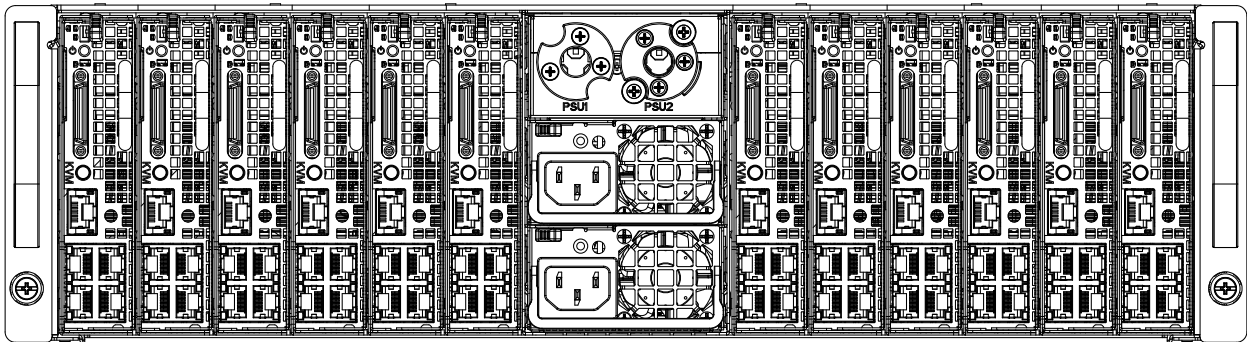# SuperServer®
5038MD-H24TRF

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

Release Date: June 17, 2016   mk

Preface

About this Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5038MD-H24TRF. Installation and maintenance should be performed by experienced technicians only.

Please refer to the 5038MD-H24TRF server 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:
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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

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Chapter 1

Introduction

1.1 Overview

The SuperServer 5038MD-H24TRF is a MicroCloud server system featuring 24 computing nodes. The SC939HX-R1K63B 3U chassis contains twelve sleds, each containing an X10SDE-DF motherboard, with each motherboard supporting two computing nodes.

In addition to the motherboards and chassis, several included parts are listed below.

Main Parts List		
Description	**Part Number**	**Quantity**
Backplane	BPN-SAS-939H	One
Fans	FAN-0159L4	Four
CPU passisve heatsink	SNK-C0054L and SNK-C0054L-1	One each per sled
Add-on module	AOM-BPN-MC24 AOM-PDB-MC24	One each per sled
Rail kit	MCP-290-41803-0N	One set

1.2 Unpacking the System

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

1.3 System Features

The following table provides you with an overview of the main features of the 5038MD-H24TRF. Refer to Appendix D for additional specifications.

System Features
Motherboards
X10SDE-DF, twelve, each supporting a pair of computing nodes
Chassis
SC939HX-R1K63B twelve hot-swap motherboard sleds
CPU (each motherboard)
Intel Xeon D-1531, Pentium in a System-on-a-Chip (SoC), two per motherboard, one per node
Memory (each motherboard)
Eight (8) 288-pin DIMM slots (four per node) support up to: • 128GB of VLP ECC 2400/2133/1866/1600/1333MHz RDIMM memory.   **Note**: 2400MHz is only supported when using 16GB DDR4 RDIMM ECC memory • 64GB of VLP ECC 2133/1866/1600/1333MHz UDIMM memory. DIMM sizes: 32GB, 16GB, 8GB, and 4GB, up to 128GB for RDIMM memory or up to 64GB for UDIMM memory
Chipset
na
Hard Drives (each motherboard)
Up to two fixed 2.5" SATA3 drives (24 total), or up to four 2.5" slim solid state drives (with a kit),(48 total)
Network (each motherboard)
• Four Intel i350 1Gb Ethernet ports • One dedicated IPMI 2.0 LAN
Power
Dual 1620 W modules, 80+ Platinum level
Cooling
Four 9-cm 7.5 K RPM, 4-pin PWM rear exhaust fans; one airflow shroud per node
Form Factor
3U rackmount
Dimensions
(WxHxD) 17.3 x 5.21 x 23.2 in. (438 x 133 x 589 mm)

1.4 Chassis Features

Front Features

The front of the chassis includes access to the hot-swap nodes and the power supply modules.

Twelve Trays Containing
Two Nodes Each

Power Supply
Modules
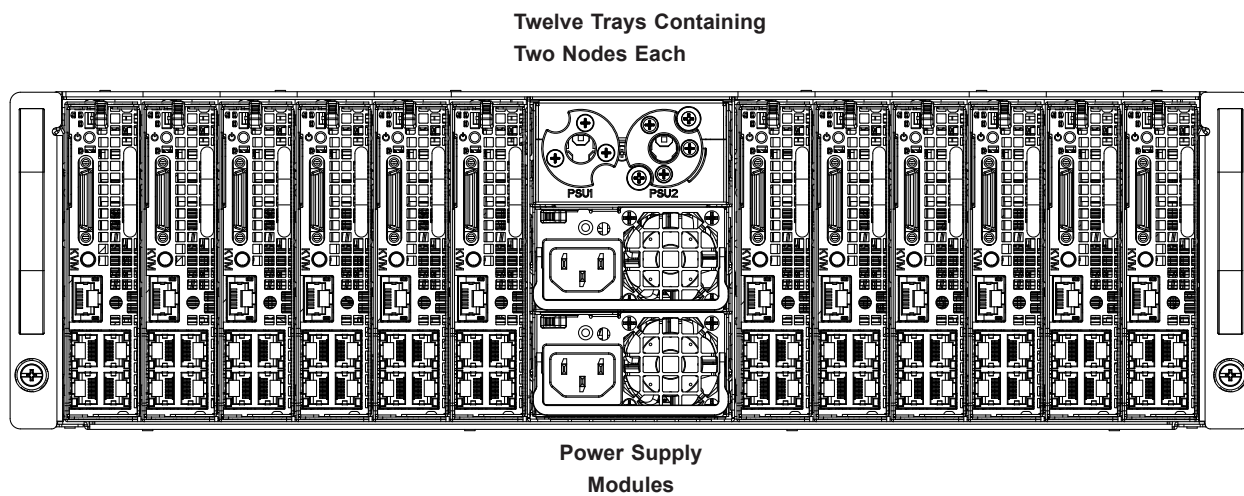
Figure 1-2. Chassis Front View

Node Front View
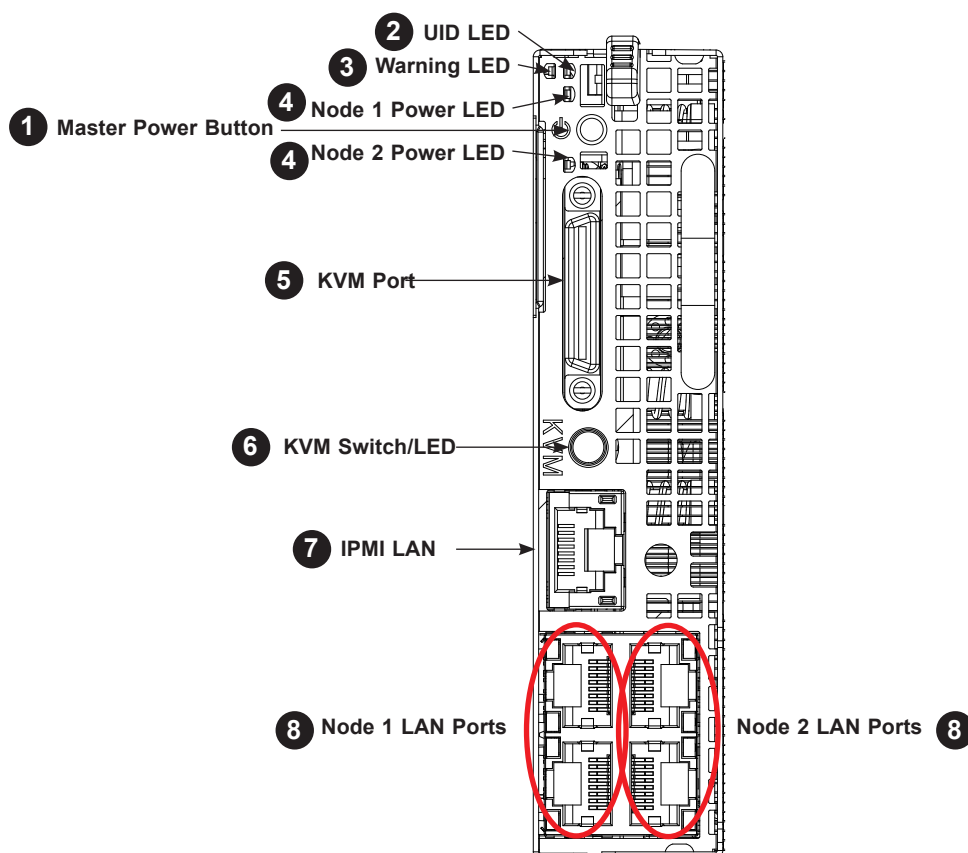
Figure 1-3. Single Node Tray

Node Pair Features		
Item	**Feature**	**Description**
1	Power button	Power button for the node pair--press to power on; press for four seconds to power down
2	UID LED	When blue, node pair is identified
3	Warning LED	Solid Red: Overheat condition detected Fast Blinking Red (1 Hz): Fan failure detected Slow Blinkng Red (0.25 Hz): Power failure detected
4	Node Power LEDs (one for each node)	Green: Node is operating normally Amber: Node is in standby mode Off: Node is off
5	KVM port	Connect the adapter to this port to provide two USB2 ports, one COM port, and one VGA port
6	KVM Switch/LED	The KVM switch controls which node is connected to the KVM port. The LED in the switch indicates green for node 1 or amber for node 2.
7	IPMI LAN Port	Dedicated LAN port for IMPI connection
8	LAN	Four LAN ports, two for node 1 and two for node 2

Rear Features

The diagram below shows the features on the rear of the chassis.

Power Cord Plugs

Rear Exhaust Fans
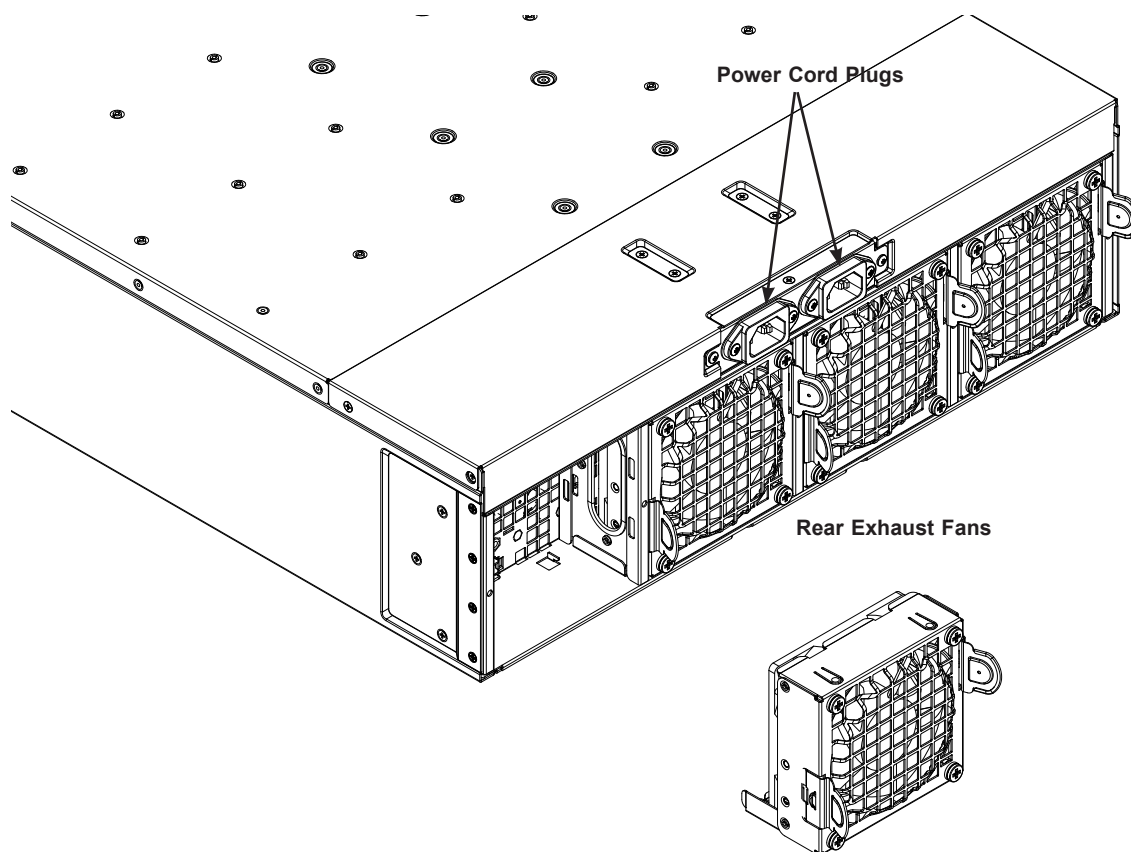
Figure 1-4. Chassis Rear View
(with one fan removed)

1.5 Motherboard Layout

The diagram below shows the X10SDE-DF 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.
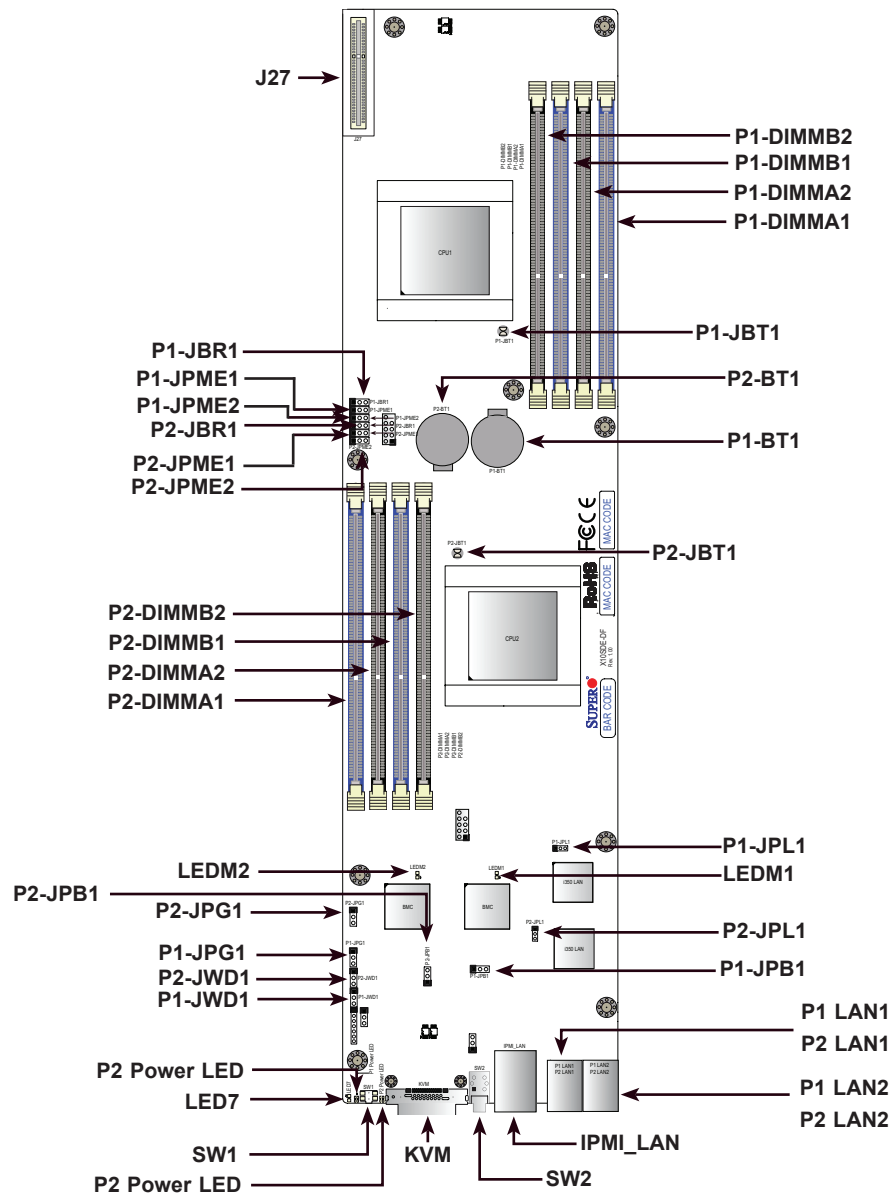
Figure 1-5. Motherboard Layout

Notes:

- "■" indicates the location of pin 1.

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

Motherboard Jumpers, Connectors, and LEDs

Jumper	Description	Default Setting
P1/P2-JBR1	BIOS Recovery	Pins 1-2 (Normal)
P1/P2-JBT1	CMOS Clear	See Chapter 3
P1/P2-JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
P1/P2-JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
P1/P2-JPL1	LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
P1/P2-JPME1	ME Recovery	Pins 1-2 (Normal)
P1/P2-JPME2	Manufacturing Mode Select	Pins 1-2 (Normal)
P1/P2-JWD1	Watch Dog Enable	Pins 1-2 (Reset)

Connector	Description
IPMI_LAN	Dedicated IPMI LAN Port
J27	Hard Drive Backplane Connector
KVM	KVM/VGA/USB/COM (UART) Connector for Remote Console Redirection or Remote Network Interface
P1/P2-BT1	Onboard Battery
P1/P2-LAN1/LAN2	Front Panel LAN Ports
SW1	Power Switch
SW2	Node 1/Node 2 switch and indicator for VGA, USB, and COM port signals

LED	Description	Status
LED7	UID LED	Blue, Blinking: Unit Identified
LED8	Overheat/Power Fail LED (Bottom of the board)	Red, Solid On Overheat Red, Blinking: Power Fail
LEDM1/M2	BMC Heartbeat LEDs	Green, Blinking: Active
P1/P2 Power LED	Onboard Power LEDs	Green, Solid On: Power On
SW2	Node 1/Node 2 switch and indicator for VGA, USB, and COM port signals	Green: Node 1 Orange: Node 2
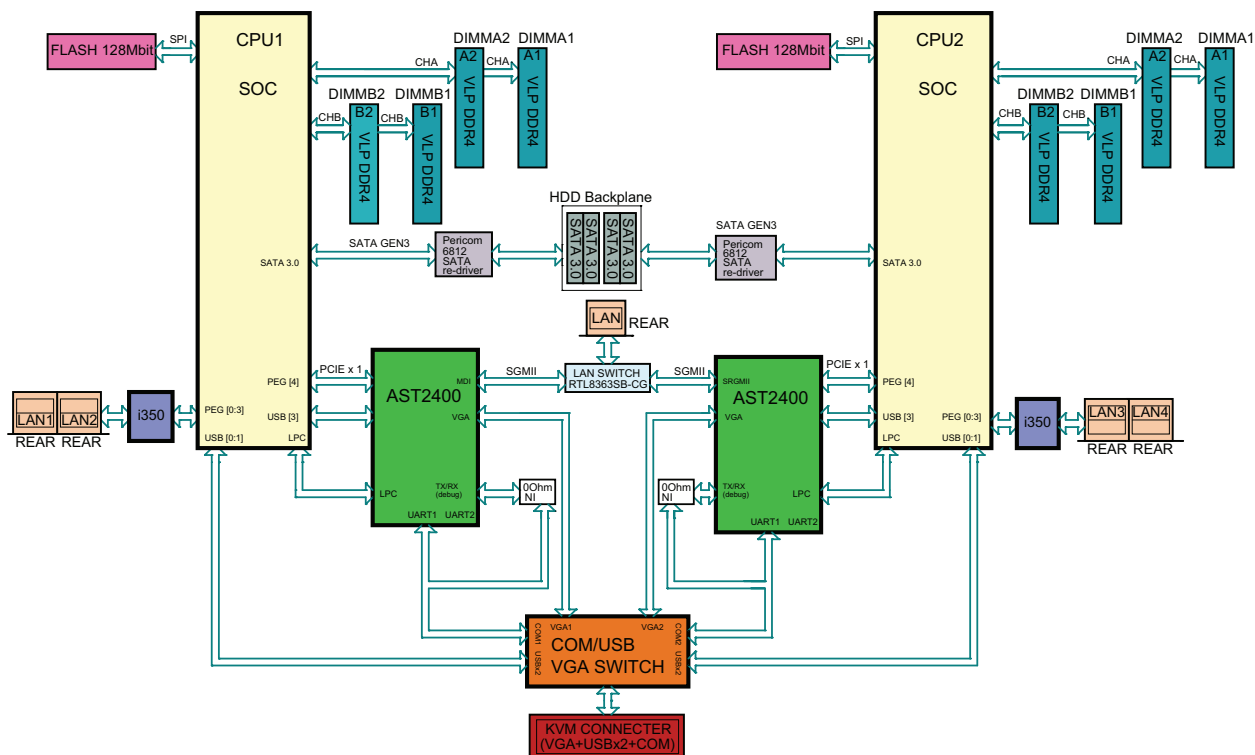
Figure 1-6. System Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your motherboard. See the System Specifications appendix for the actual specifications of your motherboard.

Chapter 2

Installation in a Rack

This chapter provides advice and instructions for mounting your system in a rack.

2.1 Preparing for Setup

The box in which the system was shipped should include the hardware needed to install it into the rack. Please note the precautions in this chapter and Appendix B

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. It will also require a grounded AC power outlet nearby.

- 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 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.

- 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 Chapter 3.

• 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.

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.

2.2 Installing the Rails

Use the procedure below for installing the system to a rack.

1. Decide where you want to place the system into the rack (see "Rack Mounting Considerations" in the previous section).

2. Position the template at the front of the system to determine the locations of the screws for the chassis rails (see Figure 2-1).
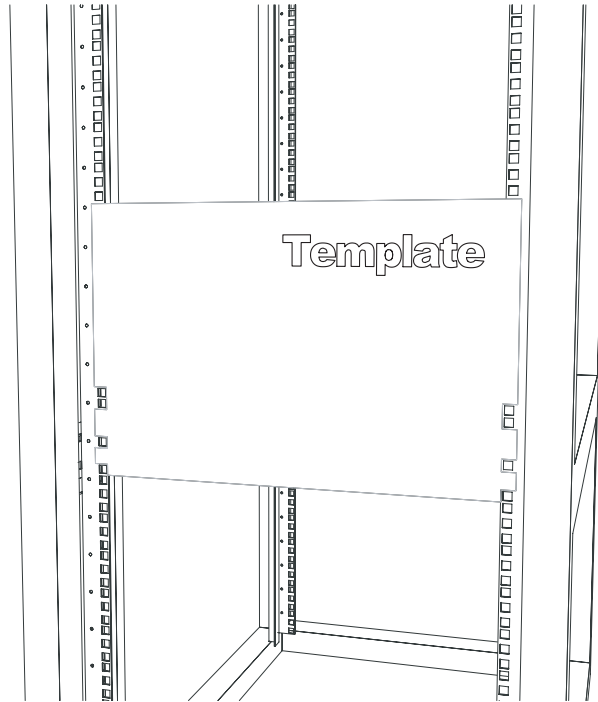
Figure 2-1. Positioning the Template

3. The two rail sections are screwed together to keep them immobile during shipping. Release these screws just enough to allow the rails to slide apart. Note the arrow on the rail, which indicates the end that attaches to the front of the rack.

4. Slide the rails apart far enough to match the depth of the rack. Position the rails with the template and secure the front of each to the front of the rack with two flathead screws, then secure the back of each rail to the rear of the rack with two flathead screws (see Figure 2-2). Note that the rails are left/right specific and very heavy.

5. (Optional step) Add the front left and right handles to the chassis using screws to secure each handle. Install a thumbscrew through the bottom hole of each handle.

6. With one person on either side, lift the system and slide it into the installed rails.

7. After pushing the enclosure all the way into the rack, use two roundhead screws on each side of the server to lock it into place.

Front   Rear
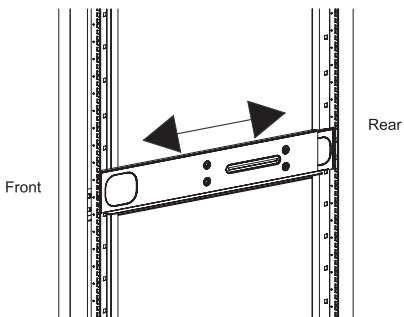
Figure 2-2. Securing the Rails to the Rack
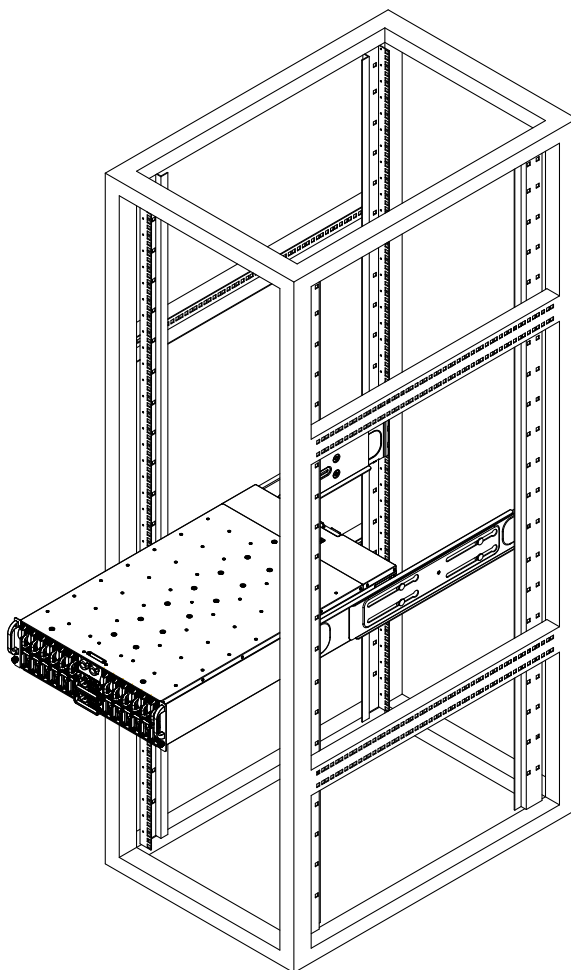
Figure 2-3. Installing to the Rack

Note: this figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

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.

3.1 Removing Power

Each motherboard sled can be removed independently of the others, so most maintenance tasks can be completed removing power from only the affected sled.

Power Down a Node

Depress the motherboard sled power button for four seconds to power down the two nodes in that sled.

Power Down the Entire System

Use the following procedure to ensure that power has been removed from the entire system. This is necessary only when removing non hot-swap components such as the backplane.

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

2. After the system has completely shut-down, disconnect the AC power cords from the power strip or outlet.

3. Disconnect the power cords from the rear of the chassis.

3.2 Accessing the System

Top Cover

A portion of the chassis top is removable to allow access to the system fans and backplane.

Removing the Top Cover

1. If necessary, remove power from the system as described in Section 3.1.

2. Remove the six screws securing the cover to the chassis. See Figure 3-1.

3. Lift the cover from the chassis.

Caution: Except for short periods of time, do not operate the server without the cover in place. The chassis cover must be in place to allow for proper airflow and to prevent overheating.
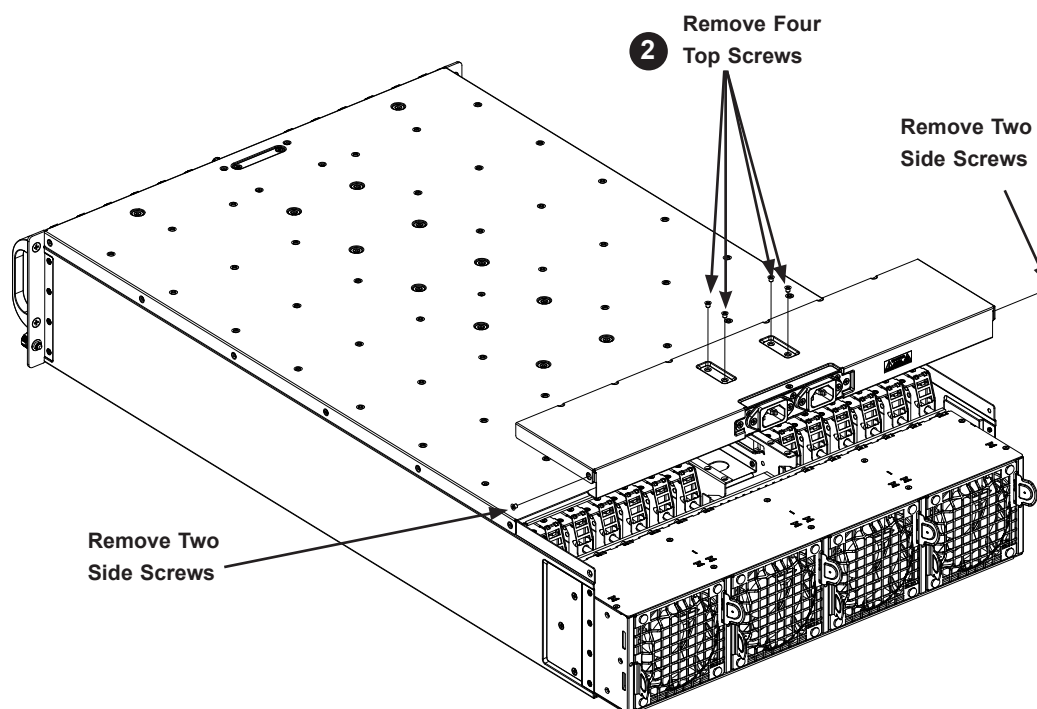
Figure 3-1. Removing the Chassis Cover

Removing a Sled

The system features twelve removable sleds. Each sled contains a motherboard hosting two nodes and two to four storage drives. The sleds allow access to the motherboards and drives.

Removing a Sled from the System

1. Power-down the node pair on the sled by pressing the power button.

2. Press and hold down the release tab on the top front of the sled.

3. Use the sled handle to pull it from the system.
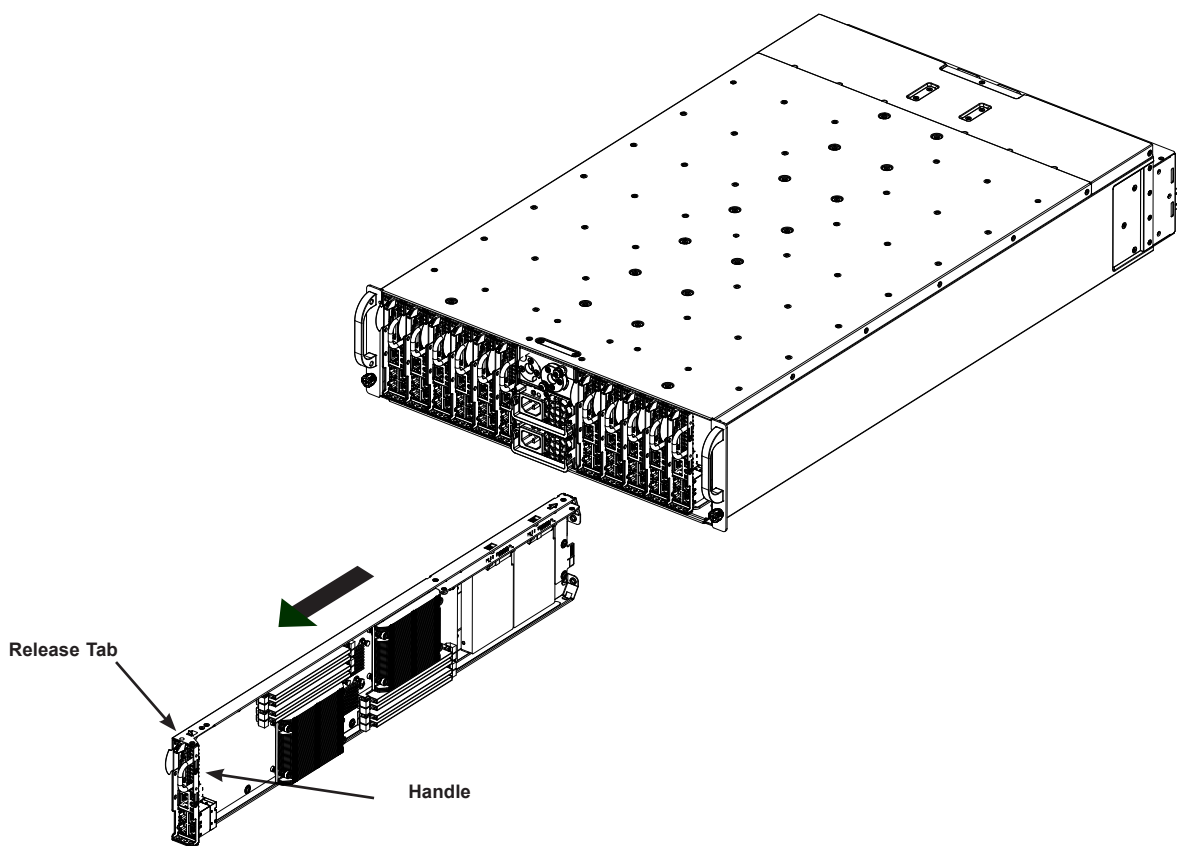
Figure 3-2. Removing a Sled

Note: Except for short periods of time while swapping sleds, do not operate the server with the sled bays empty. In the event of a node failure, remove the sled of the failed node and replace it with a dummy node that was included with the system.

Connecting to a Node

USB, COM, and serial port capabilties can be added to any node through the KVM port on the front. Plug in the adapter (dongle).
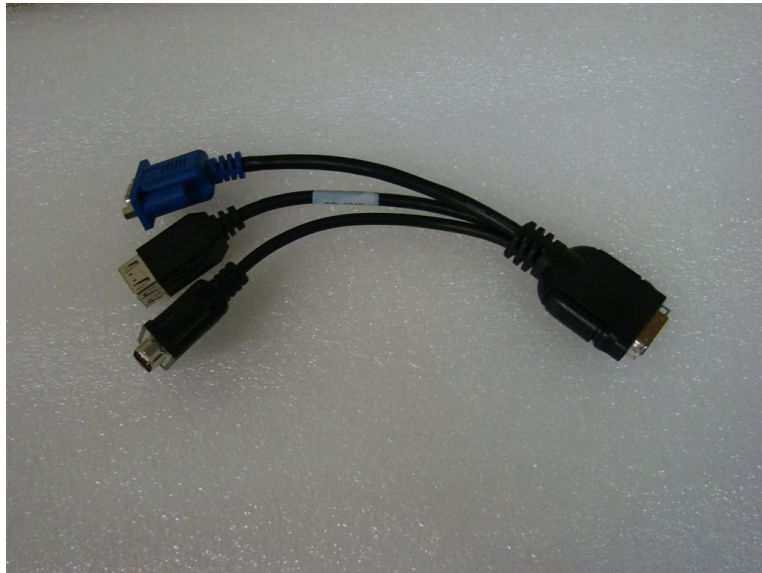
Figure 3-3. Adapter to Provide USB, COM, and Serial Ports

3.3 Motherboard Components

Memory Installation

Memory Support

The X10SDE-DF supports DDR4 VLP ECC memory; up to 64GB of unbuffered (UDIMM) memory or up to 128GB of registered (RDIMM) memory in four memory slots per node. Node 1 has slots P1-DIMMA1, P1-DIMMA2, P1-DIMMB1, and P1-DIMMB2. Node 2 has slots P2-DIMMA1, P2-DIMMA2, P2-DIMMB1, and P2-DIMMB2. Populating these DIMM modules with a pair of memory modules of the same type and size will result in interleaved memory, which will improve memory performance.

Check the Supermicro website for possible updates to memory support.

DIMM Module Population Configuration

For optimal memory performance, follow the table below when populating memory.

Processors and their Corresponding Memory Modules				
CPU#	Corresponding DIMM Modules			
CPU	DIMMA1	DIMMA2	DIMMB1	DIMMB2

Memory Module Population for Optimal Performance	
Number of DIMMs	Memory Population Configuration Table
2 DIMMs	DIMMA1/DIMMB1
4 DIMMs	DIMMA1/DIMMB1, DIMMA2/DIMMB2

Memory Module Population						
DIMM Slots per Channel	DIMM Type	POR Speeds (MHz)	Ranks per DIMM	Layer Count	FW Base	Supported Voltage
2	DDR4 VLP ECC	2400, 2133,1866, 1600, 1333	SR, DR	6	SPS	1.2V1

Note: 2400MHz memory speed is only supported when using 16 GB DDR4 RDIMM ECC memory.

Memory Module Population		
Max Memory Possible	4GB DRAM Technology	8GB DRAM Technology
Single Rank UDIMM	16GB (4x 4GB DIMMs)	32GB (4x 8GB DIMMs)
Dual Rank UDIMMs	32GB (4x 8GB DIMMs)	64GB (4x 16GB DIMMs)

Populating Memory Modules				
Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slots per Channel (SPC) and DIMMs per Channel (DPC)
				2 Slots per Channel
				1 DPC	2 DPC
		4 Gb	8 Gb	1.2 V	1.2 V
RDIMM	SRx4	8 GB	16 GB	2133	2400
RDIMM	SRx8	4 GB	8 GB	2133	2400
RDIMM	DRx8	8 GB	16 GB	2133	2400
RDIMM	DRx4	16 GB	32 GB	2133	2400

DIMM Module Population Sequence

When installing memory modules, the DIMM slots must be populated in the following order: P1-DIMMA1, P1-DIMMB1, P1-DIMMA2, P1-DIMMB2, then P2-DIMMA1, P2-DIMMB1, P2-DIMMA2, P2-DIMMB2. The blue slots must be populated first.

⬆ Towards the CPU

DIMMA1

DIMMA2 (Blue Slot)

DIMMB1

DIMMB2 (Blue Slot)

⬇ Towards the edge of the motherboard
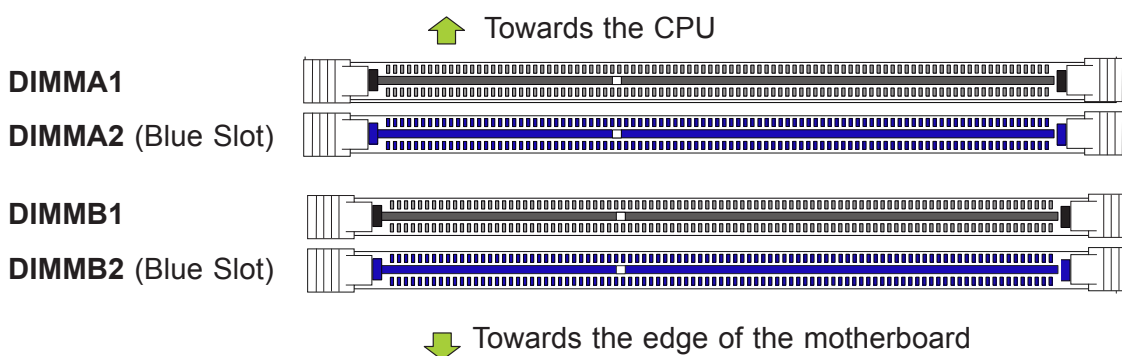
Note: Be sure to use memory modules of the same type and speed on the motherboard. Mixing of memory modules of different types and speeds is not allowed.

Install Procedure
Installing Memory

1. Remove power from the motherboard as described in Section 3.1.

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

Notches
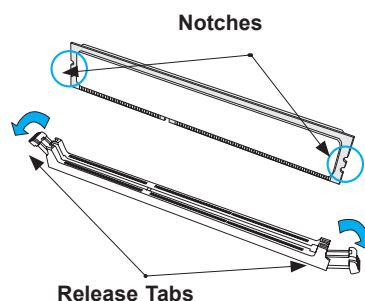
Release Tabs

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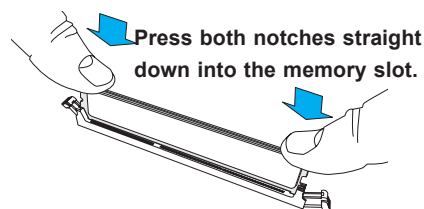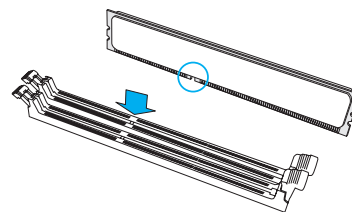
4. Press the release tabs to the locked position to secure the DIMM module into the slot.

5. Repeat the procedure for the remaining DIMM modules in the order detailed in the previous section.

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

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

Note: Visit the product page on the Supermicro website for possible updates to memory support (www.supermicro.com).

Motherboard Battery

The motherboard uses non-volatile memory to retain system information when system power is removed. This memory is powered by two lithium batteries residing on the motherboard, one battery for each node.

Replacing the Battery

1. Remove power from the motherboard as described in section 3.1 and remove the node sled from the chassis.

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

3. 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
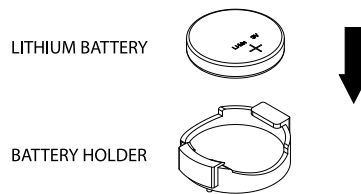
Figure 3-4. Installing the Onboard Battery

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 (CR2032).

3.4 Chassis Components

Hard Drives

Each node sled supports two 2.5" hard disk drives or four 2.5" slim solid state drives. Each hard drive, or each pair of SSDs serves one node (see diagram below). The node pair must be powered down to replace a drive.

The drives are mounted directly to the sled.
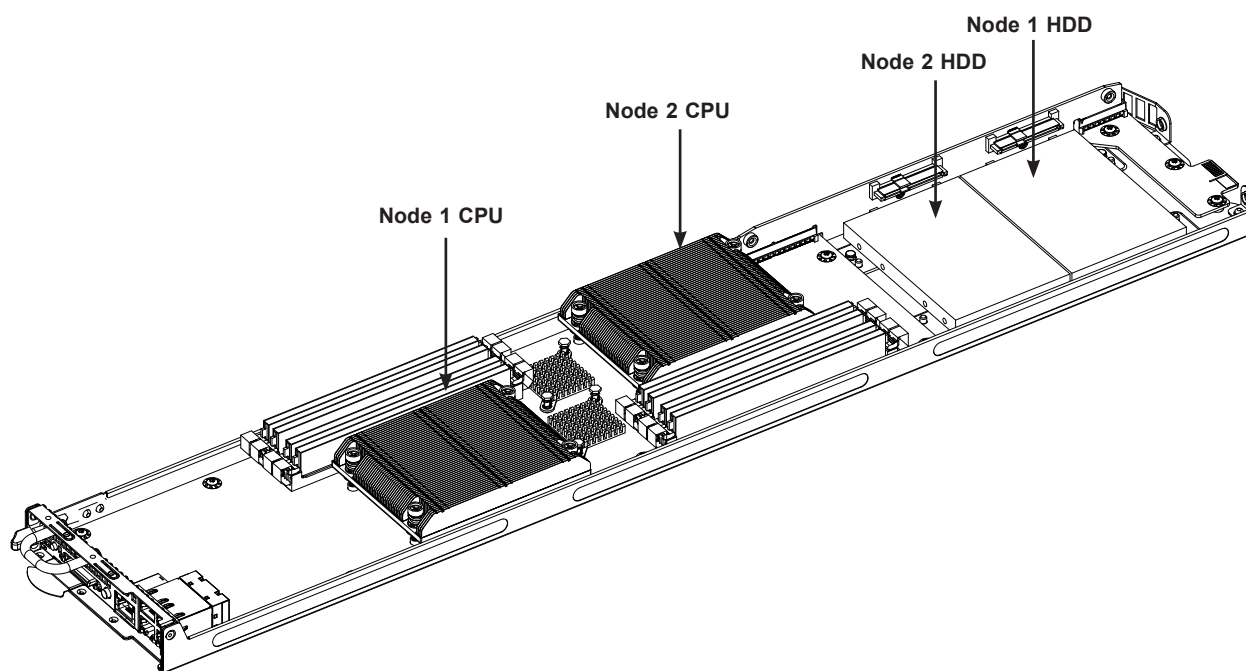
Figure 3-5. Drives Associated with Nodes

Note: Enterprise level hard disk drives are recommended for use in Supermicro servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/storage.cfm.

Installing 2.5" Hard Drives

1. Remove the sled from the chassis.

2. Insert the drive with the printed circuit board side facing the sled floor so that the mounting holes in the drive align with those in the bottom of the sled.

3. Secure the hard drive to the sled with the screws included with the drive.

4. Return the node sled into the bay in the chassis.
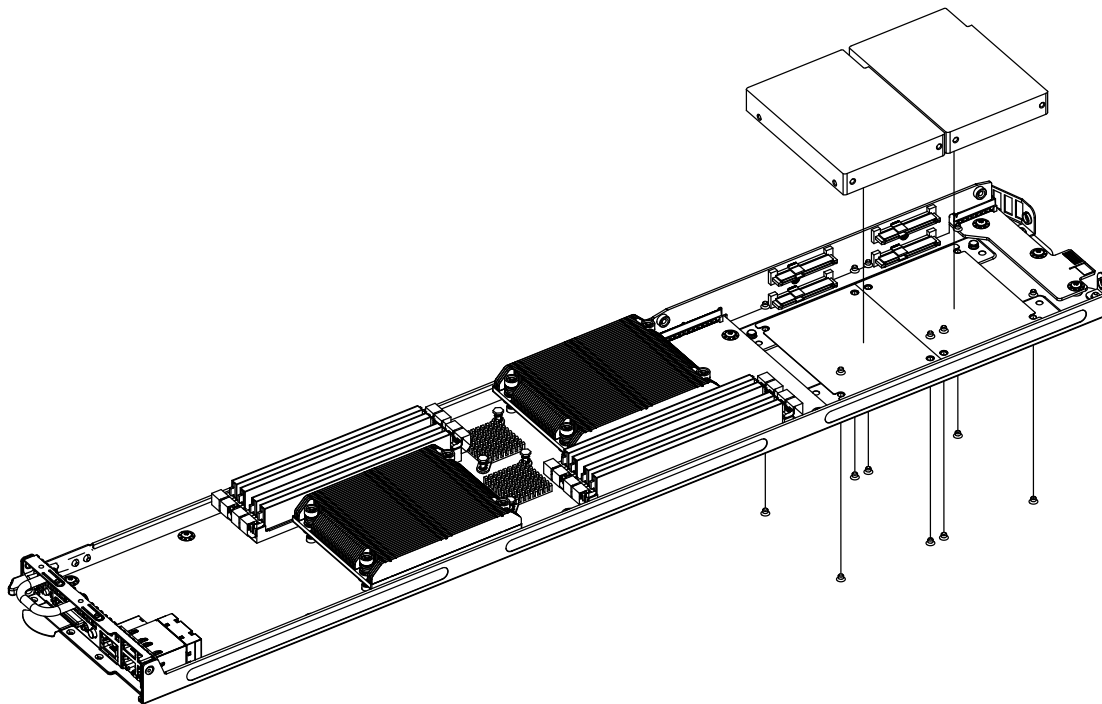
Figure 3-6. Installing 2.5" Hard Drives

Installing 2.5" Solid State Drives

An optional kit is required to install four 2.5" SDDs (MCP-220-93903-0N bracket).

1. Remove the sled from the chassis.

2. Insert two SSDs with the printed circuit board side facing downward so that the mounting holes in the drive align with those in the bottom of the sled.

3. Secure the drives to the sled with the screws included with the drive.

4. Place the other two SSDs onto the optional bracket with the printed circuit board side facing downward and secure with screws as shown below.

5. Secure the bracket with the SSDs installed directly above the drives already mounted in the sled with the screws provided as shown below.

6. Return the node sled into the bay in the chassis.
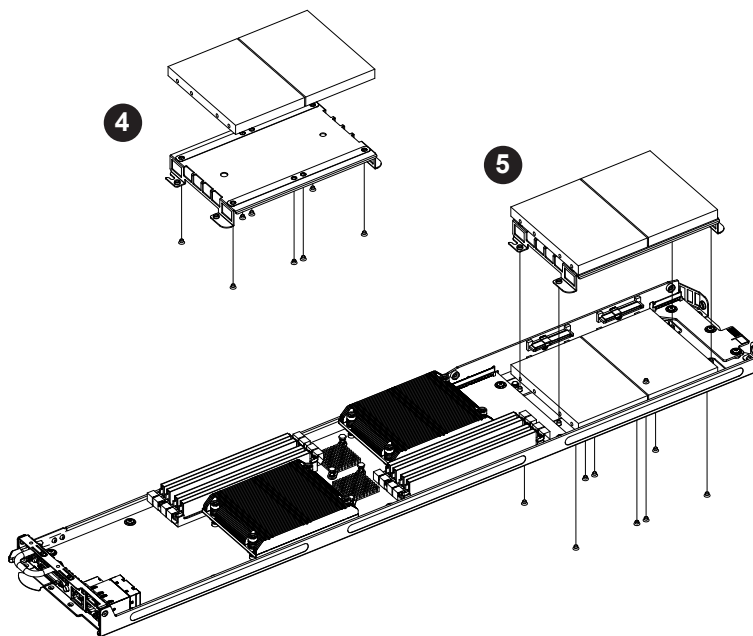
Figure 3-7. Installing 2.5" Drives

System Cooling

Fans

Four 9-cm exhaust fans provide cooling for the sysem. Six sleds share two fans in two cooling zones.
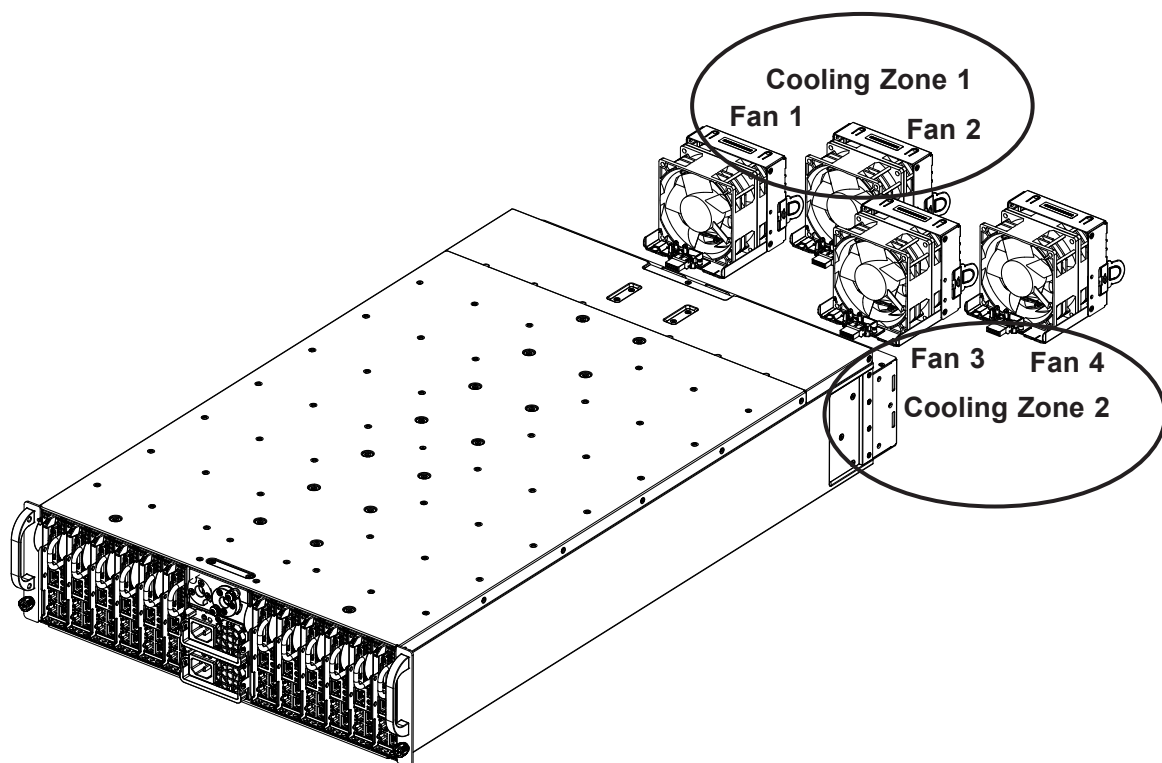
Figure 3-8. Cooling Zones

The fans can be replaced without powering down the system and with no tools required.

Replacing a System Fan

1. Identify the failed fan using IPMI or visual inpection.

2. Push both release tabs on the failed fan inward and pull the fan from the chassis. The electrical connections disconnect automatically.

3. Push the replacement fan into place.

4. Confirm that the fan is working with the system powered on.
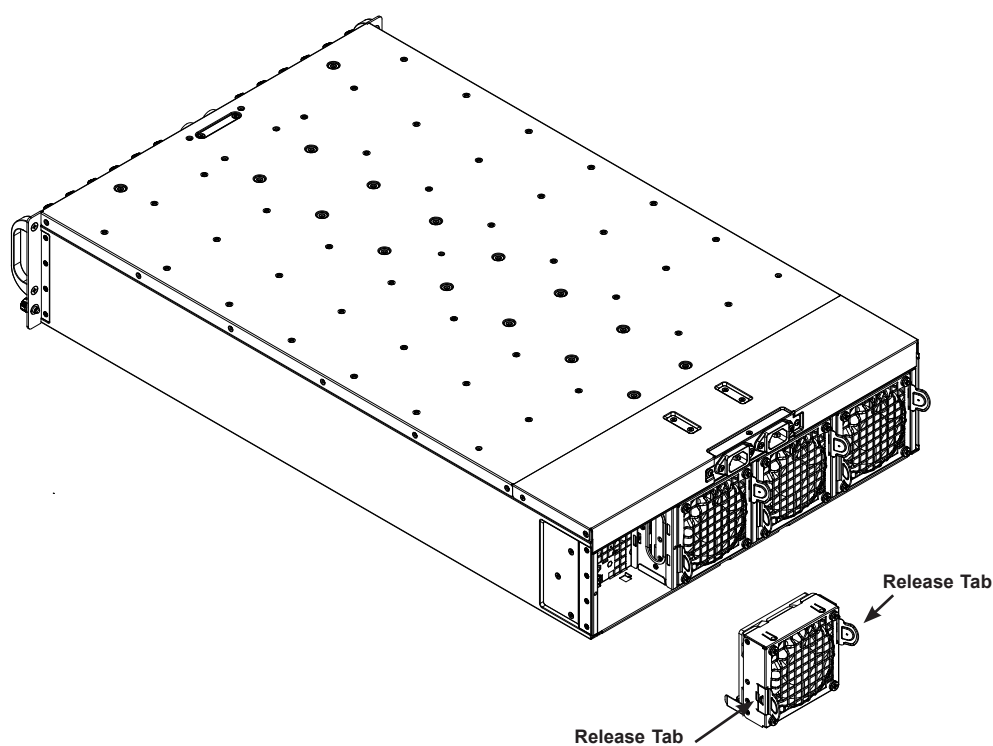
Figure 3-9. Replacing a Fan

Power Supply

The chassis features redundant power supplies. They are hot-swappable, meaning they 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 switched off. An illuminated green light indicates that the power supply is operating.

Changing the Lower Power Supply (PSU2)

1. With the system running, unplug the AC power cord that provides power to the module.

2. Press and hold the release tab on the left of the power module.

3. Grasp the handle and pull the power supply out of its bay.

4. Push the replacement power supply module into the empty bay until it clicks into the locked position.

5. Plug the AC power cord back into the power supply module.

Release Tab
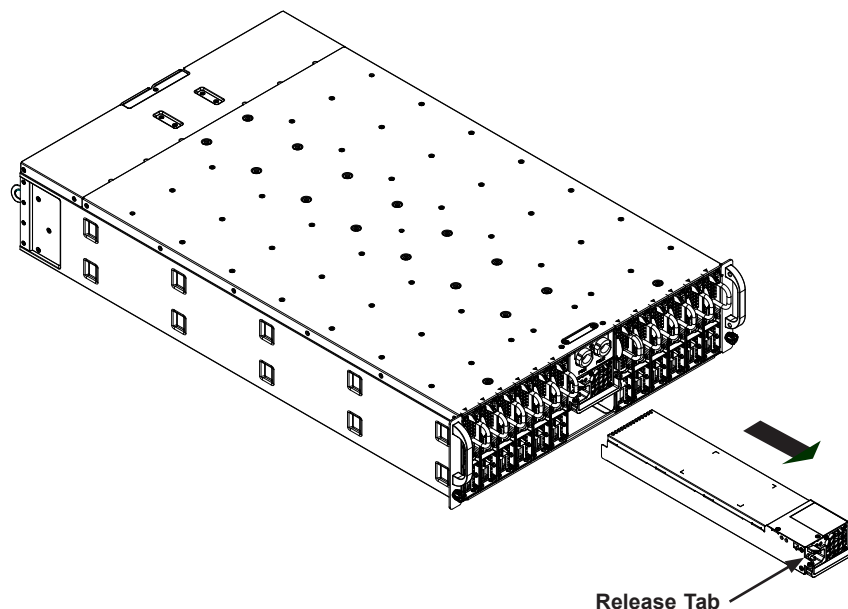
Figure 3-10. Replacing the Lower Power Supply Module

Changing the Upper Power Supply (PSU1)

1. Unplug the AC power cord that provides power to the PSU1 module.

2. Remove the thumbscrews around the PSU2 power cord anchor plate (loosen this plate without removing the PSU2 power cord).
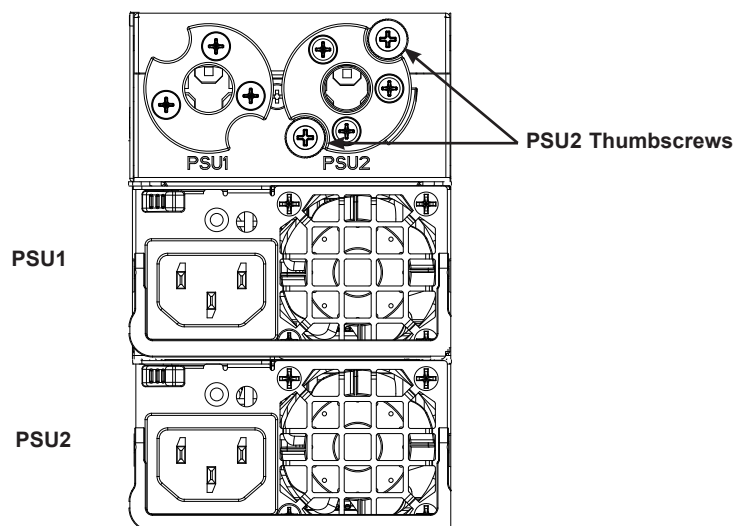
Figure 3-11. Power Cord Anchor Plates
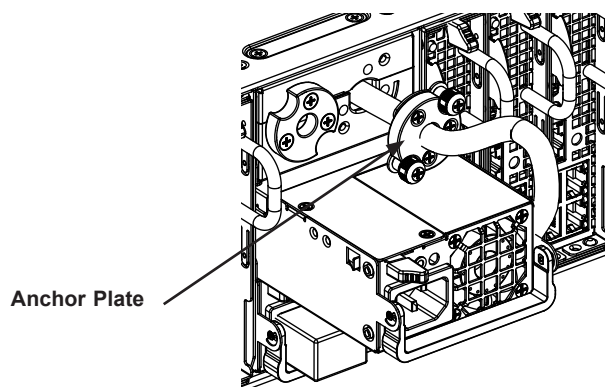
Figure 3-12. Loosen the PSU2 Anchor Plate
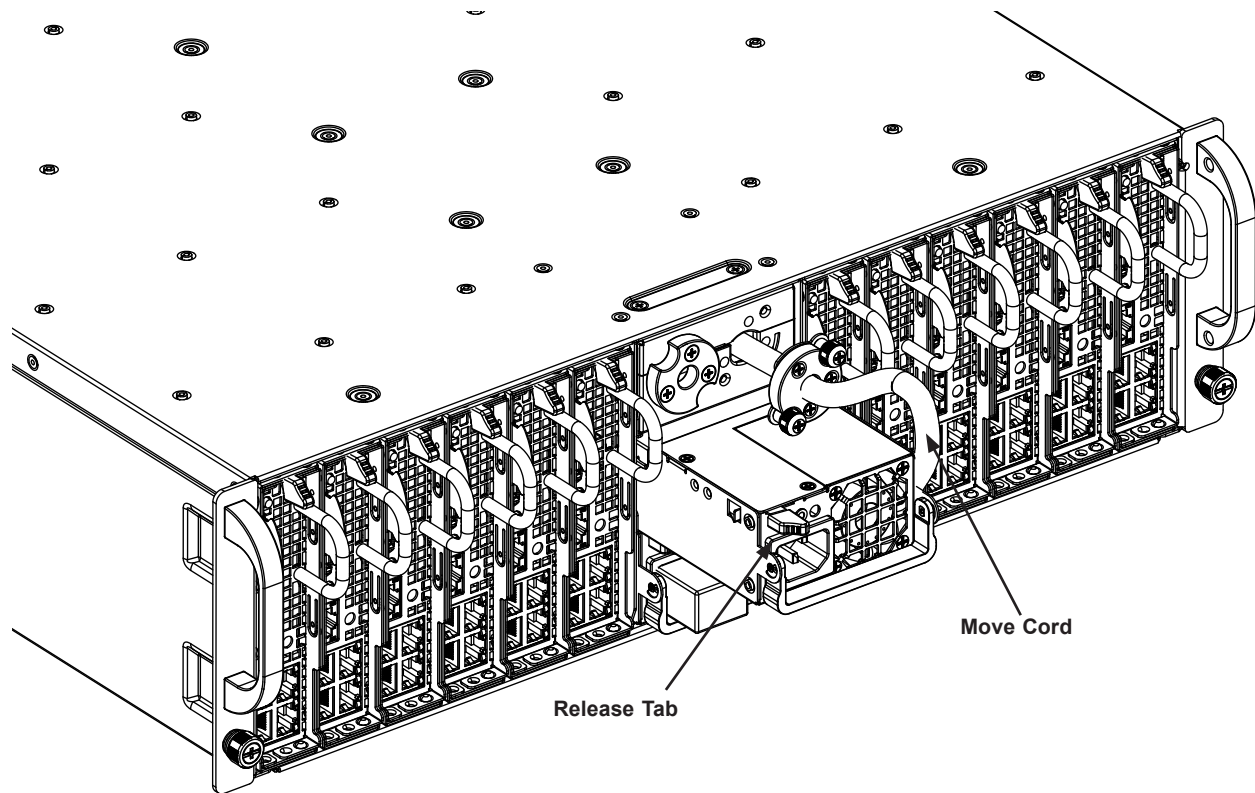
Figure 3-13. Replacing the Upper Power Supply Module

3. Pull the PSU2 power cord out and to the side so that is does not interefere with PSU1 being pulled from the system.

4. Press and hold the release tab on the left of the power module.

5. Grasp the handle and pull the power supply out of its bay.

6. Push the replacement power supply module into the empty bay until it clicks into the locked position.

7. Secure the PSU2 power cord anchor plate.

8. Plug the AC power cord back into the power supply 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. A motherboard layout indicating component locations may be found in Chapter 1.

Please review the safety precautions in Appendix B before installing or removing components.

4.1 Motherboard Sled I/O Ports and Controls
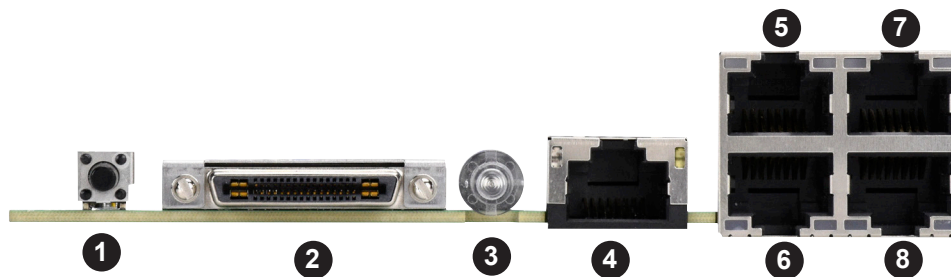
I/O Ports			
#	Description	#	Description
1.	Power Switch	5.	P2 LAN1
2.	KVM Connector	6.	P1 LAN1
3.	KVM signal switch/LED	7.	P2 LAN2
4.	IPMI LAN	8.	P1 LAN2

Power Button

The power control button (SW1) on each motherboard sled is described in Chapter 1.

KVM/VGA Connector

This KVM/VGA (UART) connector provides console redirection support or a remote networking interface. Using the adapter it provides two USB ports (USB0/1), a COM port and a VGA port.

KVM Switch/Indicator

The KVM switch (shown in Figure 1-3) toggles the KVM connector signal between the pair of nodes on the motherboard. The switch is integrated with an LED indicator. When the indicator is green, the KVM port is linked to node 1; when it is orange, the KVM port is linked to node 2.

IPMI Port

A LAN port is a dedicated connection for IPMI.

Ethernet Ports

Four Ethernet ports are provided, two for each node.

4.2 Headers and Connectors

Power Connectors

The X10SDE-DF motherboard is powered through the slide-in connection at the rear of the board. No connecting cables are necessary.

4.3 Jumpers

Explanation of 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.
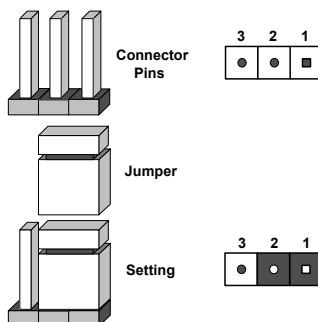
CMOS Clear

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

Close pins 2 and 3 of jumper P1-JPG1 (node 1) or P2-JPG1 (node 2) to disable the onboard 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

P1-JWD1 (for Node 1) or P2-JWD1 (for Node 2) control the Watch Dog function. Watch Dog is a monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. Watch Dog must also be enabled in BIOS. The default setting is Reset.

Note: When Watch Dog is enabled, the user must write their own application software to disable it.

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

BIOS Recovery

Jumper JBR1 is used to recover the BIOS settings on the motherboard (P1-JBR1 for Node 1, P2-JBR1 for Node 2). The default setting is Normal.

BIOS Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	BIOS Recovery

BMC Enable/Disable

JPB1 is used to enable or disable the BMC (Baseboard Management Control) chip (P1-JPB1 for Node 1, P2-JPB1 for Node 2) and the onboard IPMI connection. This jumper is used together with the IPMI settings in the BIOS.

BMC Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enabled
Pins 2-3	Disabled

LAN Ports Enable/Disable

Jumper JPL1 enables or disables Ethernet LAN ports on the motherboard. P1-JPL1 enables and disables P1-LAN1 and P1-LAN2. P2-JPL1 enables and disables P2-LAN1 and P2-LAN2. The default setting is Enabled.

GbE LAN Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

Management Engine (ME) Recovery

Set jumpers P1-JPME1/P2-JPME1 to select ME Firmware Recovery mode for Node 1 (P1-JPME1) or Node 2 (P2-JPME1). ME Recovery limits system resource for essential function use only without putting restrictions on power use. In the single-operation mode, online upgrade will be available via Recovery mode.

Management Engine Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	ME Recovery

Manufacturer Mode Select

Close the Manufacturer Mode (ME) Select Jumper P1-JPME2 (for Node 1) or P2-JPME2 (for Node 2) to bypass SPI flash security and force the system to use the Manufacturer mode. ME mode allows the user to flash the system firmware from a host server to modify system settings of a machine at a remote location.

Manufacturer Mode Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	Manufacturer Mode

4.4 LED Indicators

LAN1/2 LEDs for Node 1 and Node 2

The Ethernet ports have two LEDs. On each port, one LED indicates activity when flashing while the other LED may be green, amber or off to indicate the speed of the connection.

LAN1/2 LED (Connection Speed Indicator)	
LED Color	**Definition**
Off	100 Mb/s
Green	10 Gb/s
Amber	1 Gb/s

IPMI_LAN LED

The yellow LED on the right indicates activity, while the multi-color LED on the left indicates the speed of the connection.

IPMI LAN

Link LED   Activity LED

IPMI LAN LED Link LED (Left) and Activity LED (Right)		
	LED Color	**Definition**
Link (Left)	Amber: Solid	1 Gb/s
	Green: Solid	100 Mb/s
Activity (Right)	Yellow: Blinking	Active

Power LED Indicators

Two LEDs indicate power to each node. When P1-Power LED is on, the power supply is connected to Node 1. When P2-Power LED is on, the power supply is connected to Node 2. Press the power button at SW1 to power on or power off Node 1 and Node 2.

Power Indicator LEDs	
Color/State	**Definition**
Green	Power to Node
Orange	Standby

UID LED Indicator

An LED Indicator is located at LED7 on the motherboard. The unit identifier (UID) indicator provides identification of a system unit that may be in need of service.

UID can be triggered using the IPMI on the motherboard. For more information, refer to the IPMI User's Guide at http://www.supermicro.com.

BMC Heartbeat LEDs

Two BMC Heartbeat LEDs are located on the motherboard. When LEDM1 is blinking, the BMC is functioning normally for Node 1. When LEDM2 is blinking, the BMC is functioning normally for Node 2.

BMC Hearbeat LED	
Color/State	**Definition**
Green: Blinking	BMC: Normal

Overheat/Power Fail LED

An overheat/power fail LED is located on the bottom side of the motherboard at LED8. This indicator provides a warning if the chassis is overheating or if the power has failed.

Overheat LED	
State	**Definition**
Red: Solid	Overheat
Blinking	Power fail

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 ans 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/.
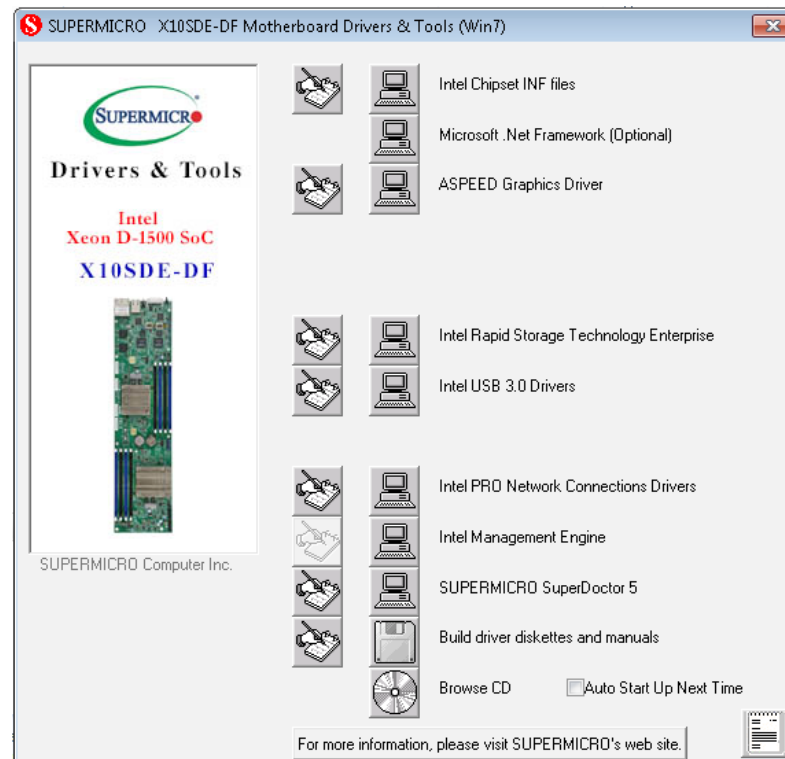
Figure 5-1. Driver & Tool Installation Screen

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.
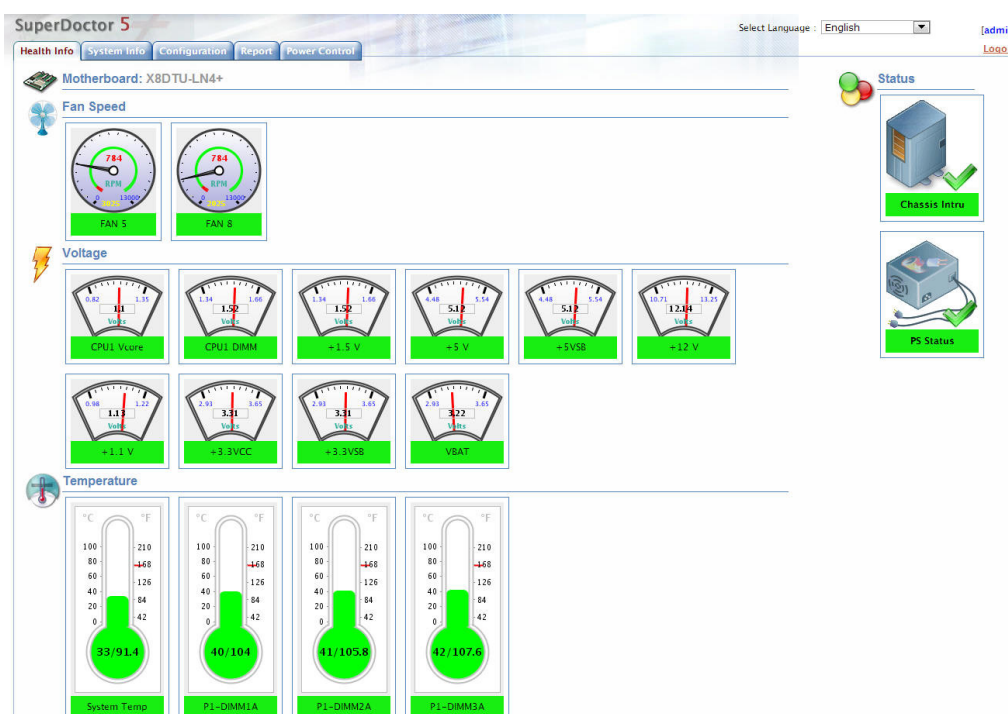
Figure 5-2. SuperDoctor 5 Interface Display Screen (Health Information)

Chapter 6

BIOS

6.1 Introduction

This chapter describes the AMI BIOS setup utility for the X10SDE-DF 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.

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                   [Fri 04/22/2016]    elements.
      System Time                   [00:58:25]

      Supermicro X10SDE-DF (CPU1)
      BIOS Version                  T20160419151243
      Build Date                    04/19/2016




                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
      Memory Information                                F1: General Help
      Total Memory                  16384 MB            F2: Previous Values
      Memory Speed                  2133 MT/s           F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit

          Version 2.17.1246. 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 X10SDE-DF (Motherboard model)

BIOS Version

Build Date (of the BIOS)

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
    ▶ Server ME Configuration
    ▶ PCIe/PCI/PnP Configuration
    ▶ Super IO Configuration
    ▶ Serial Port Console Redirection
    ▶ ACPI Settings





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

             Version 2.17.1246. 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 the POST messages and the OEM logo upon bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are Disabled and **Enabled**.

AddOn ROM Display Mode

Use this feature to set the display mode for the Option ROM. Select Keep Current to display the current AddOn ROM setting. Select Force BIOS to use the Option ROM display set by the system 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

Use this feature 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

If this item is enabled, the BIOS will automatically reboot the system from a specified boot device after its initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

▶Power Configuration

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reset or generate NMI based on jumper settings when it is expired for more than 5 minutes. The options are **Disabled** and Enabled**.**

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 Stay 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 Stay Off, Power On, and **Last State**.

▶CPU Configuration

The following CPU information will display:

- Processor ID

- Processor Frequency

- Processor Max Ratio

- Processor Min Ratio

- Microcode Revision

- L1 Cache RAM

- L2 Cache RAM

- L3 Cache RAM

- CPU Version

Clock Spread Spectrum

If this feature is set to Enabled, the BIOS utility will monitor the level of Electromagnetic Interference caused by the components and will attempt to reduce the interference whenever needed. The options are **Disable** and Enable.

Hyper-Threading (ALL) (Available when supported by the CPU)

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

Cores Enabled

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

Monitor/Mwait

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

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

Select Enabled to enable the Execute-Disable Bit 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 default is **Enable**. (Refer to the Intel® and Microsoft® websites 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 Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disable and **Enable**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU prefetches the cache line for 64 bytes if this feature is set to Disabled. The CPU prefetches both cache lines for 128 bytes as comprised if this feature is set to **Enable**.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enabled 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 Enabled for DCU (Data Cache Unit) IP Prefetcher support, which will prefetch IP addresses to improve network connectivity and system performance. The options are Disable and **Enable**.

Direct Cache Access (DCA)

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

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

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

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.**

▶CPU P State Control

P State Domain

This feature allows the user to indicate the P-State domain for each logical process in the system. All processes indicate the same domain in the same package. The options are **ALL** and ONE.

P-State Coordination

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

Energy Efficient P-State

Select Enable to support power-saving mode for P-State. The options are Disable and **Enable.**

Boot Performance Mode

This feature allows the user to select the performance state that the BIOS will set before the operating system handoff. The options are **Max Performance** and Max Efficient.

Turbo Mode

Select Enable for processor cores to run faster than the frequency specified by the manufacturer. The options are Disable and **Enable**.

▶CPU HWPM State Control

Enable CPU HWPM

Select Enable for better CPU energy performance. The options are **Disable**, HWPM NATIVE MODE, and HWPM OOB MODE.

Enable CPU Autonomous Cstate

Use this feature to enable CPU Autonomous C State, which converts HALT instructions to Mwait. The options are **Disable** and Enable.

▶CPU C State Control

CPU C State

Use this feature to enable the enhanced C State of the CPU. The options are Disable and **Enable**.

Package C State Limit

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

CPU C3 Report

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

CPU C6 Report

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

Enhanced Halt State (C1E)

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

▶**CPU T State Control**

ACPI (Advanced Configuration Power Interface) T-States

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

▶**CPU Advanced PM Turning**

▶**Energy Perf BIAS**

Energy Performance Tuning

When enabled, this item selects whether the BIOS or Operating System can turn on the energy performance bias tuning. The options are **Enable** and Disable.

If the above is set to Disable, Energy Performance BIAS Setting will display:

Energy Performance BIAS Setting

This feature allows balancing Power Efficiency vs Performance. This will override whatever setting is in the Operating System. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

Power/Performance Switch

This feature allows dynamic switching between Power and Performance power efficiency. The options are Disable and **Enable**.

Workload Configuration

This feature allows for optimization of workload. Balanced is recommended. The options are **Balanced** and I/O Sensitive.

▶**Program PowerCTL_MSR**

PKG C-state Lat. Neg.

Use this feature to indicate whether latency should be negotiated with PCH for packaging C-States. The options are **Enable** and Disable.

SAPM Control

This feature indicates whether the PCU should control the System Agent PM using its power-performance tuning algorithm. The options are **Enable** and Disable.

Energy Efficient Turbo

Use this feature to enable energy efficient turbo mode. The options are **Enable** and Disable.

▶**DRAM RAPL Configuration**

Override BW_LIMIT_TF

Use this feature to allow custom tuning of BW_LIMIT_TF when DRAM RAPL is enabled. Press the "+" or "-" key to change the value. The default value is **1**.

DRAM RAPL Extended Range

Use this feature to set the DRAM Running Average Power Limit (RAPL) Extended Range. The options are Disable and **Enable**.

▶**Chipset Configuration**

Caution: Setting the wrong values in the following features may cause the system to malfunction.

▶**North Bridge**

This feature allows the user to configure the following North Bridge settings.

▶**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.

▶IOAT (Intel® IO Acceleration) Configuration

Enable IOAT

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

No Snoop

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

▶Intel VT for Directed I/O (VT-d)

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

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

ACS Control

Use this feature to program Access Control Services (ACS) to the PCI-E Root Port Bridges. The options are **Enable** and Disable.

Interrupt Remapping

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

▶Memory Configuration

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, 2400, 2600, 2667, 2800, 2993, 3000, 3200, and Reserved (Do not select Reserved).

Data Scrambling

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

DRAM RAPL 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 Enabled to support the A7 (Addressing) mode to improve memory performance. The options are Disable and **Enable**.

▶DIMM Information

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

- DIMMA1

- DIMMB1

- DIMMA2

- DIMMB2

▶Memory RAS (Reliability Availability Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

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, the IO hub will read and write back one cache line every 16K cycles, if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are Disable and **Enable**.

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 Disable and **Enable**.

Device Tagging

Select Enable to support device tagging that generates stuck bits or hard errors. The options are **Disable** and Enable.

▶South Bridge

The following South Bridge information will display:

- USB Configuration

- USB Module Version

- USB Devices

Legacy USB Support

This feature enables support for legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disable to have USB devices available only for EFI applications. The options are **Enabled,** Disabled, and Auto.

EHCI Hand-Off

This item is for the 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 options are **Disabled** and Enabled.

Port 60/64 Emulation

This feature enables or disables I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB-aware Operating Systems. The options are Disabled and **Enabled**.

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**.

▶SATA Configuration

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

SATA Controller

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

Configure SATA as

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

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

SATA Frozen

Use this item to enable the HDD Security Frozen Mode. The options are **Disabled** and Enabled.

SATA AHCI LPM

Use this feature to enable the Link Power Management for SATA AHCI. The options are Disabled and **Enabled**.

Support Aggressive Link Power Mgmt

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 in a low power mode during extended periods of I/O inactivity, and will return the link to an active state when I/O activity resumes. The options are **Enabled** and Disabled.

P1-SATA0 ~ P1-SATA1

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

P1-SATA0 ~ P1-SATA1 Hot Plug

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

P1-SATA0 ~ P1-SATA1 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**.

P1-SATA0 ~ P1-SATA1 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.

▶Server ME Configuration

The following Server ME Configuration information will display:

- 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 information will display:

- PCI Bus Driver Version

- PCI Devices Common Settings:

PCI PERR/SERR Support

Select Enabled to allow a PCI device to generate a PERR/SERR number for a PCI Bus Signal Error Event. The options are **Disabled** and Enabled.

SR-IOV Support

Use this feature to enable or disable Single Root IO Virtualization Support. The options are **Disabled** and Enabled.

Maximum Payload

Use this feature to select the setting for the PCI Express maximum payload size. The options are **Auto**, 128 Bytes, and 256 Bytes.

Relaxed Ordering

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

Extended Tag

Use this item to allow a device to use the 8-bit tag field as a requester. The options are **Disabled** and Enabled.

ARI Forwarding

When this feature is enabled, the Downstream Port disables its traditional device number to 0 when turning Type1 Configuration Request into a Type0 Configuration Request. The default value is **Disabled**.

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.

Onboard LAN Option ROM Type

Select Enabled to enable Option ROM support to boot the computer using a network device specified by the user. The options are **Legacy** and EFI.

P1 Onboard LAN1 Option ROM

Use this option to select the type of device installed in LAN Port1 used for system boot. The default setting for LAN1 Option ROM is **PXE**. The options are Disabled, **PXE**, and iSCSI.

P1 Onboard LAN2 Option ROM

Use this option to select the type of device installed in LAN Port2 used for system boot. The default setting for LAN2 Option ROM is **Disabled**.

Onboard Video Option ROM

Use this item to select the Onboard Video Option ROM type. The options are Disabled, **Legacy,** and EFI.

VGA Priority

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

Network Stack

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

If the item above set to Enabled, the four items below will become available for configuration:

IPv4 PXE Support

Select Enabled to enable IPv4 PXE boot support. The options are **Enabled** and Disabled.

IPv6 PXE Support

Select Enabled to enable IPv6 PXE boot support. The options are Enabled and **Disabled**.

PXE boot wait time

Use this option to specify the wait time to press the ESC key to abort the PXE boot. Press "+" or "-" on your keyboard to change the value. The default setting is **0**.

Media detect count

Use this option to specify the number of times media will be checked. Press "+" or "-" on your keyboard to change the value. The default setting is **1**.

▶Super IO Configuration

The following Super IO information will display:

* Super IO Chip 2400

▶Serial Port 1

Serial Port 1 Configuration

This submenu allows the user the configure settings of Serial Port 1.

Serial Port 1

Select Enabled to enable the selected onboard serial port. The options are **Enabled** and Disabled.

Device Settings

This item displays the status of a serial part specified by the user.

Serial Port 1 Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address.

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;).

▶Serial Port Console Redirection

COM1 Console Redirection

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

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

▶COM1 Console Redirection Settings

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

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 VT100, **VT100+**, VT-UTF8, and ANSI.

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start 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 Disabled and **Enabled.**

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 the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

Redirection After BIOS POST

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to Bootloader, legacy console redirection is disabled before booting the OS. When set to Always Enable, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and Bootloader.

SOL Console Redirection

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

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

▶SOLConsole Redirection Settings

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

Terminal Type

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

Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower

transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start 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 Disabled and **Enabled.**

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Redirection After BIOS POST

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

EMS (Emergency Management Services) Console Redirection

Select Enabled to use a COM port selected by the user for EMS Console Redirection. The options are Enabled and **Disabled.**

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

►EMS Console Redirection Settings

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

Out-of-Band Mgmt Port

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

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 VT100, VT100+, **VT-UTF8**, and ANSI.

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 the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop 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,** Hardware RTS/CTS, and Software Xon/Xoff.

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 Disabled and **Enabled**.

High Precision Event Timer

Select Enabled to activate the High Performance 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 Disabled and **Enabled**.

PCI AER Support

Select Enabed to enable the ACPI OS to manage PCI Advanced Error Reporting. The options are **Disabled** and Enabled.

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 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

▶Change SMBIOS Event Log Settings

Enabling/Disabling Options

SMBIOS Event Log

Change this item to enable or disable all features of the SMBIOS 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:

Memory Corrected Error Enabling (Available when the item above - Runtime Error Logging Support is set to Enable)

Select Enable for the BIOS to correct a memory error if it is correctable. The options are Disable and **Enable**.

Memory Corr. Error Threshold

Use this item to enter the threshold value for correctable memory errors. The default setting is **10**.

PCI-Ex (PCI-Express) Error Enable

Select Yes for the BIOS to correct errors occurred in the PCI-E slots. The options are Yes and **No**.

Erasing Settings

Erase Event Log

If No is selected, data stored in the event log will not be erased. Select Yes, Next Reset, data in the event log will be erased upon next system reboot. Select Yes, Every Reset, data in the event log will be erased upon every system reboot. The options are **No**, Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately for all messages to be automatically erased from the event log when the event log memory is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Long Standard Settings

Log System Boot Event

This option toggles the System Boot Event logging to enabled or disabled. The options are **Disabled** and Enabled.

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurences that a duplicate event must happen before the MECI counter is incremented. This is a numeric value. The default value is **1**.

METW

The Multiple Event Time Window (METW) defines number of minutes must pass between duplicate log events before MECI is incremented. This is in minutes, from 0 to 99. The default value is **60**.

> **Note**: After making changes on a setting, be sure to reboot the system for the changes to take effect.

▶View SMBIOS Event Log

This section displays the contents of the SMBIOS Event Log.

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              3.32              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

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```

BMC Firmware Revision

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

IPMI Status (Baseboard Management Controller)

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

▶System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled for all system event logging at bootup. The options are **Enabled** and Disabled.

Erasing Settings

Erase SEL

Select Yes, On next reset to erase all system event logs upon next system reboot. Select Yes, On every reset to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No,** Yes, On next reset, and Yes, On every reset.

When SEL is Full

This feature allows the user to decide what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

> **Note**: After making changes on a setting, be sure to reboot the system for the changes to take effect.

▶BMC Network Configuration

BMC Network Configuration

IPMI LAN Selection

This item displays the IPMI LAN setting. The default setting is **Failover**.

IPMI Network Link Status

This item displays the IPMI Network Link status. The default setting is **Dedicated LAN**.

Update IPMI LAN Configuration

Select Yes for the BIOS to implement all IP/MAC address changes at the next system boot. The options are **No** and Yes.

If the item above is set to Yes, "Configuration Address Source" and "VLAN" options become available for user configuration:

Configuration Address Source

This feature allows the user to select the source of the IP address 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, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network that is attached to and request the next available IP address for this computer. The options are **DHCP** 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 separated by dots should not exceed 255.

Station MAC Address

This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

Gateway IP Address

This item displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 172.31.0.1).

VLAN

Use this item to enable or disable the IPMI VLAN function. The options are **Disable** and Enable.

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
  CSM Support                       [Enabled]            →←: 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 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Password Check

Select Setup for the system to check for a password at Setup. Select Always for the system to check for a password at bootup or upon entering the BIOS Setup utility. The options are **Setup** and Always.

Administrator Password

Press Enter to create a new, or change an existing Administrator password.

CSM Support

Select Enabled to support the EFI Compatibility Support Module (CSM), which provides compatibility support for traditional legacy BIOS for system boot. The options are Disabled and **Enabled**.

▶Secure Boot Menu

This section displays the contents of the following secure boot features:

- System Mode

- Secure Boot

- Vendor Keys

Secure Boot

Use this item to enable secure boot. The options are **Disabled** and Enabled.

Secure Boot Mode

Use this item to select the secure boot mode. The options are Standard and **Custom**.

▶Key Management

This submenu allows the user to configure the following Key Management settings.

Provision Factory Default Keys

Select Enabled to install the default Secure-Boot keys set by the manufacturer. The options are **Disabled** and Enabled.

▶Enroll All Factory Default Keys

Select Yes to install all default secure keys set by the manufacturer. The options are **Yes** and No.

Save All Secure Boot Variables

This feature allows the user to decide if all secure boot variables should be saved.

▶Platform Key (PK)

This feature allows the user to configure the settings of the platform keys.

Set New Key

Select Yes to load the new platform keys (PK) from the manufacturer's defaults. Select No to load the platform keys from a file. The options are **Yes** and No.

▶Key Exchange Key

Set New Key

Select Yes to load the KEK from the manufacturer's defaults. Select No to load the KEK from a file. The options are Yes and No.

Append Key

Select Yes to add the KEK from the manufacturer's defaults list to the existing KEK. Select No to load the KEK from a file. The options are Yes and No.

▶Authorized Signatures

Set New Key

Select Yes to load the database from the manufacturer's defaults. Select No to load the DB from a file. The options are Yes and No.

Append Key

Select Yes to add the database from the manufacturer's defaults to the existing DB. Select No to load the DB from a file. The options are Yes and No.

▶Forbiden Signatures

Set New Key

Select Yes to load the DBX from the manufacturer's defaults. Select No to load the DBX from a file. The options are Yes and No.

Append Key

Select Yes to add the DBX from the manufacturer's defaults to the existing DBX. Select No to load the DBX from a file. The options are Yes and No.

▶Authorized TimeStamps

Set New Key

Select Yes to load the DBT from the manufacturer's defaults. Select No to load the DBT from a file. The options are Yes and No.

Append Key

Select Yes to add the DBT from the manufacturer's defaults list to the existing DBT. Select No to load the DBT from a file. The options are Yes and No.

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                                      ▲  Select which boot device
                                                                   type to list in FIXED BOOT
        Boot Mode Select                      [DUAL]               ORDER Priorities.


        FIXED BOOT ORDER Priorities
        Dual Boot Order #1                    [Hard Disk]
        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 Slot...]
        Dual Boot Order #8                    [UEFI Hard Disk]
        Dual Boot Order #9                    [UEFI CD/DVD]
        Dual Boot Order #10                   [UEFI USB Hard Disk]
        Dual Boot Order #11                   [UEFI USB CD/DVD]
        Dual Boot Order #12                   [UEFI USB Key]        ◄►: Select Screen
        Dual Boot Order #13                   [UEFI USB Floppy]     ↑↓: Select Item
        Dual Boot Order #14                   [UEFI Network]        Enter: Select
        Dual Boot Order #15                   [UEFI AP:UEFI: Built...] +/-: Change Opt.
                                                                   F1: General Help
        ▶ Delete Boot Option                                       F2: Previous Values
                                                                   F3: Optimized Defaults
        ▶ NETWORK Drive BBS Priorities                          ▼  F4: Save & Exit
                                                                   ESC: Exit

                    Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Boot Mode Select

Use this item to select the type of device that the system is going to boot from. The options are Legacy, UEFI, and **Dual.** The default setting is Dual.

FIXED BOOT ORDER Priorities

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

- Legacy/UEFI/Dual Boot Order #1
- Legacy/UEFI/Dual Boot Order #2
- Legacy/UEFI/Dual Boot Order #3
- Legacy/UEFI/Dual Boot Order #4
- Legacy/UEFI/Dual Boot Order #5
- Legacy/UEFI/Dual Boot Order #6
- Legacy/UEFI/Dual Boot Order #7

- Legacy/UEFI/Dual Boot Order #8

- Legacy/UEFI/Dual Boot Order #9

- Legacy/UEFI/Dual Boot Order #10

- Legacy/UEFI/Dual Boot Order #11

- Legacy/UEFI/Dual Boot Order #12

- Legacy/UEFI/Dual Boot Order #13

- Legacy/UEFI/Dual Boot Order #14

- Legacy/UEFI/Dual Boot Order #15

▶**Delete Boot Option**

Use this feature to remove a pre-defined boot device from which the system will boot during startup.

The settings are [any pre-defined boot device].

▶**NETWORK Drive BBS Priorities**

This feature allows the user to specify which UEFI network drive devices are boot devices.

- Legacy Boot Order #1

▶**UEFI Application Boot Priorities**

This feature allows the user to specify which UEFI devices are boot devices.

- 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                          Exit system setup without
   Save Changes and Reset                            saving any changes.

   Save Options
   Save Changes
   Discard Changes

   Restore Optimized Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   IBA GE Slot 0400 v1513
   UEFI: Built-in EFI Shell

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

            Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
```

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any 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

When you have completed the system configuration changes, select this option to leave the BIOS setup utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Save Changes

After completing the system configuration changes, select this option to save the changes you have made. This will not reboot the system.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS utility Program.

Default Options

Restore Optimized Defaults

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

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

Listed on this section are other boot options for the system (i.e., Built-in EFI shell). Select an option and press <Enter>. Your system will boot to the selected boot option.

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 numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

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.

<div dir="rtl">

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

</div>

안전을 위한 주의사항

경고!

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告
将此系统连接电源前,请先阅读安装说明。

警告
將系統與電源連接前,請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

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

ذا المنتج يعتمد على معدات الحماية من الدوائرالقصيرة التي تم تثبيتها في بنى

أكد من أن تقدير الحماز المقائ، ليس أكثر من: 250V، 20A

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

경고!

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

Waarschuwing

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

Equipment Installation

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

機器の設置

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

警告
只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告
只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

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

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

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

Waarschuwing

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

Restricted Area

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

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

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

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

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

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

경고!

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

Waarschuwing

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

Battery Handling

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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Redundant Power Supplies

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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告
此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告
此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

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

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

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

Waarschuwing

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

Backplane Voltage

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

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。

修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

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

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

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 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.

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תיאום חוקי החשמל הארצי

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

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

</div>

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

Waarschuwing

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

Product Disposal

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

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

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

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

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

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

Waarschuwing

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

Hot Swap Fan Warning

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

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

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

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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

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

Waarschuwing

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

Power Cable and AC Adapter

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

電源コードとACアダプター

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

<div dir="rtl">

חשמליים ומתאמי AC

אזהרה !

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

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

</div>

경고!

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

Waarschuwing

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

Appendix C

UEFI BIOS Recovery Instructions

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 need to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

C.1 Overview to UEFI BIOS

The Unified Extensible Firmware Interface (UEFI) specification 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 for add-on card initialization to allow the UEFI OS loader, which is stored in the add-on card, to boot up the system. UEFI offers a clean, hands-off control to a computer system at bootup.

C.2 Recovering the UEFI BIOS Image (Main BIOS Block)

A UEFI BIOS flash chip consists of a recovery BIOS block, which is comprised of two boot blocks and a main BIOS block (the main BIOS image). The boot block contains critical BIOS codes including memory detection and recovery codes for the user to flash a new BIOS image if the original main BIOS image is corrupted. When the system power is on, the boot block codes execute first. Then the main BIOS code will continue with system initialization and bootup.

Note: Follow the BIOS recovery instructions below when the main BIOS boot crashes.

C.3 Recovering the UEFI BIOS with a USB Device

This feature allows the user to recover a BIOS image using a USB device without the need of additional utilities. A device such as a USB flash drive or a USB CD/DVD ROM/RW can be used. 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.

```
        Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Boot  Security  Exit  Recovery

   WARNING! BIOS Recovery mode has been detected       Select this to start flash
                                                       update
   Flash Update Parameters
   Reset NVRAM                         [Enabled]

 ▶ Proceed with flash update




                                                       →←: 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.
```

Note: *Do not interrupt* the process of BIOS flashing until it is 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.

Appendix D

System Specifications

Processors (each motherboard)

Single Intel Xeon D-1531, Pentium in a System-on-a-Chip (SoC), 45W max TDP., two per motherboard, one per node

Chipset

na

BIOS

128Mb AMI BIOS® SPI Flash BIOS

Memory (each motherboard)

Eight (8) 288-pin DIMM slots (four per node) support up to:
- 128GB of VLP ECC 2400/2133/1866/1600/1333MHz RDIMM memory.
  Note: 2400MHz is only supported when using 16GB DDR4 RDIMM ECC memory
- 64GB of VLP ECC 2133/1866/1600/1333MHz UDIMM memory.

DIMM sizes: 32GB, 16GB, 8GB, and 4GB, up to 128GB for RDIMM memory or up to 64GB for UDIMM memory

Drive Bays (each motherboard)

Up to two fixed 2.5" SATA3 drives (24 total), or up to four 2.5" slim solid state drives (with a kit),(48 total)

Input/Output

Four Intel i350 1Gb Ethernet ports
One dedicated IPMI 2.0 LAN

Motherboard

X10SDE-DF (proprietary form factor), twelve, each supporting a pair of computing nodes
Dimensions: 18.5" (L) x 4.66" (W) (470 mm x 118 mm)

Chassis

SC939HX-R1K63B; 3U rackmount, twelve hot-swap motherboard sleds
Dimensions: (WxHxD) 17.3 x 5.21 x 23.2 in. (438 x 132 x 589 mm)

Weight

Net Weight: 95.0 lbs (43.09 kg)
Net Weight w/ 2.5" HDDs: 115 lbs (52.16 kg)
Gross Weight: 125 lbs (56.70 kg)

System Cooling

Four 9-cm 7.5 K RPM, 4-pin PWM rear exhaust fans

Power Supply

Dual 1600 W modules, 80+ Platinum level

Model: PWS-1K63S-1R
AC Input Voltages: 100-240 VAC
Rated Input Current: 800W Output @ 100-140V, 7-10A; 1600W Output @ 180-240V, 8-11A
Rated Input Frequency: 50-60 Hz
Rated DC Output Power: 800W: +12V/67A, +5Vsb/1A; 1600W: +12V/133A, +5Vsb/1A

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 55022 Class A, EN 61000-3-2/3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

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

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"