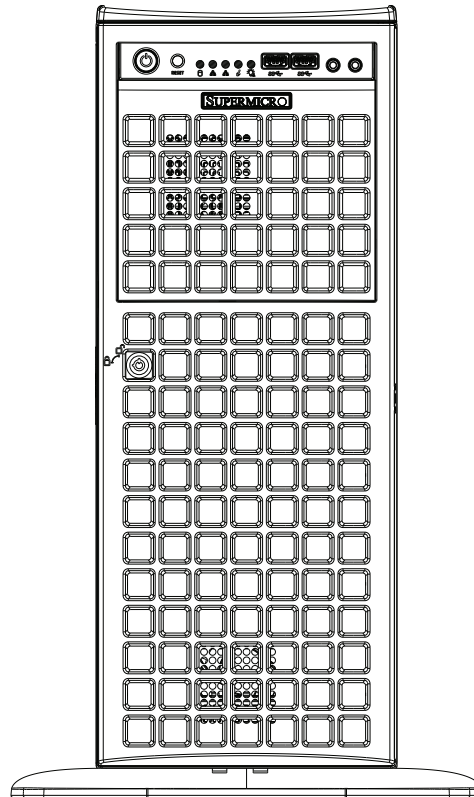




SuperWorkstation 5049A-TR



USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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Preface

About this Manual

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

Please refer to the server specifications page on our website for updates on supported memory, processors and operating systems (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/>
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- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm

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

Warnings

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



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



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

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Appendix B Standardized Warning Statements for AC Systems

Appendix C System Specifications

Appendix D UEFI BIOS Recovery

Appendix E BSMI RoHS

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Chapter 1

Introduction

1.1 Overview

This chapter provides a brief outline of the functions and features of the 5049A-TR SuperWorkstation. The 5049A-TR is designed for applications such as data science, video rendering, and machine learning. The 5049A-TR is based on the X11SPA-T motherboard and the SC747BTS-R2K20BP chassis and can operate as a workstation or as a rackmounted system.

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
Backplane	BPN-SAS-747TQ	1
Power Supply	PWS-2K20A-1R	2
Power Distribution Board	PDB-PT747-6824	1
Rear Fan	FAN-0082L4	2
Upper Middle Fan	FAN-0114L4	2
Lower Middle Fan	FAN-0138L4	2
Active CPU Heatsink (optional)	SNK-P0071APS4	-
Rail Set and Handles (optional)	MCP-290-00059-0B	-
Black Hot-swap 3.5" and 2.5" HDD Trays (optional)	MCP-220-00080-0B	-
Black Hot-swap 3.5" and 2.5" Toolless HDD Trays (optional)	MCP-220-93801-0B	-
SC747 Front Door Bezel Cover (for rackmount configurations)	MCP-210-74703-0B	-

Optional Fan Kits for Various GPU Card Population		
Description	Part Number	Quantity
Fully-Populated with Full-Height Double-Width Passive GPU Cards	MCP-320-74703-0N-KIT	1
Partially-Populated with Full-Height Double-Width Passive GPU Cards	MCP-310-74706-0B	1
	MCP-240-00096-0N	-
Fully-Populated with Full-Height Double-Width Active GPU Cards (30° C operating temperature)	MCP-310-74706-0B	1
Partially-Populated with Full-Height Double-Width Active GPU Cards	MCP-310-74706-0B	1
	MCP-240-00096-0N	-
Fully-Populated with Low-Profile Single-Width Passive GPU Cards	MCP-320-74704-0N-KIT	1
Partially-Populated with Low-Profile Single-Width Passive GPU Cards	MCP-310-74705-0B	1
	MCP-240-00169-0N	-
	FAN-0148L4	2
	MCP-320-00040-0N	2

1.2 Unpacking the System

Inspect the box the SuperWorkstation 5049A-TR 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.

1.3 System Features

The following table provides you with an overview of the main features of the 5049A-TR. Please refer to Appendix C for additional specifications.

System Features
Motherboard
X11SPA-T
Chassis
SC747BTS-R2K20BP
CPU
Supports single 2 nd Gen/1 st Gen Intel Xeon® Scalable-SP series and Intel Xeon® W-32XX series processors, up to 28 cores and 205W TDP
Socket Type
LGA3647
Memory
Supports up to 12x 1.2V DDR4 ECC RDIMM/3DS LRDIMM/3DS LRDIMM, up to 2933MHz. Supports a maximum capacity of up to 3TB via 3DS RDIMM/3DS LRDIMM
Chipset
Intel PCH C621
Expansion Slots
Three 5.25" external peripheral bays One 3.5" external peripheral bays Four PCI-E 3.0 x16 slots (CPU SLOT1, 3, 5, 7) and three PCI-E 3.0 x8 slots (INx16) (CPU SLOT2, 4, 6) (supports seven single-width or four double-width GPU cards)
Storage Drives
Eight hot-swap external 3.5" SATA/SAS drives via the backplane, supports RAID 0, 1, 5, 10 Four M.2 sockets with heatsink (M-key PCI-E 3.0 x4 in the 2260/2280/22110 form factor. Supports RAID 0 on four sockets. Supports VROC on one socket.)
Power
1+1 2200W redundant power supply, 80+ Titanium level via a power distribution board
Cooling
Two 9-cm 7.5K RPM hot-swap lower-middle fans Two 9-cm PWM hot-swap upper-middle fans Two 8-cm PWM hot-swap rear fans Two 8-cm 8.2K RPM hot-swap rear fans (optional)

Note: The System Features table continues on the following page.

System Features

Input/Output

Front: Two USB3.2 Gen1x1 (5G), one power button, one system reset button, one audio port, two network activity LEDs, HDD LED, power status LED, system information LED

Rear: Two USB3.2 Gen2x1 (10G) (one Type C and one Type A), four USB3.2 Gen1x1 (5G), three RJ45 LAN ports (GbE via Intel i210AT + AST2500 and 10GbE via AQC107), one VGA port via the BMC, one COM port, one HD audio 7.1 channel connector via Realtek ALC888S

Onboard: Two USB3.2 Gen2x1 header (10G) (one Type C and one Type A), two USB3.2 Gen1 (5G) header, two USB2.0 header, one TPM header

Form Factor

4U Tower or Rackmount with optional rackmount kit; (W x H x D) 7.0 x 18.2 x 26.5 in. / 178 x 462 x 673 mm without package

1.4 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.

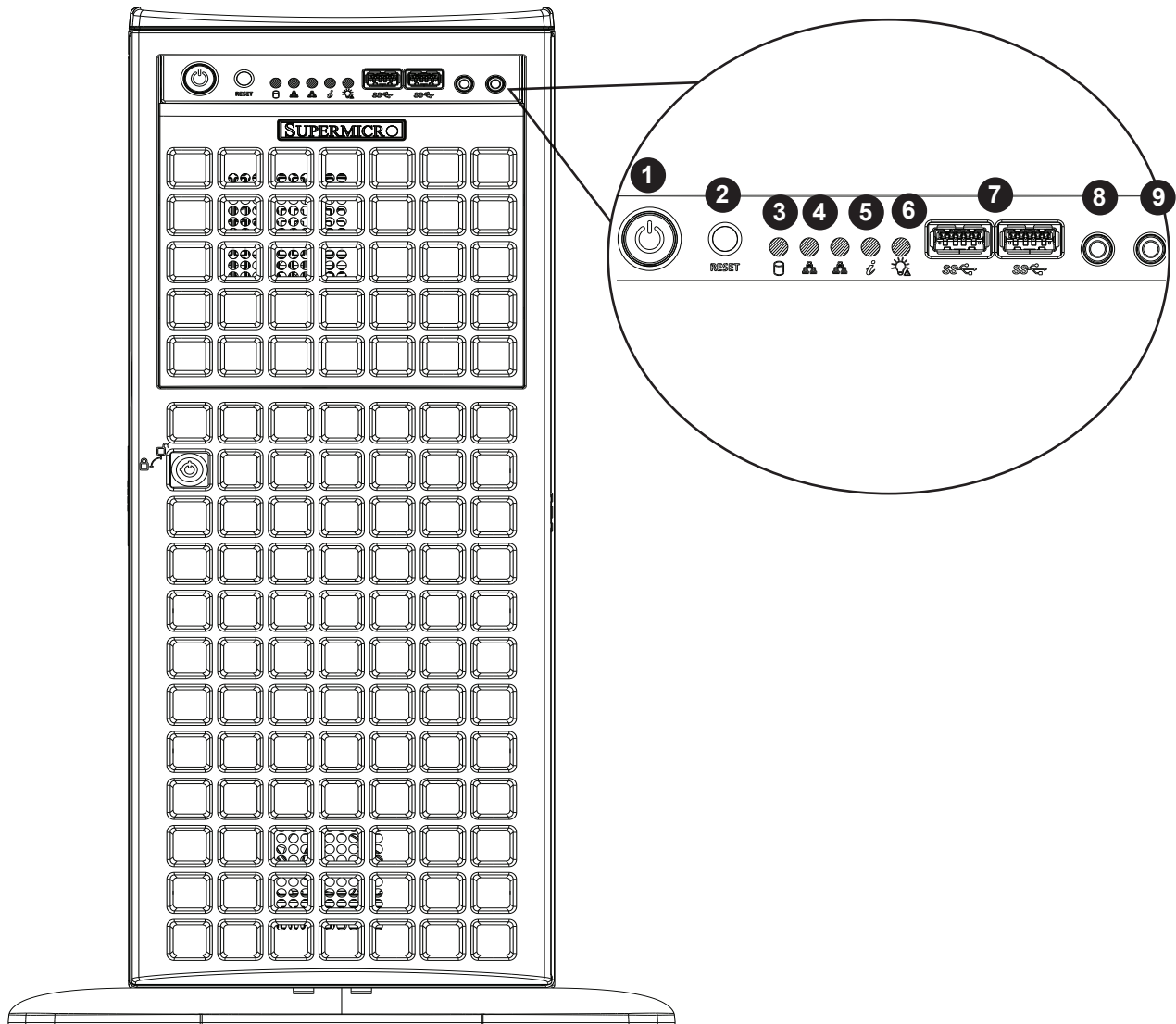


Figure 1-1. Control Panel View

Control Panel Features		
Item	Feature	Description
1	Power Button	The main power switch 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 unplug the system before servicing.
2	Reset Button	The reset button is used to reboot the system.
3	HDD LED	Indicates hard drive activity on the hard drive when flashing.
4	NIC LED	Indicates network activity on the LAN when flashing.
5	Information LED	Alerts operator of several states. See table below for details.
6	Power Fail	Indicates a power failure to the system's power supply units.
7	USB3.2 Gen1x1 (5G)	Two USB3.2 Gen1x1 (5G).
8	Line out	Line out port.
9	Mic	Mic port.

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

Front Features

The SC747BTS-R2K20BP is a 4U tower chassis that can also be rackmounted. See the illustration below for the features included on the front of the chassis.

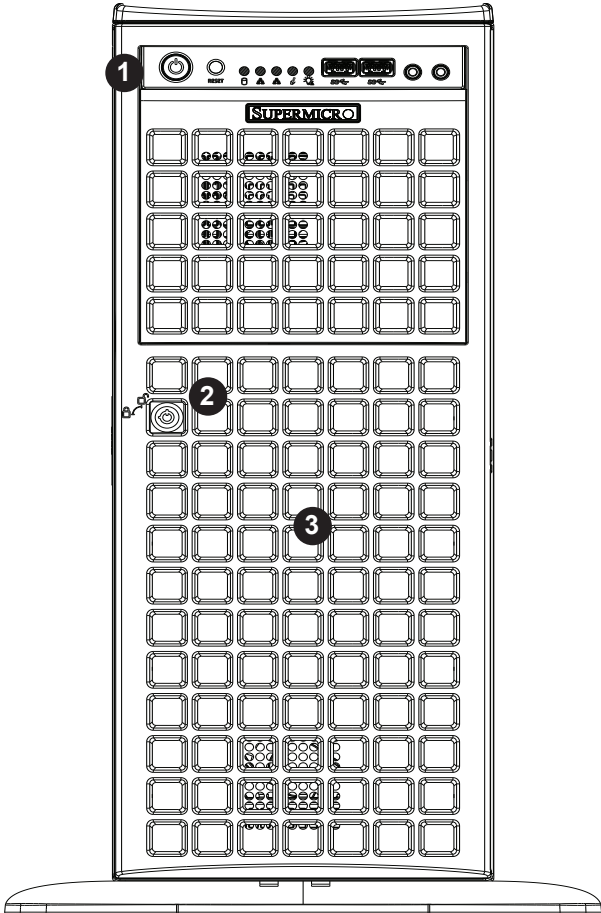


Figure 1-2. Chassis Front View

Front Chassis Features		
Item	Feature	Description
1	Control Panel	Front control panel (see preceding page).
2	Bezel Lock	Locks the bezel for secure access.
3	Hot-swap Drive Bays	Eight 3.5" drive bays.

Rear Features

The illustration below shows the features included on the rear of the chassis.

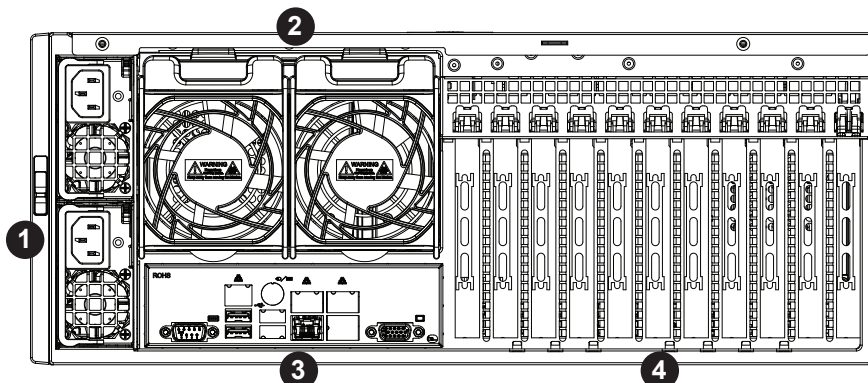
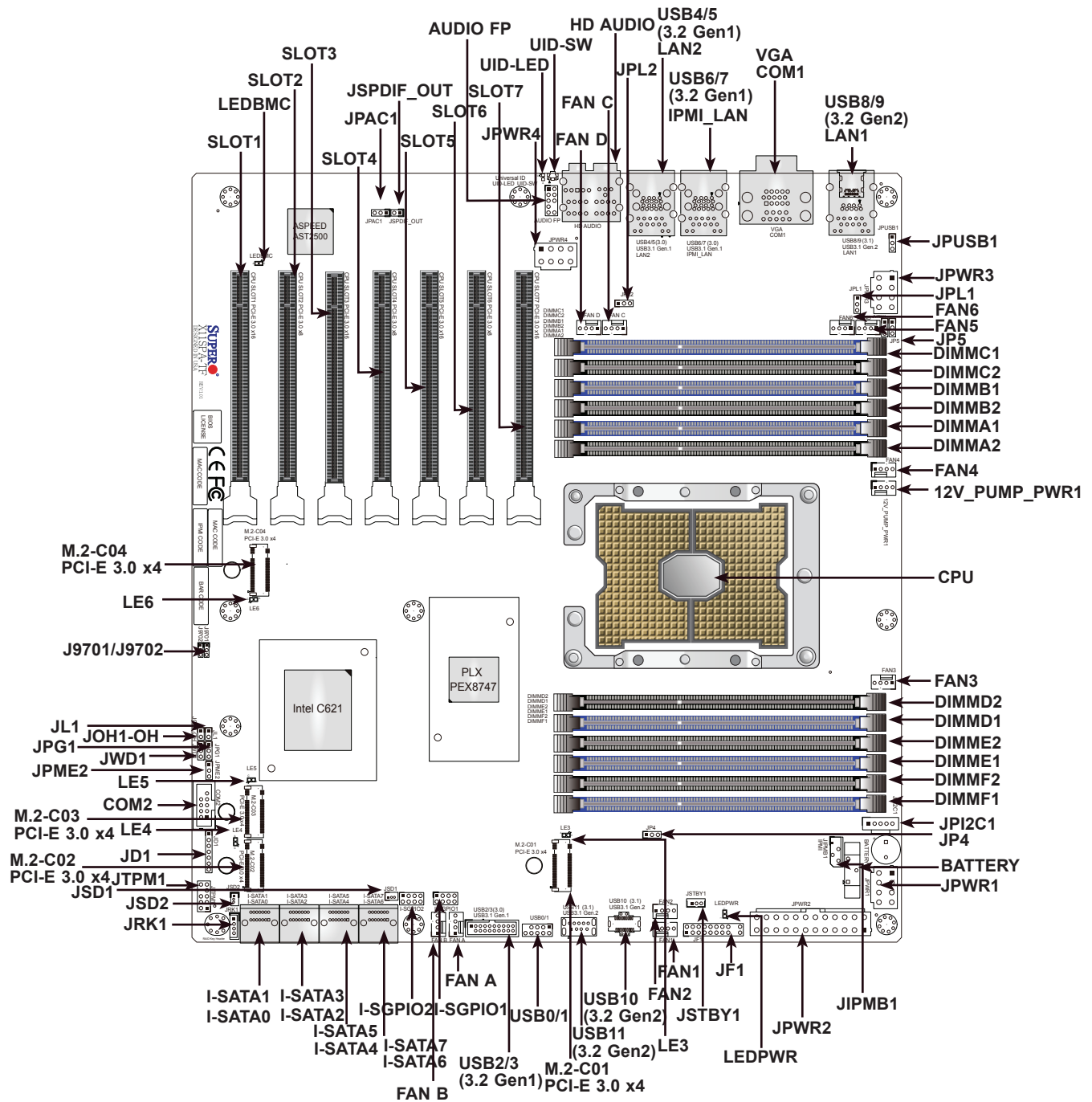


Figure 1-3. Chassis Rear View

Rear Chassis Features		
Item	Feature	Description
1	Power	1+1 2200W redundant power supply with PMBus
2	FAN	Two 8-cm PWM hot-swap rear fans
3	I/O Backpanel	Rear input/output ports (details in Chapter 4)
4	PCI-E Slots	Eleven full-height, full-length PCI-E slots

1.5 Motherboard Layout

Below is a layout of the X11SPA-T 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.



Quick Reference Table

Jumper	Description	Default Setting
J9701, J9702	Manufacturing Mode	Pins 1-2 (Normal)
JPAC1	Audio Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1, JPL2	LAN1/LAN2 Enable/Disable	Pins 1-2 (Enabled)
JPME2	Intel Manufacturing Mode	Pins 1-2 (Normal)
JWD1	Watch Dog Function Enable	Pins 1-2 (Reset)

LED	Description	Status
LE3, LE4, LE5, LE6	M.2 LED	Blinking Green: Device Working
LEDBMC	BMC Heartbeat LED	Blinking Green: BMC Normal
LEDPWR	Onboard Power LED	Solid Green: Power On
UID-LED	Unit Identifier (UID) LED	Blue On: Unit Identified

Connector	Description
12V_PUMP_PWR1	12V 4-pin power connector for CPU liquid cooling pump
AUDIO FP	Front Panel Audio Header
BATTERY	Onboard Battery
COM1, COM2	COM1: COM Port (back panel), COM2: COM Header
CPU SLOT1/3/5/7 PCI-E 3.0 x16	PCI-Express x16 Slots Note: PCI-E SLOT1 will change to PCI-Express x8 link when either M.2-C03 or M.2-C04 is populated with an SSD. PCI-E SLOT1 will be completely disabled when either M.2-C01 or M.2-C02 is populated with an SSD.
CPU SLOT2/4/6 PCI-E 3.0 x8 (in x16)	PCI-Express x16 Slots (PCI-Express x8 link)
FAN1 ~ FAN6	CPU Fan Headers
FAN A ~ FAN D	System Fan Headers Note: The initial system fan speed must not be lower than 600 RPM.
HD AUDIO	Back Panel High Definition Audio Ports
IPMI_LAN	Dedicated IPMI LAN Port Note: For IPMI support, X11SPA-T is via ME.
I-SATA0 ~ 7	Intel Serial ATA (SATA 3.0) Ports 0~7 (6Gb/sec)
I-SGPIO1, I-SGPIO2	Serial General Purpose I/O Headers
JD1	Speaker/Power LED Indicator
JF1	Front Control Panel Header
JIPMB1	4-pin External I2C Header (for an IPMI card)
JL1	Chassis Intrusion Header

Note: The Quick Reference table continues on the following page.

Connector	Description
JOH1-OH	Overheat LED Indicator
JP4, JP5	JP4: Enable/Disable USB10/11, JP5: Enable/Disable USB8/9
JPI2C1	Power Supply SMBus I2C Header
JPUSB1	Enable/Disable USB6/7 WakeUp
JPWR1/3/4	+12V 8-pin CPU Power Connectors (required)
JPWR2	24-pin ATX Main Power Connector (required)
JRK1	Intel RAID Key Header Note: A VROC hardware key is required to enable an M.2 RAID card.
JSD1, JSD2	SATA DOM (Disk-On-Module) Power Connectors
JSPDIF_OUT	Sony/Philips Digital Interface (S/PDIF) Out Header
JSTBY1	Standby Power Header (5V)
JTPM1	Trusted Platform Module (TPM) Header
LAN1, LAN2	RJ45 1GbE/10GbE LAN Ports
PCI-E M.2-C01/C02/C03/C04 PCI-E 3.0 x4	PCI-E M.2 Connectors (small form factor devices and other portable devices for high speed NVMe SSDs)
UID-SW	Unit Identifier (UID) Switch
USB0/1	Front Access USB 2.0 Header
USB2/3	Front Access USB 3.2 Gen1 Header
USB4/5, USB6/7	Back Panel USB 3.2 Gen1 Ports Note: X11SPA-T does not support S3 or S4. Note: Either USB4/5 or USB6/7 will support standby power.
USB8/9	Back Panel USB3.2 Gen2x1 Ports
USB10/11	Front Access USB3.2 Gen2x1 Headers (USB10: Type A, USB11: Type C)
VGA	VGA Port

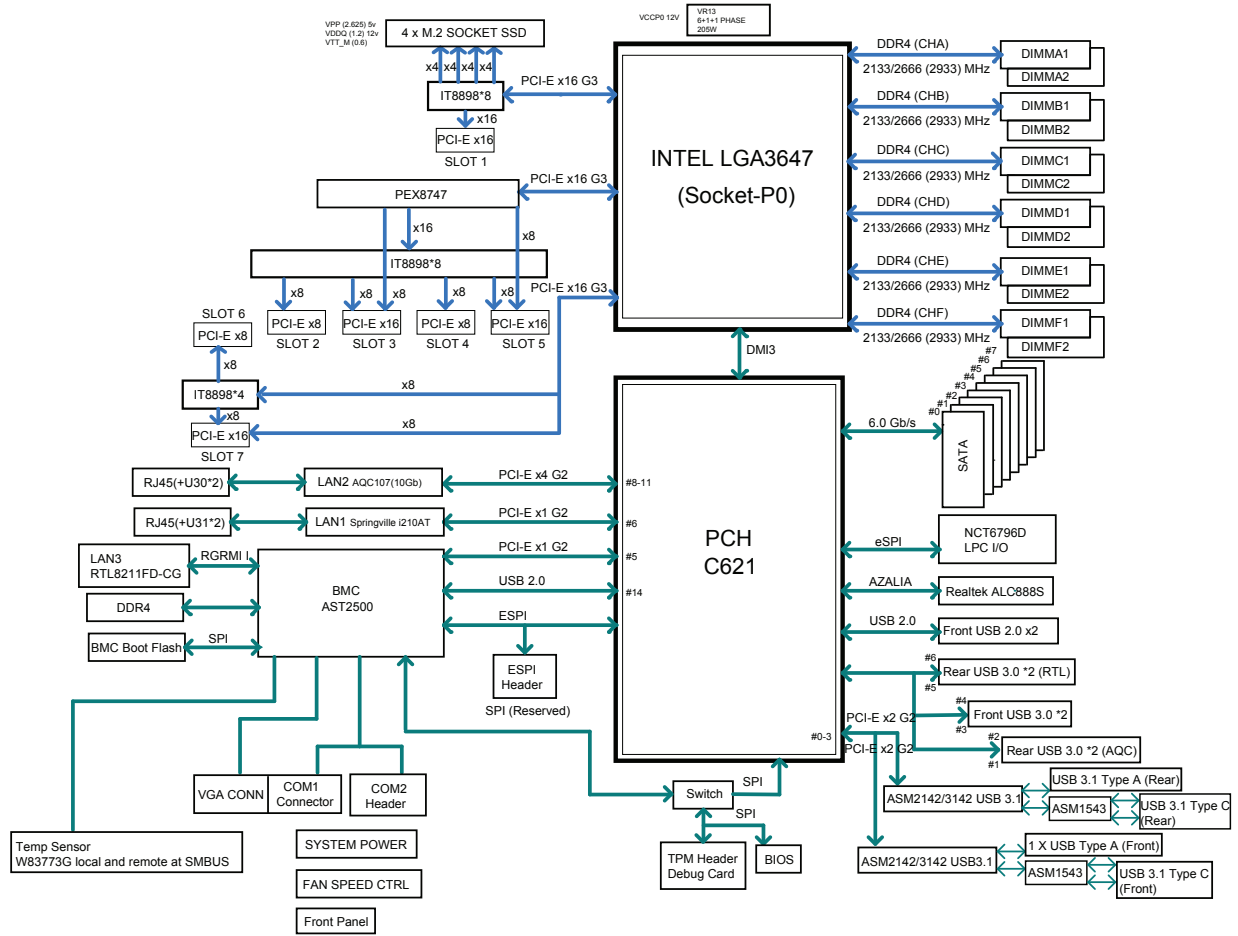


Figure 1-5. Intel PCH C621 Chipset: System Block Diagram

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

Installation

2.1 Overview

This chapter provides advice and instructions for rack or workstation installation. The system is shipped in a workstation configuration. Follow the steps in this chapter to prepare the chassis for rackmounting or for returning the chassis into a workstation configuration.

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 Rack or Workstation Setup

Please read this section in its entirety before you begin the installation. Whether you are operating the system in a rack environment or as a workstation, follow a few general precautions.

General Precautions

- Review the electrical and general safety precautions in Appendix B.
- Use a regulating uninterruptible power supply (UPS) to protect the system 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.
- To maintain proper cooling, always keep all chassis panels closed and all SATA carriers installed when not being serviced.

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.

Workstation Precaution

- Ensure that the caster wheels on the workstation are locked.

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.

Rack Mounting Considerations

Ambient Operating Temperature

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

Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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



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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.



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



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

2.3 Preparing the Chassis for Rack Mounting

The chassis top tower cover and feet must be removed before rack installation.

Removing the Top Tower Cover

1. Locate the blue cover lock at the rear of the cover.
2. Slide the lock to the right and push the cover forward.
3. Lift the top cover off the chassis.

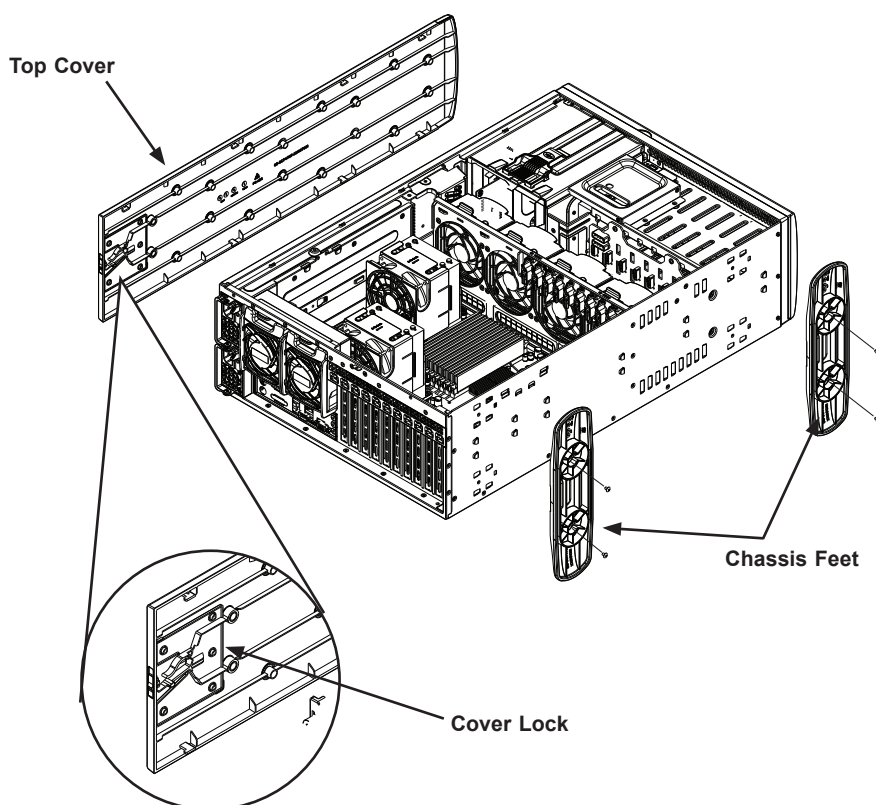


Figure 2-1. Removing the Top Tower Cover and Feet

Removing the Chassis Feet

1. Lay the chassis on its side.
2. Remove the screws holding the chassis feet in place.
3. Each foot has a foot lock tab at the center. Use a flat head screwdriver to gently lift the foot lock upward. Slide the foot toward the rear of the chassis.

2.4 Installing the Rails

This section provides a guideline for installing the rails to the chassis and to the rack with the optional rack mount kit.

Identifying the Sections of the Rack Rails

The chassis package includes two optional rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: An inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

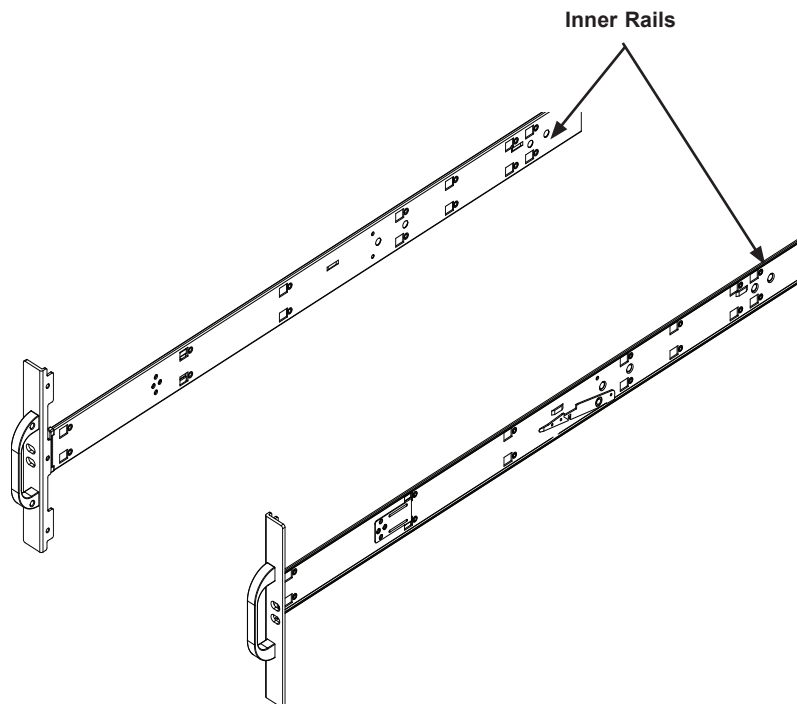


Figure 2-2. Identifying the Inner Rails and Chassis Handles

Installing the Inner Rails to the Chassis

1. Attach the handles to the front of the chassis with three screws each.
2. Identify the left and right inner rails. They are labeled on the rails and in the figure below.
3. Align each rail with the screw holes along the side of the chassis.
4. Screw the rails securely to the side of the chassis.

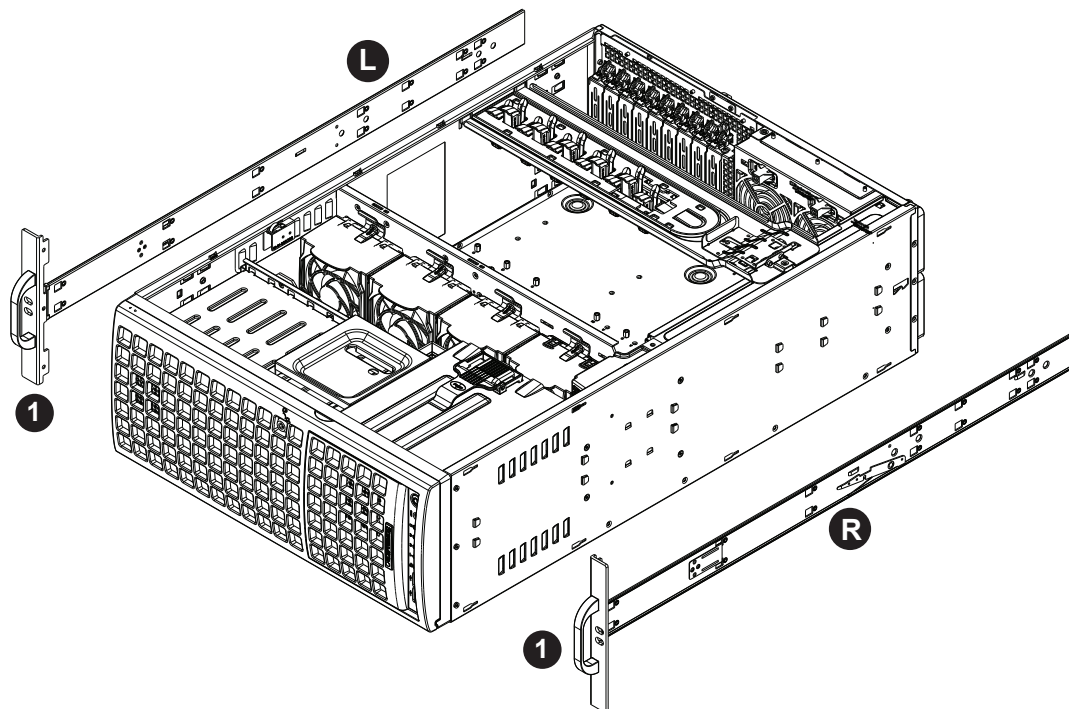


Figure 2-3. Installing the Handles and Inner Rails to the Chassis

Installing the Outer Rails to the Rack

Installing the Outer Rails

1. Attach the rear rail to the middle rail.
2. Adjust both to the proper distance so that the rails fit snugly into the rack.
3. Secure the rear rail with two M5 screws at the rear of the rack.
4. Repeat steps 1-3 for the left outer rail.

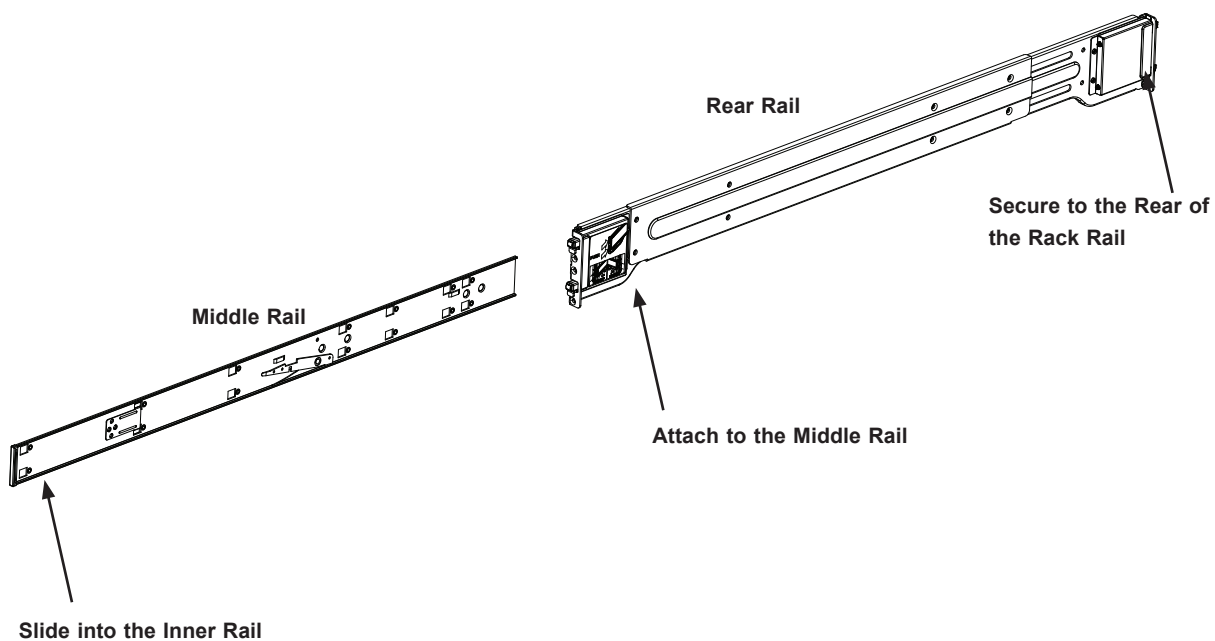


Figure 2-4. Inner and Outer Rack Rail Sections

2.5 Installing the Chassis into the Rack

With rails attached to both the chassis and the rack, install the system into the rack.

1. Confirm that the chassis includes the inner rails and the outer rails.
2. Align the inner chassis rails with the front of the outer rack rails.
3. Slide the inner rails into the outer rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the chassis has been pushed completely into the rack, you should hear the locking tabs "click" into the locked position.

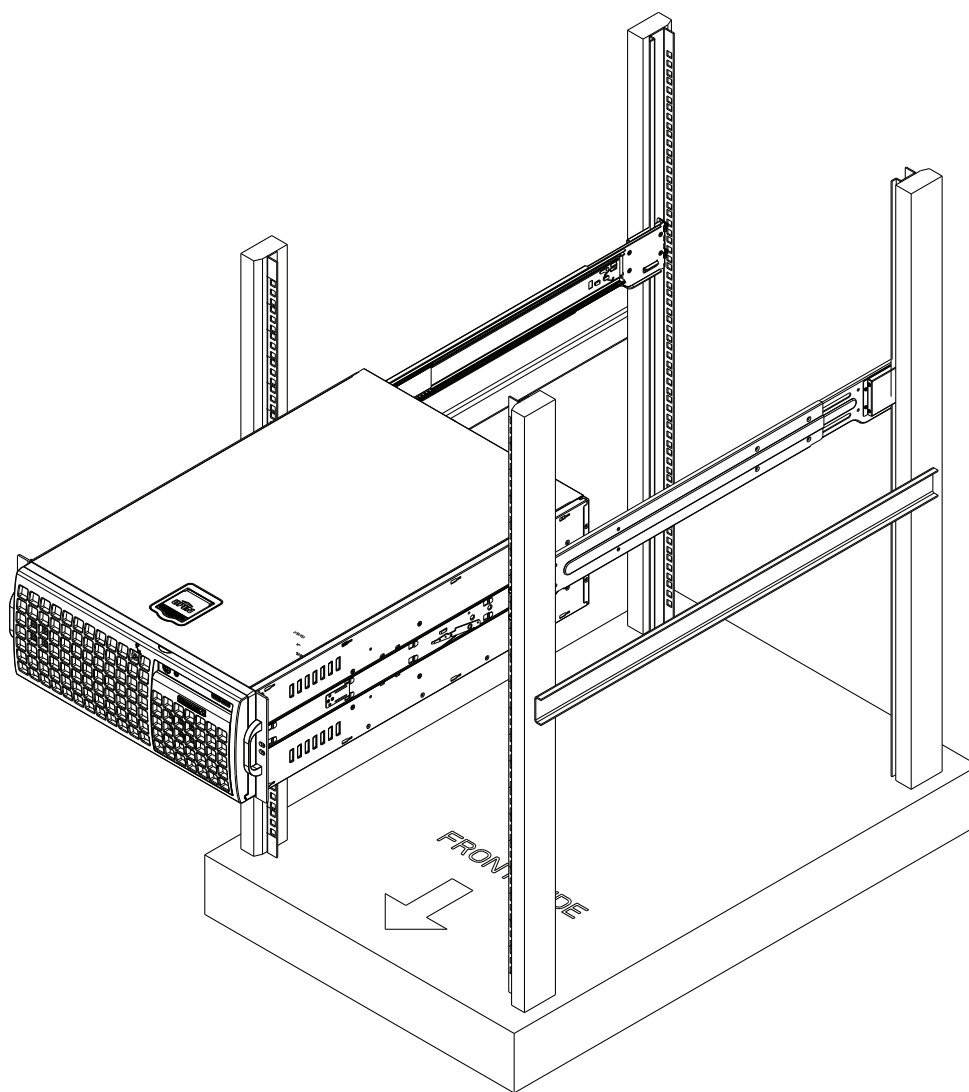


Figure 2-5. Installing the Server into the Rack

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



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.



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

Removing the Chassis from the Rack

Caution! It is dangerous for a single person to off-load the heavy chassis from the rack without assistance. Be sure to have sufficient assistance supporting the chassis when removing it from the rack. Use a lift.

1. Remove the screws that hold the front of the server to the rack.
2. Pull the chassis forward out the front of the rack until it stops.
3. Find the quick-release tab on each side of the chassis on the inner rails. Press down on the quick-release tab and continue to pull the chassis out of the rack.



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



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

2.6 Control Panel Orientation

The server can be configured for either tower or server rack orientation. It is shipped in tower mode and can be immediately used as a desktop server. To use it in a rack, rotate the module that contains the control panel and the three drive trays (1 in Figure 2-7) 90 degrees.

Note that two of the 5.25" drives may be replaced by a *mobile rack* containing eight 2.5" storage drives.

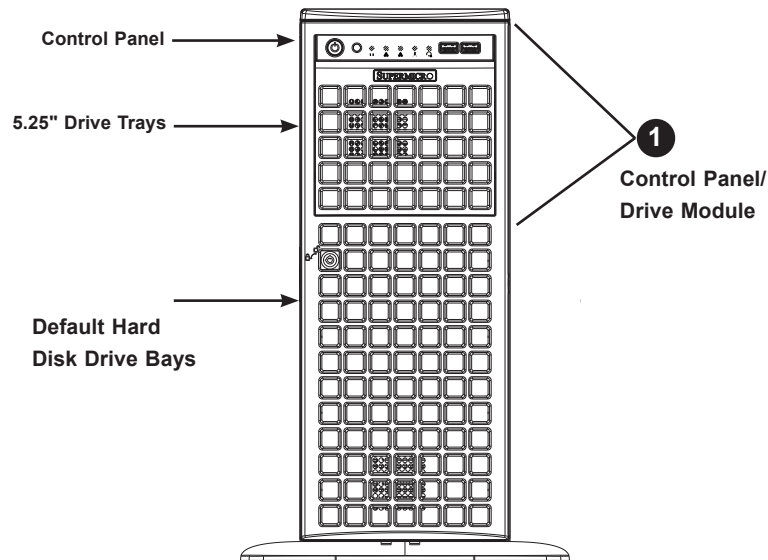


Figure 2-6. Chassis in Tower Mode (Default Configuration)

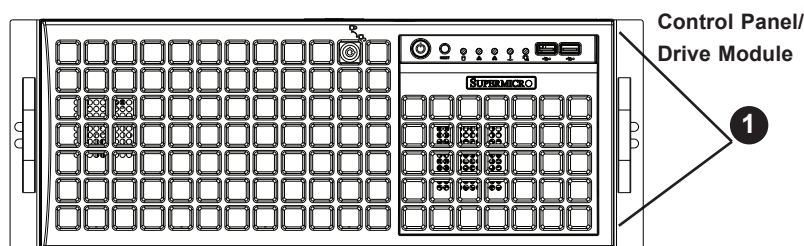


Figure 2-7. Chassis in Rack Mount Mode

Rotating the Control Panel/Drive Module for Rack Mounting

1. Power down the system as described in Section 3.1 and open the side cover as described in Section 3.2.
2. Disconnect any cables from the back of the Control Panel/Drive Module.
3. Push the module release lever to unlock the module.

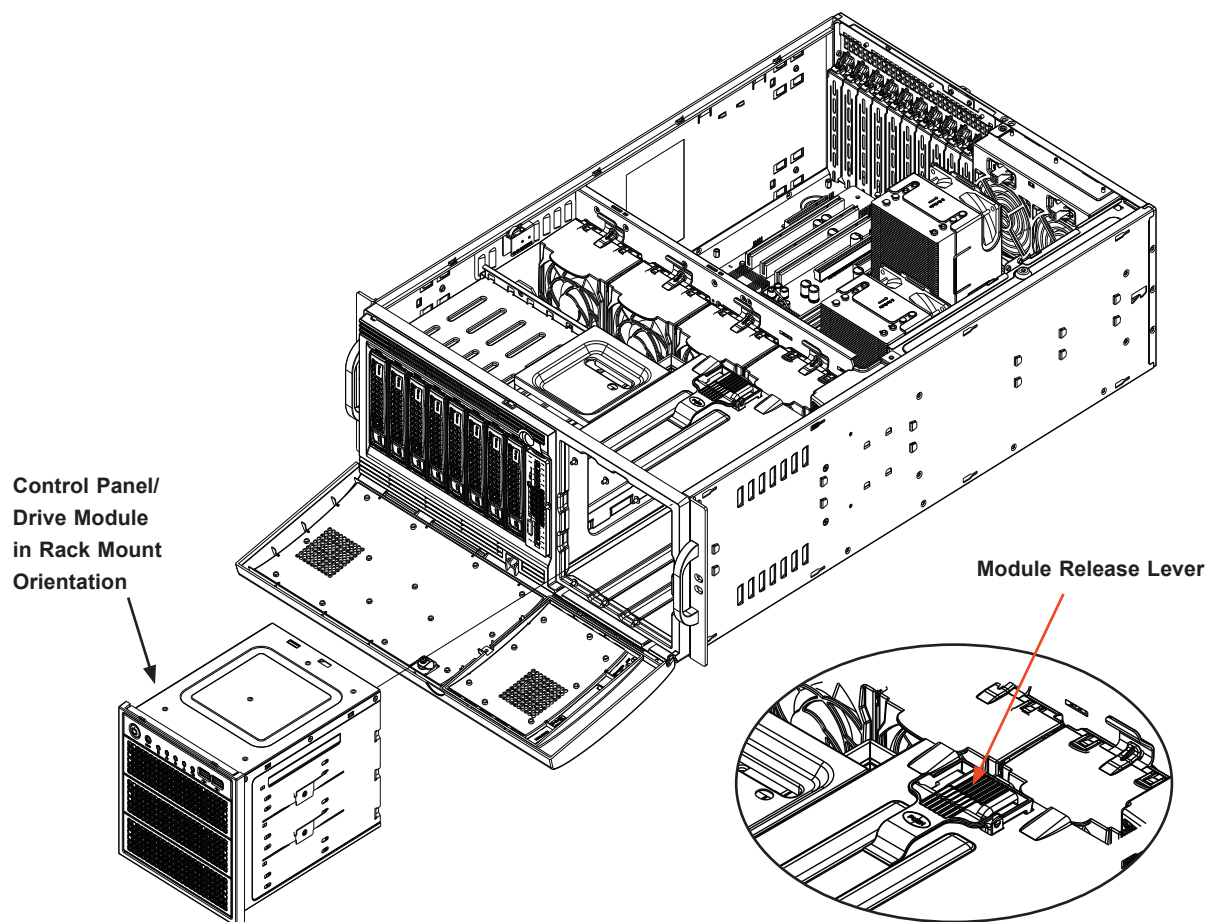


Figure 2-8. Rotating the Control Panel/Drive Module

4. Grasp the edges of the module and pull it from the chassis.
5. Rotate the module 90 degrees so that the control panel is on top.
6. Reinsert the module into the chassis and reconnect the cables.

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

2.7 Workstation Setup

The system can be configured in a workstation or a server rack orientation. It is shipped as a workstation with the chassis cover and feet pre-installed. Use the instructions below to convert a rackmounted system to tower mode.

Returning a Rackmounted System to a Workstation Setup

1. Shut down the system and remove power as described in Section 3.1.
2. Remove the chassis from the rack as described in Section 2.5.
3. Remove the inner rails and the handles.
4. Align the cover post with the corresponding holes on the top of the chassis and place the cover on top of the chassis.
5. Slide the cover toward the rear of the chassis to lock the cover into place.

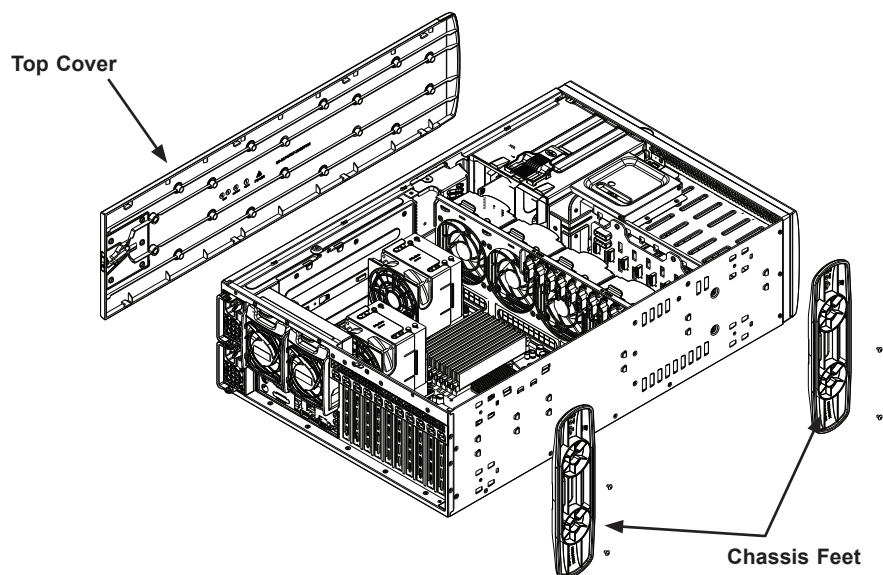


Figure 2-9. Installing the Top Tower Cover and Feet

6. Place the chassis foot in the foot receptacle and slide the foot toward the front of the chassis. The foot should lock into place.
7. Secure the foot to the chassis using two screws enclosed in the packaging.
8. Repeat steps 6 and 7 for the other chassis foot.
9. Rotate the control panel for a workstation orientation following the steps in Section 2.6.

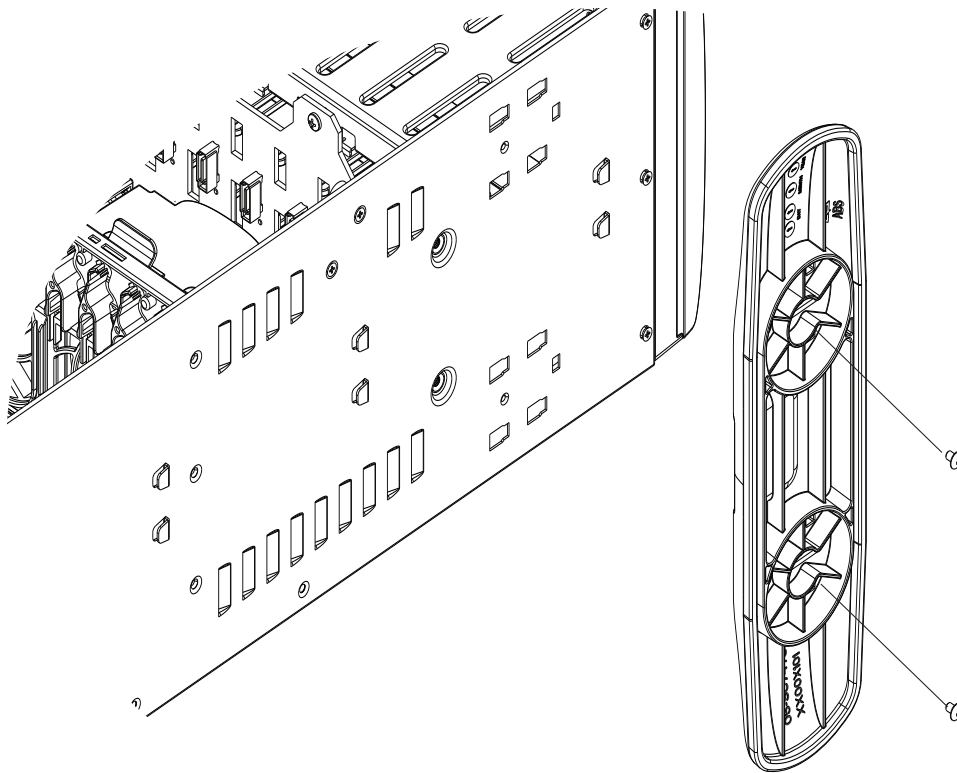


Figure 2-10. Chassis Feet and Screws

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. Use the operating system to power down the system.

1. After the system has completely shut down, disconnect the AC power cords from the power strip or outlet.
2. Disconnect the power cords from the power supply modules.

3.2 Accessing the System

The SC747BTS-R2K20BP chassis features a removable top cover, side cover, and front cover allowing access to the interior.

See Section 2.3 for instructions to remove the top cover.

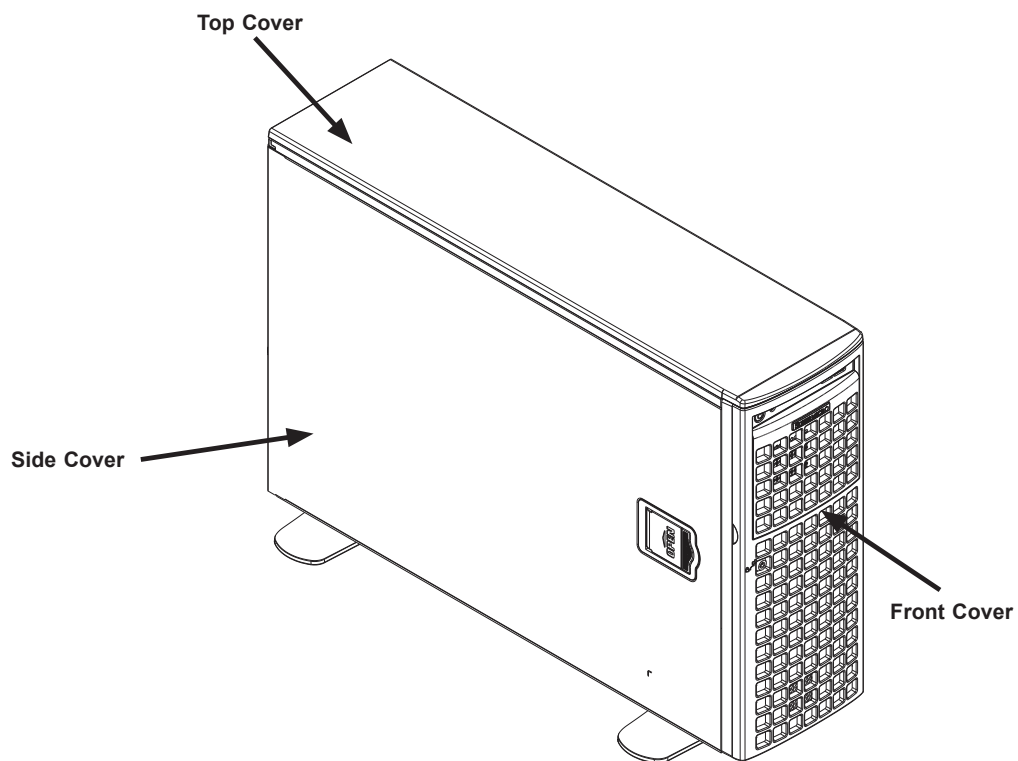


Figure 3-1. Identifying the Chassis Covers

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

Removing the Side Cover

1. Remove power from the system as described in Section 3.1.
2. Lift the handle at the side of the tower.
3. Lift the cover from the chassis.

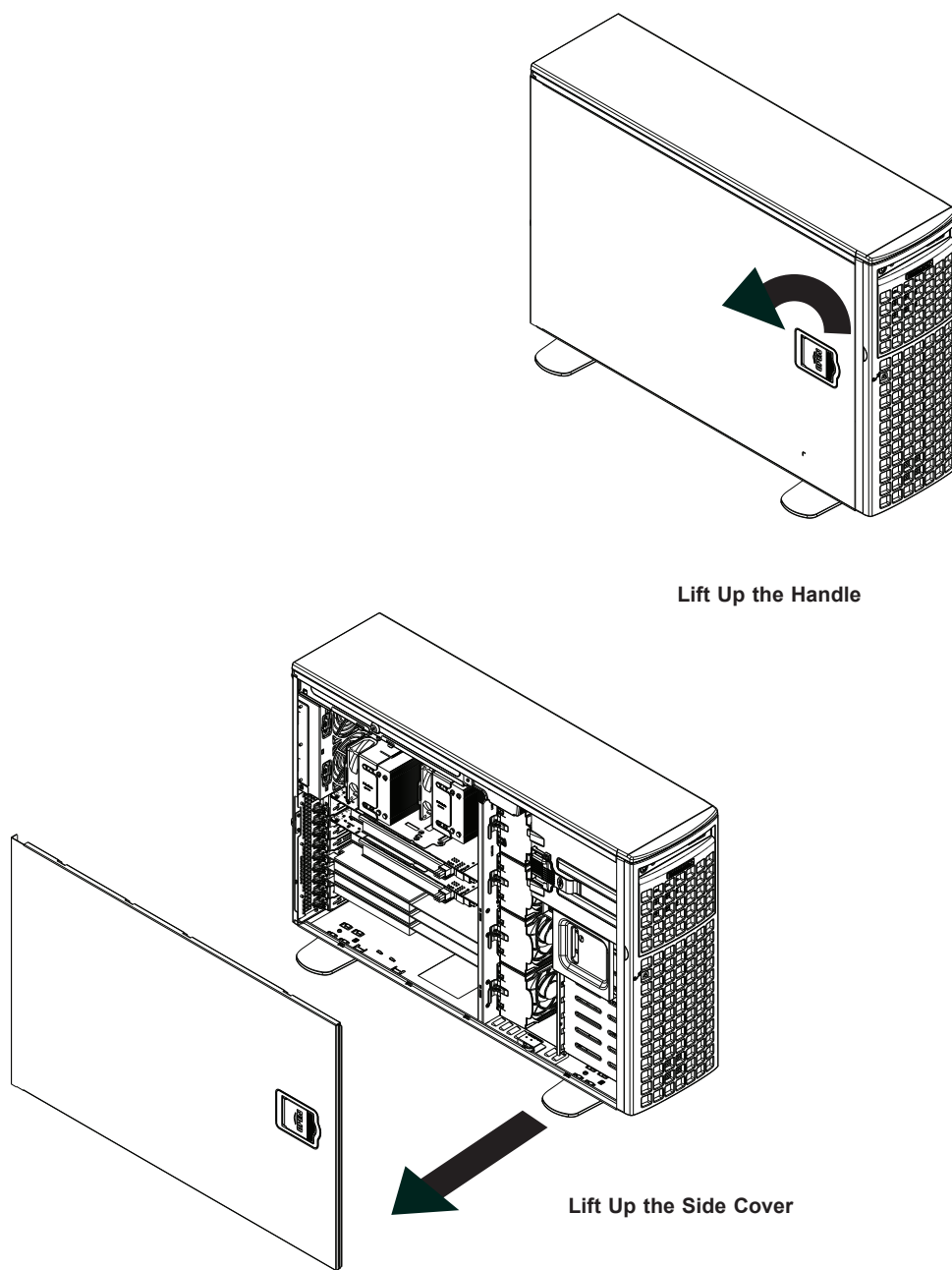


Figure 3-2. Removing the Side Cover

Opening the Front Cover

The front cover houses up to eight hot-swappable hard drives. The cover can be locked to prevent unauthorized access. The key to this lock is shipped with the system.

1. Unlock the front cover using the key shipped with the system.
2. Gently pull the cover open.

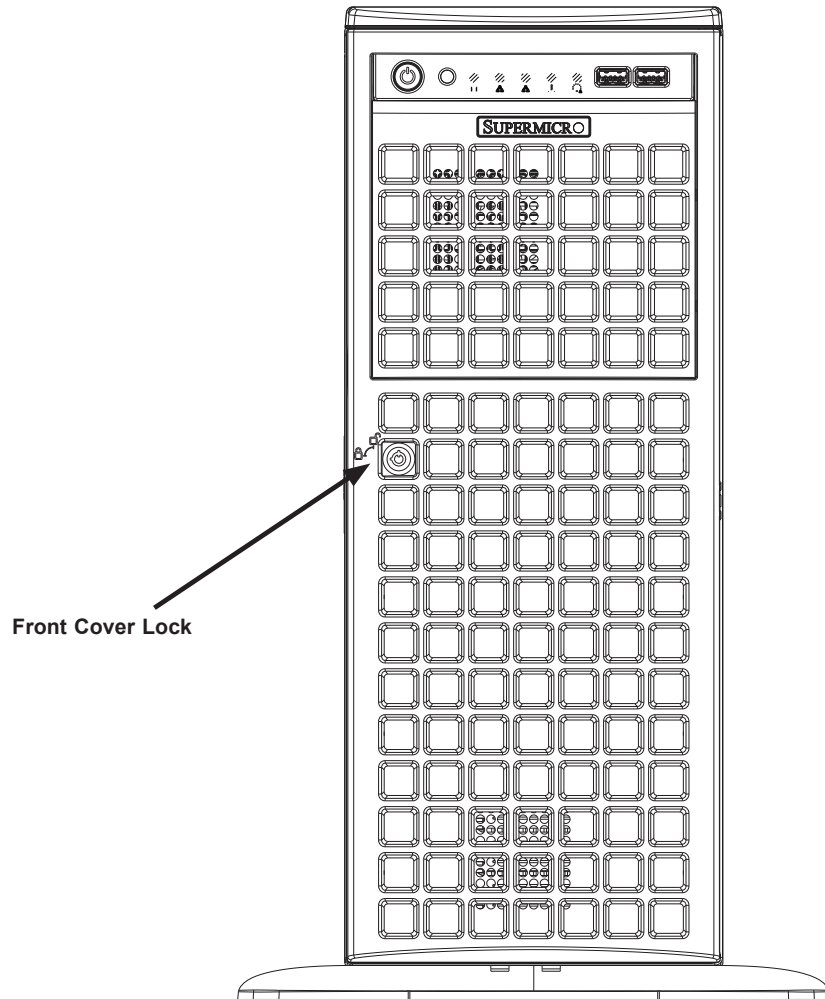


Figure 3-3. Opening the Front Cover

3.3 Motherboard Components

Processor and Heatsink Installation

Intel® Xeon® Scalable Processors come in two models: Fabric (F model) and Non-Fabric (Non-F model). Only the Non-Fabric model is supported for this system.

The processor (CPU) and heatsink should be assembled together first to form the processor heatsink module (PHM), and then install the PHM into the CPU socket.

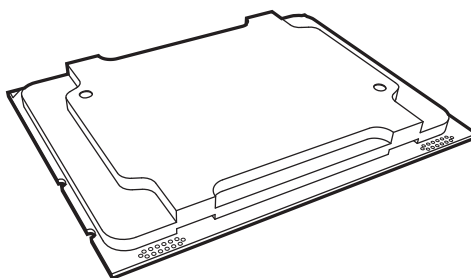
Caution: Use ESD protection. Do not touch the underside of the CPU. Improper installation or socket misalignment can cause serious damage to the CPU or socket which may require manufacturer repairs.

Notes:

- All power should be off, as described in Section 3.1, before installing the processors.
- When handling the processor package, avoid placing direct pressure on the label area of the CPU or socket.
- Check that the plastic socket dust cover is in place and none of the socket pins are bent—otherwise, contact your retailer.
- Refer to the Supermicro website for updates on CPU support.
- Graphics in this manual are for illustration. Your components may look slightly different.

The Intel Xeon SP Series Processor

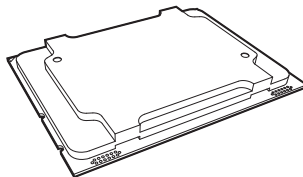
Non-Fabric Model



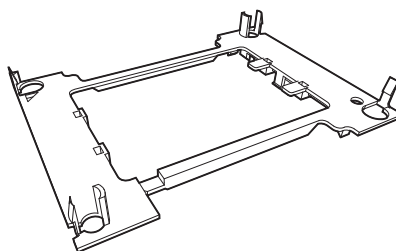
Overview of the Processor Carrier Assembly

The processor carrier assembly contains the Intel Xeon Non-Fabric (Non-F) processor and a processor carrier.

Non-F Processor



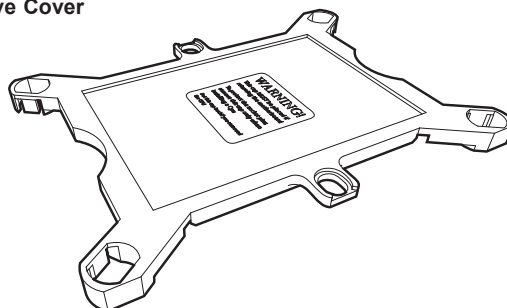
Processor Carrier



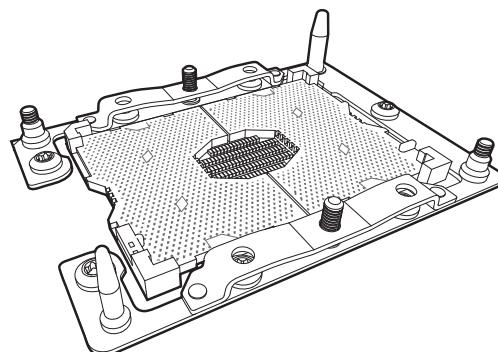
Overview of the CPU Socket

The CPU socket is protected by a plastic protective cover.

Plastic Protective Cover



CPU Socket

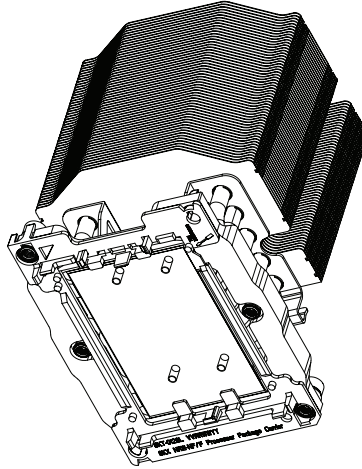


Note: Be sure to cover the CPU socket with the dust cover when the CPU is not installed.

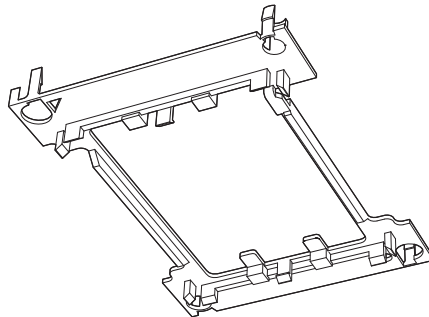
Overview of the Processor Heatsink Module

The Processor Heatsink Module (PHM) contains a heatsink, a processor carrier, and the Intel Xeon Non-Fabric (Non-F) processor.

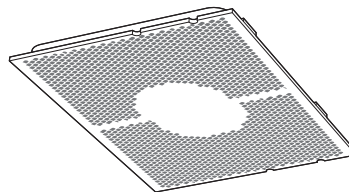
Heatsink with Thermal Grease



Processor Carrier



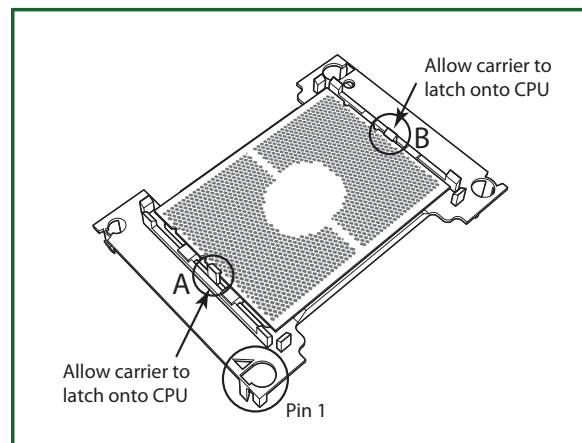
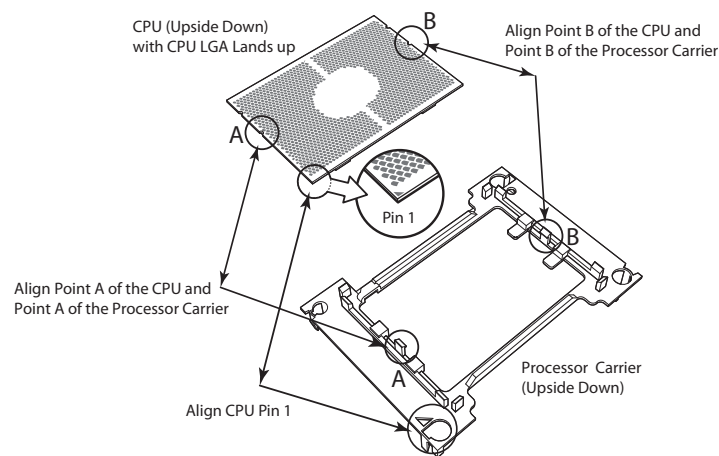
Non-F Processor



Creating the Non-F Model Processor Carrier Assembly

To install a Non-F model processor into the processor carrier, follow the steps below.

1. Hold the processor with the LGA lands (gold contacts) facing up. Locate the small, gold triangle in the corner of the processor and the corresponding hollowed triangle on the processor carrier. These triangles indicate pin 1. See the images below.
2. Using the triangles as a guide, carefully align and place Point A of the processor into Point A of the carrier. Then gently flex the other side of the carrier for the processor to fit into Point B.
3. Examine all corners to ensure that the processor is firmly attached to the carrier.

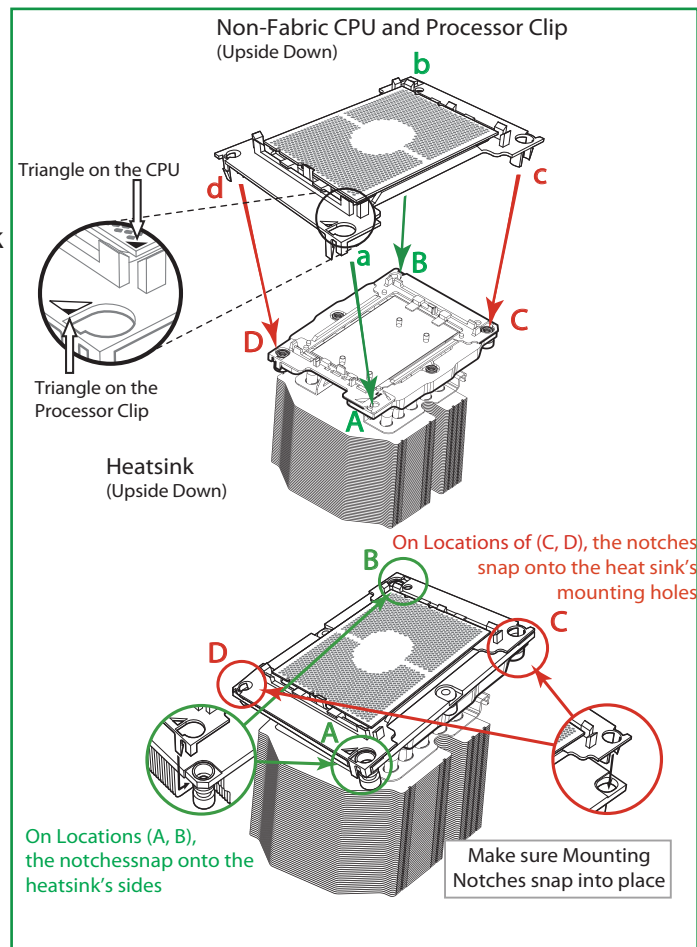


Processor Carrier Assembly (Non-F Model)

Attaching the Non-F Model Processor Package Assembly to the Heatsink to Form the Processor Heatsink Module (PHM)

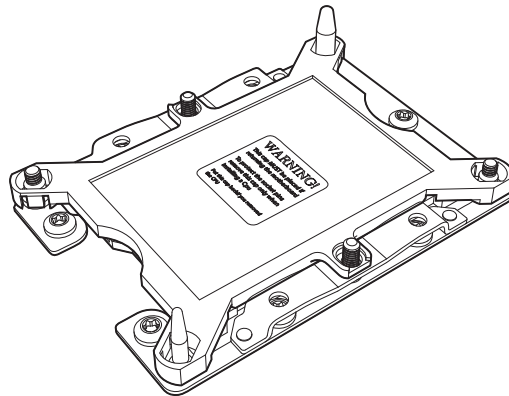
After you have made a processor package assembly by following the instructions on the previous page, please follow the steps below to mount the processor package assembly onto the heatsink to create the Processor Heatsink Module (PHM).

1. Locate "CPU 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).

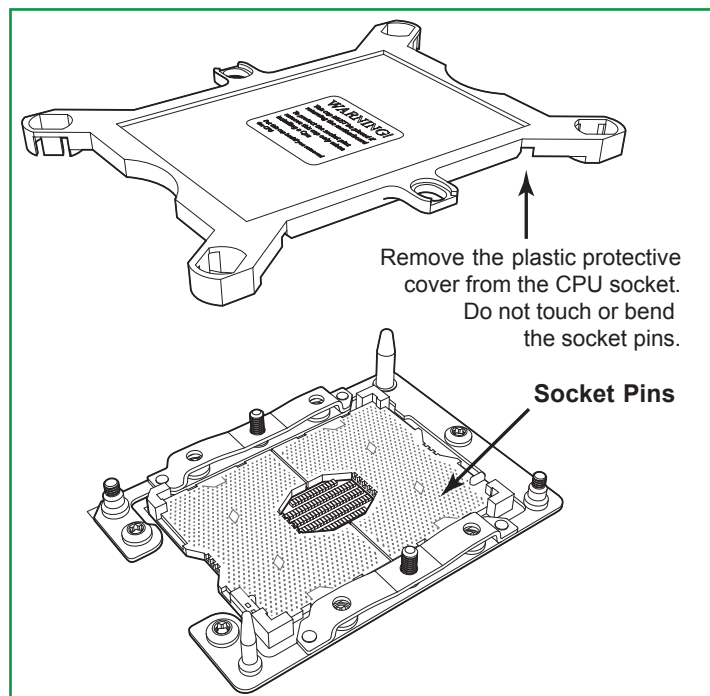


Preparing the CPU Socket for Installation

This motherboard comes with a plastic protective cover installed on the CPU socket. Remove it from the socket to install the Processor Heatsink Module (PHM). Gently pull up one corner of the plastic protective cover to remove it.



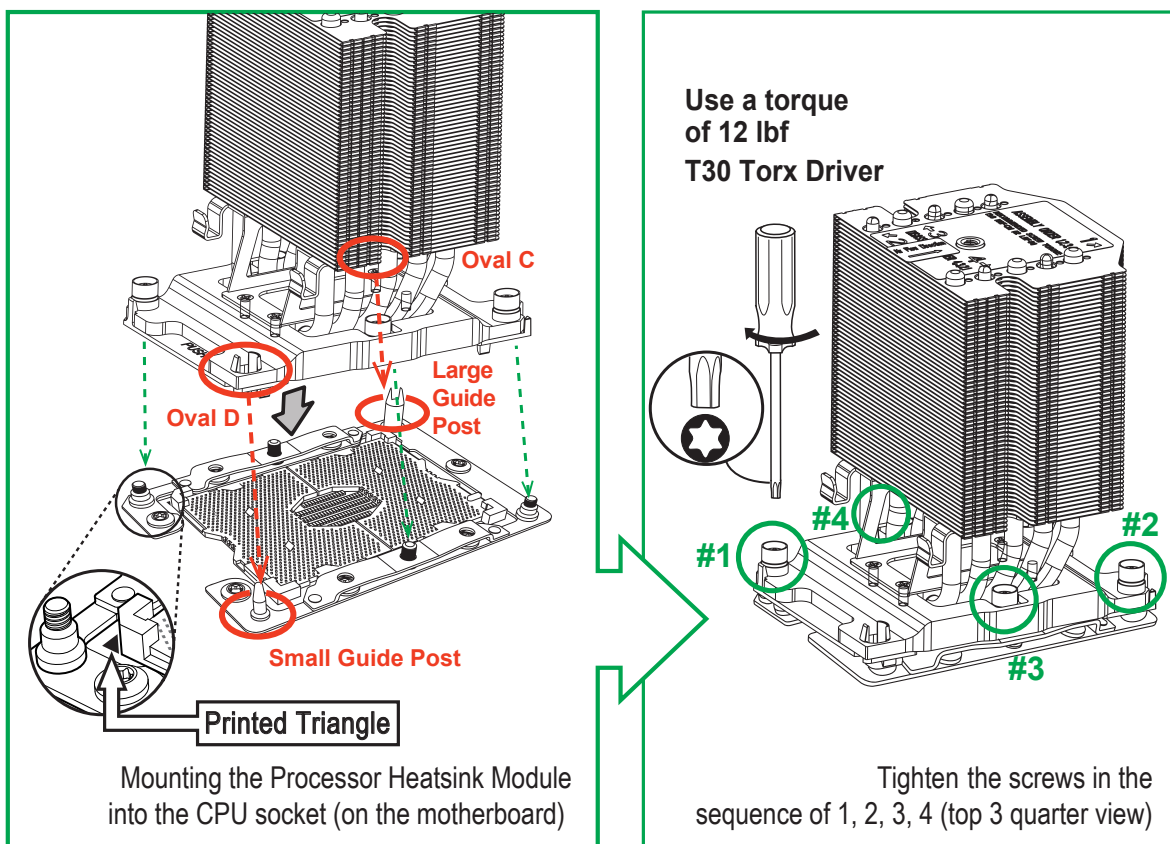
CPU Socket with Plastic Protective Cover



Installing the Processor Heatsink Module (PHM)

1. Once you have assembled the processor heatsink module (PHM) by following the instructions listed on page 42, you are ready to install the processor heatsink module (PHM) into the CPU socket on the motherboard. To install the PHM into the CPU socket, follow the instructions below.
2. 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.)
3. Carefully align pin 1 (the triangle) on the PHM against pin 1 (the triangle) on the CPU socket.
4. Once they are properly aligned, insert the two diagonal oval holes on the heatsink into the guiding posts.
5. 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.

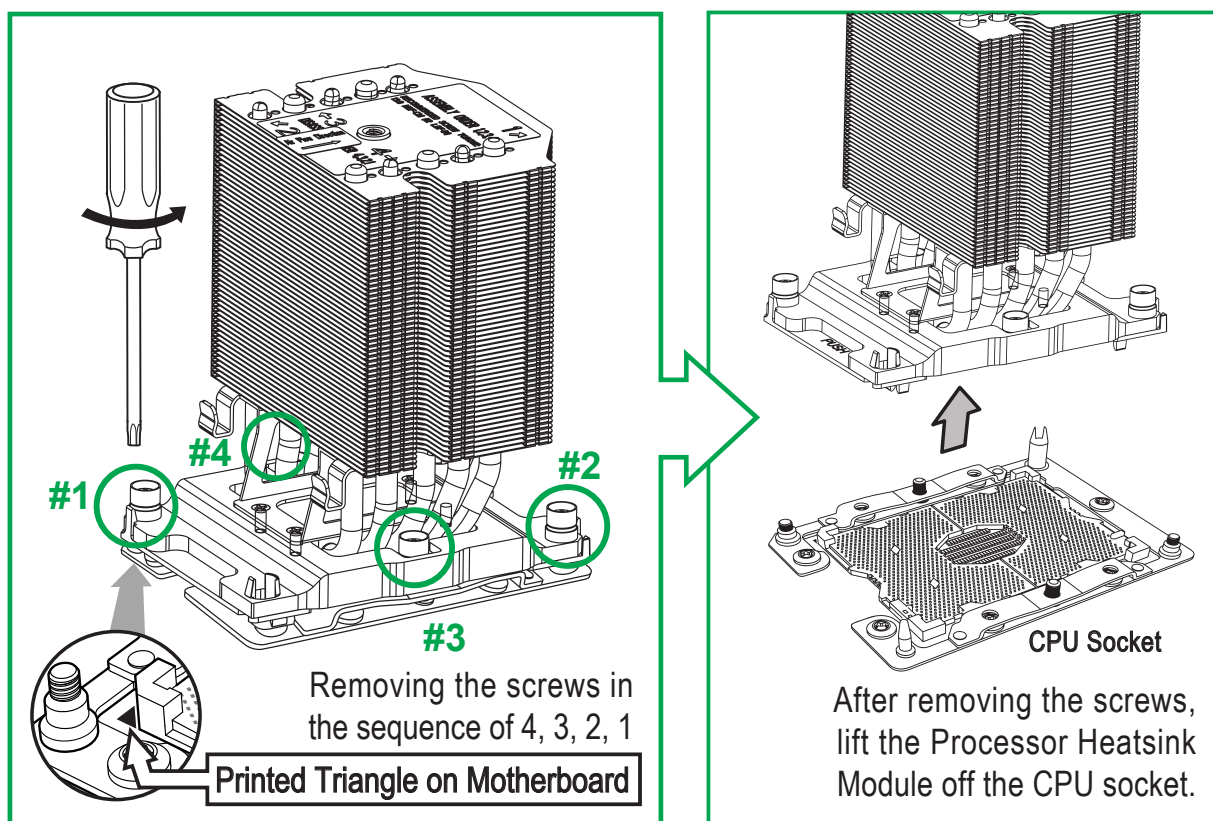


Removing the Processor Heatsink Module (PHM) from the Motherboard

Before removing the processor heatsink module (PHM), unplug the 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 the 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.



3.4 Memory Support and Installation

The X11SPA-T supports up to 768GB of ECC RDIMM, 3TB of 3DS RDIMM, 1.5TB of LRDIMM, and 3TB of 3DS LRDIMM DDR4 (288-pin) ECC memory with speeds of up to 2933MHz in 12 memory slots. Refer to the tables below for the recommended DIMM population order and additional memory information. (1DPC and 2DPC are recommended for memory installation.)

Note: 2933MHz memory is supported by 2nd Generation Intel Xeon Scalable-SP (82XX/62XX series) and W-32XX series processors.

Memory Installation Sequence

Memory modules for this motherboard is populated using the "Fill First" method. The blue memory slot of each channel is considered the first DIMM module of the channel, and the black slot is considered the second module of the channel. When installing memory modules, be sure to populate the blue memory slots first, and then the black slots. To maximize memory capacity and performance, please populate all DIMM slots on the motherboard, including all blue and black slots.

General Memory Population Requirements

1. Be sure to use the memory modules of the same type and speed on the motherboard. Mixing of memory modules of different types and speeds is not allowed.
2. Using unbalanced memory topology such as populating two DIMMs in one channel while populating one DIMM in another channel on the same motherboard will result in reduced memory performance.
3. Populating memory slots with a pair of DIMM modules of the same type and size will result in interleaved memory, which will improve memory performance.

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

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

DDR4 Memory Support for the 82xx/62xx/52xx/42xx/32xx and W-32XX Platforms

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

DIMM Population Guidelines for Optimal Performance

For optimal memory performance, follow the instructions listed in the tables below when populating memory modules.

Key Parameters for DIMM Configuration

Key Parameters for DIMM Configurations	
Parameters	Possible Values
Number of Channels	1, 2, 3, 4, 5, or 6
Number of DIMMs per Channel	1DPC (1 DIMM Per Channel) or 2DPC (2 DIMMs Per Channel)
DIMM Type	RDIMM (w/ECC), 3DS RDIMM, LRDIMM, 3DS LRDIMM
DIMM Construction	Non-3DS RDIMM Raw Cards: A/B (2Rx4), C (1Rx4), D (1Rx8), E (2Rx8) 3DS RDIMM Raw Cards: A/B (4Rx4) Non-3DS LRDIMM Raw Cards: D/E (4Rx4) 3DS LRDIMM Raw Cards: A/B (8Rx4)

DIMM Mixing Guidelines

General DIMM Mixing Guidelines	
DIMM Mixing Rules	
<ul style="list-style-type: none"> All DIMMs must be DDR4 DIMMs. x4 and x8 DIMMs can be mixed in the same channel. Mixing of LRDIMMs and RDIMMs is not allowed in the same channel, across different channels, or across different sockets. Mixing of non-3DS and 3DS LRDIMM is not allowed in the same channel, across different channels, or across different sockets. 	

Mixing of DIMM Types within a Channel			
DIMM Types	RDIMM	LRDIMM	3DS LRDIMM
RDIMM	Allowed	Not Allowed	Not Allowed
LRDIMM	Not Allowed	Allowed	Not Allowed
3DS LRDIMM	Not Allowed	Not Allowed	Allowed

Memory Population

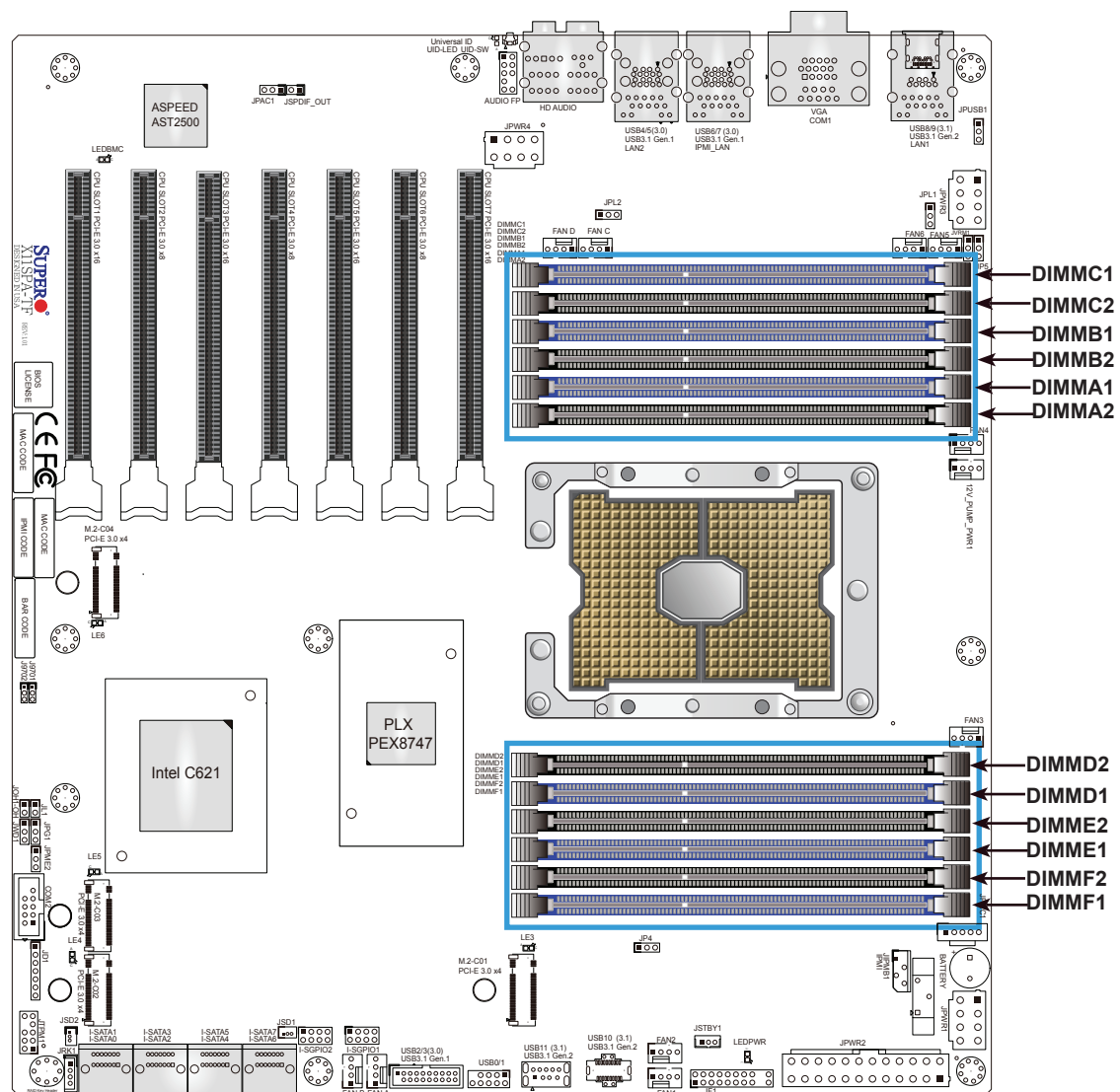
Memory Population Table for the X11SPA-T (with 12 Slots) based on the 81xx/61xx/51xx/41xx/31xx and 82xx/62xx/52xx/42xx/32xx and W-32XX series Platforms.

Memory Population Table for the X11SPA-T (with 12 Slots)	
	Memory Population Sequence
1 CPU & 1 DIMM	CPU1: P1-DIMMA1
1 CPU & 2 DIMMs	CPU1: P1-DIMMA1/P1-DIMMD1
1 CPU & 3 DIMMs	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1
1 CPU & 4 DIMMs	CPU1: P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1
1 CPU & 5 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1
1 CPU & 6 DIMM	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1
1 CPU & 7 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/P1-DIMMD1/P1-DIMME1/ P1-DIMMF1
1 CPU & 8 DIMMs	CPU1: P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/P1-DIMMD2/P1-DIMMD1/ P1-DIMME2/P1-DIMME1
1 CPU & 9 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD1/P1-DIMME1/P1-DIMMF1
1 CPU & 10 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF1
1 CPU & 11 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF1
1 CPU & 12 DIMMs	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF2/P1-DIMMF1

Note: Unbalanced memory configuration decreases memory performance and is not recommended for the Supermicro motherboards.

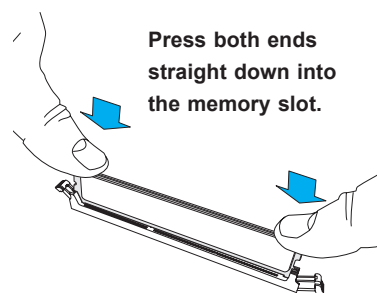
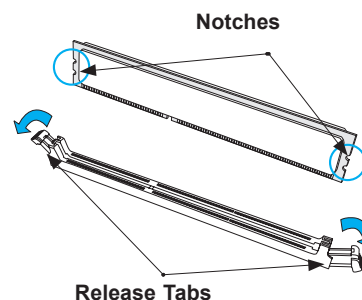
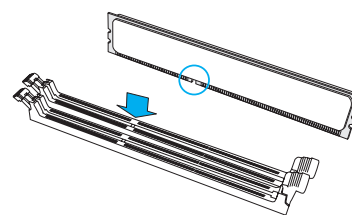
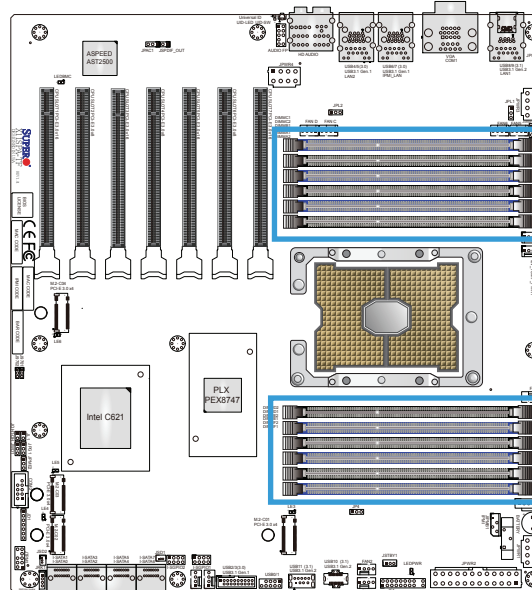
General Guidelines for Optimizing Memory Performance

- The blue slots must be populated first.
- Only populate DIMMA2 and DIMMD2 if the extra memory support is needed.
- Always use DDR4 memory of the same type, size, and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- The motherboard will support odd-numbered modules (one or three modules installed). However, to achieve the best memory performance, a balanced memory population is recommended.



DIMM Installation

1. Insert the desired number of DIMMs into the memory slots based on the recommended DIMM population on pages 47, 48, 49, and 50.
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. 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 both release tabs on the ends of the DIMM module to unlock it. Once the DIMM module is loosened, remove it from the memory slot.

Motherboard Battery

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

Replacing the Battery

1. Remove power from the system as described in Section 3.1 and remove the node from the chassis.
2. Push aside the small clamp that covers the edge of the battery. When the battery is released, lift it out of the holder.
3. To insert a new battery, slide one edge under the lip of the holder with the positive (+) side facing up. Then push the other side down until the clamp snaps over it.

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

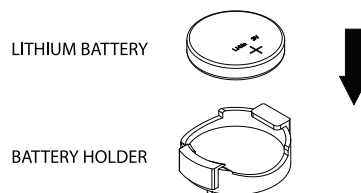
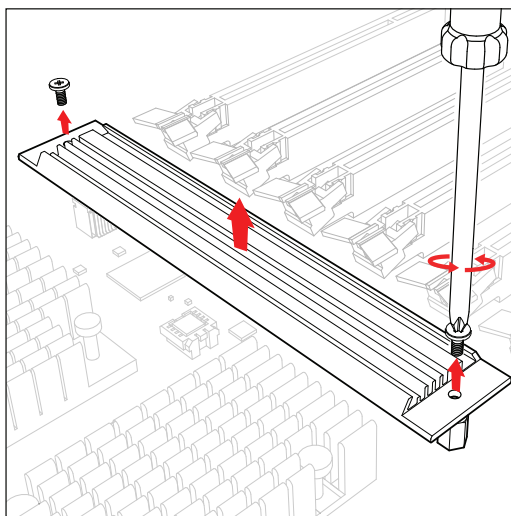


Figure 3-4. Installing the Onboard Battery

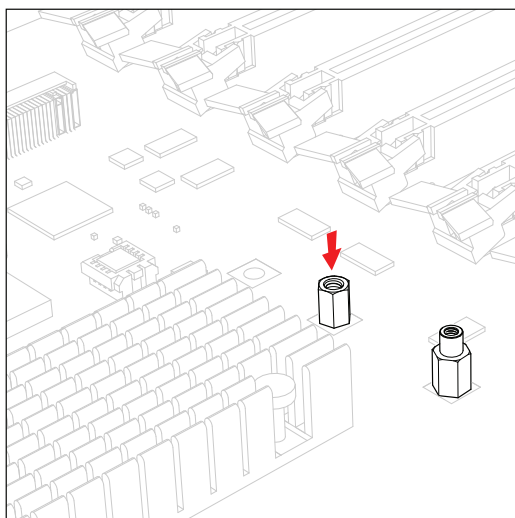
Warning: There is a danger of explosion if the onboard battery is installed upside down (which reverses its polarities). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032).

3.5 M.2 SSD Installation

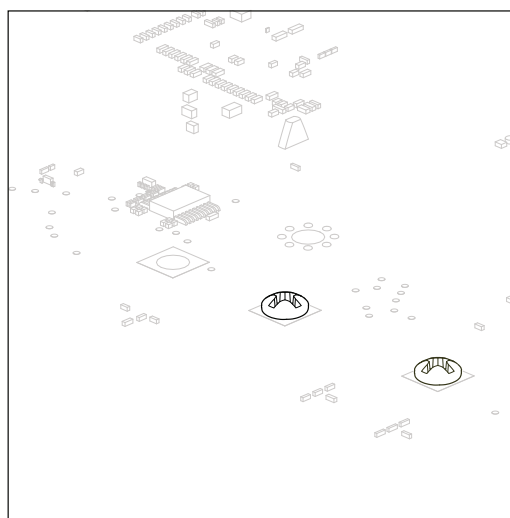
The X11SPA-T motherboard has four M.2 PCI-E 3.0 slots that support 2260, 2280, and 22110 SSD modules.



1. Loosen the screws and remove the heatsink.

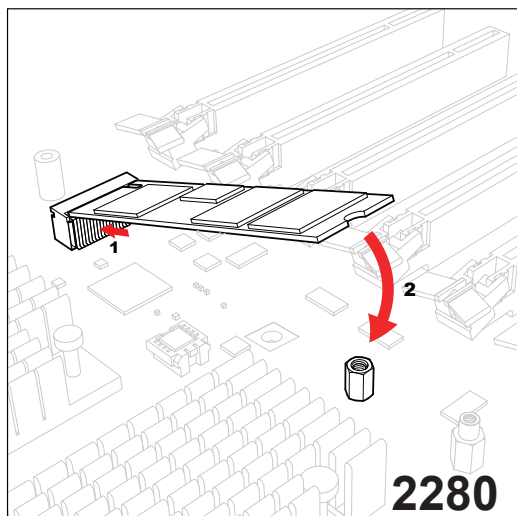


2. The default positions for the standoffs are in the 2280 and 22110 mounting holes.

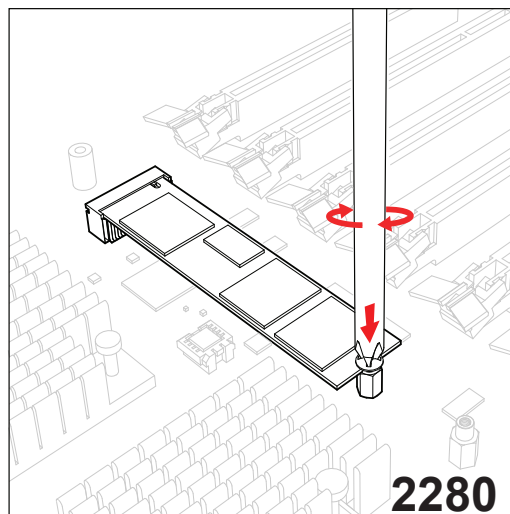


3. The mounting screws on the bottom of the motherboard secure the standoffs.

2280 SSD Module Installation

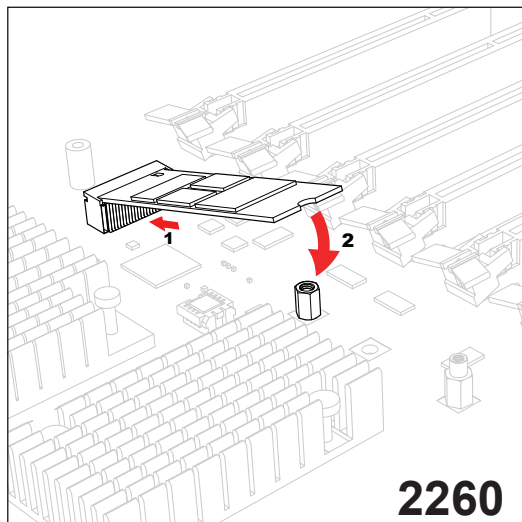


4.1. To install a 2280 SSD module, insert it into the slot at a 30 degree angle and press down.

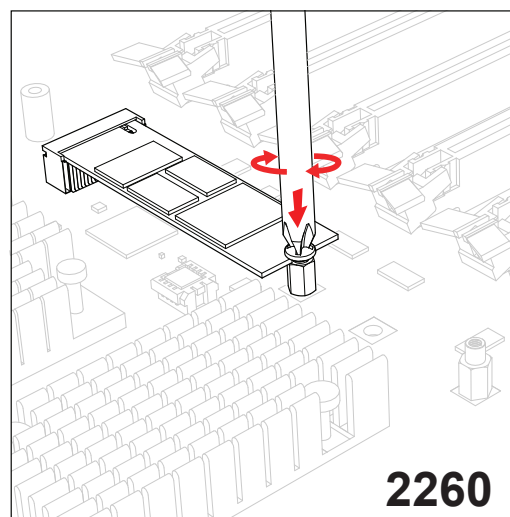
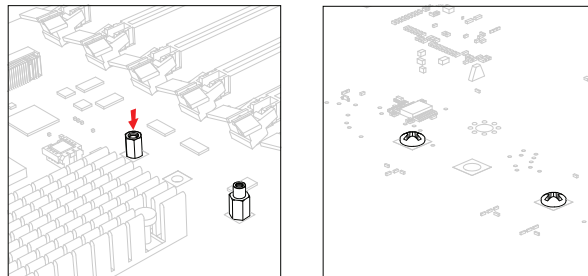


4.2. With the cutoff circle at the end of the module aligned with the standoff, tighten the screw to secure the module. Go to step 5 to complete the installation.

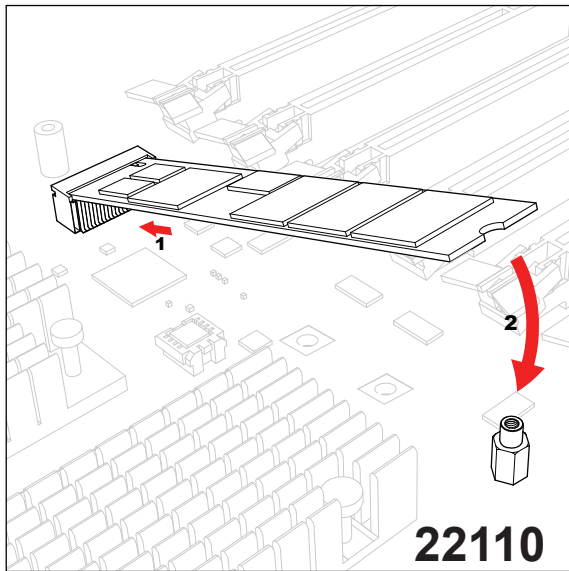
2260 SSD Module Installation



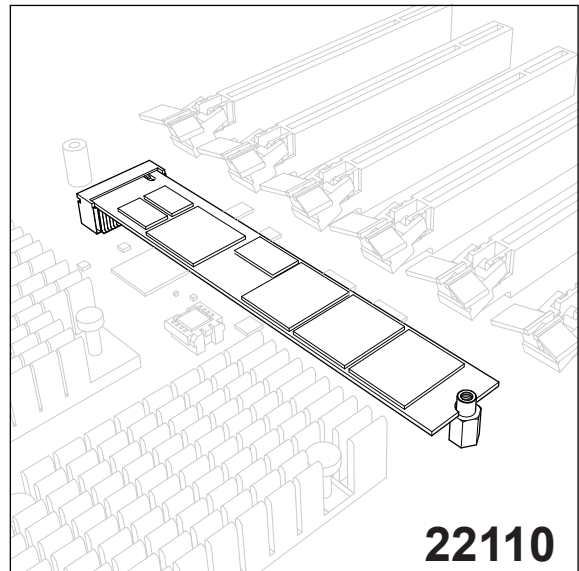
4.3. To prepare for a 2260 SSD module installation, begin by repeating steps 1-3. Then, place the standoff and screw underneath the motherboard in the hole closest to the M.2 slot. To install the module, insert it into the slot at a 30 degree angle and press down.



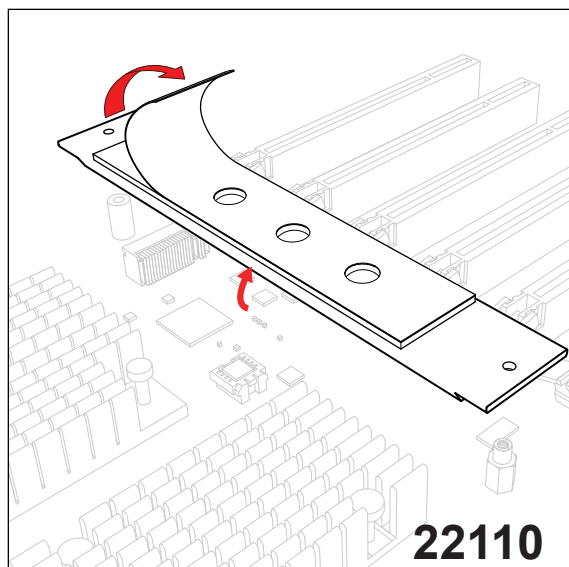
22110 SSD Module Installation



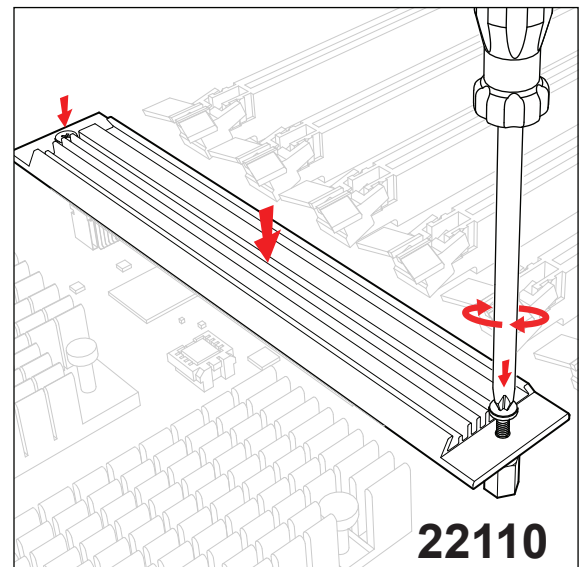
4.5. To install a 22110 SSD module, insert it into the M.2 slot at a 30 degree angle and align the cutoff circle at the end with the standoff.



4.6. Go to step 5 to complete the installation.



5. Remove the plastic liner from the heatsink's thermal pad.



6. With the thermal pad faced down, secure the heatsink on top of the module with the same screws removed in step 1.

3.6 Chassis Components

Hard Drives

A total of eight SATA drives may be housed in the SC747BTS-R2K20BP chassis. The drive IDs are preconfigured as 0 through 7 in order from bottom to top (or from left to right if rackmounted).

The 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. Open the front bezel then push the release button located beside the drive LEDs.
2. Swing the handle fully out and then use it to pull the unit straight out.

Note: Your operating system must have RAID support to enable the hot-swap capability of the SATA drives.

Mounting a Drive in a Drive Carrier

The SATA drive carriers help to promote proper airflow for the system. For this reason, even carriers without SATA drives must remain in the chassis.

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.

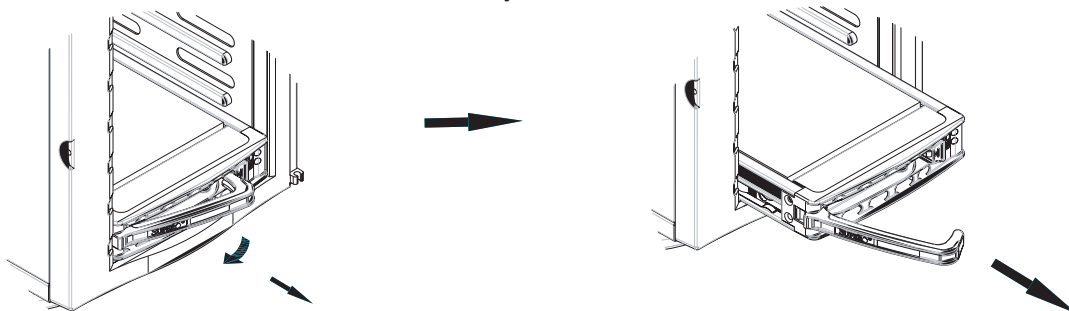


Figure 3-5. Removing a Drive Carrier

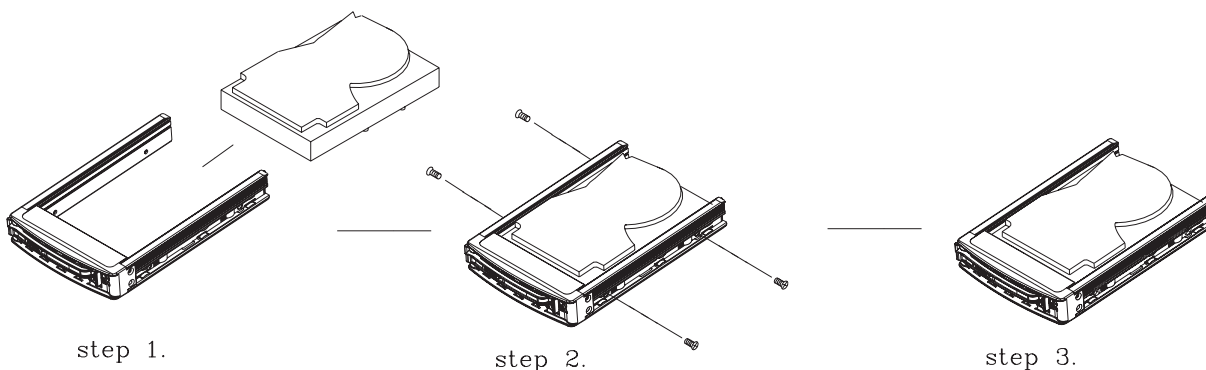


Figure 3-6. Mounting a Drive in a Carrier

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

SATA Backplane

The SATA drives plug into a drive backplane. A data cable for each drive and two LED cables need to be connected from the motherboard to the appropriate connectors on the backplane. Note that you cannot cascade the SATA backplane.

Installing Components in the 5.25" Drive Bays

The 5049A-TR has two 5.25" drive bays. Components such as an extra DVD-ROM drive can be installed into these 5.25" drive bays.

Removing the Empty Drive Bay

1. First power down the system.
2. Remove the top/left chassis cover to access the drive components.
3. With the cover off, remove the screws that secure the drive carrier to the chassis (one side only) then push the entire empty drive carrier out from the back.

Adding a DVD-ROM Drive

1. Remove the guide plates (one on each side) from the empty drive carrier and screw them into both sides of the DVD-ROM drive using the holes provided.
2. Slide the DVD-ROM into the bay and secure it to the chassis with the drive carrier screws you first removed.
3. Attach the power and data cables to the drive.
4. Replace the top/left chassis cover and restore power to the system.

System Cooling

Heavy-duty fans provide cooling for the chassis. Four fans are located in the mid-section of the chassis, two fans are located in the rear, and two optional fans can be mounted on the external rear of the chassis, required for passive GPUs.

The internal fans come pre-installed to the chassis. Each fan is hot-swappable and can be replaced without removing any connections.

System Fan Failure

Fan speed is controlled by system temperature through 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).

Replacing System Fans

The chassis contains two types of system fans: mid-system fans and rear system fans.

Replacing Mid-System Fans (FAN-0114L4 and FAN-0138L4)

1. Use IPMI to determine which fan has failed. Because the fans are hot-swappable, the system does not need to be powered-down.
2. Remove the side cover as described in Section 3.2.
3. Press the fan release tab and lift the failed fan from the chassis. Mid-fans must be pulled straight out of the chassis. Part numbers: top two fans are FAN-0114L4 and bottom two are FAN-0138L4.
4. Place the new fan into the vacant space in the housing. Make sure the arrows indicating air direction point in the same direction as the arrows on the other fans. As soon as the fan is connected, it will begin working.

Replacing the Rear System Fan (FAN-0082L4)

1. Use IPMI to determine which fan has failed.
2. Press the rear fan release tab.
3. Pull the fan away from the chassis by pulling out the top first.
4. Place the new fan in the chassis, inserting the bottom of the fan first.
5. Push the fan fully into the housing until the fan clicks into place. Replace the chassis cover.

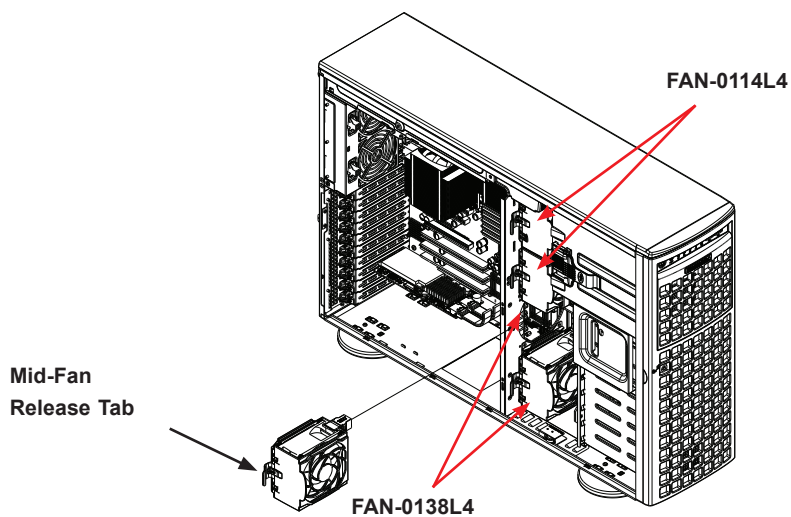


Figure 3-7. Mid-System Chassis Fans

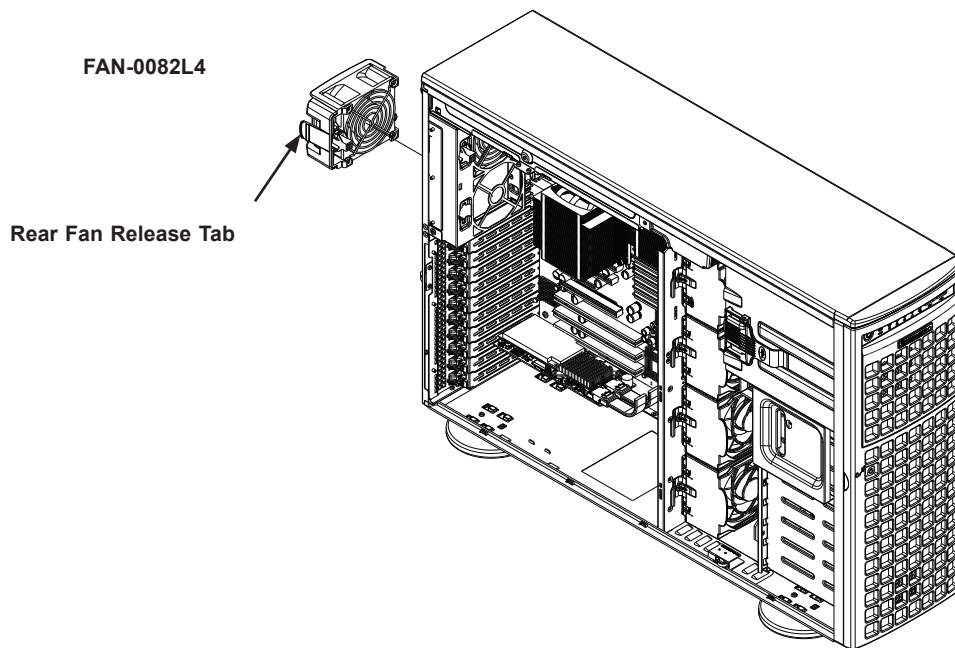


Figure 3-8. Rear System Chassis Fans

Power Supply

The SuperWorkstation 5049A-TR includes two 1+1 2200W redundant power supplies. These power supplies are auto-switching capable. This enables it to automatically sense and operate at a 100V to 240V input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Replacing the Power Supply

1. Push the release button on the back of the failed power module.
2. Pull the power module out using the handle provided.
3. Replace the failed power module with the same model.
4. Push the new power module into the power bay until you hear a click.

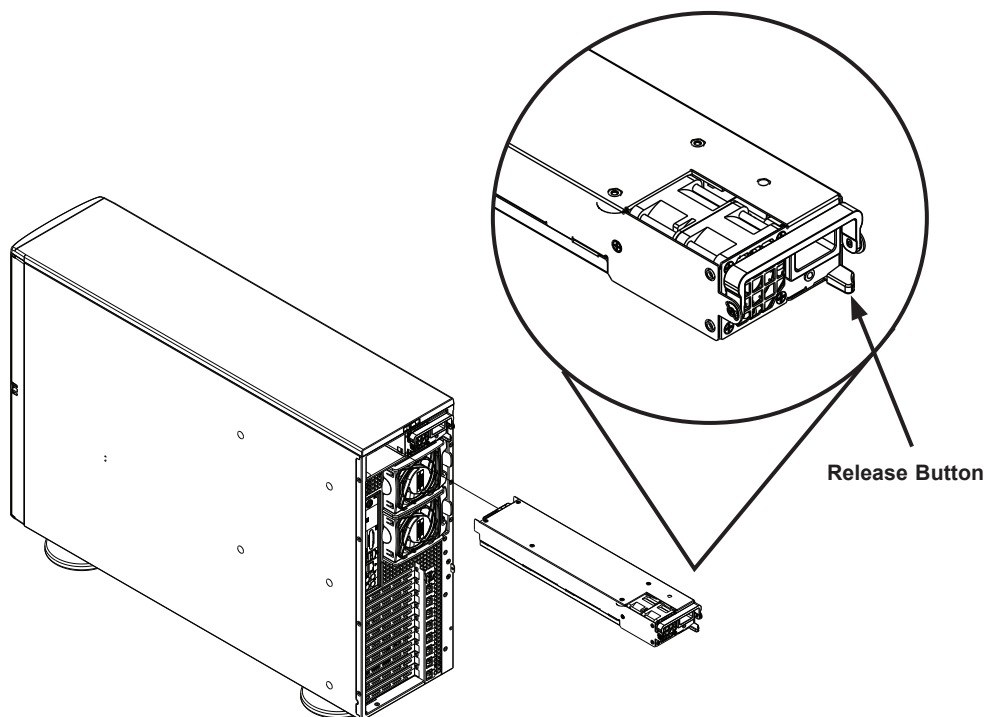


Figure 3-9: Power Supply Release Button

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. The motherboard layout indicating component locations may be found in Chapter 1.

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

4.1 Power Connections

ATX Power Supply Connector

The 24-pin power supply connector (JPWR2) meets the ATX SSI EPS 12V specification. You must also connect the 8-pin processor power connectors to the power supply.

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

8-Pin Power Connectors

JPWR1/JPWR3/JPWR4 are 8-pin 12V DC power inputs for the CPU on the X11SPA-T motherboard. Besides the 24-pin ATX PWR (JPWR2), two 12V 8-pin power connections (JPWR1/JPWR3) are required to ensure adequate power supply to the system. Refer to the table below for pin definitions.

8-pin Power Connector Pin Definitions	
Pin#	Definition
1 - 4	Ground
5 - 8	P12V (12V Power)

Required Connection

Important: Please connect the power supplies to the 24-pin power connector (JPWR2) and the 8-pin power connectors (JPWR1/JPWR3/JPWR4) on the motherboard when more than four of the PCI-E slots are populated. Failure to do so may void the manufacturer warranty on your power supply and motherboard.

4.2 Headers and Connectors

Fan Headers

There are ten 4-pin fan headers (FAN1 ~ FAN6, FAN A ~ FAN D) on the motherboard. All these 4-pin fan headers are backward compatible with the traditional 3-pin fan headers. However, fan speed control is available for 4-pin fan headers only by Thermal Management via the IPMI 2.0 interface. Refer to the table below for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	2.5A/+12V (Red)
3	Tachometer
4	PWM_Control

SGPIO Headers

There are two Serial Link General Purpose Input/Output (I-SGPIO1 and I-SGPIO2) headers located on the motherboard. Refer to the tables below for pin definitions.

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

NC = No Connection

Disk-On-Module Power Connector

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

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

TPM/Port 80 Header

A Trusted Platform Module (TPM)/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. Refer to the table below for pin definitions. Please go to the following link for more information on the TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>.

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

Standby Power Header

The Standby Power header is located at JSTBY1 on the motherboard. You must have a card with a Standby Power connector and a cable to use this feature. Refer to the table below for pin definitions.

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

Power SMB (I²C) Header

The Power System Management Bus (I²C) connector (JPI2C1) monitors the power supplies, fans, and system temperatures. Refer to the table below for pin definitions.

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

4-pin BMC External I2C Header

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable 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

M.2 Slots

The X11SPA-T motherboard has four M.2 slots. M.2 was formerly known as Next Generation Form Factor (NGFF) and serves to replace mini PCI-E. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. The M.2 sockets on the motherboard supports PCI-E 3.0 x4 (32 Gb/s) SSD cards in 2260, 2280 and 22110 form factors.

Power LED/Speaker Connector

Pins 1-3 of JD1 are used for power LED indication, and pins 4-7 are for the speaker. Please note that the speaker connector pins (4-7) are used with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a cap. Refer to the tables below for pin definitions.

PWR LED Connector Pin Definitions	
Pin#	Signal
1	JD1_PIN1
2	FP_PWR_LED
3	FP_PWR_LED

Speaker Connector Pin Definitions	
Pin#	Signal
4	P5V
5	Key
6	R_SPKPIN_N
7	R_SPKPIN

Overheat/Fan Fail LED Header

Header JOH1-OH is used to connect to an LED indicator to provide warnings of chassis overheating and fan failure. This LED will blink when a fan failure occurs. Refer to the tables below for pin definitions.

Overheat/Fan Fail LED Header Status	
State	Definition
Solid	Overheat
Blinking	Fan Fail

Overheat/Fan Fail LED Header Pin Definitions	
Pin#	Signal
1	Pull high to +3.3V power through 330-ohm resistor
2	OH Active

SATA Ports

Eight SATA 3.0 ports are located on the X11SPA-T motherboard supported by the C621 chipset. These SATA ports support RAID 0, 1, 5, and 10. SATA ports provide serial-link signal connections which are faster than the connections of Parallel ATA.

Note: For more information on the SATA HostRAID configuration, please refer to the Intel SATA HostRAID user's guide posted on our website at <http://www.supernmicro.com/support/manuals/>.

Chassis Intrusion Header

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened. Refer to the table below for pin definitions.

Chassis Intrusion Header Pin Definitions	
Pin#	Definition
1	Intrusion Input
2	Ground

Intel RAID Key Header

Header JRK1 allows the user to enable RAID functions. Refer to the table below for pin definitions.

Intel RAID Key Header Pin Definitions	
Pin#	Defintion
1	GND
2	PU 3.3V Stdbby
3	GND
4	PCH RAID KEY

4.3 Rear I/O Ports

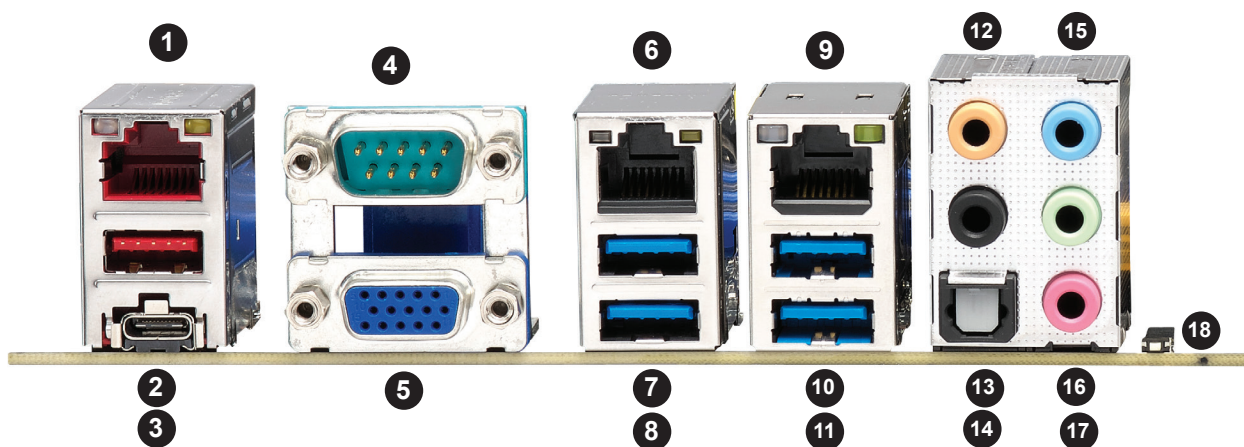


Figure 4-1. Rear I/O Ports

Rear I/O Ports					
Item	Description	Item	Description	Item	Description
1	1Gb RJ45 Port 1	7	USB 3.2 Gen1 (5G)	13	Surround Out
2	USB 3.2 Gen2x1 (10G)	8	USB 3.2 Gen1 (5G)	14	S/PDIF Out
3	USB 3.2 Gen2x1 (10G)	9	10Gb RJ45 Port2	15	Line In
4	COM1 Port	10	USB 3.2 Gen1 (5G)	16	Line Out
5	VGA Port	11	USB 3.2 Gen1 (5G)	17	Mic In
6	Dedicated IPMI LAN Port	12	Center/LFE Out	18	UID Switch

VGA Port

A video (VGA) port is located next to USB 3.2 Gen2x1 Port 8 (Type C) on the I/O back panel.

COM Connections

Two COM connections (COM1/COM2) are located on the motherboard. COM1 is located on the I/O back panel. COM2 is located next to M.2-C03 PCI-E 3.0 x4.

COM Connection Pin Definitions			
Pin#	Definition	Pin#	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	N/A

LAN Ports

Two RJ45 Ethernet LAN ports (LAN1/LAN2) are located on the I/O back panel. In addition, a dedicated IPMI LAN port is located above the USB6/7 ports on the I/O back panel. All of these ports accept RJ45 cables. Please refer to Section 4.6 for LAN LED information.

LAN Port Pin Definitions			
Pin#	Definition	Pin#	Definition
1	TD0-	11	P3V3_Dual
2	TD0+	12	Act LED (Yellow)
3	TD1-	13	Link 1000 (Amber)
4	TD1+	14	Link 100 LED (Green)
5	TD2-	15	GND
6	TD2+	16	GND
7	TD3-	17	GND
8	TD3+	18	GND
9	COMMCT		
10	GND		

IPMI LAN Port Pin Definitions			
Pin#	Definition	Pin#	Definition
9		19	GND
10	TD0+	20	Act LED (Yellow)
11	TD0-	21	Link 100 LED (Green)
12	TD1+	22	Link 1000 LED (Amber)
13	TD1-	23	SGND
14	TD2+	24	SGND
15	TD2-	25	SGND
16	TD3+	26	SGND
17	TD3-		
18	GND		

Universal Serial Bus (USB) Ports

There are four USB 3.2 Gen1 ports (USB4/5, USB6/7) and two USB 3.2 Gen2x1 ports (USB8/9) located on the I/O back panel. The motherboard also has two front access USB 3.2 Gen2x1 headers (USB10, USB11), one front access USB 2.0 header (USB0/1), and one front access USB 3.2 Gen1 header (USB2/3). The USB10 header is Type A and the USB11 header is Type C. The onboard headers can be used to provide front side USB access with a cable (not included).

Back Panel USB0/1 (2.0) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_N	6	USB_N
3	USB_P	7	USB_P
4	Ground	8	Ground

Back Panel USB8/9 (3.1 Gen2) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS	19	Power
2	Stda_SSRX-	18	USB3_RN
3	Stda_SSRX+	17	USB3_RP
4	GND	16	GND
5	Stda_SSTX-	15	USB3_TN
6	Stda_SSTX+	14	USB3_TP
7	GND	13	GND
8	D-	12	USB_N
9	D+	11	USB_P
10		x	

Front Panel USB2/3, 4/5, 6/7 (3.1 Gen1) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	2	+5V
3	USB_N	4	USB_N
5	USB_P	6	USB_P
7	Ground	8	Ground
9	Key	10	NC

Back Panel USB11 (3.1 Gen2) Pin Definitions			
Pin#	Definition	Pin#	Definition
A1	VBUS	B1	Power
A2	D-	B2	USB_N
A3	D+	B3	USB_P
A4	GND	B4	GND
A5	Stda_SSRX-	B5	USB3_RN
A6	Stda_SSRX+	B6	USB3_RP
A7	GND	B7	GND
A8	Stda_SSTX-	B8	USB3_TN
A9	Stda_SSTX+	B9	USB3_TP

Front Panel USB10 (3.1 Gen2) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS	5	SSRX-
2	USB_N	6	SSRX+
3	USB_P	7	GND
4	Ground	8	SSTX-
		9	SSTX+

Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) switch and an LED indicator are located on the motherboard. The UID switch is located at UID-SW, which is next to the HD AUDIO ports on the back panel. The UID-LED is located next to the switch. When you press the UID switch, the UID LED will be turned on. Press the UID switch again to turn off the LED indicator. The UID indicator provides easy identification of a system unit that may be in need of service.

Note: UID can also be triggered via IPMI on the motherboard. For more information on IPMI, please refer to the IPMI User's Guide posted on our website at <http://www.supermicro.com/products/nfo/IPMI.cfm>.

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

4.4 Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with a Supermicro chassis.

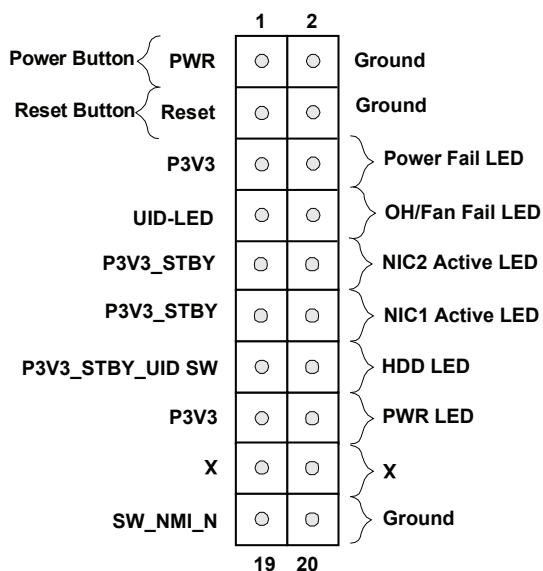


Figure 4-2. JF1 Header Pins

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button. To turn off the power when the system is in suspend mode, press the button for four seconds or longer. Refer to the table below for pin definitions.

Power Button Pin Definitions (JF1)	
Pins	Definition
1	Signal
2	Ground

Reset Button

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

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

Power Fail LED

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

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

Overheat (OH)/Fan Fail LED

Connect an LED cable to pins 7 and 8 of the Front Control Panel to use the Overheat/Fan Fail LED connections. The LED on pin 8 provides warnings of overheating or fan failure. Refer to the tables below for pin definitions.

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

OH/Fan Fail LED Pin Definitions (JF1)	
Pins	Definition
7	Blue LED
8	OH/Fan Fail LED

NIC1/NIC2 (LAN1/LAN2) LED

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

LAN1/LAN2 LED Pin Definitions (JF1)	
Pins	Definition
9	NIC 2 Activity LED
11	NIC 1 Activity LED

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable to pin 14 to show hard drive activity status. Refer to the table below for pin definitions.

HDD LED Pin Definitions (JF1)	
Pins	Definition
13	3.3V Stdby
14	HDD Active

Power LED

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

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

NMI Button

The Non-Maskable Interrupt (NMI) button header is located on pins 19 and 20 of JF1. Refer to the table below for pin definitions.

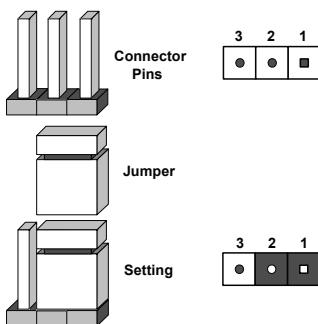
NMI Button Pin Definitions (JF1)	
Pins	Definition
19	Control
20	Ground

4.5 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.



Watchdog

Watchdog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt (NMI) signal for the application that hangs. Refer to the table below for jumper settings. The Watchdog must also be enabled in the BIOS.

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

VGA Enable/Disable

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

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

ME Manufacturing Mode

Close pins 2-3 of Jumper JPME2 to bypass SPI flash security and force the system to operate in the manufacturing mode, which will allow the user to flash the system firmware from a host server for system setting modifications. Refer to the table below for jumper settings. The default setting is Normal.

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

1Gb/10Gb LAN Enable/Disable

JPL1 and JPL2 allows the user to enable or disable the 1Gb/10Gb LAN Ports. The default setting is Enabled.

1Gb/10Gb LAN Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

USB Wake-Up

This jumper allows you to "wake up" the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. Jumper JPUSB1 is used together with the USB Wake-Up feature in BIOS. Both JPUSB1 and the BIOS setting must be enabled to use this feature. The default setting is Enabled.

Note: Please be sure to remove all other USB devices from the USB ports whose jumpers are set to disabled before the system goes into standby mode.

Note: X11SPA-T does not support S3 and S4 power mode states.

4.6 LED Indicators

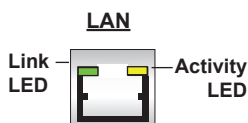
Rear Unit ID LED

A rear UID LED indicator (UID-LED) 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

LAN LEDs

Two LAN ports are located on the I/O back panel of the motherboard. This Ethernet LAN port has two LEDs (Light Emitting Diode). The yellow LED indicates activity, while the Link LED may be green, amber, or off to indicate the speed of the connection. Refer to the tables below for more information.



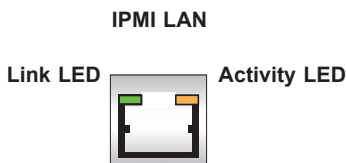
GLAN Activity Indicator LED Settings		
Color	Status	Definition
Yellow	Flashing	Active

1Gbit LAN Link Indicator LED Settings	
LED Color	Definition
Off	No Connection
Amber	100Mbps/10Mbps
Green	1 Gbps

10Gbit LAN Link Indicator LED Settings	
LED Color	Definition
Off	No Connection
Amber	5Gbps/2.5Gbps/1Gbps/100Mbps
Green	10 Gbps.

IPMI LAN LEDs

In addition to LAN1 and LAN2, an IPMI LAN is also located on the I/O back panel. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. Refer to the table below for more information.



IPMI LAN LED Settings		
	Color/State	Definition
Link (Left)	Green: Solid	100 Mbps
	Amber: Solid	1Gbps
Activity (Right)	Amber: Blinking	Active

M.2 LED

The M.2 LED is located at LE3, LE4, LE5, and LE6 on the motherboard. When the M.2 LED is blinking, its corresponding M.2 device functions normally. Refer to the table below for more information.

M.2 LED Settings	
LED Color	Definition
Green: Blinking	Device Working

Onboard Power LED

The Onboard Power LED is located at LEDPWR on the motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing any component. Refer to the table below for more information.

Onboard Power LED Indicator	
LED Color	Definition
Off	System Off (power cable not connected)
Green	System On

BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDBMC on the motherboard. When LEDBMC is blinking, the BMC is functioning normally. Refer to the table below for more information.

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

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.supernmicro.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.

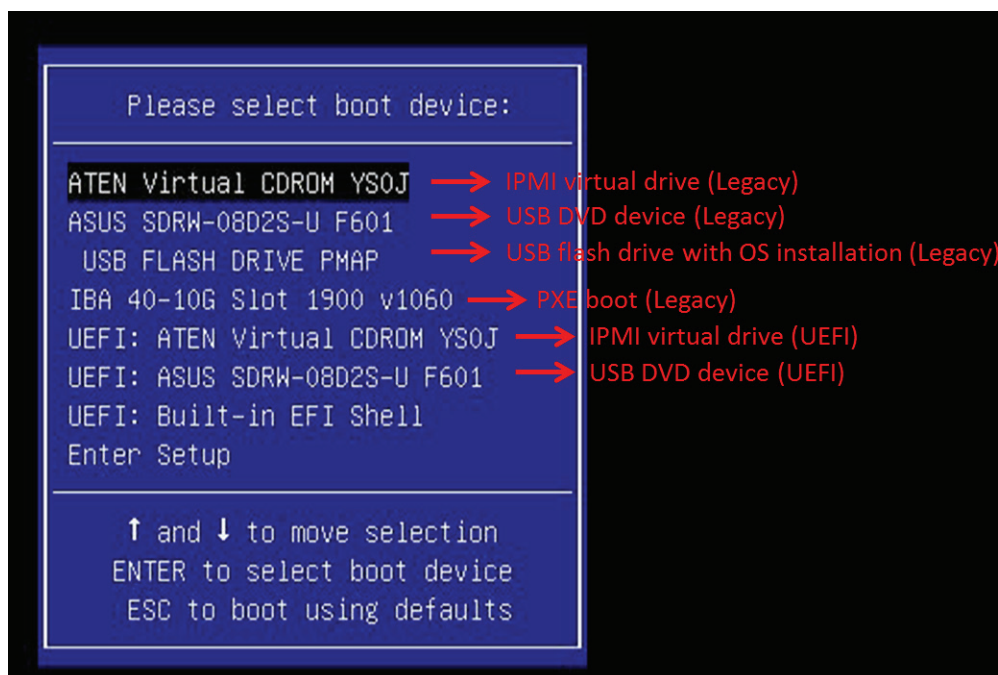


Figure 5-1. Select Boot Device

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.

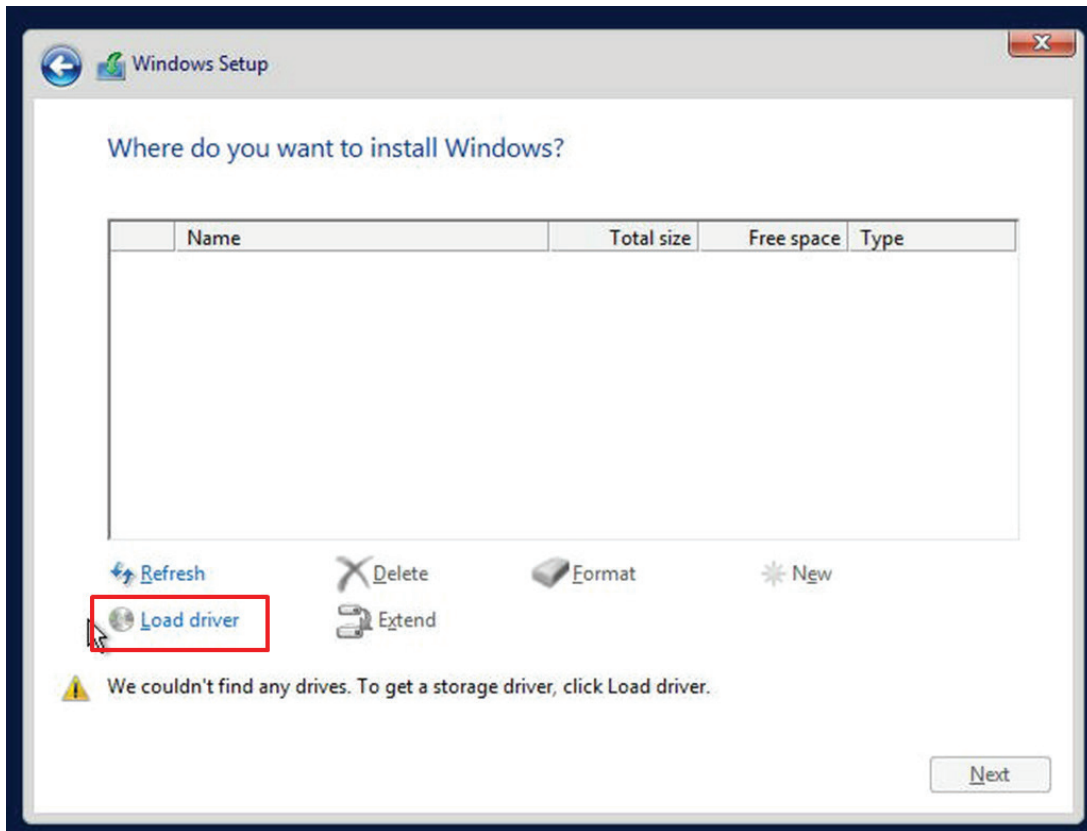


Figure 5-2. Load Driver Link

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/wftp/driver>. 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 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.

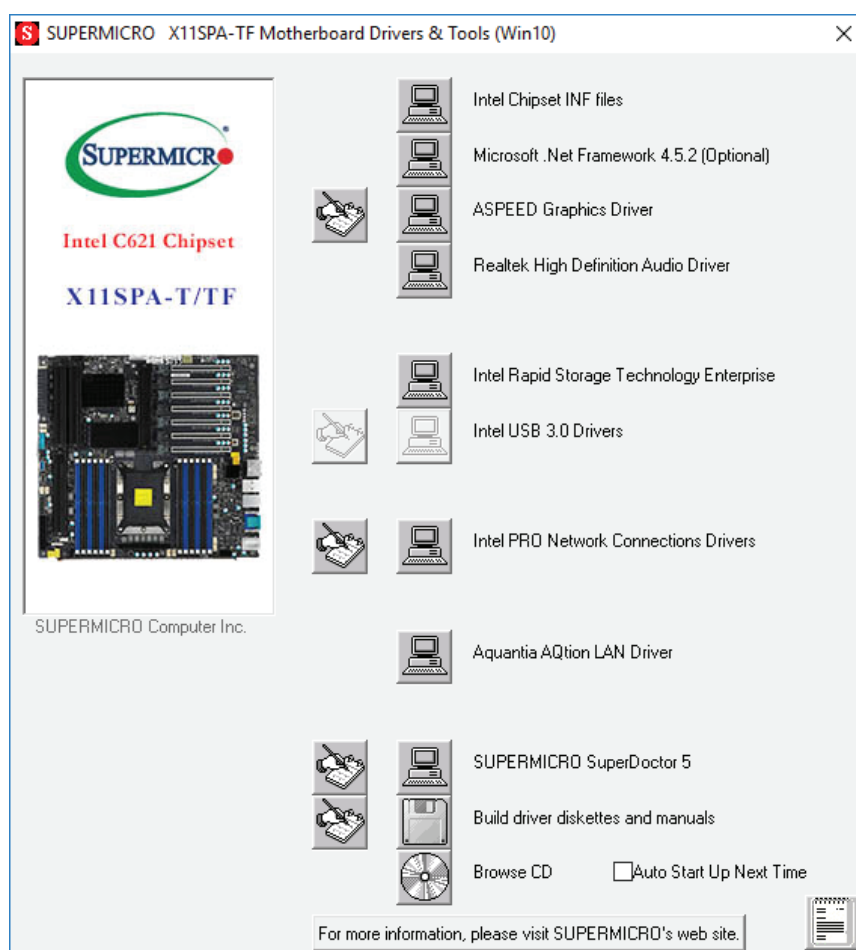


Figure 5-3. Driver & Tool Installation Screen

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.

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

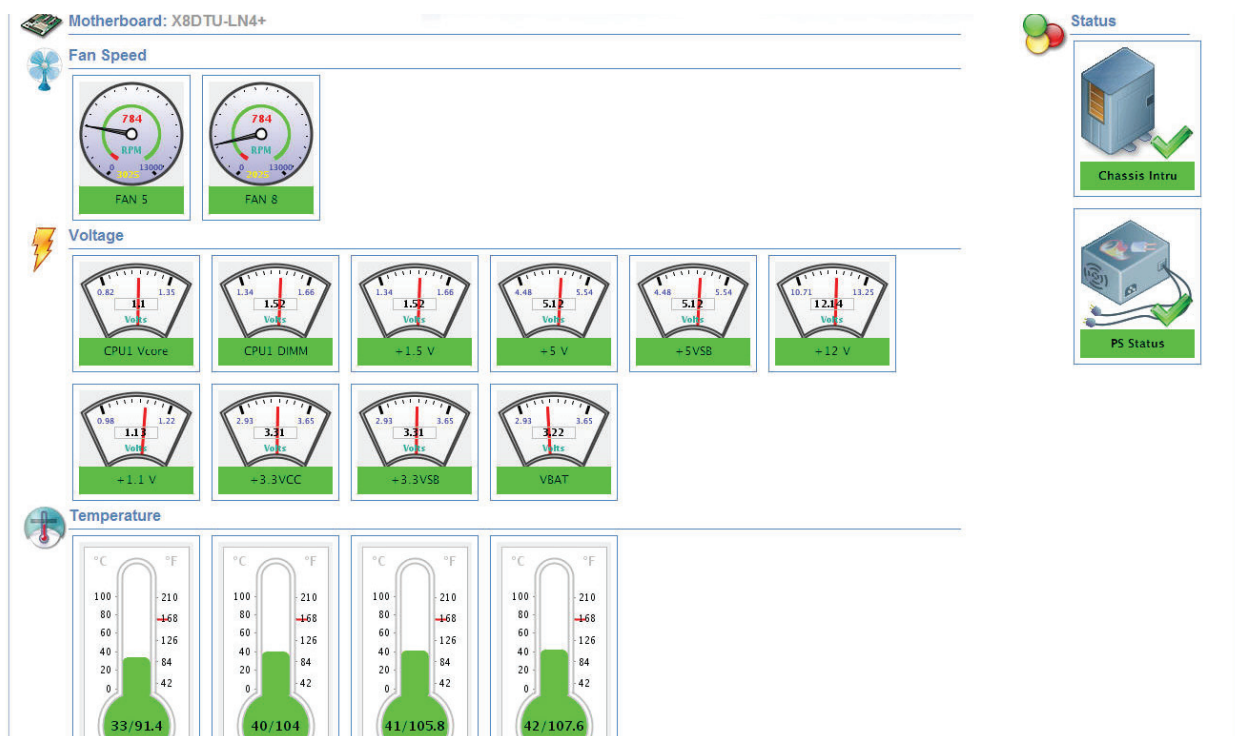


Figure 5-4. SuperDoctor 5 Interface Display Screen (Health Information)

5.4 IPMI

The X11SPA-T 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

UEFI BIOS

6.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the X11SPA-T motherboard. The 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.

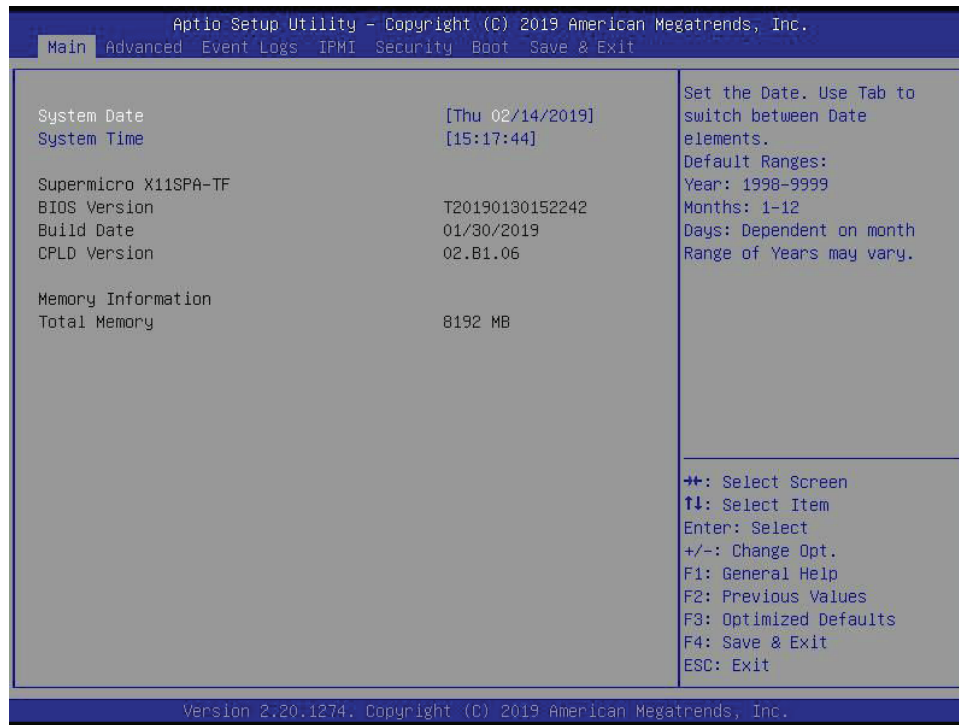
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is 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>, <F10>, <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 and the following features will be displayed:



System Date/System Time

Use this feature 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 the BIOS build date after RTC reset.

Supermicro X11SPA-T

BIOS Version

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

Build Date

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

CPLD Version

This feature displays the Complex Programmable Logic Device version.

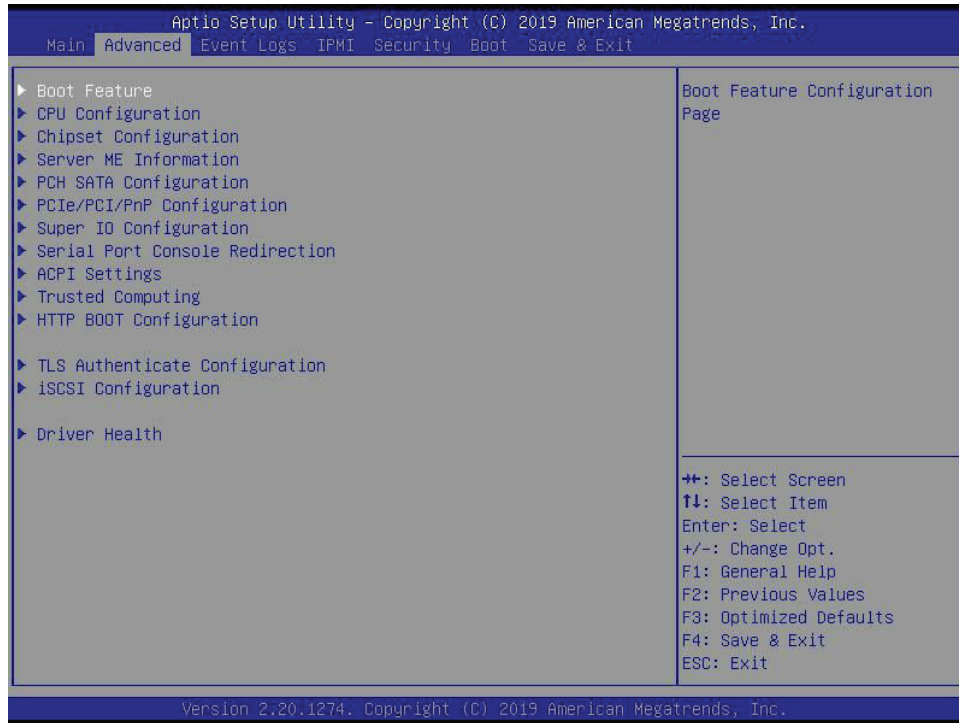
Memory Information

Total Memory

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

6.3 Advanced Setup Configurations

Use the arrow keys to select the Advanced menu and press <Enter> to access the submenu items:



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 default manufacturer 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 AddOn ROM setting. Select Force BIOS to use the Option ROM display set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup NumLock State

Use this feature to set the Power-on state for the <Numlock> key. The options are **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 feature is set to Immediate, the ROM BIOS of the host adapters will "capture" Interrupt 19 at bootup immediately and allow the drives that are attached to these host adapters to function as bootable disks. If this feature is set to Postponed, the ROM BIOS of the host adapters will not capture Interrupt 19 immediately and allow the drives attached to these adapters to function as bootable devices at bootup. The options are **Immediate** and Postponed.

Re-try Boot

If this feature 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 four 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

The following CPU information will display:

- 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 5118 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

This feature allows the user to configure Monitor/Mwait. The options are Disable and **Enable**.

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

Select Enable 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 options are Disable and **Enable**. (Refer to the Intel and Microsoft® websites for more information.)

Intel Virtualization Technology

Use this 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 set to Enable, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disable and **Enable**.

Adjacent Cache Prefetch (Available when supported by the CPU)

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. The options are **Enable** and Disable.

DCU Streamer Prefetcher (Available when supported by the CPU)

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

DCU IP Prefetcher (Available when supported by the CPU)

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

LLC Prefetch

If set to Enable, 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**.

► Advanced Power Management Configuration

Power Technology

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

**If the feature is set to Custom, the following features will display:*

Power Performance Tuning (Available when "Power Technology" is set to Custom)

Select BIOS to allow the system BIOS to configure the Power-Performance Tuning Bias setting below. The options are **OS Controls EPB** and BIOS Controls EPB.

ENERGY_PERF_BIAS_CFG mode (ENERGY PERFORMANCE BIAS CONFIGURATION Mode) (Available when supported by the Processor and when "Power Performance Tuning" is set to BIOS Controls EPB)

Use this feature to set the processor power use policy to achieve the desired operation settings for your machine by prioritizing system performance or energy savings. Select Maximum Performance to maximize system performance (to its highest potential); however, this may result in maximum power consumption as energy is needed to fuel the processor frequency. The higher the performance is, the higher the power consumption will be. Select Max Power Efficient to maximize power saving; however, system performance may be substantially impacted because limited power use decreases the processor frequency. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

► CPU P State Control

This feature allows the user to configure the following CPU power settings:

SpeedStep (P-States)

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

EIST PSD Funtion

This feature allows the user to choose between Hardware and Software to control the processor's frequency and performance (P-state). In HW_ALL mode, the processor hardware is responsible for coordinating the P-state, and the OS is responsible for keeping the P-state request up to date on all Logical Processors. In SW_ALL mode, the OS Power Manager is responsible for coordinating the P-state, and must initiate the transition on all Logical Processors. In SW_ANY mode, the OS Power Manager is responsible for coordinating the P-state and may initiate the transition on any Logical Processors. The options are **HW_ALL**, SW_ALL, and SW_ANY.

Turbo Mode

This feature will enable dynamic control of the processor, allowing it to run above stock frequency. The options are Disable and **Enable**.

► Hardware PM State Control

Hardware P-States

This feature allows the user to select between OS and hardware-controlled P-states. Selecting Native Mode allows the OS to choose a P-state. Selecting Out of Band Mode allows the hardware to autonomously choose a P-state without OS guidance. Selecting Native Mode with No Legacy Support functions as Native Mode with no support for older hardware. The options are **Disable**, Native Mode, Out of Band Mode, and Native Mode with No Legacy Support.

► CPU C State Control

Autonomous Core C-State

Enabling this feature allows the hardware to autonomously choose to enter a C-state based on power consumption and clock speed. The options are **Disable** and Enable.

CPU C6 Report

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

Enhanced Halt State (C1E)

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

► Package C State Control

Package C State

This feature allows the user to set the limit on the C State package register. The options are C0/C1 state, C2 state, C6 (Non Retention) state, C6 (Retention) state, No Limit, and **Auto**.

▶ CPU T State Control

Software Controlled T-States

Use this feature to enable Software Controlled T-States. 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 the user to configure the following North Bridge settings.

▶ UPI Configuration

The following UPI information will display:

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

Link L1 Enable

Select Enable for the QPI to enter the L1 state for power saving. 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 InvltoM Hybrid Push, InvltoM AllocFlow, Enable for Remote InvltoM Hybrid AllocNonAlloc, and Enable for Remote InvltoM and Remote WCiLF.

SNC

Select Enable to use the "Sub NUMA (Non-Uniform Memory Access) Cluster" (SNC) memory scheme, 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 Enable 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

Enforce POR

Select POR (Plan of Record) to enforce POR restrictions on DDR4 frequency and voltage programming. The options are **POR** and Disable.

PPR Type

Use this feature to select Post Package Repair Type. 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.

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

Select Enable to get TCDD settings from SPD (Serial Presence Detect) and implement into memory RC code to improve system reliability. Select Disable for TCCD to follow Intel POR. The options are **Auto** and Disable.

tRWSR Relaxation

Select Enable to use the same tRWSR DDR timing setting among all memory channels, in which case, the worst case value among all channels will be used. Select Disable to use different values for the tRWSR DDR timing settings for different channels as trained. The options are **Disable** and Enable.

2x Refresh

Use this feature to select the memory controller refresh rate to 2x refresh mode. The options are **Auto** and Enable.

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 the information of onboard memory modules as detected by the BIOS.

► Memory RAS Configuration

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% redundancy. The options are **Disable**, Mirror Mode 1LM, and Mirror Mode 2LM.

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 feature 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 feature 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 on a processor will always remain clear during electric tuning. The options are **Disable** and Enable.

► CPU Configuration

IOU1 (IIO PCIe Br2)

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

IOU2 (IIO PCIe Br3)

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

► CPU SLOT7 PCI-E 3.0 x16/CPU SLOT1 PCI-E 3.0 x16/M.2C01 PCI-E 3.0 x4/M.2C02 PCI-E 3.0 x4/M.2C03 PCI-E 3.0 x4/M.2C04 PCI-E 3.0 x4

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).

The following information will also be displayed:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port 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. The options are 128B, 256B, and **Auto**.

► IOAT Configuration

Disable TPH

TPH is used for data-tagging with a destination ID and a few important attributes. It can send critical data to a particular cache without writing through to memory. Select No in this feature for TLP Processing Hint support, which will allow a "TLP request" to provide "hints" to help optimize the processing of each transaction occurred in the target memory space. 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 **Enable** and Disable.

ACS Control

This feature allows users to choose whether they want to enable or disable PCI-E Access Control Services (ACS) Extended Capability. The options are **Enable** and Disable.

Interrupt Remapping

Use this feature to enable Interrupt Remapping support, which detects and controls external interrupt requests. 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-Isoch VT-d engine to pass through DMA to enhance system performance. The options are **Enable** and Disable.

► Intel® VMD Technology**► 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 above is set to Enable, the following features will become available for configuration:*

CPU SLOT2/3/4/5 PCI-E 3.0 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 PCI-E 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 above is set to Enable, the following features will become available for configuration:***

CPU SLOT7 PCI-E 3.0 x16 VMD/CPU 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.

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

Use this feature to enable hot plug support for PCI-E 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 above is set to Enable, the following features will become available for configuration:***

CPU SLOT1 PCI-E 3.0 x16 VMD/M.2C01 PCI-E 3.0 x4 VMD/M.2C02 PCI-E 3.0 x4 VMD/M.2C03 PCI-E 3.0 x4 VMD/M.2C04 PCI-E 3.0 x4 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 PCI-E root ports 3A~3D. The options are **Disable** and Enable.

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

The following USB information will display:

- USB Module Version
- USB Devices

Legacy USB Support

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

XHCI Hand-off

When this feature is disabled, the motherboard will not support USB 3.0. The options are **Enabled** and Disabled.

Port 60/64 Emulation

This feature allows legacy I/O support for USB devices like mice and keyboards. The options are **Enabled** and Disabled.

PCIe PLL SSC

Select Enable for PCH PCI-E 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 Enable and **Disable**.

Azalia

Use this feature to enable or disable Azalia audio devices. If Auto is selected, BIOS will automatically enable Azalia once an Azalia device is detected. The options are Enable, Disable, and **Auto**.

Azalia PME Enable

Use this feature to enable or disable PME (Power Management Event) for Azalia. The options are Enable and **Disable**.

► Workstation Me Configuration

The following General ME Configuration will display:

- Oper. Firmware Version
- Me Firmware
- Me Firmware SKU
- Backup Firmware Version

- 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 features:

SATA Controller

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

Configure SATA as

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 **Enable** and Disable.

Aggressive Link Power Management

When this feature is set to Enable, 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 **Disable** and Enable.

****If the feature "Configure SATA as" above is set to RAID, the following features will become available for configuration:***

SATA Port 0 ~ Port 7

This feature 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 feature to Enable for hot plug support, which will allow the user to replace a SATA drive without shutting down the system. The options are Disable and **Enable**.

Port 0 ~ Port 7 Spin Up Device

On an edge detect from 0 to 1, set this feature to allow the PCH to initialize the device. The options are **Disable** and Enable.

Port 0 ~ Port 7 SATA Device Type

Use this feature 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.

► PCIe/PCI/PnP Configuration

The following information will display:

- 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 I/O Virtualization Support. The options are **Disabled** and Enabled.

MMIO High Base

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

MMIO High Granularity Size

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

Maximum Read Request

Use this feature to select the Maximum Read Request size of the PCI-Express device, or select Auto to allow the System BIOS to determine the value. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

MMCFG Base

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

NVMe Firmware Source

Use this feature to select the NVMe firmware to support booting. The options are Vendor Defined 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 feature to select VGA priority when multiple VGA devices are detected. Select Onboard to give priority to your onboard video device. Select Offboard to give priority to your graphics card. The options are **Onboard** and Offboard.

CPU SLOT1 PCI-E 3.0 x16 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.

CPU 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.

CPU SLOT3 PCI-E 3.0 x16 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.

CPU SLOT4 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.

CPU SLOT5 PCI-E 3.0 x16 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.

CPU SLOT6 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.

CPU SLOT7 PCI-E 3.0 x16 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.2C01 PCI-E 3.0 x4 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.2C02 PCI-E 3.0 x4 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.2C03 PCI-E 3.0 x4 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.2C04 PCI-E 3.0 x4 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 Disabled and **Enabled**.

Onboard LAN Option ROM Type

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

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, **PXE**, and iSCSI.

Onboard LAN2 Option ROM

Use this feature to select which firmware function to be loaded for LAN Port 2 used for system boot. The options are **Disabled** and PXE.

Onboard Video Option ROM

Use this feature 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 **Enabled** and Disabled.

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

► Super IO Configuration

The following Super IO information will display:

- Super IO Chip AST2500

► Serial Port 1 Configuration

This submenu allows the user to configure the 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 feature 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=2F8h; IRQ=4;), (IO=3E8h; IRQ=4;), and (IO=2E8h; IRQ=4;).

► Serial Port 2 Configuration

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

Serial Port 2

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

Device Settings

This feature displays the status of a serial port 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=3;), (IO=3F8h; IRQ=3;), (IO=3E8h; IRQ=3;), and (IO=2E8h; IRQ=3;).

Serial Port 2 Attribute (Available for Serial Port 2 only)

Select SOL to use COM Port 2 as a Serial Over LAN (SOL) port for console redirection. 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 Enabled and **Disabled**.

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

► COM1 Console Redirection Settings

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

COM1 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.

COM1 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).

COM1 Data Bits

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

COM1 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.

COM1 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.

COM1 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.

COM1 VT-UTF8 Combo Key Support

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

COM1 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.

COM1 Resolution 100x31

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

COM1 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**.

COM1 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.

COM1 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/COM2 Console Redirection

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

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

► SOL/COM2 Console Redirection Settings

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

COM2 Terminal Type

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

COM2 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).

COM2 Data Bits

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

COM2 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.

COM2 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**.

COM2 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.

COM2 VT-UTF8 Combo Key Support

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

COM2 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.

COM2 Resolution 100x31

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

COM2 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**.

COM2 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.

COM2 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 OPRM messages. The options are **COM1** and SOL/COM2.

EMS (Emergency Management Services) Console Redirection

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

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

► EMS Console Redirection Settings

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

Out-of-Band Mgmt Port

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

Terminal Type

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

Bits Per Second

This feature 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 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**, Hardware RTS/CTS, and Software Xon/Xoff.

►ACPI Settings

WHEA Support

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

High Precision Event Timer

Select Enabled to activate the High 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

The X11SPA-T supports TPM 1.2 and 2.0. The following Trusted Platform Module (TPM) information will display if a TPM 2.0 module is detected:

- Vendor Name
- Firmware Version

Security Device Support

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for TPM (Trusted Platform Module) support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Disable and **Enable**.

- Active PCR Bank
- SHA256 PCR Bank

****If the feature above is set to Enable, "SHA-1 PCR Bank" and "SHA256 PCR Bank" will become available for configuration:***

SHA-1 PCR Bank

Use this feature to disable or enable the SHA-1 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

SHA256 PCR Bank

Use this feature to disable or enable the SHA256 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

Pending Operation

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

Platform Hierarchy

Use this feature to disable or enable platform hierarchy for platform protection. The options are Disabled and **Enabled**.

Storage Hierarchy

Use this feature to disable or enable storage hierarchy for cryptographic protection. The options are Disabled and **Enabled**.

Endorsement Hierarchy

Use this feature to disable or enable endorsement hierarchy for privacy control. The options are Disabled and **Enabled**.

PH Randomization

Use this feature to disable or enable Platform Hierarchy (PH) Randomization. The options are **Disabled** and Enabled.

TXT Support

Intel Trusted Execution Technology (TXT) helps protect against software-based attacks and ensures protection, confidentiality, and integrity of data stored or created on the system. Use this feature to enable or disable TXT Support. The options are **Disable** and Enable.

► HTTP BOOT Configuration

Http Boot One Time

This feature allows the user to disable and enable HTTP Boot feature. If a Http Boot Option is created, the system will automatically boot into Http Boot. The options are **Disable** and Enable.

Input the description

This feature allows the user to key in descriptions for the HTTP Boot option.

Boot URI

A new Boot Option will be created according to this Boot URI.

▶ TLS Authenticate Configuration

▶ Server CA Configuration

▶ Enroll Certification

▶ Enroll Cert Using File

Cert GUID

▶ Commit Changes and Exit

▶ Discard Changes and Exit

▶ Delete Certification

▶ Change Attempt order

▶ Intel® Virtual RAID on CPU

This submenu displays the information of the Intel VMD controllers as detected by the BIOS.

▶ Intel® Optane(TM) DC Persistent Memory Configuration (Available when Apache Pass device plug-in)

This submenu configures AEP (Apache Pass) device parameters and displays driver version.

Version: 1.0.0.3380

Select an action below.

Detected DIMMs:

This feature displays the number of DIMMs as detected by the system.

All DIMMs are healthy.

► DIMMs

This feature configures and displays the information of a selected DCPMM.

Select a specific DIMM to view more information.

DIMMs on socket 0x0000:

► DIMM ID 0x0001

Press <Enter> and the following information regarding this DIMM will be displayed.

View settings or select an action below.

DIMM UID	8089-A2-1837-0000115D
DIMM handle	0x0001
DIMM physical ID	0x0019
Manageability state	[Manageable]
Health state	[Healthy]
Health state reason	None
Capacity	252.4 GiB
Firmware version	01.00.00.5127
Firmware API Version	01.11
Lock state	[Disabled]
Staged firmware version	N/A
Firmware update status	Update loaded successfully
Manufacturer	Intel

Show more details +

Use this feature to display or hide additional information about this DIMM. The options are **Disabled** and **Enabled**.

****If the feature, Show more details +, is set to Enabled, the following will be displayed:***

Serial number	0x0000115D
Part number	NMA1XBD256GQS
Socket	0x0
Memory controller ID	0x0
Vendor ID	0x8089
Device ID	0x5141
Subsystem vendor ID	0x8089
Subsystem device ID	0x97A
Device locator	P1-DIMMA2
Subsystem revision ID	0x18
Interface format code	0x0301 (Non-Energy Backed Byte Addressable)
Manufacturing info valid	1
Manufacturing date	18-37
Manufacturing location	0xA2
Memory type	Logical Non-Volatile Device
Memory bank label	P0_Node0_Channel0_Dimm1
Data width label [b]	64
Total width [b]	72
Speed [MHz]	2666
Channel ID	0x0000
Channel position	1
Revision ID	0x0
Form factor	[DIMM]
Manufacturer ID	0x8089
Controller revision ID	B0 (0x0020)
Is new	0
Memory capacity	252.0 GiB

App Direct capacity **0 B**
Unconfigured capacity **0 B**
Inaccessible capacity **0 B**
Reserved capacity **465.2 MiB**
Peak power budget [mW] **20000**
Avg power budget [mW] **15000**
Max average power budget [mW] **10000**
Package sparing capable **1**
Package sparing enabled **1**
Package spares available **1**
Configuration status **[Valid]**
SKU violation **0**
ARS status **[Completed]**
Overwrite DIMM status **[Not started]**
Last shutdown time **Fri Dec 21 17:29:23 UTC 2018**
First fast refresh **0**
Viral policy enable **0**
Viral state **0**

Latched Last shutdown status PM ADR Command Received, DDRT Power Fail Command Received, PMIC 12V/DDRT 1.2V Power Loss (PLI), Controller's FW State Flush Complete, Write Data Flush Complete, PM Idle Received

(**Note:** All DCPMM items and strings displayed on the BIOS screen are provided by Intel and will depend on the driver version.)

Unlatched last shutdown status Unknown

Security capabilities **Encryption, Erase**
Modes supported **Memory Mode, App Direct**
Boot status **Success**
AIT DRAM enabled **[1]**
Error injection enabled **[0]**
Media temperature injection enabled **[0]**

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

► **DIMM ID 0x0101**

Press <Enter> and the following information regarding this DIMM will be displayed.

View settings or select an action below.

DIMM UID	8089-A2-1837-00000B35
DIMM handle	0x0101
DIMM physical ID	0x0021
Manageability state	[Manageable]
Health state	[Healthy]
Health state reason	None
Capacity	252.4 GiB
Firmware version	01.00.00.5127
Firmware API Version	01.11
Lock state	[Disabled]
Staged firmware version	N/A
Firmware update status	Update loaded successfully
Manufacturer	Intel

Show more details +

Use this feature to display or hide additional information about this DIMM. The options are **Disabled** and **Enabled**.

**If the feature, Show more details +, is set to Enabled, the following will be displayed:*

Serial number	0x00000B35
Part number	NMA1XBD256GQS
Socket	0x0
Memory controller ID	0x1
Vendor ID	0x8089
Device ID	0x5141
Subsystem vendor ID	0x8089
Subsystem device ID	0x97A
Device locator	P1-DIMMD2
Subsystem revision ID	0x18
Interface format code	0x0301 (Non-Energy Backed Byte Addressable)
Manufacturing info valid	1
Manufacturing date	18-37
Manufacturing location	0xA2
Memory type	Logical Non-Volatile Device
Memory bank label	P0_Node1_Channel0_Dimm1
Data width label [b]	64
Total width [b]	72
Speed [MHz]	2666
Channel ID	0x0000
Channel position	1
Revision ID	0x0
Form factor	[DIMM]
Manufacturer ID	0x8089
Controller revision ID	B0 (0x0020)
Is new	0
Memory capacity	252.0 GiB

App Direct capacity **0 B**
Unconfigured capacity **0 B**
Inaccessible capacity **0 B**
Reserved capacity **465.2 MiB**
Peak power budget [mW] **20000**
Avg power budget [mW] **15000**
Max average power budget [mW] **10000**
Package sparing capable **1**
Package sparing enabled **1**
Package spares available **1**
Configuration status **[Valid]**
SKU violation **0**
ARS status **[Completed]**
Overwrite DIMM status **[Not started]**
Last shutdown time **Fri Dec 21 17:29:23 UTC 2018**
First fast refresh **0**
Viral policy enable **0**
Viral state **0**

Latched Last shutdown status **PM S5 Received, PMIC 12V/DDRT 1.2V Power Loss (PLI), Controller's FW State Flush Complete, Write Data Flush Complete, PM Idle Received**

(**Note:** All DCPMM items and strings displayed on the BIOS screen are provided by Intel and will depend on the driver version.)

Unlatched last shutdown status **Unknown**

Security capabilities **Encryption, Erase**
Modes supported **Memory Mode, App Direct**
Boot status **Success**
AIT DRAM enabled **[1]**
Error injection enabled **[0]**

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

► **DIMM ID 0x0011**

Press <Enter> and the following information regarding this DIMM will be displayed.

View settings or select an action below.

DIMM UID 8089-A2-1837-00000B34

DIMM handle 0x0011

DIMM physical ID 0x001B

Manageability state [Manageable]

Health state [Healthy]

Health state reason None

Capacity 252.4 GiB

Firmware version 01.00.00.5127

Firmware API Version 01.11

Lock state [Disabled]

Staged firmware version N/A

Firmware update status Update loaded successfully

Manufacturer Intel

Show more details +

Use this feature to display or hide additional information about this DIMM. The options are **Disabled** and Enabled.

**If the feature, Show more details +, is set to Enabled, the following will be*

displayed:

Serial number	0x00000B34
Part number	NMA1XBD256GQS
Socket	0x0
Memory controller ID	0x0
Vendor ID	0x8089
Device ID	0x5141
Subsystem vendor ID	0x8089
Subsystem device ID	0x97A
Device locator	P1-DIMMB2
Subsystem revision ID	0x18
Interface format code	0x0301 (Non-Energy Backed Byte Addressable)
Manufacturing info valid	1
Manufacturing date	18-37
Manufacturing location	0xA2
Memory type	Logical Non-Volatile Device
Memory bank label	P0_Node0_Channel1_Dimm1
Data width label [b]	64
Total width [b]	72
Speed [MHz]	2666
Channel ID	0x0001
Channel position	1
Revision ID	0x0
Form factor	[DIMM]
Manufacturer ID	0x8089
Controller revision ID	B0 (0x0020)
Is new	0

Memory capacity 252.0 GiB
App Direct capacity 0 B
Unconfigured capacity 0 B
Inaccessible capacity 0 B
Reserved capacity 465.2 MiB
Peak power budget [mW] 20000
Avg power budget [mW] 15000
Max average power budget [mW] 10000
Package sparing capable 1
Package sparing enabled 1
Package spares available 1
Configuration status [Valid]
SKU violation 0
ARS status [Completed]
Overwrite DIMM status [Not started]
Last shutdown time Fri Dec 21 17:29:23 UTC 2018
First fast refresh 0
Viral policy enable 0
Viral state 0

Latched Last shutdown status PM S5 Received, PMIC 12V/DDRT 1.2V Power Loss (PLI), Controller's FW State Flush Complete, Write Data Flush Complete, PM Idle Received

(**Note:** All DCPMM items and strings displayed on the BIOS screen are provided by Intel and will depend on the driver version.)

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase
Modes supported Memory Mode, App Direct
Boot status Success
AIT DRAM enabled [1]

Error injection enabled [0]
 Media temperature injection enabled [0]
 Software triggers enabled [0]
 Software triggers enabled details None
 Poison error injection counter 0
 Poison error clear counter 0
 Media temperature injection counter 0
 Software triggers counter 0
 Master Passphrase Enabled 0

► **DIMM ID 0x0111**

Press <Enter> and the following information regarding this DIMM will be displayed.

View settings or select an action below.

DIMM UID	8089-A2-1837-0000110C
DIMM handle	0x0111
DIMM physical ID	0x0023
Manageability state	[Manageable]
Health state	[Healthy]
Health state reason	None
Capacity	252.4 GiB
Firmware version	01.00.00.5127
Firmware API Version	01.11
Lock state	[Disabled]
Staged firmware version	N/A
Firmware update status	Update loaded successfully
Manufacturer	Intel

Show more details +

Use this feature to display or hide additional information about this DIMM. The options are **Disabled** and **Enabled**.

**If the feature, Show more details +, is set to Enabled, the following will be displayed:*

Serial number	0x000011C
Part number	NMA1XBD256GQS
Socket	0x0
Memory controller ID	0x1
Vendor ID	0x8089
Device ID	0x5141
Subsystem vendor ID	0x8089
Subsystem device ID	0x97A
Device locator	P1-DIMME2
Subsystem revision ID	0x18
Interface format code	0x0301 (Non-Energy Backed Byte Addressable)
Manufacturing info valid	1
Manufacturing date	18-37
Manufacturing location	0xA2
Memory type	Logical Non-Volatile Device
Memory bank label	P0_Node1_Channel1_Dimm1
Data width label [b]	64
Total width [b]	72
Speed [MHz]	2666
Channel ID	0x0001
Channel position	1
Revision ID	0x0
Form factor	[DIMM]
Manufacturer ID	0x8089
Controller revision ID	B0 (0x0020)
Is new	0

Memory capacity	252.0 GiB
App Direct capacity	0 B
Unconfigured capacity	0 B
Inaccessible capacity	0 B
Reserved capacity	465.2 MiB
Peak power budget [mW]	20000
Avg power budget [mW]	15000
Max average power budget [mW]	10000
Package sparing capable	1
Package sparing enabled	1
Package spares available	1
Configuration status	[Valid]
SKU violation	0
ARS status	[Completed]
Overwrite DIMM status	[Not started]
Last shutdown time	Fri Dec 21 17:29:23 UTC 2018
First fast refresh	0
Viral policy enable	0
Viral state	0

Latched Last shutdown status PM S5 Received, PMIC 12V/DDRT 1.2V Power Loss (PLI), Controller's FW State Flush Complete, Write Data Flush Complete, PM Idle Received

(**Note:** All DCPMM items and strings displayed on the BIOS screen are provided by Intel and will depend on the driver version.)

Unlatched last shutdown status Unknown

Security capabilities	Encryption, Erase
Modes supported	Memory Mode, App Direct
Boot status	Success
AIT DRAM enabled	[1]

Error injection enabled [0]
Media temperature injection enabled [0]
Software triggers enabled [0]
Software triggers enabled details None
Poison error injection counter 0
Poison error clear counter 0
Media temperature injection counter 0
Software triggers counter 0
Master Passphrase Enabled 0

► **DIMM ID 0x0021**

Press <Enter> and the following information regarding this DIMM will be displayed.

View settings or select an action below.

DIMM UID	8089-A2-1837-00000B2E
DIMM handle	0x0021
DIMM physical ID	0x001D
Manageability state	[Manageable]
Health state	[Healthy]
Health state reason	None
Capacity	252.4 GiB
Firmware version	01.00.00.5127
Firmware API Version	01.11
Lock state	[Disabled]
Staged firmware version	N/A
Firmware update status	Update loaded successfully
Manufacturer	Intel

Show more details +

Use this feature to display or hide additional information about this DIMM. The options are **Disabled** and **Enabled**.

**If the feature, Show more details +, is set to Enable, the following will be displayed:*

Serial number	0x00000B2E
Part number	NMA1XBD256GQS
Socket	0x0
Memory controller ID	0x0
Vendor ID	0x8089
Device ID	0x5141
Subsystem vendor ID	0x8089
Subsystem device ID	0x97A
Device locator	P1-DIMMC2
Subsystem revision ID	0x18
Interface format code	0x0301 (Non-Energy Backed Byte Addressable)
Manufacturing info valid	1
Manufacturing date	18-37
Manufacturing location	0xA2
Memory type	Logical Non-Volatile Device
Memory bank label	P0_Node0_Channel2_Dimm1
Data width label [b]	64
Total width [b]	72
Speed [MHz]	2666
Channel ID	0x0002
Channel position	1
Revision ID	0x0
Form factor	[DIMM]
Manufacturer ID	0x8089
Controller revision ID	B0 (0x0020)
Is new	0

Memory capacity	252.0 GiB
App Direct capacity	0 B
Unconfigured capacity	0 B
Inaccessible capacity	0 B
Reserved capacity	465.2 MiB
Peak power budget [mW]	20000
Avg power budget [mW]	15000
Max average power budget [mW]	10000
Package sparing capable	1
Package sparing enabled	1
Package spares available	1
Configuration status	[Valid]
SKU violation	0
ARS status	[Completed]
Overwrite DIMM status	[Not started]
Last shutdown time	Fri Dec 21 17:29:23 UTC 2018
First fast refresh	0
Viral policy enable	0
Viral state	0

Latched Last shutdown status PM S5 Received, PMIC 12V/DDRT 1.2V Power Loss (PLI), Controller's FW State Flush Complete, Write Data Flush Complete, PM Idle Received

(**Note:** All DCPMM items and strings displayed on the BIOS screen are provided by Intel and will depend on the driver version.)

Unlatched last shutdown status Unknown

Security capabilities	Encryption, Erase
Modes supported	Memory Mode, App Direct
Boot status	Success
AIT DRAM enabled	[1]

Error injection enabled [0]
Media temperature injection enabled [0]
Software triggers enabled [0]
Software triggers enabled details None
Poison error injection counter 0
Poison error clear counter 0
Media temperature injection counter 0
Software triggers counter 0
Master Passphrase Enabled 0

► **DIMM ID 0x0121**

Press <Enter> and the following information regarding this DIMM will be displayed.

View settings or select an action below.

DIMM UID	8089-A2-1837-000010AE
DIMM handle	0x0121
DIMM physical ID	0x0025
Manageability state	[Manageable]
Health state	[Healthy]
Health state reason	None
Capacity	252.4 GiB
Firmware version	01.00.00.5127
Firmware API Version	01.11
Lock state	[Disabled]
Staged firmware version	N/A
Firmware update status	Update loaded successfully
Manufacturer	Intel
Show more details +	

Use this feature to display or hide additional information about this DIMM. The options are **Disabled** and **Enabled**.

**If the feature, Show more details +, is set to Enable, the following will be displayed:*

Serial number	0x000010AE
Part number	NMA1XBD256GQS
Socket	0x0
Memory controller ID	0x0
Vendor ID	0x8089
Device ID	0x5141
Subsystem vendor ID	0x8089
Subsystem device ID	0x97A
Device locator	P1-DIMMF2
Subsystem revision ID	0x18
Interface format code	0x0301 (Non-Energy Backed Byte Addressable)
Manufacturing info valid	1
Manufacturing date	18-37
Manufacturing location	0xA2
Memory type	Logical Non-Volatile Device
Memory bank label	P0_Node1_Channel2_Dimm1
Data width label [b]	64
Total width [b]	72
Speed [MHz]	2666
Channel ID	0x0002
Channel position	1
Revision ID	0x0
Form factor	[DIMM]
Manufacturer ID	0x8089

Controller revision ID	B0 (0x0020)
Is new	0
Memory capacity	252.0 GiB
App Direct capacity	0 B
Unconfigured capacity	0 B
Inaccessible capacity	0 B
Reserved capacity	465.2 MiB
Peak power budget [mW]	20000
Avg power budget [mW]	15000
Max average power budget [mW]	10000
Package sparing capable	1
Package sparing enabled	1
Package spares available	1
Configuration status	[Valid]
SKU violation	0
ARS status	[Completed]
Overwrite DIMM status	[Not started]
Last shutdown time	Fri Dec 21 17:29:23 UTC 2018
First fast refresh	0
Viral policy enable	0
Viral state	0

Latched Last shutdown status PM S5 Received, PMIC 12V/DDRT 1.2V Power Loss (PLI), Controller's FW State Flush Complete, Write Data Flush Complete, PM Idle Received

(**Note:** All DCPMM items and strings displayed on the BIOS screen are provided by Intel and will depend on the driver version.)

Unlatched last shutdown status Unknown

Security capabilities	Encryption, Erase
Modes supported	Memory Mode, App Direct

Boot status **Success**

AIT DRAM enabled **[1]**

Error injection enabled **[0]**

Media temperature injection enabled **[0]**

Software triggers enabled **[0]**

Software triggers enabled details **None**

Poison error injection counter **0**

Poison error clear counter **0**

Media temperature injection counter **0**

Software triggers counter **0**

Master Passphrase Enabled **0**

▶ **Monitor health**

Current non-critical threshold status

Controller temperature: within the non-critical threshold on all DIMMs.

Media temperature: within the non-critical threshold on all DIMMs.

Percentage remaining: within the non-critical threshold on all DIMMs.

Modify non-critical thresholds

Controller temperature [C]

Use this feature to set controller temperature in Celsius. (Min. = 20°C, Max. = 105°C)

Media temperature [C]

Use this feature to set media temperature in Celsius. (Min = 20°C, Max = 85°C)

Percentage remaining [%]

Use this feature to set spare capacity as a percentage. (Min = 1%, Max = 99%)

▶ **Apply changes**

▶ **Back to main menu**

▶ **Update firmware**

Specify the firmware image to load on the DIMMs on the next system restart and select Update.

Current firmware version: 01.00.00.5127

Selected firmware version: None

File:

Press <Enter> and type in the file path relative to the root directory of the device containing the new firmware image file, such as "\\firmware\\newFirmware.bin".

Staged firmware version: N/A

▶ **Update**

▶ **Back to main menu**

▶ **Configure security**

Specify the security settings on ALL the DIMMs.

State: [Disabled]

[Disabled, Frozen] will be displayed after pressing the following feature, Frozen lock.

Enable security

Use this feature to enable security by entering a new passphrase. Press <Enter> to type in a new passphrase with at least one character.

Secure erase

Use this feature to erase all persistent data. The options are Yes and No

Frozen lock

Use this feature to prevent further lock state changes until the next reboot.

▶ **Back to main menu**

▶ **Configure data policy**

Specify the data policy settings on ALL the DIMMs.

First fast refresh state: [Disabled] (or [Enabled])

Depending on the settings of the following feature, Enable/Disable first fast refresh, [Disabled] or [Enabled] will be displayed.

► **Enable/Disable first fast refresh**

Use this feature to enable/disable the feature above, First fast refresh state.

► **Back to main menu**

► **Back to main menu**

► **Regions**

Use this submenu to configure and display regions.

Current configuration

There are no regions defined in the system.

Memory allocation goal configuration

No goal configuration specified.

► **Create goal config**

Use this submenu to create goal configuration of DIMM regions.

Select the scope of the new region then set the desired sizes.

Create goal config for:

Use this feature to select target to create goal configuration. The options are **Platform** and **Socket**.

Reserved [%]:

Enter a value (0-100) to reserve a percentage of the requested DIMM capacity that will not be mapped into the system physical address space.

Memory Mode [%]:

Enter a value (0-100) to set the percentage of the total capacity to use in Memory Mode.

Persistent memory type:

Use this feature to select the type of the persistent memory capacity to create. The options are **App Direct** and **App Direct Not interleaved**.

Namespace Label version:

While creating goals, use this feature to display and modify the namespace label version to initialize. The options are 1.2 and 1.1.

► **Create goal config**

Use this feature to create goal configuration on the selected target.

▶ **Back to Regions menu**

▶ **Back to main menu**

▶ **Back to main menu**

▶ **Namespaces**

Use this submenu to display, create, modify, and delete namespaces.

Select a namespace to view more information.

NamespaceID Name Health Status.

▶ **0x00000101 Healthy**

Use this feature to display details for or modify selected namespace.

View details for or modify selected namespace.

UUID 66B9E696-0E38-47B3-81

5E-99FFAFC26A23

ID 0x00000101

Name

Press <Enter> to type in a name of namespace.

Region 1

Health [Healthy]

Mode [None]

Block size [4096 B]

Units

Use this feature to change the units of the input namespace capacity. The options are B, MB, MiB, GB, GiB, TB, and TiB.

Capacity 125.0

Label version 1.2

▶ **Save**

Use this feature to save current namespace.

▶ **Delete**

Use this feature to delete current namespace.

▶ **Back to Namespaces**

▶ **Back to main menu**

▶ **Create namespace**

Name

Press <Enter> to type in a name of namespace.

Region ID

This feature displays the region ID on which to create namespace.

Mode

Use this feature to set namespace mode. The options are **None** and Sector. The option, None, is for raw access only. Set this feature to Sector to guarantee powerfail write atomicity via a block translation table (BTT)

Capacity input

The options are **Remaining** and Manual. Set this feature to Remaining to use the maximum available capacity. Set this feature to Manual to enter the capacity manually.

Units

Use this feature to change the units of the input namespace capacity. The options are B, MB, MiB, GB, **GiB**, TB, and TiB.

Capacity

This feature displays the capacity of namespace.

▶ **Create namespace**

Press <Enter> to create a namespace with the above configuration.

▶ **Back to Namespace**

▶ **Back to main menu**

▶ **Back to main menu (return to the main menu.)**

► Total capacity

The following information is displayed.

Total DCPMM resource allocation across the host server.

Raw capacity: 1.45 TiB

App Direct capacity: 0 B

Memory capacity: 1.45 TiB

Unconfigured capacity: 0 TiB

Inaccessible capacity: 0 TiB

Reserved capacity: 2.7 GiB

► **Back to main menu**

► Diagnostics

Perform diagnostic tests on DIMMS.

Choose diagnostics type:

Quick diagnostics

Select Enabled to perform quick diagnostics test. The options are Disabled and **Enabled**.

DIMM ID 0x0001

Select Enabled to enable the diagnostics procedure for this DIMM. The options are Disabled and **Enabled**.

DIMM ID 0x0101

Select Enabled to enable the diagnostics procedure for this DIMM. The options are Disabled and **Enabled**.

DIMM ID 0x0011

Select Enabled to enable the diagnostics procedure for this DIMM. The options are Disabled and **Enabled**.

DIMM ID 0x0111

Select Enabled to enable the diagnostics procedure for this DIMM. The options are Disabled and **Enabled**.

DIMM ID 0x0021

Select Enabled to enable the diagnostics procedure for this DIMM. The options are Disabled and **Enabled**.

DIMM ID 0x0121

Select Enabled to enable the diagnostics procedure for this DIMM. The options are Disabled and **Enabled**.

Config diagnostics

Select Enabled to enable the platform configuration diagnostics test. The options are Disabled and **Enabled**.

FW diagnostics

Select Enabled to enable the firmware diagnostics test. The options are Disabled and **Enabled**.

Security diagnostics

Select Enabled to enable the security diagnostics test. The options are Disabled and **Enabled**.

▶ **Execute tests (execute selected diagnostic tests)**

Press <Enter> to perform the selected diagnostic tests. The following information is displayed.

▶ **Back to Diagnostics**

▶ **Back to main menu**

TestName: Quick

State: Ok

Message:

The quick health check succeeded.

TestName: Config

State: Ok

Message:

The platform configuration check succeeded.

TestName: Security

State: Ok

Message:

The security check succeeded.

TestName: FW

State: Ok

Message:

The firmware consistency and settings check succeeded.

▶ **Back to main menu**

▶ Preferences

Use this submenu to display and/or modify user preferences.

View and/or modify user preferences.

Default DIMM ID:

Use this feature to view and/or modify the default display of DIMM identifiers. The options are **Handle** and UID.

Capacity units:

This feature is to view and/or modify the default units for displaying capacities. Use auto (x1024) or Auto_10 (x1000) to automatically select the best format. The options are **Auto**, Auto_10, B, MB, MiB, GB, GiB, TB, and TiB .

App Direct settings:

This feature is to view and/or modify the interleaving settings for creating App Direct capacity. The default setting is 4KB_4KB (Recommended).

App Direct granularity:

This feature is to view and/or modify the minimum App Direct granularity per DIMM. The options are **Recommended** and 1.

▶ **Back to main menu**

▶ Driver Health

This submenu displays the health status of the drivers and controllers as detected by the system. The following information is displayed.

▶ **Intel(R) DCPMM 1.0.0.3380 Driver Healthy**

Intel(R) DCPMM Controller Healthy

Intel Persistent Memory DIMM 25 Controller Healthy

Intel Persistent Memory DIMM 33 Controller Healthy

Intel Persistent Memory DIMM 27 Controller Healthy

Intel Persistent Memory DIMM 35 Controller Healthy

Intel Persistent Memory DIMM 29 Controller Healthy

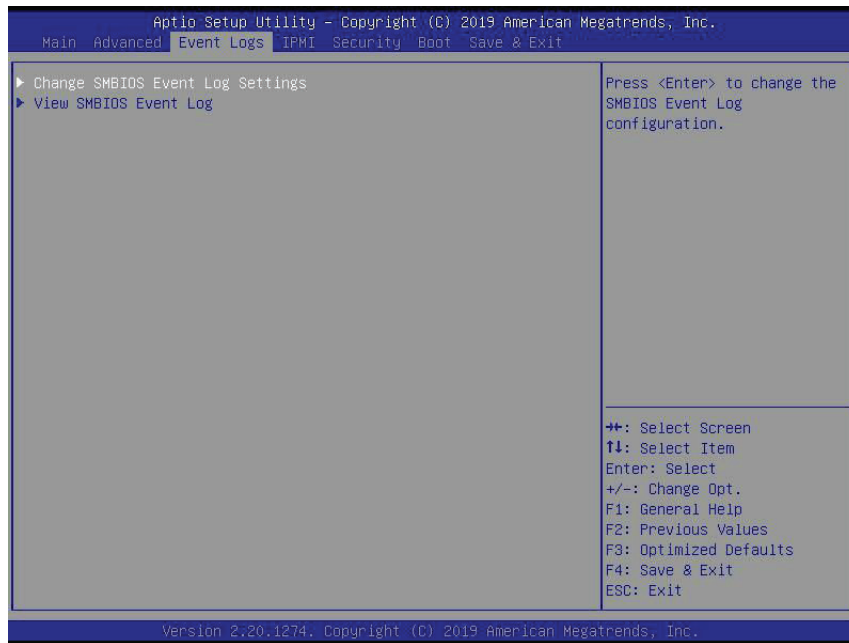
Intel Persistent Memory DIMM 37 Controller Healthy

▶ Intel(R) DCPMM 1.0.0.3380 HII Driver Healthy

Controller 665c5c98 Child 0 Healthy

6.4 Event Logs

Use this feature to configure Event Log settings.



► Change SMBIOS Event Log Settings

Enabling/Disabling Options

SMBIOS Event Log

Change this feature to enable or disable all features of the SMBIOS Event Logging during system boot. The options are **Enabled** and Disabled.

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 Log Standard Settings

Log System Boot Event

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

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurrences 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 the number of minutes that must pass between duplicate log events before MECI is incremented. This is in minutes, from 0 to 99. The default value is **60**.

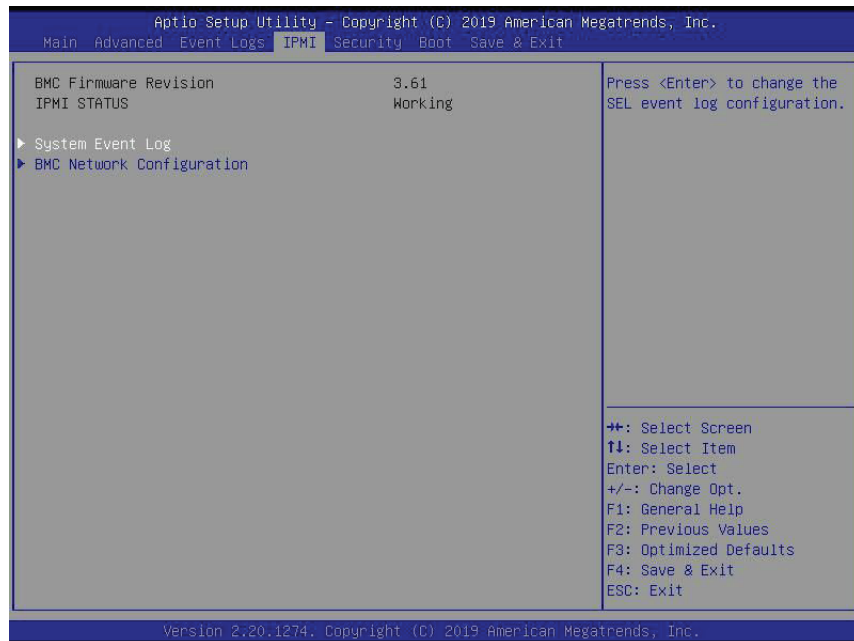
Note: All values changed here do not take effect until computer is restarted.

►View SMBIOS Event Log

Select this submenu and press enter to see the contents of the SMBIOS event log. The following categories will be displayed: Date/Time/Error Codes/Severity.

6.5 IPMI

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



BMC Firmware Revision

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

IPMI Status (Baseboard Management Controller)

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

► System Event Log

Enabling/Disabling Options

SEL Components

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

Erasing Settings

Erase SEL

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

When SEL is Full

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

Note: 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

This section displays configuration features for IPv4 support.

IPMI LAN Selection

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

IPMI Network Link Status

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

****If the feature above is set to Yes, the following feature will become available for configuration:***

Configuration Address Source

This feature allows the user to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network that is attached to and request the next available IP address for this computer. The options are **DHCP** and Static.

****If the feature above is set to Static, the following features will become available for configuration:***

Station IP Address

This feature displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

Subnet Mask

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

Gateway IP Address

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

VLAN

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

Configure IPv6 Support

This section displays configuration features for IPv6 support.

LAN Channel 1**IPv6 Support**

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

Configuration Address Source

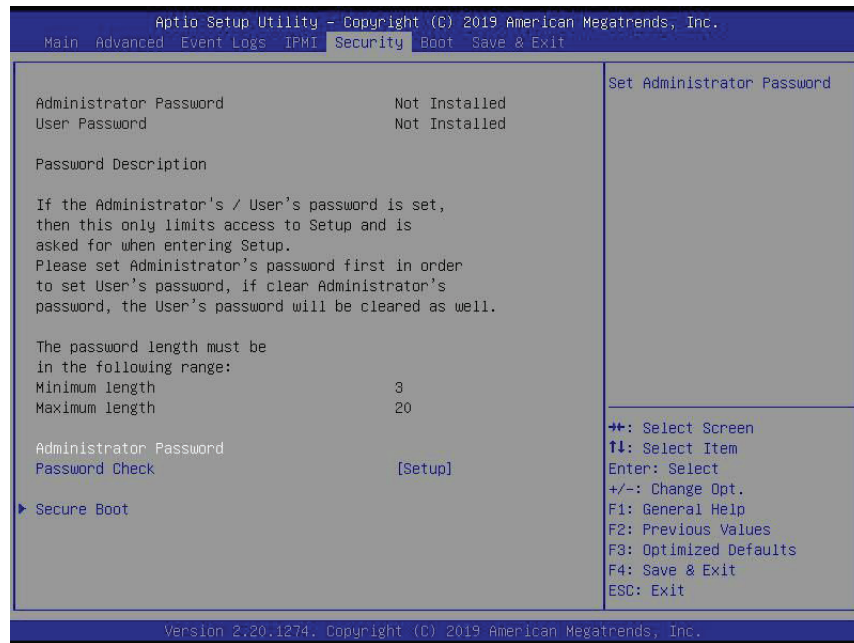
This feature allows the user to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) 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 feature above is set to Static, the following features 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.



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.

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**.

► Secure Boot

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

- System Mode
- Vendor Keys
- Secure Boot

Secure Boot

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

Secure Boot Mode

Use this feature 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 **Enabled** and Disabled.

▶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.

▶Restore Factory Keys

Select Yes to install factory default Secure Boot keys set by the manufacturer. The options are **Yes** and No.

▶Reset to Setup Mode

Select Yes to delete all variables and reset the System to Setup Mode. The options are **Yes** and No.

▶Export Secure Boot variables

This feature allows the user to export Secure Boot variables to a folder in the system.

▶Enroll Efi Image

This feature allows the image to run in Secure Boot Mode. Enroll SHA256 Hash Certificate of the image into the Authorized Signature Database.

Device Guard Ready

▶Remove 'UEFI CA' from DB

This feature allows the user to remove 'UEFI CA' certificate from an authorized signature database. The options are **Yes** and No.

► Restore DB defaults

This feature allows the user to restore DB variables to factory default. The options are **Yes** and **No**.

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 options are **Details**, **Export**, **Update**, and **Delete**.

Update

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

► Key Exchange Keys

Update

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

Append

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

► Authorized Signatures

Update

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

Append

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

► Forbidden Signatures

Update

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

Append

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

► Authorized TimeStamps

Update

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

Append

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

► OsRecovery Signatures

This feature uploads and installs an OSRecovery Signature. You may insert a factory default key or load from a file. The file formats accepted are:

- 1) Public Key Certificate
 - a. EFI Signature List
 - b. EFI CERT X509 (DER Encoded)
 - c. EFI CERT RSA2048 (bin)
 - d. EFI SERT SHA256 (bin)
- 2) EFI Time Based Authenticated Variable

When prompted, select "Yes" to load Factory Defaults or "No" to load from a file.

Update

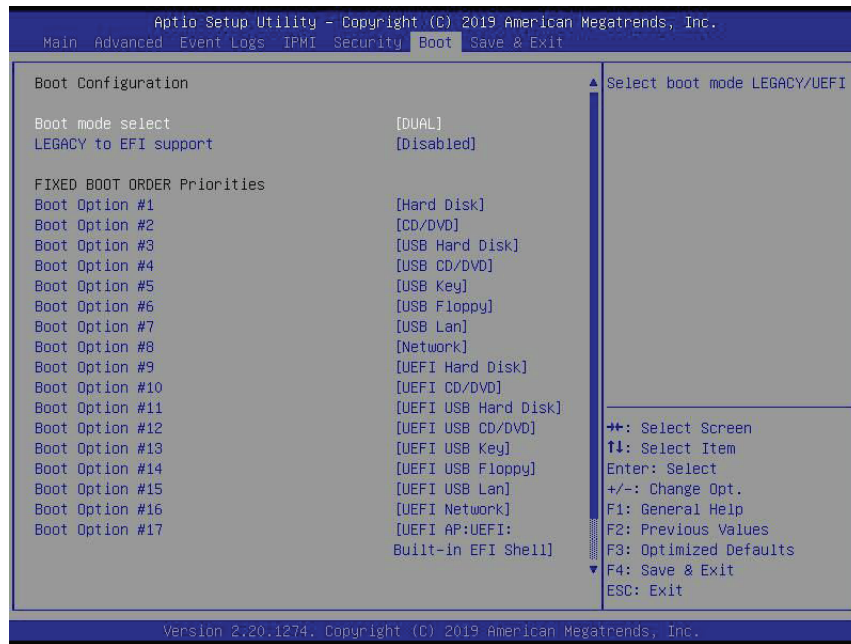
Select Yes to load the DBR from the manufacturer's defaults. Select No to load the DBR from a file. The options are Yes and No.

Append

This feature uploads and adds an OSRecovery Signature into the Key Management. You may insert a factory default key or load from a file. When prompted, select "Yes" to load Factory Defaults or "No" to load from a file.

6.7 Boot

Use this feature to configure Boot settings.



Boot Mode Select

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

Legacy to EFI Support

Select Enabled to boot EFI OS support after Legacy boot order has failed. The options are **Disabled** and Enabled.

FIXED BOOT ORDER Priorities

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

****If the feature "Boot Mode Select" above is set to Legacy, UEFI, or Dual, the following features will be displayed:***

- Boot Option #1
- Boot Option #2
- Boot Option #3
- Boot Option #4
- Boot Option #5

- Boot Option #6
- Boot Option #7
- Boot Option #8
- Boot Option #9
- Boot Option #10
- Boot Option #11
- Boot Option #12
- Boot Option #13
- Boot Option #14
- Boot Option #15
- Boot Option #16
- Boot Option #17

► Add New Boot Option

This feature allows the user to add a new boot option to the boot priority features for your system.

Add Boot Option

Use this feature to specify the name for the new boot option.

Path for Boot Option

Use this feature to enter the path for the new boot option in the format fsx:\path\filename.efi.

Boot Option File Path

Use this feature to specify the file path for the new boot option.

Create

Use this feature to set the name and the file path of the new boot option.

► Delete Boot Option

This feature allows the user to select a boot device to delete from the boot priority list.

Delete Boot Option

Use this feature to remove an EFI boot option from the boot priority list. The options are **Select one to Delete** and **UEFI: Built-in EFI Shell**.

►UEFI Application Boot Priorities

This feature sets the system boot order of detected devices. The options are **UEFI: Built-in EFI Shell** and **Disabled**.

- Boot Option #1

►UEFI USB Key Drive BBS Priorities

This feature sets the system boot order of detected devices.

- Boot Option #1

►USB Key Drive BBS Priorities

This feature sets the system boot order of detected devices.

- Boot Option #1

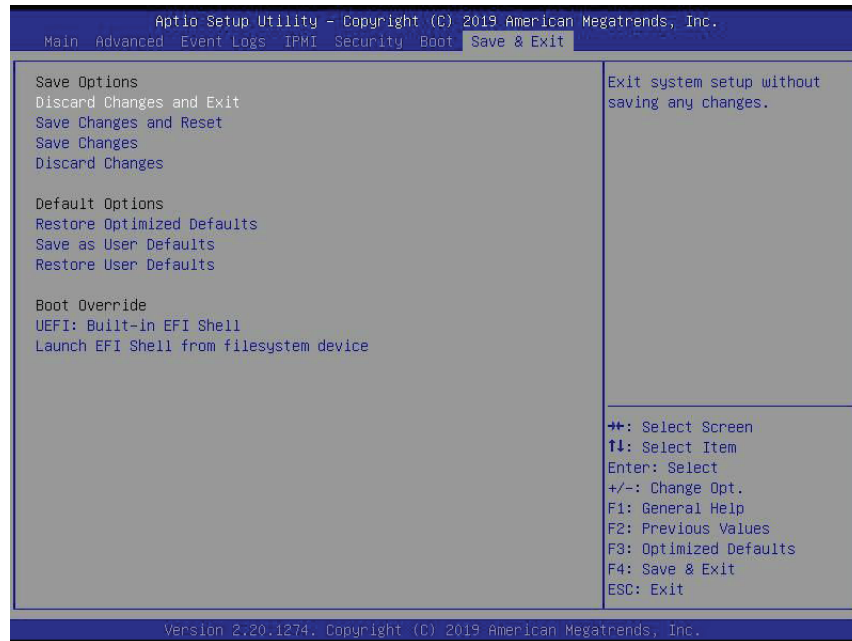
►NETWORK Drive BBS Priorities

This feature sets the system boot order of detected devices.

- Boot Option #1

6.8 Save & Exit

Select the Save & Exit tab from the BIOS setup screen to configure the settings below:



Save Options

Discard Changes and Exit

Select this feature 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 feature 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 feature 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 feature 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.

Appendix A

BIOS Error Codes

A.1 BIOS Error Beep (POST) Codes

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

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

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The table below lists some common errors and their corresponding beep codes encountered by users.

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

A.2 Additional BIOS POST Codes

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

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

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

Appendix B

Standardized Warning Statements for AC Systems

B.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。

此警告符号代表危險。

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 הזהרות אזהרה

הזהרות 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.

اَكْ ف حالة وُكِي اَي تتسبب ف اصابة جسدهُ هذا الزهز عْ خطر! تحذُرُ .
 قبل اَي تعول على اَي هعدات، كي على علن بالوخاطز ال اُجوة عي الذوائر
 الكهزبائِة
 وكي على دراةُ بالووارسات النقاىِة لو عْ وقع اَي حادث
 استخدم رقن الب اى الو صُص ف هاةُ كل تحذُرُ للعشر تزجوتها

안전을 위한 주의사항

경고!

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions



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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前,请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker



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

サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

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

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة 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 elektrische installatie. Controleer of het beveiligde apparaat 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.

電源切斷の警告

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斷され、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 chasis pour installer ou enlever des composants de système.

אזהרה מפני ניתוק חשמלי

אזהרה!

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

يجب فصل انظاؤ من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد
انطاقت قيم
انصل إلى امناطق انداخهيت نههيكم نتشيج أو إزانت مكناث الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 새시 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 الجهاز يجب أن يسمح فقط للمظفيه 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

此装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 انحدة نترك بها ف مناطق محظورة تم .
ممكن انصلل إن منطقت محظورة فقط من خلال استخذاو أداة خاصت
أو أ وس هُت أخري نلالأمما ققم 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

電池更換不當會有爆炸危險。請只使用同類電池或制造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢舊電池。

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 اسبدال البطارية بطريقة غير صحيحة فعلى
اسبدال البطارية
فقط بنفس النوع أو ما يعادلها مما أوصت به الشركة المصنعة
جخلص من البطاريات المسحومة وفقا لعمليات الشركة الصانعة

경고!

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

Waarschuwing

Er is ontplofingsgevaar 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

此装置连接的电源可能不只一个，必须切断所有电源才能停止对该装置的供电。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein Strom 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!

ליחידה 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 خطر من التيار الكهربائي أو الطاقة المتجددة على اللوحة
عندما يكون النظام يعمل كه حذرا عند خدمة هذا الجهاز

경고!

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

Waarschuwing

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

Comply with Local and National Electrical Codes



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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

Attention

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

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

تركيب المعدات الكهربائية يجب أن يمتثل للقوايه المحلية والبطية 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! 危險的可移動性零件。請務必與轉動的风扇叶片保持距離。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

警告

危險的可移動性零件。請務必與轉動的风扇叶片保持距離。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 el montaje del ventilador del chasis. Mantenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Pieces mobiles dangereuses. Se tenir a l'écart 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 בפעולה כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

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

경고!

움직이는 위험한 부품. 회전하는 송풍 날개에 접근하지 마세요. 새시로부터 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 adapters. Using any other cables and adapters 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/CSEマークがコードに表記)を Supermicro が指定する製品以外に使用することを禁止しています。

警告

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

警告

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

Warnung

Nutzen Sie beim Installieren des Produkts ausschließlich die von uns zur Verfügung gestellten Verbindungskabeln, Stromkabeln und/oder Adapter, 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 certifiés- 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.

AC כבלים חשמליים ומתאמי

!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) UL-CSA או ב UL - לחוקי השימוש במכשירי החשמל וחוקי הבטיחות, קיים איסור להשתמש בכבלים המוסמכים ב Supermicro עבור כל מוצר חשמלי אחר, אלא רק במוצר אשר הותאם ע"י (UL/CSA) של

עند تركيب المنتج، قم باستخدام التوصيلات المتوفرة أو المحددة أو قم بشراء الكابلات الكهربائية ومحوّلات التيار المتردد مع الالتزام بقوانين ومتطلبات السلامة المحلية بما في ذلك حجم الموصل والقابس السليم. استخدام أي كابلات ومحوّلات أخرى قد يتسبب في عطل أو حريق. يحظر قانون السلامة للأجهزة الكهربائية والمعدات استخدام الكابلات المعتمدة Supermicro مع أي معدات أخرى غير المنتجات المعينة 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 C

System Specifications

Processors

Supports single 2nd Gen/1st Gen Intel Xeon® Scalable-SP series and Intel Xeon® W-32XX series processors, up to 28 cores and 205W TDP

Note: Please refer to the motherboard specifications pages on our website for updates to supported processors.

Chipset

Intel PCH C621

BIOS

256 Mb AMI BIOS SPI Flash BIOS

ACPI 6.0, Plug and Play (PnP), BIOS rescue hot-key, riser card auto detection support, and SMBIOS 3.0 or later

Memory

Supports up to 12x 1.2V DDR4 ECC RDIMM/3DS RDIMM/LRDIMM/3DS LRDIMM, up to 2933MHz and maximum capacity up to 3TB via 3DS RDIMM/3DS LRDIMM

SATA Controller

On-chip (Intel PCH C621) controller

Drive Bays

Eight hot-swap external 3.5" SATA/SAS drives via the backplane, supports RAID 0, 1, 5, 10

Four M.2 sockets with heatsink (M-key PCI-E 3.0 x4 in the 2260/2280/22110 form factor. Supports RAID 0 on four sockets.

Supports VROC on one socket.)

Expansion Slots

Three 5.25" external peripheral bays

One 3.5" external peripheral bays

Four PCI-E 3.0 x16 slots (CPU SLOT1, 3, 5, 7) and three PCI-E 3.0 x8 slots (INx16) (CPU SLOT2, 4, 6) (supports seven single-width or four double-width GPU cards)

Motherboard

X11SPA-T 13 x 12 in. / 330 x 305 mm. (W x L)

Chassis

SC747BTS-R2K20BP; 4U Tower or Rackmount, 7.0 x 18.2 x 26.5 in. / 178 x 462 x 673 mm. (W x H x D)

System Cooling

Two 9-cm 7.5K RPM hot-swap lower-middle fans

Two 9-cm PWM hot-swap upper-middle fans

Two 8-cm PWM hot-swap rear fans

Two 8-cm 8.2K RPM hot-swap rear fans (optional)

Power Supply

Model: PWS-2K20A-1R

AC Input Voltages: 100-240 Vac

Rated Input Current: 14A (100V) to 11A (240 V)

Rated Input Frequency: 50-60 Hz

Rated Output Power: 2200W

Rated Output Voltages: +12V (183.3A), +5Vsb (6A)

Operating Environment

Operating Temperature: 10° to 35° C (50° to 95° F)

Non-operating Temperature: -40° to 60° C (-40° to 140° 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, 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 D

UEFI BIOS Recovery

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

D.1 Overview

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

D.2 Recovering the UEFI BIOS Image

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

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

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

D.3 Recovering the BIOS Block with a USB Device

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

The file system supported by the recovery block is FAT (including FAT12, FAT16, and FAT32), which is installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large due to the huge volumes of folders and files stored in the device.

To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below:

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

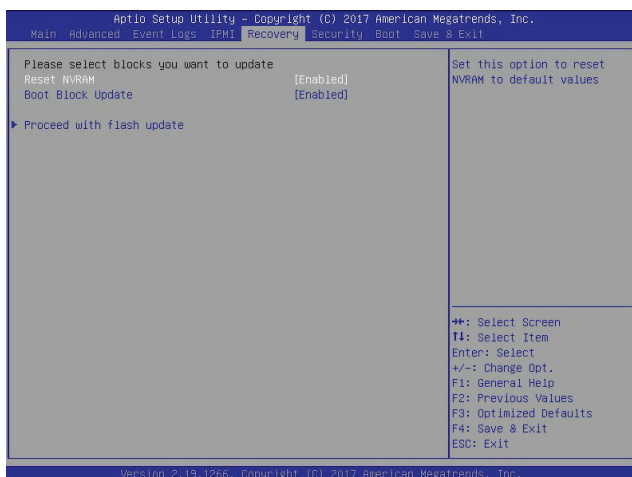
Note 1: If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

Note 2: Before recovering the main BIOS image, confirm that the "Super.ROM" binary image file you download is the same version or a close version meant for your motherboard.

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB port and reset the system until the following screen appears:



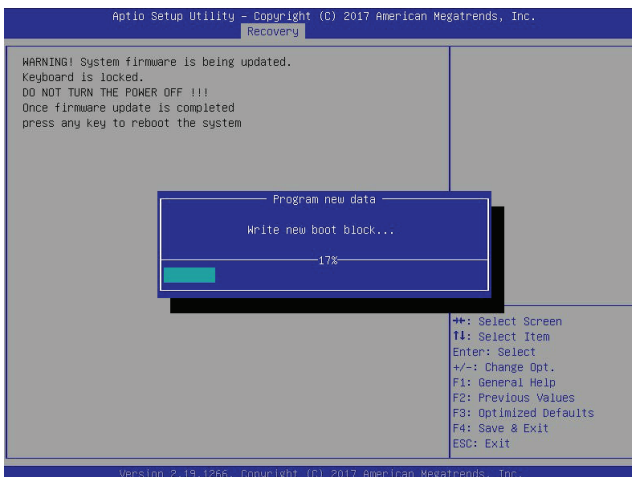
3. After locating the new BIOS binary image, the system will enter the BIOS Recovery menu as shown below:



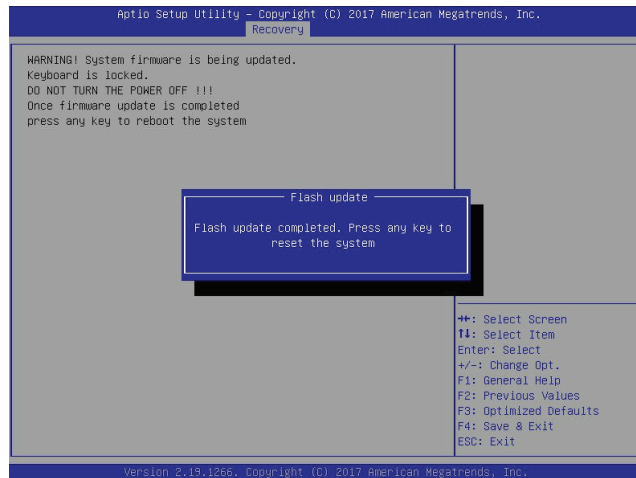
Note: At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.

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

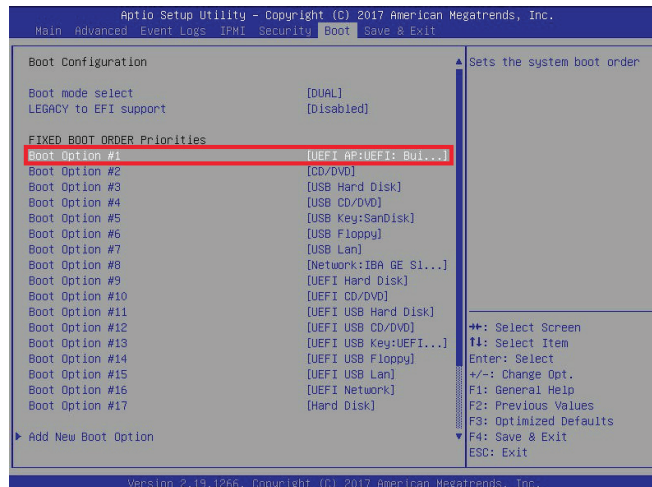
Note: Do not interrupt the BIOS flashing process until it has completed.



5. After the BIOS recovery process is completed, press any key to reboot the system.



6. Using a different system, extract the BIOS package into a USB flash drive.
7. Press during system boot to enter the BIOS Setup utility. From the top of the toolbar, select Boot to enter the submenu. From the submenu list, select Boot Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings and exit the BIOS Setup utility.



8. When the UEFI Shell prompt appears, type `fs#` to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter `flash.nsh BIOSname.###` at the prompt to start the BIOS update process.

```

UEFI Interactive Shell v2.1
EDK II
UEFI v2.50 (American Megatrends, 0x0005000C)
Mapping Table
  FSO: Alias(s):HD0r0b:BLK1:
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,MBR,0x3791072,0x800,0x1
CA9592)
  BLK0: Alias(s):
    PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
Press ESC in 1 seconds to skip startup.nsh or any other key to continue.
Shell> fs0:
FS0:\> cd \AFUDOS
FS0:\AFUDOS> cd SKJPM2_03162017
FS0:\AFUDOS\SKJPM2_03162017> flash.nsh X110PU7.314_

```

Note: Do not interrupt this process until the BIOS flashing is complete.

```

Done.
[ Access Cmos Port Ex ]
<Read>
Index 0x51: 0x18

Done.
*****
*
* Program BIOS and ME (including FDT) regions...
*
*****
|-----|
|          AMI Firmware Update Utility v5.09.01.1317          |
|          Copyright (C)2017 American Megatrends Inc. All Rights Reserved.  |
|-----|
CPUID = 50652

Reading flash ..... done
- ME Data Size checking . ok
- FFS checksums ..... ok
- Check RomLayout ..... Ok.
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
Erasing Main Block ..... 0x00132000 (0%)

```

9. The screen above indicates that the BIOS update process is complete. When you see the screen above, unplug the AC power cable from the power supply, clear CMOS, and plug the AC power cable in the power supply again to power on the system.

```

Verifying NCB Block ..... done
- Update success for FDR
- Update success for IE. -
- Successful Update Recovery Loader to OPRx!!
- Successful Update MFSB!!-
- Successful Update FTFR!!-
- Successful Update MFS, IVB1 and IVB2!!
- Successful Update FLOG and UTOK!!
- ME Entire Image update success !!
WARNING : System must power-off to have the changes take effect!
Moving FS0:\AFUDOS\SKJPM2_03162017\fdt64.efi -> FS0:\AFUDOS\SKJPM2_03162017\fdt64.smc
- [ok]
Moving FS0:\AFUDOS\SKJPM2_03162017\afueflx64.efi -> FS0:\AFUDOS\SKJPM2_03162017\afuefl.smc
- [ok]
*****
*
* Please ignore this 'Shell: Cannot read from file - Device Error'
* warning message due to it does not impact flashing process.
*
*****
Deleting 'FS0:\Startup.nsh'
Delete successful.
FS0:\> _

```

10. Press `` to enter the BIOS Setup utility.
11. Press `<F3>` to load the default settings.
12. After loading the default settings, press `<F4>` to save the settings and exit the BIOS Setup utility.

Appendix E

BSMI RoHS

Additional Traditional Chinese Version warning statements are included here in this appendix.

安全警告 (注意這些警告標誌)

以下的警告標誌對於安全使用本設備非常重要，可以避免操作人員遭遇危險，以及財產受到任何損失。

錯誤使用本機器或忽視這本手冊，所引起的傷害或損失等級分類如下：



Warning! (警告) 此注意標誌提醒未能依照正確指示使用機器，可能導致生命危險 或造成嚴重傷害。



Caution (注意) 此注意標誌提醒未能依照正確指示使用機器，可能導致受傷 或財產損失。



此標誌提示絕對不可做的動作。



此標誌提示一般性務必要採取的行為。



Warnings: (警告)



本機器必須用接地線與地面確實連接。否則受到電擊或閃電時，將對您造成危險。如果電源插座沒有接地端子，或是有無法接地情況，請務必洽詢專業技術人員，妥善安裝這些設施。



1. 電源必須在 100V 至 240V 正負 10%之間
2. 使用額定合格開關來提供電源迴路。
3. 機器安裝愈接近電源插座愈好。
4. 移動機器必須由維護工程師來處理。



1. 勿使用多孔插座或延長線，否則可能造成溫度過高而引起火災。
2. 勿在電源線放置重物，否則可能引起火災或受到電擊。
3. 勿踏在電源線上，及勿損傷或任意處理電源線，否則可能引起火災或受到電擊。
4. 勿綁住或紮緊電源線，否則可能引起火災或受到電擊。
5. 勿將花瓶、花盆或盛水容器放在機器上，如果水滴濺出，可能引起火災或受到電擊。



1. 機器如果產生怪味或不正常聲響，必需立即關閉機器電源開關，然後從插座取下插頭。
2. 絕對不可以沾濕的手插拔插頭，否則可能受到電擊。
3. 插頭必須確實插妥在插座上，如果未能妥善插好，可能會引起火災。
4. 僅可使用機器所附電源插頭。



拔取電源線時，確實抓住插頭部位，否則導致插頭破裂可能引起火災或受到電擊。



不可企圖拆解或擅自修改機器，否則可能引起火災或受到電擊。



不可將機器安裝在下列場所：

1. 濕氣高及多灰塵的地方。
2. 地板不穩的地方。如果機器傾倒，可能造成傷害。



關閉上機蓋時，千萬不可將手放在上機蓋與主機體之間。



1. 移動機器前，必須記住拔下插頭，否則插頭可能受損而引起火災或受到電擊。
2. 為安全起見，夜晚無人使用伺服器時，必須確實將它的電源關閉。
3. 連續假日長期無人使用伺服器時，必須確實將它的電源關閉。
4. 插座周圍必須淨空，以便隨時可以很輕易的拔下插頭。

限用物質含有情況標示聲明書

Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱：超級工作站/Super Workstation 型號（型式）： 747-22 Equipment name Type designation (Type) 系列型號: SYS-5049A-TR,747-12,747-R22X11,747-R12X11						
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr ⁺⁶)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
機殼 (Chassis)	○	○	○	○	○	○
機殼風扇 (Chassis Fan)	—	○	○	○	○	○
線材 (Cable)	○	○	○	○	○	○
主機板 (Motherboard)	—	○	○	○	○	○
電源供應器 (Power Supply)	—	○	○	○	○	○
硬碟 (HardDisk/M.2)	—	○	○	○	○	○
附加卡 (Add-on Card)	—	○	○	○	○	○
備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。 Note 1 : “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.						
備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。 Note 2 : “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.						
備考3. “—” 係指該項限用物質為排除項目。 Note 3 : The “—” indicates that the restricted substance corresponds to the exemption.						

警告使用者：

此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

輸入額定：100-127V ~ 60-50Hz, 12-11 A

200-240V ~ 60-50Hz, 10-9.8 A

*使用者不能任意拆除或替換內部配備

*報驗義務人之姓名或名稱：美超微電腦股份有限公司

*報驗義務人之地址：新北市中和區建一路150號3樓