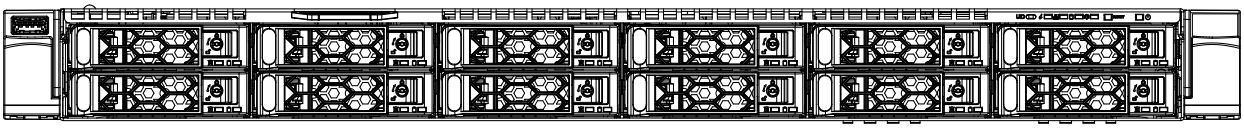
SuperServer®

SYS-1029U-TN12RV



USER'S MANUAL

Revision 1.0c

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Manual Revision 1.0c

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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 SYS-1029U-TN12RV. Installation and maintenance should be performed by experienced technicians only.

Please refer to the SYS-1029U-TN12RV server specifications page on our website for updates on supported memory, processors and operating systems (https://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: https://www.supermicro.com/support/manuals/
- Product drivers and utilities: https://www.supermicro.com/wdl/driver
- Product safety info: https://www.supermicro.com/about/policies/safety_information.cfm

If you have any questions, please contact our support team at:
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This manual may be periodically updated without notice. Please check the Supermicro website for possible updates to the manual revision level.

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/Log9_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.

Contents

Chapter 1 Introduction

1.1 Overview....8
1.2 Unpacking the System....8
1.3 System Features....9
1.4 Server Chassis Features....11
Control Panel....11
Front Features....12
Rear Features....13
1.5 Motherboard Layout....14
Quick Reference Table....15

Chapter 2 Server Installation

2.1 Overview....18
2.2 Preparing for Setup....18
Choosing a Setup Location....18
Rack Precautions....18
Server Precautions....19
Rack Mounting Considerations....19
Ambient Operating Temperature....19
Airflow....19
Mechanical Loading....19
Circuit Overloading....20
Reliable Ground....20
2.3 Installing the Server into a Rack....21
Identifying the Sections of the Rack Rails....21
Installing the Optional Inner Rail Extensions....22
Assembling the Outer Rails....23
Installing the Outer Rails onto the Rack....24
Installing the Chassis into the Rack....25
Installing the Server into a Telco Rack....26

Chapter 3 Maintenance and Component Installation

3.1 Removing Power....27
3.2 Accessing the System....27
3.3 Motherboard Components....28

Processor and Heatsink Installation....28
Intel Xeon Scalable-SP and 2nd Gen Intel Xeon Scalable-SP Processors....29
Overview of the Processor Socket Assembly....30
Overview of the Processor Heatsink Module (PHM)....31
Attaching the Processor to the Narrow Processor Clip to Create the Processor Package Assembly....32
Attaching the Processor Package Assembly to the Heatsink to Form the Processor Heatsink Module (PHM)....33
Preparing the CPU Socket for Installation....34
Removing the Dust Cover from the CPU Socket....34
Installing the Processor Heatsink Module (PHM)....35
Removing the Processor Heatsink Module (PHM) from the Motherboard....36
Memory Support and Installation....37
Memory Support....37
Memory Installation Sequence....37
General Memory Population Requirements....37
DDR4 Memory Support for Intel Xeon Scalable-SP Processors....38
DDR4 Memory Support for 2nd Gen Intel Xeon Scalable-SP Processors....38
DIMM Population Guidelines for Optimal Performance....39
DIMM Population Table....40
DIMM Installation....43
DIMM Module Removal....43
PCI Expansion Card Installation....44
Internal Expansion Card....45
Removing the Ultra Riser Card....46
Motherboard Battery....47
3.4 Chassis Components....48
Hard Drives....48
Hot-Swap for NVMe Drives....49
Checking the Temperature of an NVMe Drive....50
System Cooling....51
Installing Fans....51
Installing the Air Shroud....52
Power Supply....53
Power Supply Failure....53

Chapter 4 Motherboard Connections

4.1 Power Connections 54

4.2 Headers and Connectors 55

4.3 Rear I/O Ports 58

4.4 Front Control Panel 61

4.5 Jumpers 64

Explanation of Jumpers 64

4.6 LED Indicators 65

Chapter 5 Software

5.1 Microsoft Windows OS Installation 67

5.2 Driver Installation 69

5.3 SuperDoctor® 5 70

5.4 BMC 71

BMC ADMIN User Password 71

Chapter 6 UEFI BIOS

6.1 Introduction 72

Starting the Setup Utility 72

6.2 Main Setup 73

6.3 Advanced Setup Configurations 74

6.4 Event Logs 156

6.5 IPMI 158

6.6 Security Settings 161

6.7 Boot Settings 164

6.8 Save & Exit 166

Appendix A BIOS Error Codes

Appendix B Standardized Warning Statements for AC Systems

Appendix C System Specifications

Appendix D UEFI BIOS Recovery

Appendix E Crash Dump Using IPMI

Appendix F CPU-Based RAID for NVMe

Appendix G Configuring VROC RAID Settings

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Chapter 1

Introduction

1.1 Overview

This chapter provides a brief outline of the functions and features of the SuperServer. The SYS-1029U-TN12RV is based on the X11DPU-V motherboard and the SC119UHTS-R1K22HP-T chassis.

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

Main Parts List		
Description	**Part Number**	**Quantity**
NVMe add-on card	AOC-SLG3-4E4R-P	1
1U hybrid backplane for 12x2.5"; SAS3/SATA3/NVMe storage devices	BPN-SAS3-119A-N12	1
2.5" thin profile drive tray, Orange tab (for hotswap NVMe drive)	MCP-220-00178-0B	12
Air Shroud	MCP-310-11601-0B	1
Air Shroud	MCP-310-11906-0B	1
Riser Card with two PCIe x16 slots	RSC-R1UW-2E16	1
Riser Card with one PCIe x8 slot	RSC-R1UW-E8R	1
1U Passive CPU heat sink with a Narrow Retention Mechanism	SNK-P0067PS	2
Power Supply, 1U 1200W/800W Titanium Redundant	PWS-1K22A-1R	2
40x40x56 mm 20.5K RPM / 17.6K RPM Counter-rotating Fans	FAN-0141L4	8
Outer rail, quick-release type	MCP-290-00102-0N	1 set
Inner rail, extension, long (quick)	MCP-290-00112-0N	1set
Inner rail, front, quick-release type (thumb screw appiled)	MCP-290-00120-0N	1 set

1.2 Unpacking the System

Inspect the box the SuperServer SYS-1029U-TN12RV 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 SYS-1029U-TN12RV. Please refer to Appendix C for additional specifications.

System Features
Motherboard
X11DPU-V
Chassis
SC119UHTS-R1K22HP-T
CPU
Dual Intel Xeon 81xx/61xx/51xx/41xx/31xx series or 82xx/62xx/52xx/42xx/32xx series processors **Note:** For the latest CPU/memory updates, please refer to our website at http://www.supermicro.com/products/motherboard.
Socket Type
Socket P (LGA 3647)
Memory
Twenty-four slots for up to 6 TB of 3DS Load Reduced DIMM (3DS LRDIMM), 3DS Registered DIMM (3DS RDIMM), or up to 3 TB of Load Reduced DIMM (LRDIMM) with speeds of up to 2933 MHz; support for NonVolatile DIMM (NVDIMM) and Intel Optane DC Persistent Memory (DCPMM)
Chipset
Intel C621 chipset
Expansion Slots (supported)
One full height, full width PCIe slot, one low profile PCIe slot, one internal low profile PCIe slot (Ultra riser)
Storage Drives
Twelve 2.5" hot-swap hard drives
Power
Dual 1200 Watt (redundant) power supply modules (p/n PWS-1K22A-1R)
Form Factor
1U rackmount
Dimensions
(WxHxD) 17.2 x 1.7 x 29.1 in. (437 x 43 x 739 mm)

Note 1: Please refer to the Memory Configuration for the X11 UP/DP/MP Motherboard User Guide posted on our website for detailed information on memory support for this motherboard.

Note 2: The CPU maximum thermal design power (TDP) is subject to chassis and heatsink cooling restrictions. For proper thermal management, please check the chassis and heatsink specifications for proper CPU TDP sizing.

Note 3: For IPMI configuration instructions, please refer to the Embedded IPMI Configuration User's Guide available at http://www.supermicro.com/support/manuals/.

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.

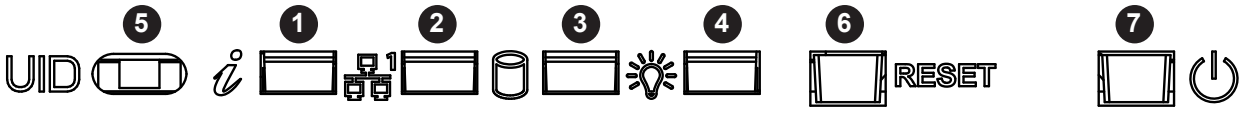


Figure 1-1. Control Panel View

Control Panel Features		
Item	**Feature**	**Description**
1	Information LED	See table below for details.
2	NIC1 LED	Indicates network activity on LAN port 1 when flashing
3	HDD LED	Indicates activity on the hard drive when flashing.
4	Power LED	Indicates power is being supplied to the system's power supply unit. This LED should normally be illuminated when the system is operating.
5	UID Button	Depressing the UID (unit identifier) button illuminates an LED on the front and rear of the chassis for easy system location in large stack configurations. The LED will remain on until the button is pushed a second time. Another UID button on the rear of the chassis serves the same function.
6	Reset Button	Use this button to reset the system.
7	Power Button	The main power button is used to apply or remove power from the power supply to the server. Turning off system power with this button removes the main power but maintains standby power. To perform many maintenance tasks, you must also unplug system before servicing.

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.
Solid blue	UID has been activated locally to locate the server in a rack environment.
Blinking blue	UID has been activated using IPMI to locate the server in a rack environment.

Front Features

The SC119UHTS-R1K22HP-T is a 1U chassis See the illustration below for the features included on the front of the chassis.

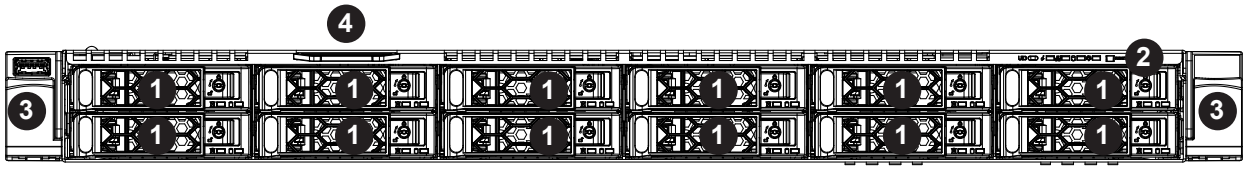


Figure 1-2. Chassis Front View

Front Chassis Features		
Item	**Feature**	**Description**
1	HDD	Hot-swap 2.5" NVMe/SAS/SATA hard disk drive*
2	Control Panel	Front control panel with LEDs and buttons (see preceding page)
3	Rack Ear Brackets	Attaches server chassis to the rack
4	Service/Asset Tag	Pull-out identifier (with BMC ADMIN default password underneath; see figure below)

Note: SAS drives are supported when installing an optional SAS storage controller

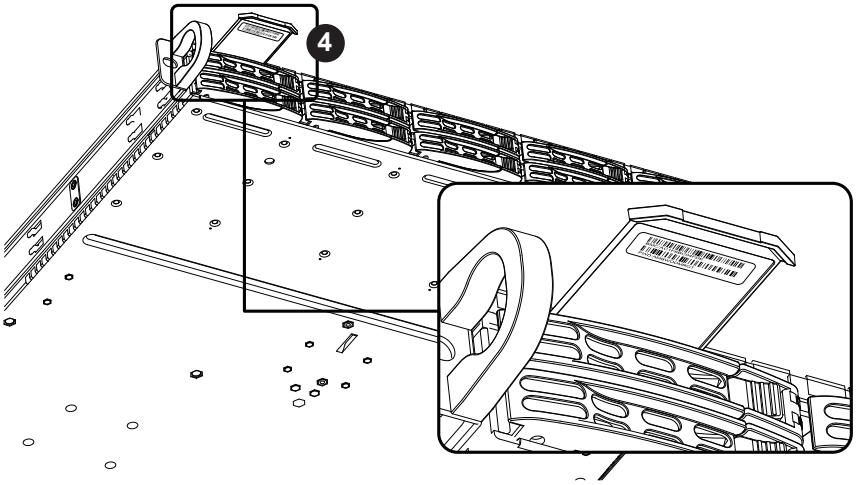


Figure 1-3. Location of the BMC Password Label

Rear Features

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

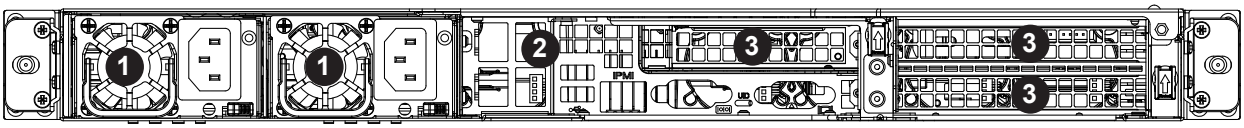


Figure 1-4. Chassis Rear View

Rear Chassis Features		
Item	**Feature**	**Description**
1	Power Supply	1200W redundant power supply (p/n PWS-1K22A-1R)
2	I/O Back Panel	Rear I/O ports (see Section 4.3)
3	Expansion Card Slot	Slot for expansion card (requires pre-installed riser cards)

1.5 Motherboard Layout

Below is a layout of the X11DPU-V 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.

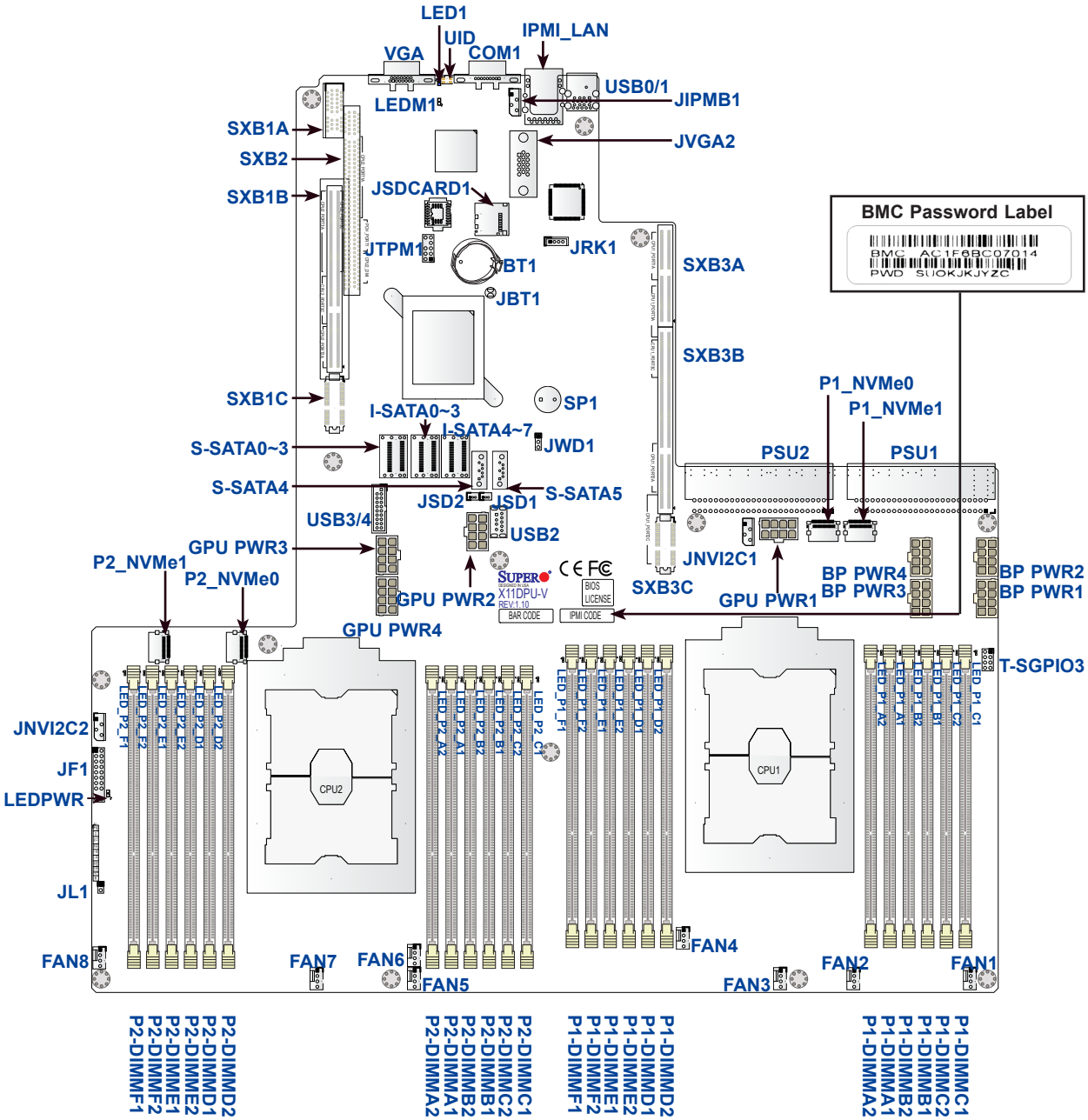


Figure 1-5. Motherboard Layout

Notes:

- "■" indicates the location of pin 1.
- Jumpers and LED indicators not indicated are used for internal testing only.

Quick Reference Table

Jumper	Description	Default Setting
JBT1	CMOS Clear	Open (Normal)
JWD1	Watch Dog	Pins 1-2 (Reset)

Connector	Description
BP PWR 1/2/3/4	8-pin Power Connectors 1/2/3/4 for Backplane Use
BT1	Onboard Battery
COM1	COM Port (COM1) on the I/O Back Panel
FAN1 ~ FAN8	System/CPU Fan Headers
GPU PWR 1/2/3/4	8-pin Power Connectors 1/2/3/4 Used for GPU Devices
I-SATA0~3, I-SATA4~7	Intel® PCH SATA 3.0 Ports (0~3, 4~7)
IPMI_LAN	Dedicated IPMI LAN Port
JF1	Front Control Panel Header
JIPMB1	4-pin BMC External I2C Header (for an IPMI card)
JL1	Chassis Intrusion Header (Note: Please connect a cable from the Chassis Intrusion header at JL1 to the chassis to receive an alert via IPMI.)
JNVI2C1, JNVI2C2	NVMe SMBus (I2C) headers used for NVMe hot-plug SMBus clock & data connections (an SMCI-proprietary NVMe add-on card and cable are required; available for a Supermicro complete system only)
JRK1	Intel® RAID Key Header for NVMe SSD
JSD1, JSD2	SATA DOM Power Connectors 1/2
JSDCARD1	Micro SSD (Solid State Drive) Card Slot (reserved for manufacture use only)
JTPM1	Trusted Platform Module/Port 80 Connector
JUIDB2	UID (Unit Identifier) Switch
JVGA2	Front VGA Port
P1_NVMe 0/1, P2_ NVMe 0/1	Non-Volatile Memory Express (NVMe) 3.0 Devices Ports. Supported by CPU1 (P1_ NVMe 0/1) and CPU2 (P2_NVMe 0/1) (Note: When installing an NVMe device on a motherboard, please be sure to connect the first NVMe port (P1_NVMe0) first for your system to work properly.)
PSU1, PSU2	Power Supply Unit (PSU) Connector 1/Power Supply Unit Connector 2
S-SATA0~3	SATA 3.0 Ports 0~3 Supported by Intel® SCU Chip
S-SATA4, S-SATA5	SATA 3.0 Ports with Power-pin Built-in w/ support of SuperDOM (Device-On Module)
SP1	Internal Speaker/Buzzer
SXB1A, SXB1B, SXB1C	PCIe 3.0 (x16 + x16) Slot Supported by CPU2 for SMCI- Proprietary Riser Card (w/ left riser card support)
SXB2	PCIe 3.0 x8 (in x16) Slot Supported by CPU2 for Center Right Riser Card Support
SXB3A, SXB3B, SXB3C	PCIe 3.0 (x16 + x16 + x8) Slot from CPU1 for Far_right Ultra Riser (SAS3 AOM & LAN options)
T-SGPIO3	Serial_Link General Purpose I/O Header for S-SATA4/S-SATA5
USB0, USB1	Back Panel Universal Serial Bus (USB) 3.0 Ports 0/1
USB2	USB 3.0 Type A Header
USB 3/4	Front Accessible USB 3.0 Header for USB 3/4 Connections
VGA	VGA Port

LED	Description	Status
LED1	UID (Unit Identifier) LED	Solid Blue: Unit Identified
LEDM1	BMC Heartbeat LED	Blinking Green: BMC Normal
LEDPWR	Onboard Power LED	Solid Green: Power On
Memory LED	**Description**	**Status**
LED_P1_A1/LED_P1_A2	Memory Fault LEDs for Memory Module P1_A1/ Memory Module P1_A2	Solid Red: Memory Error Occurs
LED_P1_B1/LED_P1_B2	Memory Fault LEDs for Memory Module P1_B1/ Memory Module P1_B2	Solid Red: Memory Error Occurs
LED_P1_C1/LED_P1_C2	Memory Fault LEDs for Memory Module P1_C1/ Memory Module P1_C2	Solid Red: Memory Error Occurs
LED_P1_D1/LED_P1_D2	Memory Fault LEDs for Memory Module P1_D1/ Memory Module P1_D2	Solid Red: Memory Error Occurs
LED_P1_E1/LED_P1_E2	Memory Fault LEDs for Memory Module P1_E1/ Memory Module P1_E2	Solid Red: Memory Error Occurs
LED_P1_F1/LED_P1_F2	Memory Fault LEDs for Memory Module P1_F1/ Memory Module P1_F2	Solid Red: Memory Error Occurs
LED_P2_A1/LED_P2_A2	Memory Fault LEDs for Memory Module P2_A1/ Memory Module P2_A2	Solid Red: Memory Error Occurs
LED_P2_B1/LED_P2_B2	Memory Fault LEDs for Memory Module P2_B1/ Memory Module P2_B2	Solid Red: Memory Error Occurs
LED_P2_C1/LED_P2_C2	Memory Fault LEDs for Memory Module P2_C1/ Memory Module P2_C2	Solid Red: Memory Error Occurs
LED_P2_D1/LED_P2_D2	Memory Fault LEDs for Memory Module P2_D1/ Memory Module P2_D2	Solid Red: Memory Error Occurs
LED_P2_E1/LED_P2_E2	Memory Fault LEDs for Memory Module P2_E1/ Memory Module P2_E2	Solid Red: Memory Error Occurs
LED_P2_F1/LED_P2_F2	Memory Fault LEDs for Memory Module P2_F1/ Memory Module P2_F2	Solid Red: Memory Error Occurs

Note 1: Intel VMD is supported by P1_NVMe0, P1_NVMe1, P2_NVMe0, and P2_ NVMe1.

Note 2: 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 it will no longer support any PCIe device. To re-activate this slot for PCIe use, please disable VMD in the BIOS.

Note 3: To avoid causing interference with other components, please be sure to use an add-on card that is fully compliant with the PCIe standard on a PCIe slot.

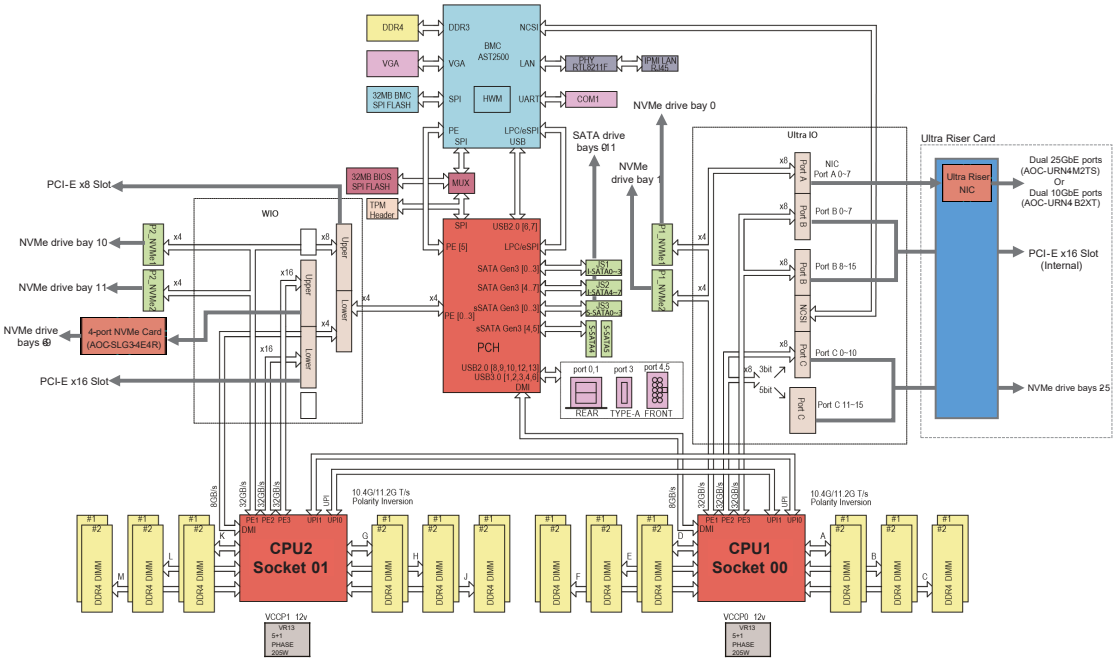


Figure 1-6. System Block Diagram

Chapter 2

Server Installation

2.1 Overview

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

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

2.2 Preparing for Setup

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

Choosing a Setup Location

- The system should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.
- Leave enough clearance in front of the rack so that you can open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow sufficient space for airflow and access when servicing.
- This product should be installed only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).
- This product is not suitable for use with visual display workplace devices acccording to §2 of the German Ordinance for Work with Visual Display Units.

Rack Precautions

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

- In single rack installations, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a server or other component from the rack.
- You should extend only one server or component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

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

Rack Mounting Considerations

Ambient Operating Temperature

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

Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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



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

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



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



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

2.3 Installing the Server into a Rack

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure differs slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Note: This rail will fit a rack between 26" and 33.5" deep.

Identifying the Sections of the Rack Rails

The chassis package includes two sets of rack rails, one set for the right side of the chassis and one for the left. Each set consists of an inner rail that is fixed directly to the chassis and an outer rail that attaches to the rack.

The inner rails are pre-attached and do not interfere with normal use of the chassis if you decide not to install it into a rack.

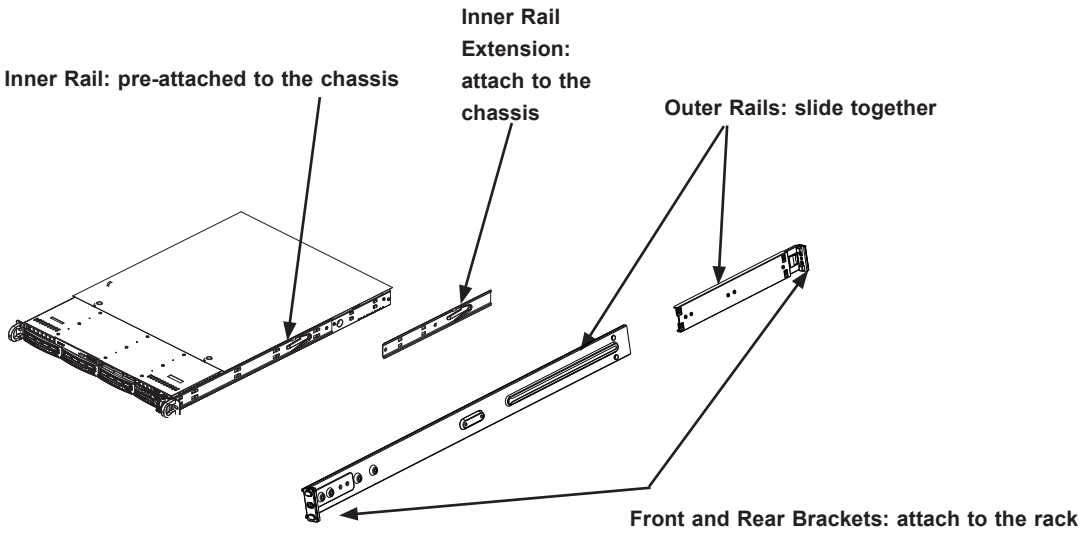


Figure 2-1. Identifying the Sections of the Rack Rails

Installing the Optional Inner Rail Extensions

Attaching the optional inner rail extensions allows you to pull the server farther out of the rack. Do not put downward force on the chassis when it is fully extended.

Installing the Inner Rail Extensions

1. Place the inner rail extensions at the side of the chassis. Align the holes of the inner rail extension with the hooks on the side of the chassis. Make sure the extension faces outward like the inner rail.
2. Slide the extension toward the front of the chassis and under the hooks until the quick release bracket snaps into place, securing the extension to the chassis.
3. If desired, you can install a screw to further secure the extension to the chassis.
4. Repeat for the other inner rail extension.

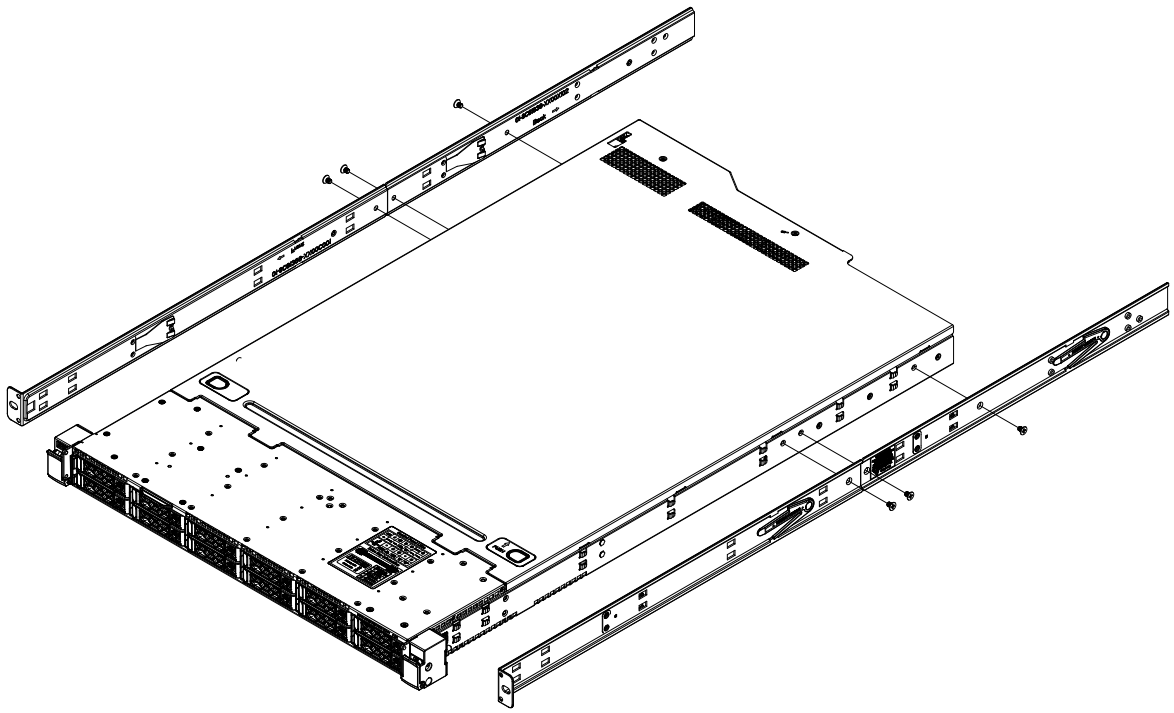


Figure 2-2. Installing the Inner Rail Extensions

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.

Assembling the Outer Rails

Each outer rail comes in two sections that must be assembled before mounting onto the rack.

Assembling the Outer Rails

1. Identify the left and right outer rails by examining the ends, which bend outward. Match the left front outer rail with the left rear outer rail and the same for the right rails.

2. Align the round post in the rear rail (B) with the round hole at the end of the slot in the front rail (A), and slide the front section into the rear section.

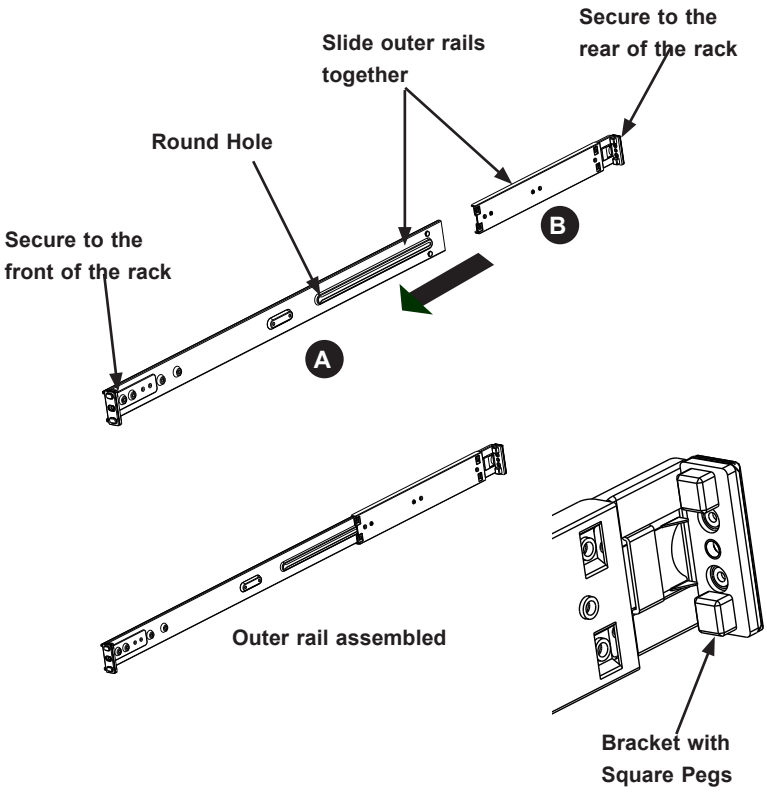


Figure 2-3. Assembling the Outer Rails

Installing the Outer Rails onto the Rack

Each end of the assembled outer rail includes a bracket with square pegs to fit into your rack holes. If you have an older rack with round holes, these brackets must be removed, and you must use screws to secure the rail to the rack.

Outer Rail Installation

1. Align the square pegs on the front end of the rail with the square holes on the front of the rack (C). Push the rail into the rack until the quick release bracket snaps into place, securing the rail to the rack. Keep the rail horizontal.
2. Adjust the rail to reach just past the full depth of your rack.
3. Align the square pegs on the rear end of the rail to the holes on the rack (D) and push the rail into the rack until the quick release bracket snaps into place, securing the rail to the rack.
4. Repeat the procedure for the other outer rail assembly.

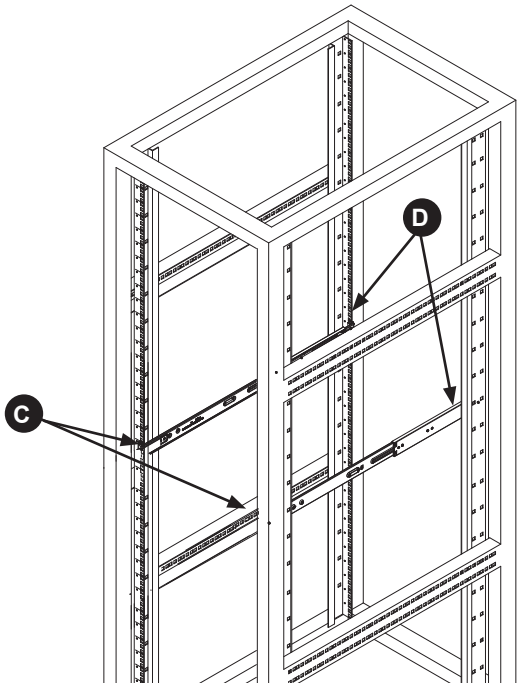


Figure 2-4. Installing the Outer Rails to the Rack

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

Installing the Chassis into the Rack

Installing the Chassis into the Rack

1. Slide the inner rail extensions into the front of the outer rails.
2. Push the chassis backward into the rack until it clicks into the locked position.

Removing the Chassis from the Rack

1. To remove the chassis from the rack, press the outer rail latch to release the chassis.
2. Carefully slide the chassis forward, off the outer rails and out of the chassis.

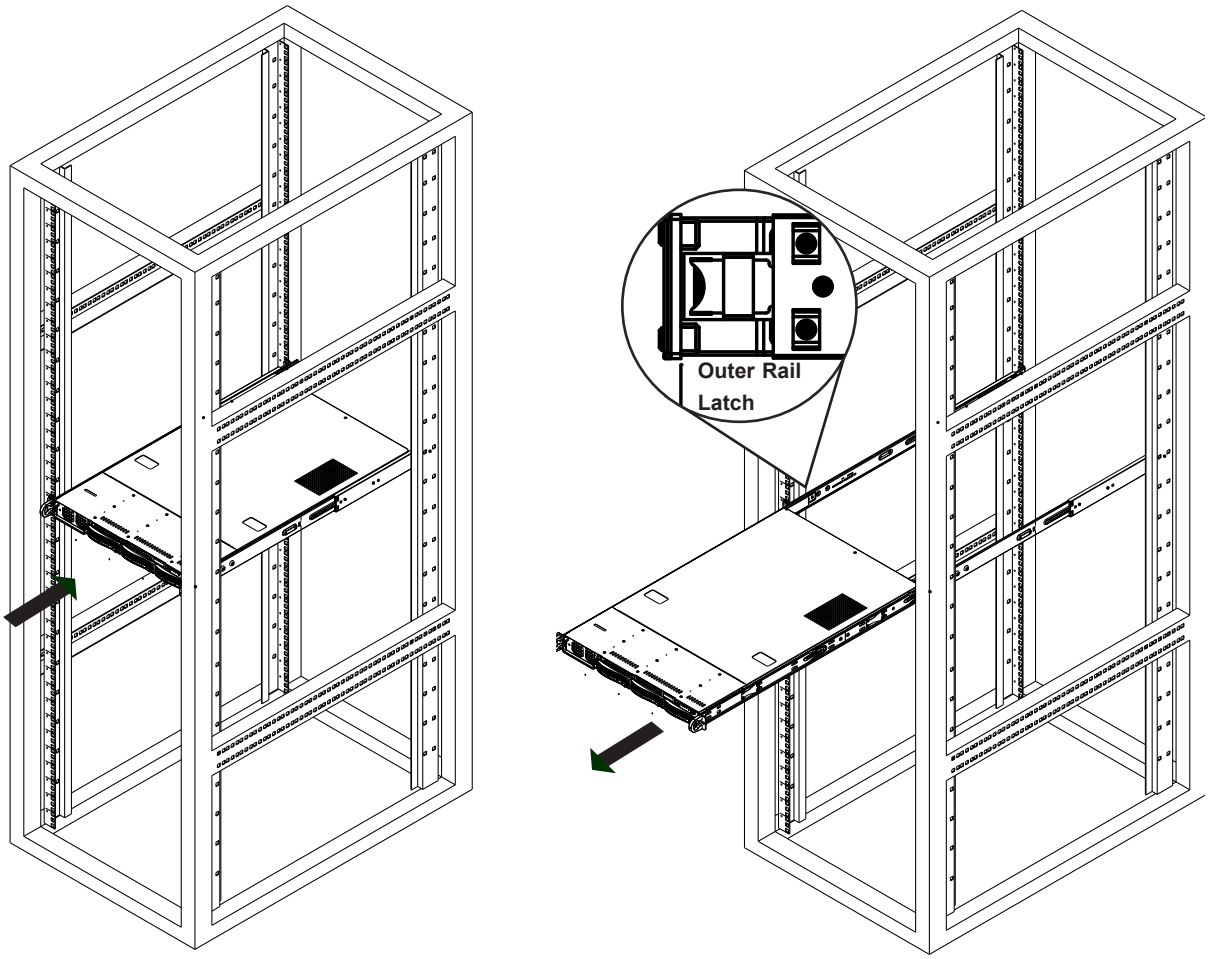


Figure 2-5. Installing/Removing the Chassis into/from the Rack

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

Installing the Server into a Telco Rack

Two optional L-shaped brackets are needed to install the server to a telco (open type) rack.

Installing the Server into a Telco Rack

1. Determine how far follow the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back.
2. If a bezel is included on your server, remove it.
3. Attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack.
4. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

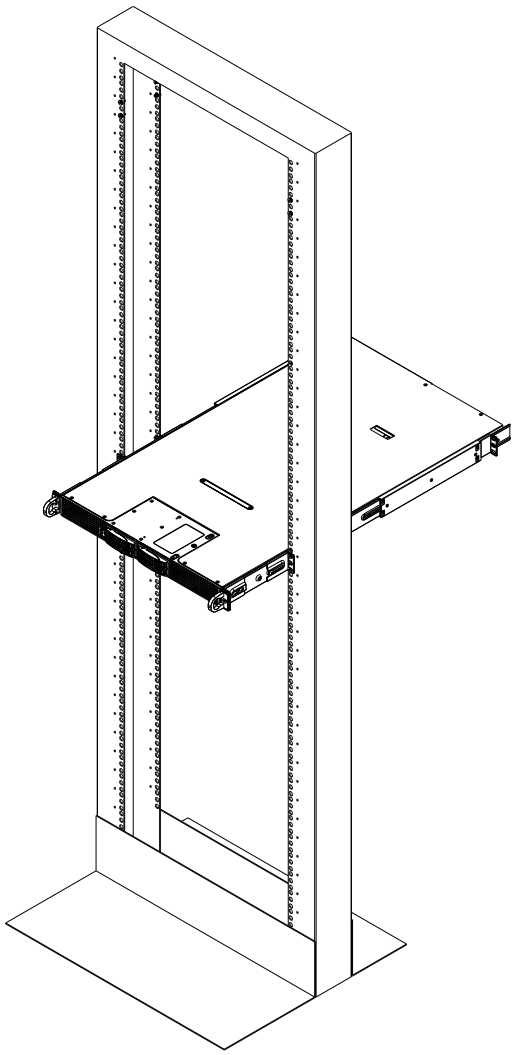


Figure 2-6. Installing the Chassis into a Telco Rack

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

Chapter 3

Maintenance and Component Installation

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

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

3.1 Removing Power

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

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

3.2 Accessing the System

The SC119UHTS-R1K22HP-T features a removable top cover, which allows easy access to the inside of the chassis.

Removing the Top Cover

1. Disconnect the chassis from any power source if necessary (see above).
2. Press the two release buttons to remove the cover from the locked position. (Press both tabs at the same time.)
3. Once the top cover is released from the locked position, slide the cover toward the rear of the chassis.
4. Lift the cover off the chassis.
5. To remove the system from the rack completely, press the locking tabs in the chassis rails (push the right-side tab down and the left-side tab up) to continue to pull the system out past the locked position.

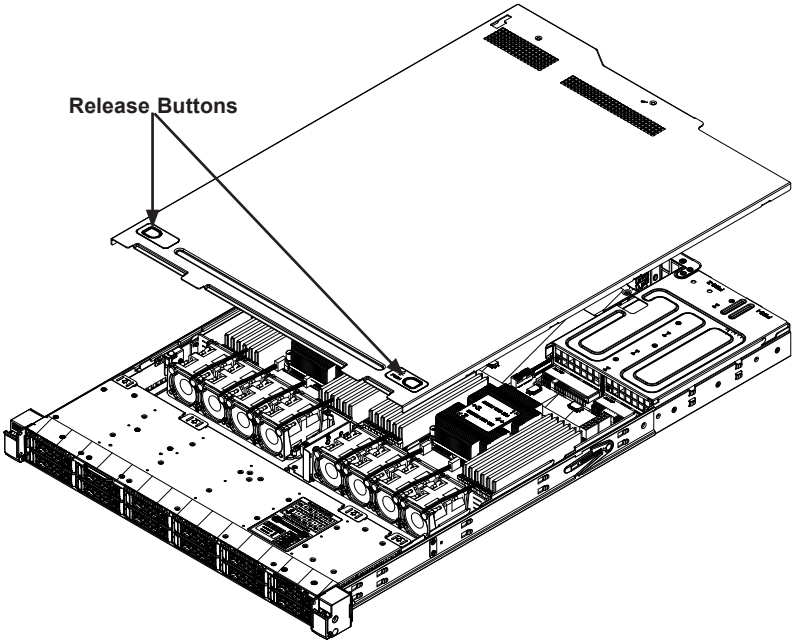


Figure 3-1. Removing the Top Cover

3.3 Motherboard Components

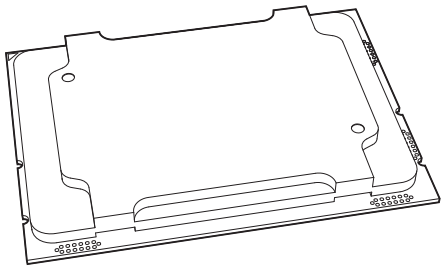
Processor and Heatsink Installation

Warning: When handling the processor package, avoid placing direct pressure on the label area of the CPU or CPU socket. Also, improper CPU installation or socket misalignment can cause serious damage to the CPU or motherboard which may result in RMA repairs. Please read and follow all instructions thoroughly before installing your CPU and heatsink.

Notes:

- Always connect the power cord last, and always remove it before adding, removing, or changing any hardware components. Please note that the processor and heatsink should be assembled together first to form the Processor Heatsink Module (PHM), and then install the entire PHM into the CPU socket.
- When you receive a motherboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and that none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro website for updates on CPU support.
- Please follow the instructions given in the ESD Warning section on the first page of this chapter before handling, installing, or removing system components.

Intel Xeon Scalable-SP and 2nd Gen Intel Xeon Scalable-SP Processors



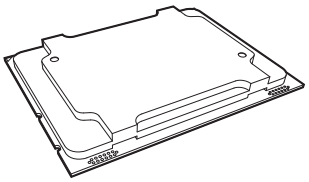
Intel Xeon Scalable-SP and 2nd Gen Intel Xeon Scalable-SP Processor

Note: All graphics, drawings, and pictures shown in this manual are for illustration only. The components that came with your machine may or may not look exactly the same as those shown in this manual.

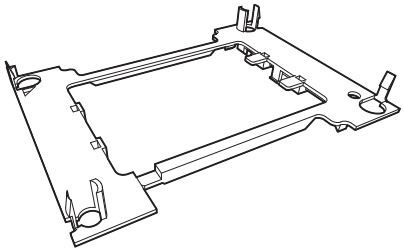
Overview of the Processor Socket Assembly

The processor socket assembly contains 1) Intel® Xeon® Scalable-SP or 2nd Generation Intel® Xeon® Scalable-SP processor, 2) the narrow processor clip, 3) the dust cover, and 4) the CPU socket.

1. Intel® Processor

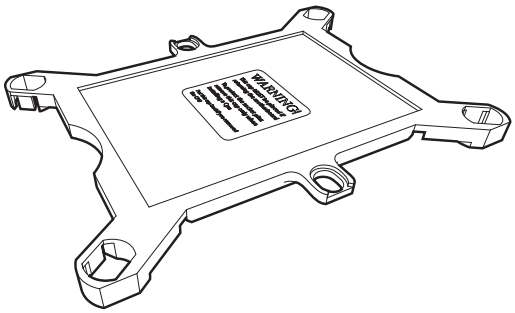


2. Narrow processor clip (the plastic processor package carrier used for the CPU)

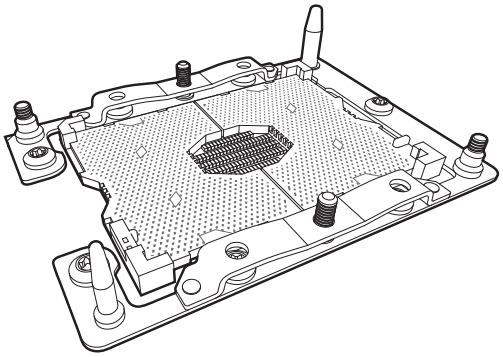


(for the non-F Model)

3. Dust Cover



4. CPU Socket

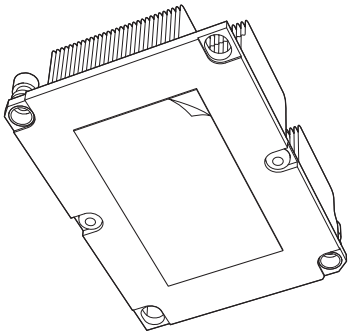


Note: Be sure to cover the CPU socket with the dust cover when the CPU is not installed.

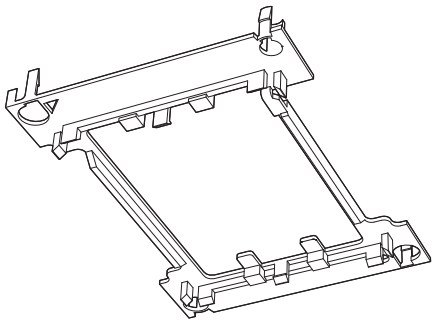
Overview of the Processor Heatsink Module (PHM)

The Processor Heatsink Module (PHM) contains 1) a heatsink, 2) a narrow processor clip, and 3) Intel® Xeon® Scalable-SP or 2nd Generation Intel® Xeon® Scalable-SP processor.

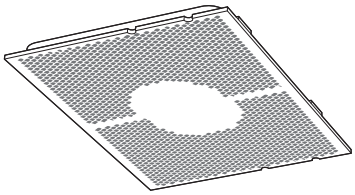
1. Heatsink



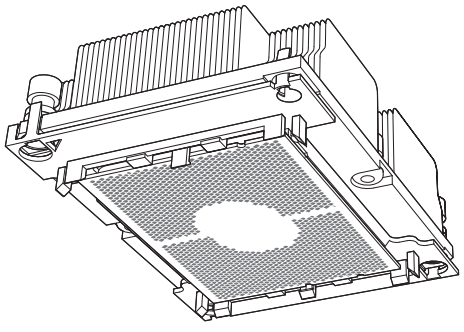
2. Narrow processor clip



3. Intel® Processor



Processor Heatsink Module (PHM)



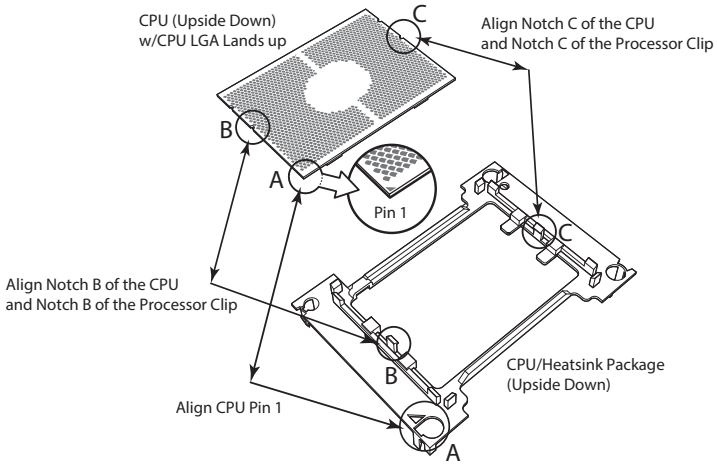
(Bottom View)

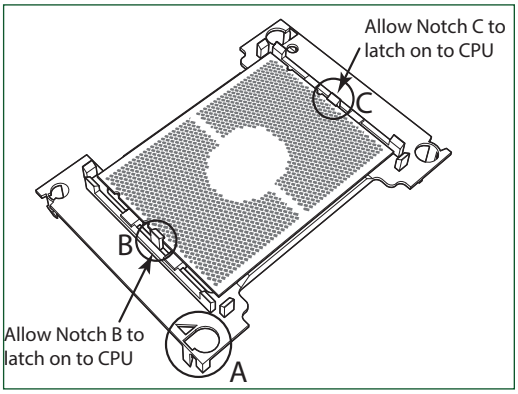
Attaching the Processor to the Narrow Processor Clip to Create the Processor Package Assembly

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

1. Locate pin 1 (notch A), which is the triangle located on the top of the narrow processor clip. Also locate notch B and notch C on the processor clip.
2. Locate pin 1 (notch A), which is the triangle on the substrate of the CPU. Also, locate notch B and notch C on the CPU as shown below.
3. Align pin 1 (the triangle on the substrate) of the CPU with pin 1 (the triangle) of the narrow processor clip. Once they are aligned, carefully insert the CPU into the processor clip by sliding notch B of the CPU into notch B of the processor clip, and sliding notch C of the CPU into notch C of the processor clip.
4. Examine all corners of the CPU to ensure that it is properly seated on the processor clip. Once the CPU is securely attached to the processor clip, the processor package assembly is created.

Note: Please exercise extreme caution when handling the CPU. Do not touch the CPU LGA-lands to avoid damaging the LGA-lands or the CPU. Be sure to wear ESD gloves when handling components.





Processor Package Carrier (w/CPU mounted on the Processor Clip)

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

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

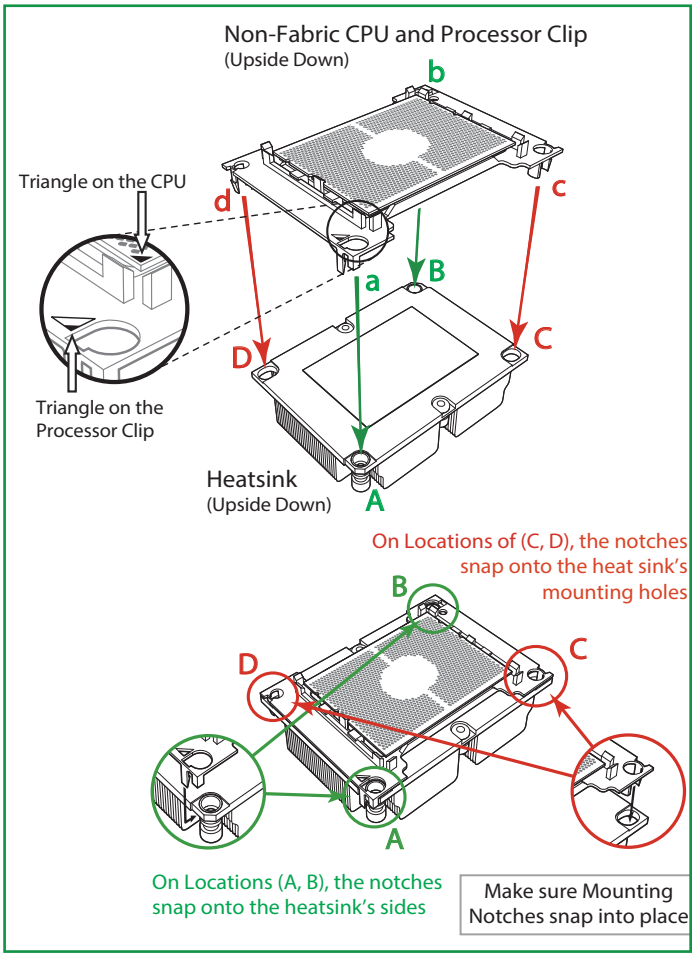
1. Locate "1" on the heatsink label and the triangular corner next to it on the heatsink. With your index finger pressing against the screw at this triangular corner, carefully hold and turn the heatsink upside down with the thermal-grease side facing up. Remove the protective thermal film if present,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

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

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

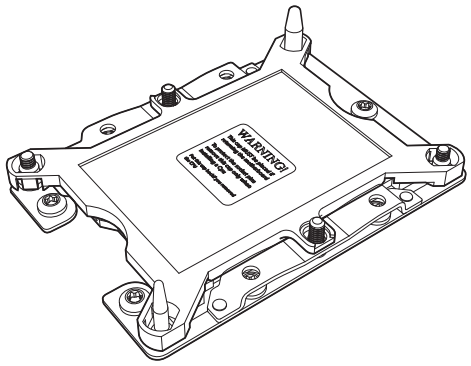
4. Also align the triangular corner ("B") at the diagonal side of the heatsink with the corresponding clips on the processor package assembly ("b").

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



Preparing the CPU Socket for Installation

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

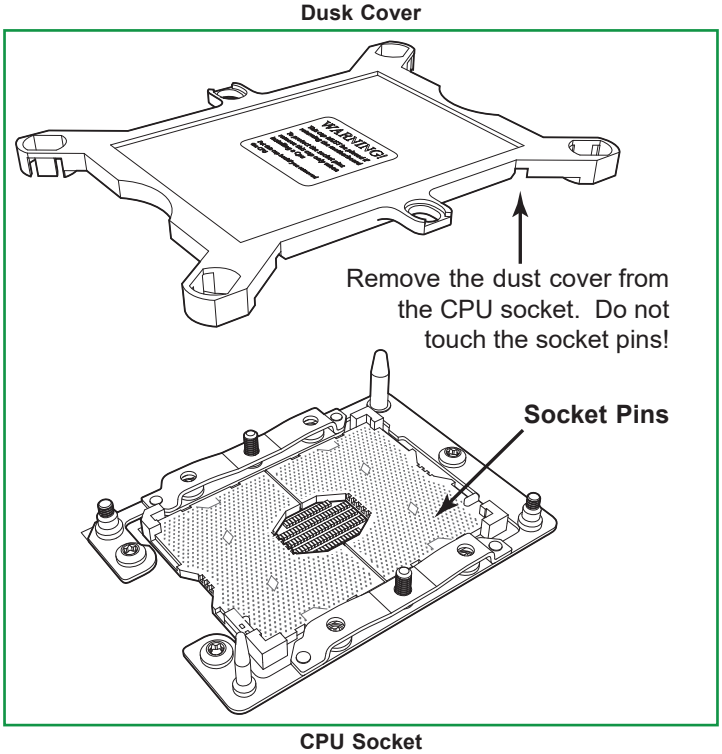


CPU Socket w/Dust Cover On

Removing the Dust Cover from the CPU Socket

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

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



CPU Socket

Installing the Processor Heatsink Module (PHM)

1. Once you have assembled the processor heatsink module (PHM) by following the instructions listed on page 29 or page 30, you are ready to install the processor heatsink module (PHM) into the CPU socket on the motherboard. To install the PHM into the CPU socket, follow the instructions below.

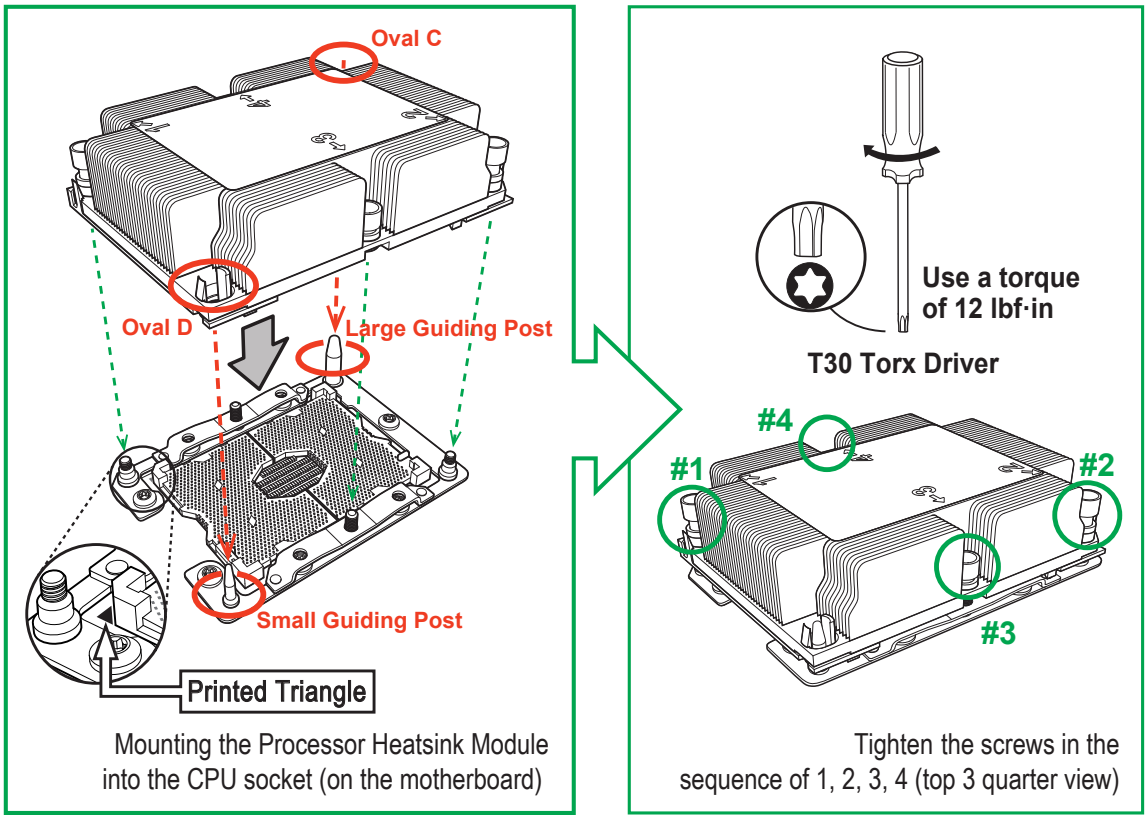
2. Locate the triangle (pin 1) on the CPU socket, and locate the triangle (pin 1) at the corner of the PHM that is closest to "1." (If you have difficulty locating pin 1 of the PHM, turn the PHM upside down. With the LGA-lands side facing up, you will note the hollow triangle located next to a screw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

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

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

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

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

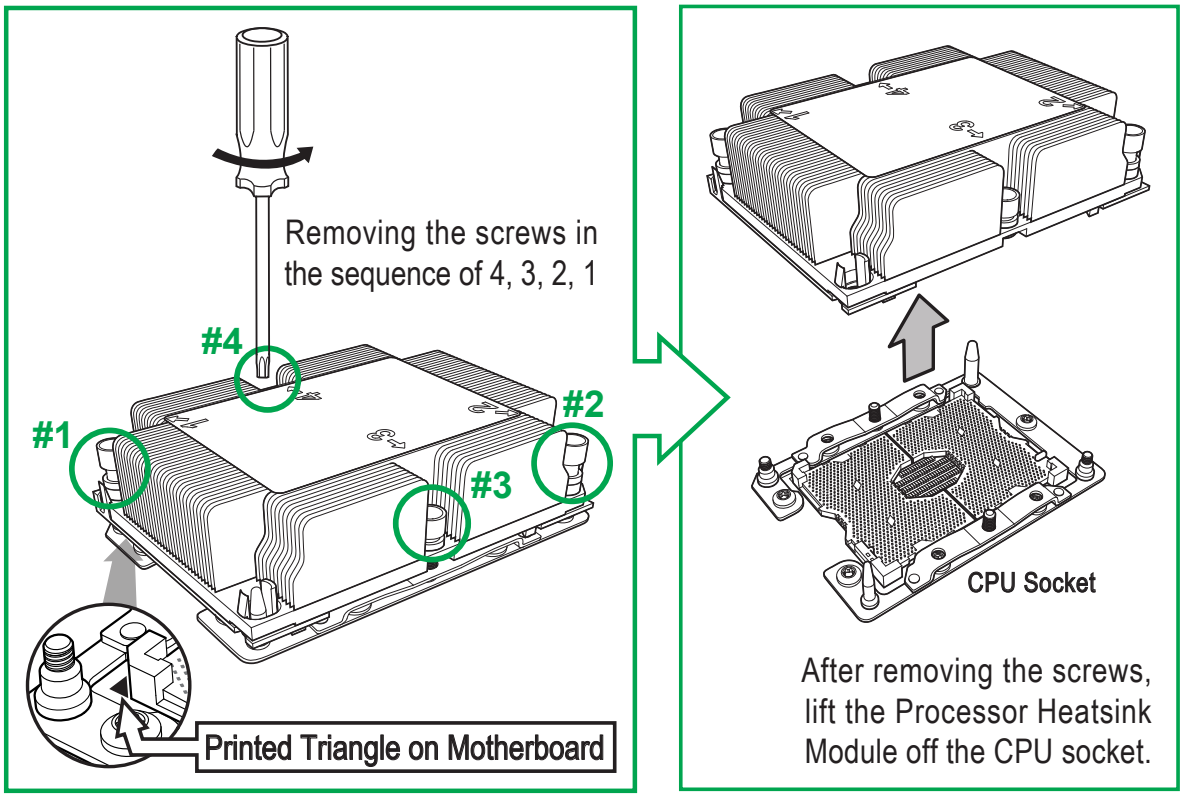


Removing the Processor Heatsink Module (PHM) from the Motherboard

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

1. Using a T30 Torx-bit screwdriver, turn the screws on the PHM counterclockwise to loosen them from the socket, starting with screw marked #4 (in the sequence of 4, 3, 2, 1).
2. After all four screws are removed, wiggle the PHM gently and pull it up to remove it from the socket.

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



Memory Support and Installation

Note: Check the Supermicro website for recommended memory modules. Exercise extreme care when installing or removing DIMM modules to prevent any damage.

Memory Support

The X11DPU-V supports up to 6 TB of 3DS Load Reduced DIMM (3DS LRDIMM), 3DS Registered DIMM (3DS RDIMM), or up to 3 TB of Load Registered DIMM (LRDIMM), with speeds up to 2933 MHz modules in 24 memory slots (***Notes** below). Populating these DIMM modules with a pair of memory modules of the same type and size will result in interleaved memory, which will improve memory performance.

Notes: 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.** When installing memory modules, be sure to populate the first DIMM module on the blue memory slot, which is the first memory slot of a memory channel, and then populate the second DIMM in the black slot if 2DPC memory configuration is used. **3.** Memory speed is dependent on the type of processors used in your system. **4.** 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. **5.** Unbalanced memory configuration is not recommended. **6.** 2933 MHz memory is supported by 2nd Generation Intel Xeon Scalable-SP (82xx/62xx series) processors only. **7.** The memory capacity support will differ according to the processor SKUs.

Memory Installation Sequence

Memory modules for this motherboard are 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: **1.** 2933 MHz memory support in two-DIMMs per-channel (2DPC) configuration can be achieved by using memory purchased from Supermicro. **2.** 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 the Motherboard Using Intel Xeon Scalable-SP and 2nd Gen Intel Xeon Scalable-SP Processors

Memory Population Table for the X11DP Motherboard w/24 DIMM Slots Onboard	
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-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/P1-DIMMD1/P1-DIMME1/P1-DIMMF1
1 CPU & 8 DIMMs	CPU1: P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1
1 CPU & 9 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD1/P1-DIMME1/P1-DIMMF1
1 CPU & 10 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF1
1 CPU & 11 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF1
1 CPU & 12 DIMMs	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF2/P1-DIMMF1
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	CPU1: P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1 CPU2: P2-DIMMC1/P2-DIMMB1/P2-DIMMA1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1
2 CPUs & 16 DIMMs	CPU1: P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1 CPU2: P2-DIMMB1/P2-DIMMB2/P2-DIMMA1/P2-DIMMA2/P2-DIMMD2/P2-DIMMD1/P2-DIMME2/P2-DIMME1
2 CPUs & 18 DIMMs	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF2/P1-DIMMF1 CPU2: P2-DIMMC1/P2-DIMMB1/P2-DIMMA1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1
2 CPUs & 20 DIMMs	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF2/P1-DIMMF1 CPU2: P2-DIMMB1/P2-DIMMB2/P2-DIMMA1/P2-DIMMA2/P2-DIMMD2/P2-DIMMD1/P2-DIMME2/P2-DIMME1
2 CPUs & 22 DIMMs (Unbalanced: not recommended)	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF1 CPU2: P2-DIMMC1/P2-DIMMC2/P2-DIMMB1/P2-DIMMB2/P2-DIMMA1/P2-DIMMA2/ P2-DIMMD2/P2-DIMMD1/P2-DIMME2/P2-DIMME1/P2-DIMMF1
2 CPUs & 24 DIMMs	CPU1: P1-DIMMC1/P1-DIMMC2/P1-DIMMB1/P1-DIMMB2/P1-DIMMA1/P1-DIMMA2/ P1-DIMMD2/P1-DIMMD1/P1-DIMME2/P1-DIMME1/P1-DIMMF2/P1-DIMMF1 CPU2: P2-DIMMC1/P2-DIMMC2/P2-DIMMB1/P2-DIMMB2/P2-DIMMA1/P2-DIMMA2/ P2-DIMMD2/P2-DIMMD1/P2-DIMME2/P2-DIMME1/P2-DIMMF2/P2-DIMMF1

Note: Please refer to the Memory Configuration User Guide for the X11 UP/DP/MP Motherboards that is posted on our website for detailed 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 (82xx/62xx/52xx/42xx series) processors support DCPMM memory.

Symmetric Population within 1 CPU Socket													
Modes	**P1-DIMMF1**	**P1-DIMMF2**	**P1-DIMME1**	**P1-DIMME2**	**P1-DIMMD1**	**P1-DIMMD2**	**P1-DIMMA2**	**P1-DIMMA1**	**P1-DIMMB2**	**P1-DIMMB1**	**P1-DIMMC2**	**P1-DIMMC1**	**Channel Config.**
AD	DRAM1	***DCPMM***	DRAM1	***DCPMM***	DRAM1	***DCPMM***	***DCPMM***	DRAM1	***DCPMM***	DRAM1	***DCPMM***	DRAM1	**2-2-2**
MM	DRAM1	***DCPMM***	DRAM1	***DCPMM***	DRAM1	***DCPMM***	***DCPMM***	DRAM1	***DCPMM***	DRAM1	***DCPMM***	DRAM1	**2-2-2**
AD + MM	DRAM3	***DCPMM***	DRAM3	***DCPMM***	DRAM3	***DCPMM***	***DCPMM***	DRAM3	***DCPMM***	DRAM3	***DCPMM***	DRAM3	**2-2-2**
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	DRAM1	-	DRAM1	***DCPMM***	DRAM1	***DCPMM***	***DCPMM***	DRAM1	***DCPMM***	DRAM1	-	DRAM1	**2-2-1**
MM	DRAM1	-	DRAM1	***DCPMM***	DRAM1	***DCPMM***	***DCPMM***	DRAM1	***DCPMM***	DRAM1	-	DRAM1	**2-2-1**
AD + MM	DRAM3	-	DRAM3	***DCPMM***	DRAM3	***DCPMM***	***DCPMM***	DRAM3	***DCPMM***	DRAM3	-	DRAM3	**2-2-1**
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**
AD	***DCPMM***	-	DRAM1	DRAM1	DRAM1	DRAM1	DRAM1	DRAM1	DRAM1	DRAM1	-	***DCPMM***	**2-2-1**

Asymmetric Population within 1 CPU Socket													
Modes	**P1-DIMMF1**	**P1-DIMMF2**	**P1-DIMME1**	**P1-DIMME2**	**P1-DIMMD1**	**P1-DIMMD2**	**P1-DIMMA2**	**P1-DIMMA1**	**P1-DIMMB2**	**P1-DIMMB1**	**P1-DIMMC2**	**P1-DIMMC1**	**Channel Config.**
AD	DRAM1	-	DRAM1	-	DRAM1	-	***DCPMM***	DRAM1	-	DRAM1	-	DRAM1	**2/1-1-1**
AD*	DRAM1	-	DRAM1	-	DRAM1	-	***DCPMM***	DRAM1	-	DRAM1	-	DRAM1	**2/1-1-1**

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.

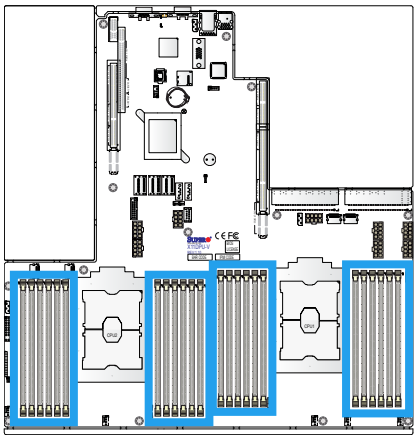
Legend (for the first two tables above)	
Capacity	
DCPMM	Any Capacity (Uniformly for all channels for a given configuration)

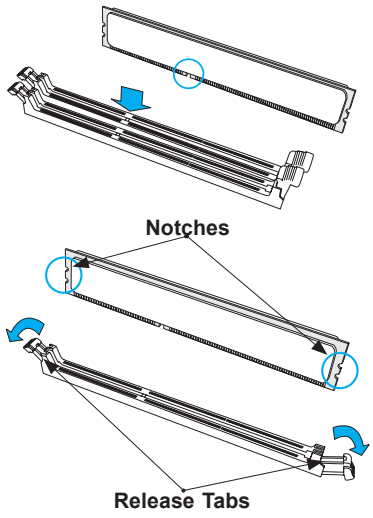
- * 2nd socket has no DCPMM DIMM
- For MM, general NM/FM ratio is between 1:4 and 1:16. Excessive capacity for FM can be used for AD. (NM = Near Memory; FM = Far Memory)
- For each individual population, rearrangements between channels are allowed as long as the resulting population is compliant with the PDG rules for 2nd Gen Intel Xeon Scalable-SP (82xx/62xx/52xx/42xx 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

DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with P1-DIMM A1. For the system to work properly, please use memory modules of the same type and speed on the motherboard.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
3. Align the key of the DIMM module with the receptive point on the memory slot.
4. Align the notches on both ends of the module against the receptive points on the ends of the slot.
5. Use two thumbs together to press both ends of the module straight down into the slot until the module snaps into place.
6. Press the release tabs to the lock positions to secure the DIMM module into the slot.

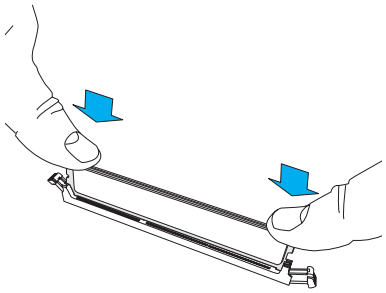


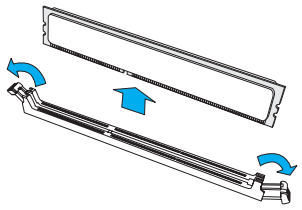


Insert the DIMM module into the memory slot.

DIMM Module Removal

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





Warnings: 1. Please do not use excessive force when pressing the release tabs on the ends of the DIMM socket to avoid causing any damage to the DIMM module or the DIMM socket. 2. Please handle DIMM modules with care. Carefully follow all the instructions given on Page 1 of this chapter to prevent ESD-related damages to your memory modules or components.

PCI Expansion Card Installation

The system includes two pre-installed riser cards (p/n RSC-R1UW-E8R and RSC-R1UW-2E16). Riser cards on chassis brackets allow you to add PCI expansion cards.

- RSC-R1UW-E8R supports one standard size PCI-E x8 expansion card.
- RSC-R1UW-2E16 supports two standard size PCI-E x16 expansion cards.

Installing PCI Expansion Cards

Perform the following steps to install an add-on card:

1. Remove power from the system as described in Section 3.1.
2. Remove the chassis cover as described in Section 3.2.
3. Remove the bracket and sections of the chassis in the rear.
4. Insert the expansion card into a slot on the riser card while aligning the expansion card backplate with the open slot in the rear of the chassis.
5. Insert the riser card into the motherboard expansion slot while aligning the riser card bracket with the rear of the chassis. The riser card bracket is toolless and has pins that snap into holes on the rear of the chassis.

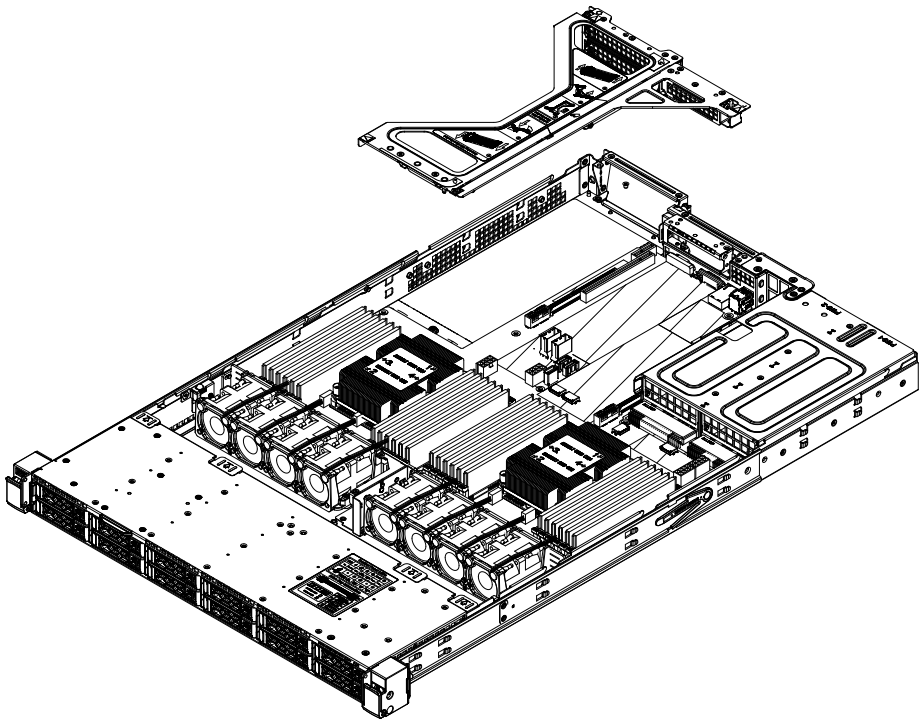


Figure 3-10. Riser Card Bracket and Expansion Slots

Internal Expansion Card

The Ultra riser card that holds your LAN ports also offers another internal low profile card slot for Supermicro SAS only.

Supermicro SAS Cards	
Part Number	**Description**
AOC-S3008L-L8e (8-port HBA)	Std LP, 8 internal ports, 12 Gb/s per port, Gen 3, 122HDD, HBA
AOC-S3008L-L8i (8-port SW RAID)	Std LP, 8 internal ports, 12 Gb/s per port, Gen 3, 63HDD, RAID 0, 1, 1E
AOC-S3108L-H8iR (8-port HW RAID)	Std LP, 8 internal ports, 12 Gb/s per port, Gen 3, 240HDD, RAID 0, 1, 5, 6, 10, 50, 60
AOC-S3108L-H8iR-16DD (8-port HW RAID)	Std LP, 8 internal ports, 12 Gb/s per port, Gen 3, 16HDD, RAID 0, 1, 5, 6, 10, 50, 60

Installing the Internal Expansion Card

1. Remove the cover.
2. Locate the mounting bracket in the accessories box. Mount the bracket to hold the SAS expansion card onto the Ultra riser card.

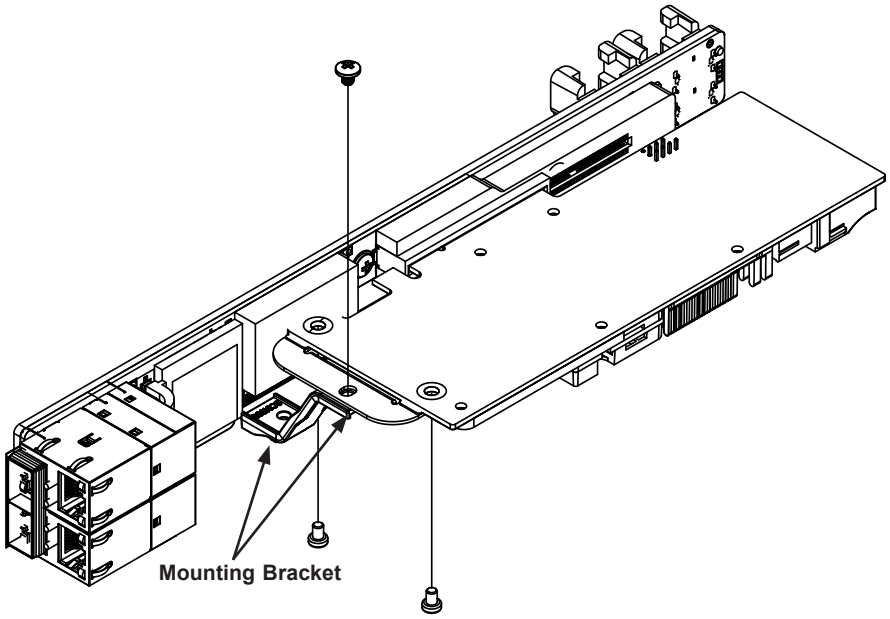


Figure 3-11. Bracket for Mounting an Internal Expansion Card on the Ultra Riser Card
(four port Ultra card shown in this example)

3. Insert the SAS card into the expansion slot on the Ultra riser card and secure it to the bracket.

Removing the Ultra Riser Card

To remove the Ultra riser card, use two hands. One hand lifts the mylar release tab and the other hand lifts at the PCI-E slot at the same time. **Caution**: Lifting at only one of these points may cause damage to connectors on the motherboard.

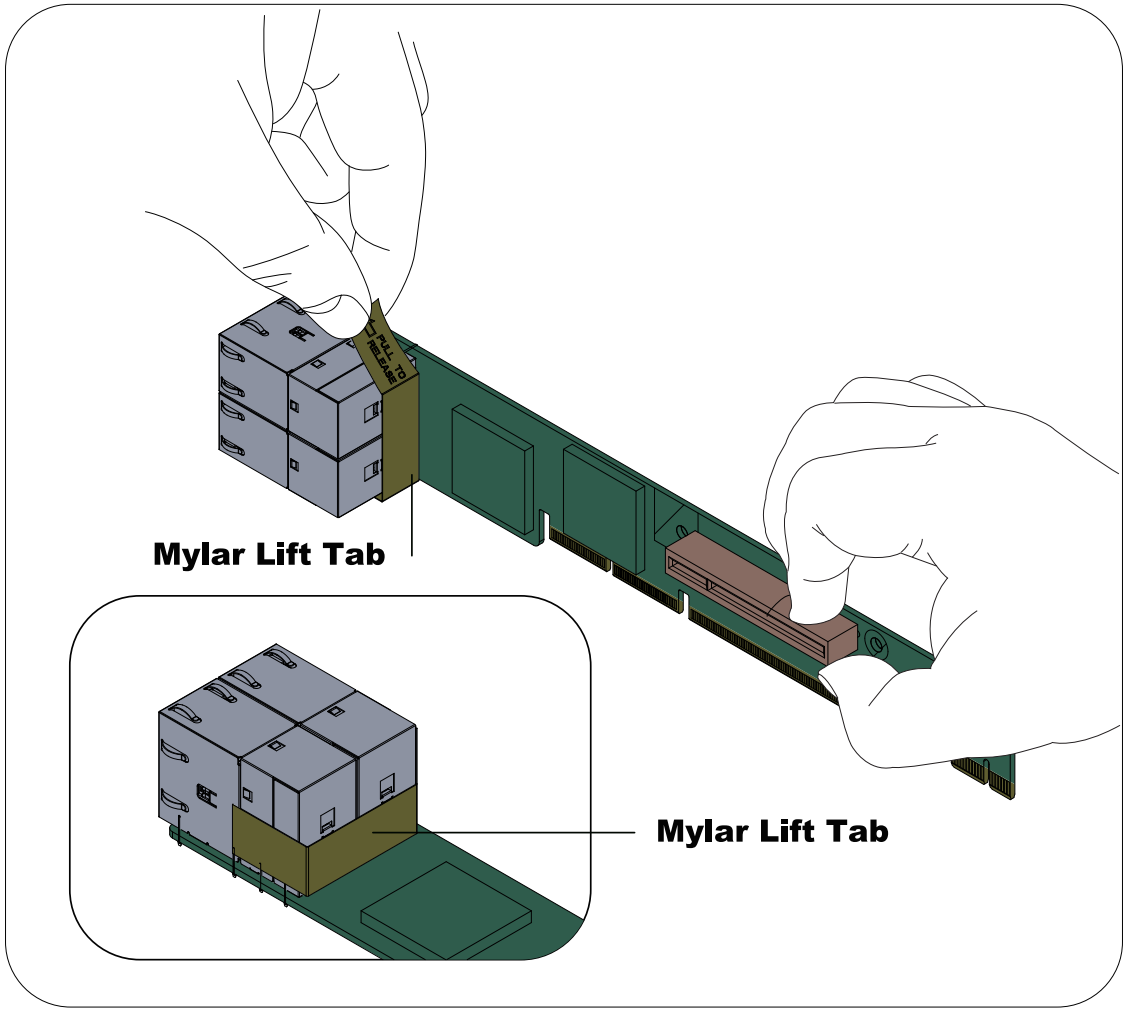


Figure 3-12. Removing the Ultra Riser Card

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: Please 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.

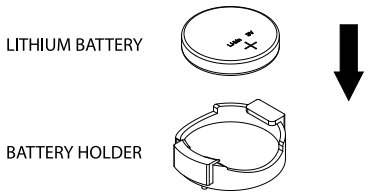


Figure 3-13. Installing the Onboard Battery

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

3.4 Chassis Components

Hard Drives

The 1029U-TN12RV supports 12 hot-swappable 2.5" hard drives. The hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. System power may remain on when removing carriers with drives installed. These carriers also help promote proper airflow for the drive bays. For this reason, even empty carriers without drives installed must remain in the chassis..

Removing a Hot-Swap Drive Carrier

1. Push the release button on the carrier. This extends the drive carrier handle.
2. Swing the handle fully out.
3. Grasp the handle and use it to pull the drive carrier out of its bay.

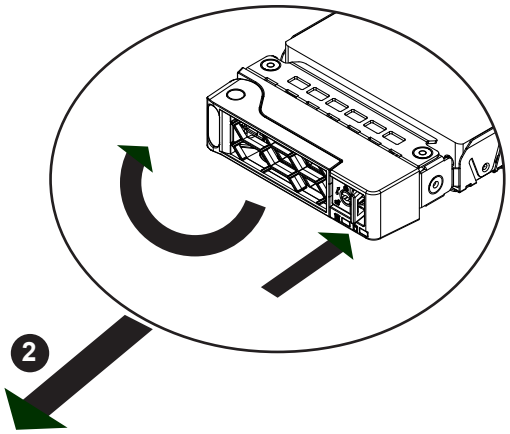


Figure 3-14. Removing a Drive Carrier

Mounting a Drive in a Drive Carrier

1. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier. Place the drive in the carrier so that the screw holes line up.
2. The drive carrier has a tool-less design but you also have the option to secure the drive to the carrier with four M3 screws. These screws are included in the chassis accessory box.
3. Insert the drive carrier with the disk drive into its bay, keeping the carrier oriented so that the hard drive is on the top of the carrier and the release button is on the right side. When the carrier reaches the rear of the bay, the release handle will retract.
4. Push the handle in until it clicks into its locked position

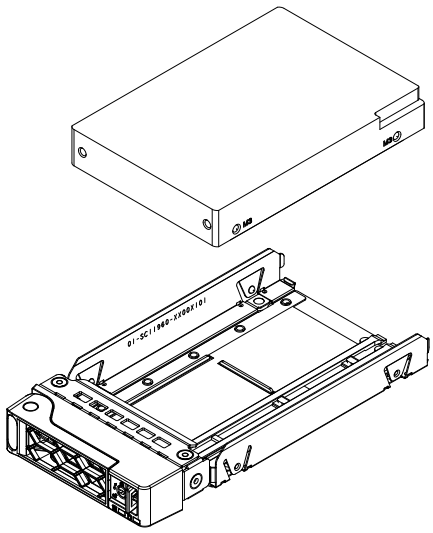


Figure 3-15. Removing a Dummy Drive from the Carrier

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 https://www.supermicro.com/en/products/system/1U/1029/SYS-1029U-TN12RV.cfm

Hot-Swap for NVMe Drives

An NVMe drive can be inserted and replaced using IPMI.

Note: If you are using VROC, see the VROC appendix in this manual instead.

Ejecting a Drive

1. **IPMI > Server Health > NVMe SSD**
2. Select Device, Group and Slot, and click **Eject**. After ejecting, the drive Status LED indicator turns green.
3. Remove the drive.

Note that *Device* and *Group* are categorized by the CPLD design architecture. The 1029U-TN12RV server has one Device and one Group.

Slot is the slot number on which the NVMe drives are mounted.

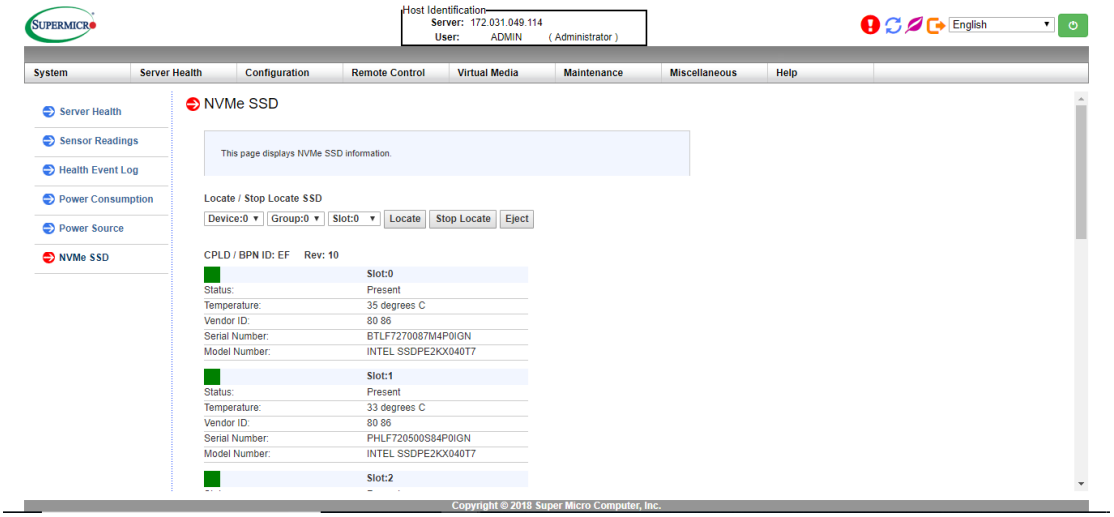


Figure 3-16. IPMI Screenshot

Replacing the Drive

1. Insert the replacement drive.
2. **IPMI > Server Health > NVMe SSD**
3. Select Device, Group and slot and click **Insert**. The drive Status LED indicator flashes red, then turns off. The Activity LED turns blue.

Checking the Temperature of an NVMe Drive

There are two ways to check using IPMI.

Checking a Drive

- **IPMI > Server Health > NVMe SSD –** Shows the temperatures of all NVMe drives, as in Figure 3-14.
- **IPMI > Server Health > Sensor Reading > NVME_SSD –** Shows the single highest temperature among all the NVMe drives.

System Cooling

Eight 4-cm counter-rotating fans provide the cooling for the system. Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels.

Installing Fans

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

Replacing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan requires changing. (Never run the server for an extended period of time with the chassis open.)
2. Power down the system as described in Section 3.1.
3. Next, remove the top chassis cover as described in Section 3.2.
4. Unplug the fan cable from the motherboard and remove the failed fan from the chassis.
5. Replace the failed fan with an identical 4cm fan, available from Supermicro.
6. Push the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
7. Reposition the fan housing back over the two mounting posts in the system, then reconnect the fan wires to the same fan headers on the motherboard.
8. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the chassis cover.

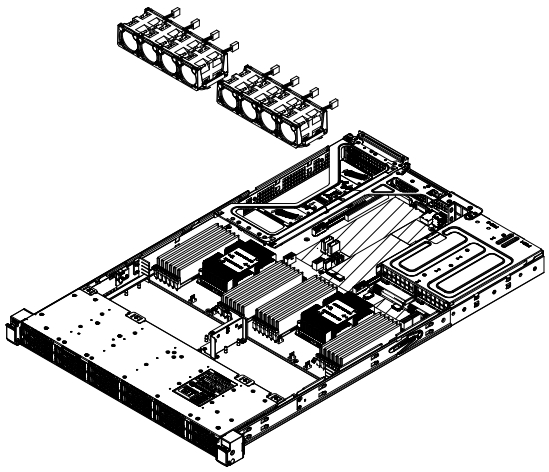


Figure 3-17. System Fans

Installing the Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The motherboard air shroud does not require screws to install. Position the air shroud in the chassis as illustrated below.

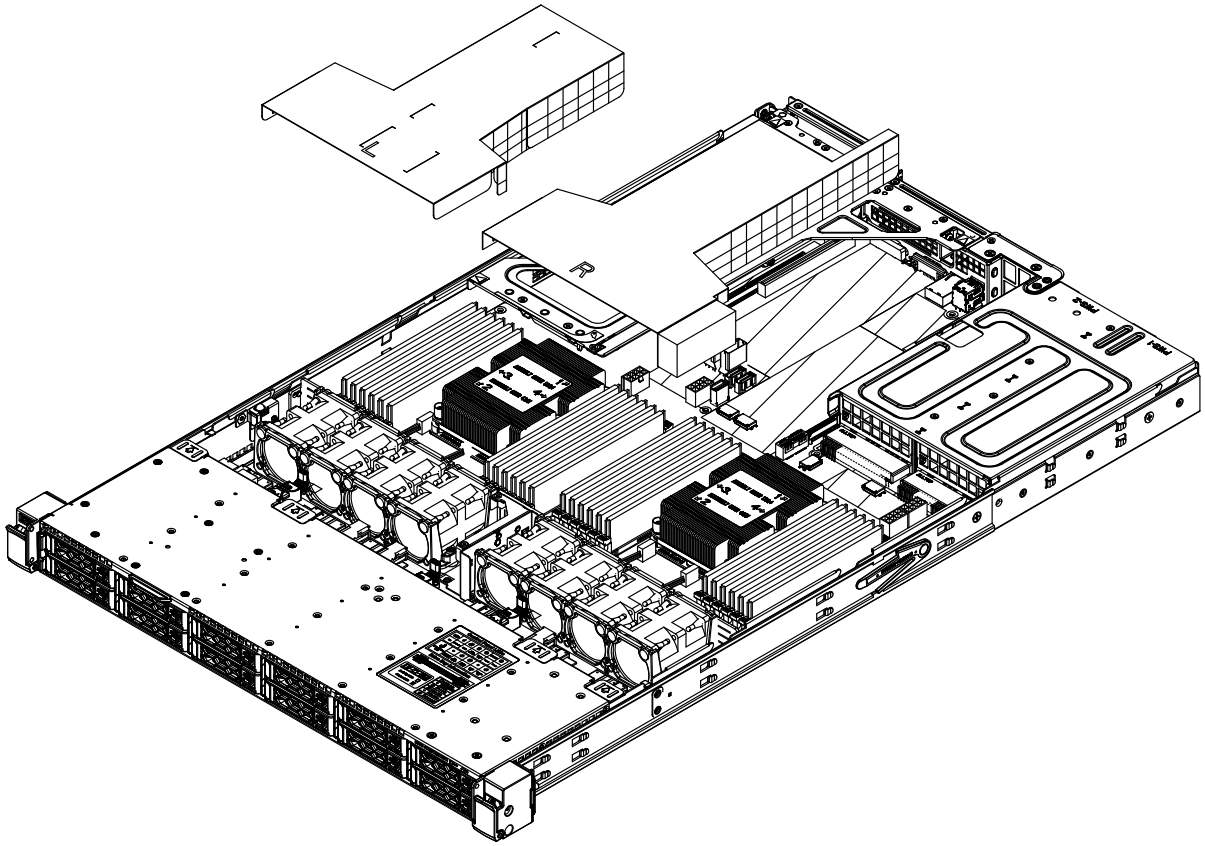


Figure 3-18. Installing the Air Shroud

Power Supply

The 1029U-TN12RV has a redundant 1200W power supply, consisting of two power supply modules. These power supplied are auto-switching capable, which enables it to automatically sense and operate with a 100V to 240V input voltage.

Power Supply Failure

If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The Power Fail LED will illuminate and remain on until the failed unit has been replaced. Replacement units can be ordered directly from Supermicro.

Replacing the Power Supply

Begin by removing power from the failed power supply.

1. Releasing the retention screws that secure the chassis to the rack, then grasp the two handles on either side and pull the system straight out until it locks (you will hear a "click").
2. Unplug the AC power cord from the failed power supply module.
3. Push in the locking tab at the back of the module to release it.
4. Pull the unit straight out of the chassis.
5. Insert the new unit into the chassis, pushing until it clicks.
6. Plug the AC power cord back into the module.

Chapter 4

Motherboard Connections

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

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

4.1 Power Connections

There are several different power connectors on the X11DPU-V as described below.

- SMCI-proprietary Power Connectors (PSU1/PSU2)
- 8-pin HDD Backplane Power Connectors (BP PWR 1/2/3/4)

SMCI-Propietary Main Power Supply Units

Two SMCI-proprietary main power supply units are located at PSU1 and PSU2. Connect appropriate power supply units to these two headers to provide adequate power to your system.

Backplane Power Connectors & GPU Power Connectors

In addition to the two SMCI-proprietary main power supply units located at PSU1/PSU2, eight 8-pin power connectors are also located on the motherboard to supply power to onboard devices. GPU Power Connectors 1~4 are used for GPU devices, while BP PWR 1~4 are used for backplane devices. Connect these connectors to your power supply to provide adequate power to your onboard devices.

Warning: To provide adequate power to your system and to avoid damaging the power supply or the motherboard, be sure to connect all power connectors mentioned above to the power supply. Failure in doing so may void the manufacturer warranty on your power supply and motherboard.

8-pin GPU Power Pin Definitions	
Pin#	Definition
1 - 4	Ground
5 - 8	+12V

8-pin Backplane Power Pin Definitions	
Pin#	Definition
1 - 4	Ground
5 - 6	+12V
7 - 8	+5V

4.2 Headers and Connectors

Fan Headers

There are eight fan headers on the motherboard. These are 4-pin fan headers; pins 1-3 are backward compatible with traditional 3-pin fans. The onboard fan speeds are monitored and controlled by BMC. Use 4-pin fan headers for fan speed control support.

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 SMCI (optional). A TPM/Port 80 connector is a security device that supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. See the table below for pin definitions.

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

NVMe SMBus Headers

NVMe SMBus (I^2C) headers (JNVI^{2}C1/JNVI^{2}C2), used for PCI-E SMBus clock and data connections, provide hot-plug support via a dedicated SMBus interface. This feature is only available for a Supermicro complete system with an SMCI-proprietary NVMe add-on card and cable installed. See the table below for pin definitions.

NVMe SMBus Header Pin Definitions	
Pin#	**Definition**
1	Data
2	Ground
3	Clock
4	VCCIO

T-SGPIO3 Header

A Serial General Purpose Input/Output header (T-SGPIO3) is located on the motherboard. This header is used to communicate with the enclosure management chip on the backplane. See the table below for pin definitions.

SGPIO Header Pin Definitions

Pin#	Definition	Pin#	Definition
1	NC	2	NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

Disk-On-Module Power Connector

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

DOM Power Pin Definitions

Pin#	Definition
1	5V
2	Ground
3	Ground

4-pin BMC External I2C Header

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect a cable to this header to use the IPMB I^2C connection on your system. See the table below for pin definitions.

External I^2C Header Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Connect an appropriate cable from JL1 to the chassis so that you can be informed of a chassis intrusion (via IPMI) when the system case is opened. Refer to the table below for pin definitions.

Chassis Intrusion Pin Definitions

Pins	Definition
1	Intrusion Input
2	Ground

I-SATA 3.0 and S-SATA 3.0 Ports

The X11DPU-V has eight I-SATA 3.0 ports (I-SATA0-3, I-SATA4-7) which are supported by the Intel® C621 chipset. In addition, it also has six S-SATA 3.0 ports (S-SATA0-3, S-SATA4/S-SATA5) that are supported by the Intel® SCU. S-SATA4/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 need external power cables.

SATA 3.0 Port Pin Definitions

Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground

RAID Key Header

A H/W RAID key is required to install on this RAID Key header for supporting RAID settings for NVMe connections. Please contact Supermicro at www.supermicro.com to purchase the H/W RAID key for this header.

RAID Key Header Pin Definitions

Pin#	Definition
1	Ground
2	RAID_KEY_PU
3	Ground
4	PCH_RAID_KEY

Front VGA Port

One VGA port is located at JVGA2 on the motherboard. This VGA port provides front accessible video display.

Internal Speaker/Buzzer

The Internal Speaker/Buzzer (SP1) is used to provide audible indications for various beep codes. See the table below for pin definitions.

Internal Buzzer Pin Definitions

Pin#	Definition	
1	Pos (+)	Beep In
2	Neg (-)	Alarm Speaker

4.3 Rear I/O Ports

See the figure below for the locations and descriptions of the various I/O ports on the rear of the motherboard.

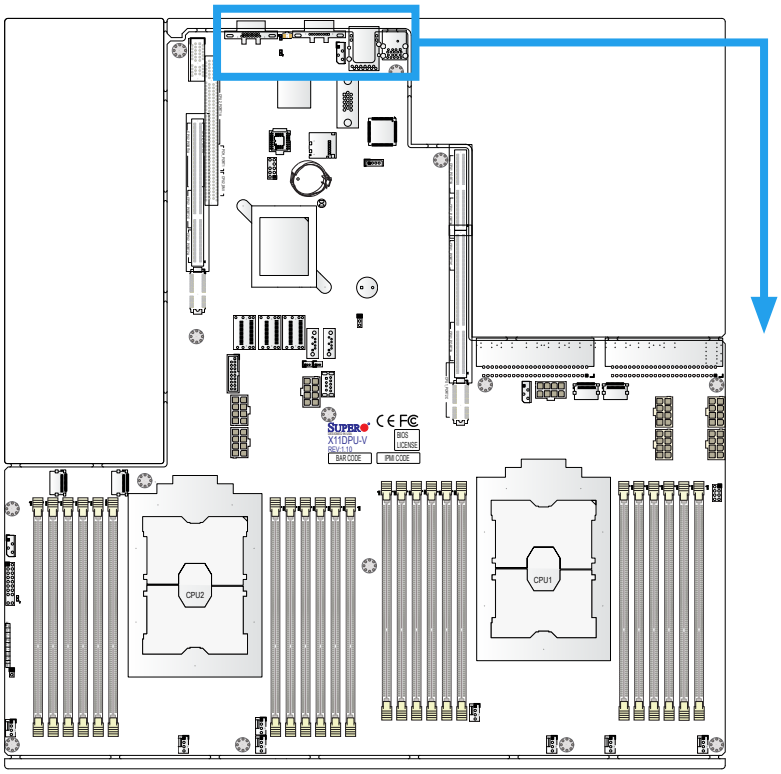
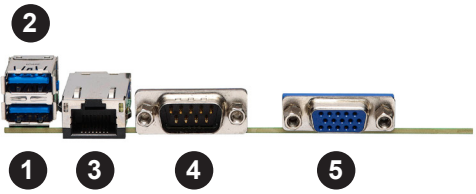


Figure 4-1. I/O Port Locations and Definitions



Rear I/O Ports	
#	**Description**
1.	USB0 (3.0)
2.	USB1 (3.0)
3.	Dedicated BMC LAN
4.	COM Port 1
5.	VGA

VGA Port

One VGA port is located next to COM Port 1 on the I/O back panel. Use this connection for VGA display.

Serial Port

There is one COM port (COM1) on the I/O back panel on the motherboard. This COM port provides serial communication support. See the table below for pin definitions.

COM Port Pin Definitions

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

Universal Serial Bus (USB) Ports

There are two USB 3.0 ports (USB0/USB1) located on the I/O back panel. The motherboard also has a front access USB 3.0 header that supports two USB connections (USB3/USB4). A USB Type A header (USB2), located next to GPU PWR2, provides also USB 3.0 support. The onboard headers can be used to provide front side USB access with a cable (not included).

Back Panel USB (3.0) Pin Definitions

Pin#	Definition	Pin#	Definition
1	VBUS	10	Power
2	D-	11	USB 2.0 Differential Pair
3	D+	12	
4	Ground	13	Ground of PWR Return
5	StdA_SSRX-	14	SuperSpeed Receiver
6	StdA_SSRX+	15	Differential Pair
7	GND_DRAIN	16	Ground for Signal Return
8	StdA_SSTX-	17	SuperSpeed Transmitter
9	StdA_SSTX+	18	Differential Pair

Front Panel USB (3.0) Pin Definitions

Pin#	Definition	Pin#	Definition
1	VBUS	19	Power
2	Stda_SSRX-	18	USB3_RN
3	Stda_SSRX+	17	USB3_RP
4	Ground	16	Ground
5	Stda_SSTX-	15	USB3_TN
6	Stda_SSTX+	14	USB3_TP
7	Ground	13	Ground
8	D-	12	USB_N
9	D+	11	USB_P
10		x	

Unit Identifier Switch/UID LED Indicator

A rear Unit Identifier (UID) switch (JUIDB2) and an rear LED Indicator (LED1) are located on the rear side of the system. The front UID LED is located on Pin 7 of the Front Control Panel (JF1). When you press the UID switch, both front and rear UID LED indicators will be turned on. Press the UID switch again to turn off the LEDs. The UID Indicators provide easy identification of a system unit that may be in need of service.

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

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

NVM Express Connections

Four NVM Express ports are located on the motherboard. These NVM ports provide PCI-Exp. 3.0 x4 connections. P1_NVMe0 and P1_NVMe1 are supported by CPU1. P2_NVMe0 and P1_NVMe1 are supported by CPU2. The NVM Express ports provide high-speed low-latency connections directly from the CPU to NVMe Solid State (SSD) drives. This greatly increases SSD data-throughput performance and significantly reduces PCI-E latency by simplifying driver/software requirements resulting from direct PCI-E interface from the CPU to the NVMe SSD drives.

Note: When installing an NVMe device on a motherboard, please be sure to connect the first NVMe port (P1_NVMe0) first for your system to work properly.

4.4 Front Control Panel

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

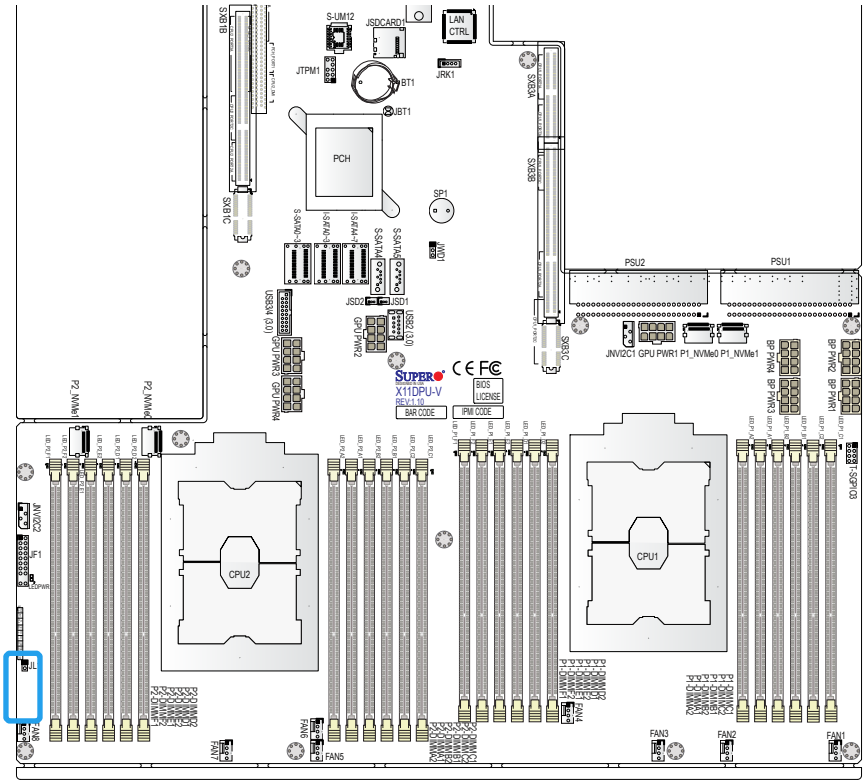


Figure 4-2. JF1 Header Pins

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	Power Fail LED
UID LED	○	○	OH/PWR Fail/Fan Fail LED
3.3V Stby	○	○	NIC2 Active LED
3.3V Stby	○	○	NIC1 Active LED
3.3V Stby	○	○	HDD LED
3.3V	○	○	PWR LED
X	○	○	X
NMI	○	○	Ground
	19	20	

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table below for pin definitions.

NMI Button Pin Definitions (JF1)

Pin#	Definition
19	NMI
20	Ground

Power LED

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

Power LED Pin Definitions (JF1)

Pin#	Definition
15	Vcc
16	FP PWR LED

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable here to indicate the status of HDD-related activities, including IDE, SATA activities. See the table below for pin definitions.

HDD LED Pin Definitions (JF1)

Pin#	Definition
13	Vcc
14	HDD LED

NIC1/NIC2 (LAN1/LAN2) LED

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

LAN1/LAN2 LED Pin Definitions (JF1)

Pin#	Definition
10	NIC2 Activity LED
12	NIC1 Activity LED

Power Fail LED

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

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

UID/OH/Fan Fail/PWR Fail LED

Connect an LED cable to pins 7 and 8 of the Front Control Panel (JF1) to use UID/Overheat/ Fan Fail/Power Fail LED connections. The LED on pin 8 provides warnings of overheat, power failure or fan failure. Refer to the tables below for details.

Information LED-UID/OH/PWR Fail/Fan Fail LED Pin Definitions (Pin 7 & Pin 8 of JF1)	
Status	**Description**
Solid red	An overheat condition has occurred. (This may be caused by cable congestion).
Blinking red (1Hz)	Fan failure: check for an inoperative fan.
Blinking red (0.25Hz)	Power failure: check for a non-operational power supply
Solid blue	Local UID is activated. Use this function to locate a unit in a rack mount environment that might be in need of service.
Blinking blue (300 msec)	Remote UID is on. Use this function to identify a unit from a remote location that might be in need of service.

Reset Button

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

Reset Button Pin Definitions (JF1)	
Pin#	**Definition**
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button. To turn off the power in the suspend mode, press the button for at least 4 seconds. Refer to the table below for pin definitions.

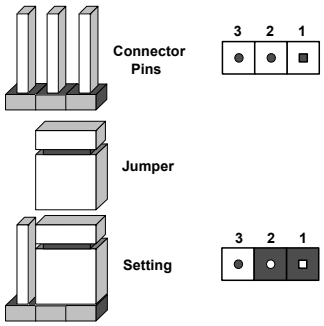
Power Button Pin Definitions (JF1)	
Pin#	**Definition**
1	Signal
2	Ground

4.5 Jumpers

Explanation of Jumpers

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

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



CMOS Clear

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

To Clear CMOS

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

Notes: Clearing CMOS will also clear all passwords.

Do not use the PW_ON connector to clear CMOS.



Watch Dog

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

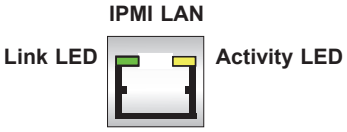
Note: When Watch Dog is enabled, the user needs to write their own application software to disable it.

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

4.6 LED Indicators

Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is also included on the motherboard. The amber LED on the right of the IPMI LAN port indicates activity, while the green LED on the left indicates the speed of the connection. See the table below for more information.



IPMI LAN LEDs		
Color	**Status**	**Definition**
Off	Off	No Connection
Green: Solid	Link/Speed (Left)	100 Mb/s
Amber Blinking	Activity (Right)	Active

Unit ID LED

A rear UID LED indicator at LED1 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

Onboard Power LED

LEDPWR is an Onboard Power LED. When this LED is lit, it means that power is present on the motherboard. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

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

BMC Heartbeat LED

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

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

Memory Fault Indication LEDs

The memory fault LEDs provide visual notification to a service technician which memory DIMM slot(s) are at fault due to un-correctable memory errors during POST (Power-On Self-Test). A memory fault LED will remain "on" even after system reboots (or repeated "power cycling") until it is reset manually by the technician using the BIOS setup menu to turn it off. This feature allows the technician to easily identify and replace any bad DIMMs that may be at fault in the system.

Memory Fault LED Indicators		
LED	**Description**	**Status**
LED_P1_A1-A2	Memory Fault LEDs for Memory Module P1_A1-A2	Red: on (memory errors)
LED_P1_B1-B2	Memory Fault LEDs for Memory Module P1_B1-B2	Red: on (memory errors)
LED_P1_C1-C2	Memory Fault LEDs for Memory Module P1_C1-C2	Red: on (memory errors)
LED_P1_D1-D2	Memory Fault LEDs for Memory Module P1_D1-D2	Red: on (memory errors)
LED_P1_E1-E2	Memory Fault LEDs for Memory Module P1_E1-E2	Red: on (memory errors)
LED_P1_F1-F2	Memory Fault LEDs for Memory Module P1_F1-F2	Red: on (memory errors)
LED_P2_A1-A2	Memory Fault LEDs for Memory Module P2_A1-A2	Red: on (memory errors)
LED_P2_B1-B2	Memory Fault LEDs for Memory Module P2_B1-B2	Red: on (memory errors)
LED_P2_C1-C2	Memory Fault LEDs for Memory Module P2_C1-C2	Red: on (memory errors)
LED_P2_D1-D2	Memory Fault LEDs for Memory Module P2_D1-D2	Red: on (memory errors)
LED_P2_E1-E2	Memory Fault LEDs for Memory Module P2_E1-E2	Red: on (memory errors)
LED_P2_F1-F2	Memory Fault LEDs for Memory Module P2_F1-F2	Red: on (memory errors)

Chapter 5

Software

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

5.1 Microsoft Windows OS Installation

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

Installing the OS

1. Create a method to access the MS Windows installation ISO file. That can be a USB flash or media drive.
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 clicking **F11** during the system startup.

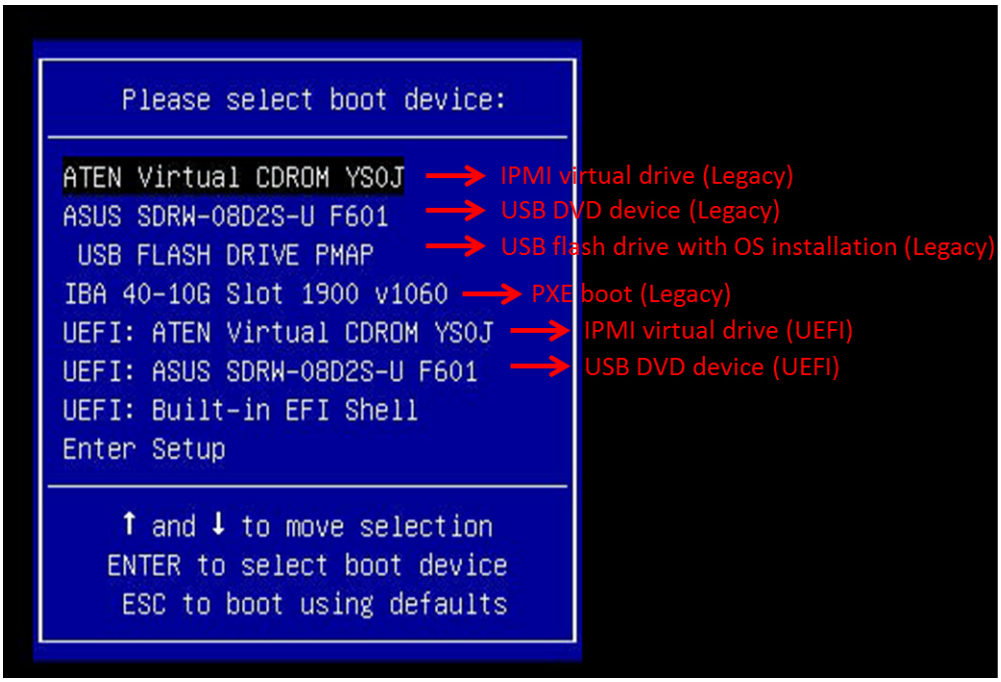


Figure 5-1. Select Boot Device

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.

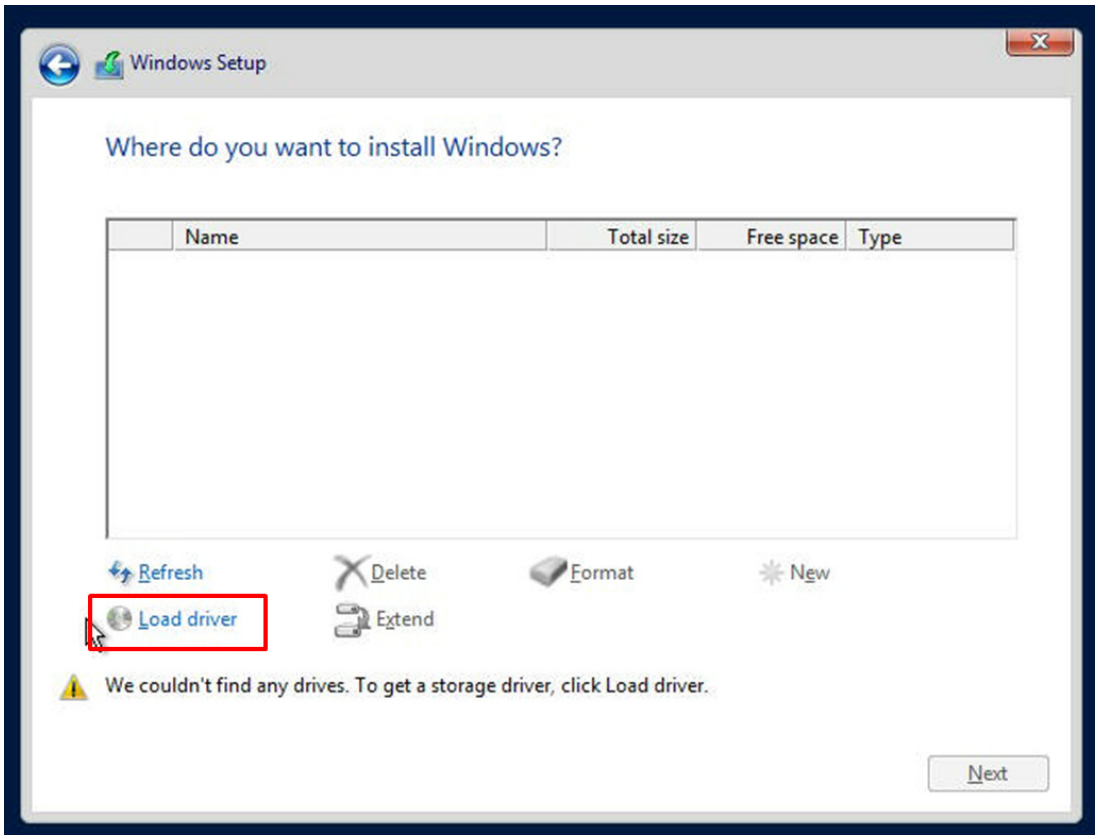


Figure 5-2. Load Driver Link

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 or media drive. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro website at https://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.

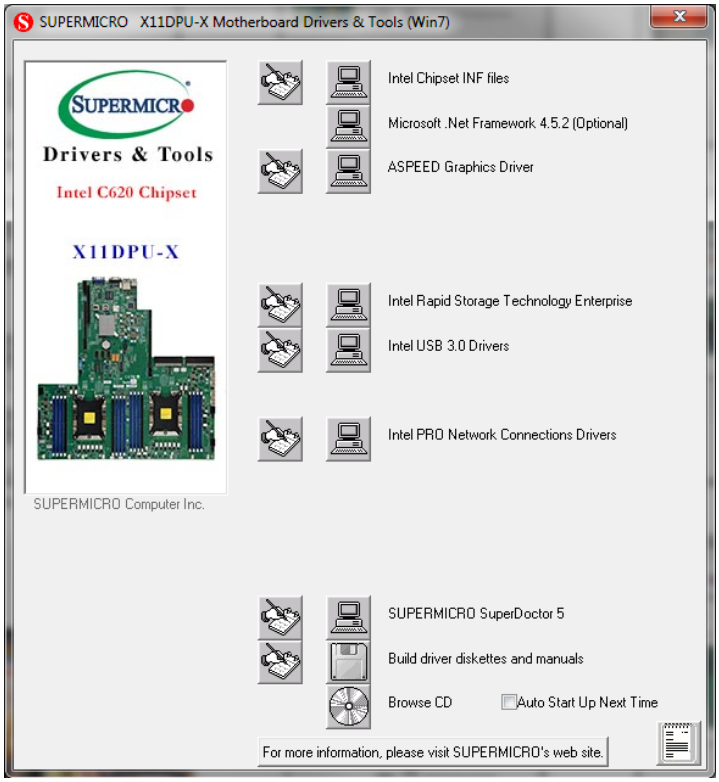


Figure 5-3. Driver & Tool Installation Screen

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.

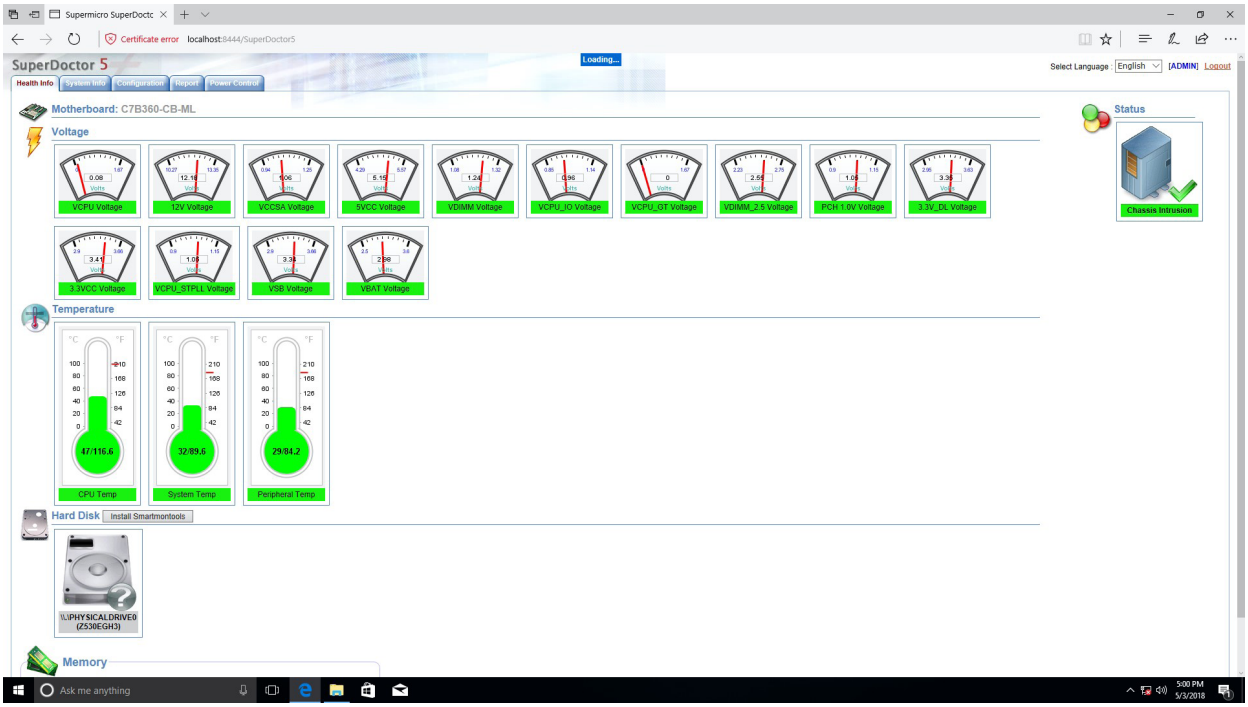


Figure 5-4. SuperDoctor 5 Interface Display Screen (Health Information)

5.4 BMC

The motherboard provides remote access, monitoring and management through the baseboard management controller (BMC) and other management controllers distributed among different system modules. There are several BIOS settings that are related to BMC. For general documentation and information on BMC, visit our website at:

www.supermicro.com/en/solutions/management-software/bmc-resources

BMC ADMIN User Password

For security, each system is assigned a unique default BMC password for the ADMIN user. This can be found on a sticker on the chassis and a sticker on the motherboard. The sticker also displays the BMC MAC address. If necessary, the password can be reset using the Supermicro IPMICFG tool.



Figure 5-5. BMC Password Label

See Chapter 1 for the locations of the labels.

Chapter 6

UEFI BIOS

6.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the X11DPU-V 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, press the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.) Each main BIOS menu option is described in this manual.

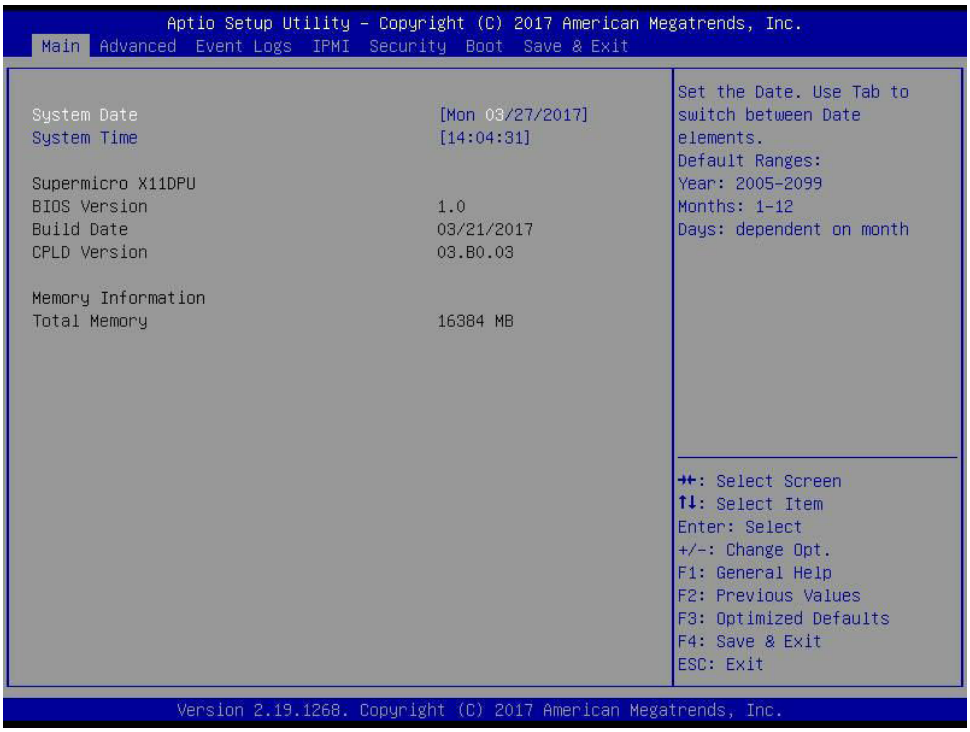
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is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

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

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

6.2 Main Setup

When you first enter the AMI BIOS setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS setup screen is shown below. 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 X11DPU

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.

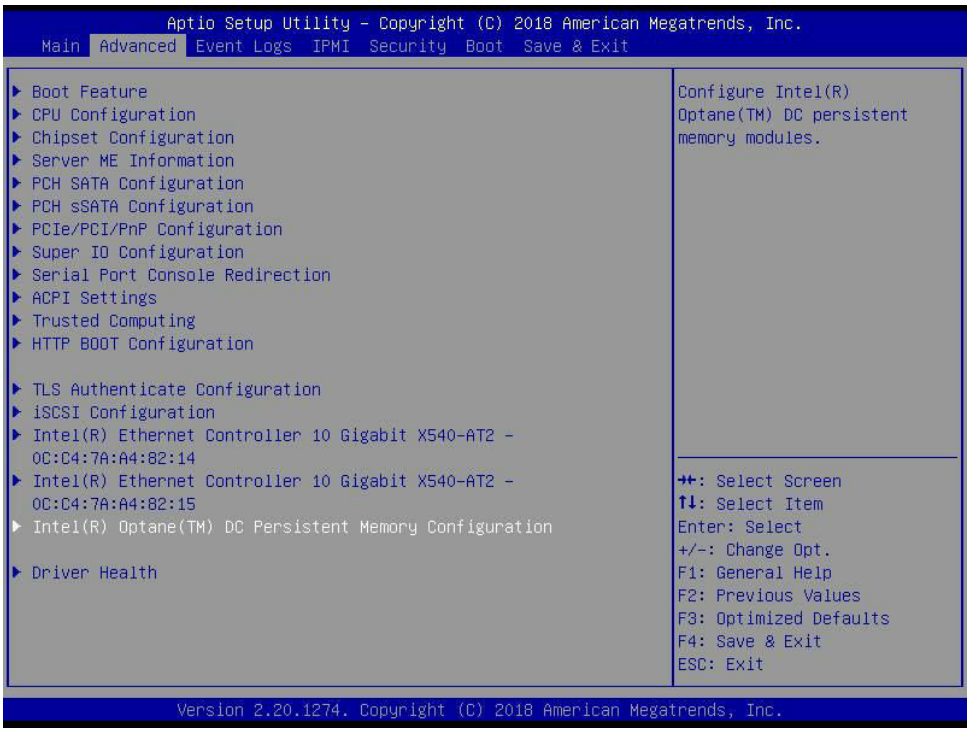
Memory Information

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 Setup 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.

Throttle on Power Fail

Throttling improves reliability and reduces power consumption in the processor via automatic voltage control during processor idle states. Select Enabled to decrease the system power by throttling CPU frequency when one power supply is failed. The options are **Disabled** and Enabled.

▶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 Ration
- Processor Min Ration
- 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**.

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

▶CPU P State Control

SpeedStep (Pstates)

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**.

Activate PBF (Available when SpeedStep is set to Enable)

Select Enable to enable Prioritized Base Frequency (PBF) feature support which will enhance CPU performance. The options are **Disable** and Enable.

Configure PBF (Available when Activate PBF is set to Enable)

Select Enable to allow the BIOS to configure high priority CPU cores as Prioritized Base Frequency (PBF) so that software programs do not have to configure the PBF (Prioritized Base Frequency) settings. The options are **Enable** and Disable.

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

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

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

Package C State

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

▶CPU T State Control

Software Controlled T-States

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 IIO
- 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 WViLF.

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.

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 NVMDIMM

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

Data Scrambling for DDR4

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

Enable ADR

Select Enable for ADR (Automatic Diagnostic Repository) support to enhance memory performance. The options are **Disable** and Enable.

Refresh Options

Use this feature to select the self refresh mode. The options are Accelerated Self Refresh and **2x Refresh**.

▶Memory Topology

The following information will be displayed: P1 DIMMA1/P1 DIMMB1/P1 DIMMC1/P1 DIMMD1/P1 DIMME1/P1 DIMMF1

▶Memory RAS (Reliability_Availability_Serviceability) Configuration

Memory RAS Configuration Setup

Use this submenu to configure the following Memory RAS settings.

Static Virtual Lockstep Mode

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

Mirror Mode

Use this feature to select the mirror mode. The options are **Disable**, Mirror Mode 1LM, and Mirror Mode 2LM. If this feature is set to Mirror Mode 1LM or Mirror Mode 2LM, the available memory capacity will be reduced by 50 percent.

UEFI ARM Mirror

Select Enable to support the UEFI-based address range mirroring with setup option. The options are **Disable** and Enable.

Memory Rank Sparing

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

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

Multi Rank Sparing

Use this feature to set the multiple rank sparing number. The default setting and the maximum is two ranks per channel. The options are One Rank and **Two Rank**.

Correctable Error Threshold

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

SDDC Plus One

Single Device Data Correction (SDDC) allows data to be reconstructed when one of the memory devices fails on a DIMM. Use this feature to enable the SDDC support. The options are **Disable** and Enable.

ADDDC Sparing

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

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this feature is set to Enable, read-and-write will be performed every 16K cycles per cache line if there is no delay caused by internal processing. The options are Disable and **Enable**.

Patrol Scrub Interval

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

▶IIO Configuration

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**.

MCP0 (IIO PCIe Br4)

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

MCP1 (IIO PCIe Br5)

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

▶P1_NVMe0

Link Speed

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

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size

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

▶P1_NVMe1

Link Speed

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

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size

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

▶AOC-URN4-m2TS NVME0 (Available when the device is detected by the system)

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s).

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size

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

▶AOC-URN4-m2TS NVME1 (Available when the device is detected by the system)

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s).

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size

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

▶AOC-URN4-m2TS NVME2 (Available when the device is detected by the system)

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s).

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size

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

▶AOC-URN4-m2TS NVME3 (Available when the device is detected by the system)

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s).

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size

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

▶AOC-URN4-m2TS SLOT1 (Available when the device is detected by the system)

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s).

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size

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

▶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**.

MCP0 (IIO PCIe Br4)

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

MCP1 (IIO PCIe Br5)

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

▶RSC-R1UW-E8R SLOT1

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s)..

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size

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

▶P2_NVMe0

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s)..

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size -

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

▶P2_NVMe1

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s)..

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size -

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

▶RSC-R1UW-2E16 SLOT1

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s)..

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size -

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

▶RSC-R1UW-2E16 SLOT2

Link Speed

This feature allows the user to select PCI-E support for the device installed in the system. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), and Gen 3 (8 GT/s)..

PCI-E Port Link Status

PCI-E Port Link Max

PCI-E Port Link Speed

PCI-E Port Max Payload Size -

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

▶IOAT (Intel® IO Acceleration) Configuration

Disable TPH

Select Yes to deactivate TLP Processing Hint support. The options are **No** and Yes.

Prioritize TPH

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

Relaxed Ordering

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

▶Intel® VT for Directed I/O (VT-d)

Intel® VT for Directed I/O (VT-d)

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

Interrupt Remapping

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

PassThrough DMA

Select Enable to use the Non-Isoch VT_D engine pass through DMA support. The options are **Enable** and Disable.

ATS

Select Enable to use the Non-Isoch VT_D engine ATS support. The options are **Enable** and Disable.

Posted Interrupt

Use this feature to enable VT_D posted interrupt. The options are **Enable** and Disable.

Coherency Support (Non-Isoch)

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

▶Intel® VMD for Volume Management Device on CPU1

VMD Config for PStack0

Intel® VMD for Volume Management Device

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

If the feature, Intel® VMD for Volume Management Device, is set to Enable, the following features will become available for user's configuration:

P1_NVMe0 VMD (Available when the device is detected by the system)

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

P1_NVMe1 VMD (Available when the device is detected by the system)

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

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

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

VMD Config for PStack1

Intel® VMD for Volume Management Device

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

If the feature, Intel® VMD for Volume Management Device, is set to Enable, the following features will become available for user's configuration:

AOC-URN4-m2TS NVME0 VMD (Available when the device is detected by the system)

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

AOC-URN4-m2TS NVME1 VMD (Available when the device is detected by the system)

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

AOC-URN4-m2TS NVME2 VMD (Available when the device is detected by the system)

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

AOC-URN4-m2TS NVME3 VMD (Available when the device is detected by the system)

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

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

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

VMD Config for PStack2

Intel® VMD for Volume Management Device

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

If the feature, Intel® VMD for Volume Management Device, is set to Enable, the following features will become available for user's configuration:

AOC-URN4-m2TS SLOT1 VMD (Available when the device is detected by the system)

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

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

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

▶Intel® VMD for Volume Management Device on CPU2

VMD Config for PStack0

Intel® VMD for Volume Management Device

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

If the feature, Intel® VMD for Volume Management Device, is set to Enable, the following features will become available for user's configuration:

RSC-R1UW-E8R SLOT1 VMD (Available when the device is detected by the system)

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

P2_NVMe0 VMD (Available when the device is detected by the system)

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

P2_NVMe1 VMD (Available when the device is detected by the system)

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

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

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

VMD Config for PStack1

Intel® VMD for Volume Management Device

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

If the feature, Intel® VMD for Volume Management Device, is set to Enable, the following features will become available for user's configuration:

RSC-R1UW-2E16 SLOT1 VMD (Available when the device is detected by the system)

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

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

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

VMD Config for PStack2

Intel® VMD for Volume Management Device

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

If the feature, Intel® VMD for Volume Management Device, is set to Enable, the following features will become available for user's configuration:

RSC-R1UW-2E16 SLOT2 VMD (Available when the device is detected by the system)

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

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

Use this feature to enable the hot plug support for PCIe root ports 3A~3D. 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**..

▶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

SATA Controller

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

Configure SATA as

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

SATA HDD Unlock

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

Aggressive Link Power Management

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

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

SATA Port 0~ Port 7

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

- Model number of drive and capacity
- Software Preserve Support

Hot Plug (SATA Port 0~ Port 7)

Select Enabled to enable a SATA port specified by the user. The options are **Disable** and Enable.

Spin Up Device (SATA Port 0~ Port 7)

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

SATA Device Type (SATA Port 0~ Port 7)

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

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

SATA RSTe Boot Info

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

Aggressive Link Power Management

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

SATA RAID Option ROM/UEFI Driver

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

SATA Port 0~ Port 7

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

- Model number of drive and capacity
- Software Preserve Support

Hot Plug (SATA Port 0~ Port 7)

Select Enabled to enable a SATA port specified by the user. The options are **Disable** and Enable.

Spin Up Device (SATA Port 0~ Port 7)

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

SATA Device Type (SATA Port 0~ Port 7)

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

▶PCH sSATA Configuration

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

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

SATA HDD Unlock

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

Aggressive Link Power Management

When this feature is set to Enable, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **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 (sSATA Port 0~ Port 5)

Select Enabled to enable a SATA port specified by the user. The options are **Disable** and Enable.

Spin Up Device (sSATA Port 0~ Port 5)

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

sSATA Device Type (sSATA Port 0~ Port 5)

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

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 SATA 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

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 (sSATA Port 0~ Port 5)

Select Enabled to enable a SATA port specified by the user. The options are **Disable** and Enable.

Spin Up Device (sSATA Port 0~ Port 5)

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

sSATA Device Type (sSATA Port 0~ Port 5)

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

▶PCIe/PCI/PnP Configuration

The following information will be displayed:

- PCI Bus Driver Version

PCI Devices Common Settings:

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

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

SR-IOV Support

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

MMIO High Base

Use this feature to select the base memory size according to memory-address mapping for the IO hub. The 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.

PCI PERR/SERR Support

Select Enabled to activate PCI Error and System Error report handling. The options are Disabled and **Enabled**.

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

Use this feature to select the default value for the PCI MMIO (Memory-Mapped IO) base address. The options are 1G, 1.5G, 1.75G, **2G**, 2.25G, and 3G.

NVMe Firmware Source

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

VGA Priority

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

AOC-URN4-m2TS SLOT1 PCI-E 3.0 X16 OPROM (Available when the device is detected by the system)

RSC-R1UW-2E16 SLOT1 PCI-E 3.0 X16 OPROM

RSC-R1UW-2E16 SLOT2 PCI-E 3.0 X16 OPROM

RSC-R1UW-E8R SLOT1 PCI-E 3.0 X8 OPROM

Select Disabled to deactivate the selected slot, Legacy to activate the slot in legacy mode, and EFI to activate the slot in EFI mode. The options are Disabled, **Legacy**, and EFI.

Onboard LAN Option ROM Type

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

Onboard LAN1 Option ROM

Onboard LAN2 Option ROM

Use the above two features to select the type of device installed in a LAN port specified by the user for system boot. The default setting for Onboard LAN1 Option ROM is **PXE**, and the default setting for Onboard LAN2 Option ROM is **Disabled**.

Onboard NVMe1 Option ROM

Onboard NVMe2 Option ROM

Onboard NVMe3 Option ROM

Onboard NVMe4 Option ROM

AOC-URN4-m2TS NVMe0 OPROM (Available when the device is detected by the system)

AOC-URN4-m2TS NVMe1 OPROM (Available when the device is detected by the system)

AOC-URN4-m2TS NVMe2 OPROM (Available when the device is detected by the system)

AOC-URN4-m2TS NVMe3 OPROM (Available when the device is detected by the system)

Use the above 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. The options are Disabled and **Enabled**.

Ipv4 HTTP Support

Select Enabled to enable Ipv4 HTTP boot support. The options are **Disabled** and Enabled.

Ipv6 PXE Support

Select Enabled to enable Ipv6 PXE boot support. The options are Disabled and **Enabled**.

Ipv6 HTTP Support

Select Enabled to enable Ipv6 HTTP boot support. The options are **Disabled** and Enabled.

PXE boot wait time

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

Media detect count

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

▶Super IO Configuration

Super IO Configuration

The following Super IO information will be displayed:

- Super IO Chip AST2500

▶Serial Port 1 Configuration

Serial Port 1 Configuration

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

Serial Port 1

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

Device Settings

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

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=3F8h; IRQ=4;), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;).

▶Serial Port 2 Configuration

Serial Port 2 Configuration

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

Serial Port 2

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

Device Settings

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

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=2F8h; IRQ=3;), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;).

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

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

▶Serial Port Console Redirection

COM1

Console Redirection

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

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.

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.

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.

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.

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)

Security Device Support

If a Trusted Platform Module (TPM) device is connected to the TPM header (JTPM1) on the motherboard and this feature is set to Enable, onboard security devices will be available for the TPM support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Disable and **Enable**.

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

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

SHA256 PCR Bank

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

Pending operation

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

Platform Hierarchy

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

Storage Hierarchy

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

Endorsement Hierarchy

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

PH Randomization

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

TXT Support

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

▶HTTP Boot Configuration

Use this feature to configure HTTP Boot settings for your system.

HTTP Boot One Time

If this feature is set to Enabled, the system will automatically boot into the HttpBoot setting that has been previously configured when it is powered up the first time. The options are **Disabled** and Enabled.

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

▶Intel® Virtual RAID on CPU

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

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

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

Version: 1.0.0.3380

Select an action below.

Detected DIMMs:

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

All DIMMs are healthy.

▶DIMMs

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

Select a specific DIMM to view more information.

DIMMs on socket 0x0000:

▶DIMM ID 0x0001

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

View settings or select an action below.

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

Show more details +

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

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

Serial number	**0x0000115D**
Part number	**NMA1XBD256GQS**
Socket	**0x0**
Memory controller ID	**0x0**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P1-DIMMA2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P0_Node0_Channel0_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0000**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**
Package sparing enabled	**1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x0101

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

View settings or select an action below.

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

Show more details +

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

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

Serial number	**0x00000B35**
Part number	**NMA1XBD256GQS**
Socket	**0x0**
Memory controller ID	**0x1**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator P1-DIMMD2

Subsystem revision ID 0x18

Interface format code 0x0301 (Non-Energy Backed Byte Addressable)

Manufacturing info valid 1

Manufacturing date 18-37

Manufacturing location 0xA2

Memory type Logical Non-Volatile Device

Memory bank label P0_Node1_Channel0_Dimm1

Data width label [b] 64

Total width [b] 72

Speed [MHz] 2666

Channel ID 0x0000

Channel position 1

Revision ID 0x0

Form factor [DIMM]

Manufacturer ID 0x8089

Controller revision ID B0 (0x0020)

Is new 0

Memory capacity 252.0 GiB

App Direct capacity 0 B

Unconfigured capacity 0 B

Inaccessible capacity 0 B

Reserved capacity 465.2 MiB

Peak power budget [mW] 20000

Avg power budget [mW] 15000

Max average power budget [mW] 10000

Package sparing capable 1

Package sparing enabled 1

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x0011

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

View settings or select an action below.

DIMM UID **8089-A2-1837-00000B34**

DIMM handle **0x0011**

DIMM physical ID **0x001B**

Manageability state **[Manageable]**

Health state **[Healthy]**

Health state reason **None**

Capacity **252.4 GiB**

Firmware version **01.00.00.5127**

Firmware API Version **01.11**

Lock state **[Disabled]**

Staged firmware version **N/A**

Firmware update status **Update loaded successfully**

Manufacturer **Intel**

Show more details +

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

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

Serial number **0x00000B34**

Part number **NMA1XBD256GQS**

Socket **0x0**

Memory controller ID **0x0**

Vendor ID **0x8089**

Device ID **0x5141**

Subsystem vendor ID **0x8089**

Subsystem device ID **0x97A**

Device locator **P1-DIMMB2**

Subsystem revision ID **0x18**

Interface format code **0x0301 (Non-Energy Backed Byte Addressable)**

Manufacturing info valid **1**

Manufacturing date **18-37**

Manufacturing location **0xA2**

Memory type **Logical Non-Volatile Device**

Memory bank label **P0_Node0_Channel1_Dimm1**

Data width label [b] **64**

Total width [b] **72**

Speed [MHz] **2666**

Channel ID **0x0001**

Channel position **1**

Revision ID **0x0**

Form factor **[DIMM]**

Manufacturer ID **0x8089**

Controller revision ID **B0 (0x0020)**

Is new **0**

Memory capacity **252.0 GiB**

App Direct capacity **0 B**

Unconfigured capacity **0 B**

Inaccessible capacity **0 B**

Reserved capacity **465.2 MiB**

Peak power budget [mW] **20000**

Avg power budget [mW] **15000**

Max average power budget [mW] **10000**

Package sparing capable **1**

Package sparing enabled **1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x0111

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

View settings or select an action below.

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

Show more details +

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

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

Serial number	**0x000011C**
Part number	**NMA1XBD256GQS**
Socket	**0x0**
Memory controller ID	**0x1**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P1-DIMME2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P0_Node1_Channel1_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0001**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**

Package sparing enabled 1

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x0021

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

View settings or select an action below.

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

Show more details +

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

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

Serial number	**0x00000B2E**
Part number	**NMA1XBD256GQS**
Socket	**0x0**
Memory controller ID	**0x0**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**

Subsystem device ID	**0x97A**
Device locator	**P1-DIMMC2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P0_Node0_Channel2_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0002**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**

Package sparing enabled 1

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x0121

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

View settings or select an action below.

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

Show more details +

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

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

Serial number	**0x000010AE**
Part number	**NMA1XBD256GQS**
Socket	**0x0**
Memory controller ID	**0x0**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P1-DIMMF2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P0_Node1_Channel2_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0002**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**
Package sparing enabled	**1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

DIMMs on socket 0x0001:

▶DIMM ID 0x1001

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

View settings or select an action below.

DIMM UID	**8089-A2-1837-0000111C**
DIMM handle	**0x1001**
DIMM physical ID	**0x0029**
Manageability state	**[Manageable]**
Health state	**[Healthy]**
Health state reason	**None**
Capacity	**252.4 GiB**
Firmware version	**01.00.00.5127**
Firmware API Version	**01.11**
Lock state	**[Disabled]**
Staged firmware version	**N/A**
Firmware update status	**Update loaded successfully**
Manufacturer	**Intel**

Show more details +

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

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

Serial number	**0x0000111C**
Part number	**NMA1XBD256GQS**
Socket	**0x1**
Memory controller ID	**0x0**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P2-DIMMA2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P1_Node0_Channel0_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0000**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**
Package sparing enabled	**1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x1101

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

View settings or select an action below.

DIMM UID	**8089-A2-1837-00001038**
DIMM handle	**0x1101**
DIMM physical ID	**0x0031**
Manageability state	**[Manageable]**
Health state	**[Healthy]**
Health state reason	**None**
Capacity	**252.4 GiB**
Firmware version	**01.00.00.5127**
Firmware API Version	**01.11**
Lock state	**[Disabled]**
Staged firmware version	**N/A**
Firmware update status	**Update loaded successfully**
Manufacturer	**Intel**

Show more details +

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

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

Serial number	**0x00001038**
Part number	**NMA1XBD256GQS**
Socket	**0x1**
Memory controller ID	**0x1**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P2-DIMMD2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P1_Node1_Channel0_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0000**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**
Package sparing enabled	**1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x1011

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

View settings or select an action below.

DIMM UID	**8089-A2-1837-00000AA5**
DIMM handle	**0x1011**
DIMM physical ID	**0x002B**
Manageability state	**[Manageable]**
Health state	**[Healthy]**
Health state reason	**None**
Capacity	**252.4 GiB**
Firmware version	**01.00.00.5127**
Firmware API Version	**01.11**
Lock state	**[Disabled]**
Staged firmware version	**N/A**
Firmware update status	**Update loaded successfully**
Manufacturer	**Intel**

Show more details +

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

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

Serial number	**0x00000AA5**
Part number	**NMA1XBD256GQS**
Socket	**0x1**
Memory controller ID	**0x0**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P2-DIMMB2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P1_Node0_Channel1_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0001**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**
Package sparing enabled	**1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x1111

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

View settings or select an action below.

DIMM UID	**8089-A2-1837-000000E3A**
DIMM handle	**0x1111**
DIMM physical ID	**0x0033**
Manageability state	**[Manageable]**
Health state	**[Healthy]**
Health state reason	**None**
Capacity	**252.4 GiB**
Firmware version	**01.00.00.5127**
Firmware API Version	**01.11**
Lock state	**[Disabled]**
Staged firmware version	**N/A**
Firmware update status	**Update loaded successfully**
Manufacturer	**Intel**

Show more details +

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

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

Serial number	**0x00000E3A**
Part number	**NMA1XBD256GQS**
Socket	**0x1**
Memory controller ID	**0x1**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P2-DIMME2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P1_Node1_Channel1_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0001**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**
Package sparing enabled	**1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x1021

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

View settings or select an action below.

DIMM UID	**8089-A2-1837-0000118C**
DIMM handle	**0x1021**
DIMM physical ID	**0x002D**
Manageability state	**[Manageable]**
Health state	**[Healthy]**
Health state reason	**None**
Capacity	**252.4 GiB**
Firmware version	**01.00.00.5127**
Firmware API Version	**01.11**
Lock state	**[Disabled]**
Staged firmware version	**N/A**
Firmware update status	**Update loaded successfully**
Manufacturer	**Intel**

Show more details +

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

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

Serial number	**0x0000118C**
Part number	**NMA1XBD256GQS**
Socket	**0x1**
Memory controller ID	**0x0**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P2-DIMMC2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory bank label	**P1_Node1_Channel2_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0002**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**
Package sparing enabled	**1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶DIMM ID 0x1121

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

View settings or select an action below.

DIMM UID	**8089-A2-1837-00000BB2**
DIMM handle	**0x1211**
DIMM physical ID	**0x0035**
Manageability state	**[Manageable]**
Health state	**[Healthy]**
Health state reason	**None**
Capacity	**252.4 GiB**
Firmware version	**01.00.00.5127**
Firmware API Version	**01.11**
Lock state	**[Disabled]**
Staged firmware version	**N/A**
Firmware update status	**Update loaded successfully**
Manufacturer	**Intel**

Show more details +

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

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

Serial number	**0x00000B82**
Part number	**NMA1XBD256GQS**
Socket	**0x1**
Memory controller ID	**0x1**
Vendor ID	**0x8089**
Device ID	**0x5141**
Subsystem vendor ID	**0x8089**
Subsystem device ID	**0x97A**

Device locator	**P2-DIMMF2**
Subsystem revision ID	**0x18**
Interface format code	**0x0301 (Non-Energy Backed Byte Addressable)**
Manufacturing info valid	**1**
Manufacturing date	**18-37**
Manufacturing location	**0xA2**
Memory type	**Logical Non-Volatile Device**
Memory back label	**P1_Node1_Channel2_Dimm1**
Data width label [b]	**64**
Total width [b]	**72**
Speed [MHz]	**2666**
Channel ID	**0x0002**
Channel position	**1**
Revision ID	**0x0**
Form factor	**[DIMM]**
Manufacturer ID	**0x8089**
Controller revision ID	**B0 (0x0020)**
Is new	**0**
Memory capacity	**252.0 GiB**
App Direct capacity	**0 B**
Unconfigured capacity	**0 B**
Inaccessible capacity	**0 B**
Reserved capacity	**465.2 MiB**
Peak power budget [mW]	**20000**
Avg power budget [mW]	**15000**
Max average power budget [mW]	**10000**
Package sparing capable	**1**
Package sparing enabled	**1**

Package spares available 1

Configuration status [Valid]

SKU violation 0

ARS status [Completed]

Overwrite DIMM status [Not started]

Last shutdown time Fri Dec 21 17:29:23 UTC 2018

First fast refresh 0

Viral policy enable 0

Viral state 0

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

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

Unlatched last shutdown status Unknown

Security capabilities Encryption, Erase

Modes supported Memory Mode, App Direct

Boot status Success

AIT DRAM enabled [1]

Error injection enabled [0]

Media temperature injection enabled [0]

Software triggers enabled [0]

Software triggers enabled details None

Poison error injection counter 0

Poison error clear counter 0

Media temperature injection counter 0

Software triggers counter 0

Master Passphrase Enabled 0

▶Monitor health

Current non-critical threshold status

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

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

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

Modify non-critical thresholds

Controller temperature [C]

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

Media temperature [C]

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

Percentage remaining [%]

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

▶Apply changes

▶Back to main menu

▶Update firmware

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

Current firmware version: 01.00.00.5127

Selected firmware version: None

File:

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

Staged firmware version: N/A

▶Update

▶Back to main menu

▶Configure security

Specify the security settings on ALL the DIMMs.

State: [Disabled]

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

Enable security

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

Secure erase

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

Frozen lock

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

▶Back to main menu

▶Configure data policy

Specify the data policy settings on ALL the DIMMs.

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

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

▶Enable/Disable first fast refresh

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

▶Back to main menu

▶Back to main menu

▶Regions

Use this submenu to configure and display regions.

Current configuration

There are no regions defined in the system.

Memory allocation goal configuration

No goal configuration specified.

▶Create goal config

Use this submenu to create goal configuration of DIMM regions.

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

Create goal config for:

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

Reserved [%]:

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

Memory Mode [%]:

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

Persistent memory type:

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

Namespace Label version:

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

▶Create goal config

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

▶Back to Regions menu

▶Back to main menu

▶Back to main menu

▶Namespaces

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

Select a namespace to view more information.

NamespaceID Name Health Status.

▶0x00000101 Healthy

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

View details for or modify selected namespace.

UUID 66B9E696-0E38-47B3-81

5E-99FFAFC26A23

ID 0x00000101

Name

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

Region 1

Health [Healthy]

Mode [None]

Block size [4096 B]

Units

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

Capacity 125.0

Label version 1.2

▶Save

Use this feature to save current namespace.

▶Delete

Use this feature to delete current namespace.

▶Back to Namespaces

▶Back to main menu

▶Create namespace

Name

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

Region ID

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

Mode

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

Capacity input

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

Units

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

Capacity

This feature displays the capacity of namespace.

▶Create namespace

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

▶Back to Namespace

▶Back to main menu

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

▶Total capacity

The following information is displayed.

Total DCPMM resource allocation across the host server.

Raw capacity: 2.9 TiB

App Direct capacity: 0 B

Memory capacity: 2.9 TiB

Unconfigured capacity: 0 TiB

Inaccessible capacity: 0 TiB

Reserved capacity: 5.4 GiB

▶Back to main menu

▶Diagnostics

Perform diagnostic tests on DIMMS.

Choose diagnostics type:

Quick diagnostics

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

DIMM ID 0x0001

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

DIMM ID 0x0101

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

DIMM ID 0x1001

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

DIMM ID 0x1101

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

DIMM ID 0x0011

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

DIMM ID 0x0111

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

DIMM ID 0x1011

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

DIMM ID 0x1111

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

DIMM ID 0x0021

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

DIMM ID 0x0121

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

DIMM ID 0x1021

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

DIMM ID 0x1121

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

Config diagnostics

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

FW diagnostics

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

Security diagnostics

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

▶Execute tests (execute selected diagnostic tests)

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

▶Back to Diagnostics

▶Back to main menu

TestName: Quick

State: Ok

Message:

The quick health check succeeded.

TestName: Config

State: Ok

Message:

The platform configuration check succeeded.

TestName: Security

State: Ok

Message:

The security check succeeded.

TestName: FW

State: Ok

Message:

The firmware consistency and settings check succeeded.

▶Back to main menu

▶Preferences

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

View and/or modify user preferences.

Default DIMM ID:

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

Capacity units:

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

App Direct settings:

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

App Direct granularity:

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

▶Back to main menu

▶Driver Health

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

▶Intel(R) DCPMM 1.0.0.3380 Driver Healthy

Intel(R) DCPMM Controller Healthy

Intel Persistent Memory DIMM 25 Controller Healthy

Intel Persistent Memory DIMM 33 Controller Healthy

Intel Persistent Memory DIMM 41 Controller Healthy

Intel Persistent Memory DIMM 49 Controller Healthy

Intel Persistent Memory DIMM 27 Controller Healthy

Intel Persistent Memory DIMM 35 Controller Healthy

Intel Persistent Memory DIMM 43 Controller Healthy

Intel Persistent Memory DIMM 51 Controller Healthy

Intel Persistent Memory DIMM 29 Controller Healthy

Intel Persistent Memory DIMM 37 Controller Healthy

Intel Persistent Memory DIMM 45 Controller Healthy

Intel Persistent Memory DIMM 53 Controller Healthy

▶Intel(R) DCPMM 1.0.0.3380 HII Driver Healthy

Controller 665c5c98 Child 0 Healthy

▶Intel(R) 10GbE Driver 7.0.19 x64 Healthy

Controller 63f38f18 Child 0 Healthy

Intel(R) Ethernet Controller 10 Gigabit X540-AT2 Healthy

Controller 63f37398 Child 0 Healthy

Intel(R) Ethernet Controller 10 Gigabit X540-AT2 Healthy

▶Intel(R) PRO/1000 8.5.21 PCI-E Healthy

6.4 Event Logs

Use this feature to configure the Event Log settings.



▶Change SMBIOS Event Log Settings

Enabling/Disabling Options

SMBIOS Event Log

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

Erasing Settings

Erase Event Log

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

When Log is Full

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

SMBIOS Event Log Standard Settings

Log System Boot Event

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

MECI

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

METW

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

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

▶View SMBIOS Event Log

This section displays the contents of the SMBIOS Event Log.

6.5 IPMI

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



BMC Firmware Revision

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

IPMI STATUS (Baseboard Management Controller)

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

▶System Event Log

Enabling/Disabling Options

SEL Components

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

Erasing Settings

Erase SEL

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

When SEL is Full

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

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

▶BMC Network Configuration

BMC Network Configuration

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 **Shared LAN**.

Update IPMI LAN Configuration

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

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

Configuration Address Source

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

This feature displays the current configuration address for this computer.

Station IP Address

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

Subnet Mask

This feature displays the sub-network that this computer belongs to. The value of each three-digit number separated by dots should not exceed 255.

Station MAC Address

This feature displays the Station MAC address for this computer. Mac addresses are 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

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

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

VLAN ID

Use this feature to enter the VLAN ID. The default setting is **0**.

Configure IPV6 support

Lan channel 1

IPV6 Support

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

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

Configuration Address Source

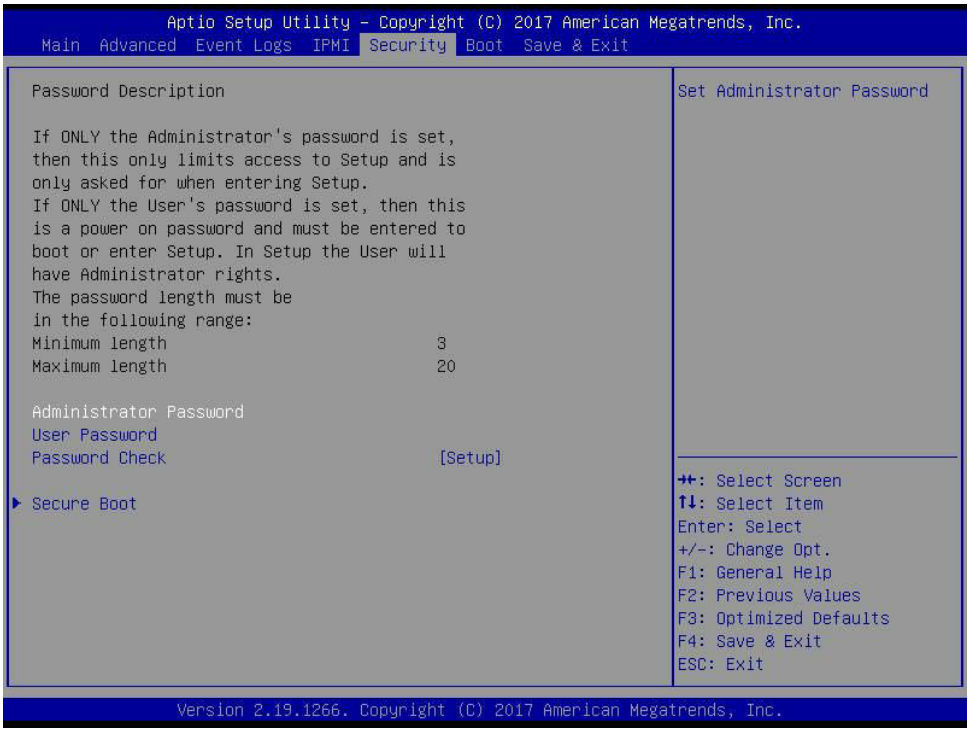
This feature allows the user to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol)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

The following information is displayed:

- Current Configuration Address source
- Station IPV6 address
- Prefix Length
- IPV6 Router1 IP Address
- IPV6 address status
- IPV6 DHCP Algorithm

6.6 Security Settings

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



Administrator Password

Press Enter 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.

User Password

Press Enter 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 bootup or upon entering the BIOS Setup utility. The options are **Setup** and Always.

▶Secure Boot

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

- System Mode
- Secure Boot
- Vendor Keys

Secure Boot

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

Secure Boot Mode

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

CSM Support

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

▶Key Management (Available when Secure Boot Mode is set to Custom)

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

Provision Factory Defaults

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

▶Enroll all Factory Default Keys

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

▶Enroll Efi Image

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

▶Save all Secure Boot variables

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

Secure Boot variable: Size/Key#/Key Source

▶Platform Key (PK)

This feature allows the user to configure the settings of the platform keys. Select Update to load the new platform keys (PK) from the manufacturer's defaults. The options are **Details**, Export, Update, and Delete.

▶Key Exchange Keys (KEK)

Select Update to load the KEK from the manufacturer's defaults. Select Append to add the KEK from the manufacturer's defaults list to the existing KEK. The options are **Details**, Export, Update, Append, and Delete.

▶Authorized Signatures

Authorized Signature Database (DB) contains authorized signing certificates and digital signatures. Select Update to load the DB from the manufacturer's defaults. Select Append to add the database from the manufacturer's defaults to the existing DB. The options are **Details**, Export, Update, Append, and Delete.

▶Forbidden Signatures

Forbidden Signature Database (DBX) contains forbidden certificates and digital signatures. Select Update to load the DBX from the manufacturer's defaults. Select Append to add the DBX from the manufacturer's defaults to the existing DBX. The options are **Details**, Export, Update, Append, and Delete.

▶Authorized TimeStamps

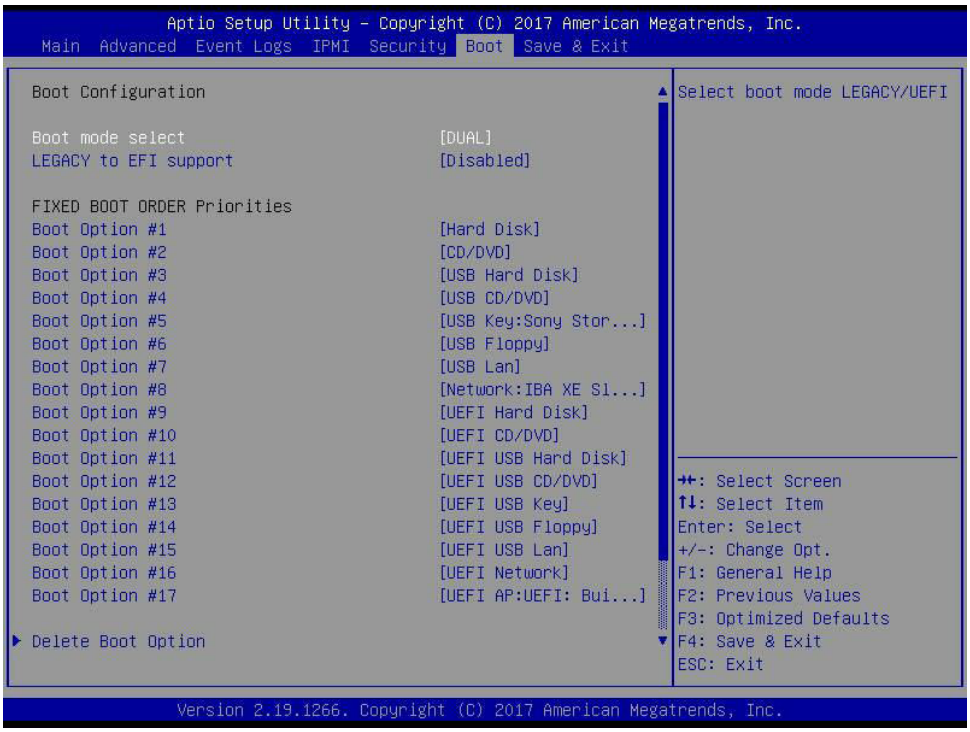
Select Update to load the Authorized Timestamp Database (DBT) from the manufacturer's defaults. Select Append to add the DBT from the manufacturer's defaults list to the existing DBT. The options are **Details**, Export, Update, Append, and Delete.

▶OsRecovery Signatures

Select Update to load the OsRecovery Signatures Database (DBR) from the manufacturer's defaults. Select Append to add the DBR from the manufacturer's defaults list to the existing DBR. The options are **Details**, Export, Update, Append, and Delete.

6.7 Boot Settings

Use this feature to configure Boot Settings:



Boot mode select

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

LEGACY to EFI support

Use this feature to enable the EFI boot support. The options are **Disabled** and Enabled.

FIXED BOOT ORDER Priorities

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

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

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

- Legacy/UEFI/Dual Boot Order #7
- Legacy/UEFI/Dual Boot Order #8
- UEFI/Dual Boot Order #9
- Dual Boot Order #10
- Dual Boot Order #11
- Dual Boot Order #12
- Dual Boot Order #13
- Dual Boot Order #14
- Dual Boot Order #15
- Dual Boot Order #16
- Dual Boot Order #17

▶Delete Boot Option

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

▶UEFI Application Boot Priorities

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

Boot Option #1

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

▶Network Drive BBS Priorities

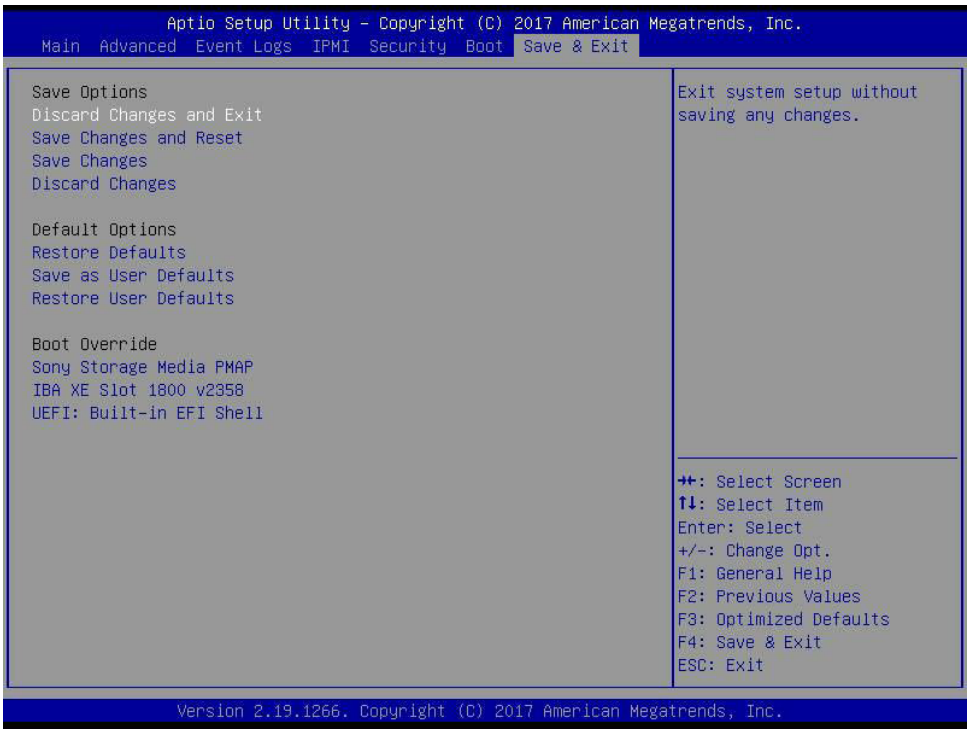
This feature allows the user to specify which available network drives are boot devices.

Boot Option #1

The options are **IBA XE Slot 1800 v2358** 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 Defaults

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

Save As User Defaults

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

Restore User Defaults

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

Boot Override

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

Appendix A

BIOS Error Codes

A.1 BIOS Error 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.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error.

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

A-2 Additional BIOS POST Codes

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

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

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

Appendix B

Standardized Warning Statements for AC Systems

B.1 About Standardized Warning Statements

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

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

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

Warning Definition



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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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 اننظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد
انطاقت قبم
انصل إنى اىمناطق 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 والبطية المتعلقة
بالكهرباء

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

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

Product Disposal



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

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

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

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

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

Attention

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

סילוק המוצר

אזהרה!

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

التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع 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 code) for any other electrical devices than products designated by Supermicro only.

電源コードとACアダプター

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

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

AC כבלים חשמליים ומתאמי

!אזהרה

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

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

전원 케이블 및 AC 어댑터

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

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

Stroomkabel en AC-Adapter

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

Appendix C

System Specifications

Processors
Dual Intel Xeon 81xx/61xx/51xx/41xx/31xx series or 82xx/62xx/52xx/42xx/32xx series processors Note: Please refer to the motherboard specifications pages on our website for updates to supported processors.
Chipset
Intel C621 chipset
BIOS
32Mb AMI® Flash ROM
Memory
Twenty-four slots for up to 6 TB of 3DS Load Reduced DIMM (3DS LRDIMM), 3DS Registered DIMM (3DS RDIMM), or up to 3 TB of Load Reduced DIMM (LRDIMM) with speeds of up to 2933 MHz; support for NonVolatile DIMM (NVDIMM) and Intel Optane DC Persistent Memory (DCPMM)
SATA Controller
Intel C621 controller
Drive Bays
Twelve 2.5" hot-swap drive bays
PCI Expansion Slots (supported)
One full height, full width PCI-E slot, one low profile PCI-E slot, one internal low profile PCI-E slot (Ultra riser)
Motherboard
X11DPU-V; ATX form factor (17.00" (L) x 16.80" (W) (431.80 mm x 426.72 mm)
Chassis
SC119UHTS-R1K22HP-T; 1U rackmount, (WxHxD) 17.2 x 1.7 x 29.1 in. (437 x 43 x 739 mm)
System Cooling
Eight 4-cm counter-rotating PWM fans
Power Supply
Model: PWS-1K22A-1R AC Input Voltages: 100-240 VAC Rated Input Current: 100-127Vac / 9.8 - 7A / 50-60Hz, 200-240Vac / 7.5 - 6A / 50-60Hz, 200-240Vdc / 7.5 - 6A (for CCC only) Rated Input Frequency: 50-60 Hz Rated Output Power: 800W: 100 – 127Vac, 1200W: 200 – 240Vac, 1200W: 200 -240Vdc (for CCC only) Rated Output Voltages: +12V: Max: 66.7A / Min: 0A (100-127Vac), Max: 100A / Min: 0A (200-240Vac), Max: 100A / Min: 0A (200-240Vdc); +12Vsb (2A): Max: 2.1A / Min: 0A
Operating Environment
Operating Temperature: 10º to 35º C (50º to 95º F) Non-operating Temperature: -40°C to 70°C (-40°F to 158°F) Operating Relative Humidity: 8% to 90% (non-condensing) Non-operating Relative Humidity: 5% to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55032 Class A, EN 61000-3-2/3-3, CISPR 32 Class A
Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)
Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)
Other: VCCI-CISPR 32 and AS/NZS CISPR 32
Environmental: Directive 2011/65/EU, Delegated Directive (EU) 2015/863 and Directive 2012/19/EU

Perchlorate Warning

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

Appendix D

UEFI BIOS Recovery

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

D.1 Overview

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

D.2 Recovering the UEFI BIOS Image

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

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

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

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

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

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

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

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

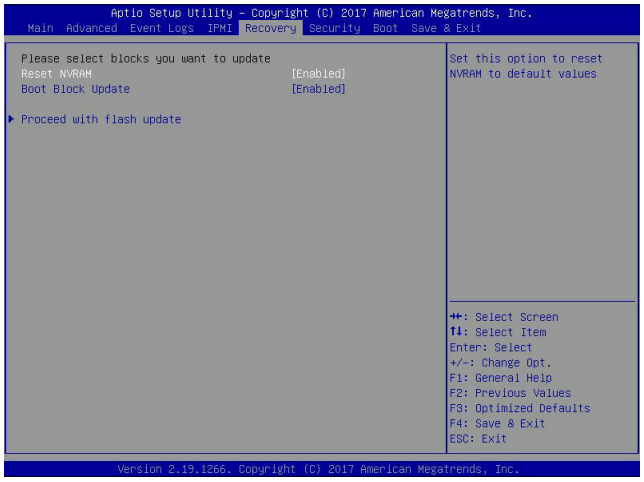
   Note 1: If you cannot locate the "Super.ROM" file in your drive disk, visit our website at www.supermicro.com to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

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

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



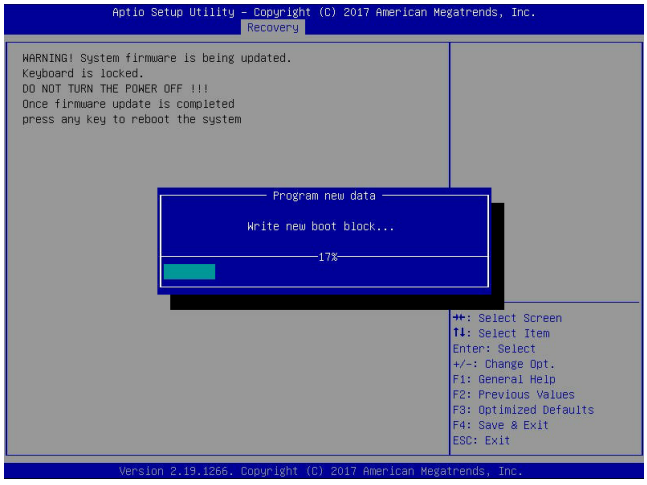
3. After locating the healthy BIOS binary image, the system will enter the BIOS Recovery menu as shown below.



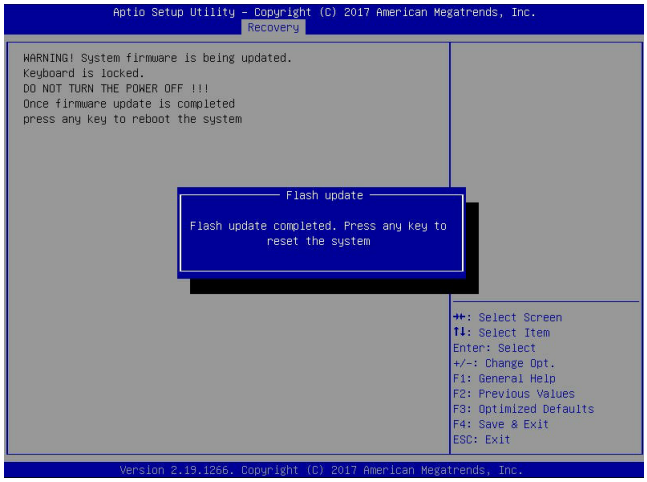
Note: At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.

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

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

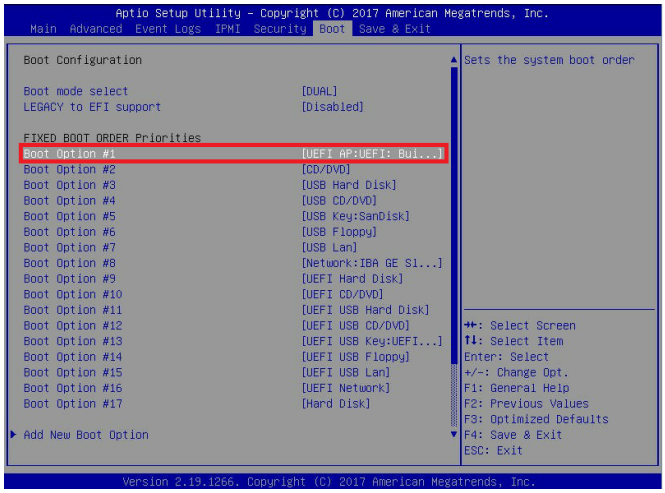


5. After the BIOS recovery process is complete, press any key to reboot the system.

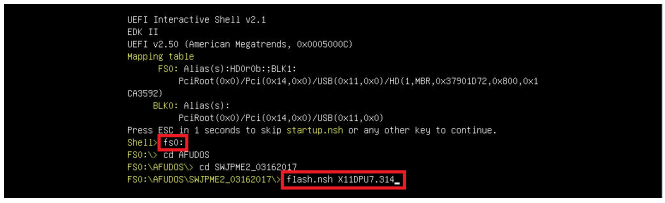


6. Using a different system, extract the BIOS package into a USB flash drive.

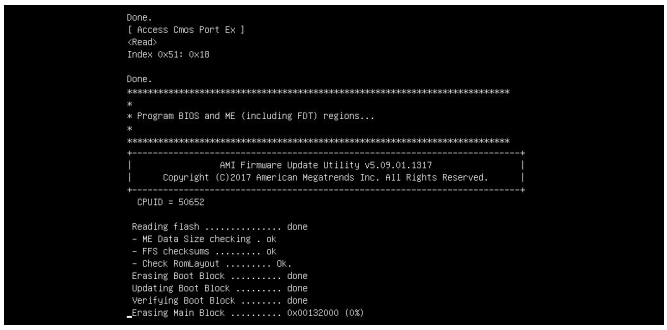
7. Press <Del> continuously during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings and exit the BIOS Setup utility.



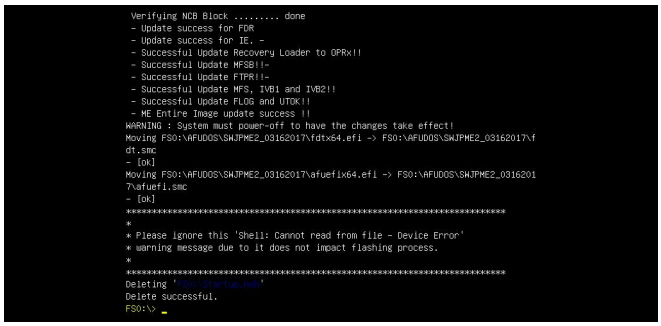
8. When the UEFI Shell prompt appears, type fs# to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter flash.nsh BIOSname.### at the prompt to start the BIOS update process.



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



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



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

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

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

Appendix E

Crash Dump Using IPMI

In the event of a processor internal error (IERR) that crashes your system, you may want to provide information to support staff. For this purpose you can download a crash dump of status information using IPMI. The IPMI manual is available at https://www.supermicro.com/solutions/IPMI.cfm.

Check IPMI Error Log

1. Access the IPMI web interface.
2. Click the **Server Health** tab, then **Event Log** to verify an IERR error has occurred.

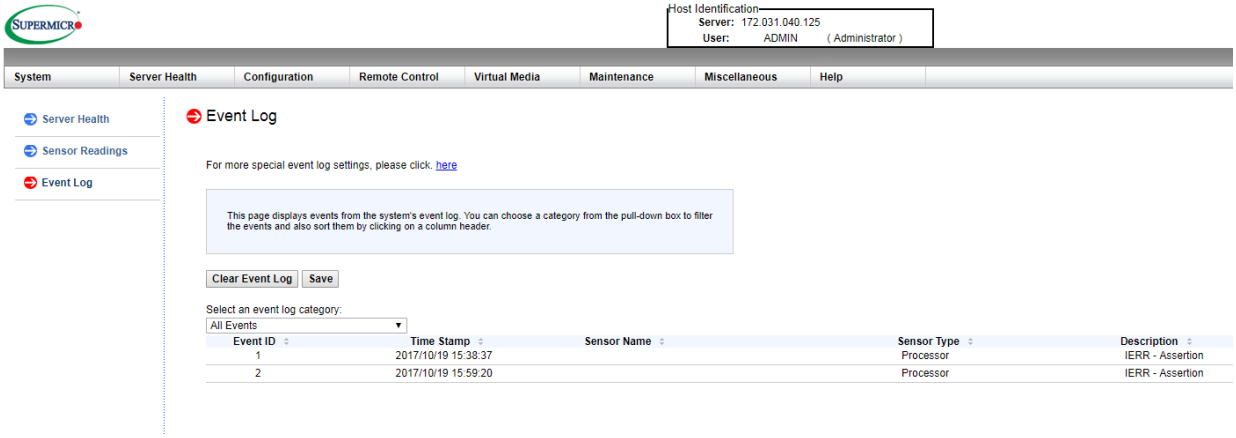


Figure E-1. IPMI Event Log

In the event of an IERR, the BMC executes a crash dump. You must download the crash dump and save it.

Downloading the Crash Dump File

1. In the IPMI interface, click the **Miscellanous** tab, then the **Trouble Shooting** option.
2. Click the **Dump** button and wait five minutes for the file to be created. (No confirmation message will appear.)
3. Click the **Download** button and a Save As dialog appears.
4. Save the zipped dump file, noting the name and location.

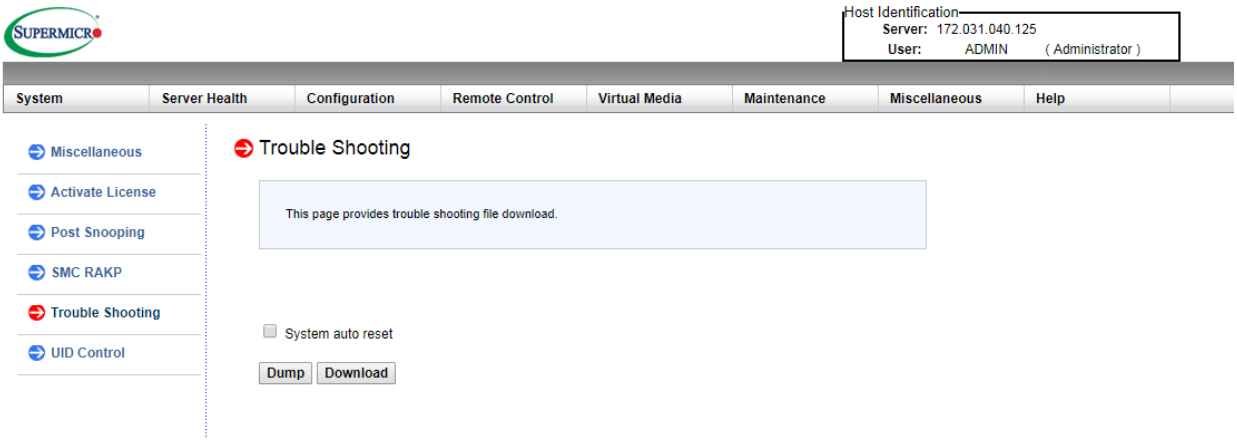


Figure E-2. IPMI Crash Dump Download

Note: The **System auto reset** check box dictates behavior after an IERR. If checked, the system will restart automatically, and the dump file will be erased. If not, the system remains in a failed state. Do not check this box until after the dump file has been sent to Support.

Appendix F

CPU-Based RAID for NVMe

Intel® Virtual RAID on CPU (Intel VROC) is an enterprise RAID solution for NVMe SSDs directly attached to Intel Xeon Scalable processors. Intel Volume Management Device (VMD) is an integrated controller inside the CPU PCI-E root complex.

- A single processor supports up to 12 NVMe SSDs and up to 6 RAID arrays.
- A dual processor system supports up to 24 NVMe SSDs and 12 RAID arrays.

Strip sizes are 4K, 8K, 16K, 32K, 64K, 128K.

Requirements and Restrictions

- **Intel VROC is only available when the system is configured for UEFI boot mode.**
- To enable the **mdadm** command and support for RSTe, install the patch from
  - Linux: https://downloadcenter.intel.com/download/28158/Intel-Virtual-RAID-on-CPU-Intel-VROC-and-Intel-Rapid-Storage-Technology-enterprise-Intel-RSTe-Driver-for-Linux-
  - Windows: https://downloadcenter.intel.com/download/28108/Intel-Virtual-RAID-on-CPU-Intel-VROC-and-Intel-Rapid-Storage-Technology-enterprise-Intel-RSTe-Driver-for-Windows-
- To enable Intel VROC, a hardware key must be inserted on the motherboard, and the appropriate processor's Virtual Management Devices must be enabled in the BIOS setup.
- It is possible to enable Intel VROC without a hardware key installed, but only RAID0 will be enabled.
- Intel VROC is not compatible with secure boot. This feature must be disabled.
- When creating bootable OS RAID1 devices, you must have both devices on the same CPU, and a VMD on that CPU.
- Spanning drives when creating RAID devices is not recommended to due to performance issues, even though it is supported.

Supported SSDs and Operating Sytems

To see the latest support information: https://www.intel.com/content/www/us/en/support/articles/000030310/memory-and-storage/ssd-software.html

Additional Information

Additional information is available on the product page for the Supermicro add-on card and the linked manuals.

www.supermicro.com/products/accessories/addon/AOC-VROCxxxMOD.cfm

F.1 Hardware Key

The Intel VROC hardware key is a license key that detects the Intel VROC SKU and activates the function accordingly. The key must be plugged into the Supermicro motherboard (connector JRK1). The key options are:

Intel® VROC Keys			
VROC Package	**Description**	**Part Number**	**Intel MM Number**
Standard	RAID 0, 1, 10 Supports 3rd party SSDs	AOC-VROCSTNMOD	951605
Premium	RAID 0, 1, 5, 10 Supports 3rd party SSDs	AOC-VROCPREMOD	951606
Intel SSD only	RAID 0, 1, 5, 10 Supports Intel SSDs only	AOC-VROCINTMOD	956822

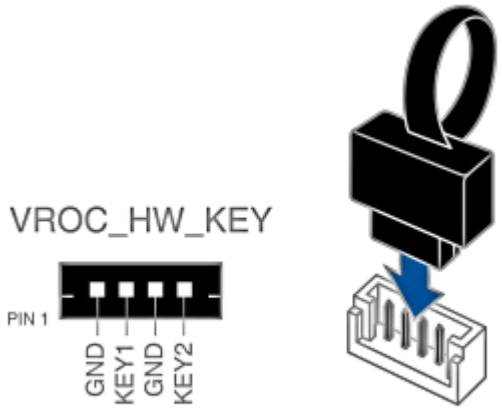


Figure F-1. Intel® VROC RAID Key and Motherboard Connector JRK1

F.2 Enabling NVMe RAID

RAID for NVMe SSDs must be enabled through the UEFI BIOS.

1. Install the patch as described in the Restrictions and Requirements section on a previous page.
2. Reboot the server.
3. Press [DEL] key to enter BIOS.
4. Switch to **Advanced > Chipset Configuration > North Bridge > IIO Configuration > Intel® VMD Technology > CPU1 & CPU2**.
5. **Enable** the VMD according to the following rules.
   - For U.2 NVMe, enable all the sub-items under each PStack, based on the your model server:

VMD BIOS Setting for 1029U-TN12RV	
CPU1	**CPU2**
VMD Config for PStack0 VMD Config for PStack1	VMD Config for PStack0 VMD Config for PStack2

   - For M.2 NVMe or NVMe AIC, enable the VMD according to which AOC card/slot it used.

An example U.2 configuration follows.

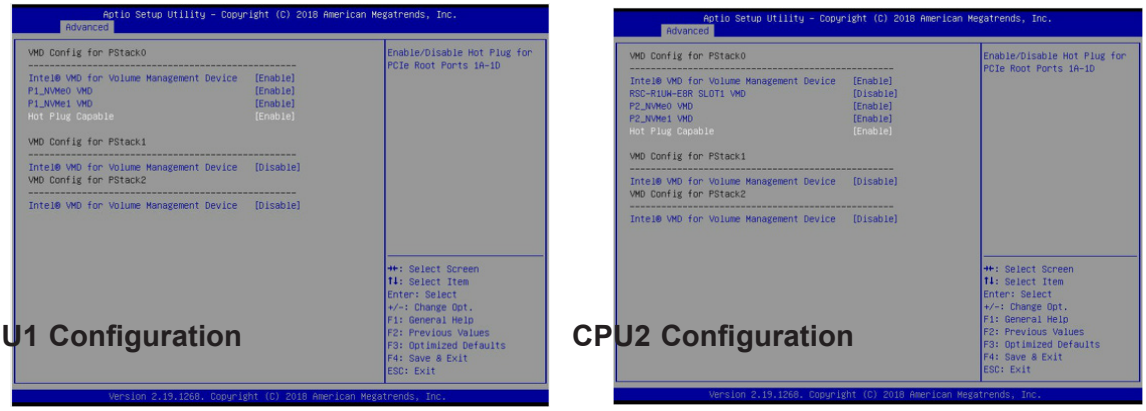


Figure F-2. BIOS VMD Setting Example

6. Press [F4] to save the configuration and reboot the system.
7. Press [DEL] to enter BIOS.
8. Switch to **Advanced > Intel® Virtual RAID on CPU > All Intel VMD Controllers > Create RAID Volume**.
9. Set **Name**.
10. Set **RAID Level**.
11. If cross-controller RAID is required, select **Enable RAID spanned over VMD Controller** as shown in Figure F-4.

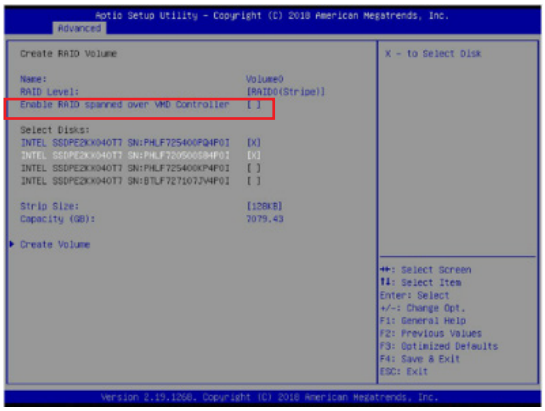


Figure F-3. Created Volume *without* enabling RAID spanned over VMD controller

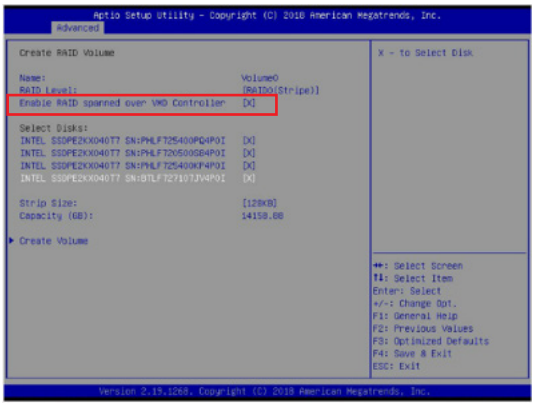


Figure F-4. Created Volume *with* enabling RAID spanned over VMD controller

12. Select specific disks for RAID with an [X].
    - RAID0: Select at least two [2 - 24] disks
    - RAID1: Select only two disks
    - RAID5: Select at least three [3 - 24] disks
    - RAID10: Select only four disks
13. Select **Strip Size** (Default 64KB).
14. Select **Create Volume**.
15. If another RAID is needed, start again at step 6.
16. Press [F4] to save and reboot.

F.3 Status Indications

An LED indicator on the drive carrier shows the RAID status of the drive.

Drive Carrier Status LED Indicator	
Status	**State (red)**
Normal function	Off
Locating	4 Hz blink
Fault	Solid on
Rebuilding	1 Hz Blink

IBPI SFF 8489 Defined Status LED States

F.4 Hot Swap Drives

Intel VMD enables hot-plug and hot-unplug for NVMe SSDs, whether from Intel or other manufacturers. Under vSphere ESXi, several steps are necessary to avoid potential stability issues. See the information at link [1] below.

Hot-unplug

1. Prevent devices from being re-detected during rescan:

```
esxcli storage core claiming autoclaim --enabled=false
```

2. Unmount the VMFS volumes on the device. Check [2] for details.
3. Detach the device. Check [3] for details.
4. Physically remove the device.

Hot-plug

- Physically install the device.

ESXi will automatically discover NVMe SSDs, but a manual scan may be required in some cases.

Related Information Links

[1] https://kb.vmware.com/s/article/2151404

[2] https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.storage.doc/GUID-1B56EF97-F60E-4F21-82A7-8F2A7294604D.html

[3] https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.storage.doc/GUID-F2E75F67-740B-4406-9F0C-A2D99A698F2A.html

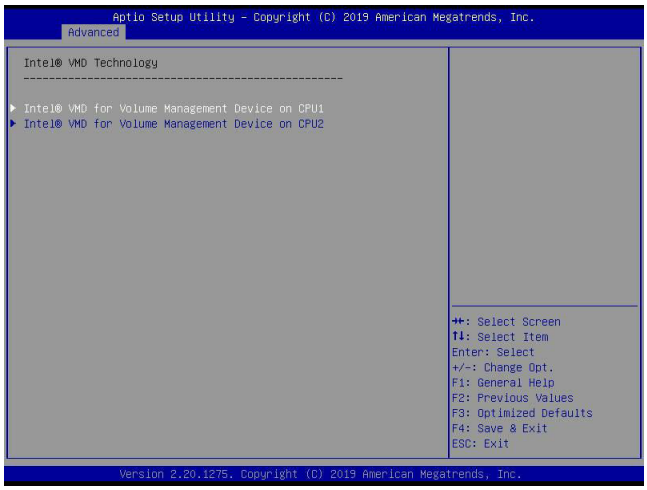
Appendix G

Configuring VROC RAID Settings

Intel® Virtual RAID on CPU (Intel® VROC) is a Redundant Array of Independent Disks (RAID) solution, which integrates with Intel® Volume Management Device (Intel® VMD), for Non-Volatile Memory Express (NVMe) solid-state drives (SSDs). The E.1 section provides instructions on how to access All Intel VMD Controllers menu items. The E.2 section explains RAID settings. The E.3 section describes the use of journaling drive for the RAID5 volume (parity based RAID).

G.1 All Intel® VMD Controllers Features

Press <Del> during system boot to enter the BIOS Setup utility. Navigate to the Advanced tab. Use the arrow keys and press <Enter> to select Chipset Configuration -> North Bridge -> IIO Configuration -> Intel® VMD Technology. The following screen will appear.

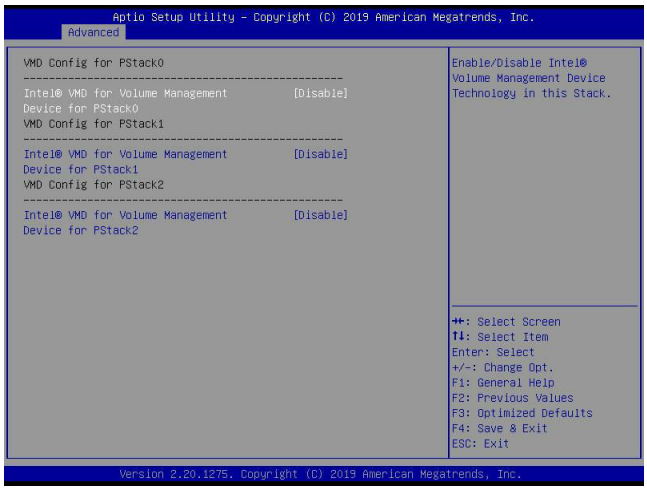


Step 1. Use the arrow keys to select Intel® VMD for Volume Management Device on CPU1 and press <Enter> to access the menu items.

Note 1: Only use NVMe devices that have been validated by Supermicro. For the latest updates, please contact us or refer to our website at https://www.supermicro.com.tw/.

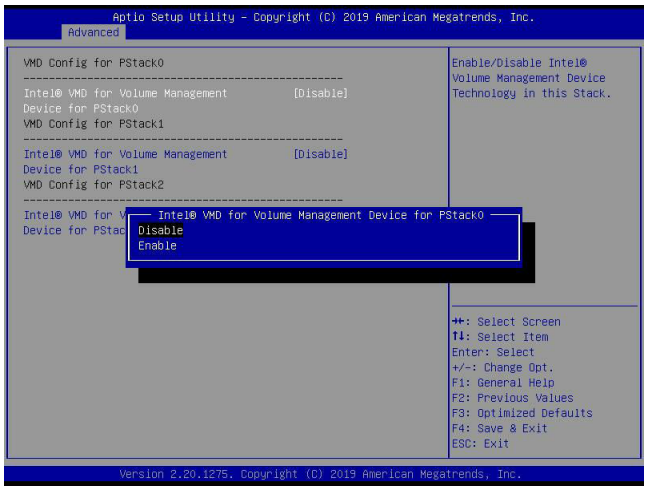
Note 2: Depending on the version of driver/utility/package, it may or may not have exactly the same as the BIOS settings/features shown in the appendix.

The following screen will appear.



Step 2. Intel® VMD for Volume Management Device for PStack0

The options are **Disable** and Enable. Set this feature to Enable.



Step 3. **P1_NVMe0 VMD** and **P1_NVMe1 VMD**

Set VMD on all the PStack0 NVMe related devices to Enable as well as set Hot Plug Capable to Enable.

Step 4. **Intel® VMD for Volume Management Device for PStack1**

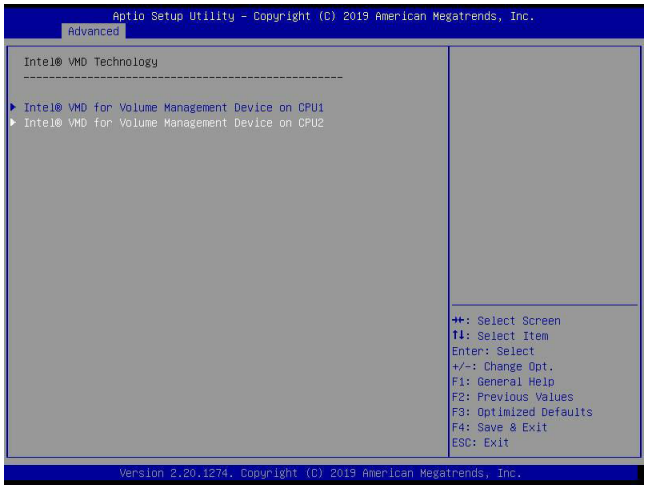
The options are **Disable** and Enable. Set this feature to Enable.

Step 5. **AOC-URN4-m2TS NVME0 VMD**, **AOC-URN4-m2TS NVME1 VMD**, **AOC-URN4-m2TS NVME2 VMD**, and **AOC-URN4-m2TS NVME3 VMD**

Set VMD on all the PStack1 NVMe related devices to **Enable** as well as set **Hot Plug Capable** to **Enable**.

Note: This option or AOC device name may vary depending on the Ultra Riser card installed in the system

Step 6. Press <Esc> and return to the main screen of Intel® VMD Technology as shown below. Use the arrow keys to select Intel® VMD for Volume Management Device on CPU2 and press <Enter> to access the menu items.



Step 7. **Intel® VMD for Volume Management Device for PStack0**

The options are **Disable** and Enable. Set this feature to Enable.

Step 8. **P2_NVMe0 VMD and P2_NVMe1 VMD**

Set VMD on all the PStack0 NVMe related devices to **Enable** as well as set **Hot Plug Capable** to **Enable**.

Step 9. **Intel® VMD for Volume Management Device for PStack2**

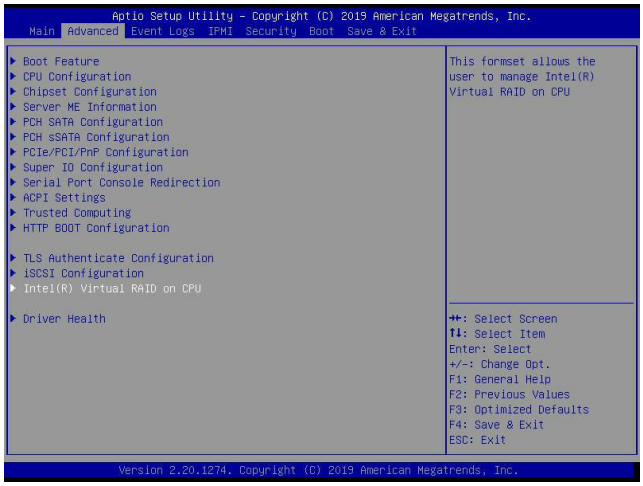
The options are **Disable** and Enable. Set this feature to Enable.

Step 10. **RSC-R1UW-2E16 SLOT2 VMD**

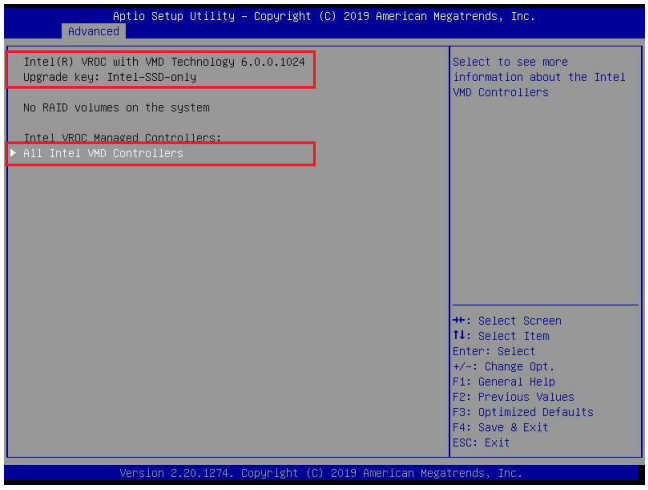
Set VMD on all the PStack2 NVMe related devices to **Enable** as well as set **Hot Plug Capable** to **Enable**.

Step 11. For the changes to take effect, press <F4> to save the settings and exit the BIOS Setup utility. Press <Del> during system boot to enter the BIOS Setup utility.

Navigate to the Advanced tab.



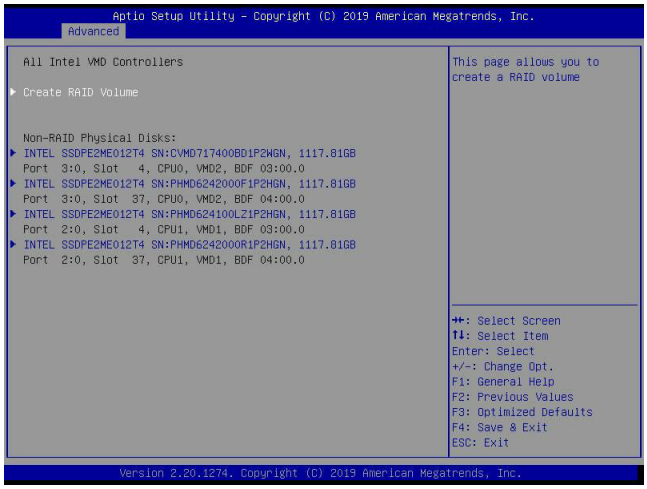
Use the arrow keys to select Intel(R) Virtual RAID on CPU and press <Enter> to access the menu items. The following screen will appear and the All Intel VMD Controllers feature has become available.



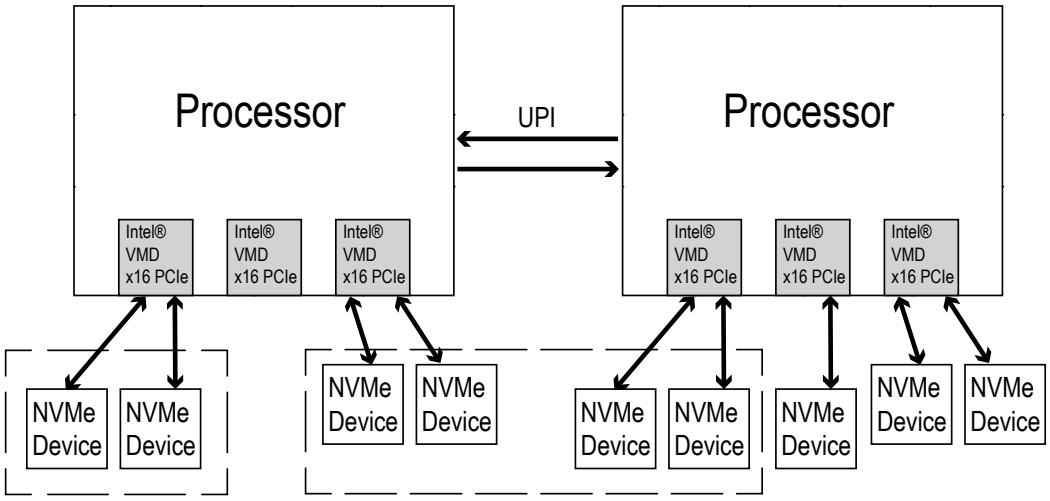
Note 1: The license and header (on the motherboard) for Intel® VROC hardware key are required. Also, be sure the version of Intel® Rapid Storage Technology enterprise (Intel® RSTe) VROC utility is 5 or above (look for Intel(R) VROC with VMD Technology x.x.x.xxxx shown on the screen).

Note 2: Intel® VROC Premium hardware key is used in the appendix to demonstrate RAID settings.

Use the arrow keys to select All Intel VMD Controllers and press <Enter> to access the menu items. The following screen will appear. It allows the user to create RAID volumes and configure settings of NVMe devices as detected by the system.

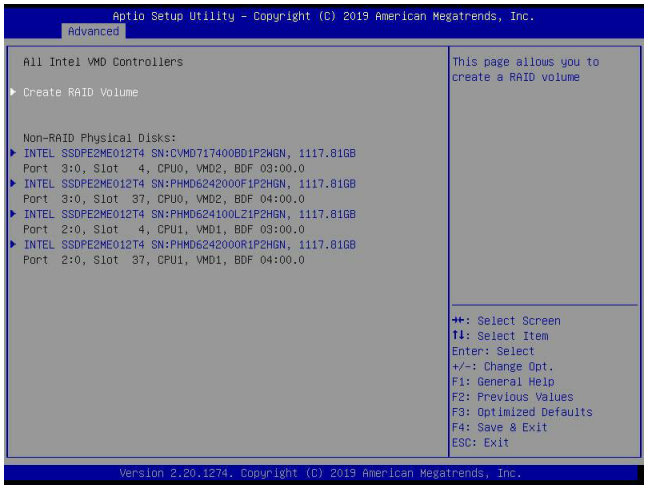


Note : A single Intel® VMD supported processor supplies 48 PCIe lanes and contains three Intel® VMD controllers (domains). Refer to the following illustration for more information.

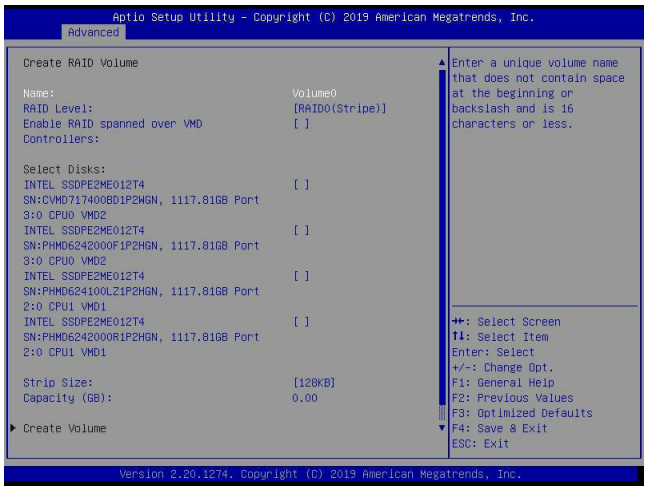


G.2 Configuring RAID Settings

Refer to the instructions stated in E.1 section to access All Intel VMD Controllers menu items. Follow the steps below to create RAID volume(s).

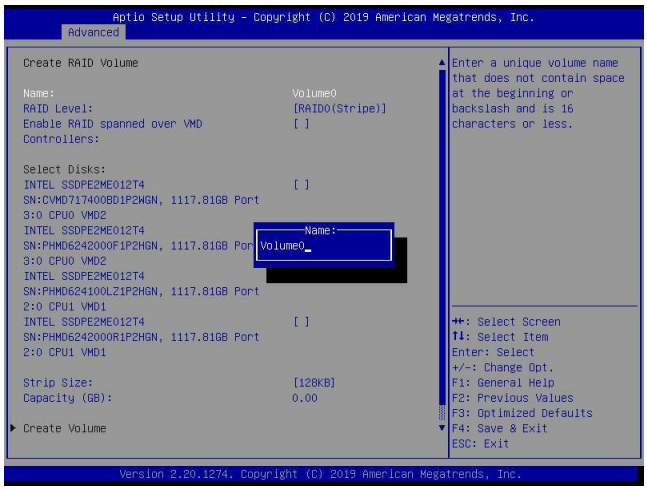


Step 1. To create RAID volume(s), use the arrow keys to select Create RAID Volume and press <Enter>. The following screen will appear.



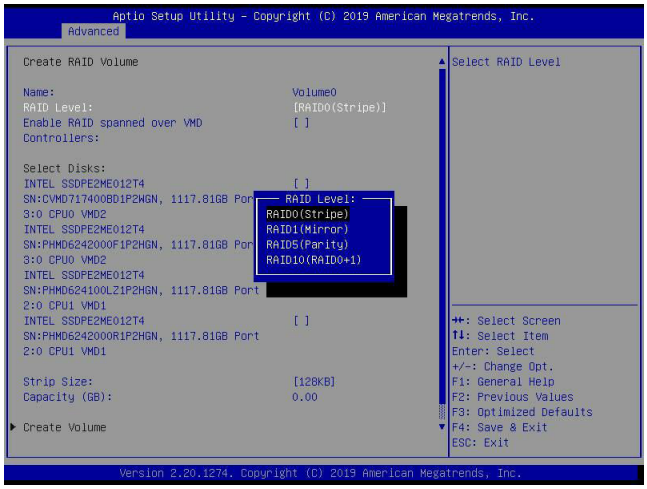
Step 2. **Name:**

This feature allows the user to enter the unique name of the RAID volume.



Step 3. **RAID Level:**

This feature allows the user to select the RAID level. The options are **RAID0(Stripe)**, RAID1(Mirror), RAID5(Parity), and RAID10(RAID0+1).

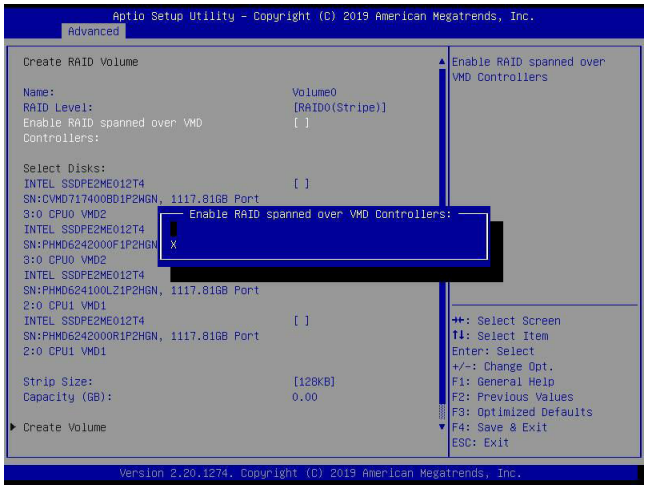


Note 1: The RAID level(s) displayed is(are) based on the number of NVMe devices connected to the system.

Note 2: Use Intel® VROC Standard hardware key to support RAID 0/1/10. Use Intel® VROC Premium hardware key (or Intel SSD Only hardware key) to support RAID 0/1/5/10.

Step 4. **Enable RAID spanned over VMD Controllers**

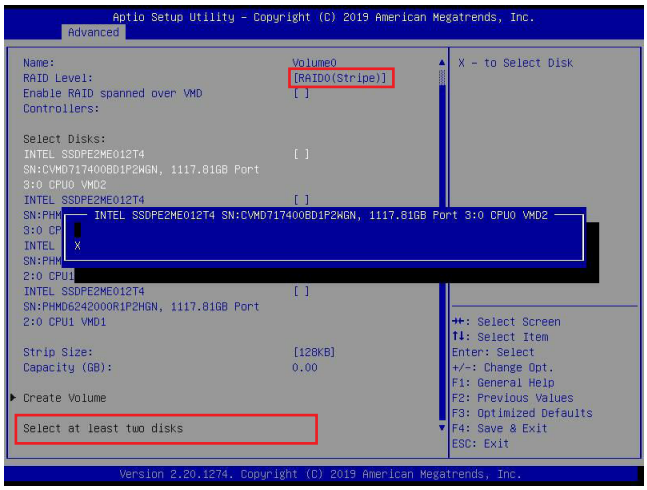
The options are **(not selected)** and X (selected). Set this feature to X if the RAID level you selected earlier from Step 3 will cross VMD domains.



Note: For a bootable RAID volume, do not cross VMD domains.

Step 5. **Select Disks:**

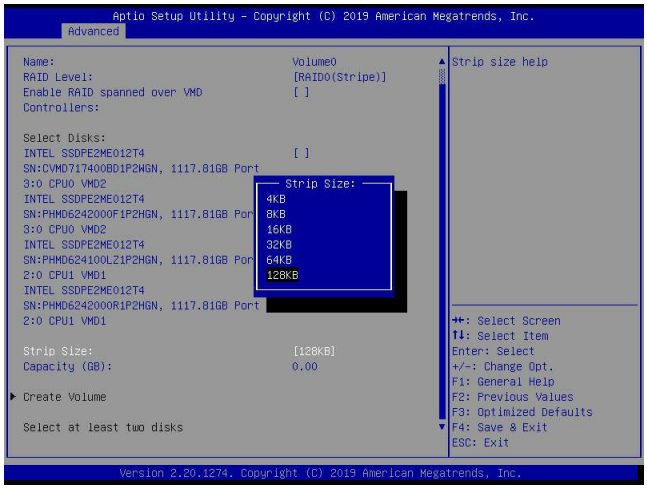
The options are **(not selected)** and X (selected). Set the features one by one to X to select the desired RAID disks.



Note: For RAID0/RAID1/RAID5/RAID10, the minimum number of NVMe devices required is two/two/three/four respectively.

Step 6. **Strip Size:**

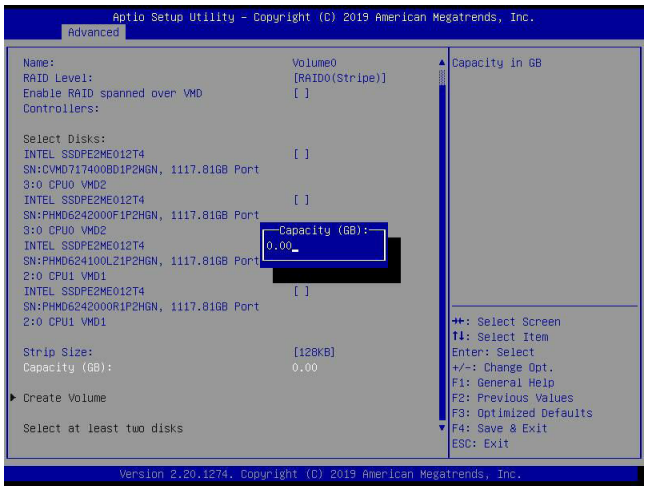
Use this feature to select the RAID strip size. The options are 4KB, 8KB, 16KB, 32KB, 64KB, and **128KB**.



Note: For RAID5, the options are 4KB, 8KB, 16KB, 32KB, **64KB**, and 128KB. For RAID10, the options are 4KB, 8KB, 16KB, 32KB, and **64KB**.

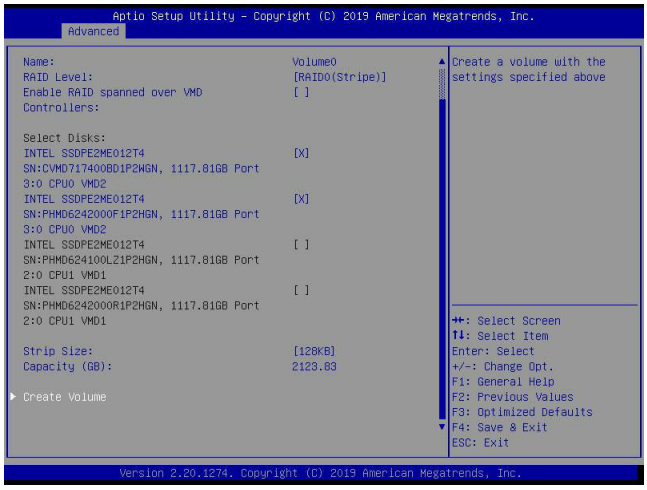
Step 7. **Capacity (GB):**

This feature allows the user to enter the desired RAID capacity (in GB).

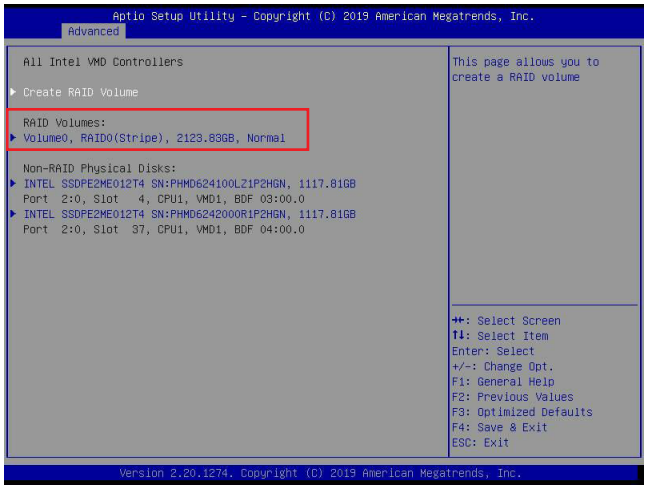


Step 8. **Create Volume**

Use the arrow keys to select Create Volume.

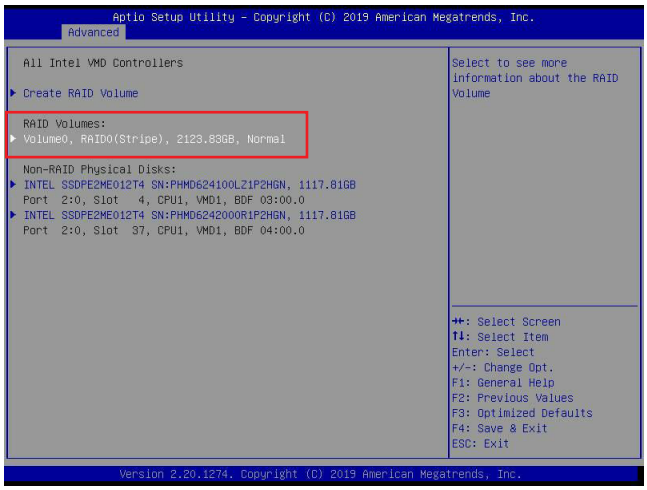


This feature is to create a RAID level with settings shown on the screen. Press <Enter> and the following screen will appear. It displays all RAID volumes.



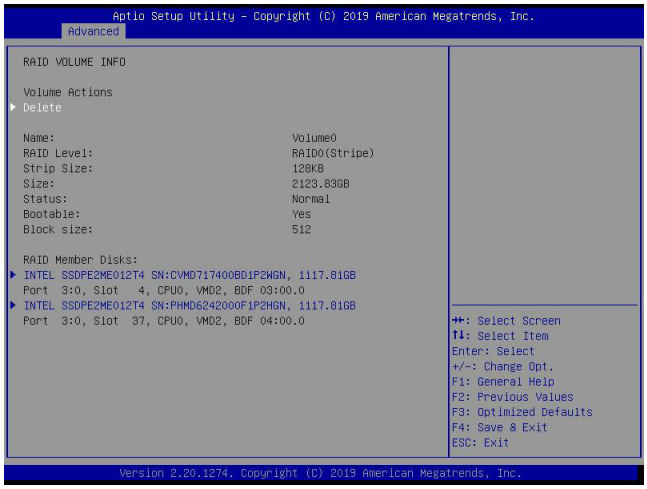
RAID Volumes:

For detailed RAID volume information, use the arrow keys to select the desired RAID volume as shown below.



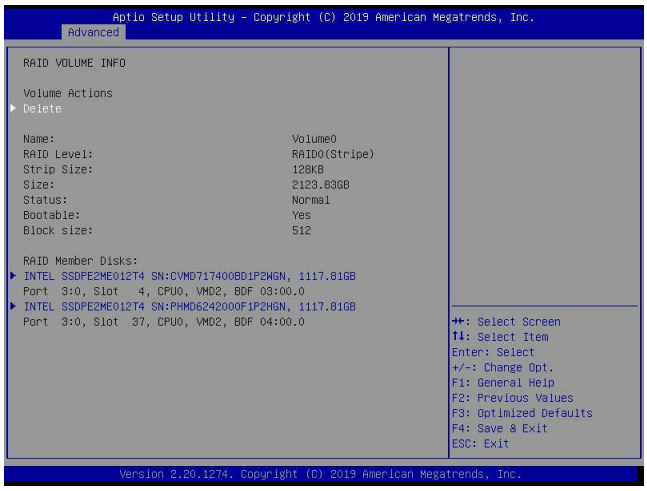
RAID VOLUME INFO

Press <Enter> and the following screen will appear.

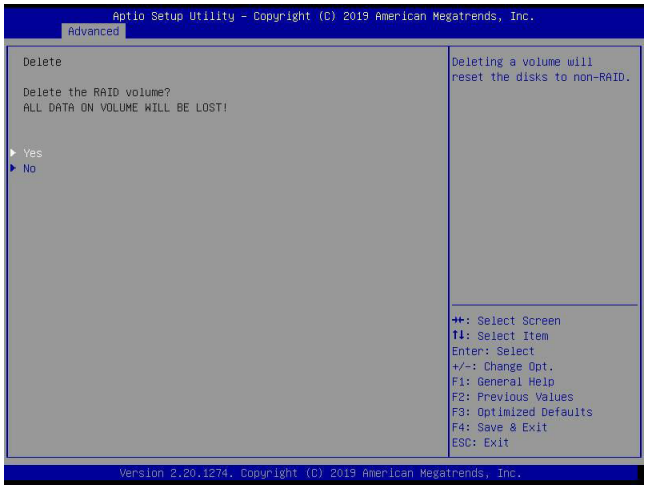


Delete

On the RAID VOLUME INFO screen, use the arrow keys to select Delete and press <Enter> to delete the RAID volume you have selected earlier (see the previous page for the RAID volume selection).

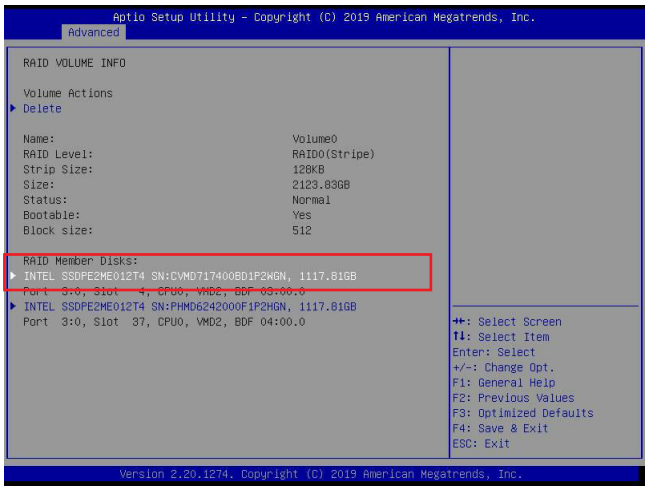


The following screen will appear. The options are **Yes** and No.

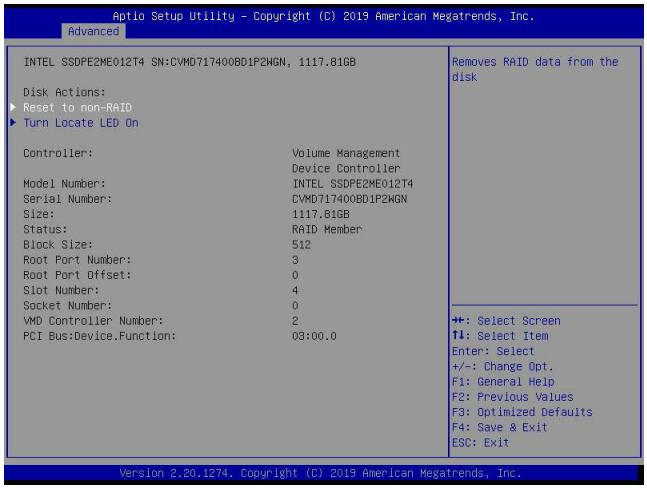


Reset to non-RAID

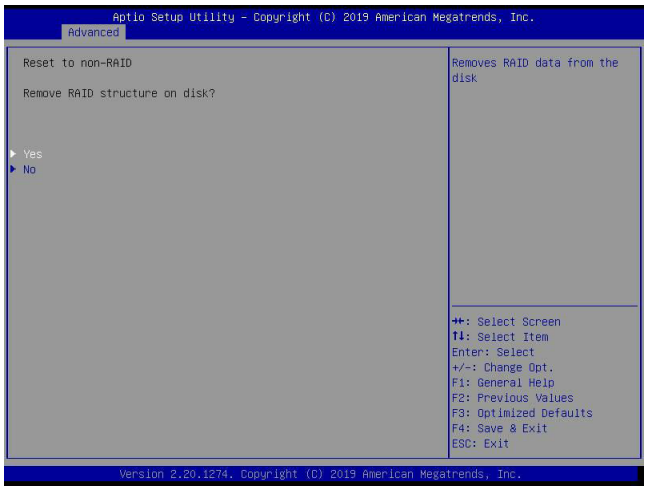
On the RAID VOLUME INFO screen (see page 214 for more information), select the desired NVMe device from the list of RAID Member Disks.



Press <Enter> and the following screen will appear.



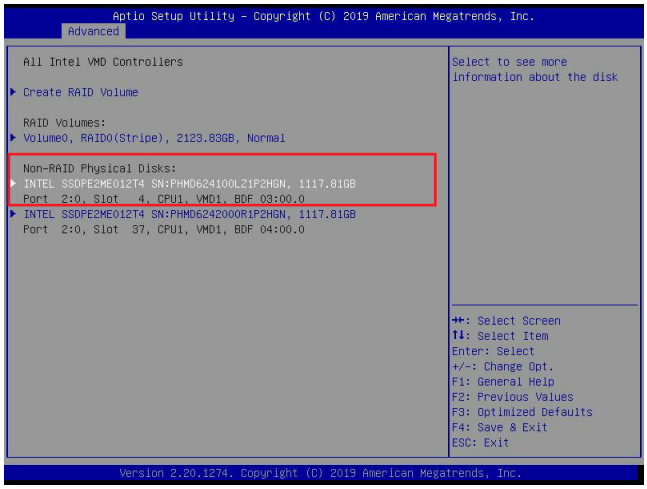
The feature, Reset to non-RAID, allows the user to remove RAID data from the selected NVMe device. Press <Enter> and the following screen will appear. The options are **Yes** and No.



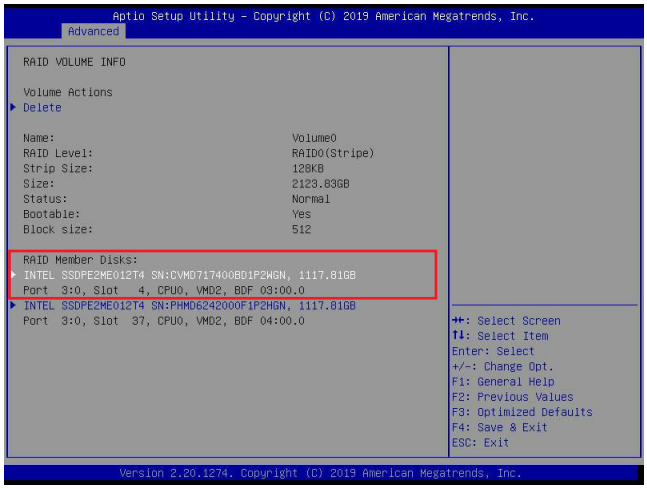
Turn Locate LED On

Use this feature to locate the selected device.

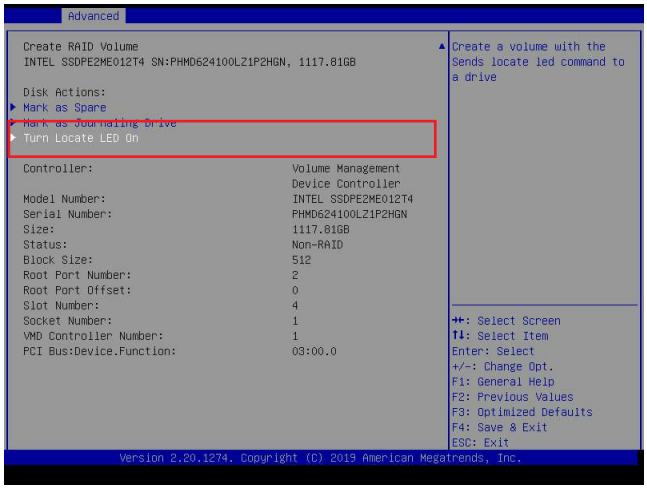
Select a non-RAID physical disk.



Or select a RAID member disk.

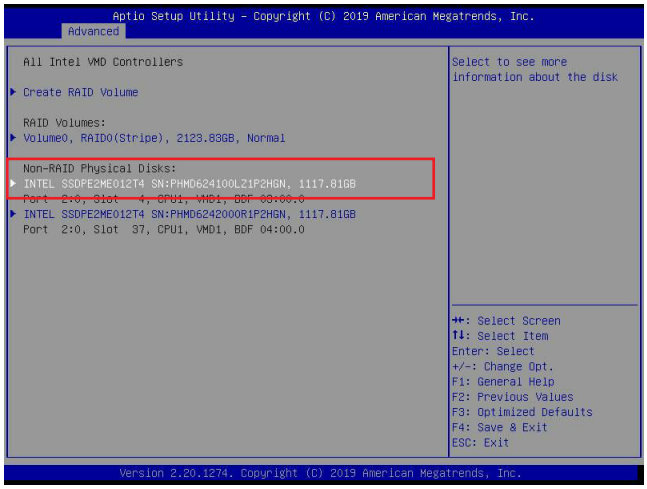


When the following screen appears, use the arrow keys to select Turn Locate LED On. Press <Enter> to locate the selected device.

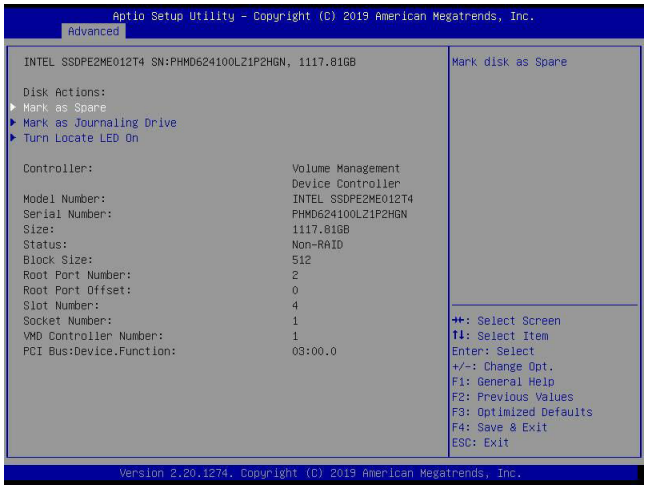


Mark as Spare

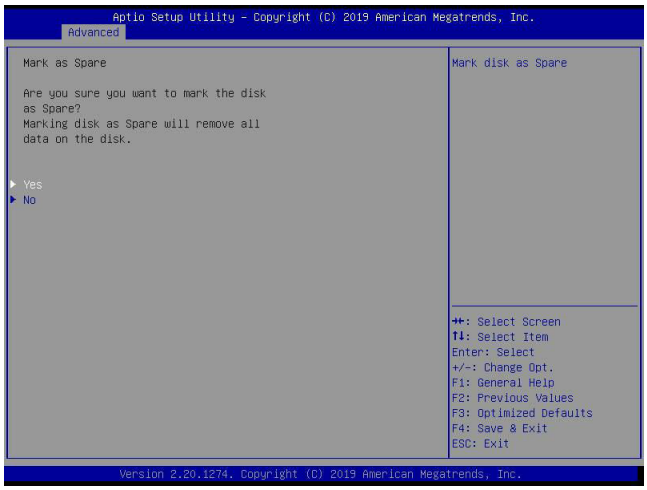
Refer to the instructions stated in E.1 section to access All Intel VMD Controllers menu items. When the following screen appears, select the desired NVMe device from the list of Non-RAID Physical Disks.



Press <Enter> and the following screen will appear.



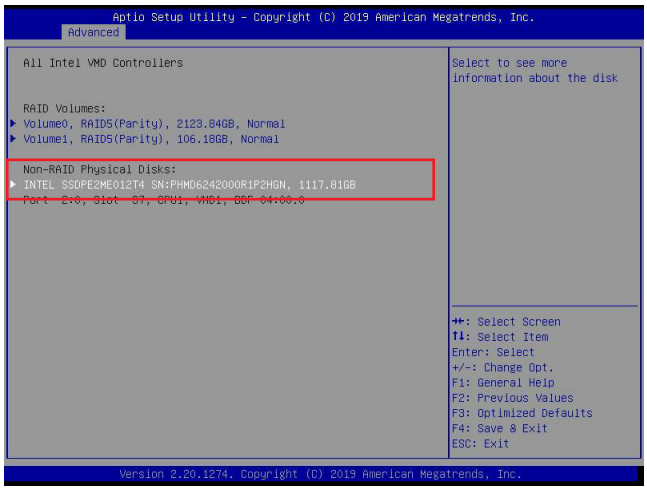
The feature, Mark as Spare, allows the user to set the selected NVMe device as a spare disk. Use the arrow keys to select Mark as Spare and press <Enter>. The following screen will appear. The options are **Yes** and No.



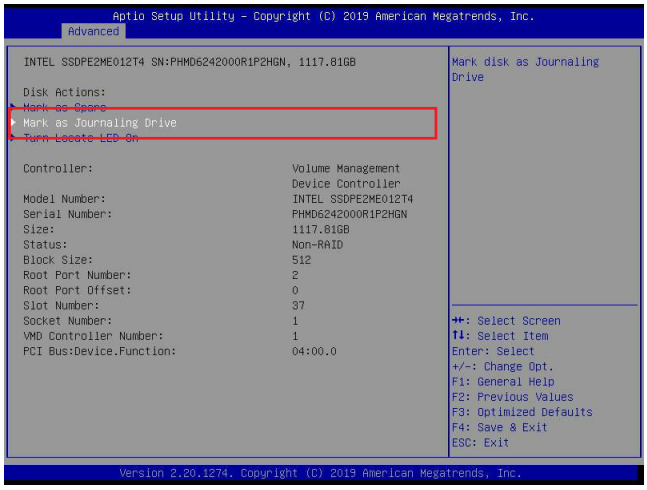
Note: A spare disk is used for automatic RAID volume rebuilds when status of failed, missing, or at risk is detected on the array disk. For a RAID0 volume, only status of at risk will trigger automatic RAID volume rebuilds.

Mark as Journaling Drive

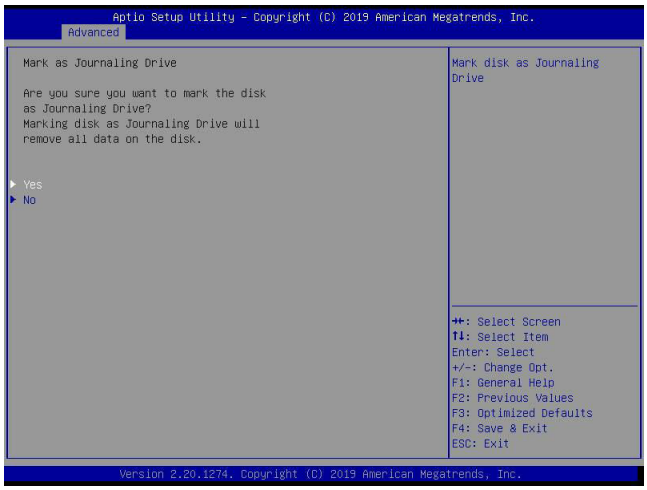
Refer to the instructions stated in E.1 section to access All Intel VMD Controllers menu items. When the following screen appears, select the desired NVMe device from the list of Non-RAID Physical Disks.



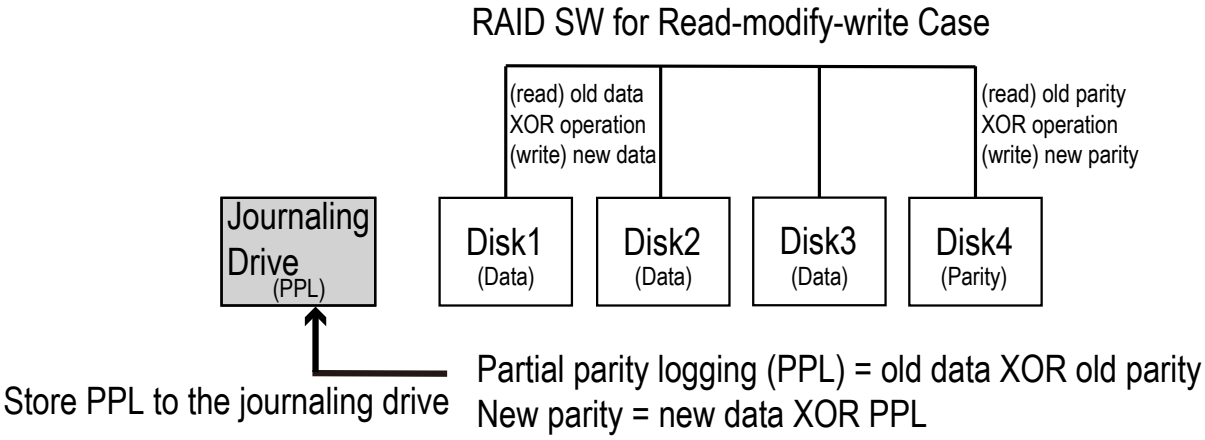
Press <Enter> and the following screen will appear.



The feature, Mark as Journaling Drive, allows the user to set the selected NVMe device as a journaling drive. Use the arrow keys to select Mark as Journaling Drive and press <Enter>. The following screen will appear. The options are **Yes** and No.



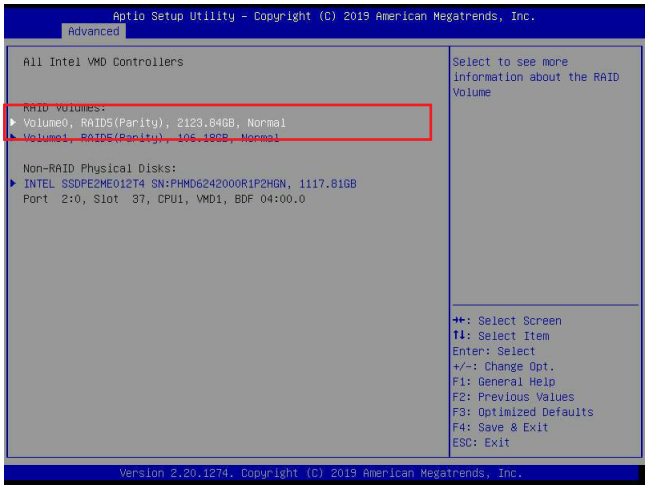
Note: RAID Write Hole (RWH) is a condition associated with a power/drive-failure/crash while writing to a RAID5 volume. The use of journaling drive that contains partial parity logging (PPL) can reduce the potential data loss. Refer to the following illustration for the use of journaling drive.



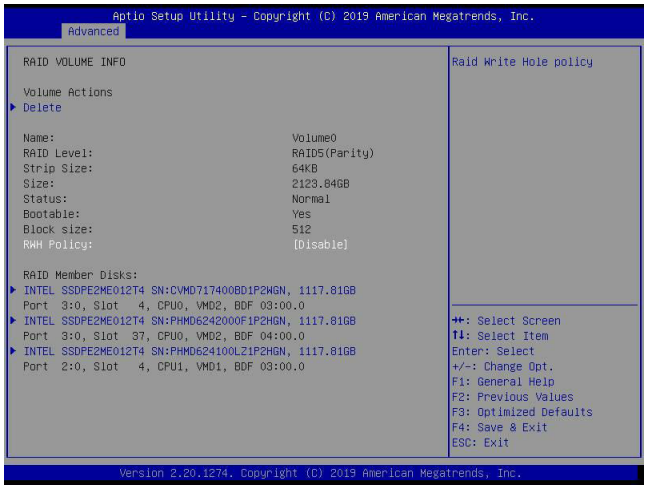
G.3 Use of Journaling Drive

The following steps describe the use of journaling drive for the RAID5 volume (parity based RAID).

Step 1. Refer to the instructions stated in E.1 section to access All Intel VMD Controllers menu items. When the following screen appears, use the arrow keys to select the desired RAID5 volume.



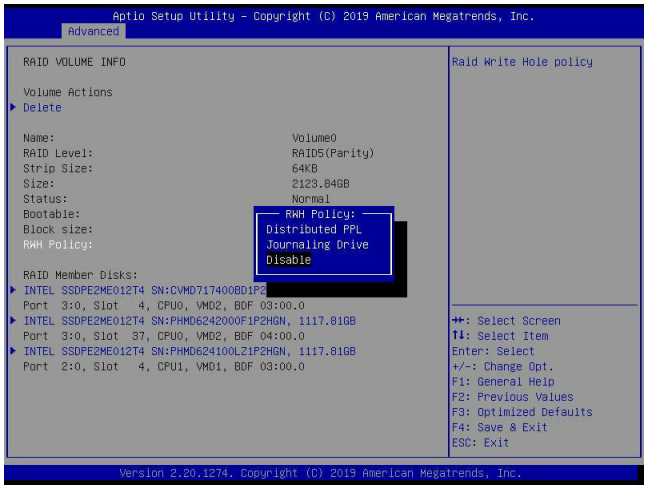
Press <Enter> and the following screen will appear.



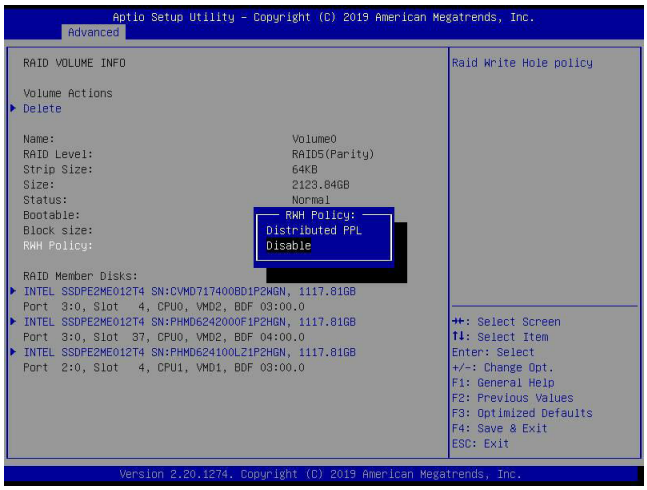
Step 2. Use the arrow keys to select RWH Policy. RWH is a scenario related to a power/ drive-failure/crash.

RWH Policy

Press <Enter> and the following screen will appear. If any device has been set as a journaling drive (see pages 220 and 221), the options are Distributed PPL, Journaling Drive, and **Disable**.



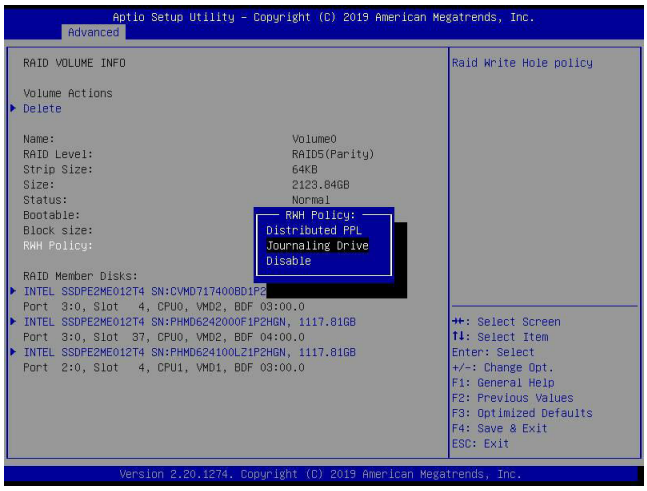
If no device has been set as a journaling drive, the options are Distributed PPL and **Disable**.



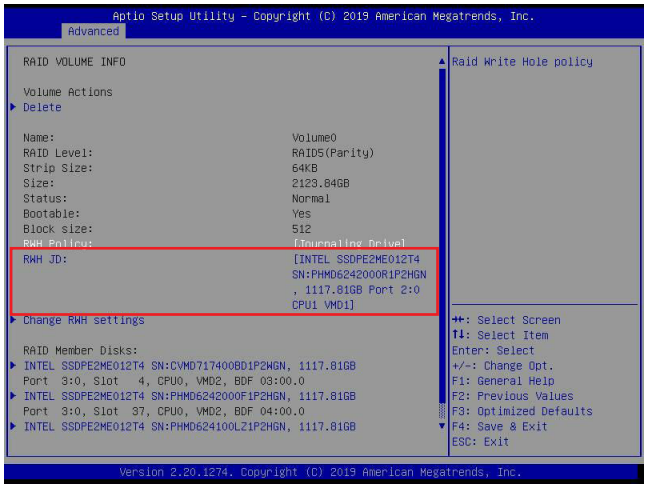
Note 1: Partial parity logging (PPL) can be defined as the result of XOR calculation of old data and old parity. PPL is a feature available for RAID5 volumes. While a power/drive-failure/crash occurring, PPL information helps rebuild the RAID volume and reduce the potential data loss.

Note 2: For the RWH condition, the Intel® RSTe 5.X or above RWH closure algorithm provides the option of use of an additional NVMe device for RAID volume rebuilds (Journaling Drive RWH closure mode). Without the use of an additional NVMe device, PPL distributed RWH closure mode can be utilized to close the RWH by using the parity drive for example.

Step 3. Set the feature, RWH Policy, to Journaling Drive.

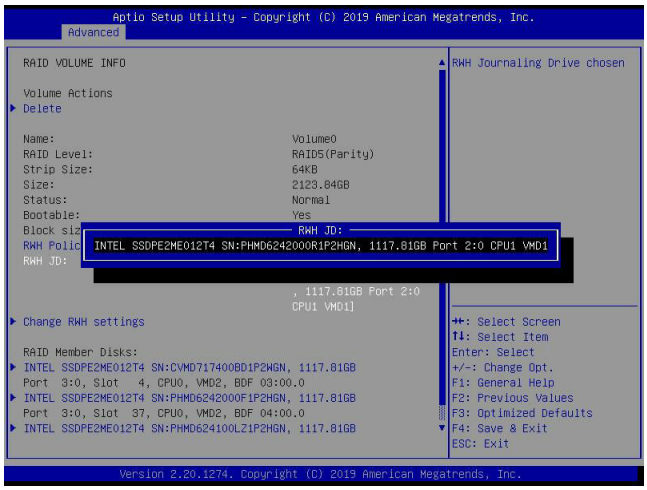


Press <Enter> and the RWH JD feature will become available as shown below.



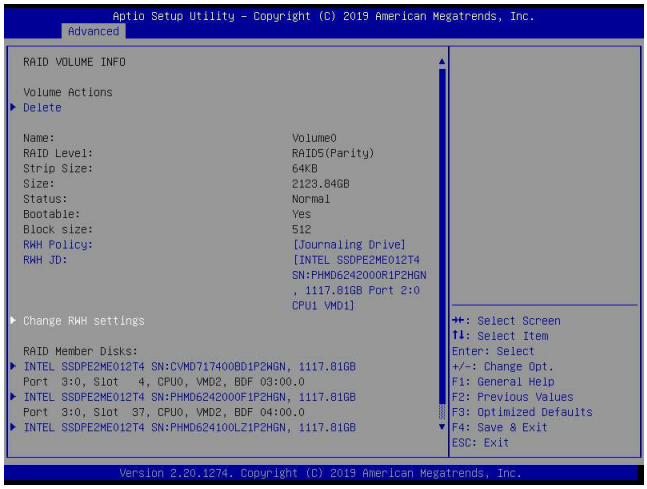
RWH JD

Use the arrow keys to select RWH JD. Press <Enter> and the following screen will appear. The feature displays the information of journaling drive(s).



Step 4. Use the arrow keys and press <Enter> to select the desired journaling drive from the option list of RWH JD.

Step 5. For the changes to take effect, use the arrow keys to select Change RWH settings and press <Enter>.



The user will be returned to the main screen of All Intel VMD Controllers as shown below.

