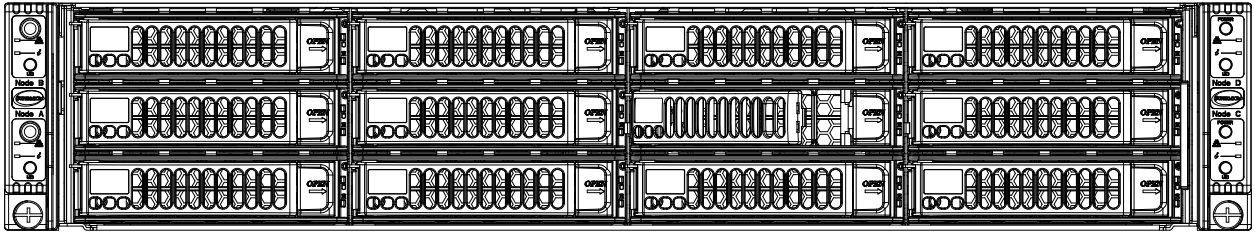# SuperServer®
6028BT-HNC0R+

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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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 server. Installation and maintenance should be performed by experienced technicians only.

Please refer to the SuperServer 6028BT-HNC0R+ specifications page on our website for updates on supported memory, processors and operating systems (http://www.supermicro.com).

Notes

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 info: http://www.supermicro.com/about/policies/safety_information.cfm

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

This manual may be periodically updated without notice. Please check the Supermicro website for possible updates to the manual revision level.

Warnings

Special attention should be given to the following symbols used in this manual.

Warning! Indicates important information given to prevent equipment/property damage or personal injury.

Warning! Indicates high voltage may be encountered when performing a procedure.

Contents

Chapter 3 Maintenance and Component Installation

Chapter 4 Motherboard Connections

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Chapter 1

Introduction

1.1 Overview

This chapter provides a brief outline of the functions and features of the 6028BT-HNC0R+ SuperServer. It is based on the X10DRT-B+ motherboard and the SC827BHQ+-R2K22BP chassis. This is a BigTwin chassis with four independent hot-pluggable computing nodes and twelve 3.5" storage drives.

Models			
System	**Drive Type**	**1U Storage Adapter (4)**	**2U Midplane (1)**
6028BT-HNC0R+	SAS/NVMe hybrid	BPN-ADP-6S3008N4-1UB	BPN-SAS3-827BHQ-N3

In addition to the motherboard and chassis, several important parts that are included with the system are listed below.

Main Parts List		
Description	**Part Number**	**Quantity**
Power supply	PWS-2K22A-1R	2
Fans	FAN-0162L4	4
Heatsink	SNK-P0057PS SNK-P0057PSM	4 each
Air shroud	MCP-310-21718-0B	4
PCIe Riser Card	RSC-P-6 RSC-R1UTP-E16R	4 each
Rack-mount rails	MCP-290-00144-0N	1 set

1.2 Unpacking the System

Inspect the box the in which the server was shipped and note if it was damaged in any way. If any equipment appears damaged, file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the server. 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. It will also require a grounded AC power outlet nearby. Be sure to read the precautions and considerations noted in Appendix B.

1.3 System Features

The following table provides you with an overview of the main features of the 6028BT-HNC0R+.

System Features
Motherboard (per node)
X10DRT-B+
Chassis
SC827BHQ+-R2K22BP
CPU (per node)
Dual Intel Xeon processor E5-2600 v4/v3 familys (in Socket R3 (LGA 2011))
Memory (per node)
Up to 3 TB of memory with DDR4 2666 MT/s ECC Load Reduced DIMMs (LRDIMM) and Registered DIMMs (RDIMM) in 24 DIMM slots; up to 128 GB; Support for Non-Volatile DIMM (NV-DIMM)
Chipset
Intel C612
Expansion Slots (per node)
Two PCIe 3.0 x16 (low profile)
Storage Drives
Twelve hot-swap 3.5" drives total; each node controls three NVMe/SAS drives Two M.2 NVMe/SATA SSD cards (per node)
Cooling
Four 8-cm mid-chassis fans; two CPU heatsinks per node; four air boxes per node
Power
Redundant 2200 W modules, 80Plus level Titanium
Networking (per node)
One SIOM slot (SIOM cards support Ethernet/IB/OPA with speeds ranging from 1G to 100G; must be bundled) One dedicated LAN port for IPMI
Input/Output Ports (per node)
USB: Two USB 3.0 ports VGA
Dimensions
2U rackmount; (WxHxD) 17.6 x 3.47 x 30.5 in. (447 x 88 x 775 mm)

1.4 Server Chassis Features

Control Panel

The are four control panels on the front outside edges of the chassis. Each control panel houses power buttons and status monitoring lights for one node.
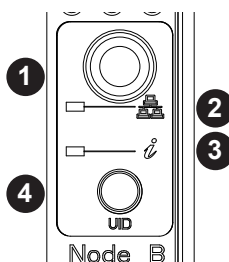
Figure 1-1. Control Panel

Control Panel Features		
Item	**Feature**	**Description**
1	Power button	The main power switch applies or removes primary power from the power supply to the node but maintains standby power.
2	NIC LED	Indicates network activity on the LAN when flashing.
3	Information LED	Alerts operator to several states, as noted in the table below
4	UID button/LED	The unit identification (UID) button turns on or off the blue light function of the Information LED and a blue LED on the rear of the chassis. These are used to locate the server in large racks and server banks.

Information LED	
Status	**Description**
Continuously on and red	An overheat condition has occurred. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.
Blinking red (0.25Hz)	Power failure, check for a non-operational power supply.
Solid blue	UID has been activated locally to locate the server in a rack environment.
Blinking blue	UID has been activated using IPMI to locate the server in a rack environment.

Front Features

The chassis front offers access to the storage drives and a control panel for each node.
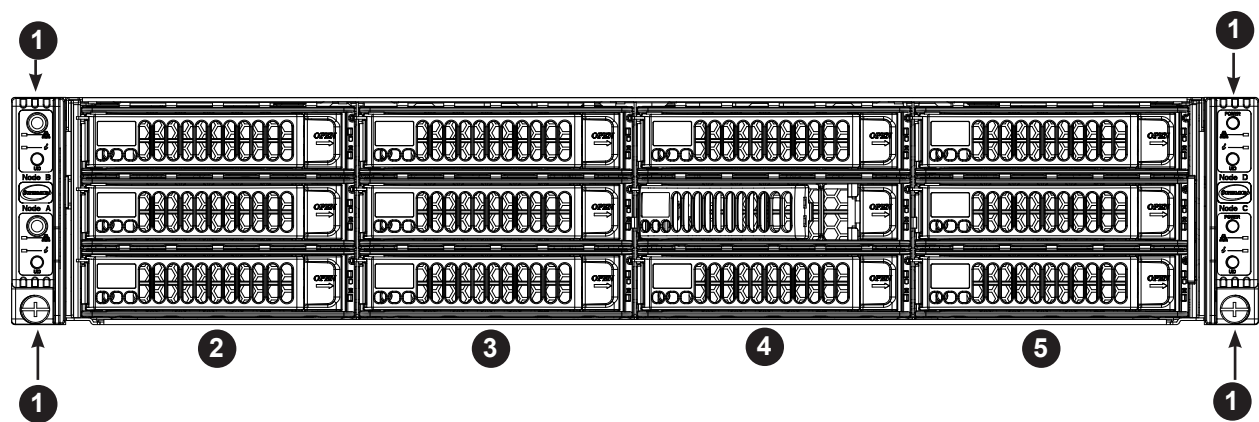
Figure 1-2. Chassis Front View

Front Chassis Features		
Item	**Feature**	**Description**
1	Control Panels	One for each node
2	Node A Drives	Three NVMe/SAS storage drive bays
3	Node B Drives	Three NVMe/SAS storage drive bays
4	Node C Drives	Three NVMe/SAS storage drive bays
5	Node D Drives	Three NVMe/SAS storage drive bays

Rear Features

The illustration below shows the features included on the rear of the chassis.
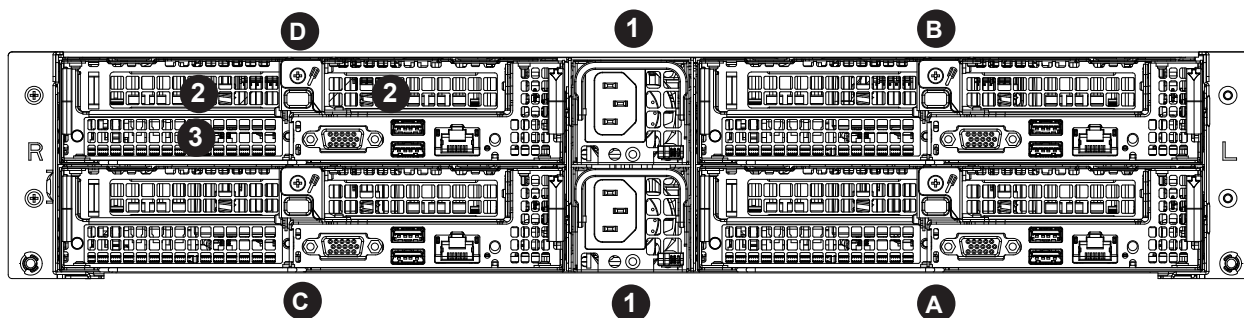
Figure 1-3. Chassis Rear View

Rear Chassis Features		
Item	**Feature**	**Description**
A, B, C, D	Node A, B, C, D	Independent computing nodes
1	Power Supplies	Redundant power modules
2	PCI Slots	Two PCIe 3.0 x16 slots in each node
3	SIOM port	Network ports in each node; refer to table below for available SIOM cards
Unlabeled	I/O ports	Described below

SIOM Network Ports

Network ports are provided by the SIOM card, which offers networking choices.

SIOM Networking Add-on Card Options		
Speed	**Ports**	**Add-on Card Part Number**
GbE	Two RJ45	AOC-MGP-i2M
GbE	Four RJ45	AOC-MGP-i4M
10 G SFP+	Two SFP+	AOC-MTGN-i2SM
10 G SFP+	Four SFP+	AOC-MTG-i4SM
10GBase-T	Two RJ45	AOC-MTG-i2TM
25GbE	Two SFP28 & two RJ45	AOC-MH25G-m2S2TM
25GbE	Two SFP28 & two RJ45	AOC-MH25G-b2S2GM
25GbE	Two SFP28	AOC-M25G-i2SM
IB FDR	Two QSFP & two RJ45	AOC-MHIBF-m2Q2GM
IB FDR	One QSFP & two RJ45	AOC-MHIBF-m1Q2GM
100 G Omni	One QSFP28	AOC-MHFI-i1C

Updates: https://www.supermicro.com/support/resources/AOC/AOC_Compatibility_SIOM.cfm

Input/Output Ports
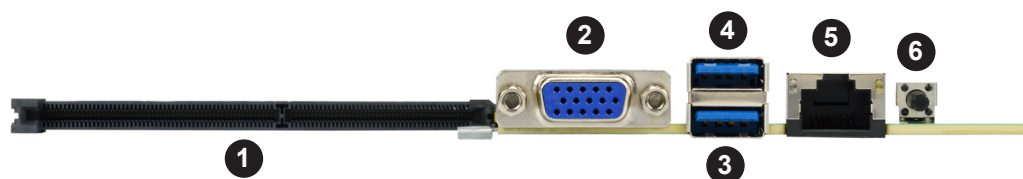
Figure 1-4. Rear I/O Ports

Back Panel I/O Ports			
No.	Description	No.	Description
1	SIOM Network ports	4	USB0 (3.0)
2	VGA port	5	Dedicated IPMI LAN
3	USB1 (3.0)	6	UID Switch and LED

Node Trays

The chassis contains four separate computing nodes, each with its own motherboard.
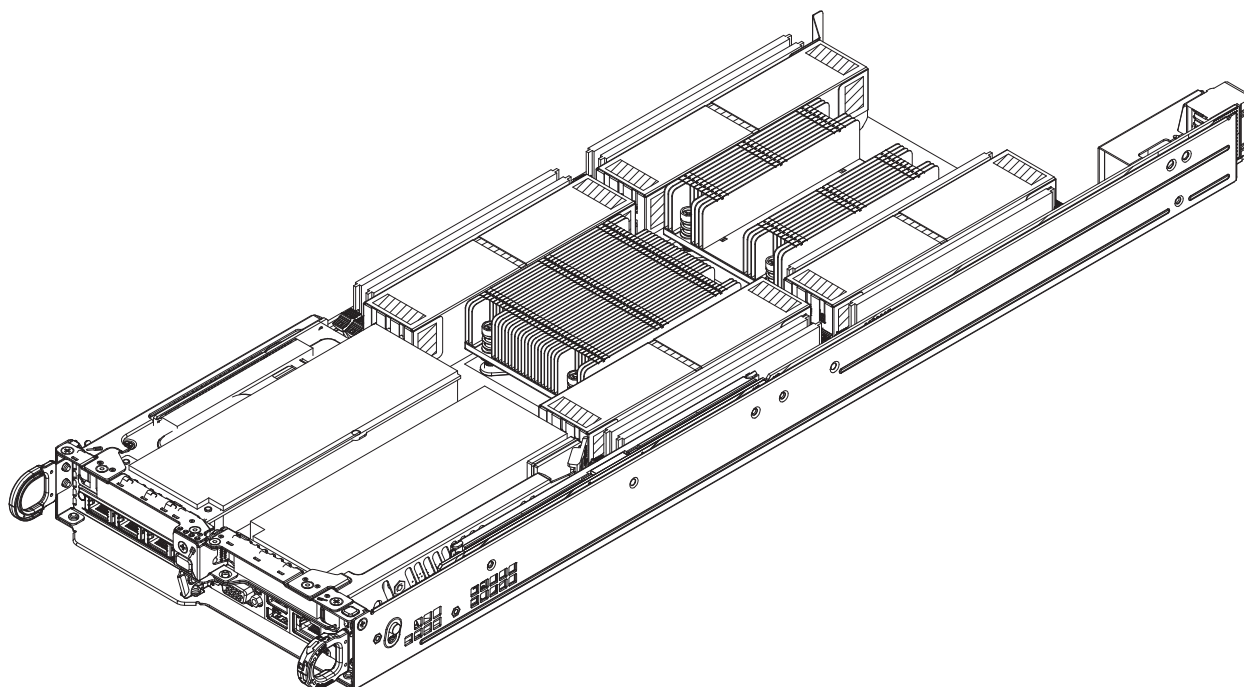
Figure 1-5. Node Drawer

1.5 Motherboard Layout

Below is a layout of the X10DRT-B+ with jumper, connector and LED locations shown. See the table on the following page for descriptions. For detailed descriptions, pinout information and jumper settings, refer to Chapter 4.
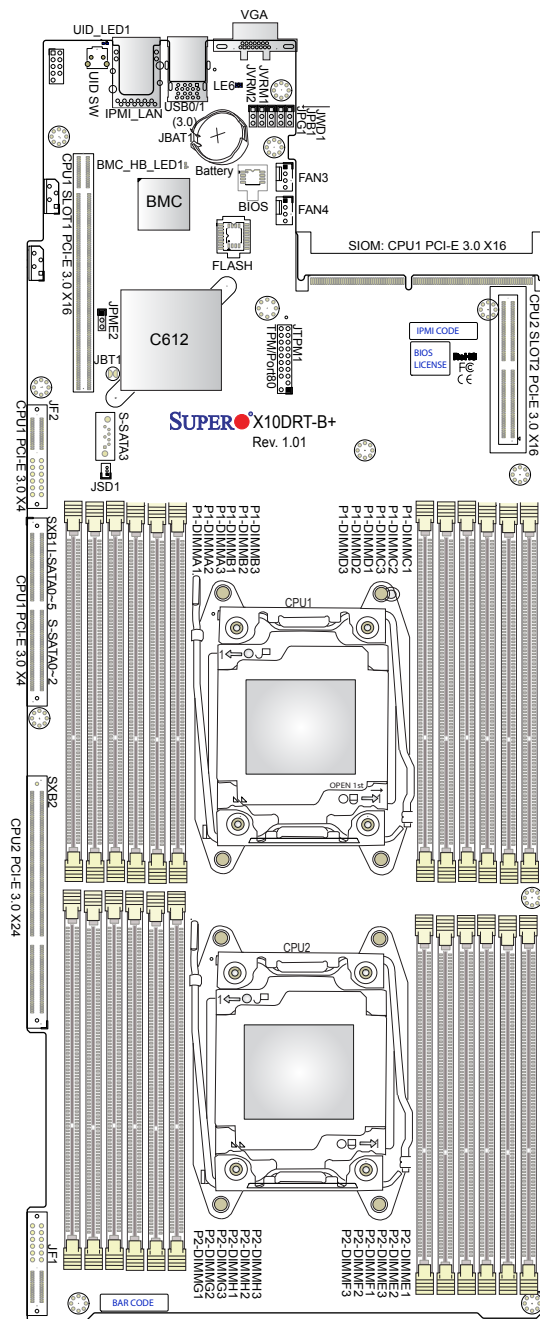
Figure 1-4. Motherboard Layout

- "■" indicates the location of Pin 1.

- Jumpers/LED indicators not indicated are used for internal testing only.

Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 4-7
JPB1	Baseboard Management Controller (BMC) Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPME2	Manufacturing Mode	Pins 1-2 (Normal)
JWD1	Watch Dog Timer Enable	Pins 1-2 (Reset)
JVRM1/2	I^2C Bus for VRM	Pins 1-2 (BMC: Normal)

Connector	Description
Battery (JBAT1)	Onboard CMOS battery
FAN3, FAN4	System fan headers
IPMI_LAN	Dedicated IPMI LAN port
JF1	Power and front control panel connector
JF2	PCIe 3.0 x4 slot supported by CPU1
JSD1	SATA DOM (Disk-On-Module) power connector
JTPM1	TPM (Trusted Platform Module)/Port 80 header
SIOM	CPU1 PCIe 3.0 x16 slot for proprietary add-on module use
SLOT1	PCIe 3.0 x16 slot supported by CPU1
SLOT2	PCIe 3.0 x16 slot supported by CPU2
S-SATA3	SATA DOM with power-pin connector
SXB1	PCIe 3.0 x4 slot (supported by CPU1) and SATA connections (I-SATA0~5 & S-SATA0~2)
SXB2	PCIe 3.0 x24 slot supported by CPU2
UID SW	UID (Unit Identifier) switch
USB0/1 (3.0)	Back panel USB 3.0 ports
VGA	Back panel VGA port

LED	Description	State	Status
BMC_HB_LED1	BMC Heartbeat	Green: Blinking	BMC Normal
LE6	Onboard power	Orange Green Red	Standby power ready All power RAMP normal One or more power regulators failed
UID_LED1	Rear UID	Blue: On/blinking	Unit Identified

System Block Diagram
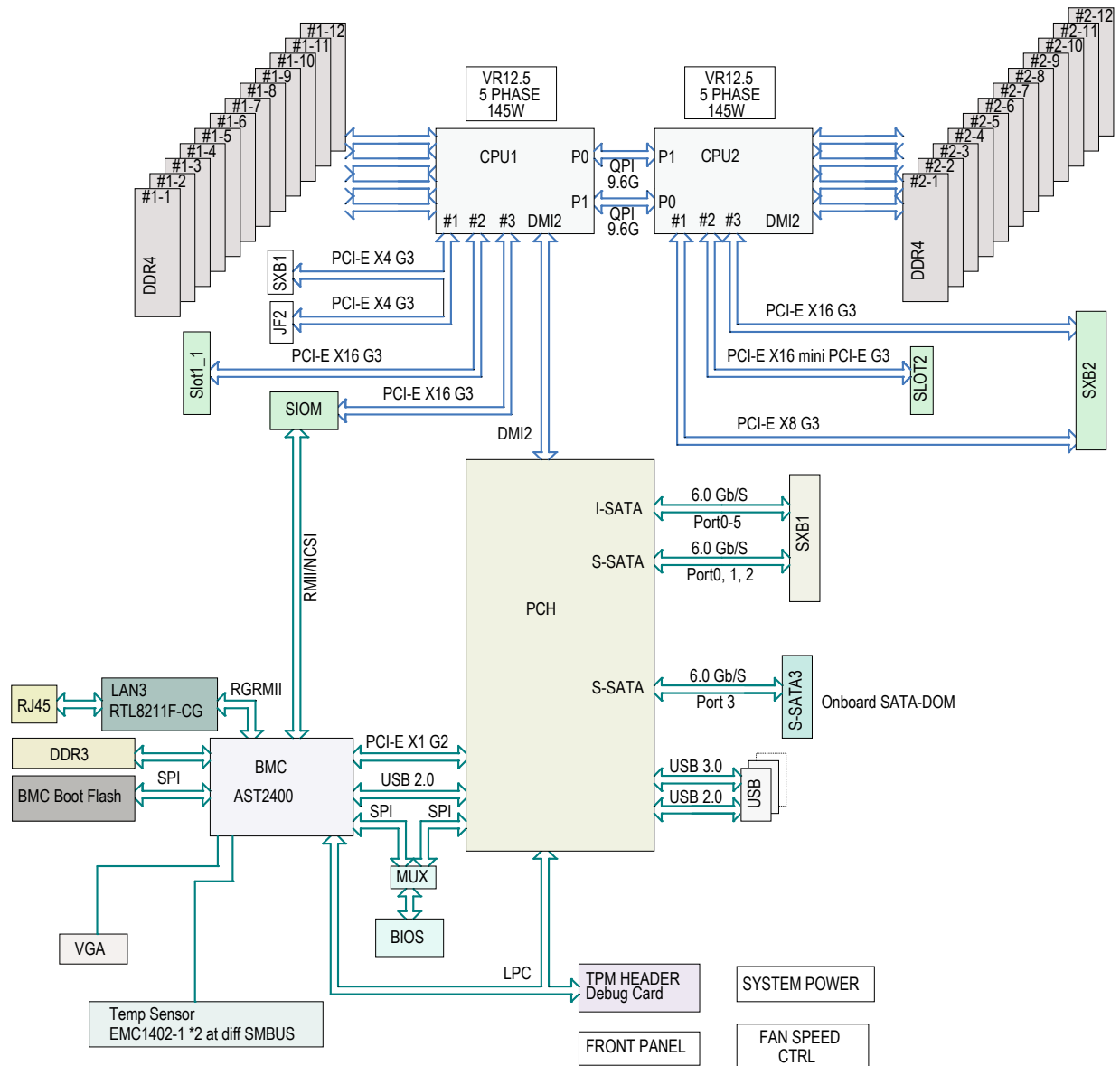
Figure 1-5. Intel C612 Chipset Block Diagram (Single Node)

Chapter 2

Server Installation

2.1 Overview

This chapter provides advice and instructions for mounting your system in a server rack. If your system is not already fully integrated with processors, system memory etc., refer to Chapter 4 for details on installing those specific components.

Caution: Electrostatic Discharge (ESD) can damage electronic components. To prevent such damage to PCBs (printed circuit boards), it is important to use a grounded wrist strap, handle all PCBs by their edges and keep them in anti-static bags when not in use.

2.2 Preparing for Setup

The box in which the system was shipped should include the rackmount hardware needed to install it into the rack. Please read this section in its entirety before you begin the installation.

Choosing a Setup Location

- The system should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.

- Leave enough clearance in front of the rack so that you can open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow sufficient space for airflow and access when servicing.

- This product should be installed only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).

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

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are extended to the floor so that the full weight of the rack rests on them.

- In single rack installations, 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 server or other component from the rack.

- You should extend only one server or 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 Appendix B.

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

- Install the heaviest server components at the bottom of the rack first and then work your way up.

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

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

- When not servicing, always keep the front door of the rack and all covers/panels on the servers closed to maintain proper cooling.

Rack Mounting Considerations

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 room's ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (TMRA).

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.).

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.

- Slide rail mounted equipment is not to be used as a shelf or a work space.

2.3 Rack Mounting Instructions

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. **Note:** This rail will fit a rack between 28" and 33.5" deep.

Overview of the Rack Rails

The package includes two rail assemblies. Each is specifically designed for the left or right side of the chassis, and so marked. Each rail consists of two sections: a front section which secures to the front post of the rack and a rear section which adjusts in length and secures to the rear post of the rack.
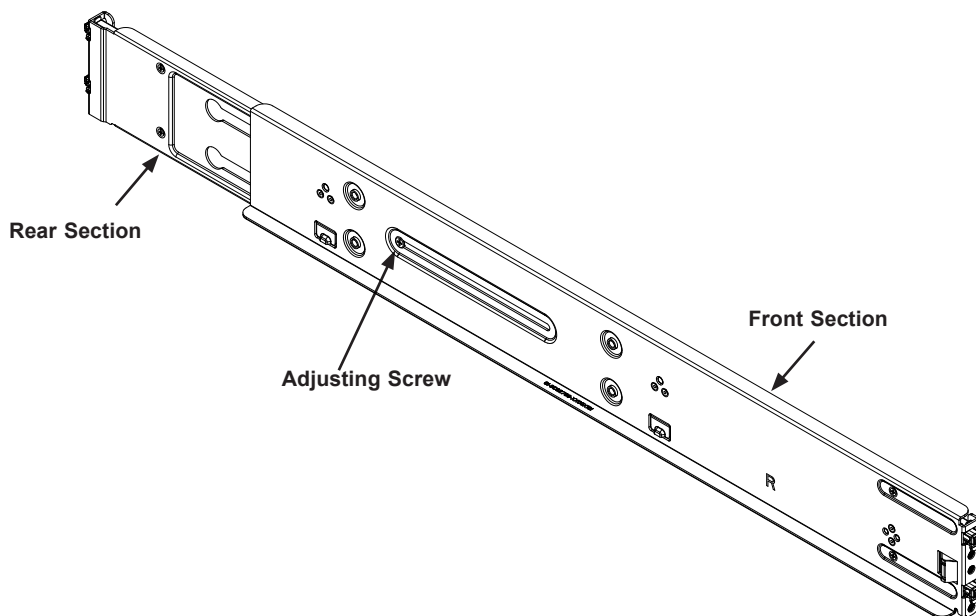
Figure 2-1. Rackmount Rail
(Right rail assembly shown)

Adjusting the Rail Length

Each rail assembly has a locking screw to adjust the length of the rail to fit the depth of your rack.

Installing the Rails on a Rack

1. Loosen the adjusting screw to allow the rear section to slide in the front section.

2. Push the small hooks on the front section of the rail into the holes on the front post of the rack and then down, until the spring-loaded pegs snap into the rack holes. Secure the rail to the rack with screws.

3. Pull out the rear section of the outer rail, adjusting the length until it fits within the posts of the rack and align the small hooks with the appropriate holes on the rear post of the rack. Be sure the rail is level, then mount the rear section onto the rack. Secure the rail with screws.

4. Tighten the adjusting screw.
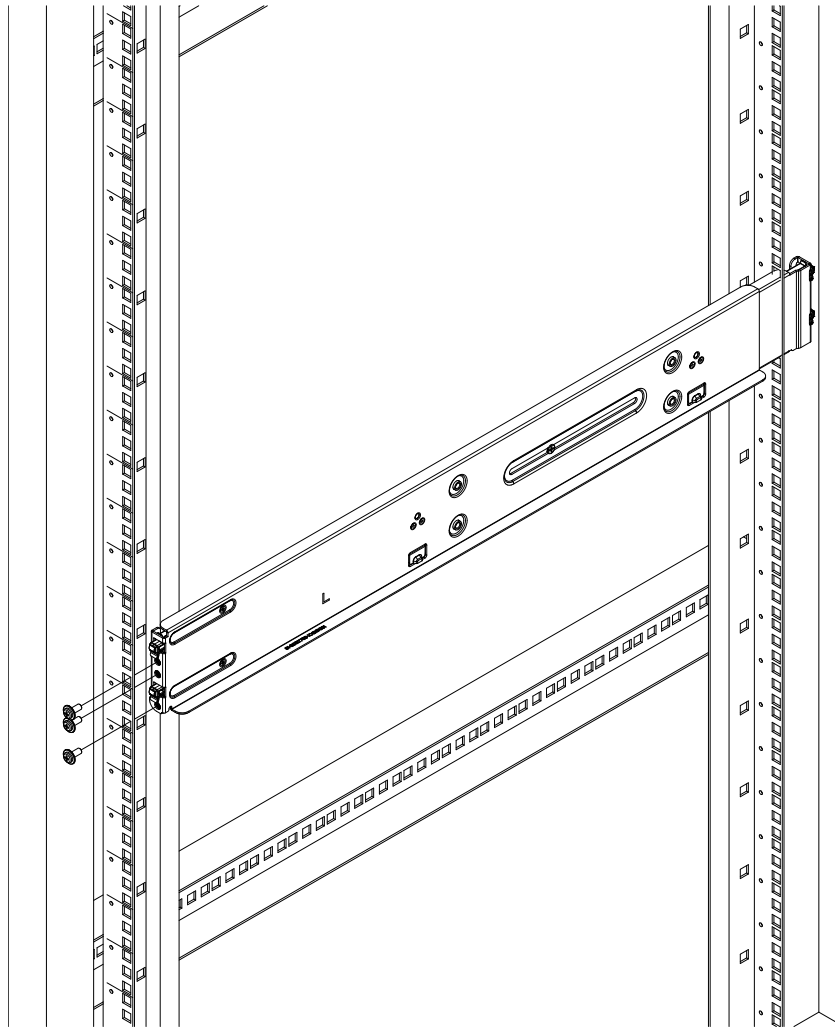
Figure 2-2. Attaching the Rail Front to the Rack
(Left rail shown)

Note: Figures are for illustrative purposes only. Always install servers into racks from the bottom up.

Chassis Installation

Slide the chassis into the rack so that the bottom of the chassis slides onto the bottom lip of the rails.
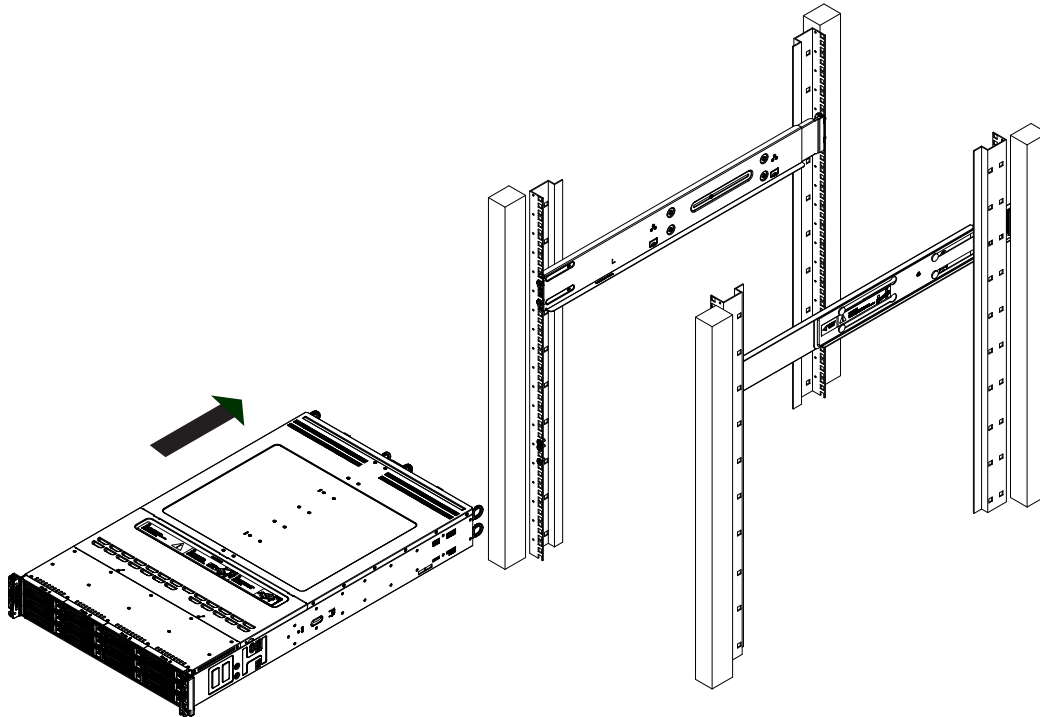
Figure 2-3. Sliding the Chassis into the Rack

Note: Figures are for illustrative purposes only. Always install servers into racks from the bottom up.

⚠️ 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.

Chapter 3

Maintenance and Component Installation

This chapter provides instructions on installing and replacing main system components. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

Installation or replacement of most components require that power first be removed from the system. Please follow the procedures given in each section.

3.1 Removing Power

Before performing some setup or maintenance tasks, use the following procedure to ensure that power has been removed from the system.

Removing Power from a Node

1. Use the operating system to power down the node.

2. Grasp the head of the power cord and gently pull it out of the back of the power supply.

Removing Power from the System

1. Use the operating system to power down all nodes.

2. Grasp the head of each power cord and gently pull it out of the back of the power supply.

3. Disconnect the cords from the power strip or wall outlet.

3.2 Accessing the System

Removing a Computing Node Drawer

1. Use the operating system to power down the node.

2. Remove any cables attached to the node.

3. Push the release latch handle down, then pull both node handles.

4. Slide the node out the chassis rear.

Handle

**Release Latch
Handle**
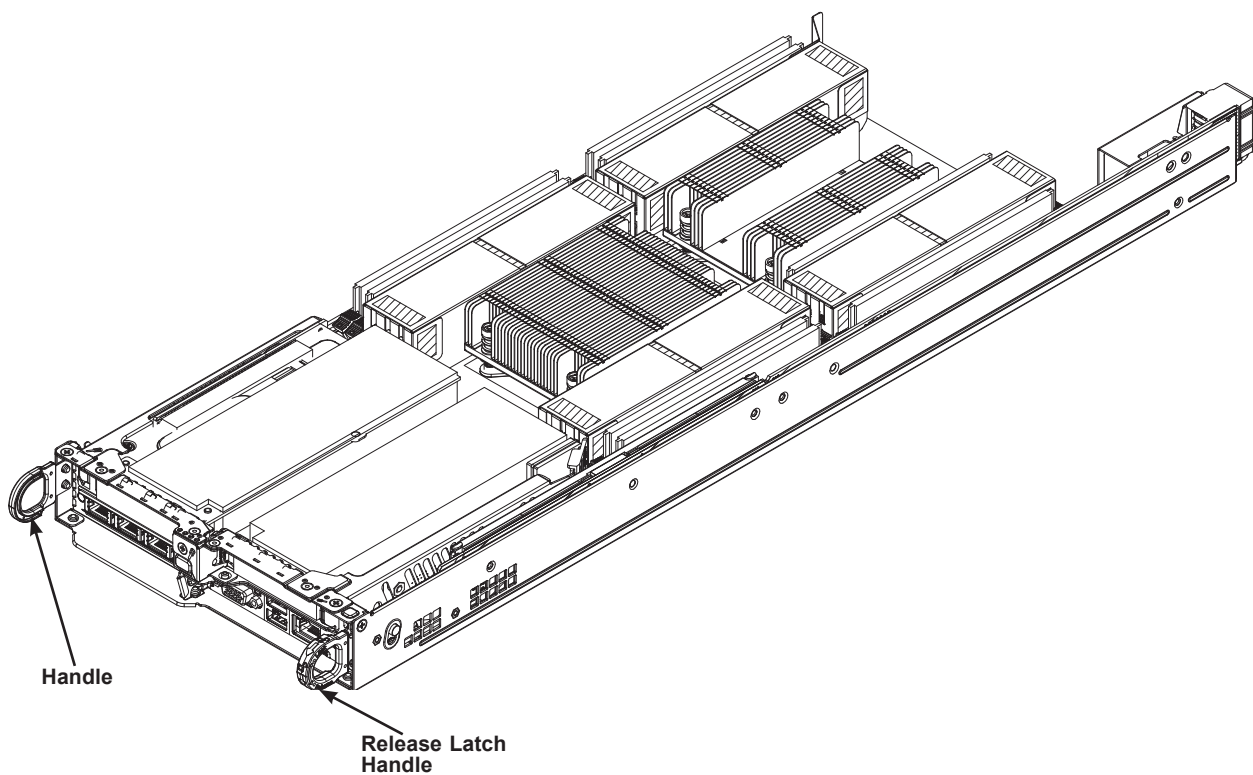
Figure 3-1. Removing a Node Tray

Removing the Chassis Cover

You can access some chassis components, such as fans, by removing the cover.
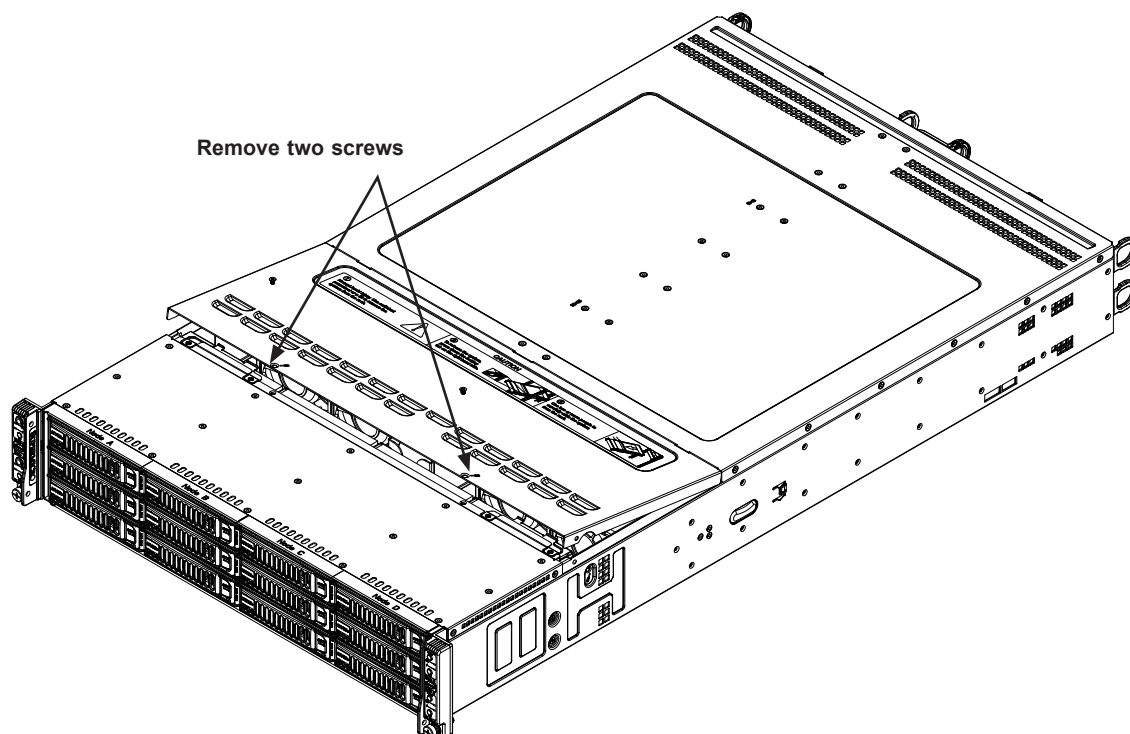
Remove two screws

Figure 3-2. Removing the Chassis Cover

Removing the Chassis Cover

The chassis top cover can be lifted off after removing two screws.

Caution: Except for short periods of time, do not operate the server without the cover in place. It provides proper airflow to prevent overheating.

3.3 Motherboard Components

Processor and Heatsink Installation

Notes:

- Use ESD protection.

- Unplug the AC power cord from all power supplies after shutting down the system.

- Check that the plastic protective cover is on the CPU socket and none of the socket pins are bent. If they are, contact your retailer.

- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or CPU socket, which may require manufacturer repairs.

- Install the processor into the CPU socket before installing the heatsink.

- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.

- Refer to the Supermicro website for updates on processor support.

- All graphics in this manual are for illustration only. Your components may look different.

Installing an LGA 2011 Processor

Installing a CPU

1. There are two levers on the LGA 2011 socket. First press and release the load lever labeled "Open 1st".

Release the lever labeled "Open 1st"
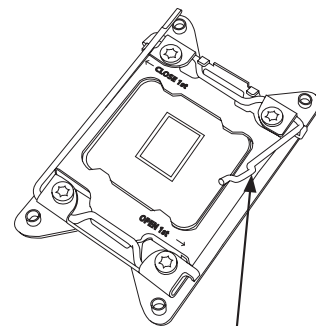
Release the lever labeled "Close 1st"

2. Press the second load lever labeled "Close 1st" to release the load plate from its locked position.
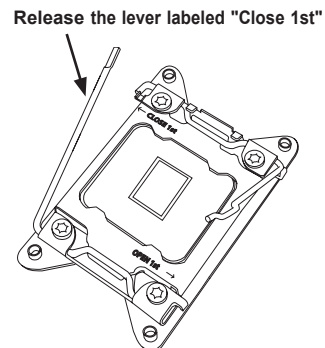
3. With the second lever fully retracted, gently push down on the "Open 1st" lever to loosen the load plate. Lift the load plate with your fingers to open it completely.
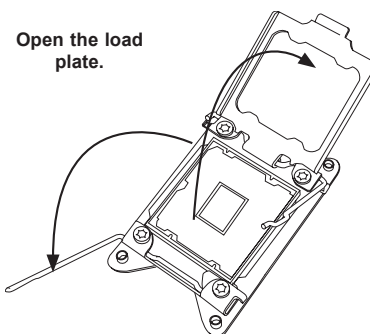
Open the load plate.

4. Pop the plastic cap marked "Warning" out of the load plate.

5. Holding the CPU carefully above the socket, orient the CPU so that all keys and edges will fit the socket.

IMPORTANT!
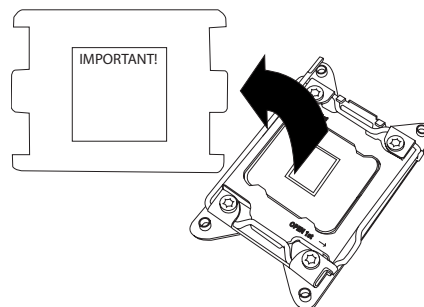
6. Carefully lower the CPU straight down into the socket. Do not move the CPU horizontally, and do not rub the pins of the socket. This may damage the CPU or the socket.
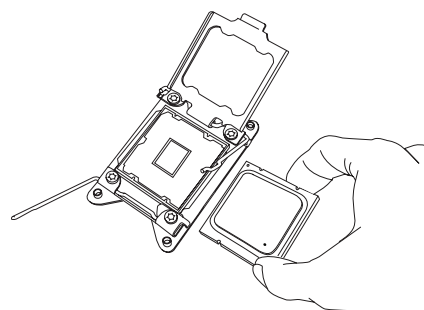
Caution: You can only install the CPU into the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it does not close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

**Gently close
the load plate.**

7. With the "Close 1st" lever fully retracted, gently
    close the load plate.

**Push down and lock the
lever labeled "Close 1st".**
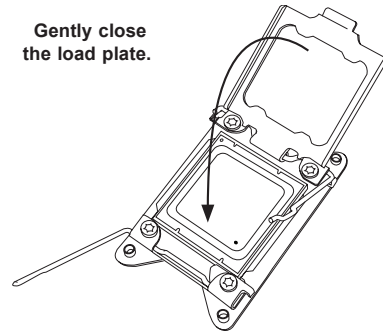
8. Make sure the locking mechanism on the "Close
    1st" lever catches the lip of the load plate. Close
    and lock the "Close 1st" lever.

**Engage the lip of
the load plate and
locking portion of
the lever."**
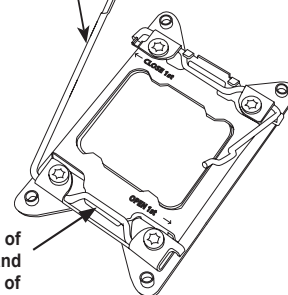
9. Close and lock the "Open 1st" lever.

**Push down and lock the
lever labeled "Open 1st"**
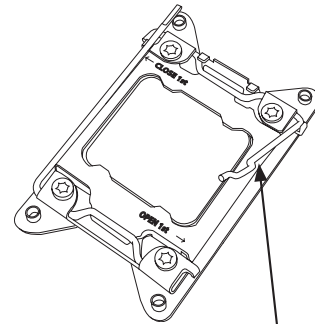
Installing a CPU Heatsink

Each mother board uses two distinct heatsinks: SNK-P0057PS is mounted on CPU1 and SNK-P0057PSM is mounted on CPU2.

Installing a Heatsink

1. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism. The heatsink fins should be parallel with the chassis airflow from the fans.

2. Screw in two diagonal screws (#1 and #2) until just snug—do not over-tighten and damage the CPU. Screw in the remaining screws.

3. Finish the installation by fully tightening all four screws.
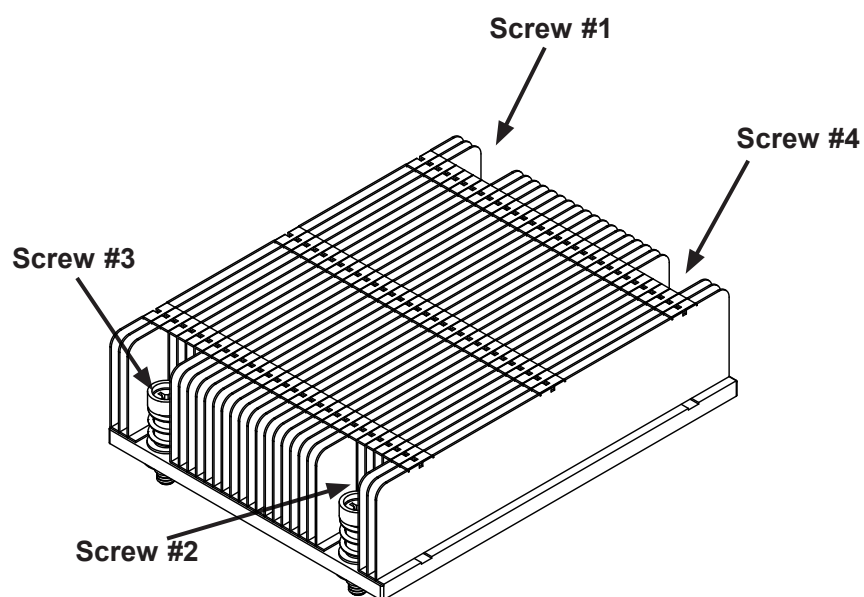
Figure 4-1. Heatsink Screw Order

Removing the Heatsink

Caution: We do not recommend removing the CPU or the heatsink. If you must remove the heatsink, follow the instructions below to prevent damage to the CPU or the socket.

1. Power off the node as described in Section 3.1 an remove the node.

2. Unscrew and remove the heatsink screws in the opposite sequence shown in the picture above.

3. Hold the heatsink and <u>gently</u> wriggle it to loosen it from the CPU. (Do not use excessive force!)

4. Once the heatsink is loosened, remove it from the CPU.

5. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease before re-installing the heatsink.

Memory Installation

Memory Support

The server features 24 DIMM slots that can support up to 3 TB of Load Reduced (LRDIMM 3DS), 1.5 TB LRDIMM, or 768 registered (RDIMM) ECC DDR4-2400/2133/1866/1600/1333 SDRAM or LRDIMM type memory. In addition it supports Non-Volatile DIMMs (NV-DIMM). Populating these DIMM modules with pairs of memory modules of the same type and size will result in interleaved memory, which will improve memory performance.

Note: When installing memory modules, be sure to populate the first DIMM module on the blue memory slot, which is the first memory slot of a memory channel, and then populate the second DIMM in the black slot if 2DPC memory configuration is used.

Check the Supermicro website for possible updates to memory support.

Processors and their Corresponding Memory Modules											
CPU#	**Corresponding DIMM Modules**										
(CPU 1) P1-DIMM	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
(CPU 2) P2-DIMM	E1	F1	G1	H1	E2	F2	G2	H2	E3	F3	G3	H3

Caution: Install DIMMs of the same type and speed. Mixing of DIMMs of different types or speeds is not allowed.

Processor and Memory Module Population for Optimal Performance	
Number of CPUs+DIMMs	**CPU and Memory Population Configuration Table** (For memory to work properly, please follow the instructions below.)
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
1 CPU & 5~8 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1 + Any memory pairs in P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2 slots
2 CPUs & 2 DIMMs	CPU1 + CPU2 P1-DIMMA1, P2-DIMME1
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 9~16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1 + Any memory pairs in P1, P2 DIMM slots

Processor and Memory Module Population for Optimal Performance	
Number of CPUs+DIMMs	**CPU and Memory Population Configuration Table** (For memory to work properly, please follow the instructions below.)
2 CPUs & 16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1,P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2, P2-DIMME2/P2-DIMMF2/P2-DIMMG2/P2-DIMMH2
2 CPUs & 16~24 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1, P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2, P2-DIMME2/P2-DIMMF2/P2-DIMMG2/P2-DIMMH2, P1-DIMMA3/P1-DIMMB3/P1-DIMMC3/P1-DIMMD3, P2-DIMME3/P2-DIMMF3/P2-DIMMG3/P2-DIMMH3

Populating RDIMM/LRDIMM DDR4 Memory Modules, E4-2600 Processors								
Type	**Ranks Per DIMM and Data Width**	**DIMM Capacity (GB)**		**Three Slots per Channel**				
				1 DPC		**2 DPC**		**3 DPC**	
				V3	**V4**	**V3**	**V4**	**V3**	**V4**
		4 Gb	**8 Gb**	**1.2 V**	**1.2 V**	**1.2 V**	**1.2 V**	**1.2 V**	**1.2 V**
RDIMM	SRx4	8 GB	16 GB	2133	2400	1866	2133	1600	1600
RDIMM	SRx8	4 GB	8 GB	2133	2400	1866	2133	1600	1600
RDIMM	DRx8	8 GB	16 GB	2133	2400	1866	2133	1600	1600
RDIMM	DRx4	16 GB	32 GB	2133	2400	1866	2133	1600	1600
LRDIMM	QRx4	32 GB	64 GB	2133	2400	2133	2400	1600	1866
LRDIMM 3DS	8Rx4	64 GB	128 GB	2133	2400	2133	2400	1600	1866

Installing Memory

Begin by removing power from the system as described in Section 3.1.

1. Starting with P1-DIMMA1, push the release tabs outwards on both ends of the DIMM slot to unlock it.

Notches
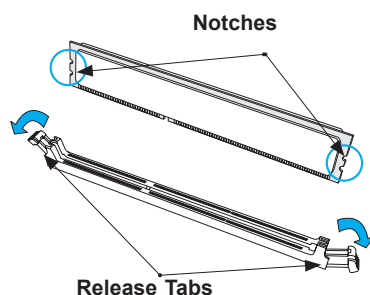
Release Tabs

2. Align the key of the DIMM with the receptive point on the memory slot and with your thumbs on both ends of the module, press it straight down into the slot until the module snaps into place.

Press both ends straight down into the memory slot.
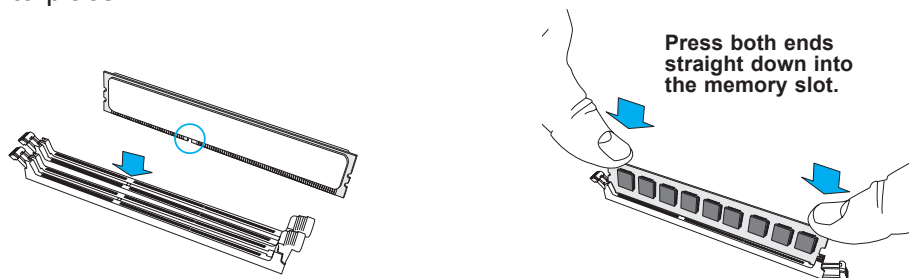
3. Press the release tabs to the locked position to secure the DIMM module into the slot.

Caution: Exercise extreme caution when installing or removing memory modules to prevent any possible damage to the DIMMs or slots.

Notes:

1. In dual-CPU configurations, memory must be installed in the DIMM slots associated with the installed CPUs.

2. When installing memory modules, be sure to populate the first DIMM module on the blue memory slot, which is the first memory slot of a memory channel, and then populate the second DIMM in the black slot if 2DPC memory configuration is used.

Removing Memory

To remove a DIMM, unlock the release tabs then pull the DIMM from the memory slot.

Motherboard Battery

The motherboard uses non-volatile memory to retain system information when system power is removed. This memory is powered by a lithium battery residing on the motherboard.

Replacing the Battery

Begin by removing power from the system as described in section 3.1.

1. Push aside the small clamp that covers the edge of the battery. When the battery is released, lift it out of the holder.

2. To insert a new battery, slide one edge under the lip of the holder with the positive (+) side facing up. Then push the other side down until the clamp snaps over it.

Note: 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.

LITHIUM BATTERY

BATTERY HOLDER
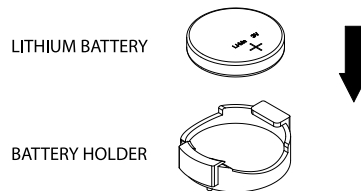
Figure 3-5. Installing the Onboard Battery

Warning: There is a danger of explosion if the onboard battery is installed upside down (which reverses its polarities). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (BR2032).

3.4 Chassis Components

Storage Drives

The SC827BHQ chassis supports twelve 3.5" storage drives (HDDs or SSDs). Each node controls three NVMe/SAS drives.

They are mounted in carriers to simplify their removal from the chassis. These carriers also help promote proper airflow.

For M.2 SSD storage, see the next section.

Drive Carrier Indicators

Each drive carrier has two LED indicators: an activity indicator and a status indicator. In RAID configurations, the status indicator lights to indicate the status of the drive. In non-RAID configurations, the status indicator remains off. See the table below for details.

Hard Drive Carrier LED Indicators			
	Color	**Blinking Pattern**	**Behavior for Device**
Activity LED	Blue	Solid On	SAS/NVMe drive installed
	Blue	Blinking	I/O activity
Status LED	Red	Solid On	Failure of drive with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for drive with RSTe support
	Red	On for five seconds, then off	Power on for drive with RSTe support
	Red	Blinking at 4 Hz	Identify drive with RSTe support
	Green	Solid On	Safe to remove NVMe device
	Amber	Blinking at 1 Hz	Attention state—do not remove NVMe device

Note: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, see the Supermicro website.

Note: Please contact Supermicro Technical Support for additional information about HDD and SSD if mixed. Some restrictions and configuration rules that apply to SSD are different from HDD.

Drive Configuration

The SC827BHQ+-R2K22BP chassis contains four separate computing node drawers, each with its own motherboard. Each node controls a set of three drives. If a node drawer is pulled out of the chassis, the drives associated with that node will power down.

Node Drawer Locations	
Node A controls drives A1–A3	Node B controls drives B1–B3
Node C controls drives C1–C3	Node D controls drives D1–D3
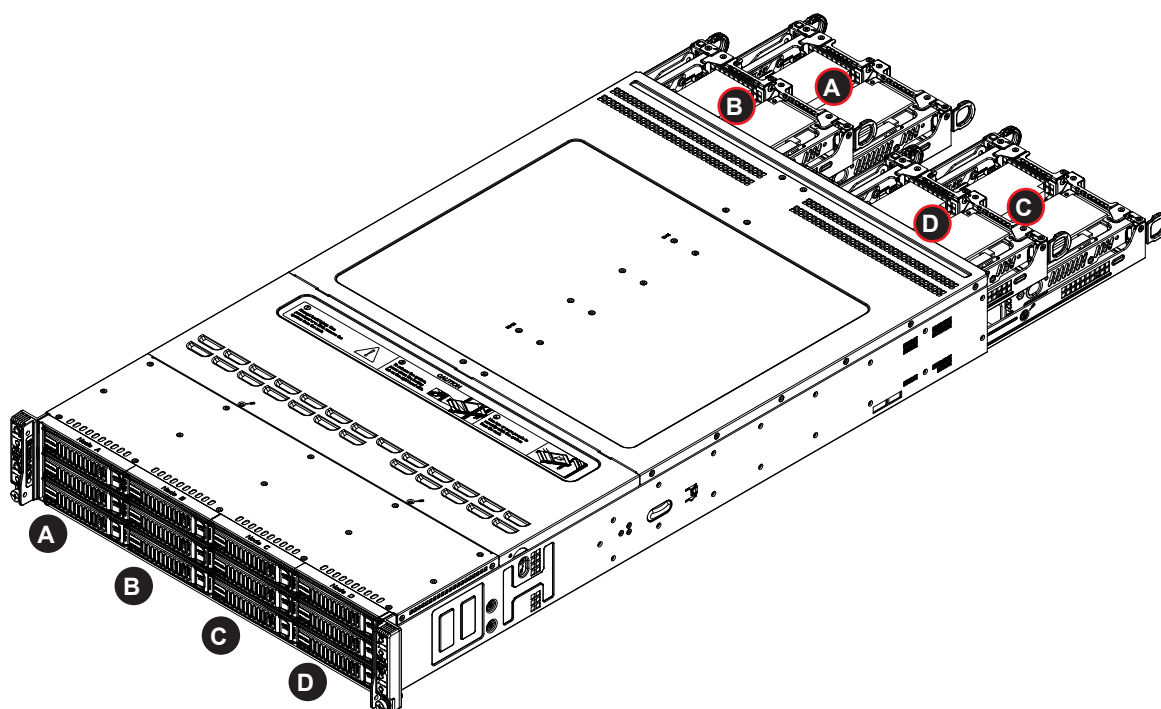
Figure 3-6. Storage Drives and the Corresponding Nodes

Installing Drives

Removing Drive Carriers from the Chassis

1. Press the release button on the drive carrier. This extends the drive carrier handle.

2. Use the handle to pull the carrier out of the chassis (Figure 3-7).

3. Remove the dummy drive from the carrier (Figure 3-8).

Caution: Except for short periods of time (swapping drives), do not operate the server with the drive carriers removed from the bays, regardless of how many drives are installed, for proper airflow.
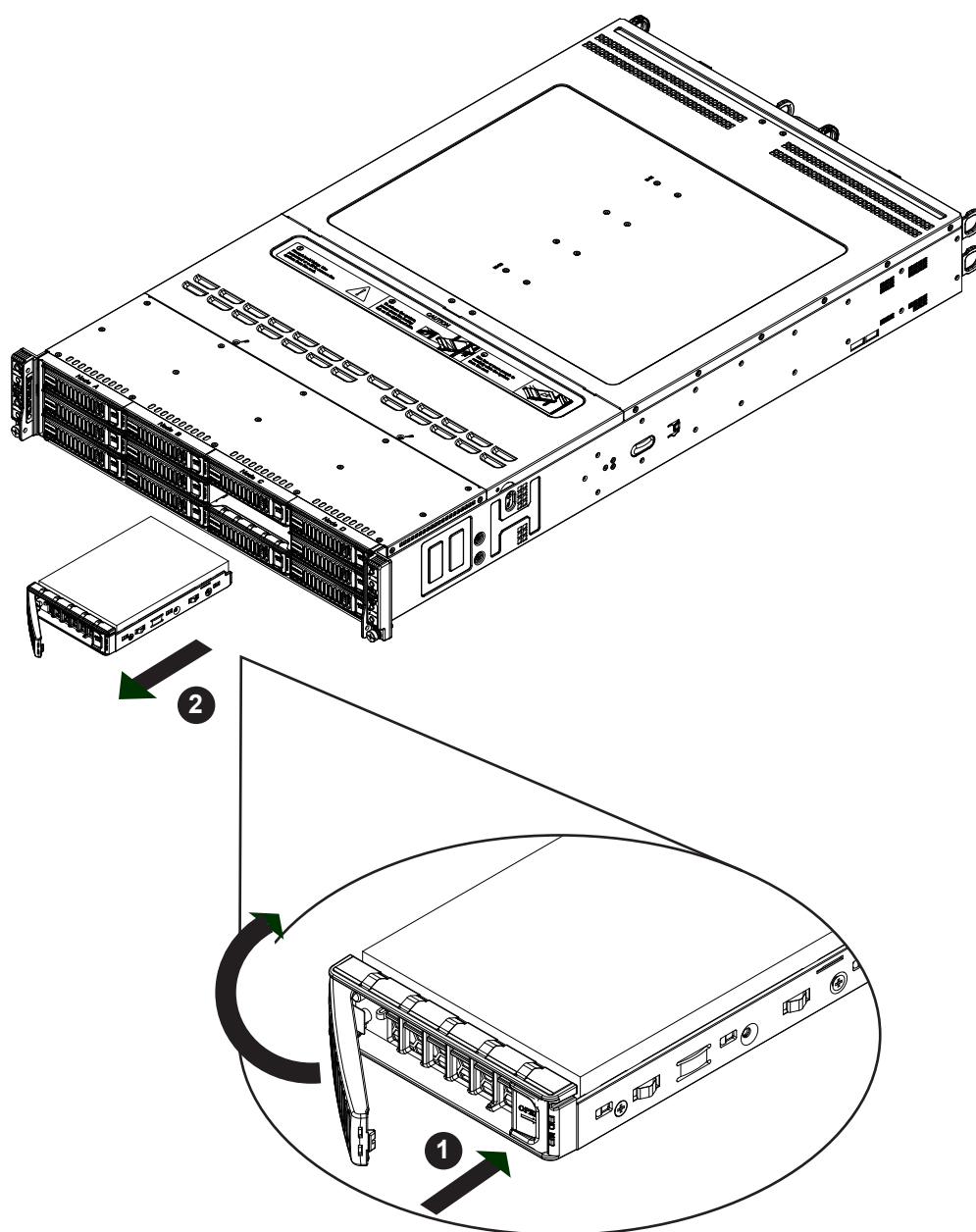
Figure 3-7. Removing a Drive Carrier
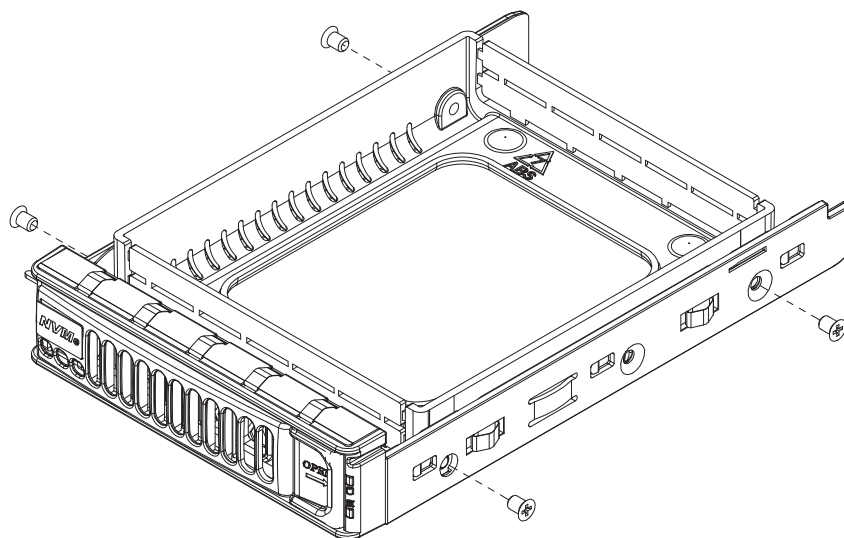
Figure 3-8. Removing a Dummy Drive from the Drive Carrier

Installing a Drive

1. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes in the drive align with those in the carrier.

2. Secure the hard drive into the carrier with the screws.
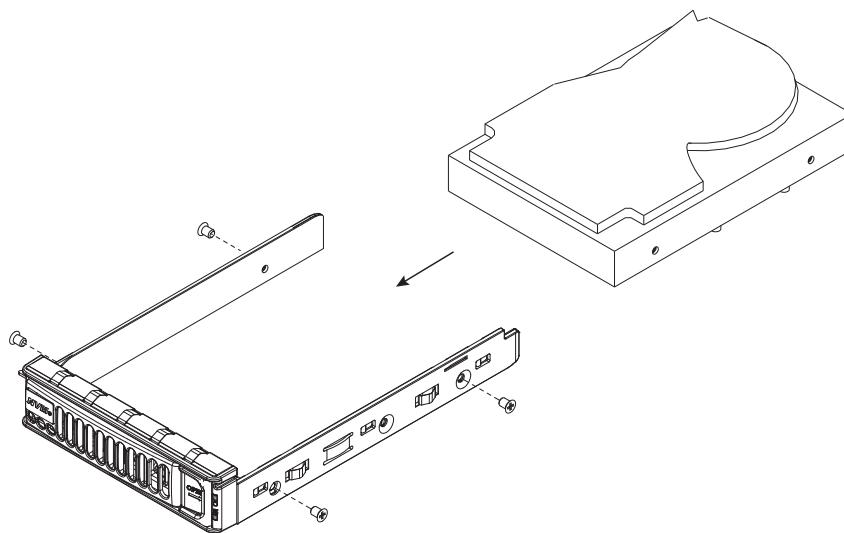
Figure 3-9. Installing the Hard Drive into the Carrier

3. Insert the drive and carrier into its bay with the release button is on the right. When the carrier reaches the rear of the bay, the release handle starts to retract.

4. Push the upper part of the drive's carrier handle until it clicks into the locked position.

Installing M.2 Solid State Drives

Each node can accommodate two M.2 solid state drives (SSDs) on an optional storage adapter card—one SATA and one NVMe. Several SSD lengths are supported—42mm, 60mm, or 80mm. For each length, there is an hole in the storage adapter card for a plastic standoff.
Note: For NVMe, the maximum system operating temperature is 30º C.
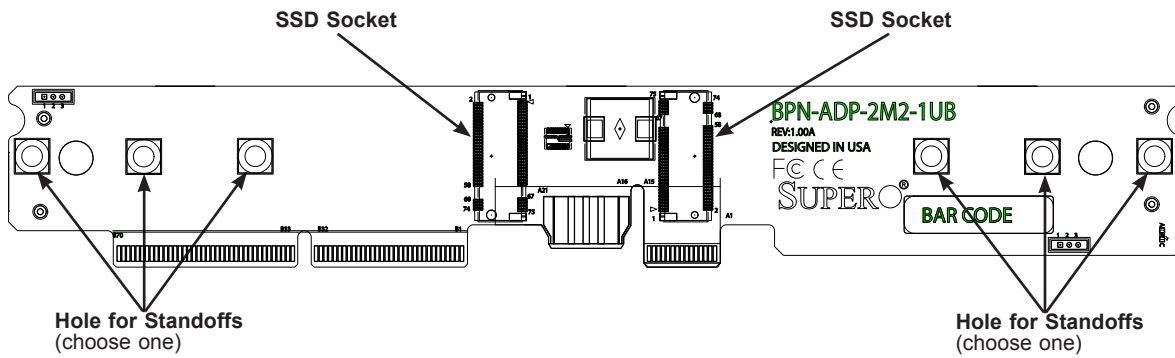
Figure 3-10. M.2 SSD onto Storage Adapter Card
(BPN-ADP-2M2-1UB adapter card)

Installing an M.2 SSD

Look at the storage adapter card. There is a plastic standoff in one of the holes. If it is the correct hole for your M.2 SSD, you can slide the SSD into the socket, and secure it by pushing the plug into the standoff. You may have to temporarily remove a DIMM or two to allow room.

If the standoff is not in the appropriate hole for your M.2 SSD, you must remove the storage adapter card and move it.

Caution: Use industry-standard anti-static equipment, such as gloves or wrist strap, and follow precautions to avoid damage caused by ESD.
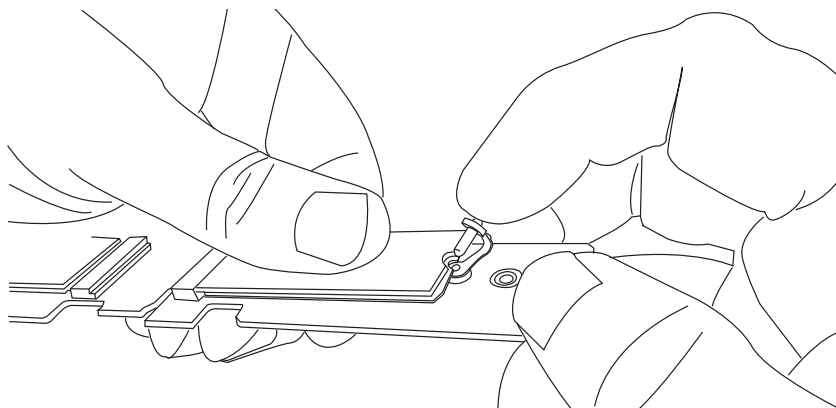
Figure 3-11. Inserting the Standoff Plug
(**Note:** Your card looks different, but the standoff functions the same.)

Moving the M.2 Standoff

1. With the node out of the chassis, release the storage adapter card from the node. There are two screws on the right outside of the node.

2. Pull the storage adapter card up and out of the motherboard slot.

Screw

Top Edge of the
Storage Adapter Card

Screw
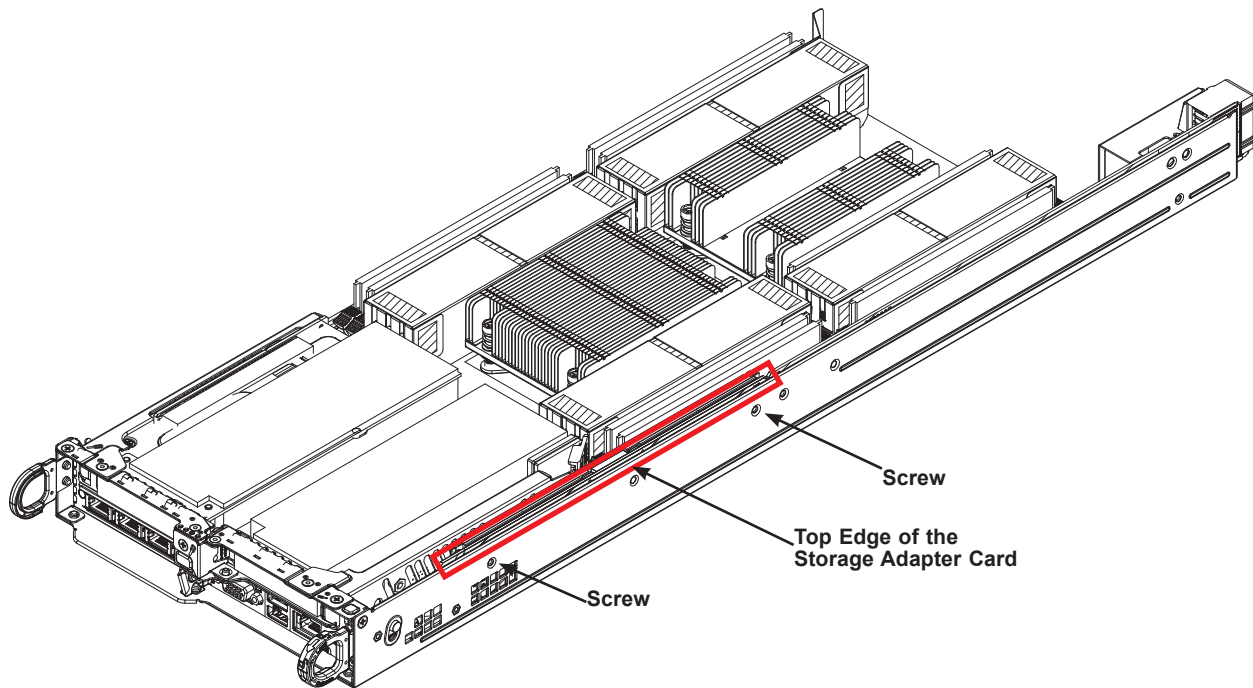
Figure 3-12. Removing the Storage Adapter Card

3. Push the plastic standoff out of the storage adapter card. Push it into the correct hole for your SSD length.

4. Insert the SSD into the socket on the storage adapter card. Then push it flat against the adapter card and the plastic standoff.

5. Secure the SSD by firmly inserting the standoff plug.

6. Replace the adapter card into the JF1/SXB1/SXB2/JF2 slots on the motherboard and replace the mounting screws.

7. Replace the node into the chassis and power up.

Installing Expansion Cards

Each node can accommodate two low profile, half length x8 PCIe cards per node.

Installing a Full-Height Expansion Card

1. Power down the node and remove it from the chassis.

2. Loosen the necessary retention screws. Most are marked by a small screwdriver icon.

3. Remove the blank PCI shield from the chassis.

4. Slide the expansion card shield into the open shield slot while plugging the expansion card into the riser card slot.

5. Replace the screws.
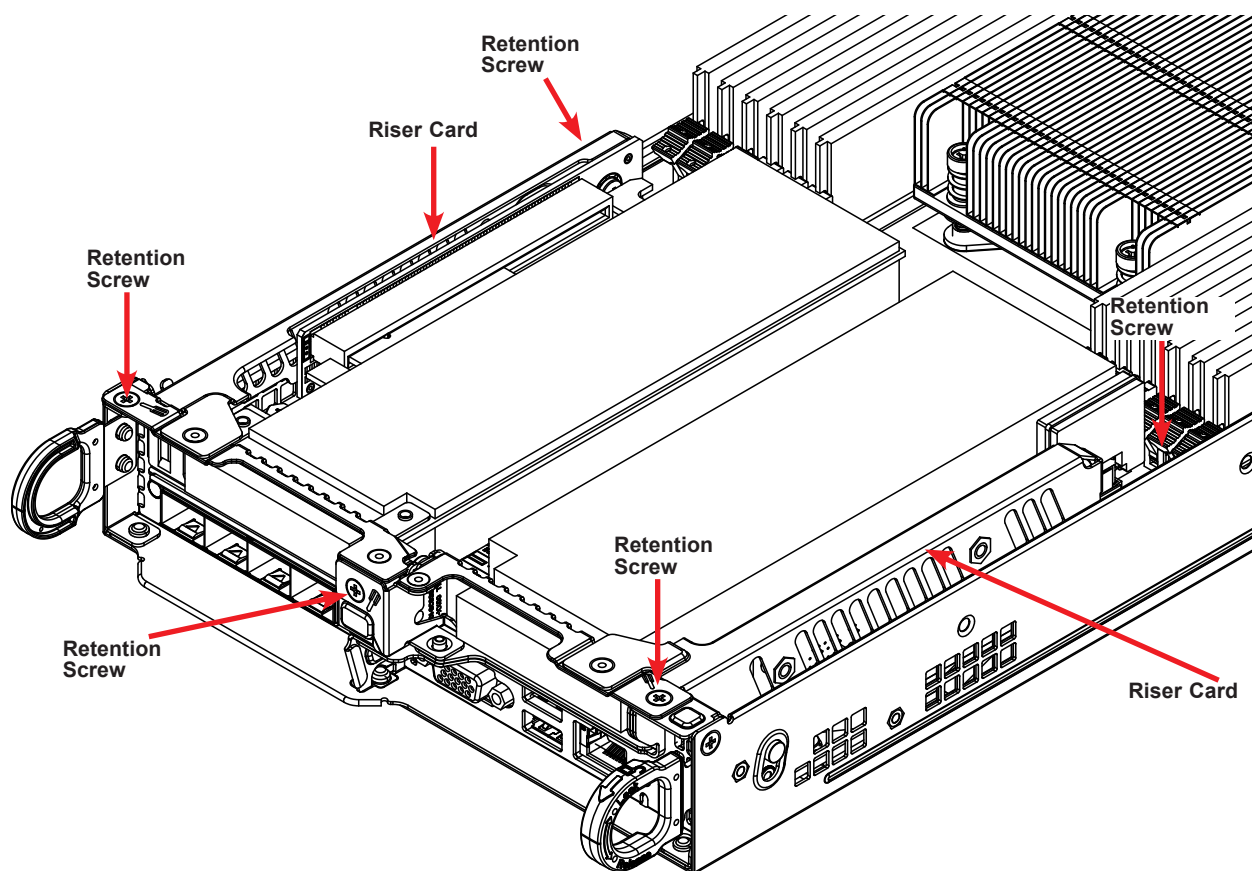
Figure 3-13. Installing the Expansion Cards

SIOM Card

The Supermicro Input/Output module (SIOM) card provides options for network connection. It is inserted into a SIOM slot on the motherboard. This installation is usually performed by a system integrator or manufacturer.

Installing the SIOM Card Before Installing the Motherboard

1. Insert the SIOM card into the motherboard as shown.

2. Secure it with a screw. **Note**: Torque range is 0.20-0.28 Nm.

3. Install the covering bracket on the rear of the node drawer using a screw.

4. Install the motherboard including the other screw on the SIOM card.
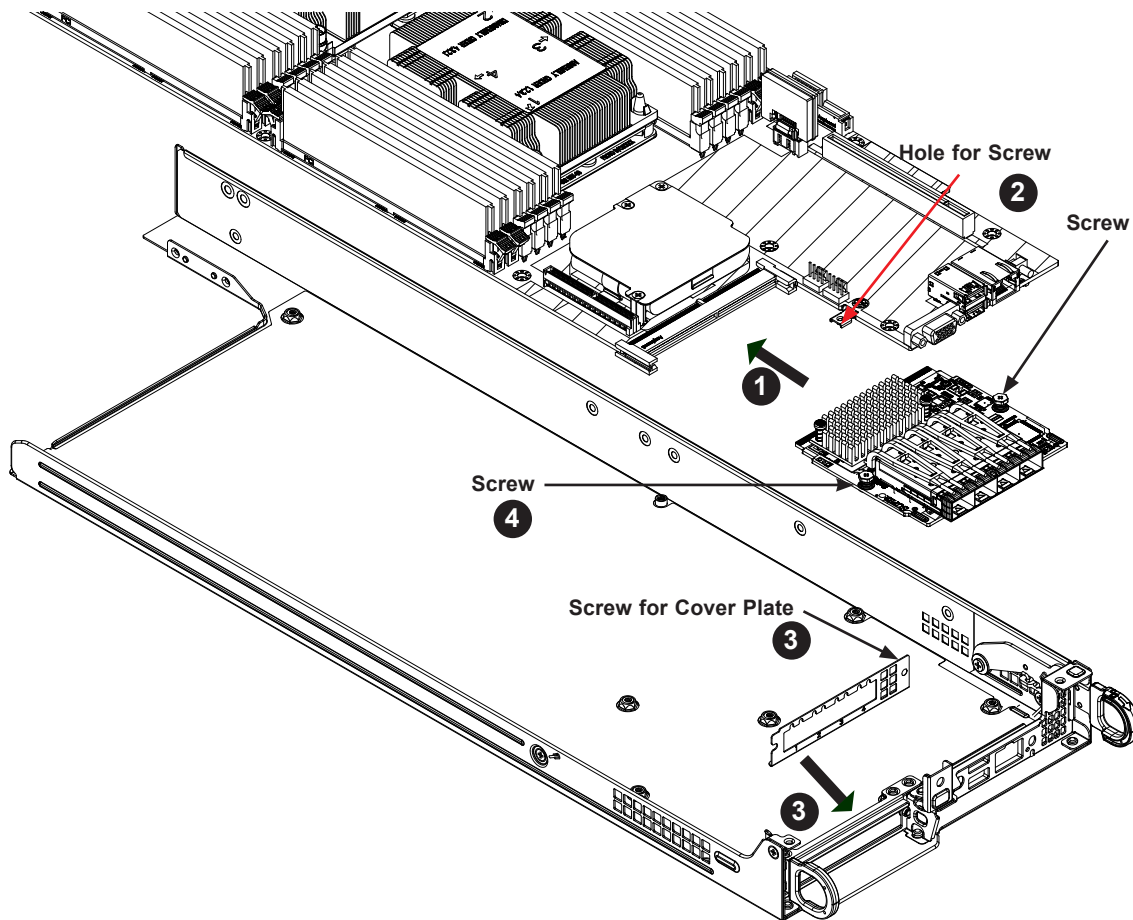
Figure 3-14. SIOM Card Position on Node Drawer Rear

Installing the SIOM Card After the Motherboard

Remove the riser card bracket, remove the entire chassis rear, then follow the above procedure.

System Fans

Four fans provide cooling. Fan speed is controlled by a system temperature setting in IPMI. If a fan fails, the remaining fans will ramp up to full speed. The system can continue to run with a failed fan. Replace any failed fan at your earliest convenience with the same type and model.
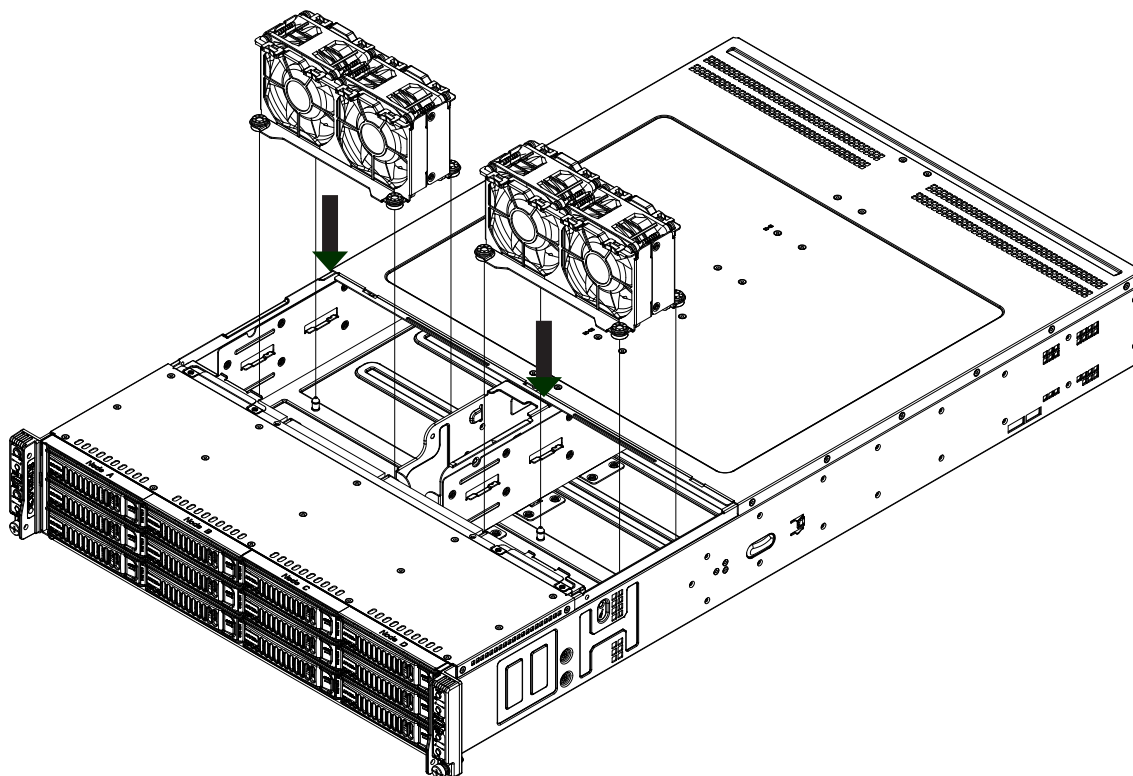
Figure 3-15. Fan Housing Placement

Changing a System Fan

1. Determine which fan is failing. If possible, use IPMI. If not, remove the chassis cover while the power is on, and examine the fans to determine which one has failed.

2. Power down the affected node.

3. Remove the failed fan's power cable from the backplane.

4. Lift the fan housing up and out of the chassis.

5. Push the fan up from the bottom and out of the top of the housing.
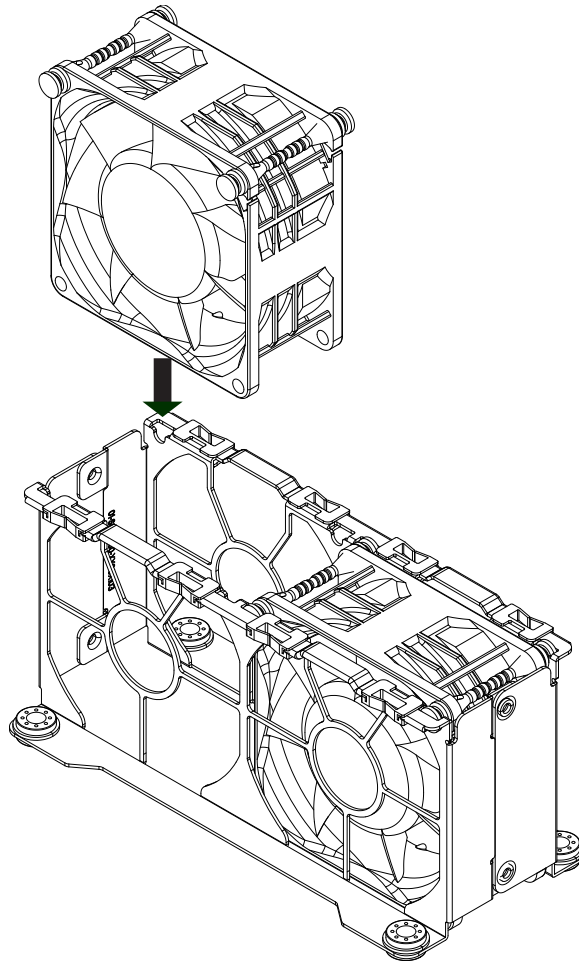
Figure 3-16. Replacing a Fan in the Fan Housing

6. Place the replacement 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.

7. Put the fan housing back into the chassis and reconnect the cable.

8. Confirm that the fan is working properly before replacing the chassis cover.

Installing the Air Shrouds

The system requires air shrouds for each node to maximize airflow efficiency.

Installing an Air Shroud

The motherboard, any expansion cards, and all components must be installed in the node tray.

Place the four air shrouds over the DIMM slots as shown below. Note that each shroud is labeled as to which DIMMs it covers.
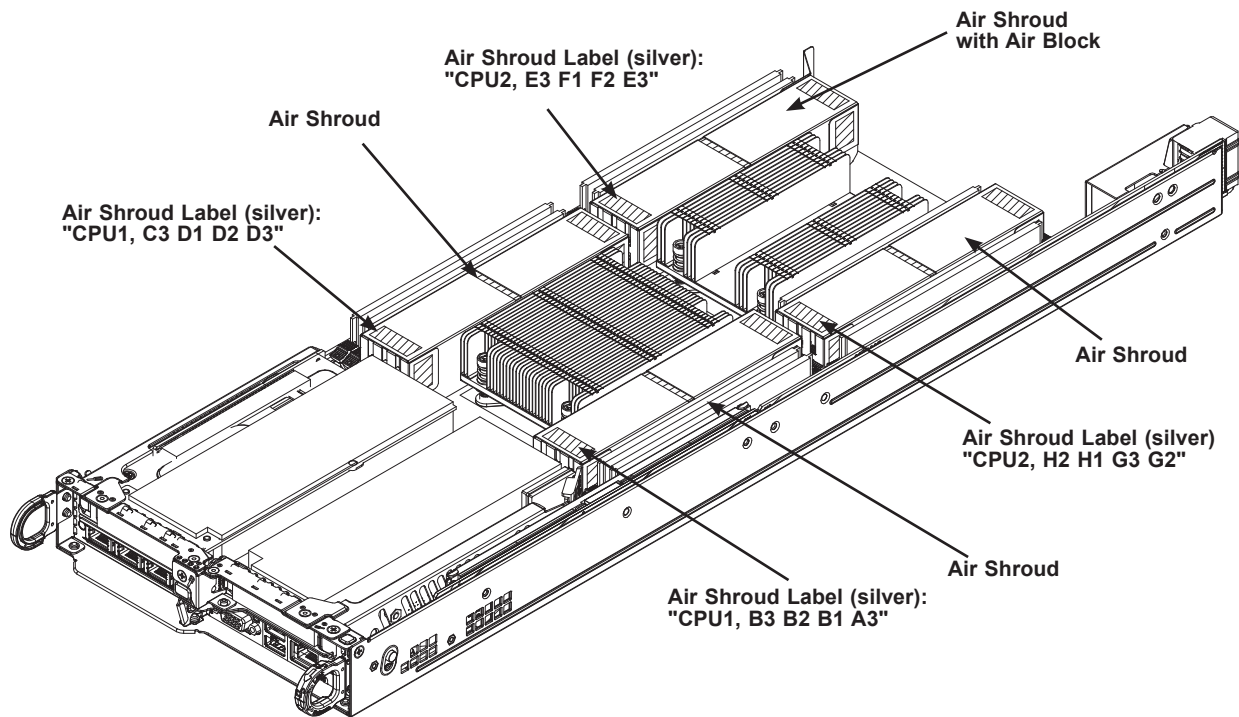
Figure 3-17. Installing the Air Shrouds

Checking the Airflow

Checking Airflow

• Make sure there are no objects obstructing the airflow in and out of the chassis.

• Except for brief periods while swapping hard drives, do not operate the server without the drive carriers in the drive bays.

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

Power Supply

The chassis features redundant power supplies. The power modules can be changed without powering down the system. New units can be ordered directly from Supermicro or authorized distributors.

These power supplies are auto-switching capable. This feature enables them to automatically sense the input voltage and operate at a 100-120v or 180-240v. 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.

Replacing the Power Supply

1. Unplug the AC cord from the module to be replaced.

2. Push the release tab on the back of the power supply as illustrated.
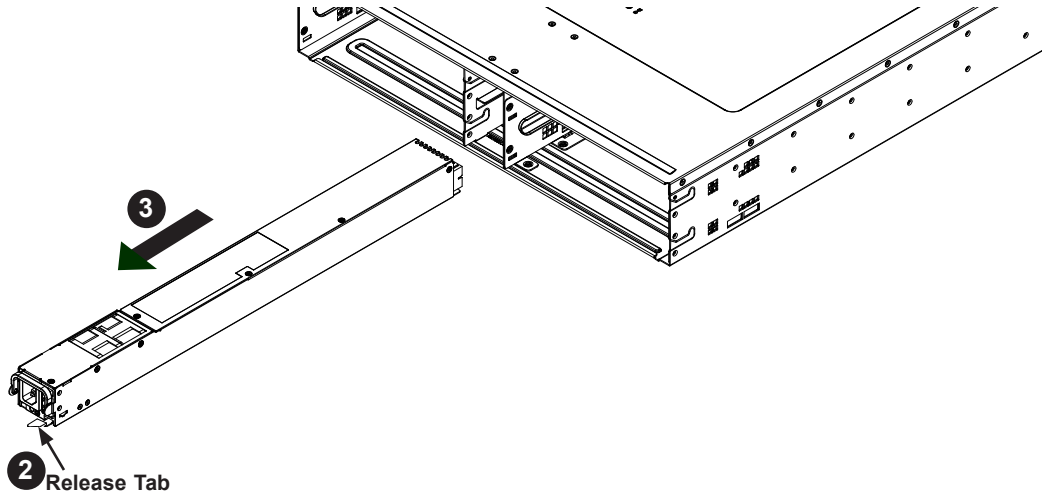
Figure 3-18. Power Supply Release Tab

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 it clicks.

6. Plug the AC power cord back into the module.

Chapter 4

Motherboard Connections

This section describes the connections on the motherboard and provides pinout definitions. Note that depending on how the system is configured, not all connections are required. The LEDs on the motherboard are also described here. A motherboard layout indicating component locations may be found in Chapter 1.

Please review the Safety Precautions in Chapter 3 before installing or removing components.

4.1 Headers and Connectors

Fan Headers

There are two fan headers on the motherboard (FAN3/4). These are 4-pin fan headers; pins 1-3 are backward compatible with traditional 3-pin fans. The onboard fan speeds are controlled by Thermal Management through the BIOS > Hardware Monitoring. When using the Thermal Management setting, use all 3-pin fans or all 4-pin fans.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

TPM Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM), which is available from Supermicro. A TPM is a security device that supports encryption and authentication in hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. For more information, see http://www.supermicro.com/manuals/other/TPM.pdf.

Trusted Platform Module/Port 80 Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+3.3V	2	SPI_CS#
3	RESET#	4	SPI_MISO
5	SPI_CLK	6	GND
7	SPI_MOSI	8	
9	+3.3V Stdby	10	SPI_IRQ#

DOM Power Connector

A power connector for a SATA DOM (Disk-On-Module) device is located at JSD1. Connect an appropriate cable here to provide power for your SATA DOM devices.

DOM Power Pin Definitions	
Pins	Definition
1	+5V
2	Ground
3	Ground
4	PCH RAID KEY

I-SATA 3.0 and S-SATA 3.0 Ports

The X10DRT-B+ has seven I-SATA 3.0 ports (I-SATA0~5, I-SATA6) and six S-SATA ports (S-SATA0~5) on the motherboard. These SATA ports are supported by the Intel PCH C612 chipset. I-SATA0~5 and S-SATA0~5 are located at SXB1 and are supported by CPU1.

Control Panel

JF1 contains header pins for various buttons and indicators located on the control panel at the front of the chassis. It is designed specifically for use with a Supermicro chassis.

PCI Express 3.0 Slots

There are two PCIe slots on the motherboard for expansion cards. Several other PCIe slots are used for proprietary cards.

- Slot 1 (SXB3) is a standard x16 slot supported by CPU1 that can be used for a externally accessible expansion card.

- Slot 2 (SXB4) is a proprietary x16 slot supported by CPU2 used for a riser card that supports two externally accessible expansion cards.

Four proprietary slots, JF1/SXB1/SXB2/JF2, support the storage adapter card.

The SIOM slot is proprietary x16 for the network card.

Powered SATADOM (SuperDOM)

A SATADOM (Device-on-Disk) is located at I-SATA6 on the motherboard. I-SATA6 is used with a Supermicro SuperDOM, which is a yellow SATADOM connector with a power pin built in, and no external power supply is needed. Supermicro SuperDOM is backward-compatible with a regular SATA HDD or SATADOM that requires an external power supply.

4.2 Input/Output Ports

See the figure below for the locations and descriptions of the various I/O ports on the rear of the motherboard.
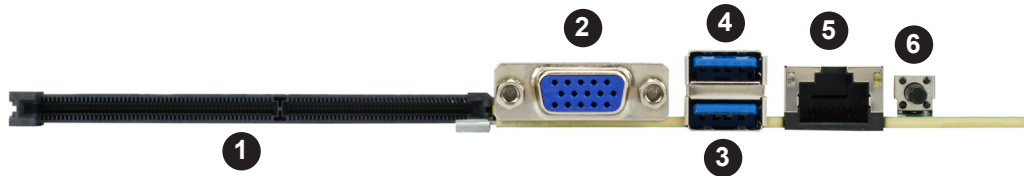
Figure 4-2. Rear I/O Ports

Back Panel I/O Ports			
No.	**Description**	**No.**	**Description**
1	SIOM Network ports	4	USB0 (3.0)
2	VGA port	5	Dedicated IPMI LAN
3	USB1 (3.0)	6	UID Switch and LED

UID

The unit identifier (UID) switch toggles the UID LED indicator on or off. This indicator can be used to identify the node for troubleshooting or service.

Network Ports

The primary LAN ports are provided by means of the SIOM card with server configuration options. There is also a dedicated IPMI LAN port.

4.3 Jumpers

To modify the operation of the motherboard, jumpers are used to choose between optional settings. Jumpers create shorts between two pins to change the function associated with it. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout page for jumper locations.

Note: On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" indicates the jumper is either on only one pin or has been completely removed.
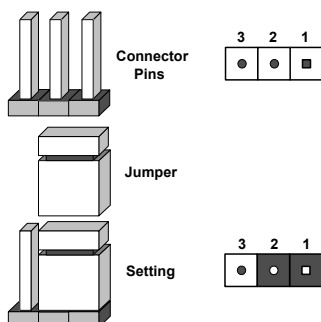
CMOS Clear

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).

2. Remove the cover of the chassis to access the motherboard.

3. Remove the onboard battery from the motherboard.

4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.

5. Remove the screwdriver (or shorting device).

6. Replace the cover, reconnect the power cord(s) and power on the system.

Notes: Clearing CMOS will also clear all passwords.

Do not use the PW_ON connector to clear CMOS.

JBT1 contact pads

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port using the onboard graphics controller. The default setting is Enabled.

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

Watch Dog Enable/Disable

JWD1 controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application "hangs". Pins 1-2 will cause WD to reset the system if an application hangs. Pins 2-3 will generate a non-maskable interrupt signal for the application that has hung. Watch Dog must also be enabled in BIOS.

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

I²C Bus for VRM

Jumpers JVRM1 and JVRM2 allow the BMC or the PCH to access CPU and memory VRM controllers.

VRM Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC (Default)
Pins 2-3	PCH

BMC Enable

Jumper JPB1 allows you to enable the embedded onboard BMC (Baseboard Management) controller to provide IPMI 2.0 support on the motherboard. Be sure to remove the power cord before closing pins 2-3 to disable the BMC.

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

ME Manufacturing 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 (ME) mode, allowing the user to flash the system firmware from a host server for system setting modifications.

ME Mode Select Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Normal
Pins 2-3	Manufacture Mode

4.4 LED Indicators

IPMI LAN LED

The yellow LED indicates activity, while the green/amber LED indicates the speed of the connection.

IPMI LAN

Link LED **Activity LED**

IPMI LAN LED Link LED (left)	
LED Color	**Definition**
Amber: Solid	1 Gb/s
Green: Solid	100 Mb/s
Off	10 Mbps or no connection

Onboard Power LED

An Onboard Power LED is located at LE6 on the motherboard. When this LED is on, the system is receiving power. Be sure to turn off the system and unplug the power cord before removing or installing components.

Onboard PWR LED Indicator LED States	
Color	**Definition**
Off	System PWR Off (PWR cable not connected)
Orange	Standby PWR Ready
Green	All PWR RAMP Normal
Red	One or more PWR Regulators: Failed

BMC Heartbeat LED

BMC_HB_LED1 is the BMC heartbeat LED. When the LED is blinking green, BMC is functioning normally.

UID

The unit identifier (UID) switch toggles the UID LED indicator on or off. This indicator can be used to identify the node for troubleshooting or service.

4.5 PCIe Slots and SATA

PCI-Express x16

There are two PCIe 3.0 x16 slots on the motherboard. Slot 1 is supported by CPU1 and Slot 2 is supported by CPU2.

PCI-Express x4

There are two PCIe 3.0 x4 slots supported by CPU1. They are located at JF2 and SXB1. SXB1 is used for I-SATA0~5 and S-SATA0~2.

PCI-Express x24

A PCIe 3.0 x24 slot supported by CPU2 is located at SXB2.

Powered SATA DOM (SuperDOM)

A SATA DOM (Device-on-Disk) is located at S-SATA3 on the motherboard. S-SATA3 is used with a Supermicro SuperDOM, which is a yellow SATA DOM connector with a power pin built in, and no external power supply is needed. Supermicro SuperDOM is backward-compatible with a regular SATA HDD or SATA DOM that requires an external power supply.

SATA DOM Power Pin Definitions	
Pin#	**Signal**
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground
8	+5V
9	Ground

Chapter 5

Software

After the hardware has been installed, you should install the Operating System (OS), configure RAID settings and install the drivers. Necessary drivers and utilities may be found at ftp://ftp.supermicro.com/driver.

5.1 OS Installation

You must first configure RAID settings (if using RAID) before you install the Windows OS and the software drivers. To configure RAID settings, please refer to the RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

Installing the Windows OS for a RAID System

1. Insert Microsoft's Windows Setup DVD in the DVD drive and the system will start booting up from the DVD.

2. Insert the USB stick containing Windows drivers to a USB port on the system.
   Note: for older legacy OS's, please use a method to slipstream the drivers.

3. Select the partition on the drive in which to install Windows.

4. Browse the USB folder for the proper driver files.

5. Choose the RAID driver indicated in the Windows OS Setup screen, then choose the hard drive in which you want to install it.

6. Once all devices are specified, continue with the installation.

7. After the Windows OS installation is completed, the system will automatically reboot.

Installing Windows to a Non-RAID System

1. Insert Microsoft's Windows OS Setup DVD in the DVD-ROM drive and the system will start booting up from the DVD.

2. Continue with the installation. The Windows OS Setup screen will display.

3. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files and then continue with the Windows installation.

4. After the installation has completed, the system will automatically reboot.

5.2 Driver Installation

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 motherboard. Download this file to create a DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

After creating a DVD with the ISO files, insert the disk into the DVD drive on your system and the display shown in Figure 5-1 should appear.

Another option is to go to the Supermicro website at http://www.supermicro.com/products/. Find the product page for your motherboard here, where you may download individual drivers and utilities to your hard drive or a USB flash drive and install from there.

Note: To install the Windows OS, please refer to the instructions posted on our website at http://www.supermicro.com/support/manuals/.

Figure 5-1. Driver & Tool Installation 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.

5.3 SuperDoctor® 5

The Supermicro SuperDoctor® 5 is a program that functions in a command-line or web-based interface for Windows and Linux operating systems. The program monitors such system health information 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. SuperDoctor 5 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 5-2. SuperDoctor 5 Interface Display Screen (Health Information)

5.4 IPMI

The X10DRT-B+ supports the Intelligent Platform Management Interface (IPMI). IPMI is used to provide remote access, monitoring and management. There are several BIOS settings that are related to IPMI.

For general documentation and information on IPMI, please visit our website at: http://www.supermicro.com/products/nfo/IPMI.cfm.

Chapter 6

BIOS

6.1 Introduction

This chapter describes the AMI BIOS setup utility for the X10DRT-B+ and provides the instructions on navigating the setup screens. The BIOS is stored in a Flash EEPROM and can be updated.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted since this manual was published.

Starting BIOS Setup Utility

To enter the AMI BIOS setup utility screens, press the <Delete> key while the system is booting up. (There are a few cases when other keys are used, such as <F1>, <F2>, etc.)

The BIOS screens have three main frames. The large left frame displays options can be configured by the user. These are blue. When an option is selected, it is highlighted in white. Settings printed in **Bold** are the default values.

In the left frame, a " ▶" indicates a submenu. Highlighting such an item and pressing the <Enter> key opens the list of settings in that submenu.

The upper right frame displays helpful information for the user. The AMI BIOS has default informational messages built in. The manufacturer retains the option to include, omit, or change any of these informational messages.

The lower right frame lists navigational methods. The AMI BIOS setup utility uses a key-based navigation system called *hot keys*. Most of these hot keys can be used at any time during setup navigation. These keys include <F3>, <F4>, <Enter>, <ESC>, arrow keys, etc.

Some system parameters may be changed.

6.2 Main Setup

When running the AMI BIOS setup utility, it starts with the Main screen. You can always return to it by selecting the Main tab on the top of the screen.

```
                 Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

                                                         ▲  Set the Date. Use Tab to
                                                            switch between Date
   System Date                     [Wed 12/14/2016]         elements.
   System Time                     [11:59:21]

   Supermicro X10DRT-B+
   BIOS Version                    2.0
   Build Date                      12/12/2016
   CPLD Version                    01.a1.03




                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
   Memory Information                                       F2: Previous Values
   Total Memory                    393216 MB             ▒  F3: Optimized Defaults
   Memory Speed                    1600 MHz             ▼  F4: Save & Exit
                                                            ESC: Exit

                 Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.
```

The Main tab page allows you to set the date and time, and it displays system information.

System Date/System Time

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in 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. The date's default value is 01/01/2016 after RTC reset.

Supermicro X10DRT-B+ (Motherboard model)

BIOS Version

Build Date (of the BIOS)

CPLD Version: This item displays when the version of the CPLD (Complex Programmable Logic Device) used in the system was built.

Memory Information

Total Memory (for the system); **Memory Speed**

6.3 Advanced Setup Configurations

Use the arrow keys to select the Advanced tab and press <Enter> to access the submenu items.

```
              Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

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



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

              Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.
```

Caution: Take caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency, or an incorrect DRAM timing setting may make the system unstable. If this occurs, revert to the manufacture default settings.

▶Boot Feature

Quiet Boot

Use this feature to select the screen display between POST messages or the OEM logo at bootup. 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 mode set by the BIOS. The options are **Force BIOS** and Keep Current.

Bootup NumLock State

Use this feature 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 if 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 ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup immediately and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Postponed, the ROM BIOS of the host adaptors will not capture Interrupt 19 immediately and allow the drives attached to these adaptors to function as bootable devices at bootup. The options are **Immediate** and Postponed.

Re-try Boot

When EFI Boot is selected, the system BIOS will automatically reboot the system from an EFI boot device after its initial boot failure. Select Legacy Boot to allow the BIOS to automatically reboot the system from a Legacy boot device after its initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

Power Configuration

Watch Dog Function

Select Enabled to allow the Watch Dog timer to reboot the system when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for the user to power off the system after pressing and holding the power button for 4 seconds or longer. Select Instant Off to instantly power off the system as soon as the user presses the power button. The options are 4 Seconds Override and **Instant Off.**

Restore on AC Power Loss

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

▶CPU Configuration

This submenu displays the following information regarding the CPU installed in Socket 1 and (or) Socket 2 as detected by the BIOS.

- Processor Socket

- Processor ID

- Processor Frequency

- Processor Maximum Ratio

- Processor Minimum Ratio

- Microcode Revision

- L1 Cache RAM

- L2 Cache RAM

- L3 Cache RAM

- CPU 1 Version

- CPU 2 Version

Clock Spread Spectrum

Select Enabled to enable Clock Spectrum support, which will allow the BIOS to attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and Enabled.

Hyper-Threading (ALL)

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

Cores Enabled

Set a numeric value to enable the number of cores in the CPU. (Please refer to Intel's website for more information.) Enter **0** to enable all cores.

Monitor/Mwait

Select Enable to use the CPU monitor instructions for address-range monitoring and advanced power management to enhance processor performance. The options are **Enable** and Disable.

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

Select Enable to enable the Execute-Disable Bit technology which will allow the processor to designate areas in the system memory where an application code can execute 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 options are **Enable** and Disable. (Refer to Intel and Microsoft Web sites for more information.)

PPIN Control

Select Unlock/Enable to use the Protected-Processor Inventory Number (PPIN) in the system. The options are **Unlock/Enable** and Unlock/Disable.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enable, 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 Disable and **Enable**.

Adjacent Cache Prefetch (Available when supported by the CPU)

If this feature is set to Disable, the CPU prefetches the cache line for 64 bytes. If this feature is set to **Enable**, the CPU prefetches both cache lines for 128 bytes as comprised. The options are Disable and **Enable**.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enable to enable the DCU (Data Cache Unit) Streamer Prefetcher which will stream and prefetch data, and send it to the Level 1 data cache to improve data processing and system performance. The options are Disable and **Enable**.

DCU IP Prefetcher (Available when supported by the CPU)

Select Enable for DCU (Data Cache Unit) IP Prefetcher support, which will prefetch the next IP address in line to L1 cache to improve network connectivity and system performance. The options are Disable and **Enable**.

Direct Cache Access (DCA)

Select Enable to use Intel's DCA (Direct Cache Access) Technology to improve efficiency in data transferring. The options are Disable, Enable, and **Auto**.

X2APIC

Select Enable to activate APIC (Advanced Programmable Interrupt Controller) support to enhance system performance. The options are Enable and **Disable**.

AES-NI

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

Intel Virtualization Technology (Available when supported by the CPU)

Select Enable 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 **Enable** and Disable.

Note: If a change is made to this setting, you will need to reboot the system for the change to take effect. Refer to Intel's website for detailed information.

▶ 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 Disable to disable power-saving settings. The options are Disable, **Energy Efficiency**, and Custom.

Energy Performance Tuning

Select Enable to allow the AMI BIOS to configure (to choose) energy performance bias tuning settings for your system. Select Disable to allow the Operating System (OS) to configure energy performance bias tuning settings for your system. The options are Enable and Disable. The options are Enable and **Disable**.

Energy/Performance Bias Setting

Use this item to select an appropriate fan setting to achieve maximum system performance (with maximum cooling) or maximum energy efficiency with maximum power saving). The fan speeds are controlled by the firmware management via IPMI 2.0. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

Energy Efficient Turbo

If this feature is set to Enable, the CPU cores will operate at the turbo mode, and the remaining system components will run at normal speeds, which will enhance CPU performance without compromising power efficiency. The options are **Enable** and Disable.

If the item-Power Technology is set to Custom, the following submenus will display:

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

EIST (P-States)

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

Use this feature 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 all 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 particular software program specified by the user in the system. The options are **HW_All**, SW_ALL, and SW_ANY.

▶ CPU HWPM State Control (Available when Power Technology is set to Custom)

Enable CPU HWPM (Hardware Power Management)

Use this feature to configure CPU hardware power management settings to enhance energy performance. The options are **Disable**, HWPM Native Mode, HWMP OOB Mode.

Enable CPU Autonomous CState

Select Enable for CPU Autonomous C-State support which will allow the CPU to convert a "HALT" instruction to an "MWait" state to conserve power consumption. The options are **Disable** and Enable.

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

Package C State limit

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

CPU C3 Report

Select Enable 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 Enable 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 Enable 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**.

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

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.

▶Chipset Configuration

▶North Bridge

This feature allows the user to configure the settings for the Intel North Bridge.

▶IIO Configuration

EV DFX (Device Function On-Hide) Features

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

Snoop Response Hold Off

User this feature to set the value of the Snoop Response Hold-Off setting. The default setting is **256 cycle**.

▶IIO1 Configuration

IOU2 (II01 PCIE Port 1)

Use this item to configure the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4, x8, and **Auto**.

IOU0 (II01 PCIe Port 2)

Use this feature to set the PCI-Exp bus speed for the slot specified above. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU1 (II01 PCIe Port 3)

Use this feature to set the PCI-Exp bus speed for the slot specified above. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU1 IOU0 Non-Posted Prefetch/IOU1 IOU1 Non-Posted Prefetch/IOU1 IOU2 Non-Posted Prefetch

Select Enable to use the function of Non-Posted Prefetch on the slot specified by the user. The options are Enable and **Disable**.

▶IIO2 Configuration

IOU2 (II02 PCIE Port 1)

Use this item to configure the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are 4x4, x8, and **Auto**.

IOU0 (II02 PCIE Port 2)

Use this feature to set the PCI-Exp bus speed for the slot specified above. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU1 (II02 PCIe Port 3)

Use this feature to set the PCI-Exp bus speed for the slot specified above. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto.**

IOU2 IOU0 Non-Posted Prefetch/IOU2 IOU1 Non-Posted Prefetch/IOU2 IOU2 Non-Posted Prefetch

Select Enable to use the function of Non-Posted Prefetch on the slot specified by the user. The options are Enable and **Disable**.

▶IOAT Configuration

Enable IOAT (I/O Acceleration Technology)

Select Enable to enable Intel I/OAT (I/O Acceleration Technology), which significantly reduces 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 to ensure cache coherency within each memory platform. The options are **Disable** and Enable.

Relaxed Ordering

Select Enable to enable Relaxed Ordering support which will allow certain transactions to violate the strict-ordering rules of PCI and to be completed prior to other transactions that have already been enqueued. The options are **Disable** and Enable.

▶Intel VT for Directed I/O (VT-d)

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

Intel® VT for Directed I/O (VT-d)

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

▶QPI (Quick Path Interconnect) Configuration

The following QPI information will be displayed:

- Number of CPU

- Number of II0

- Current QPI Link Speed: This item displays the current QPI Link speed.

- Current QPI Link Frequency: This item displays the frequency of the QPI Link.

- QPI Global MMIO Low Base / Limit

- QPI Global MMIO High Base / Limit

- QPI PCI-E Configuration Base / Size

Link Frequency Select

Use this feature to select the desired QPI link frequency. The options are 6.4 GB/s, 8.0 GB/s, 9.6 GB/s, **Auto**, and Auto Limited.

Link L0p Enable

Select Enable for the QPI to enter the L0p state for power saving. The options are Disable and **Enable**.

Link L1 Enable

Select Enable for the QPI to enter the L1 state for power saving. The options are Disable and **Enable**.

COD Enable (Available when the OS and the CPU support this feature)

Select Enable for Cluster-On-Die support to enhance system performance in cloud computing. The options are Enable and **Disable**.

Early Snoop (Available when the OS and the CPU support this feature)

Select Enable for Early Snoop support to enhance system performance. The options are Enable Disable, and **Auto**.

Home Dir Snoop with IVT-Style OSB (Available when the OS and the CPU support this feature)

Select Enable to use the Home Directory snoop mode for Opportunistic Snoop Broadcast (OSB) support for Ivy Bridge-basd systems to boost system performance. The options are Enable Disable, and **Auto**.

Isoc Mode

Select Enable to enable Isochronous support to meet QoS (Quality of Service) requirements. This feature is especially important for Virtualization Technology. The options are Enable and **Disable**.

▶Memory Configuration

Integrated Memory Controller (IMC)

Enforce POR

Select Enable to enforce POR restrictions on DDR4 frequency and voltage programming. The options are **Enabled** and Disabled.

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1333, 1400, 1600, 1800, 1867, 2000, 2133, 2200, and 2400.

Data Scrambling

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

S5 Trigger ADR

When this item is set to Enabled, the setting of OS S5 Shutdown will trigger an ADR (Asynchronous DRAM Refresh) to save NVDIMM data. The options are **Disabled** and Enabled.

DRAM RAPL (Running Average Power Limit) Baseline

Use this feature to set the run-time power-limit baseline for DRAM modules. The options are Disable, DRAM RAPL Mode 0, and **DRAM RAPL Mode 1**.

Set Throttling Mode

Throttling improves reliability and reduces power consumption in the processor via automatic voltage control during processor idle states. The options are Disabled and **CLTT** (Closed Loop Thermal Throttling).

A7 Mode

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

▶DIMM Information

This item displays the status of a DIMM module specified by the user.

- P1-DIMMA1/A2/A3

- P1-DIMMB1/B2/B3

- P1-DIMMC1/C2/C3

- P1-DIMMD1/D2/D3

- P2-DIMME1/E2/E3

- P2-DIMMF1/F2/F3

- P2-DIMMG1/G2/G3

- P2-DIMMH1/H2/H3

▶Memory RAS (Reliability_Availability_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

Memory RAS Configuration Setup

RAS Mode

Use this feature to configure memory RAS settings. Select Independent to use a memory module separately as an independent memory unit. When Mirror is selected, the motherboard maintains two identical copies of all data in memory for data backup. When Lockstep is selected, the motherboard uses two areas of memory to run the same set of operations in parallel to boost performance. The options are **Independent**, Mirror, and Lockstep Mode.

Memory Rank Sparing

Select Enabled to enable memory-sparing support for memory ranks to improve memory performance. The options are **Disabled** and Enabled.

Patrol Scrub

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 Enabled, 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.

Patrol Scrub Interval

This feature allows you to decide how many hours the system should wait before the next complete patrol scrub is performed. Use the keyboard to enter a value from 0-24. The default setting is **24**.

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** and Enable.

▶**South Bridge Configuration**

The following South Bridge information will display:

USB Configuration

- USB Module Version

- USB Controllers

- USB Devices

Legacy USB Support

Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there is no legacy USB device present. Select Disable to have all USB devices available for EFI applications only. The options are **Enabled,** Disabled and Auto.

XHCI Hand-Off

This is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

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 in turn, will provide complete legacy USB keyboard support for the operating systems that do not support legacy USB devices. The options are Disabled and **Enabled**.

USB 3.0 Support

Select Enabled for USB 3.0 support. The options are Smart Auto, **Auto**, Enabled, Disabled and Manual.

EHCI1

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #1 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

EHCI2

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #2 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

XHCI Pre-Boot Driver

Select Enabled to load the Intel XHCI (Extensible Host Controller Interface) pre-boot driver for system boot. The settings are **Enabled** and Disabled.

▶SATA Configuration

When this submenu is selected, 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 Support Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Disabled** and Enabled.

SATA Port 0~ SATA Port 5

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

- Model number of drive and capacity

- Software Preserve Support

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

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port 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**.

Port 0 ~ Port 5 SATA Device Type

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

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.

Port 0 ~ Port 5 SATA Device Type (Available when a SATA port is detected)

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

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

SATA Support Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Disabled** and Enabled.

SATA RAID Option ROM/UEFI Driver

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Disabled, EFI, and **Legacy**.

SATA/sSATA RAID Boot Select

Select SATA Controller to boot the system from a SATA RAID device. Select sSATA Controller to boot the system from a S-SATA RAID device. Select Both to boot the system either from a SATA RAID device or from an sSATA RAID device. Please note that the option"Both" is not supported by the Windows Server 2012/R2 OS. The options are Both, SATA Controller, and **sSATA Controller**.

Serial ATA Port 0~ Port 5

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

- Model number of drive and capacity

- Software Preserve Support

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

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port 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 start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

Port 0 ~ Port 5 SATA Device Type

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

▶sSATA Configuration

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

sSATA Controller

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

Configure sSATA as

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

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

sSATA Support Aggressive Link Power Management

When this item is set to Enabled, the sSATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Disabled** and Enabled.

sSATA Port 0~ Port 3

This item displays the information detected on the installed on the sSATA port. specified by the user.

- Model number of drive and capacity

- Software Preserve Support

sSATA Port 0~ Port 3

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

sSATA Port 0 ~ Port 3 Hot Plug

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a sSATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

sSATA Port 0 ~ Port 3 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**.

Port 0 ~ Port 3 sSATA Device Type

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

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

sSATA Port 0~ Port 3

This item indicates that an sSATA port specified by the user is not installed or not detected.

Port 0 ~ Port 3 sSATA Device Type (Available when a SATA port is detected)

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are H**ard Disk Drive** and Solid State Drive.

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

sSATA Support Aggressive Link Power Management

When this item is set to Enabled, the sSATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Disabled** and Enabled.

sSATA RAID Option ROM/UEFI Driver

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Disabled, EFI, and **Legacy**.

SATA/sSATA RAID Boot Select

Select SATA Controller to boot the system from a SATA RAID device. Select sSATA Controller to boot the system from a S-SATA RAID device. Select Both to boot the system either from a SATA RAID device or from an sSATA RAID device. Please note that the option-Both is not supported by the Windows Server 2012/R2 OS. The options are Both, SATA Controller, and **sSATA Controller**.

sSATA Port 0~ Port 3

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

- Model number of drive and capacity

- Software Preserve Support

sSATA Port 0~ Port 3

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

sSATA Port 0 ~ Port 3 Hot Plug

Set this item to Enabled for hot-plugging support, which will allow the user to replace an sSATA drive without shutting down the system. The options are Disabled and **Enabled**.

sSATA Port 0 ~ Port 3 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**.

Port 0 ~ Port 3 sSATA Device Type

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

▶Server ME (Management Engine) Configuration

This feature displays the following system ME configuration settings.

- General ME Configuration

- Operational Firmware Version

- ME Firmware Type

- Recovery Firmware Version

- ME Firmware Features

- ME Firmware Status #1

- ME Firmware Status #2

  - Current State

  - Error Code

▶PCIe/PCI/PnP Configuration

The following PCI information will be displayed:

- PCI Bus Driver Version

PCI Devices Common Settings:

PCI Latency Timer

Use this item to configure the PCI latency timer for a device installed on a PCI bus. Select 32 to set the PCI latency timer to 32 PCI clock cycles. The options are **32**, 64, 96, 128, 160, 192, 224 and 248 (PCI Bus Clocks).

PCI PERR/SERR Support

Select Enabled for the system to log an error event when a PERR (PCI/PCI-E Parity Error) or a SERR (System Error) occurs. The options are Enabled and **Disabled**.

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 (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 for 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, and 256 Bytes.

Maximum Read Request

Select Auto for the system BIOS to automatically set the maximum size for a read request 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

Use this item to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disabled, and **Auto**.

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

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 **56 TB**, 40 TB, 24 TB, 3 TB, 2 TB, and 1 TB.

MMIO High Size

Use this item to select the high memory size according to memory-address mapping for the IO hub. The options are **256 GB**, 128 GB, 512 GB, and 1024 GB.

RSC-R1UTP-E16R PCI-E 3.0 x16 OPROM/CPU1 PCI-E 3.0 x4 OPROM/RSC-P-6 PCI-E 3.0 x16 OPROM 1/CPU2 SXB2A PCI-E 3.0 x8 OPROM/CPU2 SXB2B PCI-E 3.0 x16 OPROM

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

Onboard LAN OPROM (Option ROM) Type

Use this feature to select the type of device installed on the onboard LAN ports to be used for system boot. The options are EFI and **Legacy**.

Onboard LAN1 OPROM/Onboard LAN2 OPROM/Onboard LAN3 OPROM/ Onboard LAN4 OPROM

Use this feature to select the type of device to be installed in LAN Port 1, LAN Port 2, LAN Port 3, and LAN Port 4 for system boot. The default setting for LAN1 OPROM is **PXE**. The default setting for LAN2 OPROM/LAN3 OPROM/LAN4 OPROM is **Disabled**.

Onboard Video OPROM

Use this feature to select the type of video firmware to be used for system boot. Select Legacy to boot the system using a legacy video device installed on the motherboard for system boot. The options are Disabled, **Legacy** and EFI.

VGA Priority

Use this item to select the graphics device to be used as the primary video display for system boot. The options are **Onboard** and Offboard

Network Stack

Select Enabled to enable PXE (Preboot Execution Environment) or UEFI (Unified Extensible Firmware Interface) for network stack support. The options are Disabled and **Enabled**.

Ipv4 PXE Support (Available when Network Stack is set to Enabled)

Select Enabled to enable Ipv4 PXE (Preboot Execution Environment) for boot support. If this feature is set to Disabled, Ipv4 PXE boot option will not be supported. The options are **Enabled** and Disabled.

Ipv6PXE Support (Available when Network Stack is set to Enabled)

Select Enabled to enable Ipv6 PXE (Preboot Execution Environment) for boot support. If this feature is set to Disabled, Ipv6 PXE boot option will not be supported. The options are **Disabled** and Enabled.

▶Super IO Configuration

Super IO Chip AST2400

▶Serial Port 1 Configuration/Serial Port 2 Configuration

Serial Port 1/Serial Port 2

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

Device Settings

This item displays the base I/O port address and the Interrupt Request address of a serial port specified by the user.

Change Port 1 Settings/Change Port 2 Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 1 or Serial Port 2. Select **Auto** for the BIOS to automatically assign the base I/O and IRQ address to a serial port specified.

The options for Serial Port 1 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), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

The options for Serial Port 2 are **Auto**, (IO=2F8h; IRQ=3), (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), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

Serial Port 2 Attribute

Select SOL to use COM Port 2 as a Serial_Over_LAN (SOL) port for console redirection. The options are COM and **SOL**.

▶Serial Port Console Redirection

COM 1 Console Redirection

COM1 Console Redirection

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

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 overflowing. 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, SCD, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST. When 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.

COM2/SOL (Serial-On-LAN)

COM/SOL 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:

▶COM2/SOL 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 overflowing. 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, SCD, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST. 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 (Available when EMS Console Redirection is set to Enabled)

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, in an emergency situation.

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** and SOL.

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 overflowing. 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

▶ACPI Settings

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.

High Precision 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 and 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.

NUMA Support (Available when the OS supports this feature)

Select Enabled to enable Non-Uniform Memory Access support to enhance system performance. The options are **Enabled** and Disabled.

▶iSCSi Configuration

iSCSI Initiator Name

This feature allows the user to enter the unique name of the iSCSI Initiator in IQN format. Once the name of the iSCSI Initiator is entered into the system, configure the proper settings for the following items.

▶Add an Attempt

▶Delete Attempts

▶Change Attempt order

6.4 Event Logs

Use this tab page to configure Event Log settings.

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

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










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

                Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.
```

▶Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

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.

Runtime Error Logging Support

Select Enable to support Runtime Error Logging. The options are **Enable** and Disable. If this item is set to Enable, the following item will be available for configuration:

Erasing Settings

Erase Event Log

Select Yes, Every Reset to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No**, Yes, Next Reset and Yes, Every Reset.

When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the 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 between 1 to 255. The default setting is **1**.

METW (Multiple Event Count Time Window)

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

Note: Please reboot the system for the changes to take effect.

▶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

6.5 IPMI

Use this tab page to configure Intelligent Platform Management Interface (IPMI) settings.

```
                Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
      Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

   BMC Firmware Revision              3.09                    Press <Enter> to change the
   IPMI STATUS                        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

                Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.
```

BMC (Baseboard Management Controller) Firmware Revision

This item indicates the IPMI firmware revision used in your system.

IPMI Status

This item indicates the status of the IPMI firmware installed in your system.

▶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 (System Event Log)

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. Please note that you will need to reboot the system for the changes to take effect. The options are **Do Nothing** and Erase Immediately.

▶BMC Network Configuration

IPMI LAN Selection

Use this feature to select the type of the IPMI LAN. The default setting is **Failover**.

IPMI Network Link Status

This item indicates the status of the IPMI Network Link. The default setting is **Shared LAN.**

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

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.

VLAN

Select Enable for VLAN port support.

6.6 Security

Use this tab page to configure Security settings.

```
                 Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
       Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

   Password Description                                   Setup: Check password while
                                                          invoking setup. Always:
   If ONLY the Administrator's password is set,           Check password while
   then this only limits access to Setup and is           invoking setup as well as
   only asked for when entering Setup.                    on each boot.
   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


   Password Check                    [Setup]
   Administrator Password                                 →←: Select Screen
                                                          ↑↓: Select Item
 ▶ Secure Boot Menu                                       Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

                 Version 2.17.1249. Copyright (C) 2016 American Megatrends, Inc.
```

Password Check

If this feature is set to Setup, a password is required for a user to enter the BIOS Setup utility. If Always selected, the user will need to enter a password when entering the Setup utility and upon each system boot. The options are **Setup** and Always.

Administrator Password

Use this feature to set the administrator password which is required before entering the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

User Password

Use this feature to set the user password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

▶Secure Boot Menu

The following items will display:

- System Mode

- Secure Boot

- Vendor Keys

Secure Boot

Select Enable for secure boot support to ensure system security at bootup. The options are Enabled and **Disabled.**

Secure Boot Mode

This item allows the user to select the desired secure boot mode for the system. The options are Standard and **Custom**.

CSM (Compatibility Support Module) Support

Select Enabled to enable CSM booting support which will allow a UEFI-compatible device to boot from a system that uses a legacy BIOS ROM. The options are **Enabled** and Disabled.

▶Key Management

Provision Factory Default Keys

Select Enable to install all manufacturer default keys for the system security settings. The options are **Disabled** and Enabled.

▶Enroll All Factor Default Keys

Select Enable to install all manufacturer defaults for the system security settings. The options are **Yes** and No.

▶Save All Secure Boot Variables

This feature allows the user to set and save the Secure Boot Variable settings:

▶Platform Key (PK)

This feature allows the user to configure and save platform key settings.

▶Key Exchange Key

This feature allows the user to configure and save Key-Exchange-Key settings.

▶Authorized Signatures

This feature allows the user to set and save authorized signatures and grant access to those whose names appear on the list.

▶Forbidden Signatures

This feature allows the user to set and save the forbidden signatures and deny the access to those whose names appear on the list.

▶Authorized TimeStamps

This feature allows the user to set and save the timestamps for authorized signatures to indicate when these signatures were entered into the system.

6.7 Boot

Use this tab page to configure Boot Settings.

```
                Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
     Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

   Boot Configuration                                     ▲ Number of seconds to wait
   Setup Prompt Timeout                    1                for setup activation key.
                                                            65535(0xFFFF) means
   Boot Mode Select                        [DUAL]           indefinite waiting.


   FIXED BOOT ORDER Priorities
   Dual Boot Order #1                      [Hard Disk: HGST H...]
   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 GE Sl...]
   Dual Boot Order #8                      [UEFI Hard Disk:Wi...]
   Dual Boot Order #9                      [UEFI CD/DVD]
   Dual Boot Order #10                     [UEFI USB Hard Disk]
   Dual Boot Order #11                     [UEFI USB CD/DVD]    ↔: Select Screen
   Dual Boot Order #12                     [UEFI USB Key]       ↑↓: Select Item
   Dual Boot Order #13                     [UEFI USB Floppy]    Enter: Select
   Dual Boot Order #14                     [UEFI Network]       +/-: Change Opt.
   Dual Boot Order #15                     [UEFI AP:UEFI: Bui...] F1: General Help
                                                               F2: Previous Values
   ▶ Add New Boot Option                                       F3: Optimized Defaults
   ▶ Delete Boot Option                                   ▼ F4: Save & Exit
                                                             ESC: Exit

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```

Boot Configuration

Setup Prompt Timeout

This feature allows the user to determine how long the system should wait for the setup activation key before it boots up. The default setting is **1 (second)**.

Boot Mode Select

Use this item to select the type of device to be used for system boot. The options are Legacy, UEFI, and **Dual.**

Fixed Boot Order Priorities

This option prioritizes the order of bootable devices from which the system will boot. Press <Enter> on each entry from top to bottom to select devices.

When the item above -"Boot Mode Select" is set to **Dual** (default), the following items will be displayed for configuration:

Dual Boot Option #1 - Dual Boot Option #15

When the item above -"Boot Mode Select" is set to Legacy, the following items will be display for configuration:

Legacy Boot Option #1 - Legacy Boot Option #7

When the item above -"Boot Mode Select" is set to UEFI, the following items will be display for configuration:

UEFI Boot Option #1 - UEFI Boot Option #8

▶Add New Boot Option

Add Boot Option

This feature allows the user to add a new pre-formatted boot device for system boot.

Path for Boot Option

This feature allows the user to define the pathway for the system to access the boot device for system boot.

Boot Option File Path

Create

This feature allows the user to select the name of boot device and set a file path for this device to boot the system.

▶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.

Hard Disk Driver BBS Priorities
Legacy Boot Order #1 - Legacy Boot Order #6
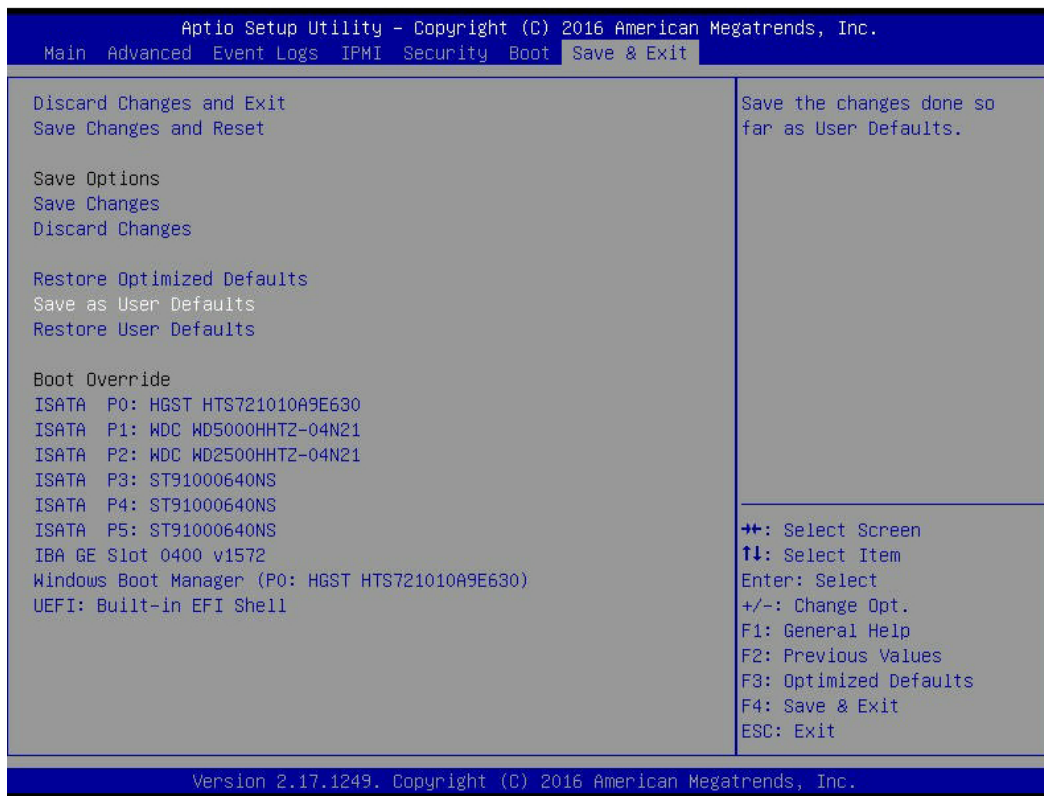
NETWORK Disk Drive BBS Priorities
Legacy Boot Order #1

UEFI Application Boot Priorities
UEFI Boot Order #1

6.8 Save & Exit

Use this tab page to configure Save & Exit settings.

```
                 Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
     Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

     Discard Changes and Exit                             Save the changes done so
     Save Changes and Reset                               far as User Defaults.

     Save Options
     Save Changes
     Discard Changes

     Restore Optimized Defaults
     Save as User Defaults
     Restore User Defaults

     Boot Override
     ISATA  P0: HGST HTS721010A9E630
     ISATA  P1: WDC WD5000HHTZ-04N21
     ISATA  P2: WDC WD2500HHTZ-04N21
     ISATA  P3: ST91000640NS
     ISATA  P4: ST91000640NS
     ISATA  P5: ST91000640NS                              →←: Select Screen
     IBA GE Slot 0400 v1572                               ↑↓: Select Item
     Windows Boot Manager (P0: HGST HTS721010A9E630)      Enter: Select
     UEFI: Built-in EFI Shell                             +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          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 permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Save Changes and Reset

After making system configuration changes, select this option to save the changes you've made and reboot the computer for the new configuration parameters to take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Save Options

Save Changes

After making system configuration changes, select this option to save all changes made. This will not reset (reboot) the system.

Discard Changes

Select this option and press <Enter> to discard all the changes you've made and return to the AMI BIOS Utility Program.

Restore Optimized Defaults

To set this feature, select Restore Optimized Defaults from the Exit menu and press <Enter>. These are manufacturer default settings designed for maximum system performance but not for maximum stability.

Save As User Defaults

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use.

Restore User Defaults

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

This feature allows the user to override the Boot priorities sequence in the Boot menu, and immediately boot the system with another device specified by the user. This is a one-time override.

Appendix A

BIOS Error Codes

A-1 BIOS Error Beep (POST) Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up 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 table below lists some common errors and their corresponding beep codes encountered by users.

BIOS Error Beep (POST) Codes		
Beep Code	**Error Message**	**Description**
1 short	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
5 long, 2 short	Display memory read/write error	Video adapter missing or with faulty memory
1 long continuous	System OH	System overheat condition

A-2 Additional BIOS POST Codes

The AMI BIOS supplies additional checkpoint codes, which are documented online at http://www.supermicro.com/support/manuals/ ("AMI BIOS POST Codes User's Guide").

When BIOS performs the Power On Self Test, it writes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, a diagnostic card can be attached to the computer to read I/O port 0080h (Supermicro p/n AOC-LPC80-20).

For information on AMI updates, please refer to http://www.ami.com/products/.

Appendix B

Standardized Warning Statements for AC Systems

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 website 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.

احذر! خطرٌ عٌ هذا الزهز ةٌ جسد اصابة ف تتسبب أى وٌي حالة ف اَك ا.
قبل أى تعول على أي هعذات،كي على علن بالوخاطز ال اُجوة عي الذوائز
الكهزبائ ةٍ
وٌي على درا ةٌ بالووارسات القائ ةٍ لو عٌ وقع أي حادث
استخذم رقن الب إٍى الو صُص ف هًا ةٌ كل تحذ زٌ للعشر تزجوتها

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-250VDC, 20A

هذا المنتج يعتمد على معداث الحمايت مه 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 250V, 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 فصم اننظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد

انطاقت قبم

انصل إنى امناطق انداخهيت نههيكم نتثبيج أو إزانت مكناث 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.

والمدربيه لتزكيب واستبدال أو خدمة هذا الجهاس يجب أن يسمح فقط للمضظفيه المؤهليه

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.)'

تخصيص هذه انحذة نترك بُها ف مناطق محظورة تم .

،مَكن انصسل إن منطقت محظورة فقط من خلال استخذاو أداة خاصت

أو أ وس هُت أخري نلاألمما قفم ومفتاح

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 اسحبذال البطارية بطريقة غير صحيحة فعليل
اسحبذال البطارية
فقط بنفس النع أو ما يعادلها مما أوصث به الشرمة المصنعة
جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة 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 لعسل 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.

<div dir="rtl">

هناك خطز مه التيار الكهزبائي أوالطاقة المجددة على اللحة

عندما يكن النظام يعمل كه حذرا عند خدمة هذا الجهاس

</div>

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생 합니다. 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 للقواويه المحلية والطية 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.

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

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! Hazardous moving parts. Keep away from moving fan blades. 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

警告!回転部品に注意。運転中は回転部(羽根)に触れないでください。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!

警告！危险的可移动性零件。请务必与转动的风扇叶片保持距离。 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

危险的可移动性零件。请务必与转动的风扇叶片保持距离。 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。

Warnung

Gefährlich Bewegende Teile. Von den bewegenden Lüfterblätter fern halten. 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!

Riesgo de piezas móviles. Mantener alejado de las aspas del ventilador. 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

Pieces mobiles dangereuses. Se tenir a l'ecart des lames du ventilateur 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!

חלקים נעים מסוכנים. התרחק מלהבי המאוורר בפעולהכאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

تحذير! أجزاء متحركة خطرة. ابتعد عن شفرات المروحة المتحركة.من الممكن أن المراوح لا تزال تدورعند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

움직이는 위험한 부품. 회전하는 송풍 날개에 접근하지 마세요. 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

Gevaarlijk bewegende onderdelen. Houd voldoende afstand tot de bewegende ventilatorbladen. 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 cord) 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、提供または指定および購入された接続ケーブル、電源コードとACアダプターを 該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。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或采购的连接线,电源线和电源适配器，包含遵照当地法规和安全要求的合规的电源线尺寸和插头.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或採購的連接線,電源線和電源適配器，包含遵照當地法規和安全要求的合規的電源線尺寸和插頭.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

Nutzen Sie beim Installieren des Produkts ausschließlich die von uns zur Verfügung gestellten Verbindungskabeln, Stromkabeln und/oder Adapater, die Ihre örtlichen Sicherheitsstandards einhalten. Der Gebrauch von anderen Kabeln und Adapter können Fehlfunktionen oder Feuer verursachen. Die Richtlinien untersagen das Nutzen von UL oder CAS zertifizierten Kabeln (mit UL/CSA gekennzeichnet), an Geräten oder Produkten die nicht mit Supermicro gekennzeichnet sind.

¡Advertencia!

Cuando instale el producto, utilice la conexión provista o designada o procure cables, Cables de alimentación y adaptadores de CA que cumplan con los códigos locales y los requisitos de seguridad, incluyendo el tamaño adecuado del cable y el enchufe. El uso de otros cables y adaptadores podría causar un mal funcionamiento o un incendio. La Ley de Seguridad de Aparatos Eléctricos y de Materiales prohíbe El uso de cables certificados por UL o CSA (que tienen el certificado UL / CSA en el código) para cualquier otros dispositivos eléctricos que los productos designados únicamente por Supermicro.

Attention

Lors de l'installation du produit, utilisez les cables de connection fournis ou désigné ou achetez des cables, cables de puissance et adaptateurs respectant les normes locales et les conditions de securite y compris les tailles de cables et les prises electriques appropries. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et la Loi sur la Sécurité Matériel interdit l'utilisation de câbles certifies- UL ou CSA (qui ont UL ou CSA indiqué sur le code) pour tous les autres appareils électriques sauf les produits désignés par Supermicro seulement.

כבלים חשמליים ומתאמי AC

אזהרה!

כאשר מתקינים את המוצר, שי להשתמש בכבלים, ספקים ומתאמים AC אשר נרכשו או ותאמו לצורך כך בלבד שומיש . עקמהתונה לבכה לש הנוכנ הדימ ללוכ ,תוימוקמה תוחיטבה תושירדל ומאתוה רשאו ,הנקתהה למשחה ירישכמב שומישה יקוחל םאתהב .ילמשח רצק וא הלקתל םורגל לולע ,רחא גוסמ םאתמ וא לבכ לש דוק םהילע עיפומ רשאכ) CSA-ב וא UL -ב םיכמסומה םילבכב שמתשהל רוסיא סייק ,תוחיטבה יקוחו UL/CSA) .דבלב Supermicro י"ע םאתוה רשא רצומב קר אלא ,רחא ילמשח רצומ לכ רובע

عند تركيب المنتج، قم باستخدام التوصيلات المتوفرة أو المحددة قم أو بشراء الكابلات الكهربائية ومحولات التيار المتردد مع الالتزام بقوانين ومتطلبات السلامة المحلية بما في ذلك حجم الموصل والقابس السليم. استخدام أي كابلات ومحولات أخرى قد يتسبب في عطل أو حريق. يحظر قانون السلامة للأجهزة الكهربائية والمعدات استخدام الكابلات المعتمدة من قبل UL وأ CSA (UL/CSA) مع أي معدات أخرى غير المنتجات المعنية والمحددة من قبل Supermicro. والتي تحمل علامة

전원 케이블 및 AC 어댑터

경고! 제품을 설치할 때 현지 코드 및 적절한 굵기의 코드와 플러그를 포함한 안전 요구 사항을 준수하여 제공되거나 지정된 연결 혹은 구매 케이블, 전원 케이블 및 AC 어댑터를 사용하십시오.

다른 케이블이나 어댑터를 사용하면 오작동이나 화재가 발생할 수 있습니다. 전기 용품 안전법은 UL 또는 CSA 인증 케이블 (코드에 UL / CSA가 표시된 케이블)을 Supermicro 가 지정한 제품 이외의 전기 장치에 사용하는 것을 금지합니다.

Stroomkabel en AC-Adapter

Waarschuwing! Bij het aansluiten van het Product uitsluitend gebruik maken van de geleverde Kabels of een andere geschikte aan te schaffen Aansluitmethode, deze moet altijd voldoen aan de lokale voorschriften en veiligheidsnormen, inclusief de juiste kabeldikte en stekker. Het gebruik van niet geschikte Kabels en/of Adapters kan een storing of brand veroorzaken. Wetgeving voor Elektrische apparatuur en Materiaalveiligheid verbied het gebruik van UL of CSA -gecertificeerde Kabels (met UL/CSA in de code) voor elke andere toepassing dan de door Supermicro hiervoor beoogde Producten.

Appendix C

System Specifications

Processors (per node)

Dual Intel Xeon processor E5-2600 v4/v3 familys in a R3 (LGA 2011)
Note: Refer to the motherboard specifications pages on our website for updates to supported processors.

Chipset

Intel C612

BIOS

AMI 128Mb SPI Flash ROM

Memory (per node)

Twenty four DIMM slots supporting up to 3 TB of memory with DDR4 2666 MT/s ECC Load Reduced DIMMs (LRDIMM) and Registered DIMMs (RDIMM)
Note: See the Supermicro website for current supported memory.

SAS Controller

SAS3 (12Gbps) via Broadcom 3008; IT mode

Drive Bays

Twelve hot-swap 3.5" drives total; each node controls three NVMe/SAS drives
Two M.2 SATA3 or NVMe support (per node)

PCI Expansion Slots (per node)

Two PCIe 3.0 x16 low-profile slots
One SIOM card support (must bundle with network card)

Motherboard

X10DRT-B+; proprietary form factor (7.2 x 18.64 in/182.88 x 473.46 mm)

Chassis

SC827BHQ+-R2K22BP; four hot-swap computing nodes
2U Rackmount, 17.6 x 3.47 x 30.5 in. / 447 x 88 x 775 mm. (W x H x D)

Weight

Gross weight: 86.5 lbs. (39.2 kg)
Net weight: 56 lbs. (25.4 kg)

System Cooling

Four 8-cm PWM fans; two CPU heatsinks per node; four air boxes per node

Power Supply

Model: PWS-2K22A-1R, 80 Plus Titanium level
Rated Output Power: 1200W/1800W/1980W/2090/2200W
Rated AC Input Voltages: Output Power, +12 V Output Current
100-127 Vac: 1200 W, 100 A
220-220 Vac: 1800 W, 150 A
220-230 Vac: 1980 W, 165 A
230-240 Vac: 2090 W, 174 A
180-220 Vac (UL/cUL only): 2090 W, 174 A
220-240 Vac (UL/cUL only): 2200 W, 183 A
230-240 Vac (CCC only): 2200 W, 174 A
Rated Input Frequency: 50-60 Hz
12 V standby: 2.1 A max

Operating Environment

Operating Temperature: 10º to 35º C (50º 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 55032 Class A, EN 61000-3-2/3-3, CISPR 32 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)

Other: VCCI-CISPR 32 and AS/NZS CISPR 32

Environmental: Directive 2011/65/EU and Directive 2012/19/EU

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

Perchlorate Warning

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"

Appendix D

UEFI BIOS Recovery

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you do update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

D.1 Overview

The Unified Extensible Firmware Interface (UEFI) provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism that will allow the UEFI OS loader stored in an add-on card to boot the system. The UEFI offers clean, hands-off management to a computer during system boot.

D.2 Recovering the UEFI BIOS Image

A UEFI BIOS flash chip consists of a recovery BIOS block and a main BIOS block (a main BIOS image). The recovery block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a healthy BIOS image if the original main BIOS image is corrupted. When the system power is turned on, the recovery block codes execute first. Once this process is complete, the main BIOS code will continue with system initialization and the remaining POST (Power-On Self-Test) routines.

Note 1: Follow the BIOS recovery instructions below for BIOS recovery when the main BIOS block crashes.

Note 2: When the BIOS recovery block crashes, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request. (For a RMA request, please see section 3.5 for more information). Also, you may use the Supermicro Update Manager (SUM) Out-of-Band (OOB) (https://www.supermicro.com.tw/products/nfo/SMS_SUM.cfm) to reflash the BIOS.

D.3 Recovering the Main BIOS Block with a USB Device

This feature allows the user to recover the main BIOS image using a USB-attached device without additional utilities used. A USB flash device such as a USB Flash Drive, or a USB CD/DVD ROM/RW device can be used for this purpose. However, a USB Hard Disk drive cannot be used for BIOS recovery at this time.

To perform UEFI BIOS recovery using an attached device, follow the instructions below.

1. Using a different system, copy the "Super.ROM" binary image file into the disc Root "\" directory of a USB device or a writeable CD/DVD.

Note: If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www. supermicro.com to download the BIOS image to a USB flash device and rename it "Super ROM".

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system

3. While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your keyboard until your hear two short beeps. This may take from a few seconds to one minute.

4. After locating the new BIOS binary image, the system will enter the BIOS recovery menu as shown below.
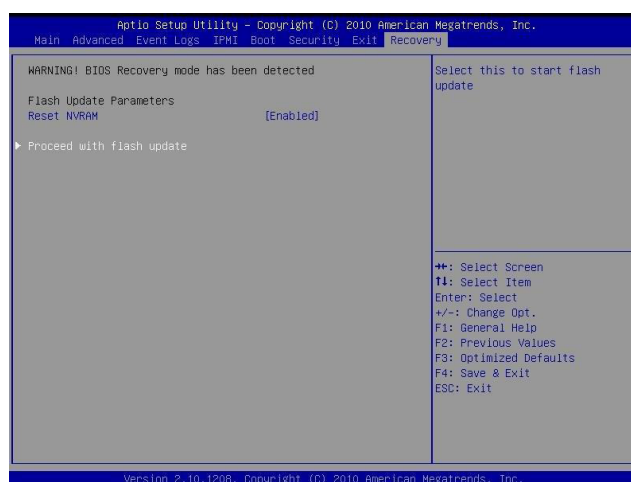
Note: At this point, you may decide if you want to start with BIOS Recovery. If you decide to proceed with BIOS Recovery, follow the procedures below.

5. When the screen shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.

Note: *Do not interrupt* the BIOS flashing until it has completed.

```
              Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
                                                    Recovery

   WARNING! System firmware is being updated.
   Keyboard is locked.
   DO NOT TURN THE POWER OFF !!!
   Once firmware update is completed
   press any key to reboot the system

   Flash update progress            15 %

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

              Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```
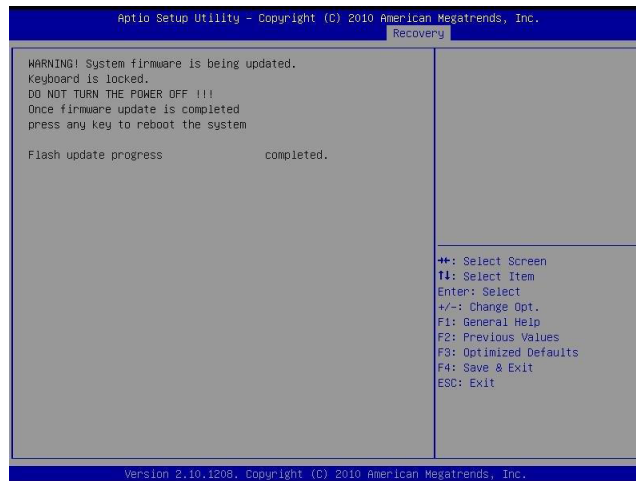
6. After the process has completed, press any key to reboot the system.

```
              Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
                                                    Recovery

   WARNING! System firmware is being updated.
   Keyboard is locked.
   DO NOT TURN THE POWER OFF !!!
   Once firmware update is completed
   press any key to reboot the system

   Flash update progress            completed.

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

              Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

7. Using a different system, extract the BIOS package into a bootable USB flash drive.

8. When the DOS prompt appears, enter AMI.BAT BIOSname.###.

 Note: *Do not interrupt this process* until BIOS flashing has completed.

9. After receiving the message that the BIOS update is complete, unplug the AC power cable from the power supply to clear CMOS, then plug the AC power cable in the power supply again to power on the system.

10. Press <Del> continuously to enter the BIOS Setup utility.

11. Press <F3> to load the default settings.

12. After loading the default settings, press <F4> to save the settings and exit the BIOS Setup utility.