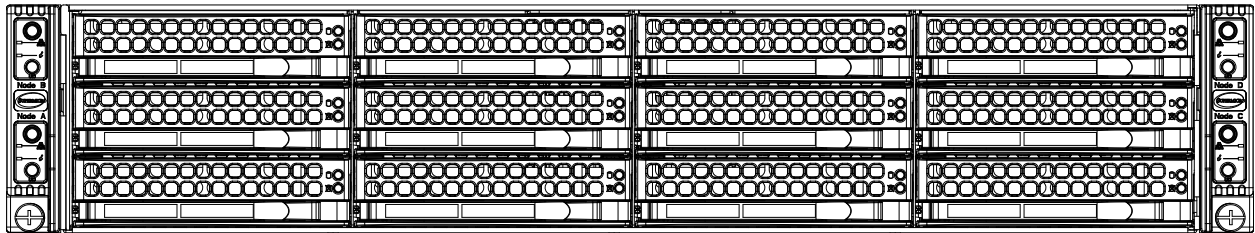# SUPERMICRO®

SuperServer®

6029TR-HTR

USER'S MANUAL

Revision 1.0b

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Manual Revision 1.0b

Release Date: February 25, 2022

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Preface

About this Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 6029TR-HTR. Installation and maintenance should be performed by experienced technicians only.

Please refer to the 6029TR-HTR 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: https://www.supermicro.com/wdl/

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

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

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

Warnings

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

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

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

Contents

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Chapter 1

Introduction

1.1 Overview

This chapter provides a brief outline of the functions and features of the 6029TR-HTR. The 6029TR-HTR is based on the X11DPT-L motherboard and the SC827HQ-R1K68BP3 chassis.

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

Main Parts List		
Description	**Part Number**	**Quantity**
Power supply	PWS-1K68A-1R	2
Fan	FAN-0162L4	4
Heatsink (CPU1)	SNK-P0067PS	4
Heatsink (CPU2)	SNK-P0067PSM	4
Air shroud	MCP-310-82722-0B	4
Riser card	RSC-R1UTP-E16R	4
Rackmount rail	MCP-290-00053-0N	1 set
SATA HDD midplane	BPN-SAS2-827HQ2	1
HDD Backplane	BPN-ADP-6SATA3M2-1UL	4

1.2 Unpacking the System

Inspect the box the SuperServer 6029TR-HTR was shipped in and note if it was damaged in any way. If any equipment appears damaged, please file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. It will also require a grounded AC power outlet nearby. Be sure to read the precautions and considerations noted in Appendix A.

1.3 System Features

The following table provides you with an overview of the main features of the 6029TR-HTR. Please refer to Appendix B for additional specifications.

System Features
Motherboard
X11DPT-L
Chassis
SC827HQ-R1K68BP3
CPU
Dual Intel Xeon 81xx/61xx/51xx/41xx/31xx series or 82xx/62xx/52xx/42xx/32xx series processors (support for CPUs with a TDP of 70-140W)
Socket Type
Dual Socket P (LGA 3647)
Memory
Up to 2TB 3DS ECC RDIMM/LRDIMM to speeds of DDR4-2933MHz in 8 DIMM slots (82xx/62xx series processors) Up to 1TB 3DS ECC RDIMM/LRDIMM to speeds of DDR4-2666MHz, in 8 DIMM slots (81xx/61xx/51xx/41xx/31xx series processors)
Chipset
Intel® C621 chipset
Expansion Slots
1 PCIe 3.0 x16 Low-profile slot
Storage Drives
Three hot-swap 3.5" SATA3.0 drives Up to one M.2 22110/2280 SATA/NVMe SSD via BPN-ADP-6SATA3M2-1UL Up to two onboard SATA3.0 ports for SATA DOM
Health Monitoring
Temperature: CPU, Chipset, Memory VRM, M.2 ambient (M.2_ARTx), system inlet and system Voltage: CPU, +12V, 5Vcc, 3.3Vcc, 5Vsb, 3.3Vsb, PCH
Power
Two 1600W Redundant High-efficiency Digital Power Supplies
Form Factor
2U Rackmount
Dimensions
17.25 x 3.47 x 28.5 in. / 438 x 88 x 724 mm. (W x H x D)

1.4 Server Chassis Features

Control Panel

The switches and LEDs located on the control panel are described below. See Chapter 4 for details on the control panel connections.
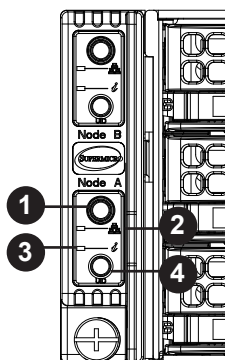
Figure 1-1. Control Panel View

	Control Panel Features	
Item	**Feature**	**Description**
1	Power Button	The main power button is used to apply or remove power from the power supply to the server. Turning off system power with this button removes the main power but maintains standby power. To perform many maintenance tasks, you must also unplug system before servicing.
2	NIC LED	Indicates network activity on LAN port when flashing.
3	Information LED	See the following table for the status shown by this LED.
4	UID Button/LED	The unit identification (UID) button turns on or off the blue light function of the Information LED and a blue LED on the rear of the chassis. These are used to locate the server in large racks and server banks.

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

Front Features

The SC827HQ-R1K68BP3 is a 2U chassis. See the illustration below for the features included on the front of the chassis.
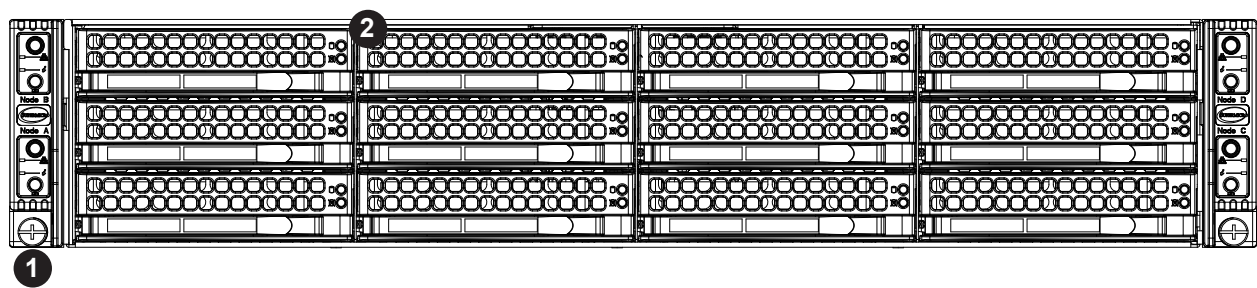
Figure 1-2. Chassis Front View

Front Chassis Features		
Item	**Feature**	**Description**
1	Control Panel	Front control panel with LEDs and buttons (see preceding page)
2	HDD LED	Indicates activity on a hard drive when flashing.

Rear Features

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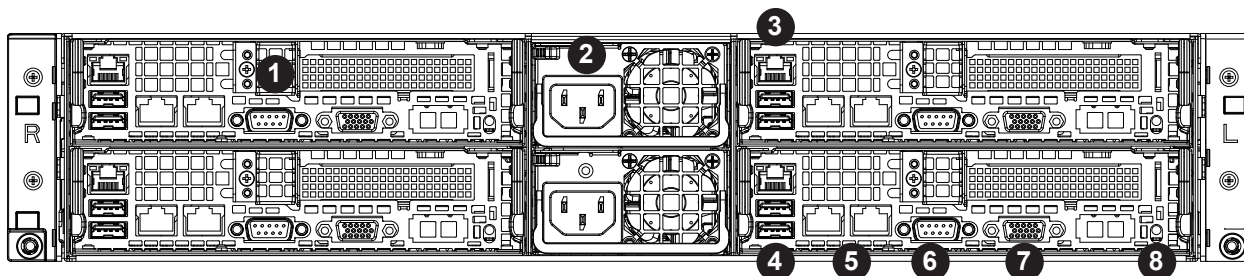
Figure 1-3. Chassis Rear View

Rear Chassis Features		
Item	**Feature**	**Description**
1	PCIe 3.0 Slot	PCIe 3.0 x16 LP Slot (CPU 1)
2	Power Supplies	Redundant 1600W Titanium Level power supplies
3	Dedicated IPMI LAN Port	A dedicated IPMI LAN port is located above USB0/1.
4	USB 3.0 Ports	Rear access USB 3.0 ports (2x)
5	LAN Ports	Accept RJ45 type cables.
6	COM Port	Serial port
7	VGA Port	For VGA display
8	UID Button	Illuminates an LED on the chassis for identification.

1.5 Motherboard Layout

Below is a layout of the X11DPT-L with jumper, connector and LED locations shown. See the table on the following page for descriptions. For detailed descriptions, pinout information and jumper settings, refer to Chapter 4.
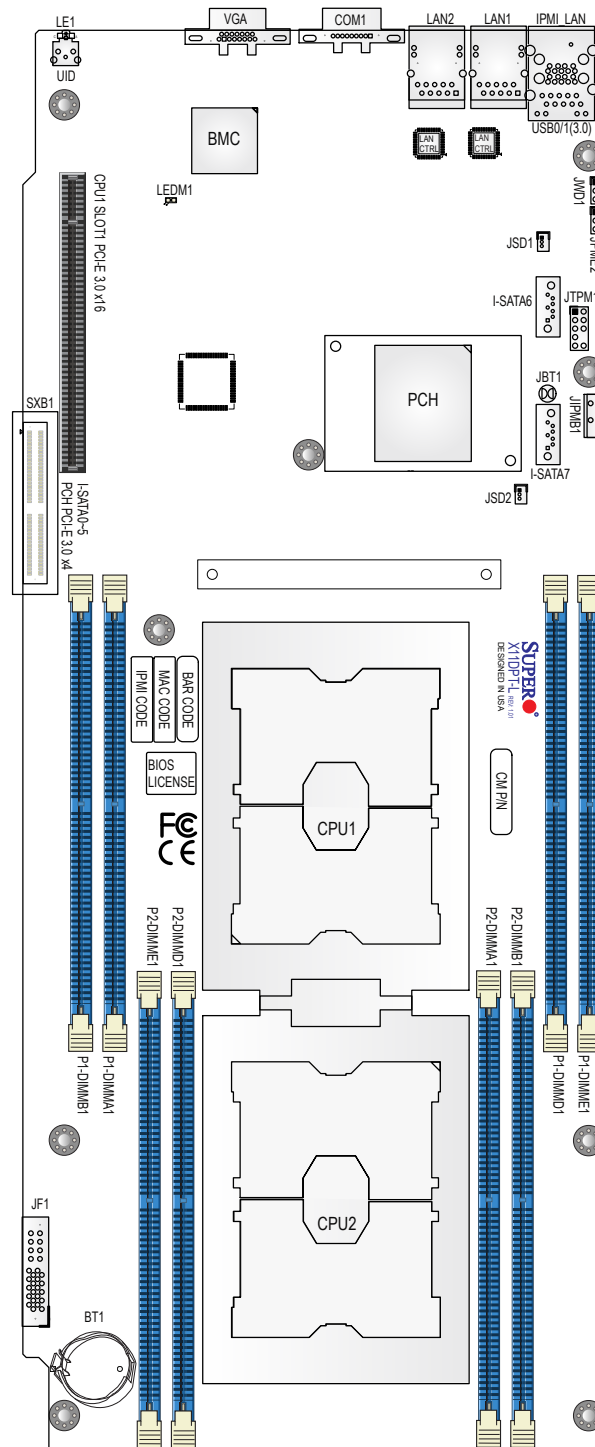
Figure 1-4. Motherboard Layout

Quick Reference Table

Jumper	Description	Default Setting
JBT1	CMOS Clear	Open (Normal)
JPME2	Manufacturing Mode Select	Pins 1-2 (Normal)
JWD1	Watch Dog Timer Enable	Pins 1-2 (Enabled, Reset)

Connector	Description
BT1	Onboard Battery
COM1	Backpanel COM port
IPMI_LAN	Dedicated IPMI LAN port
I-SATA0-5	SATA 3.0 connection header supported by the Intel® PCH
I-SATA6/I-SATA7	I-SATA Ports with built-in power pins and with support of Supermicro SuperDOM (Disk On Module) devices
JF1	Front Panel Control Signals and Power Input Connector
JIPMB1	4-pin BMC External I^{2}C header (for an IPMI-supported card)
JSD1/JSD2	SATA DOM Power Connectors 1/2
JTPM1	Trusted Platform Module (TPM)/Port 80 connector
LAN1/2	Gigabit LAN Ethernet Ports on the I/O Backpanel
(CPU1) SLOT1	PCI-Express 3.0 x16 Slot Supported by CPU1
SXB1	PCI-Express 3.0 x4 from PCH to SMCI- Proprietary Storage Slot for M.2 Hybrid (SATA/NVME) Support on ADP, SATA0~5 Support on Backplane
UID	Unit Identifier (UID) Switch
USB0/1	Backpanel USB 3.0 Ports
VGA	VGA Port

LED	Description	Status
LE1	UID (Unit Identifier) LED	Solid Blue: Unit identified
LEDM1	BMC Heartbeat LED	Blinking Green: BMC normal
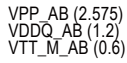
Figure 1-5. Intel® C621 Chipset: System Block Diagram

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

Server Installation

2.1 Overview

This chapter provides advice and instructions for mounting your system in a server rack. If your system is not already fully integrated with processors, system memory etc., refer to Chapter 3 for details on installing those specific components.

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

2.2 Preparing for Setup

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

Choosing a Setup Location

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

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

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

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

Rack Precautions

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

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

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

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

Server Precautions

- Review the electrical and general safety precautions in Appendix A.

- 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.

2.3 Installing the Rails

There are a variety of rack units on the market, which may require a slightly different assembly procedure.

The following is a basic guideline for installing the system into a rack with the rack mounting hardware provided. You should also refer to the installation instructions that came with the specific rack you are using.

Identifying the Rails

The rack rails and the related hardware should have been included with the system. Refer to Figure 2-1 to identify the rail sections. Note that these rails are left/right specific

1　　**Rail Assembly**

2　　**Extending the Rails**

3　　**Quick-Release Tab**

4　　**Separating the Inner Rail Extension**
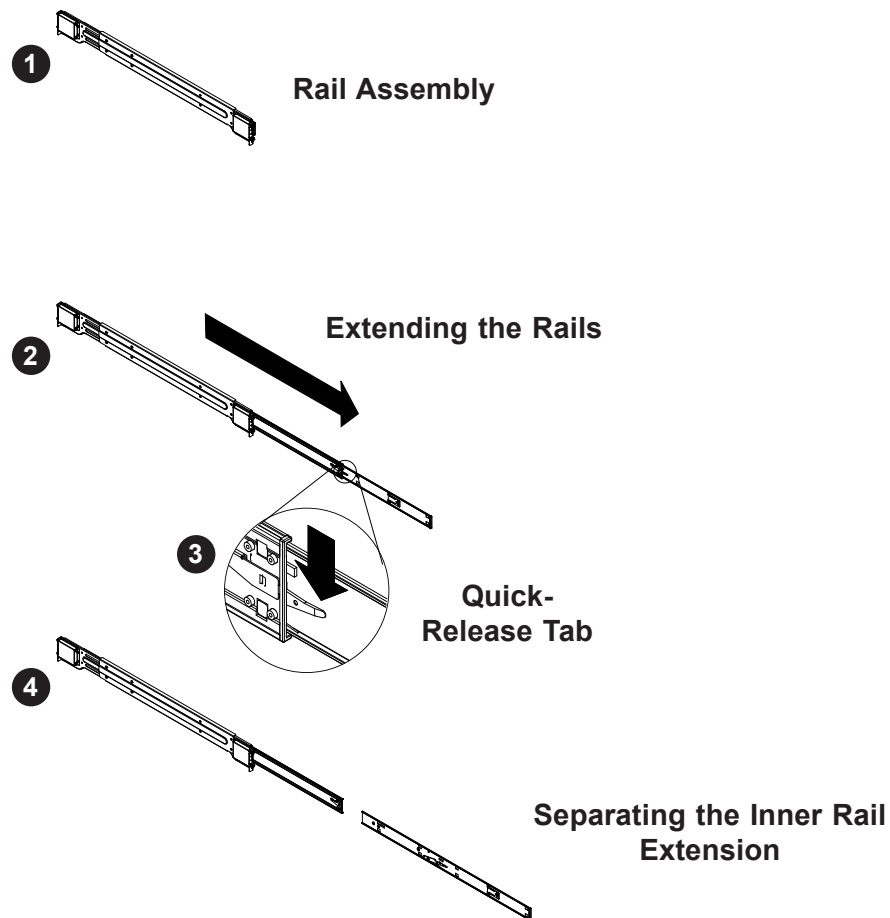
Figure 2-1. Identifying the Rail Sections

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

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

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Installing the Chassis Rails

Begin the rack mounting procedure by installing the inner rails to the server chassis.

1. Position the front and rear chassis rail sections along the side of the server making sure the screw holes line up. Note that these two rails are left/right specific.

2. Screw the front chassis rail (the long piece) securely to the side of the chassis (see Figure 2-2). There should be two screws for each side. Repeat this procedure for the other rail on the opposite side of the chassis.

3. Attach the two rear chassis rails to the chassis in the same manner, again keeping in mind that the rails are left/right specific. (You will also need to attach the rail brackets when installng into a telco rack.)
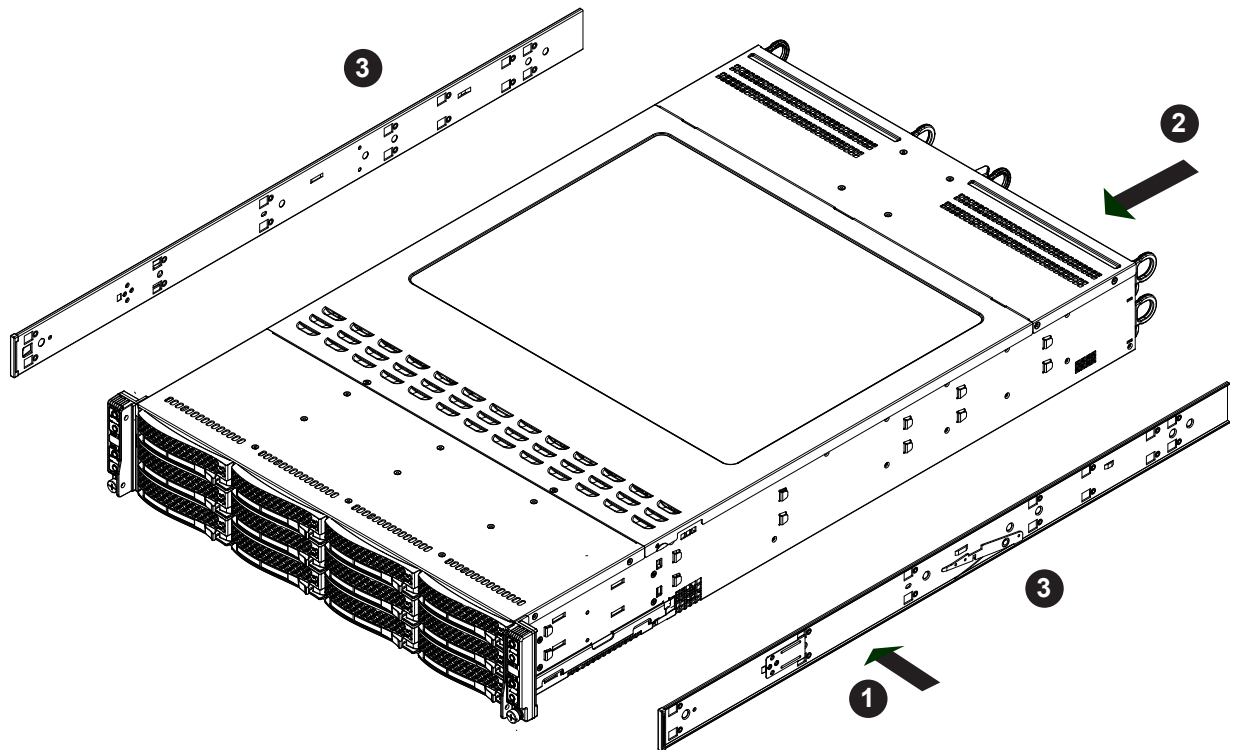
Figure 2-2. Installing the Rails

Note: Both front chassis rails and the rack rails have a locking tab, which serves two functions. First, it locks the server into place when installed and pushed fully into the rack (its normal operating position. In addition, these tabs lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when pulled out for servicing.

Warning: 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.

Outer Rack Rails

Outer rails attach to the rack and hold the chassis in place. The outer rails for the SC827 chassis extend between 30 inches and 33 inches.

Installing the Outer Rails to the Rack

1. Secure the back end of the outer rail to the rack, using the screws provided.

2. Press the button where the two outer rails are joined to retract the smaller outer rail.

3. Hang the hooks of the rails onto the rack holes and if desired, use screws to secure the front of the outer rail onto the rack.

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

Note: The figure above is for illustration purposes only. Always install servers to the bottom of the rack first.
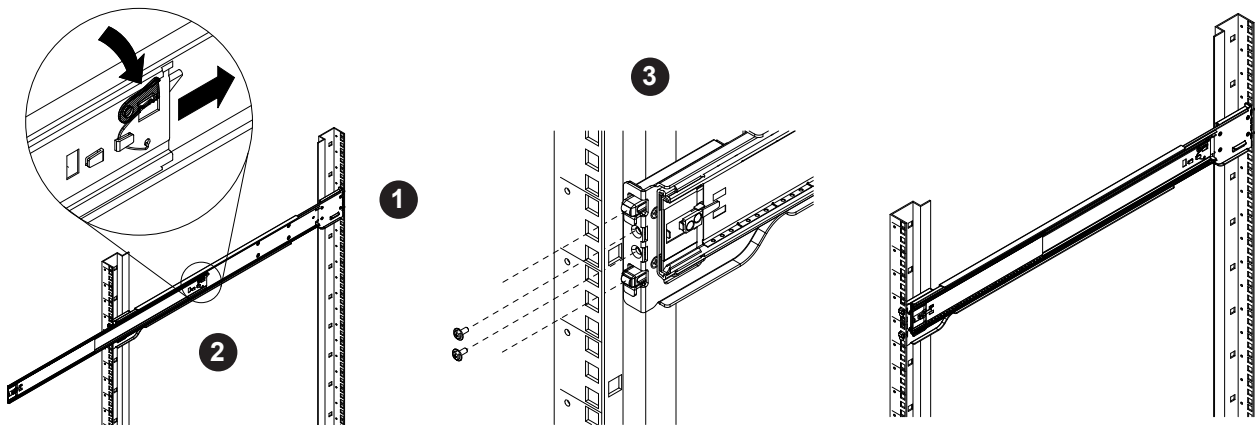
Figure 2-3. Assembling the Outer Rails

Installing the Rack Rails

Determine where you want to place the server in the rack (see the Rack and Server Precautions in Section 2.2). Note that servers should always be installed to the bottom of a rack first for stability reasons.

1. Position the fixed rack rail/sliding rail guide assemblies (made up of two inter-locking sections) at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack and the rollers toward the front of the rack.

2. Screw the assembly securely to the rack.

3. Attach the other assembly to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

2.4 Installing the Server into a Rack

You should now have rails attached to both the chassis and the rack. The next step is to install the server into the rack.

1. Line up the rear of the chassis rails with the front of the rack rails.

2. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to press the locking tabs when inserting). See Figure 2-4.

3. When the server has been pushed completely into the rack, you should hear the locking tabs "click".
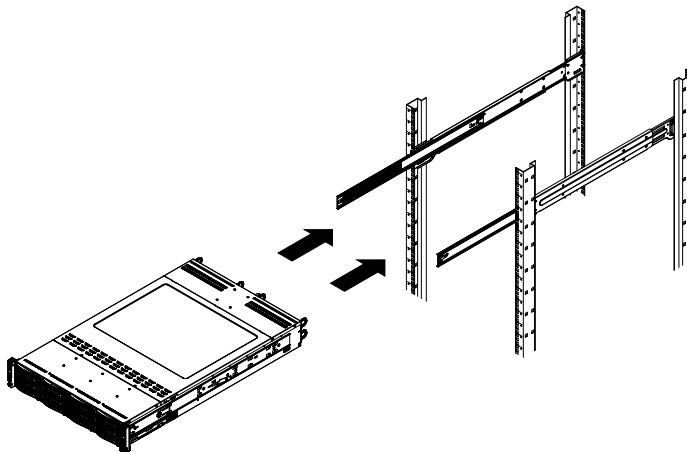
Figure 2-4. Installing the Server into a Rack

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

Installing the Server into a Telco Rack

To install the SuperServer 6029TR-HTR into a Telco (or "open") type rack, use two L-shaped brackets on either side of the chassis (four total).

1. First, determine how far the server will extend out from the front of the rack. The chassis should be positioned so that the weight is balanced between front and back.

2. Attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the rack.

3. Finish by sliding the chassis into the rack and tightening the brackets to the rack. See Figure 2-5.
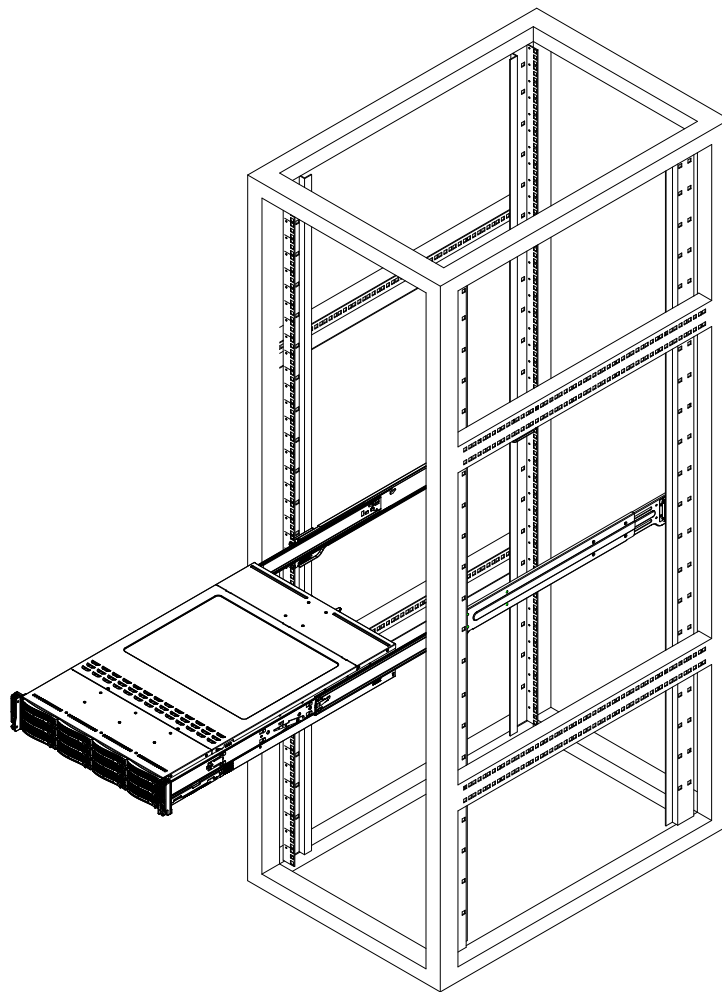
Figure 2-5. Installing the Server into a Telco Rack

Note: 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.

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

3.1 Removing Power

Use the following procedure to ensure that power has been removed from the system. This step is necessary when removing or installing non hot-swap components or when replacing a non-redundant power supply.

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

2. After the system has completely shut-down, disconnect the AC power cord(s) from the power strip or outlet. (If your system has more than one power supply, remove the AC power cords from all power supply modules.)

3. Disconnect the power cord(s) from the power supply module(s).

3.2 Accessing the System

The SC827HQ-R1K68BP3 features a removable top cover, which allows easy access to the inside of the chassis.

Removing the Top Cover

1. Remove the two screws which secure the top cover onto the chassis as shown above.

2. Lift the top cover up and off the chassis.

Warning: 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.

Remove two screws
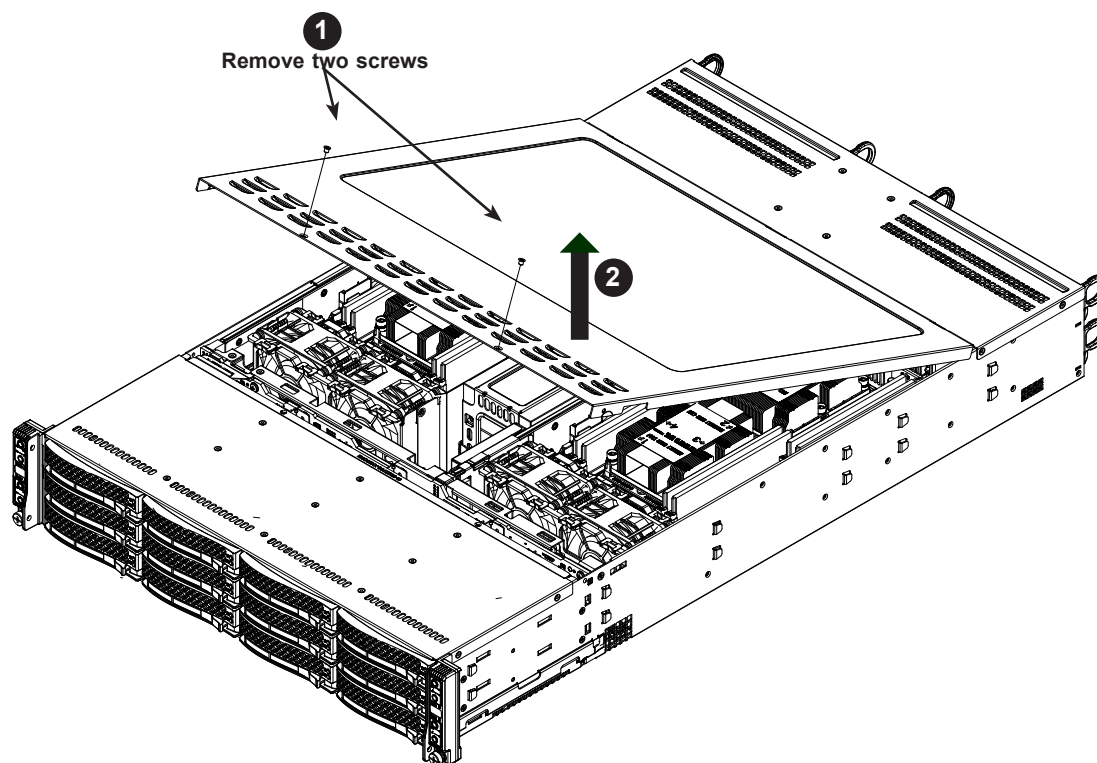
Figure 3-1. Removing the Chassis Cover

3.3 Motherboard Components

Processor and Heatsink Installation

Follow the procedures in this section to install a processor (CPU) and heatsink to the motherboard.

Notes:

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

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

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

Attaching the Processor to the Narrow Processor Clip to Create the Processor Package Assembly

To properly install the CPU into the narrow processor clip, please follow the steps below.

1. Locate pin 1 (notch A), which is the triangle located on the top of the narrow processor clip. Also locate notch B and notch C on the processor clip.

2. Locate pin 1 (notch A), which is the triangle on the substrate of the CPU. Also, locate notch B and notch C on the CPU as shown below.

3. Align pin 1 (the triangle on the substrate) of the CPU with pin 1 (the triangle) of the narrow processor clip. Once they are aligned, carefully insert the CPU into the processor clip by sliding notch B of the CPU into notch B of the processor clip, and sliding notch C of the CPU into notch C of the processor clip.

4. Examine all corners of the CPU to ensure that it is properly seated on the processor clip. Once the CPU is securely attached to the processor clip, the processor package assembly is created.

> **Note**: Please exercise extreme caution when handling the CPU. Do not touch the CPU LGA-lands to avoid damaging the LGA-lands or the CPU. Be sure to wear ESD gloves when handling components.
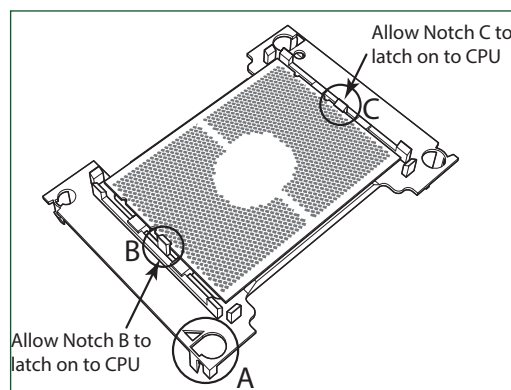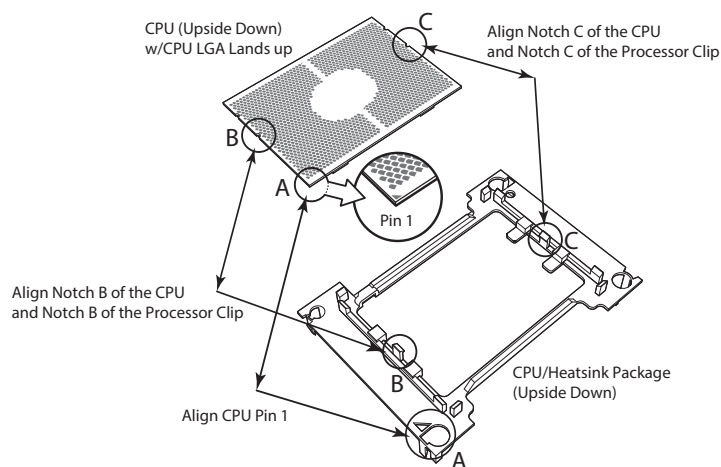
Processor Package Carrier (w/CPU mounted on the Processor Clip)

Attaching the Processor Package Assembly to the Heatsink to Form the Processor Heatsink Module (PHM)

After you have made a processor package assembly by following the instructions on the previous page, please follow the steps below to mount the processor package assembly onto the heatsink to create the Processor Heatsink Module (PHM).

1. Locate "1" on the heatsink label and the triangular corner next to it on the heatsink. With your index finger pressing against the screw at this triangular corner, carefully hold and turn the heatsink upside down with the thermal-grease side facing up. Remove the protective thermal film if present, and apply the proper amount of the thermal grease as needed. (Skip this step if you have a new heatsink because the necessary thermal grease is pre-applied in the factory.)

2. Holding the processor package assembly at the center edge, turn it upside down. With the thermal-grease side facing up, locate the hollow triangle located at the corner of the processor carrier assembly ("a" in the graphic). Note a larger hole and plastic mounting clicks located next to the hollow triangle. Also locate another set of mounting clicks and a larger hole at the diagonal corner of the same (reverse) side of the processor carrier assembly ("b" in the graphic).

3. With the back of heatsink and the reverse side of the processor package assembly facing up, align the triangular corner on the heatsink ("A" in the graphic) against the mounting clips next to the hollow triangle ("a") on the processor package assembly.

4. Also align the triangular corner ("B") at the diagonal side of the heatsink with the corresponding clips on the processor package assembly ("b").

5. Once the mounting clips on the processor package assembly are properly aligned with the corresponding holes on the back of heatsink, securely attach the heatsink to the processor package assembly by snapping the mounting clips at the proper places on the heatsink to create the processor heatsink module (PHM).

Non-Fabric CPU and Processor Clip (Upside Down)

Triangle on the CPU

Triangle on the Processor Clip

Heatsink (Upside Down)

On Locations of (C, D), the notches snap onto the heat sink's mounting holes

On Locations (A, B), the notches snap onto the heatsink's sides

Make sure Mounting Notches snap into place
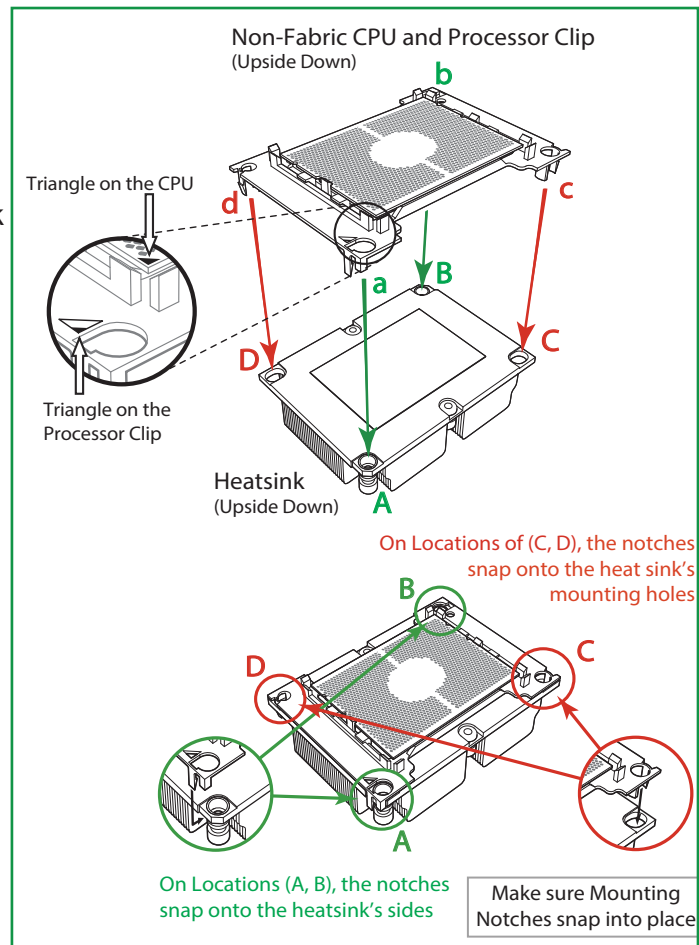
Preparing the CPU Socket for Installation

This motherboard comes with the CPU socket pre-assembled in the factory. The CPU socket contains 1) a dust cover, 2) a socket bracket, 3) the CPU socket, and 4) a back plate. These components are pre-installed on the motherboard before shipping.
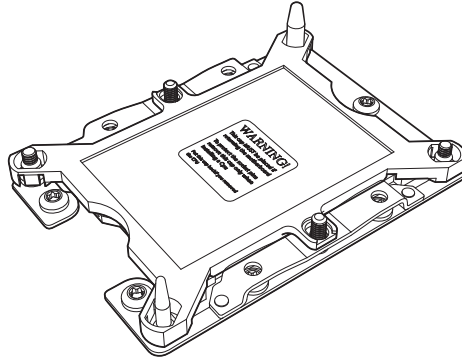
CPU Socket w/Dust Cover On

Removing the Dust Cover from the CPU Socket

Remove the dust cover from the CPU socket, exposing the CPU socket and socket pins as shown on the illustration below.

Note: Do not touch the socket pins to avoid damaging them, causing the CPU to malfunction.

Dusk Cover

Remove the dust cover from the CPU socket. Do not touch the socket pins!

Socket Pins
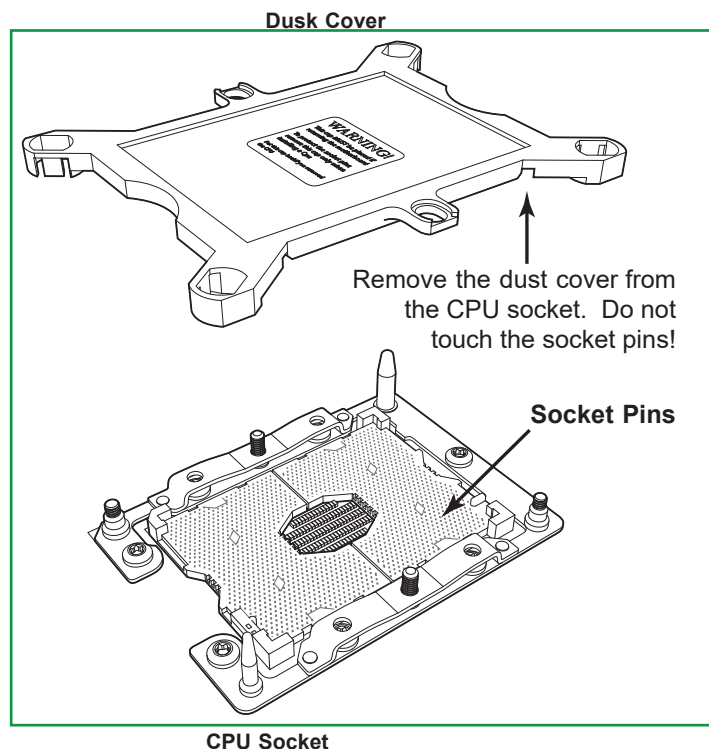
CPU Socket

Installing the Processor Heatsink Module (PHM)

Once you have assembled the processor heatsink module (PHM), you are ready to install the processor heatsink module (PHM) into the CPU socket on the motherboard. Note that there are two heatsink models. Use the SNK-P0067PS for CPU1 and the SNK-P0067PSM for CPU2 in each node. To install the PHM into the CPU socket, follow the instructions below.

1. Locate the triangle (pin 1) on the CPU socket, and locate the triangle (pin 1) at the corner of the PHM that is closest to "1." (If you have difficulty locating pin 1 of the PHM, turn the PHM upside down. With the LGA-lands side facing up, you will note the hollow triangle located next to a screw at the corner. Turn the PHM right side up, and you will see a triangle marked on the processor clip at the same corner of hollow triangle.)

2. Carefully align pin 1 (the triangle) on the PHM against pin 1 (the triangle) on the CPU socket.

3. Once they are properly aligned, insert the two diagonal oval holes on the heatsink into the guiding posts.

4. Using a T30 Torx-bit screwdriver, install four screws into the mounting holes on the socket to securely attach the PHM onto the motherboard starting with the screw marked "1" (in the sequence of 1, 2, 3, and 4).

    Note: Do not use excessive force when tightening the screws to avoid damaging the LGA-lands and the processor.

Mounting the Processor Heatsink Module into the CPU socket (on the motherboard)

Tighten the screws in the sequence of 1, 2, 3, 4 (top 3 quarter view)
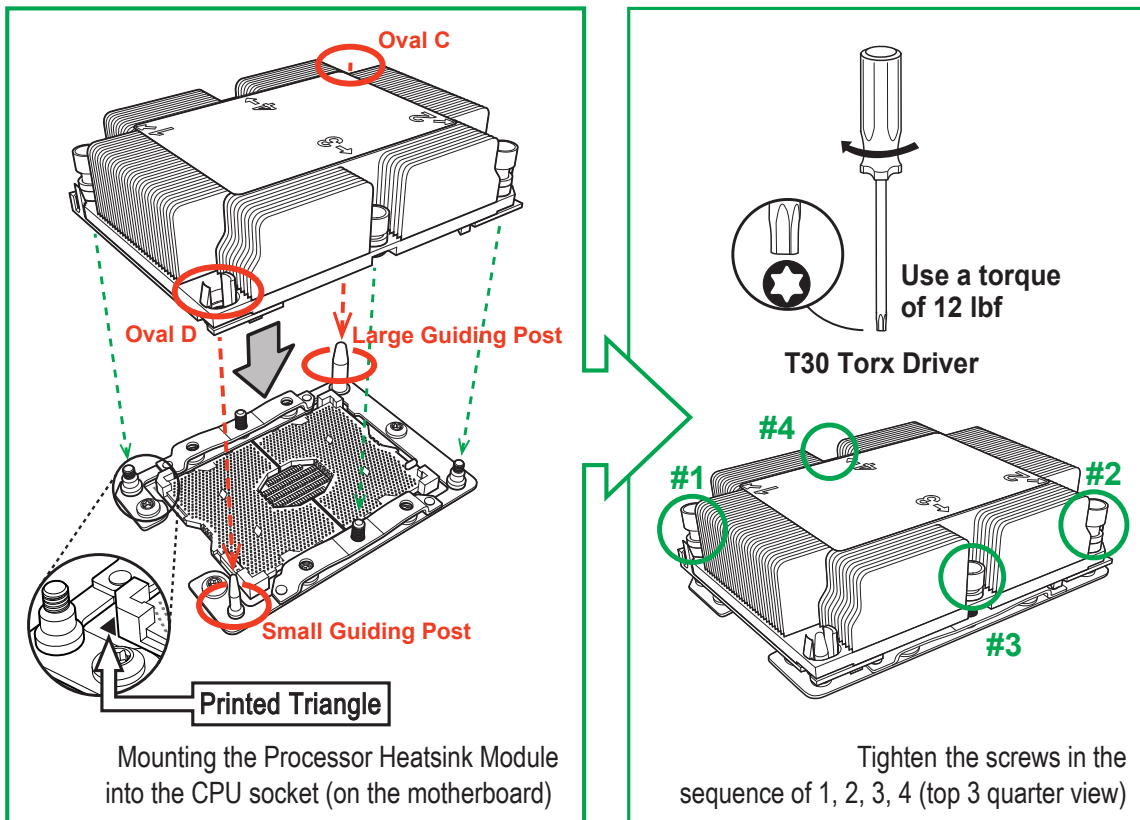
Removing the Processor Heatsink Module (PHM) from the Motherboard

Before removing the processor heatsink module (PHM), unplug power cord from the power outlet.

1. Using a T30 Torx-bit screwdriver, turn the screws on the PHM counterclockwise to loosen them from the socket, starting with screw marked #4 (in the sequence of 4, 3, 2, 1).

2. After all four screws are removed, wiggle the PHM gently and pull it up to remove it from the socket.

> **Note**: To properly remove the processor heatsink module, be sure to loosen and remove the screws on the PHM in the sequence of 4, 3, 2, 1 as shown below.

Removing the screws in the sequence of 4, 3, 2, 1

#4 #1 #2 #3

Printed Triangle on Motherboard

CPU Socket

After removing the screws, lift the Processor Heatsink Module off the CPU socket.
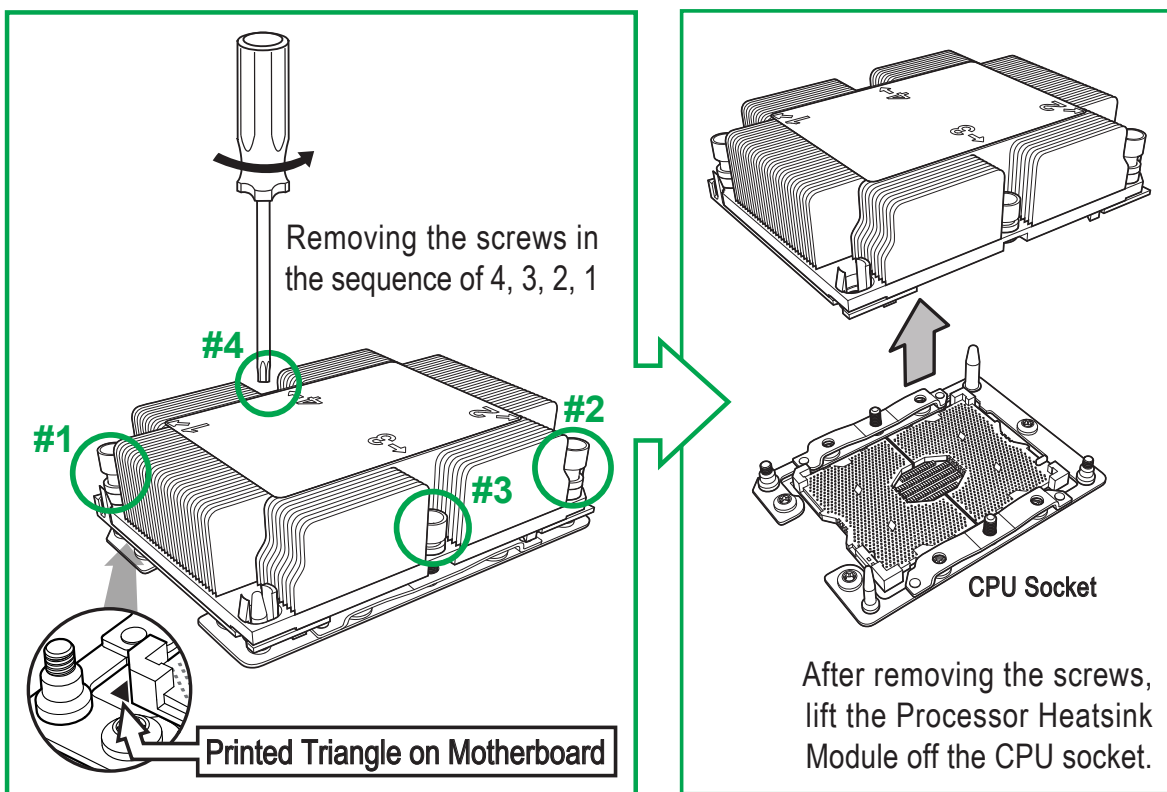
PCI Expansion Card Installation

The system includes a pre-installed riser card (p/n RSC-R1UTP-E16R) that positions one PCIe card at a 90 degree angle, allowing it to fit inside the chassis.

Installing PCI Expansion Cards

The riser card has already been pre-installed into the motherboard. Perform the following steps to install an add-on card:

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

1. Remove the chassis node A or chassis node B.

2. Remove the PCI slot shield on the node by releasing the locking tab.

3. Insert the expansion (add-on) card into the riser card.

4. Secure the card with the locking tab.

Memory Installation

Memory Support

The X11DPT-L supports up to 2TB of 3DS ECC RDIMM/LRDIMM DDR4-2933/2666/2400/2133 memory in eight slots. Populating the DIMM slots in a 1DPC (one DIMMs per channel) configuration with pairs of memory modules of the same type, speed and size will result in interleaved memory, which improves performance.

Check the Supermicro website for possible updates to memory support.

Note: 2933 MHz memory is supported by the 82xx/62xx platform only.

Memory Population Table	
CPUs/DIMMs Memory	**Population Sequence**
1 CPU & 1 DIMM	CPU1: P1-DIMMA1
1 CPU & 2 DIMMs	CPU1: P1-DIMMA1/P1-DIMMD1
1 CPU & 3 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMB1/P1-DIMMA1/P1-DIMMD1
1 CPU & 4 DIMMs	CPU1: P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1
2 CPUs & 2 DIMMs	CPU1: P1-DIMMA1 CPU2: P2-DIMMA1
2 CPUs & 4 DIMMs	CPU1: P1-DIMMA1/P1-DIMMD1 CPU2: P2-DIMMA1/P2-DIMMD1
2 CPUs & 6 DIMMs	CPU1: P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1 CPU2: P2-DIMMA1/P2-DIMMD1
2 CPUs & 8 DIMMs	CPU1: P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1 CPU2: P2-DIMMB1/P2-DIMMA1/P2-DIMMD1/P2-DIMME1

- For each individual population, rearrangements between channels are allowed as long as the resulting population is compliant with the PDG rules for the 82xx/62xx/52xx platform.

- For each individual population, please use the same DDR4 DIMM in all slots as specified by the PDG rules.

DDR4 Memory Support for the 81xx/61xx/51xx/41xx/31xx Platform

DDR4 Memory Support (for 1-Slot Per-Channel Configuration)				
Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slots per Channel (SPC) and DIMMs per Channel (DPC)
				1 or 2 Slots per Channel
		DRAM Density		1DPC (1-DIMM per Channel)
		4Gb*	8Gb	1.2 V
RDIMM	SRx4	4GB	8GB	2666
RDIMM	SRx8	8GB	16GB	2666
RDIMM	DRx8	8GB	16 GB	2666
RDIMM	DRx4	16GB	32 GB	2666
RDIMM 3Ds	QRX4	N/A	2H-64GB	2666
RDIMM 3Ds	8RX4	N/A	4H-128GB	2666
LRDIMM	QRx4	32GB	64GB	2666
LRDIMM 3Ds	QRX4	N/A	2H-64GB	2666
	8Rx4	N/A	4H-128GB	2666

DDR4 Memory Support for the 82xx/62xx/52xx/42xx/32xx Platform

DDR4 Memory Support (for 1-Slot Per-Channel Configuration)					
Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)			Speed (MT/s); Voltage (V); Slots per Channel (SPC) and DIMMs per Channel (DPC)
					1 Slot per Channel
		DRAM Density			1DPC
		4Gb*	8Gb	16Gb	1.2 V
RDIMM	SRx4	4GB	8GB	16GB	2933
RDIMM	SRx8	8GB	16GB	32GB	2933
RDIMM	DRx8	8GB	16GB	32GB	2933
RDIMM	DRx4	16GB	32GB	32GB	2933
RDIMM 3Ds	QRX4	N/A	2H-64GB	2H-128GB	2933
RDIMM 3Ds	8RX4	N/A	4H-128GB	4H-256GB	2933
LRDIMM	QRx4	32GB	64GB	128GB	2933
LRDIMM 3Ds	QRX4	N/A	2H-64GB	2H-128GB	2933
	8Rx4	N/A	4H-128GB	4H-256GB	2933

*DDR2933 is not supported by the 52xx/42xx/32xx platform.

DIMM Installation

1. Insert DIMM modules in the following order: P1-DIMMA1, P1-DIMMD1, P1-DIMMB1, and P1-DIMME1. For the system to work properly, please use memory modules of the same type and speed on the motherboard.

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

3. Align the key of the DIMM module with the receptive point on the memory slot.

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

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

6. Press the release tabs to the lock positions to secure the DIMM module into the slot.
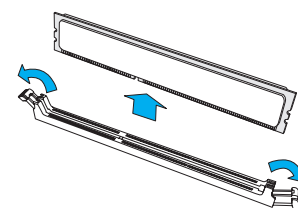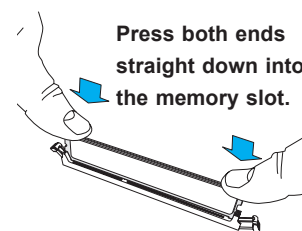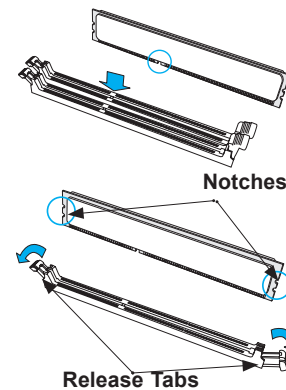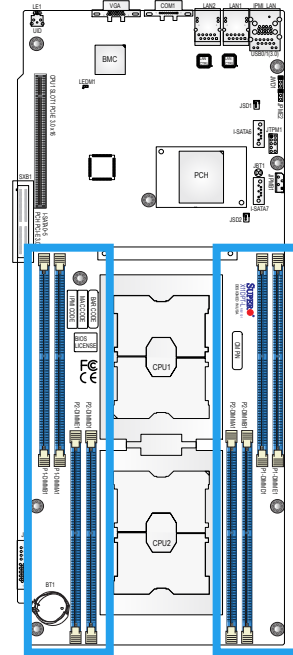
DIMM Removal

Press the release tabs on both ends of the DIMM socket to release the DIMM module from the socket as shown in the drawing below.

Notches

Release Tabs

Press both ends straight down into the memory slot.

Motherboard Battery

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

Replacing the Battery

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

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

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

Note: Handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.
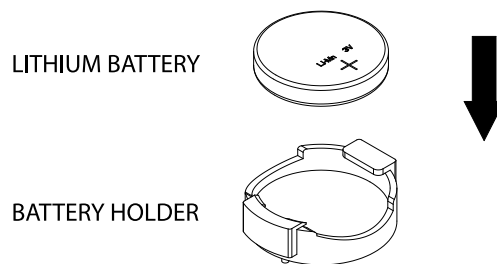
Figure 3-2. Installing the Onboard Battery

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

Front Bezel

If your system has an optional bezel attached to the front of the chassis, you will need to remove it to gain access to the drive bays.

1. Unlock the front of the chassis and then press the release knob.

2. Carefully remove the bezel with both hands. A filter located within the bezel can be removed for replacement/cleaning.

It is recommended that you keep a maintenance log to list filter cleaning/replacement dates, since its condition affects the airflow throughout the whole system.

Hard Drives

Your server may or may not have come with hard drives installed. Up to six 3.5" hard drives are supported by the chassis.

The SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. (Both procedures may be done without removing power from the system.)
Removing a Hot-Swap Drive Carrier

1. Push the release button on the carrier.

2. Swing the handle fully out.

3. Grasp the handle and use it to pull the drive carrier out of its bay.

Mounting a Drive in a Drive Carrier

1. To add a new drive, install it into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

2. Secure the drive to the carrier with the screws provided, then push the carrier completely into the drive bay. You should hear a *click* when the drive is fully inserted. This indicates that the carrier has been fully seated and connected to the midplane, which automatically makes the power and logic connections to the hard drive.

Removing a Drive from a Drive Carrier

1. Remove the screws that secure the hard drive to the carrier and separate the hard drive from the carrier.

2. Replace the carrier back into the drive bay.
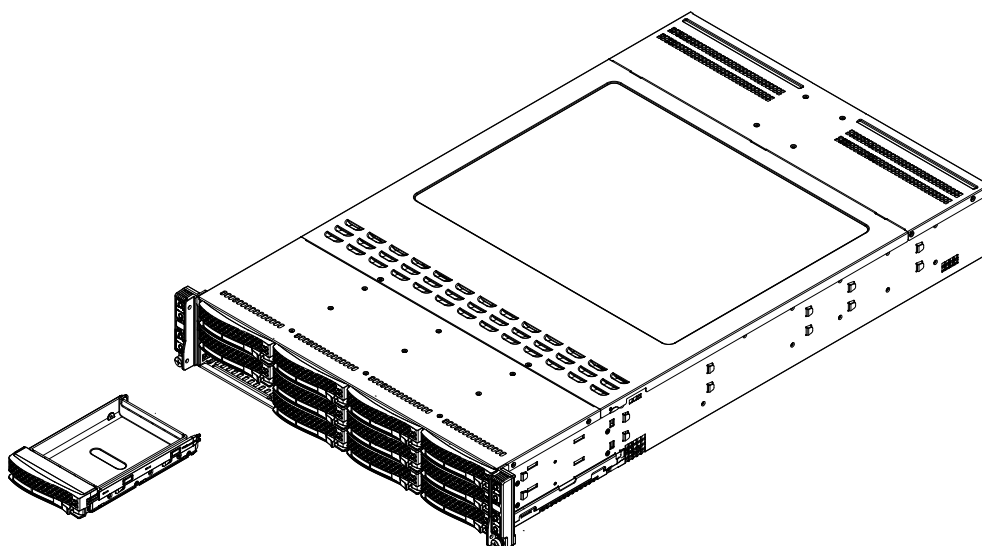
Figure 3-3. Mounting or Removing from a Drive Carrier

Hard Drive Carrier Indicators

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

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

System Cooling

Four 8-cm counter-rotating fans provide the cooling for the system. Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and is effective in dampening vibration levels. The chassis provides two additional open fan housings, where an additional system fan may be added for optimal cooling.

It is very important that the chassis top cover is installed for the cooling air to circulate properly through the chassis and cool the components.

Installing Fans

Fan speed is controlled by system temperature via IPMI. If a fan fails, the remaining fans will ramp up to full speed. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

1. With the server powered on, remove the chassis cover and inspect the fans to see which one has failed.

2. Power down the server and remove the AC power cord.

3. Remove the screws securing the cover to the chassis.

4. Slide the cover toward the rear of the chassis.
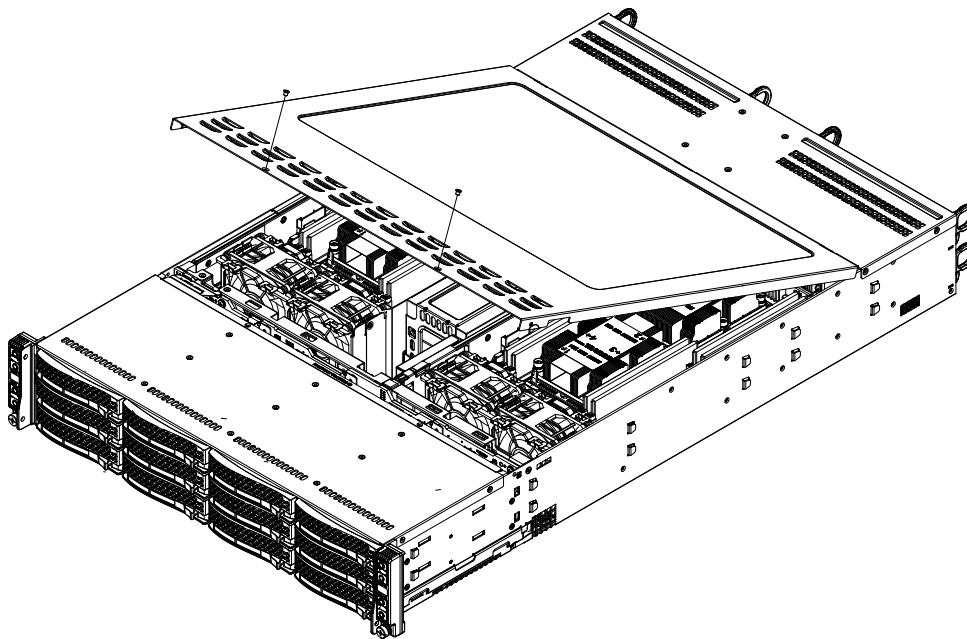
Figure 3-4. Removing the Chassis Cover

5. Lift the cover from the chassis.

6. Remove the failed fan's wiring from the fan header on the motherboard.

7. Lift the failed fan from the chassis and pull it completely out.

8. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.

9. Connect the fan wires to the same fan header as the fan just removed.
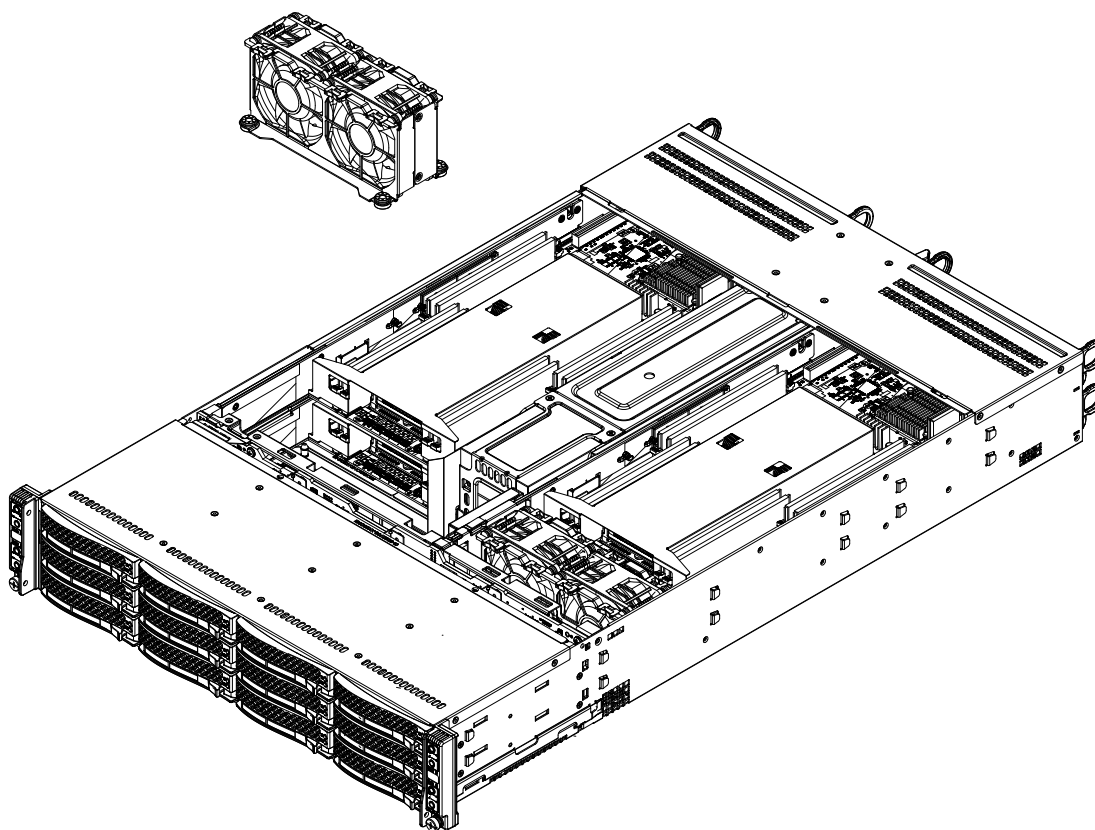
Figure 3-5. Replacing a System Fan
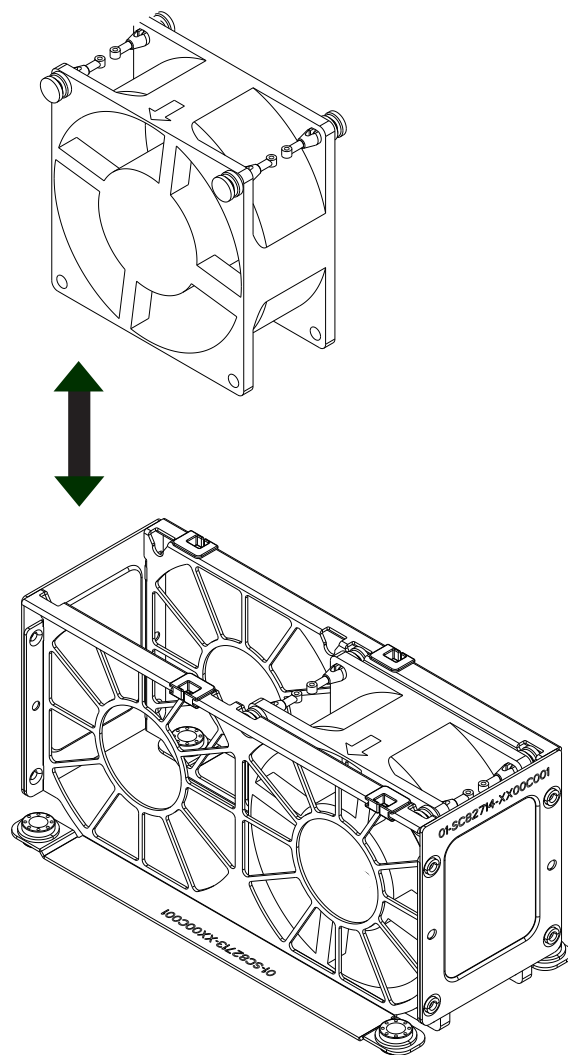
Figure 3-6. Replacing a System Fan in the Fan Housing

Backplane

The SC827HQ chassis backplane is located behind the hard drives and in front of the front system fans. If it is necessary to remove the backplane, follow the instructions below.

Removing the Backplane

1. Power down and unplug the system from any power source.

2. Remove the chassis cover.

3. Disconnect the cabling to the backplane and the front panel.

4. Remove all of the hard drive trays from the front of the chassis.

5. Remove the four upper screws at the top of the backplane.

6. Remove one screw and one side screw from the side of the chassis.
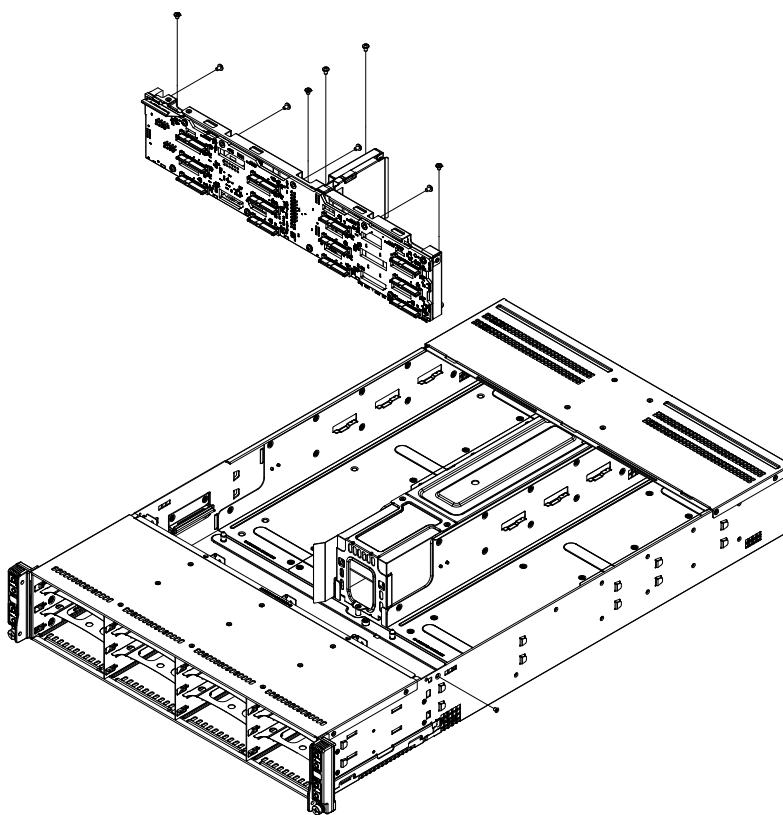
Figure 3-7. Removing the Screws at the Top and Side of the Backplane

7. Loosen the six screws in the backplane mounting bracket, located on the floor of the chassis.
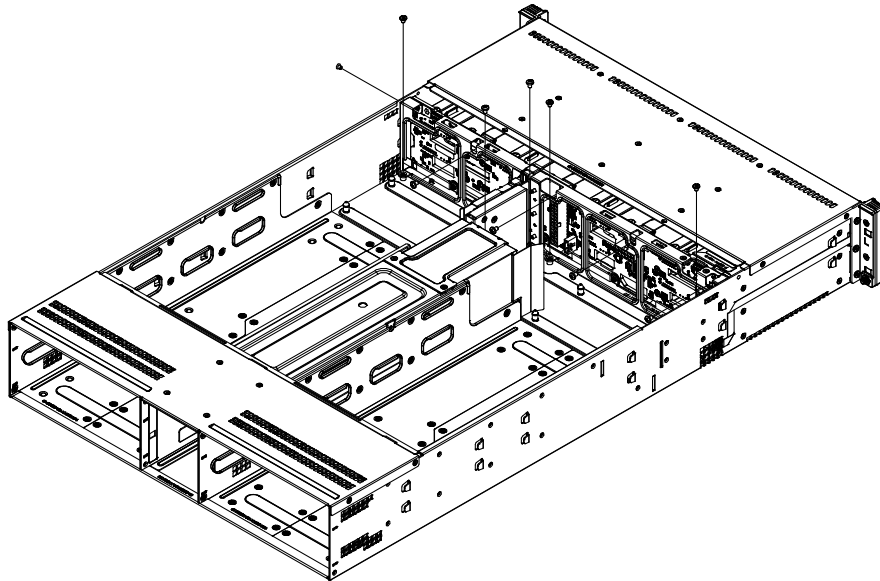
Figure 3-8. Loosening the Backplane Mounting Bracket in the Floor of the Chassis

8. Gently ease the backplane up and out of the chassis at a slight angle.
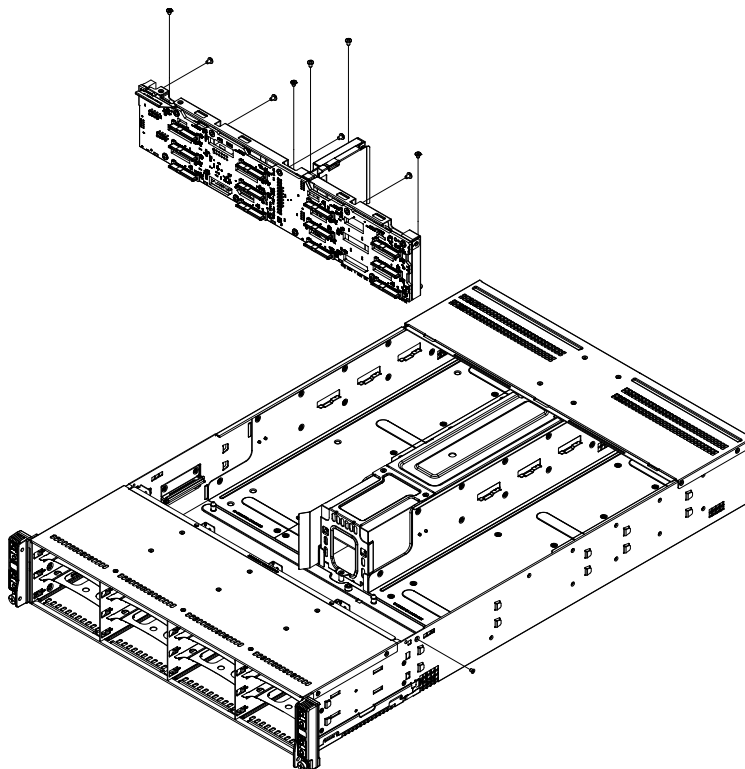
Figure 3-9. Removing the Backplane from the Chassis

Installing the Backplane

1. Ensure that all of the hard drive trays have been removed from the bays in the front of the chassis.

2. Secure the side mounting bracket to the backplane with the six screws provided.

3. Slide the backplane into the chassis at a slight angle, pushing it up against the side of the chassis.

4. Ease the backplane forward, against the front of the chassis. This will aid in the alignment of the mounting holes.

5. Align the mounting holes in the backplane with the holes in the chassis. Replace the four screws at the top of the backplane (5A) and the screw on the side of the chassis (5B).

6. Adjust the spring bar, then tighten the spring bar screws in the floor of the chassis.

7. Reconnect all cables and return the hard drive trays to their bays in the front of the chassis.
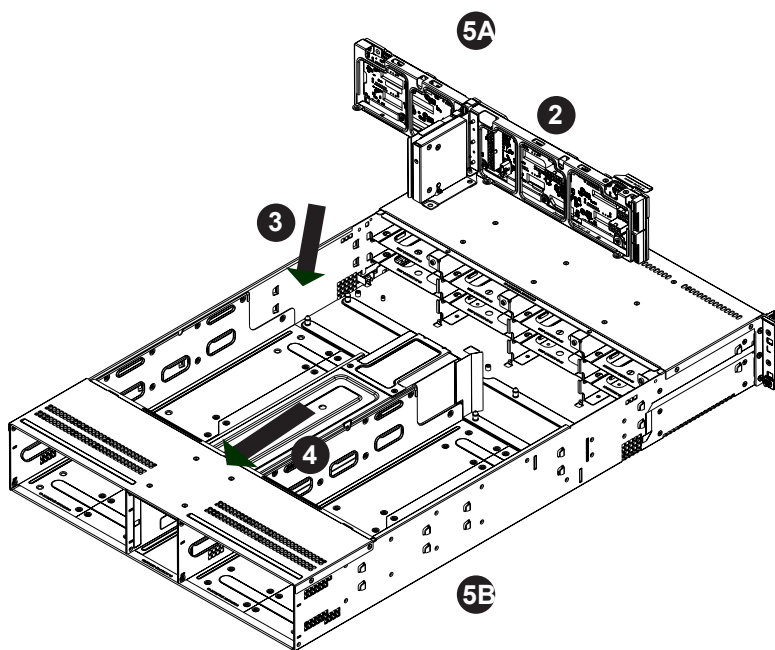
Figure 3-10. Installing the Backplane

Air Shroud

The air shroud is used to concentrate airflow to maximize fan efficiency. The air shroud requires to be fixed with screws.

Installing the Air Shroud

1. Lay the chassis on a flat, stable surface and remove the chassis cover.

2. If necessary, move any cables that interfere with the air shroud placement.

3. Place the air shroud in the chassis.

4. Slide the air shroud into the grooves just behind the fan rack.

5. Ensure the two tabs on the air shroud are fit in the pin slots of the CPU1 heatsink.

6. Fix the air shroud to the motherboard with two screws.

7. Reroute any cables that were moved and replace the chassis cover.

Place the air shroud in the chassis.

Slide the air shroud.

Ensure the two tabs on the air shroud are fit in the pin slots of the CPU1 heatsink.

Fix the air shroud to the motherboard with two screws.
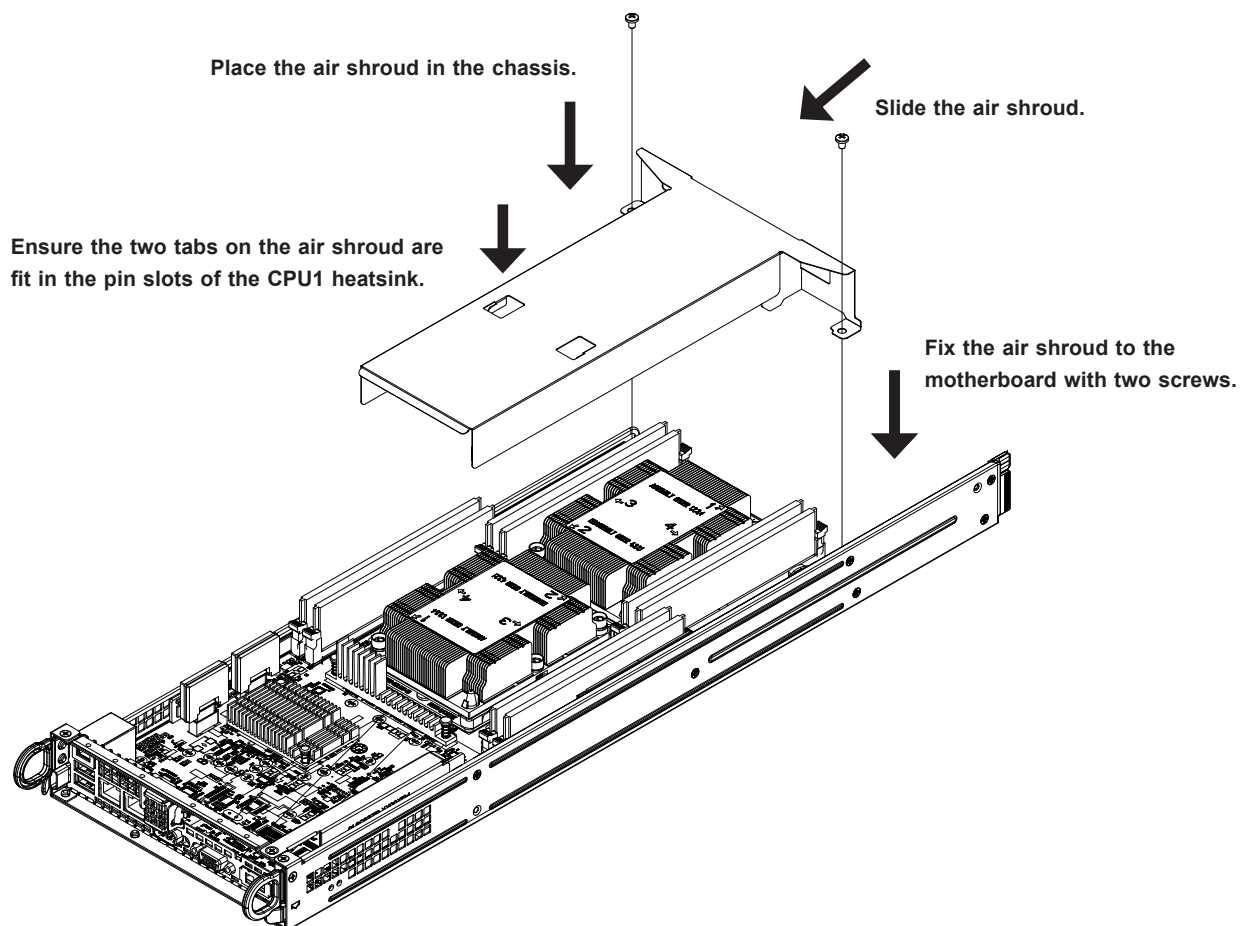
Figure 3-11. Installing the Air Shroud

I/O Shield

The I/O shield holds the serverboard ports in place. The I/O shield does not require installation.

Node Installation/Removal

As with any server system, power must be removed from the serverboard when upgrading or installing memory or processors. In the 2U Twin server, the serverboards (nodes) are capable of being hot-swapped from the chassis, allowing one to be powered down for servicing while the other continues operating.

Caution! Removing a node from the server affects the airflow throughout the system. For this reason, nodes should be removed, serviced and replaced as quickly as possible. Also note that powering down a node will power down all the hard drives that are logically associated with it.

Removing a Node

1. Depress the power button on the control panel to power down the node.

2. There are two latches located below the handles at the rear of the node tray. Push both of these inward.

3. While pushing the latches inward, grasp both handles and pull the node from the chassis.

4. Perform any service needed to the node in a timely manner.

5. Reinstall the node by pushing it into its bay until firmly seated.

Permanent and Optional Standoffs

Standoffs prevent short circuits by securing space between the serverboard and the chassis surface. The SC827HQ chassis includes permanent standoffs in locations used by the serverboards. These standoffs accept the rounded Phillips head screws included in the SC827HQ accessories packaging.

Some serverboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are used for these serverboards.

To use an optional standoff, you must place a hexagon screw through the bottom the chassis and secure the screw with the hexagonal nut (rounded side up).

Depending upon the configuration of the serverboard being used, it is also possible that some of the optional standoffs which are pre-installed in the chassis, may need to be removed.

Installing the Serverboard

1. Review the documentation that came with your serverboard. Become familiar with component placement, requirements, precautions, and cable connections.

2. Pull the serverboard node drawer out of the back of the chassis.

3. Remove the expander card brackets:

   a. Remove the screws securing the expander card bracket to the back of the node drawer.
   b. Lift the bracket out of the node drawer.

4. Lay the serverboard in the node drawer aligning the standoffs with the serverboard. Compare the holes in the serverboard to the standoffs in the drawer and add and remove standoffs as needed.

5. Secure the serverboard to the node drawer using the rounded, Phillips head screws included for this purpose. Do not exceed eight pounds of torque when tightening down the serverboard.

6. Install the adapter card associated with the serverboard. Refer to the next section for instructions on installing the adapter card

7. Secure the CPU(s), heatsinks, and other components to the serverboard as described in the serverboard documentation.

8. Connect the cables between the serverboard, backplane, chassis, front panel, and power supply, as needed. Also, fans may be temporarily removed to allow access to the back panel ports.

9. Replace the expander card bracket and secure the bracket with a screw.

10. Repeat steps 3 to 5 for the remaining node.
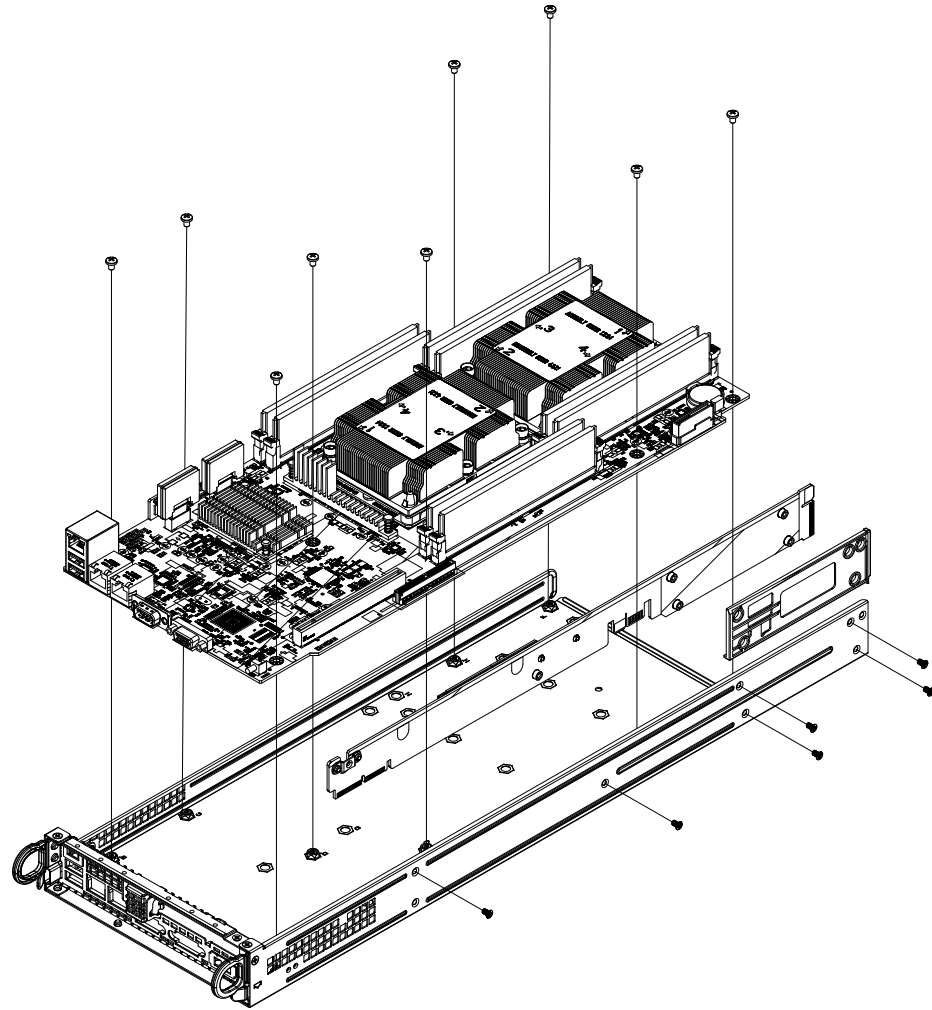
Figure 3-12. Installing the Serverboard in the Serverboard Node Drawer

Expansion Card/Expansion Slot

The 6029TR-HTR includes one preinstalled riser card per node, designed specifically for use in a 2U rackmount chassis. This riser card (RSC-R1UTP-E16R) supports one low-profile PCI Express x16 card for each node.

Installing the Riser Card onto the Riser Card Bracket

1. Disconnect the power supply and lay the chassis on a flat surface.

2. Pull the serverboard node drawer from the chassis.

3. Remove the riser card bracket.
    3a. Remove the screw securing the riser card bracket to the back of the drawer.
    3b. Lift the bracket out of the serverboard node drawer.

4. Align the riser card mounting hole to the bracket standoff and secure the riser card to the bracket using the two screws included in the accessory box.
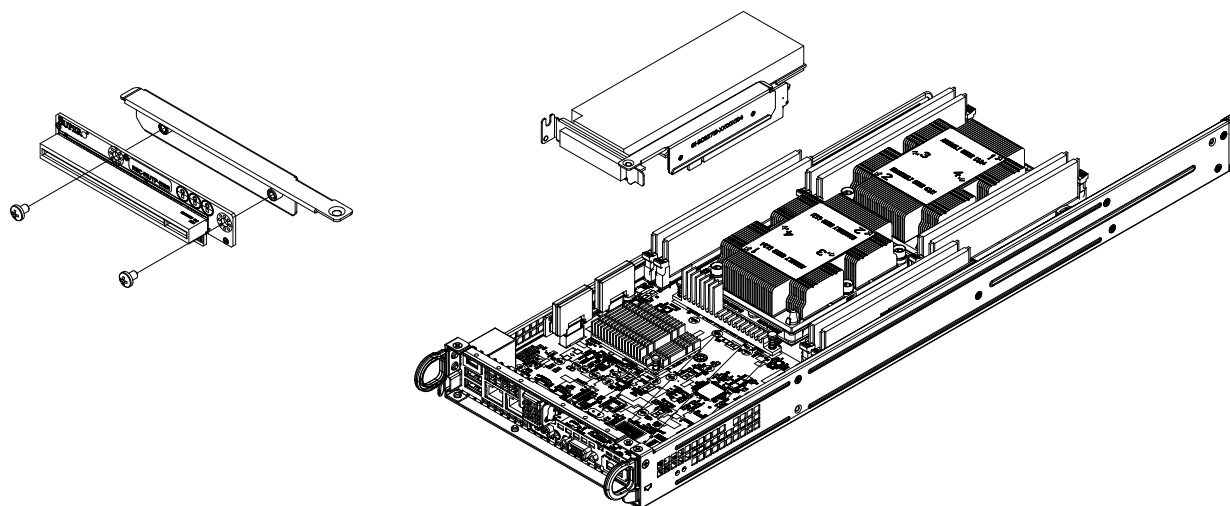
Figure 3-13. Installing an Add-On Card

Power Supply

The 6029TR-HTR has two 1600 watt hot-plug power supply modules to provide redundant power for the system. If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption.

The LED on the control panel for node A will flash slowly (about 4 seconds on and 4 off) and remain flashing until the failed unit has been replaced. Replacement units can be ordered directly from Supermicro (see contact information in the Preface).

Removing/Replacing the Power Supply

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

2. Push the colored release tab to the side and pull the power module out with the handle provided.

3. Replace the failed power supply module with the exact same model from Supermicro.

4. Carefully insert the new module into position in the chassis and push it in until fully seated. You should see the LED on the rear of the module turn amber showing that power (from the backup module) is present.

5. Reconnect the AC power cord to the new module.
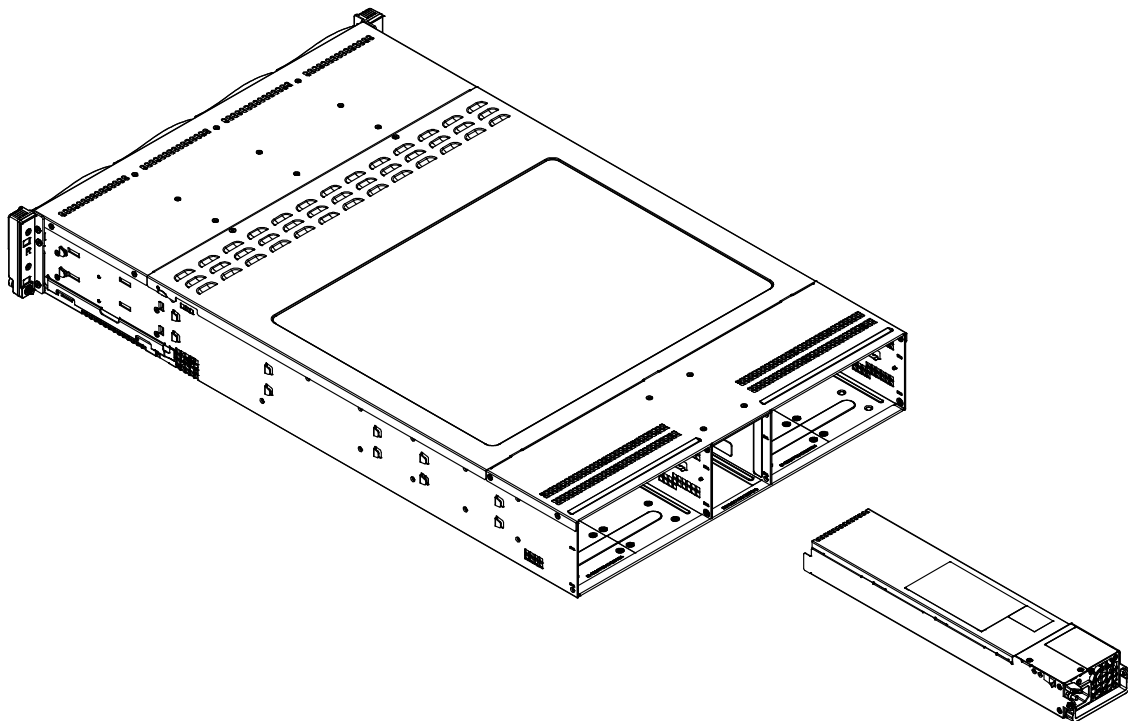
Figure 3-14. Removing/Replacing a Power Supply

Chapter 4

Motherboard Connections

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

Please review the Safety Precautions in Appendix A before installing or removing components.

4.1 Headers and Connectors

4-pin BMC External I²C Header

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

External I²C Header Pin Definitions	
Pin#	**Definition**
1	Data
2	Ground
3	Clock
4	No Connection

TPM Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermico (optional). A TPM/Port 80 connector is a security device that supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. See the table below for pin definitions.

Trusted Platform Module/Port 80 Header Pin Definitions			
Pin#	**Definition**	**Pin#**	**Definition**
1	P3V3	2	SPI_TPM_CS_N
3	PCIE_RESET_N#	4	SPI_PCH_MISO
5	SPI_PCH_CLK#	6	Ground
7	SPI_PCH_MOSI	8	N/A
9	JTPM1_P3V3A	10	IRQ_TPM_SPIN_N

Disk-On-Module Power Connector

The Disk-On-Module (DOM) power connectors at JSD1 and JSD2 provide 5V power to a solid-state DOM storage devices connected to one of the SATA ports. See the table below for pin definitions.

DOM Power Pin Definitions	
Pin#	Definition
1	5V
2	Ground
3	Ground

I-SATA 3.0 Ports

The X11DPT-L has eight I-SATA 3.0 ports (I-SATA0-7) on the motherboard. These SATA ports are supported by the Intel® C621 chipset. I-SATA0-5 are supported by SXB1. I-SATA6/I-SATA7 can be used with Supermicro SuperDOMs which are yellow SATA DOM connectors with power pins built in, and do not require external power cables. Supermicro SuperDOMs are backward-compatible with regular SATA HDDs or SATA DOMs that need external power cables. All these SATA ports provide serial-link signal connections.

4.2 Ports

Rear I/O Ports

See the figure below for the locations and descriptions of the various I/O ports on the rear of the motherboard.
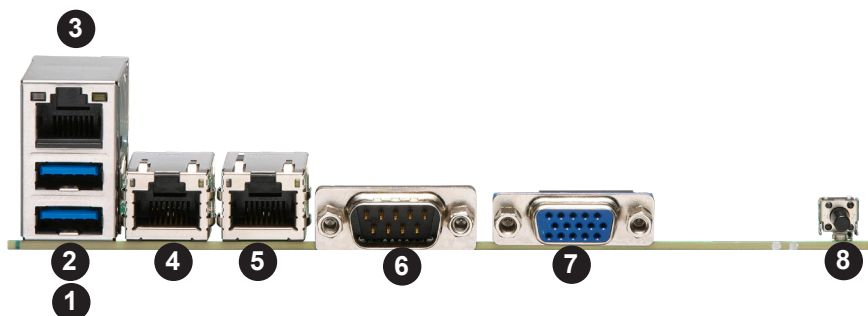
Back Panel I/O Ports					
No.	Description	No.	Description	No.	Description
1.	USB 0 (USB 3.0)	4.	LAN1	7.	VGA
2.	USB 1 (USB 3.0)	5.	LAN2	8.	Unit Identifier Switch (UID)
3.	IPMI LAN	6.	COM1		

VGA Port

The onboard VGA port is located on the I/O backpanel. Use this connection for VGA display.

Serial Port

There is one COM port (COM1) on the I/O backpanel. The COM port provides serial communication support.

Ethernet Ports

Two Ethernet ports (LAN1, LAN2) are located on the I/O back panel. These Ethernet ports support GbE LAN connections on the motherboard. In addition, a dedicated IPMI LAN that supports GbE LAN is located next to USB 0/1 ports on the back panel. All Ethernet ports accept RJ45 type cables. Please refer to the LED Indicator Section for LAN LED information.

Universal Serial Bus (USB) Ports

There are two USB 3.0 ports (USB0/1) on the I/O back panel. See the table below for pin definitions.

Back Panel USB0 (3.0) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS1	33	SGND
2	D1N	34	SGND
3	D1P	35	SGND
4	GND	36	SGND
5	Stda_SSRX1N		
6	Stda_SSRX1P		
7	GND_DRAIN		
8	Stda_SSTX1N		
9	Stda_SSTX1P		

Back Panel USB1 (3.0) Pin Definitions	
Pin#	Definition
10	VBUS2
11	D2N
12	D2P
13	GND
14	Stda_SSRX2N
15	Stda_SSRX2P
16	GND_DRAIN
17	Stda_SSTX2N
18	Stda_SSTX2P

Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) switch and a rear UID LED (LE1) are located on the rear side of the motherboard. When you press the rear UID switch, the rear UID LED (LE1) will be turned on. Press the UID switch again to turn off the LED indicator. The UID indicator provide easy identification of a system that may be in need of service. (**Note:** UID can also be triggered via IPMI on the motherboard. For more information, please refer to the IPMI User's Guide posted on our website at http://www.supermicro.com.)

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

UID LED Pin Definitions	
Color	Status
Blue: On	Unit Identified

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.
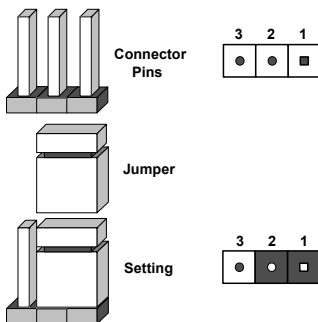
CMOS Clear

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

Manufacturing Mode Select

Close JPME2 to bypass SPI flash security and force the system to use the Manufacturing Mode, which will allow you to flash the system firmware from a host server to modify system settings. See the table below for jumper settings.

Manufacturing Mode Select Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacturing Mode

Watch Dog

JWD1 controls the Watch Dog function. Watch Dog is a monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause Watch Dog to reset the system if an application hangs. Jumping pins 2-3 will 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 needs to 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

4.4 LED Indicators

Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is located on the I/O back panel of the motherboard. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the tables below for more information.

IPMI LAN Connection LED	
LED Color	**Definition**
Off	No Connection, 10 Mbps or 100 Mbps
Green	100 Mbps
Orange	1 Gbps

IPMI LAN

Link LED Activity LED

IPMI LAN Activity LED		
LED	**Color/State**	**Definition**
Link (left)	Green: Solid	100 Mbps
Activity (Right)	Amber: Blinking	Active
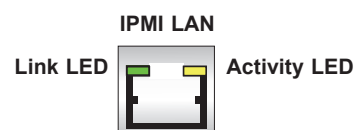
LAN1/LAN2 LEDs

Two LAN ports (LAN1/LAN2) are located on the I/O back panel of the motherboard. Each Ethernet LAN port has two LEDs. The amber LED on the right indicates activity, while the other Link LED on the left may be orange or off to indicate the speed of the connection. See the tables below for more information.

LAN1/LAN2 Link LED (Left)	
LED Color	**Definition**
Off	No Connection
Orange	1 Gbps

Link LED Activity LED

LAN1/LAN2 Activity LED (Right)		
LED Color	**Status**	**Definition**
Amber	Blinking	1 Gbps (Active)

BMC Heartbeat LED

LEDM1 is the BMC heartbeat LED. When the LED is blinking green, BMC is functioning normally. See the table below for the LED status.

BMC Heartbeat LED Indicator	
LED Color	**Definition**
Green: Blinking	BMC Normal

Unit ID LED

A rear UID LED indicator at LE1 is located near the UID switch on the I/O back panel. This UID indicator provides easy identification of a system unit that may need service.

UID LED LED Indicator	
LED Color	**Definition**
Blue: On	Unit Identified

Chapter 5

Software

After the hardware has been installed, you can install the Operating System (OS), configure RAID settings and install the drivers.

5.1 Microsoft Windows OS Installation

If you will be using RAID, you must configure RAID settings before installing the Windows OS and the RAID driver. Refer to the RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

Installing the OS

1. Create a method to access the MS Windows installation ISO file. That might be a DVD, perhaps using an external USB/SATA DVD drive, or a USB flash drive, or the IPMI KVM console.

2. Retrieve the proper RST/RSTe driver. Go to the Supermicro web page for your motherboard and click on "Download the Latest Drivers and Utilities", select the proper driver, and copy it to a USB flash drive.

3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing **<F11>** during the system startup.


```
            Please select boot device:

ATEN Virtual CDROM YS0J      ──▶  IPMI virtual drive (Legacy)
ASUS SDRW-08D2S-U F601        ──▶  USB DVD device (Legacy)
 USB FLASH DRIVE PMAP         ──▶  USB flash drive with OS installation (Legacy)
IBA 40-10G Slot 1900 v1060   ──▶  PXE boot (Legacy)
UEFI: ATEN Virtual CDROM YS0J ──▶ IPMI virtual drive (UEFI)
UEFI: ASUS SDRW-08D2S-U F601  ──▶ USB DVD device (UEFI)
UEFI: Built-in EFI Shell
Enter Setup

     ↑ and ↓ to move selection
   ENTER to select boot device
    ESC to boot using defaults
```

Figure 5-1. Select Boot Device

4. During Windows Setup, continue to the dialog where you select the drives on which to install Windows. If the disk you want to use is not listed, click on "Load driver" link at the bottom left corner.
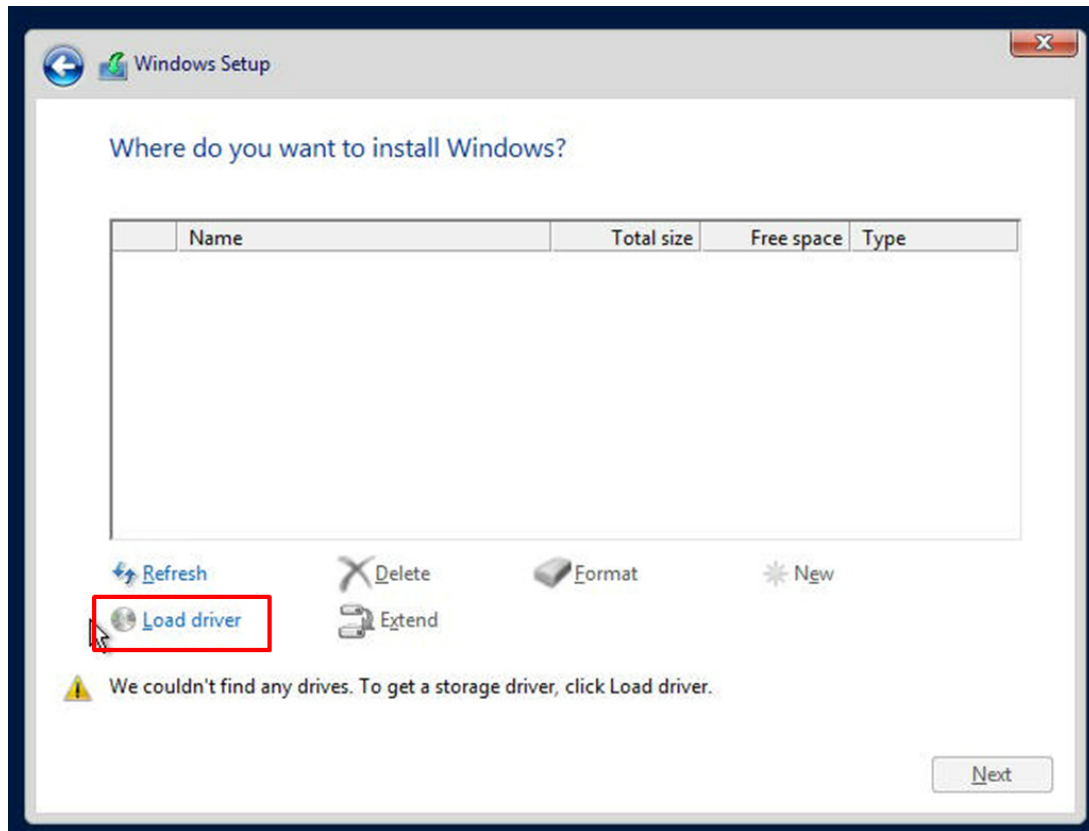
Figure 5-2. Load Driver Link

To load the driver, browse the USB flash drive for the proper driver files.

- For RAID, choose the SATA/sSATA RAID driver indicated then choose the storage drive on which you want to install it.

- For non-RAID, choose the SATA/sSATA AHCI driver indicated then choose the storage drive on which you want to install it.

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

6. After the Windows OS installation has completed, the system will automatically reboot multiple times.

5.2 Driver Installation

The Supermicro website contains drivers and utilities for your system at https://www.supermicro.com/wdl/. Some of these must be installed, such as the chipset driver.

After accessing the website, go into the CDR_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to a USB flash drive or a DVD. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro website at http://www.supermicro.com/products/. Find the product page for your motherboard, and "Download the Latest Drivers and Utilities".

Insert the flash drive or disk and the screenshot shown below should appear.

Figure 5-3. 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.

SuperDoctor® Manual and Resources
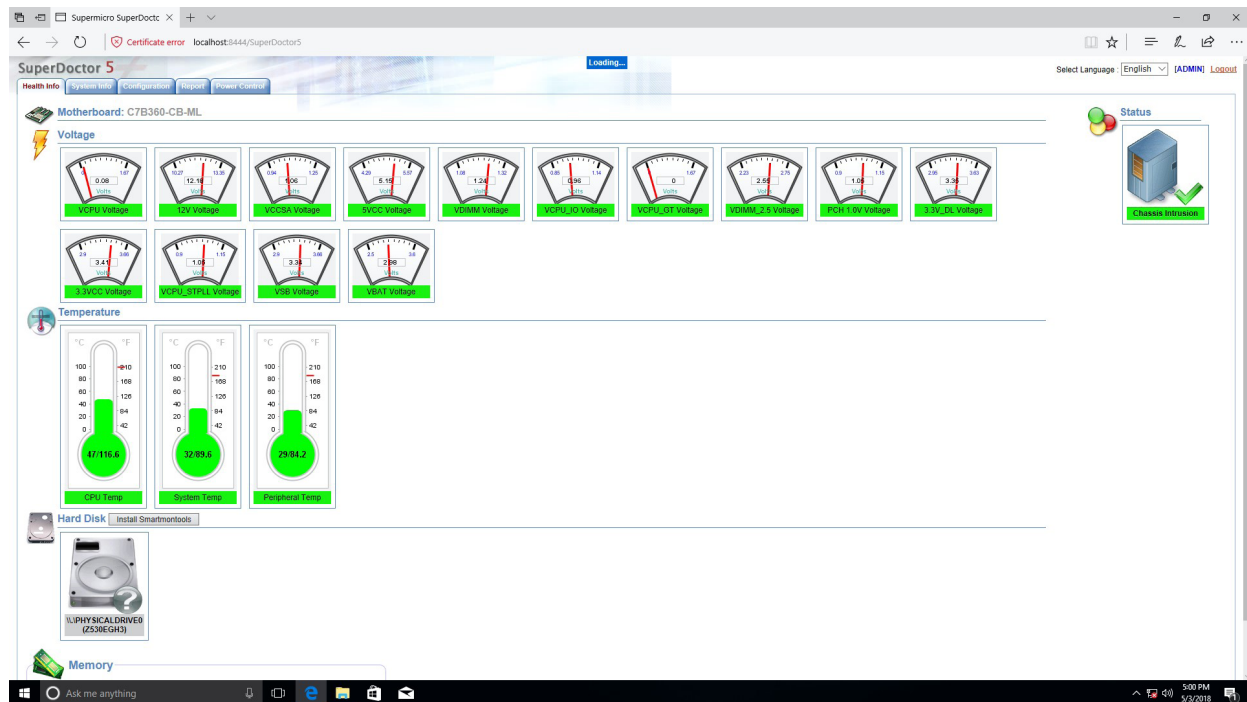
Figure 5-4. SuperDoctor 5 Interface Display Screen (Health Information)

5.4 IPMI

The X11DPT-L supports the Intelligent Platform Management Interface (IPMI). IPMI is used to provide remote access, monitoring and management. There are several BIOS settings that are related to IPMI.

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

Chapter 6

BIOS

6.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the motherboard. The BIOS is stored on a chip and can be easily upgraded using a flash program.

> **Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of our website for any changes to BIOS that may not be reflected in this manual.

Starting the Setup Utility

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

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

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

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

6.2 Main Setup

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

```
              Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
     Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

                                                              Set the Date. Use Tab to
     System Date                      [Mon 10/08/2018]        switch between Date
     System Time                      [02:34:03]              elements.
                                                              Default Ranges:
     Supermicro X11DPT-L                                      Year: 2005-2099
     BIOS Version                     T20181003171357         Months: 1-12
     Build Date                       10/03/2018              Days: dependent on month
     CPLD Version                     01.B1.11

     Memory Information
     Total Memory                     131072 MB




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

              Version 2.19.1268. Copyright (C) 2018 American Megatrends, Inc.
```

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 01/01/2015 after RTC reset.

Supermicro X11DPT-L

BIOS Version

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

Build Date

This item displays the date when the version of the BIOS ROM used in the system was built.

CPLD Version

This item displays the version of the CPLD (Complex-Programmable Logical Device) used in the system.

Memory Information

Total Memory

This item displays the total size of memory available in the system.

6.3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and press <Enter> to access the submenu items.

```
                  Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
           Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

        ▶ Boot Feature                                    Boot Feature Configuration
        ▶ CPU Configuration                               Page
        ▶ Chipset Configuration
        ▶ Server ME Information
        ▶ PCH SATA Configuration
        ▶ PCH sSATA Configuration
        ▶ PCIe/PCI/PnP Configuration
        ▶ Super IO Configuration
        ▶ Serial Port Console Redirection
        ▶ ACPI Settings
        ▶ Trusted Computing
        ▶ Intel(R) Virtual RAID on CPU
        ▶ Driver Health

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

                  Version 2.19.1268. Copyright (C) 2018 American Megatrends, Inc.
```

Warning: 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. When this occurs, revert to the default 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**.

Option ROM Messages

Use this feature to set the display mode for the Option ROM. Select Keep Current to display the current Add On 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 **On** and Off.

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.

Install Windows 7 USB Support

Enable this feature to use the USB keyboard and mouse during the Windows 7 installation, since the native XHCI driver support is unavailable. Use a SATA optical drive as a USB drive, and USB CD/DVD drives are not supported. Disable this feature after the XHCI driver has been installed in Windows. The options are **Disabled** and Enabled.

Port 61h Bit-4 Emulation

Select Enabled to enable the emulation of Port 61h Bit-4 toggling in SMM (System Management Mode). The options are **Disabled** and Enabled.

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 five minutes. The options are **Disabled** and Enabled**.**

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**.

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 **Instant Off** and 4 Seconds Override**.**

▶CPU Configuration

Processor Configuration

The following CPU information will be displayed:

- Processor BSP Revision

- Processor Socket

- Processor ID

- Processor Frequency

- Processor Max Ratio

- Processor Min Ratio

- Microcode Revision

- L1 Cache RAM

- L2 Cache RAM

- L3 Cache RAM

- Processor 0 Version

- Intel(R) Xeon (R) Gold 6140 CPU @ 2.30GHz

- Processor 1 Version

- Intel(R) Xeon (R) Gold 6140 CPU @ 2.30GHz

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

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

Cores Enabled

Use this feature to enable or disable CPU cores in the processor specified by the user. The default setting is **0**.

Monitor/Mwait

Streaming SIMD Extensions 3 (SSE3) includes Monitor and Mwait instructions, which are used for thread synchronization. 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. Select Enable to enable the Monitor/Mwait instructions. 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.)

Intel Virtualization Technology

Use feature to enable the Vanderpool Technology. This technology allows the system to run several operating systems simultaneously. The options are Disable and **Enable**.

PPIN Control

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

Hardware Prefetcher (Available when supported by the CPU)

If this feature is 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 **Enable** and Disable.

Adjacent Cache 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 **Enable** and Disable.

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 **Enable** and Disable.

LLC Prefetch

If this feature is set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L3 cache to improve CPU performance. The options are **Disable** and Enable.

Extended APIC

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

AES-NI

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

▶Chipset Configuration

> **Warning:** Setting the wrong values in the following features may cause the system to malfunction.

▶North Bridge

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

▶UPI Configuration

UPI Configuration
The following UPI information will be displayed:

- Number of CPU

- Number of Active UPI Link

- Current UPI Link Speed

- Current UPI Link Frequency

- UPI Global MMIO Low Base / Limit

- UPI Global MMIO High Base / Limit

- UPI Pci-e Configuration Base / Size

Degrade Precedence
Use this feature to set degrade precedence when system settings are in conflict. Select Topology Precedence to degrade Features. Select Feature Precedence to degrade Topology. The options are **Topology Precedence** and Feature Precedence.

Link L0p Enable

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

Link L1 Enable

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

IO Directory Cache (IODC)

IO Directory Cache is an 8-entry cache that stores the directory state of remote IIO writes and memory lookups, and saves directory updates. Use this feature to lower cache to cache (C2C) transfer latencies. The options are Disable, **Auto**, Enable for Remote InvItoM Hybrid Push, InvItoM AllocFlow, Enable for Remote InvItoM Hybrid AllocNonAlloc, and Enable for Remote InvItoM and Remote WViLF.

SNC

Select Enable to use the feature of Sub NUMA Clustering (SNC), which supports full SNC (2-cluster) interleave and 1-way IMC interleave. Select Auto for 1-cluster or 2-cluster support depending on the status of IMC (Integrated Memory Controller) Interleaving. The options are **Disable**, Enable, and Auto.

XPT Prefetch

Select Enable for Extended (Xtended) Prediction Table (XPT) Prefetch support which will allow a read request to be sent to the memory controller requesting the prefetch in parallel to an LLC (Last Level Cache) look-up. The options are **Disable** and Enable.

KTI Prefetch

KTI Prefetch is a feature that enables memory read to start early on a DDR bus, where the KTI Rx path will directly create a Memory Speculative Read command to the memory controller. The options are Disable and **Enable** .

Local/Remote Threshold

Use this feature to configure the threshold settings for local and remote systems that are connected in the network. The options are Disable, **Auto**, Low, Medium, and High.

Stale AtoS

Select Enable to remove the contents and the structures of the files that are no longer needed in the remote host server but are still in use by the local client machine from Directory A to Directory S in the NFS (Network File System) to optimize system performance. The options are **Disable**, Enable, and Auto.

LLC Dead Line Alloc

Select Enable to opportunistically fill the deadlines in LLC (Last Level Cache). The options are Disable, **Enable**, and Auto.

Isoc Mode

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

►**Memory Configuration**

Integrated Memory Controller (IMC)

Enforce POR

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

PPR Type

Post Package Repair (PPR) is a new feature available on the DDR4 Technology. PPR provides additional spare capacity within a DDR4 DRAM module to be used to replace faulty cell areas detected during system boot. PPR offers two types of memory repairs. Soft Post Package Repair (sPPR) provides a quick, temporary fix on a raw element in a bank group of a DDR4 DRAM device, while hard Post Package Repair (hPPR) will take a longer time to provide permanent repair on a raw element. The options are **Auto**, Hard PPR, Soft PPR, and PPR Disabled.

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are Auto, 1866, 2000, 2133, 2400, 2666, and 2933.

> **Note:** 2933 MHz memory is supported by 2nd Gen Intel Xeon Scalable-SP (82xx/62xx series) processors only.

Data Scrambling for NVDIMM

Use this feature to enable or disable data scrambling for non-volatile DIMM (NVDIMM) memory. The options are **Auto**, Disable, and Enable.

Data Scrambling for DDR4

Use this feature to enable or disable data scrambling for DDR4 memory. The options are **Auto**, Disable, and Enable.

tCCD_L Relaxation

If Enabled, the tCCD_L overrides the SPD. When disabled, it is enforced based on memory frequency. The options are Disable and **Auto**.

2X REFRESH

This option allows the user to select 2X refresh mode. The options are **Auto** and Enabled.

Page Policy

Use this feature to set the page policy for onboard memory support The options are **Auto**, Closed, and Adaptive.

IMC Interleaving

Use this feature to configure interleaving settings for the IMC (Integrated Memory Controller), which will improve memory performance. The options are **Auto**, 1-way Interleave, and 2-way Interleave.

▶Memory Topology

This feature displays DIMM population information.

P1 DIMMA1: 2934MT/S Micron SRx4 16GB RDIMM

P1 DIMMB1: 2934MT/S Micron SRx4 16GB RDIMM

P1 DIMMD1: 2934MT/S Micron SRx4 16GB RDIMM

P1 DIMME1: 2934MT/S Micron SRx4 16GB RDIMM

P2 DIMMA1: 2934MT/S Micron SRx4 16GB RDIMM

P2 DIMMB1: 2934MT/S Micron SRx4 16GB RDIMM

P2 DIMMD1: 2934MT/S Micron SRx4 16GB RDIMM

P2 DIMME1: 2934MT/S Micron SRx4 16GB RDIMM

▶Memory RAS Configuration

Memory RAS Configuration Setup

Static Virtual Lockstep Mode

Select Enable to run the system's memory channels in lockstep mode to minimize memory access latency. The options are **Disable** and Enable.

Mirror Mode

This feature allows memory to be mirrored between two channels, providing 100% re-dundancy. The options are **Disable**, Mirror Mode 1LM, and Mirror Mode 2LM.

UEFI ARM Mirror

This options allows the system to imitate the behavior of the UEFI based Address Range Mirror with setup option. The options are **Disable** and Enable.

Memory Rank Sparing

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

Correctable Error Threshold

Use this item to specify the threshold value for correctable memory-error logging, which sets a limit on the maximum number of events that can be logged in the memory-error log at a given time. The default setting is **100**.

Intel Run Sure

Select Enable to support Intel® Run Sure Technology to further enhance critical data protection and to increase system uptime and resiliency. The options are **Disable** and Enable.

SDDC Plus One

Single Device Data Correction (SDDC) organizes data in a single bundle (x4/x8 DRAM). If any or all the bits become corrupted, corrections occur. The x4 condition is corrected on all cases. The x8 condition is corrected only if the system is in Lockstep Mode. The options are **Disable** and Enable.

ADDDC Sparing

Adaptive Double Device Data Correction (ADDDC) Sparing detects when the predetermined threshold for correctable errors is reached, copying the contents of the failing DIMM to spare memory. The failing DIMM or memory rank will then be disabled. The options are **Disable** and Enable.

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 Enable, 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**.

▶IIO Configuration

EV DFX Features

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

▶CPU1 Configuration

IOU1 (II0 PCIe Br2)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

▶RSC-T2R-884 SLOT1

Note 1: The item above is available when the device is detected by the system.

Note 2: The item above displays depending on the device being installed in and detected by the system.

Note 3: Otherwise, the BIOS screen displays CPU SLOT1.

Link Speed

Use this feature to select the link speed for the PCI-E port specified by the user. The options are **Auto,** Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s).

PCI-E Port Link Status

This feature displays current PCI-E Link Status.

PCI-E Port Link Max

This feature displays PCI-E Link maximum value.

PCI-E Port Link Speed

This feature displays current PCI-E Link Speed.

PCI-E Port Max Payload Size

Selecting **Auto** for this feature will enable the motherboard to automatically detect the maximum Transaction Layer Packet (TLP) size for the connected PCI-E device, allowing for maximum I/O efficiency. Selecting 128B or 256B will designate maximum packet size of 128 or 256. Options are 128B, 256B, and **Auto**. Auto is enabled by default.

▶RSC-T2R-884 SLOT2 (Available when the device is detected by the system)

Link Speed

Use this item to select the link speed for the PCI-E port specified by the user. The options are **Auto,** Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s).

PCI-E Port Link Status

This feature displays current PCI-E Link Status.

PCI-E Port Link Max

This feature displays PCI-E Link maximum value.

PCI-E Port Link Speed

This feature displays current PCI-E Link Speed.

PCI-E Port Max Payload Size

Selecting **Auto** for this feature will enable the motherboard to automatically detect the maximum Transaction Layer Packet (TLP) size for the connected PCI-E device, allowing for maximum I/O efficiency. Selecting 128B or 256B will designate maximum packet size of 128 or 256. Options are 128B, 256B, and **Auto**. Auto is enabled by default.

▶IOAT Configuration

Disable TPH

Transparent Hugepages is a Linux memory management system that enables communication in larger blocks (pages). Enabling this feature will increase performance. The options are **No** and Yes.

Prioritize TPH

Use this feature to enable Prioritize TPH support. The options are Enable and **Disable**.

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 **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 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 **Enabled** and Disabled.

ACS Control

This feature allows users to choose whether they want to enable or disable PCIe Access Control Services (ACS) Extended Capability. The options are **Enabled** and Disabled.

Interrupt Remapping

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

PassThrough DMA

Use this feature to allow devices such as network cards to access the system memory without using a processor. Select Enable to use the Non-Isoch VT_D Engine Pass Through Direct Memory Access (DMA) support. The options are **Enable** and Disable.

ATS

Use this feature to enable Non-Isoch VT-d Engine Address Translation Services (ATS) support. ATS translates virtual addresses to physical addresses. The options are **Enable** and Disable.

Posted Interrupt

Use this feature to enable VT_D Posted Interrupt. The options are **Enable** and Disable.

Coherency Support (Non-Isoch)

Use this feature to maintain setting coherency between processors or other devices. Select Enable for the Non-Iscoh VT-d engine to pass through DMA to enhance system performance. The options are **Enable** and Disable.

▶**Intel® VMD Technology**

This section describes the configuration settings for the Intel® Volume Management Device (VMD) Technology.

Note: After you've enabled VMD on a PCI-E slot of your choice, this PCI-E slot will be dedicated for VMD use only, and it will no longer support any PCI-E device. To re-activate this slot for PCI-E use, please disable VMD.

▶**Intel® VMD for Volume Management Device on CPU1**

VMD Config for PStack0

Intel® VMD for Volume Management Device

Select Enable to use the Intel Volume Management Device Technology for this stack. The options are **Disable** and Enable.

If the feature "Intel VMD for Volume Management Device" is set to Enable, the following features will be available:

CPU1 SLOT6 PCI-E 3.0 X8 VMD (Available when the device is detected by the system)

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable.

CPU1 SLOT4 PCI-E 3.0 X8 VMD (Available when the device is detected by the system)

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable.

Hot Plug Capable (Available when the device is detected by the system)

Use this feature to enable hot plug support for PCIe root ports 1A~1D. The options are **Disable** and Enable.

VMD Config for PStack1

Intel® VMD for Volume Management Device

Select Enable to use the Intel Volume Management Device Technology for this stack. The options are **Disable** and Enable.

If the feature "Intel VMD for Volume Management Device" is set to Enable, the following features will be available:

CPU1 SLOT5 PCI-E 3.0 X16 VMD (Available when the device is detected by the system

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable.

Hot Plug Capable (Available when the device is detected by the system)

Use this feature to enable hot plug support for PCIe root ports 2A~2D. The options are **Disable** and Enable.

VMD Config for PStack2

Intel® VMD for Volume Management Device

Select Enable to use the Intel Volume Management Device Technology for this stack. The options are **Disable** and Enable.

*If the feature "Intel VMD for Volume Management Device" is set to Enable, the following features will be available:

CPU1 SLOT1 PCI-E 3.0 X4 (IN X8) VMD (Available when the device is detected by the system)

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable

CPU1 SLOT2 PCI-E 3.0 X8 VMD (Available when the device is detected by the system)

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable.

Hot Plug Capable (Available when the device is detected by the system)

Use this feature to enable hot plug support for PCIe root ports 3A~3D. This will allow the user to replace the components without shutting down the system. The options are **Disable** and Enable.

▶**Intel® VMD for Volume Management Device on CPU2**

VMD Config for PStack2

Intel® VMD for Volume Management Device

Select Enable to use the Intel Volume Management Device Technology for this stack. The options are **Disable** and Enable.

*If the feature "Intel VMD for Volume Management Device" is set to Enable, the following features will be available:

CPU2 SLOT3 PCI-E 3.0 X16 VMD (Available when the device is detected by the system

Select Enable to use the Intel Volume Management Device Technology for this specific root port. The options are **Disable** and Enable.

Hot Plug Capable (Available when the device is detected by the system)

Use this feature to enable hot plug support for PCIe root ports 3A~3D. The options are **Disable** and Enable.

II0-PCIE Express Global Options

PCI-E Completion Timeout Disable

Use this feature to enable PCI-E Completion Timeout support for electric tuning. The options are Yes, **No**, and Per-Port.

▶South Bridge

USB Module Version

This feature display current USB module version.

USB Devices

This feature display current USB device.

Legacy USB Support

This feature enables support for USB 2.0 and older. The options are **Enabled,** Disabled, and Auto. Default setting is **Enabled**.

XHCI Hand-off

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

Port 60/64 Emulation

Select Enabled for legacy I/O support for USB devices such as mice and keyboards. The options are **Enabled** and disabled. Default setting is **Enabled**.

PCIe PLL SSC

Select Enable for PCH PCIe Spread Spectrum Clocking support, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disable** and Enable.

▶Server ME (Management Engine) Information

This feature displays the following system ME configuration settings.

- General ME Configuration

- Operational Firmware Version

- Backup Firmware Type

- Recovery Firmware Version

- ME Firmware Status #1

- ME Firmware Status #2

- Current State

- Error Code

▶PCH 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 Disable and **Enable**.

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 **AHCI** and RAID.

SATA HDD Unlock

This feature allows the user to remove any password-protected SATA disk drives. The options are Disable and **Enable**.

Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link 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 **Disabled** and Enabled.

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

SATA RAID Option ROM/UEFI Driver

Use this feature to select the Raid Option ROM type. The options are Disable, EFI, and **Legacy**.

SATA Port 0 ~ Port 7

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

- Model number of drive and capacity

- Software Preserve Support

Port 0 ~ Port 7 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 Disabled and **Enabled**.

Port 0 ~ Port 7 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 **Disabled** and Enabled.

Port 0 ~ Port 7 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.

▶PCH sSATA 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:

sSATA Controller

This item enables or disables the onboard sSATA controller supported by the Intel PCH chip. The options are **Enable** and Disable.

SATA HDD Unlock

This feature allows the user to remove any password-protected SATA disk drives. The options are Disable and **Enable**.

Aggressive Link Power Management

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link 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 **Disabled** and Enabled.

sSATA Port 5

This item displays the information detected on the installed Solid State Drive (SSD) on the particular SATA port.

▶PCIe/PCI/PnP Configuration

The following information will be displayed:

• PCI Bus Driver Version

• PCI Devices Common Settings:

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

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

SR-IOV Support

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

MMIO High Base

Use this item to select the base memory size according to memory-address mapping for the IO hub. The options are **56T**, 40T, 24T, 16T, 4T, 2T, and 1T.

MMIO High Granularity Size

Use this item to select the high memory size according to memory-address mapping for the IO hub. The options are 1G, 4G, 16G, 64G, **256G**, and 1024G.

Maximum Read Request

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

MMCFG Base

Use this item to select the low base address for PCIE adapters to increase base memory. The options are 1G, 1.5G, 1.75G, **2G**, 2.25G. and 3G.

NVMe Firmware Source

Use this item to select the NVMe firmware to support booting. The options are **Vendor De-fined Firmware** and AMI Native Support. The default option, **Vendor Defined Firmware**, is pre-installed on the drive and may resolve errata or enable innovative functions for the drive. The other option, AMI Native Support, is offered by the BIOS with a generic method.

VGA Priority

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

> **Note 1**: The three items below are available when the device is detected by the system.

> **Note 2:** The three items below display depending on the device being installed in and detected by the system.

RSC-T2R-884

RSC-T2R-884 SLOT1 PCI-E 3.0 X8 OPROM

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are Disabled, Legacy and EFI. Use this feature to select which firmware type to be loaded for the add-on card in this slot. The options are Disabled, **Legacy**, and EFI.

RSC-T2R-884 SLOT2 PCI-E 3.0 X8 OPROM

Use this feature to select which firmware type to be loaded for the add-on card in this slot. The options are Disabled, **Legacy**, and EFI.

M.2-H OPROM

Use this feature to select which firmware type to be loaded for the add-on card in this slot. The options are Disabled, **Legacy**, and EFI.

Bus Master Enable

This feature allows users to change Bus Master Enable policy. If Disabled is selected, this policy will be enable based on device settings; if Enabled is selected, the policy will be enabled all the time. The options are **Enabled** and Disabled.

Onboard LAN Device

Select Enabled to enable the Onbaord LAN device. The options are Disabled and **Enabled**.

Onboard LAN1 Option ROM

Use this feature to select which firmware function to be loaded for LAN Port1 used for system boot. The options are Disabled, **Legacy**, and EFI.

Onboard LAN2 Option ROM

Use this feature to select which firmware function to be loaded for LAN Port2 used for system boot. The options are **Disabled**, Legacy, and EFI.

Onboard Video Option ROM

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

▶**Network Stack Configuration**

Network Stack

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

IPv4 PXE Support

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

IPv4 HTTP Support

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

IPv6 PXE Support

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

IPv6 HTTP Support

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

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 be displayed:

• Super IO Chip AST2500

▶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 Disabled and **Enabled**.

Device Settings

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

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;).

▶SOL Configuration

This submenu allows the user to configure the settings of Serial Port 2.

SOL

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

Device Settings

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

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

SOL Attribute

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

▶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 **Disabled and** Enabled.

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

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

▶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.

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

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

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.

Legacy Console Redirection

Legacy Serial Redirection Port

Use this feature to select a COM port to display redirection of Legacy OS and Legacy OPROM messages. The options are **COM1** and SOL.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management.

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.

Console Redirection

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

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

▶**Console Redirection Settings**

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.

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: 8

Parity: None

Stop Bits: 1

▶ACPI Settings

Numa

This setting enables or disables Non-Uniform Memory Access (NUMA), a feature that improves memory-to-processor communication and performance. The options are Disabled and **Enabled**.

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 Timer

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

▶Trusted Computing Configuration (Available when a TPM device is installed and detected by the BIOS)

When a TPM (Trusted-Platform Module) device is detected in your machine, the following information will be displayed.

- Security Device Support

- No Security Device Found

Security Device Support

If this feature and the TPM jumper (JPT1) on the motherboard are both enabled, the onboard security (TPM) device will be enabled in the BIOS to enhance data integrity and system security. Please note that the OS will not show the security device. Neither TCG EFI protocol nor INT1A interaction will be made available for use. If you have made changes on the setting on this item, be sure to reboot the system for the change to take effect. The options are Disable and **Enable**. If this option is set to Enable, the following screen and items will display:

Pending Operation

Use this feature to schedule a TPM-related operation to be performed by a security (TPM) device at the next system boot to enhance system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **None** and TPM Clear.

> **Note**: Your system will reboot to carry out a pending TPM operation.

Platform Hierarchy (for TPM Version 2.0 and above)

Select Enabled for TPM Platform Hierarchy support which will allow the manufacturer to utilize the cryptographic algorithm to define a constant key or a fixed set of keys to be used for initial system boot. This early boot code is shipped with the platform and is included in the list of "public keys". During system boot, the platform firmware uses this trusted public key to verify a digital signature in an attempt to manage and control the security of the platform firmware used in a host system via a TPM device. The options are **Enabled** and Disabled.

Storage Hierarchy

Select Enabled for TPM Storage Hierarchy support that is intended to be used for non-privacy-sensitive operations by the platform owner such as an IT professional or the end user. Storage Hierarchy has an owner policy and an authorization value, both of which can be set and are held constant (-rarely changed) through reboots. This hierarchy can be cleared or changed independently of the other hierarchies. The options are **Enabled** and Disabled.

Endorsement Hierarchy

Select Enabled for Endorsement Hierarchy support, which contains separate controls to address the user's privacy concerns because the primary keys in this hierarchy are certified by the TPM or a manufacturer to be constrained to an authentic TPM device that is attached to an authentic platform. A primary key can be an encrypted, and a certificate can be created using TPM2_ ActivateCredential. It allows the user to independently enable "flag, policy, and authorization value" without involving other hierarchies. A user with privacy concerns can disable the endorsement hierarchy while still using the storage hierarchy for TPM applications and permitting the platform software to use the TPM. The options are **Enabled** and Disabled.

PH (Platform Hierarchy) Randomization (for TPM Version 2.0 and above)

Select Enabled for Platform Hierarchy Randomization support, which is used only during the platform developmental stage. This feature cannot be enabled in the production platforms. The options are **Disabled** and Enabled.

TXT Support

Select Enabled to enable Intel Trusted Execution Technology (TXT) support to enhance system security and data integrity. The options are **Disabled** and Enabled.

> **Note 1**: If the option for this item (TXT Support) is set to Enabled, be sure to disable EV DFX (Device Function On-Hide) support for the system to work properly. (EV DFX is under "IIO Configuration" in the "Chipset/North Bridge" submenu).

> **Note 2:** For more information on TPM, please refer to the TPM manual at http://www.supermicro.com/manuals/other.

▶Intel(R) Virtual RAID on CPU

When this submenu is selected and the RAID devices are detected, the BIOS screen displays the following items:

Intel(R) VROC with VMD Technology 5.4.0.1039

▶Intel(R) RSTe SATA Controller (Available when "Configure SATA as" is set to RAID and "SATA RAID option ROM/UEFI" is set to EFI)

Intel(R) RSTe 5.4.0.1039 SATA Driver

This feature displays RSTe Driver version.

▶Intel(R) Ethernet Connection X722 for 1GbE - xx:xx:xx:xx:xx:xx (Available when "Onboard Lan option ROM" is set to EFI)

▶NIC Configuration

Link Speed

This feature allows the user to specify the port speed used for the selected boot protocol. The options are **Auto Negotiated**, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, and 100 Mbps Full.

Wake On LAN

Select Enabled for Wake_On_LAN support, which will allow the system to "wake up" when an onboard device receives an incoming signal. The options are Disabled and **Enabled**.

Blink LEDs

Use this feature to identify the physical network port by blinking the associated LED. Use the keybaord to select a value.

UEFI Driver

This item displays the UEFI driver version.

Adapter PBA

This item displays the Processor Bus Adapter (PBA) model number. The PBA number is a nine digit number (i.e., 010B00-000) located near the serial number.

Device Name

This item displays the adapter device name.

Chip Type

This item displays the network adapter chipset name.

PCI Device ID

This item displays the device ID number.

PCI Address

This item displays the PCI address for this computer. PCI addresses are 3 two-digit hexadecimal numbers.

Link Status

This item displays the connection status.

MAC Address

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

Virtual MAC Address

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

▶Driver Health

Intel(R) VROC with VMD Technology 5.4.0.1039   Healthy

Controller 678e4718 Child 0   Healthy

This item displays the information/status of driver installed in the system.

Apache Pass 1.0.0.1011 Driver   Heathy

This item displays the information/status of driver installed in the system.

6.4 Event Logs

Use this feature to configure Event Log settings.

```
               Aptio Setup Utility - Copyright (C) 2018 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 2.19.1268. Copyright (C) 2018 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 Disabled and **Enabled**.

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 Enabled and **Disabled**.

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: All values changed here do not take effect until computer is restarted.

▶View SMBIOS Event Log

This section displays the contents of the SMBIOS Event Log.

6.5 IPMI

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

```
             Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

     BMC Firmware Revision              1.56              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 Disabled and **Enabled**.

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: All values changed here do not take effect until computer is restarted.

▶BMC Network Configuration

BMC Network Configuration

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.

Configure IPV4 support

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**.

Configuration Address Source (Available when Update IPMI LAN Configuration is set to Yes)

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 Static and **DHCP**.

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.,10.135.174.29).

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., 10.135.0.250).

VLAN

This item displays the virtual LAN settings. The options are **Disable** and Enable.

Configure IPV6 Support

This section displays configuration features for IPv6 support.

IPV6 address status

This section displays status of station IPv6 address to BMC. The default setting is Disabled.

IPV6 Support

Use this feature to enable IPv6 support. The options are **Enabled** and Disabled.

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 Static and **DHCP**.

*If the item "Configuration Address Source" is set to Static, the following items will become available for configuration:

- Station IPV6 Address

- Prefix Length

- IPV6 Router1 IP Address

6.6 Security

This menu allows the user to configure the following security settings for the system.

```
              Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
       Main   Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

                                                        ▲ Set Administrator Password

          Administrator Password            Not Installed
          User Password                     Not Installed

          Password Description

          If the Administrator's / User's password is set,
          then this only limits access to Setup and is
          asked for when entering Setup.
          Please set Administrator's password first in order
          to set User's password, if clear Administrator's
          password, the User's password will be cleared as well.

          The password length must be
          in the following range:
          Minimum length                    3
          Maximum length                    20               →←: Select Screen
                                                             ↑↓: Select Item
          Administrator Password                             Enter: Select
          Password Check                    [Setup]          +/-: Change Opt.
          HDD Security Configuration:                        F1: General Help
          P0:HGST HUH728080ALE600                            F2: Previous Values
          P1:HGST HUH728080ALE600                            F3: Optimized Defaults
          P2:HGST HUH728080ALE600                         ▼  F4: Save & Exit
                                                             ESC: Exit

              Version 2.19.1268. Copyright (C) 2018 American Megatrends, Inc.
```

Administrator Password

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

User Password

Press <Enter> to create a new, or change an existing, user password.

Administrator Password

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.

HDD Security Configuration:

P0:HGST HUH728080ALE600

P1:HGST HUH728080ALE600

P2:HGST HUH728080ALE600

P3:HGST HUH728080ALE600

P4:HGST HUH728080ALE600

P5:HGST HUH728080ALE600

▶Secure Boot

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 configure Secure Boot variables without authentication. The options are Standard and **Custom**.

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**.

▶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

▶Enroll Efi Image

▶Save all Secure Boot variables

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. The option is Set New.

▶Key Exchange Keys

This feature allows the user to configure the settings of the Key Exchange Keys. The options are **Set New** and Append.

►**Authorized Signatures**

This feature allows the user to configure the settings of the Authorized Signatures. The options are **Set New** and Append.

►**Forbidden Signatures**

This feature allows the user to configure the settings of the Forbidden Signatures. The options are **Set New** and Append.

►**Authorized TimeStamps**

This feature allows the user to configure the settings of the authorized TimeStamps. The options are **Set New** and Append.

►**OsRecovery Signature**

This item uploads and installs an OSRecovery Signature. You may insert a factory default key or load from a file. The options are **Set New** and Append.

6.7 Boot

Use this feature to configure Boot Settings:

```
              Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
       Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

   Boot Configuration                                          ▲  Select boot mode LEGACY/UEFI

   Boot mode select                       [DUAL]
   LEGACY to EFI support                  [Disabled]

   FIXED BOOT ORDER Priorities
   Boot Option #1                         [Hard Disk: HGST H...]
   Boot Option #2                         [CD/DVD]
   Boot Option #3                         [USB Hard Disk]
   Boot Option #4                         [USB CD/DVD]
   Boot Option #5                         [USB Key]
   Boot Option #6                         [USB Floppy]
   Boot Option #7                         [USB Lan]
   Boot Option #8                         [Network:IBA 40-10...]
   Boot Option #9                         [UEFI Hard Disk]
   Boot Option #10                        [UEFI CD/DVD]
   Boot Option #11                        [UEFI USB Hard Disk]
   Boot Option #12                        [UEFI USB CD/DVD]          ↔: Select Screen
   Boot Option #13                        [UEFI USB Key]             ↑↓: Select Item
   Boot Option #14                        [UEFI USB Floppy]          Enter: Select
   Boot Option #15                        [UEFI USB Lan]             +/-: Change Opt.
   Boot Option #16                        [UEFI Network]             F1: General Help
   Boot Option #17                        [UEFI AP:UEFI: Bui...]     F2: Previous Values
                                                                    F3: Optimized Defaults
 ▶ Delete Boot Option                                          ▼   F4: Save & Exit
                                                                    ESC: Exit

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```

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**.

Legacy to EFI Support

This feature enables the system to boot to EFI OS if boot fails from Legacy boot order. The options are **Disabled** and Enabled.

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.

If the item above is set to Legacy, UEFI/Dual the following items will be displayed:

- Legacy/UEFI/Dual/Boot Option #1

- Legacy/UEFI/Dual/Boot Option #2

- Legacy/UEFI/Dual/Boot Option #3

- Legacy/UEFI/Dual/Boot Option #4

- Legacy/UEFI/Dual/Boot Option #5

- Legacy/UEFI/Dual/Boot Option #6

- Legacy/UEFI/Dual/Boot Option #7

- Legacy/UEFI/Dual/Boot Option #8

- UEFI/Dual/Boot Option #9

- Dual/Boot Option #10

- Dual/Boot Option #11

- Dual/Boot Option #12

- Dual/Boot Option #13

- Dual/Boot Option #14

- Dual/Boot Option #15

- Dual/Boot Option #16

- Dual/Boot Option #17

▶**Delete Boot Option**

Use this feature to remove a pre-defined boot device from which the system will boot during startup. The options are **Select one to delete** and UEFI: Built-in EFI Shell.

▶**UEFI Application Boot Priorities**

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

Boot Option #1

The options are **UEFI: Built-in EFI Shell** and Disabled.

▶Hard Disk Drive BBS Priorities

UEFI Boot Option #1

The options are **ISATA P0:HGST HUH728080ALE600 (SATA,Port:0)**, ISATA P1:HGST HUH728080ALE600 (SATA,Port:1), ISATA P2:HGST HUH728080ALE600 (SATA,Port:2), ISATA P3:HGST HUH728080ALE600 (SATA,Port:3), ISATA P4:HGST HUH728080ALE600 (SATA,Port:4), ISATA P5:HGST HUH728080ALE600 (SATA,Port:5), and Disabled.

UEFI Boot Option #2

The options are ISATA P0:HGST HUH728080ALE600 (SATA,Port:0), **ISATA P1:HGST HUH728080ALE600 (SATA,Port:1)**, ISATA P2:HGST HUH728080ALE600 (SATA,Port:2), ISATA P3:HGST HUH728080ALE600 (SATA,Port:3), ISATA P4:HGST HUH728080ALE600 (SATA,Port:4), ISATA P5:HGST HUH728080ALE600 (SATA,Port:5), and Disabled.

UEFI Boot Option #3

The options are ISATA P0:HGST HUH728080ALE600 (SATA,Port:0), ISATA P1:HGST HUH728080ALE600 (SATA,Port:1), **ISATA P2:HGST HUH728080ALE600 (SATA,Port:2)**, ISATA P3:HGST HUH728080ALE600 (SATA,Port:3), ISATA P4:HGST HUH728080ALE600 (SATA,Port:4), ISATA P5:HGST HUH728080ALE600 (SATA,Port:5), and Disabled.

UEFI Boot Option #4

The options are ISATA P0:HGST HUH728080ALE600 (SATA,Port:0), ISATA P1:HGST HUH728080ALE600 (SATA,Port:1), ISATA P2:HGST HUH728080ALE600 (SATA,Port:2), **ISATA P3:HGST HUH728080ALE600 (SATA,Port:3)**, ISATA P4:HGST HUH728080ALE600 (SATA,Port:4), ISATA P5:HGST HUH728080ALE600 (SATA,Port:5), and Disabled.

UEFI Boot Option #5

The options are ISATA P0:HGST HUH728080ALE600 (SATA,Port:0), ISATA P1:HGST HUH728080ALE600 (SATA,Port:1), ISATA P2:HGST HUH728080ALE600 (SATA,Port:2), ISATA P3:HGST HUH728080ALE600 (SATA,Port:3), **ISATA P4:HGST HUH728080ALE600 (SATA,Port:4)**, ISATA P5:HGST HUH728080ALE600 (SATA,Port:5), and Disabled.

UEFI Boot Option #6

The options are ISATA P0:HGST HUH728080ALE600 (SATA,Port:0), ISATA P1:HGST HUH728080ALE600 (SATA,Port:1), ISATA P2:HGST HUH728080ALE600 (SATA,Port:2), ISATA P3:HGST HUH728080ALE600 (SATA,Port:3), ISATA P4:HGST HUH728080ALE600 (SATA,Port:4), **ISATA P5:HGST HUH728080ALE600 (SATA,Port:5)**, and Disabled.

▶NETWORK Drive BBS Priorities

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

Boot Option #1

The options are **IBA 40-10G Slot 6000 v1066** and Disabled.

6.8 Save & Exit

Select the Exit tab from the BIOS setup utility screen to enter the Exit BIOS Setup screen.

```
            Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
      Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

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

   Default Options
   Restore Optimized Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   ISATA  P0: HGST HUH728080ALE600
   ISATA  P1: HGST HUH728080ALE600
   ISATA  P2: HGST HUH728080ALE600
   ISATA  P3: HGST HUH728080ALE600
   ISATA  P4: HGST HUH728080ALE600
   ISATA  P5: HGST HUH728080ALE600              ➔←: Select Screen
   IBA 40-10G Slot 6000 v1066                   ↑↓: Select Item
   UEFI: Built-in EFI Shell                     Enter: Select
                                                +/-: Change Opt.
                                                F1: General Help
                                                F2: Previous Values
                                                F3: Optimized Defaults
                                                F4: Save & Exit
                                                ESC: Exit

            Version 2.19.1268. Copyright (C) 2018 American Megatrends, Inc.
```

Save Options

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 Save & Exit menu and press <Enter>.

Save Changes and Reset

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

Save Changes

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

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 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 Save & 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 Save & Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

Listed in 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.

- ISATA P0: HGST HUH728080ALE600

- ISATA P1: HGST HUH728080ALE600

- ISATA P2: HGST HUH728080ALE600

- ISATA P3: HGST HUH728080ALE600

- ISATA P4: HGST HUH728080ALE600

- ISATA P5: HGST HUH728080ALE600

- IBA 40-10G Slot 6000 v1066

- UEFI: Built-in EFI Shell

Appendix A

Standardized Warning Statements for AC Systems

A.1 About Standardized Warning Statements

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

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

These warnings may also be found on our 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.

اَ كَ ف حالة وُيِ أى تتسبب ف اصابة جسد ةٌ هذا الزهز عٌ خطز !تحذ زٌ .

قبل أى تعول على أي هعذات،كي على علن بالوخاطز ال اُجوة عي الذوائز الكهزبائ ةٍ

وكِي على درا ةٌ بالوواِرسات النقائ ةٍ لو عٌ وقع أي حادث

استخذم رقن الب إِى الو صُص ف هًا ةٌ كل تحذ زٌ للعشر تزجوتها

안전을 위한 주의사항

경고!

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前,请先阅读安装说明。

警告

將系統與電源連接前,請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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

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

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 250V, 20A.

Power Disconnection Warning

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

電源切断の警告

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

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

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה מפני ניתוק חשמלי

אזהרה!

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק

לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصم اننظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد
انطاقت قبم
انصل إنى امناطق انداخهيت نههيكم نتثبيج أو إزانت مكناث الجهاز

경고!

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

Waarschuwing

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

Equipment Installation

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

機器の設置

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

警告
只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告
只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

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

경고!

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

Waarschuwing

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

Restricted Area

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

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

אזהרה!

יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת

כלי אבטחה בלבד (מפתח, מנעול וכד').

تخصيص هذه الاجهذة نترك بُها ف مناطق محظورة تم .

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

أو أ وس هُت أخري نلالأمما قفم ومفتاح

경고!

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

Waarschuwing

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

Battery Handling

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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה!

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسحبذال البطارية بطريقة غير صحيحة فعليل

اسحبذال البطارية

فقط بنفس النع أو ما يعادلها مما أوصث به الشرمة المصنعة

جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

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

Waarschuwing

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

Redundant Power Supplies

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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

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

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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

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

Waarschuwing

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

Backplane Voltage

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

バックプレーンの電圧

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

修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

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

هناك خطز مه التيار الكهزبائي أوالطاقة المجددة على اللحة
عندما يكن النظام يعمل كه حذرا عند خدمة هذا الجهاس

경고!

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

Waarschuwing

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

Comply with Local and National Electrical Codes

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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

Attention

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

תיאום חוקי החשמל הארצי

אזהרה!

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقواوِه المحلية والطية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

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

Product Disposal

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

製品の廃棄

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

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

אזהרה!

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

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

경고!

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

Waarschuwing

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

Hot Swap Fan Warning

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

ファン・ホットスワップの警告

警告!回転部品に注意。運転中は回転部(羽根)に触れないでください。シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告!
警告！危险的可移动性零件。请务必与转动的风扇叶片保持距离。 当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告
危险的可移动性零件。請務必與轉動的風扇葉片保持距離。 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

Gefährlich Bewegende Teile. Von den bewegenden Lüfterblätter fern halten. Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

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

Attention

Pieces mobiles dangereuses. Se tenir a l'ecart des lames du ventilateur Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

אזהרה!

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

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

경고!

움직이는 위험한 부품. 회전하는 송풍 날개에 접근하지 마세요. 섀시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

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

Power Cable and AC Adapter

Warning! When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the 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、提供または指定および購入された接続ケーブル、電源コードとACアダプターを 該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。

電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSAマークがコードに表記)を Supermicro が指定する製品以外に使用することを禁止しています。

警告

安装此产品时,请使用本身提供的或指定的或采购的连接线,电源线和电源适配器，包含遵照当地法规和安全要求的合规的电源线尺寸和插头.使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止
使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告

安裝此產品時,請使用本身提供的或指定的或採購的連接線,電源線和電源適配器，包含遵照當地法規和安全要求的合規的電源線尺寸和插頭.使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止
使用未經UL或CSA認證的線材。 (線材上會顯示UL/CSA符號)。

Warnung

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

¡Advertencia!

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

Attention

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

כבלים חשמליים ומתאמי AC

אזהרה!

אשר נרכשו או הותאמו לצורך ההתקנה, ואשר הותאמו לדרישות AC כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים הבטיחות המקומיות, כולל מידה נכונה של הכבל והתקע . שימוש בכל כבל או מתאם מסוג אחר, עלול לגרום לתקלה או קצר חשמלי. בהתאם כאשר מופיע עליהם קוד) CSA-או ב UL ב- לחוקי השימוש במכשירי החשמל וחוקי הבטיחות, קיים איסור להשתמש בכבלים המוסמכים ב בלבד Supermicro עבור כל מוצר חשמלי אחר, אלא רק במוצר אשר הותאם ע"י (UL/CSA) של.

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

전원 케이블 및 AC 어댑터

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

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

Stroomkabel en AC-Adapter

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

Appendix B

System Specifications

Processors (Per Node)

Dual Intel® Xeon® 81xx/61xx/51xx/41xx/31xx series or 82xx/62xx/52xx/42xx/32xx series processors (support for CPUs with a TDP of 70-140W)
Note: Please refer to the motherboard specifications pages on our website for updates to supported processors.

Chipset (Per Node)

Intel Intel® C621 chipset

BIOS (Per Node)

AMI 32Mb SPI Flash ROM with UEFI

Memory (Per Node)

Up to 2TB 3DS ECC RDIMM/LRDIMM to speeds of DDR4-2933MHz in 8 DIMM slots (82xx/62xx series processors)
Up to 1TB 3DS ECC RDIMM/LRDIMM to speeds of DDR4-2666MHz, in 8 DIMM slots (81xx/61xx/51xx/41xx/31xx series processors)
Note: See the memory section in Chapter 3 for details and our website for updates to supported memory.

SATA Controller (Per Node)

On-chip (Intel® C621) controller

Drive Bays (Per Node)

3 Hot-swap 3.5" SATA3 drive bays

PCI Expansion Slots (Per Node)

1 PCIe 3.0 x16 low-profile slot

Motherboard (Per Node)

X11DPT-L 6.8 x 16.64 in /172.7 x 422.7 mm (W x D)

Chassis

SC827HQ-R1K68BP3; 2U Rackmount, 17.25 x 3.47 x 28.5 in. / 438 x 88 x 724 mm. (W x H x D)

System Cooling

Four 8-cm counter-rotating PWM fans

Power Supply

1600W 1U Redundant Power Supplies with PMBus
Total Output Power: 800W/1600W
AC Input: 100-140Vac / 10-7A / 50-60Hz
　　　　　180-240Vac / 11-8A / 50-60Hz
Rated Output Voltages: +12V: Max: 67A / Min: 0A (100-140Vac)
　　　　　　　　　　　　　　Max: 133A / Min: 0A (180-240Vac)
　　　　　　　　+5Vsb: Max: 1A / Min: 0A

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 60º C (-40º to 140º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5% to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55032 Class A, EN 61000-3-2/3-3, CISPR 32 Class A

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

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

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

Environmental: Directive 2011/65/EU and Delegated Directive (EU) 2015/863 and Directive 2012/19/EU

Perchlorate Warning

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

Appendix C

Secure Boot Settings

Secure boot is a feature of UEFI (Unified Extensible Firmware Interface) that ensures boot loaders are digitally signed and validated. The F.1, F.2, and F.3 sections provide instructions on how to enable the features of secure boot. The F.4 section states Key Management settings.

C.1 Boot mode select Feature

Press **<Del>** key continuously during system boot to enter the BIOS Setup utility. Navigate to the Boot tab. Use the arrow keys to select Boot mode select and press **<Enter>**. The options are LEGACY, UEFI, and **DUAL**. Set the item, Boot mode select, to UEFI. For the changes to take effect, press **<F4>** to save the settings and exit the BIOS Setup utility.

```
                Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

     Boot Configuration                                            ▲  Select boot mode LEGACY/UEFI

     Boot mode select                        [DUAL]
     LEGACY to EFI support                   [Disabled]

     FIXED BOOT ORDER Priorities
     Boot Option #1                          [Hard Disk]
     Boot Option #2                          [CD/DVD]
     Boot Option #3                          [USB Hard Disk]
     Boot Option #4                          [USB CD/DVD]
     Boot Option #5                  ┌──────── Boot mode select ────────┐
     Boot Option #6                  │ LEGACY                           │
     Boot Option #7                  │ UEFI                             │
     Boot Option #8                  │ DUAL                             │
     Boot Option #9                  └──────────────────────────────────┘
     Boot Option #10
     Boot Option #11                         [UEFI USB Hard Disk]
     Boot Option #12                         [UEFI USB CD/DVD]        →←: Select Screen
     Boot Option #13                         [UEFI USB Key]           ↑↓: Select Item
     Boot Option #14                         [UEFI USB Floppy]        Enter: Select
     Boot Option #15                         [UEFI USB Lan]           +/-: Change Opt.
     Boot Option #16                         [UEFI Network:UEFI...]   F1: General Help
     Boot Option #17                         [UEFI AP:UEFI: Bui...]   F2: Previous Values
                                                                      F3: Optimized Defaults
     ▶ Delete Boot Option                                          ▼  F4: Save & Exit
                                                                      ESC: Exit

                Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.
```

C.2 Secure Boot/ Secure Boot Mode/ CSM Support Features

Press **<Del>** key continuously during system boot to enter the BIOS Setup utility. Navigate to the Security tab as shown below.

```
                    Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
      Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

    Administrator Password               Not Installed          Customizable Secure Boot
    User Password                        Not Installed          settings

    Password Description

    If the Administrator's / User's password is set,
    then this only limits access to Setup and is
    asked for when entering Setup.
    Please set Administrator's password first in order
    to set User's password, if clear Administrator's
    password, the User's password will be cleared as well.

    The password length must be
    in the following range:
    Minimum length                       3
    Maximum length                       20

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

                Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.
```

Use the arrow keys to select Secure Boot and press **<Enter>** to access the menu items. The following screen will appear.

```
                    Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
                                       Security

    System Mode                          User                   Secure Boot activated when
    Secure Boot                          Not Active              Platform Key(PK) is
    Vendor Keys                          Not Active             enrolled,
                                                                 System mode is
    Secure Boot                          [Disabled]            User/Deployed,
    Secure Boot Mode                     [Custom]                and CSM function is
    CSM Support                          [Enabled]             disabled
  ▶ Key Management




                                                                →←: 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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```

Secure Boot

This feature is available when the platform key (PK) is pre-registered where the platform operates in the user mode and compatibility support module (CSM) support is disabled in the BIOS Setup utility. Select Enabled for secure boot flow control. The options are **Disabled** and Enabled.

Secure Boot Mode

This feature allows selection of the secure boot mode. The options are Standard and **Custom**. Select Standard to load manufacturer's default secure variables. Selecting Custom allows users to change the image execution policy and to manage secure boot keys.

CSM Support

Select Enabled to support the legacy CSM, which provides compatibility support for traditional legacy BIOS for system boot. The options are Disabled and **Enabled**.

C.3 Secure Boot Settings

Follow the steps below to enable Secure Boot.

Step 1. Set Secure Boot Mode to Standard. Press Yes to install factory default keys as needed.
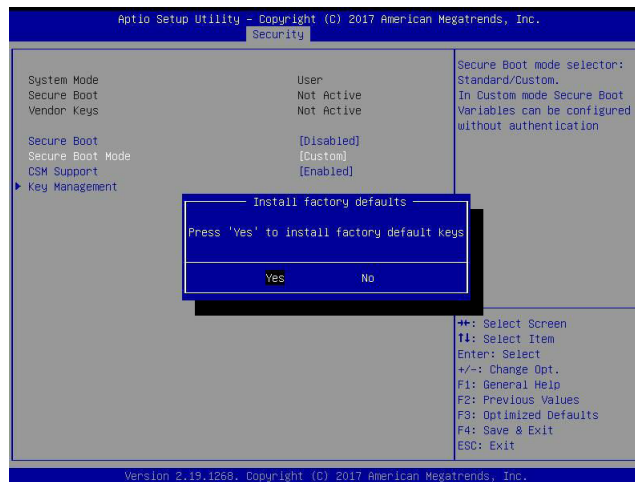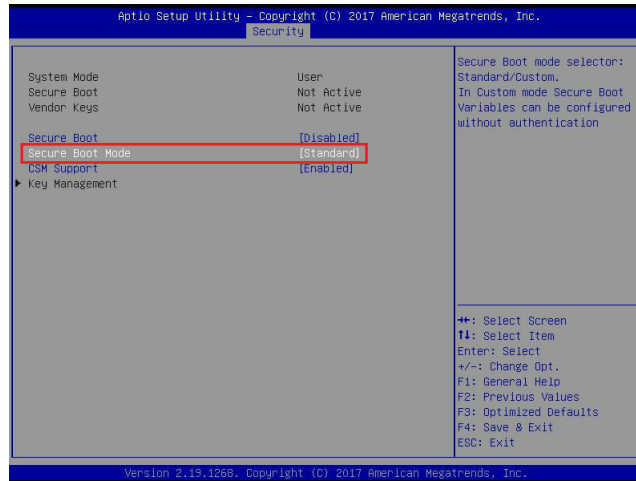
Note: The Key Management menu will become unavailable when Secure Boot Mode is set to Standard.

Step 2. For the changes to take effect, press **<F4>** to save the settings and exit the BIOS Setup utility.

```
         Aptio Setup Utility — Copyright (C) 2017 American Megatrends, Inc.
                              Security
┌─────────────────────────────────────────────────┬───────────────────────────┐
│                                                  │ Secure Boot mode selector:│
│  System Mode                    User             │ Standard/Custom.          │
│  Secure Boot                    Not Active       │ In Custom mode Secure Boot│
│  Vendor Keys                    Not Active       │ Variables can be configured│
│                                                  │ without authentication    │
│  Secure Boot                    [Disabled]       │                           │
│  Secure Boot Mode               [Standard]       │                           │
│  CSM Support                    [Enabled]        │                           │
│ ▶ Key Management                                 │                           │
│                 ┌───── Save & Exit Setup ─────┐  │                           │
│                 │                             │  │                           │
│                 │ Save configuration and exit?│  │                           │
│                 │                             │  │                           │
│                 │      Yes        No          │  │→←: Select Screen          │
│                 └─────────────────────────────┘  │↑↓: Select Item            │
│                                                  │Enter: Select              │
│                                                  │+/−: Change Opt.           │
│                                                  │F1: General Help           │
│                                                  │F2: Previous Values        │
│                                                  │F3: Optimized Defaults     │
│                                                  │F4: Save & Exit            │
│                                                  │ESC: Exit                  │
└─────────────────────────────────────────────────┴───────────────────────────┘
         Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.
```

Step 3. Press **<Del>** key continuously during system boot to enter the BIOS Setup utility. Navigate to the Security tab and enter the Secure Boot menu. Set Secure Boot to Enabled.

```
         Aptio Setup Utility — Copyright (C) 2017 American Megatrends, Inc.
                              Security
┌─────────────────────────────────────────────────┬───────────────────────────┐
│                                                  │ Secure Boot can be enabled│
│  System Mode                    User             │ if 1.System running in User│
│  Secure Boot                    Not Active       │ mode with enrolled Platform│
│  Vendor Keys                    Active           │ Key(PK) 2.CSM function is  │
│                                                  │ disabled                  │
│  Secure Boot                    [Disabled]       │                           │
│  Secure Boot Mode               [Standard]       │                           │
│  CSM Support                    [Enabled]        │                           │
│ ▶ Key Management                                 │                           │
│                                                  │                           │
│                                                  │                           │
│                                                  │                           │
│                                                  │                           │
│                                                  │→←: Select Screen          │
│                                                  │↑↓: Select Item            │
│                                                  │Enter: Select              │
│                                                  │+/−: Change Opt.           │
│                                                  │F1: General Help           │
│                                                  │F2: Previous Values        │
│                                                  │F3: Optimized Defaults     │
│                                                  │F4: Save & Exit            │
│                                                  │ESC: Exit                  │
└─────────────────────────────────────────────────┴───────────────────────────┘
         Version 2.17.1249. Copyright (C) 2017 American Megatrends, Inc.
```

Step 4. For the changes to take effect, press **<F4>** to save the settings and exit the BIOS Setup utility. Then, Press <Del> key continuously during system boot to enter the BIOS Setup utility. Navigate to the Security tab and enter the Secure Boot menu. The following screen will appear. CSM Support has been set to Disabled, and both Secure Boot and Vendor Keys are Active.
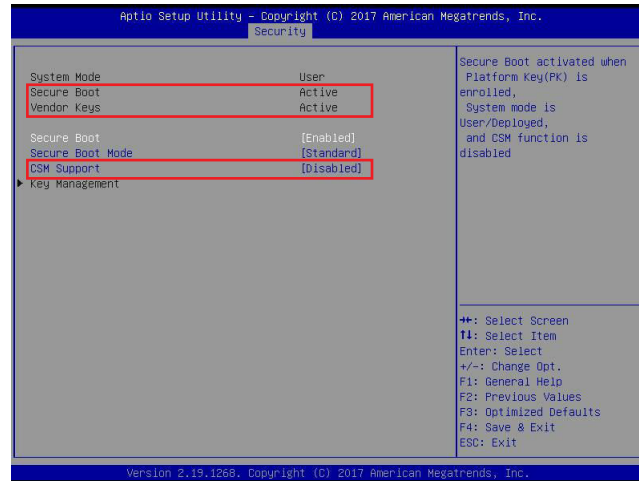
Note 1: Once Secure Boot is enabled, CSM Support will become disabled and the legacy environment is no longer valid. The authorized UEFI support such as UEFI OS, AOC UEFI FW, and UEFI PXE server are allowed.

Note 2: If CSM Support has not been set to Disabled after the completion of Step 4, please be sure to set it to Disabled.

C.4 Key Management Settings

The Key Management menu as shown below, which is available when Secure Boot Mode is set to Custom, allows the secure boot keys to be installed via the external media and be involved in the secure boot process.

```
               Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
                               Security

 Provision Factory Defaults                 [Disabled]          Allow to provision factory
                                                               default Secure Boot keys
 ▶ Reset to Setup Mode                                          when System is in Setup Mode
 ▶ Enroll Efi Image
 ▶ Save all Secure Boot variables

   Secure Boot variable |  Size| Keys#| Key Source
 ▶ Platform Key(PK)     |  1466|     1| Default
 ▶ Key Exchange Keys    |  1560|     1| Default
 ▶ Authorized Signatures|  4269|     3| Default
 ▶ Forbidden  Signatures|  3724|    77| Default
 ▶ Authorized TimeStamps|  1565|     1| Default
 ▶ OsRecovery Signatures|  1466|     1| Default

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

               Version 2.19.1268. Copyright (C) 2017 American Megatrends, Inc.
```
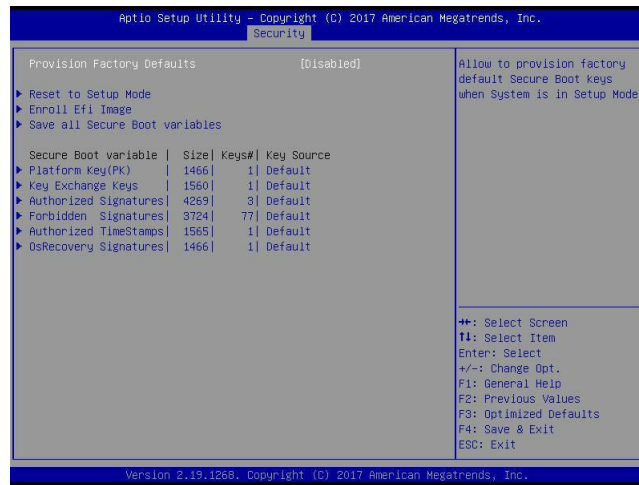
Provision Factory Defaults

This feature allows provisioning the default secure boot keys set by the manufacturer when system is in the setup mode. The options are **Disabled** and Enabled.

▶**Reset to Setup Mode**

Select Yes to clear all secure boot variables and reset the system to the setup mode. The options are **Yes** and No.

▶**Enroll Efi Image**

This feature allows the image to run in the secure boot mode and the enroll of SHA256 hash of the binary into the Authorized Signature Database (DB).

▶**Save all Secure Boot variables**

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

*Refer to the following settings for keys and signatures related to secure boot.

▶Platform Key (PK)

The Platform Key (PK), which is pre-installed in firmware during manufacturing, provides full control of the secure boot key hierarchy. The options are **Save to File**, Set New, and Erase. Select Save to File to save the current PKs to a FAT formatted USB flash drive.
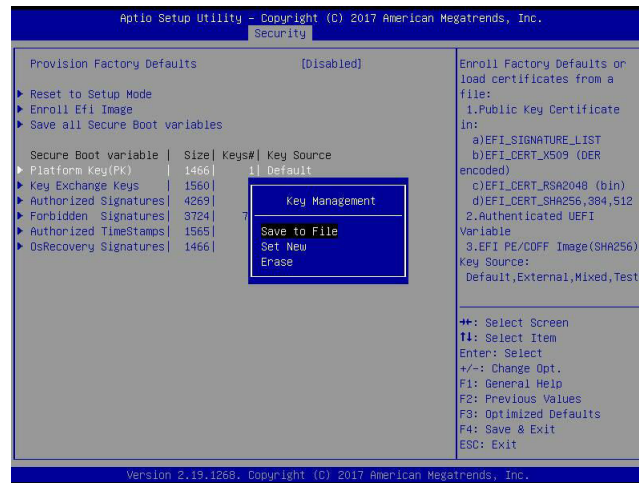
Set New: Use the arrow keys to select Set New.
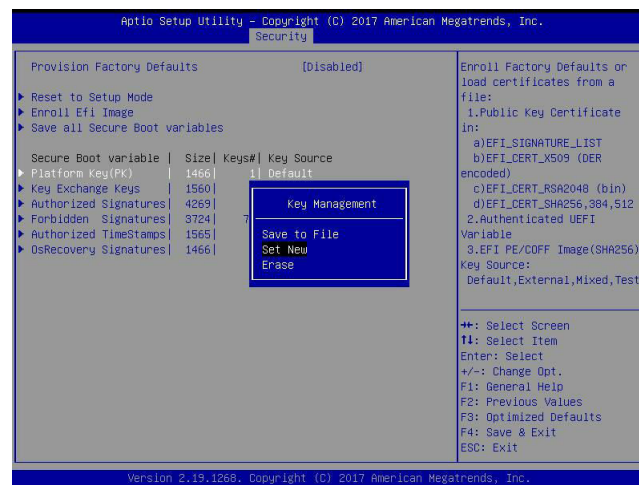
Note: Refer to the right panel of the screen for the file formats accepted.

Press <Enter> and the following screen will appear.
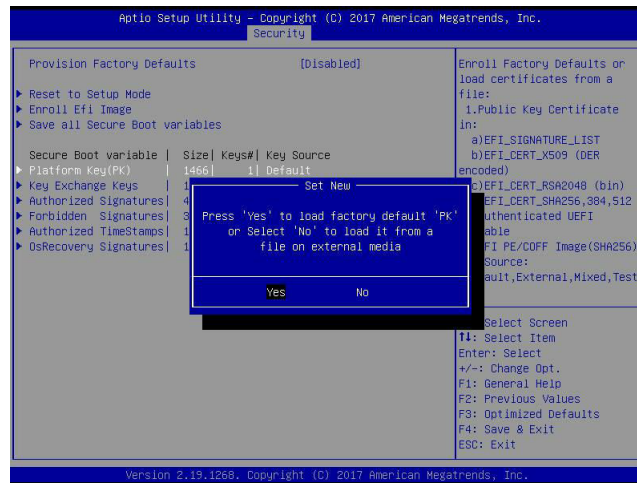
To load the manufacturer's defaults, navigate to Yes and press **<Enter>**. The following screen will appear.
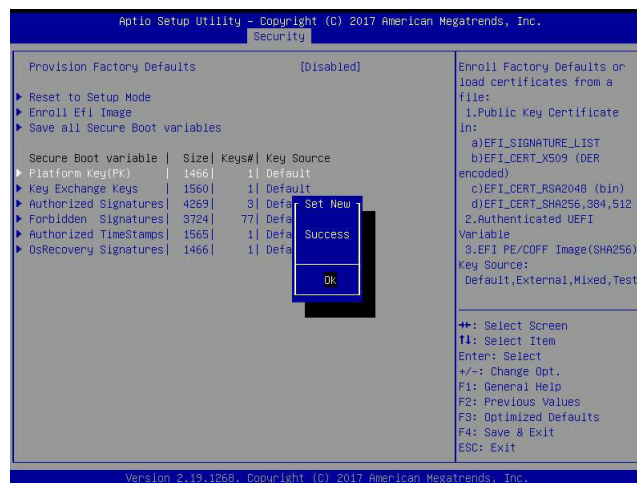
To load it from the external media, navigate to No and press **<Enter>**.

When the following screen appears, select the USB flash drive that contains the desired file.

Erase: Use the arrow keys to select Erase and press **<Enter>** to clear the current PKs and the system will enter the secure boot setup mode.

▶**Key Exchange Key**

The Key Exchange Key (KEK), which is held by the operating system vendor, can be updated by the holder of the PK and be used by secure boot to protect access to signatures databases. The options are **Save to File**, Set New, Append, and Erase. Select Save to File to save the current KEKs to a FAT formatted USB flash drive. Select Set New to load the manufacturer's defaults or load it from the external media. Select Erase to clear the current KEKs.
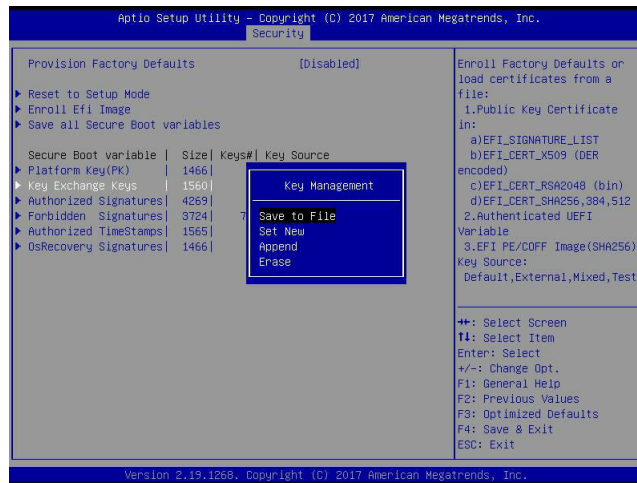
Append: Use the arrow keys to select Append.

Press **<Enter>** and the following screen will appear.

To load the manufacturer's defaults, navigate to Yes and press **<Enter>**. The following screen will appear.

To load it from the external media, navigate to No and press **<Enter>**.

```
                    Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
                                    Security
    Provision Factory Defaults                [Disabled]           Enroll Factory Defaults or
                                                                   load certificates from a
 ▶ Reset to Setup Mode                                             file:
 ▶ Enroll Efi Image                                                 1.Public Key Certificate
 ▶ Save all Secure Boot variables                                  in:
                                                                    a)EFI_SIGNATURE_LIST
    Secure Boot variable |   Size| Keys#| Key Source               b)EFI_CERT_X509 (DER
 ▶ Platform Key(PK)      |   1466|     1| Default                  encoded)
 ▶ Key Exchange Keys     |                  ┌───── Append ─────┐   c)EFI_CERT_RSA2048 (bin)
 ▶ Authorized Signatures|                   │                  │    EFI_CERT_SHA256,384,512
 ▶ Forbidden  Signatures|    Press 'Yes' to load factory default 'KEK'  uthenticated UEFI
 ▶ Authorized TimeStamps|      or Select 'No' to load it from a    able
 ▶ OsRecovery Signatures|          file on external media          FI PE/COFF Image(SHA256)
                                   │                  │           Source:
                                   │                  │          ault,External,Mixed,Test
                                   │   Yes       No   │
                                   └──────────────────┘           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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```

When the following screen appears, select the USB flash drive that contains the desired file.

```
                        Select File from a File system
 Acpi(a0341d0, 0)\PCI(1F|2)\DevicePath(Type 3, SubType 18)HD(Part2, Sig ?)\
 Acpi(a0341d0, 0)\PCI(1D|0)\USB(0,0)\USB(3,0)\HD(Part1, Sig ?)\
```

▶**Authorized Signatures**

Authorized Signature Database (DB) contains authorized signing certificates and digital signatures. The options are **Save to File**, Set New, Append, and Erase. Select Save to File to save the c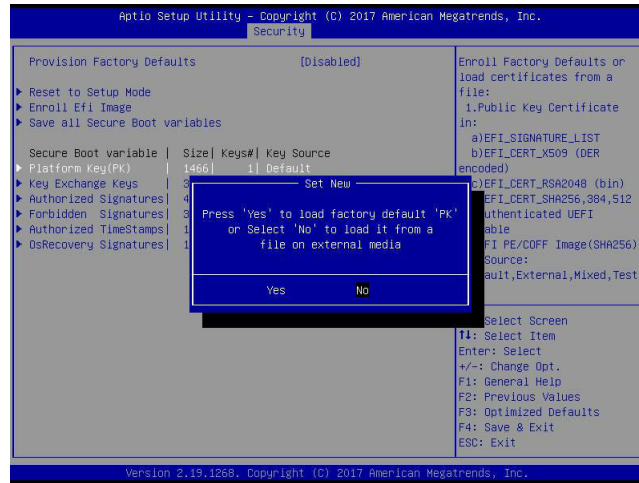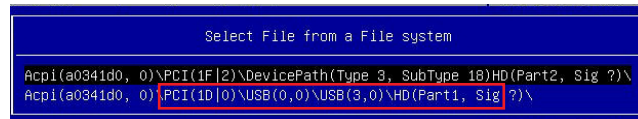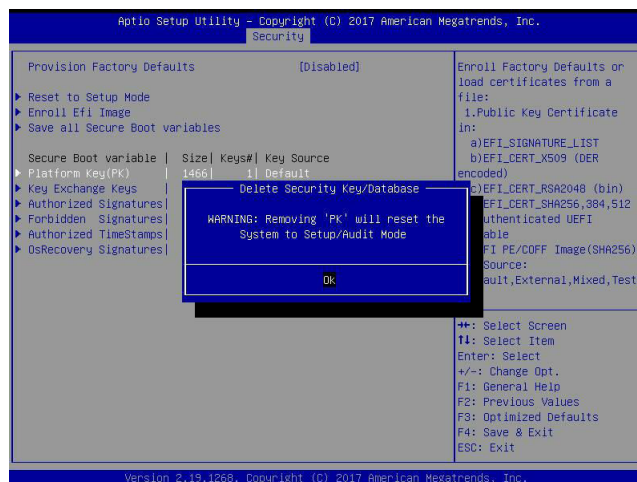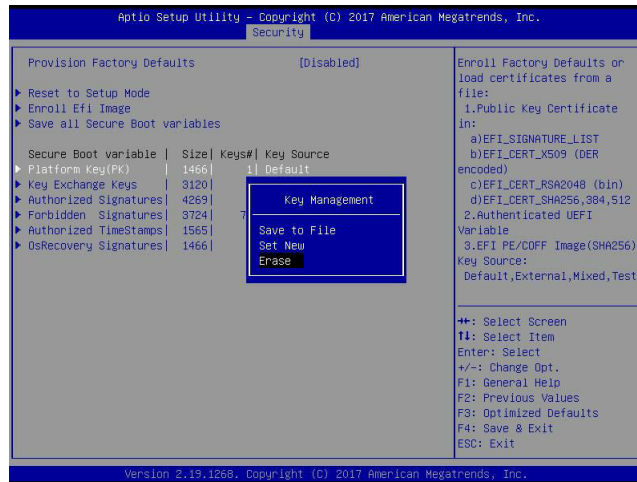urrent DB to a FAT formatted USB flash drive. Select Set New to load the manufacturer's def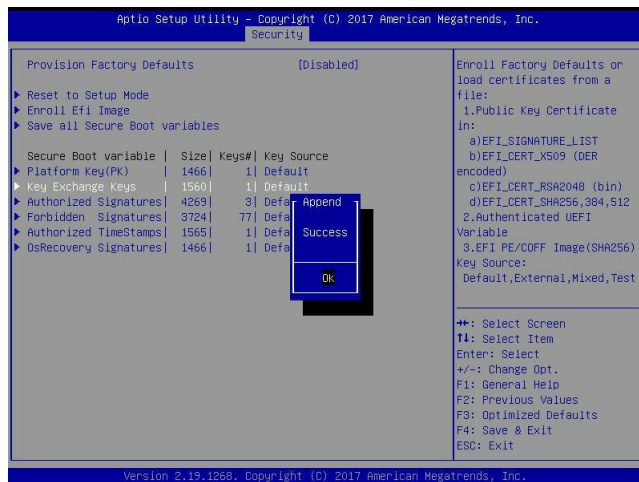aults or load it from the external media. Select Append to add variables to the existing DB. Select Erase to clear the current DB.
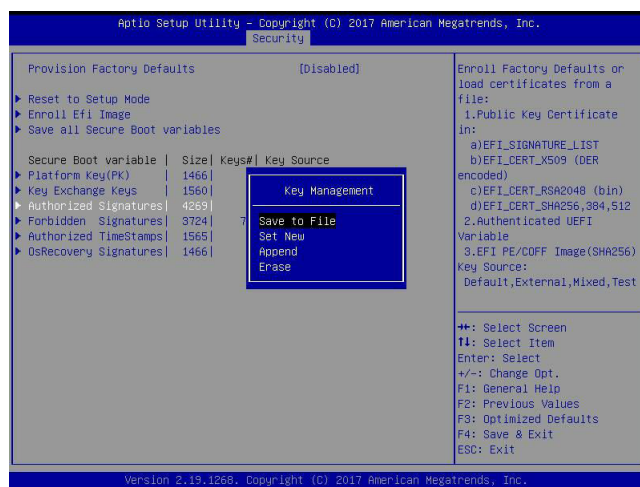
▶**Forbidden Signatures**

Forbidden Signature Database (DBX), which is the inverse of DB, contains forbidden certificates and digital signatures. The options are **Save to File**, Set New, Append, and Erase. Select Save to File to save the current DBX to a FAT formatted USB flash drive. Select Set New to load the manufacturer's defaults or load it from the external media. Select Append to add variables to the existing DBX. Select Erase to clear the current DBX.
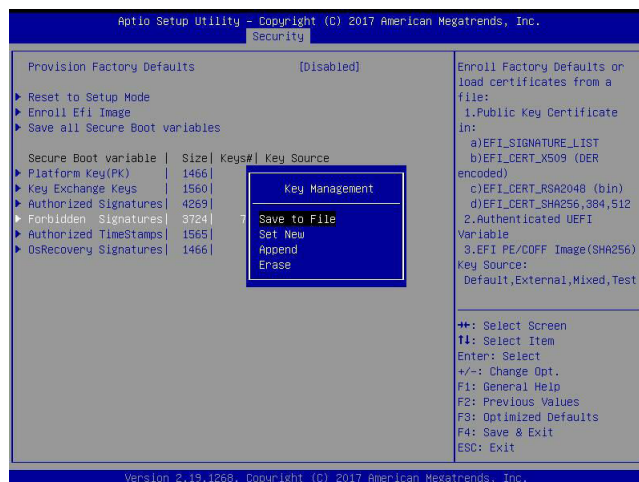
▶**Authorized TimeStamps**

Authorized Timestamp Database (DBT) is used to issue and check signed time stamp certificates. The options are **Save to File**, Set New, Append, and Erase. Select Save to File to save the current DBT to a FAT formatted USB flash drive. Select Set New to load the manufacturer's defaults or load it from the external media. Select Append to add variables to the existing DBT. Select Erase to clear the current DBT.
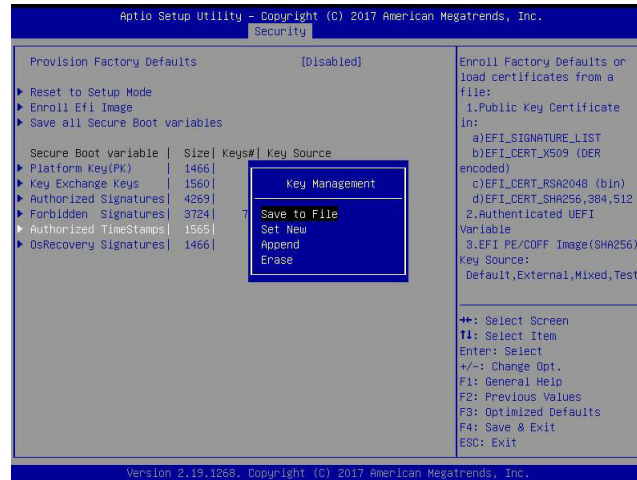
▶**OsRecovery Signatures**

OsRecovery Signatures Database (DBR) contains secure boot authorized recovery variables. The options are **Save to File**, Set New, Append, and Erase. Select Save to File to save the current DBR to a FAT formatted USB flash drive. Select Set New to load the manufacturer's defaults or load it from the external media. Select Append to add variables to the existing DBR. Select Erase to clear the current DBR.
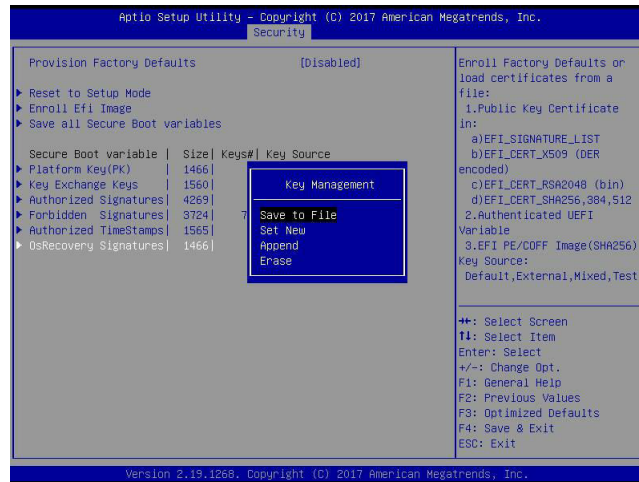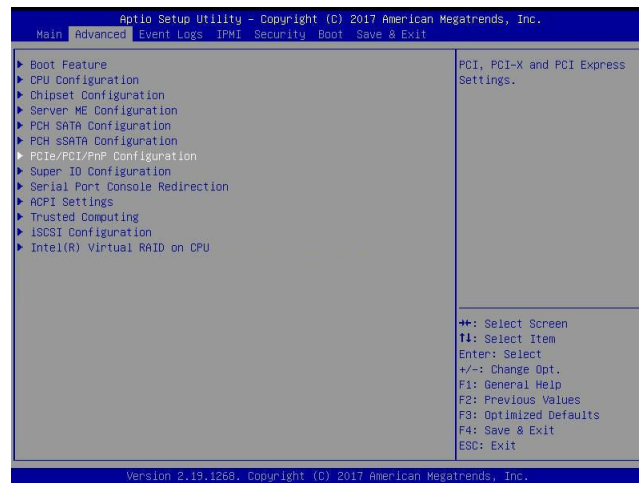
```
              Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
                                    Security

   Provision Factory Defaults            [Disabled]          Enroll Factory Defaults or
                                                             load certificates from a
 ▶ Reset to Setup Mode                                       file:
 ▶ Enroll Efi Image                                           1.Public Key Certificate
 ▶ Save all Secure Boot variables                           in:
                                                               a)EFI_SIGNATURE_LIST
   Secure Boot variable |  Size| Keys#| Key Source             b)EFI_CERT_X509 (DER
 ▶ Platform Key(PK)     |  1466|                             encoded)
 ▶ Key Exchange Keys    |  1560|      Key Management            c)EFI_CERT_RSA2048 (bin)
 ▶ Authorized Signatures|  4269|                               d)EFI_CERT_SHA256,384,512
 ▶ Forbidden  Signatures|  3724|  7  Save to File            2.Authenticated UEFI
 ▶ Authorized TimeStamps|  1565|     Set New                 Variable
 ▶ OsRecovery Signatures|  1466|     Append                   3.EFI PE/COFF Image(SHA256)
                                     Erase                   Key Source:
                                                             Default,External,Mixed,Test


                                                            →←: 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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```

Appendix D

Configuring Network Interface Card (NIC) Settings

The appendix describes settings of onboard Intel® LAN devices via the BIOS Setup utility supported by the Unified Extensible Firmware Interface (UEFI) driver.
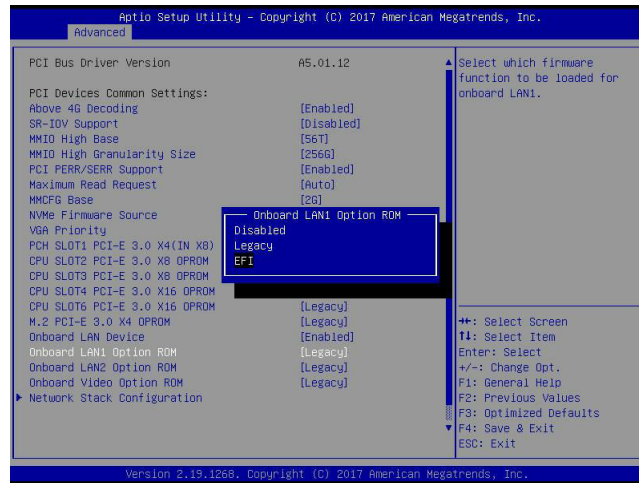
D.1 Network Interface Card (NIC) Settings

Press **<Del>** key continuously during system boot to enter the BIOS Setup utility. Navigate to the Advanced tab. Use the arrow keys to select PCIe/PCI/PnP Configuration and press **<Enter>** to access the menu items.

```
              Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

      ▶ Boot Feature                                 PCI, PCI-X and PCI Express
      ▶ CPU Configuration                            Settings.
      ▶ Chipset Configuration
      ▶ Server ME Configuration
      ▶ PCH SATA Configuration
      ▶ PCH sSATA Configuration
      ▶ PCIe/PCI/PnP Configuration
      ▶ Super IO Configuration
      ▶ Serial Port Console Redirection
      ▶ ACPI Settings
      ▶ Trusted Computing
      ▶ iSCSI Configuration
      ▶ Intel(R) Virtual RAID on CPU

                                                    →←: 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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```

Onboard LAN1 Option ROM (available when NIC(s) is(are) detected by the system)

Use the arrow keys to select Onboard LAN1 Option ROM and press **<Enter>**. The options are Disabled, **Legacy**, and EFI. Set this item to EFI.


> **Note :** If Onboard LAN1 Option ROM is set to EFI, all items for onboard LAN option ROM will be set to EFI by the EFI driver. Additionally, these items will become unavailable except Onboard LAN1 Option ROM.

For the changes to take effect, press **<F4>** to save the settings and exit the BIOS Setup utility. Then, press **<Del>** key continuously during system boot to enter the BIOS Setup utility. Navigate to the Advanced tab. The item(s) for onboard Intel® LAN device(s) will become available for configuration as shown below.
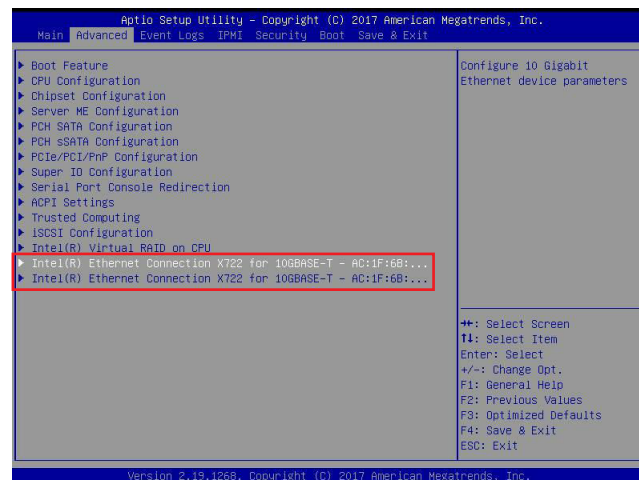
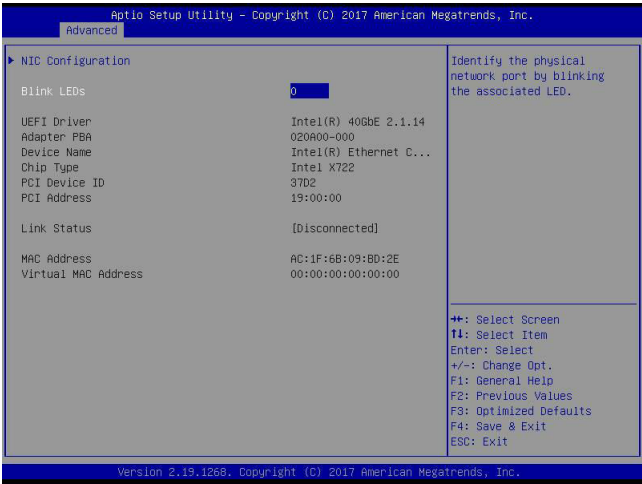Use the arrow keys to select the desired onboard LAN device as shown below.
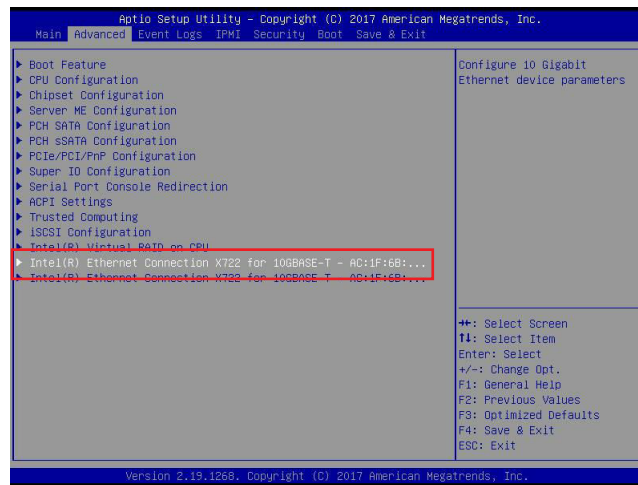
Press **<Enter>** and the following screen will appear. It displays the detailed information for the selected onboard LAN device.
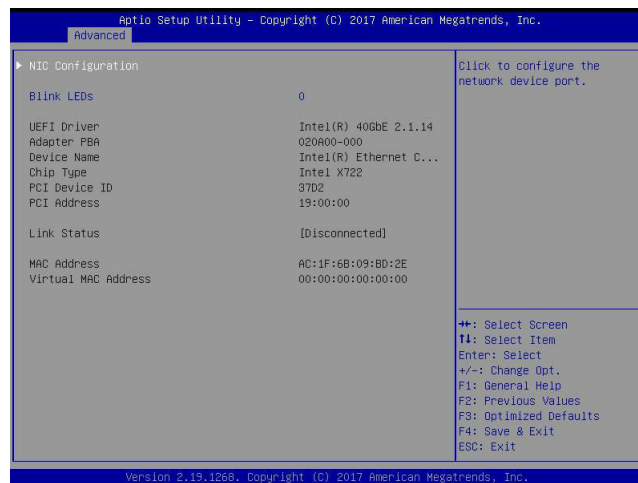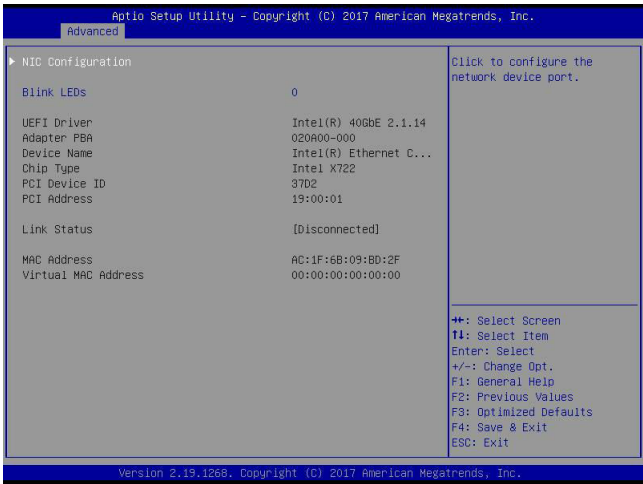
Blink LEDs

This item allows the user to set the LED blink duration (in seconds). The valid range is 0~15 (seconds).

NIC Configuration

Use the arrow keys to select NIC Configuration.

Press **<Enter>** and the following screen will appear.

Wake on LAN

Use the arrow keys to select Wake On LAN and press **<Enter>**. The following screen will appear. The options are Disabled and **Enabled**. Set this item to support system wake-up via the selected LAN device.