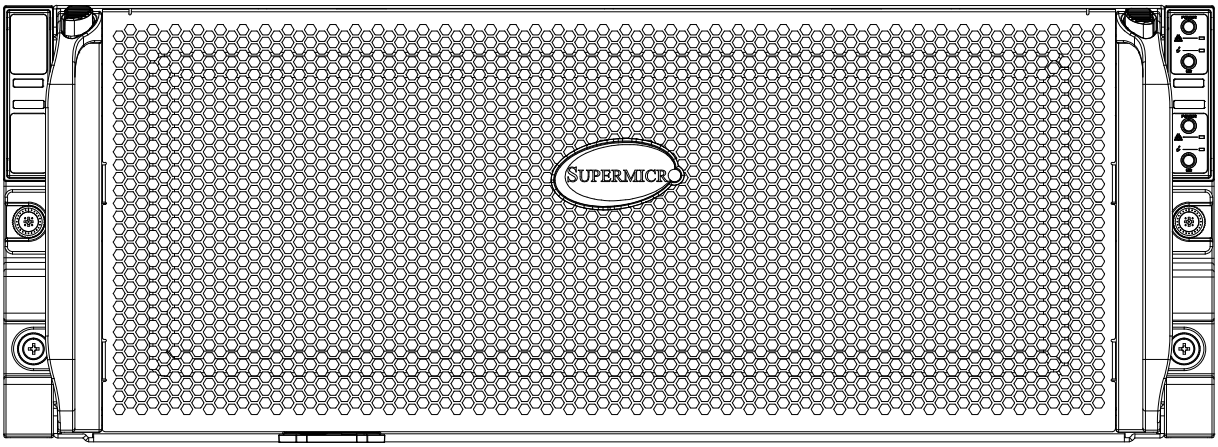
SuperStorage Server®
SSG-6049SP-DE1CR60
SSG-6049SP-DE1CR90



USER'S 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 SuperServer SSG-6049SP-DE1CR60/90 servers. Installation and maintenance should be performed by experienced technicians only.

Please refer to the SSG-6049SP-DE1CR60/90 server specifications page on our website for updates on supported memory, processors and operating systems (http://www.supermicro.com).

Notes

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

- Supermicro product manuals: http://www.supermicro.com/support/manuals/
- Product drivers and utilities: https://www.supermicro.com/wdl/driver
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm

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

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

Secure Data Deletion

A secure data deletion tool designed to fully erase all data from storage devices can be found on our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility/

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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Chapter 1

Introduction

1.1 Overview

This chapter provides a brief outline of the functions and features of the SuperStorage Server SSG-6049SP-DE1CR60/90. The SSG-6049SP-DE1CR60/90 is a high-density, dual-node storage system comprised of two main subsystems: the CSE-947STS-R2K63P/CSE-947HTS-R2K63P 4U chassis and the X11DSC dual processor motherboard.

In addition to the motherboard and chassis, several important parts that are included with the system are listed below. The table at bottom shows the main differences between the two server models.

Main Parts List		
Description	**Part Number**	**Quantity**
SAS3 Backplane	BPN-SAS3-947EB	4 (SSG-6049SP-DE1CR60) 6 (SSG-6049SP-DE1CR90)
3.5"/2.5" Hot-swap HDD Trays	MCP-220-94601-0N	30 per node (SSG-6049SP-DE1CR60) 45 per node (SSG-6049SP-DE1CR90)
2U Passive Heatsink	SNK-P0068PS	2 per node
8-cm Rear Exhaust Fans	FAN-0184L4	6
4U Rack Rail Kit	MCP-290-00180-0N	1
2600W Redundant Power Supply	PWS-2K63A-1R	2

Note: the following safety models associated with the SSG-6049SP-DE1CR60/90 have been certified as compliant with UL: 947S60, 947S-R26X11, 947H90, 947H-R26X11.

1.2 Unpacking the System

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

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

1.3 System Features

The following table provides you with an overview of the main features of the SSG-6049SP-DE1CR60/90. Please refer to Appendix C for additional specifications.

System Features
Motherboard
X11DSC
Chassis
SSG-6049SP-DE1CR60: CSE-947STS-R2K63P SSG-6049SP-DE1CR90: CSE-947HTS-R2K63P
CPU (per node)
Dual Intel Xeon Scalable CPUs (Socket P) with three UltraPath Interconnects (UPIs) of up to 10.4 GT/s. **Note:** Both CPUs need to be installed for full access to the PCIe slots, DIMM slots, and onboard controllers. Refer to the block diagram in the next section to determine which slots or devices may be affected.
Chipset
Intel PCH C621 chipset
Memory (per node)
Up to 4TB 3DS ECC LRDIMM/RDIMM, LRDIMM/RDIMM and NVDIMM at speeds of 2933/2666/2400/2133 MHz in 16 slots. The system also supports up to 5TB of DCPMM. **Note:** The memory capacity support will differ according to the processor SKUs and 2933 MHz memory support is dependent on the processor SKU.
Expansion Slots (per node)
One PCIe 3.0 x8 AOC slot supported by CPU1 (slot1) Two PCIe 3.0 x16 slots supported by CPU1/CPU2 (slot2/slot3) Two PCIe 3.0 x2 M.2 NVMe ports supported by PCH (on mezzanine board)
Drives Bays (per node)
SSG-6049SP-DE1CR60: 30 2.5" or 3.5" hot-swap SAS3/SATA3 drive bays SSG-6049SP-DE1CR90: 45 2.5" or 3.5" hot-swap SAS3/SATA3 drive bays
Power
2600W redundant power supply (PWS-2K63A-1R)
Form Factor
4U rackmount
Dimensions
SSG-6049SP-DE1CR60: 17.6”(W) x 6.9”(H) x 34.1”(D) SSG-6049SP-DE1CR90: 17.6”(W) x 6.9”(H) x 42.9”(D)

1.4 Server Chassis Features

Control Panel

The switches and LEDs located on the control panel are described below. See Chapter 4 for details on the control panel connections.

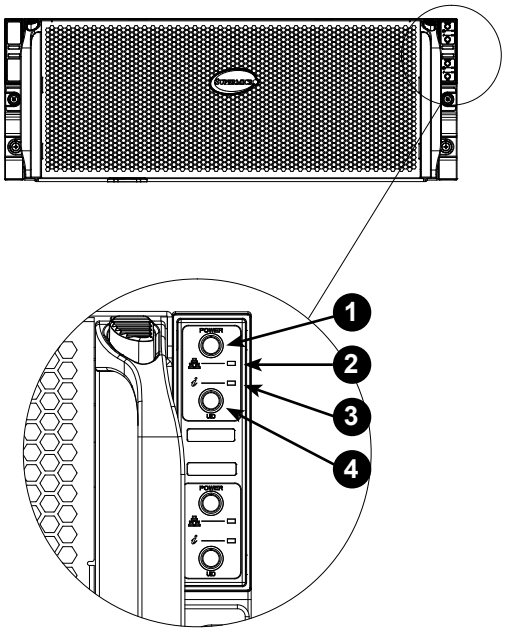


Figure 1-1. Control Panel View

Control Panel Features		
Item	**Feature**	**Description**
1	Power Button/LED	The main power button is used to apply or remove power from the power supply to the server. Turning off system power with this button removes the main power but maintains standby power. To perform many maintenance tasks, you must also unplug system before servicing
2	NIC LED	Indicates network activity on LAN port 1 when flashing
3	Universal Information LED	See table below for details.
4	UID Button/LED	The Unit ID (UID) button is used to turn on or off the blue UID LED to easily locate the server in racks and server banks. Solid blue indicates the UID was activated locally. Blinking blue indicates UID was activated remotely.

Information LED	
Status	**Description**
Continuously on and red	An overheat condition has occurred. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.
Blinking red (0.25Hz)	Power failure, check for a non-operational power supply.

Front Features

The CSE-947STS-R2K63P/CSE-947HTS-R2K63P is a 4U chassis. See the illustration below for the features included on the front of the chassis.

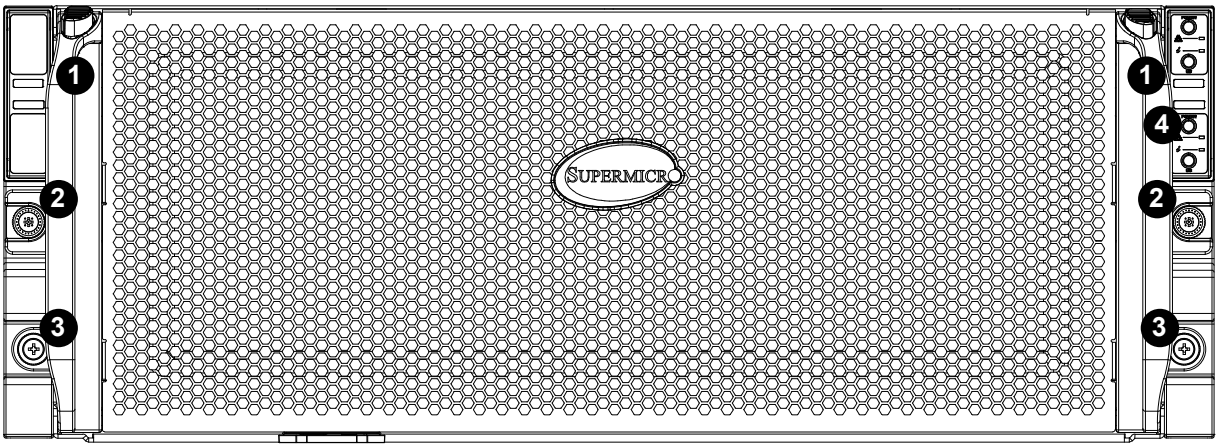


Figure 1-2. Chassis Front View

Front Chassis Features		
Item	**Feature**	**Description**
1	Drive Drawer Latch	Latch to remove the drawer from the system
2	Drive Drawer Lock	Locks the drawer into the chassis.
3	Rack Lock	Locks the system into a rack.
4	Control Panel	Control panel (see previous page for details)

Rear Features

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

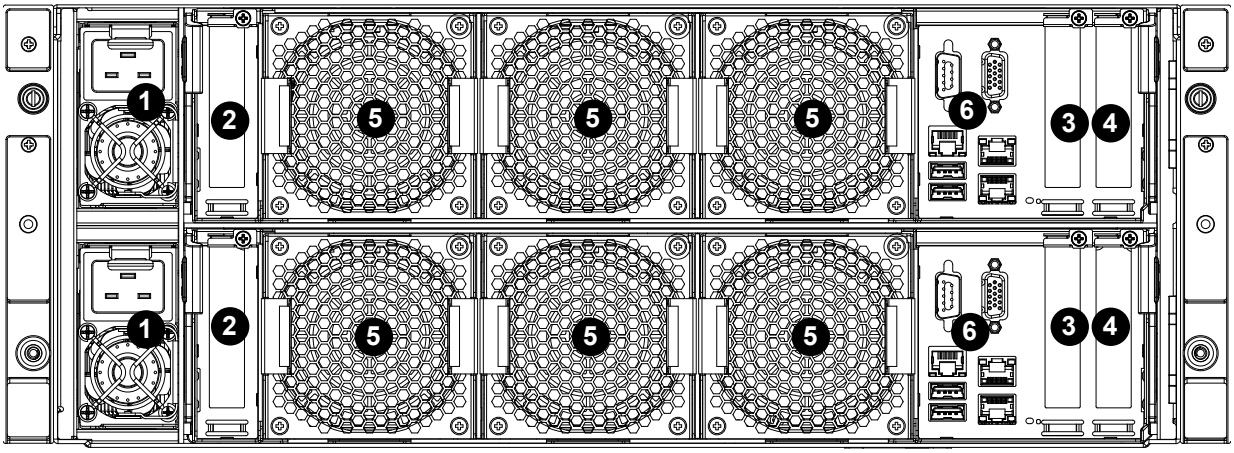


Figure 1-3. Chassis Rear View

Rear Chassis Features		
Item	**Feature**	**Description**
1	Power Supply Module*	2600W power redundant supply
2	PCIe Slot	HHHL** PCIe 3.0 x16 (slot3, from CPU2)
3	PCIe Slot	HHHL** PCIe 3.0 x16 (slot2, from CPU1)
4	PCIe Slot	HHHL** PCIe 3.0 x8 (slot1, from CPU1)
5	Fan	Six 8-cm counter-rotating fans
6	I/O Ports	I/O ports (see Section 4.3 for details)

*The 2600W power supply uses a C19 type power plug.

**HHHL = half height, half length

1.5 Motherboard Layout

Below is a layout of the X11DSC with jumper, connector and LED locations shown. See the table on the following page for descriptions. For detailed descriptions, pinout information and jumper settings, refer to Chapter 4.

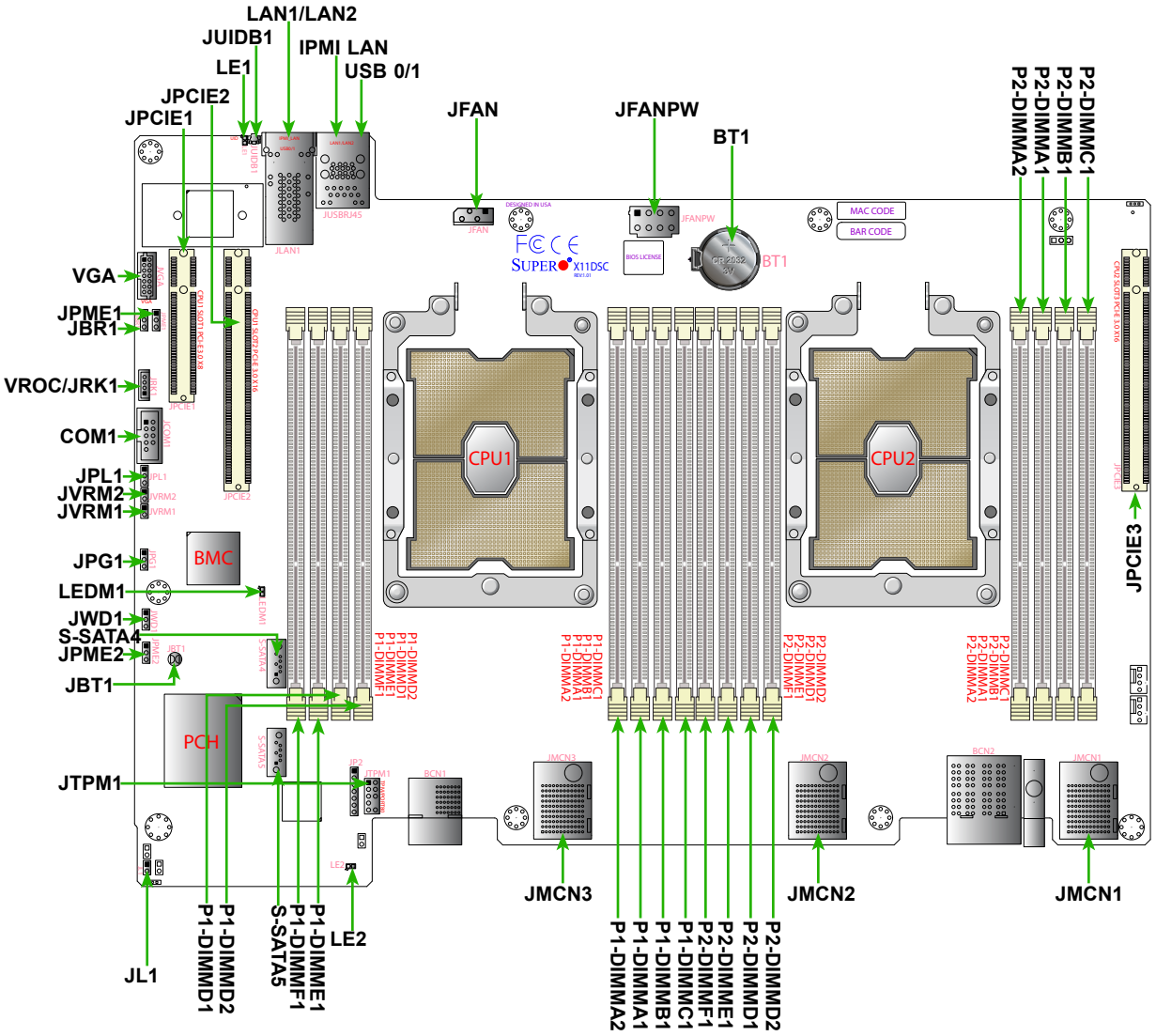


Figure 1-4. Motherboard Layout

Notes:

- "▪" indicates the location of pin 1.
- Jumpers/components/LED indicators not indicated are used for internal testing only.
- Use only the correct type of onboard CMOS battery, as specified by the manufacturer. In order to avoid possible explosion, do not install the onboard battery upside down.

Quick Reference Table

Jumper	Description	Default Setting
JBT1	CMOS Clear	Open (Normal)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	LAN1 Enable/Disable	Pins 1-2 (Enabled)
JPME1	ME Recovery	Pins 1-2 (Normal)
JPME2	Manufacturing Mode Select	Pins 1-2 (Normal)
JWD1	Watch Dog Timer	Pins 1-2 (Enabled, Reset)
JVRM1, JVRM2	VRM I^2C	Closed

Connector	Description
JCOM1	COM port on back I/O panel
JFAN, JFANPW	System cooling fan headers
S-SATA4, S-SATA5	SATA3 connection Headers Supported by the Intel PCH;
IPMI_LAN	Dedicated IPMI LAN Port
JMCN1, JMCN2, JMCN3	Mezzanine board docking connectors
JL1	Chassis Intrusion Header (connect a cable from the Chassis Intrusion header at JL1 to the chassis to receive an alert via IPMI.)
VROC (JRK1)	Intel VROC RAID key for NVMe SSD
JTPM1	Trusted Platform Module (TPM)/Port 80 Connector
JPCIE1	PCIe 3.0 x8 slot supported by CPU1
JPCIE2	PCIe 3.0 x16 slot supported by CPU1
JPCIE3	PCIe 3.0 x16 slot supported by CPU2
JUIDB1	Unit Identifier (UID) Switch
JUSBRJ45	Back Panel USB 3.0 Ports (USB0/1)
JVGA	VGA Port

LED	Description	Status
LEDM1	BMC Heartbeat LED	Blinking Green: BMC normal
LE2	Onboard Power LED	On: Onboard power on
LE1	UID (Unit Identifier) LED	Solid Blue: Unit identified

Notes:

- Use an SMC-proprietary mezzanine card for SAS3 support. Install the mezzanine card to the JMCN1/JMCN2/JMCN3 slot. Refer to Chapter 4 for details.
- To avoid causing interference with other components, please be sure to use add-on cards that are fully compliant with the PCIe standard in PCIe slots.
- **I**ntel VMD is supported by JPCIE1, JPCIE2 and JPCIE3.
- After you've enabled VMD in the BIOS on a PCIe slot of your choice, this PCIe slot will be dedicated for VMD use only and will no longer support any PCIe device. To re-activate this slot for PCIe use, please disable VMD in the BIOS.

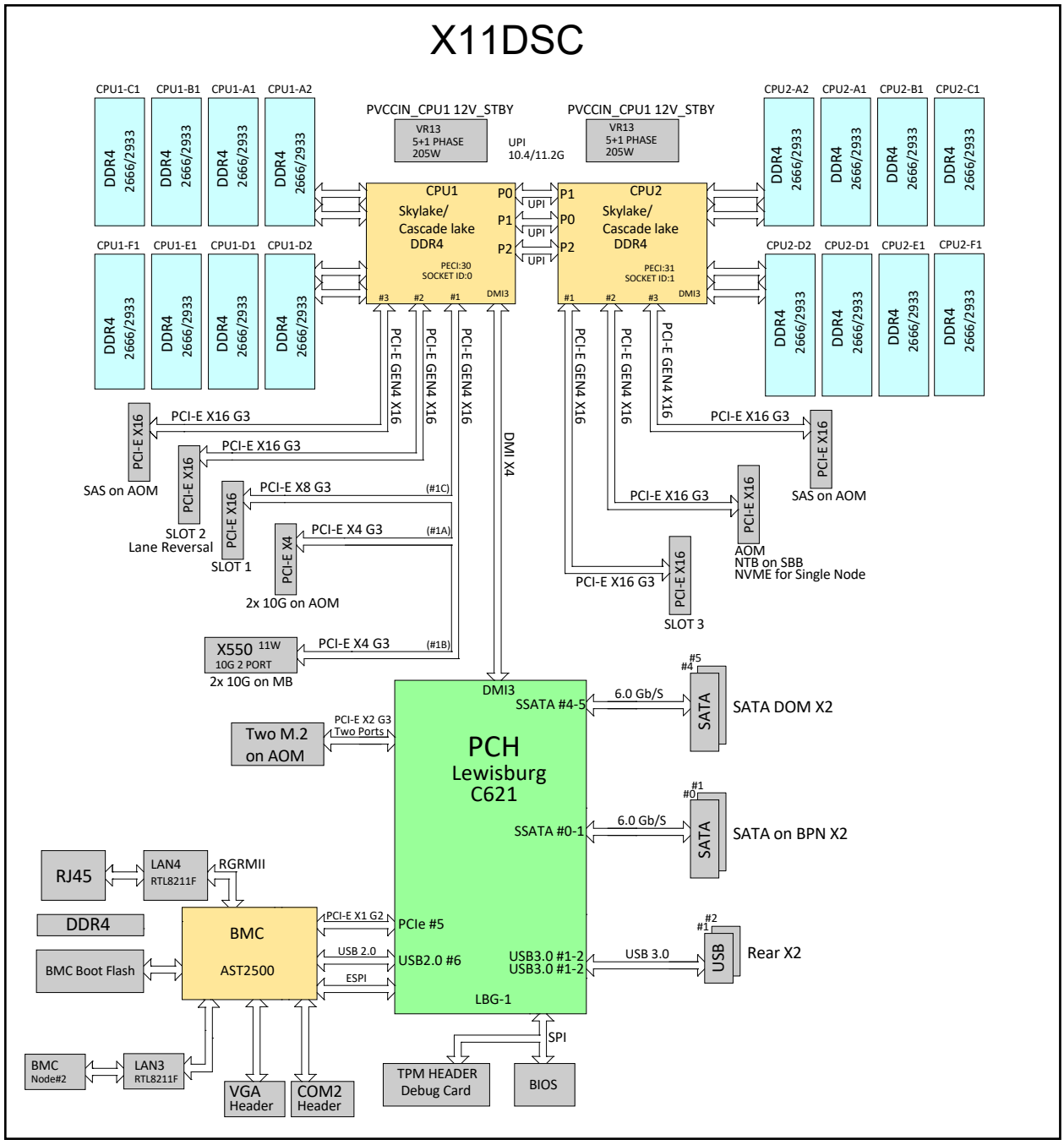


Figure 1-5. Intel PCH C621 Chipset: System Block Diagram

Notes:

- 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.
- Support for 2933 MHz memory is dependent on the processor SKU.

Chapter 2

Server Installation

2.1 Overview

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

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

2.2 Preparing for Setup

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

Choosing a Setup Location

- The system should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise, and electromagnetic fields are generated.
- Leave enough clearance in front of the rack so that you can open the front door completely (35-43 inches) and approximately 30 inches of clearance in the back of the rack to allow sufficient space for airflow and access when servicing.
- This product should be installed only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).
- This product is not suitable for use with visual display workplace devices according to §2 of the German Ordinance for Work with Visual Display Units.

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are extended to the floor so that the full weight of the rack rests on them.
- In single rack installations, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a server or other component from the rack.
- You should extend only one server or component at a time; extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Appendix B.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components at the bottom of the rack first and then work your way up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges and voltage spikes and to keep your system operating in case of a power failure.
- Allow any drives and power supply modules to cool before touching them.
- When not servicing, always keep the front door of the rack and all covers/panels on the servers closed to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

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

Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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



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

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

2.3 Installing the Rails

There are a variety of rack units on the market, which may require a slightly different assembly procedure. Do not use a two post "telco" type rack. This rail set fits a rack between 26.5" and 36.4" deep.

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

Installing the Rails onto the Rack

The front and rear ends of each rail have a locking latch. This latch is used to attach the rails to the rack.

To mount the rails onto the rack, first extend them by releasing the inner rails from the outer rails.

1. Using a screwdriver, loosen the screws holding the inner rail in place inside the outer rail.

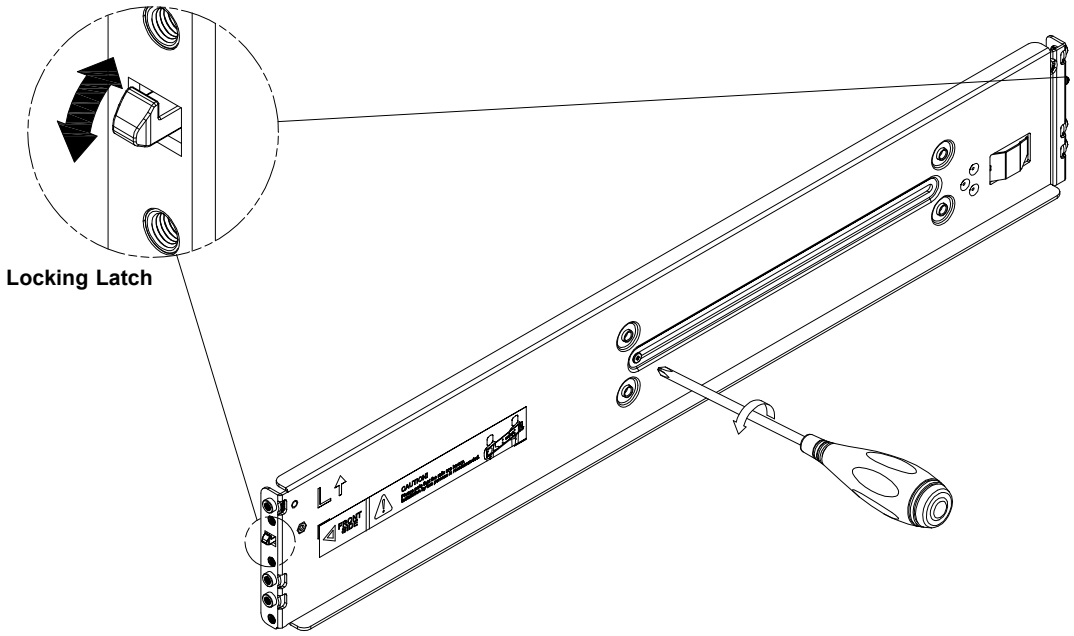


Figure 2-1. Releasing the Inner Rail

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. Mount the front end of the rail by pushing the outer rail latch through one of the square holes on the front of the rack.
3. Pull the inner rail out of the outer rail until it reaches the rear of the rack.
4. Mount the rear end of the rail by pushing the inner rail latch through one of the square holes on the rear of the rack. Take care to use the proper holes so that the rail is level.

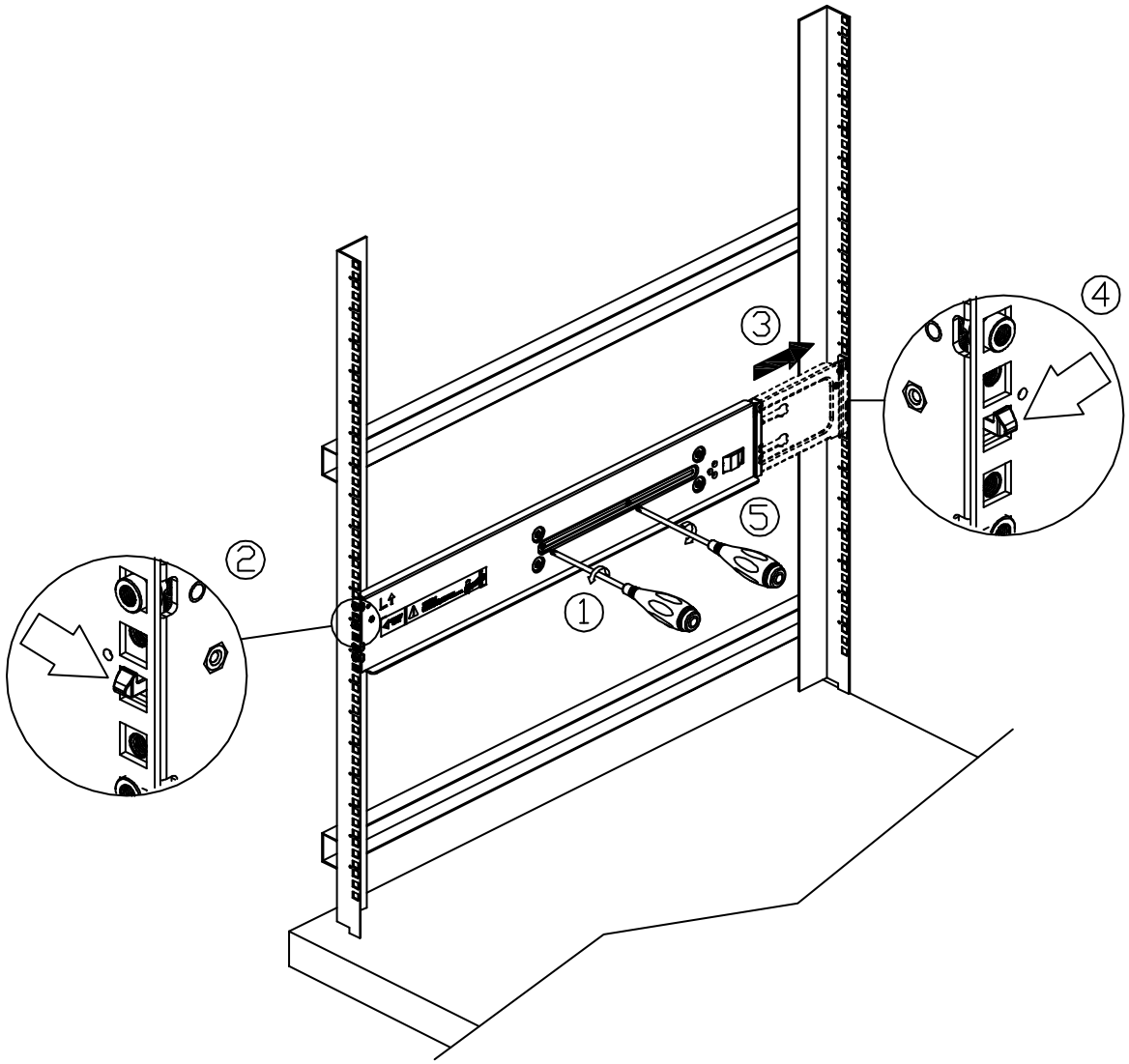


Figure 2-2. Extending and Mounting a Rail

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.

5. Secure the length of the extended rail by tightening the screws into the holes closer to the inner rail.

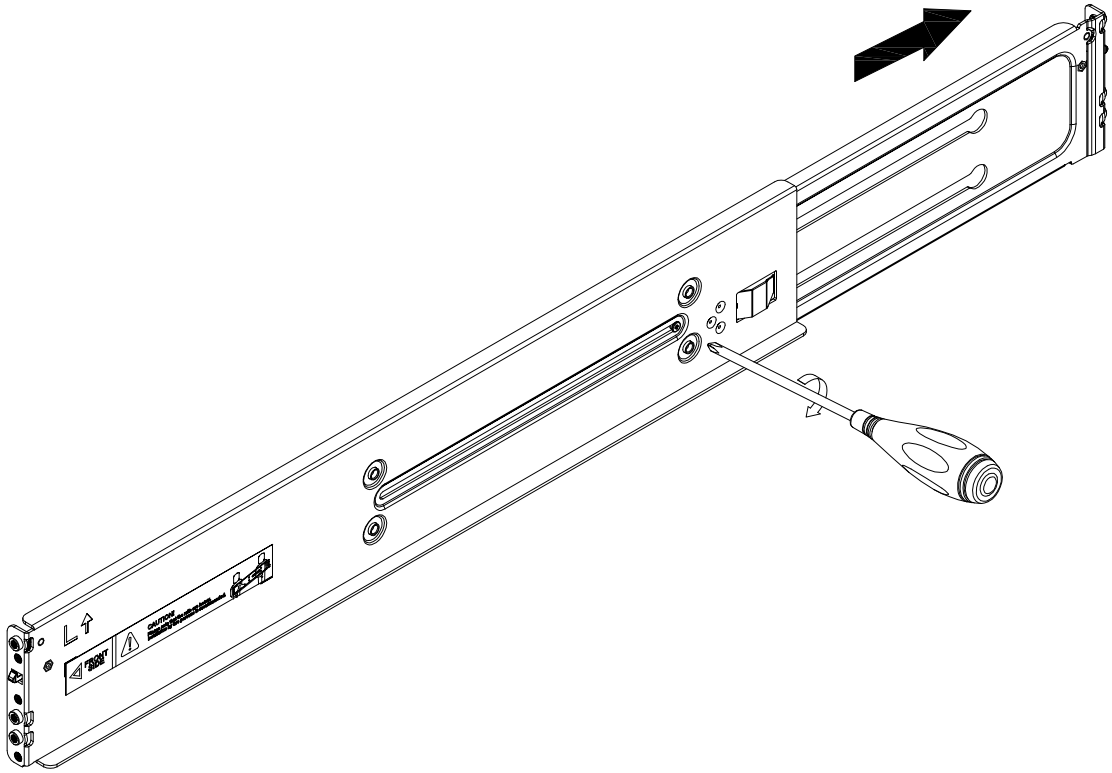


Figure 2-3. Extending the Rail

6. Repeat the preceding steps for the other rail, making sure it is mounted at the same height as the first installed rail so that they are parallel.

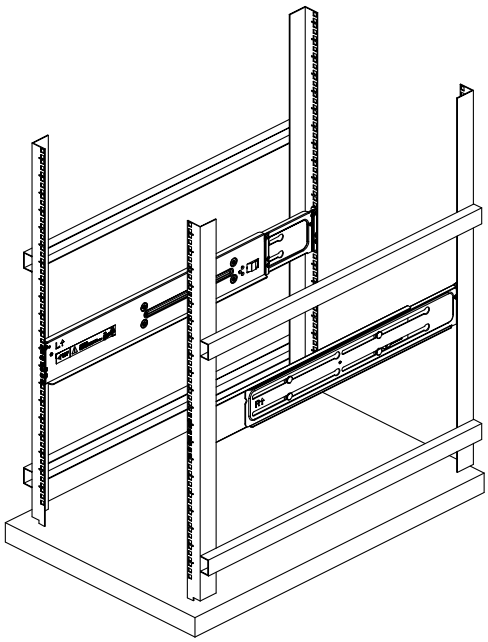


Figure 2-4. Rails Installed in a Rack

7. Secure the rails to the rack by installing screws into the square holes on the front and rear of the rack aligned with the rail holes.

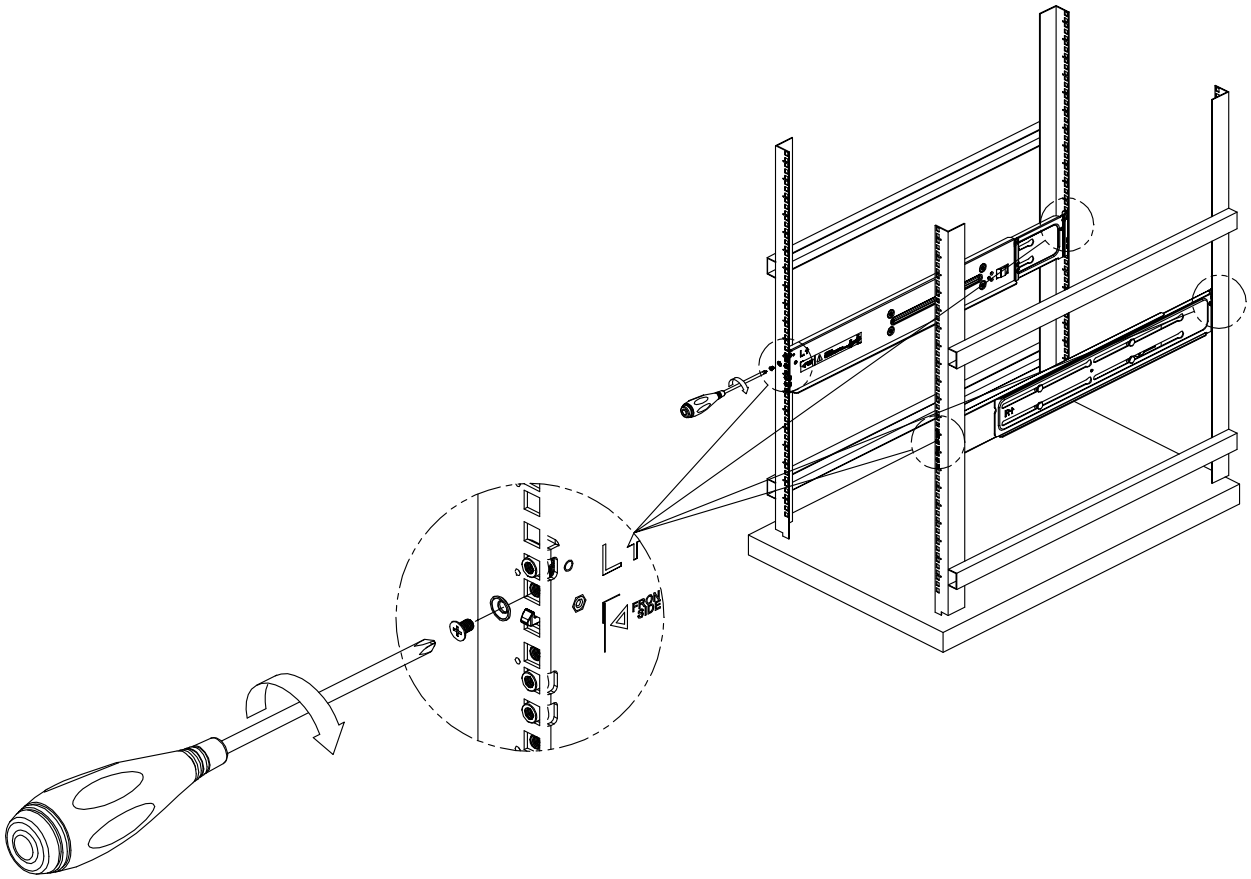


Figure 2-5. Securing Rails to a Rack

2.4 Installing the Chassis into the Rack

After the rails are installed on the rack, the chassis can be installed in the rack. It is heavy and requires two to three people or a lift.

Installing the Chassis into a Rack

1. Align the sides of the chassis with the front of the rails.
2. Slide the chassis into the rails, keeping the pressure even on both sides.

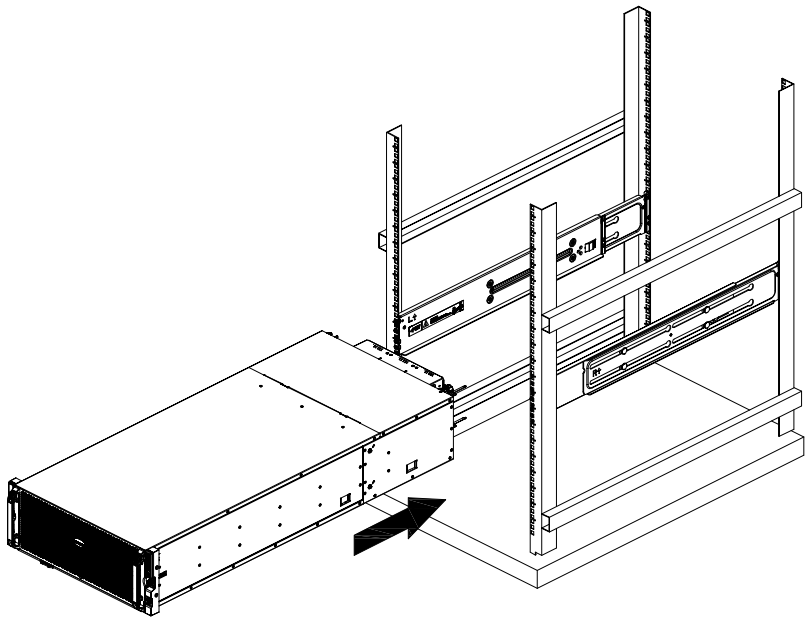


Figure 2-6. Installing the Chassis into the Rack

Note: Figures are for illustrative purposes only. Your actual chassis may differ. Always install servers into racks from the bottom up.

3. Push the chassis all the way into the rear of the rack until side brackets on the front of the chassis touch the front of the rack.

4. Secure the front of the chassis to the front of the rack by tightening screws through the chassis bracket holes and the rack holes aligned with them.

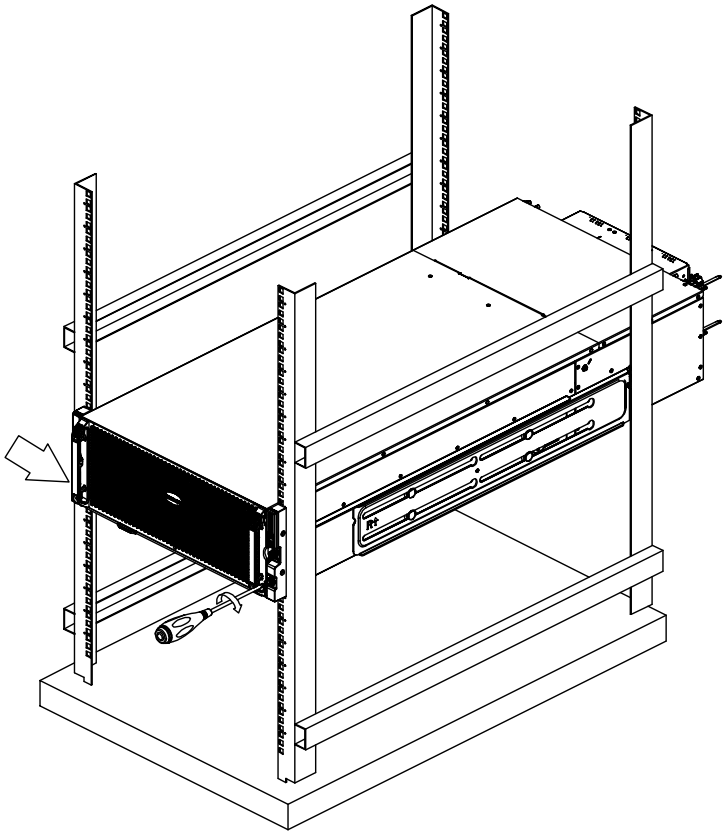


Figure 2-7. Securing the Chassis to the Rack

Chapter 3

Maintenance and Component Installation

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

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

3.1 Removing Power

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

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

3.2 Accessing the System

Drive bays can be accessed by pulling the HDD drawer forward out of the chassis. Other components can be accessed though the front or rear of the chassis.

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

HDD Drawer Access

The drives can be accessed by opening the drawer that contains them.

Opening the HDD Drawer

1. A locking handle is on either side of the chassis front. To unlock the drawer, press the release buttons on the front handles down into the unlocked position.

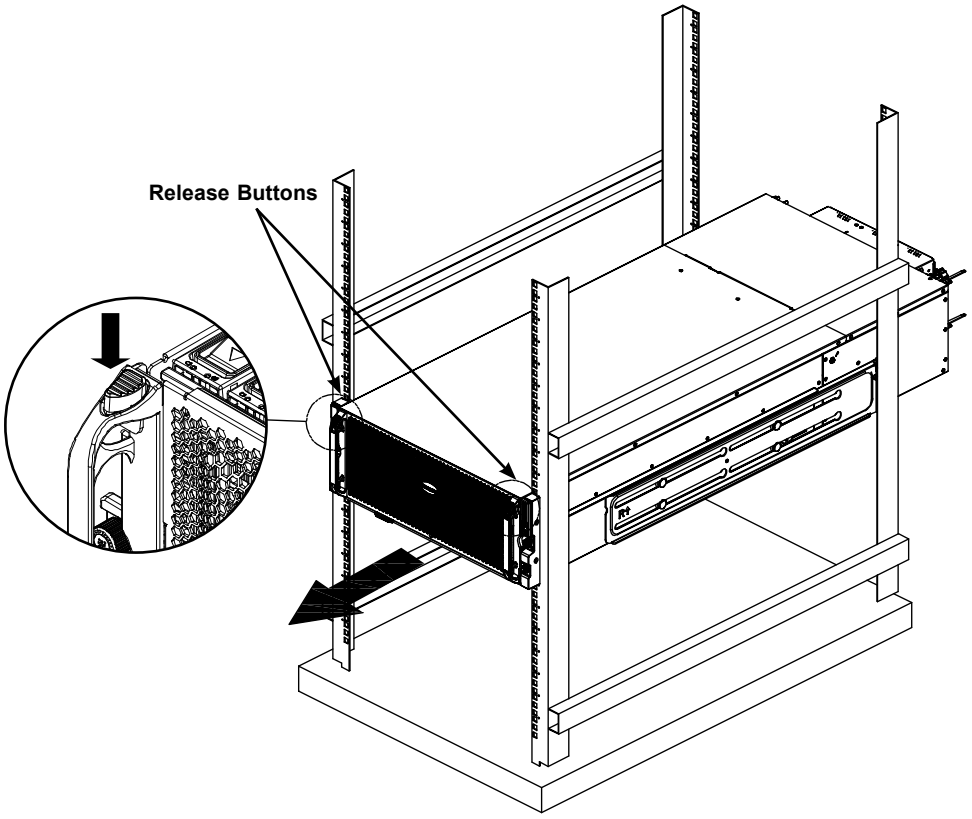


Figure 3-1. Unlocking the Drawer

2. Simultaneously pull both handles forward, sliding the HDD drawer out of the storage enclosure.

3. Push the drive carrier handle to release the carrier and pull it from the chassis.

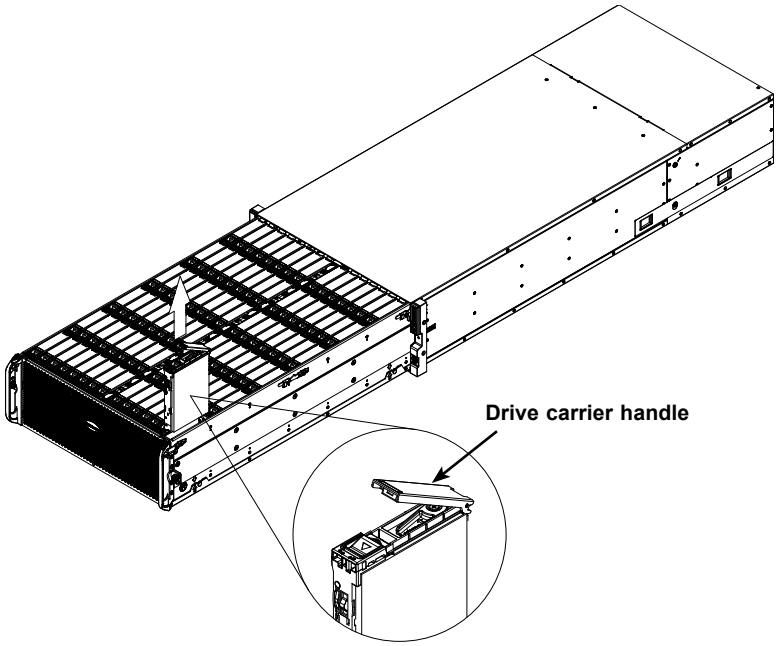


Figure 3-2. Removing an HDD

3.3 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your motherboard, it is important to handle it very carefully. The following measures are generally sufficient to protect the system PCBs from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any PCB (printed circuit board) from its antistatic bag.
- Handle PCBs by their edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the PCBs back into their antistatic bags when not in use.
- Use only the correct type of onboard CMOS battery. Do not install the onboard battery upside down to avoid possible explosion.

3.4 Motherboard Components

Processor and Heatsink Installation

The processor (CPU) and processor carrier should be assembled together first to form the processor carrier assembly. This will be attached to the heatsink to form the processor heatsink module (PHM) before being installed onto the CPU socket.

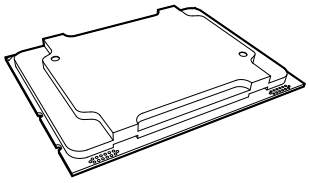
Notes:

- Use ESD protection.
- Unplug the AC power cord from all power supplies after shutting down the system.
- Check that the plastic protective cover is on the CPU socket and none of the socket pins are bent. If they are, contact your retailer.
- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or CPU socket, which may require manufacturer repairs.
- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.
- Refer to the Supermicro website for updates on processor support.
- All graphics in this manual are for illustrations only. Your components may look different.

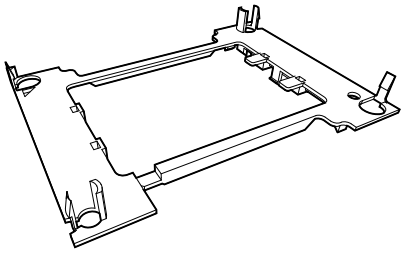
Overview of the Processor Carrier Assembly

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

1. Non-F Processor



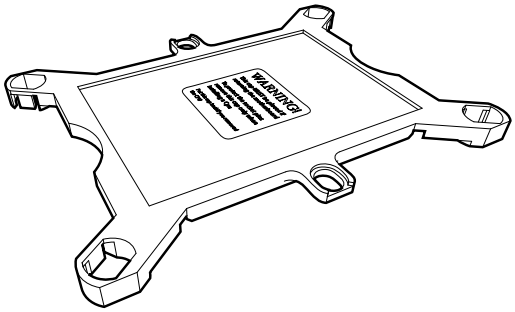
2. Processor Carrier



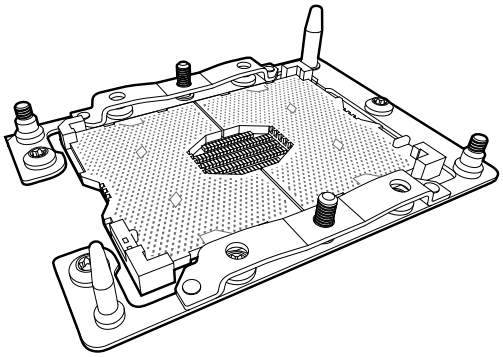
Overview of the CPU Socket

The CPU socket is protected by a plastic protective cover.

1. Plastic Protective Cover



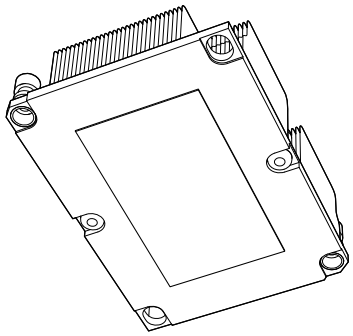
2. CPU Socket



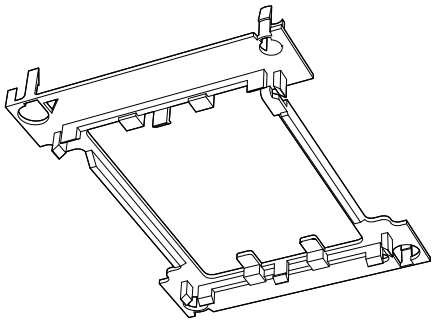
Overview of the Processor Heatsink Module

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

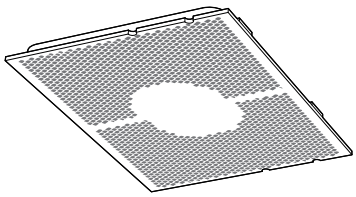
1. Heatsink with Thermal Grease



2. Processor Carrier

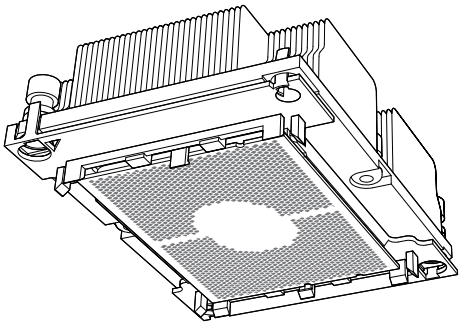


3. Non-F Processor





Processor Heatsink Module



Note: heatsink shown may differ from the heatsink in your system.

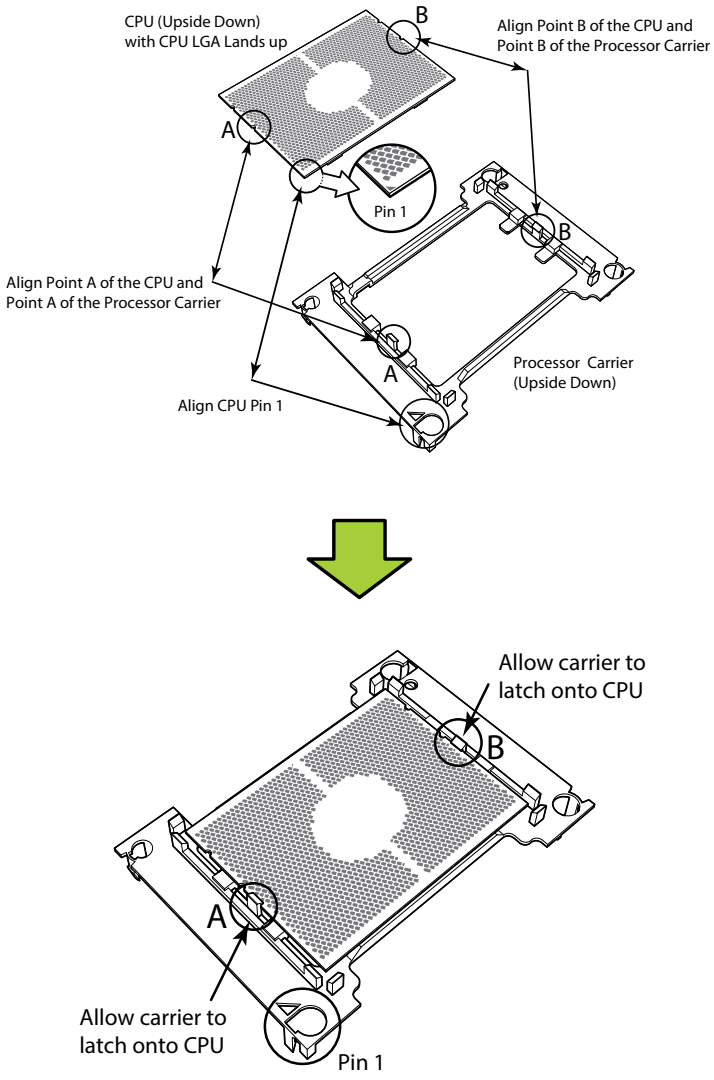
Creating the Non-F Model Processor Carrier Assembly

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)

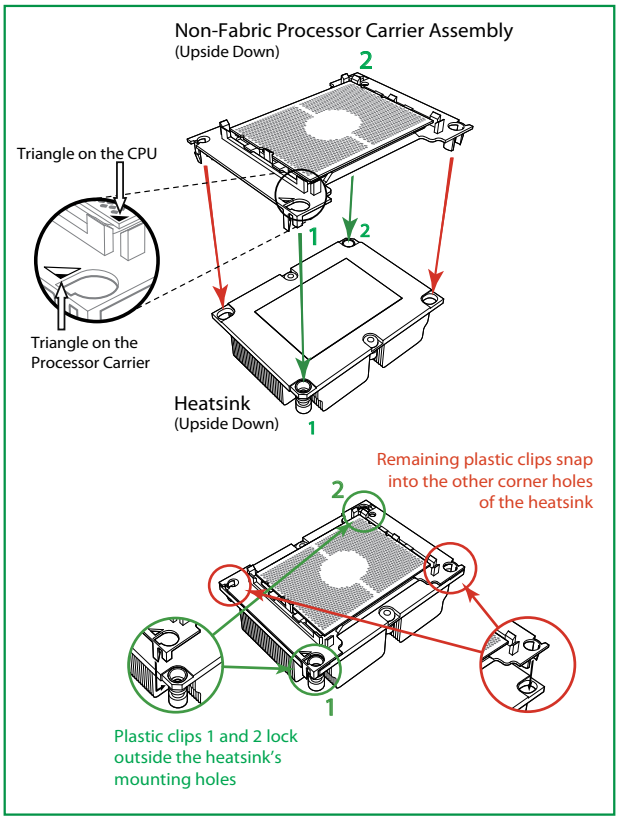
Assembling the Processor Heatsink Module

After creating the processor carrier assembly for the Non-F model processor, mount it onto the heatsink to create the processor heatsink module (PHM):

1. Note the label on top of the heatsink, which marks the heatsink mounting holes as 1, 2, 3, and 4. If this is a new heatsink, the thermal grease has been pre-applied on the underside. Otherwise, apply the proper amount of thermal grease.

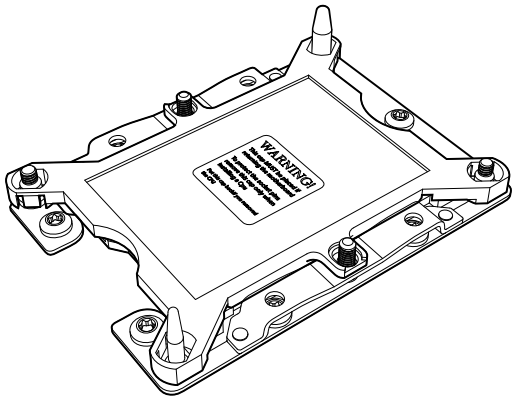
2. Turn the heatsink over with the thermal grease facing up. Hold the processor carrier assembly so the processor's gold contacts are facing up, then align the triangle on the assembly with hole 1 of the heatsink. Press the processor carrier assembly down. The plastic clips of the assembly will lock outside of holes 1 and 2, while the remaining clips will snap into their corresponding holes.

3. Examine all corners to ensure that the plastic clips on the processor carrier assembly are firmly attached to the heatsink.

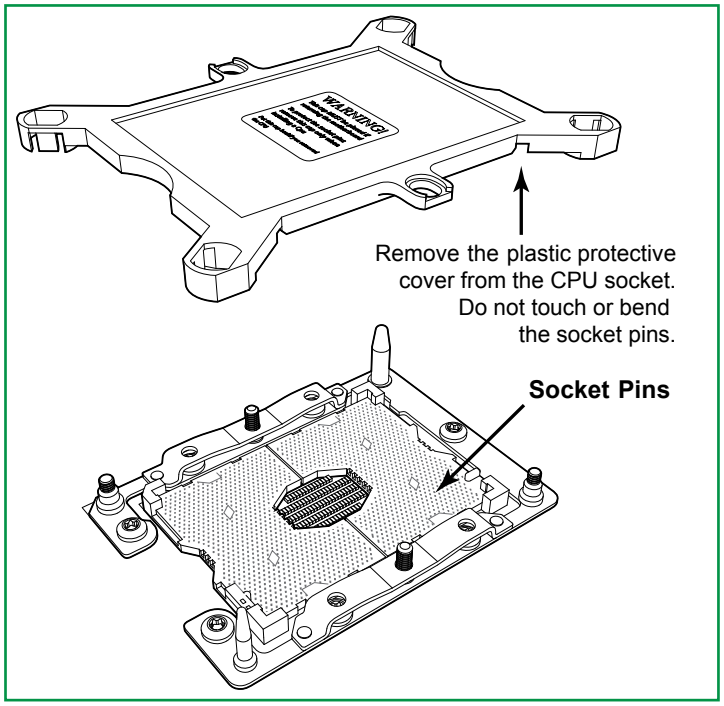


Preparing the CPU Socket for Installation

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.



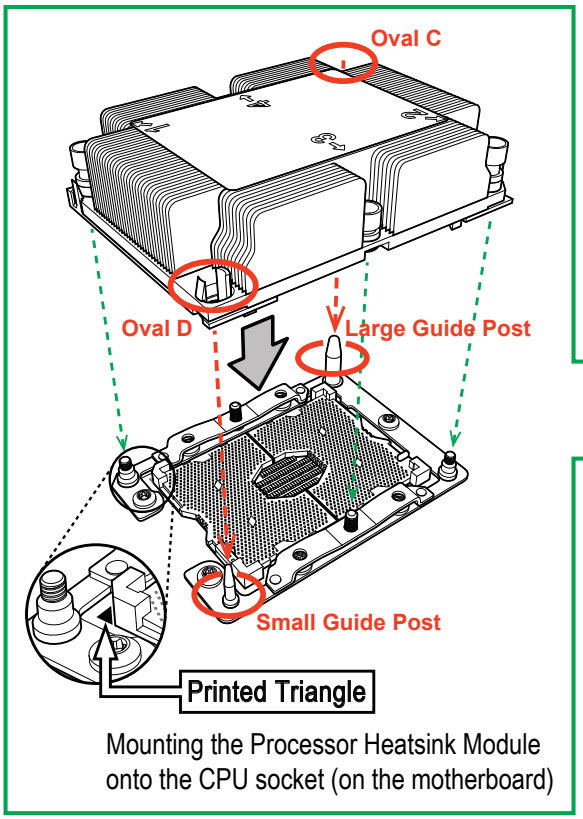
CPU Socket with Plastic Protective Cover



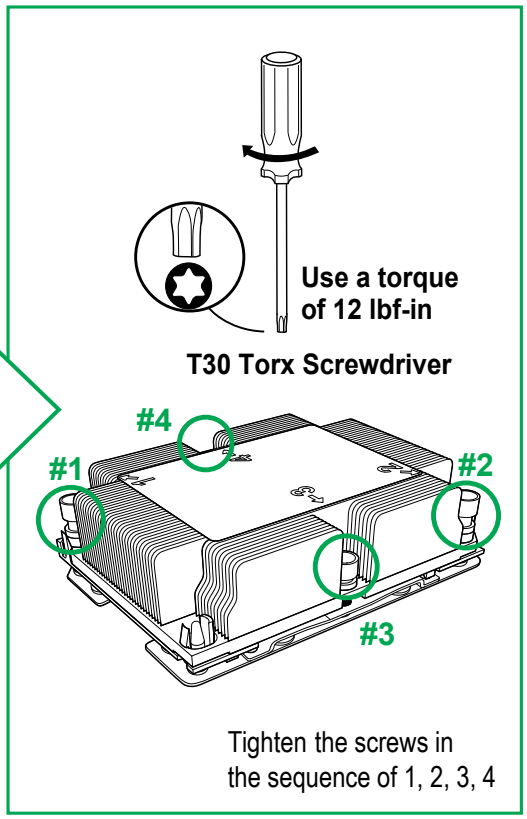
Installing the Processor Heatsink Module

After assembling the Processor Heatsink Module (PHM), install the PHM onto the CPU socket:

1. Align hole 1 of the heatsink with the printed triangle on the CPU socket. See the left image below.
2. Make sure all four holes of the heatsink are aligned with the socket before gently placing the heatsink on top.
3. With a T30 Torx-bit screwdriver, gradually tighten screws #1 - #4 to ensure even pressure. The order of the screws is shown on the label on top of the heatsink. To avoid damaging the processor or socket, do not use a force greater than 12 lbf-in when tightening the screws.
4. Examine all corners to ensure that the PHM is firmly attached to the socket.



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



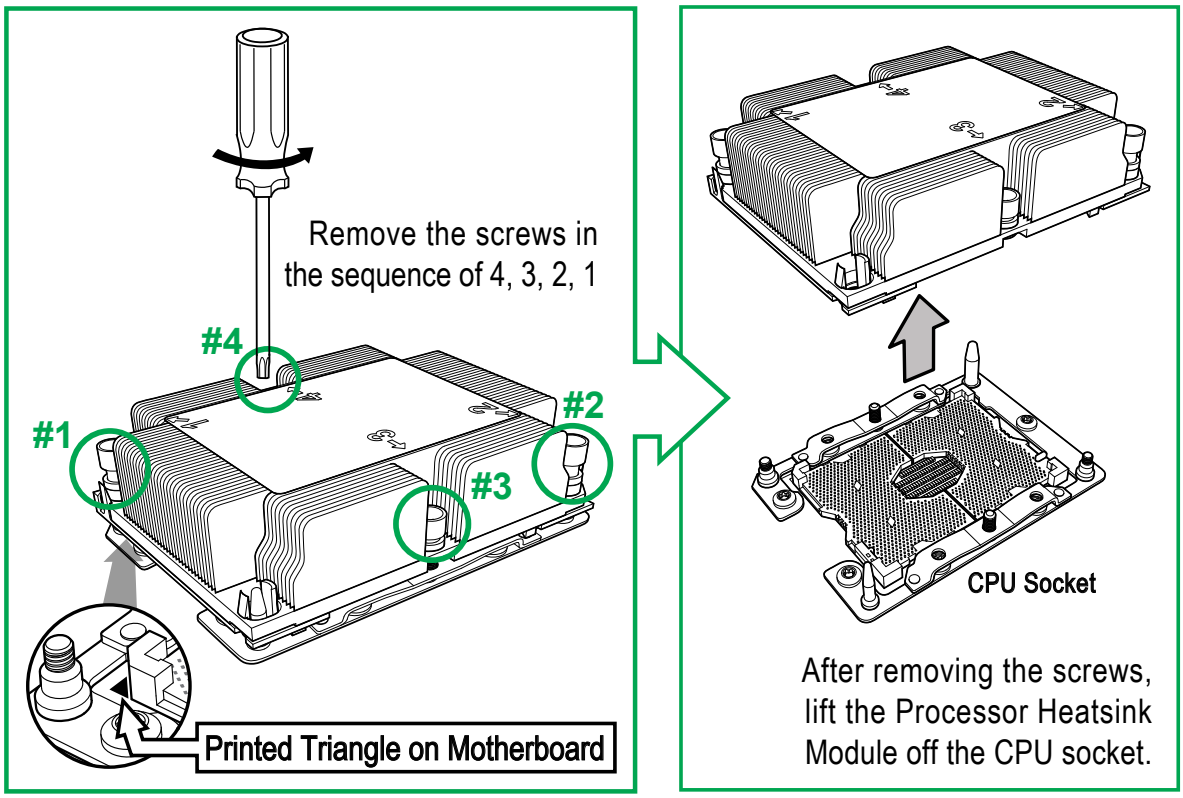
Tighten the screws in the sequence of 1, 2, 3, 4

Removing the Processor Heatsink Module

Before removing the processor heatsink module (PHM) from the motherboard, unplug the AC power cord from all power supplies after shutting down the system. Then follow the steps below:

1. Use a T30 Torx-bit screwdriver to loosen the four screws in a backwards sequence of #4, #3, #2, and #1.

2. Gently lift the PHM upwards to remove it from the socket.



Memory

The X11DSC supports up to 4TB of 3DS Load Reduced DIMM (3DS LRDIMM), 3DS Registered DIMM (3DS RDIMM), Load Reduced DIMM (LRDIMM), Registered DIMM (RDIMM) and Non-Volatile DIMM (NVDIMM) with speeds of 2933*/2666/2400/2133 MHz memory in 16 slots Note that populating the memory in a 2DPC system configuration on this motherboard will affect memory bandwidth performance.

***Notes:**

- Memory speed is dependent on the type of processors used in your system.
- Support for 2933 MHz memory is dependent on the processor SKU.
- The max. memory capacity support will differ according to the processor SKU.
- Check the Supermicro website for recommended memory modules.
- Exercise extreme care when installing or removing DIMM modules to prevent any damage.

Memory Installation Sequence

Memory 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 the second module of the channel. When installing memory modules, be sure to populate the blue memory slots first and then populate the 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 Intel Xeon Scalable-SP Processors

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	1.2 V	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 2nd Gen Intel Xeon Scalable-SP Processors

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	1.2 V	1.2 V	1.2 V
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

Notes:

- 2933 MHz memory support in a two-DIMM per-channel (2DPC) configuration can be achieved by using memory purchased from Supermicro.
- 2933 MHz memory is supported by 2nd Generation Intel Xeon Scalable-SP processors only..

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
• All DIMMs must be all 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, and across different sockets. • Mixing of non-3DS and 3DS LRDIMM is not allowed in the same channel, across different channels, and 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

DIMM Population Table

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

Memory Population Table for Intel Xeon Scalable-SP and 2nd Gen Intel Xeon Scalable-SP Processors

Memory Population Table for 16 DIMM Slots	
When 1 CPU is used:	**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-DIMMC1/P1-DIMMB1/P1-DIMMA1/P1-DIMMA2/P1-DIMMD1/P1-DIMME1/P1-DIMMF1
1 CPU & 8 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1/P1-DIMMA2/P1-DIMMD2/P1-DIMMD1/P1-DIMME1/P1-DIMMF1
When 2 CPUs are used:	**Memory Population Sequence**
2 CPUs & 2 DIMMs	CPU1: P1-DIMMA1 CPU2: P2-DIMMA1
2 CPUs & 4 DIMMs	CPU1: P1-DIMMA1/P1-DIMMD1 CPU2: P2-DIMMA1/P2-DIMMD1
2 CPUs & 6 DIMMs	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1 CPU2: P2-DIMMC1/P2-DIMMB1/P2-DIMMA1
2 CPUs & 8 DIMMs	CPU1: P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1 CPU2: P2-DIMMB1/P2-DIMMA1/P2-DIMMD1/P2-DIMME1
2 CPUs & 10 DIMMs	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1 CPU2: P2-DIMMB1/P2-DIMMA1/P2-DIMMD1/P2-DIMME1
2 CPUs & 12 DIMMs	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1 CPU2: P2-DIMMC1/P2-DIMMB1/P2-DIMMA1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1
2 CPUs & 14 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1/P1-DIMMA2/P1-DIMMD1/P1-DIMME1/P1-DIMMF1 CPU2: P2-DIMMC1/P2-DIMMB1/P2-DIMMA1/P2-DIMMA2/P2-DIMMD1/P2-DIMME1/P2-DIMMF1
2 CPUs & 16 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMA1/P1-DIMMA2/P1-DIMMD2/P1-DIMMD1/P1-DIMME1/P1-DIMMF1 CPU2: P2-DIMMC1/P2-DIMMB1/P2-DIMMA1/P2-DIMMA2/P2-DIMMD2/P2-DIMMD1/P2-DIMME1/P2-DIMMF1

Note: Please refer to the Memory Configuration User Guide for X11 UP/DP/MP motherboards that is posted on our website for more information on memory support for this motherboard.

DCPMM Memory Population Tables for 2nd Gen Intel Xeon Scalable-SP Processors

Note: Only 2nd Gen Intel Xeon Scalable-SP processors support DCPMM memory.

Symmetric Population within 1 CPU Socket									
Modes	**P1-DIMMF1**	**P1-DIMME1**	**P1-DIMMD1**	**P1-DIMMD2**	**P1-DIMMA2**	**P1-DIMMA1**	**P1-DIMMB1**	**P1-DIMMC1**	**Channel Config.**
AD	DRAM1	DRAM1	DRAM1	***DCPMM***	***DCPMM***	DRAM1	DRAM1	DRAM1	**2-1-1**
MM	DRAM2	DRAM2	DRAM2	***DCPMM***	***DCPMM***	DRAM2	DRAM2	DRAM2	**2-1-1**
AD + MM	DRAM3	DRAM3	DRAM3	***DCPMM***	***DCPMM***	DRAM3	DRAM3	DRAM3	**2-1-1**
AD	***DCPMM***	DRAM1	DRAM1	-	-	DRAM1	DRAM1	***DCPMM***	**1-1-1**
MM	***DCPMM***	DRAM1	DRAM1	-	-	DRAM1	DRAM1	***DCPMM***	**1-1-1**
AD + MM	***DCPMM***	DRAM3	DRAM3	-	-	DRAM3	DRAM3	***DCPMM***	**1-1-1**

Asymmetric Population within 1 CPU Socket									
Modes	**P1-DIMMF1**	**P1-DIMME1**	**P1-DIMMD1**	**P1-DIMMD2**	**P1-DIMMA2**	**P1-DIMMA1**	**P1-DIMMB1**	**P1-DIMMC1**	**Channel Config.**
AD	DRAM1	DRAM1	DRAM1	-	***DCPMM***	DRAM1	DRAM1	DRAM1	**2-1-1**
AD*	DRAM1	DRAM1	DRAM1	-	***DCPMM***	DRAM1	DRAM1	DRAM1	**2-1-1**

Legend (for the two tables above)					
DDR4 Type					**Capacity**
DRAM1	RDIMM	3DS RDIMM	LRDIMM	3DS LRDIMM	Refer to Validation Matrix (DDR4 DIMMs validated with DCPMM) below.
DRAM2	RDIMM	-		-	
DRAM3	RDIMM	3DS RDIMM	LRDIMM	-	

Note: DDR4 single rank x8 is not available for DCPMM Memory Mode or App-Direct Mode.

Legend (for the first two tables above)	
Capacity	
DCPMM	Any Capacity (Uniformly for all channels for a given configuration)

- * 2nd socket has no DCPMM DIMM
- Mode definitions: AD=App Direct Mode, MM=Memory Mode, AD+MM=Mixed Mode
- For MM, general DDR4-to-DCPMM ratio is between 1:4 and 1:16. Excessive capacity for DCPMM can be used for AD.
- For each individual population, rearrangements between channels are allowed as long as the resulting population is compliant with the memory rules for 2nd Gen Intel Xeon Scalable-SP(82xx/62xx/52xx/4215 series) processors.
- For each individual population, please use the same DDR4 DIMM in all slots.
- For each individual population, sockets are normally symmetric with exceptions for 1 DCPMM per socket and 1 DCPMM per node case. Currently, DCPMM modules operate at 2666 MHz.
- No mixing of DCPMM and NVMDIMMs within the same platform is allowed.
- This DCPMM population guide targets a balanced DCPMM-to-DRAM-cache ratio in MM and MM + AD modes.

Validation Matrix (DDR4 DIMMs Validated w/DCPMM)			
DIMM Type	**Ranks Per DIMM & Data Width (Stack)**	**DIMM Capacity (GB)**	
		DRAM Density	
		4Gb	**8Gb**
RDIMM	1Rx4	8GB	16GB
	2Rx8	8GB	16GB
	2Rx4	16GB	32GB
LRDIMM	4Rx4	N/A	64GB
LRDIMM 3DS	8Rx4 (4H)	N/A	128GB

Notes: Install processors to CPU socket 1 first. Refer to the Memory Configuration User Guide for X11 UP/DP/MP motherboards posted on our website for more information on memory support for this motherboard.

Installing Memory

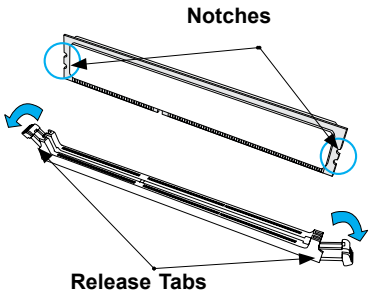
Electrostatic Discharge (ESD) can damage electronic components including memory modules. To avoid damaging DIMM modules, it is important to handle them carefully. The following measures are generally sufficient.

- Use a grounded wrist strap designed to prevent static discharge.
- Handle the memory module by its edges only.
- Put the memory modules into the antistatic bags when not in use.

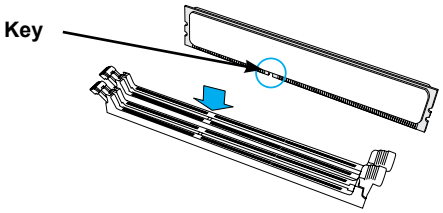
Installing Memory

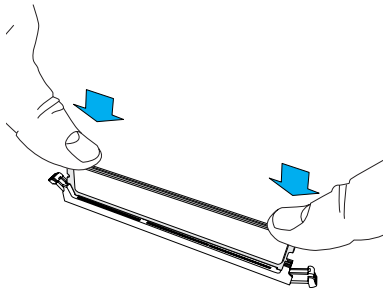
Begin by removing power from the system as described in Section 3.1. Follow the memory population sequence in the table above.

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



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





3. Press the release tabs to the locked position to secure the DIMM module into the slot.

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

Removing Memory

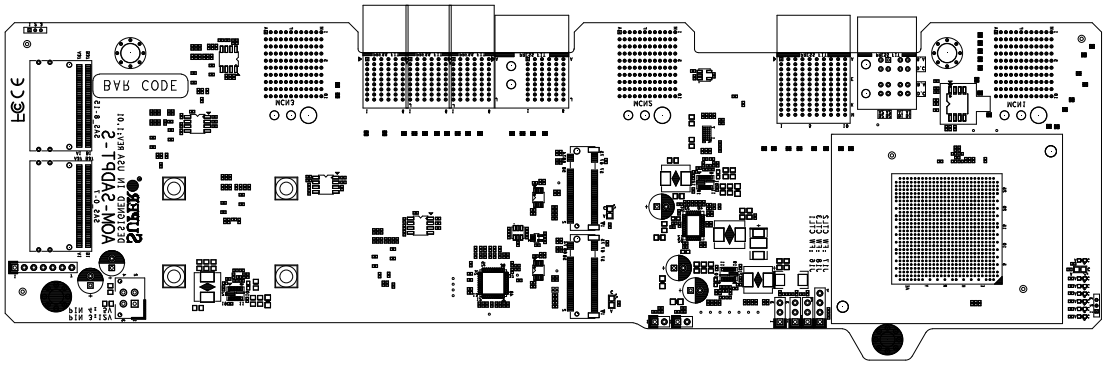
To remove a DIMM, unlock the release tabs then pull the DIMM from the memory slot.

Mezzanine Card Installation

For SAS3 support, be sure to follow the instructions below to install the mezzanine card in the JMCN1, JMCN2, and JMCN3 connectors on the motherboard.

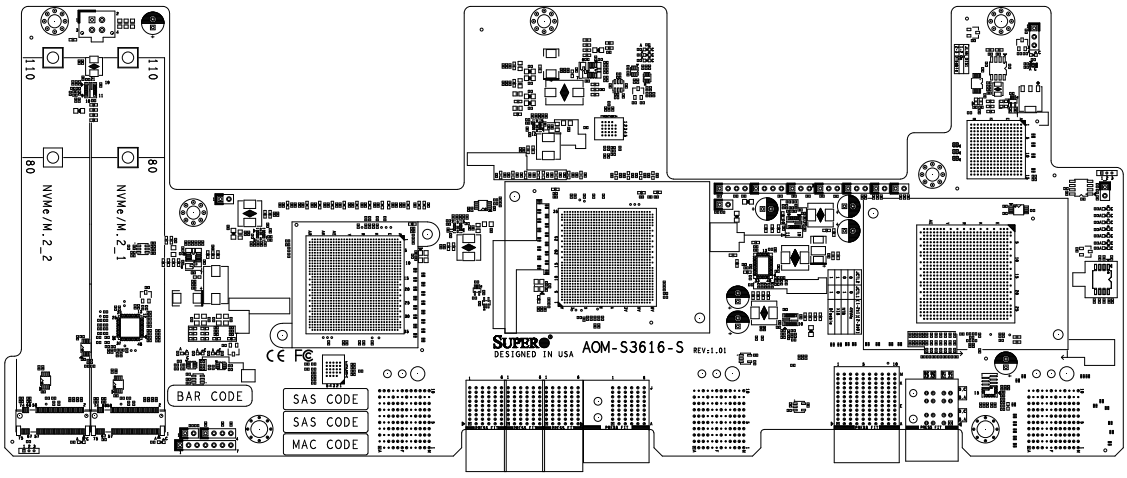
AOM-SADPT-S

The Supermicro AOM-SADPT-S is an optional mezzanine card that provides a by-pass connection to SAS devices for the SAS controller in the PCI slot. This hosts connectivity to two NVME M.2 devices (2280/22110 form factor) and PCIe NTB switch PM40036.



AOM-S3616

The Supermicro AOM-S3616-S is a mezzanine card that hosts two SAS 3616 controllers ideal for high-performing, bandwidth-intensive applications such as video streaming, medical imaging and big data analytics. For driver, firmware and management tools please refer to the system page on the Supermicro website. This card hosts connectivity to two NVME M.2 devices (2280/22110mm form factor), PCIe NTB switch PM40036, and Ethernet controller for HA heartbeat functionality.



Installing the Mezzanine Card

1. Power down the server and extend the node to which you want the card installed from the chassis.
2. Align the mezzanine card with the mezzanine tray.
3. Secure the mezzanine board to the tray with screws as shown below.
4. Flip the assembly over. Make sure the left and right latches are in the unlocked position, then align the tray to its position on the motherboard and lower it into place.
5. After making sure it is fully seated into the motherboard, rotate the latches forward to their locked position.
6. Carefully push down on the middle section to ensure the connectors are fully seated.
7. Push the node back into the chassis.

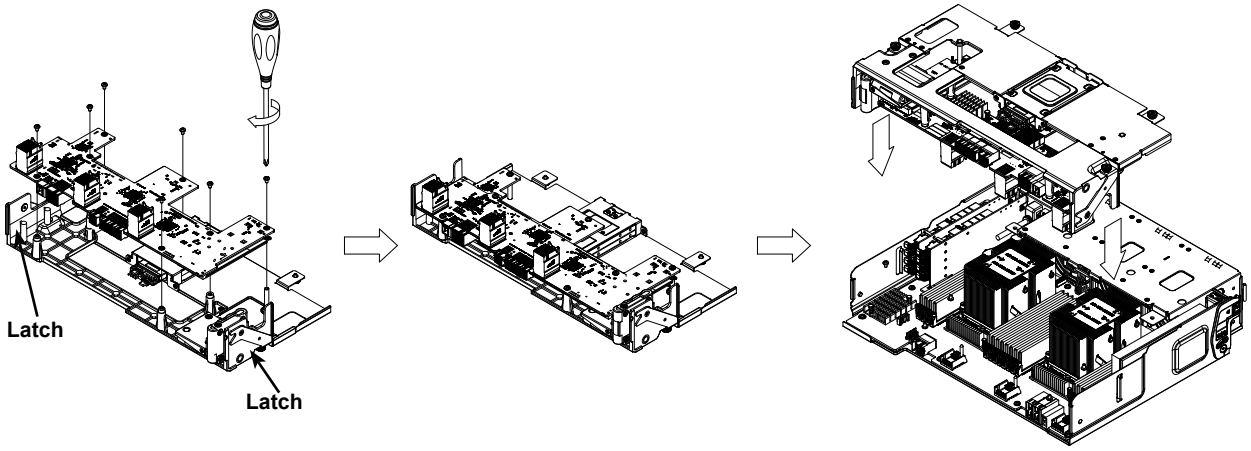


Figure 3-3. Installing the Mezzanine Card

Motherboard Battery

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

Replacing the Battery

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

1. Push aside the small clamp that covers the edge of the battery. When the battery is released, lift it out of the holder.
2. To insert a new battery, slide one edge under the lip of the holder with the positive (+) side facing up. Then push the other side down until the clamp snaps over it.

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

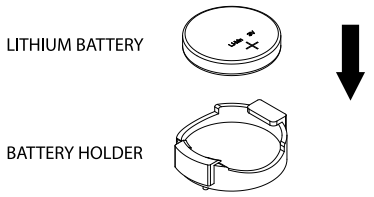


Figure 3-4. Installing the Onboard Battery

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 Chassis Components

Storage Drives

The SSG-6049SP-DE1CR60 supports 60 3.5" hard drives and the SSG-6049SP-DE1CR90 supports 90 3.5" hard drives. The drives can be removed without powering down the system if your operating system supports RAID. In addition, both servers support two 7-mm thick 2.5" SATA drives and two NVMe M.2 drives per node.

Hard Drive Carrier Indicators

Each hard drive carrier has two LED indicators: an activity indicator and a status indicator. The status indicator functions in RAID configurations. For non-RAID configurations, it remains off. See the table below for details.

Hard Drive Carrier LED Indicators			
	Color	**Blinking Pattern**	**Behavior for Device**
Activity LED	Blue	Solid on	Indicates a SAS drive
	Blue	Off	Indicates a SATA drive
	Blue	Blinking	Drive is actively being accessed
Status LED	Red	Solid on	Drive failed
	Red	Blinking at 1Hz	RAID is rebuilding
	Red	Blinking at 3Hz	Indicates a hot spare
	Red	Blinking at 4Hz	Locates a drive
	Red	Off	Idle

Note: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro website and check the "Drive Options" in the product webpage.

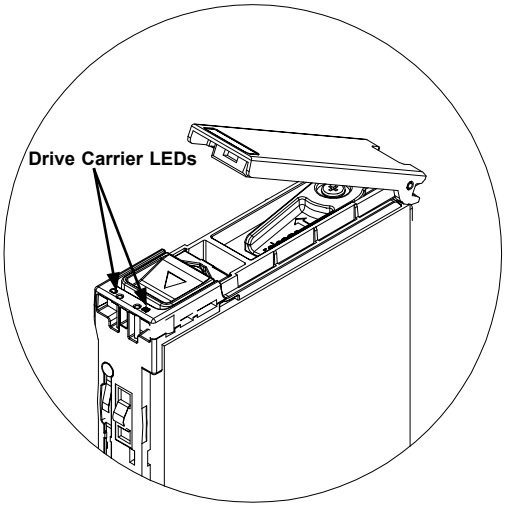


Figure 3-5. Hard Drive Carrier Indicators

Installing Hot-Swap 3.5"/2.5" Hard Drives

The chassis uses tool-less drive carriers to simplify the installation of 3.5" hard drives into the drive trays. Dummy trays feature a built-in adapter to support 2.5" drives.

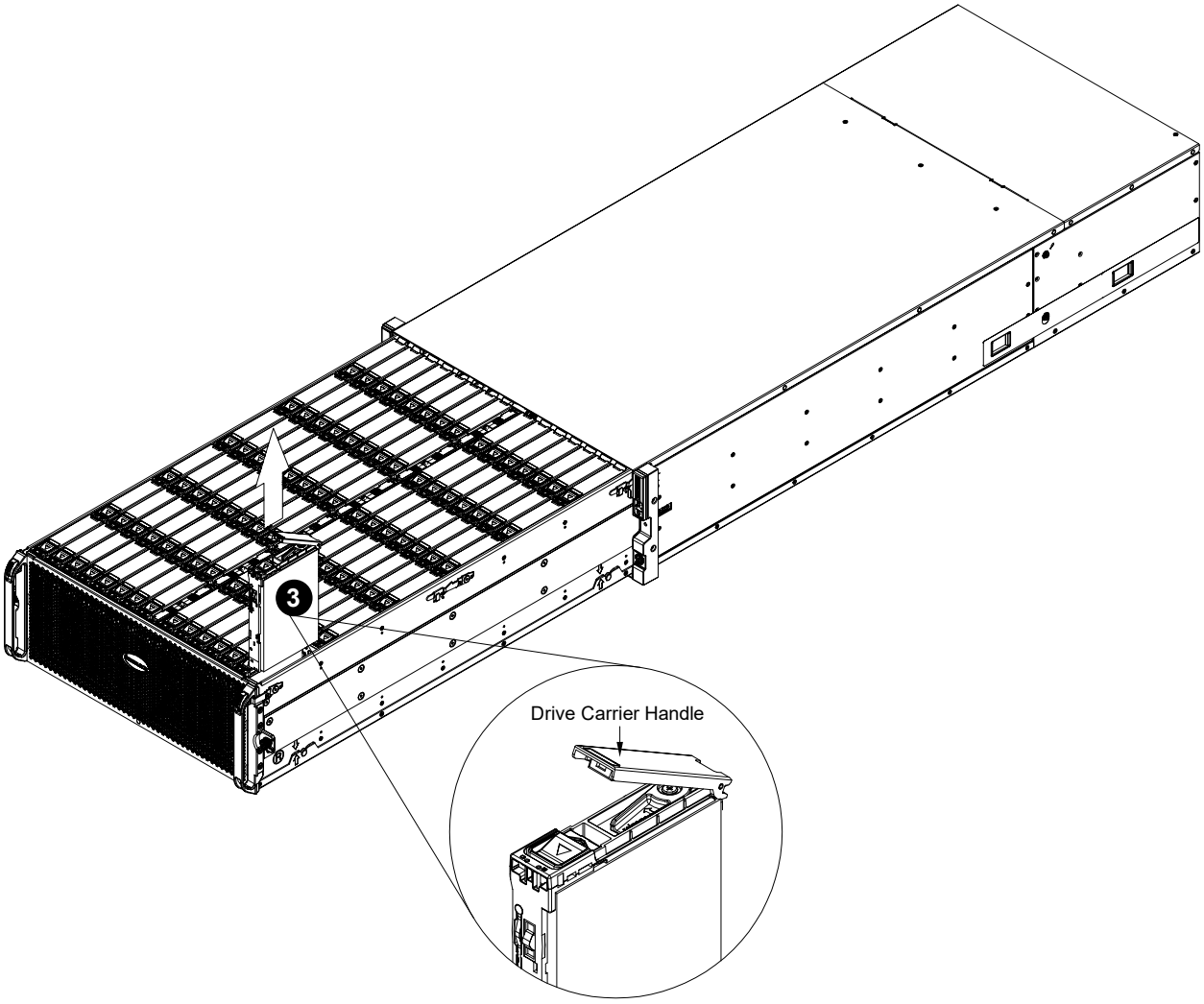


Figure 3-6. Removing a 3.5" Drive Carrier

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/files/storage/SBB-HDDCompList.pdf

Hard Drive Installation

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

Removing Hard Drive Carriers from the Chassis

1. Pull the storage enclosure forward out of the chassis.
2. Slide the release button on the drive carrier, which opens the carrier handle.
3. Use the drive carrier handle to pull the drive out of the chassis.

Caution: Except for short periods of time, such as swapping hard drives, do not operate the server with the hard drive bays empty.

Loading HDDs into the Chassis on a Rack

1. Press the release buttons on both of the front handles downward simultaneously and pull the drive drawer handles forward from the rack.

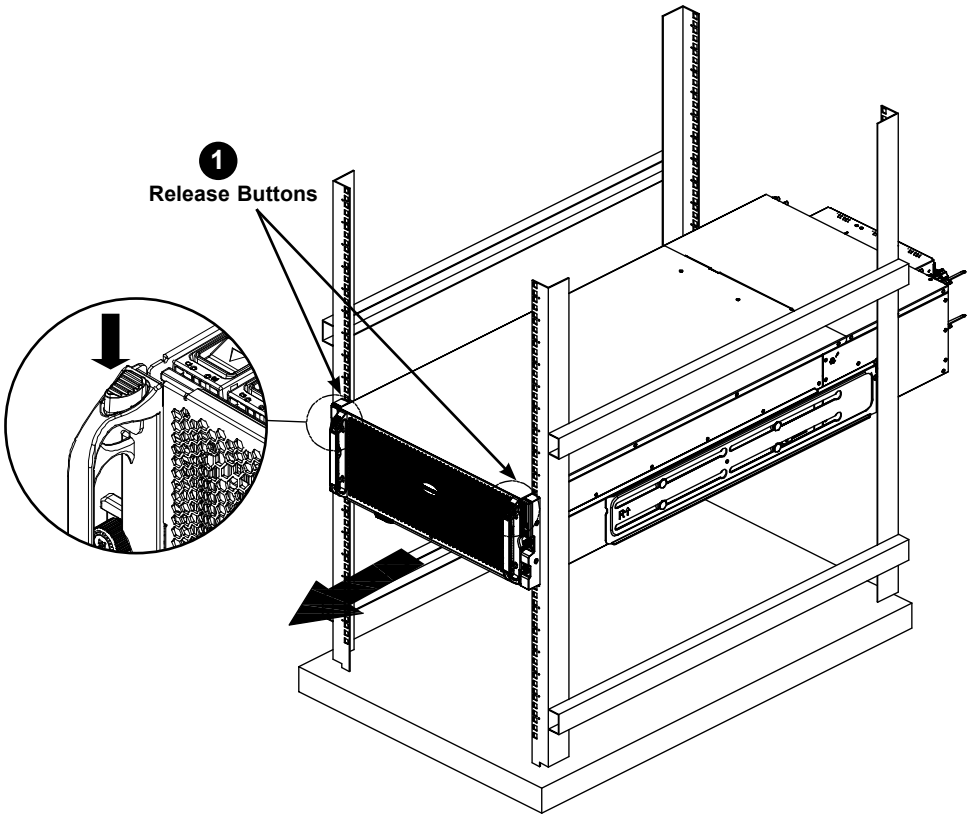


Figure 3-7. Opening the Chassis on a Rack

2. Pull open the chassis so that a locking lever on each side of the chassis aligns with the front of the chassis cover and front of the rack, then press the lever down on each side to lock the open part of the chassis in place.

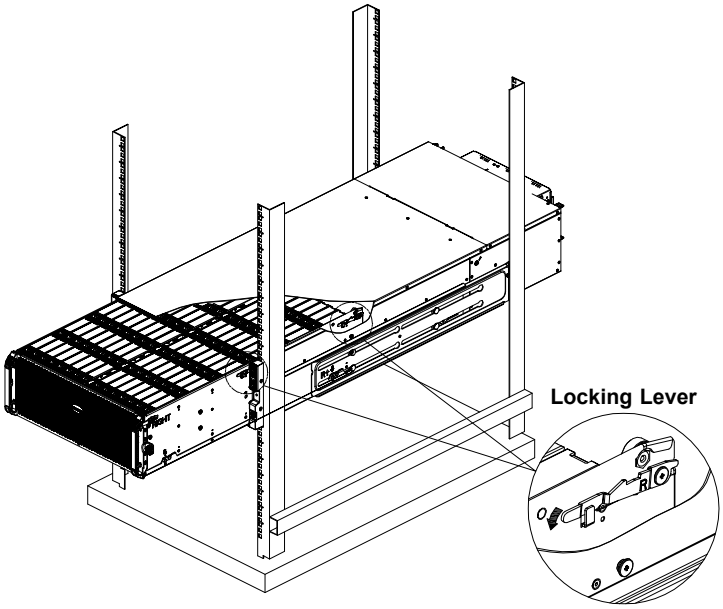


Figure 3-8. Locking in Place the Open Chassis on a Rack

3. HDDs and their carriers can be loaded into the chassis, or removed from the chassis by pressing their release buttons to eject their handles and then pulling the drives out by the handles.

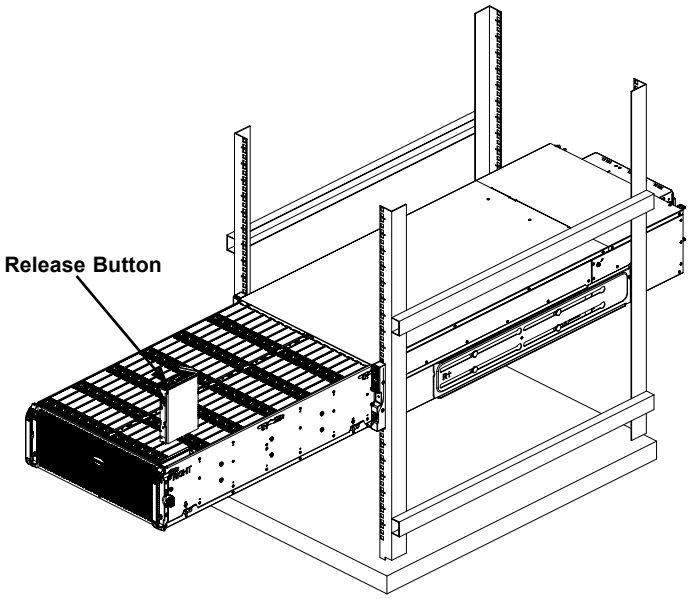


Figure 3-9. Loading HDDs in the Chassis in a Rack

Installing a 3.5" Hard Disk Drive

With the drive carrier removed from the storage compartment:

1. Under the main the carrier handle, find and the lift the breakout lever and pull out the side of the carrier.

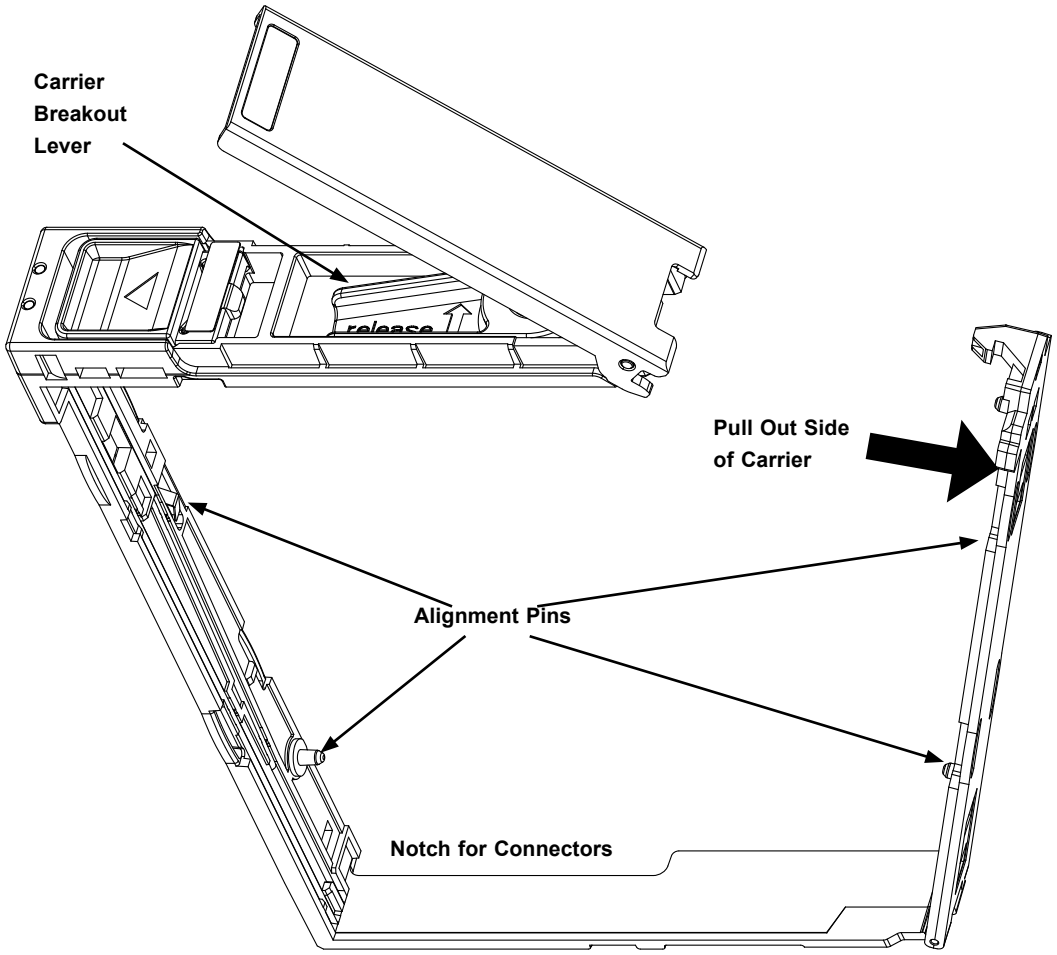


Figure 3-10. Opening the Drive Carrier

2. Remove the dummy drive from the carrier. Any unused drive bays should have the carriers remain in place in their bays.
3. Insert the hard drive into the drive carrier. Orient the drive by matching the two alignment pins on the side and by noting the notch in the carrier for the HDD connectors. Close the side of the carrier until it snaps in place.
4. Slide the carrier assembly into its spot in the chassis until it clicks into locked position.

Expander Modules

The SSG-6049SP-DE1CR60 contains two BPN-SAS3-947EL expander modules, which are labelled B and D. The SSG-6049SP-DE1CR90 contains four BPN-SAS3-947EL expander modules, which are labelled B, C, D, and F. Not that there are no expanders E or F in the SSG-6049SP-DE1CR60.

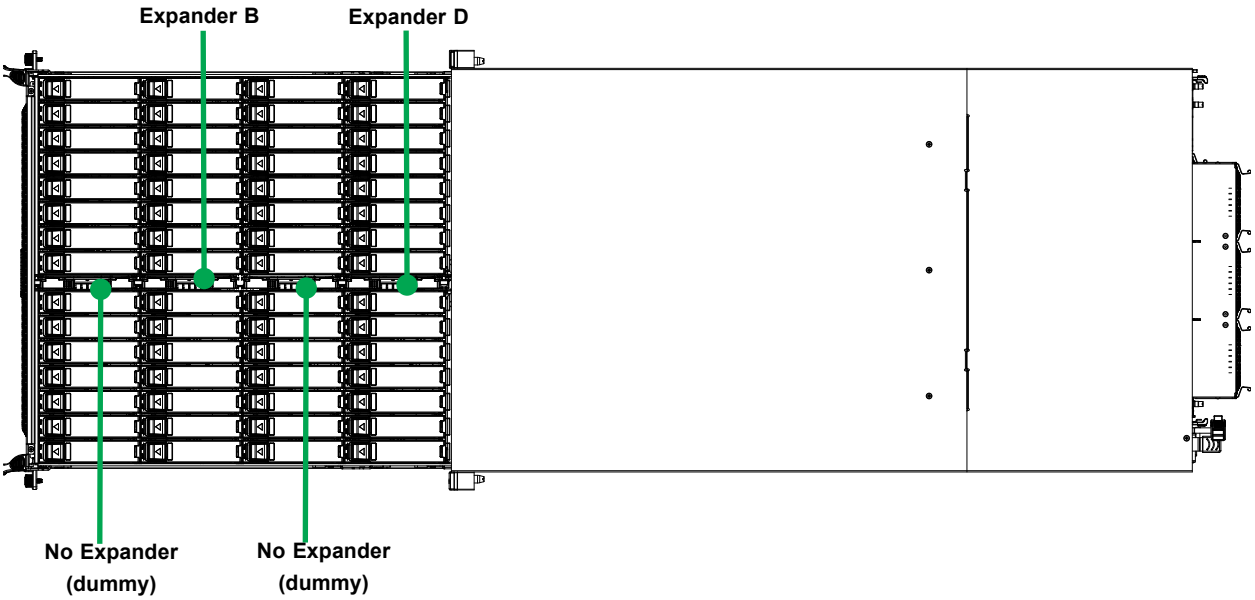


Figure 3-11. Top View of the Open Chassis (SSG-6049SP-DE1CR60 shown)

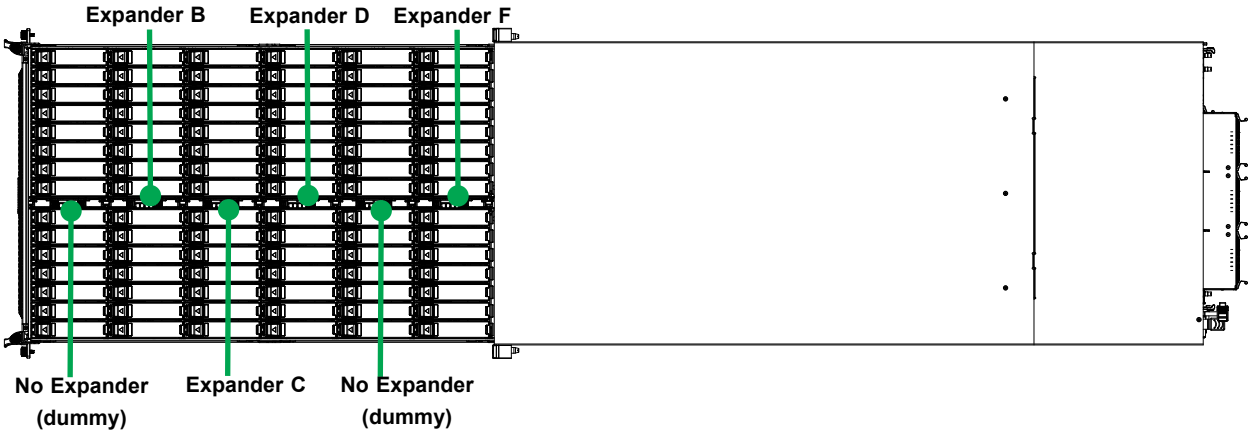


Figure 3-12. Top View of the Open Chassis (SSG-6049SP-DE1CR90 shown)

Removing an Expander Module from the Chassis

1. Each expander module has two latches on its top side, which lock the expander into place and must be opened to remove the expander from the chassis. Pull both latches up into the open position, as shown below.

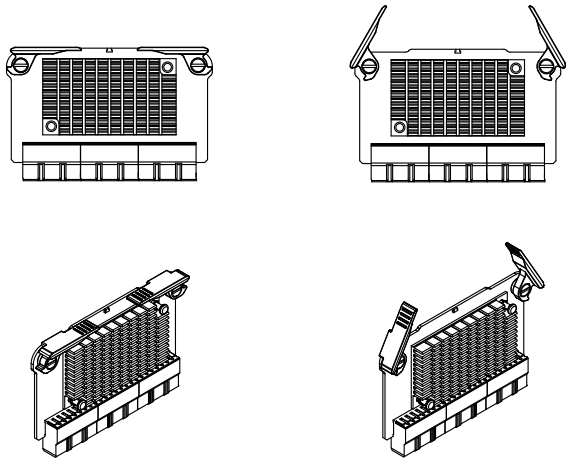


Figure 3-13. Expander Module Latches

2. Lift the unlocked expander module out of the chassis.

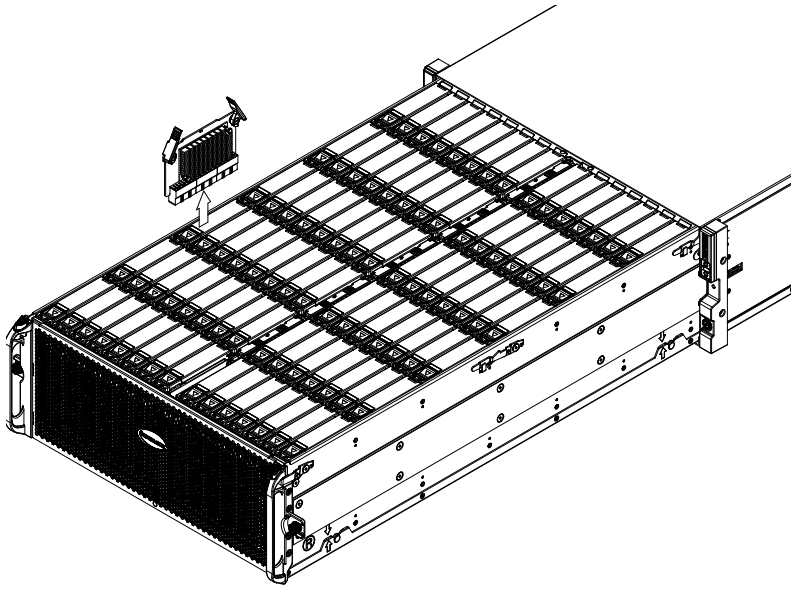


Figure 3-14. Removing an Expander Module

System Cooling

Six hot-swap, heavy-duty rear mounted fans provide cooling. They can be replaced without powering down the system.

Fan speed is controlled by a system temperature setting in 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 and all six fans will operate as long as one node is powered on.

Replacing a System Fan

1. While the power is running, examine the fans to determine which fan has failed.
2. On the failed fan, simultaneously squeeze the fan's side release tabs inward.

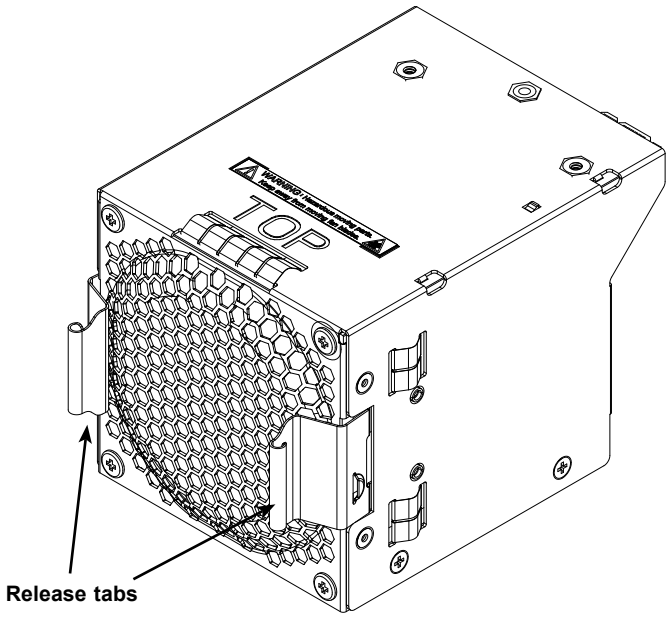


Figure 3-15. Fan Release Tabs

3. Pull the fan out of the motherboard sled using the tabs.

   Caution: Fans will continue to rotate for a brief time after removing them from the chassis. To avoid injury, keep fingers clear of the rotating fan blades.

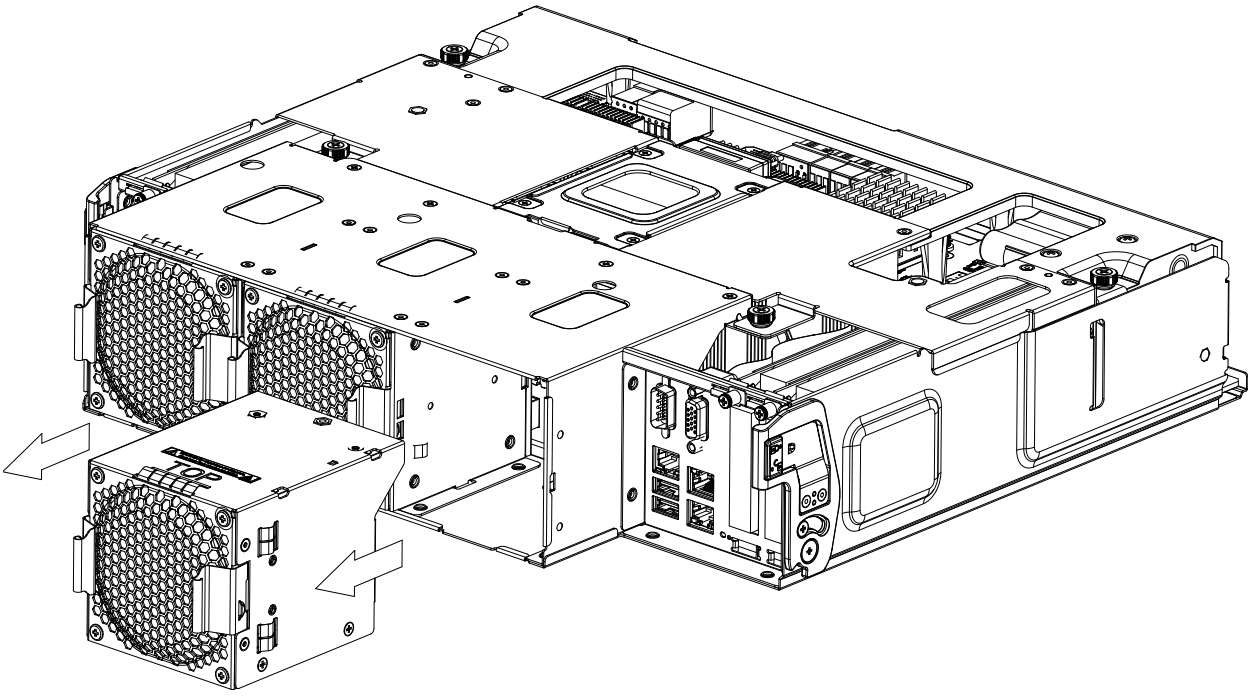


Figure 3-16. Removing a Fan from a Node

1. Place the new fan into the vacant fan bay and confirm that the fan is fully seated in the fan bay.
2. Make sure the new fan is functioning properly.

Checking the Server Air Flow

- Make sure there are no objects to obstruct airflow in and out of the server.
- If you are using a front bezel, make sure the bezel filter is replaced periodically.
- Do not operate the server without drives or drive trays in the drive bays.
- Use only recommended server parts.
- Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

The control panel LEDs display system heat status. See “Control Panel” in Chapter 1 for details.

Overheating

There are several possible responses if the system overheats.

Responses

If the enclosure overheats:

1. Use the LEDs to determine the nature of the overheating condition.
2. Confirm that the chassis covers are installed properly.
3. Make sure all fans are present and operating normally.
4. Check the routing of the cables.

Power Supply

The system features redundant power supplies and will continue to operate if one module fails, when it should be replaced as soon as convenient. The modules are hot-swappable, meaning they can be changed without powering down the system. New units can be ordered directly from Supermicro or authorized distributors. The power supplies are auto-switching capable. This feature enables them to automatically sense the input voltage and operate at a 200-240V range.

Power Supply LEDs

On the rear of the power supply module, an LED displays the status.

- **Solid Green**: When illuminated, indicates that the power supply is on.
- **Solid Amber**: When illuminated, indicates the power supply is plugged in and turned off, or the system is off but in an abnormal state.
- **Blinking Amber**: When blinking, this system power supply temperature has reached 63C. The system will automatically power-down when the power supply temperature reaches 70C and restart when the power supply temperature goes below 60C.

Changing the Power Supply Module:

1. Unplug the AC cord from the module to be replaced.
2. On the back of the module, push the release tab sideways, as illustrated.
3. Pull the module out using the handle.
4. Push the new module into the power bay until it clicks. Replace with the same model.
5. Plug the AC power cord back into the module.

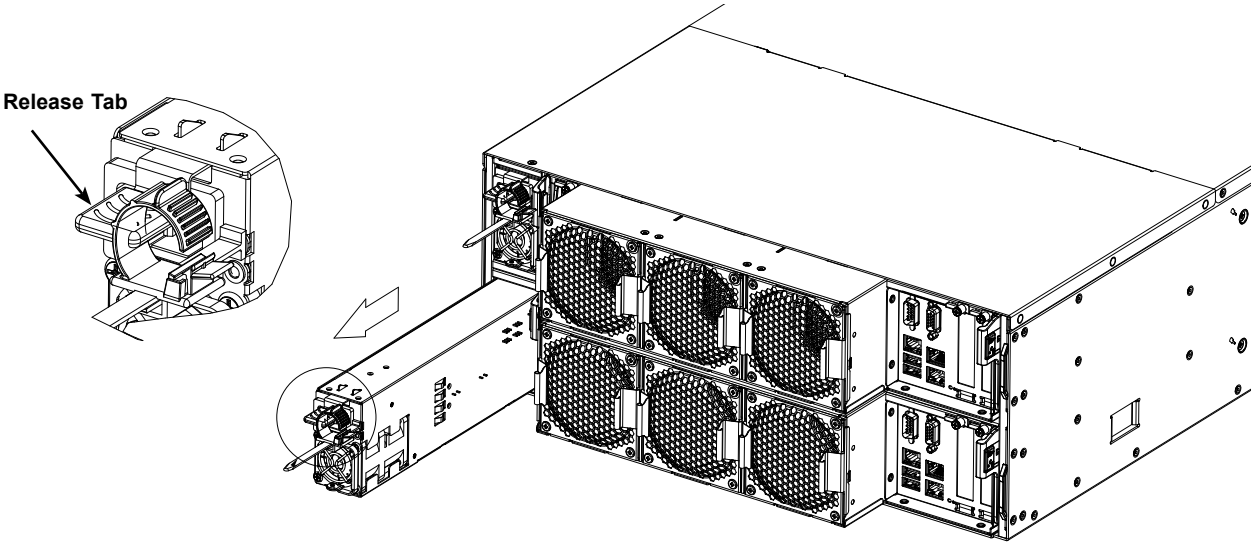


Figure 3-17. Removing the Power Supply

Chapter 4

Motherboard Connections

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

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

4.1 Power Connections

All power to the motherboard is supplied from the midplane.

4.2 Headers and Connectors

Onboard Fan Header

Two 4-pin fan headers (JFAN1, JFANPW) used for CPU/system cooling. The onboard fan speed is controlled by Thermal Management (via Hardware Monitoring) in the BIOS.

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

TPM Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from a third-party vendor. TPM/Port 80 is a security device which supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the hard drive is not installed in the system.

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

Chassis Intrusion

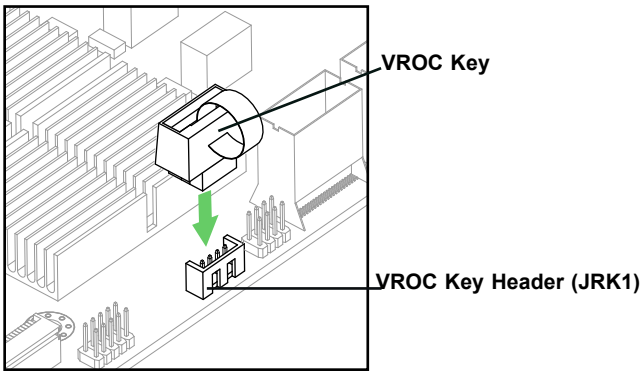
A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened. Refer to the table below for pin definitions.

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

VROC RAID Key Header

A VROC RAID Key header is located at JRK1 on the motherboard. Install a VROC RAID Key on JRK1 for NVMe RAID support as shown in the illustration below. Please refer to the layout below for the location of JRK1.

Intel VROC Key Pin Definitions	
Pin#	**Definition**
1	Ground
2	3.3V Standby
3	Ground
4	PCH RAID Key



SATA 3.0 Ports

The X11DSC has four SATA 3 ports (S-SATA4/S-SATA5 plus two extra SATA ports on the mezzanine board). These SATA ports are supported by the Intel PCH C621 chipset. S-SATA4 and S-SATA5 can be used with Supermicro SuperDOMs, which are yellow SATA DOM connectors with power pins built in and do not require external power cables. Supermicro SuperDOMs are backward-compatible with regular SATA HDDs or SATA DOMs that require external power cables.

4.3 Ports

Rear I/O

See Figure 4-1 below for the locations and descriptions of the various I/O ports as well as a UID switch/LED on the rear of the motherboard.

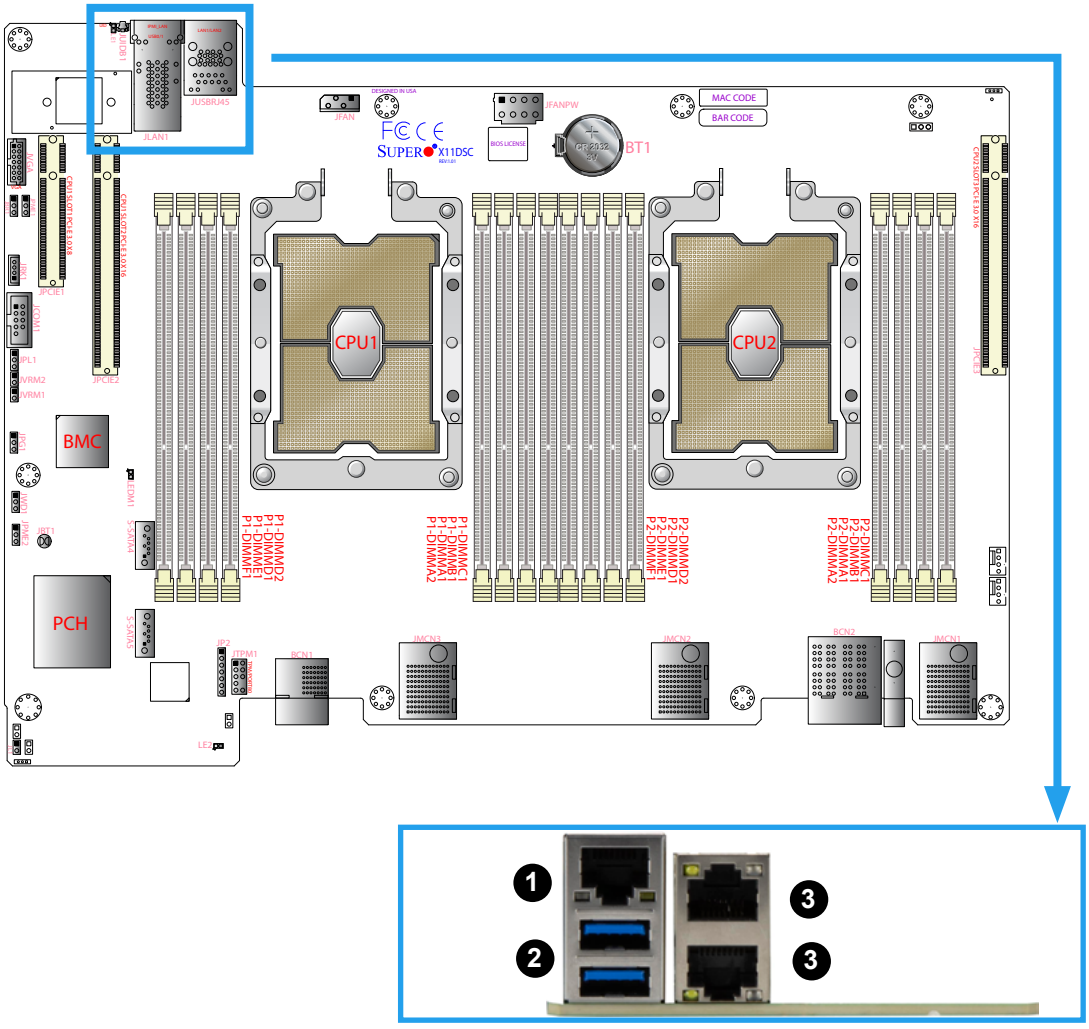


Figure 4-1. Rear I/O Port Locations

Rear I/O Ports			
#	Description	#	Description
1	IPMI LAN Port	3	LAN Ports
2	USB 3.0 Ports		

LAN Ports

Two 10G LAN ports (LAN1 and LAN2) are located on the I/O back panel. These ports accept RJ45 type cables. A 1 GbE dedicated IPMI LAN is also provided above the USB 0/1 ports.

Universal Serial Bus (USB) Ports

There are two USB 3.0 ports (USB0/USB1) on the I/O back panel. USB2 is a Type A USB 3.0 header on the motherboard used to provide a front access USB connection.

Back Panel USB 0/1 (3.0) 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

Unit Identifier Switch/UID LED Indicator

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

UID Switch Pin Definitions

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

UID LED Pin Definitions

Color	Status
Blue: On	Unit Identified

Additional I/O Ports

The following ports are located on the motherboard as headers.

VGA Port

One VGA port header is located at JVGA on the motherboard. Use this connection for VGA display.

Serial Port

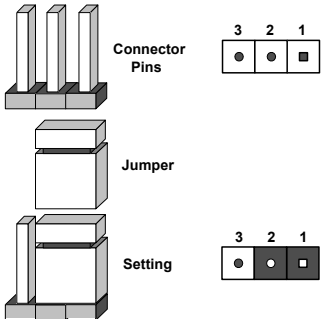
One COM port header is located at JCOM1 on the motherboard. The COM port provides serial communication support.

4.4 Jumpers

Explanation of Jumpers

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

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



CMOS Clear

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

To Clear CMOS

1. First power down the system and unplug the power cord(s).
2. Remove the cover of the chassis to access the motherboard.
3. Remove the onboard battery from the motherboard.
4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.
5. Remove the screwdriver (or shorting device).
6. Replace the cover, reconnect the power cord(s) and power on the system.

Notes: Clearing CMOS will also clear all passwords.

Do not use the PW_ON connector to clear CMOS.


JBT1 contact pads

Watch Dog

JWD1 controls the Watch Dog function. Watch Dog is a monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause Watch Dog to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. Watch Dog must also be enabled in BIOS. The default setting is Reset.

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

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

Manufacturing Engine (ME) Recovery

Use jumper JPME1 to select ME Firmware Recovery mode, which will limit resource allocation for essential only in order to maintain normal power operation and management. In the single operation mode, online upgrade will be available via Recovery mode. See the table below for jumper settings.

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

Manufacturing Mode Select

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

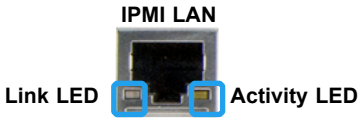
Manufacturing Mode Select Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Normal (Default)
Pins 2-3	Manufacturing Mode

4.5 LED Indicators

Dedicated IPMI LAN LEDs

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

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



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

BMC Heartbeat LED

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

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

Onboard Power LED

The Onboard Power LED is located at LE2 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 components. 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

Unit ID LED

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

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

Chapter 5

Software

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

5.1 OS Installation

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

Installing the OS

1. Create a method to access the OS 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.

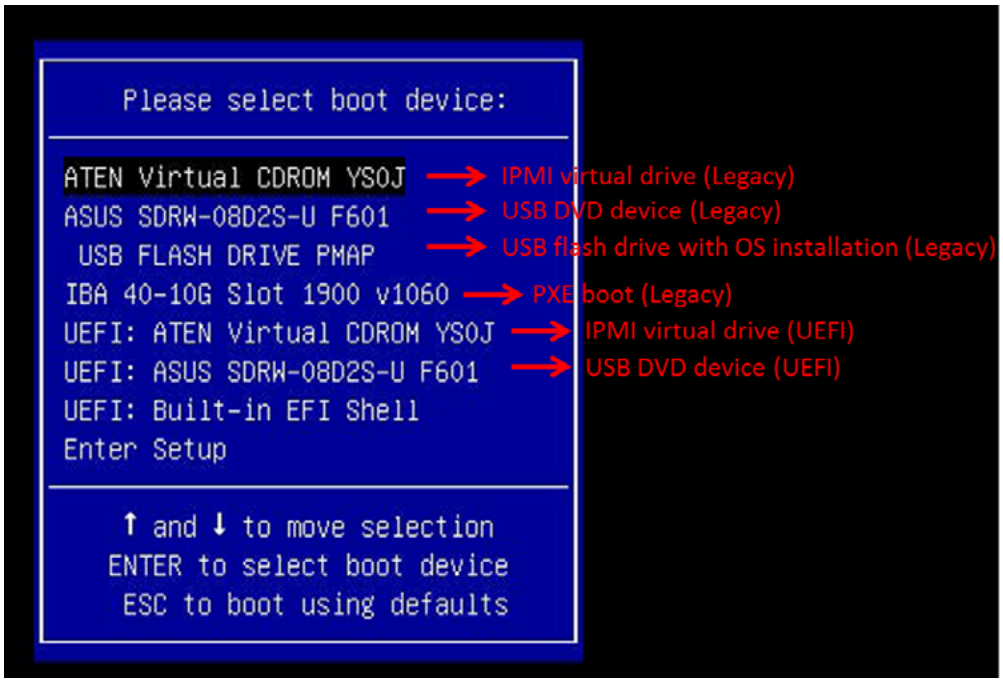


Figure 5-1. Select Boot Device

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.

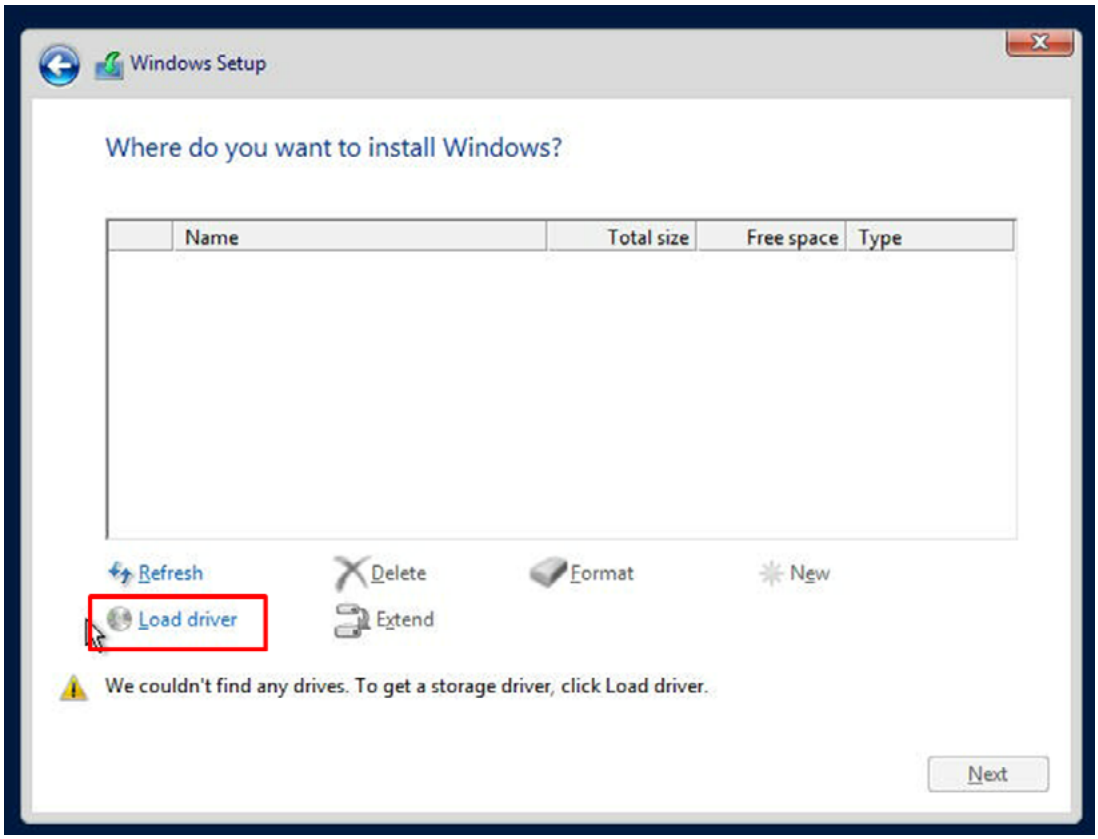


Figure 5-2. Load Driver Link

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/wdl/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.

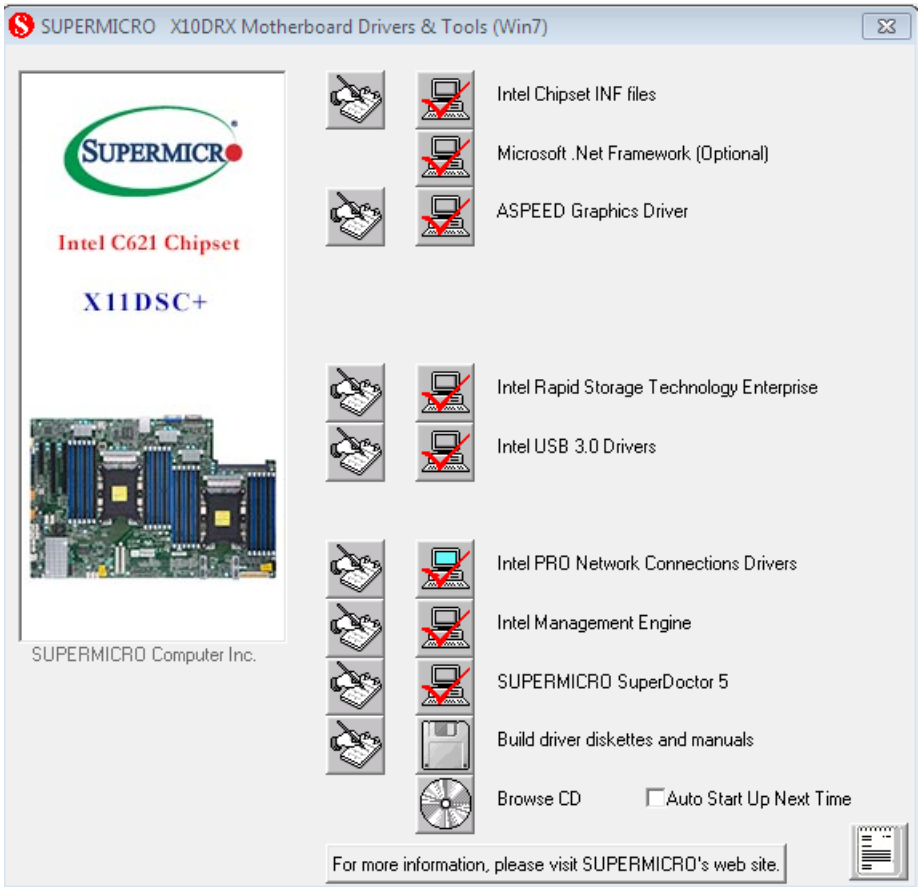


Figure 5-3. Driver & Tool Installation Screen

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.

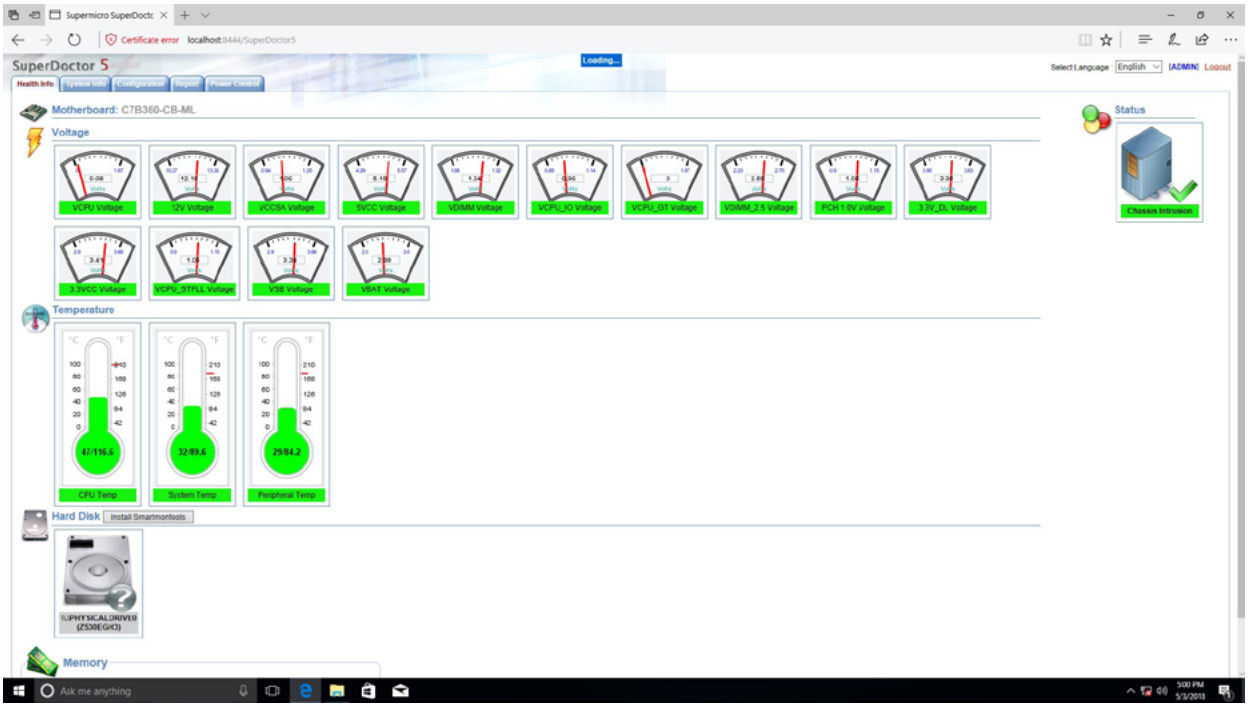


Figure 5-4. SuperDoctor 5 Interface Display Screen (Health Information)

5.4 IPMI

The X11DSC 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.

5.5 Logging into the BMC

Supermicro ships standard products with a unique password for the BMC user. This password can be found on a label on the motherboard.

When logging in to the BMC for the first time, please use the unique password provided by Supermicro to log in. You can change the unique password to a user name and password of your choice for subsequent logins.

For more information regarding BMC passwords, please visit our website at http://www.supermicro.com/bmcpassword.

Chapter 6

UEFI BIOS

6.1 Introduction

This chapter describes the AMIBIOS™ setup utility for the X11DSC motherboard. The BIOS is stored on a chip and can be easily upgraded using a flash program.

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

Starting the Setup Utility

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

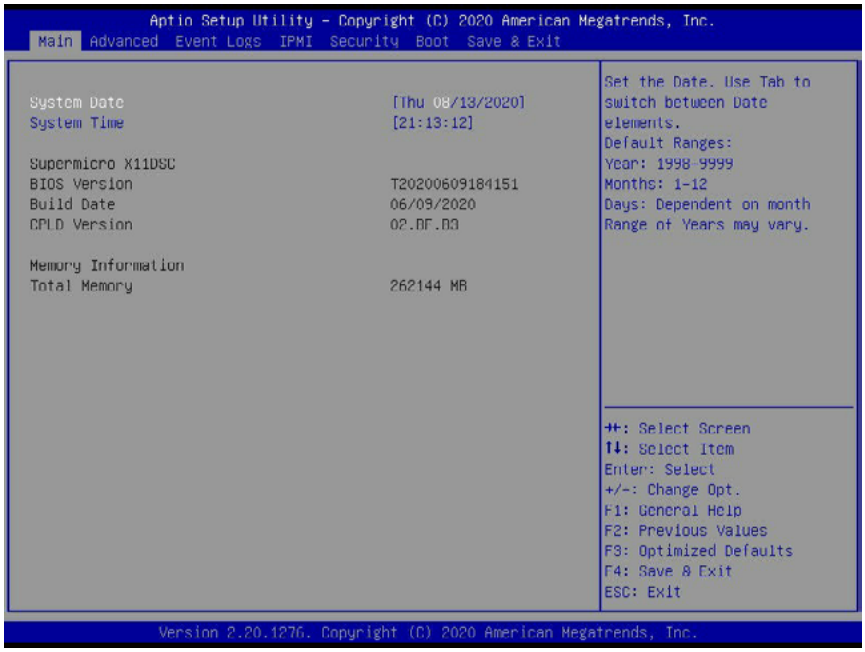
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is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

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

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <F4>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

6.2 Main Setup

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



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 after RTC reset.

Supermicro X11DSC

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

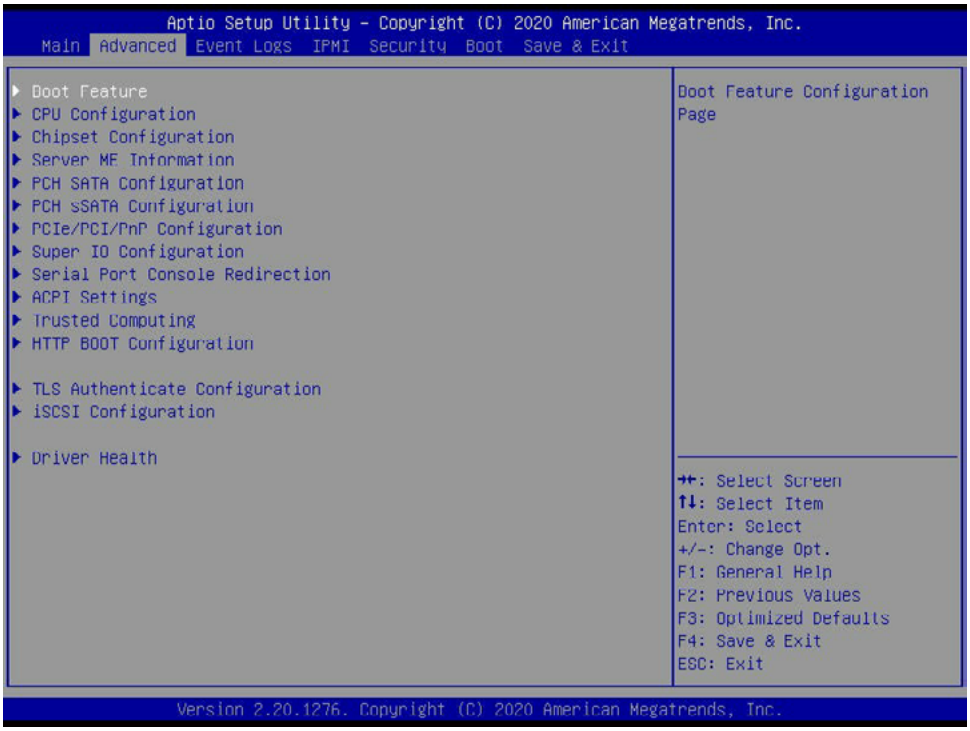
Memory Information

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 Boot Feature and press <Enter> to access the submenu items.



Warning: Take caution when changing the Advanced settings. An incorrect value, an incorrect DRAM frequency, or an incorrect BIOS timing setting may cause the system to malfunction. When this occurs, restore the setting to the manufacture default setting.

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

Re-try Boot

When EFI (Expansible Firmware Interface) Boot is selected, the system BIOS will automatically reboot the system from an EFI boot device after an initial boot failure. Select Legacy Boot to allow the BIOS to automatically reboot the system from a Legacy boot device after an 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. 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 support 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 5 minutes. The options are **Disabled** and Enabled.

Restore on AC Power Loss

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

Power Button Function

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

▶CPU Configuration

This submenu displays the information of the CPU as detected by the BIOS. It also allows the user to configuration CPU settings:

- 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
- Processor 1 Version

Hyper-Threading [All] (Available when supported by the CPU)

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

Core Enabled

Use this feature to enable or disable CPU cores in the processor specified by the user. Use the <+> key and the <-> key on the keyboard to set the desired number of CPU cores you want to enable in a processor. Please note that the maximum of 16 CPU cores are currently available in each CPU package. The default setting is **0**.

Monitor/Mwait

Select Enable to support Monitor and Mwait, which are two instructions in Streaming SIMD Extension 3 (SSE3), to improve synchronization between multiple threads for CPU performance enhancement. The options are **Auto**, Enable, and Disable.

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. (Please refer to Intel's website for more information.) The options are Disable and **Enable**.

Intel Virtualization Technology (Available when supported by the CPU)

Select Enable to use Intel® Virtualization Technology which will allow multiple workloads to share the same set of common resources. On shared virtualized hardware, various workloads (or tasks) can co-exist, sharing the same resources, while functioning in full independence from each other, and migrating freely across multi-level infrastructures and scale as needed. The options are Disable and **Enable**.

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

PPIN Control

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

Hardware Prefetcher (Available when supported by the CPU)

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

Adjacent Cache Prefetch (Available when supported by the CPU)

The CPU prefetches the cache line for 64 bytes if this feature is set to Disable. 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 Enabled to enable Intel® CPU Advanced Encryption Standard (AES) Instructions for CPU to enhance data integrity. The options are **Enable** and Disable.

DCU IP Prefetcher (Available when supported by the CPU)

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

LLC Prefetch

Select Enable to support the LLC prefetch on all threads. The options are **Disable** and Enable.

Extended APIC (Extended Advanced Programmable Interrupt Controller)

Select Enable to use the extended APIC (Advanced Programmable Interrupt Control) support to enhance power management. 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.

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. The options are BIOS Controls EPB and **OS Controls EPB**.

ENERGY_PERF_BIAS_CFG Mode (ENERGY PERFORMANCE BIAS CONFIGURATION Mode) (Available when "Power Performance Tuning" is set to BIOS Controls EPB)

Use this feature to configure the optimal operation setting for your machine by achieving the desired system performance level and energy saving (efficiency) level at the same time. Select Maximum Performance to maximize system performance to its highest potential; however, this may consume maximal amount of power as energy is needed to fuel the processor frequency. (In other words, system performance is gained at the cost of system power efficiency, depending on the workload.) Select Maximum Power Efficiency to minimize power use; however, system performance will be greatly impacted as the result of power saving. The options are Maximum Performance, Performance, **Balanced Performance**, Balanced Power and Power.

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

SpeedStep (P-States)

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

**If SpeedStep (P-States) is set to Enable, the following items will display:*

EIST PSD Function

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

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

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

▶Hardware PM State Control (Available when "Power Technology" is set to Custom)

Hardware P-States

This feature enables the hardware P-States support. The options are **Disable**, Native Mode, Out of Band Mode, and Native Mode with No Legacy Support.

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

Autonomous Core C-State

Use this feature to enable the autonomous core C-State control. 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 the CPU's clock cycle and voltage during a Halt-state. The options are Disable and **Enable**.

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

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

Software Controlled T-States

This feature enables the software controlled T-States support. 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

UPI Configuration

The following information will be displayed:

- Number of CPU
- Number of Active UPI Link
- Current UPI Link Speed
- Current UPI Link Frequency
- UPI Global MMIO Low Base/Limit
- UPI Global MMIO High Base/Limit
- UPI Pci-e Configuration Base/Size

Degrade Precedence

Select **Topology Precedence** to degrade features if system options are in conflict. Select Feature Precedence to degrade topology if system options are in conflict. 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)

Use this feature to enable the IO Directory Cache (IODC) support. The options are Disable, **Auto**, Enable for Remote InvItoM Hybrid Push, InvItoM AllocFlow, Enable for Remote InvItoM Hybrid AllocNonAlloc, and Enable for Remote InvItoM and Remote WCiLF.

SNC

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

XPT Prefetch

Select Enable for XPT (Extended Prediction Table) Prefetch support which will allow an LLC request to be duplicated and sent to an appropriate memory controller based on the recent LLC history to reduce latency. The options are Enable, and **Disable**.

KTI Prefetch

If this feature is set to Enable, the KTI prefetcher will preload the L1 cache with data deemed relevant to allow the memory read to start earlier on a DDR bus in an effort to reduce latency. The options are **Enable** and Disable.

Local/Remote Threshold

This feature allows the user to set the threshold for the Interrupt Request (IRQ) signals, which handle hardware interruptions. The options are Disable, **Auto**, Low, Medium, and High.

Stale AtoS (A to S)

The in-memory directory has three states: I, A, and S states. The I (-invalid) state indicates that the data is clean and does not exist in the cache of any other sockets. The A (-snoop All) state indicates that the data may exist in another socket in an exclusive or modified state. The S state (-Shared) indicates that the data is clean and may be shared in the caches across one or more sockets. When the system is performing "read" on the memory and if the directory line is in A state, we must snoop all other sockets because another socket may have the line in a modified state. If this is the case, a "snoop" will return the modified data. However, it may be the case that a line "reads" in an A state, and all the snoops come back with a "miss". This can happen if another socket reads the line earlier and then has silently dropped it from its cache without modifying it. If the "Stale AtoS" feature is enabled, a line will transition to the S state when the line in the A state returns only snoop misses. That way, subsequent reads to the line will encounter it in the S state and will not have to snoop, saving the latency and snoop bandwidth. Stale "AtoS" may be beneficial in a workload where there are many cross-socket reads. The options are Disable, Enable, and **Auto**.

LLC Dead Line Alloc

Select Enable to opportunistically fill the deadlines in the LLC. The options are **Enable**, Disable, and Auto.

Isoc Mode

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

▶Memory Configuration

Integrated Memory Controller (iMC)

Enforce POR

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

PPR Type

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

Enhanced PPR

Select Enable to enable DRAM test and Enhanced PPR function. The options are **Disable** and Enable.

Opertaion Mode

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1866, 2000, 2133, 2400, 2666, and 2933. (**Note:** 2933 MHz memory is supported by 2nd Gen Intel Xeon Scalable-SP (82xx/62xx series) processors only.)

Data Scrambling for DDR4

Select Enable to enable data scrambling for DDR4 memory to enhance system performance and security. Select Auto for the default setting of the Memory Reference Code (MRC) to set configure data scrambling for DDR4 setting. The options are **Auto**, Disable, and Enable.

tCCD_L Relaxation

If this feature is set to Auto, SPD (Serial Presence Detect) will automatically override tCCD_L ("Column to Column Delay-Long", or “Command to Command Delay-Long” on the column side) based on memory frequency. If this feature is set to Disable, tCCD_L will be enforced based on the memory frequency. The options are **Auto**, and Disable.

tRWSR (Read to Write turnaround time for Same Rank) Relaxation

Select Enable to use the same tRWSR DDR timing setting among all memory channels, and 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.

tRFC Optimization for 16Gb Based DIMM

Select Enable to set tRFC to the lowest supported value in SPD. Select Diable to set tRFC value to 550 ns. The options are **Disable**, and Enable.

2X Refresh

Select Enable for memory 2X refresh support to enhance memory performance. The options are Enable, and **Auto**.

Page Policy

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

IMC Interleaving

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

▶Memory Topology

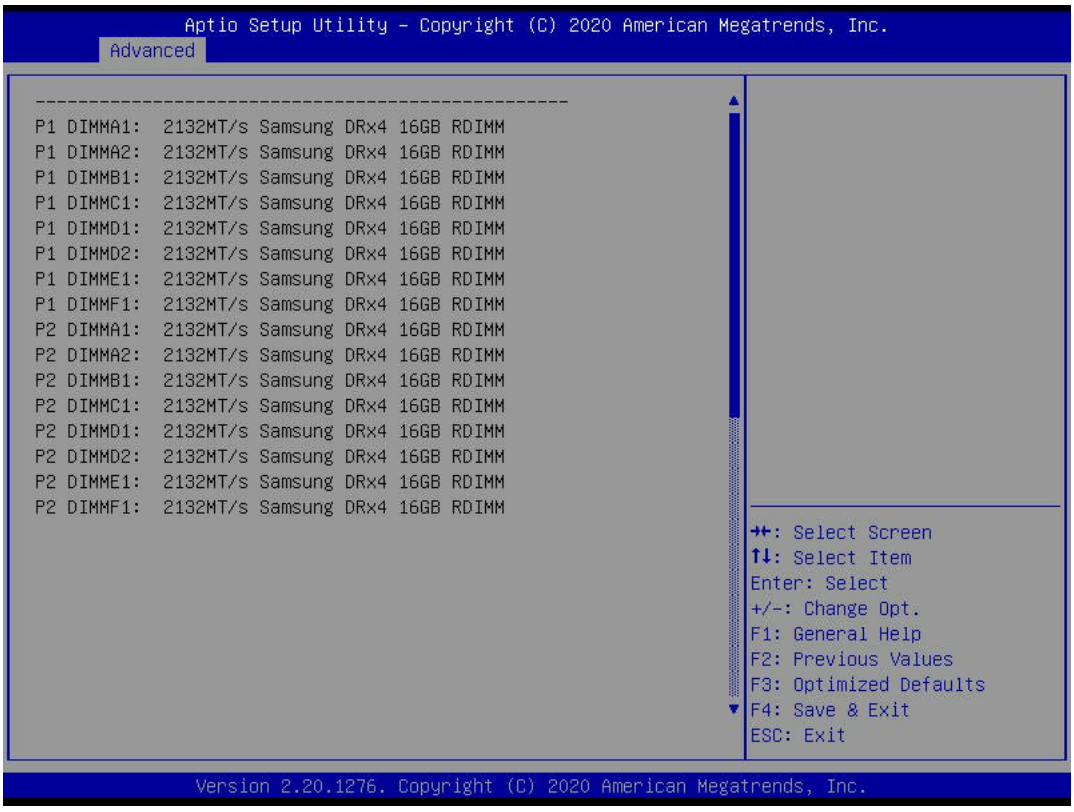
This item displays the information of onboard memory modules as detected by the BIOS (See figure below).

▶Memory RAS (Reliability_Availability_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

Static Virtual Lockstep Mode

Select Enable to support the static virtual lockstep mode to enhance memory performance. The options are **Disable** and Enable.



Mirror Mode

Use this feature to configure the mirror mode settings for all 1LM/2LM memory modules installed in the system which will create a duplicate copy of data stored in the memory to increase memory security, but it will reduce the memory capacity into half. The options are **Disable**, Mirror Mode 1LM, and Mirror Mode 2LM.

Memory Rank Sparing

Select Enable to support memory-rank sparing to optimize memory performance. The options are **Disable** and Enable.

If the feature, Memory Rank Sparing, is set to Enable, the following features will become available for user's configuration:

Correctable Error Threshold

Use this feature to enter the threshold value for correctable memory errors. The default setting is **512**.

SDDC

SDDC (Single Device Data Correction) checks and corrects single-bit or multiple-bit (4-bit max.) memory faults that affect an entire single x4 DRAM device. The options are **Disable** and Enable.

ADDDC Sparing

Select Enable for ADDDC (Adaptive Double Device Data Correction) support, which will not only provide memory error checking and correction but will also prevent the system from issuing a performance penalty before a device fails. Please note that virtual lockstep mode will only start to work for ADDDC after a faulty DRAM module is spared. The options are Enable and **Disable**.

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected in a memory module and send the corrections 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 **Enable** and Disable.

Patrol Scrub Interval (Available when Patrol Scrub is set to Enable)

Use this item to specify the number of hours (between 0 to 24) required for the system to complete a full patrol scrubbing. Enter 0 for patrol scrubbing to be performed automatically. 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.

▶CPU1 Configuration

IOU0 (IIO PCIe Br1)

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**.

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**.

▶CPU1 PCI-E Br0D00F0 - Port 0/DMI (Available for CPU 1 Configuration only)

Link Speed

Use this feature to configure the link speed of a 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 be displayed:

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max (Maximum) Payload Size (Available for CPU 1 Configuration only)

Select Auto for the system BIOS to automatically set the maximum payload value for a PCI-E device specified by to user for system performance enhancement. The options are **Auto**, 128B, and 256B.

▶CPU2 Configuration

IOU0 (IIO PCIe Br1)

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**.

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**.

▶IOAT (Intel® IO Acceleration) Configuration

Disable TPH

TPH **(**TLP Processing Hint) 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 item for TLP Processing Hint support, which will allow a "TPL request" to provide "hints" to help optimize the processing of each transaction occurred in the target memory space. The options are Yes and **No**.

Prioritize TPH (TLP Processing Hint)

Select Yes to prioritize the TPL requests that will allow the "hints" to be sent to help facilitate and optimize the processing of certain transactions in the system memory. The options are Enable and **Disable**.

Relaxed Ordering

Select Enable to allow certain transactions to be processed and completed before 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 support for Direct I/O VT-d 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.

If the item above is set to Enable, the following items will be available:

ACS (Access Control Services) Control

Select Enable to program Access Control Services to Chipset PCI-E Root Port Bridges. Select Disable to program Access Control Services to all PCI-E Root Port Bridges. The options are **Enable** and Disable.

Interrupt Remapping

If this feature is set to Enable, I/O DMA transfer remapping and device-generated interrupts will be supported. The options are **Enable** and Disable.

PassThrough DMA

Select Enable to use the Non-Isoch VT_D engine pass through DMA (Direct Memory Access) to enhance system performance. The options are **Enable** and Disable.

ATS

Select Enable to enable ATS (Address Translation Services) support for the Non-Isoch VT engine to enhance system performance. The options are **Enable** and Disable.

Posted Interrupt

Select Enable to support VT_D Posted Interrupt which will allow external interrupts to be sent directly from a direct-assigned device to a client machine in non-root mode to improve virtualization efficiency by simplifying interrupt migration and lessening the need of physical interrupts. The options are **Enable** and Disable.

Coherency Support (Non-Isoch)

Select Enable for the Non-Iscoh VT-d engine to pass through DMA (Direct Memory Access) to enhance system performance. The options are **Enable** and Disable.

▶Intel® VMD technology

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

Note: 1. After you've enabled VMD in the BIOS on a PCI-E slot of your choice, this PCI-E slot will be dedicated for VMD use only, and it will no longer support any PCI-E device. To re-activate this slot for PCI-E use, please disable VMD in the BIOS. **2.** PCI-E slots and naming differ depending on the PCI-E devices installed on your motherboard.

▶Intel® VMD for Volume Management Device on CPU1

Intel® VMD for Volume Management Device for PStack0

Select Enable to use the Intel® Volume Management Device Technology support for the root port specified by the user. The options are **Disable** and Enable.

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

VMD port 1A (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 1B (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 1C (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 1D (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

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

Select Enable to enable Hot Plug support for the root ports specified by the user, which will allow the user to change the devices on those root ports without shutting down the system. The options are **Disable** and Enable.

Intel® VMD for Volume Management Device for PStack1

Select Enable to use the Intel® Volume Management Device Technology support for the root port specified by the user. The options are **Disable** and Enable.

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

VMD port 2A (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 2B (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 2C (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 2D (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

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

Select Enable to enable Hot Plug support for the root ports specified by the user, which will allow the user to change the devices on those root ports without shutting down the system. The options are **Disable** and Enable.

Intel® VMD for Volume Management Device for PStack2

Select Enable to use the Intel® Volume Management Device Technology support for the root port specified by the user. The options are **Disable** and Enable.

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

VMD port 3A (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 3B (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 3C (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 3D (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

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

Select Enable to enable Hot Plug support for the root ports specified by the user, which will allow the user to change the devices on those root ports without shutting down the system. The options are **Disable** and Enable.

▶Intel® VMD for Volume Management Device on CPU2

Intel® VMD for Volume Management Device for PStack0

Select Enable to use the Intel® Volume Management Device Technology support for the root port specified by the user. The options are **Disable** and Enable.

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

VMD port 1A (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 1B (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 1C (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 1D (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

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

Select Enable to enable Hot Plug support for the root ports specified by the user, which will allow the user to change the devices on those root ports without shutting down the system. The options are **Disable** and Enable.

Intel® VMD for Volume Management Device for PStack1

Select Enable to use the Intel® Volume Management Device Technology support for the root port specified by the user. The options are **Disable** and Enable.

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

VMD port 2A (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 2B (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 2C (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 2D (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

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

Select Enable to enable Hot Plug support for the root ports specified by the user, which will allow the user to change the devices on those root ports without shutting down the system. The options are **Disable** and Enable.

Intel® VMD for Volume Management Device for PStack2

Select Enable to use the Intel® Volume Management Device Technology support for the root port specified by the user. The options are **Disable** and Enable.

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

VMD port 3A (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 3B (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 3C (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

VMD port 3D (Available when the device is detected by the system)

Select Enable to enable Intel® Volume Management Device Technology support for the PCIe slot specified by the user. The options are **Disable** and Enable.

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

Select Enable to enable Hot Plug support for the root ports specified by the user, which will allow the user to change the devices on those root ports without shutting down the system. The options are **Disable** and Enable.

IIO-PCIE Express Global Options

PCI-E Completion Timeout Disable

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

▶South Bridge

The following South Bridge information will be displayed:

- USB Module Version
- USB Devices

Legacy USB Support

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

XHCI Hand-off

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

Port 60/64 Emulation

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

PCIe PLL SSC

Select Enabled 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 Enabled and **Disabled**.

▶Server ME Configuration

This feature displays the following system ME configuration settings.

- Operational Firmware Version
- 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 items:

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 (Available when SATA Controller is set to Enable)

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. (**Note:** This item is hidden when the SATA Controller item is set to Disabled.)

SATA HDD Unlock (Available when SATA Controller is set to Enable)

Select Enable to unlock the SATA HDD password in the OS. The options are Disable and **Enable**.

Aggressive Link Power Management

When this feature is set to Enable, the SATA AHCI controller manages the power use of the SATA link. The controller will put the link in a low power mode during an extended period of I/O inactivity, and will return the link to an active state when I/O activity resumes. The options are Enable and **Disable**.

If the feature, Configure SATA as, is set to AHCI, the following features will become available for user's configuration:

SATA Port 0~ Port 3

Hot Plug (SATA Port 0~ Port 3)

Select Enable to support Hot-plugging for the device installed on a selected SATA port which will allow the user to replace the device installed in the slot without shutting down the system. The options are **Enable** and Disable.

Spin Up Device (SATA Port 0~ Port 3)

Select Enable for Staggered Spin Up support which will allow the SATA devices specified by the user to spin up one at a time during system boot in an effort to prevent all hard drive disks from spinning up at the same time, causing a power surge. The options are Enable and **Disable**.

SATA Device Type (SATA Port 0~ Port 3)

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

If the feature, Configure SATA as, is set to RAID, the following features will become available for user's configuration:

SATA RSTe Boot Info (Available when Configure SATA as is set to RAID)

Select Enable for full int13h support which will allow the system to boot using a device attached to the SATA controller. The options are Disable and **Enable**.

SATA RAID Option ROM/UEFI Driver (Available when Configure SATA as is set to RAID)

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

SATA Port 0~ Port 3

Hot Plug (SATA Port 0~ Port 3)

Select Enable to support Hot-plugging for the device installed on a selected SATA port which will allow the user to replace the device installed in the slot without shutting down the system. The options are **Enable** and Disable.

Spin Up Device (SATA Port 0~ Port 3)

Select Enable for Staggered Spin Up support which will allow the SATA devices specified by the user to spin up one at a time during system boot in an effort to prevent all hard drive disks from spinning up at the same time, causing a power surge. The options are Enable and **Disable**.

SATA Device Type (SATA Port 0~ Port 3)

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

▶PCH sSATA Configuration

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

sSATA Controller

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

Configure sSATA as (Available when sSATA Controller is set to Enable)

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. (**Note:** This feature is hidden when the sSATA Controller item is set to Disabled.)

SATA HDD Unlock (Available when sSATA Controller is set to Enable)

Select Enable to unlock the HDD password in the OS. The options are Disable and **Enable**.

Aggressive Link Power Management

When this feature is set to Enable, the sSATA AHCI controller manages the power use of the sSATA link. The controller will put the link in a low power mode during an extended period 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 sSATA as, is set to AHCI, the following features will become available for user's configuration:

sSATA Port 0~ Port 5

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

Hot Plug (SATA Port 0~ Port 5)

Select Enable to support Hot-plugging for the device installed on a selected sSATA port which will allow the user to replace the device installed in the slot without shutting down the system. The options are **Enable** and Disable.

Spin Up Device (SATA Port 0~ Port 5)

Select Enable for Staggered Spin Up support which will allow the SATA devices specified by the user to spin up one at a time during system boot in an effort to prevent all hard drive disks from spinning up at the same time, causing a power surge. The options are Enable and **Disable**.

sSATA Device Type (SATA Port 0~ Port 5)

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

If the feature, Configure SATA as, is set to RAID, the following features will become available for user's configuration:

sSATA RSTe Boot Info

Select Enable to provide the full int13h support for sSATA controller attached devices. The options are Disable and **Enable**.

sSATA RAID Option ROM/UEFI Driver

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

sSATA Port 0~ Port 5

Hot Plug (SATA Port 0~ Port 5)

Select Enable to support Hot-plugging for the device installed on a selected sSATA port which will allow the user to replace the device installed in the slot without shutting down the system. The options are **Enable** and Disable.

Spin Up Device (SATA Port 0~ Port 5)

Select Enable for Staggered Spin Up support which will allow the SATA devices specified by the user to spin up one at a time during system boot in an effort to prevent all hard drive disks from spinning up at the same time, causing a power surge. The options are Enable and **Disable**.

sSATA Device Type (SATA Port 0~ Port 5)

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

▶PCIe/PCI/PnP Configuration

The following information will be displayed:

- PCI Bus Driver Version

PCI Devices Common Settings:

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

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

SR-IOV Support

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

ARI (Alternate Routing ID Interpretation) Support

Select Enabled to enable Alternate Routing ID Interpretation for on-board PCIe devices. 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 IO hub. TThe options are **56T**, 40T, 24T, 16T, 4T, and 1T.

MMIO High Granularity Size

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

Maximum Read Request

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

MMCFG Base

This feature determines how the lowest MMCFG (Memory-Mapped Configuration) base is assigned to onboard PCI devices. The options are 1G, 1.5G, 1.75G. **2G**, 2.25G, and 3G.

NVMe Firmware Source

This feature determines which type of the NVMe firmware should be used in your system. The options are **Vendor Defined Firmware** and AMI Native Support.

VGA Priority

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

M.2-P PCI-E 3.0 x4 OPROM/M.2-P PCI-E 3.0 x2 OPROM

Select EFI to allow the user to boot the computer using an EFI (Extensible Firmware Interface) device installed on the PCI-E slot specified by the user. Select Legacy to allow the user to boot the computer using a legacy device installed on the PCI-E slot specified by the user. The options are Disabled, **Legacy** and EFI.

CPU1 Slot 1 PCI-E 3.0 x8 OPROM/CPU2 Slot 2 PCI-E 3.0 x16 OPROM/CPU1 Slot 3 PCI-E 3.0 x8 OPROM

Select EFI to allow the user to boot the computer using an EFI (Extensible Firmware Interface) device installed on the PCI-E slot specified by the user. Select Legacy to allow the user to boot the computer using a legacy device installed on the PCI-E slot specified by the user. The options are Disabled, **Legacy** and EFI. (**Note:** Riser card names may differ in each system.)

CPU1 2x on AOM PCIe 3.0 x4 OPROM

Select EFI to allow the user to boot the computer using an EFI (Extensible Firmware Interface) device installed on the PCI-E slot specified by the user. Select Legacy to allow the user to boot the computer using a legacy device installed on the PCI-E slot specified by the user. The options are Disabled, **Legacy** and EFI.

CPU1 SAS on AOM PCIe 3.0 x16 OPROM

Select EFI to allow the user to boot the computer using an EFI (Extensible Firmware Interface) device installed on the PCI-E slot specified by the user. Select Legacy to allow the user to boot the computer using a legacy device installed on the PCI-E slot specified by the user. The options are Disabled, **Legacy** and EFI.

CPU2 AOM NTB for SBB PCI-E 3.0 x16 OPROM

Select EFI to allow the user to boot the computer using an EFI (Extensible Firmware Interface) device installed on the PCI-E slot specified by the user. Select Legacy to allow the user to boot the computer using a legacy device installed on the PCI-E slot specified by the user. The options are Disabled, **Legacy** and EFI.

CPU2 SAS on AOM PCI-E 3.0 x16 OPROM

Select EFI to allow the user to boot the computer using an EFI (Extensible Firmware Interface) device installed on the PCI-E slot specified by the user. Select Legacy to allow the user to boot the computer using a legacy device installed on the PCI-E slot specified by the user. The options are Disabled, **Legacy** and EFI.

Bus Master Enbale

If this setting is set to Enabled, the PCI Bus Driver will enable the Bus Master Attribute for DMA transactions. If this setting is set to Disabled, the PCI Bus Driver will disable the Bus Master Attribute for Pre-Boot DMA protection. The options are Disabled and **Enabled**.

Onboard LAN1 Option ROM

Use this feature to select the type of device installed in LAN Port1, which will be used for system boot. The options are **PXE**, iSCSI, EFI and Disabled.

Onboard LAN1 Option ROM

Use this feature to select the type of device installed in LAN Port1, which will be used for system boot. The options are **PXE**, iSCSI, EFI and Disabled.

Onboard LAN2 Option ROM

Use this feature to select the type of device installed in LAN Port2, which will be used for system boot. The options are PXE and **Disabled**.

Onboard NVMe1 Option ROM/Onboard NVMe2 Option ROM/Onboard NVMe3 Option ROM/Onboard NVMe4 Option ROM

Use the above four features to select the type of the device installed on an NVMe port specified by the user for system boot. The options are Disabled, Legacy, and **EFI**.

Onboard Video Option ROM

Select Legacy to boot the system using a legacy video device installed on the motherboard. The options are Disabled, **Legacy**, and EFI.

▶Network Stack Configuration

Network Stack

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

If the feature "Network Stack" is set to Enabled, the following features will become available for user's configuration:

Ipv4 PXE Support

Select Enabled to enable IPv4 PXE boot support. If this feature is disabled, it will not create the IPv4 PXE boot option. The options are Disabled and **Enabled**.

Ipv4 HTTP Support

Select Enabled to enable IPv4 HTTP boot support. If this feature is disabled, it will not create the IPv4 HTTP boot option. The options are Enabled and **Disabled**.

Ipv6 PXE Support

Select Enabled to enable IPv4 PXE boot support. If this feature is disabled, it will not create the IPv4 PXE boot option. The options are Disabled and **Enabled**.

Ipv6 HTTP Support

Select Enabled to enable IPv4 HTTP boot support. If this feature is disabled, it will not create the IPv4 HTTP boot option. The options are Enabled and **Disabled**.

PXE boot wait time

Use this feature to select the wait time to press the <ESC> key to abort the PXE boot. The default is **0**.

Media detect count

Use this feature to select the wait time in seconds for the BIOS ROM to detect the LAN media (Internet connection or LAN port). The default is **1**.

▶Super IO Configuration

The following Super IO information will be displayed:

- Super IO Chip AST2500

▶Serial Port 1 Configuration

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

Serial Port 1

Select Enabled to enable serial port 1. The options are Disabled and **Enabled**.

Device Settings (Available when "Serial Port 1" is set to Enabled)

This item displays the base I/O port address and the Interrupt Request address 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 Serial Port 1. Select **Auto** for the BIOS to automatically assign the base I/O and IRQ address to a serial port specified. The options 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 the configure settings of Serial Port 2.

Serial Port 2

Select Enabled to enable serial port 2. The options are Disabled and **Enabled**.

Device Settings

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

Change Settings

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

Console Redirection

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

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

▶Console Redirection Settings

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

COM1

Console Redirection Settings

Terminal Type

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

Bits Per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

This feature selects the settings for the function keys and the key pad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

Redirection After BIOS POST

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

SOL/COM2

Console Redirection

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

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

▶Console Redirection Settings

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

SOL

Console Redirection Settings

Terminal Type

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

Bits Per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

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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.

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

Legacy OS Redirection Resolution

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

Putty KeyPad

This feature selects the settings for the function keys and the key pad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

Redirection After BIOS POST

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

Legacy Console Redirection

Legacy Serial Redirection Port

Use the feature to select the COM port to display redirection of Legacy OS and Legacy OPROM messages. The options are **COM1** and SOL/COM2.

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

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

Console Redirection

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

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

▶Console Redirection Settings

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

Out-of-Band Management Port

The feature selects a serial port in a client server to be used by the Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1** and SOL/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 both host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

Flow Control

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

The settings below are displayed:

Data Bits, Parity, Stop Bits

▶ACPI Settings

NUMA (Available when the OS supports this feature)

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

WHEA Support

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

High Precision 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 (Available when a TPM device is installed and detected by the BIOS)

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

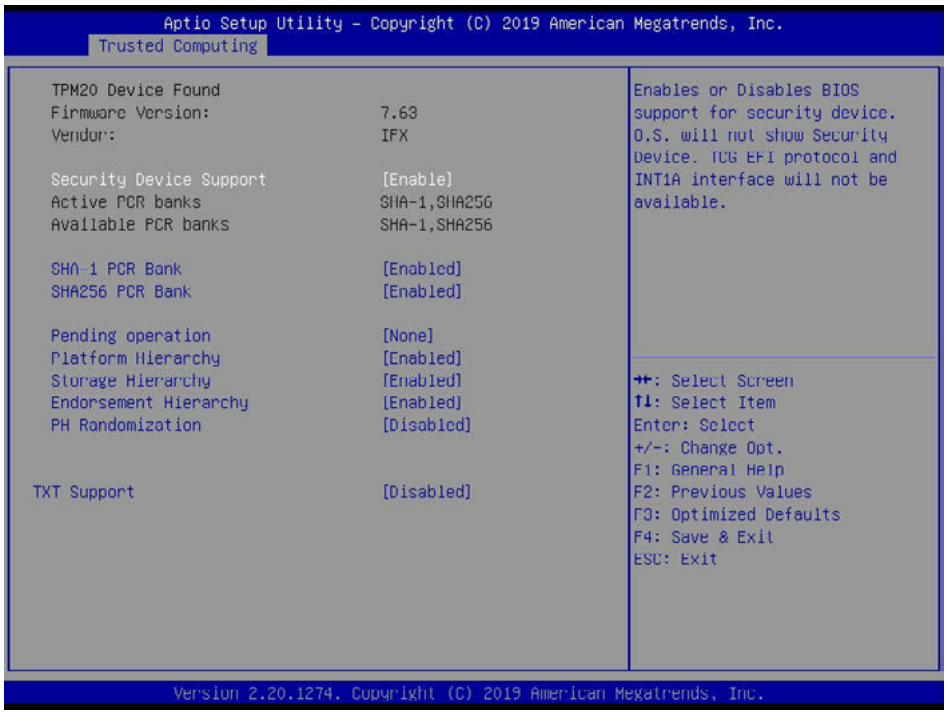
- TPM2.0 Device Found
- Firmware Version
- Vendor

Security Device Support

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

If the feature above is set to Enable, the following features will become available for user's configuration:

The following Platform Configuration Register information will be displayed:



- Active PCR banks
- Available PCR banks

SHA-1 PCR Bank

Select Enabled to enable SHA-1 PCR Bank support to enhance system security and data integrity. The options are **Enabled** and Disabled.

SHA256 PCR Bank

Select Enabled to enable SHA256 PCR Bank support to enhance system security and data integrity. The options are **Enabled** and Disabled.

Pending operation

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

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

Platform Hierarchy (for TPM Version 2.0 and above)

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

Storage Hierarchy

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

Endorsement Hierarchy

Select Enabled for Endorsement Hierarchy support, which contains separate controls to address the user's privacy concerns because the primary keys in this hierarchy are certified by the TPM or a manufacturer to be constrained to an authentic TPM device that is attached to an authentic platform. A primary key can be an encrypted, and a certificate can be created using TPM2_ ActivateCredential. It allows the user to independently enable "flag, policy, and

authorization value" without involving other hierarchies. A user with privacy concerns can disable the endorsement hierarchy while still using the storage hierarchy for TPM applications and permitting the platform software to use the TPM. The options are **Enabled** and Disabled.

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

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

TXT Support

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

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

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

▶HTTP Boot Configuration

This feature allows the user to configure HTTP Boot settings. When you select this submenu and press <Enter>, the following features will display:

HTTP Boot One Time

Select Enabled for your machine to automatically boot into HpptBoot at the first system boot after you've created the Http Boot Option. The options are Enabled and **Disabled**.

Input the Description

This feature allows the user to input the description of the boot.

Boot URI

This feature allows the user to boot the system from a network connection.

▶TLS Authenticate Configuration

When this submenu is selected, the following features will be displayed:

▶Server CA Configuration

This feature allows the user to configure the client certificate that is to be used by the server.

▸Enroll Certification

This feature allows the user to enroll the certificate in the system.

▶Enroll Cert (Certification) Using File

This feature allows the user to enroll the security certificate in the system by using a file.

Cert (Certification) GUID (Global Unique Identifier)

This feature displays the GUID for this system.

▶Commit Changes and Exit

Select this feature to keep the changes you have made and exit from the system.

▶Discard Changes and Exit

Select this feature to discard the changes you have made and exit from the system.

▶Delete Certification

If this feature is set to Enable, the certificate enrolled in the system will be deleted. The options are Enable and **Disable**.

▶iSCSI Configuration

iSCSI Initiator Name

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

▶Add an Attempt

▶Delete Attempts

▶Change Attempt order

▶Driver Health

This submenu displays health status of the drivers/controllers installed in the system.

▶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.

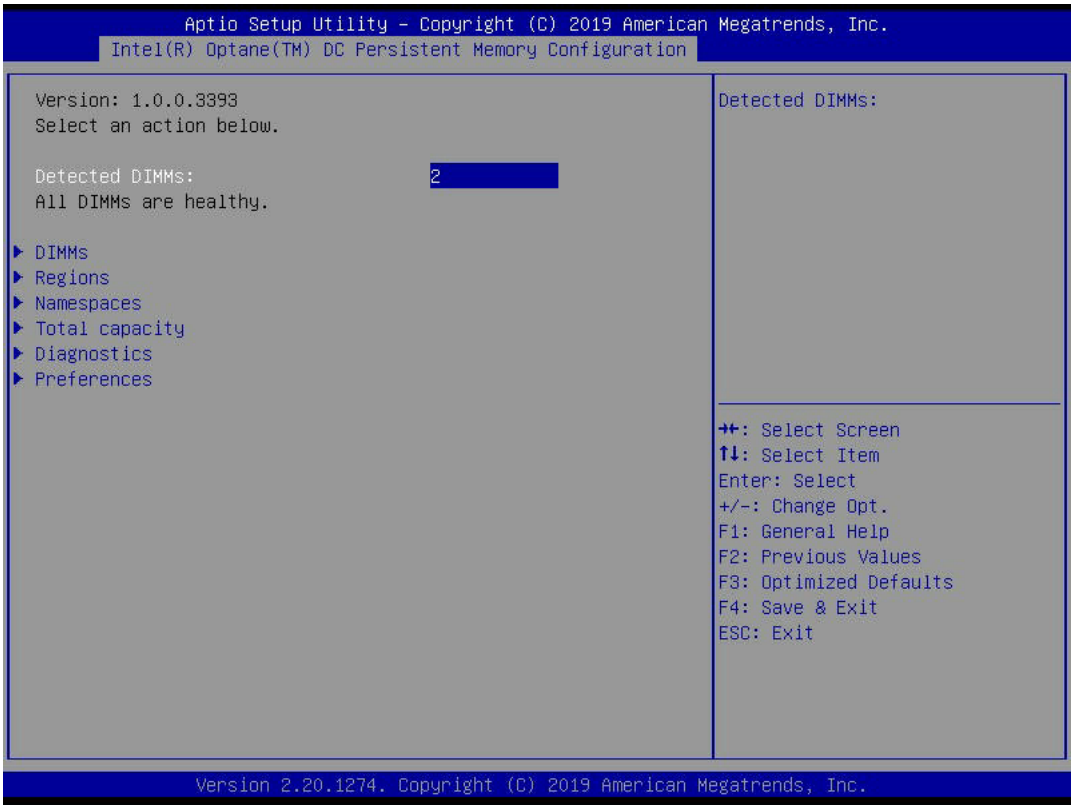
Version

Select an action below.

Detected DIMMs: This feature displays the number of DCPMM memory modules detected by the BOS.

All DIMMs are healthy.

▶DIMMs



This submenu allows the user to view and to configure the settings of the DCPMM memory modules installed in the system.

▶DIMM ID

This submenu allows the user to view and to perform an action on a DCPMM module specified by the user. When this submenu is selected, the following items will display:

- **DIMM UID**: This feature displays the unique ID of the DCPMM module.
- **DIMM Handle:** This feature displays the unique handle that the CPU assigns to the DCPMM module.
- **DIMM Physical ID:** This feature displays the physical ID of the DCPMM module.
- **Manageability State:** This feature indicates the manageability state of the DCPMM module.
- **Health State:** This feature indicates the health state of the DCPMM module.
- **Health State Reason:** This feature indicates the reason that effectuates the health state of the DCPMM module.
- **Capacity:** This feature indicates the capacity of the DCPMM module.
- **Firmware Version:** This feature indicates the firmware version of the DCPMM module.
- **Firmware API Version:** This feature indicates the firmware API version of the DCPMM module.
- **Lock State:** This feature indicates the lock state of the DCPMM module.
- **Staged Firmware Version:** This feature indicates the staged firmware version of the DCPMM module.
- **Firmware Update Status:** This feature indicates the firmware update status of the DCPMM module.
- **Manufacturer:** This feature indicates the manufacturer of the DCPMM module.

Show More Details

Select Enabled to view more detailed information on the DCPMM module. The options are **Disabled** and Enabled.

**If this option is set to Enabled, the following items will display:*

- Serial Number

- Part Number
- Socket
- Memory Controller ID
- Vendor ID
- Device ID
- System Vendor ID
- Subsystem Vendor ID
- Subsystem Device ID
- Device Locator
- Subsystem Revision ID
- Interface Format Code
- Manufacturing Information Valid
- Manufacturing Date
- Manufacturing Location
- Memory Type
- Memory Bank Label
- Data Width Label [b]
- Total Width [b]
- Speed [MHz]
- Channel ID
- Channel Position
- Revision ID
- Form Factor
- Manufacturer ID

- Controller Revision ID
- IS New
- Memory Capacity
- APP Direct Capacity
- Unconfigured Capacity
- Inaccessible Capacity
- Reserved Capacity
- Peak Power Budget [mW]
- Avg (Average) Power Budget [mW]
- Max Average Power Budget [mW]
- Package Sparing Capable
- Package Sparing Enabled
- Package Spares Available
- Configuration Status
- SKU Violation
- ARS Status
- Overwrite DIMM Status
- Last Shutdown Time
- First Fast Refresh
- Viral Policy Enable
- Viral State
- Latched Last Shutdown Status
- Unlatched Last Shutdown Status
- Security Capabilities

- Modes Supported
- Boot Status
- AIT DRAM Enabled
- Error Injection Enabled
- Media Temperature Injection Enabled
- Software Triggers Enabled
- Software Triggers Enabled Details
- Poison Error Injections Counter
- Poison Error Clear Counter
- Media Temperature Injections Counter
- Software Triggers Counter
- Master Passphrase Enabled

▶Monitor Health

Select this submenu to view the health status and thresholds of the DCPMM module specified by the user.

- **Sensor Type**: This feature displays the type of health items that are being monitored.
- **Value**: This feature displays the value of the monitor sensor mentioned above.
- **Non-critical Thresholds:** This feature displays the normal threshold value for the DCPMM module to maintain normal operations.
- **Critical Lower Threshold:** This feature displays the lowest threshold value for the DCPMM module to maintain normal operations.
- **Critical Upper Threshold:** This feature displays the higher threshold value for the DCPMM module to maintain normal operations.
- **Fatal Threshold:** This feature indicates the highest value allowed for the DCPMM module to remain functional. Beyond this value, the DCPMM selected will become non-operational.
- **State:** This feature indicates the health state of the DCPMM module.

- A**larm Enabled State:** This feature indicates the status of the non-critical threshold alarm for the DCPMM module specified by the user.
- **Modify Non-critical Thresholds:** Use this feature to modify non-critical thresholds.
- **Controller Temperature:** This feature displays the controller temperature in Celsius.
- **Media Temperature:** This feature displays the media temperature in Celsius.
- **Percentage Remaining**

▶Apply Changes

Use this feature to apply changes that you've made on the DCPMM modules to the system.

▶Back to Main Menu

Select this feature and press <Enter> to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

▶Update Firmware

Use this feature to select the firmware image to be loaded on the DCPMM module. Once it is loaded to the system, please reboot the system and select update for the firmware to take effect. The following items will display:

- **Current Firmware Version**: This feature displays the current firmware version.
- **Selected Firmware Version**: This feature allows the user to select a new firmware version to use.
- **File:** This feature allows the user to specify the file path in the root directory that contains the new firmware for firmware update.
- **Staged Firmware Version:** This feature indicates the staged firmware version of the DCPMM module specified by the user.

▶Update

Select this feature to update the firmware settings.

▶Back to Main Menu

Select this feature and press <Enter> to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

▶Configure Security

Use this feature to configure the security settings for all onboard DCPMM modules.

State

Select Enabled to configure the security settings for the DCPMM modules installed in the system. The options are **Disabled** and Enabled.

- **Enable Security**: Use this feature to enable security settings for the onboard DCPMM modules.
- **Secure Erase**: Use this feature to erase all the persistent data saved in the DCPMM modules.
- **Freeze Lock:** Use this feature to enable the security lock for the onboard DCPMM modules.

▶Back to Main Menu

- Select this feature and press <Enter> to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

▶Configure Data Policy

Use this feature to configure the data policy settings for all onboard DCPMM modules.

First Fast Fresh State

Select Enabled to display the First Fast Fresh state for onboard DCPMM modules.

▶Enable First Fast Fresh State

Select Enabled to support the first fast fresh state of DCPMM data policy.

▶Disable First Fast Fresh State

Select Disable to disable the first fast fresh state of DCPMM data policy.

▶Back to Main Menu

Select this feature and press <Enter> to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

▶Regions

Current Configuration

▶Region ID

When this submenu is selected, the following items will display:

- **Region ID**: This feature displays the Region ID of the DCPMM module.
- **DIMM ID:** This feature displays the DIMM ID of the DCPMM module.
- **ISet ID:** This feature displays the ISet ID of the DCPMM module.
- **Persistent Memory Type:** This feature indicates the persistent memory type of the DCPMM module.
- **Capacity:** This feature indicates the capacity of the DCPMM module.
- **Free Capacity:** This feature indicates the capacity of the DCPMM module that is available for use.
- **Health:** This feature indicates the health state of the DCPMM module.
- **Socket ID:** This feature displays the Socket ID of the DCPMM module.

Persistent Memory Type

Capacity

Free Capacity

▶Create Goal Configuration

When this submenu is selected, the following items will display:

- **Create Goal Configuration for**: Use this feature to select the target to create goal configuration for the DCPMM modules. The options are **Platform** and Socket.

- **Reserved [%]:** Use this feature to reserve a percentage of the DCPMM capacity for a particular purpose and keep this portion of memory space from being mapped into the physical address of system for system use.
- **Memory Mode [%]:** Use this feature to reserve a percentage of the DCPMM capacity for special use in a specific Memory Mode. Please note that this value can be automatically set by the system.

Persistent Memory Type

This feature allows the user to specify the type of DCPMM memory capacity to be created. The options are **App Direct** and App Direct Not Interleave.

Namespace Label Version

Use this feature to view and modify the namespace label version to initialize when creating goals. The options are **1.2** and 1.1.

▶Back to Regions Menu

Select this feature and press <Enter> to go back to the Regions submenu.

▶Back to Main Menu

Select this feature and press <Enter> to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

▶Namespaces

This subsection allows the user to select a namespace to view the following information on the selected namespace

Namespace ID/Name/Heath Status

▶0x00000101/0x00000201/0x00000301

Select this feature and press <Enter>, the following items will display:

- UUID
- ID
- Name
- Region
- Health
- Mode

- Block Size
- Units: Use this feature to change the namespace capacity (in the unit of B, MB, MiB, GB, **GiB**, TB, and TiB.)
- Capacity
- Label Version

▶**Save**: After configuring the settings for the namespace above, click on <Save> to save changes.

▶**Delete** After configuring the settings for the namespace above, click on <delete> to delete the changes you've made on the namespace. Please note that all data contained in the namespace will be deleted as well when you press <delete>.

▶**Back to Namespaces**

▶**Back to Main Menu**

▶Create Namespace

Use this submenu to create a namespace. The following information will display:

Name

Region ID

This feature displays the region ID of the DCPMM module. The options are **0x0001** and 0x0002.

Mode

Use this item to set the Namespace mode. The options are **None** and Sector.

Capacity Input

Select Remaining to use the maximum memory capacity currently available as system memory capacity. Select Manual to enter the system memory capacity manually. The options are **Remaining** and Manual.

Units

Use this feature to select the type of unit to use when inputting namespace capacity in the system.

The options are B, MB, MiB, GB, **GiB**, TB, and TiB.

- **Capacity**: This feature displays the namespace capacity.

▶Back to Namespace

Select this feature and press <Enter> to go back to the **Namespaces** submenu.

▶Back to Main Menu

Select this feature and press <Enter> to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

▶Total Capacity

This feature allows the user to set the total DCPMM resource capacity allocated across all segments in the host server.

- **Raw Capacity**: This feature specifies the raw capacity of the DCPMM module.
- **App. Direct Capacity**: This feature specifies the App. direct capacity of the DCPMM module.
- **Memory Capacity**: This feature specifies the memory capacity of the DCPMM module.
- **Unconfigured Capacity**: This feature specifies the capacity of the DCPMM module that has not been configured.
- **Inaccessible Capacity**: This feature specifies the capacity of the DCPMM memory that is not accessible to the user.
- **Reserved Capacity**: This feature specifies the capacity of the DCPMM memory that is reserved for a particular use.

▶Back to Main Menu

Select this feature and press <Enter> to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

▶Diagnostics

Perform Diagnostic Tests on DIMMs

When you select this submenu and press <enter>, the following items will display:

Choose Diagnostics Type:

Quick Diagnostics

Select Enabled for the quick diagnostics test to be performed on the DCPMM module installed in the system when needed. The options are **Enabled** and Disabled.

DIMM ID 0x0101/DIMM ID 0x0111/DIMM ID 0x0121D

Select Enabled for the quick diagnostics test to be performed on the DCPMM module. The options are **Enabled** and Disabled. (**Note**: More DIMM IDs will appear If more DCPMM modules are installed on the motherboard.)

Config (Configure) Diagnostics

Select Enabled for the platform configuration diagnostics test to be performed on the DCPMM module. The options are **Enabled** and Disabled.

FW (Firmware) Diagnostics

Select Enabled for the firmware diagnostics test to be performed on the DCPMM module. The options are **Enabled** and Disabled.

Security Diagnostics

Select Enabled for the security diagnostics test to be performed on the DCPMM module. The options are **Enabled** and Disabled.

▶Execute Tests

Select this feature and press <Enter> to execute the selected diagnostic tests. The following items will display:

- TestName
- State
- Message

▶Back to Main Menu

Select this feature and press <Enter> to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

▶Preferences

View and/or modify user preferences

Default DIMM ID

This feature allows the user to view and to modify the default DIMM ID as displayed on the screen. The options are **Handle** and UID.

Capacity Units

This feature allows the user to view and to set the default capacity unit of the selected DCPMM to be displayed on the screen. The options are **Auto**, Auto_10, B, MB, MiB, GB, GiB, TB, and TiB.

App Direct Settings

This feature displays the Application Direct Settings. The default setting is **4KB_4KB (Recommended)**.

App Direct Granularity

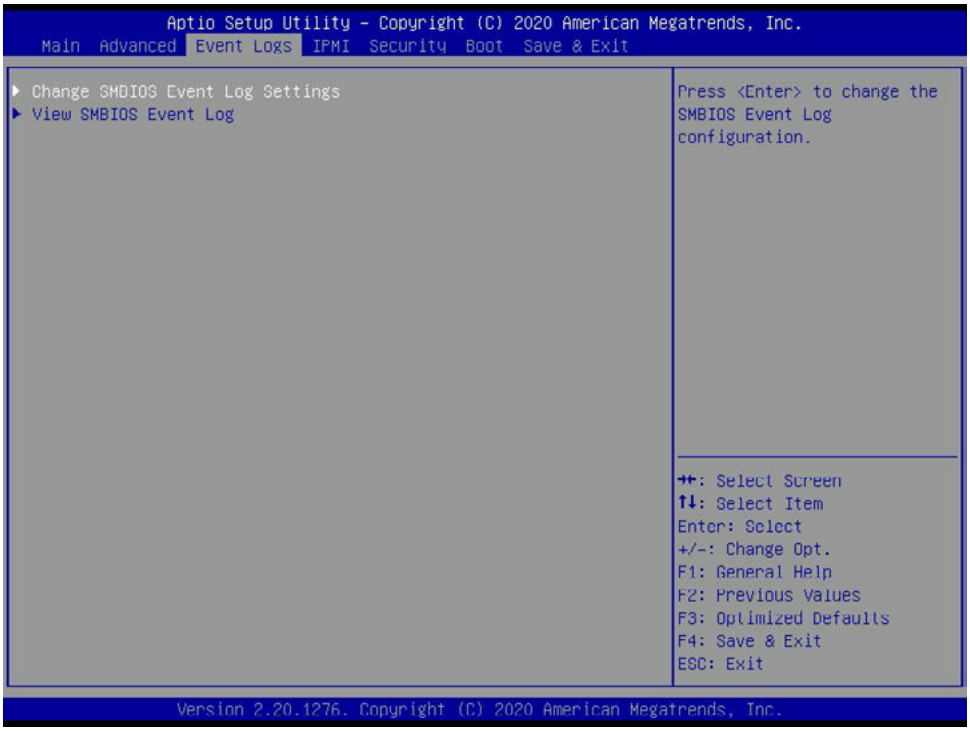
This feature allows the user to view and modify the minimum App Direct Granularity for each DIMM installed on the motherboard. The default setting is **Recommended** and 1.

▶Back to Main Menu

Use this feature to go back to the **Intel® Optane® DC Persistent Memory Configuration** menu.

6.4 Event Logs

Use this feature to configure the Event Log settings.



▶Change SMBIOS Event Log Settings

Enabling/Disabling Options

SMBIOS Event Log

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

Erasing Settings

Erase Event Log

Select "No" to keep the event log without erasing it upon next system bootup. Select "Yes, Next Reset" to erase the event log upon next system reboot. The options are "**No"**, "Yes, Next Reset", and "Yes, Every Reset"

When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately..

SMBIOS Event Log Standard Settings

Log System Boot Event

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

MECI (Multiple Event Count Increment)

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

METW (Multiple Event Count Time Window)

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

▶View System Event Log

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

Date/Time/Error Code/Severity

6.5 IPMI

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



When you select this submenu and press the <Enter> key, the following information will display:

- **BMC Firmware Revision**: This feature indicates the BMC firmware revision used in your system.
- **IPMI Status**: This feature indicates the status of the IPMI (Intelligent Platform Management Interface) installed in your system.

▶System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled to enable all system event logging upon system boot. The options are **Enabled** and Disabled.

Erasing Settings

Erase SEL

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

When SEL is Full

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

▶BMC Network Configuration

Update IPMI LAN Configuration

This feature allows the user to apply the settings listed below to IPMI at next system boot. The options are Yes and **No**.

Configure 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**.
- Configuration Address Source (available when Update IPMI LAN Configuration is set to Yes): Use this feature to select the IP address source for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, AMI BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server attached to the network and request the next available IP address for this computer. The options are **DHCP** and Static.
- 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., 172.31.41.69).
- 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 6 two-digit hexadecimal numbers.

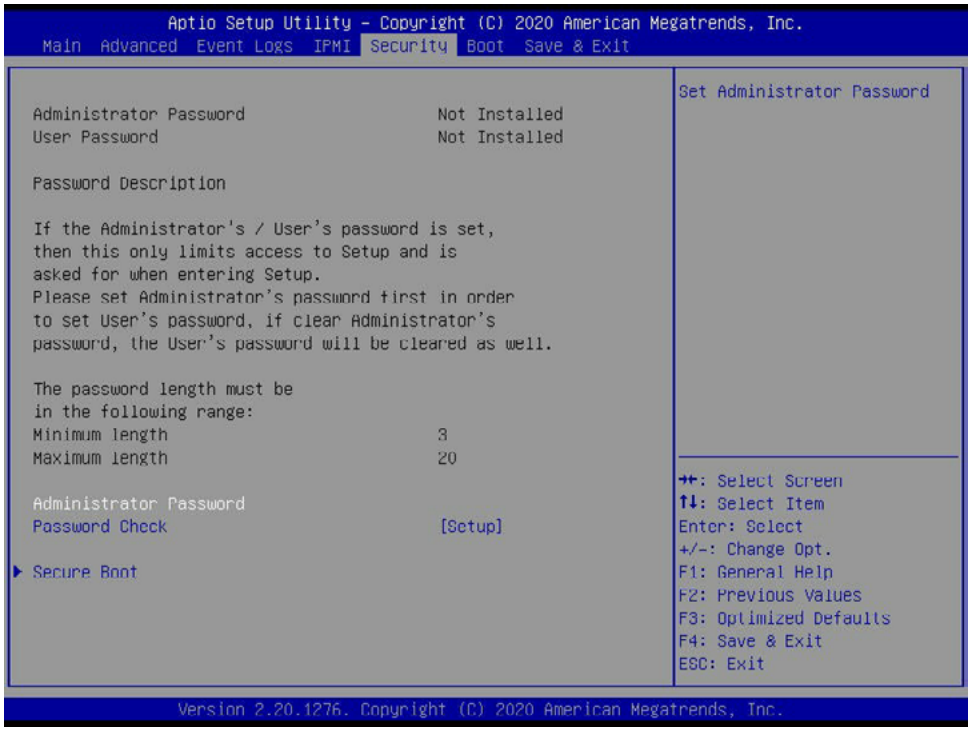
- Gateway IP Address: This feature displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 172.31.0.1).
- VLAN (available when Update IPMI LAN Configuration is set to Yes): This feature displays the status of VLAN support. The default setting is **Disable**.

Configure IPv6 Support

- IPv6 Address Status: This feature displays the IPv6 address status. The default setting is Disabled.
- IPv6 Support (available when Update IPMI LAN Configuration is set to Yes): The default setting is **Enabled**.
- Configuration Address Source (available when Update IPMI LAN Configuration is set to Yes): Use this feature to select the IP address source for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, AMI BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server attached to the network and request the next available IP address for this computer. The options are **DHCP** and Static.
- Station IPv6 Address: This feature displays the station IPv6 address.
- Prefix Length: This item displays the prefix length.
- IPv6 Router IP Address: This feature displays the IPv6 router IP address.

6.6 Security

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



Administrator Password

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

User Password

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

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 system boot and 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
- Secure Boot
- Vendor Keys

Secure Boot

Select Enabled to use Secure Boot settings. The options are Enabled and **Disabled**.

Secure Boot Mode

Use this feature to select the desired secure boot mode for the system. The options are Standard and **Custom**.

CMS Support

If this feature is set to Enabled, legacy devices will be supported by the system. The options are **Enabled** and Disabled.

▸Key Management

Vendor Keys

Provision Factory Defaults

Select Yes to install manufacturer default keys for system security use. The options are Enabled and **Disabled**.

▸Restore Factory Keys

Select Yes to restore all manufacturer default keys for system security use. The options are **Yes** and No.

▸Reset to Setup Mode

This feature resets the system to Setup Mode.

▸Export Secure Boot Variables

This feature is used to copy the NVRAM content of Secure Boot variables to a storage device.

▸Enroll EFI Image

Select this feature and press <Enter> to specify an EFI (Extensible Firmware Interface) image for the system to use when it operates in the Secure Boot mode.

Device Guard Ready

▸Remove 'UEFI CA' from DB

Select Yes to remove UEFI CA from the database. The options are **Yes** and No.

▸Restore DB defaults

Select Yes to restore database variables to the manufacturer default settings. The options are **Yes** and No.

Secure Boot Variable/Size/Keys/Key Source

▸Platform Key (PK)

This feature allows the user to enter and configure a set of values to be used as platform firmware keys for the system. The sizes, keys numbers, and key sources of the platform keys will be indicated as well. Select Update to update the platform key.

▸Key Exchange Keys

This feature allows the user to enter and configure a set of values to be used as Key-Exchange-Keys for the system. The sizes, keys numbers, and key sources of the Key-Exchange-Keys will be indicated as well. Select Update to update your "Key Exchange Keys". Select Append to append your "Key Exchange Keys".

▸Authorized Signatures

This feature allows the user to enter and configure a set of values to be used as Authorized Signatures for the system. These values also indicate the sizes, keys numbers, and the sources of the authorized signatures. Select Update to update your "Authorized Signatures". Select Append to append your "Authorized Signatures". The settings are Update and Append.

▸Forbidden Signatures

This feature allows the user to enter and configure a set of values to be used as Forbidden Signatures for the system. These values also indicate sizes, keys numbers, and key sources of the forbidden signatures. Select Update to update your "Forbidden Signatures". Select Append to append your "Forbidden Signatures". The settings are Update and Append.

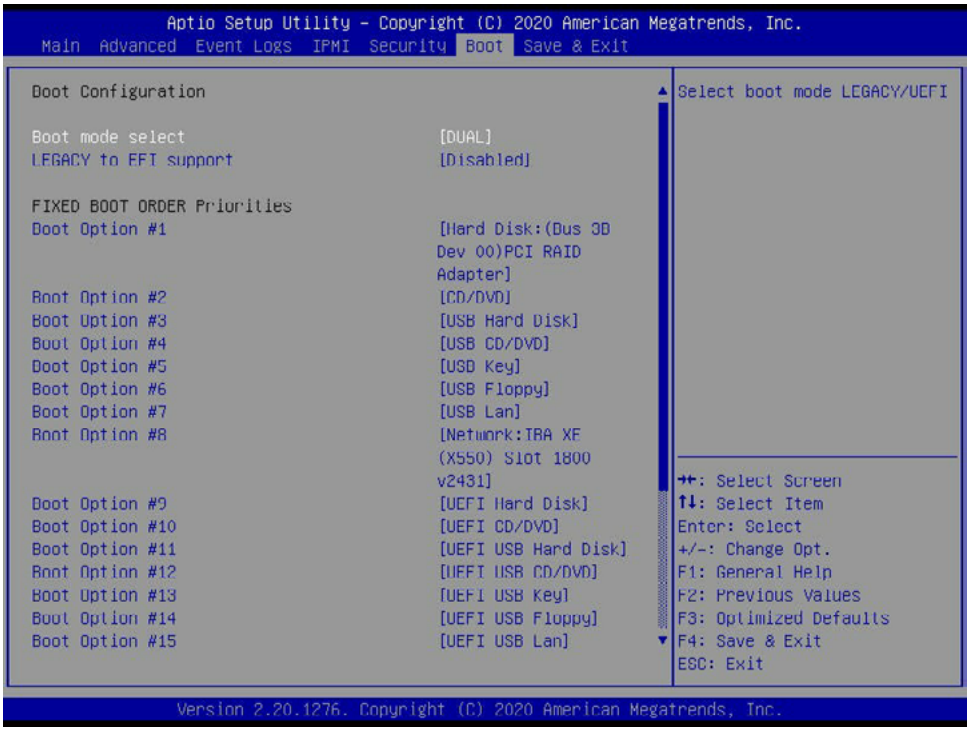
▸Authorized TimeStamps

This feature allows the user to set and save the timestamps for the authorized signatures which will indicate the time when these signatures are entered into the system. Select Update to update your "Authorized TimeStamps". Select Append to append your "Authorized TimeStamps". The settings are Update, and Append.

▸OsRecovery Signatures

This feature allows the user to set and save the authorized signatures used for OS recovery. Select Update to update your "OS Recovery Signatures". Select Append to append your "OS Recovery Signatures". The settings are Update, and Append.

6.7 Boot



Boot Mode Select

Use this feature to select the type of devices from which the system will boot. The options are Legacy, UEFI (Unified Extensible Firmware Interface), and **Dual.**

Legacy to EFI Support

Select Enabled for the system to boot from an EFI OS when the Legacy OS fails. The options are Enabled and **Disabled**.

Fixed Boot Order Priorities

This feature prioritizes the order of a bootable device from which the system will boot. Press <Enter> on each item sequentially to select devices.

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

- Boot Option #1 - Boot Option #17

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

- Boot Option #1 - Boot Option #8

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

- Boot Option #1 - Boot Option #9

▶Delete Boot Option

Use this feature 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.

▶UEFI Application Boot Priorities

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

Boot Option #1

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

▶Network Drive BBS Priorities

This feature allows the user to specify which available network drives are boot devices.

Boot Option #1

The options are **(Bus 3B Dev 00)PCI RAID Adapter(SCSI,PUN:239)** and Disabled.

▶Network Drive BBS Priorities

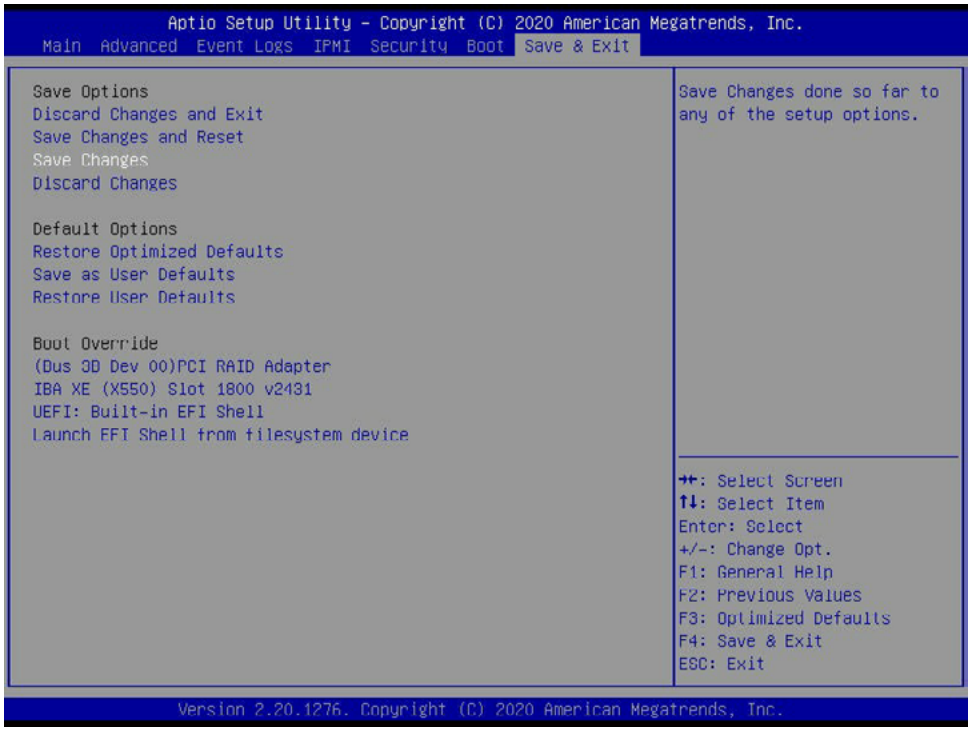
This feature allows the user to specify which available network drives are boot devices.

Boot Option #1

The options are **IBA XE (X550) Slot 1800 v2431** and Disabled.

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 option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Save Changes and Reset

After completing the system configuration changes, select this option to save the changes you have made. This will reset (reboot) the system.

Save Changes

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

Discard Changes

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

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

Default Options

Restore Optimized Defaults

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

Save As User Defaults

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

Restore User Defaults

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

Boot Override

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

Appendix A

BIOS Codes

A.1 BIOS Error POST (Beep) 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.

The fatal errors are usually communicated through repeated patterns of audible beeps. Each pattern of audible beeps listed below corresponds to its respective error.

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

About Standardized Warning Statements

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

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

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

Warning Definition



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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

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

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

ا كً ف حالة وٌكي أى تتسبب ف اصابة جسد ةٌ هذا الزهز عٌ خطز !تحذ زٌ .
قبل أى تعول على أي هعذات،كي على علن بالوخاطز ال ٱجوة عي الذوائز
الكهزبائ ةٍ
وكي على درا ةٌ بالووارسات البقائ ةٍ لو عٌ وقع أي حادث
استخذم رقن الب إٍى الو صٌص ف هًا ةٌ كل تحذ زٌ للعشر تزجوتها

안전을 위한 주의사항

경고!

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions



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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前,请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker



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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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

경고!

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

Waarschuwing

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

Power Disconnection Warning

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



電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה מפני ניתוק חשמלי

!אזהרה

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

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

يجب فصم انتظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد

انطاقت قبم

انصل إنى اثمناطق انداخهيت نههيكم نتثبيج أو إزانت مكناث الجهاز

경고!

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

Waarschuwing

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

Equipment Installation



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

機器の設置

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

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

والمدربيه لتزكيب واستبدال أو خدمة هذا الجهاس يجب أن يسمح فقط 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

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

אזהרה!

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

تخصيص هذه انحذة نترك بُها ف مناطق محظورة تم .
،مَكن انصبل إن منطقت محظورة فقط من خلال استخذاو أداة خاصت
أو أ وس هُت أخري نلالأمما قفم ومفتاح

경고!

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

Waarschuwing

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

Battery Handling



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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

!אזהרה

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף
את הסוללה בסוג התואם מחברת יצרן מומלצת.
סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسحبذال البطارية بطريقة غير صحيحة فعليل
اسحبذال البطارية
فقط بنفس النبع أو ما يعادلها مما أوصث به الشرمة المصنعة
جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

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

Waarschuwing

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

Redundant Power Supplies



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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

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

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

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

אזהרה!

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

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .

يجب إزالة كافة الاتصالات لعسل الوحدة عن الكهرباء

경고!

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

Waarschuwing

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

Backplane Voltage



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

バックプレーンの電圧

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

修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

אזהרה!

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

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

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

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

Comply with Local and National Electrical Codes



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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告
设备安装必须符合本地与本国电气法规。

警告
設備安裝必須符合本地與本國電氣法規。

Warnung
Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

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

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

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

تركيب المعدات الكهربائية يجب أن يمتثل للقاويه المحلية والسطية 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 القانين واللائح البطنية عند

경고!

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

Waarschuwing

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

Hot Swap Fan Warning



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

ファン・ホットスワップの警告

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

警告!

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

警告

危險的可移動性零件。請務必與轉動的風扇葉片保持距離。 當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

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

경고!

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

Waarschuwing

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

Power Cable and AC Adapter



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

電源コードとACアダプター

製品を設置する場合、提供または指定および購入された接続ケーブル、電源コードとACアダプターを 該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

AC ימאתמו סיילמשח סילבכ

!הרהזא

ךרוצל ומאתוה וא ושכרנ רשא AC סימאתמו סיקפס ,סילבכב שמתשהל שי ,רצומה תא סיניקתמ רשאכ לכב שומיש . עקתהו לבכה לש הנוכנ הדימ ללוכ ,תוימוקמה תוחיטבה תושירדל ומאתוה רשאו ,הנקתהה למשחה יריש כמב שומישה יקוחל סאתהב .ילמשח רצק וא הלקתל סורגל לולע ,רחא גוסמ סאתמ וא לבכ לש דוק סהילע עיפומ רשאכ) CSA-ב וא UL -ב סיכמסומה סילבכב שמתשהל רוסיא סייק ,תוחיטבה יקוחו .דבלב Supermicro י"ע סאתוה רשא רצומב קר אלא ,רחא ילמשח רצומ לכ רובע UL/CSA)

تالبكلا ءارش ب قم وأ ةدحملا وأ ةفوتملا تالصيلتا مادختسا ب قم ،جتنملا كرتب دنع لكذ يف امب ةيلحملا ةمالسلا تابلطتم نيناوقلا عم ددرتملا يارتلا تالوحمو ةيئابرهكلا .يملسلا سبلاقلاو لصوملا حجم .يرخأ قدح ببستي دق وأ لطع يف عقوتم ريغ لكشب مادختسا ةزهجلأ يزكرملا مادختسالا ةيئابرهكلا تالوحمو تالبكلا مادختسا تادعملاو ةيعانصلا جتنملا ريغ ىرخأ تادعم يأ عم (UL/CSA) ةمالسلا نوناق رظحي Supermicro. لبق نم ةدحملاو ةيعانصلا

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 Dual Intel Xeon Scalable CPUs (Socket P) processors, which offer three Intel® UltraPath Interconnect (UPI) of up to 10.4 GT/s.
Note: Please refer to the motherboard specifications pages on our website for updates to supported processors.

Chipset

Intel PCH C621 chipset

BIOS

128 Mb AMI® Flash ROM

Memory

Up to 4TB 3DS ECC LRDIMM/RDIMM, LRDIMM/RDIMM and NVDIMM at speeds of 2933/2666/2400/2133 MHz in 16 slots. The system also supports up to 5TB of DCPMM.
Note: The memory capacity support will differ according to the processor SKUs and 2933 MHz memory support is dependent on the processor SKU.

SATA Controller

On-chip (Intel PCH C621) controller

Drive Bays

SSG-6049SP-DE1CR60: 30 3.5" hot-swap hard drives per node
SSG-6049SP-DE1CR90: 45 3.5" hot-swap hard drives per node

PCI Expansion Slots

One PCIe 3.0 x8 AOC slot supported by CPU1 (slot1)
Two PCIe 3.0 x16 slots supported by CPU1/CPU2 (slot2/slot3)
Two PCIe 3.0 x2 M.2 NVMe ports supported by PCH (on mezzanine board)

Motherboard

X11DSC

Chassis

SSG-6049SP-DE1CR60: CSE-947STS-R2K63P; 4U rackmount, 17.6”(W) x 6.9”(H) x 34.1”(D)
SSG-6049SP-DE1CR90: CSE-947HTS-R2K63P; 4U rackmount, 17.6”(W) x 6.9”(H) x 42.9”(D)

System Cooling

Six 8-cm PWM fans

Power Supply

Model: PWS-2K63A-1R
AC Input Voltages: 200-240 Vac
Rated Input Current: 15-12.5A max.
Rated Input Frequency: 50-60 Hz
Rated Output Power: 2600W
Rated Output Voltages: +12V (216A max.), +12Vsb (3.5A max.)

Operating Environment

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

Regulatory Compliance

FCC, ICES, CE, VCCI, RCM, UKCA, NRTL, CB

Applied Directives, Standards

EMC/EMI: 2014/30/EU (EMC Directive)
Electromagnetic Compatibility Regulations 2016
FCC Part 15 Subpart B
ICES-003
VCCI-CISPR 32
AS/NZS CISPR 32
BS/EN 55032
BS/EN 55035
CISPR 32
CISPR 24/CISPR 35
BS/EN 61000-3-2
BS/EN 61000-3-3
BS/EN 61000-4-2
BS/EN 61000-4-3
BS/EN 61000-4-4
BS/EN 61000-4-5
BS/EN 61000-4-6
BS/EN 61000-4-8
BS/EN 61000-4-11

Environment:
2011/65/EU (RoHS Directive)
EC 1907/2006 (REACH)
2012/19/EU (WEEE Directive)
California Proposition 65

Product Safety: 2014/35/EU (LVD Directive)
UL/CSA 62368-1 (USA and Canada)
Electrical Equipment (Safety) Regulations 2016
IEC/BS/EN 62368-1

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”