	**Corresponding DIMM Modules for Full-Populated Configuration**
CPU 1 (P1M1-)	P1M1-DIMM A1/B1	P1M1-DIMM C1/D1
CPU2 (P2M1-)	P2M1-DIMM A1/B1	P2M1-DIMM C1/D1
CPU3 (P3M1-)	P3M1-DIMM A1/B1	P3M1-DIMM C1/D1
CPU4 (P4M1-)	P4M1-DIMM A1/B1	P4M1-DIMM C1/D1

- *An Important Note:* For the memory modules to work properly, please install DIMM modules of the same type, same speed, and same operating frequency in the serverboard. Mixing of DIMM modules of different types or different speeds is not allowed.

RDIMM/3DS LRDIMM DDR4 ECC in Performance Mode (2:1)

DDR4 RDIMM+LRDIMM (2:1)					
Type	**Ranks Per DIMM & Data Width (x8 is supported, but not listed) SR=Single Rank DR=Dual Rank QR=Quad Rank**	**Max DIMM Capacity (GB)**		**Max Speed (MT/s); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC)**	
				2SPC	
				1DPC	**2DPC**
		4Gb	**8Gb**	**1.2V**	**1.2V**
RDIMM	SRx4	8GB	16GB	1600	1600
RDIMM	DRx4	16GB	32GB	1600	1600
LRDIMM	QRx4	32GB	64GB	1600	1600
LRDIMM 3DS	8Rx4	64GB	128GB	1600	1600

RDIMM/3DS LRDIMM DDR4 ECC in Lockstep Mode (1:1)

DDR4 RDIMM+LRDIMM (1:1)					
Type	Ranks Per DIMM & Data Width (x8 is supported, but not listed) SR=Single Rank DR=Dual Rank QR=Quad Rank	Max DIMM Capacity (GB)		Max Speed (MT/s); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC)	
				2SPC	
				1DPC	2DPC
		4Gb	8Gb	1.2V	1.2V
RDIMM	SRx4	8GB	16GB	1866	1866
RDIMM	DRx4	16GB	32GB	1866	1866
LRDIMM	QRx4	32GB	64GB	1866	1866
LRDIMM 3DS	8Rx4	64GB	128GB	1866	1866

5-6   Adding PCI-E Add-On Cards

The 748TQ-R1K43B tower/4U rackmount chassis can accommodate four PCI low-profile expansion card slots that are available in the rear of the chassis for Two (2) PCI-E 3.0 x16 slots (CPU1 Slot1, CPU2 Slot 3) (CPU1 Slot1, CPU2 Slot3) and Two (2) PCI-E 3.0 x8 slots (CPU2 Slot2, CPU2 Slot4) (CPU2 Slot2, CPU2 Slot4) of the X10QBL-4(CT) serverboard.

Installing a Add-on Card

1. Begin by removing the PCI slot shield for the slot you wish to populate.

2. Fully seat the card into the riser card slot, pushing down with your thumbs evenly on both sides of the card.

3. Finish by using a screw to secure the top of the card shield to the chassis. The PCI-E slot shields protect the serverboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each unused slot.

5-7   Serverboard Details

Figure 5-4. X10QBL-4(CT) Layout
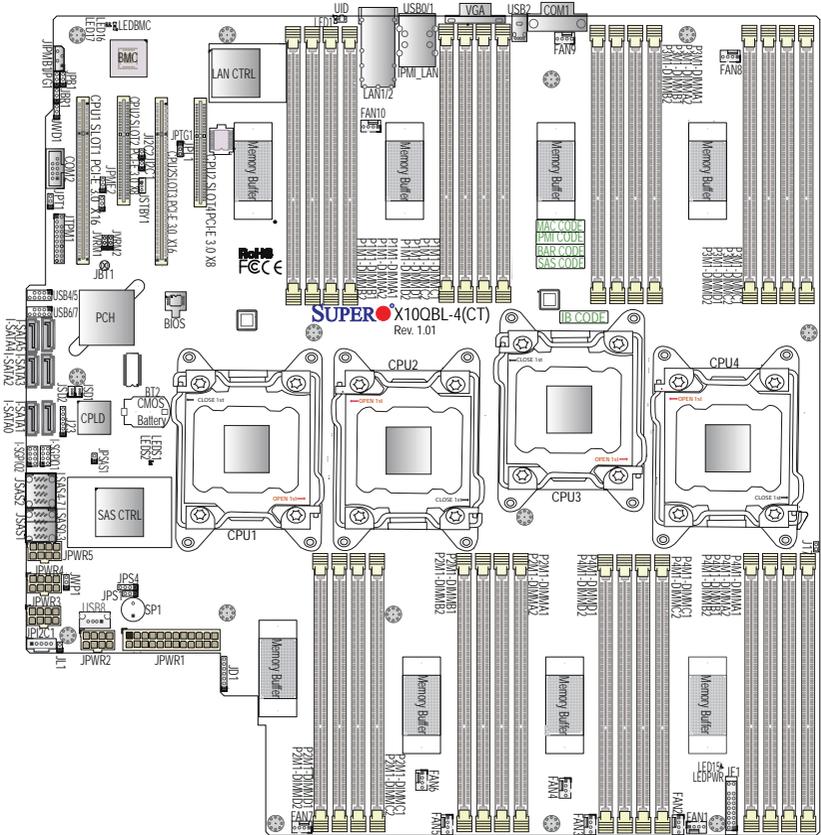
Notes:

1. Jumpers not indicated are for test purposes only. Components that are not documented are reserved for internal testing only.

2. SAS ports are not included on the X10QBL-4.

3. PCI-E slots are controlled by the CPUs, without a CPU installed some slots will not be enabled. (CPU1: PCI-E slots 1. CPU2: PCI-E slots 2, 3 and 4.)

X10QBL-4(CT) Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 5-9 for details.
JI²C1/JI²C2	SMB to PCI-E slots	Pins 2-3 (Disabled)
JPB1	BMC Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	GLAN1/GLAN2 Enable (X10QBL-4)	Pins 1-2 (Enabled)
JPTG1	10G-LAN1/ 10G-LAN2 Enable (X10QBL-4CT)	Pins 1-2 (Enabled)
JPT1	Trusted-Platform Module (TPM) Enable	Pins 1-2 (Enabled)
JPME2	Manufacture Mode (ME) Select	Pins 1-2 (Normal)
JPSAS1	SAS HDD Status Support Enable (For X10QBL-4CT)	Off (Disabled)
JPS1	SAS Enable (For X10QBL-4CT)	Pins 1-2 (Enabled)
JWD1	Watch-Dog Timer Enable	Pins 1-2 (Reset)

LED	Description	State	Status
LED1	Rear UID LED	Blue: On	Unit Identified
LED15 (LEDPWR)	Onboard Power LED	On	Power On
LEDBMC	BMC Heartbeat LED	Green: Blinking	BMC Normal
LEDS1 (for X10QBL-4CT	SAS Heartbeat LED	Green: On Red: On	SAS Normal SAS Failed
LEDS2 (for X10QBL-4CT	SAS Activity LED	Green: Blinking	SAS Active

Connector	Description
BT2 (Battery)	Onboard CMOS Battery (See page 5-34 for details on used battery disposal.)
COM1/COM2	Back panel COM port 1/Serial port 2 header
FAN1-FAN10	CPU/System fan headers
I-SATA0/1	Intel SATA 3.0 ports 0/1 used as SuperDOM (Self-powered SATA Disk-on-module devices with power-pins built-in) (supported by Intel PCH)
I-SATA2-5	Intel SATA 3.0/2.0 ports 0-5 (I-SATA 3.0 ports 0/1, I-SATA 2.0 ports 2-5) (supported by Intel PCH)
JD1	Speaker/Power LED header
JF1	Front Panel Control header
JIPMB1	4-pin external BMC I²C header (for IPMI-card support)
JL1	Chassis intrusion header
JPI²C1	Power System Management Bus (SMB) header
JPWR1	24-pin power connection header
JPWR2/3/4/5	8-pin power connectors
LAN1/2 (for X10QBL-4)	Gigabit Ethernet LAN ports 1/2 (supported by Intel i350 LAN controller)
LAN1/2 (for X10QBL-4CT))	10G-LAN (TLAN) ports 1/2 (supported by Intel X540 LAN controller)
IPMI_LAN	Gigabit IPMI-dedicated LAN on the I/O back panel (supported by the BMC for IPMI use)
L-SAS0-3, L-SAS4-7 (for X10QBL-4CT))	SAS ports 0-3, 4-7 (supported by LSI 3008 SAS controller)
JSD1/JSD2	SATA DOM (Device-On-Module) power connectors 1/2
JSTBY1	Standby power connection header
JTPM1	TPM (Trusted Platform Module)/Port 80 header
(CPU1) Slot1	PCI-Exp. 3.0x16 slot (supported by CPU1)
(CPU2) Slot2/4	PCI-Exp. 3.0x8 slots (supported by CPU2)
(CPU2) Slot3	PCI-Exp. 3.0x16 slot (supported by CPU2)
SP1	Internal speaker/buzzer
I-SGPIO1/2	Serial_Link General-purpose I/O connectors 1/2 for I-SATA 0-5 support
(BP)USB0/1	Rear USB 2.0 ports 0/1 on the I/O back panel
(BP)USB2	Rear USB 2.0 port 2 on the I/O back panel
USB4/5	USB 2.0 connections 4/5 header for front access
USB6/7	USB 2.0 connections 6/7 header for front access
USB8	Type A USB 2.0 header 8
UID	Unit-Identification (UID) button
VGA	Back panel VGA port

5-8   Connector Definitions

Main ATX Power Supply Connector

A 24-pin main power supply connector (JPWR1), and four 8-pin CPU power connectors (JPWR2/JPWR3/JPWR4/JPWR5) are located on the serverboard. These power connectors meet the SSI EPS 12V specification and must be connected to your power supply to provide adequate power to the system. See the tables on the right for pin definitions.

Warning: To provide adequate power supply to the serverboard, be sure to connect the 24-pin ATX PWR (JPWR1), and the *four* 8-pin PWR connectors (JPWR2/3/4/5) to the power supply. Failure to do so may void the manufacturer warranty on your power supply and serverboard.

ATX Power 24-pin Connector Pin Definitions			
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Processor Power Connector

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

+12V 8-pin Power Pin Definitions	
Pins	Definition
1 - 4	Ground
5 - 8	+12V

Required Connection

Power Button

The power button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS). To turn off the power when the system is set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	PW_ON
2	Ground

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	3.3V
6	PWR Supply Fail

Overheat (OH)/Fan Fail/PWR Fail/ UID LED

Connect an LED cable to pins 7 and 8 of JF1 to use the Overheat/ Fan Fail/Power Fail and UID LED connections. The red LED on pin 8 provides warnings for overheating, fan failure or power failure. The blue LED on pin 7 works as the front panel UID LED indicator. Refer to the table on the right for pin definitions.

OH/Fan Fail/ PWR Fail/Blue_ UID LED Pin Definitions (JF1)	
Pin#	Definition
7	Blue_UID LED
8	OH/Fan Fail/Power Fail

OH/Fan Fail/PWR Fail LED Status (Red LED)	
State	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity. Refer to the table on the right for pin definitions.

GLAN1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9	NIC 2 Activity LED
10	NIC 2 Link LED
11	NIC 1 Activity LED
12	NIC 1 Link LED

HDD/UID LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable here to indicate HDD activity and UID status. See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	UID LED
14	HD Active

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	3.3V
16	PWR LED

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Fan Headers

This serverboard has ten system/CPU fan headers (Fan1-Fan10) on the serverboard. These 4-pin fan headers are backward compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only by thermal management via IPMI 2.0 interface. See the table on the right for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWM Modulation

COM Port/Serial Connection Header

A COM port (COM1) is located next to USB 2 on the I/O back panel. In addition, a serial port connection header (COM2) is located next to the PCI-E 3.0 x16 slot (CPU1 Slot1) on the serverboard. See the table on the right for pin definitions.

Universal Serial Bus (USB)

Three USB2.0 ports (USB 0/1, USB 2) are located on the I/O back panel. Two internal USB headers, located next to the I-SATA ports 4/5, provide four USB 2.0 connections (USB 4/5, 6/7) for front access. In addition, a Type A USB header, located close to the 24-pin main power (JPWR1), also provides USB 2.0 connection (USB 8) for front panel support. (Cables are not included). See the tables below for pin definitions.

Back Panel USB 2.0 (USB 0/1 Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN1	6	USB_PN0
3	USB_PP1	7	USB_PP0
4	Ground	8	Ground

Front Panel USB 2.0 (USB 4/5, 6/7, 8) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	2	+5V
3	USB_PN2	4	USB_PN3
5	USB_PP2	6	USB_PP3
7	Ground	8	Ground
9	Key	10	Ground

Back panel USB 2 (2.0) Pin Definitions	
Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	NA

Ethernet Ports

Two Ethernet ports (LAN1, LAN2) are located on the I/O back panel. These Ethernet ports support 10G-LAN (TLAN) connections (10G-LAN 1/2) on the X10QBL-CT, and gigabit LAN connections (GLAN 1/2) on the X10QBL. In addition, an IPMI_LAN located on the back panel provides support for IPMI 2.0 interface. All Ethernet ports accept RJ45 type cables. Please refer to the LED Indicator section for LAN LED information.

Unit Identifier Switch

A rear Unit Identifier (UID) switch (JUIDB1) and a rear LED (LE1) are located close to LAN ports 1/2 on the rear side of the serverboard. The front UID switch is located at pin 13 of the Front Control Panel (JF1), while the front UID LED is located on pin 7 of JF1. When you press the front UID switch or the rear one, both front and rear UID LEDs will be turned on. Press the UID button again to turn off the LED indicator. The UID Indicators provide easy identification of a system unit that may be in need of service.

Note: UID can also be triggered via IPMI on the serverboard. For more information on IPMI, please refer to the IPMI User's Guide posted on our website @http://www.supermicro.com.

UID Switch	
Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Ground

UID LED (LE2) Status		
Color/State	OS	Status
Blue: On	Windows OS	Unit Identified
Blue: Blinking	Linux OS	Unit Identified

Internal Speaker

The Internal Speaker (SP1) can be used to provide audible indications for various beep codes. See the table on the right for pin definitions. Refer to the layout below for the location of the internal buzzer.

Internal Buzzer Pin Definition		
Pin#	Definitions	
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

Video Connection

A Video (VGA) port is located next to USB Port 2 on the I/O back panel. Refer to the serverboard layout below for the location.

IPMB Header

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect an appropriate cable here to use the IPMB I²C connection on your system.

IPMB Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Power LED/Speaker

Pins 1-3 of JD1 are used for power LED indication, and pins 4-7 are for the speaker. Please note that the speaker connector pins (4-7) are used with an external speaker. To use the onboard speaker, please close pins 6-7 with a cap. See the tables on the right for pin definitions.

PWR LED Connector Pin Definitions	
Pin Setting	Definition
Pin 1	JD1_PIN1
Pin2	FP_PWR_LED
Pin3	FP_PWR_LED

Speaker Connector Pin Settings	
Pin Setting	Definition
Pin 4	P5V
Pin 5	Key
Pin 6	R_SPKPIN_N
Pin 7	R_SPKPIN

TPM/Port 80 Header

A Trusted Platform Module/Port 80 header, located at JTPM1, provides TPM support and Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

Trusted Platform Module Header Pin Definitions (JTPM1)			
Pin#	Definition	Pin#	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK4	14	SMB_DAT4
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

SATA DOM Power Connectors

Two power connectors for SATA DOM (Disk_On_Module) devices are located at JSD1/JSD2. Connect appropriate cables here to provide power support for your Serial-Link DOM devices.

DOM PWR Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the serverboard. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

Power SMB (I²C) Connector

Power System Management Bus (I²C) connector (JPI²C1) monitors power supply, fan and system temperatures. See the table on the right for pin definitions.

Power SMB Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

Standby Power Header

The +5V Standby Power header is located at JSTBY1 on the serverboard. See the table on the right for pin definitions. (You must also have a card with a standby power connector and a cable to use this feature.)

Standby PWR Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	No Connection

I-SGPIO 1/2 Headers

Two SGPIO (Serial_Link General Purpose Input/Output) headers are located on the serverboard. I-SGPIO1/2 supports onboard SATA connections on the X10QBL(-CT). See the table on the right for pin definitions.

I-SGPIO Pin Definitions			
Pin#	Definition	Pin#	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

5-9   Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.
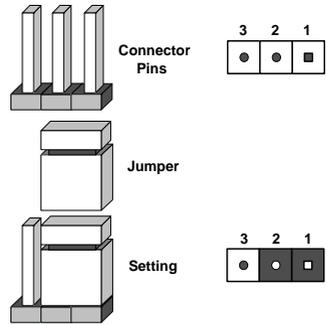
JBT1 contact pads

CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s). It is also recommended that you remove the onboard battery from the serverboard.
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note 1. For an ATX power supply, you must completely shut down the system, remove the AC power cord, and then short JBT1 to clear CMOS.

Note 2. Be sure to remove the onboard CMOS Battery before you short JBT1 to clear CMOS.

Note 3. Clearing CMOS will also clear all passwords.

Note 4: *Do not use the PW_ON connector to clear CMOS.*

LAN Enable/Disable

JPL1 enables or disables Gigabit_LAN ports on the X10QBL-4, while JPTG1 enables or disables 10G-LAN ports on the X10QBL-4CT. See the table on the right for jumper settings. The default setting is Enabled.

LAN1/2 Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that will reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

VGA Enable

Jumper JPG1 allows the user to enable the onboard VGA connector. The default setting is on pins 1-2 to enable the connection. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

BMC Enable

Jumper JPB1 is used to enable or disable the embedded ASpeed AST2400 BMC (Baseboard Management Controller) that provides IPMI 2.0/KVM support on the serverboard. See the table on the right for jumper settings.

BMC Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enable (Default)
Pins 2-3	Normal

I²C Bus to PCI-Exp. Slots

Use Jumpers JI²C1 and JI²C2 to connect the System Management Bus (I²C) to the PCI-Express slots to improve PCI performance. These two jumpers are to be set at the same time. The default setting is off to disable the connection for normal operations. See the table on the right for jumper settings.

I²C for PCI-E slots Jumper Settings	
Jumper Setting	Definition
Off	Normal (Default)
On	Enabled

TPM Support Enable

JPT1 allows the user to enable TPM (Trusted Platform Modules) support to enhance data integrity and system security. See the table on the right for jumper settings. The default setting is enabled.

TPM Enable Jumper Settings	
Jumper Setting	Definition
Pin 1-2	Enabled (Default)
Pin 2-3	Disabled

Manufacturer Mode Select

Close pin 2 and pin 3 of Jumper JPME2 to bypass SPI flash security and force the system to operate in the Manufacturer mode, which will allow the user to flash the system firmware from a host server for system setting modifications. See the table on the right for jumper settings.

ME Mode Select Jumper Settings	
Jumper Setting	Definition
Pin 1-2	Normal (Default)
Pin 2-3	Manufacture Mode

SAS Enable (for X10QBL-4CT only)

Use Jumper JPS1 to enable or disable onboard SAS connections (L-SAS 0-3, 4-7) on the X10QBL-CT. The default setting is on pins 1/2 to enable SAS support. See the table on the right for jumper settings.

SAS Enable Jumper Settings	
Jumper Setting	Definition
Pin 1-2	Enabled (Default)
Pin 2-3	Disabled

5-10 Onboard Indicators

GLAN LEDs

There are two LAN ports (LAN1/2) on the serverboard. Each Ethernet LAN port has two LEDs. The Yellow LED on the right indicates connection and activity. The Link LED on the left side may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

GLAN LED

Link Speed LED — Activity LED
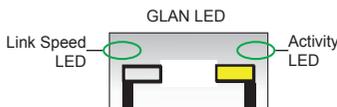
GLAN Activity Indicator (Right) LED Settings		
Color	Status	Definition
Off	No Connections	
Yellow	Flashing	Active

GLAN Connection Speed Indicator (Left) LED Settings	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

10G-LAN Link LEDs LED Settings (for X10QBL-CT)	
LED Color	Definition
Off	No Connection, 10 or 100 Mbps
Green	10 Gbps
Amber	1 Gbps

IPMI Dedicated LAN LEDs

In addition to LAN Ports 1/2, an IPMI Dedicated LAN is also located on the I/O Backplane. The amber LED on the right indicates connection and activity; while the green LED on the left indicates the speed of the connection. See the tables at right for more information.

IPMI LAN

Link LED — Activity LED
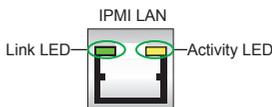
IPMI LAN Link/Speed LED (Left) & Activity LED (Right)		
Color	Status	Definition
Off	Off	No Connection
Green: Solid	Link/ Speed (Left)	100 Mb/s
Amber Blinking	Activity (Right)	Active

Onboard Power LED

An Onboard Power LED indicator is located at LED15 (LEDPWR) on the serverboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the tables at right for more information.

Onboard PWR LED Indicator LED States	
LED Color	Definition
Off	System Off (PWR cable not connected)
Green	System On

BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDBMC on the serverboard. When LEDBMC is blinking, BMC functions normally. See the table at right for more information.

BMC Heartbeat LED Status	
Color/State	Definition
Green:Blinking	BMC: Normal

SAS Heartbeat LED (for X10QBL-4CT only)

A SAS Heartbeat LED is located at LEDS1 on the serverboard. When LEDS1 is blinking, the SAS is functioning normally. See the table at right for more information.

SAS Heartbeat LED Status	
Color/State	Definition
Green: On	SAS: Normal
Red: On	SAS: Failed

SAS Activity LED (for X10QBL-4CT only)

A SAS Activity LED is located at LEDS2 on the serverboard. When LEDS2 is blinking, the SAS is active.

SAS Activity LED States	
Color/State	Definition
Green:Blinking	SAS: Active

5-11 SAS/SATA Ports

SATA 3.0 Ports

Six SATA connections supported by Intel PCH C602J are located on the serverboard. I-SATA ports 0/1 support SATA 3.0 connections, while I-SATA ports 2-5 support SATA 2.0. These SATA connectors provide serial-link connections, which are faster than Parallel ATA connections.

SAS 3.0 Ports (for X10QBL-4CT only)

Eight SAS 3.0 connections (L-SAS 0-3, 4-7) supported by the LSI 3008 SAS controller are located on the serverboard. The SAS connections are faster than traditional SATA connections.

5-12 Installing Software

The Supermicro FTP site contains drivers and utilities for your system at ftp://ftp.supermicro.com. Some of these must be installed, such as the chipset driver.

After accessing the FTP site, go into the CDR_Images directory and locate the ISO file for your serverboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro Website at http://www.supermicro.com/products/. Find the product page for your serverboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-5 should appear.

Figure 5-5. Driver/Tool Installation Display Screen
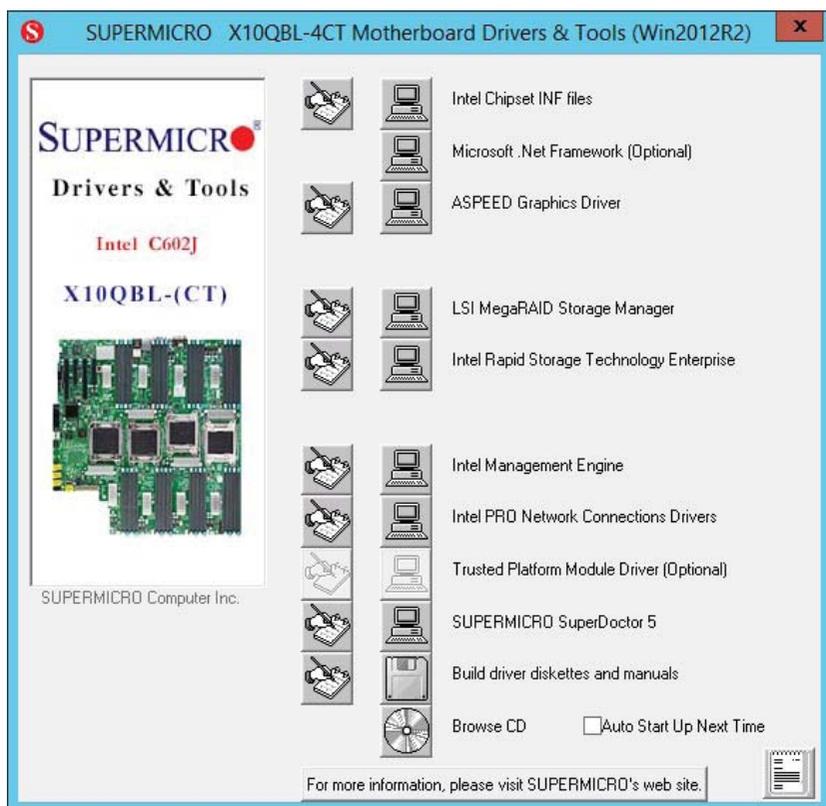
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

SuperDoctor 5

The Supermicro SuperDoctor® 5 is a hardware and operating system services monitoring program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SD5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

Note: The default User Name and Password for SuperDoctor 5 is admin / admin.

Figure 5-6. SuperDoctor 5 Interface Display Screen (Health Information)

Figure 5-7. SuperDoctor 5 Interface Display Screen (Remote Control)

Note: The SuperDoctor 5 program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/nfo/sms_sd5.cfm. For Linux, we recommend that you use the SuperDoctor II application instead.

5-13 Serverboard Battery

Caution: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 5-8). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

Figure 5-8. Installing the Onboard Battery

LITHIUM BATTERY

BATTERY HOLDER
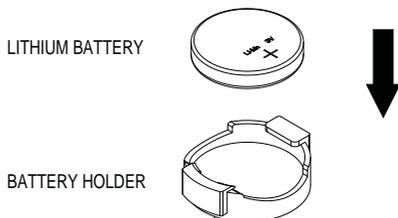
Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the 748TQ-R1K43B tower/4U rackmount chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1   Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Front and Rear Chassis Views

Control Panel

5.25" PeripheralDrive Bays (3)   SAS/SATA Drives (5)   Power Supplies (3)
In Mobile Rack

USB Ports   IPMI LAN

COM1 Port   VGA Port   Ethernet Ports   UID   Standard Size PCI Slots (6)
(4 on Serverboard)
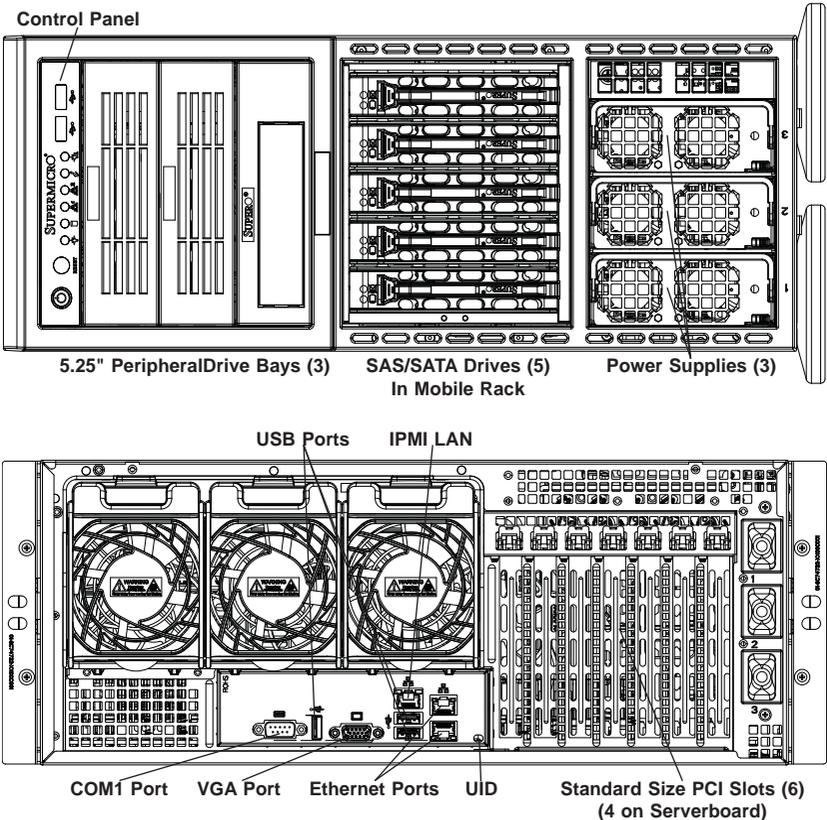
6-2   Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path. The LEDs inform you of system status.

See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3   Configuring the Storage Module

This section covers configuring the storage module for the SC748 tower/4U rackmount chassis. The storage module can be configured for either tower or server rack configurations.

Tower or Rack Configuration

The SC748 tower/4U rackmount chassis is shipped in tower mode and can be immediately used as desktop server. If the chassis is to be used in a rack, you must rotate the storage module 90 degrees. This can be done before, during, or after setup. Also an extra rail is required for rack configuration and must be purchased separately, refer to our website at www.supermicro.com for part number.

Figure 6-2: Chassis in Tower Mode
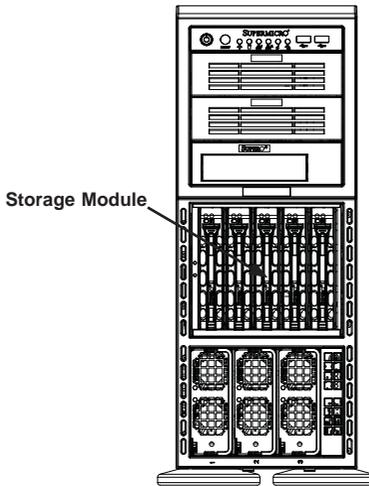
Figure 6-3: Chassis in Rack Mount Mode
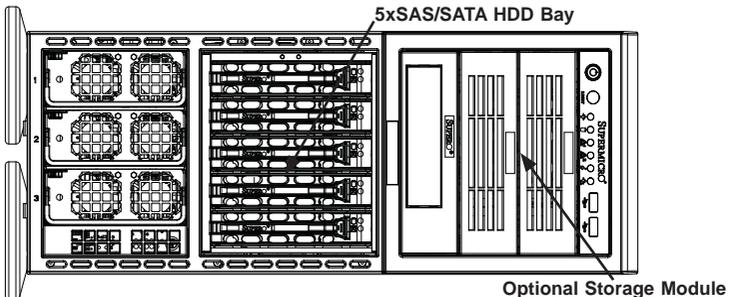
Figure 6-4: Chassis Storage Module
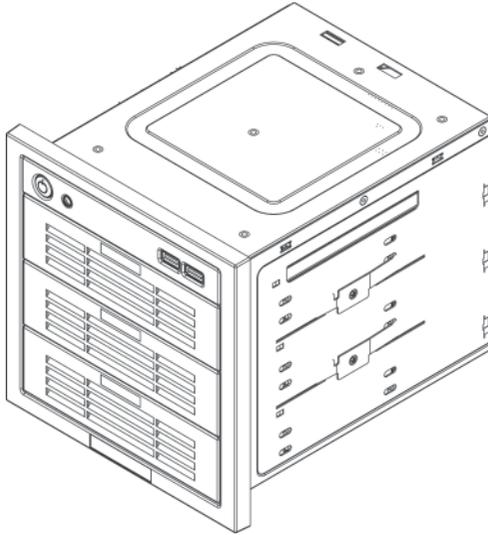
Rotating the Storage Module for Rack Mounting

1. Open the chassis cover.

2. Locate the storage module and disconnect any cables from the storage module to any component in the chassis.

3. Push the storage module release lever. This lever unlocks the storage module.

4. Grasp the external edges of the storage module and pull the unit from the chassis.

5. Rotate the storage module 90 degrees (as illustrated in Figure 6-5).

6. Reinsert the module into the chassis and reconnect the cords.

Caution: All of the drive carriers must remain in the drive bays to maintain proper cooling airflow.

Figure 6-5: Remove the Storage Module
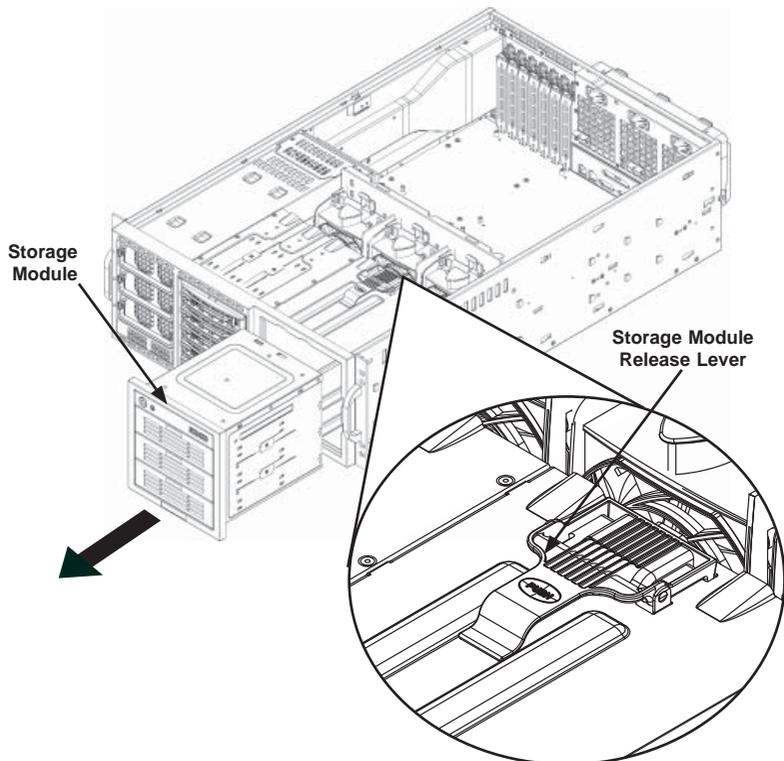
Adding Drives to the Storage Module

The storage module includes three full sized drive bays and the front LED panel. The storage module can be set up in a variety of configurations: There are three basic configurations (see A, B, and C below) which can then be combined within the three bays to suit the user's needs.

(Example: 2 DVDs with 1 HDD or 1 DVD with 2 HDD etc.)

Basic Configurations:

A. Add up to three extra hard drives to the drive trays.

B. Add up to three peripheral drives (CD-ROM, DVD-ROM, floppy drive, etc.) to the drive trays.

C. Add five hot swappable hard drives to the storage module. This configuration requires a CSE-M35BP mobile rack. More information on mobile rack installation can be found in the appendices at the end of this manual.

Installing Hard Drives into the Drive Tray

1. Open the chassis cover.

2. Locate the drive tray you want to replace and pull the tray release tab for the slot.

Figure 6-6: Remove Drive Tray

Drive Tray
Release Tabs
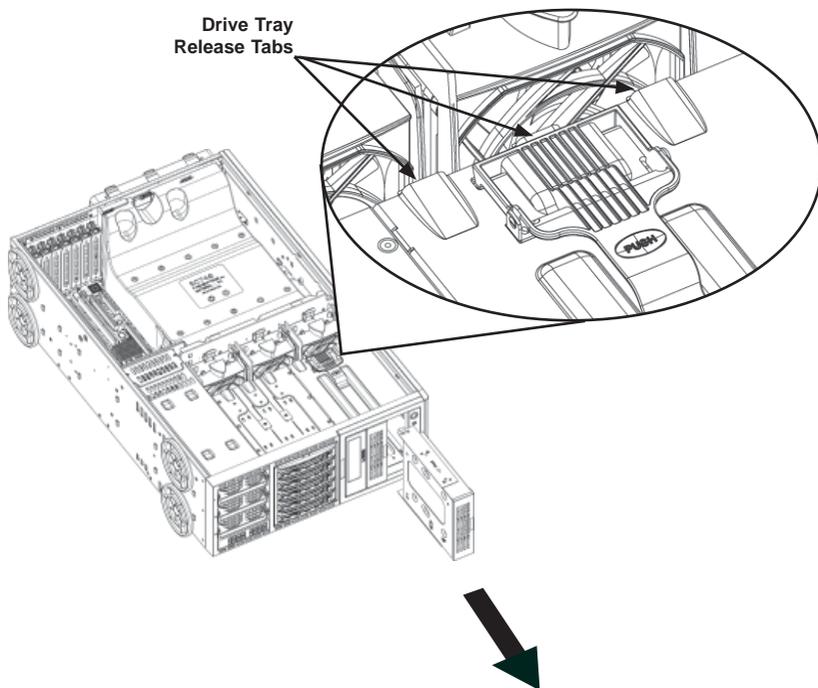
3. Push the drive tray toward the front of the chassis (Figure 6-6).

4. Place the hard drive to the hard drive tray. The hard drive can be SAS or SCSI depending on your serverboard. The hard drive may not completely fill the tray (Figure 6-7).

5. Secure the hard drive to the tray with four screws from the bottom.

6. Slide the hard drive into the chassis until the tray clicks into place.

7. Repeat these steps for each hard drive tray.

Figure 6-7: Add a Hard Drive to the Drive Tray

Hard Drive Tray

Hard Drive
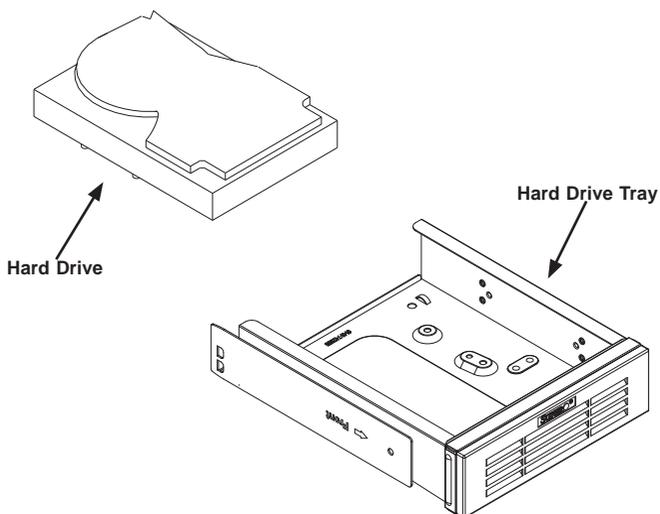
Adding Peripheral Drives (DVD-ROM, CD-ROM, Floppy Drive, etc.) to the Drive Trays

1. Open the chassis cover.

2. Locate the drive tray release tab for the slot you want to place the peripheral drive (see Figure 6-6).

3. Push the drive tray toward the front of the chassis.

4. Remove the hard drive tray rails from the hard drive tray. To do this, you must remove two screws from each side.

5. Attach the rails to a DVD-ROM, CD-ROM, floppy drive, or other peripheral. The rails should fit any standard sized peripherals (Figure 6-8).

6. Slide the peripheral into the chassis until the tray clicks into place.

7. Repeat these steps for each hard drive tray.

Caution! Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/files/storage/SAS-CompList.pdf.

Caution: Use caution when working around the backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

Figure 6-8: Add Hard Drive Rails to the DVD-ROM Drive

Hard Drive Tray

Hard Drive Rails
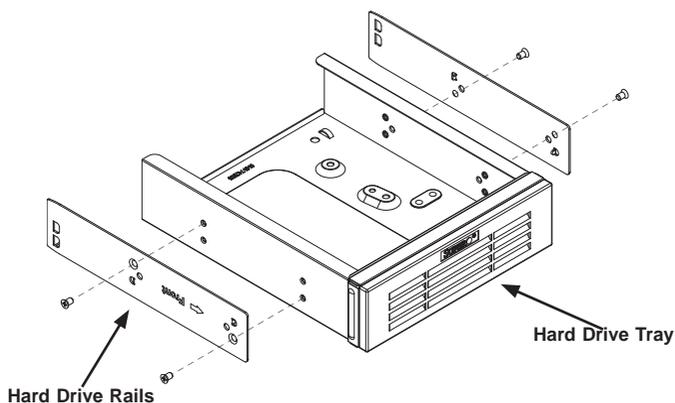
Adding Five Hard Drives to a Supermicro Mobile Rack:

The SC748 tower/4U rackmount chassis accepts a CSE-M35BP mobile rack in order to install hot swappable hard drives. The mobile rack replaces the storage module in the chassis.

For more information on mobile rack installation and use, refer to the appendices located at the end of this manual.

Removing the Storage Module and Installing the M35 Mobile Rack

1. Open the chassis cover.

2. Press the drive tray release tabs

3. Push the storage module forward and out of the chassis (Figure 6-9)

Figure 6-9: Removing the Drive Bay

Drive Tray
Release Tabs
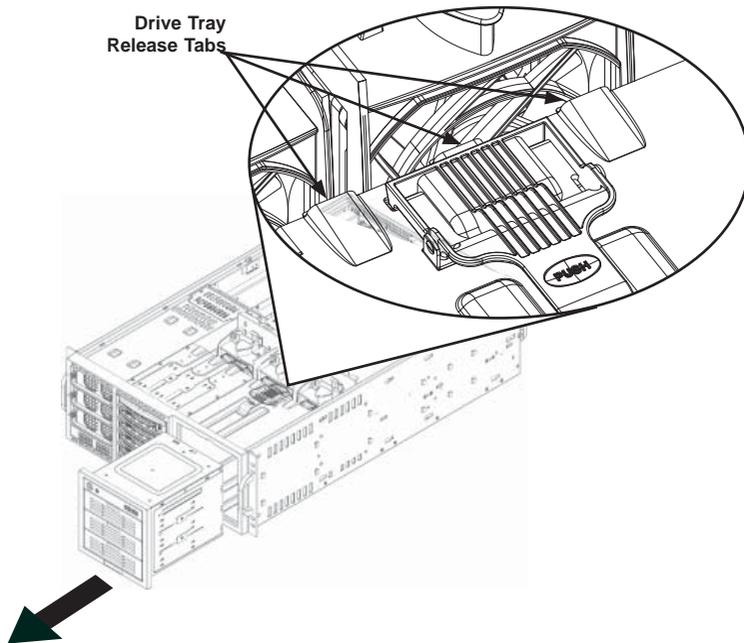
4. Install all six storage module rails onto the mobile rack. Each rail requires two screws. Make sure the arrow on the rail points toward the front of the chassis (Figure 6-10).

Figure 6-10: Add Storage Module Rails to the Mobile Rack

Mobile Rack
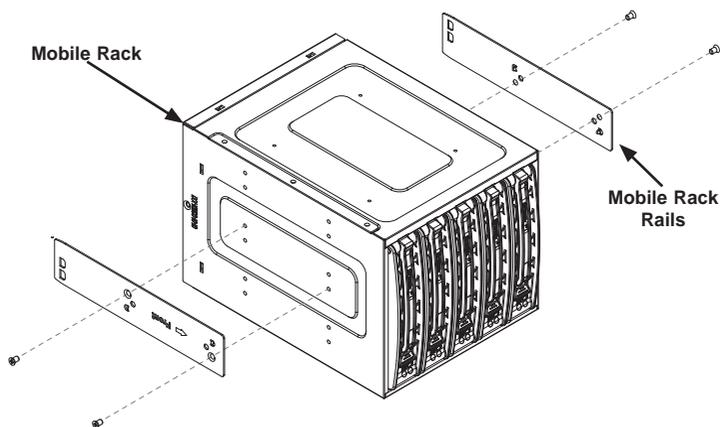
Mobile Rack
Rails

5. Slide the mobile rack into the chassis.

6-4   Installing Hard Drives

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

Installing Hard Drives

1. Press the release button to extend the drive tray handle.

2. Using the handle, pull the drive tray out by the handle. The drive is hot-swappable; there are no cables to disconnect (Figure 6-11).

Figure 6-11: Install Hard Drives
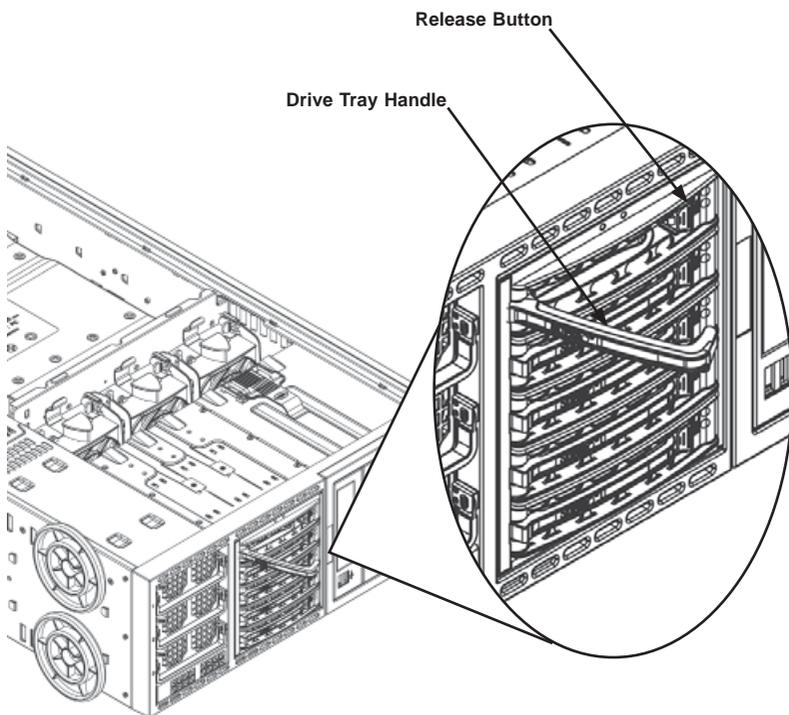
3. Remove the screws holding the drive tray to the dummy drive.

4. Place a hard drive in the drive tray (Figure 6-12).

Figure 6-12: Removing the Dummy Drive Tray

Drive Tray

**SAS/SATA or SCSI
Hard Drive**
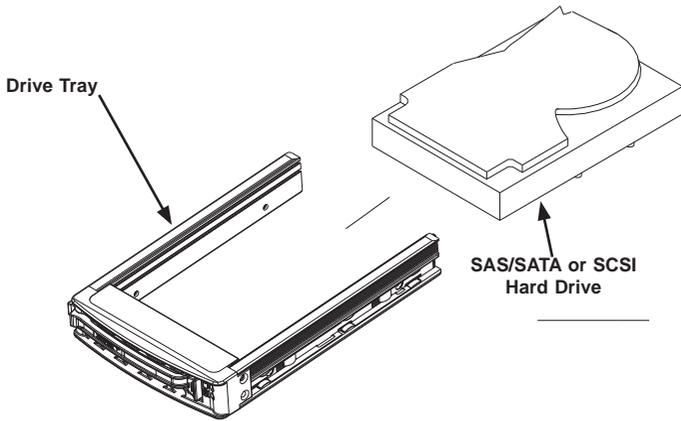
5. Secure the hard drive to the tray using four screws (Figure 6-13).

Figure 6-13: Installing the Hard Drive
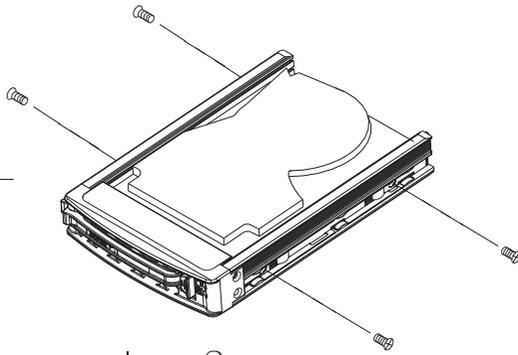
6. Insert the hard drive into the chassis. To do this:

    a. Press the hard drive release button to extend the drive tray handle.

    b. Insert the hard drive into the chassis and close the handle to lock the hard
    drive into place.

Add-on Card/Expansion Slot Setup

After serverboard installation, install add-on cards to the chassis, such as PCI cards.

Installing Add-on and Expansion Cards

1. Locate the release tab on the top of the PCI bracket.

2. Gently apply pressure in the middle of the release tab to unlock the PCI Slot bracket.

3. Pull the release tab upward (Figure 6-14).

Figure 6-14: Add-on Card/Expansion Card Port

Press the Middle of
the Release Tab

Lift the
Release Tab
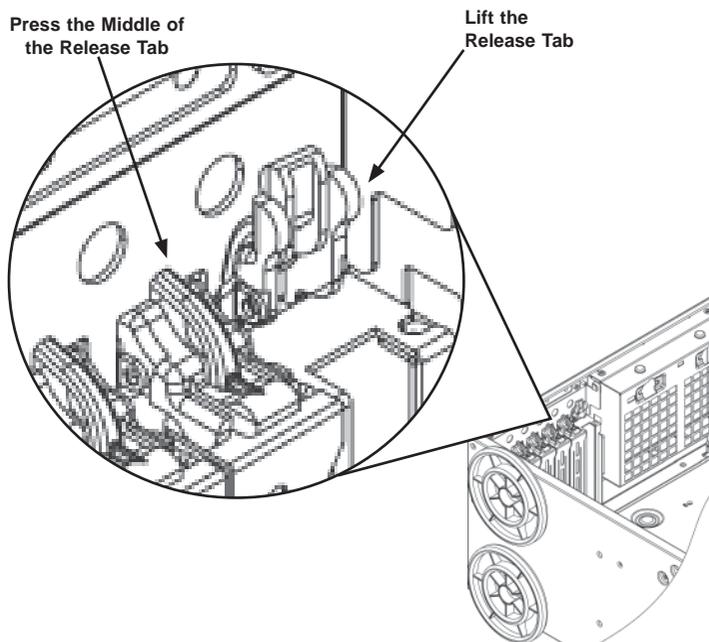
4. Remove the screw holding the bracket in place and pull the bracket from the chassis (Figure 6-15).

Figure 6-15: Remove PCI Card Slot Guard
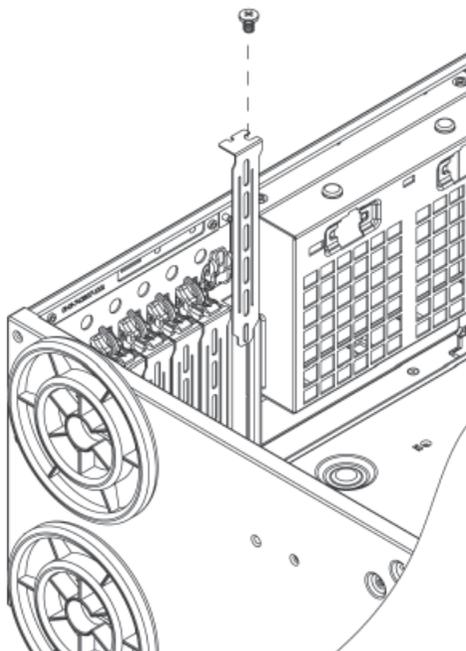
5. Install your PCI card or other add-on card into the PCI slot bracket and serverboard. To do this, slide the PCI card (with "L" bracket) into the PCI slot and secure the card to the serverboard.

6. Push the PCI bracket release tab down until it locks into place with an audible "click".

7. Secure the PCI card with the screw previously removed from the chassis

8. Repeat this process with each PCI card you want to install into the chassis.

6-5   Installing the Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The chassis air shroud does not require screws to set it up.

Installing the Air Shroud

1. Remove the chassis cover.

2. Place air shroud in your chassis with the fan side touching the edge of the two fans closest to the power supply. The other side should cover both of the rear fans (Figure 6-17).

Figure 6-17: Air Shroud in Place
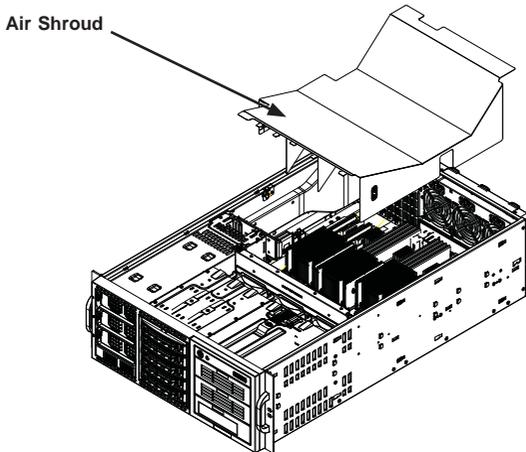
3. Replace the chassis cover.

6-6   System Fans

Six heavy duty fans provide cooling for the chassis. Three fans are located in the front of the chassis and three fans are in the rear. These fans circulate air through the chassis as a means of lowering the internal temperature of the chassis.

The fans come pre-installed to the chassis and are NOT redundant, but each fan is hot-swappable and rear fans can be replaced without removing any connections.

Replacing a Front Chassis Fan

Front Fan Replacement Procedure (Figure 6-18)

1. Open the chassis cover and determine which fan has failed. Because the fans are hot-swappable, the chassis does not have to be powered down.

2. Press the fan release tab and lift the failed fan from the chassis. Front fans must be pulled straight up.

3. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans. As soon as the fan is connected, it will begin working.

Figure 6-18: Front Chassis Fans
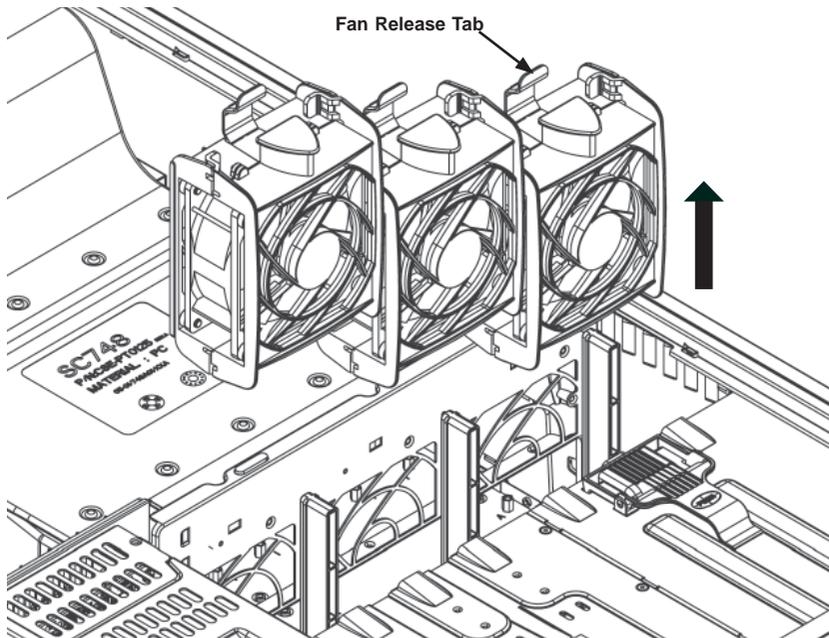
Replacing a Rear Chassis Fan

Rear Fan Replacement Procedure (Figure 6-19)

1. Press the rear fan release tab.

2. Pull the fan from the chassis top first.

3. Place the new fan in the chassis bottom first.

4. Push the fan fully into the housing until the fan clicks into place.

Figure 6-19: Rear Chassis Fans

Rear Fan Release Tab
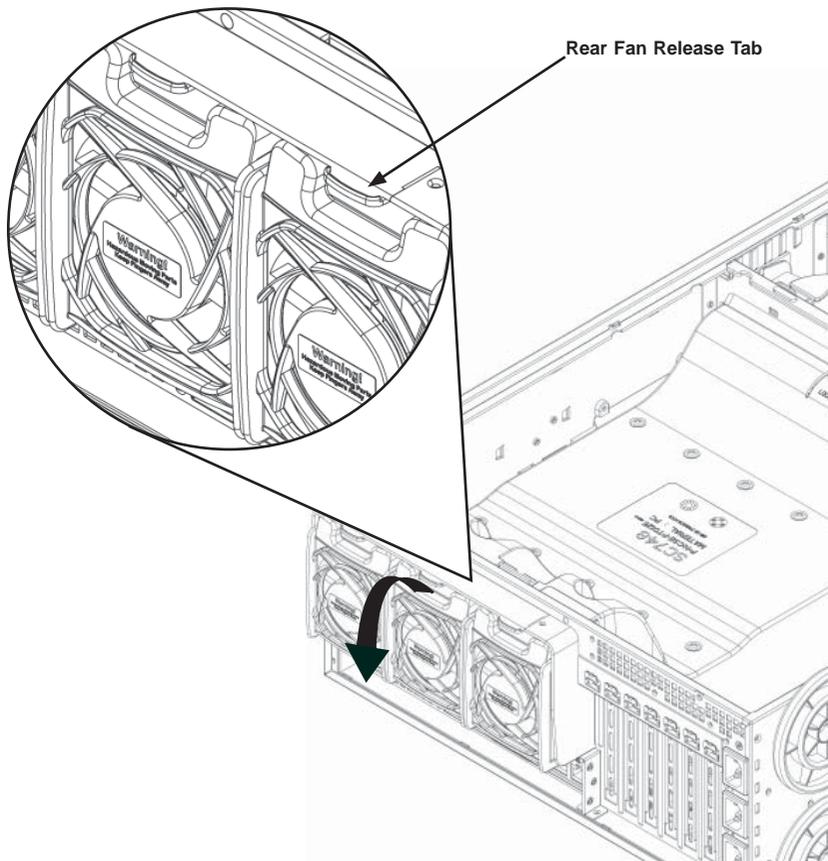
6-7   Power Supply

Depending on your chassis model, the SC748 tower/4U rackmount chassis has two 1400 Watt (redundant) power supplies. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating. The SC748 chassis utilizes redundant, hot-plug power supplies.

Power Supply Failure

In redundant power supply models, the system automatically switches to the second power supply when the first fails. If your system has only one power supply, the system shuts down in the unlikely event of a power failure.

Replacing the Power Supply

1. Power down the server and unplug the power cord. If your chassis includes a redundant power supply (at least two power modules), you can leave the server running and remove only one power supply.

2. Push the release button on the back of the power supply.

3. Pull the power supply out using the handle provided.

4. Replace the failed power module with the same model.

5. Push the new power supply module into the power bay until you hear a click.

6. Plug the AC power cord back into the module and power up the server.

Figure 6-20: Removing a Power Supply

3

**Pull the Drive Out
Using the Handle**

2

**Press the
Release Button**
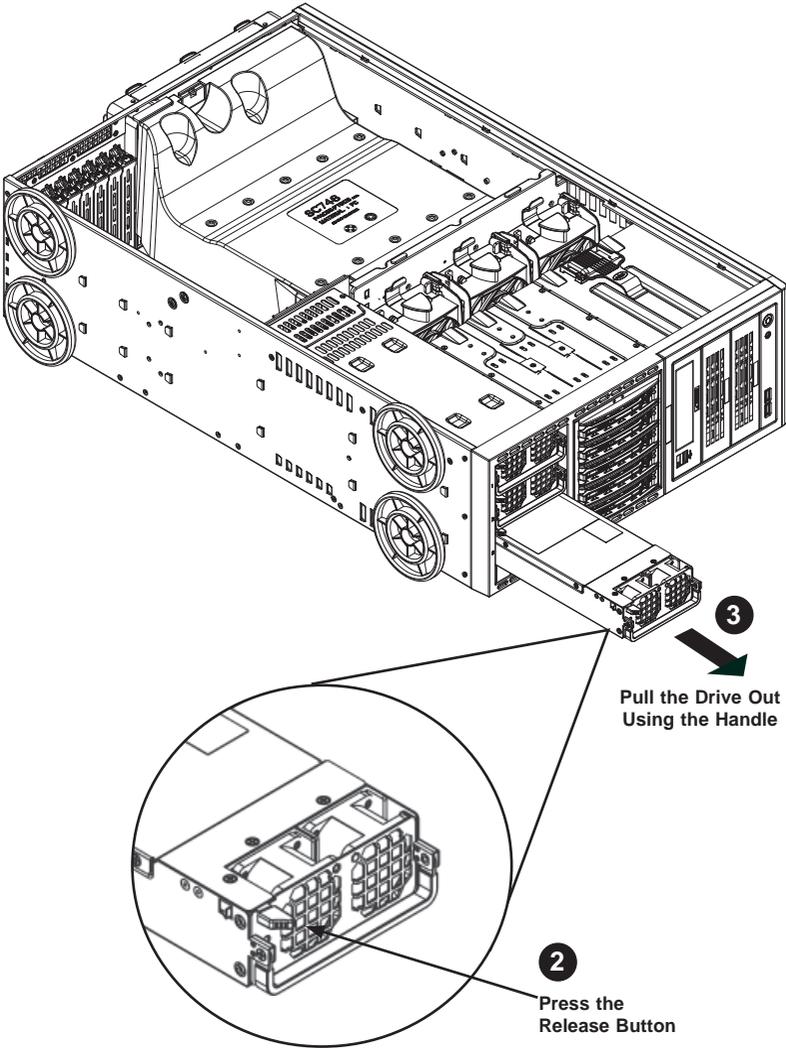
Chapter 7

BIOS

7-1   Introduction

This chapter describes the AMI BIOS Setup Utility for the SuperServer 8048B-TR4F/C0R4FT. The 128 Mb SPI AMI BIOS® SM Flash BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Starting the Setup Utility

To enter the BIOS Setup Utility, hit the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.) Each main BIOS menu option is described in this manual.

The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

A " ▶" indicates a submenu. Highlighting such an item and pressing the <Enter> key will open the list of settings within that submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

4-2   Main Setup

When you first enter the AMI BIOS setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.

```
        Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
  Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

                                                      Set the Date. Use Tab to
  System Date               [Tue 10/27/2015]          switch between Date elements.
  System Time               [17:16:20]

  Supermicro X10QBL-4CT
  BIOS Version              1.0b
  Build Date                10/02/2015
  CPLD Version              04.a1.01

  Memory Information
  Total Memory              32768 MB DDR4@1333MT/s

                                                      ↔: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit

        Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
```

The AMI BIOS Main menu displays the following information:

System Date/System Time

Use this option to change the system date and time using the arrow keys. Enter new values through the keyboard and press <Enter>. Press the <Tab> key to move between fields. The date must be entered in Day MM/DD/YYYY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.).

Supermicro X10QBL-4(CT)

BIOS Version

This item displays the SMC version of the BIOS ROM used in this system.

Build Date

This item displays the date that the BIOS setup utility was built.

CPLD Version

This item displays the version of 'Complex Programmable Logic Device' (CPLD) used in this system.

Memory Information

Total Memory

This item displays the amount of memory that is available in the system.

4-3   Advanced Setup Configurations

Select the Advanced tab to access the following submenu items.

```
                Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
        Main   Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

     ▶ Boot Feature                                          Boot Feature Configuration Page
     ▶ CPU Configuration
     ▶ Chipset Configuration
     ▶ SATA Configuration
     ▶ PCIe/PCI/PnP Configuration
     ▶ ACPI Settings
     ▶ Trusted Computing
     ▶ ME Subsystem
     ▶ Super IO Configuration
     ▶ Serial Port Console Redirection

                                                             ➡◆: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit
```

▶Boot Features

Boot Configuration

Quiet Boot

Use this item to select bootup screen display between POST messages and the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

Use this item to set the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM Display setting. Select Force BIOS to use the Option ROM display set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

Use this item to set the power-on state for the Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

Select Enabled to force the system to wait until the 'F1' key is pressed when an error occurs. The options are Disabled and **Enabled**.

INT19 (Interrupt 19) Trap Response

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Immediate, the BIOS ROM of the host adaptors will immediately capture Interrupt 19 at bootup and allow the drive that is attached to the host adaptor to function as the bootable disk. If this item is set to Postponed, the BIOS ROM of the host adaptors will only capture Interrupt 19 during bootup from a legacy device. The options are **Immediate** and Postponed.

Re-try Boot

Select Legacy Boot for the BIOS to continuously attempt to boot from the legacy boot drive. Select EFI Boot for the BIOS to continuously attempt to boot from the EFI boot drive. The options are **Disabled**, Legacy Boot, and EFI Boot.

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to automatically reboot when a non-recoverable error that lasts for more than five minutes occurs. The options are Enabled and **Disabled.**

Power Button Function

If this feature is set to Instant Off, the system will power off immediately as soon as the user presses the power button. If this feature is set to 4 Seconds Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant Off** and 4 Seconds Override.

Restore on AC Power Loss

Use this item to set the power state after a power outage. Select Stay Off for the system power to remain off after a power outage. Select Power On to turn on the system power after a power outage. Select Last State to allow the system to resume its last power state before a power outage. The options are Power On, Stay Off, and **Last State**.

▶CPU Configuration

This submenu displays the following CPU information as detected by the BIOS. It also allows the user to configure CPU settings.

▶Processor 0/Processor 1/Processor 2/Processor 3

This submenu displays the following information of the CPU installed a CPU socket detected by the BIOS.

- Processor Socket
- Processor ID
- Processor Frequency
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- Processor Socket
- Processor ID
- Processor Frequency
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- Processor 0 Version
- Processor 1 Version
- Processor 2 Version
- Processor 3 Version

Clock Spread Spectrum

Select Enable to allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disable** and Enable.

Hyper-Threading (All)

Select Enable to support Intel's Hyper-threading Technology to enhance CPU performance. The options are **Enable** and Disable.

Cores Enabled

This feature allows the user to set the number of CPU cores to enable. Enter "0" to enable all cores. The default setting is **0**.

> **Note**: To set a valid core number for your system, please refer to the help window on the right side of the BIOS screen, which will prompt you for a valid core number and will also provide a warning when an invalid core number is used.

Performance/Watt

Select Power Optimized to enable Intel® Turbo Boost Technology support when the Power Performance State-P0 has lasted more than two seconds. The options are **Traditional** and Power Optimized.

Execute Disable Bit (Available if supported by the OS & the CPU)

Select Enable to support Intel® Execute Disable Bit Technology, which will allow the processor to designate areas in the system memory where an application code can be executed and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack.

The default setting is **Enable**. (Refer to Intel and Microsoft websites for more information.)

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to support Intel Virtualization Technology, which will allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Prefetch (Available when supported by the CPU)

Select Enable for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disable for the CPU to prefetch both cache lines for 64 bytes. The options are Disable and **Enable**.

> **Note**: Please reboot the system for changes on this setting to take effect. Please refer to Intel's web site for detailed information.

DCU (Data Cache Unit) Streamer Prefetcher (Available when supported by the CPU)

If this item is set to Enable, the DCU Streamer Prefetcher will prefetch data streams from the cache memory to the DCU (Data Cache Unit) to speed up data accessing and processing for CPU performance enhancement. The options are Disable and **Enable**.

DCU IP Prefetcher

If this feature is set to Enable, the IP prefetcher in the DCU (Data Cache Unit) will prefetch IP addresses to improve network connectivity and system performance. The options are **Enable** and Disable.

DCU Mode

Use this feature to set the data-prefecting mode for the DCU (Data Cache Unit). The options are **32KB 8Way Without ECC** and 16KB 4Way With ECC.

Direct Cache Access (DCA)

Select Enable to use Intel DCA (Direct Cache Access) Technology to improve the efficiency of data transferring and accessing. The options are **Enable** and Disable.

AES-NI (New Encryption Standard-New Instructions)

Select Enable to use the Intel Advanced Encryption Standard (AES) New Instructions (NI) to ensure data security. The options are **Enable** and Disable.

PPIN

Select Yes to use the Protected-Processor Inventory Number (PPIN) in the system. The options are **No** and Yes.

▶Advanced Power Management Configuration

This section is used to configure the following CPU Power Management settings.

Power Technology

Select Energy Efficiency to support power-saving mode. Select Custom to customize system power settings. Select Disabled to disable power-saving settings. The options are Disable, **Energy Efficiency**, and Custom.

If the above is set to 'Custom' the following options are displayed:

▶CPU P State Control (Available when Power Technology is set to Customer)

EIST

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disable, and **Enable.**

Turbo Mode (Available when Intel® EIST Technology is enabled)

Select Enable to use the Turbo Mode to boost system performance. The options are **Enable** and Disable.

P-State Coordination

This feature allows the user to change the P-State (Power-Performance State) coordination type. P-State is also known as "SpeedStep" for Intel processors. Select HW_ALL to change the P-State coordination type for hardware components only. Select SW_ALL to change the P-State coordination type for all software installed in the system. Select SW_ANY to change the P-State coordination type for a software program in the system. The options are **HW_All,** SW_ALL, and SW_ANY.

SINGLE_PCTL

Select Yes for SINGLE_PCTL support to improve processor power management. The options are **No** and Yes.

Config TDP

Select Enable to allow the user to configure the Thermal Design Power (TDP) settings for the system. The TDP refers to the maximum amount of power allowed for running "real applications" without triggering an overheating event. The options are **Disable** and Enable.

▶CPU C State Control (Available when Power Technology is set to Customer)

C2C3TT

This feature allows the user to set the C2 to C3 Transition timer. The default setting is **0 (for Auto setting)**.

Package C-State limit

This feature allows the user to set the limit on the C-State package register. The options are C0/C1 State, C2 State, C6 (Non Retention) State**,** and **C6 (Rentention) State.**

CPU C3 Report

Select Enabled to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are Enable and **Disable.**

CPU C6 Report

Select Enabled to allow the BIOS to report the CPU C6 State (ACPI C3) to the operating system. During the CPU C6 State, the power to all cache is turned off. The options are **Enable** and Disable.

Enhanced Halt State (C1E)

Select Enabled to use Enhanced Halt-State technology, which will significantly reduce the CPU's power consumption by reducing the CPU's clock cycle and voltage during a Halt-state. The options are Disable and **Enable**.

Monitor/Mwait

Select Enabled to enable the Monitor/MWait instructions. The Monitor instruction monitors a region of memory for writes, and MWait instructions instruct the CPU to stop until the monitored region begins to write. The options are **Enable** and Disable.

▶CPU T State Control (Available when Power Technology is set to Customer)

ACPI (Advanced Configuration Power Interface) T-States

Select Enable to support CPU throttling by the operating system to reduce power consumption. The options are **Enable** and Disable.

▶ CPU Advanced PM Turning (Available when Power Technology is set to Customer)

▶Energy Perf BIAS

Energy Perf BIAS

Energy Performance Tuning

Use this feature to select whether the BIOS of operating system chooses energy performance BIAS Tuning. The options are OS and **BIOS**.

Energy Performance BIAS Setting.

Use this item to set the energy performance bias, which overrides the operating system setting. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

Workload Configuration

Use this item to optimize the workload characterization. The recommended setting is Balanced. The options are **Balanced** and I/O sensitive.

▶Chipset Configuration

▶North Bridge

This feature is used to configure Intel North Bridge settings.

▶Integrated IO Configuration

EV DFX (Device Function On-Hide) Features

When this feature is set to Enable, the EV_DFX Lock Bits that are located inside a processor will always remain clear during electric tuning. The options are **Disable** and Enable.

▶IIO0 Configuration

▶CPU1 SLOT1 PCI-E 3.0 X16

Use the items below to configure the PCI-E settings for a PCI-E port specified by the user.

The following items will display:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port Link Speed

Link Speed

Use this item to select the PCI-E link speed for the PCI-E port specified by the user. The options are Auto, GEN1 (2.5 GT/s), **GEN2 (5 GT/s)**, and GEN3 (8 GT/s).

PCI-E ASPM Support

Select Enable to support the Active State Power Management (ASPM) level for a PCI-E port specified by the user. Select Disabled to disable ASPM support. The options are Auto, Disable, and **L1 Only**.

▶LAN1/2

Use the items below to configure the PCI-E settings for a PCI-E device installed on a LAN connection specified by the user.

The following items will display:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port Link Speed

Link Speed

Use this item to select the PCI-E link speed for the PCI-E port specified by the user. The options are GEN1 (2.5 GT/s), GEN2 (5 GT/s), GEN3 (8 GT/s), and **Auto**.

PCI-E ASPM Support

Select Enable to support the Active State Power Management (ASPM) level for a PCI-E port specified by the user. Select Disabled to disable ASPM support. The options are Auto, Disable, and **L1 Only**.

▶L-SAS0-3(JSAS1)/L-SAS4-7(JASA2)

Use the items below to configure the PCI-E settings for a PCI-E device installed on a SAS connection specified by the user.

The following items will display:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port Link Speed

Link Speed

Use this item to select the PCI-E link speed for the PCI-E port specified by the user. The options are GEN1 (2.5 GT/s), GEN2 (5 GT/s), GEN3 (8 GT/s), and **Auto**.

▶IIO1 Configuration

No PCIe Port Active ECO

Use this feature to select a workaround setting to implement the engineering-change order (ECO) on the system when PCI ports are not active. The options are PCU Squelch exit ignore option, and **Reset the SQ FLOP by CSR option**.

▶CPU2 SLOT3 PCI-E 3.0 X16/CPU2 SLOT2 PCI-E 3.0 X8/ CPU2 SLOT4 PCI-E 3.0 X8

Use the items below to configure the PCI-E settings for a PCI-E port specified by the user.

The following items will display:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port Link Speed

Link Speed

Use this item to select the PCI-E link speed for the PCI-E port specified by the user. The options are **Auto**, GEN1 (2.5 GT/s), **GEN2 (5 GT/s)**, and GEN3 (8 GT/s).

▶IOAT (Intel® IO Acceleration) Configuration

Enable IOAT

Select Enable to enable Intel I/OAT (I/O Acceleration Technology) support, which will significantly reduce CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The options are **Enable** and Disable.

No Snoop

Select Enable to support no-snoop mode for each CB device. The options are **Disable** and Enable.

Disable TPH (TLP Processing Hint).

If this item is set to Enable, TLP Processing Hint will be disabled. The options are Disable and **Enable**.

▶ Intel VT for Directed I/O (VT-d)

Intel VT for Direct I/O (VT-d)

Select Enable to use Intel Virtualization Technology support for Direct I/O VT-d support by reporting the I/O device assignments to the VMM (Virtual Machine Monitor) through the DMAR ACPI Tables. This feature offers fully-protected I/O resource sharing across Intel platforms, providing greater reliability, security and availability in networking and data-sharing. The options are **Enable** and Disable.

Interrupt Remapping

Select Enable to support Interrupt Remapping to enhance system performance. The options are **Enable** and Disable.

PCI Express Global Options

Power Down Unused Ports

Select Enable to disable the PCI-E ports that are inactive. The options are **Disable**, Enable, HSX Disable Unused Ports (No IIO Clock Gating), and HSX Disable Unused Ports (IIO Clock Gating)

▶ QPI (Quick Path Interconnect) Configuration

▶ QPI General Configuration

▶ QPI Status

The following information will display:

- Number of CPU
- Number of IIO
- LInk Speed
- Current QPI Link Frequency
- QPI Global MMIO Low Base/Limit
- QPI Global MMIO High Base/Limit
- QPI Pci-e Configuration Base/Siz (Size)

Link Speed Mode

Use this feature to select the data transfer speed for QPI Link connections. The default setting is **Fast**.

Link Frequency Select

Use this feature to select the desired frequency for QPI Link connections. The options are 6.4GB/s, 7.2GB/s, 8.0GB/s, 9.6GB/s, **Auto**, Auto Limited, and Use Per LInk Setting.

Link L0p Enable

Select Enable for Link L0p support. The options are **Enable** and Disable.

Link L1 Enable

Select Enable for Link L1 support. The options are **Enable** and Disable.

Legacy VGA Socket

Enter the VGA socket number (from 0-7) that will be used to support legacy VGA. The default setting is **0**.

▶**QPI Per Socket Configuration**

▶**CPU 1/CPU 2**

IO Resource Allocation Ratio

Use this feature to set the IO resource-allocation ratio (from 0-8). The default setting is **3**.

MMIOL Resource Allocation Ratio

Use this feature to set the Memory-Mapped IO resource-allocation ratio (from 0-8). The CPU1 default setting is **3**, and for CPU2 is **1**.

IIO UniPhy Disable

Select Yes to hide the entire UNIFY in the L2 cache. The options are **No**, Yes, and Yes w/Memory Hot Add.

▶Memory Configuration

This section displays the following Integrated Memory Controller (IMC) information.

DDR Speed

Use this feature to force a DDR4 memory module to run at a frequency other than what is specified in the specification. The options are **Auto**, 1067, 1333, 1600, 1867, and 2133.

ODT (On-Die Termination) Timing Mode

Use this feature to configure the timing mode setting for the ODT (On-Die Termination) where the termination resistor for impedance matching in transmission lines is located inside a chip instead of on a printed circuit board. The options are **Aggressive Timing** and Conservative Timing.

MxB Rank Sharing Mapping

Use this feature to select the address-mapping setting for memory-rank sharing to enhance extended multimedia platform performance. The options are **Maximum Performance** and Maximum Margin.

3DS LRDIMM (Load-Reduction DIMM) Module Delay

When this item is set to Disabled, the MRC (Memory Regulator Controller) will not use SPD bytes 90-95 for module delay on 3DS LRDIMM memory. The options are **Disabled** and Auto.

Data Scrambling

Select Enabled to enable data scrambling to enhance system performance and data integrity. The options are Disabled and **Enabled**.

VMSE Lockstep Mode

Select Enabled to support the VMSE Lockstep mode, which will support Lock step mode for the Intel Scalable Memory Interconnect 2 (Intel SMI 2) controller. The options are 1 vs 1, and **Mode 2 vs 1 Mode**.

HA (Hash Mode) Early Write Post Mode

Select Enable to support memory hash-method-comparison mode when the system is running at the early stage of POST (Power-On-Self-Test). The options are is **Enable** and Disable.

Command 2 Data Tuning

Select Enabled to fine-tune electrical command paths from the host system to the memory-extension buffer (MXB). The options are **Enabled** and Disabled.

Closed Loop Thermal Throttling

Select Enabled to support Closed-Loop Thermal Throttling which will improve reliability and reduces CPU power consumption via automatic voltage control while the CPU are in idle states. The options are Disabled and **Enabled**.

Normal Operation Duration

Use this feature to select the normal operation duration interval. The default value is 1024.

VMSE Clock Stop

Select Enabled to de-activate the clock driver for the Intel Scalable Memory Interconnect 2 (Intel SMI 2) controller. The options are **Enabled** and Disabled.

▶Memory Topology

This item displays the status of each DIMM module as detected by the BIOS.

- Jordon Creek Revision ID
- Node
- Channel
- DIMM Frequency

▶Memory RAS (Reliability_Availability_Serviceability) Configuration (Available when a DIMM module is detected in a memory slot specified)

Use this submenu to configure the following Memory RAS settings.

Memory RAS Configuration Setup

Current Memory Mode

This item displays the current memory mode. The default setting is **Independent**.

Mirroring

This item indicates if memory mirroring is supported by the serverboard. Memory mirroring creates a duplicate copy of the data stored in the memory to enhance data security. This feature is currently not available for this serverboard.

Sparing

This item indicates if memory sparing is supported by the serverboard. Memory sparing enhances system performance.

Memory Rank Sparing

This item indicates if memory rank sparing is supported by the serverboard. Memory rank sparing enhances system memory performance. The options are Enabled and **Disabled**.

Spare Error/Memory Correctable Thr (Threshold)

Use this feature to set the correctable error threshold for spare memory modules. The default setting is **10**.

Leaky Bucket Low Bit

Use this feature to set the Low Bit value for the Leaky Bucket algorithm which is used to check the data transmissions between CPU sockets and the memory controller. The default setting is **40**.

Leaky Bucket High Bit

Use this feature to set the High Bit value for the Leaky Bucket algorithm which is used to check the data transmissions between CPU sockets and the memory controller. The default setting is **41**.

CPU1 MC1 Spare/CPU2 MC1 Spare/CPU3 MC1 Spare/CPU4 MC1 Spare (Available when Memory Rank Sparing is set to Enabled)

Select Enabled to enable memory sparing support for a memory module installed on a memory channel specified by a user for memory performance enhancement. The options are Enabled and **Disabled**.

Memory Interleaving

Use this feature to set the DIMM memory interleaving mood. The options are NUMA (1-way) Node Interleave, **2-way Node Interleave**, 4-way Interleave, 8 Way Interleaving, Inter-socket, and Auto.

Socket Interleave Below 4GB

Select Enabled for the memory above the 4G Address space to be split between two sockets. The options are Enable and **Disable**.

Channel Interleaving

Use this feature to set the DIMM channel interleaving mood. The options are **Auto**, 1-Way Interleave, 2-Way Interleave, 3-Way Interleave, and 4-Way Interleave.

Rank Interleaving

Use this feature to select a rank memory interleaving method. The options are **Auto**, 1-Way Interleave, 2-Way Interleave, 3-Way Interleave, 4-Way Interleave, and 8-Way Interleave.

Patrol Scrub (Available when it is supported by the hardware components)

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enable, read-and-write will be performed every 16K cycles per cache line if there is no delay caused by internal processing. The options are **Enable** and Disable.

Demand Scrub

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select Enable to use Demand Scrubbing for ECC memory correction. The options are **Enable** and Disable.

Device Tagging

Select Enable to support device tagging. The options are **Disable,** Rank SDDC, and Bank SDDC.

A7 Mode

Select Enabled to support A7 (Addressing) Mode to improve memory performance. The options are **Disable** and Enable.

DDDC Support

Select Enabled to enable Double-Device Data Correction (DDDC) support for the error-correction codes to correct memory errors caused by two failed DRAM devices. The options are **Disabled**, Rank DDDC, and Bank DDDC.

DDDC Wirekill (Available when DDDC support is set to Rank DDDC)

Select Enabled for Double-Device Data Correction (DDDC) Wire-kill support which will disable the wire connection between two DRAM devices when they fail. The options are **Disabled** and Enabled.

DDDC Wirekill (Wire-Kill) Threshold (Available when DDDC support is set to Rank DDDC, and DDDC Wirekill is set to Enabled)

Use this feature to set the DDDC Wirekill threshold. When the memory errors reach the threshold,wire-connections between the failed DRAM modules will be disconnected. The Default setting is **2**.

Memory Mirroring

Select Enable to enable memory-mirroring support which will create a duplicate copy of the data stored in the memory to enhance data security. The options are **Disable** and Full CH Mirroring.

Mirror Scrub (Available when Memory Mirroring is set to Enable)

Select Enable for Mirror Scrubbing support which will allow the CPU to correct correctable memory errors found on a memory module when the memory scheme is set to Memory MIrroring. The options are **Enable** and Disable.

CPU1 MC1 Mirror/CPU2 MC1 Mirror/CPU3 MC1 Mirror/CPU4 MC1 Mirror (Unavailable when Memory Mirror is set to Disbled)

Select Enabled to enable memory sparing support for a memory module installed on a memory channel specified by a user for memory performance enhancement. The options are Enabled and **Disabled**.

▶South Bridge

This feature is used to configure Intel South Bridge settings.

▶USB Configuration

The following USB items will display.

- USB Module Version
- USB Devices

Legacy USB Support (Available when USB Functions is not Disabled)

Select Enabled to support legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disabled to have USB devices available for EFI (Extensive Firmware Interface) applications only. The settings are Disabled, **Enabled** and Auto.

USB 2.0 Controller Mode

Select HiSpeed for the USB 2.0 controller to operate at the HiSpeed mode (480Mb per second). Select FullSpeed for the USB 2.0 controller to operate at the Full Speed mode (12Mb per second). The options are Full Speed, and **HiSpeed**.

EHCI Hand-Off

This item is for operating systems that do not support Enhanced Host Controller Interface (EHCI) hand-off. When this item is enabled, EHCI ownership change will be claimed by the EHCI driver. The settings are Enabled and **Disabled**.

Port 60/64 Emulation

Select Enabled for I/O port 60h/64h emulation support which will provide complete USB keyboard legacy support for the operating system that does not support Legacy USB devices. The options are Disabled and **Enabled**.

USB Controller 0 Enable

Select Enabled to enable USB Controller 0 which supports USB Port 0 to Port 7. The options are Disabled and **Enabled**.

USB Controller 1 Enable

Select Enabled to enable USB Controller 1 which supports USB Port 8 to Port 13. The options are Disabled and **Enabled**.

▶SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA devices that are supported by the Intel PCH chip and displays the following items:

SATA Controller

This item enables or disables the onboard SATA controller supported by the Intel PCH chip. The options are **Enabled** and Disabled.

Configure SATA as

Select IDE to configure a SATA drive specified by the user as an IDE drive. Select AHCI to configure a SATA drive specified by the user as an AHCI drive. Select RAID to configure a SATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

If the item above "Configure SATA as" is set to AHCI, the following items will display:

SATA Port 0~ Port 5

This item displays the information detected on the installed SATA drive on the particular SATA port.

* Display of drive number and capacity as detected by the BIOS

Port 0~ Port 5

Select Enabled to enable a SATA port specified by the user. The options are Disabled and Enabled.

Port 0 ~ Port 5 Hot Plug

This feature designates the port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA disk drive without shutting down the system. The options are **Enabled** and Disabled.

Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to initialize the device. The options are Enabled and **Disabled**.

*If the item above "Configure SATA as" is set to IDE, the following items will display:

Serial ATA Port 0~ Port 5

This item indicates that a SATA port specified by the user is not installed or not present.

- Display of drive number and capacity as detected by the BIOS

*If the item above "Configure SATA as" is set to RAID, the following items will display:

SATA RAID Option ROM Type

Use this item to select the device type for onboard SATA RAID Option ROM for system boot. The options are EFI and **Legacy**.

Serial ATA Port 0~ Port 5

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Display of drive number and capacity as detected by the BIO

Port 0~ Port 5

Select Enabled to enable a SATA port specified by the user. The options are Disabled and Enabled.

Hot Plug

This feature designates this port for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA drive without shutting down the system. The options are Enabled and **Disabled**.

Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

▶PCIe/PCI/PnP Configuration

PERR# Generation

Select Enabled to allow a PCI/PCI-E device to generate a PCI/PCI-E Parity-Error (PERR) number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

SERR# Generation

Select Enabled to allow a PCI/PCI-E device to generate a System-Error (SERR) number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

PCI AER (Advanced Error-Reporting) Support

Select Enabled to support Advanced Error-Reporting for onboard PCI devices. The options are **Disabled** and Enabled.

Above 4G Decoding (Available if the system supports 64-bit PCI decoding)

Select Enabled to decode a PCI device that supports 64-bit in the space above 4G Address. The options are Enabled and **Disabled**.

SR-IOV Support (Available if the system supports Single-Root Virtualization)

Select Enabled for Single-Root IO Virtualization support. The options are **Enabled** and Disabled.

Maximum Payload

Select Auto to allow the system BIOS to automatically set the maximum payload value for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

Maximum Read Request

Select Auto to allow the system BIOS to automatically set the maximum Read Request size for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

ASPM Support

This feature allows the user to set the Active State Power Management (ASPM) level for a PCI-E device. Select Force L0s to force all PCI-E links to operate at L0s state. Select Auto to allow the system BIOS to automatically set the ASPM level for the system. Select Disabled to disable ASPM support. The options are **Disabled**, Force L0s, and Auto.

PCI-E ASPM (Global)

Select Per-Port to support the Active State Power Management (ASPM) level for all PCI-E ports on the serverboard. Select L1 to force all PCI-E links to operate at L1 state. The options are **L1 Only**, and Per-Port

MMIOH Size PerII0

Use this item to set the MMIO (Memory-Mapped I/O Hub) size for each IIO device. The options are 0x8_00000000 (32GB), 0x10_00000000 (64GB), **0x20_00000000 (128GB)**, 0x40_00000000 (256GB), 0x80_00000000 (512GB), and 0x100_00000000 (1024GB).

MMIOHBase

Use this item to select the base memory size according to memory-address mapping for the IO hub. The base memory size must be between 4032G to 4078G. The options are **0x3800_00000000 (56T)**, 0x2800_00000000 (40T), and 0x1800_00000000 (24T).

Resource Auto Adjust

Select Enable for the PCI resource-requests for each CPU socket to be automatically adjusted on a need basis when the PCI resource allocator fails. The options are **Enable** and Disable.

Warning: Enabling ASPM support may cause some PCI-E devices to fail!

PCI Devices Option ROM Settiing

CPU1 SLOT1 PCI-E 3.0 x16 OPROM/CPU1 SLOT2 PCI-E 3.0 x8 OPROM/ CPU2 SLOT3 PCI-E 3.0 x16 OPROM/CPU2 SLOT4 PCI-E 3.0 x8 OPROM/

Use this feature to select the type of device installed on a slot specified by the user for the system to boot from. The options are EFI, **Legacy** and Disabled.

Video

This feature controls how the system executes UEFI (Unified Extensible Firmware Interface), and legacy Option ROM. Select Legacy Only to boot the system using a legacy video device. The options are Do not launch, UEFI Only and **Legacy Only**.

VGA Priority

This feature allows the user to select the graphics adapter to be used as the primary boot device. The options are **Onboard** and Offboard.

Onboard LAN Option ROM Type

Use this item to select the device type for onboard LAN Option ROM for system boot. The options are EFI and **Legacy**.

Onboard LAN 1 OPROM/Onboard LAN 2 OPROM

Select iSCSI to use the iSCSI Option ROM to boot the computer using a iSCSI network device. Select PXE (Preboot Execution Environment) to use an PXE Option ROM to boot the computer using a PXE network device. The default option for Onboard LAN 1 is **PXE and for** Onboard LAN 2 is **Disabled**.

▶**ACPI Settings**

High Precision Event Timer

Select Enabled to activate the High Precision Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback, reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

WHEA Support

Select Enabled to support the Windows Hardware Error Architecture (WHEA) platform and provide a common infrastructure for the system to handle hardware errors within the Windows OS environment to reduce system crashes and to enhance system recovery and health monitoring. The options are **Enabled** and Disabled.

▶**Trusted Computing (Available when a TPM device is detected by the BIOS)**

Configuration

Security Device Support

Select Enabled on this item and enable the TPM jumper on the serverboard to enable onboard security devices to improve data integrity and network security. The options are **Enabled** and Disabled.

TPM (Trusted-Platform Module) State

Select Enabled to enable TPM security settings to improve data integrity and network security. The options are Disabled and **Enabled**.

Pending Operation

Use this item to schedule an operation for the security device. The options are **None**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

> **Note:** The computer will reboot in order to execute the pending commands and change the state of the security device.

Current Status Information: This item displays the information regarding the current TPM status.

TPM Enable Status

This item displays the status of TPM Support to indicate if TPM is currently enabled or disabled.

TPM Active Status

This item displays the status of TPM Support to indicate if TPM is currently active or deactivated.

TPM Owner Status

This item displays the status of TPM Ownership.

TXT Support

Select Enabled for Trusted Execution Technology support. The options are Enabled and **Disabled**.

►ME (Management Engine) Subsystem

This feature displays the following ME Subsystem Configuration settings.

General ME Configuration

Operational Firmware Version

Recovery Firmware Version

ME Firmware Features

ME Firmware Status #1

ME Firmware Status #2

Current State

Error Code

▶Super IO Configuration

Super IO Chip: This item displays the Super IO chip used in the serverboard.

▶Serial Port 1 Configuration

Serial Port

Select Enabled to enable a serial port specified by the user. The options are **Enabled** and Disabled.

Device Settings

This item displays the settings of Serial Port 1 (COM).

Change Port 1 Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 (COM). Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable. The options are **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=IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12.

▶Serial Port 2 Configuration

Serial Port

Select Enabled to enable a serial port specified by the user. The options are **Enabled** and Disabled.

Change Port 2 Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 2 (SOL). Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable. The options are **Auto**, O=2F8h; 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=IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12.

Serial Port 2 Attribute

Use this feature to select the attribute for this serial port. The options are **SOL** (Serial Over LAN), and COM.

▶Serial Port Console Redirection

COM 1

COM 1 Console Redirection

Select Enabled to enable COM Port 1 Console Redirection, which will allow a client machine to be connected to a host machine at a remote site for networking. The options are **Disabled** and Enabled.

*If the item above set to Enabled, the following items will become available for configuration:

▶COM1 Console Redirection Settings

Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this item to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled**.**

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this item to select the number of rows and columns used in Console Redirection for legacy OS support. The options are **80x24** and 80x25.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS POST

Use this feature to enable or disable legacy Console Redirection after BIOS POST. When the option-Bootloader is selected, legacy Console Redirection is disabled before booting the OS. When the option- Always Enable is selected, legacy Console Redirection remains enabled upon OS bootup. The options are **Always Enable** and Bootloader.

SOL/COM2

Console Redirection

Select Enabled to use the SOL port for Console Redirection. The options are **Enabled** and Disabled.

*If the item above set to Enabled, the following items will become available for user's configuration:

▶SOL/COM2 Console Redirection Settings

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled**.**

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this feature to select the number of rows and columns used in Console Redirection for legacy OS support. The options are **80x24** and 80x25.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS POST

Use this feature to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When this feature is set to Bootloader, legacy Console Redirection is disabled before booting the OS. When this feature is set to Always Enable, legacy Console Redirection remains enabled upon OS boot. The options are **Always Enable** and Bootloader.

▶EMS Console Redirection Settings

Out-of-Band Management Port

The feature selects a serial port in a client server to be used by the Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1 (Console Redirection)** and COM2/SOL (Console Redirection).

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, VT100+, and **VT-UTF8**.

Bits Per Second

This item sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in both host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop data-sending when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None,** Hardware RTS/CTS, and Software Xon/Xoff.

The setting for each these features is displayed:

Data Bits, Parity, Stop Bits

4-4   Event Logs

Select the Event Logs tab to access the following submenu items.

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
            Main   Advanced   Event Logs   IPMI   Security   Boot   Save & Exit

                                                          Press <Enter> to change the
         ▶ Change SMBIOS Event Log Settings               Smbios Event Log configuration.

         ▶ View SMBIOS Event Log



                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit


              Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
```

▶Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

Runtime Error Logging Support

Select Enabled to enable runtime error logging upon system boot. The options are Auto, Enabled, and **Disabled**.

PCI-Ex Error Enable (Available 2hen the item above-Runtime Error Logging Support is set to Enabled)

Select Enabled for the BIOS to correct errors occurred in the PCI-E slots. The options are Enabled and **Disabled**.

Enabling/Disabling Options

SMBIOS Event Log

Select Enabled to enable SMBIOS (System Management BIOS) event logging during system boot. The options are **Enabled** and Disabled.

Erasing Settings

Erase Event Log

Select Enabled to erase the SMBIOS (System Management BIOS) event log, which is completed before a event logging is initialized upon system reboot. The options are **No**, Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately to immediately erase SMBIOS error event logs that exceed the limit when the SMBIOS event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event

Select Enabled to log system boot events. The options are **Disabled** and Enabled.

MECI (Multiple Event Count Increment)

Enter the increment value for the multiple event counter. Enter a number from 1 to 255. The default setting is **1**.

METW (Multiple Event Count Time Window)

This item allows the user to decide how long (in minutes) should the multiple event counter wait before generating a new event log. Enter a number from 0 to 99. The default setting is **60**.

▶View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. Select this item and press <Enter> to view the status of an event in the log. The following categories are displayed:

- Date
- Time
- Error Code
- Severity

4-5   IPMI

Select the IPMI (Intelligent Platform Management Interface) tab to access the following submenu items.

```
              Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
          Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

       IPMI Firmware Revision          2.19                    Press <Enter> to change the
       Status Of BMC                   Working                 SEL event log configuration.

     ▶ System Event Log
     ▶ BMC Network Configuration



                                                               ↔: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit



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```

These items indicates your system IPMI firmware revision number and status.

- IPMI Firmware Revision
- Status of BMC

▶System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled to enable all system event logging support at bootup. The options are **Enabled** and Disabled.

Erasing Settings

Erase SEL

Select Yes, On next reset to erase all system event logs upon next system reboot. Select Yes, On every reset to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No,** Yes, On next reset, and Yes, On every reset.

When SEL is Full

This feature allows the user to determine what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

> **Note**: Reboot the system for the changes to take effect.

▶BMC Network Configuration

The following items will be displayed:

- IPMI LAN Selection
- IPMI Network Link Status

Update IPMI LAN Configuration

Select Yes for the system BIOS to automatically reset the following IPMI settings at next system boot. The options are Yes and **No**.

Configuration Address Source (Available when the item above - Update IPMI LAN Configuration is set to Yes)

Use this item to select the IP address source for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, AMI BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server attached to the network and request the next available IP address for this computer. The options are **DHCP** Unspecified, and Static.

Station IP Address

This item displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

Subnet Mask

This item displays the sub-network that this computer belongs to. The value of each three-digit number is separated by dots and it should not exceed 255.

Station MAC Address

This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

Gateway IP Address

This item displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 10.132.0.250).

4-6   Security

This menu allows the user to configure the following security settings for the system.

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

  Password Description                              Setup: Check password while
                                                    invoking setup. Always: Check
  If ONLY the Administrator's password is set,      password while invoking setup
  then this only limits access to Setup and is      as well as on each boot.
  only asked for when entering Setup.
  If ONLY the User's password is set, then this
  is a power on password and must be entered to
  boot or enter Setup. In Setup the User will
  have Administrator rights.
  The password length must be
  in the following range:
  Minimum length                3
  Maximum length                20
                                                    →←: Select Screen
                                                    ↑↓: Select Item
  Password Check                [Setup]             Enter: Select
  Administrator Password                            +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit


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```

Password Check

Select Setup for the system to prompt for a password when the user's entering the BIOS setup utility. Select Always for the system to prompt for a password at bootup and when the user's entering the BIOS Setup utility. The options are **Setup** and Always.

Administrator Password

Use this item to set the administrator password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

User Password

Use this item to set a user password which is required to log into the system and to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

4-7 Boot

This submenu allows the user to configure the following boot settings for the system.

```
         Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

                                              ▲   Select which boot device type
   Boot Mode Select              [DUAL]           to list in FIXED BOOT ORDER
                                                  Priorities.

   FIXED BOOT ORDER Priorities
   Dual Boot Order #1            [Hard Disk:#0400 ID0...]
   Dual Boot Order #2            [CD/DVD]
   Dual Boot Order #3            [USB Hard Disk]
   Dual Boot Order #4            [USB CD/DVD]
   Dual Boot Order #5            [USB Key]
   Dual Boot Order #6            [USB Floppy]
   Dual Boot Order #7            [Network:IBA XE Slot...]
   Dual Boot Order #8            [UEFI Hard Disk]
   Dual Boot Order #9            [UEFI CD/DVD]           →←: Select Screen
   Dual Boot Order #10           [UEFI USB Hard Disk]    ↑↓: Select Item
   Dual Boot Order #11           [UEFI USB CD/DVD]       Enter: Select
   Dual Boot Order #12           [UEFI USB Key]          +/-: Change Opt.
   Dual Boot Order #13           [UEFI USB Floppy]       F1: General Help
   Dual Boot Order #14           [UEFI Network]          F2: Previous Values
   Dual Boot Order #15           [UEFI AP:UEFI: Built...] F3: Optimized Defaults
                                                         F4: Save & Exit
 ▶ Delete Boot Option                                    ESC: Exit

 ▶ Delete Driver Option                            ▼

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```

Boot Mood Select

Use this item to configure boot mood select settings for the machine. The options are Legacy, UEFI, and **Dual**.

Fixed Boot Order Priorities

This option prioritizes the order of bootable devices that the system to boot from. Press [Enter] on each entry from top to bottom to select devices.

- Boot Order #1 through #15

▶**Delete Boot Option**

Use this item to select a boot device to delete from the boot priority list.

Delete Boot Option

Select the target boot device to delete from the boot option list.

▶**Delete Driver Option**

Use this item to select a driver to delete from the boot priority list.

Delete Driver Option

Select the target driver to delete.

▶**Network Drive BBS Priorities (Available when a device is installed in this drive)**

This item sets the boot sequence of available network boot drives.

- Boot Order #1

▶**UEFI Application Boot Priorities (Available when a device is installed in this drive)**

- UEFI Boot Order #1

4-8   Save & Exit

This submenu allows the user to configure the Save and Exit settings for the system.

```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

  Discard Changes and Exit                              Exit system setup without
  Save Changes and Reset                                saving any changes.

  Save Options
  Save Changes
  Discard Changes

  Restore Optimized Defaults
  Save as User Defaults
  Restore User Defaults

  Boot Override
  IBA XE Slot 0200 v2304
  UEFI: Built-in EFI Shell                             ++: Select Screen
  #0400 ID09 LUN0 HITACHI  HUS156030VLS60              ↑↓: Select Item
  #0400 ID0A LUN0 HITACHI  HUS156030VLS60              Enter: Select
  #0400 ID0B LUN0 HITACHI  HUS156030VLS60              +/-: Change Opt.
  #0400 ID0C LUN0 HITACHI  HUS156030VLS60              F1: General Help
  #0400 ID0D LUN0 HITACHI  HUS156030VLS60              F2: Previous Values
  #0400 ID0E LUN0 HITACHI  HUS156030VLS60              F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit




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```

Discard Changes and Exit

Select this option to quit the BIOS setup without making any changes to the system configuration. Select Discard Changes and Exit, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without saving, select **Yes** to quit BIOS without saving the changes.

Save Changes and Reset

When completing the system configuration changes, select this option to save the changes and reboot the computer so that the new system configuration settings can take effect.

Save Options

Save Changes

Select this option and press <Enter> to save all changes you've made so far and return to the AMI BIOS utility. When the dialog box appears, asking you if you want to save configuration, select **Yes** to save the changes, or select No to return to the BIOS without making changes.

Discard Changes

Select this feature and press <Enter> to discard all the changes and return to the BIOS setup. When the dialog box appears, asking you if you want to load previous values, select **Yes** to load the values previous saved, or select No to keep the changes you've made so far.

Restore Optimized Defaults

Select this feature and press <Enter> to load the optimized default settings that help optimize system performance. When the dialog box appears, asking you if you want to load the factory defaults, select **Yes** to load the optimized default settings, or select No to abandon optimized defaults.

Save as User Defaults

Select this feature and press <Enter> to save the current settings as the user's defaults. When the dialog box appears, asking you if you want to save values as user's defaults, select **Yes** to save the current values as user's default settings, or select No to keep the defaults previously saved as the user's defaults.

Restore User Defaults

Select this feature and press <Enter> to load the user's defaults previously saved in the system. When the dialog box appears, asking you if you want to restore user's defaults, select **Yes** to restore the user's defaults previously saved in the system, or select No to abandon the user's defaults that were previously saved.

Boot Override

This feature allows the user to override the Boot Option Priority sequence set in the Boot menu, and boot the system with one of the listed devices instead.

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed at each system boot, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue to boot. The error messages normally appear on the screen.

Fatal errors will not allow the system to continue with bootup procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

A-1   BIOS Error Beep Codes

Serverboard BIOS Error Beep Codes		
Beep Code/LED	**Error Message**	**Description**
1 beep	Refresh	Ready to boot
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	No Con-In or No Con-Out devices	Con-In includes USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL. Con-Out includes Video Controller, PCI or Serial Console Redirection, IPMI SOL.
1 beep per device	Refresh	1 beep or each USB device detected
IPMI Error Codes		
1 Continuous Beep	System OH	System Overheat

Notes

Appendix B

System Specifications

Processors

Quad Intel E7-8800 v3/v4 or E7-4800 v3/v4 Series (Socket R1 type) processors

Note: In order to install the Intel E7-8800 v4 or E7-4800 v4 Series CPU, you must make sure that BIOS 2.0 version is installed to your system.

Note: You must install at least two processors for full I/O functions to be supported.

Note: Please refer to our web site for a complete listing of supported processors.

Chipset

One Intel PCH C602J chipset

BIOS

128 Mb SPI AMI BIOS® SM Flash BIOS

Memory Capacity

The X10QBL-4(CT) serverboard supports thirty-two (32) 288-pin DIMM sockets that can support up to 1TB of Registered (RDIMM) or up to 4TB of Load Reduced (3DS LRDIMM) ECC DDR4 1866/1600/1333 MHz speed SDRAM in a two-channel memory bus with memory sizes of 4GB, 8GB, 16GB, 32GB, 64GB and 128GB size @ 1.2V voltages.

Note: 128G can only be supported with 3DS LRDIMM's.

SAS/SATA Controller

Intel PCH C602J on-chip controller for six-port SATA subsystem (two SATA 3.0 and four SATA 2.0 ports), which is RAID 0, 1, 5 and 10 Windows/LINUX supported. The SATA drives are hot-swappable units.

A LSI 3008 SAS controller is integrated into the X10QBL-4CT serverboard to provide an eight port SAS (Serial Attached SCSI) subsystem, which is RAID 0, 1 and 10 supported (8048B-C0R4FT server only). The SAS drives are hot-swappable units.

Drive Bays

Five hot-swap 3.5" drive bays to house up to five SATA or SAS drives (additional five 3.5" hard drives available with optional M35 mobile rack), and three 5.25" peripheral drive bays

Expansion Slots

Four PCI low-profile expansion card slots are available in the rear of the chassis:

- Two (2) PCI-E 3.0 x16 slots (CPU1 Slot1, CPU2 Slot 3) (CPU1 Slot1, CPU2 Slot3)
- Two (2) PCI-E 3.0 x8 slots (CPU2 Slot2, CPU2 Slot4) (CPU2 Slot2, CPU2 Slot4)

Serverboard

X10QBL-4(CT) (Proprietary form factor)
Dimensions: (LxW) 16.40" x 16.79" (416.56 mm x 426.47 mm)

Chassis

748TQ-R1K43B (tower/4U rackmount chassis)
Dimensions (both): (WxHxD) 18.2 x 7 x 28.4 in. (462 x 178 x 721 mm)

Weight

Gross (Bare Bone): 86.0 lbs (39.0 kg)

Net Weight: 65.5 lbs (29.7 kg)

System Cooling

Three heavy-duty 9.2-cm and three 8-cm cooling fans (fan speed controlled by BIOS setting)

Note: The system cooling fans are NOT redundant, but are hot-plug.

System Input Requirements

AC Input Voltage: 90-240V AC auto-range
Rated Input Current: 15A max full load
Rated Input Frequency: 50 to 60 Hz (AC)
Platinum: 80+ (Platinum Level)

Power Supply

Rated Output Power: 1400 Watt (Part# PWS-1K43F-1R)
Rated Output Voltages: +12V (117A), +5Vsb (5.97A)

Note: The system power supplies are redundant, hot-plug.

Operating Environment

Operating Temperature: 10º to 35º C (32º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

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