# SuperServer®

# SYS-822GA-NGR3

## USER'S MANUAL

Revision 1.0 MNL-2770

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Manual Revision 1.0

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# Preface

## About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SYS-822GA-NGR3 server. Installation and maintenance should be performed by certified service technicians only.

## Notes

For your system to work properly, 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
- Product safety info: https://www.supermicro.com/about/policies/safety_information.cfm
- A secure data deletion tool designed to fully erase all data from storage devices can be found on our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility
- Frequently Asked Questions: https://www.supermicro.com/FAQ/index.php
- If you still have questions after referring to our FAQs, contact our support team. Region-specific Technical Support email addresses can be found at: "Contacting Supermicro" on page 13
- If you have any feedback on Supermicro product manuals, contact our writing team at: Techwriterteam@supermicro.com

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

## Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself.

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

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

**Important:** Important information given to ensure proper system installation or to relay safety precautions.

**Note:** Additional information given to differentiate various models or to provide information for proper system setup.

# Contents

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# Chapter 1:

# Introduction

This chapter provides a brief outline of the functions and features of the SYS-822GA-NGR3 system. It is based on the X14DBG-GD motherboard and the CSE-GP806 chassis.

## 1.1 Overview

This chapter provides a brief outline of the functions and features of the SuperServer SYS-822GA-NGR3. The following provides an overview of the specifications and capabilities.

| System Overview | |
|---|---|
| Motherboard | X14DBG-GD |
| Chassis | CSE-GP806 |
| Processor | Dual Socket BR (LGA-7529)<br>Intel® Xeon® 6900 series processors with P-cores<br>Up to 128 C/256 T; up to 504 MB Cache per CPU |
| Memory | 24 DIMM slots that support up to 6 TB of ECC DDR5 RDIMM/LRDIMM to 6400 MT/s (1DPC) or 6 TB of ECC DDR5 MRDIMM to 8800 MT/s (1DPC) |
| Drive Support | Eight front hot-swap 2.5" PCIe 5.0 NVMe drive bays<br>Two M.2 PCIe 5.0 x2 NVMe slots (M-key 22110 (default)) |
| Expansion Slots | Two PCIe 5.0 x16 FHFL slots<br>Two PCIe 5.0 x8 FHFL slots<br>One PCIe 5.0 x4 AIOM slot (OCP 3.0 compatible)<br>Two M.2 PCIe 5.0 x2 NVMe slots (M-key 22110 (default)) |
| I/O Ports | One RJ45 1 GbE Dedicated BMC LAN port<br>Two USB 3.0 Type-A ports<br>One VGA port |
| System Cooling | Ten 80-mm x 80-mm x 80-mm removable heavy-duty fans |
| Power | Eight 3000 W Redundant Titanium Level (96%) power supplies |
| Form Factor | 8U rackmount; (WxHxD) 17.6" x 13.8" x 33.2" (447 mm x 356 mm x 800 mm) |

**Notes:**

- A Quick Reference Guide can be found on the following page of the Supermicro website: https://www.supermicro.com/zh_tw/products/system/ai_training/8u/sys-822ga-ngr3
- The following safety models associated with the SYS-822GA-NGR3 have been certified as compliant with UL or CSA: GP806-O30X14, GP806-30

## 1.2 System Features

The following views of the system display the main features. Refer to the System Specifications appendix of this manual for additional specifications.

### Front View

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

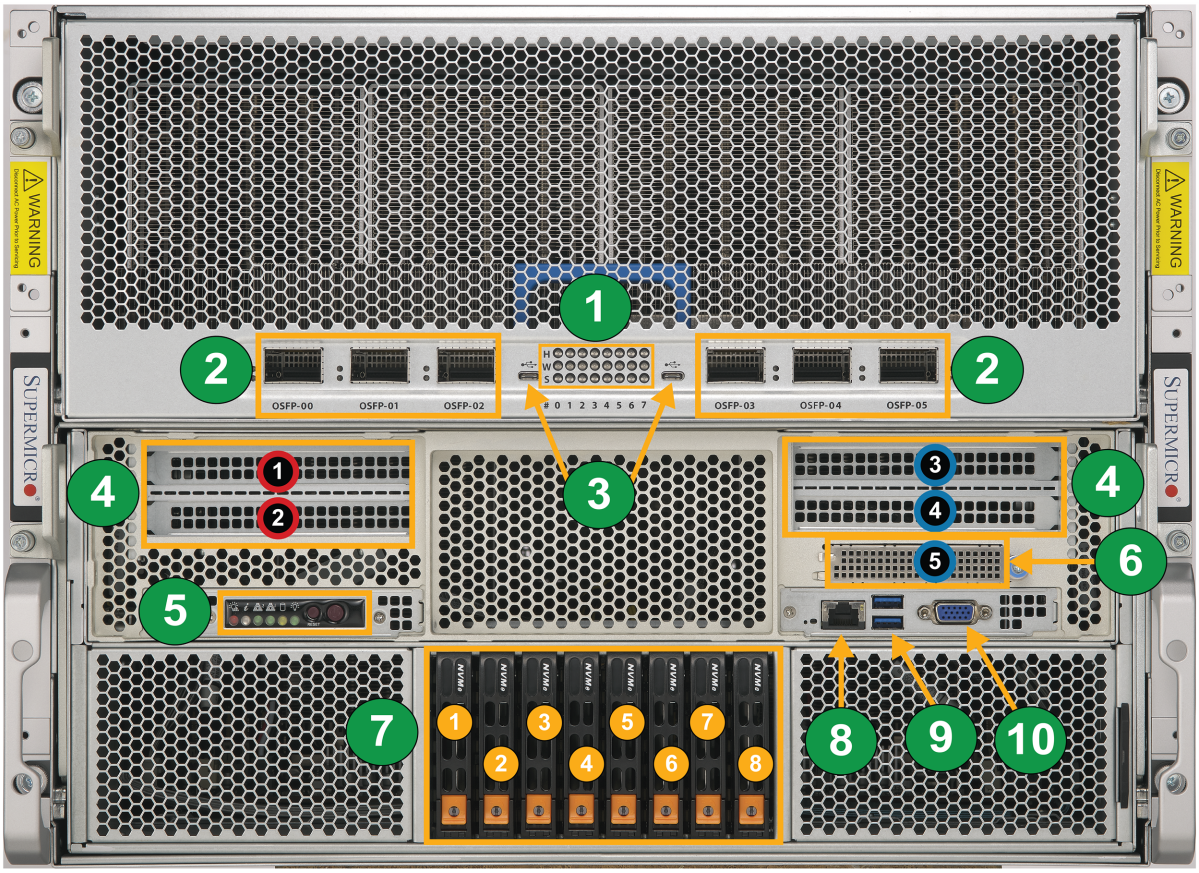



**Figure 1-1. Chassis Front View**

| Chassis Features: Front | | |
|---|---|---|
| **#** | **Features** | **Description** |
| 1 | GPU Status | Status indicator LEDs for the GPUs. See table below. |
| 2 | OSFP Transceiver Ports | Six 800 Gb/s OSFP ports are located on the AI processor tray for RDMA for scale-out. Supports up to 16 W of power.<br>**Note:** The AOC cables must be plugged into all six OSFP ports before power up. |
| 3 | USB-C Ports | Two USB-C for debugging purposes only. |
| 4 | PCIe 5.0 Slots | Four PCIe Gen5 expansion slots, full-height, half-length (FHHL) |
| 5 | Power Button and LED | Main power button and power LED |
| 6 | AIOM Slot | One PCIe Gen5 AIOM slot (for AIOM-2X8-G5-P) |
| 7 | 2.5" NVMe Storage | Eight 2.5" hot-swap NVMe drive bays |
| 8 | LAN Port | One RJ45 LAN port |
| 9 | Front USB Ports | Two USB-A 3.0 ports |
| 10 | VGA Port | One legacy VGA video port |

| Expansion Slot Locations | |
|---|---|
| **Location** | **Description** |
| 1 to 8 | Eight hot-swap NVMe drive bays |
| 1 | PCIe 5.0 x16 FHFL |
| 2 | PCIe 5.0 x8 FHFL |
| 3 | PCIe 5.0 x16 FHFL |
| 4 | PCIe 5.0 x8 FHFL |
| 5 | PCIe 5.0 x8 AIOM |

### *OSFP Transceiver Indicators*

The OSFP (Octal Small Form- Factor Pluggable) is a transceiver that connects network devices, such as switches, to fiber or copper cables. It is one of the primary form factors used in 800G access networks and data centers.

The OSFP transceiver has two LED indicators that display the activity status of data transmission to and from the system.

| Color | OSFP Status |
|---|---|
| Green | All OSFP lanes are on |
| Yellow | One or more OSFP lanes are off |

### *GPU LED Indicators*

The chassis features an LED indicator pad that shows the status of up to eight GPUs. There are Hazard (H), Warning (W), and Status (S) indicators for each GPU:

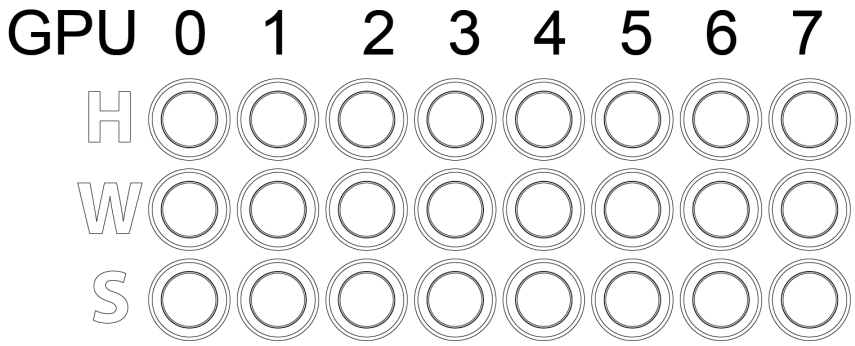



**Figure 1-2. GPU Indicators**

| GPU LED Indicators | | |
|---|---|---|
| **Row** | **Color** | **Description** |
| **H** | Green | Normal |
| | Red | Overheat |
| **W** | Green | OAM: Normal |
| | Red | OAM power status: Abnormal |
| **S** | Green | Driver has been loaded |
| | Off | Driver not loaded |

## Control Panel

The switches and LEDs located on the SYS-822GA-NGR3 server control panel are described below.

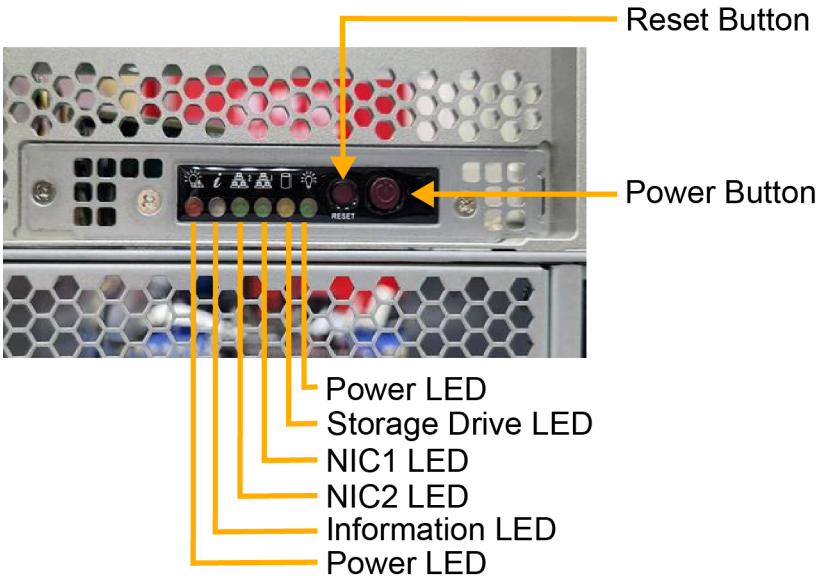



**Figure 1-3. Control Panel**

| Control Panel Features | |
|---|---|
| **Features** | **Description** |
| Power LED | One LED that indicates if the system is powered on |
| Storage Drive LED | One LED that indicates activity on the installed storage devices |
| NIC1 and NIC2 LED | Two LEDs that indicate activity on the corresponding LAN1 or LAN 2 connection on the installed AOC cards |
| Information LED | One LED that indicates system failure, UID, BMC, or RoT status |
| Power Fail LED | One LED that indicates a power failure |
| Reset Switch | One reset switch |
| Power Button | One power button to power the system on or off |

### Power Button

| Action | Result |
|---|---|
| Press | Turns the DC power (also known as "main power") on or off |
| Hold 4 seconds | Forces a shutdown |

### Power LED

The Power LED (green) indicates the state of the system power and is coupled with the Information LED to indicate the status of various RoT functions.

| Function | Status | Description |
|---|---|---|
| Power | Steady ON | DC power (main power) is on |
| RoT | Blinking at 4 Hz, with Information LED flashing blue at 10 Hz | BIOS firmware is updating |
| RoT | Blinking at 4 Hz | Checking BIOS/BMC integrity |
| RoT | Blinking, two blinks at 4 Hz, 1 pause at 2 Hz (with Information LED flashing blue at 10 Hz)<br>Essentially a blink pattern at 4 Hz of on-on-off-off, repeating | BMC firmware updating |
| RoT | Blinking at 1 Hz (with Information LED solid red) | Fault detected |

### Storage Drive LED

When flashing, the Storage Drive LED (amber) indicates activity on the installed storage devices. Only activity on storage devices connected to the PCH will be reflected on the Storage Drive LED. These devices include NVMe drives in drive bays cabled to the PCH (but not an HBA) and the M.2 NVMe internal storage devices.

The storage activity associated with other HBAs or NVMe drives can be monitored on the drive carriers.

### NIC1 and NIC2 LEDs

When flashing, the NIC1 and NIC2 LEDs (green) indicate activity on the corresponding LAN1 or LAN 2 connection on the installed AOC cards.

On 1U systems, the LAN1 LED will reflect the activity on AIOM port 1. Activity on the other AIOM ports will not cause LED activity on the front panel. Similarly, on 2U systems, the LAN1 LED corresponds to port 1 on the AIOMs, and LAN2 corresponds to port 2 on the AIOMs. Activity on additional ports, such as port 3 and port 4, will not be reflected on the front panel.

In addition to the front panel LAN1 and LAN2 LEDs, the AIOM module will have individual Link and Activity LEDs.

These Link and Activity LEDs follow the guidelines outlined in the OCP 3.0 specification, which allows for the uniformity of operation across all OCP 3.0 products. The guidelines include color, luminous intensity, and functional requirements. Please refer to the OCP 3.0 specification for more information.

### *Information LED*

The Information LED (blue, red) is a bi-color LED that communicates information about failures, UID, BMC, and RoT status in the system. See the summary table below. Some status definitions are coupled with the Power LED status to differentiate between different states in the system.

| Function | Status | Description |
|---|---|---|
| Failure | Red, solid | An overheat condition has occurred. |
| | Red, blinking at 1 Hz | Fan failure, check for an inoperative fan. |
| | Red, blinking at 0.25 Hz | Power failure, check for a non-operational power supply. |
| UID | Blue, solid | UID has been activated locally to locate the server in a rack environment. |
| | Blue, blinking at 1 Hz | UID has been activated remotely using the BMC to locate the server in a rack environment. |
| BMC | Blue, blinking at 2 Hz | BMC is resetting. |
| | Blue, blinking at 4 Hz | BMC is setting factory defaults. |
| RoT | Red, solid with Power LED blinking | Fault detected. |
| | Blue, blinking at 10 Hz with Power LED blinking | BMC or BIOS firmware being updated. The Power LED blink pattern identifies which firmware is being updated. |
| | Blue and red, blinking at 10 Hz | Recovery mode. |

## Rear View

Shown below are the features included on the chassis rear. The rear of the SYS-822GA-NGR3 chassis features two main sections: system fans and power supplies. These components are discussed later in this manual.

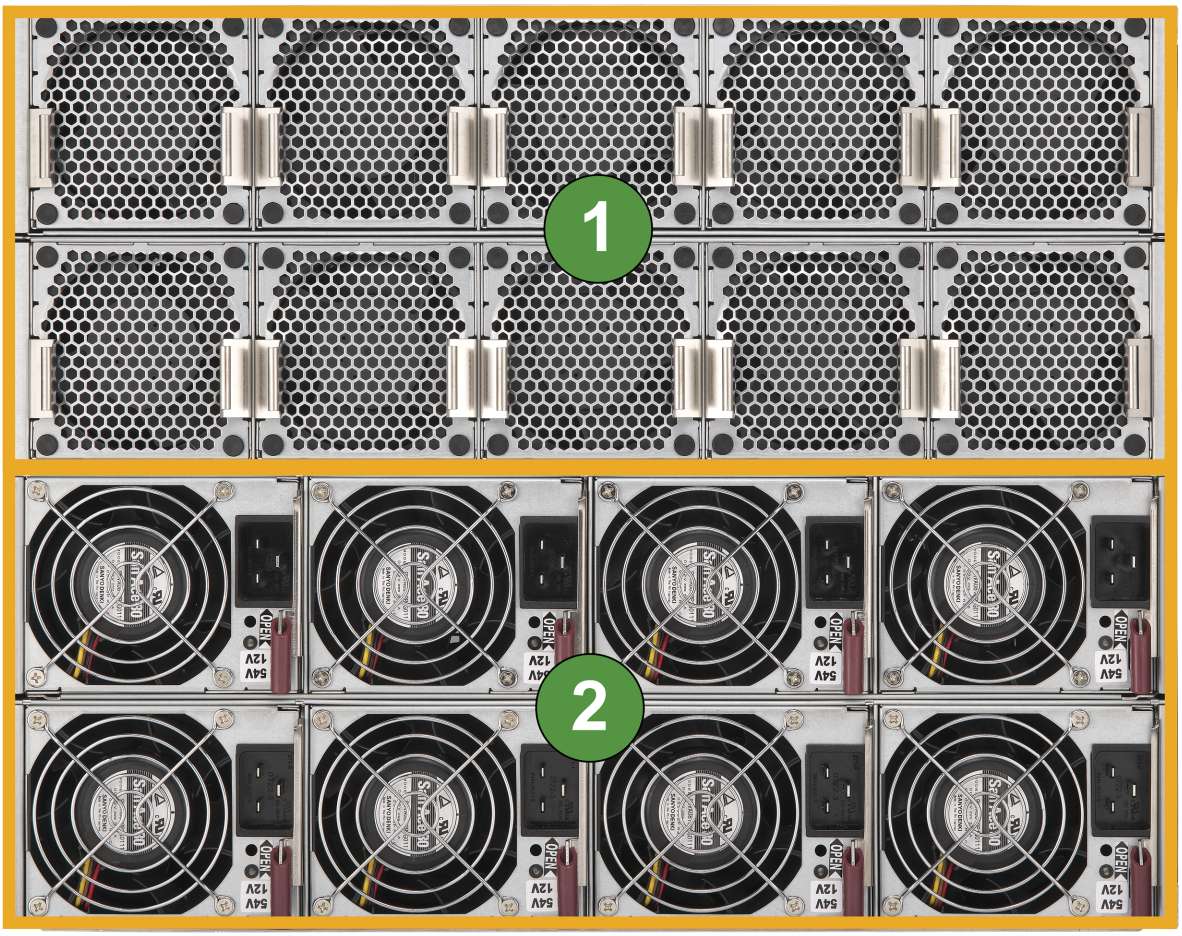



**Figure 1-4. Chassis Rear View**

| Chassis Features: Rear | | |
|---|---|---|
| **Item** | **Features** | **Description** |
| 1 | Rear System Fans | 10 high-speed system fans for cooling |
| 2 | Rear Power Supplies | Eight (4+4) 3000 W redundant power supply modules |

# 1.3 System Architecture

This section covers the locations of the system's main components and provides a system block diagram.

## System Layout

The SYS-822GA-NGR3 server is an 8U system that consists of two 4U trays – a motherboard tray and AI Processing (AIP) tray – featuring a blow-forward fan design and integrated power modules. The trays, fans, and power modules are connected through a middle-plane board for streamlined communication and power distribution.

The system's ten 80-mm x 80-mm fan modules are controlled by two fan control boards that connect with the middle-plane board through one power cable and one I2C signal cable.

The motherboard tray houses an X14 motherboard connected to a storage drive backplane, which supports eight 2.5" drive bays. The backplane accomodates eight NVMe drives and two onboard switches that provide a PCIe Gen5 signal interface. This interface enables connectivity with the Habana OAM/UBB modules in the AIP tray, which facilitates data transfer and monitoring for enhanced performance.

## Main Components

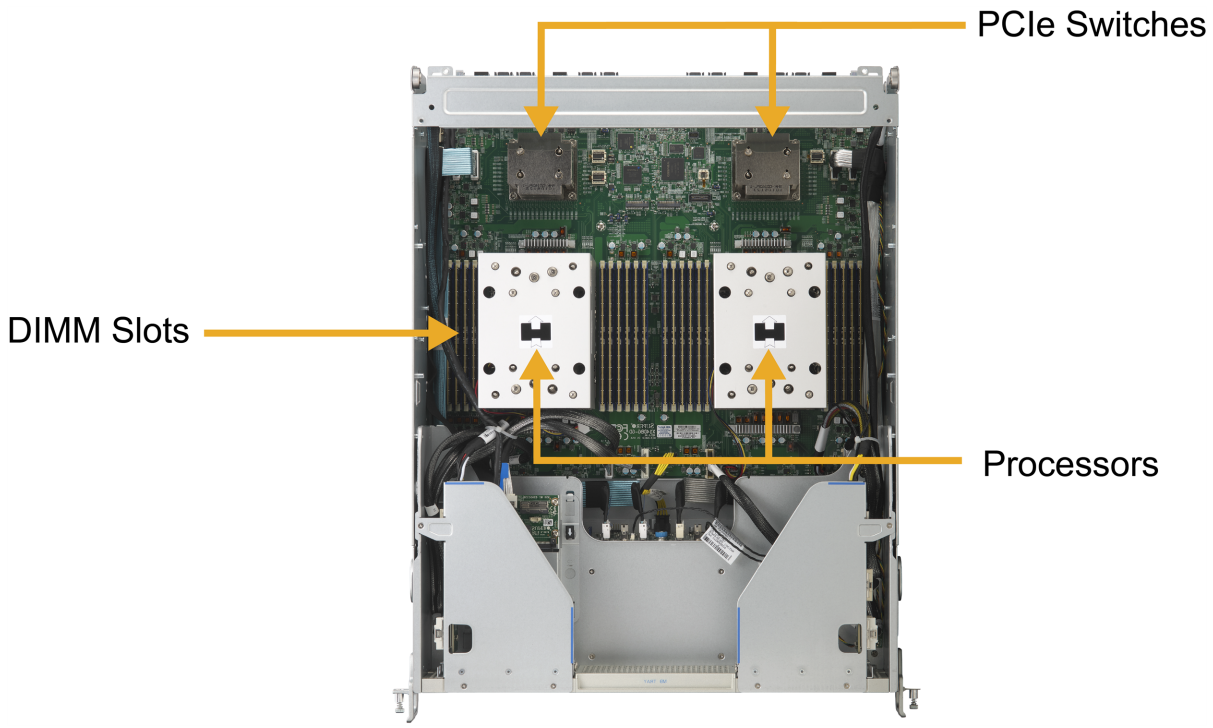



**Figure 1-5. SYS-822GA-NGR3 Main Component Locations**

| System Features Top | |
|---|---|
| **Feature** | **Description** |
| PCIe Switches | Two PCIe 5.0 switches that support two PCIe 5.0 x4 NVMe connections each. |
| DIMM Slots | 24 DIMM slots that support up to 6 TB of DDR5 ECC memory with speeds of up to 6400 MT/s (1DPC). Memory speed and capacity support depends on the processors used in the system. |
| Processors | Dual Intel Xeon 6900-series processors with P-cores in socket BR LGA 7529 with six UPIs (24 GT/s max.) and a thermal design power of up to 500 W. |

## Server Block Diagram

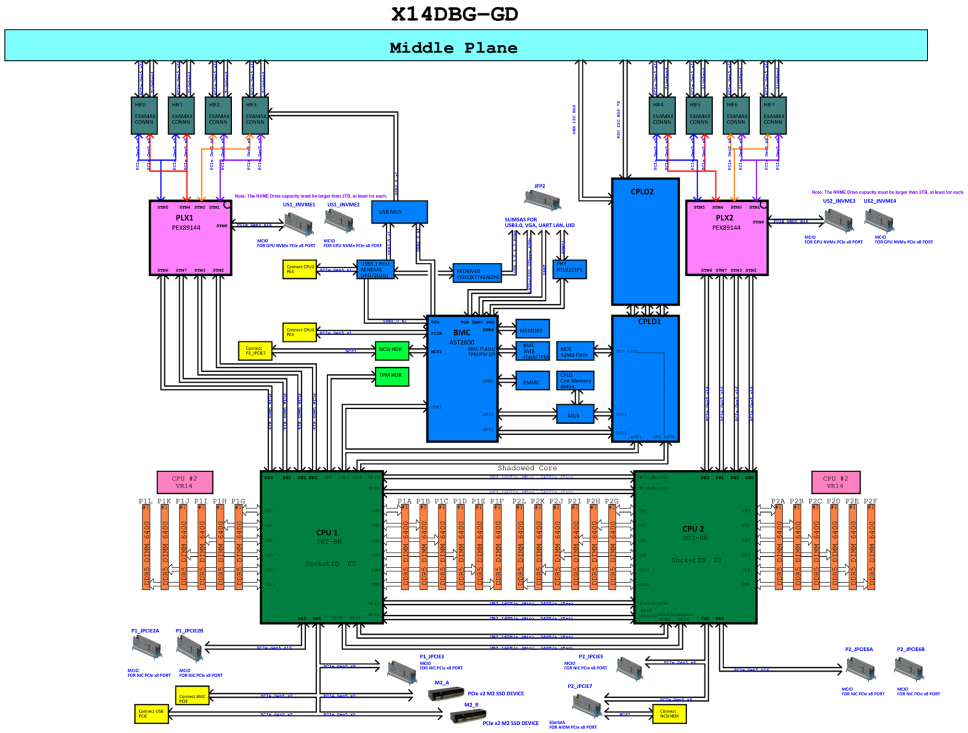



**Figure 1-6. SYS-822GA-NGR3 Block Diagram**

**Note:** This is a general block diagram and may not exactly represent the features on your motherboard. For the actual specifications of your motherboard, see Motherboard Quick Reference.

## 1.4 Motherboard Quick Reference

For details on the X14DBG-GD motherboard layout, features, and other quick reference information, refer to the content below.

### Motherboard Layout

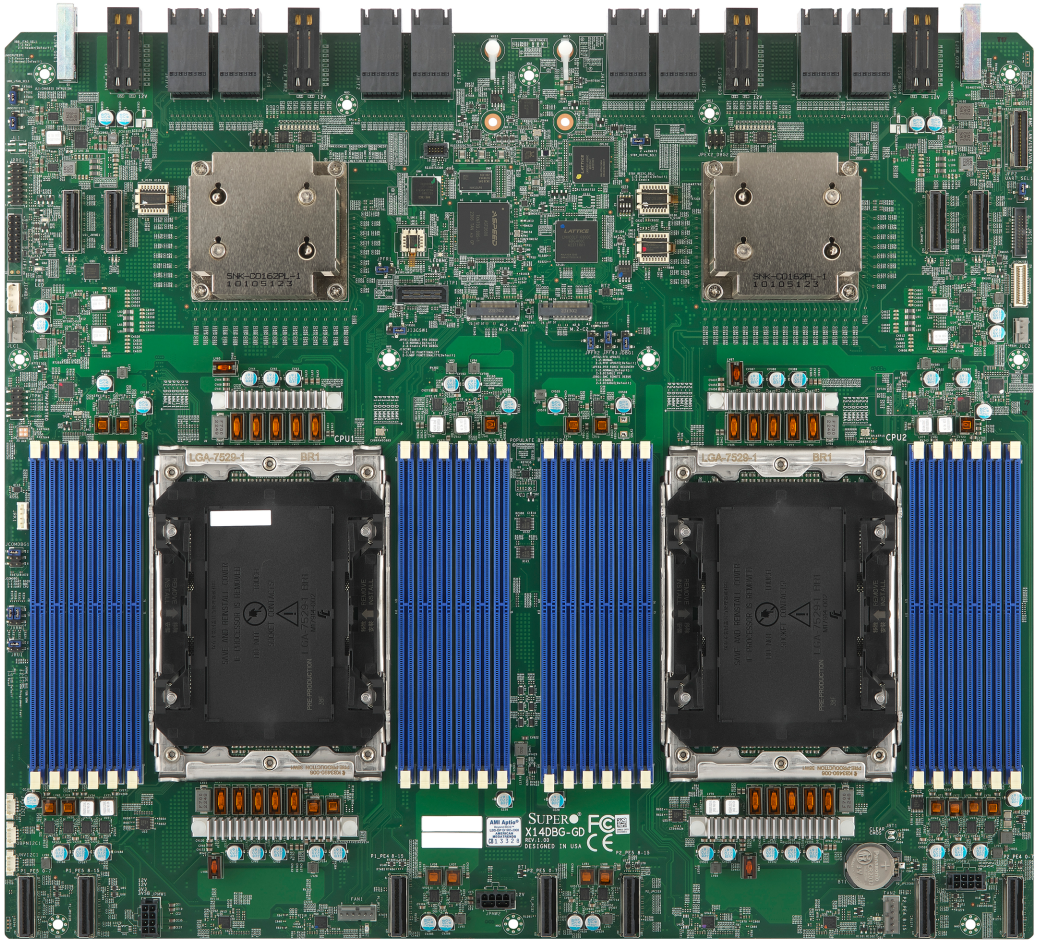



**Figure 1-7. X14DBG-GD Motherboard Image**

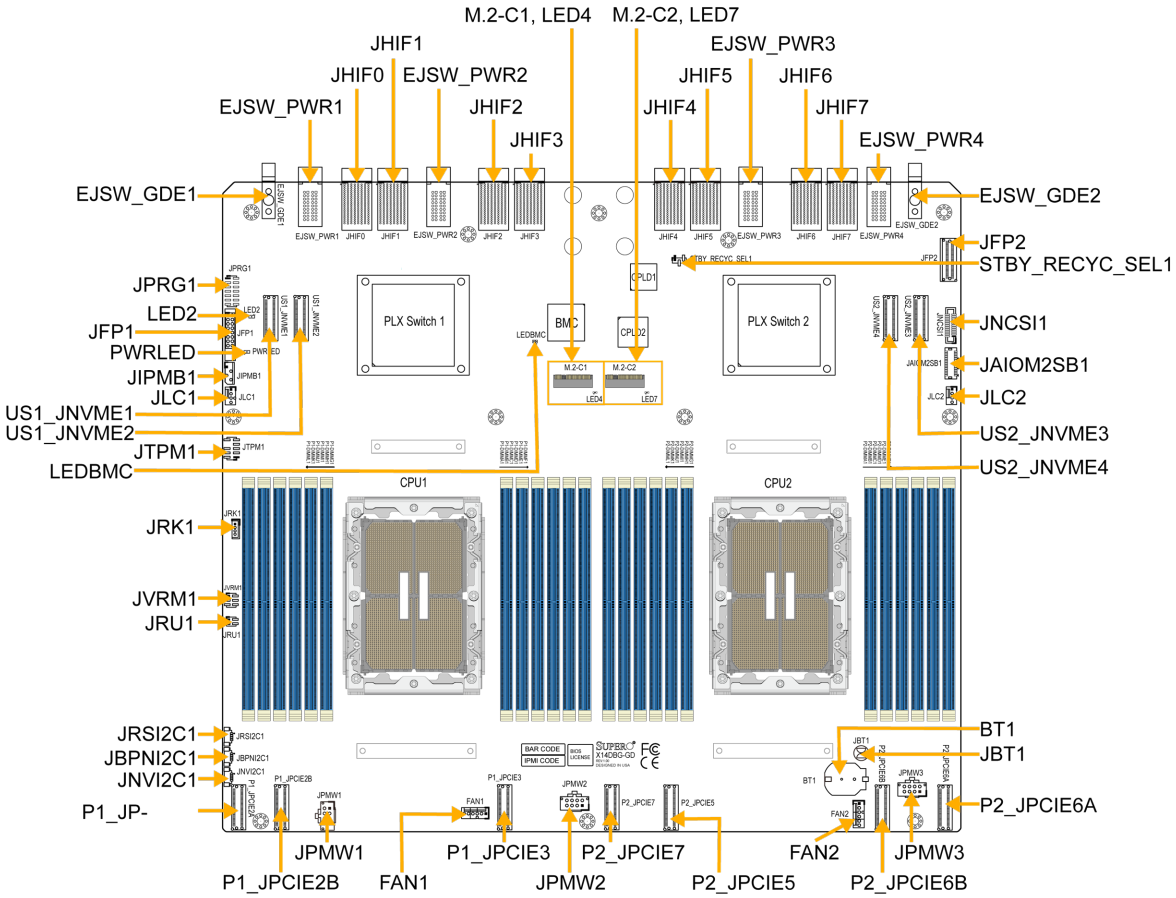



**Figure 1-8. X14DBG-GD Motherboard Layout**

**Notes:**

- See "Maintenance and Component Installation" on page 42 for detailed information on jumpers, connectors, and LED indicators.
- "■" indicates the location of pin 1.
- Components not documented are for internal testing-purposes only.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

## Quick Reference Table

| Jumper | Description | Default Setting |
|---|---|---|
| JBT1 | Clear CMOS (Onboard) | Short Pads to Clear CMOS |
| JRU1 | UID Swtich/ BMC Reset/ System Reset | Pins 1-2: UID Switch/ BMC Reset (Default)<br>Pins 3-4: System Reset |
| JVRM1 | I2C Bus for VRM | Pins 1-3, 2-4: BMC (Default)<br>Pins 2-2, 1-1: VRM Programmer Tool |
| STBY_RECYC_ SEL1 | Remote Standby Power Cycle | Pins 1-2: Disable<br>Pins 2-3: Enable (Default) |

| LED | Description | Status |
|---|---|---|
| LED2 | Unit Identifier (UID) LED | Blue On: Unit Identified |
| LED4, LED7 | M.2 LEDs for M.2-C1 and M.2-C2 | Blinking Green: Device Working |
| LEDBMC | BMC Heartbeat LED | Blinking Green: BMC Normal |
| PWRLED | Onboard Power LED | Solid Green: Power On |

| Connector | Description |
|---|---|
| BT1 | Onboard CMOS Battery |
| EJSW_GDE1, EJSW_GDE2 | Midplane Guide Pins |
| EJSW_PWR1– EJSW_PWR4 | +12 V DC PowerMAX Connectors (via the midplane) |
| FAN1, FAN2 | CPU Fan Headers |
| JAIOM2SB1 | Supermicro Advanced Input/Output Module (AIOM) Sideband Connector |
| JBPNI2C1 | SMBus Header (provides connection from BMC to BPN for BPN CPLD firmware update and NVMe sensor reading) |
| JFP1 | Front Control Panel Header |
| JFP2 | Front I/O Module Header for AOM-DXF-IO-P (with support of dedicated BMC LAN, COM, USB 3.0, and VGA connections) |

| Connector | Description |
|---|---|
| JHIF0–JHIF7 | ExaMAX Connectors (via the midplane for GPU system connection) |
| JIPMB1 | 4-pin BMC External I2C Header |
| JLC1, JLC2 | Liquid Cooling Leakage Sensor Headers |
| JNCSI1 | Network Controller Sideband Interface (NC-SI) Connector |
| JNVI2C1 | VPP I2C Header (provides connection from CPU/CPLD/PLX to BPN CPLD for NVMe hot swapping) |
| JPMW1, JPMW3 | Power Connectors with +12 V 4-pin, +3V3 V 2-pin, and +3V3_AUX 2-pin for the system riser device |
| JPMW2 | +12 V 8-pin Power Connector for the system backplane |
| JPRG1 | Connector reserved for manufacturer use for onboard Complex Programmable Logic Device (CPLD1 and CPLD2) firmware programming |
| JRK1 | Intel VROC RAID Key Header for NVMe RAID support |
| JRSI2C1 | SMBus Header for the riser card |
| JTPM1 | Trusted Platform Module/Port 80 Connector |
| M.2-C1, M.2-C2 | PCIe 5.0 x2 NVMe M.2 Slots (with support of M-key 2280/22110) |
| P1_JPCIE2A, P1_JPCIE2B, P1_JPCIE3 | MCIO x8 Connectors supported by CPU1 for front riser card (RSC-G-66G5S) |
| P2_JPCIE5, P2_JPCIE6A, P2_JPCIE6B | MCIO x8 Connectors supported by CPU2 for front riser card (RSC-GR-66G5S) |
| P2_JPCIE7 | MCIO x8 Connector supported by CPU2 for front AIOM card (AOM-AIOM-2X8-G5-P) |
| US1_JNVME1, US1_JNVME2 | MCIO x8 Connectors supported by the PLX Switch 1 (with support of two PCIe 5.0 x4 NVMe connections of each) |
| US2_JNVME3, US2_JNVME4 | MCIO x8 Connectors supported by the PLX Switch 2 (with support of two PCIe 5.0 x4 NVMe connections of each) |

**Note:** Jumpers, connectors, switches, and LED indicators that are not described in these tables are for manufacturing testing purposes only, and are not covered in this manual.

# Chapter 2:

# Server Installation

This chapter provides advice and instructions for mounting your server in a server rack. If your server is not already fully integrated with processors, system memory, etc., refer to "Maintenance and Component Installation" on page 42 for details on installing those specific components.

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

## 2.1 Unpacking the System

Inspect the box the server was shipped in and note if it was damaged in any way. If any equipment appears damaged, 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 "Standardized Warning Statements for AC Systems" on page 198.

## 2.2 Preparing for Setup

The box in which the SYS-822GA-NGR3 server was shipped should include the rackmount hardware needed to install it into the rack. Read this section in its entirety before you begin the installation.

### Choosing a Setup Location

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

### Rack Precautions

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

### System Precautions

- Review the electrical and general safety precautions in "Standardized Warning Statements for AC Systems" on page 198.
- 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

**Important:** 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:

- If this unit is the only unit in the rack, it should be mounted at the bottom of the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top, placing 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 workspace.
- Do not pick up the server with the front handles. They are designed to pull the system from a rack only.

### *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.).

## 2.3 Installing the Rails onto a Rack

The package includes two rail assemblies. Each is specifically designed for the left or right side of the chassis, and is marked accordingly. Each rail consists of two sections: a front section which secures to the front post of the rack and a rear section which adjusts in length and secures to the rear post of the rack.

There are a variety of rack units on the market, which may require a slightly different assembly procedure. This rail set fits a rack between 28" and 33.5" deep. Do not use a two post "telco" type rack.

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

1. Identify the left rail and right rail, as they are different.

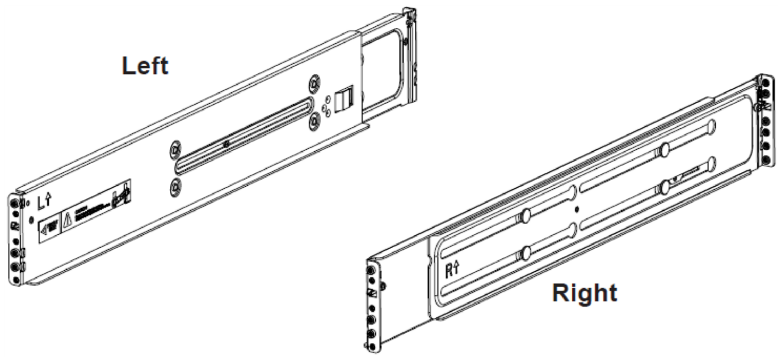



**Figure 2-1. Left and Right Rails**

2. In each rail set, the two sections are screwed together to keep them immobile during shipping. Release these screws just enough to allow the rail sections to slide apart. Note the arrow on the rail, which indicates the end that attaches to the front of the rack.
3. Slide the rails sections apart to match the depth of the rack. Position the rails with the template and secure the front of each to the front of the rack with two flathead screws, then secure the back of each rail to the rear of the rack with two flathead screws (see the following picture).

**Important:** This figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

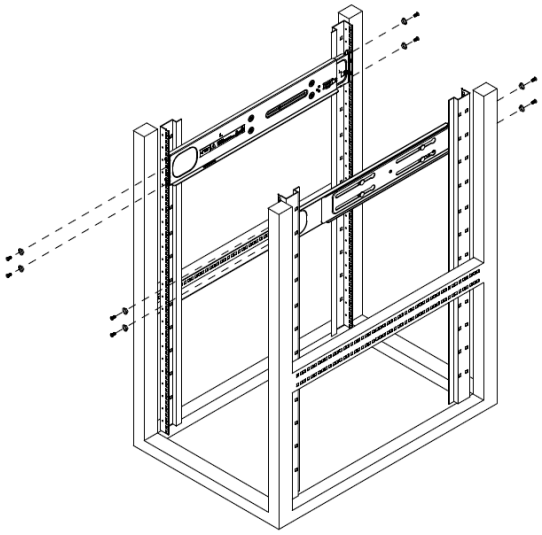


**Figure 2-2. Securing the Rails to the Rack**

## Identifying Rails

The CSE-GP806 chassis package includes two rail assemblies. Each assembly consists of three sections: an inner rail that secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis and labeled.

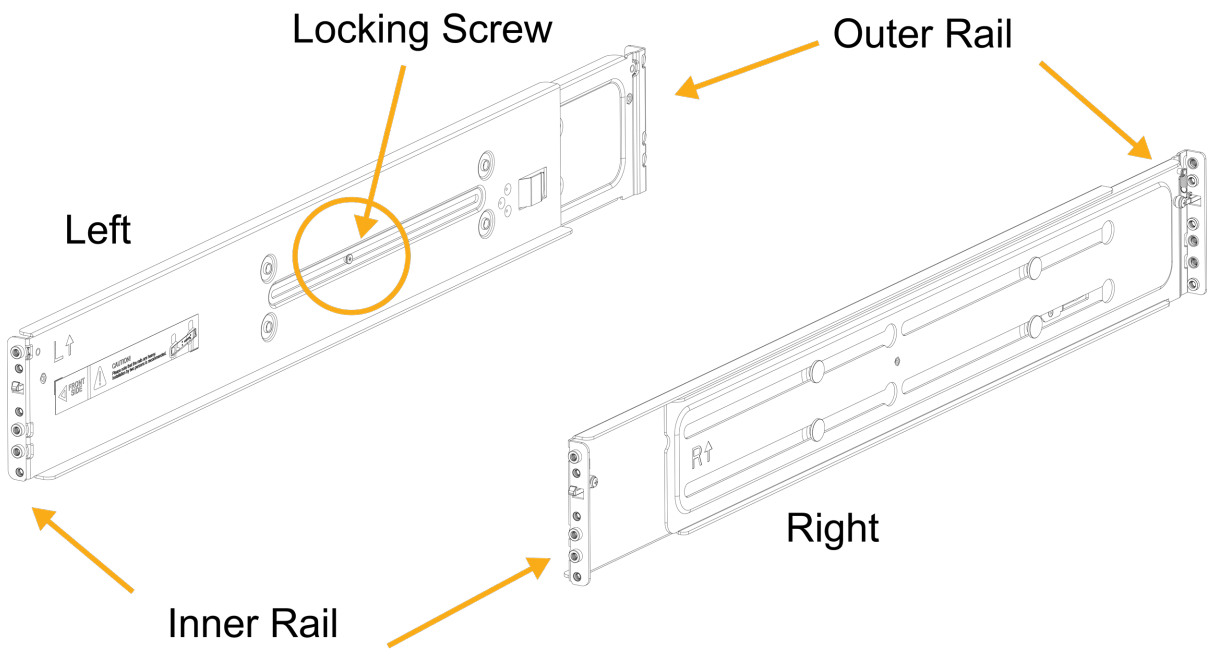



**Figure 2-3. Identifying the Left and Right Rail**

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

## Installing the Outer Rails onto the Rack

Each end of the assembled outer rail includes a bracket with hooks and square, spring-loaded pegs to fit into the square holes in your rack.

**Important:** 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.

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

1. Confirm that the left and right outer rails have been correctly identified.
2. Press upward on the locking tab at the rear end of the middle rail.
3. Push the middle rail back into the outer rail.
4. Hang the hooks on the front of the outer rail onto the square holes on the front of the rack. If desired, use screws to secure the outer rails to the rack.
5. Pull out the rear of the outer rail, adjusting the length until it just fits within the posts of the rack.
6. Hang the hooks of the rear section of the outer rail onto the square holes on the rear of the rack. Take care that the proper holes are used so the rails are level. If desired, use screws to secure the rear of the outer rail to the rear of the rack.
7. Repeat for the other outer rail.

**Important:** This figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

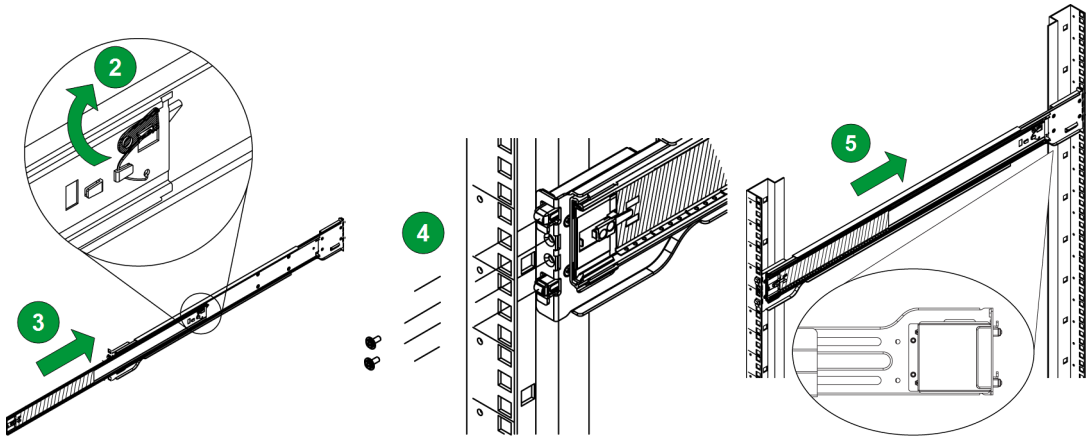



**Figure 2-4. Extending and Mounting the Outer Rails**

## 2.4 Installing the Chassis into a Rack

Once rails are attached to the chassis and the rack, the chassis is ready to be installed into a rack.

**Important:** Mounting or removing the system from the rack requires at least three people to support the chassis during installation. Follow the safety recommendations printed on the rails.

1. Align the chassis carefully and push it into the extension outer rail, as illustrated below.
2. Once the chassis is mounted in the outer rail, it can be pushed all the way into the rack.

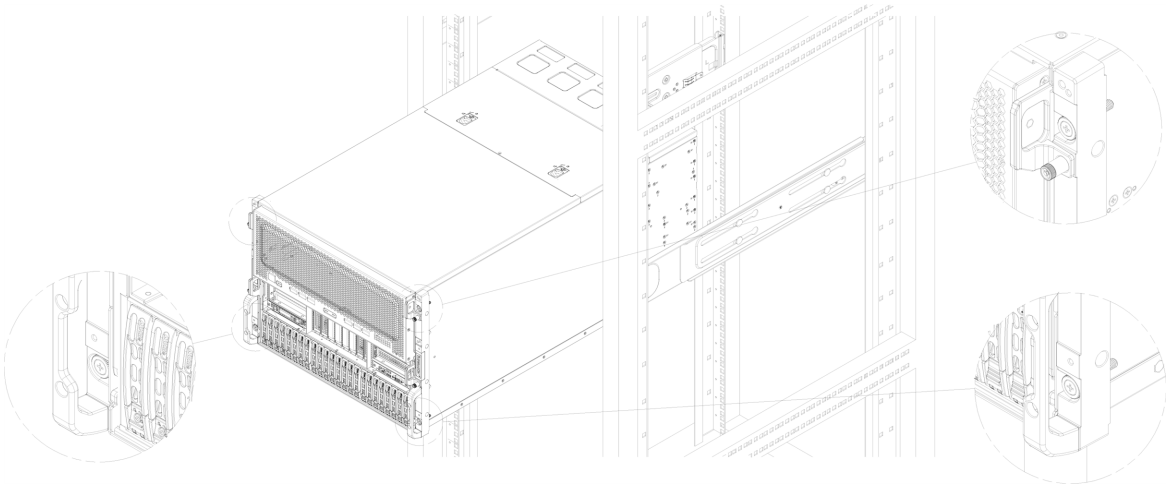


**Figure 2-5. Installing the Chassis**

3. After you've secured the main chassis to the rack, mount each tray one at a time. Push each tray to the back of the chassis and secure the trays with two flathead screws to prevent them from sliding out.

## Removing the Chassis from the Rack

The process of removing the chassis from the rack is basically the reverse of the installation procedure.

1. Begin by removing the power to your system, then remove all screws from the GPU, CPU trays, pull them out one at a time until all the remaining trays are off.

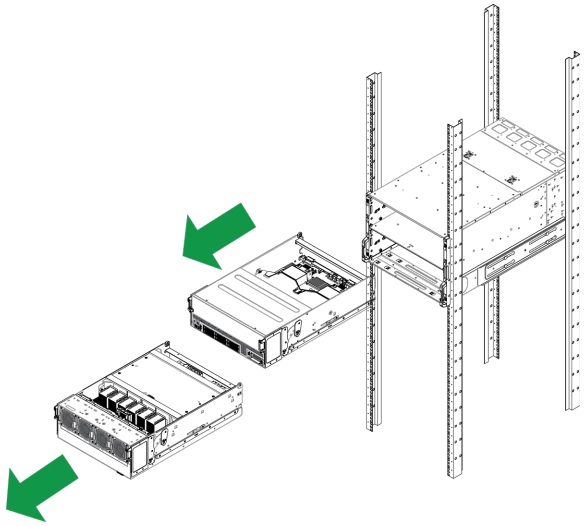


**Figure 2-6. Removing the GPU, CPU trays**

2. Remove the chassis as illustrated below.

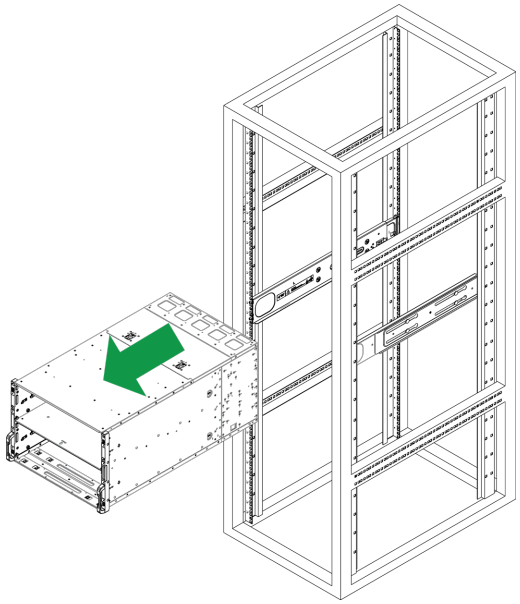


**Figure 2-7. Unmounting the Chassis from the Rack**

# Chapter 3:

# Maintenance and Component Installation

This chapter provides instructions on installing and replacing main system components for the SYS-822GA-NGR3 server. 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. Follow the procedures given in each section.

## 3.1 Removing Power

Use the following procedure to ensure that power has been removed from the SYS-822GA-NGR3 server. 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

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

**Important:** The GPU/UBB board must only be replaced by Supermicro.

### Removing the GPU Drawer

As the name implies, the GPU drawer houses the system's GPUs. The GPU drawer may be removed from the chassis for maintenance.

1. There are two levers, one located directly on the left and right side of the GPU drawer. Pull these two levers down, as shown.
2. Use these levers to pull the drawer out from the chassis.

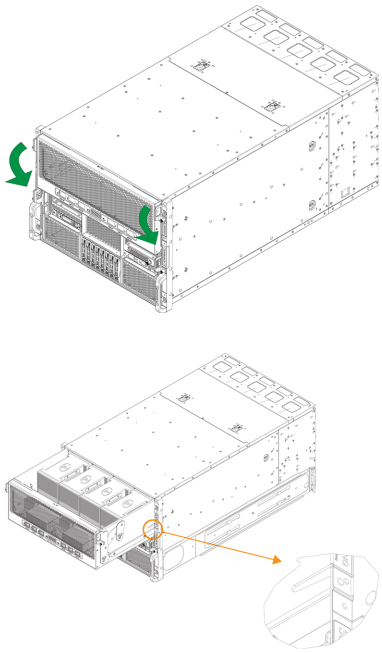


**Figure 3-1. Removing the GPU Drawer**

## Reinstalling the GPU Drawer

1. To reinstall the GPU drawer, slide the tray into the chassis.
2. Push the levers back until they snap into place.
3. Secure each lever with a screw.

## Removing the CPU Drawer

The CPU drawer houses the system's motherboard, CPU and related components. The CPU drawer may be removed from the chassis for maintenance.

1. There are two levers, one located directly on the left and right side of the CPU drawer. Pull these two levers down, as shown.
2. Use these levers to pull the drawer out from the chassis.

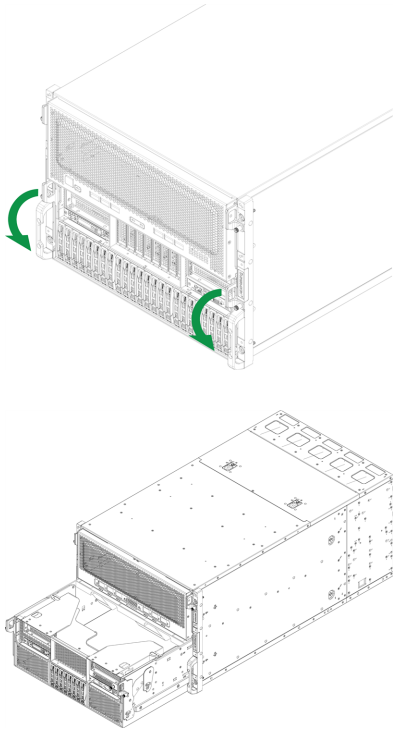


**Figure 3-2. Removing the CPU Drawer**

## 3.3 Static-Sensitive Devices

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

### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the motherboard by its edges only. Do not touch its components, peripheral chips, memory modules, or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure that your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners, and the motherboard.
- Use only the correct type of onboard CMOS battery. Do not install the onboard battery upside down to avoid possible explosion.

## 3.4 Processor and Heatsink Installation

This section provides procedures to install the processor(s) and heatsink(s).

**Notes:**

- Take industry standard precautions to avoid ESD damage. For details, see "Static-Sensitive Devices" on the previous page.
- Before starting, make sure that the plastic socket cap is in place and none of the socket pins are bent. If any damage is noted, contact your retailer.
- Do not connect the system power cord before the processor and heatsink installation is complete.
- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or processor socket.
- When buying a processor separately, use only a Supermicro certified heatsink.
- Refer to the Supermicro website for the most recent processor support.
- When installing the heatsink, ensure a torque driver set to the correct force is used for each screw.
- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.

## Intel Xeon 6900-series Processors with P-cores

### *Processor Top View*

**Figure 3-3. Processor**

## Overview of the Processor Carrier Assembly

The processor carrier assembly contains the processors and processor carriers.

### *Processor*

**Figure 3-4. Processor**

## *Processor Carriers*

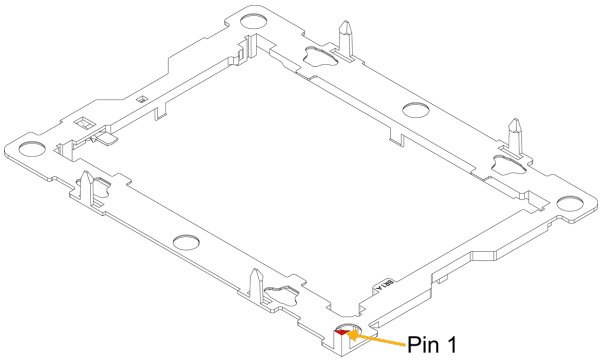



**Figure 3-5. Carrier BR1A**

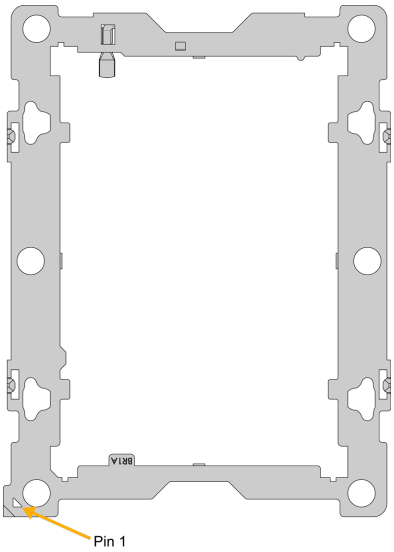



**Figure 3-6. Carrier Top View**

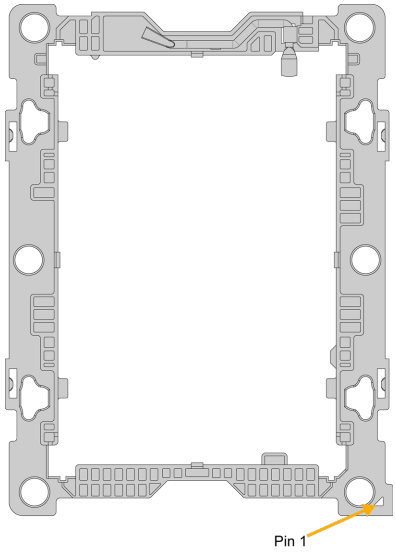



**Figure 3-7. Carrier Bottom View**

## Overview of the Processor Socket

The processor socket is protected by a plastic protective cover.

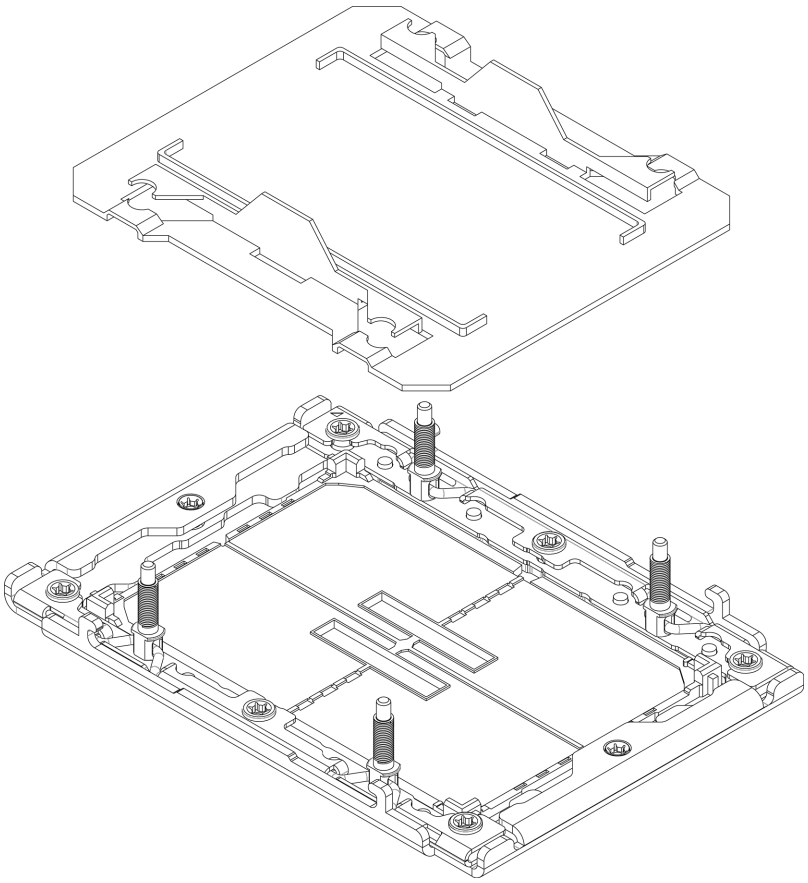


**Figure 3-8. Plastic Protective Cover and Processor Socket**

## Overview of the Processor Heatsink Module (4U)

The Processor Heatsink Module (PHM) contains a heatsink, a processor carrier, and the processor.

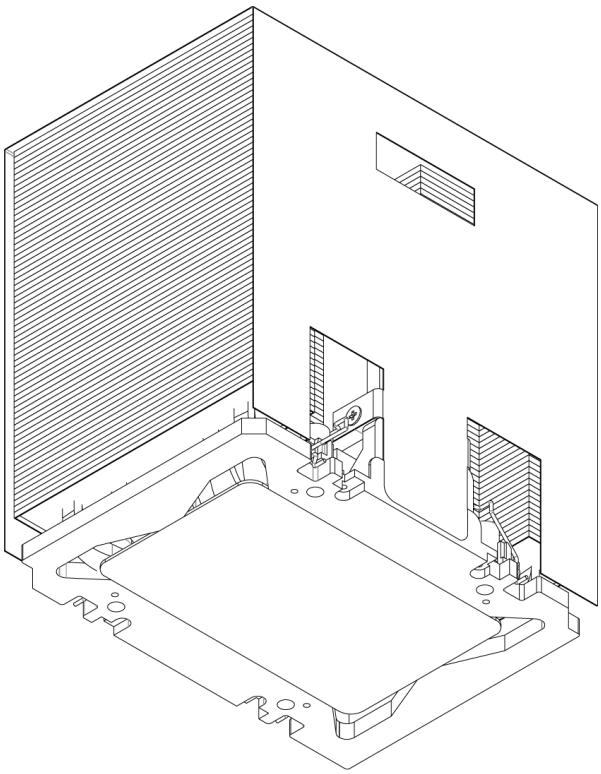


**Figure 3-9. Heatsink**

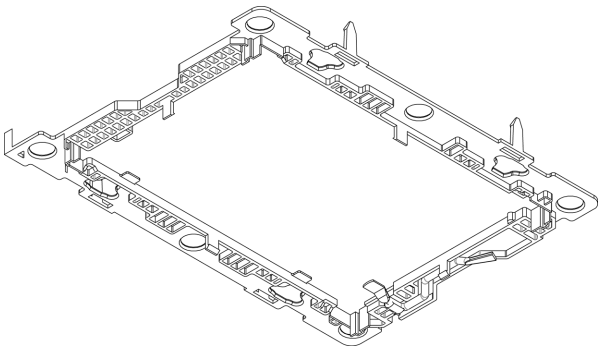


**Figure 3-10. Carrier**

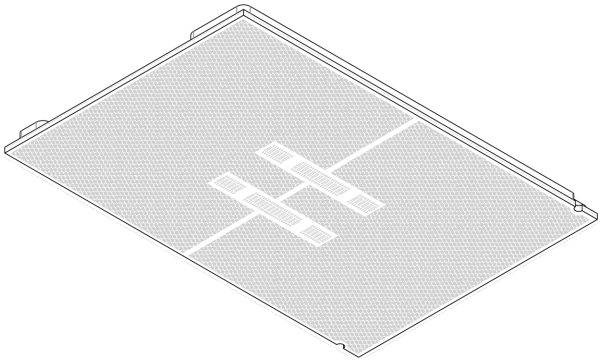


**Figure 3-11. Processor**

## Creating the Processor Carrier Assembly

To install a processor into the processor carrier, follow the steps below:

1. Ensure the lever on the processor carrier is pressed down and held by a latch on the processor carrier as shown below.

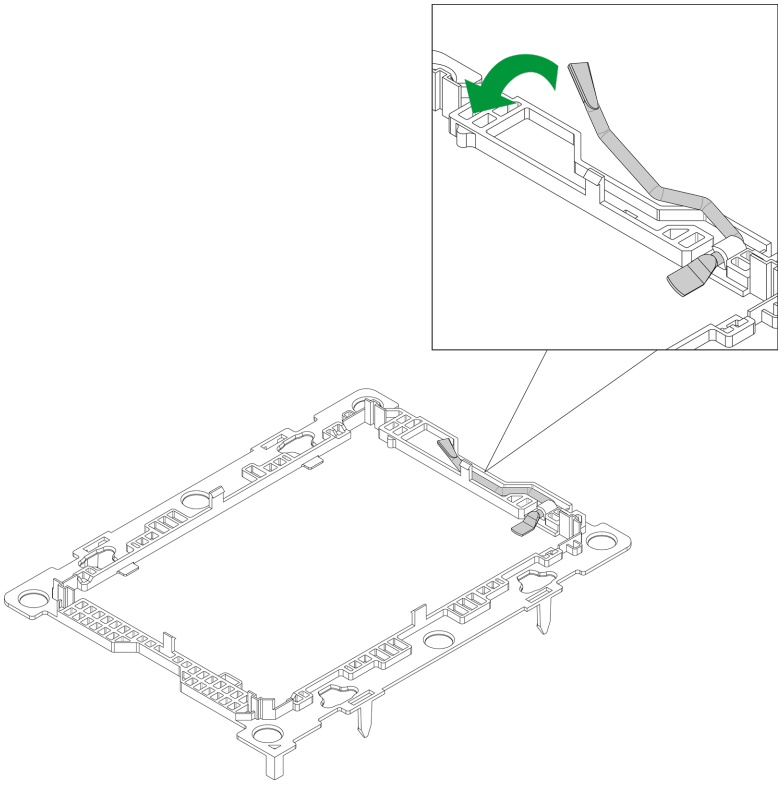


**Figure 3-12. Carrier Lever**

2. Hold the processor with the LGA lands (gold contacts) facing up. Locate the small, gold triangle in the corner of the processor and the corresponding hollowed triangle on the processor carrier. These triangles indicate pin 1.

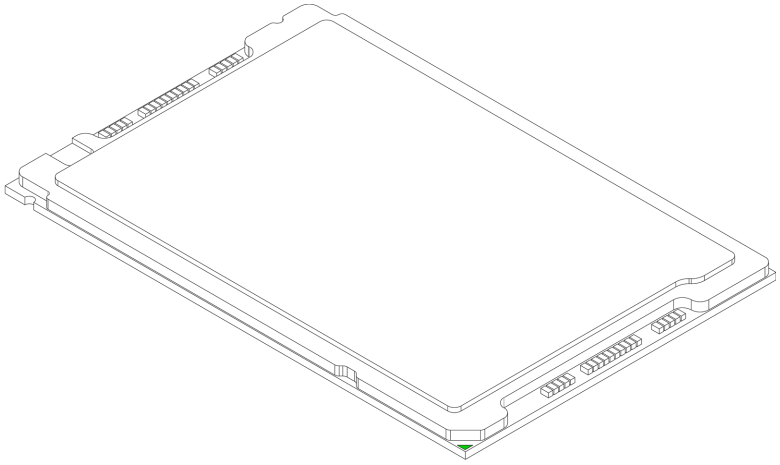


**Figure 3-13. Processor**

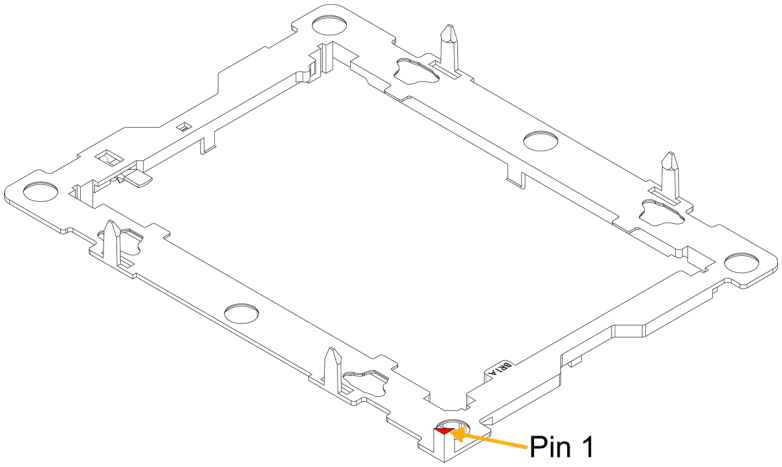



**Figure 3-14. Carrier**

3. While ensuring that the pin 1 triangles point towards the same direction, flip over the processor and processor carrier. Use the latches on the processor carrier to secure the processor onto the processor carrier. Processor keys on the processor and processor carrier will prevent securing the processor in an incorrect orientation.

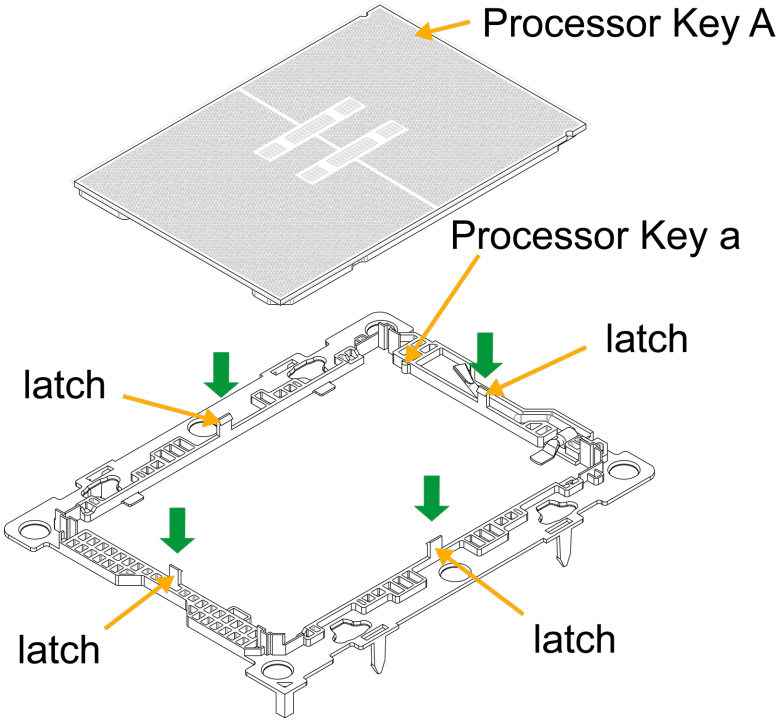



**Figure 3-15. Keys and Latches Locations**

4. Examine all corners to verify that the processor is secured to the carrier. Two triangles indicating pin 1 on the processor and processor carrier should point towards the same direction.

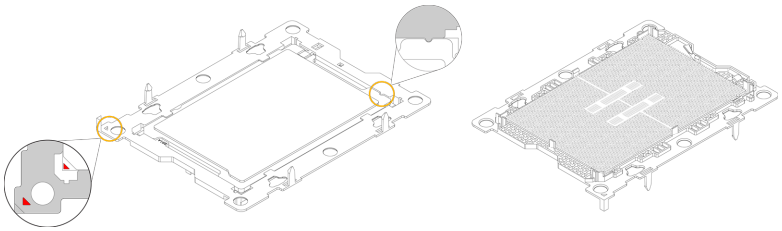


**Figure 3-16. Processor and BR1A Keys and Latches**

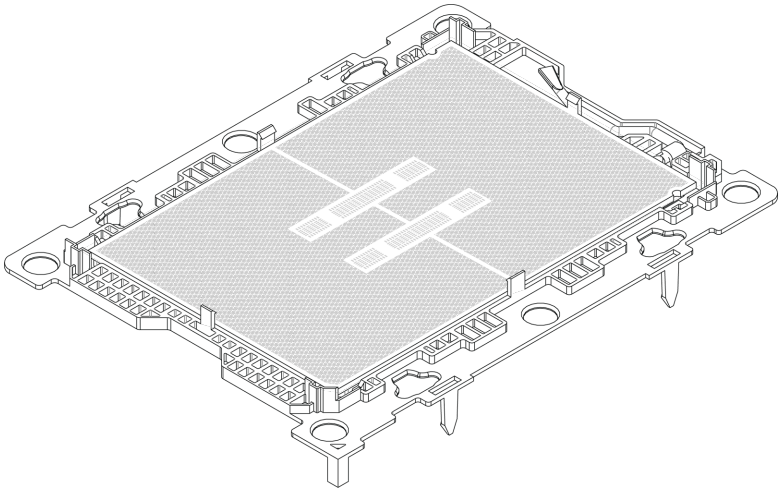


**Figure 3-17. Carrier Assembly Complete**

## Assembling the Processor Heatsink Module (4U)

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

1. Note the label on top of the heatsink, which marks the airflow direction. Turn the heatsink over and orient the heatsink so the airflow arrow is pointing towards the triangle on the processor.
2. If this is a new heatsink, the thermal grease has been pre-applied. Otherwise, apply the proper amount of thermal grease.
3. Hold the processor carrier assembly so the processor's gold contacts are facing up, then align the holes of the processor carrier assembly with the holes on the heatsink. Press the processor carrier assembly down until it snaps into place. The plastic clips of the processor carrier assembly will lock at the four corners.

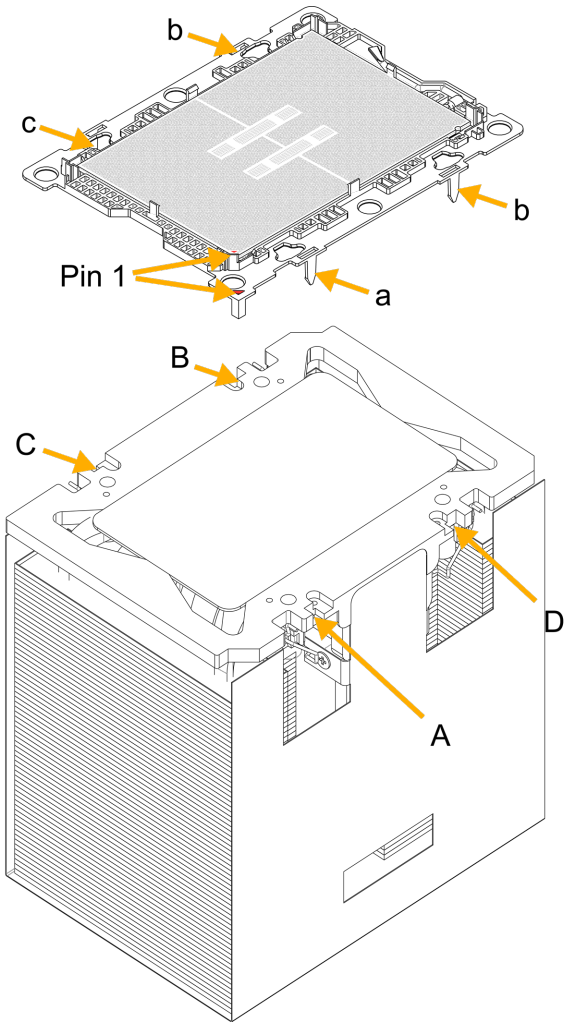



**Figure 3-18. Carrier with Heatsink**

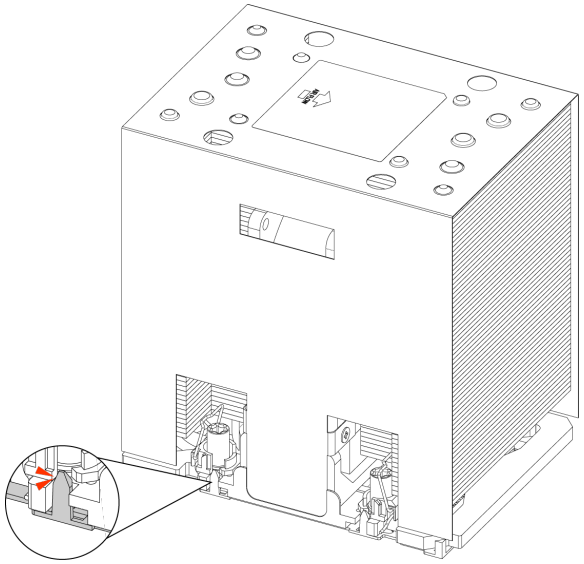


**Figure 3-19. PHM Plastic Clips Locked**

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

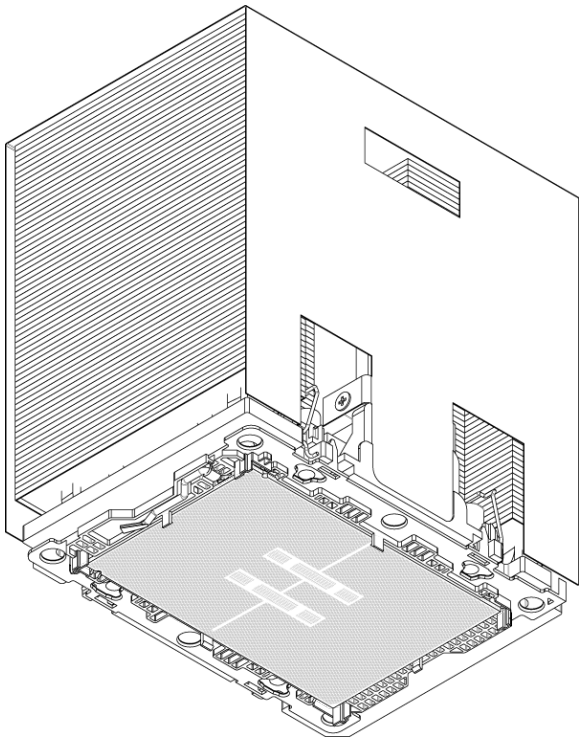


**Figure 3-20. PHM Completed**

## Preparing the Processor Socket for Installation

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

1. Press the tabs inward.

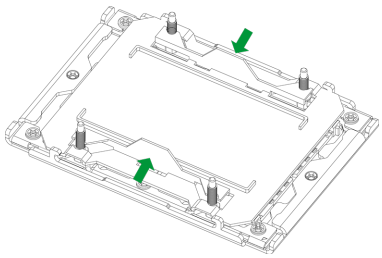


**Figure 3-21. Processor Socket with Plastic Protective Cover**

2. Pull up the protective cover from the socket.

**Note:** Do not touch or bend the socket pins.

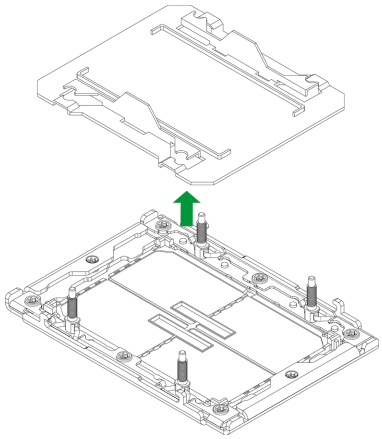


**Figure 3-22. Plastic Protective Cover Removed**

## Preparing to Install the 4U PHM into the Processor Socket

After assembling the Processor Heatsink Module (PHM), you are ready to install it into the processor socket. To ensure the proper installation, follow the procedures below:

1. Locate four threaded fasteners (marked a, b, c, and d) on the processor socket.

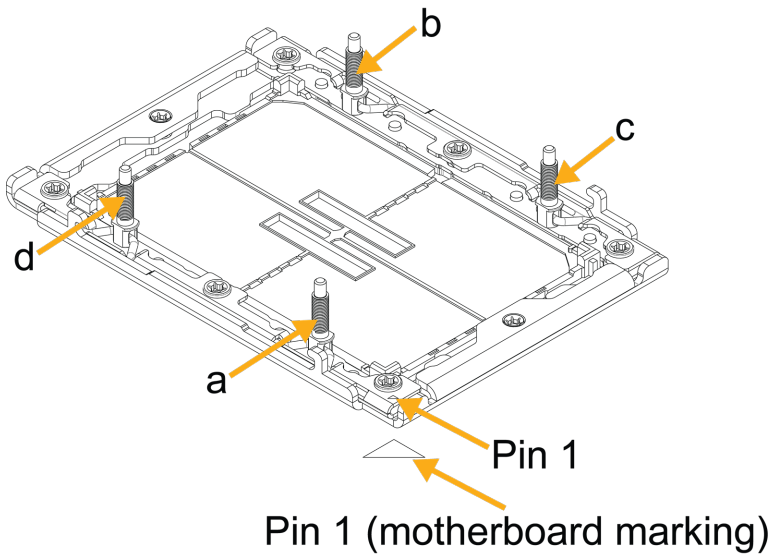



**Figure 3-23. Threaded Fasteners**

2. Locate four PEEK nuts (marked A, B, C, and D) and four rotating wires (marked 1, 2, 3, and 4) on the heatsink.

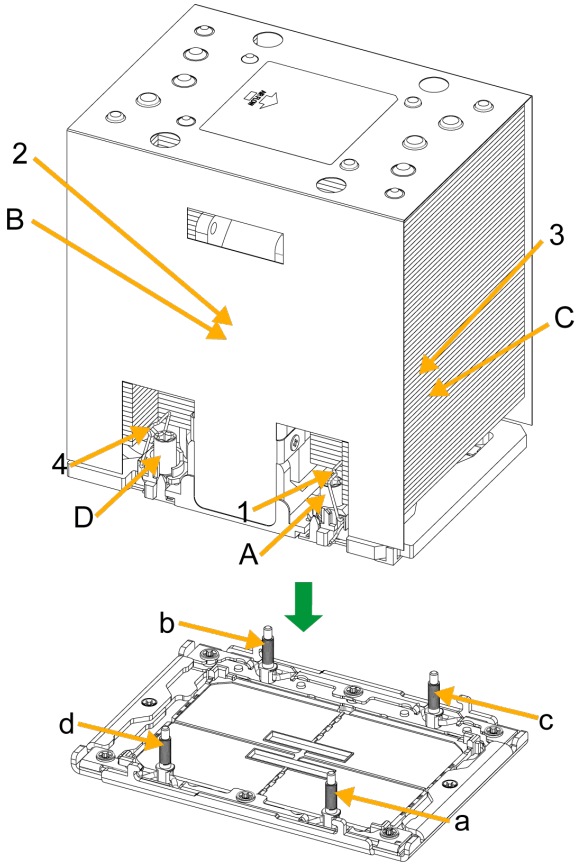



**Figure 3-24. PEEK Nuts and Rotating Wires**

3. Check the rotating wires (marked 1, 2, 3, and 4) to make sure that they are at unlatched positions before installing the PHM into the processor socket.

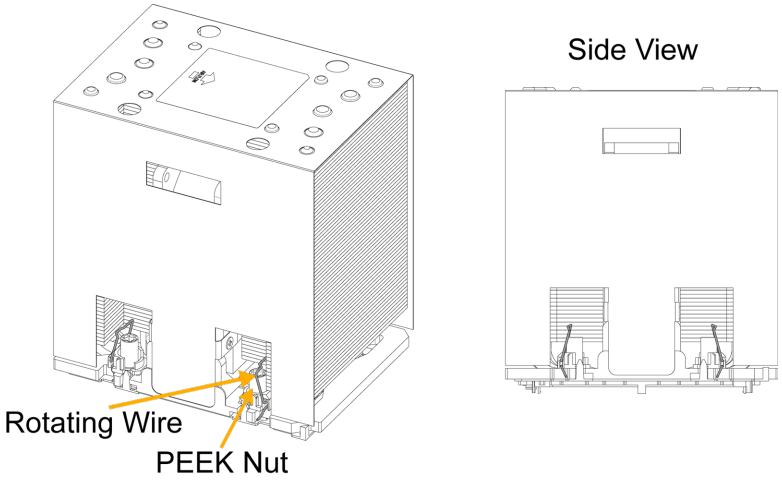



**Figure 3-25. Unlatched Positions**

## Installing the Processor Heatsink Module (4U)

1. Align pin 1 of the PHM with the printed triangle on the processor socket.
2. Make sure all four PEEK nuts of the heatsink (marked A, B, C, and D) are aligned with the threaded fasteners (marked a, b, c, and d), then gently place the heatsink on top of the processor socket.

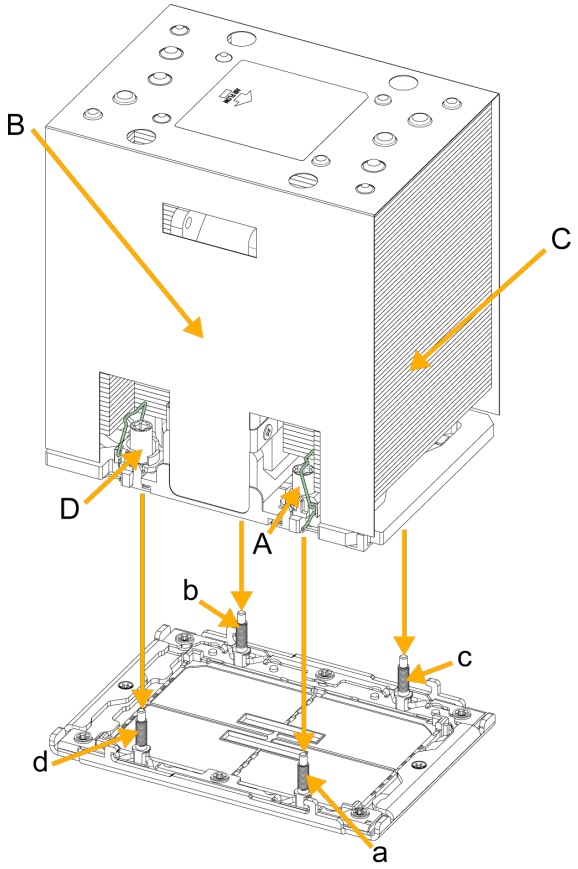



**Figure 3-26. Align the Heatsink with the Socket**

3. Press all four rotating wires inwards and make sure that the heatsink is securely latched into the processor socket.

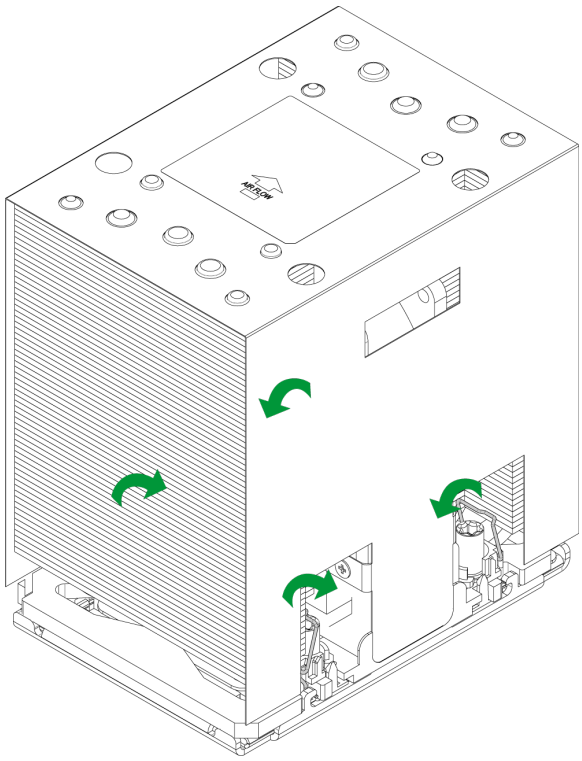



**Figure 3-27. Latch the PHM**

4. With a T30 bit torque driver set to a force of 8.0 in-lbf (0.904 N-m), gradually tighten the four screws to ensure even pressure. You can start with any screw, but make sure to tighten the screws in a diagonal pattern.

**Important:** Do not use a force greater than 8.0 in-lbf (0.904 N-m). Exceeding this force may over-torque the screw, causing damage to the processor, heatsink, and screw.

5. Examine all corners to ensure that the PHM is firmly attached to the socket.

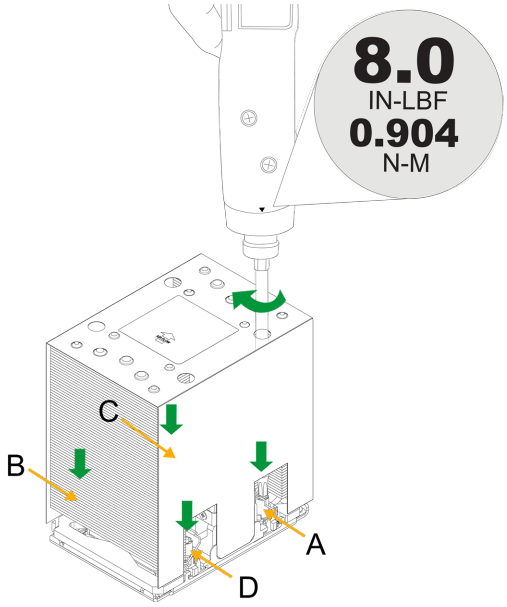



**Figure 3-28. Install the PHM with a Torque Driver**

## Removing the Processor Heatsink Module (4U)

Before removing the processor heatsink module (PHM) from the motherboard, shut down the system and then unplug the AC power cord from all power supplies.

Then follow the steps below:

1. Use a screwdriver to loosen the four screws. You can start with any screw, but make sure to loosen the screws in a diagonal pattern.

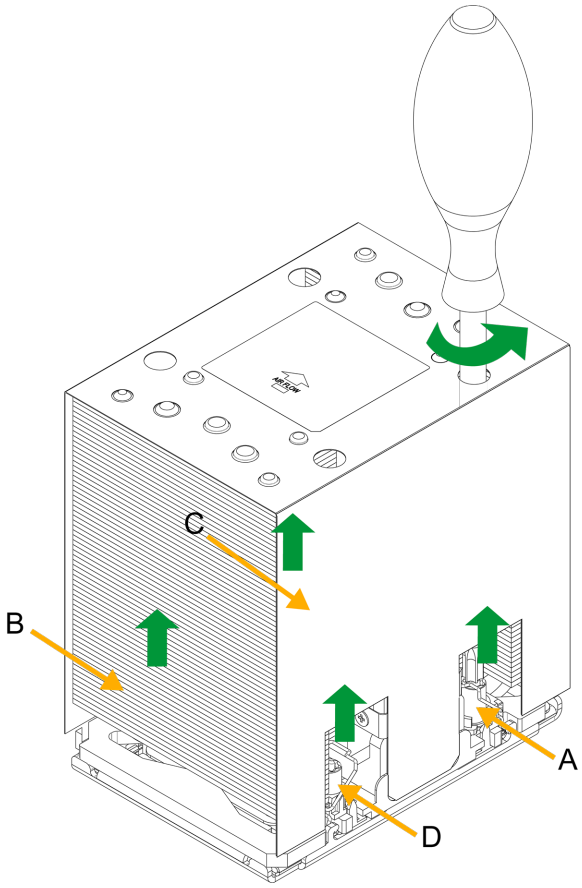



**Figure 3-29. Loosen the Screws**

2. Press the four rotating wires outwards to unlatch the PHM from the socket.

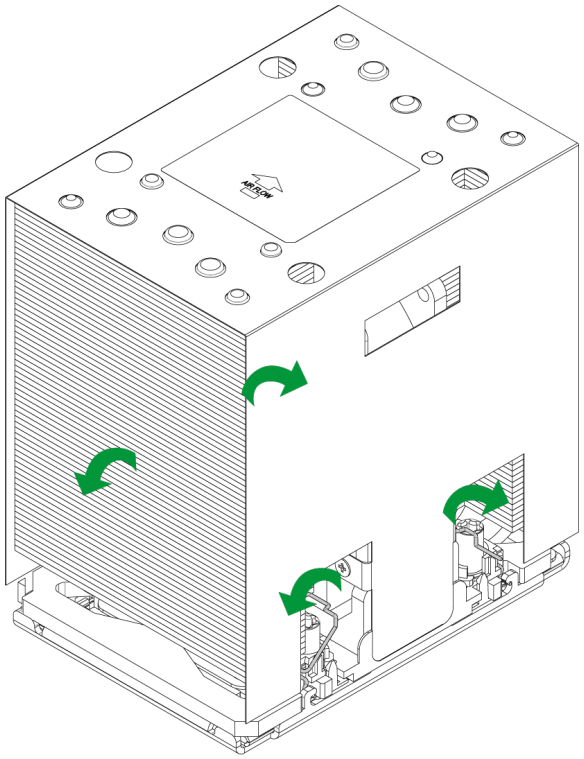


**Figure 3-30. Unlatch the PHM**

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

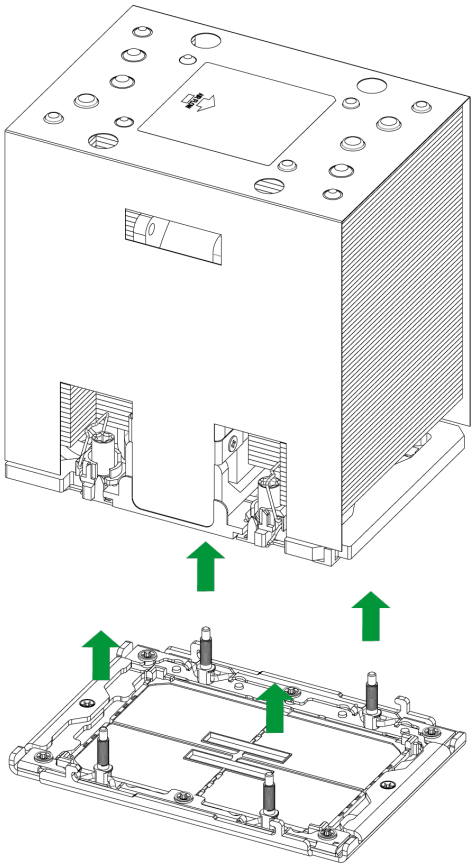


**Figure 3-31. Remove the PHM from the Socket**

4. To remove the processor from the heatsink, gently lift the lever from the processor carrier.

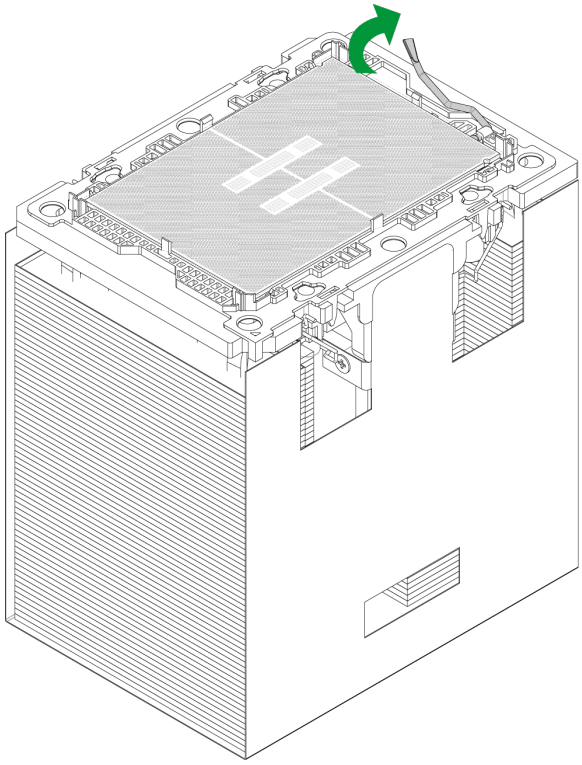


**Figure 3-32. Carrier with Heatsink**

5. To remove the processor, move the lever to its unlocked position and gently remove the processor.

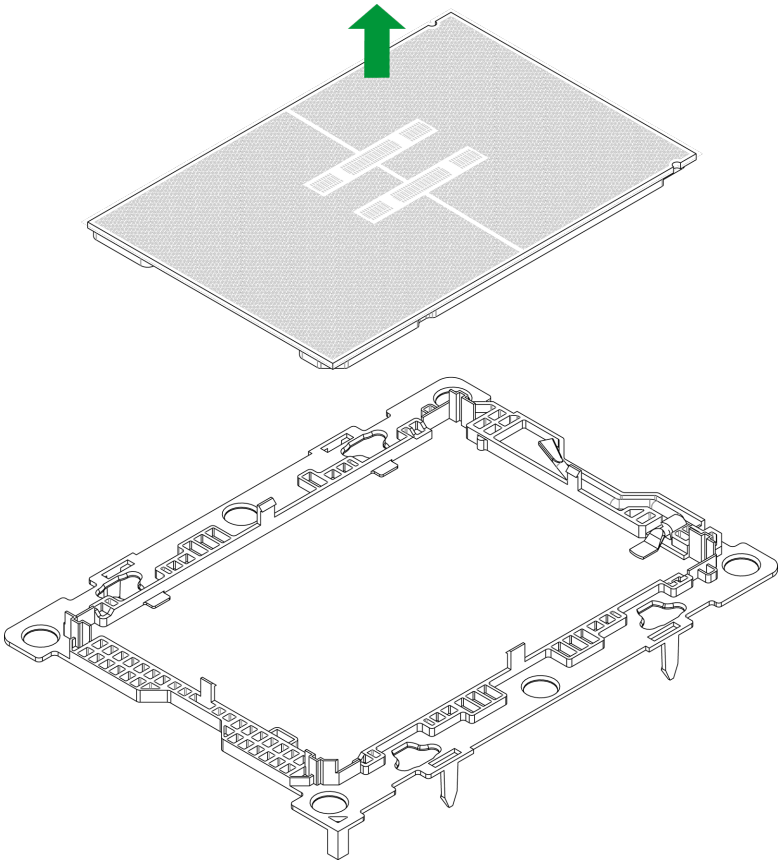


**Figure 3-33. Processor Removal**

# 3.5 Memory Support and Installation

**Important:** Exercise extreme care when installing or removing memory modules to prevent any damage.

**Note:** Check the Supermicro website for recommended memory modules.

## Memory Support

The X14DBG-GD motherboard supports up to 6 TB of DDR5 (287-pin) memory with speeds of up to 6400 MT/s (1DPC).

To enhance memory performance and ensure system stability, do not mix memory modules of different speeds, different sizes, and different types in your system.

**Note:** Memory speed and capacity support depends on the processors used in the system.

### *Memory Support for the Intel Xeon 6900-series processors with P-cores*

| DDR5-6400 Memory Support for the Intel Xeon 6900-series processors with P-cores | | | | | |
|---|---|---|---|---|---|
| **Type** | **Ranks Per DIMM and Data Width** | **DIMM Capacity (GB)** | | | **Speed (MT/s); Voltage (V); Slots per Channel (SPC) and DIMMs per Channel (DPC)** |
| | | **DRAM Density (1DPC)** | | | **1DPC** |
| | | **16 Gb** | **24 Gb** | **32 Gb** | **1.1 V** |
| **RDIMM** | 1Rx4 (R/C C) | 32 GB | 48 GB | - | 6400 |
| | 2Rx8 (R/C E) | 32 GB | 48 GB | - | |
| | 2Rx4 (R/C A) | 64 GB | 96 GB | 128 GB | |
| **RDIMM 3DS** | 8Rx4 (R/C A) | 256 GB | - | - | |
| **MRDIMM** | 2Rx8 | 32 GB | 48 GB | - | 8800 |
| | 2Rx4 | 64 GB | 96 GB | 128 GB | |
| | 4Rx8 | 64 GB | 96 GB | - | |
| **Tall MRDIMM** | 4Rx4 2U | 128 GB | - | - | |
| | 4Rx4 2U | - | - | 256 GB | |

| DDR and MRDIMM Memory Support for the Intel Xeon 6900-series processors with P-cores | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Memory Channels** | **DIMM Type** | **Slots Per Channel** | **DIMMs Per Channel** | **Slot 0 DIMM Ranks, Width** | **Slot 0 DIMM Capacity (GB)** | **DIMM Organization** | **DIMM Density (Gb)** |
| 12 | RDIMM | 1 | 1 | 2Rx8 | 32 | 5x8 | 16 |
| 12 | RDIMM | 1 | 1 | 1Rx4 | 32 | 10x4 | 16 |
| 12 | RDIMM | 1 | 1 | 2Rx8 | 48 | 5x8 | 24 |
| 12 | RDIMM | 1 | 1 | 1Rx4 | 48 | 10x4 | 24 |
| 12 | RDIMM | 1 | 1 | 2Rx4 | 64 | 10x4 | 16 |
| 12 | RDIMM | 1 | 1 | 2Rx4 | 96 | 10x4 | 24 |
| 12 | RDIMM | 1 | 1 | 2Rx4 | 128 | 10x4 | 32 |
| 12 | RDIMM | 1 | 1 | 4H 3DS | 256 | 10x4 | 16 |
| 12 | MRDIMM | 1 | 1 | 2Rx8 | 32 | 5x8 | 16 |
| 12 | MRDIMM | 1 | 1 | 2Rx8 | 48 | 5x8 | 24 |
| 12 | MRDIMM | 1 | 1 | 2Rx4 | 64 | 10x4 | 16 |
| 12 | MRDIMM | 1 | 1 | 4Rx8 | 64 | 5x8 | 16 |
| 12 | MRDIMM | 1 | 1 | 2Rx4 | 96 | 10x4 | 24 |
| 12 | MRDIMM | 1 | 1 | 4Rx8 | 96 | 5x8 | 24 |
| 12 | MRDIMM | 1 | 1 | 2Rx4 | 128 | 10x4 | 32 |

| DDR5 Memory Population Table for the X14DBG-GD Motherboard | |
|---|---|
| ***1 Processor DIMM Counts*** | ***Memory Population Sequence (1DPC)*** |
| **1 Processor and 1 DIMM** | P1-DIMMA1 |
| **1 Processor and 8 DIMMs** | P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMI1/P1-DIMMJ1/P1-DIMMK1/P1-DIMML1 |
| **1 Processor and 8 DIMMs** | P1-DIMMA1/P1-DIMMB1/P1-DIMMD1/P1-DIMME1/P1-DIMMG1/P1-DIMMH1/P1-DIMMJ1/P1-DIMMK1 |
| **1 Processor and 8 DIMMs** | P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1/P1-DIMMI1/P1-DIMML1 |

| DDR5 Memory Population Table for the X14DBG-GD Motherboard | |
|---|---|
| **1 Processor and 12 DIMMs** | P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1/P1-DIMMI1/P1-DIMMJ1/P1-DIMMK1/P1-DIMML1 |
| ***2 Processor DIMM Counts (Recommended)*** | ***Memory Population Sequence (1DPC)*** |
| **2 Processors and 2 DIMMs** | P1-DIMMA1<br>P2-DIMMA1 |
| **2 Processors and 16 DIMMs** | P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMI1/P1-DIMMJ1/P1-DIMMK1/P1-DIMML1<br>P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMI1/P2-DIMMJ1/P2-DIMMK1/P2-DIMML1 |
| **2 Processors and 16 DIMMs** | P1-DIMMA1/P1-DIMMB1/P1-DIMMD1/P1-DIMME1/P1-DIMMG1/P1-DIMMH1/P1-DIMMJ1/P1-DIMMK1<br>P2-DIMMA1/P2-DIMMB1/P2-DIMMD1/P2-DIMME1/P2-DIMMG1/P2-DIMMH1/P2-DIMMJ1/P2-DIMMK1 |
| **2 Processors and 16 DIMMs** | P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1/P1-DIMMI1/P1-DIMML1<br>P2-DIMMA1/P2-DIMMB1/P2-DIMMC1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1/P2-DIMMI1/P2-DIMML1 |
| **2 Processors and 24 DIMMs** | P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1/P1-DIMMI1/P1-DIMMJ1/P1-DIMMK1/P1-DIMML1<br>P2-DIMMA1/P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1/P2-DIMMI1/P2-DIMMJ1/P2-DIMMK1/P2-DIMML1 |

**Notes:**

- DIMMs must be all DDR5 RDIMMs or all MRDIMMs.
- All DIMMs in a channel must have the same number of ranks (unless explicitly specified otherwise).
- x8 DIMMs and x4 DIMMs cannot be mixed in the same channel or same processor socket (see the memory support table above).
- Mixing of non-3DS and 3DS RDIMMs is not allowed in the same channel, across different channels, and across different sockets.
- All DDR5 DIMMs must be in the same speed per processor socket.
- Rank mixing is not allowed.
- Mixing of DDR5 operating frequencies is not validated within a socket or across sockets by Intel. When DIMMs with different maximum frequencies are mixed in the same channel or across different channels across processor sockets, BIOS determines and sets the DIMM speed to the highest common frequency across all channels on the platform. For example, if a 6000 MT/s max frequency DIMM is installed in one channel and a 6400 MT/s max frequency DIMM in another, BIOS sets the platform speed to 6000 MT/s.
- Mixing memory made by different vendors is allowed for both RDIMM and 3DS RDIMM.

## DIMM Installation

**Important:** Do not use excessive force when pressing the release tabs on the ends of the DIMM socket to avoid causing any damage to the memory module or the DIMM socket. Handle memory modules with care. Carefully follow all the instructions given in "Static-Sensitive Devices" on page 47 to avoid ESD-related damages done to your memory modules or components.

1. Insert the desired number of DIMMs into the memory slots based on the recommended DIMM population table earlier in this section.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

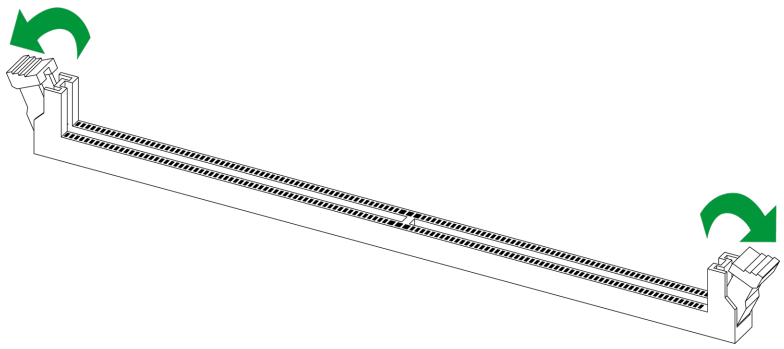


**Figure 3-34. Unlock the DIMM Slot**

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

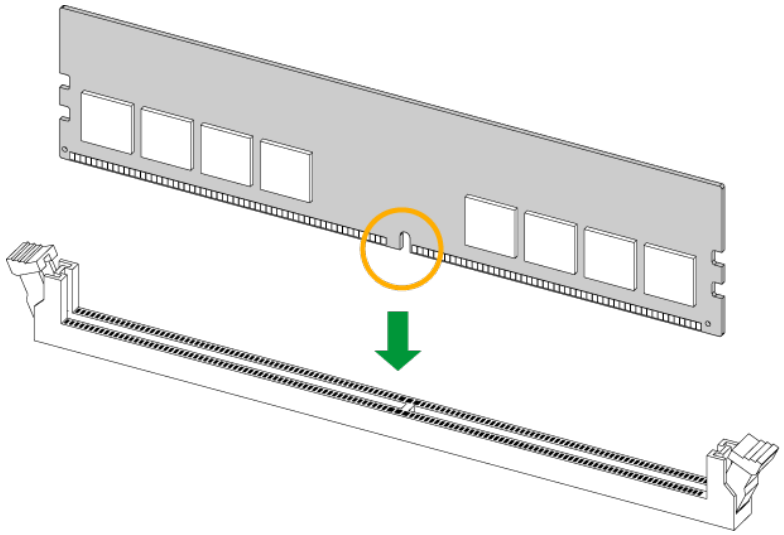


**Figure 3-35. Align the DIMM Slot with the Receptive Point**

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

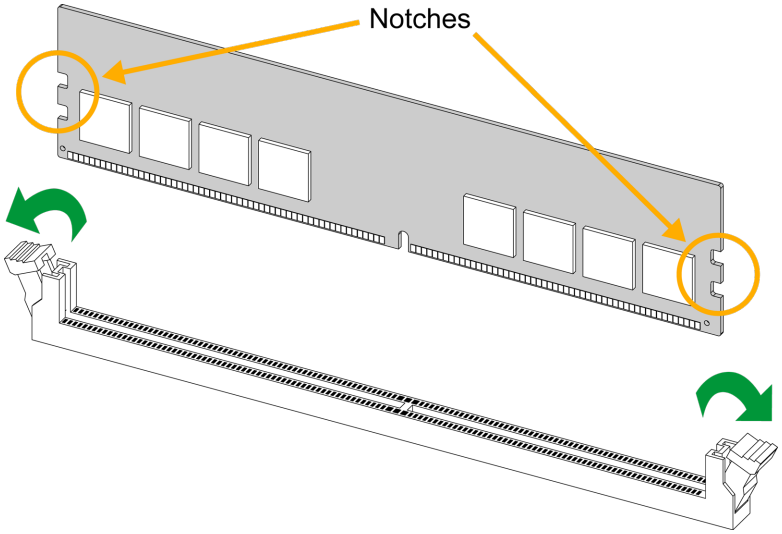



**Figure 3-36. Align the Notches**

5. Press both ends of the module straight down into the slot until the module snaps into place.
6. Press the release tabs to the lock positions to secure the DIMM into the slot.

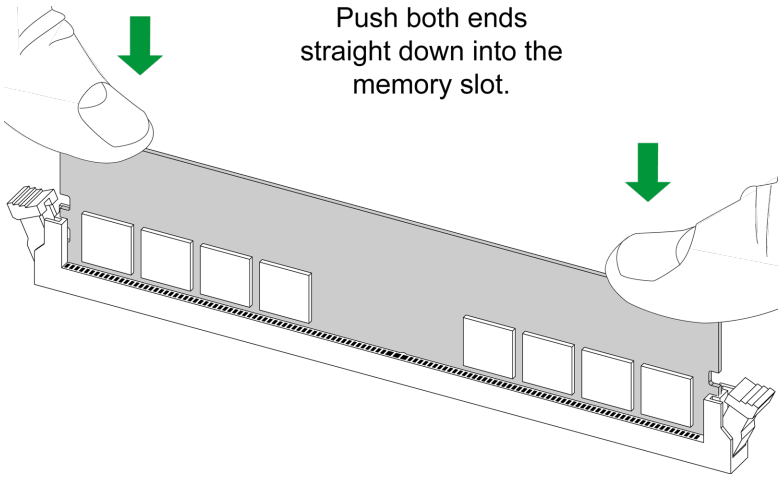


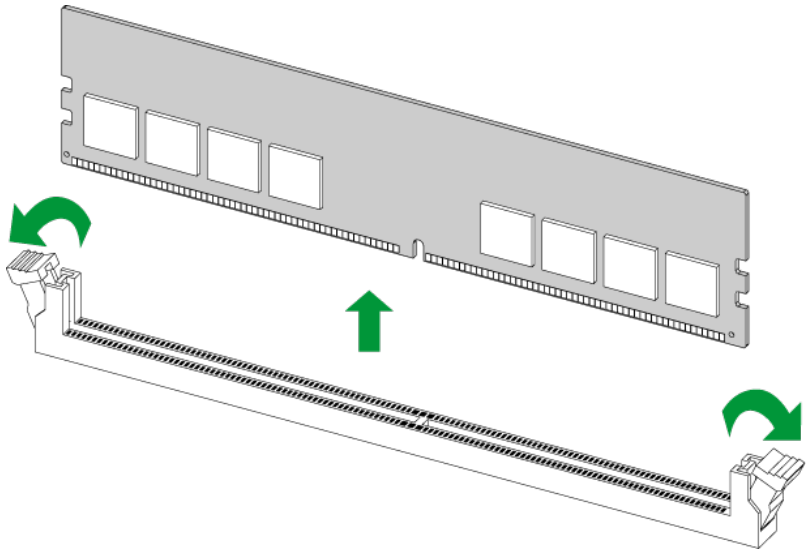

**Figure 3-37. Press Both Ends**

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## DIMM Removal

**Important:** Do not use excessive force when pressing the release tabs on the ends of the DIMM socket to avoid causing any damage to the memory module or the DIMM socket. Handle memory modules with care. Carefully follow all the instructions given in "Static-Sensitive Devices" on page 47 to avoid ESD-related damages done to your memory modules or components.

Press both release tabs on the ends of the DIMM socket to unlock it. Once the DIMM is loosened, remove it from the memory slot.



For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

# 3.6 Motherboard Battery Removal and Installation

## Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Locate the onboard battery as shown below.
3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.
4. Remove the battery.

## Proper Battery Disposal

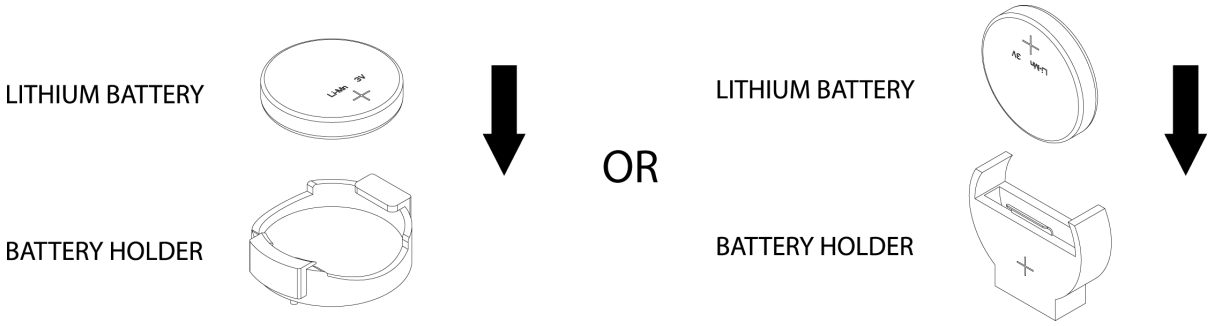
**Important:** Handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Comply with the regulations set up by your local hazardous waste management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

## Battery Installation

To install an onboard battery, follow steps 1 and 2 above and continue below:

**Important:** When replacing a battery, be sure to only replace it with the same type.

1. Identify the battery's polarity. The positive (+) side should be facing up.
2. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.



## 3.7 Storage Drives

The SYS-822GA-NGR3 chassis supports several storage options. There are two M.2 drives on board and eight 2.5" form-factor NVMe SSD drives.

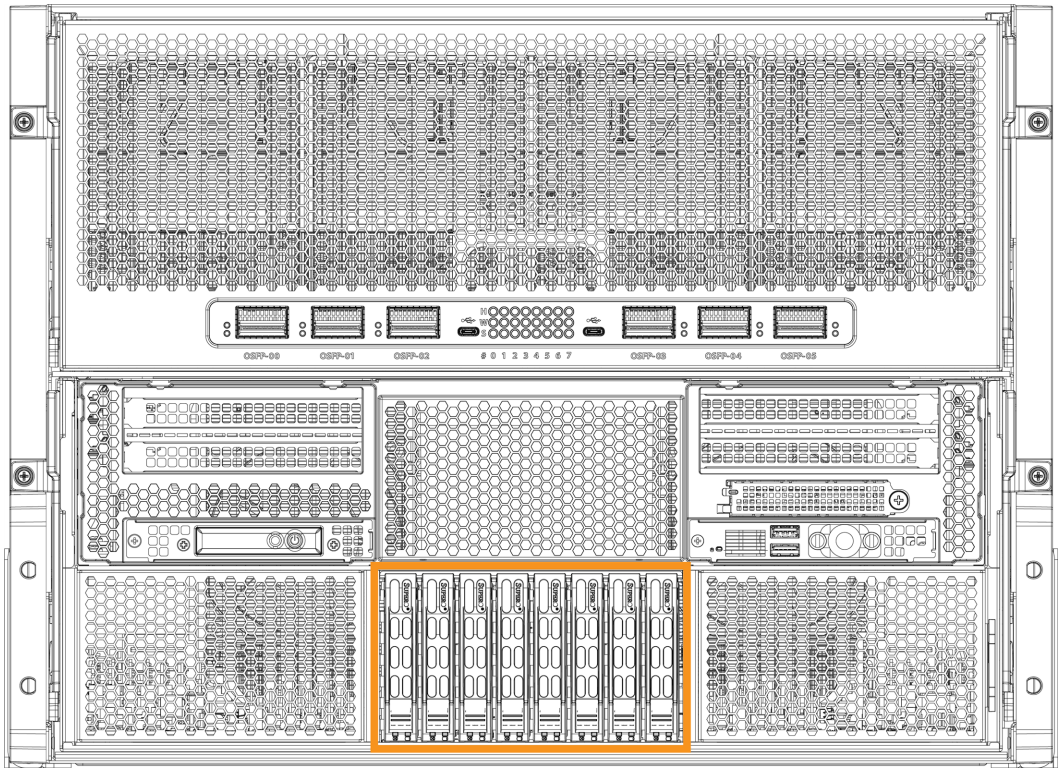


**Figure 3-38. Location of NVMe SSD Bays**

## Installing 2.5" SSDs

1. Turn off the system power.
2. Remove the drive carrier from the chassis. Push the release button on the drive carrier. This releases and extends the drive carrier handle. If the release button does not release it, the handle may be locked: using a flat-head screwdriver, rotate the screw counterclockwise 45 degrees to unlock the handle. Use the handle to pull the carrier out of the chassis as shown above.

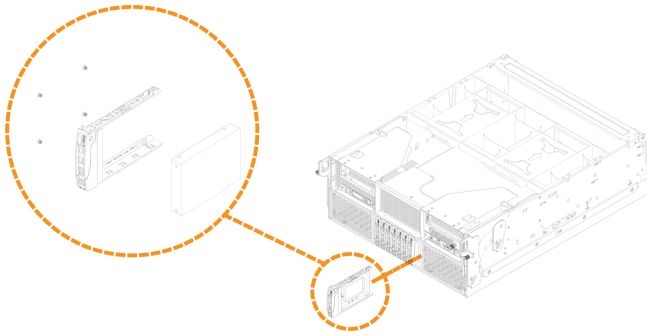


**Figure 3-39. Removing a Drive Carrier**

3. Insert the drive into the drive carrier and secure the drive to the carrier, as shown below. Orient the drive with the connector facing the bottom rear of the carrier.

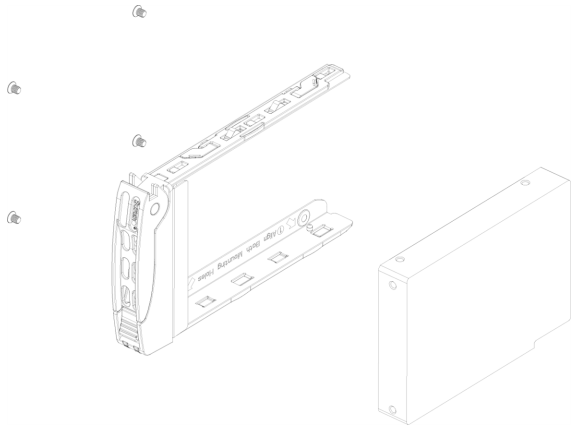


**Figure 3-40. Placing a 2.5" Storage Drive into the Drive Carrier**

4. Secure the storage drive on to the carrier with bottom screws, if needed.
5. Insert the carrier with the storage drive into the open drive bay.

**Note:** Enterprise level drives are recommended for use in Supermicro chassis and servers. For information on recommended storage drives, visit the Supermicro website product pages at www.supermicro.com/products.

## Hot-Swap for NVMe Drives

Supermicro servers support NVMe surprise hot-swap. For better data security, NVMe orderly hot-swap is recommended. NVMe drives can be ejected and replaced remotely using BMC.

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

### *Ejecting a Drive*

1. **BMC > Server Health > NVMe SSD**
2. Select Device, Group, and Slot, and click **Eject**. After ejecting, the drive's Status LED indicator light will turn off.
3. Remove the drive.

Note that Device and Group are categorized by the CPLD design architecture.

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

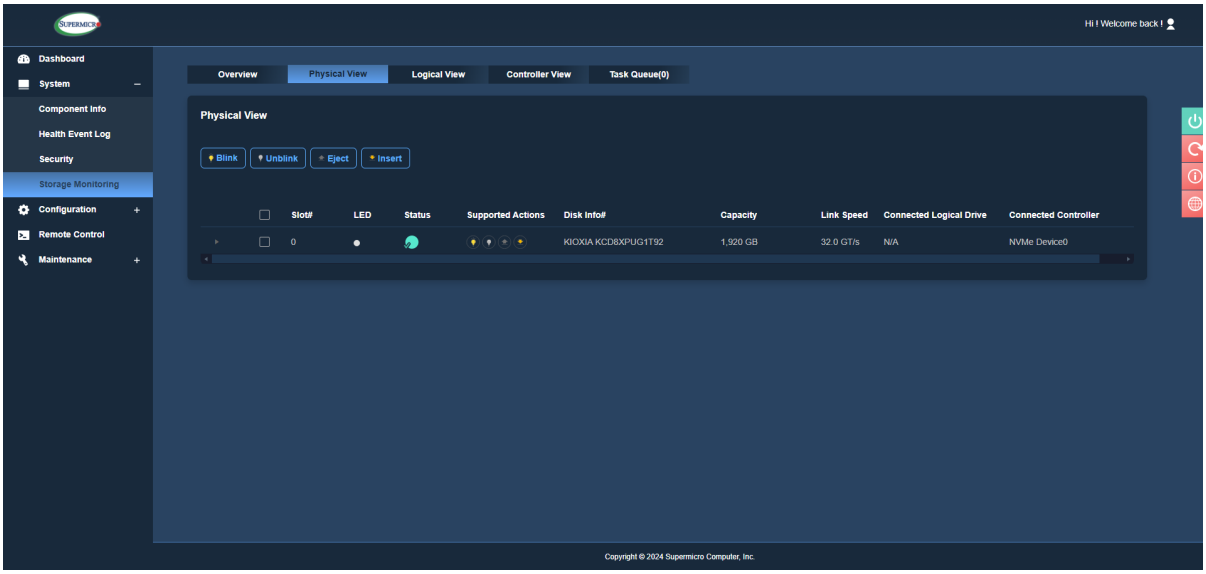



**Figure 3-41. BMC Screenshot**

### *Replacing a Drive*

1. Insert the replacement drive.
2. **BMC > System > Storage Monitor > Physical View**
3. Select Device, Group, and slot and click **Insert**. The drive Status LED indicator flashes red, then turns off. The Activity LED turns blue.

# 3.8 System Cooling

Refer to the following sections for information about the cooling capabilities of the SYS-822GA-NGR3 server.

## Thermal Management

The fully integrated SYS-822GA-NGR3 functions optimally within an external ambient temperature range of 10°C to 35°C. Leveraging integrated platform management, the system incoporates airflow mechanisms that direct air from front to back. This design ensures efficient cooling by guiding airflow over critical components, preventing overheating and enabling peak performance.

The SYS-822GA-NGR3 uses several components to maintain system thermals, including:

- Ten managed 80-mm x 80-mm dual rotor fans
- One installed AIP air shroud in the 4U AIP tray
- Eight fans integrated into each installed power supply module
- CPU air shrouds and drive carriers, which can be populated with an SSD or HDD
- Populated DIMM slots

To maintain the necessary airflow within the system, all of the previously listed components and top cover must be properly installed. For optimum system performance, the external ambient temperature should remain below 35°C and all system fans should be operational.

**Note:** All system fans are controlled independently of each other. The fan control system may adjust fan speeds for individual fans based on temperatures in different thermal zones within the chassis.

## Temperature Sensors

The table below shows the I2C address for each temperature sensor.

| Bus | Component | Voltage | I2C Address |
|---|---|---|---|
| I2C 12 - I2C_TMPS_CLK | Temperature Sensor 0 on UBB | 3.3 V | 0x48 |
| | Temperature Sensor 1 on UBB | 3.3 V | 0x49 |
| | Temperature Sensor 2 on UBB | 3.3 V | 0x4a |
| | Temperature Sensor 3 on UBB | 3.3 V | 0x4b |
| | Temperature Sensor 4 on UBB | 3.3 V | 0x4c |
| | Temperature Sensor 5 on UBB | 3.3 V | 0x4d |

## Thermal Events

The table below summarizes the different thermal events that occur at various thresholds.

| Thermal Sensor | Threshold | Action |
|---|---|---|
| TS - Temperature sensor | 115°C | Thermal throttling<br>Orange Thermal Warning Out 0 LED turns ON |
| | 120°C | Graceful power down<br>Red Thermal Warning Out 1 LED turns ON<br>THERMTRIP# assertion |
| | 125°C | Immediate power down |
| TD - Thermal diode | 125°C | Immediate power down<br>THERMTRIP# assertion |
| HBM | 105°C | Thermal throttling |
| | 120°C | Immediate power down<br>THERMTRIP# assertion |
| VRs | 130°C | Immediate power shutdown |

## Fans

Fan speed is controlled by a system temperature setting in the BMC. If a fan fails, the remaining fans will ramp up to full speed. The system can continue to run with a failed fan. Replace any failed fan at your earliest convenience with the same type and model. Failed fans can be identified through the BMC.

### *Replacing a System Fan*

1. Determine which fan has failed using a remote management utility.
2. Once the failed fan has been identified, remove power from the system.
3. Remove the failed fan from chassis by squeezing the two release tabs together and pulling the fan out.

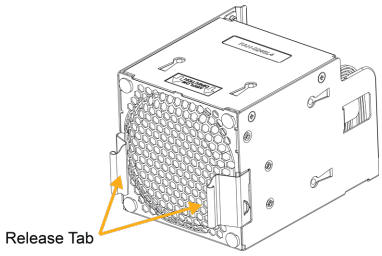



**Figure 3-42. Release the Fan from the Chassis**

4. Install a new fan into the drive tray.

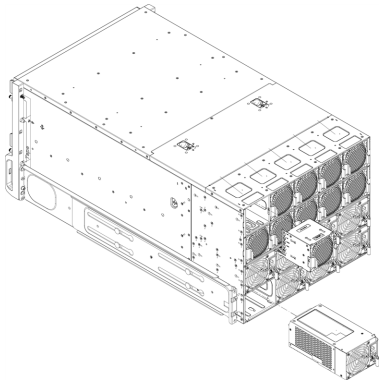


**Figure 3-43. Installing a New Fan into the Drive Tray**

5. Reconnect the power cord and power up the system.

- Make sure there are no objects to obstruct air flow in and out of the server.
- If you are using a front bezel, make sure the bezel filter is replaced periodically.
- Do not operate the server without drives or drive trays in the drive bays.

- Use only recommended server parts.
- Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

### *Fan Speeds*

The system health monitor embedded in the BMC chip can check the RPM status of the fans. The processor and chassis fans are controlled via the BMC.

It is recommended to use the fans in a controlled, low temperature environment.

| Speed | Description |
|---|---|
| Standard Speed | System and power supply fans run at 60% PWM by default. |
| Full Speed | When activated, the system and power supply fans run at 100% PWM. |
| Optimal Speed | When activated, system and power supply fans start at 50% PWM. |

### *Adjusting Fan Speed*

Fan speeds can be manually adjusted through the IPMI web GUI. In the GUI's side tab, go to "System" > "Component Info". Then, click "Cooling" > "Fan mode". This will bring you to a screen that allows you to change the fan mode.

### *Fan Groupings*

The SYS-822GA-NGR3 has eight power supplies and ten active system fans. The fans are divided into group A and B. The CLPD controls the fan speed for Group A and B groups and can set the fan speed to one of three settings: low, normal, or full speed.

Group A uses ten 80-mm x 80-mm active fan modules to provide airflow for the eight Gaudi3 OAM modules.

Group B uses 3000 W power supplies and fans to provide airflow to the motherboard tray. Group B strengthens the airflow in the tray if the motherboard tray overheats.

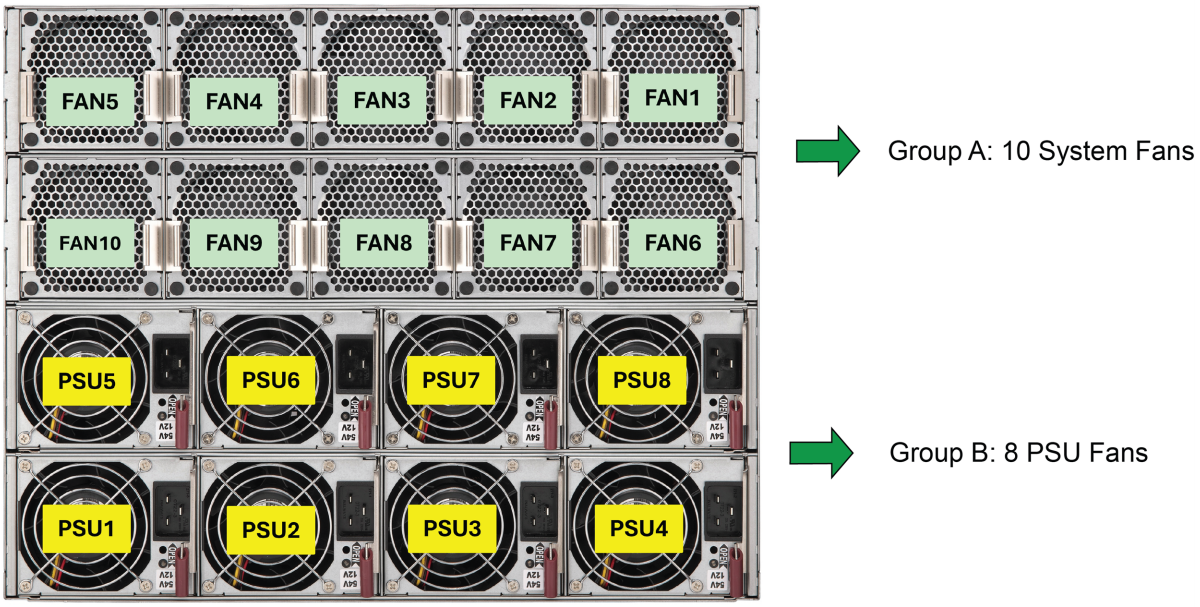



**Figure 3-44. SYS-822GA-NGR3 Fan Groupings**

## Fan Failure

This section describes the system behavior in various fan failure and overtemperature conditions.

### Single Fan Failure

- If a single system or power supply fan failure occurs, the system will attempt to adjust fan speeds to maintain system temperatures below maximum thermal limits. Supermicro does not claim system fan redundancy in the SYS-822GA-NGR3.
- If a system configuration supports fan redundancy and a single fan failure occurs, the system's Status LED will blink green and the event is logged to the system event log. The integrated platform management will automatically adjust fan speeds to maintain system temperatures below maximum thermal limits.

### Overtemperature Conditions

- If system temperatures continually increase and the system fans are operating at their maximum speed, platform management may throttle the bandwidth of the memory subsystem, the processors, or both to prevent overheating and keep the system operational. Throttling of these subsystems will continue until system temperatures are reduced below preprogrammed limits.
- The power supply is protected against overtemperature conditions caused by excessive ambient temperature. In an overtemperature protection condition, the power supply module shuts down.
- If system thermals are above the maximum thermal limits, the system shuts down, the system's Status LED will display solid amber, and the event is logged to the system event log. If power supply thermals are above their maximum thermal limits or if a power supply fan fails, the power supply shuts down.

## Overheating

### *Overheat Temperature Setting*

Some backplanes allow the overheat temperature to be set at 45, 50, or 55 by changing a jumper setting. For more information, consult the backplane user manual at www.supermicro.com.

#### *If the server overheats:*

1. Use the LEDs to determine the nature of the overheating condition.
2. Confirm that the chassis covers are installed properly.
3. Make sure all fans are present and operating normally.
4. Check the routing of the cables.
5. Verify that the heatsinks are installed properly. Push the replacement fan module straight inward into the GPU tray until the left and right fan module finger tabs are locked into the GPU tray.

## Air Shrouds

The system requires air shrouds for each drawer to maximize airflow efficiency. The motherboard, any expansion cards, and all components must be installed in the chassis. Place the air shroud as pictured.

### *Installing an Air Shroud*

**Important:** The GPU and its associated air shroud must be replaced by Supermicro field engineers.

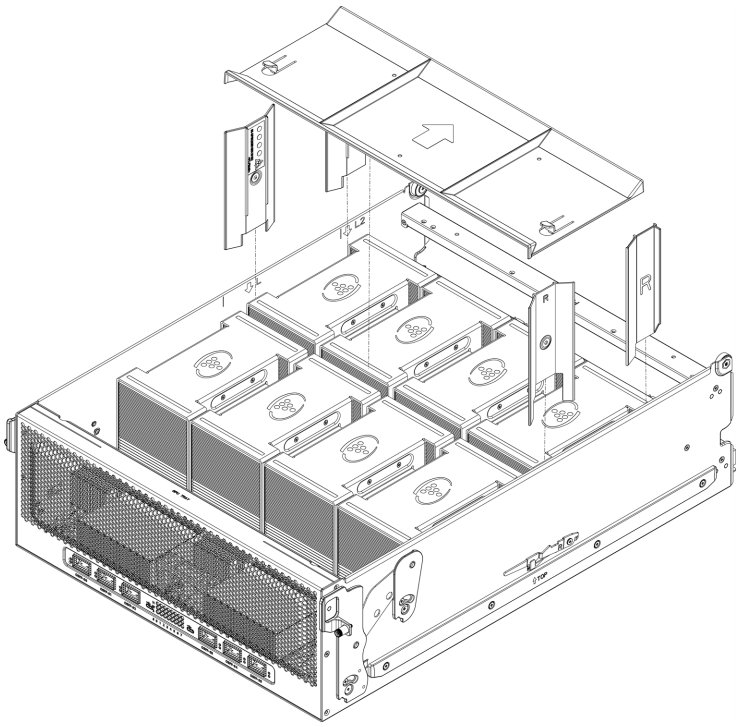


**Figure 3-45. Installing the CPU Drawer Air Shroud**

1. Ensure the CPU, CPU heatsinks, and configured DIMMs are installed.
2. Align the air shroud with the motherboard.
3. Install directly onto the motherboard. There are no screws to set.

# 3.9 GPU

**Note:** The GPU included with this system only supports Linux (Ubuntu).

The table below shows the thermal and mechanical properties of the HLB-325 key.

| Feature | Description |
|---|---|
| PCB Dimensions (total dimensions including OAM cards) | 585 mm x 417 mm x 4.6 mm<br>585 mm x 417 mm x 140 mm |
| Total Weight (including OAM cards) | 27.5 Kg |
| UBB Power (including HL-325L cards) | 7.6 kW, using 44 V to 59.5 VDC as input supply (54 V nominal) |
| Ambient Temperature | 5°C to 35°C |
| Relative Humidity | 20% to 90% |
| Storage Temperature | -20°C to 85°C |
| Airflow | 800 CFM |
| Airflow Direction | Both directions are supported |
| Maximum Inlet Temperature to UBB | 38.5°C |
| Altitude | Sea level to 3000 ft, without temperature derating |

Each Gaudi 3 OAM mezzanine card has a x16 PCIe interface. The UBB is comprised of eight Gaudi 3 OAM cards and supports eight x16 PCIe channels connected to eight HIF (HIB interface) connectors through eight Astera Labs PT5161L PCIe retimers. Each retimer connects to a single OAM on one side and to two HIF connectors on the other.

## SerDes Connectivity

The SerDes topology is separated into internal topology for in-server communication and external topology for scale-out purposes between servers. The 24 ports (48 lanes) of each OAM are divided as follows:

- Twenty-one ports are connected to seven neighboring OAMs (three ports / six lanes for each) for scale-up.
- Three ports (six lanes) are connected to SerDes PHY retimers and from there to OSFP connectors.

### *Internal Mesh Connectivity*

An internal SerDes mesh connects each OAM to the other OAM through six lanes.

### *OAM0 Connectivity*

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S1-0 | Port6_Lane0 | OAM5 | S7-2 | Port12_Lane0 |
| S1-1 | Port6_Lane1 | OAM5 | S7-3 | Port12_Lane1 |
| S1-2 | Port7_Lane0 | OAM5 | S7-0 | Port13_Lane0 |
| S1-3 | Port 7_Lane1 | OAM5 | S7-1 | Port13_Lane1 |
| S1-4 | Port9_Lane0 | OAM4 | S3-0 | Port1_Lane0 |
| S1-5 | Port9_Lane1 | OAM4 | S3-1 | Port1_Lane1 |
| S1-8 | Port8_Lane0 | OAM4 | S3-2 | Port0_Lane0 |
| S1-9 | Port8_Lane1 | OAM4 | S3-3 | Port0_Lane1 |
| S1-10 | Port1_Lane0 | OAM7 | S3-2 | Port0_Lane0 |
| S1-11 | Port1_Lane1 | OAM7 | S3-3 | Port0_Lane1 |
| S1-12 | Port1_Lane0 | OAM7 | S3-0 | Port1_Lane0 |
| S1-13 | Port1_Lane1 | OAM7 | S3-1 | Port1_Lane1 |
| S2-0 | Port3_Lane0 | OAM3 | S2-2 | Port5_Lane0 |
| S2-1 | Port3_Lane1 | OAM3 | S2-3 | Port5_Lane1 |
| S2-2 | Port5_Lane0 | OAM2 | S7-0 | Port13_Lane0 |
| S2-3 | Port5_Lane1 | OAM2 | S7-1 | Port13_Lane1 |
| S2-4 | Port4_Lane0 | OAM2 | S7-2 | Port12_Lane0 |
| S2-5 | Port4_Lane1 | OAM2 | S7-3 | Port12_Lane1 |
| S3-0 | Port1_Lane0 | OAM1 | S7-0 | Port13_Lane0 |
| S3-1 | Port1_Lane1 | OAM1 | S7-1 | Port13_Lane0 |
| S3-2 | Port0_Lane0 | OAM1 | S7-2 | Port12_Lane0 |
| S3-3 | Port0_Lane1 | OAM1 | S7-3 | Port12_Lane1 |
| S3-4 | Port2_Lane0 | OAM3 | S2-4 | Port4_Lane0 |
| S3-5 | Port2_Lane1 | OAM3 | S2-5 | Port4_Lane1 |
| S4-2 | Port13_Lane0 | OAM1 | S1-12 | Port1_Lane0 |
| S4-3 | Port13_Lane1 | OAM1 | S1-13 | Port1_Lane1 |
| S4-4 | Port13_Lane0 | OAM3 | S4-2 | Port13_Lane0 |
| S4-5 | Port13_Lane1 | OAM3 | S4-3 | Port13_Lane1 |
| S5-0 | Port18_Lane0 | OAM5 | S1-8 | Port8_Lane0 |
| S5-1 | Port18_Lane1 | OAM5 | S1-9 | Port8_Lane1 |

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S5-2 | Port19_Lane0 | OAM2 | S1-2 | Port7_Lane0 |
| S5-3 | Port19_Lane1 | OAM2 | S1-3 | Port7_Lane1 |
| S6-0 | Port15_Lane0 | OAM7 | S6-2 | Port17_Lane0 |
| S6-1 | Port15_Lane1 | OAM7 | S6-3 | Port17_Lane1 |
| S6-4 | Port16_Lane0 | OAM4 | S5-0 | Port18_Lane0 |
| S6-5 | Port16_Lane1 | OAM4 | S5-1 | Port18_Lane1 |
| S7-0 | Port13_Lane0 | OAM6 | S7-0 | Port13_Lane0 |
| S7-1 | Port13_Lane1 | OAM6 | S7-1 | Port13_Lane1 |
| S7-2 | Port12_Lane0 | OAM6 | S7-2 | Port12_Lane0 |
| S7-3 | Port12_Lane1 | OAM6 | S7-3 | Port12_Lane1 |
| S7-4 | Port14_Lane0 | OAM6 | S2-4 | Port4_Lane0 |
| S7-5 | Port14_Lane1 | OAM6 | S2-5 | Port4_Lane1 |

### *OAM1 Connectivity*

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S1-0 | Port6_Lane0 | OAM4 | S4-0 | Port20_Lane0 |
| S1-1 | Port6_Lane1 | OAM4 | S4-1 | Port20_Lane1 |
| S1-2 | Port7_Lane0 | OAM3 | S5-2 | Port19_Lane0 |
| S1-3 | Port7_Lane1 | OAM3 | S5-3 | Port19_Lane1 |
| S1-10 | Port1_Lane0 | OAM2 | S1-12 | Port1_Lane0 |
| S1-11 | Port1_Lane1 | OAM2 | S1-13 | Port1_Lane1 |
| S1-12 | Port1_Lane0 | OAM0 | S4-2 | Port13_Lane0 |
| S1-13 | Port1_Lane1 | OAM0 | S4-3 | Port13_Lane1 |
| S2-0 | Port3_Lane0 | OAM6 | S2-2 | Port5_Lane0 |
| S2-1 | Port3_Lane1 | OAM6 | S2-3 | Port5_Lane1 |
| S2-4 | Port4_Lane0 | OAM5 | S1-0 | Port6_Lane0 |
| S2-5 | Port4_Lane1 | OAM5 | S1-1 | Port6_Lane1 |
| S3-0 | Port1_Lane0 | OAM5 | S1-12 | Port1_Lane0 |
| S3-1 | Port1_Lane1 | OAM5 | S1-13 | Port1_Lane1 |
| S3-2 | Port0_Lane0 | OAM5 | S1-10 | Port1_Lane0 |
| S3-3 | Port0_Lane1 | OAM5 | S1-11 | Port1_Lane1 |
| S3-4 | Port2_Lane0 | OAM7 | S6-4 | Port16_Lane0 |
| S3-5 | Port2_Lane1 | OAM7 | S6-5 | Port16_Lane1 |
| S4-0 | Port20_Lane0 | OAM6 | S7-4 | Port14_Lane0 |
| S4-1 | Port20_Lane1 | OAM6 | S7-5 | Port14_Lane1 |
| S4-2 | Port13_Lane0 | OAM7 | S4-2 | Port13_Lane0 |
| S4-3 | Port13_Lane1 | OAM7 | S4-3 | Port13_Lane1 |
| S4-4 | Port13_Lane0 | OAM7 | S4-4 | Port13_Lane0 |
| S4-5 | Port13_Lane1 | OAM7 | S4-5 | Port13_Lane1 |
| S5-0 | Port18_Lane0 | OAM4 | S4-2 | Port13_Lane0 |
| S5-1 | Port18_Lane1 | OAM4 | S4-3 | Port13_Lane1 |
| S5-2 | Port19_Lane0 | OAM4 | S4-4 | Port13_Lane0 |
| S5-3 | Port19_Lane1 | OAM4 | S4-5 | Port13_Lane1 |
| S5-4 | Port21_Lane0 | OAM6 | S6-0 | Port15_Lane0 |
| S5-5 | Port21_Lane1 | OAM6 | S6-1 | Port15_Lane1 |
| S6-0 | Port15_Lane0 | OAM2 | S6-2 | Port17_Lane0 |
| S6-1 | Port15_Lane1 | OAM2 | S6-3 | Port17_Lane1 |
| S6-2 | Port17_Lane0 | OAM3 | S3-0 | Port1_Lane0 |
| S6-3 | Port17_Lane1 | OAM3 | S3-1 | Port1_Lane1 |
| S6-4 | Port16_Lane0 | OAM3 | S3-2 | Port0_Lane0 |

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S6-5 | Port16_Lane1 | OAM3 | S3-3 | Port0_Lane1 |
| S7-0 | Port13_Lane0 | OAM0 | S3-0 | Port1_Lane0 |
| S7-1 | Port13_Lane1 | OAM0 | S3-1 | Port1_Lane1 |
| S7-2 | Port12_Lane0 | OAM0 | S3-2 | Port0_Lane0 |
| S7-3 | Port12_Lane1 | OAM0 | S3-3 | Port0_Lane1 |
| S7-4 | Port14_Lane0 | OAM2 | S6-4 | Port16_Lane0 |
| S7-5 | Port14_Lane1 | OAM2 | S6-5 | Port16_Lane1 |

### *OAM2 Connectivity*

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S1-0 | Port6_Lane0 | OAM7 | S4-0 | Port20_Lane0 |
| S1-1 | Port6_Lane1 | OAM7 | S4-1 | Port20_Lane1 |
| S1-2 | Port7_Lane0 | OAM0 | S5-2 | Port19_Lane0 |
| S1-3 | Port7_Lane1 | OAM0 | S5-3 | Port19_Lane1 |
| S1-10 | Port1_Lane0 | OAM3 | S4-4 | Port13_Lane0 |
| S1-11 | Port1_Lane1 | OAM3 | S4-5 | Port13_Lane1 |
| S1-12 | Port1_Lane0 | OAM1 | S1-10 | Port1_Lane0 |
| S1-13 | Port1_Lane1 | OAM1 | S1-11 | Port1_Lane1 |
| S2-0 | Port3_Lane0 | OAM5 | S2-2 | Port5_Lane0 |
| S2-1 | Port3_Lane1 | OAM5 | S2-3 | Port5_Lane1 |
| S2-4 | Port4_Lane0 | OAM6 | S1-0 | Port6_Lane0 |
| S2-5 | Port4_Lane1 | OAM6 | S1-1 | Port6_Lane1 |
| S3-0 | Port1_Lane0 | OAM6 | S1-12 | Port1_Lane0 |
| S3-1 | Port1_Lane1 | OAM6 | S1-13 | Port1_Lane1 |
| S3-2 | Port0_Lane0 | OAM6 | S1-10 | Port1_Lane0 |
| S3-3 | Port0_Lane1 | OAM6 | S1-11 | Port1_Lane1 |
| S3-4 | Port2_Lane0 | OAM4 | S6-4 | Port16_Lane0 |
| S3-5 | Port2_Lane1 | OAM4 | S6-5 | Port16_Lane1 |
| S4-0 | Port20_Lane0 | OAM4 | S3-4 | Port2_Lane0 |
| S4-1 | Port20_Lane1 | OAM4 | S3-5 | Port2_Lane1 |
| S4-2 | Port13_Lane0 | OAM7 | S3-4 | Port2_Lane0 |
| S4-3 | Port13_Lane1 | OAM7 | S3-5 | Port2_Lane1 |
| S4-4 | Port13_Lane0 | OAM7 | S2-0 | Port3_Lane0 |
| S4-5 | Port13_Lane1 | OAM7 | S2-1 | Port3_Lane1 |
| S5-0 | Port18_Lane0 | OAM5 | S6-4 | Port16_Lane0 |
| S5-1 | Port18_Lane1 | OAM5 | S6-5 | Port16_Lane1 |
| S5-2 | Port19_Lane0 | OAM5 | S6-2 | Port17_Lane0 |
| S5-3 | Port19_Lane1 | OAM5 | S6-3 | Port17_Lane1 |
| S5-4 | Port21_Lane0 | OAM4 | S2-0 | Port3_Lane0 |
| S5-5 | Port21_Lane1 | OAM3 | S2-1 | Port3_Lane1 |
| S6-0 | Port15_Lane0 | OAM3 | S2-0 | Port3_Lane0 |
| S6-1 | Port15_Lane1 | OAM3 | S2-1 | Port3_Lane1 |
| S6-2 | Port17_Lane0 | OAM1 | S6-0 | Port15_Lane0 |

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S6-3 | Port17_Lane1 | OAM1 | S6-1 | Port15_Lane1 |
| S6-4 | Port16_Lane0 | OAM1 | S7-4 | Port14_Lane0 |
| S6-5 | Port16_Lane1 | OAM1 | S7-5 | Port14_Lane1 |
| S7-0 | Port13_Lane0 | OAM0 | S2-2 | Port5_Lane0 |
| S7-1 | Port13_Lane1 | OAM0 | S2-3 | Port5_Lane1 |
| S7-2 | Port12_Lane0 | OAM0 | S2-4 | Port4_Lane0 |
| S7-3 | Port12_Lane1 | OAM0 | S2-5 | Port4_Lane1 |
| S7-4 | Port14_Lane0 | OAM3 | S3-4 | Port2_Lane0 |
| S7-5 | Port14_Lane1 | OAM3 | S3-5 | Port2_Lane1 |

### *OAM3 Connectivity*

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S1-0 | Port6_Lane0 | OAM5 | S7-4 | Port14_Lane0 |
| S1-1 | Port6_Lane1 | OAM5 | S7-5 | Port14_Lane1 |
| S1-2 | Port7_Lane0 | OAM5 | S6-0 | Port15_Lane0 |
| S1-3 | Port7_Lane1 | OAM5 | S6-1 | Port15_Lane1 |
| S1-4 | Port9_Lane0 | OAM7 | S2-2 | Port5_Lane0 |
| S1-5 | Port9_Lane1 | OAM7 | S2-3 | Port5_Lane1 |
| S1-8 | Port8_Lane0 | OAM7 | S2-4 | Port4_Lane0 |
| S1-9 | Port8_Lane1 | OAM7 | S2-5 | Port4_Lane1 |
| S1-10 | Port1_Lane0 | OAM4 | S2-4 | Port4_Lane0 |
| S1-11 | Port1_Lane1 | OAM4 | S2-5 | Port4_Lane1 |
| S1-12 | Port1_Lane0 | OAM4 | S2-2 | Port5_Lane0 |
| S1-13 | Port1_Lane1 | OAM4 | S2-3 | Port5_Lane1 |
| S2-0 | Port3_Lane0 | OAM2 | S6-0 | Port15_Lane0 |
| S2-1 | Port3_Lane1 | OAM2 | S6-1 | Port15_Lane1 |
| S2-2 | Port5_Lane0 | OAM0 | S2-0 | Port3_Lane0 |
| S2-3 | Port5_Lane1 | OAM0 | S2-1 | Port3_Lane1 |
| S2-4 | Port4_Lane0 | OAM0 | S3-4 | Port2_Lane0 |
| S2-5 | Port4_Lane1 | OAM0 | S3-5 | Port2_Lane1 |
| S3-0 | Port1_Lane0 | OAM1 | S6-2 | Port17_Lane0 |
| S3-1 | Port1_Lane1 | OAM1 | S6-3 | Port17_Lane1 |
| S3-2 | Port0_Lane0 | OAM1 | S6-4 | Port16_Lane0 |
| S3-3 | Port0_Lane1 | OAM1 | S6-5 | Port16_Lane1 |
| S3-4 | Port2_Lane0 | OAM2 | S7-4 | Port14_Lane0 |
| S3-5 | Port2_Lane1 | OAM2 | S7-5 | Port14_Lane1 |
| S4-2 | Port13_Lane0 | OAM0 | S4-4 | Port13_Lane0 |
| S4-3 | Port13_Lane1 | OAM0 | S4-5 | Port13_Lane1 |
| S4-4 | Port13_Lane0 | OAM2 | S1-10 | Port1_Lane0 |
| S4-5 | Port13_Lane1 | OAM2 | S1-11 | Port1_Lane1 |
| S5-0 | Port18_Lane0 | OAM6 | S1-8 | Port8_Lane0 |
| S5-1 | Port18_Lane1 | OAM6 | S1-9 | Port8_Lane1 |
| S5-2 | Port19_Lane0 | OAM1 | S1-2 | Port7_Lane0 |
| S5-3 | Port19_Lane1 | OAM1 | S1-3 | Port7_Lane1 |
| S6-0 | Port15_Lane0 | OAM4 | S6-2 | Port17_Lane0 |
| S6-1 | Port15_Lane1 | OAM4 | S6-3 | Port17_Lane1 |
| S6-4 | Port16_Lane0 | OAM7 | S5-0 | Port18_Lane0 |
| S6-5 | Port16_Lane1 | OAM7 | S5-1 | Port18_Lane1 |
| S7-0 | Port13_Lane0 | OAM6 | S6-2 | Port17_Lane0 |

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S7-1 | Port13_Lane1 | OAM6 | S6-3 | Port17_Lane1 |
| S7-2 | Port12_Lane0 | OAM6 | S6-4 | Port16_Lane0 |
| S7-3 | Port12_Lane1 | OAM6 | S6-5 | Port16_Lane1 |
| S7-4 | Port14_Lane0 | OAM5 | S2-4 | Port4_Lane0 |
| S7-5 | Port14_Lane1 | OAM5 | S2-5 | Port4_Lane1 |

### *OAM4 Connectivity*

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S1-0 | Port6_Lane0 | OAM5 | S4-0 | Port20_Lane0 |
| S1-1 | Port6_Lane1 | OAM5 | S4-1 | Port20_Lane1 |
| S1-2 | Port7_Lane0 | OAM5 | S5-4 | Port21_Lane0 |
| S1-3 | Port7_Lane1 | OAM5 | S5-5 | Port21_Lane1 |
| S1-4 | Port9_Lane0 | OAM7 | S1-4 | Port9_Lane0 |
| S1-5 | Port9_Lane1 | OAM7 | S1-5 | Port9_Lane1 |
| S1-8 | Port8_Lane0 | OAM7 | S1-8 | Port8_Lane0 |
| S1-9 | Port8_Lane1 | OAM7 | S1-9 | Port8_Lane1 |
| S1-10 | Port1_Lane0 | OAM6 | S5-0 | Port18_Lane0 |
| S1-11 | Port1_Lane1 | OAM6 | S5-1 | Port18_Lane1 |
| S1-12 | Port1_Lane0 | OAM6 | S5-2 | Port19_Lane0 |
| S1-13 | Port1_Lane1 | OAM6 | S5-3 | Port19_Lane1 |
| S2-0 | Port3_Lane0 | OAM2 | S5-4 | Port21_Lane0 |
| S2-1 | Port3_Lane1 | OAM2 | S5-5 | Port21_Lane1 |
| S2-2 | Port5_Lane0 | OAM3 | S1-12 | Port1_Lane0 |
| S2-3 | Port5_Lane1 | OAM3 | S1-13 | Port1_Lane1 |
| S2-4 | Port4_Lane0 | OAM3 | S1-10 | Port1_Lane0 |
| S2-5 | Port4_Lane1 | OAM3 | S1-11 | Port1_Lane1 |
| S3-0 | Port1_Lane0 | OAM0 | S1-4 | Port9_Lane0 |
| S3-1 | Port1_Lane1 | OAM0 | S1-5 | Port9_Lane1 |
| S3-2 | Port0_Lane0 | OAM0 | S1-8 | Port8_Lane0 |
| S3-3 | Port0_Lane1 | OAM0 | S1-9 | Port8_Lane1 |
| S3-4 | Port2_Lane0 | OAM2 | S4-0 | Port20_Lane0 |
| S3-5 | Port2_Lane1 | OAM2 | S4-1 | Port20_Lane1 |
| S4-0 | Port20_Lane0 | OAM1 | S1-0 | Port6_Lane0 |
| S4-1 | Port20_Lane1 | OAM1 | S1-1 | Port6_Lane1 |
| S4-2 | Port13_Lane0 | OAM1 | S5-0 | Port18_Lane0 |
| S4-3 | Port13_Lane1 | OAM1 | S5-1 | Port18_Lane1 |
| S4-4 | Port13_Lane0 | OAM1 | S5-2 | Port19_Lane0 |
| S4-5 | Port13_Lane1 | OAM1 | S5-3 | Port19_Lane1 |
| S5-0 | Port18_Lane0 | OAM0 | S6-4 | Port16_Lane0 |
| S5-1 | Port18_Lane1 | OAM0 | S6-5 | Port16_Lane1 |
| S5-4 | Port21_Lane0 | OAM7 | S5-4 | Port21_Lane0 |
| S5-5 | Port21_Lane1 | OAM7 | S5-5 | Port21_Lane1 |
| S6-2 | Port17_Lane0 | OAM3 | S6-0 | Port15_Lane0 |
| S6-3 | Port17_Lane1 | OAM3 | S6-1 | Port15_Lane1 |
| S6-4 | Port16_Lane0 | OAM2 | S3-4 | Port2_Lane0 |

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S6-5 | Port16_Lane1 | OAM2 | S3-5 | Port2_Lane1 |
| S7-0 | Port13_Lane0 | OAM5 | S3-2 | Port0_Lane0 |
| S7-1 | Port13_Lane1 | OAM5 | S3-3 | Port0_Lane1 |
| S7-2 | Port12_Lane0 | OAM6 | S3-0 | Port1_Lane0 |
| S7-3 | Port12_Lane1 | OAM6 | S3-1 | Port1_Lane1 |

### *OAM5 Connectivity*

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S1-0 | Port6_Lane0 | OAM1 | S2-4 | Port4_Lane0 |
| S1-1 | Port6_Lane1 | OAM1 | S2-5 | Port4_Lane1 |
| S1-4 | Port9_Lane0 | OAM6 | S1-4 | Port9_Lane0 |
| S1-5 | Port9_Lane1 | OAM6 | S1-5 | Port9_Lane1 |
| S1-8 | Port8_Lane0 | OAM0 | S5-0 | Port18_Lane0 |
| S1-9 | Port8_Lane1 | OAM0 | S5-1 | Port18_Lane1 |
| S1-10 | Port1_Lane0 | OAM1 | S3-2 | Port0_Lane0 |
| S1-11 | Port1_Lane1 | OAM1 | S3-3 | Port0_Lane1 |
| S1-12 | Port1_Lane0 | OAM1 | S3-0 | Port1_Lane0 |
| S1-13 | Port1_Lane1 | OAM1 | S3-1 | Port1_Lane1 |
| S2-2 | Port5_Lane0 | OAM2 | S2-0 | Port3_Lane0 |
| S2-3 | Port5_Lane1 | OAM2 | S2-1 | Port3_Lane1 |
| S2-4 | Port4_Lane0 | OAM3 | S7-4 | Port14_Lane0 |
| S2-5 | Port4_Lane1 | OAM3 | S7-5 | Port14_Lane1 |
| S3-0 | Port1_Lane0 | OAM7 | S7-2 | Port12_Lane0 |
| S3-1 | Port1_Lane1 | OAM7 | S7-3 | Port12_Lane1 |
| S3-2 | Port0_Lane0 | OAM4 | S7-0 | Port13_Lane0 |
| S3-3 | Port0_Lane1 | OAM4 | S7-1 | Port13_Lane1 |
| S4-0 | Port20_Lane0 | OAM4 | S1-0 | Port6_Lane0 |
| S4-1 | Port20_Lane1 | OAM4 | S1-1 | Port6_Lane1 |
| S4-2 | Port13_Lane0 | OAM7 | S1-0 | Port6_Lane0 |
| S4-3 | Port13_Lane1 | OAM7 | S1-1 | Port6_Lane1 |
| S4-4 | Port13_Lane0 | OAM7 | S1-2 | Port7_Lane0 |
| S4-5 | Port13_Lane1 | OAM7 | S1-3 | Port7_Lane1 |
| S5-0 | Port18_Lane0 | OAM6 | S4-0 | Port20_Lane0 |
| S5-1 | Port18_Lane1 | OAM6 | S4-1 | Port20_Lane |
| S5-2 | Port19_Lane0 | OAM6 | S5-4 | Port21_Lane0 |
| S5-3 | Port19_Lane1 | OAM6 | S5-5 | Port21_Lane1 |
| S5-4 | Port21_Lane0 | OAM4 | S1-2 | Port7_Lane0 |
| S5-5 | Port21_Lane1 | OAM4 | S1-3 | Port7_Lane1 |
| S6-0 | Port15_Lane0 | OAM3 | S1-2 | Port7_Lane0 |
| S6-1 | Port15_Lane1 | OAM3 | S1-3 | Port7_Lane1 |
| S6-2 | Port17_Lane0 | OAM2 | S5-2 | Port19_Lane0 |
| S6-3 | Port17_Lane1 | OAM2 | S5-3 | Port19_Lane1 |
| S6-4 | Port16_Lane0 | OAM2 | S5-0 | Port18_Lane0 |
| S6-5 | Port16_Lane1 | OAM2 | S5-1 | Port18_Lane1 |
| S7-0 | Port13_Lane0 | OAM0 | S1-2 | Port7_Lane0 |

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S7-1 | Port13_Lane1 | OAM0 | S1-3 | Port7_Lane1 |
| S7-2 | Port12_Lane0 | OAM0 | S1-0 | Port6_Lane0 |
| S7-3 | Port12_Lane1 | OAM0 | S1-1 | Port6_Lane1 |
| S7-4 | Port14_Lane0 | OAM3 | S1-0 | Port6_Lane0 |
| S7-5 | Port14_Lane1 | OAM3 | S1-1 | Port6_Lane1 |

### *OAM6 Connectivity*

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S1-0 | Port6_Lane0 | OAM2 | S2-4 | Port4_Lane0 |
| S1-1 | Port6_Lane1 | OAM2 | S2-5 | Port4_Lane1 |
| S1-4 | Port9_Lane0 | OAM5 | S1-4 | Port9_Lane0 |
| S1-5 | Port9_Lane1 | OAM5 | S1-5 | Port9_Lane1 |
| S1-8 | Port8_Lane0 | OAM3 | S5-0 | Port18_Lane0 |
| S1-9 | Port8_Lane1 | OAM3 | S5-1 | Port18_Lane1 |
| S1-10 | Port1_Lane0 | OAM2 | S3-2 | Port0_Lane0 |
| S1-11 | Port1_Lane1 | OAM2 | S3-3 | Port0_Lane1 |
| S1-12 | Port1_Lane0 | OAM2 | S3-0 | Port1_Lane0 |
| S1-13 | Port1_Lane1 | OAM2 | S3-1 | Port1_Lane1 |
| S2-2 | Port5_Lane0 | OAM1 | S2-0 | Port3_Lane0 |
| S2-3 | Port5_Lane1 | OAM1 | S2-1 | Port3_Lane1 |
| S2-4 | Port4_Lane0 | OAM0 | S7-4 | Port14_Lane0 |
| S2-5 | Port4_Lane1 | OAM0 | S7-5 | Port14_Lane1 |
| S3-0 | Port1_Lane0 | OAM4 | S7-2 | Port12_Lane0 |
| S3-1 | Port1_Lane1 | OAM4 | S7-3 | Port12_Lane1 |
| S3-2 | Port0_Lane0 | OAM7 | S7-0 | Port13_Lane0 |
| S3-3 | Port0_Lane1 | OAM7 | S7-1 | Port13_Lane1 |
| S4-0 | Port20_Lane0 | OAM5 | S5-0 | Port18_Lane0 |
| S4-1 | Port20_Lane1 | OAM5 | S5-1 | Port18_Lane1 |
| S4-2 | Port13_Lane0 | OAM7 | S1-10 | Port1_Lane0 |
| S4-3 | Port13_Lane1 | OAM7 | S1-11 | Port1_Lane1 |
| S4-4 | Port13_Lane0 | OAM7 | S1-12 | Port1_Lane0 |
| S4-5 | Port13_Lane1 | OAM7 | S1-13 | Port1_Lane1 |
| S5-0 | Port18_Lane0 | OAM4 | S1-10 | Port1_Lane0 |
| S5-1 | Port18_Lane1 | OAM4 | S1-11 | Port1_Lane1 |
| S5-2 | Port19_Lane0 | OAM4 | S1-12 | Port1_Lane0 |
| S5-3 | Port19_Lane1 | OAM4 | S1-13 | Port1_Lane1 |
| S5-4 | Port21_Lane0 | OAM5 | S5-2 | Port19_Lane0 |
| S5-5 | Port21_Lane1 | OAM5 | S5-3 | Port19_Lane1 |
| S6-0 | Port15_Lane0 | OAM1 | S5-4 | Port21_Lane0 |
| S6-1 | Port15_Lane1 | OAM1 | S5-5 | Port21_Lane1 |
| S6-2 | Port17_Lane0 | OAM3 | S7-0 | Port13_Lane0 |
| S6-3 | Port17_Lane1 | OAM3 | S7-1 | Port13_Lane1 |
| S6-4 | Port16_Lane0 | OAM3 | S7-2 | Port12_Lane0 |
| S6-5 | Port16_Lane1 | OAM3 | S7-3 | Port12_Lane1 |
| S7-0 | Port13_Lane0 | OAM0 | S7-0 | Port13_Lane0 |

| OCP Lane | Logical Port | Peer OAM | Peer OCP Lane | Peer OAM Logical Port |
|---|---|---|---|---|
| S7-1 | Port13_Lane1 | OAM0 | S7-1 | Port13_Lane1 |
| S7-2 | Port12_Lane0 | OAM0 | S7-2 | Port12_Lane0 |
| S7-3 | Port12_Lane1 | OAM0 | S7-3 | Port12_Lane1 |
| S7-4 | Port14_Lane0 | OAM1 | S4-0 | Port20_Lane0 |
| S7-5 | Port14_Lane1 | OAM1 | S4-1 | Port20_Lane1 |

### *Scale-Out Connectivity*

The HLB-325 supports six 13-mm close top OSFP modules.

The scale-out connectivity architecture consists of six lanes, where each OAM is connected to OSFPs through retimers.

- OAM[3:0] is connected to OSFP[2:0] through Retimer0 and Retimer1.
- OAM[7:4] is connected to OSFP[5:3] through Retimer2 and Retimer1.

| OAM | OAM Pin | Logical Port | Retimer | Retimer Octa | Retimer Side | Retimer Lane | OSFP | OSFP_ Port |
|---|---|---|---|---|---|---|---|---|
| OAM0 | S4-0 | Port20_ Lane0 | 0 | 0 | Line | RT0_L4 | OSFP0 | 5 |
| OAM0 | S4-1 | Port20_ Lane1 | 0 | 0 | Line | RT0_L5 | OSFP0 | 6 |
| OAM1 | S1-8 | Port8_ Lane0 | 0 | 0 | Sys | RT0_S2 | OSFP0 | 1 |
| OAM1 | S1-9 | Port8_ Lane1 | 0 | 0 | Sys | RT0_S3 | OSFP0 | 2 |
| OAM2 | S1-8 | Port8_ Lane0 | 0 | 0 | Sys | RT0_S6 | OSFP0 | 3 |
| OAM2 | S1-9 | Port8_ Lane1 | 0 | 0 | Sys | RT0_S7 | OSFP0 | 4 |
| OAM3 | S4-0 | Port20_ Lane0 | 0 | 0 | Line | RT0_L0 | OSFP0 | 7 |
| OAM3 | S4-1 | Port20_ Lane1 | 0 | 0 | Line | RT0_L1 | OSFP0 | 8 |
| OAM0 | S5-4 | Port21_ Lane0 | 0 | 1 | Sys | RT0_ S12 | OSFP1 | 3 |
| OAM0 | S5-5 | Port21_ Lane1 | 0 | 1 | Sys | RT0_ S13 | OSFP1 | 4 |
| OAM1 | S1-4 | Port9_ Lane0 | 0 | 1 | Line | RT0_ L14 | OSFP1 | 5 |
| OAM1 | S1-5 | Port9_ Lane1 | 0 | 1 | Line | RT0_ L15 | OSFP1 | 6 |
| OAM2 | S1-4 | Port9_ Lane0 | 0 | 1 | Line | RT0_ L10 | OSFP1 | 7 |
| OAM2 | S1-5 | Port9_ Lane1 | 0 | 1 | Line | RT0_ L11 | OSFP1 | 8 |

| OAM | OAM Pin | Logical Port | Retimer | Retimer Octa | Retimer Side | Retimer Lane | OSFP | OSFP_ Port |
|---|---|---|---|---|---|---|---|---|
| OAM3 | S5-4 | Port21_ Lane0 | 0 | 1 | Sys | RT0_S8 | OSFP1 | 1 |
| OAM3 | S5-5 | Port21_ Lane1 | 0 | 1 | Sys | RT0_S9 | OSFP1 | 2 |
| OAM0 | S6-2 | Port17_ Lane0 | 1 | 0 | Line | RT1_L0 | OSFP2 | 7 |
| OAM0 | S6-3 | Port17_ Lane1 | 1 | 0 | Line | RT1_L1 | OSFP2 | 8 |
| OAM1 | S2-2 | Port5_ Lane0 | 1 | 0 | Sys | RT1_S2 | OSFP2 | 1 |
| OAM1 | S2-3 | Port5_ Lane1 | 1 | 0 | Sys | RT1_S3 | OSFP2 | 2 |
| OAM2 | S2-2 | Port5_ Lane0 | 1 | 0 | Line | RT1_L4 | OSFP2 | 5 |
| OAM2 | S2-3 | Port5_ Lane1 | 1 | 0 | Line | RT1_L5 | OSFP2 | 6 |
| OAM3 | S6-2 | Port17_ Lane0 | 1 | 0 | Sys | RT1_S6 | OSFP2 | 3 |
| OAM3 | S6-3 | Port17_ Lane1 | 1 | 0 | Sys | RT1_S7 | OSFP2 | 4 |
| OAM4 | S5-2 | Port19_ Lane0 | 1 | 1 | Sys | RT1_ S12 | OSFP3 | 3 |
| OAM4 | S5-3 | Port19_ Lane1 | 1 | 1 | Sys | RT1_ S13 | OSFP3 | 4 |
| OAM5 | S1-2 | Port7_ Lane0 | 1 | 1 | Line | RT1_ L14 | OSFP3 | 5 |
| OAM5 | S1-3 | Port7_ Lane1 | 1 | 1 | Line | RT1_ L15 | OSFP3 | 6 |
| OAM6 | S1-2 | Port7_ Lane0 | 1 | 1 | Sys | RT1_S8 | OSFP3 | 1 |
| OAM6 | S1-3 | Port7_ Lane1 | 1 | 1 | Sys | RT1_S9 | OSFP3 | 2 |
| OAM7 | S5-2 | Port19_ Lane0 | 1 | 1 | Line | RT1_ L10 | OSFP3 | 7 |

| OAM | OAM Pin | Logical Port | Retimer | Retimer Octa | Retimer Side | Retimer Lane | OSFP | OSFP_ Port |
|---|---|---|---|---|---|---|---|---|
| OAM7 | S5-3 | Port19_ Lane1 | 1 | 1 | Line | RT1_ L11 | OSFP3 | 8 |
| OAM4 | S7-4 | Port14_ Lane0 | 2 | 0 | Line | RT2_L4 | OSFP4 | 1 |
| OAM4 | S7-5 | Port14_ Lane1 | 2 | 0 | Line | RT2_L5 | OSFP4 | 2 |
| OAM5 | S3-4 | Port2_ Lane0 | 2 | 0 | Sys | RT2_S6 | OSFP4 | 7 |
| OAM5 | S3-5 | Port2_ Lane1 | 2 | 0 | Sys | RT2_S7 | OSFP4 | 8 |
| OAM6 | S3-5 | Port2_ Lane1 | 2 | 0 | Sys | RT2_S3 | OSFP4 | 6 |
| OAM7 | S7-4 | Port14_ Lane0 | 2 | 0 | Line | RT2_L0 | OSFP4 | 3 |
| OAM7 | S7-5 | Port14_ Lane1 | 2 | 0 | Line | RT2_L1 | OSFP4 | 4 |
| OAM4 | S6-0 | Port15_ Lane0 | 2 | 1 | Sys | RT2_S8 | OSFP5 | 1 |
| OAM4 | S6-1 | Port15_ Lane1 | 2 | 1 | Sys | RT2_S9 | OSFP5 | 2 |
| OAM5 | S2-0 | Port3_ Lane0 | 2 | 1 | Line | RT2_ L10 | OSFP 5 | 7 |
| OAM5 | S2-1 | Port3_ Lane1 | 2 | 1 | Line | RT2_ L11 | OSFP 5 | 8 |
| OAM6 | S2-0 | Port3_ Lane0 | 2 | 1 | Line | RT2_ L14 | OSFP5 | 5 |
| OAM6 | S2-1 | Port3_ Lane1 | 2 | 1 | Line | RT2_ L15 | OSFP5 | 6 |
| OAM7 | S6-0 | Port15_ Lane0 | 2 | 1 | Sys | RT2_ S12 | OSFP5 | 3 |
| OAM7 | S6-1 | Port15_ Lane1 | 2 | 1 | Sys | RT2_ S13 | OSFP5 | 4 |

## GPU Power Consumption

The GPU power consumption is divided according to the table below. This table includes a list of the associated UBB connectors.

| Component | Count | Power | Total Power |
|---|---|---|---|
| HL-325L | 8 | 894 W | 7152 W |
| PCIe retimer | 8 | 17.4 W | 139.2 W |
| PCIe clock buffers | 2 | 0.35 W | 0.7 W |
| SerDes retimers | 3 | 30.92 W | 92.76 W |
| SerDes retimer clock buffer | 1 | 0.46 W | 0.46 W |
| OSFP | 6 | 16 W | 96 W |
| FPGA | 2 | 1.06 W | 2.12 W |
| 3.3 V misc | 1 | 10 W | 10 W |
| Power delivery loss | 1 | 69.76 W | 69.76 W |
| **Total** | -- | -- | **7563 W** |

## PCIe Interface

The HL-325L is an OCP OAM spec V2.0 compliant card. The HL-325L accelerator card utilizes the x16 Gen5 PCIe link.

PCIe Device ID:

- Device ID: 0x1060
- Vendor ID: 0x1DA3
- Sub-System Device ID: 0x1060
- Sub-System Vendor ID: 0x1DA3
- Class Code: 12h (Processing Accelerator)

### *PCIe Failover Behavior*

Several lanes are detected and supported at larger lane counts. The system falls back to lower speeds if the link training fails, starting at 16 lanes and gradually decreasing to 1 lane (16 → 8 → 4 → 2 → 1).

### *PCIe Mapping Carrier Board and Motherboard*

**Figure 3-46. Physical Location of Each OAM**

| Carrier Board Mapping Table | |
|---|---|
| **Physical Location** | **PCI BUS ID** |
| OAM #0 | 17:00.0 |
| OAM #1 | 97:00.0 |
| OAM #2 | 2c:00.0 |
| OAM #3 | a9:00.0 |
| OAM #4 | 3d:00.0 |
| OAM #5 | ba:00.0 |
| OAM #6 | 4e:00.0 |
| OAM #7 | cb:00.0 |

**Note:** Linux OS Numbering changes at every system boot.

## Gaudi3 OAM Key Hardware

The table below details the key components of the HL-325L.

| Key Hardware Features | Description |
|---|---|
| AI ASIC | Gaudi3 with HBM memory |
| Main NVM Components | SPI Flash (16 MB), I2C EEPROM (4 KB), FRU EEPROM (2 Kb) |
| Board Management | CPLD – LCMXO5 and two L-ASC 10 |
| Voltage Regulators | Onboard |
| Monitoring | Thermal, Voltage and Current sensors: onboard and on-die (Gaudi3) |
| Clocks | Onboard: 50 MHz, 156.25 MHz<br>Input clock from the B2B connector: 100 MHz |

### *HL-325L Key Interfaces*

| Key Hardware Interface | Description |
|---|---|
| Host Link | x16 PCIe Gen5 |
| Networking: Card to Card and Scale-out | 48 x 112 Gb PAM4 SerDes Links |
| JTAG | In-field CPLD programming and low-level ASIC debug |
| UART | Low-level debug and BMC access |
| I2C Master | On/off board peripherals |
| I2C Slave/SMBUS | BMC control and monitoring interface |

### *HL-325L Key Thermal and Mechanical Properties*

| Key Thermal & Mechanical Properties Feature | Details |
|---|---|
| Module Dimension | 102 mm x 170 mm |
| PCB Thickness | 185 mil / 4.7 mm |
| Weight | 2.95 Kg |
| Connectors | Two Molex Mirror Mezz Connectors (MPN: 2189161115-SD)<br>Stack height: 8-mm differential pair<br>Impedance: 90 ohm ± 5% |
| HL-325L, HL-338 and HL-335 Bottom Stiffener Height (including Mylar) | 8 mm ±0.15 mm |

| Key Thermal & Mechanical Properties Feature | Details |
|---|---|
| Power | Up to total of 600 W for two main input voltages rails:<br>44 V – 59.5 V DC (54 V Nominal): 850 W<br>12 V DC: 35 W<br>3.3 V: 9 W |
| Ambient Temperature* | 5°C to 35°C |
| Approach Temperature* | 10°C to 48°C, considering shadowing other components |
| Relative Humidity | 20% to 90% |
| Cold Boot T Temperature | 10°C |
| Storage T Temperature | -20°C to 85°C |
| Airflow | 185 CFM |
| Transportation Temperature Range | -55°C to +85°C (short-term storage) |
| Altitude | Sea level to 3000 ft, without temperature derating |

*For higher temperatures, higher airflow will be required.

## 3.10 PCIe Expansion Cards

The CPU drawer has two sets of PCIe slots. These slots typically house I/O devices such as network interface cards or host adapters to connect to other servers. The default configuration includes four PCIe Gen5 slots via two riser cards (slots 1 through 4) and one AIOM card (slot 5).

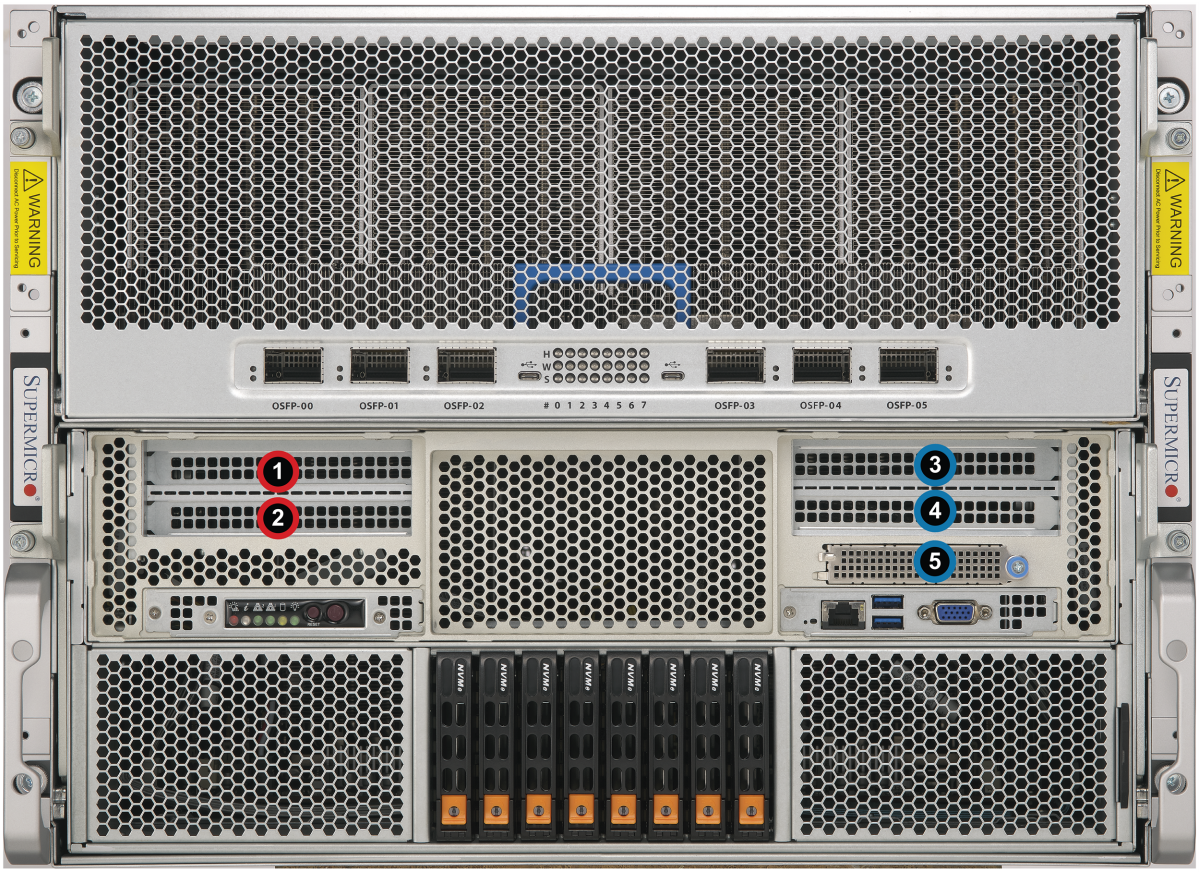



**Figure 3-47. PCIe Expansion Slot Locations**

| Expansion Slot Locations | |
|---|---|
| **Location** | **Description** |
| 1 | PCIe 5.0 x16 FHFL slot |
| 2 | PCIe 5.0 x8 FHFL slot |
| 3 | PCIe 5.0 x16 FHFL slot |
| 4 | PCIe 5.0 x8 FHFL slot |
| 5 | PCIe 5.0 x8 AIOM slot (10 G, OCP 3.0 compatible) |

## 3.11 Power Supply

The SYS-822GA-NGR3 includes eight hot-plug power supply modules. These modules will automatically sense and operate at an input voltage between 100 V to 240 V. Note that different input voltages will result in different maximum power output levels.

In the event of a power module failure, the other power modules will continue to power the system on its own. Failed power supply modules can be replaced without powering down the system. Replacement modules can be ordered directly from Supermicro.

| Power Supply Indicators | | |
|---|---|---|
| **Power Supply Condition** | **Green LED** | **Amber LED** |
| No AC power to power supply | Off | Off |
| Power supply critical events causing a shutdown/failure/OCP/OVP/Fan Fail/OTP/UVP | Off | On |
| Power supply warning events where the power supply continues to operate; high temperature; over voltage; under voltage, etc. | Off | 1 Hz Blinking |
| AC present only 12 VSB ON (PS OFF) | 1 Hz Blinking | Off |
| Output ON and OK | On | Off |
| AC cord unplugged and in redundant mode | Off | On |

### Replacing the Power Supply

1. Unplug the AC power cord from the failed power supply module.
2. Push and hold the release tab on the back of the power supply.
3. Grasp the handle of the power supply and pull it out of its bay.
4. Push the new power supply module into the power bay until it clicks into the locked position.
5. Plug the AC power cord back into the power supply module.

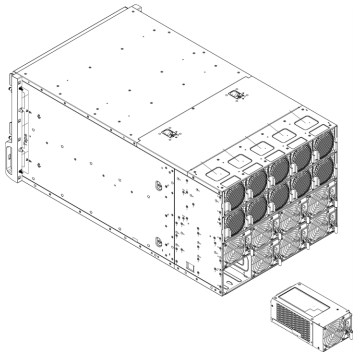


**Figure 3-48. Installing a Power Supply Module**

# Chapter 4:

# Motherboard Connections, Jumpers, and LEDs

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 the "Introduction" on page 14. More detail can be found in the X14DBG-GD motherboard manual.

Review the "Standardized Warning Statements for AC Systems" on page 198 before installing or removing components.

# 4.1 Power Supply and Power Connections

For information about the power supply and power connections of the SYS-822GA-NGR3 server, refer to the following content.

## Power Connector for the System Backplane

One +12 V 8-pin power connector is located at JPMW2 on the X14DBG-GD motherboard to provide adequate power to the system backplane.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| 8-pin 12V Power Connector for the System Backplane<br>Pin Definitions: Eight Total | |
|---|---|
| **Pin#** | **Definition** |
| 1–4 | GND |
| 5–8 | +12 V |

## Power Connectors for the System Riser Device

Two power connectors with +12 V 4-pin, +3V3 V 2-pin, and +3V3_AUX 2-pin are located at JPMW1 and JPMW3 on the X14DBG-GD motherboard to provide adequate power to the system riser devices.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| 8-pin Power Connector for the System Riser Device<br>Pin Definitions: Eight Total | |
|---|---|
| **Pin#** | **Definition** |
| 1–4 | +12 V |
| 5–6 | +3V3 V |
| 7–8 | +3V3_AUX |

## 4.2 Headers and Connections

For information about the headers of the SYS-822GA-NGR3 server, refer to the following content.

### 4-pin BMC External I2C Header

A System Management Bus header for the BMC is located at JIPMB1 on the X14DBG-GD motherboard. Connect the appropriate cable here to use the IPMB I2C connection on your system.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

### AIOM Sideband Connector

One Supermicro proprietary Advanced I/O Module (AIOM) sideband connector is located at JAIOM2SB1 on the X14DBG-GD motherboard. This connector is supported by CPU2 and provides PCIe 5.0 x8 (OCP 3.0 compliant) for AIOM sideband connections.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

### ExaMAX Connectors

Eight ExaMAX connectors are located at JHIF0–JHIF7 on the X14DBG-GD motherboard. They are used to connect to the midplane for the GPU system.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

### Fan Headers

Two 6-pin fan headers are located at FAN1 and FAN2 on the X14DBG-GD motherboard. These fan headers are used for the cooling fans for your system. Fan speed control for these fans is supported by Thermal Management via the BMC 2.0 interface.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| 6-pin Fan Header<br><br>Pin Definitions: Six Total | | | |
|---|---|---|---|
| **Pin#** | **Definition** | **Pin#** | **Definition** |
| 1 | GND | 4 | PWM_Control |
| 2 | 3A/12 V | 5 | 3A/12 V |
| 3 | Tachometer | 6 | GND |

## Liquid Cooling Leakage Sensor Headers

Two liquid cooling leakage sensor headers are located at JLC1 and JLC2 on the X14DBG-GD motherboard. Liquid cooling leakage sensor headers are used to detect leakage of the coolant used in your liquid cooling system. JLC1 is used for leak detection on the CPU side, while JLC2 is used for leak detection on the GPU side.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## MCIO Connectors for Front AIOM Card

One Mini Cool Edge IO (MCIO) PCIe 5.0 x8 connector is located at P2_JPCIE7 on the X14DBG-GD motherboard. This connector that can be used for the front AIOM card (AOM-AIOM-2X8-G5-P) is supported by CPU2.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## MCIO Connectors for Front Riser Cards

Three Mini Cool Edge IO (MCIO) PCIe 5.0 x8 connectors are located at P1_JPCIE2A, P1_JPCIE2B, and P1_JPCIE3 on the X14DBG-GD motherboard. These connectors that can be used for the front riser card (RSC-G-66G5S) are supported by CPU1.

Another three MCIO PCIe 5.0 x8 connectors are located at P2_JPCIE5, P2_JPCIE6A, and P2_JPCIE6B on the X14DBG-GD motherboard. These connectors that can be used for the front riser card (RSC-GR-66G5S) are supported by CPU2.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## MCIO NVMe Connectors

Four Mini Cool Edge IO (MCIO) PCIe 5.0 x8 connectors are located at US1_JNVME1, US1_JNVME2, US2_JNVME3, and US2_JNVME4 on the X14DBG-GD motherboard. US1_JNVME1 and US1_JNVME2 are supported by the PLX Switch 1. US2_JNVME3 and US2_JNVME4 are supported by the PLX Switch 2. Each of these connectors supports two PCIe 5.0 x4 NVMe connections.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## Midplane Guide Pins

Midplane guide pins are located at EJSW_GDE1 and EJSW_GDE2 on the X14DBG-GD motherboard. Use these midplane guide pins to connect your motherboard to the midplane.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## NC-SI Connection

The Network Controller Sideband Interface (NC-SI) connection is located on the X14DBG-GD motherboard. This connection is used to connect a Network Interface Card (NIC) to the motherboard to allow the onboard Baseboard Management Controller (BMC) to communicate with a network.

**Note:** For detailed instructions on how to configure Network Interface Card (NIC) settings, refer to the Network Interface Card Configuration User's Guide posted on the web page under the link: https://www.supermicro.com/support/manuals.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## PCIe 5.0 x2 NVMe M.2 Slots

Two PCIe 5.0 x2 NVMe M.2 Slots are located at M.2-C1 and M.2-C2 on the X14DBG-GD motherboard. These M.2 slots support M.2 NVMe SSDs in the M-key 2280 and 22110 form factors.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## SMBus Header

An SMBus (I2C) Header for storage backplane is located at JBPNI2C1 on the X14DBG-GD motherboard. This header provides connection from BMC to BPN for BPN CPLD firmware update and NVMe sensor reading.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| SMBus Header<br>Pin Definitions: Four Total | |
|---|---|
| **Pin#** | **Definition** |
| 1 | Data |
| 2 | GND |
| 3 | Clock |
| 4 | P3V3 |

## SMBus Header for the Riser Card

An SMBus (I2C) Header for the riser card is located at JRSI2C1 on the X14DBG-GD motherboard. Connect the appropriate cable to this header to connect to the riser card.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| SMBus Header for the Riser Card<br>Pin Definitions: Four Total | |
|---|---|
| **Pin#** | **Definition** |
| 1 | Data |
| 2 | GND |
| 3 | Clock |
| 4 | P3V3 |

## TPM/Port 80 Header

The JTPM1 header on the X14DBG-GD motherboard is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermicro (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. Information on the TPM is available at the following page:

https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H__X12_H12.pdf

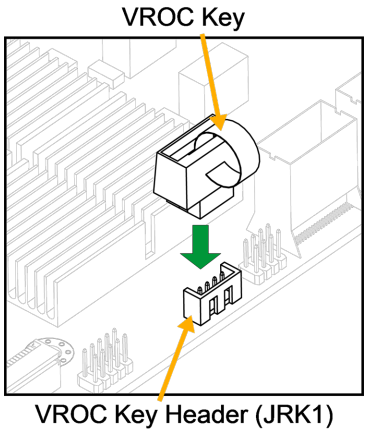
For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| Trusted Platform Module Header<br>Pin Definitions: 10 Total | | | |
|---|---|---|---|
| **Pin#** | **Definition** | **Pin#** | **Definition** |
| 1 | +3.3 V | 2 | SPI_CS# |
| 3 | RESET# | 4 | SPI_MISO |
| 5 | SPI_CLK | 6 | Ground |
| 7 | SPI_MOSI | 8 | No Connection |
| 9 | +1.8 V Standby | 10 | SPI_IRQ# |

## VROC RAID Key Header

A VROC RAID Key header is located at JRK1 on the X14DBG-GD motherboard. Install a VROC RAID key on JRK1 for NVMe RAID support as shown in the illustration below.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.




| Intel VROC Key<br>Pin Definitions:<br>Four Total | |
|---|---|
| **Pin#** | **Definition** |
| 1 | GND |
| 2 | +3.3 V Standby |
| 3 | GND |
| 4 | CPU RAID Key |

**Note:** Images displayed are for illustrative purposes only. The components installed in your system may or may not look exactly the same as the graphics shown in the manual.

**Note:** For detailed instructions on how to configure VROC RAID settings, refer to the VROC RAID Configuration User's Guide posted on the web page under the following link: https://www.supermicro.com/support/manuals.

## VPP I2C Header

A VPP I2C header for storage backplane is located at JNVI2C1 on the X14DBG-GD motherboard. Connect the appropriate cable to use the VPP I2C connection for your system. This header provides connection from CPU/CPLD/PLX to BPN CPLD for NVMe hot swapping.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| VPP I2C Header<br>Pin Definitions: Four Total | |
|---|---|
| **Pin#** | **Definition** |
| 1 | Data |
| 2 | GND |
| 3 | Clock |
| 4 | P3V3 |

## 4.3 I/O Connections

### Front I/O Module Header

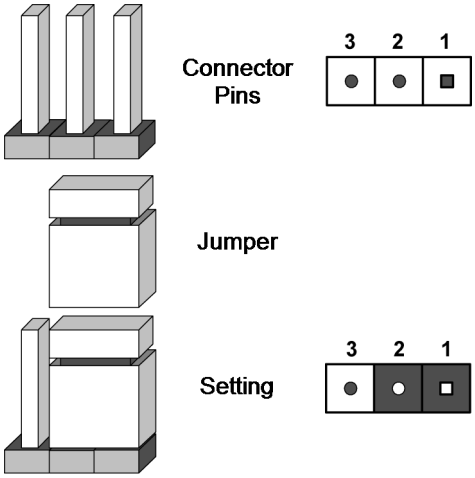
An Supermicro proprietary front I/O module header is located at JFP2 on the X14DBG-GD motherboard. This header can be connected to the front I/O module (AOM-DXF-IO-P) via a cable. The AOM-DXF-IO-P provides connections of one dedicated BMC LAN port, two USB 3.0 ports, one VGA port, and one COM header.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

## 4.4 Jumper Settings

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram below for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

**Note:** On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.




### CMOS Clear

JBT1 on the X14DBG-GD motherboard 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.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.


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, JBT1, with a metal object such as a small screwdriver for at least four seconds.

**Note:** Clearing CMOS will also clear all passwords.

5. Remove the screwdriver (or shorting device).
6. Replace the cover, reconnect the power cord(s), and power on the system.

## I2C Bus for VRM

JVRM1 on the X14DBG-GD motherboard allows the BMC or the VRM programmer tool to access CPU and memory VRM controllers.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| I2C Bus for VRM (JVRM1) Jumper Settings | |
|---|---|
| **Jumper Setting** | **Definition** |
| Pins 1–3, 2–4 | BMC (Default) |
| Pins 2–2, 1–1 | VRM Programmer Tool |

## Remote Standby Power Cycle

STBY_RECYC_SEL1 on the X14DBG-GD motherboard is used to disable or enable the motherboard AC power cycle remotely.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| Remote Standby Power Cycle (STBY_RECYC_SEL1) Jumper Settings | |
|---|---|
| **Jumper Setting** | **Definition** |
| Pins 1–2 | Disable |
| Pins 2–3 | Enable (Default) |

## UID Switch/BMC Reset and System Reset

JRU1 on the X14DBG-GD motherboard is used in conjunction with pin 2 of JFP1 to function as a System Reset button or a UID Switch/BMC Reset button. To configure pin 2 of JFP1 for front UID Switch and BMC Reset use in a chassis that supports front UID connection, close pins 1 and 2 of JRU1. To set pin 2 of JFP1 for System Reset support, close pins 3 and 4 of JRU1.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| Front UID Switch/BMC Reset and System Reset (JRU1)<br><br>Jumper Settings | |
|---|---|
| **State** | **Description** |
| Close pin 1 and pin 2 of JRU1 | Pin 2 of JFP1: used for front UID switch and BMC reset support (Default) |
| Close pin 3 and pin 4 of JRU1 | Pin 2 of JFP1: used for system reset |

## 4.5 Motherboard Jumper Check

Check the default jumper locations. If a jumper is different from any of the pictures below, please insert the jumper at the default location.

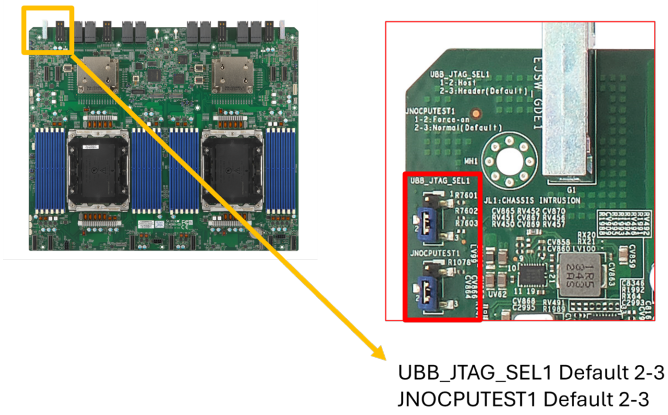



**Figure 4-1. UBB_JTAG Setting and CPU Test Setting**

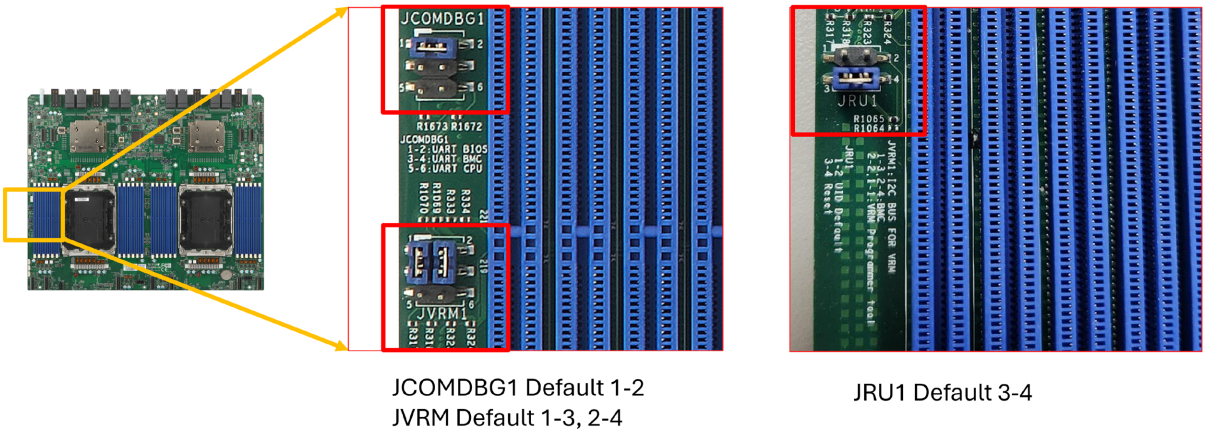
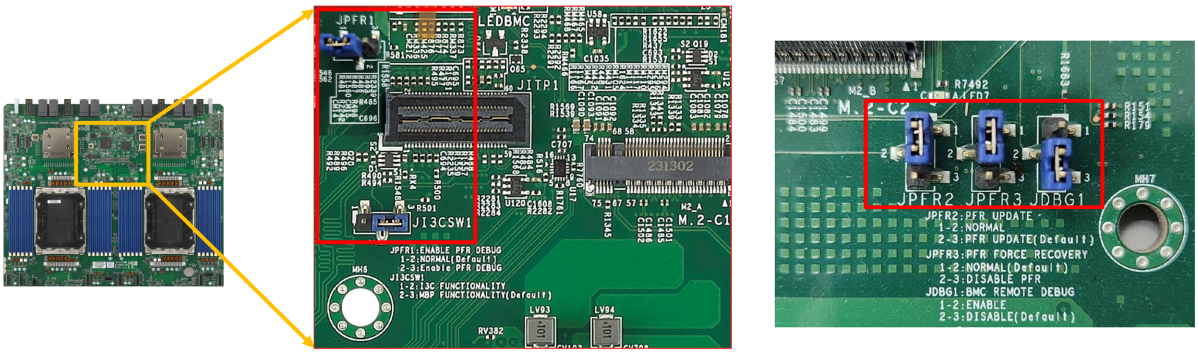


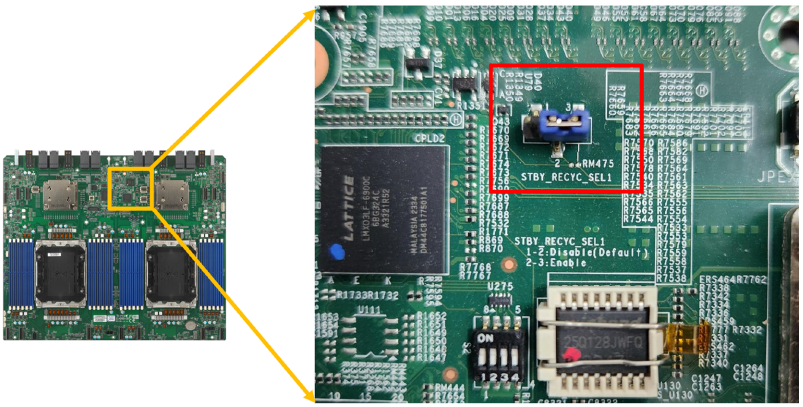

**Figure 4-2. Debug Mode Setting, I2C Bus for VRM Setting and UID Setting**




JPFR1 Default 1-2
JI3CSW1 Default 2-3

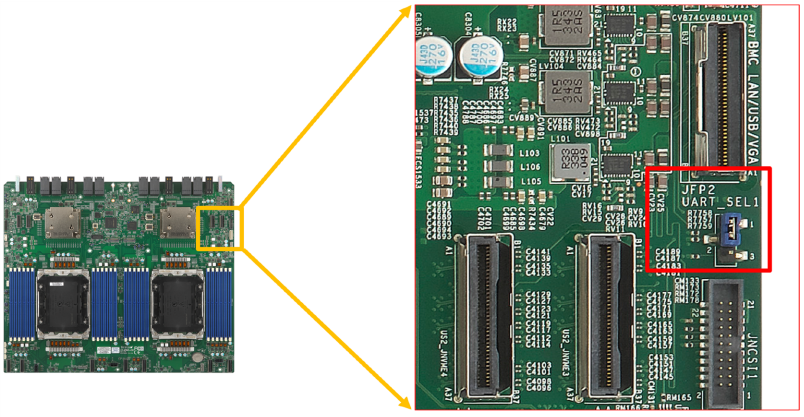
JPFR2 Default 1-2
JPFR3 Default 1-2
JDBG1 Default 2-3

**Figure 4-3. PFR Setting and BMC Remote Debug Setting**




STBY_RECYC_SEL1 Default 2-3

**Figure 4-4. BMC AC Cycle Enable Setting**




UART_SEL1 Default 1-2

**Figure 4-5. Front I/O Module Header for AOM-DXF-IO-P**

# 4.6 LED Indicators

For information about the LED indicators on the SYS-822GA-NGR3 server, refer to the following content.

## BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDBMC on the X14DBG-GD motherboard. When this LED is blinking, the BMC is functioning normally.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

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

## M.2 LEDs

M.2 LEDs are located at LED4 and LED7 on the X14DBG-GD motherboard. When these LEDs are blinking, the M.2 devices are functioning normally. LED4 is for M.2-C1. LED7 is for M.2-C2.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| M.2 LED Indicator | |
|---|---|
| **LED Color** | **Definition** |
| Green: Blinking | Device Working |

## Onboard Power LED

The Onboard Power LED is located at PWRLED on the X14DBG-GD motherboard. When this LED is on, the system power is on. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

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

## Unit ID (UID) LED

The front UID LED indicator is located at LED2 on the X14DBG-GD motherboard. This UID indicator provides easy identification of a system that may need services.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.

| UID LED<br><br>LED Indicator | |
|---|---|
| **LED Color** | **Definition** |
| Blue: On | System Identified |

## OAM LEDs

Below is a summary of the OAM (HL-325L) LEDs.

| LED Description | Color |
|---|---|
| Module Power Good | Green |
| Host Power Good | Green |
| Gaudi3 Reset In | Blue |
| Recovery | Blue |
| Thermal Warning | Orange |
| Overtemperature | Red |
| Pre-Boot Up | Orange |
| System Up | Green |

An additional four green LEDs indicate the status of the power-up sequence:

| Number | 4 LED Indication | LED Description |
|---|---|---|
| 1 |  | 6.5 V, always on |
| 2 |  | 5 V |
| 3 |  | 2 V 5 |
| 4 |  | 1.8 V, always on |
| 5 |  | 1.2 V LDO, always on |
| 6 |  | 1.2 V LDO – PLL |
| 7 |  | 0.85 V PCIe VP |
| 8 |  | 1 V |
| 9 |  | 12 V from 1st stage |
| 10 |  | C_VDD (0.75 V) |
| 11 |  | 1.2 V HBM |
| 12 |  | NIC 0.75 V |
| 13 |  | D2D 0.75 V |
| 14 |  | NIC_VDDH |

## Drive Carrier LEDs

| | LED Color | Blinking Pattern | Behavior for Device |
|---|---|---|---|
| **Activity LED** | Blue | Blinking | I/O activity |
| | Blue | Solid On | Idle NVMe drive installed |
| | Off | Off | Idle NVMe drive |
| **Status LED** | Red | Solid On | Failure of drive with RSTe support |
| | Red | Blinking at 1 Hz | Rebuild drive with RSTe support |
| | Red | Blinking with two blinks and one stop at 1 Hz | Hot spare for drive with RSTe support |
| | Red | On for 5 seconds then off | Power on for drive with RSTe support |
| | Red | Blinking at 4 Hz | Identify drive with RSTe support |

## Power Supply LEDs

The power supply LED behavior is consistent across all PWS models supported in Hyper Systems. Below is a summary of behaviors based on the PWS-3K02G-2R HW specification for easy reference. Please refer to the appropriate hardware specification for more details.

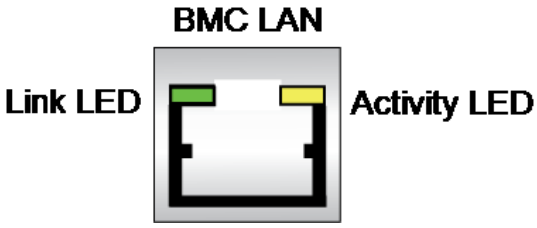
| Power Supply Condition | Bicolor | |
|---|---|---|
| | Green LED | Amber LED |
| No AC power to all power supplies | OFF | OFF |
| Power supply critical events causing a shutdown/ failure/ OCP/ OVP/ Fan Fail/ OTP/ UVP | OFF | Amber LED |
| Power supply warning events where the power supply continues to operate: high temperature; high power, high current, slow fan, etc. | OFF | 1Hz Blink Amber |
| AC present only, 12 VSB on (PS off) or PS in sleep state | 1Hz Blink Green | OFF |
| Output ON and OK | Green | OFF |
| AC cord unplugged or AC power lost; with a second PWS in parallel and valid AC input power. | OFF | Amber |
| Power supply FW updating mode | 2Hz Blink Green | OFF |

## BMC LAN LEDs

The BMC LAN is located on the IO Board and provides a Link Status LED, and an Activity LED.

The dedicated BMC LAN connection on the X14DBG-GD motherboard features two LEDs. The LED on the right indicates activity, and the LED on the left indicates the speed of the connection.

For a detailed diagram of the X14DBG-GD motherboard, see the layout under Quick Reference.




| BMC LAN LEDs | | | |
|---|---|---|---|
| **Link LED** | | **Activity LED** | |
| **LED Color** | **Definition** | **LED Color** | **Definition** |
| Off | No Connection | Off | Off |
| Off | 10 Mb/s | Amber | Activity |
| Green | 100 Mb/s | Amber | Activity |
| Amber | 1 Gb/s | Amber | Activity |

# Chapter 5:

# Software

After the SYS-822GA-NGR3 server has been installed, you can install the Operating System (OS), configure RAID settings, and install the drivers.

## 5.1 OS Support

The GPU included with this system only supports Linux (Ubuntu, RedHat, or SUSE).

Visit the OS support matrix for more information: https://docs.habana.ai/en/latest/Support_Matrix/Support_Matrix.html

## 5.2 System Firmware Version

The SYS-822GA-NGR3 includes functional boards that have dedicated firmware versions. The table below indicates the latest version for this system.

| Item | System Current Version | System Beta Version |
|---|---|---|
| BIOS FW | BIOS_X14DBG-1D55_20241105_1.0a_STDsp.zip (CRC: 72B4F4E5) | BIOS_X14DBG-1D55_20240906_1.0_STDsp.zip (CRC: EE35B22C) |
| BMC FW | BMC_X14AST2600-ROT20-7601MS_20241216_01.00.21.25_STD.zip (CRC: 7B9AA0ED) | BMC_X14AST2600-ROT20-7601MS_20240920_01.00.21.03_STD.zip (CRC: FCEAE5F4) |
| MB CPLD1 FW | CPLD_X14DBG-GD-30XXF24B_20240826_F2.4B.08_STDsp.zip (CRC: 27688BF7) | CPLD_X14DBG-GD-30XXF24B_20240826_F2.4B.08_STDsp.zip (CRC: 27688BF7) |
| MB CPLD2 FW | CPLD_X14DBG-GD-33XXF24B_20240826_F2.4B.05_STD.zip (CRC: 1E94283B) | CPLD_X14DBG-GD-33XXF24B_20240826_F2.4B.05_STD.zip (CRC: 1E94283B) |
| MB Switch FW | 4.16.00 | 4.16.00 |

## 5.3 Driver Installation

The Supermicro website contains drivers and utilities for your system at the following page:

https://www.supermicro.com/wdl.

Some of these drivers and utilities must be installed, such as the chipset driver. After accessing the website, go into the CDR_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to a USB flash 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. 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.

**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 bottom) one at a time. *After installing each item, you must reboot 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.

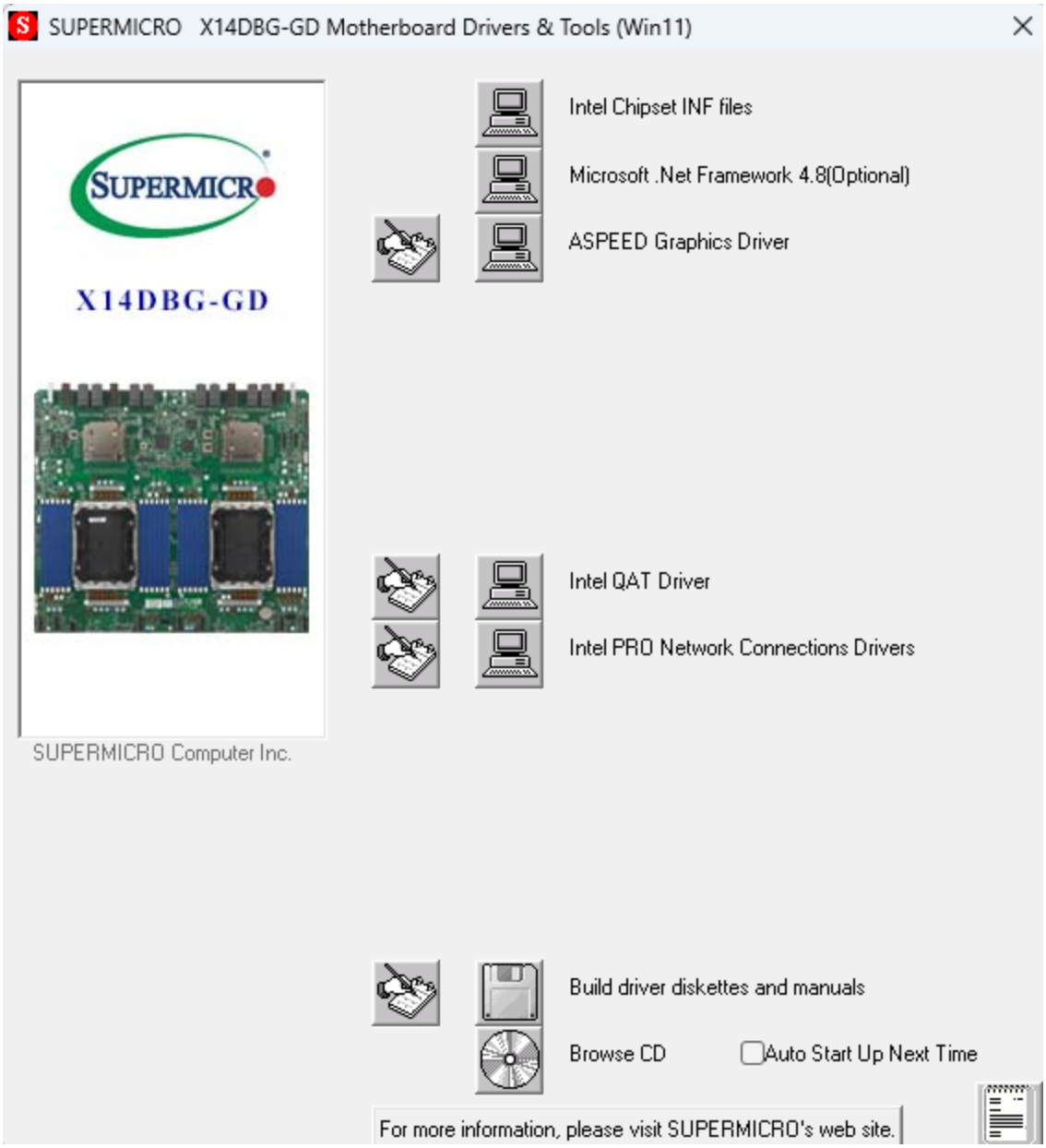



**Figure 5-1. Driver and Tools Installation Screen**

## 5.4 BMC

The X14DBG-GD 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 the following page:

https://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. The password can be found on a sticker on the motherboard and a sticker on the chassis, for Supermicro chassis. The sticker also displays the BMC MAC address. If necessary, the password can be reset using the Supermicro IPMICFG tool.


**Figure 5-2. BMC Password Label**

## 5.5 Server Management

This section explains the tools used for server management.

### SuperServer Automation Assistant

The SuperServer Automation Assistant (SAA) is a powerful command-line interface (CLI) based utility that allows IT administrators to easily deploy, configure, and update managed systems ranging from single nodes to entire data centers. SAA consolidates all Supermicro CLI-based software features, simplifying the software stack integration.

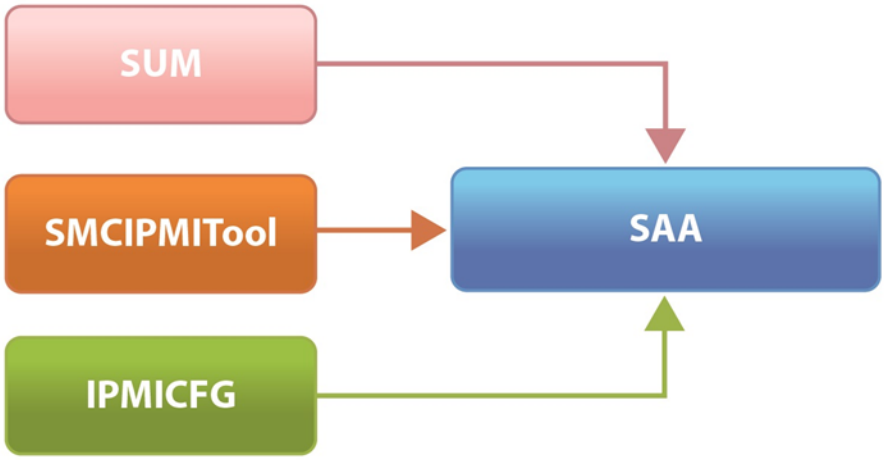



**Figure 5-3. SAA Workflow**

#### *Features*

- In-Band/Out-of-Band/Remote-In-Band, single/multiple node and operation
- BIOS, BMC, CMM, CPLD, storage, PSU, and other peripheral firmware management capabilities
- Parallel management and configuration on multiple systems
- Extended features of asset management, system utilization, sensor information, BIOS/BMC event logs, and TPM provisioning
- Single CLI utility for ease of integration into your software stack and scripting

#### *Specification*

- Interface: Command line
- Supported OS: Windows, Linux, FreeBSD, ESXi 7.0/8.0, Linux AArch64, UEFI*

- License Requirements:
  - Standard Update/Management: No license required
  - Basic Remote Management: SFT-OOB-LIC
  - Advanced Full Features: SFT-DCMS-SINGLE
  - Service Calls: SFT-DCMS-SVC-KEY + SFT-DCMS-SINGLE

## Supermicro Power Manager

The Supermicro Power Manager (SPM) is an application for monitoring and managing Supermicro servers with Intel® Node Manager enabled. Based on the Intel® Data Center Manager (Intel® DCM), the policy-based energy management provided by SPM is agentless and out-of-band. SPM provides real-time power monitoring and management, helping IT managers optimize energy efficiency for different levels of workloads ranging from servers to data centers.

Licensing: SFT-DCMS-Single or SFT-SPM-LIC is required for each target node.

### *Features*

- Real-time power monitoring and management
- Agentless management via BMC with Intel® NM-enabled servers
- Centralized management on a single dashboard console
- Notifications through email and SNMP traps
- Supports REST APIs, GUI, and CLI
- Supports exporting reports in CSV and PDF formats

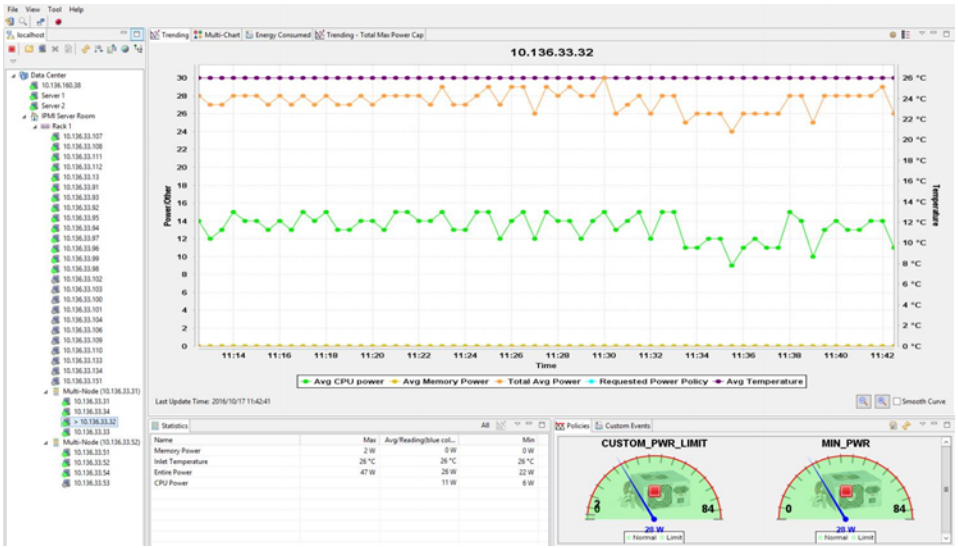



**Figure 5-4. SPM Desktop View**

## Supermicro Thin-Agent Service

The Thin-Agent Service (TAS) provides server usage information at the OS level that you can monitor on a system through the BMC/IPMI. For hardware platforms, where there is no RAID controller in the configuration, it is recommended to install TAS.

### *Features*

- Provides asset and health information about hardware (CPU, memory, NIC, and storage drive health) and usage monitoring (CPU workload, memory size, NIC state, and disk partition)
- Supports RAID & HDD SMART failure information from the Broadcom 3108 RAID controller and Intel PCH/RSTe RAID chipset
- Generates state event logs for disk failure and NIC state change

## Super Diagnostics Offline

The Super Diagnostics Offline provides the capability to determine the health of Supermicro server's components, including CPU, I/O, and memory.

### *Features*

- Designed for Supermicro systems
- Offline diagnostics
- Local and remote diagnostics; remote diagnostics enables multiple servers to be tested simultaneously
- Automatically collects information on detected devices
- Test results reported in output files, enabling further analysis
- Flexible test coverage: all components can be tested, or specific components can be targeted

## Supermicro IPMI Utilities

This section details the tools used for IPMI utilities.

## *IPMICFG*

IPMICFG is an in-band utility for configuring IPMI devices. It is a command line tool providing standard IPMI and Supermicro® proprietary OEM commands. This CLI-based utility can be executed on DOS, Windows, and Linux OS and does not require any installation procedures. This utility is assists with BMC/FRU configuration.

### *Features*

- Sets up IPMI IP address
- Sets up IPMI configuration
- Configures IPMI user management
- Configures IPMI FRU
- Manages System Event Log (SEL)
- Manages IPMI by node management (NM) protocol

## *SMCIPMITool*

The SMCIPMITool is an out-of-band Supermicro utility that allows you to interface with SuperBlade® systems and IPMI devices via CLI. This utility provides two user modes: OS Command Line Mode and Shell Mode. This utility can be easily integrated with existing infrastructure to connect with Supermicro server's baseboard management controllers.

### *Features*

**Remote System Management**

- SuperBlade management
- MicroBlade management
- System power control
- Storage drive and NVMe management
- FRU management
- System diagnostic (with Super Diagnostics Offline)
- NM (Node Manager) Management
- Group management

**Remote IPMI Management**

- Supports IPv6
- Serial-over-LAN
- Boot override
- Firmware upgrade
- Sensors and event log
- Power supply and BBP monitoring
- MultiNode System Information
- Virtual media management (node product key is required)
- Remote screen capture (node product key is required)

## *IMPIVIEW*

IPMIView is a GUI-based software application that allows administrators to manage multiple target systems through BMC. IPMIView V2.0 supports Supermicro's BMCs that adhere to IPMI v1.5 or v2.0.

IPMIView monitors and reports on the status of SuperBlade systems, including the blade server, power supply, gigabit switch, InfiniBand and CMM modules. IPMIView also supports remote KVM and virtual media.

### *Features*

- IPMI system management
- KVM console redirection
- Text console redirection (Serial over LAN)
- Virtual media management
- IPMI user/group management
- Trap receiver
- Associated mobile app, available for Android and iOS

# Chapter 6:

# Optional Components

This chapter describes alternate configurations and optional system components for the SYS-822GA-NGR3 server.

## 6.1 Storage Protocols Supported

The system hot-swap storage backplane (BPN-NVME5-HS219N-S8) features:

- Hot-swap drive support
- MCIO cable connectors for eight NVMe drive bays

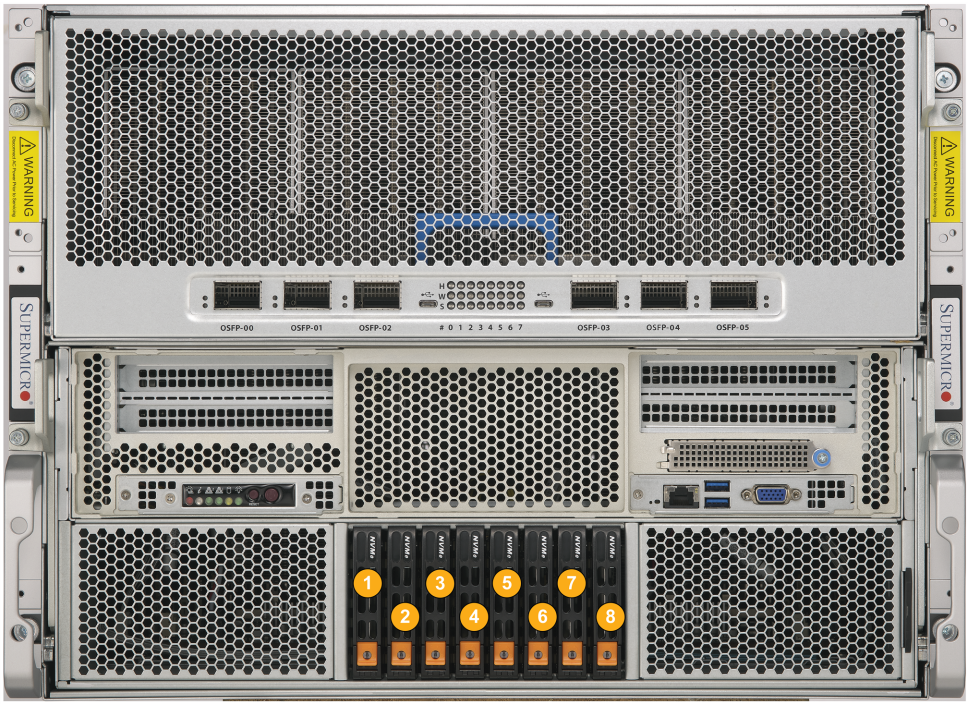



**Figure 6-1. NVMe Drive Bay Locations**

| Location | Description |
|---|---|
| 1 to 8 | Eight 2.5" NVMe drive bays |

## Configuration Ordering Information

| CPU | | | | |
|---|---|---|---|---|
| Intel | Xeon® Platinum | 500 W Gen 6th (128C AP) | GNR-AP 6980P | **Passed** |
| Intel | Xeon® Platinum | 500 W Gen 6th (72C AP) | GNR-AP 6980P | **Passed** |
| Intel | Xeon® Platinum | 500 W Gen 6th (72C AP) | P4X-LN1DPQ5DK-001 | **Passed** |
| Intel | Xeon® Platinum | 500 W Gen 6th (96C AP) | P4X-LN1DPQ5DL-001 | **Passed** |
| Intel | Xeon® Platinum | 500 W Gen 6th (120C AP) | P4X-LN1DPQ5DM-001 | **Passed** |
| Intel | Xeon® Platinum | 500 W Gen 6th (128C AP) | P4X-LN1DPQ5DN-001 | **Passed** |
| Intel | Xeon® Platinum | 400 W Gen 6th (96C AP) | P4X-LN1UPQ5DP-001 | **Passed** |

| Memory | | | | |
|---|---|---|---|---|
| Samsung | RDIMM | 9 6GB DDR5-6400 | MEM-DR596L-SL01-ER64 | **Passed** |
| Micron | RDIMM | 128 GB DDR5-6400 | MEM-DR512L-CL01-ER64 | **Passed** |
| Micron | RDIMM | 96 GB DDR5-6400 | MEM-DR596L-CL01-ER64 | **Passed** |

| U.2 & AIC SSD (NVMe) | | | | |
|---|---|---|---|---|
| Kioxia | CD8-P | 2.5" U.3 NVMe (G5) | HDS-TUN-KCD8XPUG3T84 | **Passed** |
| Kioxia | CM7-V | 2.5" U.3 NVMe (G5) | HDS-TUN-KCMYXVUG12T8 | **TBD** |
| Samsung | PM1743 | 2.5" U.2 NVMe (G5) | HDS-SUN-MZWLO15THBLA07 | **TBD** |
| Micron | 7450 PRO | 2.5" U.3 NVMe (G4) | HDS-MUN-MTFDKCB7T6TFR1BC | **TBD** |
| Micron | 9400 PRO | 2.5" U.3 NVMe (G4) | HDS-MUN-MTFDKCC30T7TGH1B | **TBD** |
| Samsung | PM9A3 | 2.5" U.2 NVMe (G4) | HDS-SUN0-MZQL15THBLAA7 | **TBD** |

| M.2 SSD (NMVe) | | | | |
|---|---|---|---|---|
| Samsung | PM9A3 | NVMe M.2(G4) | HDS-SMN0-MZ1L2960HCJRA7 | **Passed** |
| Micron | 7450 PRO | NVMe M.2(G4) | HDS-SMN0-MZ1L2960HCJRA7 | **TBD** |
| Micron | 7450 PRO | NVMe M.2(G4) | HDS-MMN-MTFDKBG3T8TFR1BC | **TBD** |
| Micron | 7450 PRO | NVMe M.2(G4) | HDS-MMN-MTFDKBG3T8TDZ1AZ | **TBD** |

| Network AOC | | | | |
|---|---|---|---|---|
| AIOM | Gen3 | AIOM 2-port 10GbE RJ45, Intel X550 | AOC-ATG-i2TM | **Passed** |
| AIOM | Gen3 | AIOM 2-port 10GbE SFP+, Intel X710-BM2 | AOC-ATG-i2SM | **TBD** |
| AIOM | Gen2 | AIOM 4-port GbE RJ45, Intel i350-AM4 | AOC-AG-i4M | **TBD** |
| AIOM | Gen2 | AIOM 4-port GbE SFP, Intel i350-AM4 | AOC-AG-i4SM | **TBD** |
| STD Low Profile | Gen4 | Standard PCIe Gen 4 dual port 100GbE Broadcom BCM 57508 | AOC-S100G-b2C | **TBD** |
| STD Low Profile | Gen5 | Nvidia 900-9X7AH-0078-DTZ Gen5x16 CX7 VPI NDR200,2-p QSFP112 | AOC-CX7AH0078-DTZ | **TBD** |
| STD Low Profile | Gen5 | Std LP 1-port 400G QSFP56DD based on Broadcom BCM57600,R | AOC-S400G-B1C-O | **TBD** |
| STD Low Profile | Gen5 | Std LP 1-port 400G QSFP56DD based on Broadcom BCM57600,R | AOC-S400G-B1C-P | **TBD** |
| STD Low Profile | Gen5 | Nvidia 900-9X7AH-0079-DTZ Gen5x16 CX7 VPI 400G NDR/OSFP | AOC-CX766003N-SQ0 | **Passed** |
| STD Low Profile | Gen4 | Mellanox MCX623106AN-CDAT PCIe 2-port 100GbE QSFP56 Gen4.0 x16, CX-6 Dx RoHS | AOC-623106AN-CDAT | **TBD** |
| STD Low Profile | Gen4 | MCX653106A-HDAT, CX-6 VPI, HDR, 200 GbE, 2p, QSFP56, PCIe4 x16 | AOC-653106A-HDAT | **TBD** |
| STD Low Profile | Gen4 | MCX653105A-HDAT, CX-6 VPI, HDR, 200 GbE,1x QSFP56, PCIe4 x16 | AOC-653105A-HDAT | **TBD** |
| STD Low Profile | Gen4 | PCIe 1-port IB-HDR 100GbE QSFP56 Gen3.0/4.0 x16 CX-6 VPI | AOC-653105A-ECAT | **TBD** |
| STD Low Profile | Gen4 | Standard PCIe 4.0 x 16 dual port 100GbE with QSFP28 | AOC-S100GC-i2C | **TBD** |

| Network AOC | | | | |
|---|---|---|---|---|
| STD Low Profile | Gen3 | Standard LP 4-port 10GbaseT, Intel XL710 and X557 | AOC-STG-I4T-O | **TBD** |
| STD Low Profile | Gen3 | Std LP 2-port 10G SFP+, Intel X710 | AOC-STGF-I2S-O | **TBD** |
| STD Low Profile | Gen2 | Standard LP 2-port GbE with Intel i350 | AOC-SGP-I2 | **Passed** |
| STD Low Profile | Gen2 | 4-port GbE card based on Intel i350, OEM and Bundle only | AOC-SGP-I4 | **TBD** |
| VROC | N/A | Intel VROC Premium, RAID0,1,5,10,HF,RoHS | AOC-VROCPREMOD | **Passed** |

| Network AOC | | | | |
|---|---|---|---|---|
| Canonical | Enterprise | Ubuntu 22.04 LTS | | **Passed** |

## Power Supply Module

This section provides a high level summary of the Hyper System Power, including system power operational modes, and related system power functions.

The PWS modules (PWS-3K02G-2R) are hot swappable from the rear of the system. If the system is operating in Dual Redundant PWS mode, a failed PWS can be replaced without impacting system functionality. In Non-Redundant mode with Smart Power enabled, you can replace a failed PWS in the throttled condition and the system will automatically return to normal function when the PWS is detected and enabled.


**Figure 6-2. PWS-3K02G-2R Power Supply**

| Power Specification Table: PWS-3K02G-2R | |
|---|---|
| 2U 3000 W 54 V and 12 V Output Redundant Power Supplier | |
| Total Output Power | 2880 W/3000 W |
| Dimension (W x H x L) | 106.5 mm x 203.5 mm x 82.4 mm |
| **Input Characteristics** | |
| Rated Input Voltage Input Current | 200 VAC to 207 VAC/16 A to 15.7 A<br>207.1 VAC to 240 VAC/16 A to 14.5 A<br>240 VDC/15 A (CQC only) |
| Rated Frequency | 50 Hz to 60 Hz |

| Power Specification Table: PWS-3K02G-2R | | | |
|---|---|---|---|
| Inrush Current | Less than 45 A | | |
| Power Factor | 99% Typical | | |
| Inlet Connector | IEC 60320 C20 | | |
| **DC Output Characteristics** | | | |
| Combined Maximum Output Power | 2880 W @ 200–207 VAC<br>3000 W @ 207.1–240 VAC<br>3000 W @ 240 VDC (CQC only) | | |
| Efficiency | 80Plus Titanium<br>96% at 230 VAC, 50% loading | | |
| Output Voltage | +54 V | +12 V | +12 Vsb |
| Maximum Output Current | 45 A | 91.66 A | 4 A |
| Regulation | +3%/-3% | +5%/- 5% | +5%/- 5% |
| Output Ripple & Noise | 500 mV | 120 mV | 120 mV |
| Output Ripple & Noise | Gold Finger match HPCE 32P (on right side) + 22S (on left side) connector | | |
| Hold Up Time | PWOK 10 ms at 75% loading 54 V and 12 V 11.2 ms at 75% loading | | |
| **General Specifications** | | | |
| Remote Management | PMBus 1.2 Compatible FRU Data | | |
| MTBF | >500,000 hours at 30°C | | |
| Redundancy | Hot swappable, N+1, N+N | | |
| Leakage Current | Less than 3.5 mA | | |
| Protection | Output Over Current/Voltage, Short Circuit, Over Temperature, Input Under Voltage | | |
| **Regulatory** | | | |
| Safety Compliance | UL62368-1<br>EN60950-1/IEC60950-1<br>EN62368-1/IEC62368-1<br>CE Low Voltage Directive<br>FCC Class A<br>BSMI CQC 5000 m | | |
| EMC | EMI Class A | | |

## 6.2 TPM Security Module

SPI capable TPM 2.0 with Infineon 9670 controller, vertical form factor.

The JTPM1 header is used to connect a Trusted Platform Module (TPM). A TPM is a security device that supports encryption and authentication in hard drives. It enables the X14DBG-GD motherboard to deny access if the TPM associated with the hard drive is not installed in the SYS-822GA-NGR3 server.

For details and installation procedures, refer to the following page:

https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H__X12_H12.pdf

- AOM-TPM-9670V (TCG 2.0)

TPM is a chip that stores keys, passwords and digital certificates. This chip resides on the motherboard of a computing device. The key data is protected from external software attack. For backSecurity purposes, Digital signature and key exchange are protected through the secure TCG subsystem. When using with encryption software, such as Microsoft® BitLocker™ Drive Encryption, access to data in a platform is denied if the boot sequence is not as expected. Critical applications such as email, secure web access and local protection of data are thereby made more secure.

**Trusted Platform Module Header Pin Definitions**

| Pin# | Definition | Pin# | Definition |
|---|---|---|---|
| 1 | +3.3V | 2 | SPI_CS# |
| 3 | RESET# | 4 | SPI_MISO |
| 5 | SPI_CLK | 6 | GND |
| 7 | SPI_MOSI | 8 | NC |
| 9 | +3.3V Stdby | 10 | SPI_IRQ# |

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

## 6.3 Intel Virtual RAID on CPU (VROC)

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 PCIe 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.

Stripe 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 due to performance issues, even though it is supported.

### Supported SSDs and Operating Systems

To see the latest support information, refer to the following page:

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 following product page for the Supermicro add-on card and the linked manuals:

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

## 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<br>Supports 3rd party SSDs | AOC-VROCSTNMOD | 951605 |
| Premium | RAID 0, 1, 5, 10<br>Supports 3rd party SSDs | AOC-VROCPREMOD | 951606 |
| Intel SSD only | RAID 0, 1, 5, 10<br>Supports Intel SSDs only | AOC-VROCINTMOD | 956822 |

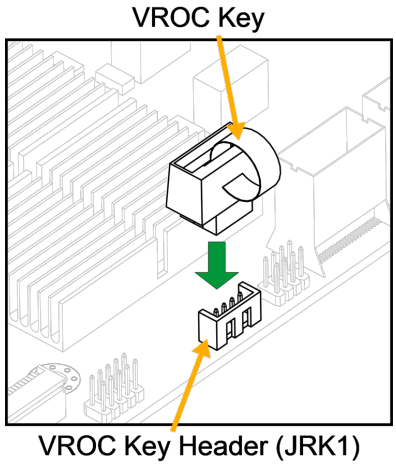



**Figure 6-3. Intel VROC RAID Key and Motherboard Connector JRK1**

## Configuring Intel VMD

VMD must be enabled on PCIe ports which have NVMe drives attached to them in order for those drives to be added to a VROC RAID configuration. The default BIOS setting for the NVMe Mode Switch is Auto which automatically enables VMD on all installed NVMe drives.

**Note:** Without a VROC Key, there is no RAID support with the Auto switch. Only RAID 0 is supported with the VMD and Manual switches.

NVMe Mode Switch:

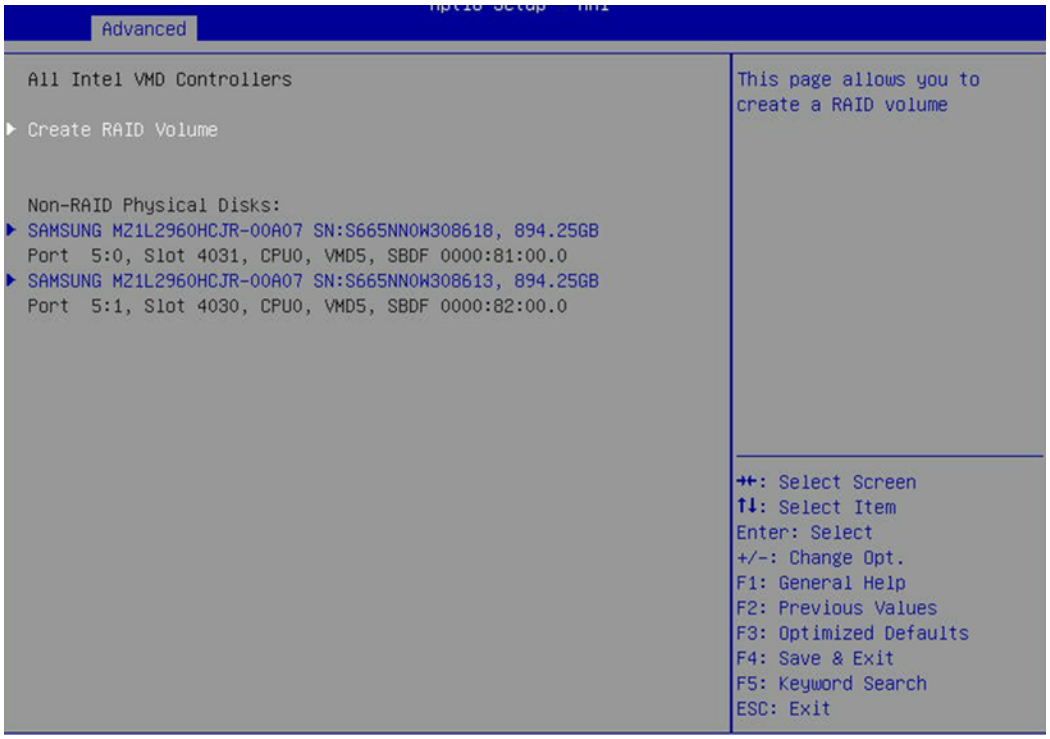
- Auto: Enables VMD for all NVMe ports if VROC Key is installed.
- VMD: Enables VMD for all NVMe ports despite the lack of the VROC Key.
- Manual: Allows the user to select specific NVMe ports on which to enable VMD.

The NVMe Mode Switch can be viewed or selected at BIOS > Advanced > Chipset Configuration > North Bridge > IIO Configuration > Intel® VMD Technology.

### *Configuring VMD and VROC Function Settings*

1. Install the VROC key on the motherboard. Open the motherboard tray, remove the air shroud, and check the left side of the motherboard.
2. Prepare the VROC key and then install the key at location JRK1 on the motherboard.
3. Replace the motherboard tray and power on the system. Enter BIOS and VMD settings on start up by pressing the [DEL] key to access the BIOS options.
4. Select Chipset Configuration in the Advanced tab.
5. Select IIO Configuration.
6. Select CPU1 Configuration.
7. Select PCI Express 4.
8. Enter Intel VMD Technology.
9. In Intel VMD Technology, enable the VMD option.
10. In M.2-C1, enable Intel VMD Technology.
11. In M.2 C2, enable Intel VMD Technology.
12. Navigate to the Save & Exit tab and select Save Changes and Reset.
13. In the Advanced tab, select Intel(R) Virtual RAID on CPU.
14. Select All Intel VMD Controllers.

15. RAID volume can be created now.



## Creating NVMe RAID Configurations

1. Open Advanced > Intel(R) Virtual RAID on CPU > All Intel VMD Controllers > Create RAID Volume.

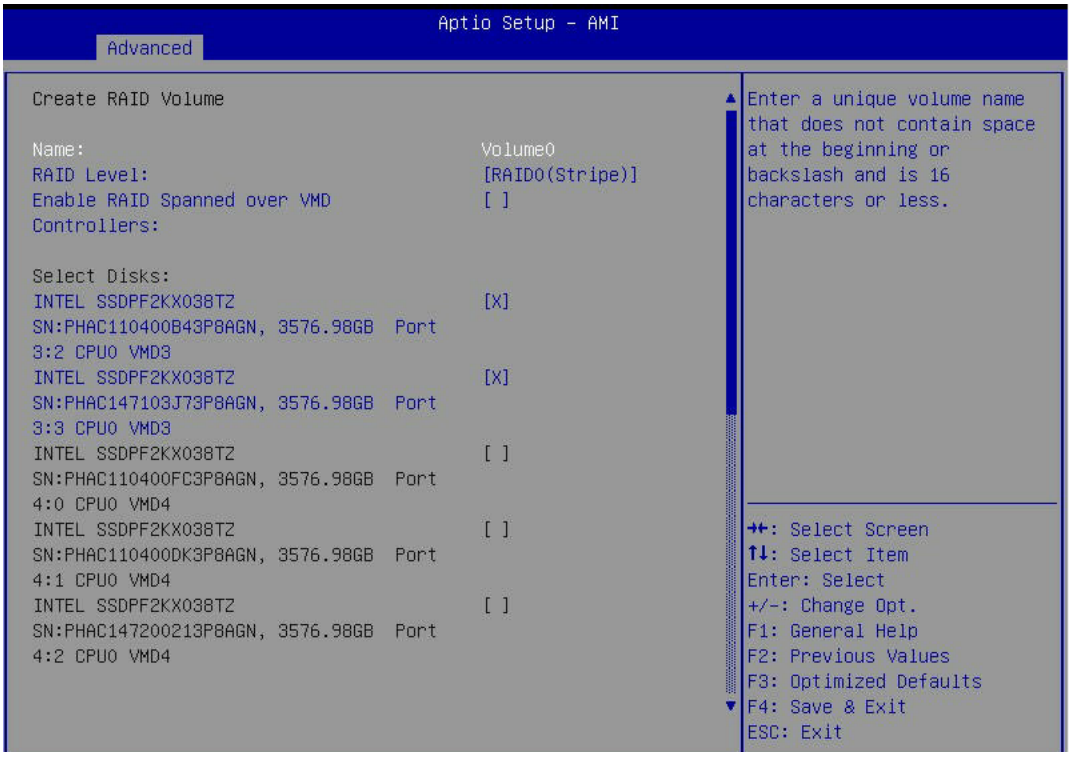



**Figure 6-4. Created Volume without enabling RAID spanned over VMD controller**

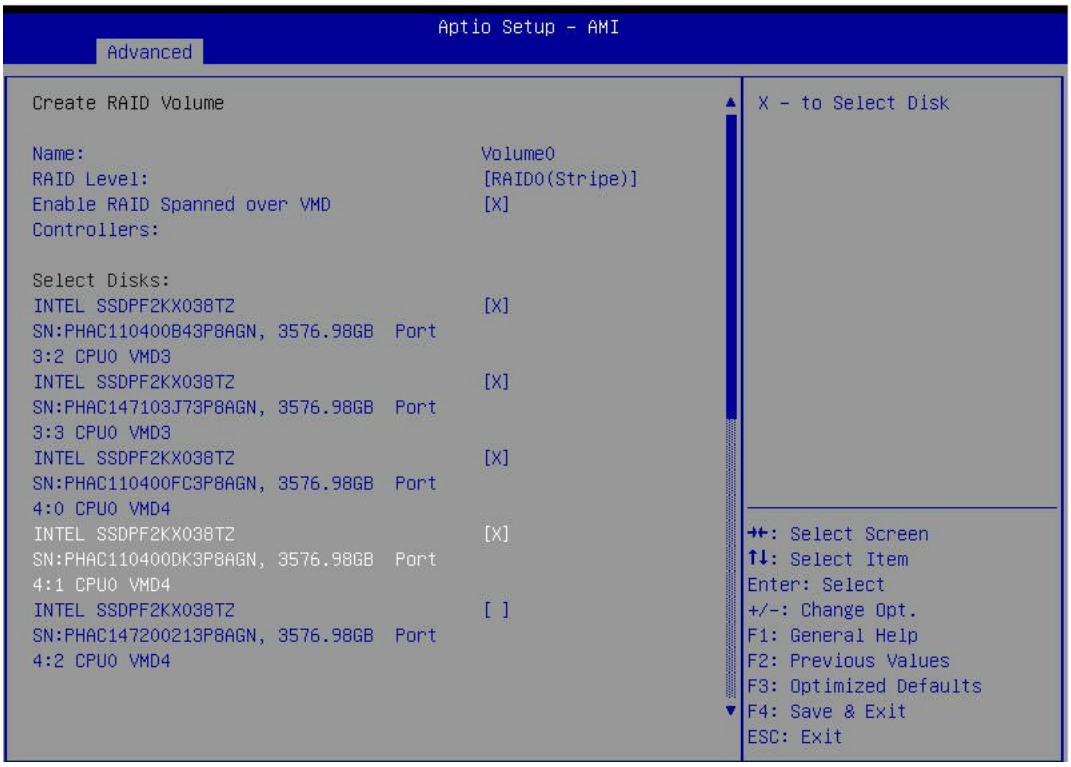



**Figure 6-5. Created Volume with enabling RAID spanned over VMD controller**

2. Set Name.
3. Set RAID Level.
4. If cross-controller RAID is required, select Enable RAID spanned over VMD Controller.
5. 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
6. Select Strip Size (Default 64 KB).
7. Select Create Volume.
8. If another RAID is needed, start again at step 1.

### *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 blinking |
| Fault | Solid on |
| Rebuilding | 1 Hz blinking |
| **IBPI SFF 8489 Defined Status LED States** | |

### *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 link [2] for details.
3. Detach the device. Check link [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

# Chapter 7:

# Troubleshooting and Support

The following content contains information on common issues and how to resolve them.

# 7.1 Online Resources

A great deal of information is available on the Supermicro website. From the top menu of the Supermicro home page at https://www.supermicro.com:

- Specifications for servers and other hardware are available by clicking **Products**.
- The **Support** option offers downloads (manuals, BIOS/BMC, drivers, etc.), FAQs, RMA, warranty, and other service extensions.

## Direct Links for the SYS-822GA-NGR3 System

SYS-822GA-NGR3 Specification Page

## Direct Links for General Support and Information

Tested Memory List

- General Memory Configuration Guide for X14 and B14 motherboards that use Intel® Xeon® 6900-series processors: https://www.supermicro.com/support/resources/memory/X14_B14_memory_config_guide_AP.pdf
- Frequently Asked Questions: https://www.supermicro.com/FAQ/index.php
- TPM User Guide: https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H__X12_H12.pdf
- BMC User Guide: https://www.supermicro.com/manuals/other/BMC_IPMI_X14_H14.pdf
- Product Resources page for validated memory details: https://www.supermicro.com/support/resources/mem.cfm
- Product Matrices page for links to tables summarizing specs for systems, motherboards, power supplies, riser cards, add-on cards, and more: https://www.supermicro.com/en/support/product-matrices
- Security Center for recent security notices: https://www.supermicro.com/en/support/security_center
- Supermicro Phone and Addresses: https://www.supermicro.com/en/about/contact

## 7.2 Baseboard Management Controller (BMC)

The SYS-822GA-NGR3 server supports the Baseboard Management Controller (BMC). BMC is used to provide remote access, monitoring, and management. There are several BIOS settings that are related to BMC.

For general documentation and information on BMC, visit our website at the following page:

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

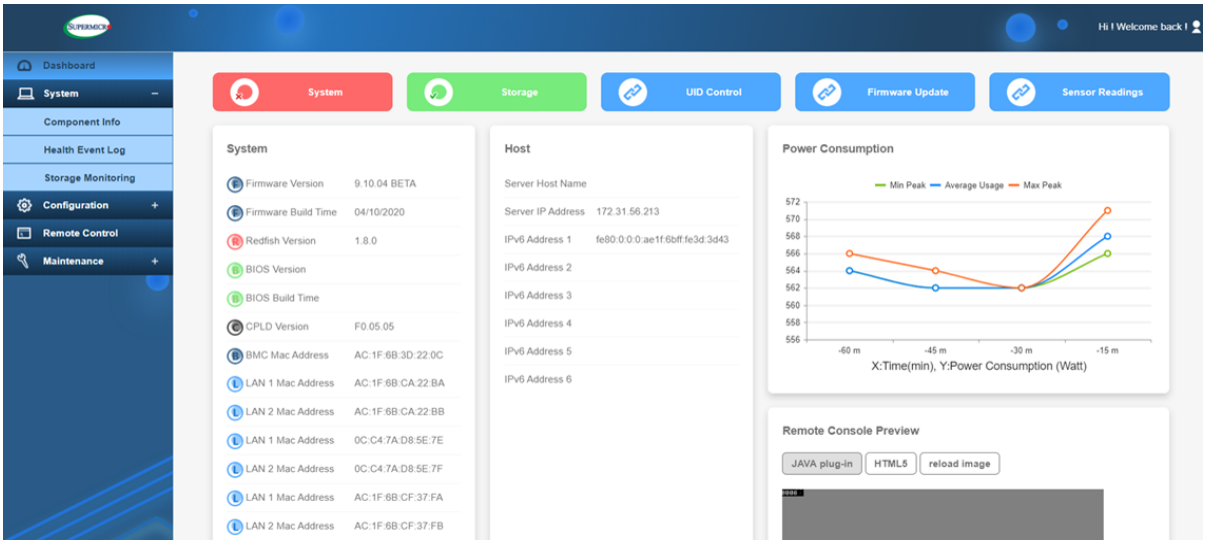



**Figure 7-1. BMC Dashboard**

## 7.3 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the Technical Support Procedures section in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components. If the below steps do not fix the setup configuration problem, contact your vendor for repairs.

### Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install the processor (making sure it is fully seated) and connect the front panel connectors to the motherboard.

### No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

### No Video

1. If the power is on, but you do not have video, remove all add-on cards and cables.
2. Remove all memory modules and turn on the system (if the alarm is on, check the specs of memory modules, reset the memory, or try a different one).

### System Boot Failure

If the system does not display Power-On-Self-Test (POST) or does not respond after the power is turned on, do the following:

1. Remove all components from the motherboard, especially the DIMMs. Power on the system and check if the power-on LED and the BMC Heartbeat LED are on, and system fans are spinning.

2. Turn on the system with only one DIMM installed. If the system boots, check for bad DIMMs or slots by following the Memory Errors Troubleshooting procedure in this chapter.

## Memory Errors

When suspecting faulty memory is causing the system issue, check the following:

1. Make sure that the memory modules are compatible with the system and are properly installed. See "Maintenance and Component Installation" on page 42 for installation instructions. (For memory compatibility, refer to the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.)
2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM type and speed for all DIMMs in the system.
3. Make sure that you are using the correct type of DIMMs recommended by the manufacturer.
4. Check for bad DIMMs or slots by swapping a single module among all memory slots and check the results.

## Losing the System's Setup Configuration

1. Make sure that you are using a high-quality power supply. A poor-quality power supply may cause the system to lose the CMOS setup information. Refer to "Introduction" on page 14 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

## If the System Becomes Unstable

A. If the system becomes unstable during or after OS installation, check the following:

   1. Processor/BIOS support: Make sure that your processor is supported and that you have the latest BIOS installed in your system.
   2. Memory support: Make sure that the memory modules are supported. Refer to the product page on our website at https://www.supermicro.com. Test the modules using memtest86 or a similar utility.

      **Note:** Click on the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.

3. Storage Drive support: Make sure that all storage drives work properly. Replace the failed storage drives with good ones.
4. System cooling: Check the system cooling to make sure that all heatsink fans and processor/system fans, etc., work properly. Check the hardware monitoring settings in the BMC to make sure that the processor and system temperatures are within the normal range. Also, check the front panel Overheat LED and make sure that it is not on.
5. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Refer to our website for more information on the minimum power requirements.
6. Proper software support: Make sure that the correct drivers are used.

B. If the system becomes unstable before or during OS installation, check the following:

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as a CD/Media drive.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Use the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with the processor and a memory module installed) to identify the trouble areas. Refer to the steps listed above in this section for proper troubleshooting procedures.
4. Identify bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

## 7.4 CMOS Clear

JBT1 on the X14DBG-GD motherboard is used to clear CMOS, which will also clear any passwords. For information on clearing CMOS, refer to "CMOS Clear" on page 128 earlier in this manual.

## 7.5 Motherboard Battery

For information on removing, disposing of, and replacing the motherboard battery of your system, refer to "Motherboard Battery Removal and Installation" on page 79.

## 7.6 Where to Get Replacement Components

If you need replacement parts for your SYS-822GA-NGR3 server, to ensure the highest level of professional service and technical support, purchase exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list can be found on the Supermicro website:

https://www.supermicro.com

Under the "Buy" menu, click the "Where to Buy" link.

## 7.7 Technical Support Procedures

**Important:** If, after troubleshooting, the problem is confirmed to be the Gaudi3 module, do not disassemble or assemble the Gaudi3. Contact Supermicro directly. If the anti-tamper labels on the module are damaged, the warranty will be voided.

Before contacting technical support, take the following steps. Also, note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problems with the specific system configuration that was sold to you.

1. Refer to "Troubleshooting Procedures" on page 172 or see the FAQs on our website (https://www.supermicro.com/FAQ/index.php) before contacting technical support.
2. BIOS upgrades can be downloaded from our website (https://www.supermicro.com/support/resources/bios_ipmi.php).
3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
   - Motherboard model and PCB revision number
   - BIOS release date/version (This can be seen on the initial display when your system first boots up.)
   - System configuration
4. An example of a Technical Support form is on our website at https://webpr3.supermicro.com/SupportPortal.
5. Distributors: For immediate assistance, have your account number ready when placing a call to our Technical Support department. For Supermicro contact information, refer to "Contacting Supermicro" on page 13.

### Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning the server to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations can be requested online at the following page:

https://www.supermicro.com/RmaForm

Whenever possible, repack the server in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the server securely, using packaging material to surround the server so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

## 7.8 Feedback

Supermicro values your feedback as we strive to improve our customer experience in all facets of our business. Email us at Techwriterteam@supermicro.com to provide feedback on our manuals.

# Chapter 8:

# UEFI BIOS

The following content contains information on BIOS configuration with the SYS-822GA-NGR3 server.

# 8.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the motherboard. The BIOS is stored on a chip and can be easily upgraded using the UEFI script (flash.nsh), the BMC WebUI, or the SuperServer Automation Assistant (SAA) utility.

**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. Refer to the Manual Download area of our website for any changes to BIOS that may not be reflected in this manual.

## Updating BIOS

It is recommended that you do not upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at the following page:

https://www.supermicro.com/support/resources/bios_ipmi.php

Check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading.

**Important:** Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure! Read the motherboard README file carefully before you perform the BIOS update.

Unzip the BIOS file onto a bootable USB device and then boot into the built-in UEFI Shell and type "flash.nsh <BIOS filename><BMC Username><BMC Password>" to start the BIOS update. The flash script will invoke the SCC (EFI) tool automatically to perform the BIOS update, beginning with uploading the BIOS image to BMC. After uploading the firmware, the system will reboot to continue the process. The BMC will take over and continue the BIOS update in the background. The process will take 3–5 minutes.

## 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 hot keys are used, such as <F1>, <F2>, etc. Each main BIOS menu option is described in this manual.

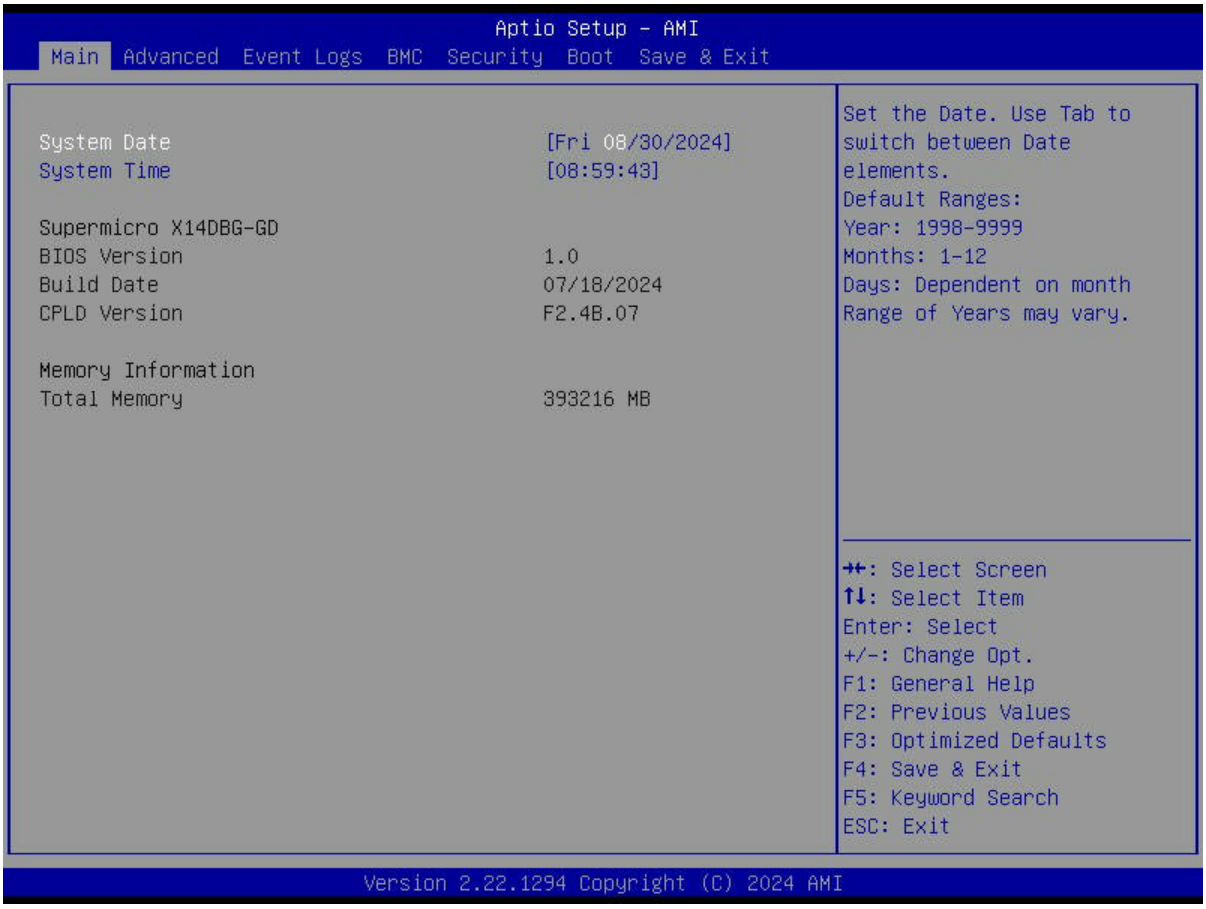
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When a BIOS submenu or item is selected in the left 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 open the list of settings within that submenu.

The BIOS Setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <F4>, <F5>, <F6>, <Enter>, <ESC>, the arrow keys, etc.) can be used at any time during the setup navigation process.

## 8.2 Main Setup

The Main setup screen appears when the AMI BIOS Setup utility is first entered. To return to the Main setup screen, select the Main tab at the top of the screen. The Main BIOS setup screen is shown below.




### System Date/System Time

Use the two features 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.

### Supermicro X14DBG-GD

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

**Memory Information**

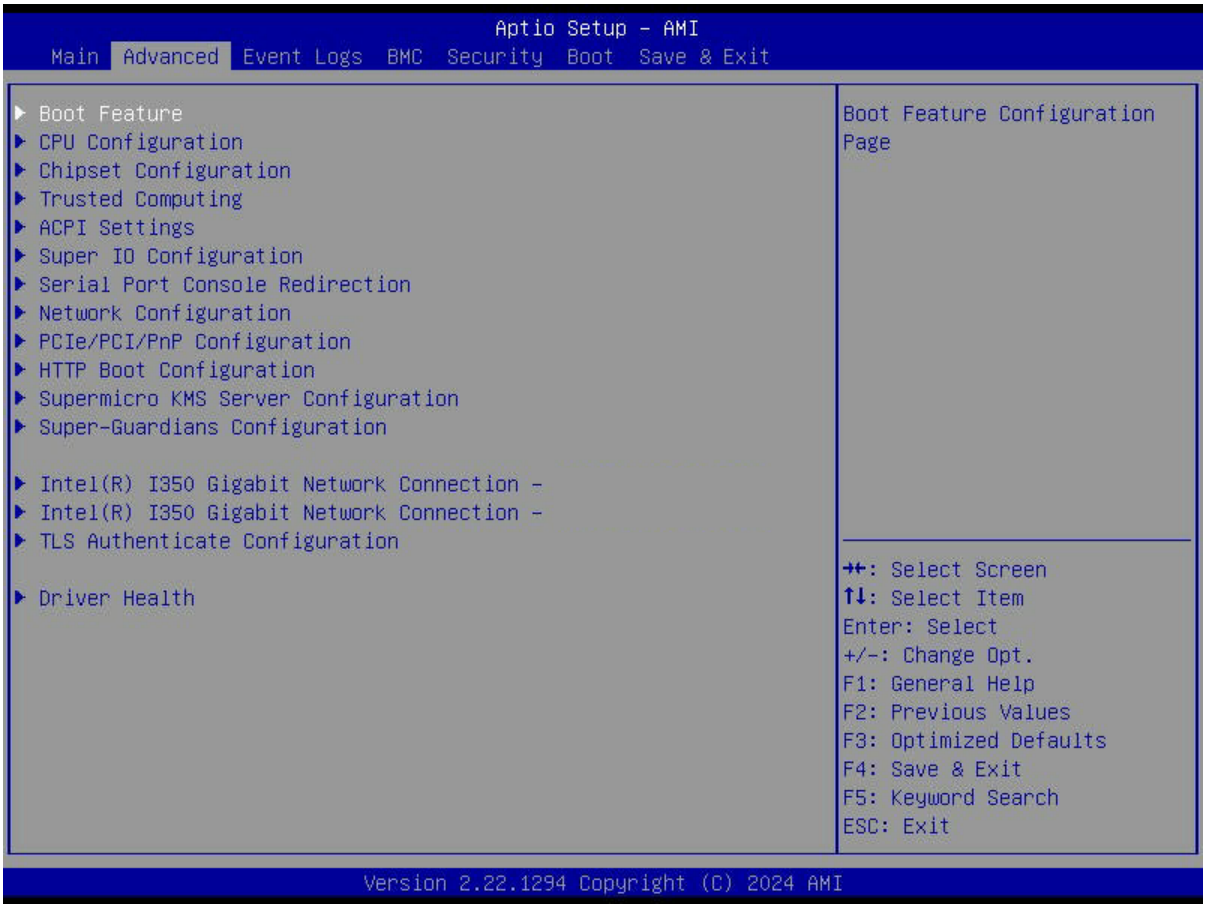
**Total Memory**

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

## 8.3 Advanced Setup Configurations

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

**Important:** Use caution when changing the Advanced settings. An incorrect value, an improper DRAM frequency, or a wrong BIOS timing setting may cause the system to malfunction. When this occurs, revert the setting to the manufacture default settings.



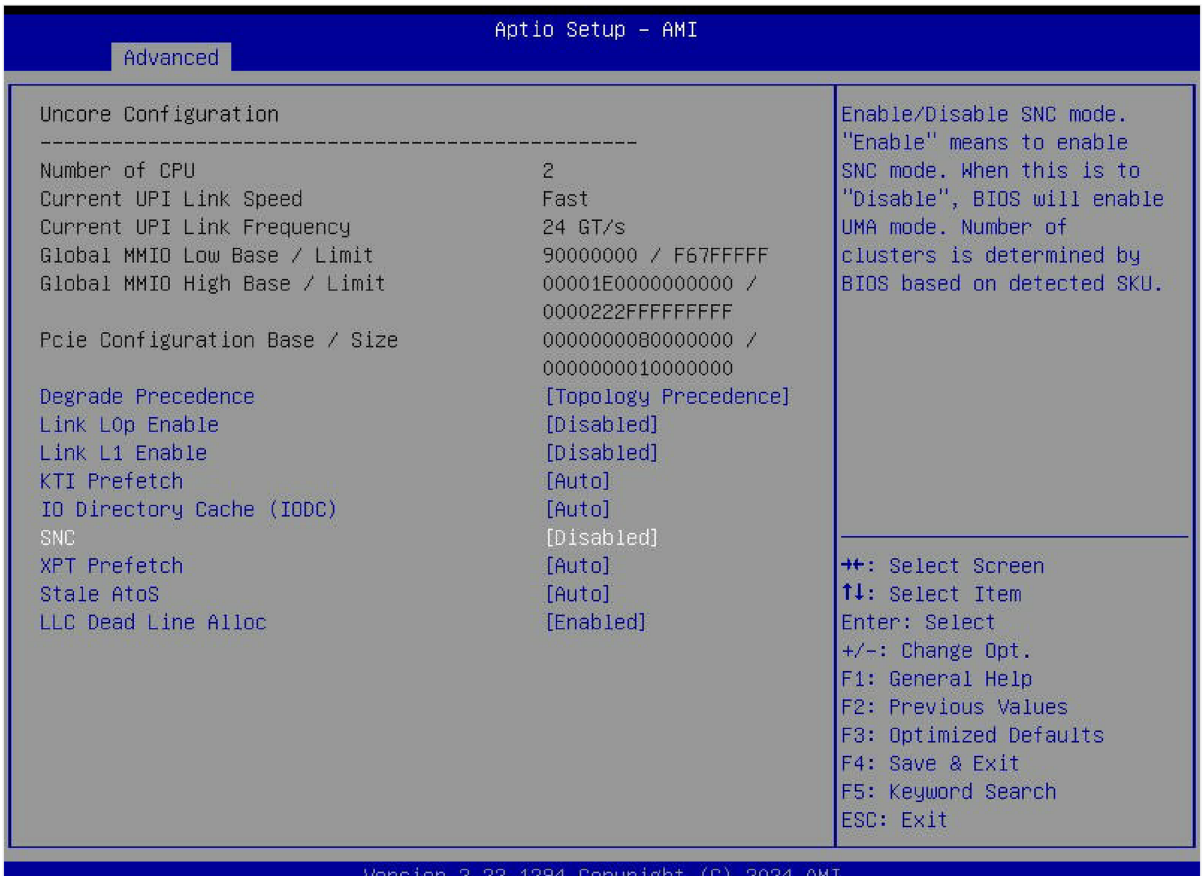

### SNC Settings

Sub NUMA Clustering (SNC) is a feature that breaks up the Last Level Cache (LLC) into clusters based on address range. Each cluster is connected to a subset of the memory controller. Enable this feature to improve average latency and reduce memory access congestion for higher performance. The options are Disabled, Enabled, and Auto. This feature is CPU-dependent.

**Note:** This feature is NOT available when "Workload Profile" is set to I/O, Virtualization, or Telco FlexRAN.

In the Advanced submenu, use the arrow keys to select Chipset Configuration and press <Enter> to access the Chipset Configuration items.

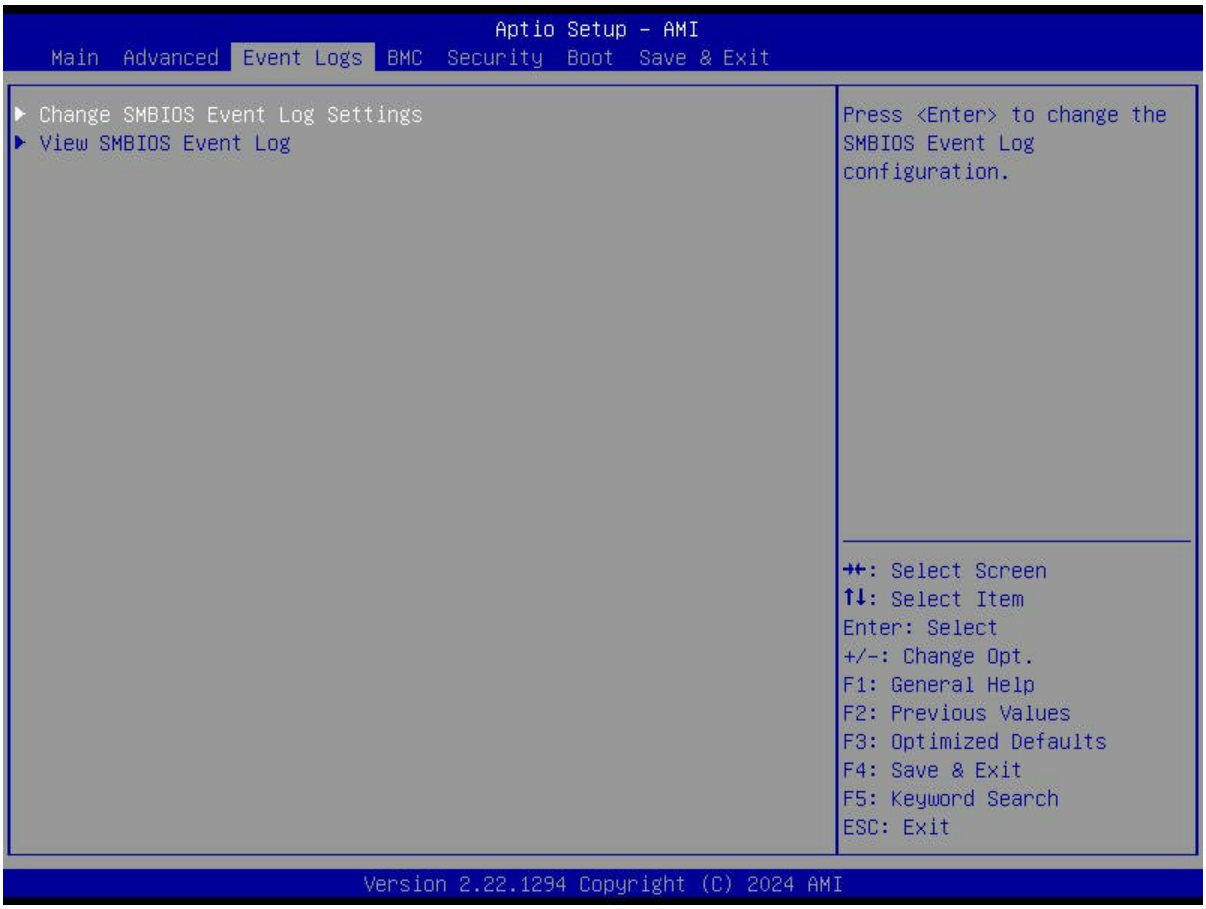
1. Using the arrow keys in the Chipset Configuration items, navigate to the Uncore Configuration and press <Enter>.
2. Use the arrow keys to select SNC and press <Enter> to set SNC to [Disabled].



## 8.4 Event Logs

Use this menu to configure Event Logs settings.

**Note:** After making any changes in this section, please be sure to reboot the system for the changes to take effect.




### ►Change SMBIOS Event Log Settings

**Note:** Reboot the system for the changes in this section to take effect.

**Enabling/Disabling Options**

**SMBIOS Event Log**

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

**Erasing Settings**

**Erase Event Log (Available when "SMBIOS Event Log" is set to Enabled)**

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

**When Log is Full (Available when "SMBIOS Event Log" is set to Enabled)**

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

**SMBIOS Event Log Standard Settings**

**Log System Boot Event (Available when "SMBIOS Event Log" is set to Enabled)**

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

**MECI (Available when "SMBIOS Event Log" is set to Enabled)**

Enter the increment value for the multiple event counter. Enter a number between 1 and 255. The default setting is **1**. (MECI is the abbreviation for Multiple Event Count Increment.)

**METW (Available when "SMBIOS Event Log" is set to Enabled)**

Use this feature to determine how long (in minutes) should the multiple event counter wait before generating a new event log. Enter a number between 0 and 99. The default value is **60**. (METW is the abbreviation for Multiple Event Count Time Window.)

### ►View SMBIOS Event Log

Use this feature to view the event in the system event log. Select this feature and press <Enter> to view the status of an event in the log. The following information is displayed: DATE / TIME / ERROR CODE / SEVERITY.

## 8.5 BMC

Use this menu to configure Baseboard Management Console (BMC) settings.


**BMC Firmware Revision**

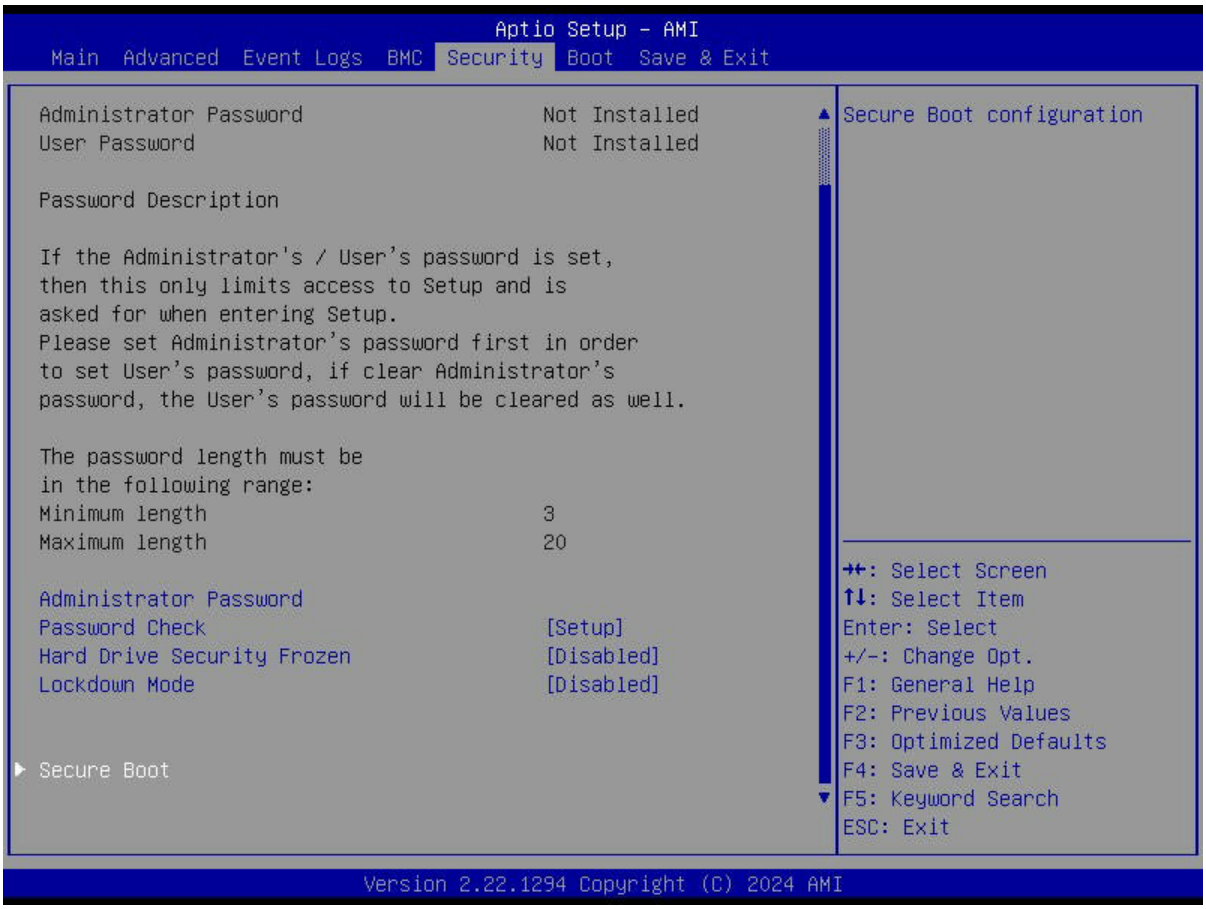
This feature indicates the BMC firmware revision used in this system.

**BMC STATUS**

This feature indicates the status of the BMC firmware installed in this system.

## 8.6 Security

Use this menu to configure the following security settings for the system.




**Disable Block Sid and Freeze Lock (Available when your storage devices support TCG)**

Select Enabled to allow SID authentication to be performed in TCG storage devices. The options are **Disabled** and Enabled.

The following information is displayed:

- Administrator Password
- User Password
- Password Description

**Administrator Password**

This feature indicates if an administrator password has been installed. Use this feature to set the administrator password, which is required to enter the BIOS Setup utility. The length of the password can be between three and 20 characters long.

**User Password (Available when "Administrator Password" has been set)**

This feature indicates if a user password has been installed. Use this feature to set the user password which is required to enter the BIOS Setup utility. The length of the password can be between three and 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 and upon entering the BIOS Setup utility. The options are **Setup** and Always.

**Hard Drive Security Frozen**

Select Enabled to freeze the Lock Security feature for HDD to protect key data in hard drives from being altered. The options are **Disabled** and Enabled.

**Lockdown Mode (Available when the DCMS key is activated)**

Select Enabled to support the Lockdown Mode, which prevents the existing data or keys stored in the system from being altered or changed in an effort to preserve system integrity and security. The options are **Disabled** and Enabled.

# 8.7 Boot

Use this menu to configure Boot settings.

**FIXED BOOT ORDER Priorities**

Use this feature to prioritize the order of a bootable device from which the system will boot. Press <Enter> on each item sequentially to select the device.

- Boot Option #1 – Boot Option #9

### ►Add New Boot Option

Use this feature to add a new boot option to the boot priority features for system boot.

**Note:** This submenu is available when any storage device is detected by the BIOS.

**Add boot option**

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

**Path for boot option**

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

**Boot option File Path**

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

**Create**

After setting the name and the file path for the boot option, press <Enter> to create the new boot option in the boot priority list.

### ►Delete Boot Option

Use this feature to select a boot device to delete from the boot priority list.

**Delete Boot Option**

Use this feature to remove an EFI boot option from the boot priority list.

### ►UEFI NETWORK Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

### ►UEFI Application Boot Priorities

Use this feature to set the system boot order of detected devices.

### ►UEFI USB Key Drive BBS Priorities

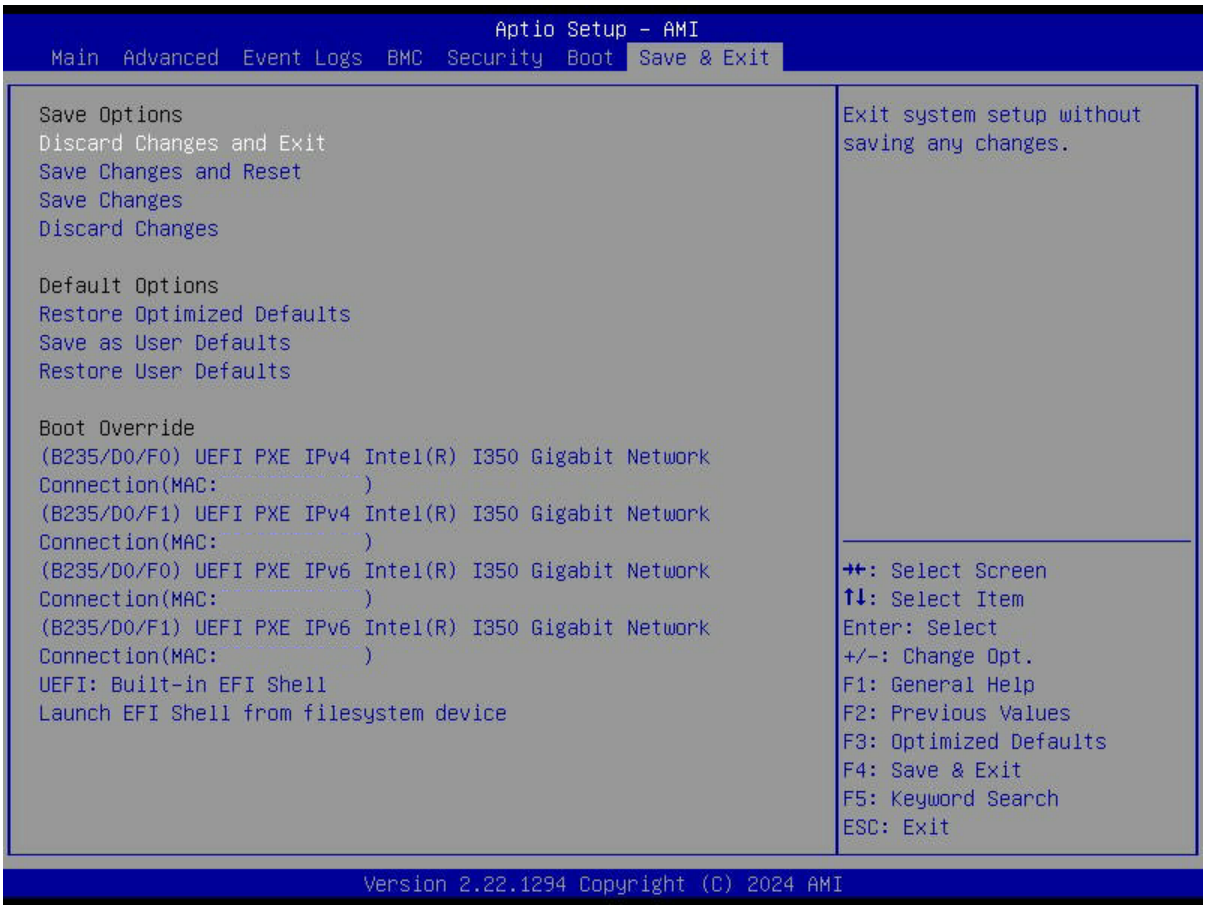
Use this feature to set the system boot order of detected devices.

### ►UEFI Hard Disk Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

## 8.8 Save & Exit

Select Save & Exit from the BIOS Setup screen to configure the settings below.




### Save Options

### Discard Changes and Exit

Use this feature to exit from the BIOS Setup utility without making any permanent changes to the system configuration and reboot the computer.

### Save Changes and Reset

On completing the system configuration changes, use this feature to exit the BIOS Setup utility and reboot the computer for the new system configuration parameters to take effect.

### Save Changes

On completing the system configuration changes, use this feature to save all changes made. This will not reset (reboot) the system.

### Discard Changes

Select this feature and press <Enter> to discard all changes made and return to the BIOS Setup utility.

### Default Options

### Restore Optimized Defaults

Select this feature and press <Enter> to load manufacturer optimized default settings, which are intended for maximum system performance but not for maximum stability.

**Note:** After pressing <Enter>, reboot the system for the changes to take effect, which ensures that this system has the optimized default settings.

### Save As User Defaults

Select this feature and press <Enter> to save all changes as the default values specified to the BIOS Setup utility for future use.

### Restore User Defaults

Select this feature and press <Enter> to retrieve user-defined default settings that have been saved previously.

### Boot Override

**Note:** Use this section to override the Boot priorities sequence in the Boot menu, and immediately boot the system with a device specified here instead of the one specified in the boot list. This is a one-time boot override.

### Launch EFI Shell from filesystem device

Use this feature to launch the EFI shell application (Shell.efi) from one of the available filesystem devices. A filesystem is a virtual, logical, or physical system for organizing, managing, and accessing the files and directories on devices such as SSDs, HDDs, or other storage devices.

# Appendix A:

# BIOS Codes

For information about BIOS codes for the SYS-822GA-NGR3 server, refer to the following content.

## BIOS Error POST (Beep) Codes

During the Power-On Self-Test (POST) 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 process. 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 that can be heard on an external buzzer connected to JD1. The table shown below lists some common errors and their corresponding beep codes encountered by users.

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

## Additional BIOS POST Codes

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

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

# Appendix B:

# Standardized Warning Statements for AC Systems

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 section in its entirety before installing or configuring components in the Supermicro SYS-822GA-NGR3 server.

These warnings may also be found on our website at the following page:

https://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 جسذ ةٌ هذا الز هز عٌ خطز !تحذ زٌ.

قبل أى تعول على أي هعذات،كي على علن بالوخاطز ال اجٌّوة عي الذوائز

الكهزبائ ةٍ

وكي على درا ةٌ بالووارسات النقائ ةٍ لو عٌ وقنع أي حىادث

استخذم رقن الب إى الو صٌنص ف هًا ةٌ كل تحذ زٌ للعثىر 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-250V, 20A

هذا المنتج يعتمد على معداث الحمايت مه الدوائر القصيرة التي تم تثبيتها في

المبنى

تأكد من أن تقييم الجهاز الوقائي ليس أكثر من : 20A, 250V

경고!

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

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw 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 (except for hot-swap 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

انىصل إنى انمناطق انداخهيت نههيكم نتثبيج أو إزانت مكنناث 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 authorized personnel and qualified service persons 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

Nur autorisiertes Personal und qualifizierte Servicetechniker dürfen dieses Gerät installieren, austauschen oder warten.

¡Advertencia!

Sólo el personal autorizado y el personal de servicio calificado deben poder instalar, reemplazar o dar servicio a este equipo.

Attention

Seul le personnel autorisé et le personnel de maintenance qualifié doivent être autorisés à installer, remplacer ou entretenir cet équipement.

אזהרה!

יש לאפשר רק צוות מורשה ואנשי שירות מוסמכים להתקין, להחליף או לטפל בציוד זה

ينبغي السماح فقط للموظفين المعتمدين وأفراد الخدمة المؤهلين بتركيب هذا الجهاز أو استبداله أو صيانته.

경고!

승인된 직원과 자격을 갖춘 서비스 담당자만이 이 장비를 설치, 교체 또는 서비스할 수 있습니다.

Waarschuwing

Alleen geautoriseerd personeel en gekwalificeerd onderhoudspersoneel mag deze apparatuur installeren, vervangen of onderhouden.

## 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.)

اتخصيص هذه انحذة نترك بُها ف مناطق محظورة تم .

مَكن انصل 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

**CAUTION** There is risk of explosion if the battery is replaced by an incorrect type. 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

バッテリーを間違ったタイプに交換すると爆発の危険があります。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

如果更换的电池类型不正确。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

如果更換的電池類型不正確。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

Es besteht Explosionsgefahr, wenn die Batterie durch einen falschen Typ ersetzt wird. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

ADVERTENCIA

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

ATTENTION

Il existe un risque d'explosion si la batterie est remplacée par un type incorrect. 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.

אזהרה!

קיימת סכנת פיצוץ אם הסוללה תוחלף בסוג שגוי. יש להחליף

את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر الانفجار إذا تم استبدال البطارية بنوع غير صحيح.

اسحبذال البطارية

فقط بنفس النمع أو ما يعادلها مما أوصث به الشرمة المصنعة

جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

배터리를 잘못된 종류로 교체하면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

WAARSCHUWING

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

## Redundant Power Supplies

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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

אזהרה!

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

את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .

يجب إزالة كافة الاتصالات لعسل الوحدة عن الكهرباء

경고!

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

Waarschuwing

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

## Backplane Voltage

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

バックプレーンの電圧

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

修理する際には注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

אזהרה!

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

העבודה.

هناك خطز مه التيار الكهزبائي أوالطاقة المىجىدة على اللىحة

عندما يكىن 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 للقناويه المحلية والبطنية 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.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القانين واللنائح النطنية

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.

## 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 تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع

ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

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

Waarschuwing

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

## Power Cable and AC Adapter

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

電源コードとACアダプター

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

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

AC ימאתמו ם"ילמשח ם"ילבכ

הרהזא!

ררוצל ומאתוה וא ושכרנ רשא AC ם"ימאתמו ם"יקפס ,ם"ילבכב שמתשהל שי ,רצומה תא ם"יניקתמ רשאכ לכב שומיש . עקתהו לבכה לש הנוכנ הדימ ללוכ ,תוימוקמה תוחיטבה תושירדל ומאתוה רשאו ,הנקתהה למשחה ירישכמב שומישה יקוחל מאתהב .ילמשח רצק וא הלקתל מורגל לולע ,רחא גוסמ מאתמ וא לבכ לש דוק מהילע עיפומ רשאכ) CSA- ב וא UL - ב מיכמסומה ם"ילבכב שמתשהל רוסיא ם"ייק ,תוחיטבה יקוחו דבלב Supermicro י"ע מאתוה רשא רצומב קר אלא ,רחא ילמשח רצומ לכ רובע UL/CSA).

تالباكلا ءارشب مق وأ ةددحملا وأ ةرفوتملا تاليصوتلا مادختساب مق ،جتنملا بيكرت دنع

كلذ يف امب ةيلحملا ةمالسلا تابلطتمو نيناوقب مازتلالا عم ددرتملا رايتلا تالوحمو ةيئابرهكلا

قيرح وأ لطع يف ببستي دق برخأ تالوحمو تالباك يأ مادختسا .ميلسلا سباقلاو لصوملا مجح.

CSA وأ UL لبق نم ةدمتعملا تالباكلا مادختسا تادعملاو ةيئابرهكلا ةزهجألل ةمالسلا نوناق رظحي

Supermicro لبق نم ةددحملاو ةينعملا تاجتنملا ريغ برخأ تادعم يأ عم (UL/CSA) ةمالع لمحت يتلاو.

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 Socket BR (LGA-7529) |
| Intel® Xeon® 6900 series processors with P-cores |
| Up to 128 C/256 T; Up to 504 MB Cache per CPU |
| **Chipset** |
| System on chip |
| **BIOS** |
| AMI 32 MB SPI Flash EEPROM |
| **Memory** |
| Slot Count: 24 DIMM slots |
| Max Memory (1DPC): Up to 6 TB 6400 MT/s ECC DDR5 RDIMM/LRDIMM |
| Max Memory (1DPC): Up to 6 TB 8800 MT/s ECC DDR5 MRDIMM |
| **Storage Drives** |
| Eight front hot-swap 2.5" PCIe 5.0 NVMe drive bays |
| Two M.2 PCIe 5.0 x2 NVMe slots (M-key 22110(default)) |
| **PCI Expansion Slots** |
| Two PCIe 5.0 x16 FHFL slots |
| Two PCIe 5.0 x8 FHFL slots |
| One PCIe 5.0 x4 AIOM slot (OCP 3.0 compatible) |
| **Input/Output** |
| LAN: One RJ45 1 GbE Dedicated IPMI LAN port |
| USB: Two USB 3.0 Type-A ports (rear) |
| Video: One VGA port (rear) |
| TPM: One TPM header |
| **Motherboard** |
| X14DBG-GD; 17" x 14.96" (43.18 cm x 38 cm) |
| **Chassis** |
| CSE-GP806; 8U rackmount; (WxHxD) 13.8" x 17.6" x 33.2" (356 mm x 447 mm x 800 mm) |
| **System Cooling** |
| 10 removable heavy-duty 80 x 80 x 80 mm fans |
| **Power Supply** |
| Eight 3000 W Redundant Titanium Level (96%) power supplies |

| |
|---|
| **Operating Environment** |
| Operating Temperature: 10°C ~ 32°C (50°F ~ 95°F) |
| Non-operating Temperature: -30°C to 60°C (-22°F to 140°F) |
| Operating Relative Humidity: 8% to 80% (non-condensing) |
| Non-operating Relative Humidity: 8% to 90% (non-condensing |
| **Regulatory Compliance** |
| FCC, ICES, CE, UKCA, VCCI, RCM, NRTL, CB |
| **Certified Safety Models** |
| GP806-O30X14,GP806-30 |

**Applied Directives, Standards**

**Directives:**

EMC/EMI: 2014/30/EU (EMC Directive)

Electromagnetic Compatibility Regulations 2016

FCC Part 15 Subpart B

ICES-003

VCCI-CISPR 32

AS/NZS CISPR 32

BS/EN55032

BS/EN55035

CISPR 32

CISPR 35

BS/EN 61000-3-2

BS/EN 61000-3-3

BS/EN 61000-4-2

EN/BS 61000-4-3

EN/BS 61000-4-4

EN/BS 61000-4-5

EN/BS 61000-4-6

EN/BS 61000-4-8

EN/BS 61000-4-11

Environment:

Delegated Directive (EU) 2015/863

Directive 2011/65/EU (RoHS)

REACH Regulation EC 1907/2006

WEEE Directive 2012/19/EU

California Proposition 65

**Product Safety:**

2014/35/EU (LVD Directive)

UL/CSA 62368-1 (USA and Canada)

Electrical Equipment (Safety) Regulations 2016

IEC/BS/EN 62368-1

**Perchlorate Warning**

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

この装置は、クラスＡ機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI ー A