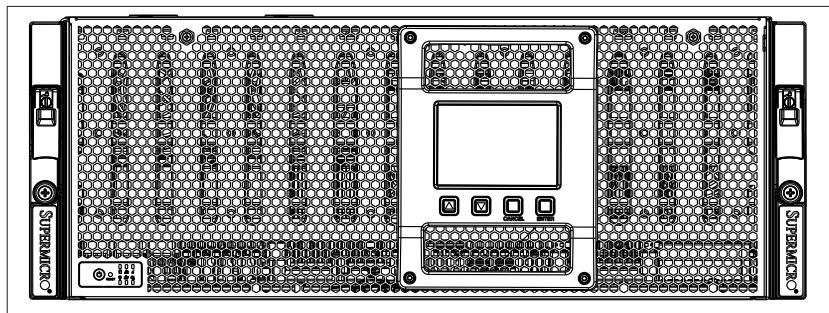




## SUPER STORAGE SYSTEM

6048R-E1CR60N  
6048R-E1CR60L



## USER'S MANUAL

1.0a

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at [www.supermicro.com](http://www.supermicro.com).**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software and documentation, is the property of Supermicro and/or its licensors, and is supplied only under a license. Any use or reproduction of this product is not allowed, except as expressly permitted by the terms of said license.

IN NO EVENT WILL SUPERMICRO BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPERMICRO SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Super Micro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

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

**WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.**

Manual Revision 1.0a  
Release Date: March 6, 2017

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document.

Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Copyright © 2017 by Super Micro Computer, Inc.  
All rights reserved.  
**Printed in the United States of America**

## 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 6048R-E1CR60N/L. Installation and maintenance should be performed by experienced technicians only.

The 6048R-E1CR60N/L is a high-end storage system based on the SC946TS-R2K05P 4U rackmount chassis and the X10DSC+ dual processor serverboard.

### Manual Organization

#### **Chapter 1: Introduction**

The first chapter provides a checklist of the main components included with the system and describes the main features of the X10DSC+ serverboard and the SC946TS-R2K05P chassis.

#### **Chapter 2: Server Installation**

This chapter describes the steps necessary to install the 6048R-E1CR60N/L into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

#### **Chapter 3: System Interface**

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

#### **Chapter 4: Standardized Safety Warnings**

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the 6048R-E1CR60N/L.

## **Chapter 5: Advanced Serverboard Setup**

Chapter 5 provides detailed information on the X10DSC+ serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

## **Chapter 6: Advanced Chassis Setup**

Refer to Chapter 6 for detailed information on the SC946TS-R2K05P chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply units and cooling fans.

## **Chapter 7: BIOS**

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

### **Appendix A: BIOS Error Beep Codes**

### **Appendix B: System Specifications**

## Notes

# Table of Contents

## ***Chapter 1 Introduction***

1-1	Overview .....	1-1
1-2	Serverboard Features .....	1-2
	Processors .....	1-2
	Memory .....	1-2
	Main Storage Controller .....	1-2
	Serial ATA.....	1-2
	PCI Expansion Slots .....	1-2
	Rear I/O Ports .....	1-2
1-3	Server Chassis Features .....	1-2
	System Power .....	1-3
	Hard Drives .....	1-3
	Front Control Panel.....	1-3
	Cooling System .....	1-3
1-4	Contacting Supermicro.....	1-5

## ***Chapter 2 Server Installation***

2-1	Overview .....	2-1
2-2	Unpacking the System .....	2-1
2-3	Preparing for Setup.....	2-1
	Choosing a Setup Location.....	2-1
2-4	Warnings and Precautions .....	2-2
	Rack Precautions .....	2-2
	Server Precautions.....	2-2
	Rack Mounting Considerations .....	2-3
	Ambient Operating Temperature .....	2-3
	Reduced Airflow .....	2-3
	Mechanical Loading .....	2-3
	Circuit Overloading.....	2-3
	Reliable Ground .....	2-3
2-5	Rack Mounting Instructions.....	2-4
	Identifying the Sections of the Rack Rails.....	2-4
	Locking Tabs .....	2-4
	Releasing the Inner Rail .....	2-5
	Installing The Inner Rails on the Storage Chassis .....	2-6
	Installing the Outer Rails on the Rack .....	2-7
	Installing to the Rack .....	2-8

---

Optional Quick Installation Method .....	2-9
Accessing Top-Loading Hard Drives .....	2-10
Adapters for Round and Threaded Hole Racks .....	2-10
<b>Chapter 3 System Interface</b>	
3-1 Overview .....	3-1
3-2 Control Panel Buttons .....	3-2
3-3 Control Panel LEDs .....	3-2
3-4 Drive Carrier LEDs .....	3-4
SAS3/SATA3 Drives .....	3-4
3-5 System Status LCD Screen .....	3-5
<b>Chapter 4 Standardized Warning Statements for AC Systems</b>	
4-1 About Standardized Warning Statements .....	4-1
Warning Definition .....	4-1
Installation Instructions .....	4-4
Circuit Breaker .....	4-5
Power Disconnection Warning .....	4-6
Equipment Installation .....	4-8
Restricted Area .....	4-9
Battery Handling .....	4-10
Redundant Power Supplies .....	4-12
Backplane Voltage .....	4-13
Comply with Local and National Electrical Codes .....	4-14
Product Disposal .....	4-15
Hot Swap Fan Warning .....	4-16
Power Cable and AC Adapter .....	4-18
<b>Chapter 5 Advanced Serverboard Setup</b>	
5-1 Handling the Serverboard .....	5-1
Precautions .....	5-1
5-2 Connecting Cables .....	5-2
Connecting Data Cables .....	5-2
Connecting Power Cables .....	5-2
Connecting the Control Panel .....	5-2
5-3 Rear I/O Ports .....	5-3
5-4 Installing the Processor and Heatsink .....	5-4
Installing an LGA2011 Processor .....	5-4
Installing a Passive CPU Heatsink .....	5-7
Removing the Heatsink .....	5-7
5-5 Installing Memory .....	5-8
Memory Support .....	5-8

DIMM Installation .....	5-8
5-6 Serverboard Details .....	5-10
X10DSC+ Quick Reference .....	5-10
X10DSC+ Quick Reference .....	5-11
X10DSC+ Quick Reference (cont.) .....	5-12
5-7 Connector Definitions .....	5-13
5-8 Jumper Settings .....	5-20
5-9 Onboard Indicators .....	5-22
5-10 SAS/SATA Ports .....	5-23
5-11 Installing Software .....	5-24
SuperDoctor® 5 .....	5-25
5-12 Onboard Battery .....	5-26

## ***Chapter 6 Advanced Chassis Setup***

6-1 Static-Sensitive Devices .....	6-1
Precautions .....	6-1
6-2 Control Panel .....	6-2
6-3 Opening and Closing the Chassis Cover .....	6-3
6-4 System Fans .....	6-4
Individual fans .....	6-4
Dual Rear Fan Module .....	6-5
6-5 Installing the HDD Support Partitions .....	6-6
6-6 Installing Hot-Swappable 3.5" Hard Drives .....	6-7
Installing Hard Drives Into Carriers .....	6-8
Installing Hard Drive Carriers into the Storage Chassis .....	6-8
6-7 Installing Optional Rear 2.5" Hot-Swappable Drives .....	6-9
Installing Hard Drives Into the Rear Carriers .....	6-9
6-8 Installing Hot-Swappable Optional NVMe Drives .....	6-12
Installing the NVMe Drive Cage .....	6-12
Installing NVMe Drive Carriers into the NVMe Drive Cage .....	6-13
6-9 Accessing the Motherboard for Memory Upgrades and Maintenance .....	6-14
Expansion Card Setup .....	6-15
PCI Slot Setup for Expansion Cards .....	6-15
Installing the SIOM Network Module .....	6-16
Installing Heatsinks .....	6-17
6-10 IPMI Connector .....	6-18
6-11 Accessing the Backplane and Power Card .....	6-19
6-12 Installing the Cable Management Arm .....	6-20
6-13 Power Supply .....	6-20

***Chapter 7 BIOS***

7-1	Introduction.....	7-1
	Starting BIOS Setup Utility.....	7-1
	How To Change the Configuration Data.....	7-1
	How to Start the Setup Utility .....	7-2
7-2	Main Setup.....	7-2
7-3	Advanced Setup Configurations.....	7-4
7-4	Event Logs .....	7-30
7-5	IPMI.....	7-32
7-6	Security Settings .....	7-34
7-7	Boot Settings.....	7-36
7-8	Save & Exit .....	7-38

***Appendix A BIOS Error Beep Codes******Appendix B System Specifications***

## Notes

# Chapter 1

## Introduction

### 1-1 Overview

The SuperStorageSystem 6048R-E1CR60N/L is a high-end server comprised of two main subsystems: the SC946TS-R2K05P 4U/rackmount chassis and the X10DSC+ dual processor serverboard. Please refer to our website for information on operating systems that have been certified for use with the system ([www.supermicro.com](http://www.supermicro.com)).

In addition to the serverboard and chassis, various hardware components have been included with the 6048R-E1CR60N/L, as listed below:

- Two passive CPU heatsinks (SNK-P0048PS)
- Five 8-cm rear exhaust fans (FAN-0169L4)
- Hardware RAID controller:  
6048R-E1CR60N: AOC-S3108M-H8L-P  
6048R-E1CR60L: AOC-S3008L-L8-P
- SAS/SATA Accessories  
Two SAS/SATA backplanes (BPN-SAS3-946SEL1)  
Sixty 3.5" toolless drive carriers (MCP-220-00075-0B)  
Two 2.5" toolless drive carriers (MCP-220-00117-0B)
- One set of mounting rails (MCP-290-00137-0N)

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

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: [ftp://ftp.supermicro.com](http://ftp.supermicro.com)
- Product safety info: [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm)
- If you have any questions, please contact our support team at:  
[support@supermicro.com](mailto:support@supermicro.com)

## 1-2 Serverboard Features

The SuperStorageSystem 6048R-E1CR60N/L is built around the X10DSC+, a dual processor serverboard based on the Intel C612 chipset. Below are the main features of the X10DSC+. (See Figure 1-1 for a block diagram of the chipset.)

### Processors

The X10DSC+ supports single or dual Intel® Xeon E5-2600 (v3) Series processors. Please refer to the serverboard description pages on our website for a complete listing of supported processors ([www.supermicro.com](http://www.supermicro.com)).

### Memory

The X10DSC+ has 24 DIMM slots that can support up to 1.5 TB of Load Reduced (LRDIMM) or 768 GB of Registered (RDIMM) ECC DDR4-2133/1866/1600 memory. See Chapter 5 for details.

### Main Storage Controller

The 6048R-E1CR60N includes an LSI 3108 controller card in the system to support SATA 3.0/SAS 3.0 hard drives. (RAID 0, 1, 5, 6, 10, 50 and 60 supported). The SATA/SAS drives are hot-swappable units.

The 6048R-E1CR60L has an LSI 3008 controller card included in the system to support SATA 3.0/SAS 3.0 hard drives.

**Note:** Backplane naming rule follows.

P0 : 01 : 00 --> indicates 1st expander board, 1st drive, slot1 (out of 60 drives)

P0 : 02 : 00 --> indicates 2nd expander board, 1st drive, slot31 (out of 60 drives)

The 3108 controller will recognize both backplanes in the system and assigns them enclosure IDs. These IDs are assigned randomly regardless of how the backplanes are physically connected. When using the MegaRAID utility, the customer may see the first backplane first then the second backplane or vice versa. In either case, drives may be identified through the naming rule shown above.

### Serial ATA

A SATA controller is also integrated into the chipset to provide 10 SATA 3.0 (6/ Gbps) ports, which are RAID 0, 1 and 10 supported. (RAID 5 supported with Windows OS only).

## PCI Expansion Slots

The X10DSC+ has two PCI-E 3.0 x16 and one PCI-E x8 slot (one PCI-E 3.0 x8 slot is used for the are available for add-on cards.

## Rear I/O Ports

The I/O ports include one COM port, a VGA port, two USB 3.0 ports and a dedicated IPMI LAN (Ethernet) port.

### 1-3 Server Chassis Features

The SC946TS-R2K05P is a 4U form factor chassis designed to be used in a storage configuration. The following is a general outline of the main features of the chassis.

#### System Power

The SC946TS-R2K05P features a redundant, hot-plug (two separate power modules) 2000W high-efficiency power supply. This power redundancy feature allows you to replace a failed power supply without shutting down the system.

#### Hard Drives

The SC946TS-R2K05P chassis was designed to support 60 top-loading 3.5" hard drives and two 2.5" hard drives at the rear of the chassis. All drives use carriers and are hot-swappable units.

#### Front Control Panel

The control panel on the front of the chassis provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, system information LED and power supply failure. A main power button and a system reset button are also included.

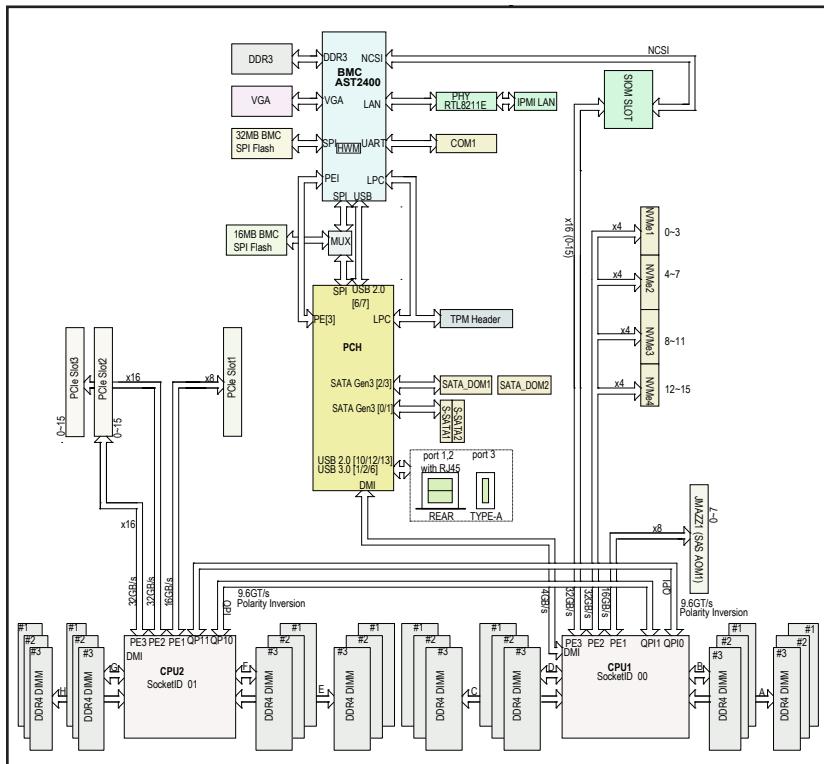
In addition, an LCD screen is mounted on the front of the chassis to display system and HDD information.

#### Cooling System

The SC946TS-R2K05P chassis includes five 8-cm hot-plug system cooling fans located at the rear of the chassis. Three of these fans can be removed individually, while two are paired together in a dual-fan module.

**Figure 1-1. Intel C612 Chipset:  
System Block Diagram**

Note: This is a general block diagram. Please see Chapter 5 for details.



## 1-4 Contacting Supermicro

### **Headquarters**

Address: Super Micro Computer, Inc.  
980 Rock Ave.  
San Jose, CA 95131 U.S.A.  
Tel: +1 (408) 503-8000  
Fax: +1 (408) 503-8008  
Email: [marketing@supermicro.com](mailto:marketing@supermicro.com) (General Information)  
[support@supermicro.com](mailto:support@supermicro.com) (Technical Support)  
Website: [www.supermicro.com](http://www.supermicro.com)

### **Europe**

Address: Super Micro Computer B.V.  
Het Sterrenbeeld 28, 5215 ML  
's-Hertogenbosch, The Netherlands  
Tel: +31 (0) 73-6400390  
Fax: +31 (0) 73-6416525  
Email: [sales@supermicro.nl](mailto:sales@supermicro.nl) (General Information)  
[support@supermicro.nl](mailto:support@supermicro.nl) (Technical Support)  
[rma@supermicro.nl](mailto:rma@supermicro.nl) (Customer Support)  
Website: [www.supermicro.nl](http://www.supermicro.nl)

### **Asia-Pacific**

Address: Super Micro Computer, Inc.  
3F, No. 150, Jian 1st Rd.  
Zhonghe Dist., New Taipei City 235  
Taiwan (R.O.C)  
Tel: +886-(2) 8226-3990  
Fax: +886-(2) 8226-3992  
Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)  
Website: [www.supermicro.com.tw](http://www.supermicro.com.tw)

## **Notes**

# Chapter 2

## Server Installation

### 2-1 Overview

This chapter provides a quick setup checklist to get the 6048R-E1CR60N/L up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

### 2-2 Unpacking the System

You should inspect the box the 6048R-E1CR60N/L was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the 6048R-E1CR60N/L. 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. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

### 2-3 Preparing for Setup

The box the 6048R-E1CR60N/L was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

#### Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
- This product is not suitable for use with visual display work place devices according to §2 of the German Ordinance for Work with Visual Display Units.

## 2-4 Warnings and Precautions

### Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, 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 component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

### Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow any hot plug drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

## Rack Mounting Considerations

### ***Ambient Operating Temperature***

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the room's ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (T<sub>mra</sub>).

### ***Reduced 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.).



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

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

## 2-5 Rack Mounting Instructions

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using. Note: This rail will fit a rack between 26.5" and 36.4" deep

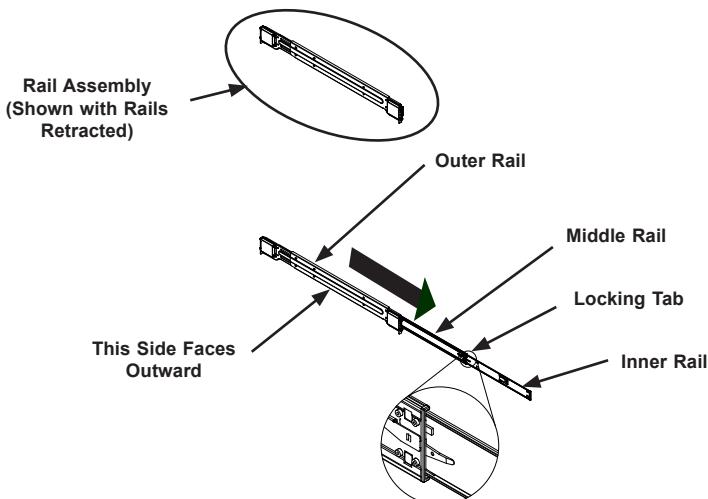
### Identifying the Sections of the Rack Rails

The chassis package includes a rack rail assembly in the rack mounting kit. Each assembly consists of three sections: an inner chassis 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.

### Locking Tabs

Each inner rail has a locking tab. This tab locks the chassis into place when installed and pushed fully into the rack. These tabs also lock the chassis in place when fully extended from the rack. This prevents the server from coming completely out of the rack when the chassis is pulled out for servicing.

Figure 2-1. Identifying the Different Rail Sections

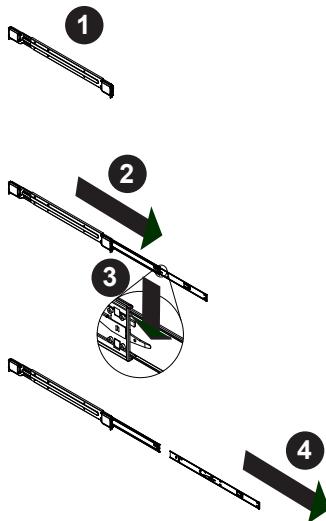


## Releasing the Inner Rail

### *Releasing Inner Rail from the Outer Rails*

1. Identify the left and right outer rail assemblies as described on page 5-4.
2. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.
3. Press the locking tab down to release the inner rail.
4. Pull the inner rail all the way out.
5. Repeat steps 1-3 for the second outer rail.

**Figure 2-2. Extending and Releasing the Inner Rail**



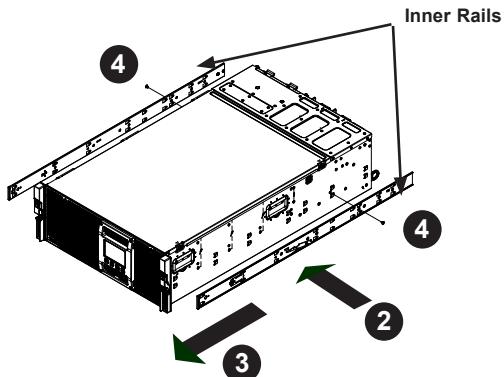


Figure 2-3. Installing the Inner Rails

## Installing The Inner Rails on the Storage Chassis

### *Installing the Inner Rails*

1. Confirm that the left and right inner rails have been correctly identified.
2. Place the inner rail firmly against the side of the storage chassis, aligning the hooks on the side of the storage chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the storage chassis until the rail clicks into the locked position, which secures the inner rail to the storage chassis.
4. Secure the inner rail to the storage chassis with the screws provided.
5. Repeat steps 1 through 4 above for the other inner rail.



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



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

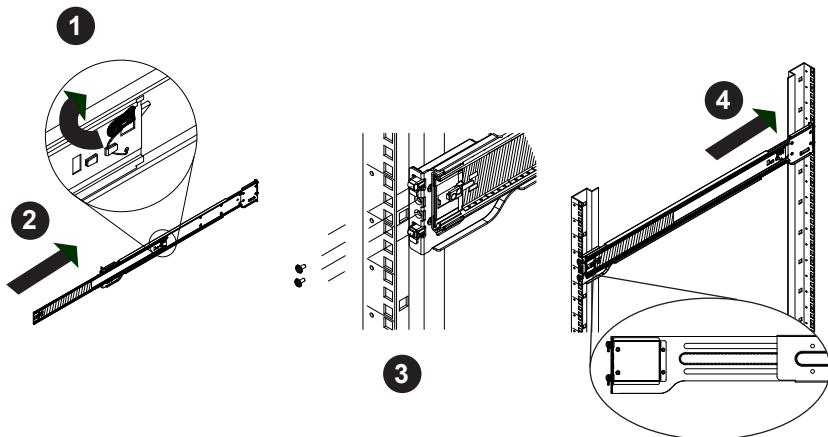


Figure 2-4. Extending and Releasing the Outer Rails

## Installing the Outer Rails on the Rack

### *Installing the Outer Rails*

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks of the front of the outer rail onto the slots on the front of the rack. If necessary, use screws to secure the outer rails to the rack, as illustrated above.
4. Pull out the rear of the outer rail, adjusting the length until it fits within the posts of the rack.
5. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. If necessary, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat steps 1-5 for the remaining outer rail.



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

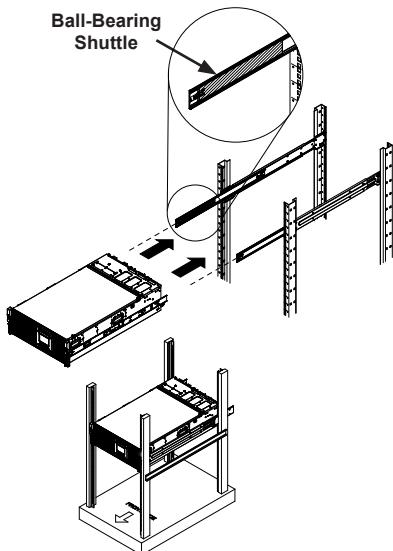


Slide rail mounted equipment is not to be used as a shelf or a work space.

## Installing to the Rack

### *Installing the Chassis into a Rack*

1. Confirm that the inner rails are properly installed on the chassis and the outer rails are correctly installed on the rack.
2. Pull the middle rail out from the front of the outer rail and make sure that the ball-bearing shuttle is at the front locking position of the middle rail.
3. Align the chassis inner rails with the front of the middle rails.
4. Slide the inner rails on the chassis into the middle rails, keeping the pressure even on both sides, until the locking tab of the inner rail clicks into the front of the middle rail, locking the chassis into the fully extended position.
5. Depress the locking tabs of both sides at the same time and push the storage chassis all the way into the rear of the rack.



**Figure 2-5. Installing into a Rack**

**Notes:** figures are for illustrative purposes only. Always install servers into racks from the bottom up. The chassis pictured may vary slightly from the 6048R-E1CR60N/L system chassis.

**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.



6. Depress the locking tabs of both sides at the same time and push the storage chassis all the way into the rear of the rack.
7. If necessary for security purposes, use screws to secure the storage chassis handles to the front of the rack.

## Optional Quick Installation Method

The following quick installation method may be used to install the chassis to a rack.

### *Installing the Storage Chassis into a Rack*

1. Install the whole rail assembly onto the rack as described on page 6-7.
2. Release the inner rail without retracting the middle rail.
3. Install the inner rails on the storage chassis as previously described on page 6-6.
4. Install the storage chassis onto the middle rail as described in the previous section.

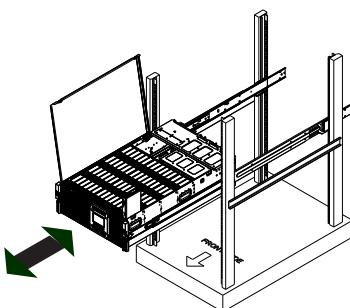


Figure 2-6. Installing into a Rack

## Accessing Top-Loading Hard Drives

After completing the rack installation steps on the previous pages, the top-loading functionality of your chassis can be utilized while mounted in a rack system without removing the chassis from the rack.

### ***Accessing the Storage Chassis in a Rack***

1. Complete the rack installation steps on the preceding pages.
2. Grasp the system by the front handles on either side of the storage chassis.
3. Pull the system forward until the rails are fully extended and the cover can be opened unobstructed, as illustrated above.
4. To close, push the chassis back into the rack.

## Adapters for Round and Threaded Hole Racks

The SC946S chassis includes adapter brackets for those customers using round hole racks or racks with threaded holes size M5 or larger.

### ***Installing the Adapter Bracket***

1. Place the hooks of the front of the outer rail into the square holes of one of the adapter brackets.
2. Place the hooks of the rear of the outer rail into the square holes of a second adapter bracket.
3. Adjust the length of the outer rail to fit within the rack uprights.
4. Secure the front adapter bracket to the front of the rack using the screws recommended by the rack manufacturer.
5. Secure the rear adapter bracket to the rear of the rack in the same manner.

# Chapter 3

## System Interface

### 3-1 Overview

The storage chassis features a large, easy-to-read LCD screen with screen navigation buttons. This LCD screen displays information about the system. The control panel is located on the front edge of the storage chassis and features system status LEDs, a power on/off button and reset button. There are other LEDs on the drive carriers to help monitor the activity and status of the system and components. This chapter explains the meanings of the LED indicators and appropriate responses.

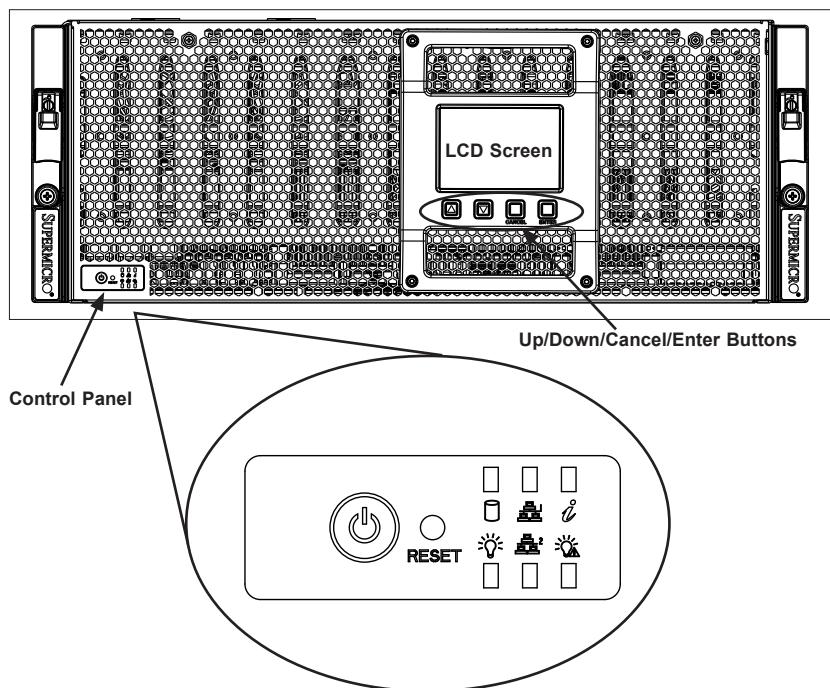


Figure 3-1. Control Panel and LCD Screen

### 3-2 Control Panel Buttons

There are two push-buttons located on the left handle of the chassis. These are (in order from left to right) a power on/off button and a reset button.



**Power:** The main power button is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. In addition to removing power, you should therefore unplug the AC power cord system before servicing.

RESET



**Reset:** The reset button is used to reboot the system.

### 3-3 Control Panel LEDs

The control panel located on the left handle of the storage chassis has six LEDs. They provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



**Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.



**HDD:** Indicates SAS/SATA drive and/or DVD-ROM drive activity when flashing.



**NIC1:** Indicates network activity on GLAN1 when flashing.



**NIC2:** Indicates network activity on GLAN2 when flashing.



**Information LED:** Alerts operator of several states, as noted in the table below.

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



**Power Failure:** When this LED flashes, it indicates a failure in the redundant power supply.

### 3-4 Drive Carrier LEDs

The SC946S chassis supports SAS3 or SATA3 drives.

#### SAS3/SATA3 Drives

Each SAS3/SATA3 drive carrier has two LEDs.

- **Blue:**

Solid on = Drive is present and available.

Blinking = Drive is actively being accessed.

Each SATA drive carrier has a blue LED. When illuminated in a solid on state, this blue LED indicates drive activity. A connection to the SAS/SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:**

Solid on = Drive failure

Blinking = RAID activity

When the red LED is blinking, it indicates that the system is either building, initializing or rebuilding RAID.

**Note:** Backplane naming rule follows.

P0 : 01 : 00 --> indicates 1st expander board, 1st drive, slot1 (out of 60 drives)

P0 : 02 : 00 --> indicates 2nd expander board, 1st drive, slot31 (out of 60 drives)

The 3108 controller will recognize both backplanes in the system and assigns them enclosure IDs. These IDs are assigned randomly regardless of how the backplanes are physically connected. When using the MegaRAID utility, the customer may see the first backplane first then the second backplane or vice versa. In either case, drives may be identified through the naming rule shown above.

## 3-5 System Status LCD Screen

The 6048R-E1CR60N/L offers an optional LCD screen on the front of the chassis that shows the status of many system components. The functions are described in this section.

### Introduction

This feature gives the user the ability to monitor drives, power supplies, fans, and connections. It shows temperature, events, and errors. The LCD display is activated as the system powers on.

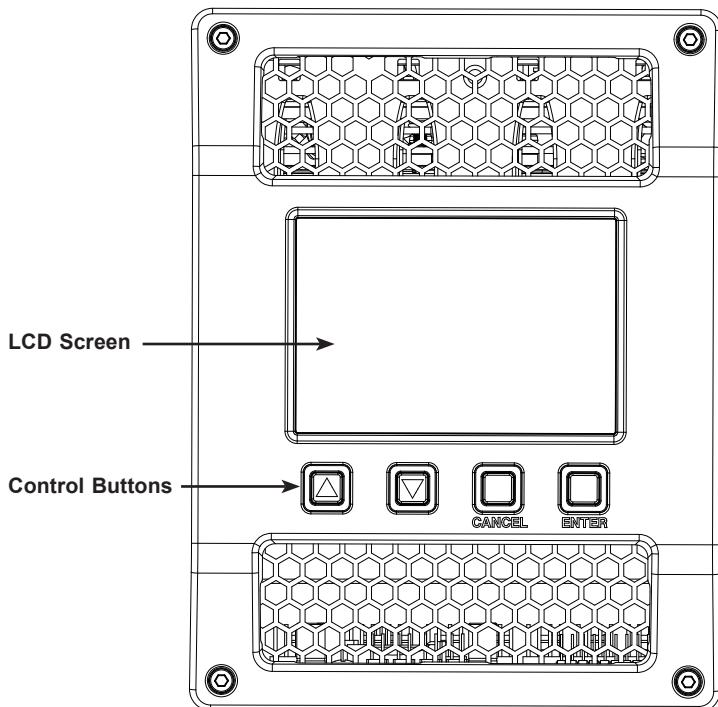
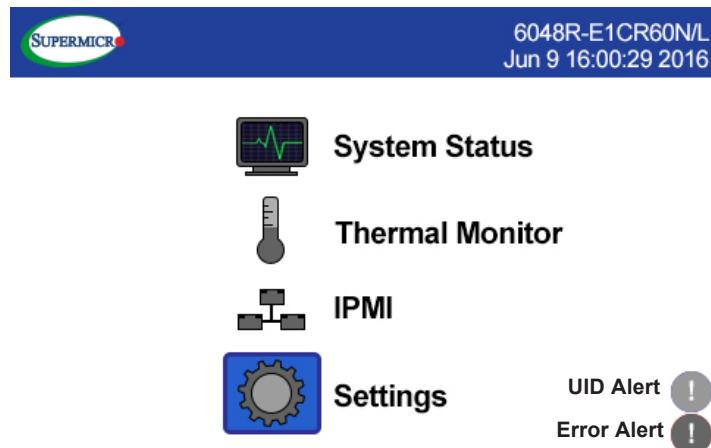


Figure 3-2. LCD Screen

The user can navigate the menus using the four control buttons: Scroll Up, Scroll Down, Cancel, and Enter.

## Main Screen

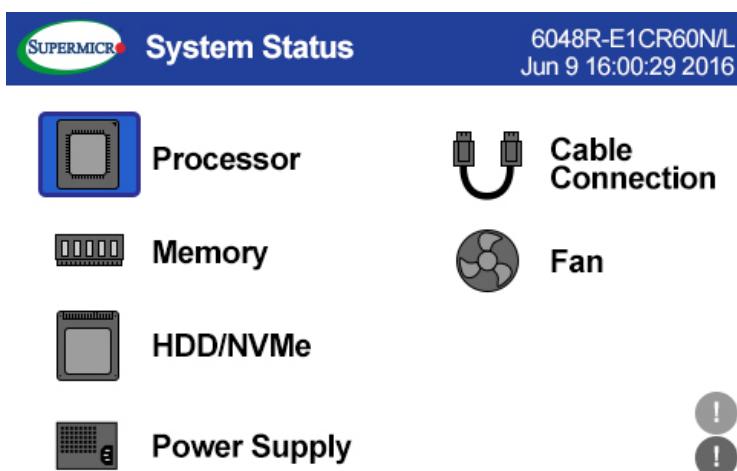
After a welcome page, the Main screen appears.



Throughout the GUI, component status is displayed in color where green indicates normal operation, red indicates a problem, and gray indicates the component is not installed. The UID Alert is blue when active; the Error Alert is red when active.

### System Status Submenu

*Main Page > System Status*



## **Processor Status**

### ***Main Page > System Status > Processor***

This page displays CPU information including model (SKU), temperature and status. The status may be operational (good, green), failed (bad, red), or not installed (gray).

## **Memory Status**

### ***Main Page > System Status > Memory***

This page shows each DIMM slot as operational, failed, or not installed.

## **Hard Disk Drive Status**

### ***Main Page > System Status > Hard Disk Drive***

This page displays all drive bays. The drive may be operational, failed, or not installed.

## **Power Supply Status**

### ***Main Page > System Status > Power Supply***

This page shows the status and temperature of each power supply unit.

## **Cable Connection Status**

### ***Main Page > System Status > Cable Connection***

The Cable Connection page shows the status of connections to the backplanes.

## **Fans Status**

### ***Main Page > System Status > Fan***

The Fan page shows whether each fan is operational, failed or not installed.

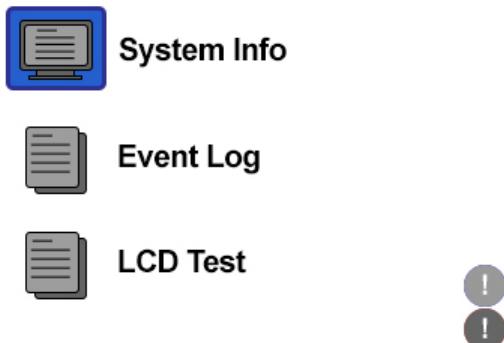
## **Thermal Monitor**

### ***Main Page > Thermal Monitor***

The Thermal Monitor shows the temperature of the backplane, motherboard, processor, and ambient chassis temperature.

## IPMI Submenu

*Main Page > IPMI*



### ***System Info***

*Main Page > IPMI > System Info*

The IPMI System Info pages show:

- LCD firmware version
- IPMI firmware version
- BMC IP Address
- MAC Address
- Motherboard serial number
- Product serial number
- Chassis serial number
- Power supplies 1 and 2 serial numbers

## ***IPMI Event Log***

### ***Main Page > IPMI > Event Log***

Event Log page will show the latest 100 critical errors:

- /\*CPU OverHeating\*/
- /\*MEM OverHeating\*/
- /\*PSU FAIL\*/
- /\*MEM ECC Error\*/
- /\*MEM MRC Error\*/
- /\*Fan Error\*/
- HDD activity

## ***LCD Test***

### ***Main Page > IPMI > LCD Test***

## **Settings Submenu**

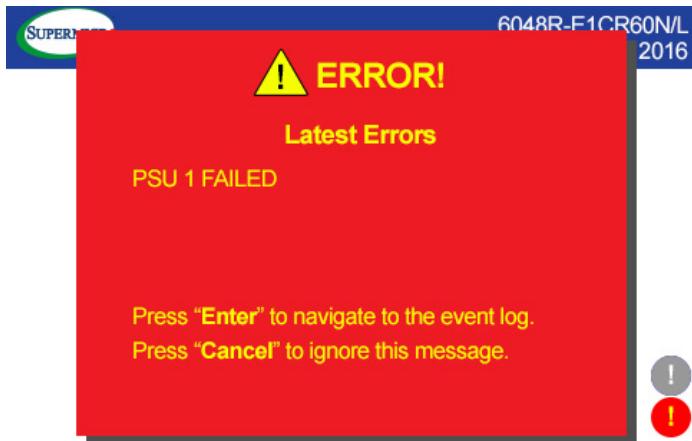
### ***Main Page > Settings > Brightness***

This item allows the user to adjust the LCD brightness.

## **Error Message**

An error message pops up whenever critical error occurs. It shows the latest three critical errors. The user can choose to navigate to event log or ignore message.

Also, there will be an error icon on the bottom right of the page to remind user that there are critical errors that require attention.



## UID Message

A message pops up whenever the user activates UID. The UID icon (blue circle with a white exclamation mark) in the bottom right corner remains active until the user turns off UID.

## Chapter 4

# Standardized Warning Statements for AC Systems

### 4-1 About Standardized Warning Statements

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

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

These warnings may also be found on our web site at [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm).

#### Warning Definition



##### Warning!

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

##### 警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符号代表危险。

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 הצהורות אזהרה

הצהורות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היבטים בעיה כלשהו, יש לצטור קשר עם מחלקת תמייה. תכנית של סופרמייקרו. טכנאים מוסמכים בלבד רשאים להתקין או להציג את הרכיבים. יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במאזוי סופרמייקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .  
 قبل أن تعلم على أي معدات، كن على علم بالمخاطر الناجمة عن الدوائر  
 الكهربائية  
 وكن على دراية بالمارسات الوقائية لمنع وقوع أي حوادث  
 استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

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 waarschuwing 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.

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

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة التي تم تثبيتها في المبني  
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고!

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

#### Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 220V, 20A.

### Power Disconnection Warning



#### Warning!

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

#### 電源切断の警告

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

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

#### 警告

在您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 châssis pour installer ou enlever des composants de système.

**אזהרה !**

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

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل الوصول إلى المناطق الداخلية للهيكل لتنبيت أو إزالة مكونات الجهاز

**경고!**

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

**Waarschuwing**

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

## Equipment Installation



### Warning!

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

#### 機器の設置

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

#### 警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

#### 警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

#### Warnung

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

#### ¡Advertencia!

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

#### Attention

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

ازהרה !

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לחת שירות עבורו הציוד.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتركيب واستبدال أو خدمة هذا الجهاز

경고!

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

## Waarschuwing

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

## Restricted Area



### Warning!

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

### アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

### 警告

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

### 警告

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

### Warnung

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

### ¡Advertencia!

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

### Attention

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

**אזרע עם גישה מוגבלת****אזהרה !**

יש להתקין את היחידה באזורי שיש בהם האבלת גישה. הגישה ניתנת בעזרת כל אבטחה בלבד (מפתח, מנעול וכד').

تم تخصيص هذه الوحدة لتركيبها في مناطق محظورة .  
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،  
قفل وفتح أو أي وسيلة أخرى للأمان

경고!

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

**Waarschuwing**

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

**Battery Handling****Warning!**

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

**電池の取り扱い**

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

**警告**

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

**警告**

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

### Warnung

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

### Attention

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

### ¡Advertencia!

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

### אזהרה!

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות הייצורן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة تخلص من البطاريات المستعملة وفقاً لتعليمات الشركة الصانعة

### 경고!

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

### Waarschuwing

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

## Redundant Power Supplies



### Warning!

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

#### 冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

#### 警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

#### 警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

#### Warnung

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

#### ¡Advertencia!

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

#### Attention

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

**אם קיימים יותר מספק אחד**

**אוורה!**

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 لعزل 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りています。

修理する際には注意ください。

### 警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

### 警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

### Warnung

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

### ¡Advertencia!

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

### Attention

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

**מתח בפנל האחורי****אזהרה !**

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

هناك خطر من التيار الكهربائي أو الطاقة الموجودة على اللوحة عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

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

**Waarschuwing**

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

**Comply with Local and National Electrical Codes****Warning!**

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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

**警告**

设备安装必须符合本地与本国电气法规。

**警告**

設備安裝必須符合本地與本國電氣法規。

**Warnung**

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

**¡Advertencia!**

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

**Attention**

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

**תיאום חוקי החשמל הארץ**

ازהרה!

תקנת הבדיקה חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل لقوانين المحلية والوطنية 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 وفقاً لجميع القوانين واللوائح الوطنية

경고!

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

**Waarschuwing**

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

**Hot Swap Fan Warning**

**Warning!**



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

ファン・ホットスワップの警告

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

警告！

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

警告

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

## Warnung

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

## ¡Advertencia!

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

## Attention

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

**ازהרה!**

חלקים נעים מסוכנים. התركח מלהבי המאוחר בפעולת האשר מסירים את חלקו המאוחר מהמארז, יתכן והמאוררים עדין עובדים. יש להרחק למרחוק בטוח את האצבעות וכל עבודה שונות מהפתחים בתחום המאוחר

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

경고!

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

## Waarschuwing

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

## Power Cable and AC Adapter



### Warning!

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

### 電源コードとACアダプター

製品を設置する場合、提供または指定および購入された接続ケーブル、電源コードとACアダプターを、該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。

### 警告

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

### 警告

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

### Warnung

Nutzen Sie beim Installieren des Produkts ausschließlich die von uns zur Verfügung gestellten Verbindungskabeln, Stromkabeln und/oder Adaptern, die Ihre örtlichen Sicherheitsstandards einhalten. Der Gebrauch von anderen Kabeln und Adaptern 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

## 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 sécurité y compris les tailles de cables et les prises électriques appropriées. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et la Loi sur la Sécurité Matériel interdit l'utilisation de câbles certifiés- UL ou CSA (qui ont UL ou CSA indiqué sur le code) pour tous les autres appareils électriques sauf les produits désignés par Supermicro seulement.

AC 'מאתמו מיילמשח מילבכ

הרזה!

וא שכרך רשא AC מימאתמו ס"קפס, מילבכ שמתshall שי, רצומה תא מיניקתם רשא לש הוכנוך הדימ ללוּכ, תויומוקהה תוחיטבה תושירידל ומאותה רשא, הנקתהה ררצול ומאותה ימשוח רץך וא הלקתל סורגל לולע, רחוא גוזם סאותם וא לבכ ללב שומיש . עתקתו לבכה

밀בכ שמתshall רוסיא ס"יק, תוחיטבה יקוחו למשחה ירשכמב שומישה יקוחל מאתהב ימשוח רצום לכ רבען (UL/CSA) לש דוק מהילע עיפומ רשא( C-ב ו CSA-ב )-ב פיכסומה דבלב Supermicro י"ע פאתהו רשא רצומב קר אלא, רחא

تالباكللا اارشـب مـق وـأ قـدـحـمـلـا وـأ قـرـفـوـتـمـلـا تـالـاـيـصـوـتـلـا مـادـخـتـسـابـ مـقـ جـتـنـمـلـا بـيـكـرـتـ دـنـعـ اـمـبـ ئـيـلـحـمـلـا قـمـالـسـلـا تـابـلـطـنـهـوـ نـيـنـاـقـبـ مـازـتـلـالـاـعـ دـدـرـتـمـلـا رـايـتـلـا تـالـلـوـحـمـوـ ئـيـلـاـبـرـمـكـلـلـاـ يـفـ بـيـبـسـتـيـ دـقـ يـرـخـأـ تـالـلـوـحـمـوـ تـالـبـاـكـ يـأـ مـادـخـتـسـاـ .ـمـجـلـسـلـاـ سـبـاقـلـاـوـ لـصـوـمـلـاـ مـجـحـ كـلـذـ يـفـ قـدـمـتـعـمـلـلـاـ تـالـبـاـكـلـلـاـ مـادـخـتـسـاـ تـادـعـمـلـاـوـ ئـيـلـاـبـرـمـكـلـلـاـ قـرـهـجـأـلـلـ قـمـالـسـلـاـ نـونـاقـ رـطـحـيـ قـيـرـجـ وـأـ لـطـعـ ئـيـنـعـمـلـاـ تـاجـتـنـمـلـاـ رـيـغـ يـرـخـأـ تـادـعـمـيـ يـأـ عـ (UL/CSA)ـ قـمـالـعـ لـمـحـتـ يـتـلـاـوـ CSAـ وـأـ ULـ لـبـقـ نـمـ Supermicroـ لـبـقـ نـمـ قـدـحـمـلـاـوـ

### 전원 케이블 및 AC 어댑터

경고! 제품을 설치할 때 현지 코드 및 적절한 굽기의 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 Supermicro가 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.

# Chapter 5

## Advanced Serverboard Setup

This chapter covers the steps required to connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

### 5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

#### Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board 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 serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

## 5-2 Connecting Cables

Several cables need to be connected to the serverboard. These include the data cables for the peripherals and control panel and the power cables.

### Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). See the layout on page 5-10 for connector locations.

### Connecting Power Cables

The X10DSC+ has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there are two 8-pin 12V processor power connectors (JPW2 and JPW3) that must be connected to your power supply. See Section 5-9 for power connector pin definitions.

### Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Chapter 5 for details and pin descriptions.

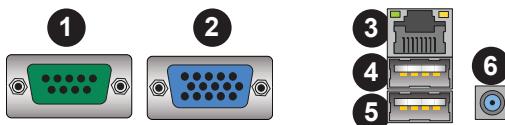
Figure 5-1. Control Panel Header Pins

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	Power Fail LED
UID LED	○	○	OH/Fan Fail/ PWR Fail LED)
NIC2 Activity LED	○	○	NIC2 Link LED
NIC1 Activity LED	○	○	NIC1 Link LED
UID Switch	○	○	HDD LED
3.3 V	○	○	FP PWRLED
X	○	○	X
NMI	○	○	Ground
	19	20	

### 5-3 Rear I/O Ports

See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. Rear I/O Ports



Rear I/O Ports	
1 COM Port 1	4 USB1 Port (USB 3.0)
2 VGA Port	5 USB0 Port (USB 3.0)
3 IPMI LAN Port	6 UID LED

## 5-4 Installing the Processor and Heatsink

**Warning:** When handling the processor package, avoid placing direct pressure on the label area of the fan.

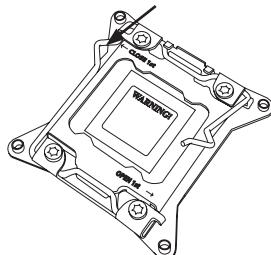
**Notes:**

- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the serverboard into the chassis before you install the CPU heatsinks.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

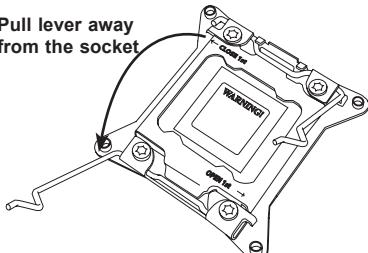
### Installing an LGA2011 Processor

Press down on the lever labeled  
'Close 1st'

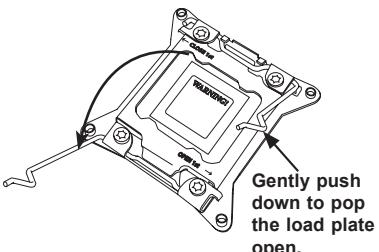
1. There are two levers on the LGA2011 socket. First press and release the load lever labeled 'Open 1st'.
2. Press the second load lever labeled 'Close 1st' to release the load plate from its locked position.



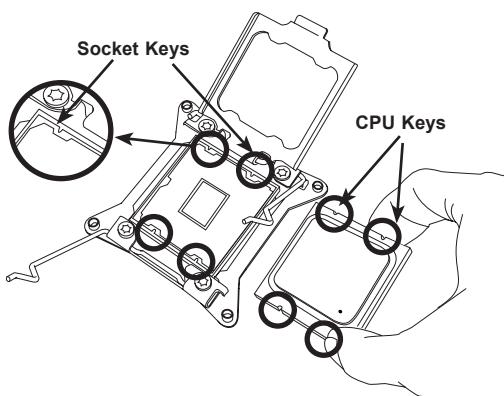
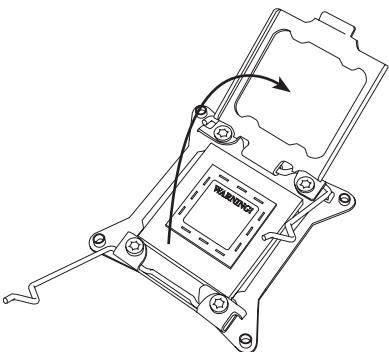
Pull lever away  
from the socket



3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.

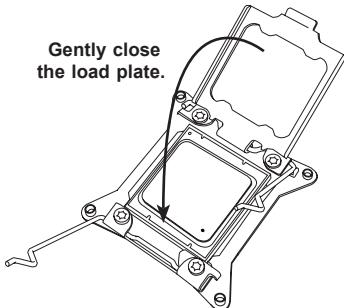


4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.
5. Use your thumb and index finger to hold the CPU by its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.
6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically and do not rub the CPU against any pins of the socket, which may damage the CPU or the socket.)

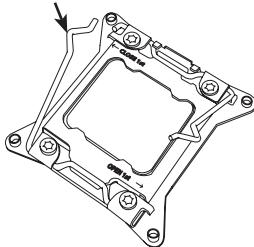


**Warning:** You can only install the CPU to the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

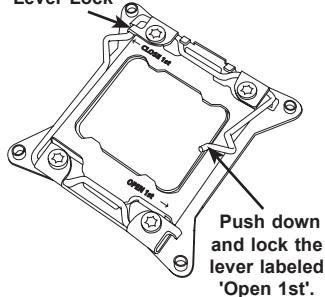
7. With the CPU in the socket, inspect the four corners of the CPU to make sure that they are flush with the socket.
8. Close the load plate. Lock the lever labeled 'Close 1st', then lock the lever labeled 'Open 1st'. Use your thumb to gently push the load levers down until the lever locks.



Push down and lock the lever labeled 'Close 1st'.



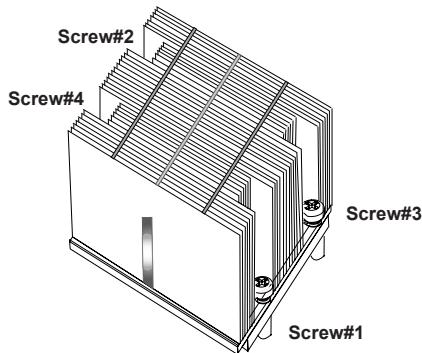
Lever Lock



## Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die. The required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the serverboard and the heatsink bracket underneath.
3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (do not over-tighten the screws to avoid possible damage to the CPU.)
4. Finish the installation by fully tightening all four screws.

**Figure 5-3. Installing a Heatsink**



## Removing the Heatsink

**Warning:** We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to uninstall the heatsink to prevent damage to the CPU or the CPU socket.

1. Unscrew the heatsink screws in the sequence as shown above.
2. Gently wiggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)
3. Once the heatsink is loose, remove it from the CPU.
4. Remove the used thermal grease and clean the surface of the CPU and the heatsink, Reapply the proper amount of thermal grease on the surface before reinstalling the heatsink.

**Warning:** Do not reuse old thermal grease!

## 5-5 Installing Memory

**Caution:** Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

### Memory Support

The X10DSC+ supports up to 1.5 TB of Load Reduced (LRDIMM) or 768 GB of Registered (RDIMM) ECC DDR4-2133/1866/1600 memory. For best performance, install pairs of memory modules of the same type and speed. All channels will run at the fastest common frequency.

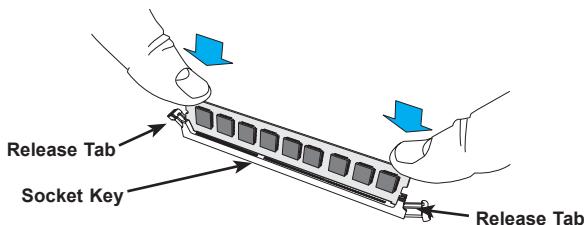
**Note:** Memory speed support depends on the CPUs installed in the motherboard. For the latest memory updates, please refer to the product page on our website.

### DIMM Installation

#### *Installing Memory Modules*

1. Install the desired number of DIMMs into the memory slots starting with P1-DIMMA1: insert each DIMM vertically into its slot, paying attention to the notch along the bottom of the module to avoid installing incorrectly (see Figure 5-4). See the Memory Installation Tables on the following pages.
2. Use your thumbs to gently press down on both ends of the DIMM module until it snaps into place in the slot. Press the release tabs to the locked positions to secure the DIMM in the slot.
3. Repeat for all modules.

**Figure 5-4. DIMM Installation**



## Processor & Memory Module Population Configuration

Follow the tables below for correct memory installation.

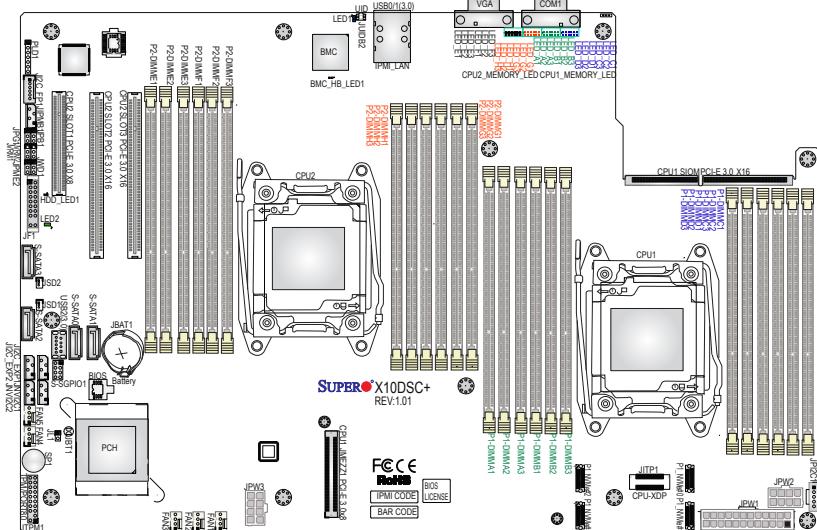
Processors and their Corresponding Memory Modules												
CPU#	Corresponding DIMM Modules											
CPU 1	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
CPU2	E1	F1	G1	H1	E2	F2	G2	H3	E3	F3	G3	H3

Processor and Memory Module Population for Optimal Performance	
Number of CPUs+DIMMs	CPU and Memory Population Configuration Table
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
1 CPU & 6-8 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1 + any pair of P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2 slots
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 10-16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1 + any pair of P1, P2 DIMM slots
2 CPUs & 16-24 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1, P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2, P2-DIMME2/P2-DIMMF2/P2-DIMMG2/P2-DIMMH2, P1-DIMMA3/P1-DIMMB3/P1-DIMMC3/P1-DIMMD3, P2-DIMME3/P2-DIMMF3/P2-DIMMG3/P2-DIMMH3

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)		Speed (MT/s); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC)					
				1 Slot Per Channel	2 Slots Per Channel	3 Slots Per Channel			
		4Gb	8Gb	1DPC	1DPC	2DPC	1DPC	2DPC	3DPC
RDIMM	SRx4	8GB	16GB	2133	2133	1866	2133	1866	1600
RDIMM	SRx8	4GB	8GB	2133	2133	1866	2133	1866	1600
RDIMM	DRx8	8GB	16GB	2133	2133	1866	2133	1866	1600
RDIMM	DRx4	16GB	32GB	2133	2133	1866	2133	1866	1600
LRDIMM	QRx4	32GB	64GB	2133	2133	2133	2133	2133	1600

## 5-6 Serverboard Details

Figure 5-5. X10DSC+ Layout



### Notes

Jumpers not indicated are for test purposes only and should not have their settings changed.

Note that the PCI slots are enabled when their corresponding processors are installed. "CPU2 Slot 4" indicates that the second CPU must be installed to the CPU2 socket to enable this PCI slot.

"■" indicates the position of pin 1.

### X10DSC+ Quick Reference

LED	Description	State	Status
BMC_HB_LED1	BMC Heartbeat LED	Green: Blinking	BMC Normal
HDD_LED1	HDD LED	Green: On	HDD Normal
LED1	Rear UID LED	Blue: On	Unit Identified
LED2	Power LED	On	Power On

## X10DSC+ Quick Reference

Jumper	Description	Default Setting
JB1	Clear CMOS/Reset BIOS Configuration	See Section 5-8
JPB1	BMC Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPME2	Manufacture (ME) Mode Select	Pins 1-2 (Normal)
JWD1	Watch Dog Timer Enable	Pins 1-2 (Reset)
Connectors	Description	
COM1	Rear COM Port	
FAN1-FAN5	System Fan Headers (Fan 1-Fan 5)	
JF1	Front Control Panel Header	
JI <sup>2</sup> C_EXP1/2	System Management Bus (SMBus) I <sup>2</sup> C for SAS3 Backplane	
JI <sup>2</sup> C_FP1	System Management Bus (SMBus) I <sup>2</sup> C for LCD Devices	
JIPMB1	4-pin external BMC I <sup>2</sup> C Header (for an IPMI card)	
JL1	Chassis Intrusion Header	
JNVI <sup>2</sup> C1/2	System Management Bus (SMBus) (I <sup>2</sup> C) for NVME Devices	
JPI <sup>2</sup> C1	Power Supply SMBbus I <sup>2</sup> C Header	
JPW1	24-pin ATX Main Power Header	
JPW2/3	12V 8-pin Power Headers	
JSD1/JSD2	SATA DOM (Device on Module) Power Connectors 1/2	
JTPM1	TPM (Trusted Platform Module)/Port 80 Header	
IPMI_LAN	Dedicated IPMI LAN	
P1_NVMe#0-#3	NVM Express PCI-E 3.0 x4 Ports (from CPU1)	
S-SATA 0-3	SAS 3.0 Ports (S-SATA 1/2 support SMCI SuperDOM with built-in power pins)	
S-SGPIO 1	Serial Link General Purpose I/O Header (for S-SATA ports)	
Slot1	PCI-Express 3.0 x8 Slot (from CPU2)	
Slot2/3	PCI-Express 3.0 x16 Slot (from CPU2)	
JMEZZ1 PCI-E	PCI-Express 3.0 x8 Add-On-Module (AOM) slot from CPU1 (for mezzanine card)	
SIOM PCI-E	PCI-Express 3.0 x16 Slot (from CPU1, for SMCI SIOM add-on module support)	
UID	UID (Unit Identification) Switch	
USB 0/1	Backpanel USB 3.0 Ports	
USB 2	Type A USB 3.0 Connector (for front access)	

**X10DSC+ Quick Reference (cont.)**

LED	Description	State	Status
LED_A1-A3	CPU1 Memory Fail LED for DIMMs A1-A3	On	Memory Failure
LED_B1-B3	CPU1 Memory Fail LED for DIMMs B1-B3	On	Memory Failure
LED_C1-C3	CPU1 Memory Fail LED for DIMMs C1-C3	On	Memory Failure
LED_D1-D3	CPU1 Memory Fail LED for DIMMs D1-D3	On	Memory Failure
LED_E1-E3	CPU2 Memory Fail LED for DIMMs E1-E3	On	Memory Failure
LED_F1-F3	CPU2 Memory Fail LED for DIMMs F1-F3	On	Memory Failure
LED_G1-G3	CPU2 Memory Fail LED for DIMMs G1-G3	On	Memory Failure
LED_H1-H3	CPU2 Memory Fail LED for DIMMs H1-H3	On	Memory Failure

## 5-7 Connector Definitions

### Power Connectors

A 24-pin main power supply connector (JPW1) and two 8-pin CPU power connectors (JPW2/JPW3) must be connected to the power supply to provide adequate power to the system. These power connectors meet the SSI EPS 12V specification. See the table on the right for pin definitions.

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

### Secondary Power Connector

JPW2 and JPW3 must also be connected to the power supply. See the table on the right for pin definitions.

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

Required Connection

**Warning:** To provide adequate power supply to the serverboard, be sure to connect JPW1 and both JPW2 and JPW3 to the power supply. Failure to do so will void the manufacturer warranty on your power supply and serverboard.

### Power Button

The Power On connection is on pins 1 and 2 of JF1. These should be connected to the chassis power button. Momentarily contacting both pins will power on/off the system. To turn off the power when the system is on, press the button for 4 seconds or longer. See the table on the right for pin definitions.

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

### Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

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

### Power Fail LED

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

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

### Overheat, Fan/Power Fail LED

Connect an LED cable to pins 7 and 8 of the front control panel to use the Overheat/Fan Fail/Power Fail and UID LED connections. The red LED on pin 8 provides warnings of overheat, fan failure or power failure. The blue LED on pin 7 works as the front panel UID LED indicator. Refer to the table on the right for pin definitions.

OH/Fan Fail/ PWR Fail/Blue_UID LED Pin Definitions (JF1)	
Pin#	Definition
7	Blue_UID LED
8	OH/Fan Fail/Power Fail

OH/Fan Fail/PWR Fail LED Status (Red LED)	
State	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

### NIC2 (JLAN2) LED

The LED connections for LAN2 are on pins 9 and 10 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Activity
10	Link

### NIC1 (JLAN1) LED

The LED connections for LAN1 are on pins 11 and 12 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Activity
12	Link

### HDD LED/UID Switch

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable to pin 14 to show HDD activity status. Attach a cable to pin 13 to use UID switch. See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	UID Switch
14	HD Active

### Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1. This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

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

### NMI Button

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

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

### Fan Headers

There are five fan headers on the serverboard, all of which are 4-pin fans. Pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans. (Fan speed control is supported with 4-pin fans only.) See the table on the right for pin definitions. The onboard fan speeds are controlled by Thermal Management (via IPMI).

Fan Header Pin Definitions (FAN1-8)	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWR Modulation

### Chassis Intrusion

The Chassis Intrusion header is designated JL1. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened

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

### Dedicated IPMI LAN Port

A dedicated IPMI LAN port is located above the rear USB 0/1 ports. Connect an RJ45 cable here for IPMI LAN support. Please refer to the LED Indicator section for LAN LED information.

### Serial Ports

One serial port (COM1) is located at the rear of the server. as part of the rear I/O panel

### Video Connection

A Video (VGA) port is located next to COM Port 1 on the I/O back panel. Refer to the board layout below for the location.

### Internal Speaker

The internal speaker, located at SP1, can be used to provide audible indications for various beep codes. See the table on the right for pin definitions..

Internal Buzzer (SP1) Pin Definition		
Pin#	Definitions	
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

### SGPIO Headers

An SGPIO (Serial General Purpose Input/Output) header is used to communicate with the enclosure management chip on the backplane. SGPIO1 supports the I-SATA0-3 ports. See the table on the right for pin definitions.

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

NC = No Connection

### IPMB

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I<sup>2</sup>C connection on your system.

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

### Power Supply SMBus I<sup>2</sup>C Header

The power System Management Bus header at JPI<sup>2</sup>C1 is used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR SMBus Header Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

### IPMB

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I<sup>2</sup>C connection on your system.

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

### Universal Serial Bus (USB)

Two USB 3.0 ports (USB 0/1) are located on the rear I/O panel. In addition, a Type A connector (USB 2) is provided to support front access (cables not included). See the table on the right for pin definitions.

USB 0/1 and Type A (USB 2) Pin Definitions	
Pin#	Description
1	VBUS
2	SSRX-
3	SSRX+
4	Ground
5	SSTX-
6	SSTX+
7	GND_DRAIN
8	D-
9	D+

### DOM Power Connectors

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

DOM PWR Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground

### SMB (I<sup>2</sup>C) for NVME Connectors

The System Management Bus (I<sup>2</sup>C) for NVME connectors are located at JNVI<sup>2</sup>C1/2. These connectors provides system management for onboard NVME devices.

### SMB (I<sup>2</sup>C) for SAS3 Backplanes Connectors

The JI<sup>2</sup>C\_EXP1/2 connectors are used with the System Management Bus (I<sup>2</sup>C) for the devices installed on the SAS3 backplanes. Connect appropriate cables to these connectors for SAS3 health monitoring and system management.

### SMB (I<sup>2</sup>C) for LCD Connector

The connector used for System Management Bus (I<sup>2</sup>C) for LCD devices is located at JI<sup>2</sup>C\_FP1. Connect a cable here to provide health monitoring and management for LCD devices.

### Unit Identifier Switch

The UID switch and LED are located next to the rear I/O ports. The rear UID LED is located next to the UID switch. The front UID switch and its UID LED are both located on the front control panel. When you press the front or rear UID switch, both front and rear UID LEDs will be turned on. Press the UID switch again to turn off the LED indicators. These indicators provide easy identification of a system unit that may be in need of service.

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

UID LED Status	
Color/State	Status

Blue: On      Unit Identified

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

### TPM Header/Port 80

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and a Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

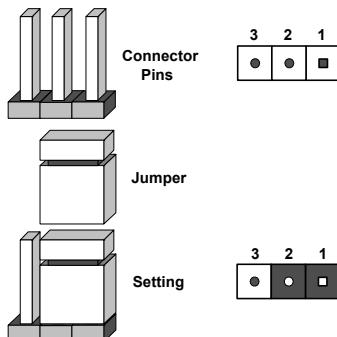
TPM/Port 80 Header Pin Definitions			
Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK4	14	SMB_DAT4
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

## 5-8 Jumper Settings

### Explanation of Jumpers

To modify the operation of the serverboard, 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 serverboard layout pages for jumper locations.

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



### CMOS Clear

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

#### To clear CMOS,

1. First power down the system and unplug the power cord(s).
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

**Note:** Do not use the PW\_ON connector to clear CMOS.

### VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

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

### Watch Dog Enable/Disable

Jumper JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause WD to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

**Note:** When enabled, the user needs to write their own application software in order to disable the Watch Dog Timer.

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

### Manufacturer's Mode

Close pins 2 and 3 of jumper JPME2 allows the user to flash the system firmware from a host server in order to modify system settings. See the table on the right for jumper settings.

ME Mode Select Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	Manufacture's Mode

### BMC Enable

Jumper JPB1 allows you to enable the embedded the ASpeed AST 2400 BMC (Baseboard Management) Controller to provide IPMI 2.0/KVM support on the serverboard. See the table on the right for jumper settings.

BMC Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

## 5-9 Onboard Indicators

### Dedicated IPMI LAN LEDs

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

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

### BMC Heartbeat LED

A BMC (Baseboard Management Controller) Heartbeat LED is located at BMC\_HB\_LED1. When BMC\_HB\_LED1 is blinking, BMC is functioning normally. See the table at right for more information.

BMC Heartbeat LED States	
Color/State	Definition
Green: Blinking	BMC Normal

### Onboard Power LED

The Onboard Power LED is located at LED2 on the motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the tables at right for more information.

Onboard PWR LED Indicator LED States	
Color/State	Definition
Off	System Power Off
Green: On	System Power On

### HDD LED

An HDD LED indicator, located at HDD\_LED1 on the motherboard, indicates the status of onboard hard drive disks including SATA devices. When HDD\_LED1 is blinking, all onboard HDDs are functioning normally. See the table at right for more information.

HDD LED Indicator States	
Color/State	Definition
Green: Blinking	HDDs Normal

### Onboard Memory\_Fault LED Indicators

The memory-fault LED indicators are located at LED\_A1 - LED\_H3 on the motherboard. Each memory LED indicates the status of the DIMM module installed on the memory slot that carries the same name. For example, if LED\_A1 is on, it indicates that an error has occurred to the DIMM module installed on the P1-DIMM\_A1 memory slot. See the tables on the right for more information.

Memory-Fault LED Indicators & Corresponding DIMM	
LED Indicator	Corresponding DIMMs
LED_A1-A3	P1DIMM_A1-A3
LED_B1-B3	P1DIMM_B1-B3
LED_C1-C3	P1DIMM_C1-C3
LED_D1-D3	P1DIMM_D1-D3
LED_E1-E3	P2DIMM_E1-E3
LED_F1-F3	P2DIMM_F1-F3
LED_G1-G3	P2DIMM_G1-G3
LED_H1-H3	P2DIMM_H1-H3

Memory-Fault LED Indicator LED State	
Color/State	Definition
Red: On	Corresponding DIMM module failed

## 5-10 SAS/SATA Ports

The 6048R-E1CR60N includes an LSI 3108 controller card in the system to support SATA 3.0/SAS 3.0 hard drives. (RAID 0, 1, 5, 6, 10, 50 and 60 supported). The SATA/SAS drives are hot-swappable units.

The 6048R-E1CR60L has an LSI 3008 controller card included in the system to support SATA 3.0/SAS 3.0 hard drives. (RAID 0, 1, and 10 supported).

**Note:** For more information on SATA HostRAID configuration, please refer to the Intel SATA HostRAID User's Guide posted on our website at <http://www.supermicro.com..>

## 5-11 Installing Software

The Supermicro FTP site contains drivers and utilities for your system at <ftp://ftp.supermicro.com>. Some of these must be installed, such as the chipset driver.

After accessing the FTP site, go into the CDR\_Images directory and locate the ISO file for your serverboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro website at <http://www.supermicro.com/products/>. Find the product page for your serverboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-6 should appear.

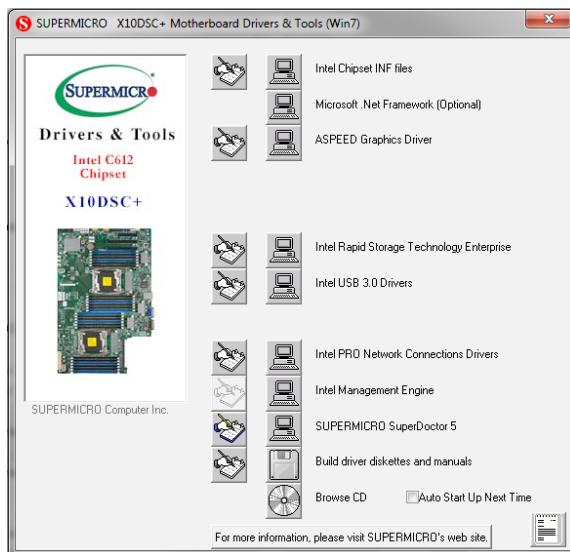


Figure 5-6. Driver/Tool Installation Display Screen

**Note:** Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

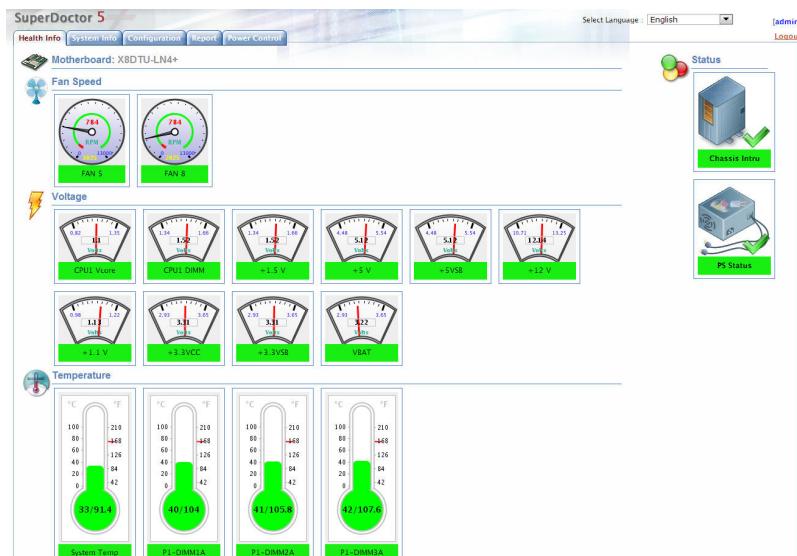
## SuperDoctor® 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SD5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

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

**Figure 5-7. SuperDoctor 5 Interface Display Screen (Health Information)**

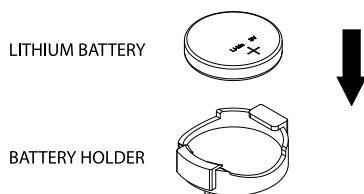


**Note:** The SuperDoctor 5 program and User's Manual can be downloaded from the Supermicro web site at [http://www.supermicro.com/products/info/sms\\_sd5.cfm](http://www.supermicro.com/products/info/sms_sd5.cfm).

## 5-12 Onboard Battery

Care must be taken to assure that the chassis cover is in place when the system is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

**Figure 5-8. Installing the Onboard Battery**



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

# Chapter 6

## Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC946TS-R2K05P chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Phillips screwdriver.

### 6-1 Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

#### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board 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 serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

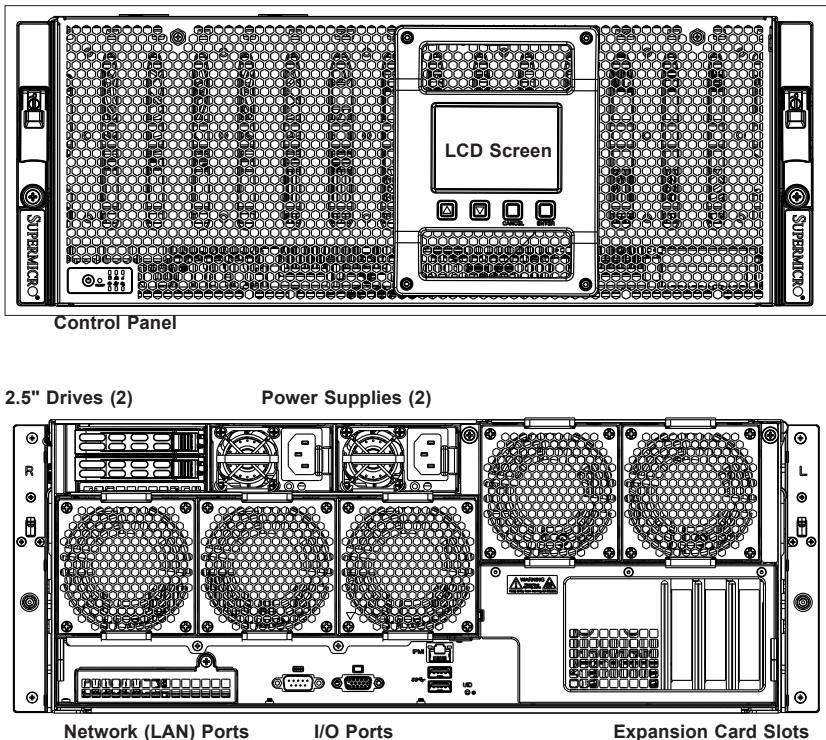


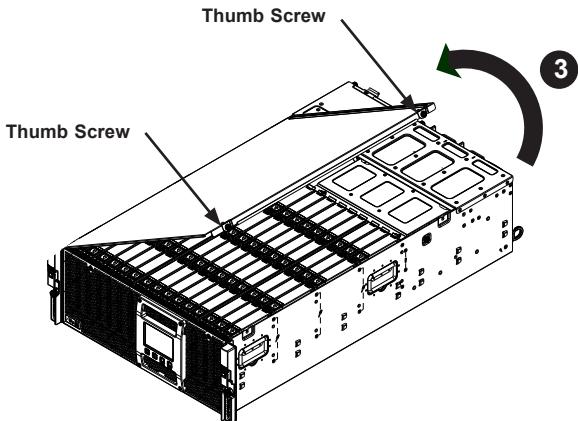
Figure 6-1. Front and Rear Chassis Views

## 6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path.

The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

## 6-3 Opening and Closing the Chassis Cover



**Figure 6-2. Removing the Chassis Cover**

### *Opening the Chassis Cover*

1. Power down the system and disconnect the AC power cords from the power supplies.
2. Release the two thumb screws on the right side of the storage chassis.
3. Lift the cover up as illustrated above.
4. The cover is designed to hold itself in an open position without additional support. Note that the cover is designed to swing open to a maximum angle of 100 degrees.

### *Closing the Chassis Cover*

1. Gently push downward on the cover, easing it into the closed position.
2. Secure the cover with the thumb screws on the right side of the storage chassis.

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

## 6-4 System Fans

Five heavy-duty, hot-swappable fans provide cooling for the system. The SC946 features three fans that can be removed individually and two that are paired in a dual fan module. The fans can be removed without powering down the system.

### Individual fans

Three cooling fans are mounted individually on the lower left of the rear of the storage chassis when facing the rear of the storage chassis.

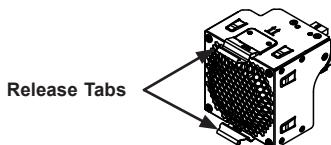


Figure 6-3. Individual Rear Fan

### Replacing a System Fan

1. With the system on, examine the fans to determine which fan has failed.
2. Simultaneously press down on the upper release tab and push up the lower release tab of the failed fan.
3. Pull the fan out of the rear of the storage chassis using the handle provided.

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

4. Place the new fan into the vacant fan bay.
5. Confirm that the fan is fully seated in the fan bay and functioning properly.

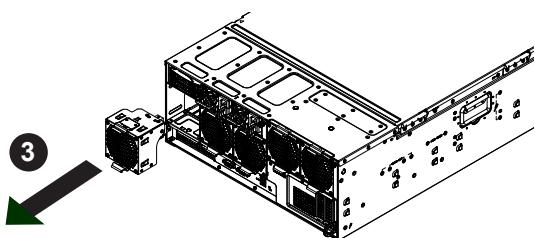


Figure 6-4. Removing an Individual Fan From the Housing

## Dual Rear Fan Module

The SC946S chassis supports two rear-mounted cooling fans in a hot-swappable dual fan unit.

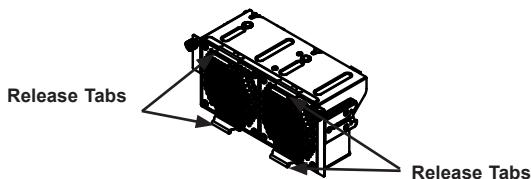


Figure 6-5. Dual Fan Module

### *Replacing a System Fan*

1. While the power is running, examine the fans to determine which fan has failed.
2. Simultaneously press the upper and lower release tabs of the dual fan module.
3. Pull the fan out of the rear of the storage chassis using the handle provided.

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

4. Place the new fan into the vacant fan bay and push it in until it clicks into the locked position.
5. Confirm that the fan is fully seated in the fan bay and functioning properly.

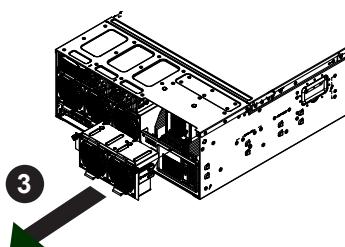
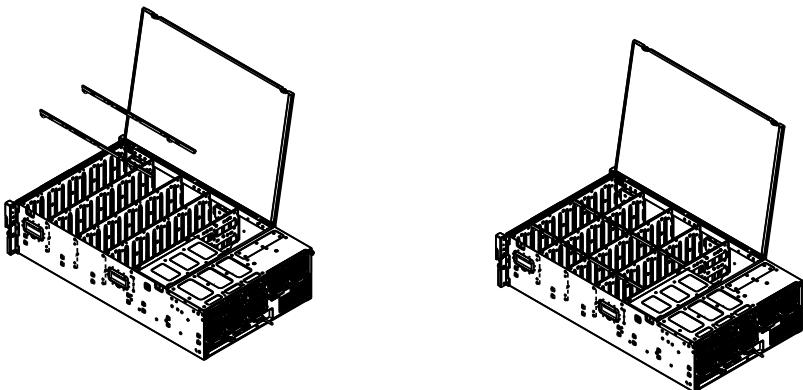


Figure 6-6. Removing the Dual Fan Module From the Housing

## 6-5 Installing the HDD Support Partitions



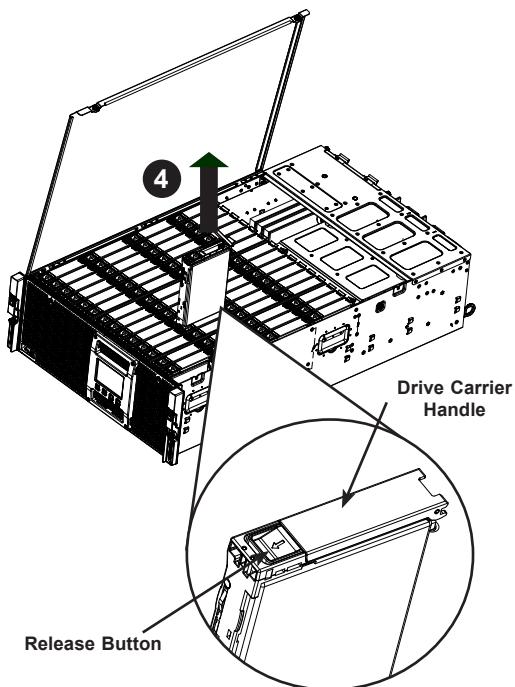
**Figure 6-7. Installing the Hard Drive Support Partitions**

Prior to installing top-loading 3.5" hard drives into the SC946S chassis, it is necessary to install the two hard drive support partitions included with the system.

### ***Installing the HDD Support Partitions***

1. Power down the system and disconnect the AC power cords from the rear of the power supplies. Open the chassis cover as described in Section 6-3.
2. Place the HDD support partitions into the storage chassis as illustrated above.
3. Flex the partition bar slightly while simultaneously holding open the latches at each end of the partition.
4. Slide the partitions onto the dividers and release the latches to clip the partition to the divider.
5. Secure the dividers to the storage chassis using five screws.
6. Close the storage chassis cover, reconnect the power cords to the rear of the power supplies and power up the system.

## 6-6 Installing Hot-Swappable 3.5" Hard Drives



**Figure 6-8. Removing a 3.5" Hard Drive Carrier**

The SC946S chassis supports sixty 3.5" hard drives in tool less hard drive carriers to simplify their removal from the chassis. These carriers also help promote proper airflow through the storage chassis.

### ***Removing Hard Drive Carriers from the Chassis***

1. Power down the system and disconnect the AC power cords from the rear of the power supplies. Open the storage chassis cover as described in Section 6-3.
2. Remove hard drives beginning from the center of the storage chassis and working out to the outer HDDs.
3. Slide the release button on the drive carrier to open the handle.
4. Use the handle to pull the drive carrier up and out of the chassis.

**Warning:** Except for short periods of time (while swapping hard drives), do not operate the server with the drives removed from the storage chassis drive bays.

## Installing Hard Drives Into Carriers

### *Installing 3.5" Hard Drives into Hard Drive Carriers*

1. With the drive carrier removed from the storage compartment, lift the breakout lever and pull out the side of the carrier as shown below.
2. Remove the dummy drive from the carrier.
3. Insert the hard drive into the drive carrier, orienting it by matching the alignment pins on the side and noting the notch in the carrier for the HDD connectors. Close the side of the carrier until it snaps into place.
4. Slide the carrier assembly into its spot in the chassis until it clicks into the locked position. Note that each adjacent row of drives faces in the alternate direction to reduce vibration from the direction of the HDD spin.

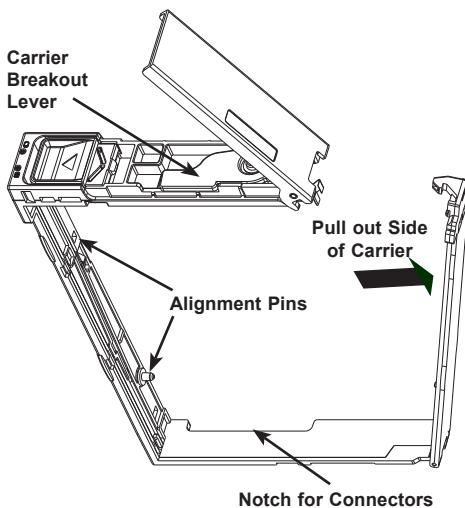


Figure 6-9. Installing a 3.5" Hard Drive into a Hard Drive Carrier

**Warning:** Enterprise level hard disk drives are recommended for use in Supermicro storage chassis and servers. For information on recommended HDDs, visit the Supermicro website at [www.supermicro.com](http://www.supermicro.com).

## Installing Hard Drive Carriers into the Storage Chassis

### *Installing 3.5" Hard Drives and Carriers into the Storage Chassis*

1. Grasp the hard drive carrier handle.
2. Push the hard drive carrier into the hard drive bay until it clicks into the locked position.

**Note:** See Figure 6-15 for a layout of the logical numbering of the hard drives.

## 6-7 Installing Optional Rear 2.5" Hot-Swappable Drives

The SC946S chassis supports two optional 2.5" hot-swappable hard drives in the rear of the chassis. These drives are mounted in carriers to simplify their removal from the chassis. It is not necessary to power down the system before removing these hard drives.

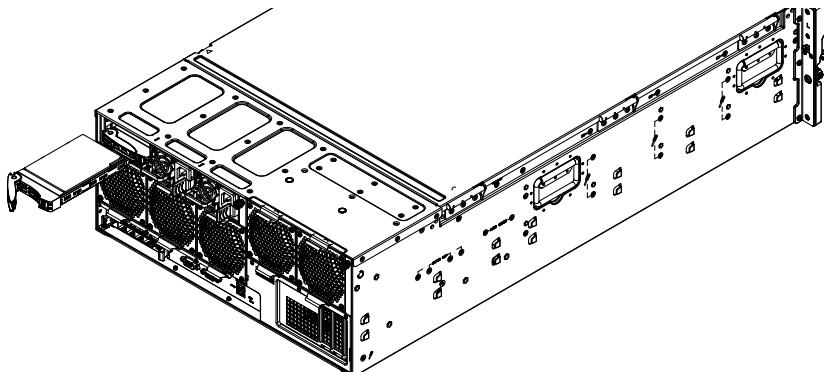


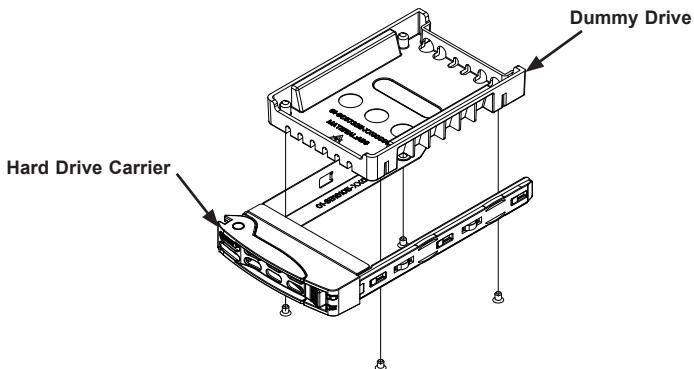
Figure 6-10. Removing a Rear 2.5" Hard Drive Carrier

## Installing Hard Drives Into the Rear Carriers

### *Removing Rear Hard Drive Carriers*

1. Push the release button on the drive carrier. This will extend the drive carrier handle.
2. Use the handle to pull the drive carrier and out of the rear hard drive bay.

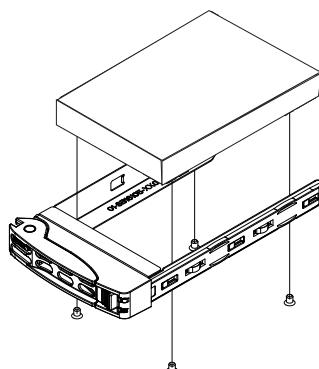
**Warning:** Except for short periods of time (while swapping hard drives), do not operate the server with the drives removed from the storage chassis drive bays.



**Figure 6-11. Removing the Dummy Drive From the Carrier**

***Installing 2.5" Hard Drives Into Carriers***

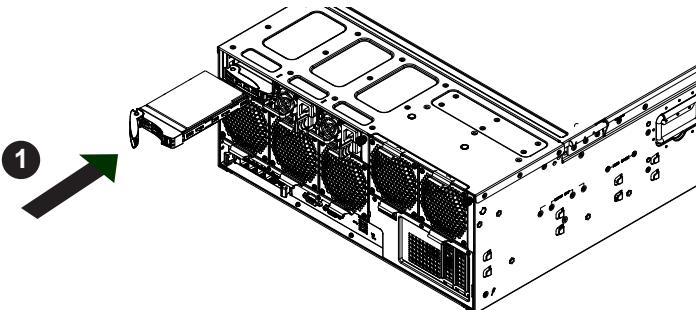
1. Remove the four screws securing the dummy drive to the hard drive carrier and set them aside for later use.
2. Lift the dummy drive up and out of the carrier
3. Place a 2.5" hard drive into the carrier with the printed circuit board side facing downward.
4. Secure the hard drive to the carrier with the screws previously set aside.



**Figure 6-12. Removing the Dummy Drive From the Carrier**

***installing Rear Hard Drive Carriers***

1. Using the drive carrier handle, push the hard drive and carrier into the rear bay of the storage chassis.
2. Push the drive carrier into the drive bay until it clicks into the locked position.



**Figure 6-13. Installing a 2.5" Rear Hard Drive Carrier**

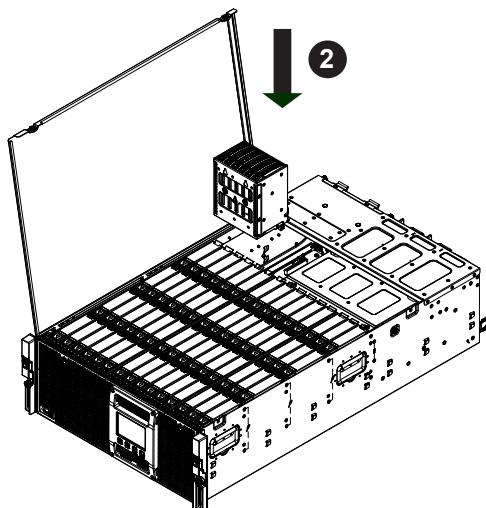
**Note:** Backplane naming rule follows.

P0 : 01 : 00 --> indicates 1st expander board, 1st drive, slot1 (out of 60 drives)

P0 : 02 : 00 --> indicates 2nd expander board, 1st drive, slot31 (out of 60 drives)

The 3108 controller will recognize both backplanes in the system and assigns them enclosure IDs. These IDs are assigned randomly regardless of how the backplanes are physically connected. When using the MegaRAID utility, the customer may see the first backplane first then the second backplane or vice versa. In either case, drives may be identified through the naming rule shown above.

## 6-8 Installing Hot-Swappable Optional NVMe Drives



**Figure 6-14. Installing the NVMe Drive Cage**

The SC946S storage chassis supports the option for six 2.5" hot-swappable NVMe drives in tool less hard drive carriers, which are mounted in a fixed NVMe drive cage. The NVMe drive cage must be installed prior to removing the drives. Once installed, the drive cage permits the NVMe drives and their carriers to be removed without powering down the system.

### Installing the NVMe Drive Cage

#### *Installing NVMe Drive Cage*

1. Power down the system and disconnect the AC power cords from the rear of the power supplies. Open the storage chassis cover as described in Section 6-3.
2. Place the NVMe drive cage into the storage chassis as illustrated above.
3. Press the NVMe drive cage into the storage chassis until it clicks into the locked position.

## Installing NVMe Drive Carriers into the NVMe Drive Cage

NVMe drives are hot-swappable and once the NVMe drive cage has been installed as described in the beginning of this section, the NVMe drives can be added to or removed from the NVMe cage without powering down the system.

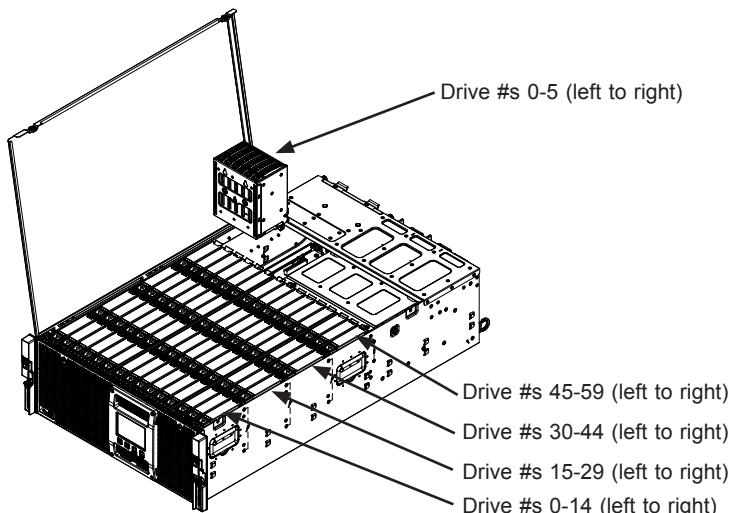
### ***Installing NVMe Drives and Carriers into the Storage Chassis***

1. Grasp the drive carrier handle.
2. Push the hard drive carrier into the hard drive bay until it clicks into the locked position.

### ***Removing NVMe Drives and Carriers from the NVMe Drive Cage***

1. Push the release button on the drive carrier. This will extend the drive carrier handle.
2. Grasp the drive carrier handle and pull the carrier up and out of the NVMe cage.

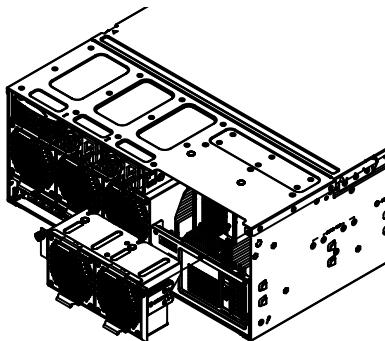
**Warning:** Enterprise level hard disk drives are recommended for use in Supermicro storage chassis and servers. For information on recommended HDDs, visit the Supermicro website at [www.supermicro.com](http://www.supermicro.com).



**Figure 6-15. Logical Numbering of Hard Drive Layout**

## 6-9 Accessing the Motherboard for Memory Upgrades and Maintenance

The following access method allows the motherboard to be accessed for memory upgrades and other maintenance without removing the motherboard tray from the chassis.



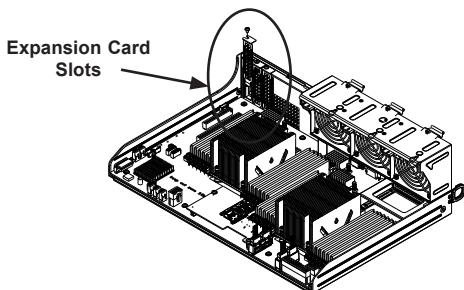
**Figure 6-16. Accessing Expansion Card Slots Through the Dual Fan Bay**

### *Accessing the Motherboard*

1. Power down the system and disconnect the AC power cords from the power supplies.
2. Simultaneously press the upper and lower release latches on the dual fan module and pull it off the rear of the chassis.
3. Open the top cover by releasing the two thumb screws on the right side of the chassis and lifting the cover up.
4. Carefully reach into the chassis through the dual fan bay and the top cover.
5. Gently remove and replace the desired components on the motherboard.
6. Return the dual fan module to the rear bay, close the top cover, tighten the thumbscrews on the cover, plug the power cords into the power supplies and power up the system.

## Expansion Card Setup

The X10DSC+ motherboard has three PCI slots available to populate with expansion cards..



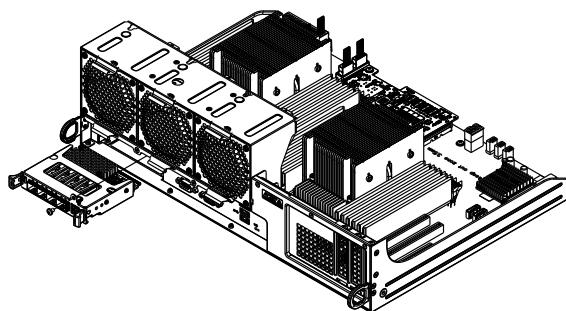
**Figure 6-17. PCI Card Slot**  
(Shown with MB removed during initial setup)

### PCI Slot Setup for Expansion Cards

#### *Installing Expansion Cards*

1. Power down the system and disconnect the AC power cords from the power supplies.
2. Pull the motherboard tray out only two inches and access the motherboard as described at the beginning of this section.
3. Remove the screw holding the PCI slot cover on each PCI card slot you want to use. Set this screw aside for later use.
4. Simultaneously slide the expansion card bracket into the PCI slot while plugging the expansion card into the corresponding slot on the motherboard.
5. Secure each card to the motherboard tray using the screw previously set aside.
6. Plug the power cords back into the power supplies, return the dual fan module to the fan bay, replace the covers and power up the system.

## Installing the SIOM Network Module



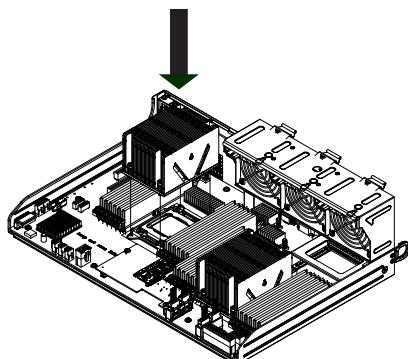
**Figure 6-18. Installing the SIOM Network Module  
(Shown with MB removed during initial setup)**

The SC946 storage chassis supports a Super In/Out Module (SIOM) which provides additional ports for expanded network capability.

### ***Installing the SIOM Network Module***

1. Power down the system and disconnect the AC power cords from the power supplies.
2. Pull the motherboard tray out only two inches and access the motherboard as described at the beginning of this section.
3. Insert the SIOM module into the SIOM bay and secure it with the two screws as illustrated above.
4. Plug the power cords back into the power supplies, return the dual fan module to the fan bay, replace the covers and power up the system.

## Installing Heatsinks



**Figure 6-19. Installing Heatsinks**  
(Shown with MB removed during initial setup)

### *Installing Heatsinks*

1. Power down the system and disconnect the AC power cords from power supplies.
2. Pull the motherboard tray out only two inches and access the motherboard as described at the beginning of this section.
3. Place the first heatsink on the motherboard as shown and secure it to the motherboard as shown with the screws provided.
4. Place the second heatsink on the motherboard as shown and secure it to the motherboard with the screws provided.
5. Plug the power cords back into the power supplies, return the dual fan module to the fan bay, replace the covers and power up the system.

## 6-10 IPMI Connector

To access the IPMI connector it is necessary to remove the center fan. It is not necessary to power down the system.

### *Accessing the IPMI Connector*

1. While the power is running, remove the center hot-swappable fan as illustrated below and described Section 6-4 in the Individual Fans section.
2. After removing the center fan, locate the IPMI receptacle, which is located behind the fan.
3. Grasp the collar of the IPMI cable that you wish to connect and plug it into the receptacle.

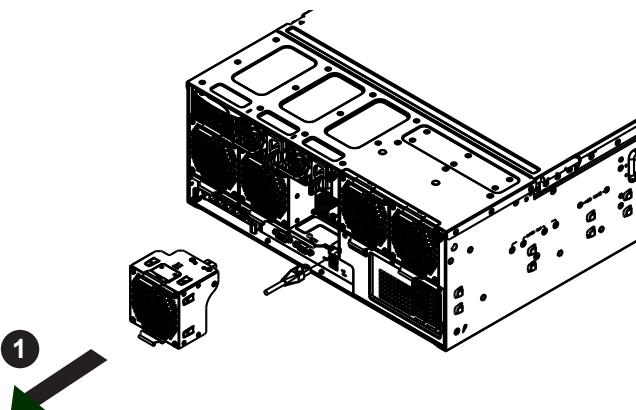


Figure 6-20. Removing an Individual Fan

## 6-11 Accessing the Backplane and Power Card

The backplane and power card are stored in a backplane tray, which is accessible through the top of the storage chassis. The following actions are to be performed by authorized personnel only.

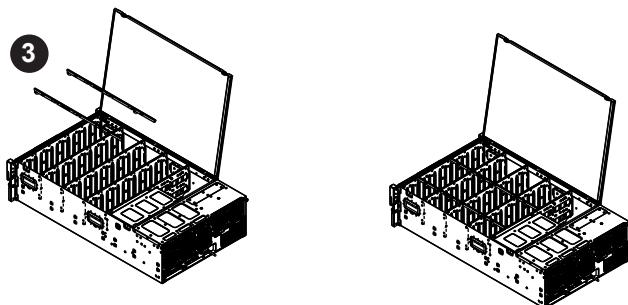


Figure 6-21. Accessing the Backplane

### ***Removing the Backplane***

1. Power down the system and disconnect the AC power cords from the power supplies. Open the top cover as described in Section 6-3.
2. Remove the four screws securing the two HDD support partitions and set them aside for later use.
3. Lift the HDD support partitions up and out of the chassis as illustrated above.
4. Loosen the five screws securing the HDD brackets: two on the right side of the chassis and three on the left.
5. Turn the bracket slightly, then lift it up and out of the chassis.
6. Remove the hard drives and carriers out the top of the storage chassis.
7. Loosen the screw securing the backplane to the chassis.
8. Lift the backplane up and out of the chassis.

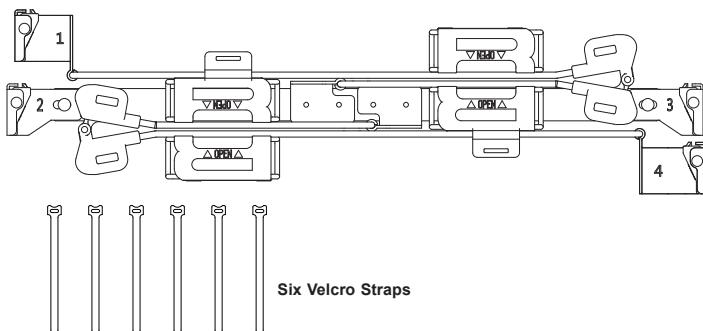
### ***Installing the Backplane***

1. Place the backplane in the chassis and tighten the screw to secure it to the storage chassis.
2. Tighten the five screws securing the HDD brackets.
3. Place the HDD support partitions in the chassis and secure them with the four screws previously set aside.
4. Return the hard drives and carriers by placing them into the storage chassis.
5. Plug the power cords into the rear of the power supplies and power up the system.

## **6-12 Installing the Cable Management Arm**

The [chassis model(s) short] chassis supports a cable management arm (CMA) that keeps the rear cables organized and clear of the rail mechanisms when the system is extended out the front of the rack for maintenance. The kit includes six fabric Velcro cable ties.

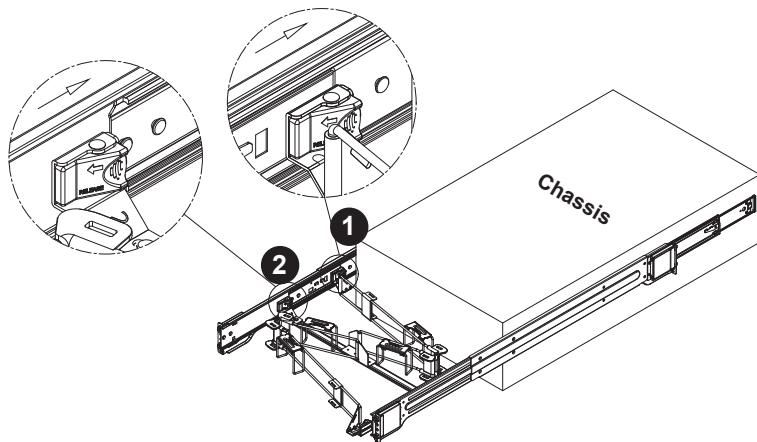
The CMA attaches to the rack mounting rails by means of four connectors. They are labeled on the connectors 1, 2, 3, and 4.



**Figure 6-22. Cable Management Arm and Velcro Straps**

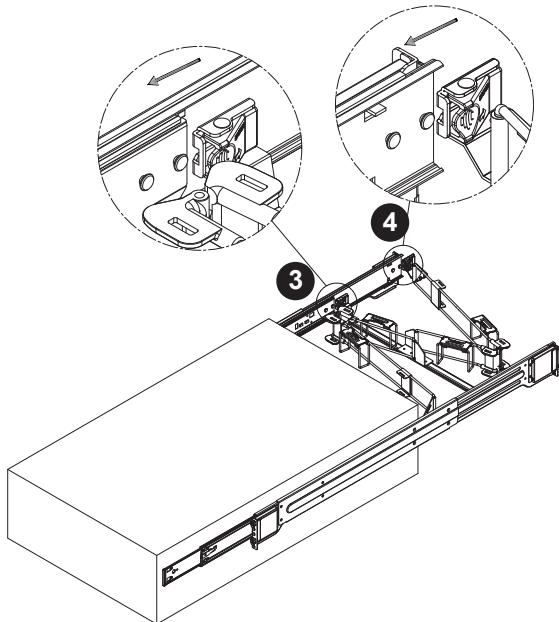
### ***Installing the Cable Management Arm***

1. Slide CMA connector #1 forward onto the two posts on the rear of the right inner rail (right side when viewed from the front). It snaps into place.
2. Slide CMA connector #2 forward onto the two posts on the rear of the right middle rail. It snaps into place.

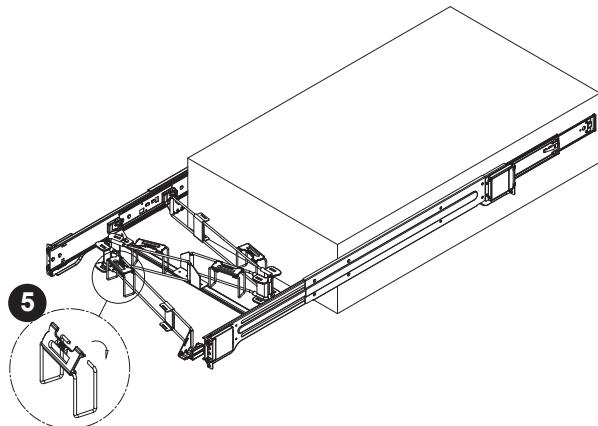


**Figure 6-23. Installing Connectors 1 and 2**

3. Slide CMA connector #3 forward onto the two posts on the rear of the left middle rail. It snaps into place.
4. For CMA connector #4, align the metal tabs with the slots on the rear of the left outer rail and push it forward. It snaps into place.

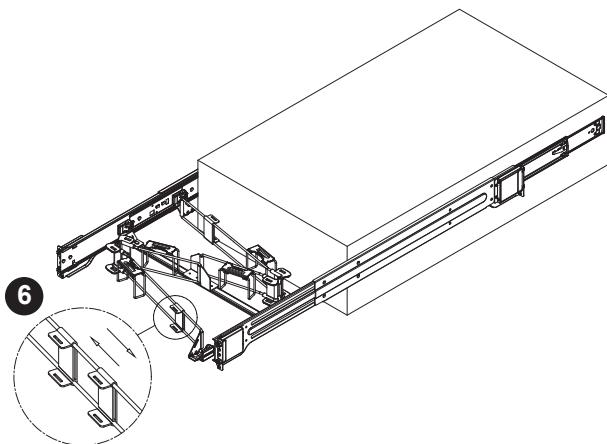


**Figure 6-24. Installing Connectors 3 and 4**



**Figure 6-25. Routing the Cables**

5. Open the four red plastic caps and route the cables into the wire carrier.
6. If necessary, adjust the U-brackets to clear chassis components.



**Figure 6-26. Adjusting the U-Brackets**

7. Use the six Velcro straps to secure the cables to the CMA. Use a strap on either side of each joint and one on each U-bracket, inserting it through the slot on the bracket.
8. Slide the chassis forward and backward in the rack to confirm that the cable management arm is operating smoothly. If necessary, loosen the straps for smoother movement.

If at some time you must remove the cable management arm, follow this procedure.

***Removing the Cable Management Arm***

1. Remove cables from the CMA, releasing the Velcro straps and the red plastic caps.
2. For CMA connector #4, pull the metal release tab toward the center of the rack and slide the connector toward the rear to release it.
3. For CMA connectors #3, #2, and #1, depress the front edge of the yellow plastic rocker lock, and slide the connector toward the rear to release it.

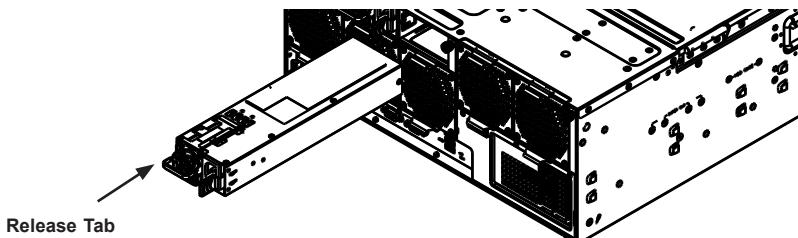
## 6-13 Power Supply

The SC946S storage chassis features redundant 1000W (N+1) 96% efficient Digital Titanium Level power supplies. These power supplies are auto-switching capable, which enables them to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Redundant power supplies are hot-swappable and can be changed without powering down the system. New units can be ordered directly from Supermicro (see contact information in the Preface).

### ***Changing the Power Supply***

1. Remove the AC power cord from the power supply that you wish to remove from the storage chassis.
2. Press the release tab and pull the power supply out of the storage chassis using the handle provided.
3. Replace the failed power module with another of the same model.
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 new power module.



**Figure 6-27. Installing the Power Supply**

# Chapter 7

## BIOS

### 7-1 Introduction

This chapter describes the AMI BIOS setup utility for the X10DSC+. The BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS setup utility.

**Note:** For AMI BIOS recovery, please refer to the UEFI BIOS Recovery Instructions in Appendix C.

### Starting BIOS Setup Utility

To enter the AMI BIOS setup utility, press the <Delete> key while the system is booting up.

**Note:** In most cases, the <Delete> key is used to invoke the AMI BIOS setup utility.

Each main BIOS menu option is described in this manual. The AMI BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

**Note:** the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.

The AMI BIOS setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F4>, <Enter>, <Esc>, arrow keys, etc.

**Note:** Options printed in **Bold** are default settings.

### How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS setup utility. This setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

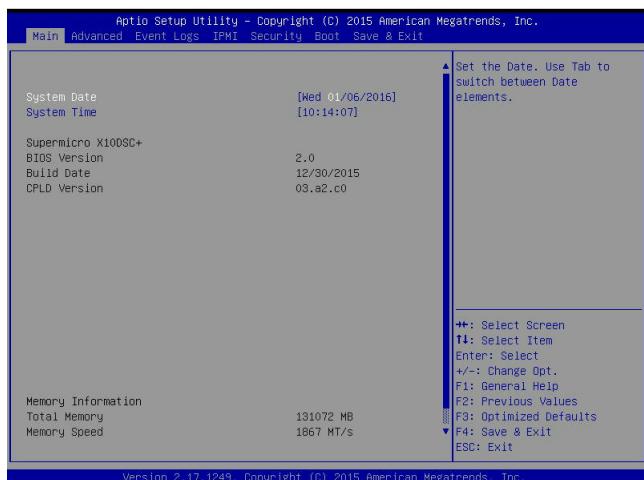
## How to Start the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

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

## 7-2 Main Setup

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



The following Main menu items will be displayed:

### **System Date/System Time**

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values using the keyboard. Press the *<Tab>* key or the arrow keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format.

**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

### **Supermicro X10DSC+**

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

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

**CPLD (Complex Programmable Logic Device) Version:** This item displays the CPLD version used in the system.

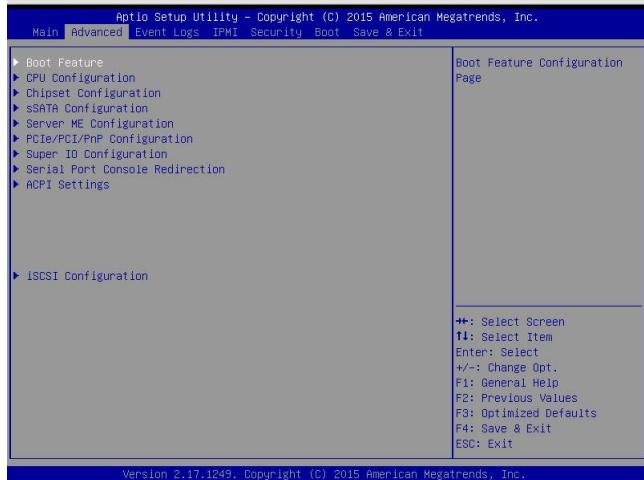
### **Memory Information**

**Total Memory:** This item displays the total size of memory available in the system.

**Memory Speed:** This item displays the default speed of the memory modules installed in the system.

## 7-3 Advanced Setup Configurations

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



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

### ►Boot Feature

#### Quiet Boot

Use this item to select the screen display between POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and **Disabled**.

#### AddOn ROM Display Mode

Use this item to set the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM display setting. Select Force BIOS to use the Option ROM display mode set by the system BIOS. The options are **Force BIOS** and **Keep Current**.

#### Bootup Num-Lock State

Use this item to set the Power-on state for the Numlock key. The options are **Off** and **On**.

### **Wait For 'F1' If Error**

Select Enabled to force the system to wait until the <F1> key is pressed when an error occurs. The options are **Disabled** and **Enabled**.

### **INT19 Trap Response**

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to **Immediate**, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup immediately and allow the drives that are attached to the host adaptors to function as bootable disks. If this item is set to **Postponed**, the ROM BIOS of the host adaptors will not capture Interrupt 19 immediately to allow the drives attached to the adaptors to function as bootable devices at bootup. The options are **Immediate** and **Postponed**.

### **Re-try Boot**

Select **EFI Boot** to allow the BIOS to automatically reboot the system from an **EFI** boot device after the initial boot failure. Select **Legacy Boot** to allow the BIOS to automatically reboot the system from a **Legacy** boot device after its initial boot failure. The options are **Disabled**, **Legacy Boot**, and **EFI Boot**.

## **Power Configuration**

### **CPLD Watch Dog Function**

Select Enabled to allow the CPLD (Complex Programmable Logic Device) Watch Dog timer to reboot the system when it is inactive for more than 5 minutes. The options are **Enabled** and **Disabled**.

### **Watch Dog Function**

Select Enabled to allow the Watch Dog timer to reboot the system when it is inactive for more than 5 minutes. The options are **Enabled** and **Disabled**.

### **Power Button Function**

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

### **Restore on AC Power Loss**

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

## ►CPU Configuration

This submenu displays the following CPU information as detected by the BIOS. It also allows the user to configure CPU settings.

- Processor Socket
- Processor ID
- Processor Frequency
- Processor Max Ratio
- Processor Min Ratio
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- CPU 1 Version
- CPU 2 Version

### Clock Spread Spectrum

Select Enabled to allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and **Enabled**.

### Hyper-Threading (All)

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

### Cores Enabled

This feature allows the user to determine the number of CPU cores to be enabled. Enter "0" to enable all cores. The default setting is **0**, which enables all CPU cores in the system.

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

Select Enable for Execute Disable Bit Technology support, which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding

illegal codes to overwhelm the processor to damage the system during an attack. The options are **Enable** and **Disable**. (Refer to Intel's and Microsoft's websites for more information.)

#### **PPIN Control**

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

#### **Hardware Prefetcher (Available when supported by the CPU)**

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

#### **Adjacent Cache Prefetch (Available when supported by the CPU)**

Select **Enable** for the CPU to prefetch both cache lines for 128 bytes as comprised. Select **Disable** for the CPU to prefetch both cache lines for 64 bytes. The options are **Disable** and **Enable**.

**Note:** Please reboot the system for the changes made on this setting to take effect. Please refer to Intel's website for detailed information.

#### **DCU (Data Cache Unit) Streamer Prefetcher (Available when supported by the CPU)**

If set to **Enable**, the DCU Streamer prefetcher will prefetch data streams from the cache memory to the DCU (Data Cache Unit) to speed up data accessing and processing to enhance CPU performance. The options are **Disable** and **Enable**.

#### **DCU IP Prefetcher**

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

#### **Direct Cache Access (DCA)**

Select **Enable** to use Intel DCA (Direct Cache Access) Technology to improve the efficiency of data transferring and accessing. The options are **Auto**, **Enable**, and **Disable**.

#### **X2 APIC (Advanced Programmable Interrupt Controller)**

Based on Intel's Hyper-Threading architecture, each logical processor (thread) is assigned 256 APIC IDs (APIIDs) in 8-bit bandwidth. When this feature is set to **Enable**, the APIC ID will expand(X2) from 8 bits to 16 bits to provide 512 APIIDs to each thread to enhance CPU performance. The options are **Disable** and **Enable**.

## AES-NI

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

## Intel Virtualization Technology

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

# ► Advanced Power Management Configuration

## Advanced Power Management Configuration

### Power Technology

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

*\*If the option is set to Custom or Energy Efficient, the following items will display:*

### Energy Performance Tuning (Available when Power Technology is set to Custom or Energy Efficient)

Select Enable for energy-performance tuning support to enhance energy efficiency, which might compromise system performance. The options are **Enable** and **Disable**.

### Energy Performance Bias Setting (Available when Power Technology is set to Custom or Energy Efficient)

Use this feature to select an appropriate power setting and performance level for the system. Select Performance to maximize system performance by using maximum amount of power. Select Balanced Performance to downgrade system performance a notch by using less power. Select Power to maximize power saving, which may greatly compromise system performance as a result. Select Balanced Power to downgrade power saving a notch and allow the system to use more power to boost system performance. The options are **Performance**, **Balanced Performance**, **Balanced Power**, and **Power**.

### Energy Efficiency Turbo (Available when Power Technology is set to Custom or Energy Efficient)

Select Enable for the system to operate at turbo mode with reduced power consumption so that your machine can achieve maximum system performance with the maximum power efficiency possible. The options are **Enable** and **Disable**.

*\*If the option is set to Custom, the following items will display:*

## ► CPU P State Control (Available when Power Technology is set to Custom)

### **EIST (P-states)**

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

### **Turbo Mode**

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

### **P-state Coordination**

This item is used to change the P-state (Power-Performance State) coordination type. P-state is also known as "SpeedStep" for Intel processors. Select **HW\_ALL** to change the P-state coordination type for hardware components only. Select **SW\_ALL** to change the P-state coordination type for all software installed in the system. Select **SW\_ANY** to change the P-state coordination type for a software program in the system. The options are **HW\_All**, **SW\_All**, and **SW\_Any**.

## ► CPU C State Control (Available when Power Technology is set to Custom)

### **Package C State limit**

Use this item to set the limit on the C-State package register. The options are **C0/1 state**, **C2 state**, **C6 (non-Retention) state**, and **C6 (Retention) state**.

### **CPU C3 Report**

Select **Enable** to allow the BIOS to report the CPU C3 state (ACPI C2) to the operating system. During the CPU C3 state, the CPU clock generator is turned off. The options are **Enable** and **Disable**.

### **CPU C6 Report (Available when Power Technology is set to Custom)**

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

### **Enhanced Halt State (C1E)**

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

### **► CPU T State Control (Available when Power Technology is set to Custom)**

#### **ACPI (Advanced Configuration Power Interface) T-States**

If this item is set to **Enable**, CPU throttling will be supported by the operating system to reduce power consumption. The options are **Enable** and **Disable**.

### **► Chipset Configuration**

**Warning!** Please set the correct settings for the items below. A wrong configuration setting may cause the system to malfunction.

### **► North Bridge**

This feature allows the user to configure the settings for the Intel North Bridge.

### **► IIO Configuration**

#### **EV DFX (Device Function On-Hide) Features**

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

### **► IIO1 Configuration**

#### **IIO2 (IIO1 PCIe Port 1)**

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are **x4x4**, **x8**, and **Auto**.

#### **IIO1 Port 1A Link Speed**

This item configures the link speed of a PCI-E port specified by the user. The options are **Gen 1 (Generation 1) (2.5 GT/s)**, **Gen 2 (Generation 2) (5 GT/s)**, and **Gen 3 (Generation 3) (8 GT/s)**.

### **IOU0 (IIO1 PCIe Port 2)**

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

### **IIO1 Port 2A Link Speed**

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

### **IIO1 Port 2C Link Speed**

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

### **IOU1 (IIO1 PCIe Port 3)**

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

### **IIO1 Port 3A Link Speed**

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

## **►IIO2 Configuration**

### **IIO2 (IIO2 PCIe Port 1)**

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4, x8, and **Auto**.

### **IIO2 Port 1A Link Speed**

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

### **IOU0 (IIO2 PCIe Port 2)**

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

### **IIO2 Port 2A Link Speed**

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

### **IOU1 (IIO2 PCIe Port 3)**

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

### **IIO2 Port 3A Link Speed**

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s), and **Gen 3 (Generation 3) (8 GT/s)**.

## **►IOAT Configuration**

### **Enable IOAT**

Select Enable to enable Intel I/OAT (I/O Acceleration Technology), which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The options are **Enable** and **Disable**.

### **No Snoop**

Select Enable to support no-snoop mode for each CB device. The options are **Disable** and **Enable**.

### **Relaxed Ordering**

Select Enable for relaxed ordering support, which will allow certain transactions to be processed and completed prior to other transactions that have already been queued by overriding the strict ordering rules of PCI processing. The options are **Disable** and **Enable**.

## **► Intel VT for Directed I/O (VT-d)**

### **Intel VT for Directed I/O (VT-d)**

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

### **Interrupt Remapping**

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

## ►QPI (Quick Path Interconnect) Configuration

### ►QPI General Configuration

#### ►QPI Status

The following information will display:

- Number of CPU
- Number of IIO
- Current QPI Link Speed
- Current QPI Link Frequency
- QPI Global MMIO Low Base/Limit
- QPI Global MMIO High Base/Limit
- QPI PCIe Configuration Base/Size

#### Link Frequency Select

Use this item to select the desired frequency for QPI Link connections. The options are 6.4GB/s, 8.0GB/s, 9.6GB/s, **Auto**, and Auto Limited.

#### Link L0p Enable

Select Enable for Link L0p support to reduce power consumption. The options are **Enable** and Disable.

#### Link L1 Enable

Select Enable for Link L1 support to reduce power consumption. The options are **Enable** and Disable.

#### Early Snoop (Available when the OS and the CPU support this feature)

Select Enable for Early Snoop support to enhance system performance. The options are Enable, Disable, and **Auto**.

#### Home Dir Snoop with IVT-Style OSB (Available when the OS and the CPU support this feature)

Select Enable for Home-Direct Snoop with IVT-Style\_OSB support to enhance system performance. The options are Enable, Disable, and **Auto**.

### **Isoc Mode**

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

## **►Memory Configuration**

This submenu allows the user to configure Integrated Memory Controller (IMC) settings.

### **Enforce POR**

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

### **Memory Frequency**

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1333, 1400, 1600, 1800, 1867, 2000, 2133, 2200, and 2400.

### **Data Scrambling**

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

### **DRAM RAPL (Running Average Power Limit) Baseline**

Use this feature to set the run-time power-limit baseline for DRAM modules. The options are **Disable**, DRAM RAPL Mode 0, and **DRAM RAPL Mode 1**.

### **Set Throttling Mode**

Throttling improves CPU reliability and reduces power consumption via automatic-voltage control during CPU idle states. The options are **Disabled** and **CLTT** (Closed Loop Thermal Throttling).

### **A7 Mode**

Select Enable to support A7 (Addressing) mode to improve memory performance. The options are **Enable** and **Disable**.

## **►DIMM Information**

This item displays the status of a DIMM module as detected by the AMI BIOS.

- P1 DIMMA1 ~ P2 DIMMH3

## ►Memory RAS (Reliability\_Availability\_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

### RAS Mode

When Independent is selected, all memory modules operate independently. When Mirror is selected, the motherboard maintains two identical copies of all data in memory for data backup. When Lockstep is selected, the motherboard uses two areas of memory to run the same set of operations in parallel to boost performance. The options are **Independent**, Mirror, and Lockstep Mode.

### Memory Rank Sparing

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

### Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the corrections to the requestor (the original source). When this item is set to Enable, the IO hub will read and write back one cache line every 16K cycles if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Enable** and Disable.

### Patrol Scrub Interval

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

### Demand Scrub

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select Enable to use Demand Scrubbing for ECC memory correction. The options are **Enable** and Disable.

### Device Tagging

Select Enable to support device tagging. The options are **Disable** and Enable.

## ►South Bridge Configuration

The following South Bridge information will display:

## ►USB Configuration

- USB Module Version
- USB Controllers
- USB Devices

### Legacy USB Support

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

### XHCI Hand-Off

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

### EHCI Hand-Off

This item is for operating systems that do not support Enhanced Host Controller Interface (EHCI) hand-off. When this item is enabled, EHCI ownership change will be claimed by the EHCI driver. The settings are **Enabled** and **Disabled**.

### Port 60/64 Emulation

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

### USB 3.0 Support

Select Enabled for USB 3.0 support. The options are **Smart Auto**, **Auto**, **Enabled**, and **Disabled**.

### EHCI1

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #1 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are **Disabled** and **Enabled**.

## **EHCI2**

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #2 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

## **XHCI Pre-Boot Driver**

Select Enabled to load Intel XHCI pre-boot driver. The settings are **Enabled** and Disabled.

# **►sSATA Configuration**

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

## **sSATA Controller**

This item enables or disables the onboard SATA controller supported by the Intel PCH chip. The options are **Enabled** and Disabled.

## **Configure sSATA as**

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

*\*If the item above "Configure sSATA as" is set to AHCI, the following items will display:*

## **sSATA AHCI ALPM**

Select Enabled for the sSATA controller to automatically generate link requests in partial or slumber mode when there is no commands for the system to execute. The options are Disabled, and **Enabled**.

## **sSATA Port 0~ Port 3**

This item displays the information detected on the installed on the sSATA port. specified by the user.

- Model number of drive and capacity

## **sSATA Port 0~ Port 3**

Select Enabled to enable an sSATA port specified by the user. The options are Disabled and **Enabled**.

**sSATA Port 0 ~ Port 3 Hot Plug**

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a sSATA disk drive installed on this port without shutting down the system. The options are **Enabled** and **Disabled**.

**sSATA Port 0 ~ Port 3 Spin Up Device**

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are **Enabled** and **Disabled**.

**Port 0 ~ Port 3 sSATA Device Type**

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

*\*If the item above "Configure sSATA as" is set to IDE, the following items will display:*

**sSATA Port 0~ Port 3**

This item indicates that an sSATA port specified by the user is installed (present) or not.

**Port 0~ Port 3 sSATA Device Type (Available when a sSATA port is detected)**

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

*\*If the item above "Configure sSATA as" is set to RAID, the following items will display:*

**sSATA AHCI ALPM**

Select Enabled for the sSATA controller to automatically generate link requests in partial or slumber mode when there is no commands for the system to execute. The options are **Disabled**, and **Enabled**.

**sSATA RAID Option ROM/UEFI Driver**

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

**SATA/sSATA RAID Boot Select**

Select SATA Controller to boot the system from a SATA RAID device. Select sSATA Controller to boot the system from a sSATA RAID device. Select Both to boot the system either from a SATA RAID device or from an sSATA RAID device. Please

note that the option-Both is not supported by the Windows Server 2012/R2 OS. The options are Both, SATA Controller, and **sSATA Controller**.

#### **sSATA Port 0 ~ Port 3 Hot Plug**

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a sSATA disk drive installed on this port without shutting down the system. The options are **Enabled** and **Disabled**.

#### **sSATA Port 0 ~ Port 3 Spin Up Device**

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are **Enabled** and **Disabled**.

#### **Port 0 ~ Port 3 sSATA Device Type**

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

## **►Server ME (Management Engine) Configuration**

This feature displays the following system ME configuration settings.

- General ME Configuration
- Operational Firmware Version
- ME Firmware Type
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1
- ME Firmware Status #2
  - Current State
  - Error Code

## **►PCIe/PCI/PnP Configuration**

The following items will display:

- PCI Bus Driver Version

- PCI Devices Common Settings

#### **PCI PERR/SERR Support**

Select Enabled to support PERR (PCI/PCI-E Parity Error)/SERR (System Error) runtime error reporting for a PCI/PCI-E slot. The options are Enabled and **Disabled**.

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

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

#### **SR-IOV (Available if the system supports Single-Root Virtualization)**

Select Enabled for Single-Root IO Virtualization support. The options are Enabled and **Disabled**.

#### **Maximum Payload**

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

#### **Maximum Read Request**

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

#### **ASPM Support**

Use this item to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are **Disabled** and Auto.

**Warning:** Enabling ASPM support may cause some PCI-E devices to fail!

#### **MMIOHBase**

Use this item to select the I/O base memory size according to memory-address mapping for the PCH chip. The base memory size must be between 4032G to 4078G. The options are **56TB**, 40TB, 24T, 3T, 2T, and 1TB.

#### **MMIO High Size**

Use this item to select the high I/O memory size according to memory-address mapping for the PCH chip. The options are **256G**, 128G, 512G, and 1024G.

## PCI Devices Option ROM Settings

**CPU2 PCI-E 3.0x8 Slot1 OPROM/CPU2 PCI-E 3.0x16 Slot2 OPROM/CPU2 PCI-E 3.0x16 Slot3 OPROM/CPU1 SAS AOM1 (Add-On Module#1) Slot4 OPROM/CPU1 SIOM Card Slot5 OPROM**

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are Disabled, **Legacy**, and **EFI**.

## Onboard NVMe1 Option ROM/Onboard NVMe2 Option ROM/Onboard Video Option ROM

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are Disabled and **EFI**.

## VGA Priority

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

## Onboard LAN1 Option ROM/Onboard LAN2 Option ROM

Use this option to select the type of device installed in LAN Port1 or LAN Port2 for system boot. The default setting for LAN1 Option ROM is **PXE**, and for LAN2 Option ROM is **Disabled**.

## Network Stack

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

### IPv4 PXE Support (Available when Network Stack is set to Enabled)

Set this item to Enabled to activate IPv4 PXE Support. The options are **Enabled** and **Disabled**.

### IPv6 PXE Support (Available when Network Stack is set to Enabled)

Set this item to Enabled to activate IPv6 PXE Support. The options are **Enabled** and **Disabled**.

## ►Super IO Configuration

### Super IO Chip AST2400

### ►Serial Port 1 Configuration

#### Serial Port 1

Select Enabled to enable the onboard serial port specified by the user. The options are **Enabled** and **Disabled**.

## Device Settings

This item displays the base I/O port address and the Interrupt Request address for a serial port specified by the user. The default setting for Serial Port 1 is IO=3F8h IRQ=4.

## Change Port 1 Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 1. Select **Auto** for the BIOS to automatically assign the base I/O and IRQ address to a serial port specified.

The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

## ►Serial Port Console Redirection

### COM 1

#### COM 1 Console Redirection

Select Enabled to enable COM Port 1 Console Redirection, which will allow a client machine to be connected to a host machine at a remote site for networking. The options are **Disabled** and **Enabled**.

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

## ►COM 1 Console Redirection Settings

### Terminal Type

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

### Bits Per second

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

### Data Bits

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

### Parity

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

### Stop Bits

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

### Flow Control

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

### VT-UTF8 Combo Key Support

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

### Recorder Mode

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

### Resolution 100x31

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

### Legacy OS Redirection Resolution

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

### Putty KeyPad

Use this item to select Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, **LINUX**, **XTERMR6**, **SCO**, **ESCN**, and **VT400**.

## Redirection After BIOS Post

Use this item to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When "Bootloader" is selected, legacy Console Redirection is disabled before booting the OS. When "Always Enable" is selected, legacy Console Redirection remains enabled while the OS boots up. The options are **Always Enable** and **Bootloader**.

## SOL

### SOL Console Redirection

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

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

## ► SOL Console Redirection Settings

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

### Terminal Type

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

### Bits Per second

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

### Data Bits

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

### Parity

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

the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

### **Stop Bits**

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

### **Flow Control**

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

### **VT-UTF8 Combo Key Support**

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

### **Recorder Mode**

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

### **Resolution 100x31**

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

### **Legacy OS Redirection Resolution**

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

### **Putty KeyPad**

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, **LINUX**, **XTERMR6**, **SCO**, **ESCN**, and **VT400**.

### **Redirection After BIOS Post**

Use this feature to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When this feature is set to Bootloader, legacy Console Redirection is disabled before booting the OS. When this feature is set to Always Enable, legacy Console Redirection remains enabled upon OS boot. The options are **Always Enable** and **Bootloader**.

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

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

### **(EMS) Console Redirection**

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

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

### **►EMS Console Redirection Settings (Available when EMS Console Redirection is enabled)**

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

#### **Out-of-Band Management Port**

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

#### **Terminal Type**

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

#### **Bits Per Second**

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

#### **Flow Control**

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop data-sending when the receiving buffer is full. Send a "Start" signal to start data-sending when

the receiving buffer is empty. The options are **None**, Hardware RTS/CTS, and Software Xon/Xoff.

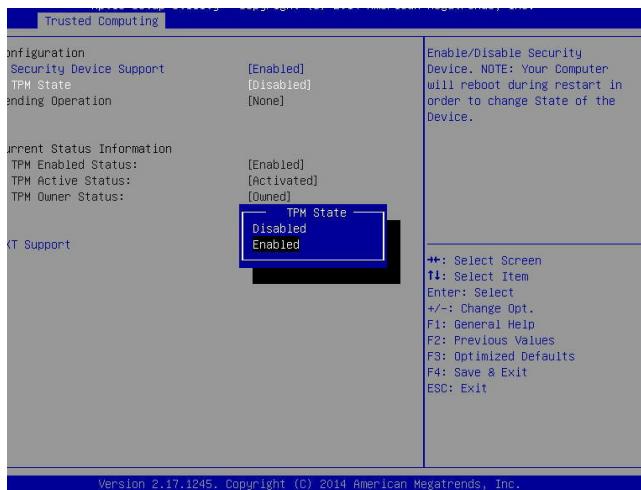
The following settings will be displayed:

#### Data Bits, Parity, Stop Bits

### ►Enabling TPM in the BIOS

The steps below describe the proper procedure on how to enable the TPM in the BIOS. This process is necessary to activate support in the system before you can start using the TPM.

1. Enter the BIOS setup screen. You may do this either from the IPMI remote console or from the server directly using KVM. Reboot the system and press the <Del> key as the system boots until you reach the BIOS screen.
2. You will be presented with the BIOS setup main screen. Using the arrow keys, navigate to the Advanced tab. From there, navigate down and select the "CPU Configuration" option as shown below. Press <Enter>.



3. You will be taken to the CPU Configuration page. Using the arrow keys, navigate down to the "Intel Virtualization Technology" option and press <Enter>. Select "Enable" and press <Enter>.
4. Once you have enabled Virtualization support, press your <Esc> key until you are back to the Advanced tab. Navigate down to the "Trusted Computing" option and press <Enter>.

5. The Trusted Computing window will appear. Select "TPM State" and press <Enter>.
6. From the window that pops up, select "Enabled" and press <Enter>.
7. You must save your changes and reset for the changes to take effect. Scroll to the Save & Exit tab and select "Save Changes and Reset."

## ►Intel TXT (LT-SX) Configuration

This submenu allows the user to configure the following TXT settings.

### TXT Support

Select Enabled to enable Intel Trusted Execution Technology (TXT) support. The options are **Disabled** and **Enabled**.

**Note:** If the option for this item (TXT Support) is set to Enabled, be sure to disable EV DFX (Device Function On-Hide) support for the system to work properly. (EV DFX is under "IIO Configuration" in the "Chipset/North Bridge" submenu on Page 4-10). For more information on TPM, please refer to the TPM manual at [http://www.supermicro.com/manuals/other/AOM-TPM-9655V\\_9655H.pdf](http://www.supermicro.com/manuals/other/AOM-TPM-9655V_9655H.pdf)

## ►ACPI Settings

### WHEA Support

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

### High Precision Event Timer

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

### NUMA (Available when the OS supports this feature)

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

## ►iSCSI Configuration

This item displays iSCSI configuration information:

### **iSCSI Initiator Name**

Use this item to enter the name of the iSCSI Initiator, which is a unique name used in the world. The name must be in the IQN format. The following submenu will be available for configuration:

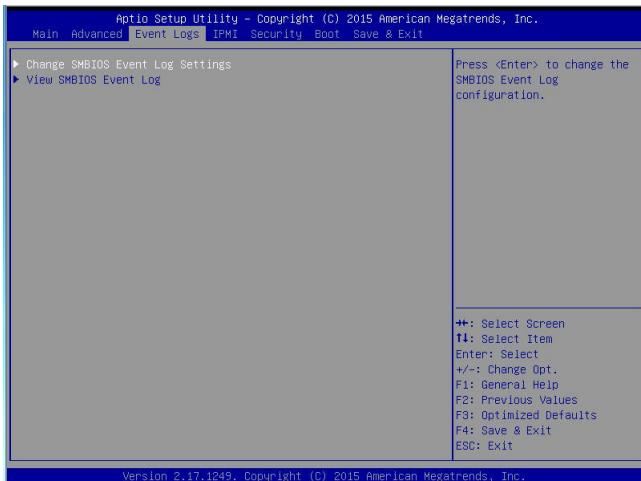
►Add an Attempt

►Delete Attempts

►Change Attempt Order

## 7-4 Event Logs

This submenu allows the user to configure Event Log settings.



### ►Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

#### Enabling/Disabling Options

##### SMBIOS Event Log

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

##### Runtime Error Logging Support

Select Enable to support Runtime Error logging. The options are **Enabled** and **Disabled**. If this item is set to Enabled, the following item will be available for configuration:

##### Erasing Settings

##### Erase Event Log

Select Yes to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No**, **Yes**, **Next reset**, and **Yes, every reset**.

##### When Log is Full

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

## SMBIOS Event Log Standard Settings

### Log System Boot Event

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

### MECI (Multiple Event Count Increment)

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

### METW (Multiple Event Count Time Window)

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

**Note:** Please reboot the system for the changes to take effect.

## ►View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. The following categories are displayed:

### Date/Time/Error Code/Severity

## 7-5 IPMI

This submenu allows the user to configure IPMI settings.



The following items will be displayed:

- BMC (Baseboard Management Controller) Firmware Revision
- IPMI Status

### ►System Event Log

#### Enabling/Disabling Options

#### SEL Components

Select Enabled to enable all system event logging support at bootup. The options are **Enabled** and **Disabled**.

#### Erasing Settings

#### Erase SEL

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

## When SEL is Full

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

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

## ►BMC Network Configuration

The following items will be displayed:

- IPMI LAN Selection
- IPMI Network Link Status

### Update IPMI LAN Configuration

Select Yes for the system BIOS to automatically reset the following IPMI settings upon next system boot. The options are **Yes** and **No**.

#### Configuration Address Source (Available when the item above - Update IPMI LAN Configuration is set to Yes)

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

#### Station IP Address

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

#### Subnet Mask

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

#### Station MAC Address

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

#### Gateway IP Address

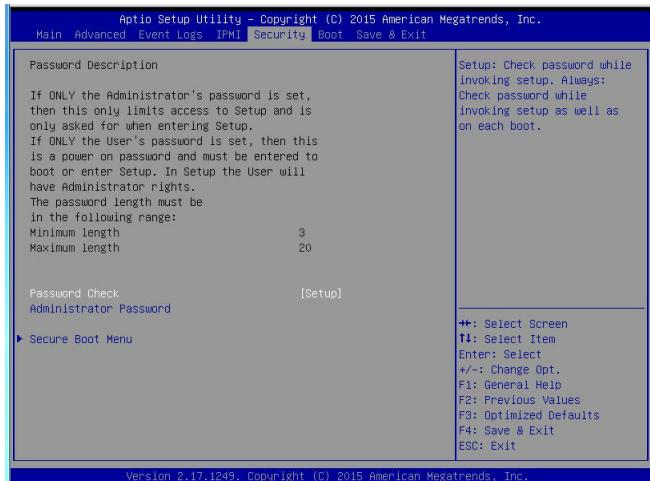
This item displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

## VLAN

Select Enabled to enable onboard LAN connections to be used for Intel Virtualization Technology. The options are **Enable** and **Disable**.

## 7-6 Security Settings

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



### Password Check

Select Setup for the system to prompt for a password upon entering the BIOS setup utility. Select Always for the system to prompt for a password at bootup and upon entering the BIOS Setup utility. The options are **Setup** and **Always**.

### Administrator Password

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

### User Password (Available after an Administrator Password is entered)

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

## ►Secure Boot Menu

The following items will display:

- System Mode
- Secure Boot
- Vendor Keys

### Secure Boot

Select Enable for secure boot support to ensure system security at bootup. The options are Enabled and **Disabled**.

### Secure Boot Mode

This item allows the user to select the desired secure boot mode for the system. The options are Standard and **Custom**.

### CSM Support

Select Enabled to support Compatibility Support Module (CSM) to enhance system security. The options are **Enabled** and Disabled.

## ►Key Management

### Provision Factory Default Keys

Select Enable to install all manufacturer default keys for the following system security settings. The options are **Disabled** and Enabled.

### ►Enroll All Factor Default Keys

Select Enable to install all manufacturer defaults for the following system security settings. The options are **Yes** and No.

### ►Save All Secure Boot Variables

This feature allows the user to set and save the following Secure Boot Variable settings:

### ►Platform Key (PK)

This feature allows the user to configure and save platform key settings.

## ►Key Exchange Key

This feature allows the user to configure and save Key-Exchange-Key settings.

## ►Authorized Signatures

This feature allows the user to set and save authorized signatures and grant access to those whose names appear on the list.

## ►Forbidden Signatures

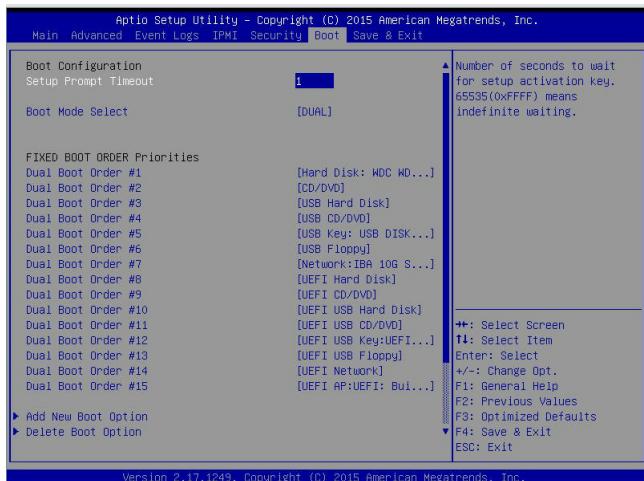
This feature allows the user to set and save the forbidden signatures and deny the access to those whose names appear on the list.

## ►Authorized TimeStamps

This feature allows the user to set and save the timestamps for authorized signatures to indicate when these signatures were entered into the system.

## 7-7 Boot Settings

This submenu allows the user to configure Boot settings for this system:



## Boot Configuration

### Setup Prompt Timeout

Use this item to enter the number of seconds for the system to wait for the setup activation key before entering the Setup utility. Enter 65535 (0xFFFF) to wait indefinitely.

### Boot Mode Select

Use this item to select the type of device to be used for system boot. The options are Legacy, UEFI, and **Dual**.

### Fixed Boot Order Priorities

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

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

- Boot Option #1 - Boot Option #15

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

- Boot Option #1 - Boot Option #7

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

- Boot Option #1 - Boot Option #8

### ► Add New Boot Option

Use this item to select a new boot device to add to the boot priority list.

#### Add New Boot Option

Use this feature to select the target boot device to add to the boot priority list.

#### Path for Boot Option

Use this feature to create a new path for boot option.

#### Boot Option File Path

Use this feature to set a new file path for boot option.

#### Create

Use this feature to create a new boot option for the new device.

## ►Delete Boot Option

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

### Delete Boot Option

Select the target boot device to delete from the boot priority list.

## ►Hard Disk Drive BBS Priorities

- Legacy Boot Order #1

## ►Network Drive BBS Priorities

- Legacy Boot Order #1 - # 8

## ►USB Key Drive BBS Priorities

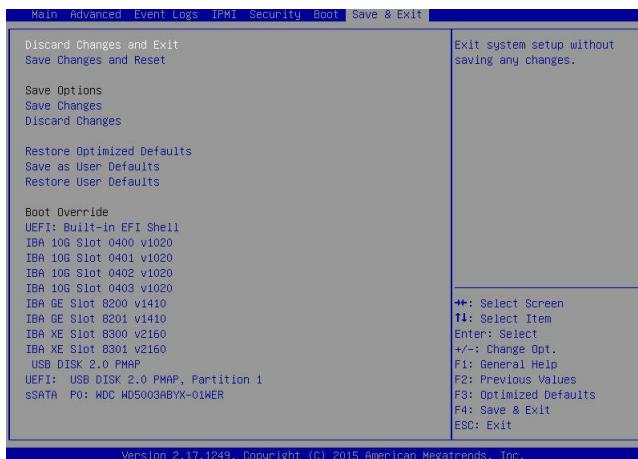
- Legacy Boot Order #1

## ►UEFI USB Key Drive BBS Priorities

- UEFI Boot Order #1

## 7-8 Save & Exit

This submenu allows the user to configure the following Save & Exit settings:



**Discard Changes and Exit**

Select this item to exit from the BIOS setup without making any permanent changes to the system configuration, and reboot the computer.

**Save Changes and Reset**

When you have completed the system configuration changes, select this item to leave the BIOS setup utility and reboot the computer for the new system configuration parameters to take effect. Select Yes and press <Enter> to save the changes you've made and reboot the system.

**Save Options****Save Changes**

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

**Discard Changes**

Select this item to discard all the changes and return to the AMI BIOS setup utility. Select Yes and press <Enter> to discard all changes made.

**Restore Defaults**

Select this item and press <Enter> to load the manufacturer default settings which are designed for maximum system performance but not for maximum stability.

**Save As User Defaults**

Select this item and press <Enter> to save the current BIOS settings as user's default settings for future use.

**Restore User Defaults**

Select this item and press <Enter> to retrieve the user-defined default settings that were previously saved to be used as current default settings.

**Boot Override**

This feature allows the user to override the boot priority sequence in the Boot submenu and immediately boot the system with another device specified by the user. This is a one-time override.

## **Notes**

## Appendix A

### BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed at each system boot, errors may occur.

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

**Fatal errors** will not allow the system to continue with bootup procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

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

Motherboard BIOS Error Beep Codes		
Beep Code/LED	Error Message	Description
1 beep	Refresh	Ready to boot
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	No Con-In or No Con-Out devices	Con-In includes USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL.  Con-Out includes Video Controller, PCI or Serial Console Redirection, IPMI SOL.
1 beep per device	Refresh	1 beep or each USB device detected
IPMI Error Codes		
1 continuous beep	System OH	System Overheat

## **Notes**

## Appendix B

# System Specifications

### Processors

Single or dual Intel® Xeon E5-2600 (v3) Series processors

Note: Please refer to our web site for a complete listing of supported processors.

### Chipset

Intel C612 chipset

### BIOS

16 Mb AMI® SPI Flash ROM

### Memory Capacity

Twenty-four DIMM sockets supporting up to 1.5 TB of Load Reduced (LRDIMM) or 768 GB of Registered (RDIMM) ECC DDR4-2133/1866/1600 memory

Note: see Section 5-6 for details.

### Drive Bays

Sixty top-loading hot-swap drive bays for 3.5" SAS or SATA drives and two rear hot-swap drive bays for 2.5" SAS or SATA drives

### Expansion Slots

Up to three PCI-E expansion cards may be added to the system. See Section 6-9.

### Serverboard

X10DSC+ (Extended ATX form factor)

Dimensions: 11 x 16.90 in (279 x 429 mm)

### Chassis

SC946TS-R2K05P, 4U rackmount

Dimensions: (WxHxD) 17.6 x 7 x 35.66 in. (447 x 178 x 906 mm)

## **Weight**

Gross: 225 lbs. (102 kg.)

## **System Cooling**

Five 8-cm system fans

## **Power Supply**

Rated Output Power: 2000W (Part# PWS-2K05A-1R)

Rated Output Voltages: 100-127V: +12V (83A), +12Vsb (2.1A), 200-240V: +12V (167A), +12Vsb (2.1A)

## **System Input Requirements**

AC Input Voltage: 100 - 240V AC auto-range

Rated Input Current: 110V: 12 - 8A, 1280W output @ 180-240V: 8 - 6A

Rated Input Frequency: 50 to 60 Hz

## **Operating Environment**

Operating Temperature: 10° to 35° C (32° to 95° F)

Non-operating Temperature: -40° to 60° C (-40° to 140° F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-operating Relative Humidity: 5% to 95% (non-condensing)

## **Regulatory Compliance**

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

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

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

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

## Notes

(continued from front)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.