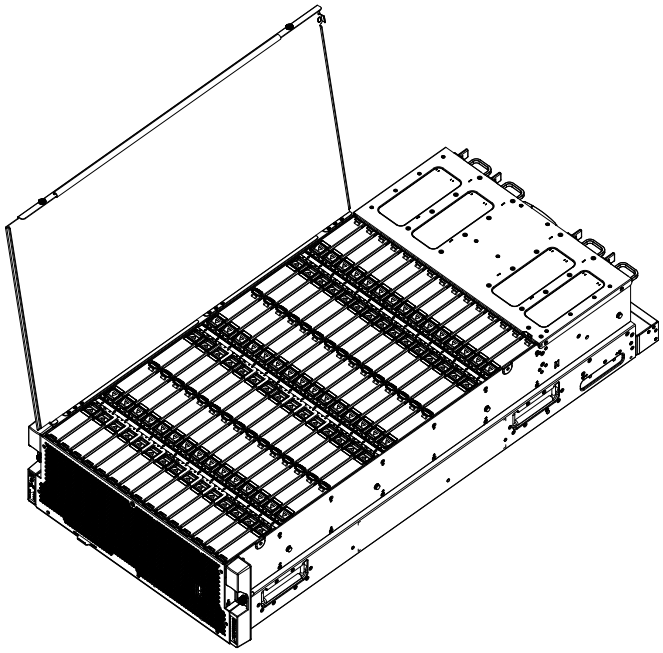
6048R-E1CR90L

SUPERSTORAGE SERVER



USER'S MANUAL

Revision 1.0

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, and 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 website at 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 Super Micro Computer, Inc. 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, SUPER MICRO COMPUTER, INC. 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. Supermicro'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".

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.

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.

Manual Revision 1.0

Release Date: September 14, 2016

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 chassis. Installation and maintainance should be performed by experienced technicians only.

This document lists compatible parts available when this document was published. Refer to the Supermicor web site for updates on supported parts and configurations.

This manual may be periodically updated without notice. Please check the Supermicro Web site for possible updates.(http://www.supermicro.com).

Notes

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

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

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

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

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

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

Contents

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 (General Information) support@supermicro.com (Technical Support)
Website:	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 (General Information) support@supermicro.nl (Technical Support) rma@supermicro.nl (Customer Support)
Website:	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
Website:	www.supermicro.com.tw

Chapter 1

Introduction

1.1 Overview

The SuperStorage server 6048-E1CR90L is a high-end solution comprised of two main subsystems: the SC946E1C-R3KB 4U chassis and the X10DSC-TP4S dual processor motherboard. The server features up to ninety 3.5" or 2.5" SAS3 hard drives in hot-swap top-loading drive bays. This design offers extra high-density of drive-per-space ratio. Equipped with four 1000W (N+1) redundant high-efficiency power supplies and five 80 mm high-speed, low-vibration, hot-swap cooling fans, it is a reliable and trouble-free storage server.

It is useful for IOPS-intensive storage applications, database applications such as MySQL or Casandra, virtual storage environments, single instance storage and data deduplication.

In addition to the motherboard and chassis, several included parts are listed below.

Main Parts List		
Description	**Part Number**	**Quantity**
Backplane	BPN-SAS3-946BA	Three
Backplane	BPN-SAS3-826TQ-B2B	One
Add-on Card / Module	AOM-SAS3-946E90-P	One
Fans	FAN-0159L4	Four
CPU passisve heatsink	SNK-P0058PSC	Two
Add-on module (choice of one)	AOC-MGP-I2 AOC-MGP-I4 AOC-MTGN-I2S AOC-MTG-I4S	One
Rail kit	MCP-290-00124-0N	One set

1.2 Unpacking the System

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

Caution: When shipping the system, remove the drives from the chassis for travel, whether the chassis is shipped alone or in a rack. The original Supermicro packaging includes boxes for the drives in carriers.

1.3 System Features

The following table provides an overview of the main features of the 6048-E1CR90L. Refer to Appendix C for additional specifications.

System Features
Motherboard
X10DSC-TP4S
Chassis
SC946E1C-R3KB 4U, slide mounting rails and cable management arm
CPU
Dual Intel Xeon E5-2600 v4/v3 family
Memory
Eight 288-pin DDR4 DIMM slots support up to: • 1 TB of ECC 3DS LRDIMM memory • 512 GB of ECC LRDIMM memory • 256 GB of ECC RDIMM memory Type: 2400/2133/1866/1600/1333MHz ECC DDR4 SDRAM 72-bit DIMM sizes: LRDIMM--64GB, 32GB; RDIMM--32GB, 16GB, 8GB, 4GB
Chipset
Intel PCH C612
Drives Bays
Ninety 3.5" or 2.5" SAS/SATA drives (top loading) Two 2.5" rear SAS/SATA drive bays
Network
Quad LAN with Intel XL710 10G SFP+ SIOM card for multiple I/O options
Storage Controllers
Two Avago SAS3008 IT Mode
Power
Four (N+2) redundant 800W/1000W modules, 80Plus Titanium level
Cooling
Five 80-cm hot-swap redundant PWM rear exhaust fans
Dimensions
(WxHxD) 17.6 x 7.0 x 35.7 in. (447 x 178 x 906 mm)

1.4 Chassis Views

Control Panel

Power switches and status LEDs are located on the control panel on the front of the chassis.

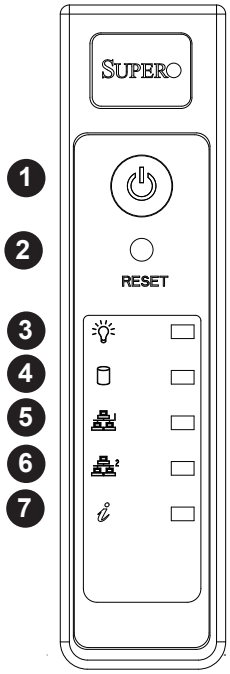


Figure 1-1. Control Panel

Control Panel Features		
Item	**Features**	**Description**
1	Power button	The main power switch applies or removes primary power from the power supply to the server but maintains standby power.
2	UID button/LED	The uinit identification (UID) button turns on or off the blue light function of the Information LED and a blue LED on the rear of the chassis. These are used to locate the server in large racks and server banks.
3	Power LED	Indicates power is being supplied to the system power supply units. This LED is illuminated when the system is operating normally.
4	HDD LED	Indicates HDD activity
5	NIC LED	Indicates network activity on the LAN when flashing.
6	NIC LED	Indicates network activity on the LAN when flashing.
7	Information LED	Alerts operator to several states, as noted in the table below

Information LED	
Status	**Description**
Continuously on and red	An overheat condition has occured. (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.

Chassis Front

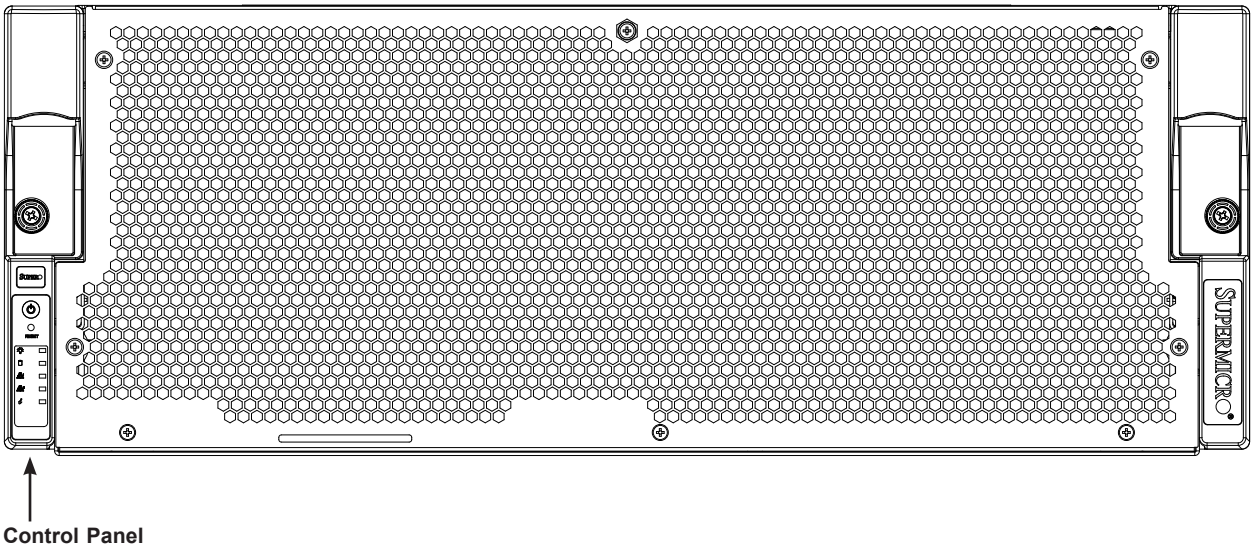


Figure 1-2. Front View

Chassis Rear

The illustration below shows the features included on the rear of the chassis. Power supply modules display status lights.

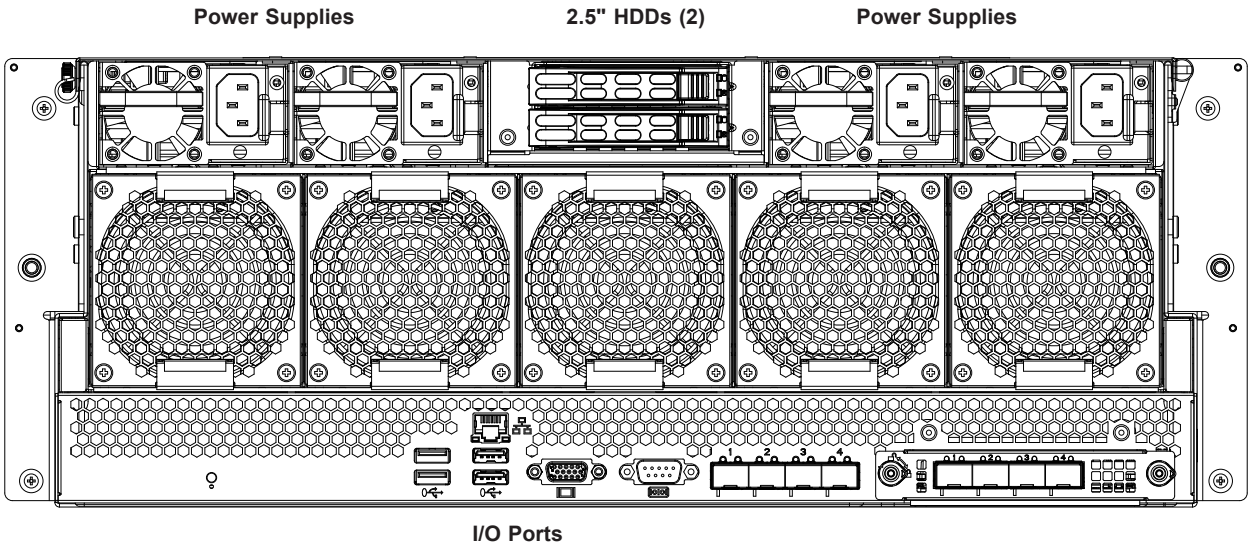


Figure 1-3. Rear View

Chassis Top

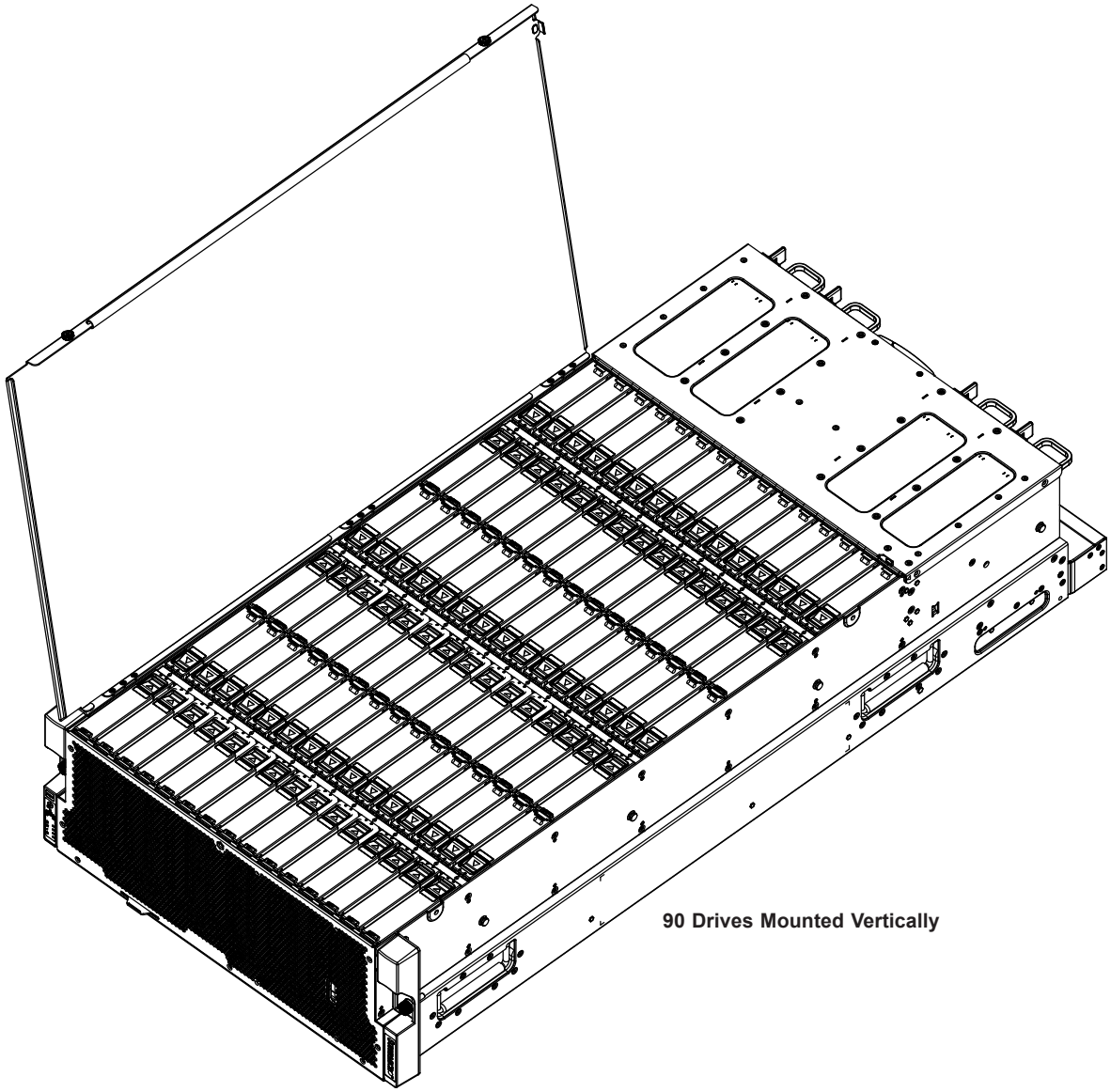


Figure 1-4. Top View

1.5 Motherboard Layout

Below is a layout of the X10DSC-TP4S with jumper, connector and LED locations. See the following table for descriptions. For detailed descriptions, pinout information and jumper settings, refer to Chapter 4.

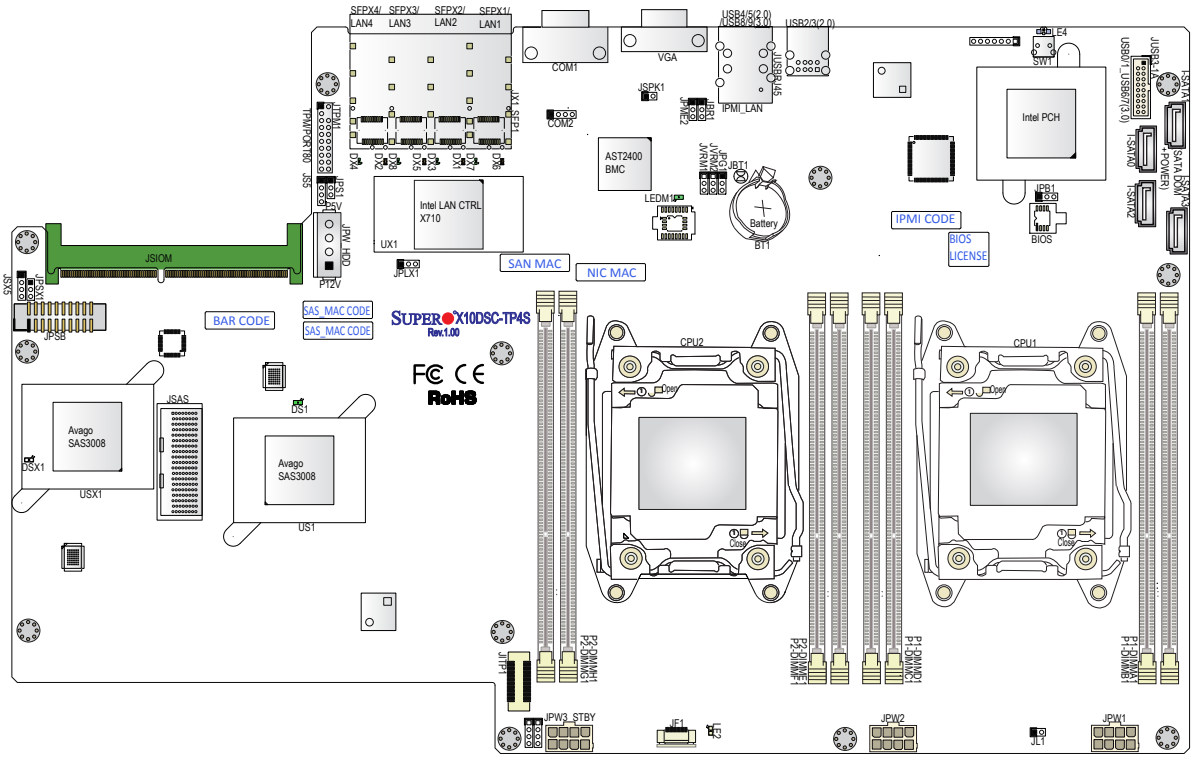


Figure 1-5. Motherboard Layout

Motherboard Jumpers, Connectors, and Indicators

Jumper	Description	Default Setting
JBT1	Clear CMOS/Reset BIOS Configuration	See Chapter 2
JPB1	BMC (Baseboard Management Controller) Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPLX1	Onboard LAN Enable (for the X710 LAN controller located at UX1)	Pins 1-2 (Enabled)
JPME2	Manufacture (ME) Mode Select	Pins 1-2 (Normal)
JPS1	SAS Enable for the 3008 SAS controller located at US1	Pins 1-2 (Enabled)
JPSX1	SAS Enable for the 3008 SAS controller located at USX1	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
Battery (BT1)	Onboard CMOS battery (See Chpt. 3 for Used Battery Disposal)
COM1/COM2	Backplane COM port (COM1)/4-pin onboard serial port header (COM2)
JF1	Front Panel Control connector
JL1	Chassis intrusion header
JPSB	Power distribution board header (Part No: PDB-PT946-S386)
JPW1/2	12V 8-pin power connectors
JPW3_STBY	8-pin power connector for onboard 12V power and 12V standby power
JPW_HDD	4-pin (+5V/+12V) power connector for HDD use
JSAS	SAS 3008 add-on module connector used for SAS expanders (Part No: AOC-SAS3-946E90)
JSIOM	Supermicro I/O module connector (SIOM) for SIOM card use
JSPK1	Internal speaker/buzzer
JTPM1	TPM (Trusted Platform Module)/Port 80 header
IPMI_LAN	IPMI_dedicated LAN support by the ASpeed AST2400 controller
I-SATA 0-3	I-SATA 3.0 connections (0-3) supported by Intel PCH (I-SATA1 & I-SATA 3 support SMCI SuperDOM connections w/power pins built-in)
SFP/LAN1-SFP/LAN4 (JX1_SFP1)	10G SFP (small form-factor pluggable) Networking/LAN ports 1-4
SW1 (UID)	UID (Unit Identification) switch
(BP) USB 2/3 (2.0)	Backpanel USB 2.0 ports 2/3, 4/5 (USB1)
USB0/1 (2.0)/USB6/7 (3.0) (JUSB3-1A) (Optional)	USB 2.0 connections 0/1 or USB 3.0 connections 6/7 (optional)
USB4/5 (2.0)/USB8/9 (3.0) (JUSBRJ45)	Backpanel USB 2.0 ports 4/5 or USB 3.0 ports 8/9
VGA	Backpanel VGA port

LED	Description	State	Status
DS1	SAS Heartbeat LED for SAS connections supported by the 3008 SAS controller located at US1	Green: Blinking	SAS Normal
DSX1	SAS Heartbeat LED for SAS connections supported by the SAS 3008 controller located at USX1	Green: Blinking	SAS Normal
DX1, 2, 5, 6	SFP/LAN1-SFP/LAN4 Link LEDs	Green: On	10Gb Link
DX3, 4, 7, 8	SFP/LAN1-SFP/LAN4 Activity LEDs	Green: Blinking	LAN Active
LE2	Onboard PWR LED	On	Power On
LE4	Rear UID LED	Blue: On	Unit Identified
LEDM1	BMC Heartbeat LED	Green: Blinking	BMC Normal

System Block Diagram

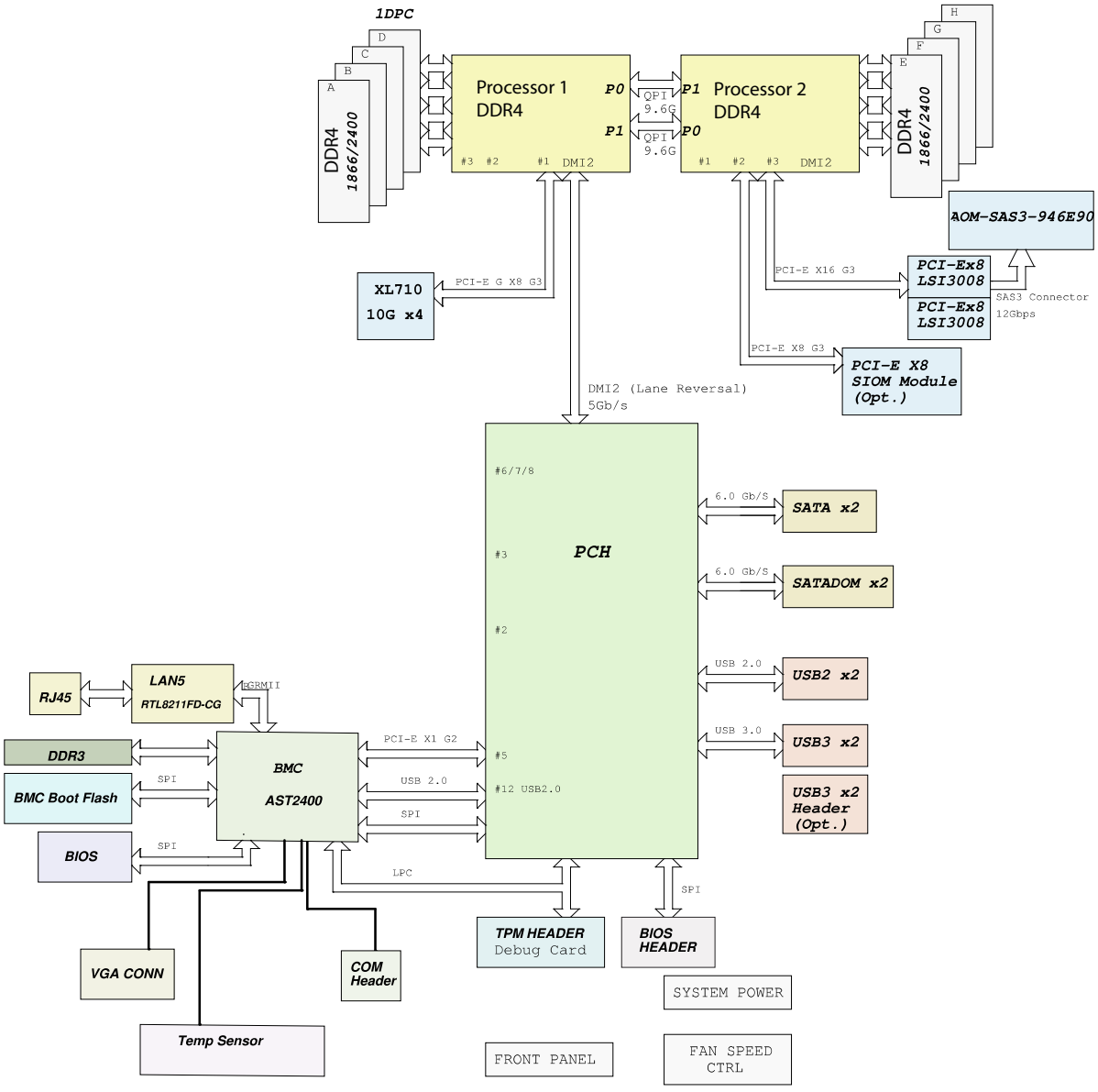


Figure 1-6. Intel PCH C612 Chipset: System Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your motherboard. See the System Specifications appendix for the actual specifications of your motherboard.

Chapter 2

Installation in a Rack

This chapter provides advice and instructions for mounting your system in a rack.

2.1 Preparing for Setup

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

Choosing a Setup Location

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

Rack Precautions

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

Server Precautions

- Review the electrical and general safety precautions in Chapter 3.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components at the bottom of the rack first and then work your way up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges and voltage spikes and to keep your system operating in case of a power failure.
- Allow any drives and power supply modules to cool before touching them.
- When not servicing, always keep the front door of the rack and all covers/panels on the servers closed to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

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

Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
- Slide rail mounted equipment is not to be used as a shelf or a work space.
- In any instance of pulling the system from the rack, always use a rack lift and follow all associated safety precautions.

2.2 Installing the Rails

There are a variety of rack units on the market, which may require a slightly different assembly procedure. Do not use a two post "telco" type rack. This rail set fits a rack between 28" and 34" deep.

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

Identifying the Rails

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

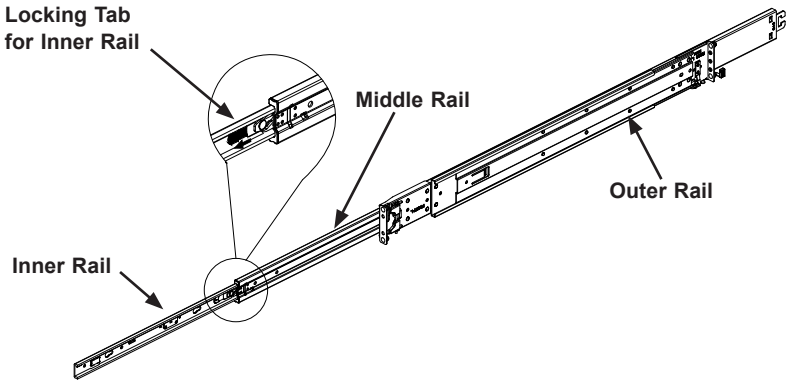


Figure 2-1. Identifying the Outer Rail, Middle Rail and Inner Rail
(Right Rail Assembly Shown)

Locking Tabs

Each inner rail has two locking tabs. One keeps the inner rail, and therefore the chassis, from accidentally pulling completely out of the rack. The other holds the chassis in a fully extended position when it is pulled out of the rack for servicing.

There is a small locking tab on the middle rail. It keeps the extended middle rail from sliding back into the outer rail. Push in the tab to release it. If the inner rail is installed in the middle rail, the locking tab is released automatically.

Releasing the Inner Rail

To mount the rails onto the chassis, first release the inner rail from the outer rails.

Each inner rail has a locking latch that prevents the server from coming completely out of the rack when when the chassis is pulled out for servicing.

1. Pull the inner rail out of the outer rail until it is fully extended.
2. Pull the thin plastic locking tab to release the inner rail.
3. Pull the inner rail all the way out.

Note: Keep track of which inner rail is left or right. The inner rails are not marked

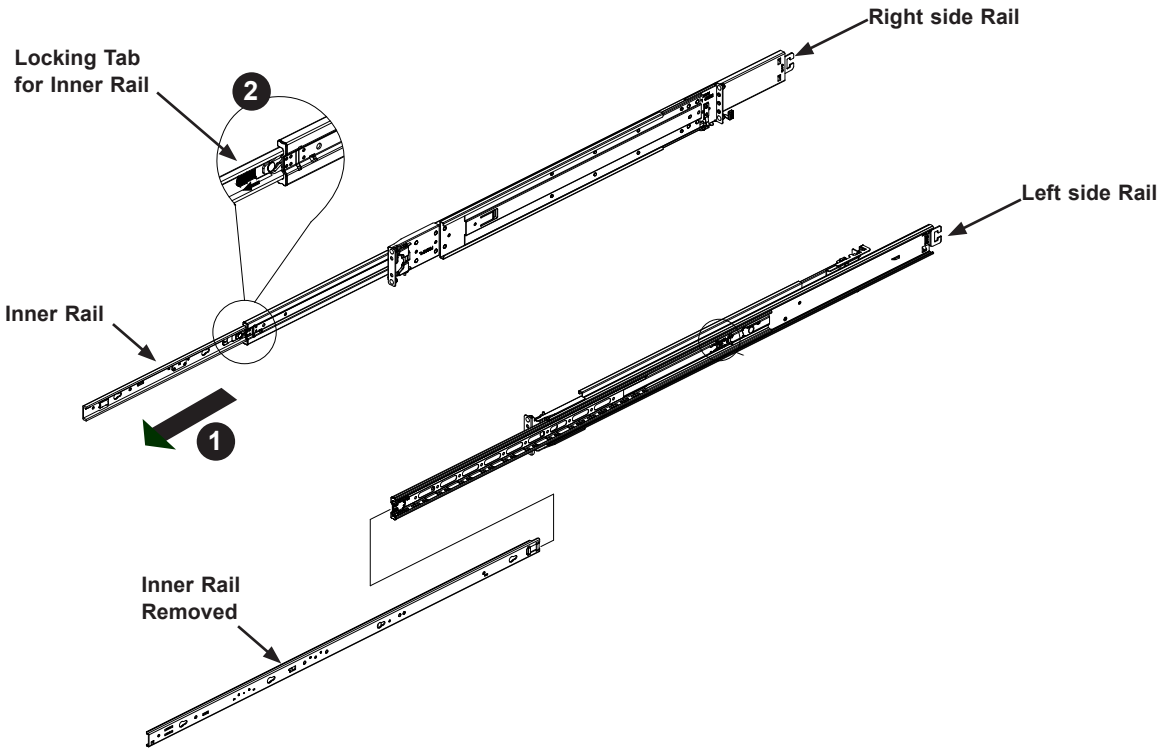


Figure 2-2. Extending and Releasing the Inner Rail

Installing the Inner Rails

Install the inner rails onto the chassis.

1. Identify the left and right inner rails.
2. Place the inner rail firmly against the side of the chassis, aligning the mushroom pins on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis and under the mushroom pins until the quick release bracket snaps into place, securing the rail to the chassis.
4. A screw can be added through the rail and into the chassis for further security.

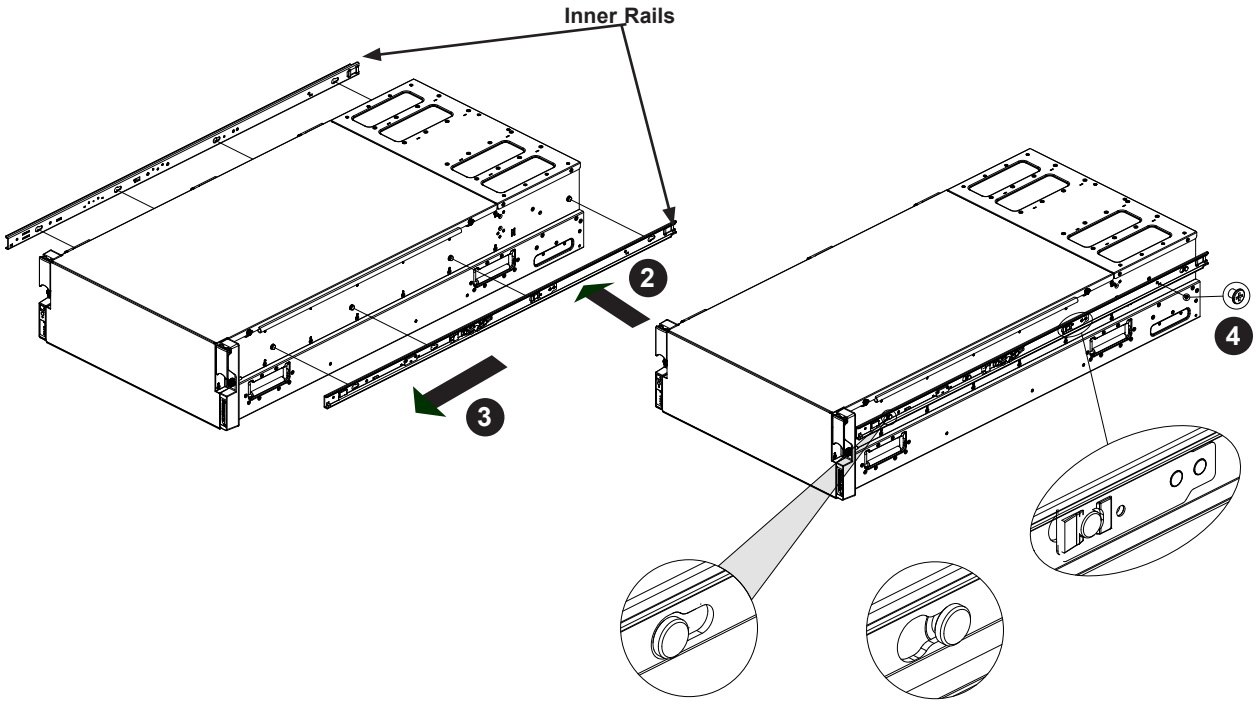


Figure 2-3. Installing the Inner Rails onto the Chassis

Installing the Outer Rails onto the Rack

The outer rail is actually two parts that slide to lengthen the rail. Each end of the assembled outer rail includes a bracket with round pegs to fit into your rack holes. The left and right rail and the front and rear of each rail is labeled.

1. Align the round pegs on the front end of the rail with the square holes on the front post of the rack. Push the rail sideways firmly against the rack and toward the rear until the quick release bracket snaps into place, securing the rail to the rack. Keep the rail horizontal.

2. Adjust the rail to reach almost to the rear post of your rack making sure that rear bracket is level with the front bracket.

3. At the rear of the rack, align the round pegs on the rear end of the rail to the holes on the rack. Push and hold the latch lever toward the center of the rack while pulling the pegs into the holes of the rack. Once the rail seats against the rack, release the latch lever.

4. Use a screw to further secure the rail rear to the rack.

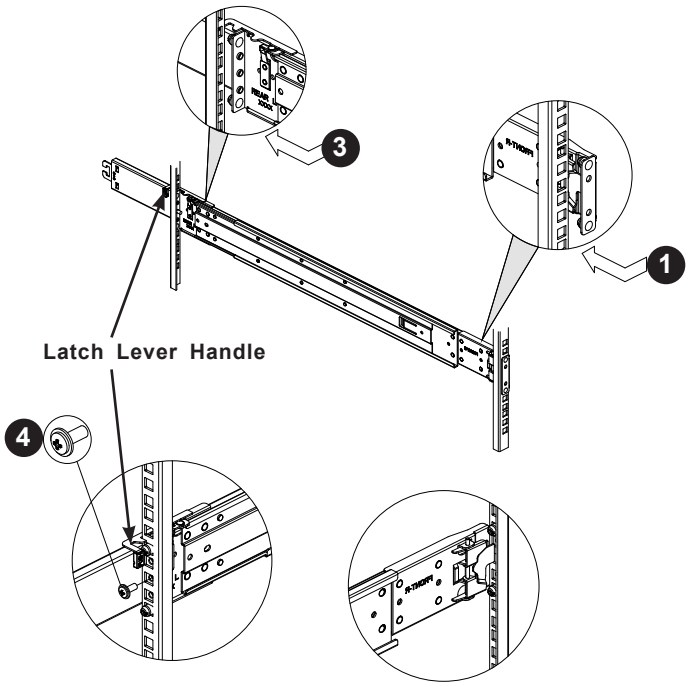


Figure 2-4. Installing the Outer Rails to the Rack
(left rail shown)

2.3 Installing the Chassis into a Rack

Once rails are attached to the chassis and the rack, you can install the server.

Caution! The chassis is heavy. Mount or remove the chassis using sufficient personel and/or a lift. Also, be sure the rack is bolted to the racks next to it or the floor.

1. Pull the middle rails out of the front of the outer rails until they are locked at full extension.

2. Align the rear of the inner rails with the middle rails and then push evenly on both sides of the chassis until it clicks into position. The middle rail should stay locked at full extension.

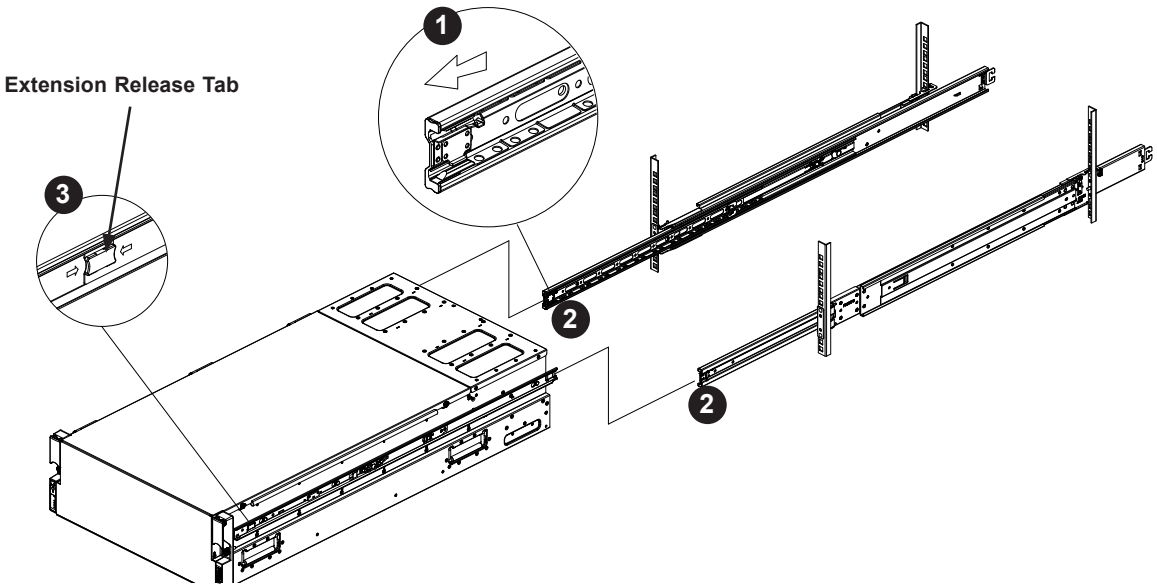


Figure 2-5. Aligning the Inner Rail with the Middle Rails

3. Pull the thin plastic extension release locking tabs on both inner rails and push the chassis fully into the rack. The locking tabs should click.

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.

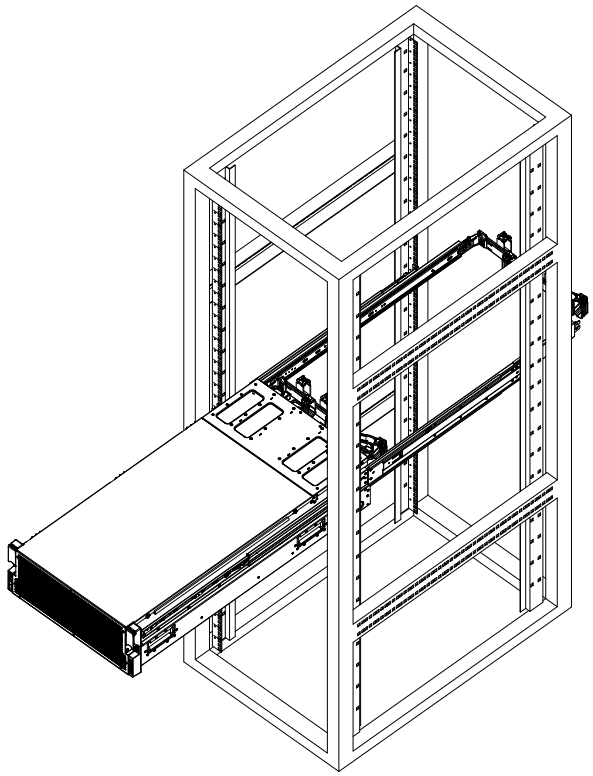


Figure 2-6. Installing the Server into the Rack

Note: Figures are for illustrative purposes. Always install servers from the bottom up.

Removing the Chassis from the Rack

To remove the chassis from the rack, use the previous procedure, "*Releasing the Inner Rail*."

Caution! The loaded chassis is heavy. Mount or remove the chassis using sufficient personel and/or a lift. You can also lighten the chassis by removing the drives.

Removing the Outer Rails from the Rack

If you want to move or remove the outer rails from the rack, first remove the server completely.

1. Push the middle rail fully into the outer rail. There is a small locking tab on the inside of the middle rail. Push it in to allow the middle rail to slide back into the outer rail.
2. At the rear of the rack, if you have used a locking screw, remove it.
3. To release the rear outer rail, push on the locking latch lever handle while pushing the rail forward.
4. At the front of the rack, reach inside the outer rail and depress the metal and plastic locking latch while pulling the rail forward and pulling the pegs from the rack holes.

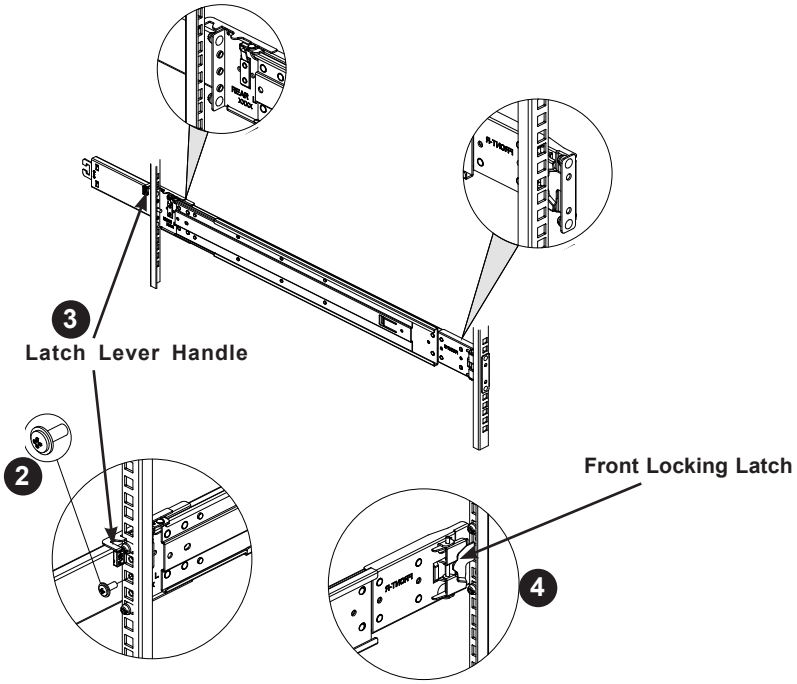


Figure 2-7. Removing the Outer Rails from the Rack
(left rail shown)

2.4 Assembling the Cable Management Arm

The SC946E1C chassis supports a cable management arm (CMA) which helps to keep the cables organized and clear of the rack and rail mechanisms. The swing arm functionality of the cable management arm keeps the cables clear while maintenance is being performed on the system.

Prior to using the cable managment arm for the first time, remove the loop strap which secures the cable arm during transport. The loop strap is made of thin plastic which can be easily cut scissors.

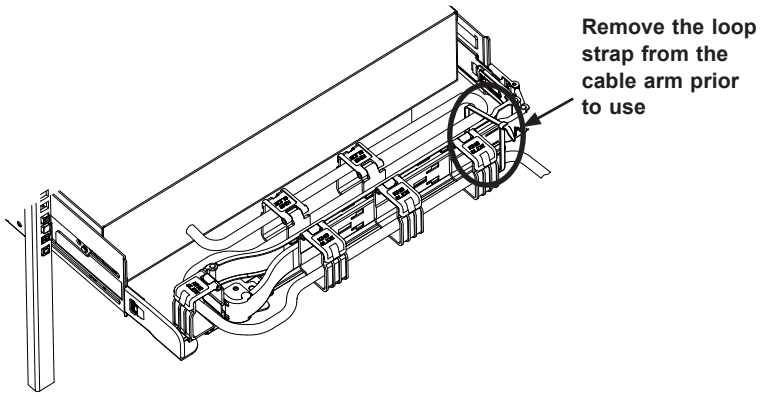


Figure 2-8. Removing the Loop Strap

Assembling the Cable Managment Arm

1. Identify the components of the cable management arm as shown below:

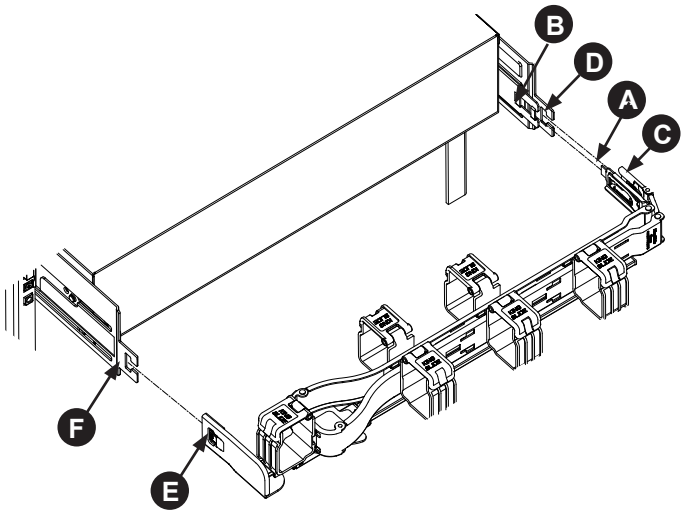
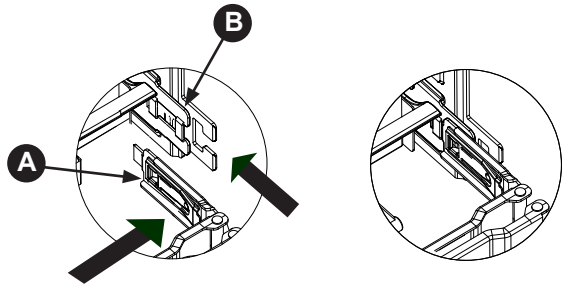


Figure 2-9. Identifying the Cable Managment Arm Components

Cable Arm Managment Components	
A	CMA connector #1
B	CMA connector #1 base on the inner member
C	CMA connector #2
D	CMA connector #2 base on the outer member
E	Center CMA body
F	Outer member CMA connector base

2. Install CMA connector #1 (A) onto CMA connector #1 base on the inner member (B).



CMA Connector #1 Apart **CMA Connector #1 Assembled**

Figure 2-10. Installing the CMA Connector #1 onto the Inner Member

3. Install CMA connector #2 (C) onto CMA connector #2 base (D) on the inner member.

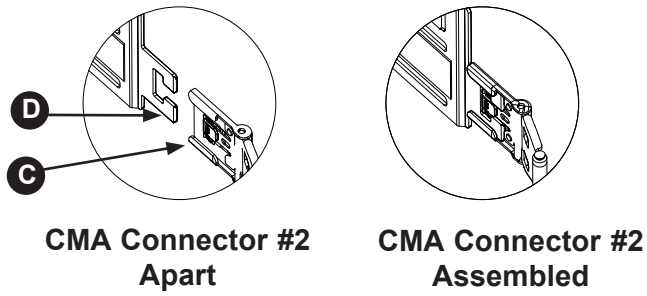


Figure 2-11. Installing the CMA Connector #1 onto the Inner Member

4. Install the CMA connector beside the center CMA body (E) onto the outer member CMA connector base (F).

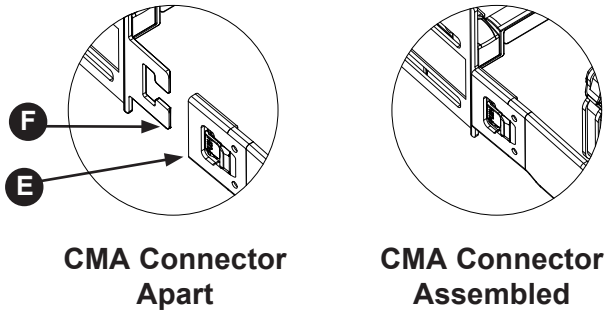


Figure 2-12. Installing the CMA #2 Connector onto the Inner Member

Swing Arm Functionality of the Cable Arm

Swing Arm Function (Swings Right)

1. Press the button on CMA connector #1 (A).
2. Pull back on CMA connector #1 to release it from the base.
3. Rotate the arm ninety degrees to the right.

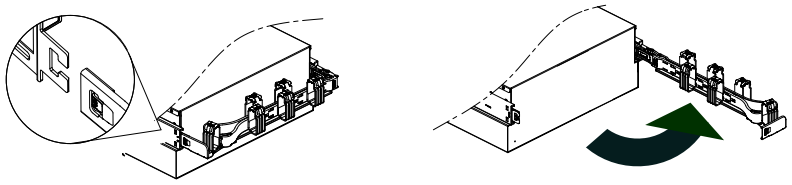


Figure 2-13. Swinging open the Cable Management Arm

Swing Arm Function (Swings Left)

1. Press the release button on the CMA right inner arm (A) and separate the inner arm from its connector.
2. Press the release button on the CMA right outer arm (B) and separate the outer arm from its connector.
3. Swing the arm ninety degrees to the left.

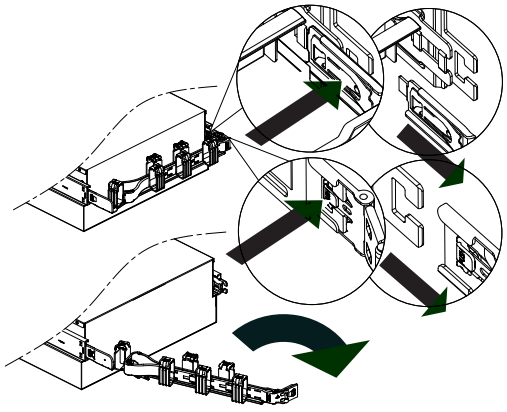


Figure 2-14. Swinging open the Cable Management Arm

Chapter 3

Maintenance and Component Installation

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

Installation or replacement of most components require that power first be removed from the system.

3.1 Removing Power

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

1. Use the operating system to power down the system.
2. After the system has completely shut-down, carefully remove the end of the AC power cords that are plugged into the power outlet.
3. Disconnect the cords from all power supply modules.

3.2 Accessing the System

The SC946E1C chassis top cover opens to access the storage drives, as described in the section, "Storage Drives." Other server components can be accessed from the chassis rear, described in the section, "Power Distributor Board."

Caution: Except for short periods of time, do not operate the server without the cover in place. The cover contributes to proper airflow and prevents overheating.

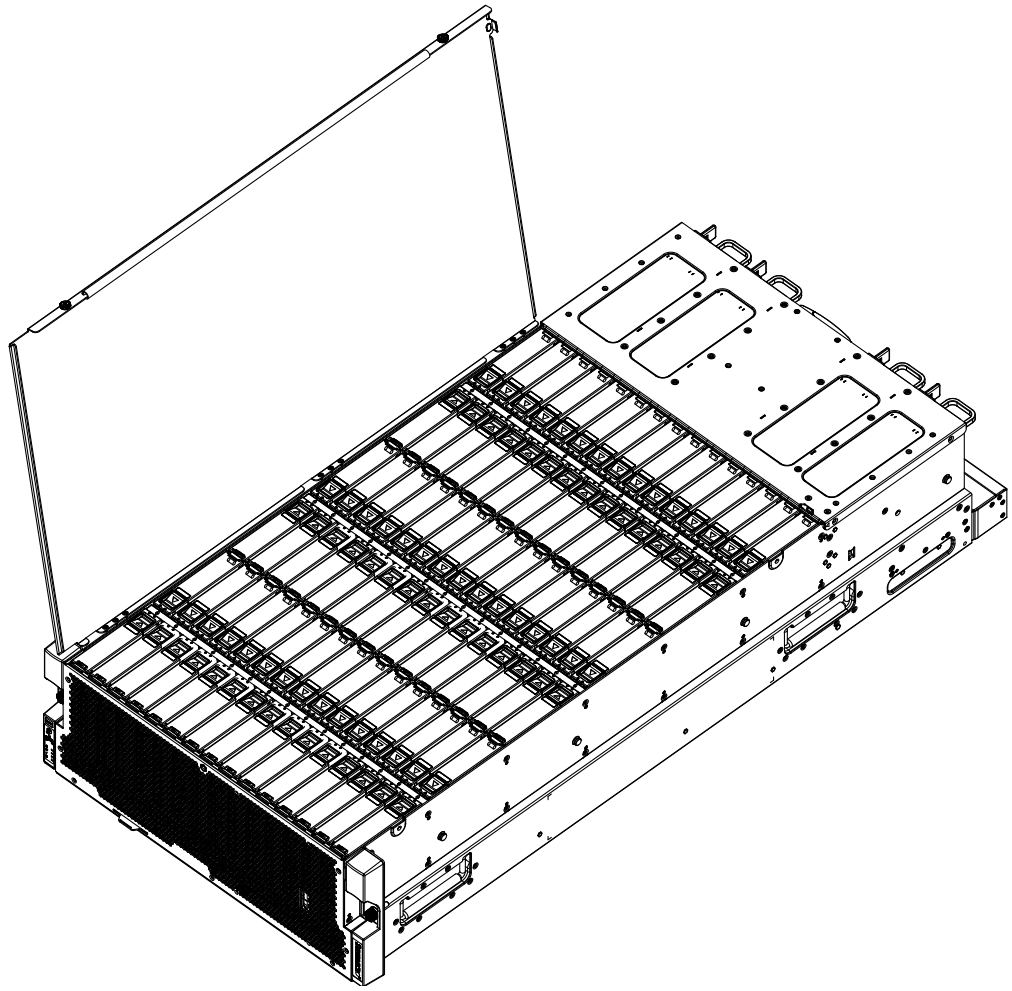


Figure 3-1. Cover for Storage Compartment

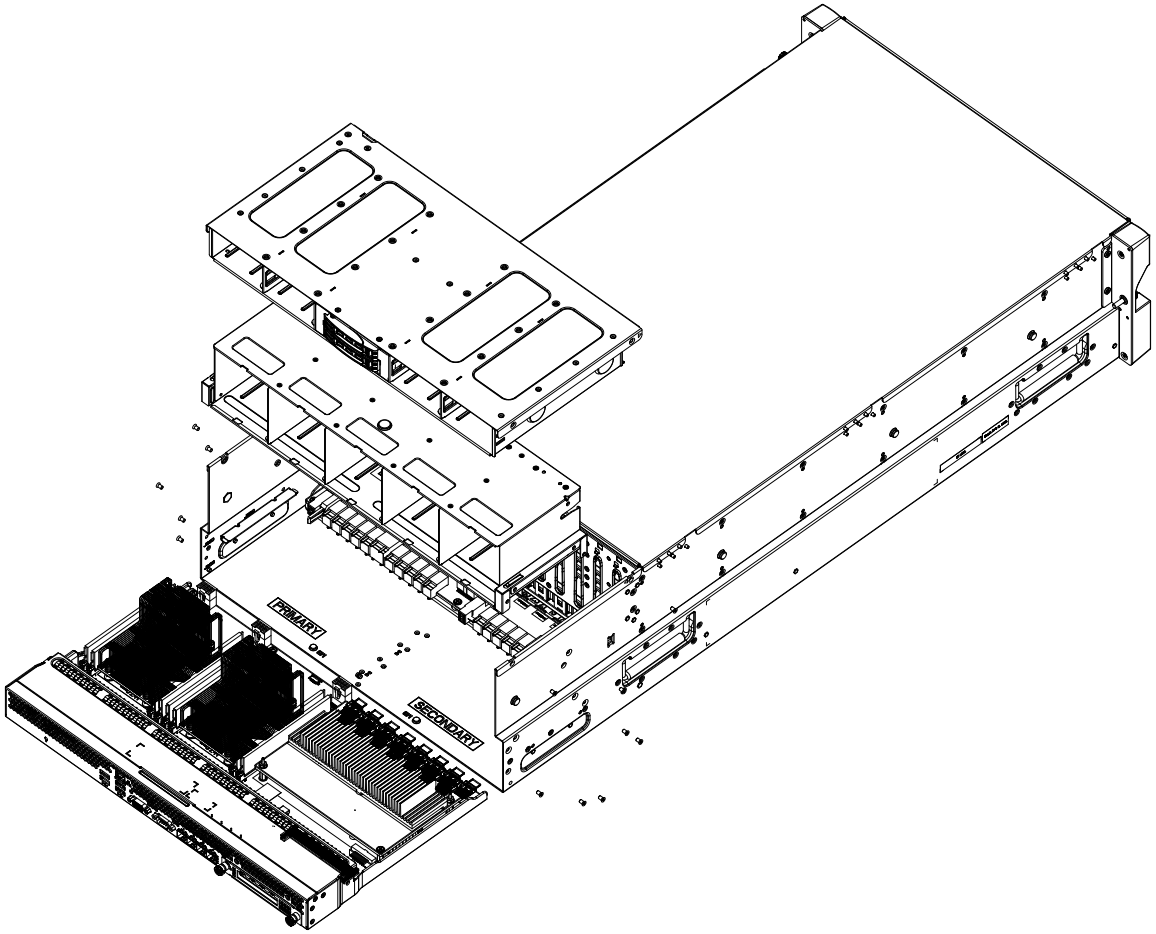


Figure 3-2. Access to the Motherboard and Other Components

3.3 Motherboard Components

Processor and Heatsink Installation

Follow the procedures in this section to install a processor (CPU) and heatsink to the motherboard.

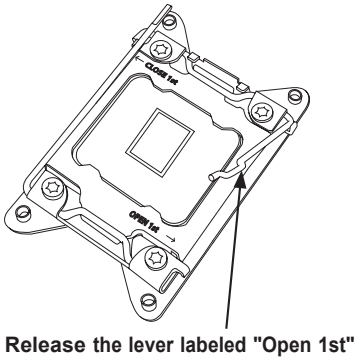
Notes:

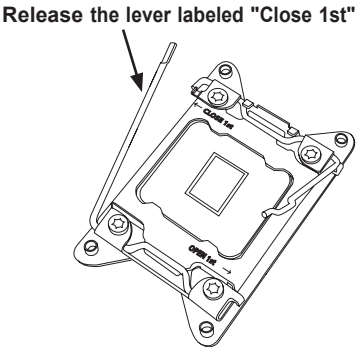
- The motherboard should be installed into the chassis first and the processor should be installed into the CPU socket before you install a CPU heatsink.
- If you bought a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- When receiving a motherboard without 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 website for updates on CPU support.

Installing the Processor(s)

If the system is powered on, remove power as described in Section 3.1.

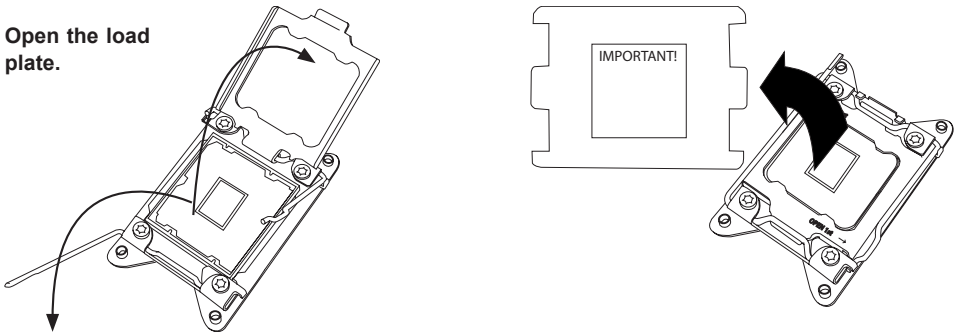
1. There are two levers on the LGA 2011 socket. First press and release the load lever labeled "Open 1st".
2. Press the second load lever labeled "Close 1st" to release the load plate from its locked position.





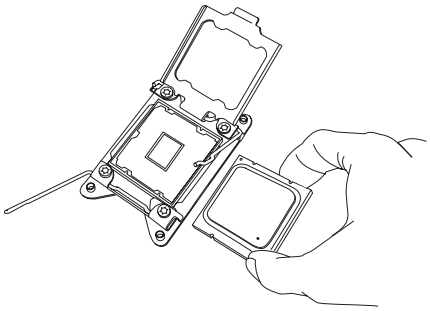
3. With the second lever fully retracted, gently push down on the "Open 1st" lever to loosen the load plate. Lift the load plate with your fingers to open it completely.

4. Pop the plastic cap marked "Warning" out of the load plate.



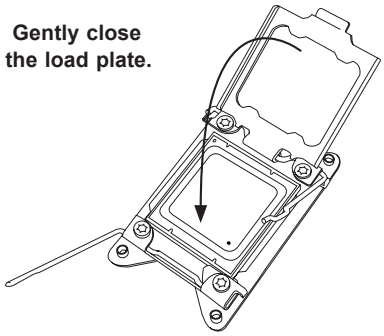
5. Holding the CPU carefully above the socket, orient the CPU so that all keys and edges will fit the socket.

6. Carefully lower the CPU straight down into the socket. Do not move the CPU horizontally, and do not rub the pins of the socket. This may damage the CPU or the socket.



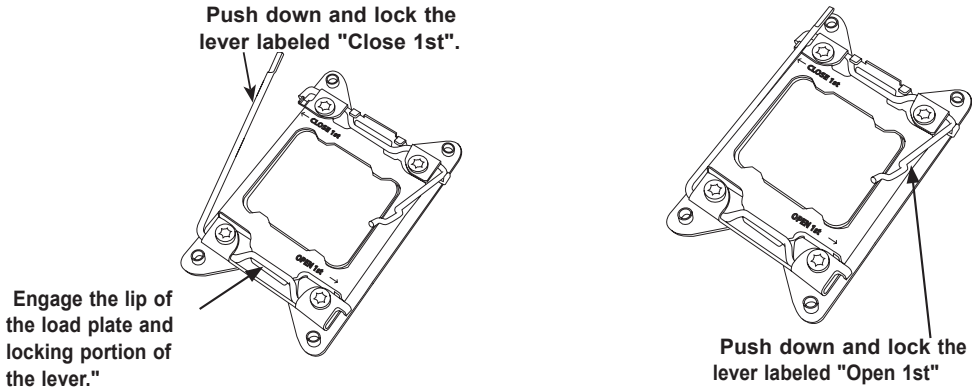
Caution: You can only install the CPU into the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it does not close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU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

7. With the "Close 1st" lever fully retracted, gently close the load plate.



8. Make sure the locking mechanism on the "Close 1st" lever catches the lip of the load plate. Close and lock the "Close 1st" lever.

9. Close and lock the "Open 1st" lever.



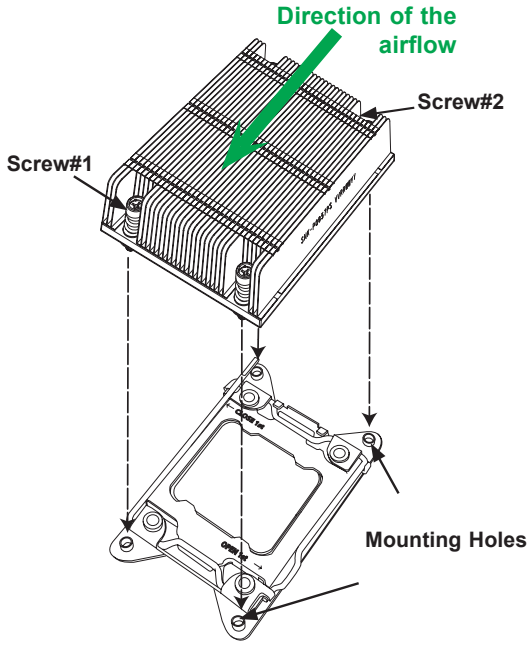
Installing a Heatsink

1. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.

2. Screw in two diagonal screws (#1 and #2) until just snug—do not over-tighten and damage the CPU.

3. Screw in the remaining screws.

4. Finish by fully tightening all four screws.



Note: Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

Figure 3-3. Heatsink Installation

Removing a Heatsink

We do not recommend removing the heatsink. If necessary, please follow the instructions below to prevent damage to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws.
2. Hold and gently pivot the heatsink back and forth to loosen it from the CPU. Do not use excessive force when dislodging the heatsink.
3. Once the heatsink is loose, remove it from the CPU.
4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease to the surface before you re-install the heatsink.

Memory Installation

Memory Support

The motherboard includes eight slots for DDR4 VLP ECC 288-pin memory. It supports up to 1 TB of 3DS LRDIMM, 512 GB of LRDIMM, or 256 GB of RDIMM memory, at 2400/2133/1866/1600/1333MHz. Populating these DIMM modules with a pair of memory modules of the same type and size will result in interleaved memory, which will improve memory performance. Check the Supermicro website for possible updates to memory support.

DIMM Module Population Configuration

For optimal memory performance, follow the table below when populating memory.

Processors and the Corresponding Memory Modules				
CPU#	**Corresponding DIMM Modules**			
CPU 1 P1-DIMM-	A1	B1	C1	D1
CPU2 P2-DIMM-	E1	F1	G1	H1

Processor and Memory Module Population for Optimal Performance	
Number of CPUs+DIMMs	**CPU and Memory Population Configuration**
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
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

Note: Be sure to use memory modules of the same type and speed on the motherboard. Mixing of memory modules of different types and speeds is not allowed.

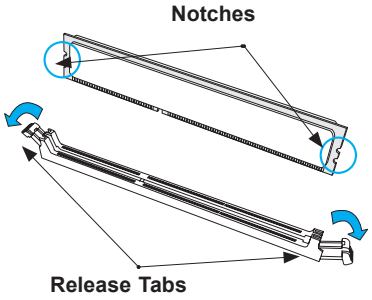
Populating Memory Modules					
Type	**Ranks Per DIMM and Data Width**	**DIMM Capacity (GB)**		**Speed (MT/s); Voltage (V); Slots per Channel (SPC) and DIMMs per Channel (DPC)**	
				1 Slot per Channel	
				1 DPC	
				E5-2600 V3	**E5-2600 V4**
		4 Gb	**8 Gb**	**1.2 V**	**1.2 V**
RDIMM	SRx4	8 GB	16 GB	2133	2400
RDIMM	SRx8	4 GB	8 GB	2133	2400
RDIMM	DRx8	8 GB	16 GB	2133	2400
RDIMM	DRx4	16 GB	32 GB	2133	2400
LRDIMM	QRx4	32 GB	64 GB	2133	2400
LRDIMM 3DS	8Rx4	64 GB	128 GB	2133	2400

Install Procedure

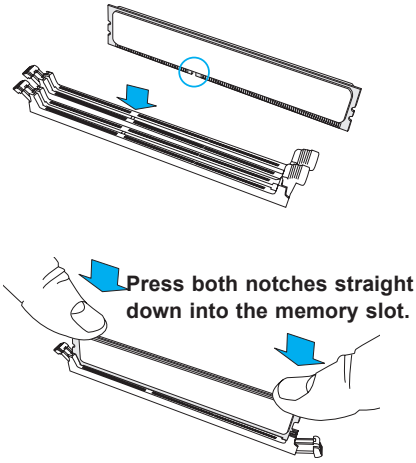
Installing Memory

1. Remove power from the motherboard as described in Section 3.1.

2. Starting with P1-DIMMA1, push the release tabs outwards on both ends of the DIMM slot to unlock it.



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



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

5. Repeat the procedure for the remaining DIMM modules in the order detailed in the previous section.

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

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

Note: Visit the product page on the Supermicro website for possible updates to memory support (www.supermicro.com).

Motherboard Battery

The motherboard uses non-volatile memory to retain system information when system power is removed. This memory is powered by two lithium batteries residing on the motherboard, one battery for each node.

Replacing the Battery

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

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

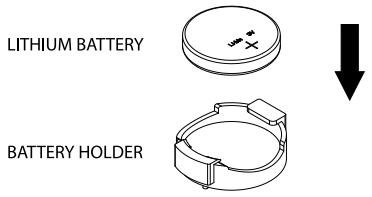


Figure 3-4. Installing the Onboard Battery

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

3.4 Chassis Components

Several components are accessable in the chassis. The following sections describe each.

Storage Drives

The SC946E1C chassis supports ninety 3.5" or 2.5" hard drives in toolless drive carriers to simplify their removal from the storage compartment of the chassis. These carriers also help promote proper airflow. The 2.5" drives require a kit.

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

Caution: When shipping the system, remove the drives from the chassis for travel, whether the chassis is shipped alone or in a rack. The original Supermicro packaging includes boxes for the drives in carriers.

Drive Carrier Indicators

Each hard drive carrier has two LED indicators: an activity indicator and a status indicator. In RAID configurations, the status indicator lights to indicate the status of the drive. In non-RAID configurations, the status indicator remains off. See the table below for details.

Hard Drive Carrier LED Indicators			
	Color	**Blinking Pattern**	**Behavior for Device**
Activity LED	Blue	Solid On	SAS drive installed
	Blue	Blinking	I/O activity
Status LED	Red	Solid On	Failure of drive with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for drive with RSTe support
	Red	On for five seconds, then off	Power on for drive with RSTe support
	Red	Blinking at 4 Hz	Identify drive with RSTe support

Controller to Drive Configuration

The drives are accessed by means of two SAS3008 controllers connected through three expanders, which connect to the drives. By default, each controller manages 45 drives. Furthermore, each controller manages alternating physical drives, that is, odd numbered or even numbered drives as labeled in Figure 3-5. This design helps balance performance.

This zoning configuration is accomplished by factory installed firmware on the expanders. **Note**: If you want to change the zoning configuration, contact Supermicro Technical Support for assistance.

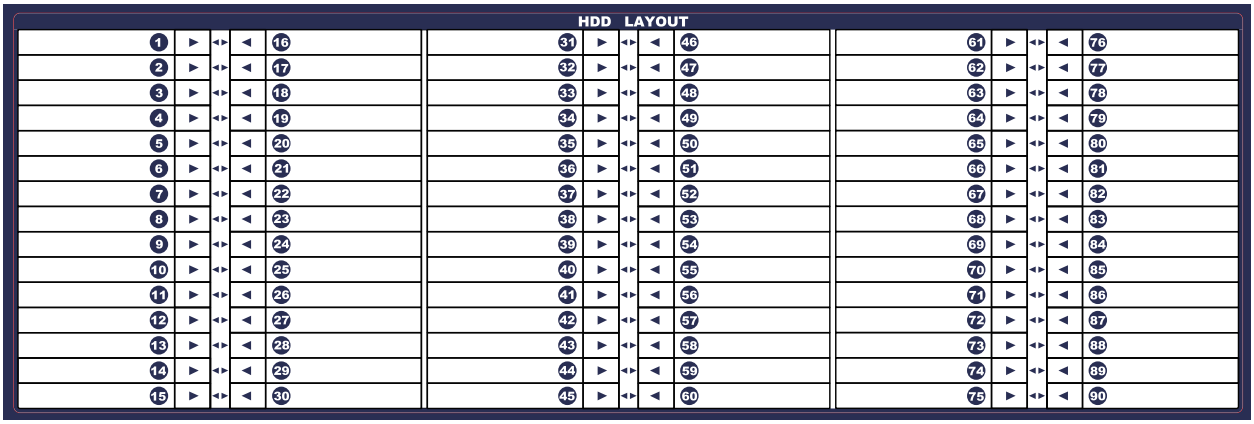


Figure 3-5. Drive Layout
(One controller manages all even numbered drives, the other manages all odd.)

Adding or Replacing Hard Drives

Opening the Storage Compartment Cover

1. Release the two thumb screws on the right side of the chassis.
2. Lift the cover. The cover holds an open position at 100 degrees without additional support. Do not open farther.

Caution: Do not operate the server with the cover open for long periods of time. The closed cover assists proper airflow to prevent overheating.

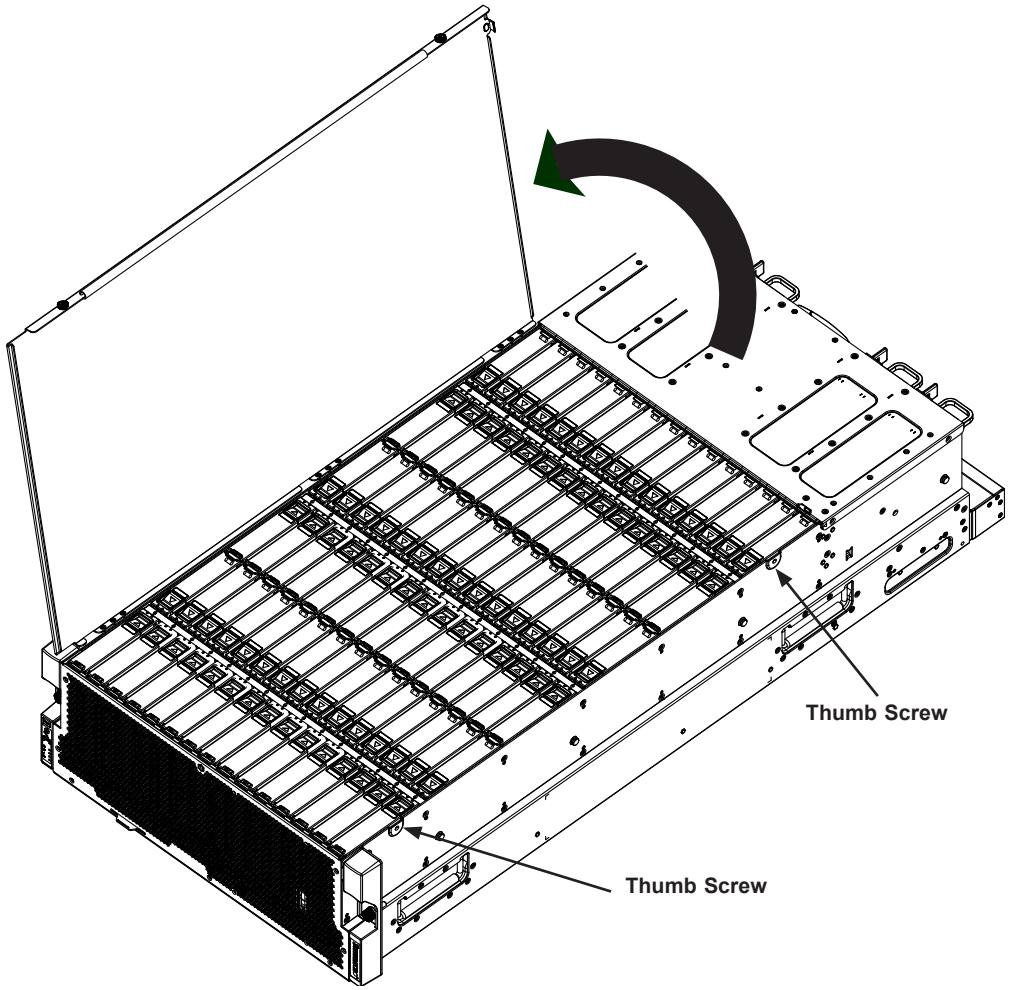


Figure 3-5. Opening the Storage Compartment

Removing a Hard Drive Carrier from the Storage Compartment

1. Open the storage compartment cover.
2. Slide the release button on the drive carrier, which opens the carrier handle.
3. Use the handle to pull the drive carrier up and out.

Caution: Except for short periods of time, such as while swapping hard drives, do not operate the server with the drive carriers removed from the bays. Even empty carriers help promote airflow.

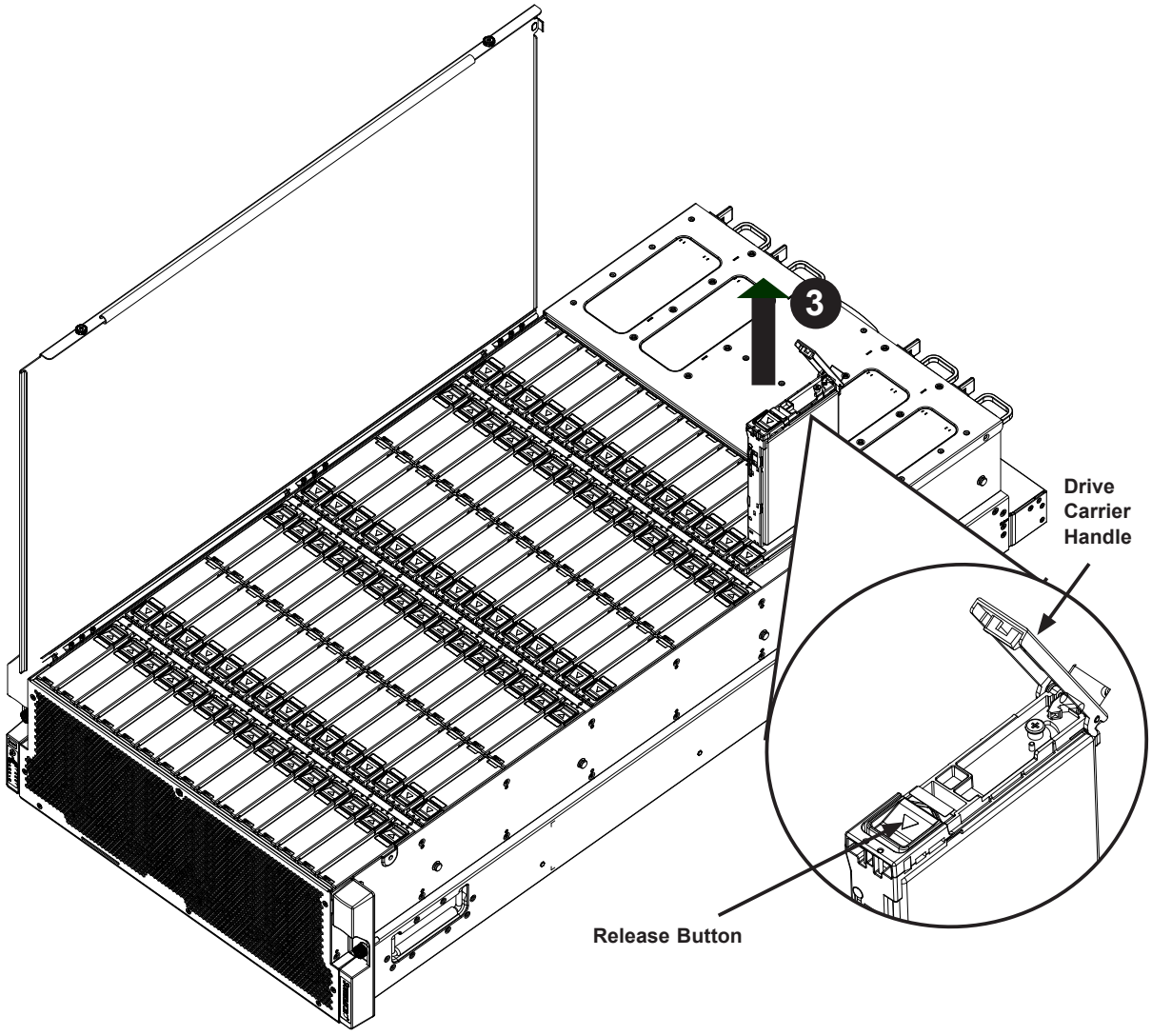


Figure 3-6 Removing a Hard Drive Carrier

Installing a 3.5" Hard Disk Drive

With the drive carrier removed from the storage compartment:

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

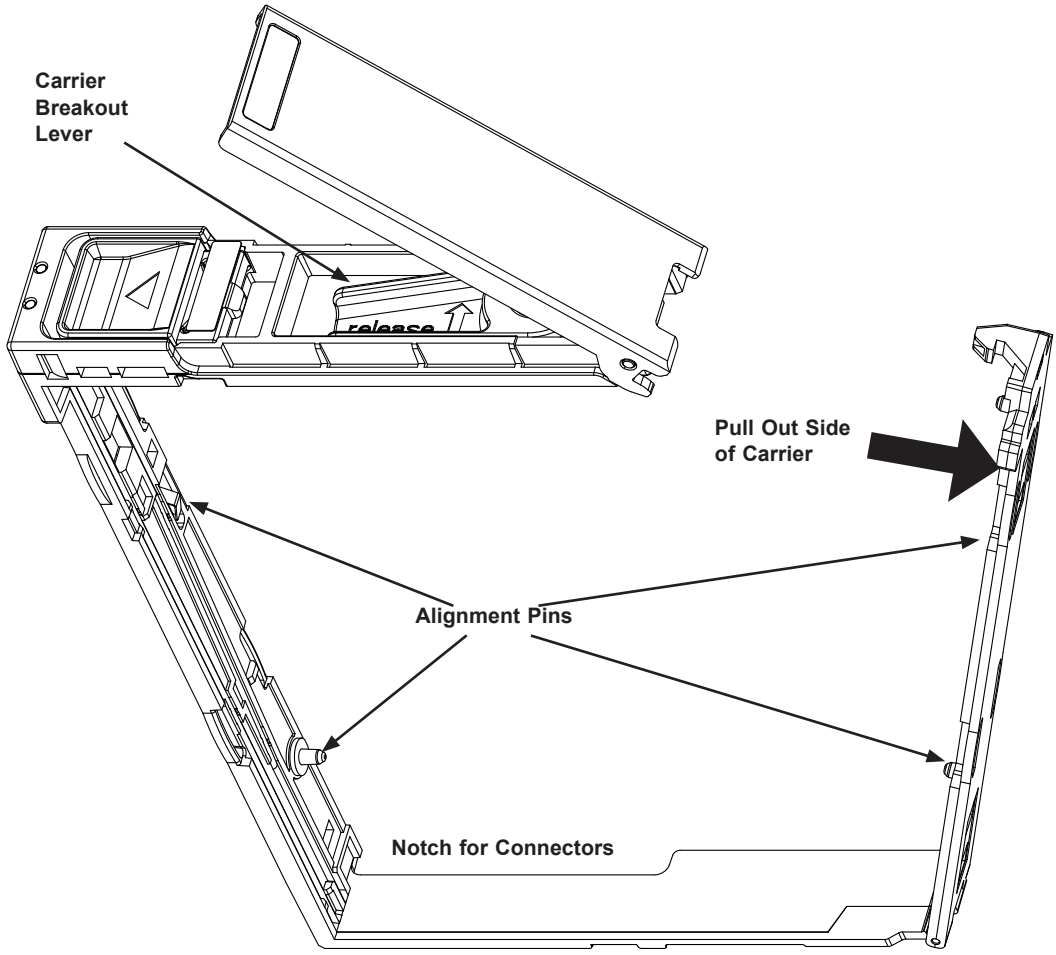


Figure 3-7. Opening the Drive Carrier

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

Two Hard Disk Drives at the Chassis Rear

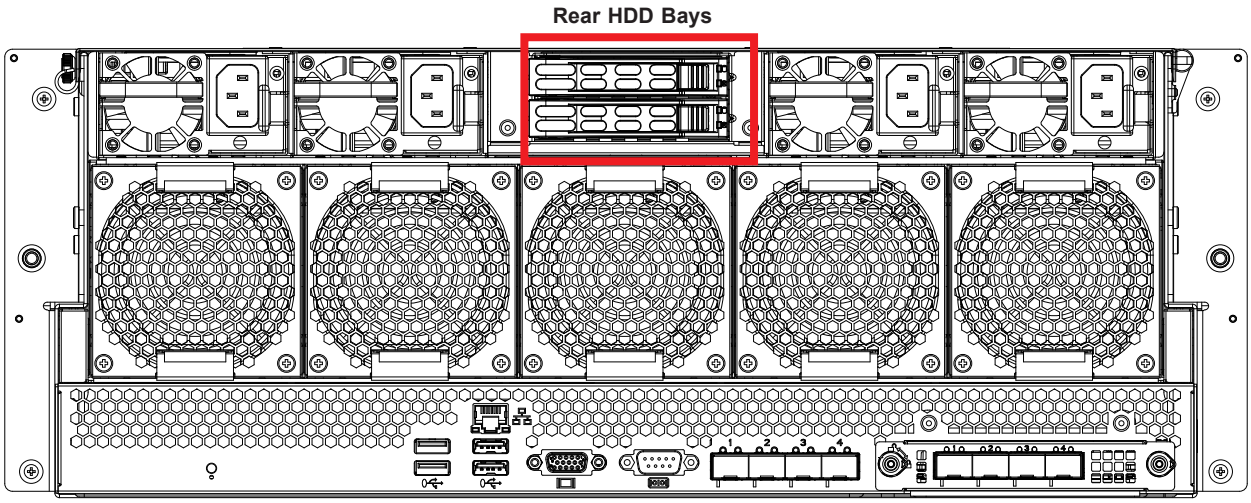


Figure 3-8. HDDs at Chassis Rear

There is room for two optional hot-swap 2.5" drives in the rear of the chassis.

Installing 2.5" Hard Disk Drives at the Chassis Rear

1. Press the carrier release button and the carrier lever pops out.
2. Pull out the carrier by the lever.
3. Insert HDD into the carrier.
4. Push the carrier assembly into the bay until it clicks into place.

System Cooling

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

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

Replacing a System Fan

1. While the power is running, 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.

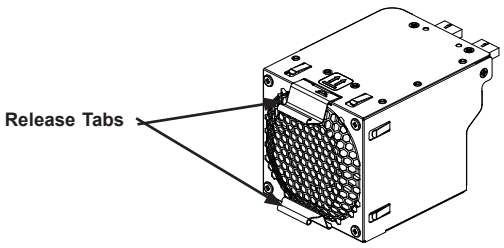


Figure 3-9. Fan Release Tabs

3. Pull the fan out of the bay using the tabs.

   Caution: Fans will continue to rotate for a brief time after removing them from the chassis. To avoid injury, keep fingers clear of the rotating fan blades.
4. Place the new fan into the vacant fan bay. Confirm that the fan is fully seated in the fan bay and functioning properly.

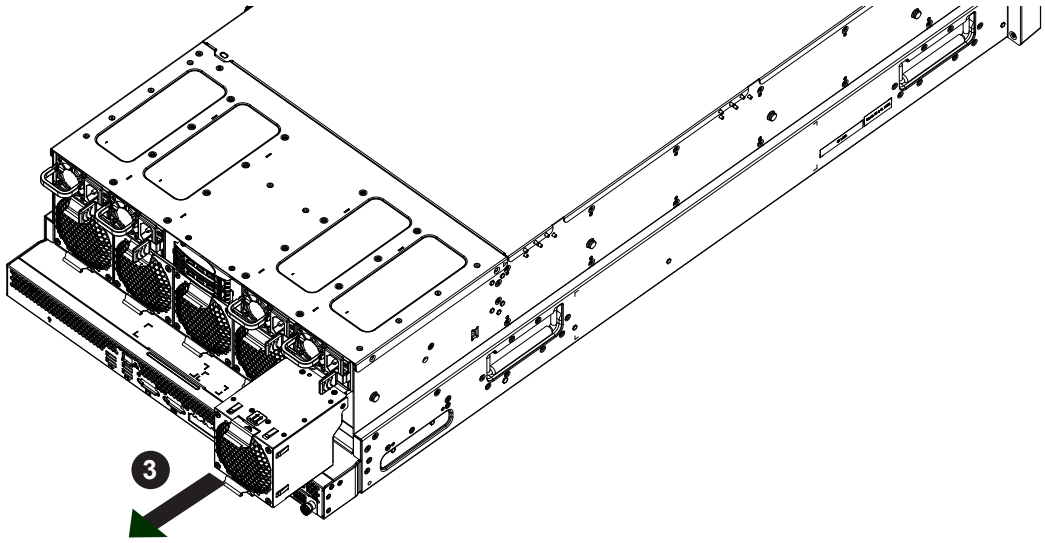


Figure 3-10. Removing a Fan From the Housing

Checking the Server Air Flow

- Make sure there are no objects to obstruct airflow in and out of the server.
- Do not operate the server without drives or drive trays in the drive bays.
- Use only recommended server parts.
- Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

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

Overheating

There are several possible responses if the system overheats.

Overheat Temperature Setting

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

Responses

If the server overheats:

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

Power Supply

The chassis features redundant power supplies. The system will continue to operate if one module fails. It should be replaced as soon as convenient. The power supply modules are hot-swappable, meaning they can be changed without powering down the system. New units can be ordered directly from Supermicro or authorized distributors.

These power supplies are auto-switching capable. This feature enables them to automatically sense the input voltage and operate at a 100-120v or 180-240v.

Power Supply LEDs

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

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

Changing the Power Supply Module:

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

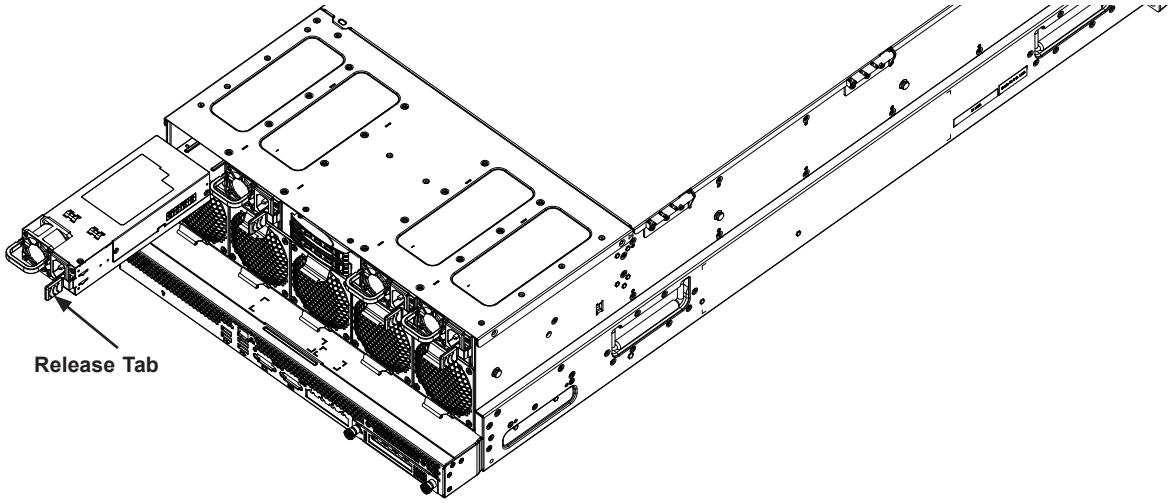


Figure 3-11. Installing the Power Supply

Power Distributor Board

The chassis comes equipped with a PDB-PT946-S386 power distributor. In the unlikely event that you need to replace the power distributor, use the following instructions.

Removing the Power Distributor

1. Power down the chassis as described in section 3.1.
2. Remove all four power supplies from the power bays. (Figure 3-10)
3. Remove the four cage side screws as illustrated below and set them aside for later use.
4. Pull the power supply cage out of the back of the chassis.
5. Remove the four side screws securing the power distributor assembly to the chassis and set them aside for later use.
6. Unplug the power distributor assembly from the chassis.
7. Lift the power distributor assembly up and out of the chassis.

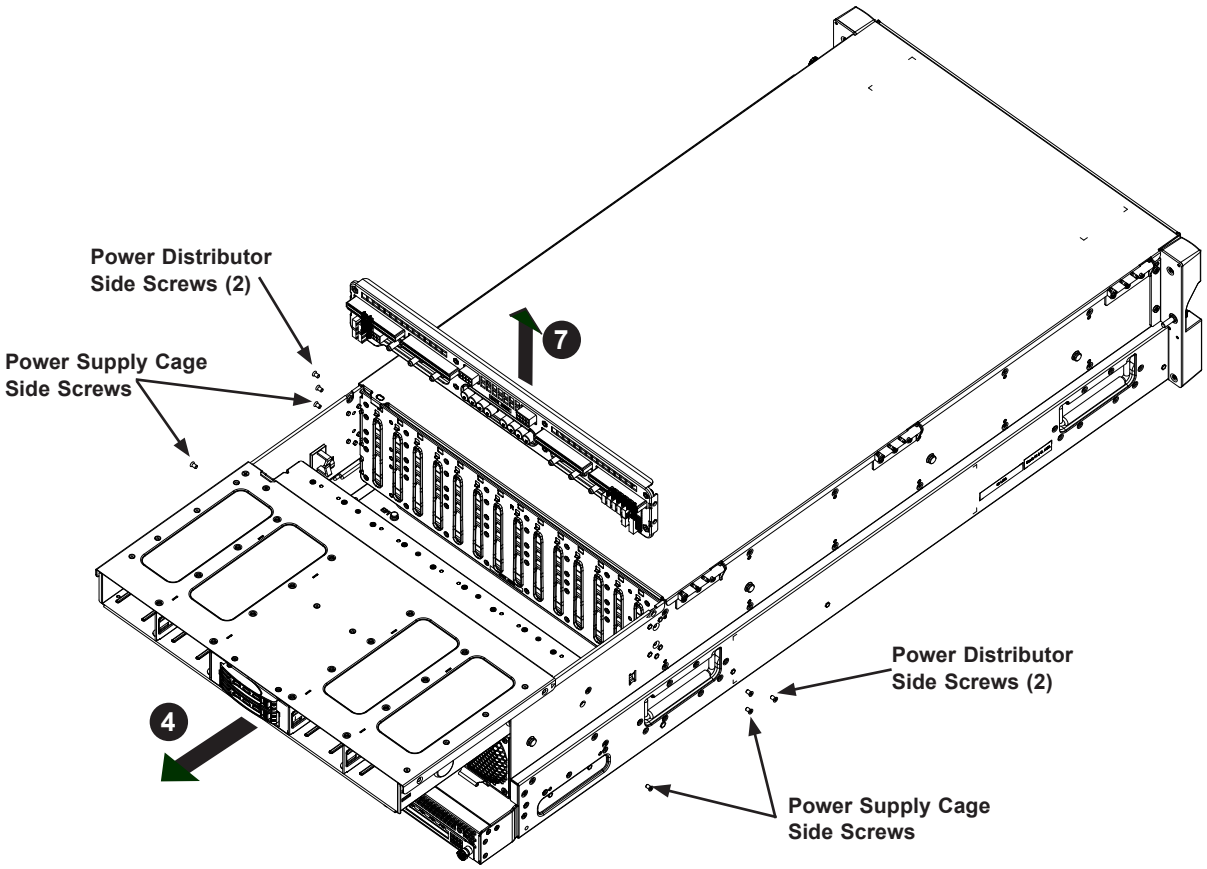


Figure 3-12. Removing the Power Distributor

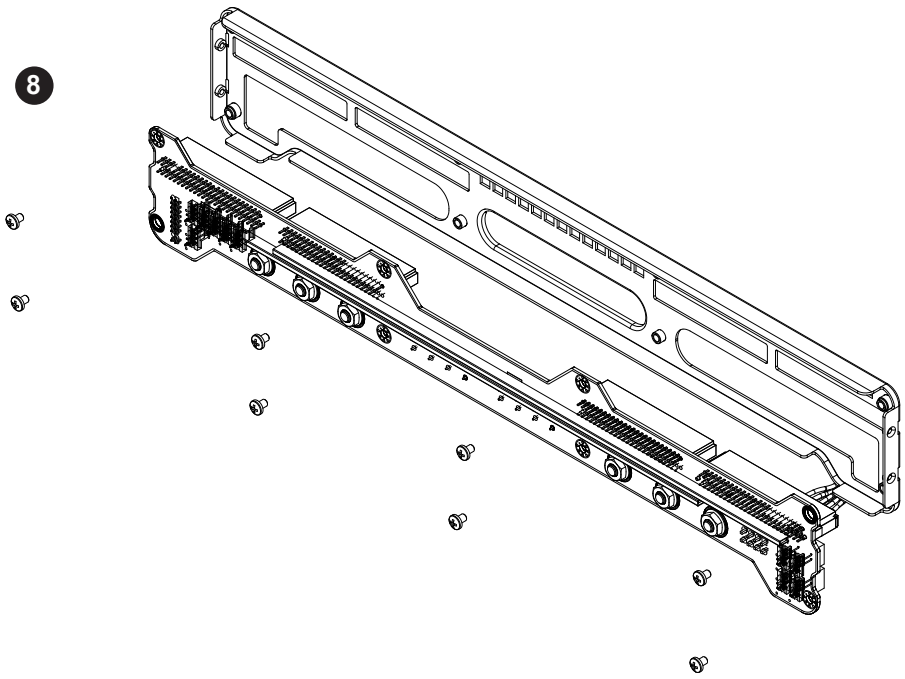


Figure 3-13. Removing the Power Distributor Board

8. Remove the eight screws securing the power distributor board to the power distributor bracket and set them aside for later use.
9. Pull the power distributor board off the bracket.
10. Align the mounting holes in the replacement power distributor board with those in the power distributor bracket.
11. Secure the power distributor board to the bracket using the eight screws previously set aside.
12. Return all components and power up the system.

Motherboard Removal

The motherboard is mounted on a tray that slides out the rear of the chassis.

1. Power down the system as described in Section 3.1.
2. Remove the power supply modules, the power supply cage and the power distributor board as described in previous sections.
3. Remove all fans from the fan housing. Remove the fan housing by removing the screws from both sides and slide it out toward the rear of chassis then lift up.
4. Remove the screws on both sides and slide the motherboard tray out.

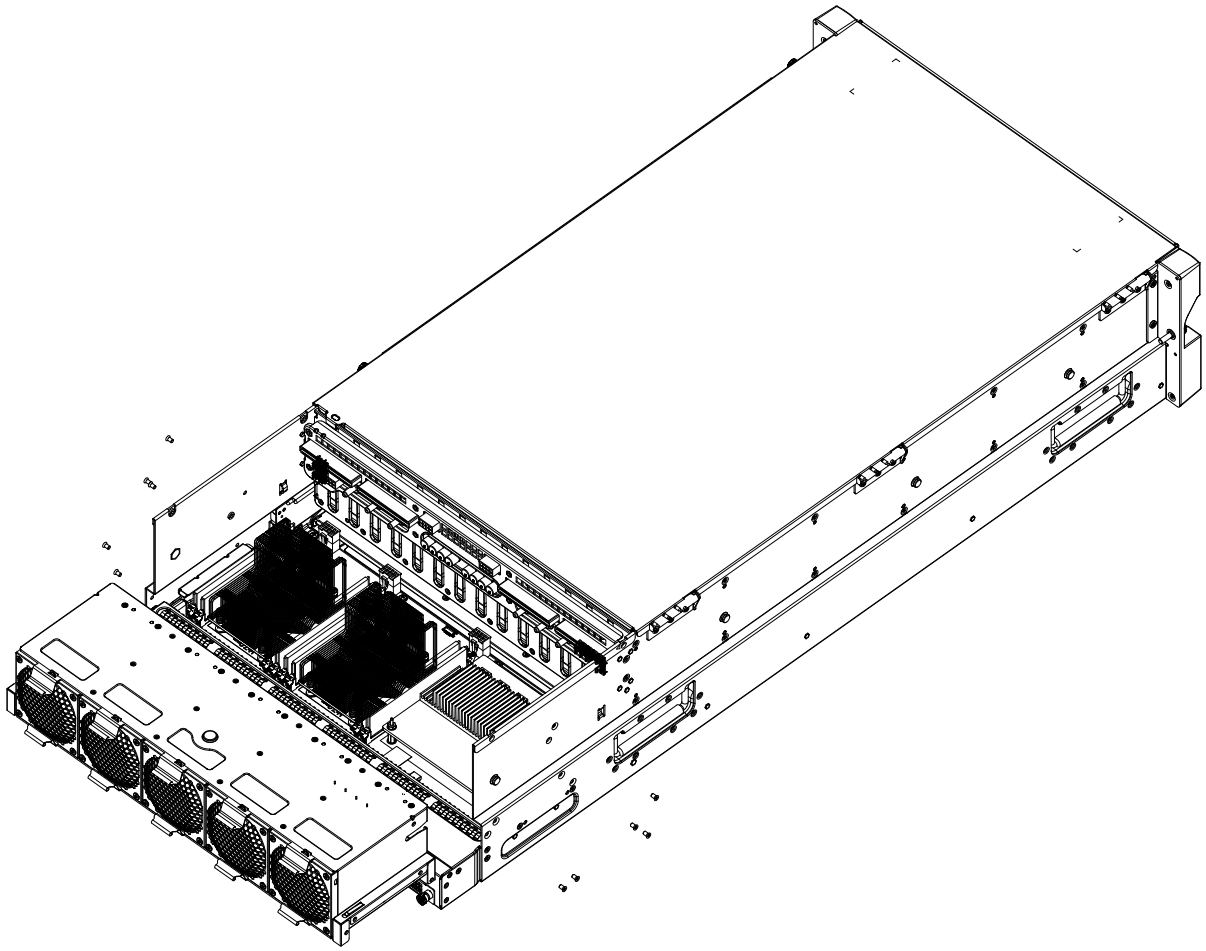


Figure 3-16. Removing the Fan Housing

Notes

Chapter 4

Motherboard Connections

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

Please review the safety precautions in Appendix B before installing or removing components.

4.1 Power Connections

Two 8-pin 12V power supply connectors (JPW1/JPW2) and an 8-pin 12V/12V standby power connector (JPW3-STBY) are located on the motherboard. In addition, a 4-pin power connector, located at JPW_HDD, provides 5V and 12V power to the onboard HDD devices. These power connectors meet the SSI EPS specifications and must be connected to your power supply to provide adequate power to the system.

8-pin 12V Power Connector (JPW1/2)

Pins	Definition
1-4	Ground
5-8	+12V

8-pin 12V/12V Standby Power Connector (JPW3_STBY)

Pins	Definition
Pins 1-4	Ground
Pin 5	12V Standby
Pins 6- 8	+12V

4-pin 12V/5V Power Connector (JPW_HDD)

Pins	Definition
Pins 1	12V
Pin 2-3	Ground
Pins 4	5V

Power Distribution Board

A power distribution board header is located at JPSB on the motherboard. Install a Supermicro power distribution board (part number: PDB-PT946-S386) on this header to maximize power efficiency and enhance power management. See the layout below for the location.

4.2 Headers and Connectors

Internal Speaker

The Internal Speaker (JSPK1) can be used to provide audible notifications using various beep codes. See the table on the right for pin definitions. Refer to the layout below for the location of the internal buzzer.

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

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

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

TPM/Port 80 Header

A Trusted Platform Module (TPM)/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.

TPM/Port 80 Header			
Pin #	**Definition**	**Pin #**	**Definition**
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	No Connection
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	No Connection	14	No Connection
15	+3V STBY	16	SERIRQ
17	GND	18	CLKRUN#
19	LPCPD#	20	No Connection

SIOM Connector Header (Optional)

A connection slot is available for an optional Supermicro I/O Module (SIOM). This card provides a variety of options for network connections.

SAS AOM Connector Header

A 3008 Add-On Module (AOM) connector is located at JSAS on the motherboard. Install a Supermicro SAS Expander add-on card (Part Number: AOC-SAS3-946E90) on this header to use SAS expanders. When the AOC-SAS3-946E90 add-on card is installed, onboard 3OO8 SAS controllers will be enabled. The AOC-SAS3-946E90 supports up to three SAS expanders. See the layout below for the location.

Control Panel

JF1 contains header pins for various control panel connections. See the figure below for the pin locations and definitions of the 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 motherboard. The other end connects to the control panel PCB board.

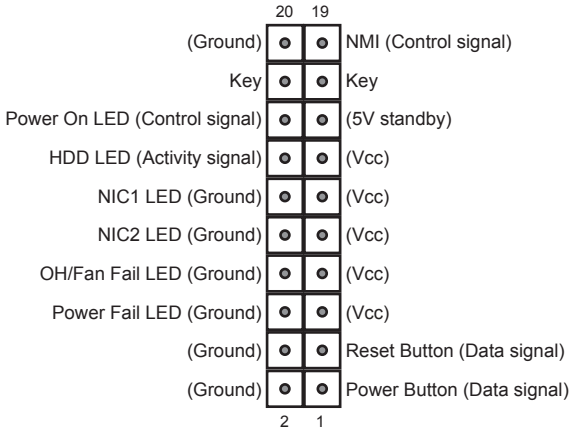


Figure 4-1. JF1: Control Panel Pins

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 7). To turn off the power when the system is in suspend mode, press the button for 4 seconds or longer.

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

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case.

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.

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

Overheat (OH)/Fan Fail

Connect an LED cable to pins 7 and 8 of JF1 to use the Overheat/Fan Fail LED connections. The LED on pin 8 provides warnings of overheat or fan failure.

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

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

NIC1/NIC2 (LAN1/LAN2)

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

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	**Definition**
9	NIC2 Activity LED
10	NIC2 Link LED
11	NIC1 Activity LED
12	NIC1 Link LED

HDD LED/UID Switch

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

HDD LED Pin Definitions (JF1)	
Pin#	**Definition**
13	3.3V Standby/UID Switch
14	HDD Active

Power LED

The Power LED connection is located on pins 15 and 16 of JF1.

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

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1.

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

Data Cables

The data cables in the system have been carefully routed to maintain airflow efficiency. If you disconnect any of these cables, take care to re-route them as they were originally when reconnecting them.

Important! Make sure the the cables do not come into contact with the fans.

Power Cables

The following power connections on the [motherboard model1] must be connected to the power supply. The wiring is included with the power supply. See Section 4.1 for details.

- 24-pin Primary ATX Power (JPW1)
- 8-pin Processor Power (JPW2, JPW3)

4.3 Ports

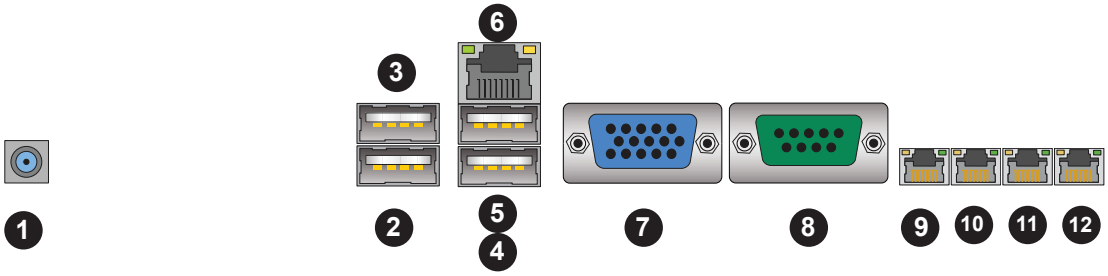


Figure 4-2. Rear I/O Ports

Rear I/O Ports			
	Description		**Description**
1	UID (SW1)	7	VGA
2	USB 2 (USB 2.0)	8	COM1
3	USB 3 (USB 2.0)	9	SFP+/LAN1
4	USB 4 (USB 2.0) or USB 8 (USB 3.0)	10	SFP+/LAN2
5	USB 5 (USB 2.0) or USB 9 (USB 3.0)	11	SFP+/LAN3
6	IPMI_LAN	12	SFP+/LAN4

Universal Serial Bus (USB) Ports

There are four USB ports located on the I/O backpanel. USB ports 2/3 support USB 2.0 connections. The other two USB ports located next to USB ports 2/3 can support both USB 2.0 or USB 3.0 connections. When used for USB 2.0 support, these two ports are labelled as USB 4/5 (USB 2.0). When used for USB 3.0 connections, these ports are labelled as USB 8/9 (USB 3.0). In addition, an onboard header, located next to the Intel PCH chip, also supports USB 2.0 or USB 3.0 connections. When this header is used for USB 2.0 support, it is labelled as USB 0/1 (USB 2.0). When used for 3.0 support, this header is labelled as USB 6/7 (USB 3.0) (Cables are not included.)

IPMI-Dedicated LAN Port

An IPMI-dedicated LAN, supported by the ASpeed AST2400 Baseboard Controller (BMC), is located above USB ports 4/5. Connect a RJ45 cable here for IPMI LAN support.

Video Connection

A Video (VGA) port is located next to COM Port 1 on the I/O back panel.

Serial/COM Ports

The motherboard offers two serial/COM connections. COM1 is located on the I/O backpanel, and COM2 header is located next to the Aspeed AST2400 BMC chip on the motherboard.

SFP/LAN Port 1 - SFP/LAN Port 4

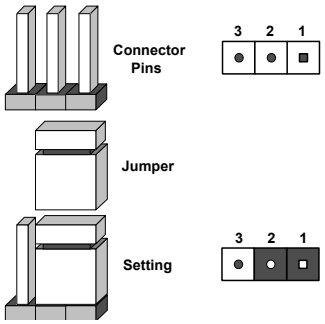
Four SFP (Small Form-factor Pluggable) networking devices/LAN ports are located on the I/O backpanel. Supported by the Intel 710 controller, they provide 10 gigabit LAN support for complex telecommunication and data communications applications. Appropriate cables are required for these connections.

4.4 Jumpers

Explanation of Jumpers

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

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



CMOS Clear

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

To Clear CMOS

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

Notes: Clearing CMOS will also clear all passwords.

Do not use the PW_ON connector to clear CMOS.

VGA Enable/Disable

Close pins 2 and 3 of jumper JPG1 to disable the onboard VGA port using the onboard graphics controller. The default setting is Enabled.

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

LAN1/2 Enable/Disable

Close pins 1 and 2 of Jumper JPLX1 to enable the onboard 710 LAN controller located at UX1. The default setting is Enabled.

LAN1/2 Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Enabled
Pins 2-3	Disabled

3008 SAS Controller Enable

Use Jumper JPS1 to enable or disable the 3008 SAS controller located at US1, and use Jumper JPSX1 for the SAS controller located at USX1.

SAS 3008 Controller Enable Jumper Assignments	
Jumper	**Controller Supported**
JPS1	for SAS Controller located at US1
JPSX1	for SAS Controller located at USX1

SAS 3008 Controller Enable Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	SAS Enable (Default)
Pins 2-3	SAS Disabled

BMC Enable/Disable

Jumper JPB1 allows you to enable the embedded ASpeed AST2400 Baseboard Management Controller (BMC) to provide IPMI 2.0/KVM support on the motherboard.

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

Manufacturer Mode Select

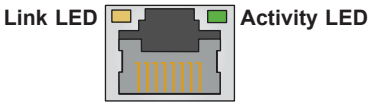
Close the Manufacturer Mode (ME) Select Jumper JPME2 to bypass SPI flash security and force the system to use the Manufacturer mode. ME mode allows the user to flash the system firmware from a host server to modify system settings of a machine at a remote location.

Manufacturer Mode Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Normal
Pins 2-3	Manufacturer Mode

4.5 LED Indicators

SFP/LAN1 - SFP/LAN4 LED Indicators

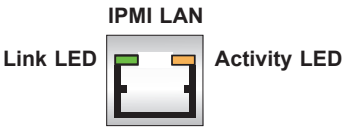
The SFP Ethernet ports have two LEDs. On each port, one LED indicates activity when flashing while the other LED may be green, amber or off to indicate the link speed of the connection.



LAN LED Link Speed Indicator	
LED Color	**Definition**
Off	No connection, 10 Mb/s, or 100 Mb/s
Green	10 Gb/s
Amber	1 Gb/s

IPMI_LAN LED

The yellow LED on the right indicates activity, while the multi-color LED on the left indicates the speed of the connection.



IPMI LAN LED		
	LED Color	**Definition**
Link (Left)	Amber: Solid	1 Gb/s
	Green: Solid	100 Mb/s
Activity (Right)	Yellow: Blinking	Active

Power LED Indicator

The power LED is located at LE2 on the motherboard.

Power Indicator LEDs	
Color/State	**Definition**
Green	Power to system
Off	Power cord disconnected

BMC Heartbeat LED

A BMC (Baseboard Management Controller) Heartbeat LED is located at LEDM1 on the motherboard. When LEDM1 is blinking, BMC functions normally.

BMC Hearbeat LED	
Color/State	**Definition**
Green: Blinking	BMC: Normal

SAS Heartbeat LEDs

Two SAS Heartbeat LEDs are located on the motherboard. DS1 indicates the heartbeat status for the SAS connections supported by the SAS controller located at US1, while DSX1 shows the heartbeat state for the SAS connections supported by the SAS controller located at USX1.

SAS Heartbeat LEDs LED States		
LED	**Color/State**	**Definition**
DS1	Green: Blinking	SAS connections supported by the SAS Controller at US1: Normal
DSX1	Green: Blinking	SAS connections supported by the SAS Controller at USX1: Normal

UID LED Indicator

An LED Indicator is located at LED4 on the motherboard. The unit identifier (UID) indicator provides identification of a system unit that may be in need of service. See <???>

UID can be triggered using the IPMI on the motherboard.

4.6 SATA Connections

I-SATA 0-3 Connections

Four I-SATA 3.0 connections are located on the motherboard. I-SATA (0-3) ports are supported by the Intel PCH chip. In addition, I-SATA 1/ I-SATA 3, colored in yellow, are used with Supermicro SuperDOM (Disk-on-Module) connectors with power-pins built in. The SuperDOM connectors are backward-compatible with regular SATA HDDs and SATA DOMs. All SATA ports provide serial-link signal connections, which are faster than the connections of Parallel ATA.

Note 1: Supermicro SuperDOMs are yellow SATADOM connectors with power pins built in and do not require separate external power cables. These connectors are backward-compatible with non-Supermicro SATADOMs that require an external power supply.

Note 2: For more information on the SATA HostRAID configuration, refer to the Intel SATA HostRAID user's guide posted on www.supermicro.com.

Chapter 5

Software

After the hardware has been installed, you should install the Operating System (OS), configure RAID settings and install the drivers. Necessary drivers and utilities may be found at ftp://ftp.supermicro.com/driver.

5.1 OS Installation

You must first configure RAID settings (if using RAID) before you install the Windows OS and the software drivers. To configure RAID settings, please refer to the RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

Installing the Windows OS for a RAID System

1. Insert Microsoft's Windows Setup DVD in the DVD drive and the system will start booting up from the DVD.
2. Insert the USB stick containing Windows drivers to a USB port on the system.
   Note: for older legacy OS's, please use a method to slipstream the drivers.
3. Select the partition on the drive in which to install Windows.
4. Browse the USB folder for the proper driver files.
5. Choose the RAID driver indicated in the Windows OS Setup screen, then choose the hard drive in which you want to install it.
6. Once all devices are specified, continue with the installation.
7. After the Windows OS installation is completed, the system will automatically reboot.

Installing Windows to a Non-RAID System

1. Insert Microsoft's Windows OS Setup DVD in the DVD-ROM drive and the system will start booting up from the DVD.
2. Continue with the installation. The Windows OS Setup screen will display.
3. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files and then continue with the Windows installation.
4. After the installation has completed, the system will automatically reboot.

5.2 Driver Installation

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 motherboard. Download this file to create a DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

After creating a DVD with the ISO files, insert the disk into the DVD drive on your system and the display shown in Figure 5-1 should appear.

Another option is to go to the Supermicro website at http://www.supermicro.com/products/. Find the product page for your motherboard here, where you may download individual drivers and utilities to your hard drive or a USB flash drive ans install from there.

Note: To install the Windows OS, refer to the previous section or the instructions posted on our website at http://www.supermicro.com/support/manuals/.

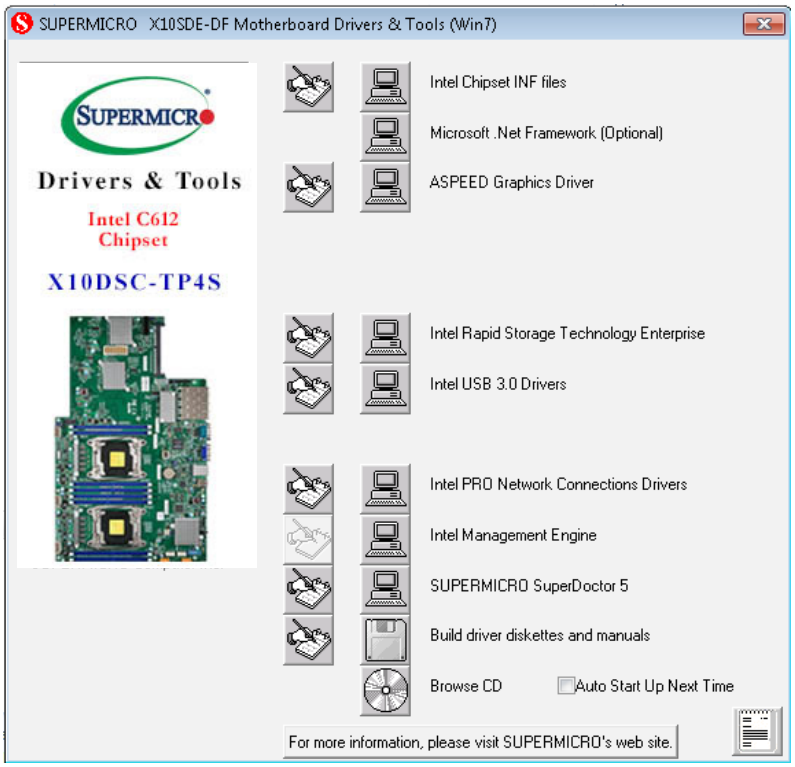


Figure 5-1. Driver & Tool Installation Screen

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

5.3 SuperDoctor® 5

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

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

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

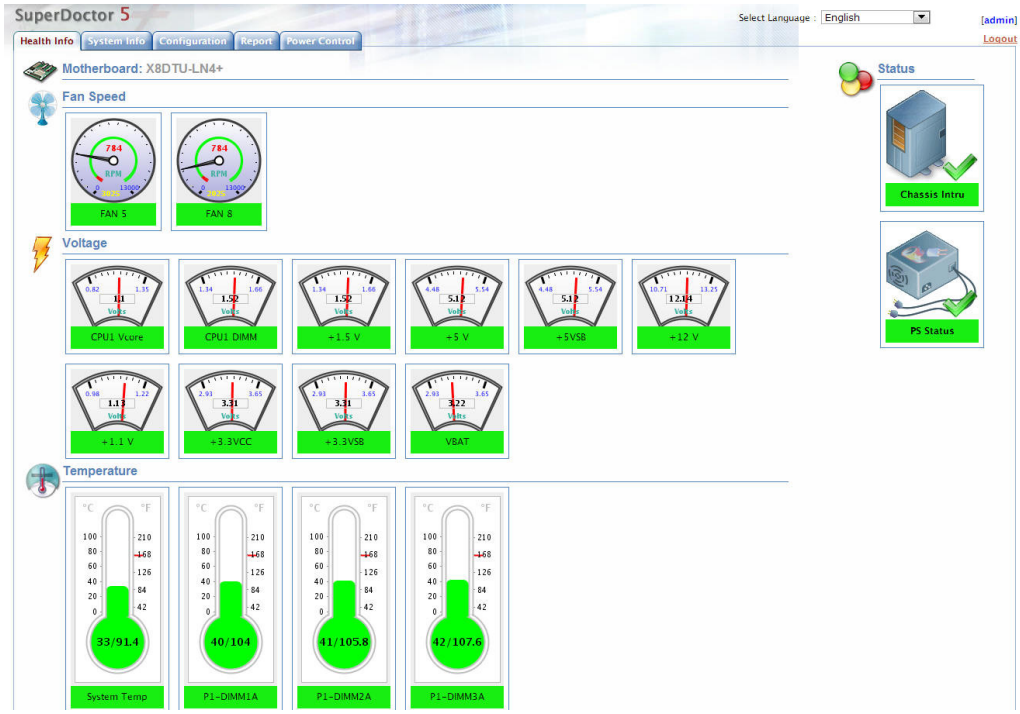


Figure 5-2. SuperDoctor 5 Interface Display Screen (Health Information)

Chapter 6

BIOS

6.1 Introduction

This chapter describes the AMI BIOS setup utility for the X10DSC-TP4S and provides the instructions on navigating the setup screens. The BIOS is stored in a Flash EEPROM and can be updated.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted since this manual was published.

Starting BIOS Setup Utility

To enter the AMI BIOS setup utility screens, press the <Delete> key while the system is booting up. (There are a few cases when other keys are used, such as <F1>, <F2>, etc.)

The BIOS screens have three main frames. The large left frame displays options can be configured by the user. These are blue. When an option is selected, it is highlighted in white. Settings printed in **Bold** are the default values.

In the left frame, a " ▶" indicates a submenu. Highlighting such an item and pressing the <Enter> key opens the list of settings in that submenu.

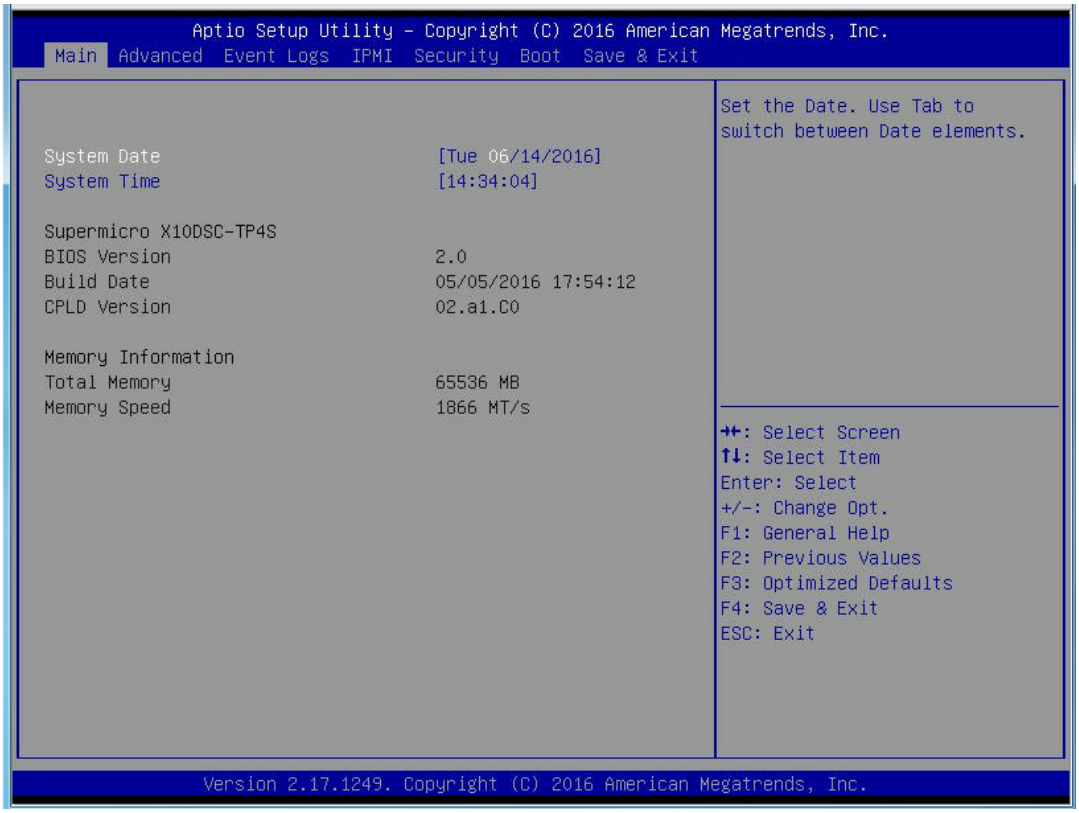
The upper right frame displays helpful information for the user. The AMI BIOS has default informational messages built in. The manufacturer retains the option to include, omit, or change any of these informational messages.

The lower right frame lists navigational methods. The AMI BIOS setup utility uses a key-based navigation system called *hot keys*. Most of these hot keys can be used at any time during setup navigation. These keys include <F3>, <F4>, <Enter>, <ESC>, arrow keys, etc.

Some system parameters may be changed.

6.2 Main Setup

When running the AMI BIOS setup utility, it starts with the Main screen. You can always return to it by selecting the Main tab on the top of the screen.



The Main tab page allows you to set the date and time, and it displays system information.

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. The date's default value is 01/01/2016 after RTC reset.

Supermicro X10DSC-TP4S (Motherboard model)

BIOS Version

Build Date (of the BIOS)

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

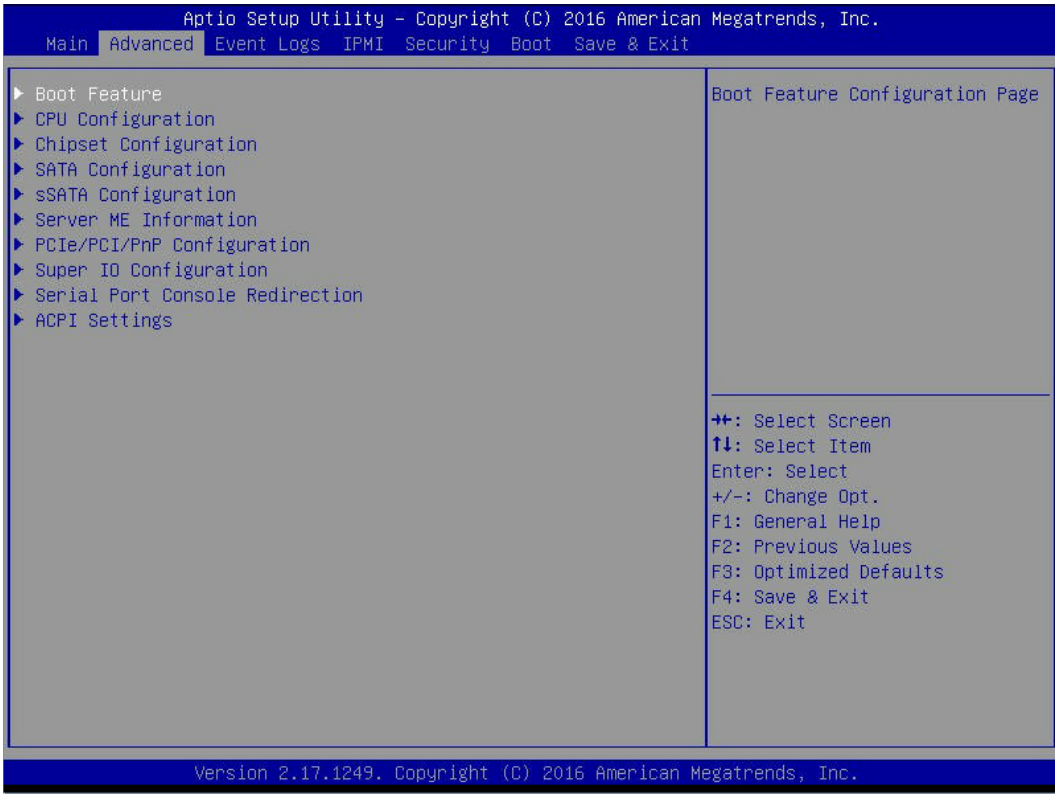
Memory Information

Total Memory (for the system)

Memory Speed

6.3 Advanced Setup Configurations

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



Caution: Take caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency, or an incorrect DRAM timing setting may make the system unstable. If this occurs, revert to the manufacture default settings.

▸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.

CSM Support

Select Enabled to support Compatibility Support Module (CSM) to enhance system security. 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**.

Interrupt 19 Capture

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

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
- Processor 0 Version
- Processor 1 Version

Clock Spread Spectrum

Select Enabled to allow the BIOS to 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.

X2APIC (Advanced Programmable Interrupt Controller)

Based on Intel's Hyper-Threading architecture, each logical processor (thread) is assigned 256 APIC IDs (APIDs) 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 APIDs 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.

Energy Performance Tuning

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

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

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

Caution! 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.

Snoop Response Hold Off

Use this option to set the snoop response hold-off value. The default setting is **6** Cycles.

▶IIO0 Configuration/IIO1 Configuration

IOU2 (IIO PCIe Port 1)

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

IOU0 (IIO PCIe Port 2)

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

IOU1 (IIO PCIe Port 3)

This item configures the PCI-E port Bifuraction setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, **x8X8**, x16, and Auto. The default setting for IIO0 IOU1 (IIO PCI-E Port 3) is **x16**, and the default setting of IIO1 IOU1 (IIO PCI-E Port 3) is **x8x8**.

▶Socket 0 PceiD00F0 - Port 0/DMI (for IIO0 Configuration)

▶Socket 1 PceiD00F0 - Port 0/DMI (for IIO1 Configuration)

PCI-E Port (Available for the II01 Configuration only)

Select Enable to enable a PCI-E port specified by the user. Select Disable to de-activate a PCI-E port specified by the user. Select Auto for the BIOS ROM to automatically discard a PCI-E port specified by the user when there is no HP-compatible device connected to this port or when there is no error detected in this port. The options are **Auto**, Enable, and Disable.

Hot Plug Capable (Available for the II01 Configuration only)

Use this item to enable or disable Hot-Plug support for a port specified by the user. The options are **Disable** and Enable.

PCI-E Port Link (Available for the II01 Configuration only)

Use this item to disable the physical link connected to a PCI-E port specified by a user so that no training will take place on the component-level while the PCI-E configuration commands are still in full force. The options are **Enable** and Disable.

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) and **Auto**.

Override Max Link Width

Use this item to enter a value that overrides the maximum link width set by PCI-E bifurcation for a PCI-E port specified by the user. The options are x1, x2, x4, x8, x16, and **Auto**.

PCI-E Port DeEmphasis

This item configures the De-Emphasis Control (LANKCON2 [6]) setting for this computer. The options are **-0.6 dB** and -3.5 dB.

PCI-E Port L0s Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L0s to L0. The default setting is **4uS - 8uS**.

PCI-E Port L1 Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L1 to L0. The options are: <1uS, 1uS - 2uS, 2uS - 4uS, 4uS - 8uS, **8uS - 16uS**, 16uS - 32uS, 32uS - 64uS, and >64uS.

Fatal Err (Error) Over

Select Enable to force a fatal error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. The options are **Disable** and Enable.

Non-Fatal Err (Error) Over

Select Enable to force a non-fatal error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. The options are **Disable** and Enable.

Corr Err (Correctable Error) Over

Select Enable to force a correctable error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. The options are **Disable** and Enable.

L0s Support

When this item is set to Disable, II0 will not put its transmitter in the L0s state. The options are **Disable** and Enable.

▶Socket 0 PceiD01F0 - Port 1A/Socket 0 PceiD02F0 - Port 2A/Socket 0 PceiD03F0 - Port 3A (for IIO0 Configuration)

▶Socket 1 PceiD01F0 - Port 1A/Socket 1 PceiD02F0 - Port 2A/ Socket 1 PceiD03F0 - Port 3A/Socket 1 PceiD03F2 - Port 3C (for IIO1 Configuration)

PCI-E Port (Available for the II01 Configuration only)

Select Enable to enable a PCI-E port specified by the user. Select Disable to de-activate a PCI-E port specified by the user. Select Auto for the BIOS ROM to automatically discard a PCI-E port specified by the user when there is no HP-compatible device connected to this port or when there is no error detected in this port. The options are **Auto**, Enable, and Disable.

Hot Plug Capable (Available for the II01 Configuration only)

Use this item to enable or disable Hot-Plug support for a port specified by the user. The options are **Disable** and Enable.

PCI-E Port Link (Available for the II01 Configuration only)

Use this feature to disable the physical link connected to a PCI-E port specified by a user so that no training will take place on the component-level while the PCI-E configuration commands are still in full force. The options are **Enable** and Disable.

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) and **Auto**.

Override Max Link Width

Use this item to enter a value that overrides the maximum link width set by PCI-E bifurcation for a PCI-E port specified by the user. The options are x1, x2, x4, x8, x16, and **Auto**.

PCI-E Port DeEmphasis

This item configures the De-Emphasis Control (LANKCON2 [6]) setting for this computer. The options are **-0.6 dB** and -3.5 dB.

PCI-E Port L0s Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L0s to L0. The default setting is **4uS - 8uS**.

PCI-E Port L1 Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L1 to L0. The options are: <1uS, 1uS - 2uS, 2uS - 4uS, 4uS - 8uS, **8uS - 16uS**, 16uS - 32uS, 32uS - 64uS, and >64uS.

Fatal Err (Error) Over

Select Enable to force a fatal error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. The options are **Disable** and Enable.

Non-Fatal Err (Error) Over

Select Enable to force a non-fatal error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. The options are **Disable** and Enable.

Corr Err (Correctable Error) Over

Select Enable to force a correctable error that has occurred to the port specified by the user to be prorogated to the II0 core error logic. The options are **Disable** and Enable.

L0s Support

When this item is set to Disable, II0 will not put its transmitter in the L0s state. The options are **Disable** and Enable.

PM ACPI Mode

Select Enable to generate an _HPGPE message on a PM ACPI event. Select Disable to generate an MSI message. The options are **Disable** and Enable.

Gen3 (Generation 3) Eq (Equalization) Mode

Use this item to set PCI-E Gen3 Adaptive Equalization mode. The options are **Auto**, Enable Phase 0, 1, 2, 3; Disable Phase 0, 1, 2, 3; Enable Phase 1 Only, Enable Phase 0, 1 Only, Advanced, Enable MMM Offset West, and Alt Short Channel.

Gen3 (Generation 3) Spec (Specifics) Mode

Use this item to set the Specifics mode for a PCI-E Gen. 3 device. The options are **Auto**, 0.70 July, 0.70 Sept and 071 Sept.

Gen3 (Generation 3) Phase2 Mode

Use this feature to configure the Loop-count settings for PCI-E Gen3 Phase 2. The options are **Hardware Adaptive** and Manual.

Gen3 DN Tx Preset

Use this item to select the preset setting for a downstream component transmitter. The options are P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/-2.0 dB), P6 (0.0/-2.5 dB), P7 (-6.0/-3.5 dB), P8 (-3.5/-3.5 dB), P9 (0.0/-3.5 dB), and **Auto**.

Gen3 DN Rx Preset Hint

Use this item to select a preset setting for a downstream component receiver. The options are P0 (-6.0 dB), P1 (-7.0 dB), P2 (-8.0 dB), P3 (-9.0 dB), P4 (-10.0 dB), P5 (-11.0 dB), P6 (-12.0 dB), and **Auto.**

Gen3 UP Tx Preset

Use this item to select the preset setting for a upstream component transmitter. The options are P0 (-6.0/0.0 dB), P1 (-3.5/0.0 dB), P2 (-4.5/0.0 dB), P3 (-2.5/0.0 dB), P4 (0.0/0.0 dB), P5 (0.0/-2.0 dB), P6 (0.0/-2.5 dB), P7 (-6.0/-3.5 dB), P8 (-3.5/-3.5 dB), P9 (0.0/-3.5 dB), and **Auto.**

Hide Port?

Use this item to hide the root port from the operating system. The options are **No** and yes.

IOU0 Non-Posted Prefetch/IOU1 Non-Posted Prefetch/IOU2 Non-Posted Prefetch

Select Enable to enble Non-Posted Prefetch support for a PCI-E slot specified by the user. The options are **Disable** and Enable.

▶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.

ACS Control

This item determines how to use the Access Control Service (ACS) in the system. ACS control provides an easy way of authenticating and authorizing for the user to gain access to web applications and services. Select Enable to achieve ACS Control via software programming. Select Disable to obtain ACS control by managing PCI-E bridge connections. 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 II0
- 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 (Direct) Snoop with IVT-Style OSB (Available when the OS and the CPU support this feature)

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 item to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1333, 1400, 1600, 1800, 1867, 2000, 2133, 2200, 2400, 2600, 2667, 2800, 2933, 3000, 3200, and Reserved.

Data Scrambling

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

Enable ADR

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

Erase-Arm NVDIMMs (Non-Volatile DIMMs)

Non-volatile memory modules use flash memory to save data by erasing the old data first before. When this item is set to Enabled, BIOS will erase the flash memory of NVDIMMs and make NVDIMMs ready to save data. The options are **Enabled** and Disabled.

Restore NVDIMMs (Non-Volatile DIMMs)

Select Enabled for the NVDIMM modules to be automatically restored. The options are **Enabled** and Disabled.

Interleave NVDIMMs (Non-Volatile DIMMs)

Select Enabled for interleaving mode support for the onboard NVDIMM modules. The options are **Disabled** and Enabled.

ACPI Shutdown Trigger ADR

If this feature is set to Enabled, the AMI BIOS will issue a command to the Baseboard controller (BMC), which will allow the BMC to override the 4-second gracefully shutdown default setting and to trigger the ADR (Automatic Diagnostic Repository) command. The options are **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).

Socket Interleave Below 4GB

Select Enable for the memory above the 4G Address space to be split between two sockets. The options are **Disable** and Enable.

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 DIMMH1

▶Memory RAS (Reliability_Availability_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

RAS Mode

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. Select Disable to disable Mirror and Lockstep mode support. The options are **Disable**, 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 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.

▸SATA Configuration

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

SATA Controller

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

Configure SATA as

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

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

SATA Port 0~ Port 5

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

- Model number of drive and capacity
- Software Preserve Support

Port 0~ Port 5

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

Port 0 ~ Port 5 Hot Plug

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

Port 0 ~ Port 5 Spin Up Device

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

Port 0 ~ Port 5 SATA Device Type

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

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

Serial ATA Port 0~ Port 5

This item indicates if a SATA port specified by the user is installed (present) or not.

Port 0 ~ Port 5 SATA Device Type (Available when a SATA port is detected)

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

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

SATA RAID Option ROM/UEFI Driver

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are 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 None, Both, SATA Controller, and **sSATA Controller**.

▸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 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.

Configure as eSATA (Available for the sSATA Port 0 Only)

Select Enabled to configure sSATA Port 0 as an external sSATA port. 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 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 None, 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.

Configure as eSATA (Available for the sSATA Port 0 Only)

Select Enabled to configure sSATA Port 0 as an external sSATA port. 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

PCI Latency Timer

Use this item to configure the PCI latency timer for a device installed on a PCI bus. Select 32 to set the PCI latency timer to 32 PCI clock cycles. The options are **32**, 64, 96, 128, 160, 192, 224 and 248 (PCI Bus Clocks).

PERR# Generation

Select Enabled for the BIOS to generate a PERR (PCI/PCI-E Parity Error) number The options are Enabled and **Disabled**.

SERR# Generation

Select Enabled for the BIOS to generate a SERR (System Error) number The options are Enabled and **Disabled**.

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.

Caution: 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

Slot1 PCI-E OPROM

Use this item to select the Option ROM type for a device installed on PCI-E Slot1 for system boot. The options are Disabled, **Legacy**, and EFI.

Onboard Video Option ROM

Use this item to select the Option ROM type for the onboard video device for system boot. The options are Disabled, **Legacy**, 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 LAN OPROM Type

This item allows the user to select Option ROM type for the network (LAN) connections. The options are **Legacy** and EFI.

Onboard LAN1 OPROM (Option ROM)/Onboard LAN2 OPROM (Option ROM)/Onboard LAN3 OPROM (Option ROM)/Onboard LAN4 OPROM (Option ROM)

Use this item to select the type of device installed in a LAN port specified by the user for system boot. The default setting for LAN1 Option ROM is **Enabled**. The default settings for LAN2-LAN4 Option ROMs are **Disabled.**

Onboard SAS OPROM Type

Use this item to select the Option ROM type for the SAS device specified by the user for system boot. The options are Disabled, **Legacy**, and EFI.

Network Stack

Select Enabled to enable PXE (Preboot Execution Environment) or UEFI (Unified Extensible Firmware Interface) for network stack support. The options are **Disabled** and Enabled. If this item is set to Enabled, the following items will display:

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**.

PXE Boot Wait Time(Available when Network Stack is set to Enabled)

Use this item to set the wait time for the BIOS to hold back PXE-boot from being executed when the user presses the ESC key. The default setting is **0**.

▸Super IO Configuration

Super IO Chip AST2400

▸Serial Port 1 Configuration/Serial Port 2 Configuration

Serial Port

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, and for Serial Port 2 is IO=2F8h IRQ=3.

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, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7,10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 10, 11, 12).

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

Device Mode

Use this item to select the SUART Clock source for a serial port specified by the user. The options are **24MHz/13** and 24MHz.

Serial Port 2 Attribute (Available on the Serial Port 2 Configuration Only)

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

▸Serial Port Console Redirection

COM 1 Console Redirection

(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:*

▶(COM1) 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.

COM2/SOL Console Redirection

(COM2/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:*

▶(COM2/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 **COM2/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. For more information on TPM, please refer to the TPM manual at 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

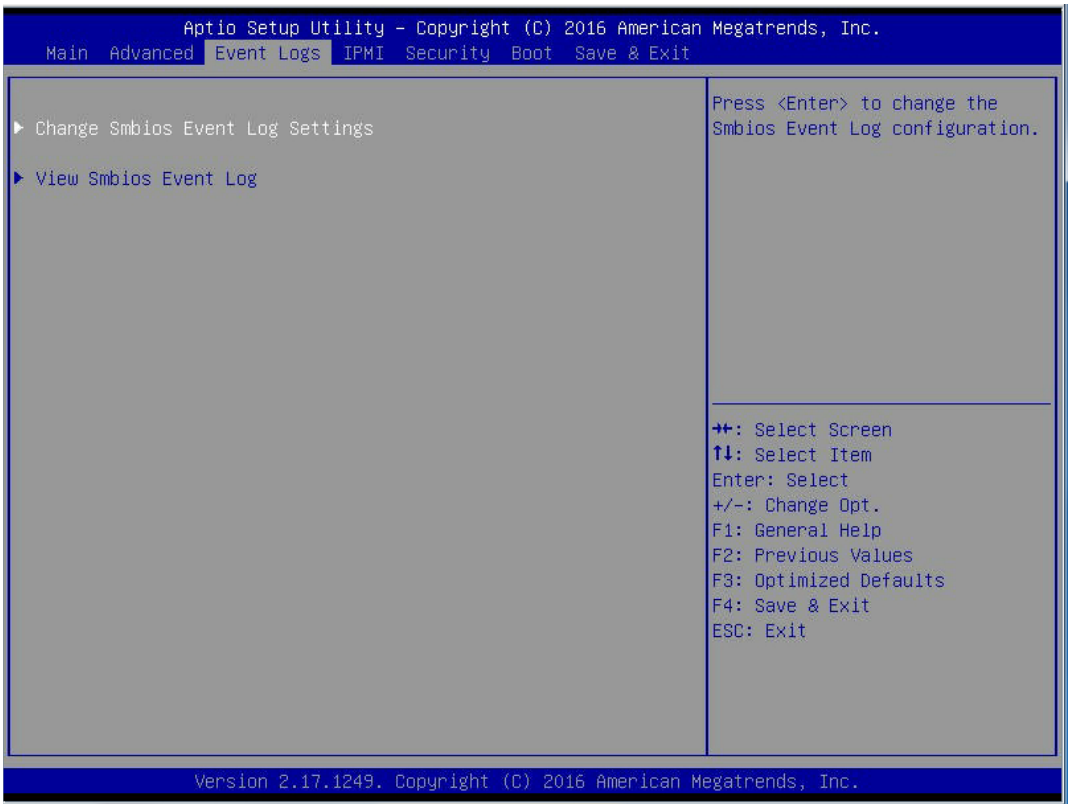
Select Enabled to activate the High Precision Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an 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.

6.4 Event Logs

Use this tab page 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.

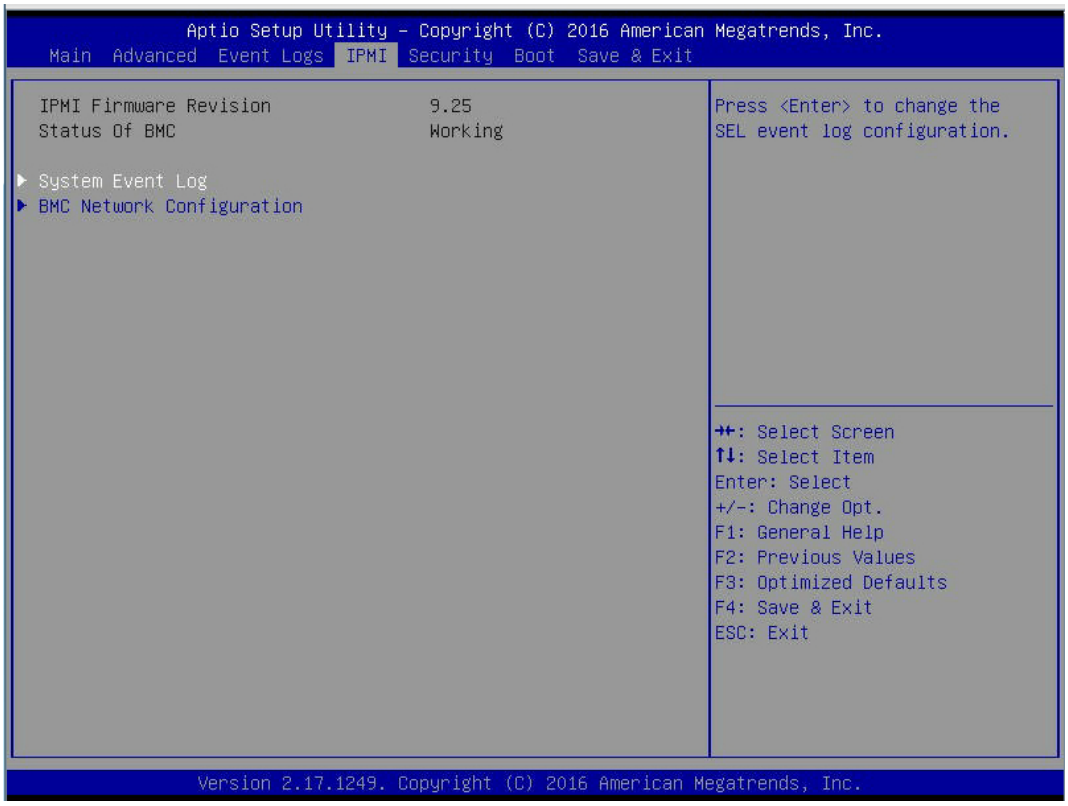
View SMBIOS Event Log

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

Date/Time/Error Code/Severity

6.5 IPMI

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



The following items will be displayed:

- IPMI Firmware Revision
- Status of BMC

▸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.

Custom EFI Logging Options

Log EFI Status Codes

Use this item to select the type of events to log. The options are Disabled, Both, **Error Code**, and Progress Codes.

> **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

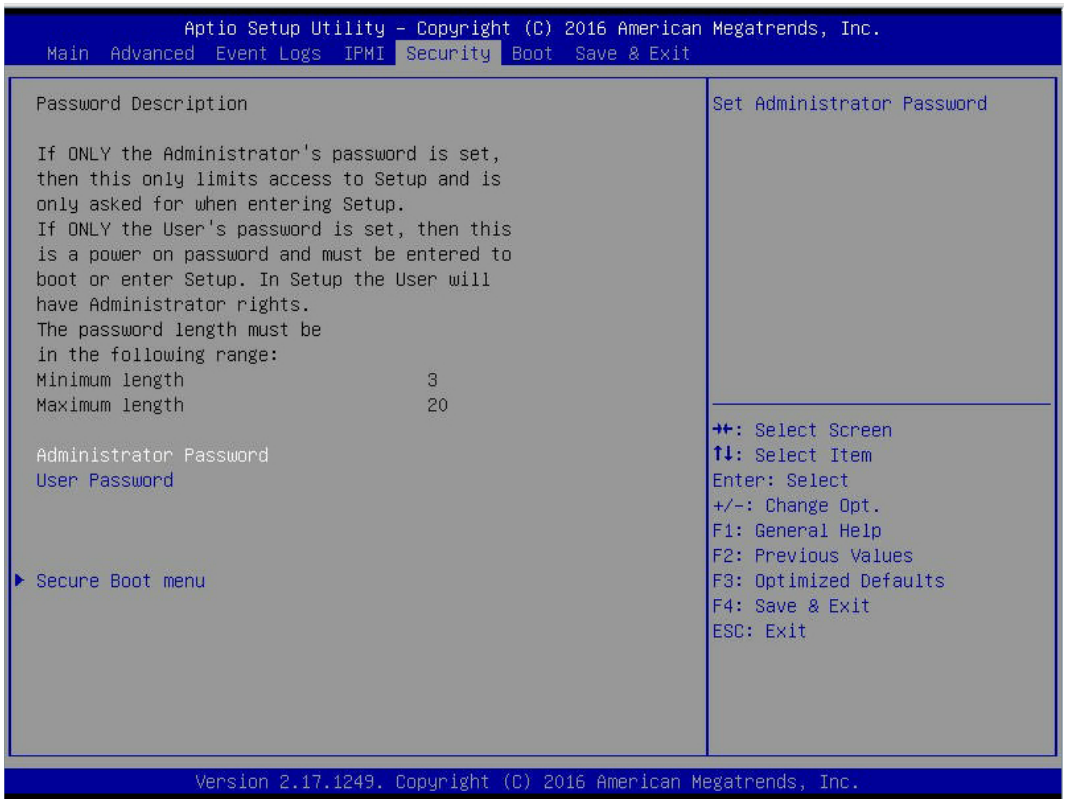
This item displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

VLAN

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

6.6 Security

Use this tab page to configure Security settings.



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**.

▸Key Management

Provision Factory Default Keys

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

▸Enroll All Factor Default Keys

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

▸Save All Secure Boot Variables

This feature allows the user to set and save the 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

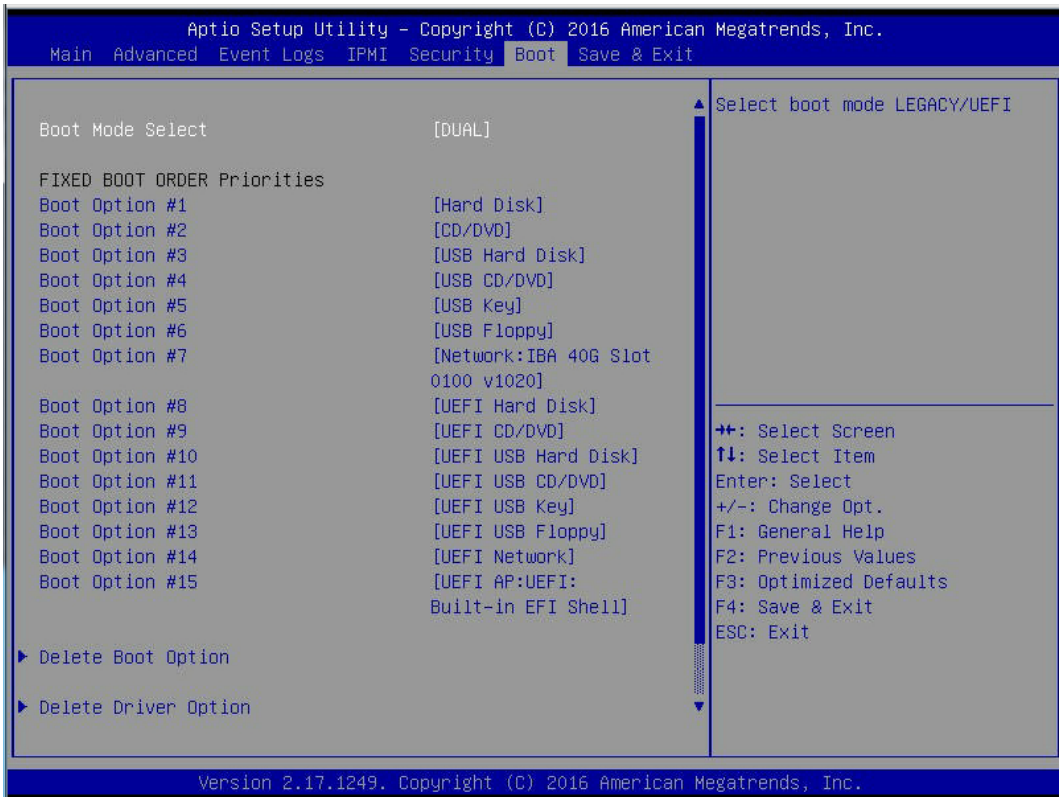
This feature allows the user to set and save the forbidden signatures and deny the access to those whose names appear on the list.

▸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.

6.7 Boot

Use this tab page to configure Boot Settings.



Boot Configuration

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

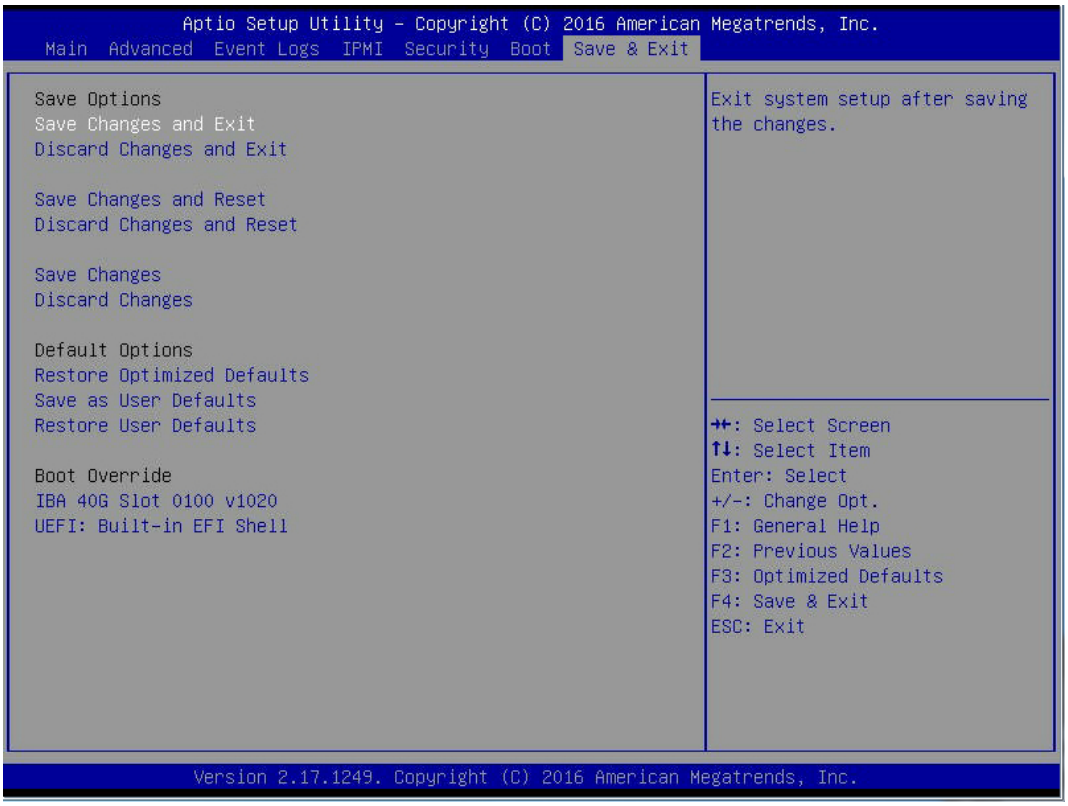
- Legacy Boot Order #1

▶UEFI USB Key Drive BBS Priorities

- UEFI Boot Order #1

6.8 Save & Exit

Use this tab page to configure Save & Exit settings.



Save Options

Save Changes and Exit

Select this item to save the changes you've made and to exit from the BIOS setup. For the changes to take effect, please reboot your computer.

Discard Changes and Exit

Select this item to exit from the BIOS setup without making any changes to the system setup 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.

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.

Default Options

Restore Optimized Defaults

Select this item and press <Enter> to load the manufacture 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.

Appendix A

BIOS Error Codes

A-1 BIOS Error Beep (POST) Codes

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

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

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

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

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

A-2 Additional BIOS POST Codes

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

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

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

Appendix B

Standardized Warning Statements for AC Systems

About Standardized Warning Statements

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

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

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

Warning Definition

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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

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

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

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .
قبل أن تعمل على أي معدات،كن على علم بالمخاطر الناجمة عن الدوائر
الكهربائية
وكن على دراية بالممارسات 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 waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

Installation Instructions

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告
将此系统连接电源前,请先阅读安装说明。

警告
將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

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

:ا المنتج يعتمد على معدات الحماية من الدوائرالقصيرة التي تم تثبيتها في
بنى
أكد من أن تقدير الجهاز الواقي ليس أكثر من: 250V، 20A

경고!

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

Waarschuwing

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

Power Disconnection Warning

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

電源切断の警告

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

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

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה מפני ניתוק חשמלי

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

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

경고!

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

Waarschuwing

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

Equipment Installation

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

機器の設置

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

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה !

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

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.

אזור עם גישה מוגבלת

אזהרה !
יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת כלי 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 ومفتاح أو أي وسيلة أخرى للالأمان

경고!

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

Waarschuwing

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

Battery Handling

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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה !

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك
استبدال البطارية
فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة
تخلص من البطاريات المستعملة وفقا 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 trom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

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

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات 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っています。

修理する際には注意ください。

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

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

هناك خطر من التيار الكهربائي أوالطاقة 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 הארצי

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

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين 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 وفقا 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 ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

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

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

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

경고!

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

Waarschuwing

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

Power Cable and AC Adapter

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

電源コードとACアダプター

製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。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连接线,电源线和电源适配器.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連接線,電源線和電源適配器.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

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

חשמליים ומתאמי AC

אזהרה !
כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרקמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل،والكابلات الكهربائية
ومحولات التيار المتردد
التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق.
تم توفيرها لك مع المنتج
الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL
معتمدة من قبل
لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro
(التي تحمل علامة UL/CSA)

경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

Appendix C

UEFI BIOS Recovery Instructions

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

C.1 Overview to UEFI BIOS

The Unified Extensible Firmware Interface (UEFI) specification provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism for add-on card initialization to allow the UEFI OS loader, which is stored in the add-on card, to boot up the system. UEFI offers a clean, hands-off control to a computer system at bootup.

C.2 Recovering the UEFI BIOS Image (Main BIOS Block)

A UEFI BIOS flash chip consists of a recovery BIOS block, which is comprised of two boot blocks and a main BIOS block (the main BIOS image). The boot block contains critical BIOS codes including memory detection and recovery codes for the user to flash a new BIOS image if the original main BIOS image is corrupted. When the system power is on, the boot block codes execute first. Then the main BIOS code will continue with system initialization and bootup.

Note: Follow the BIOS recovery instructions below when the main BIOS boot crashes.

C.3 Recovering the UEFI BIOS with a USB Device

This feature allows the user to recover a BIOS image using a USB device without the need of additional utilities. A device such as a USB flash drive or a USB CD/DVD ROM/RW can be used. A USB hard disk drive cannot be used for BIOS recovery at this time.

To perform UEFI BIOS recovery using an attached device, follow the instructions below.

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

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

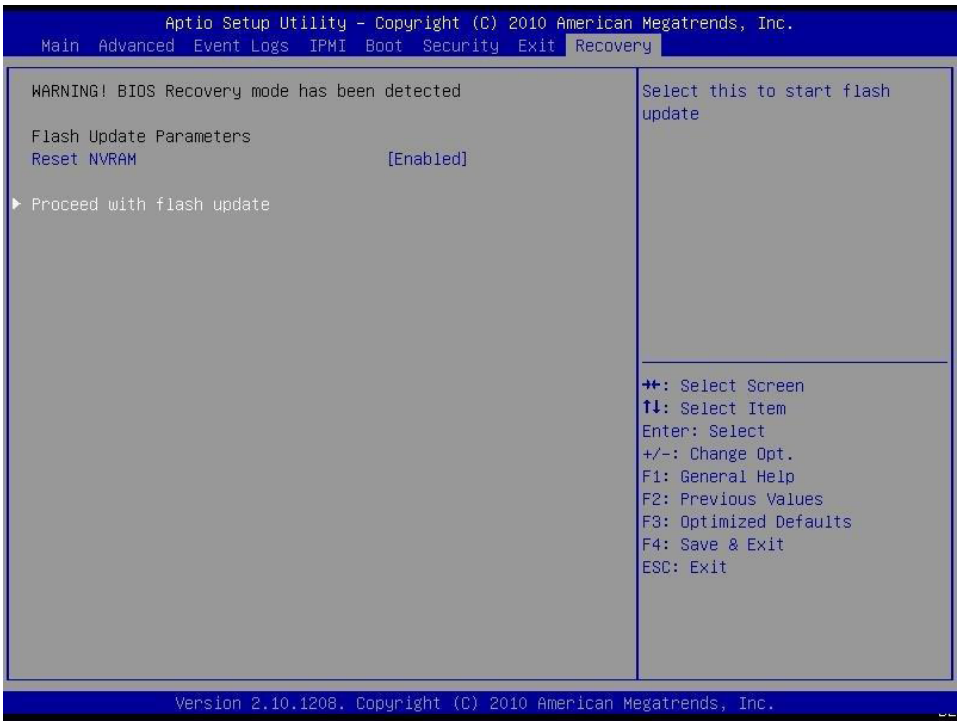
2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system

3. While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your keyboard until your hear two short beeps. This may take from a few seconds to one minute.

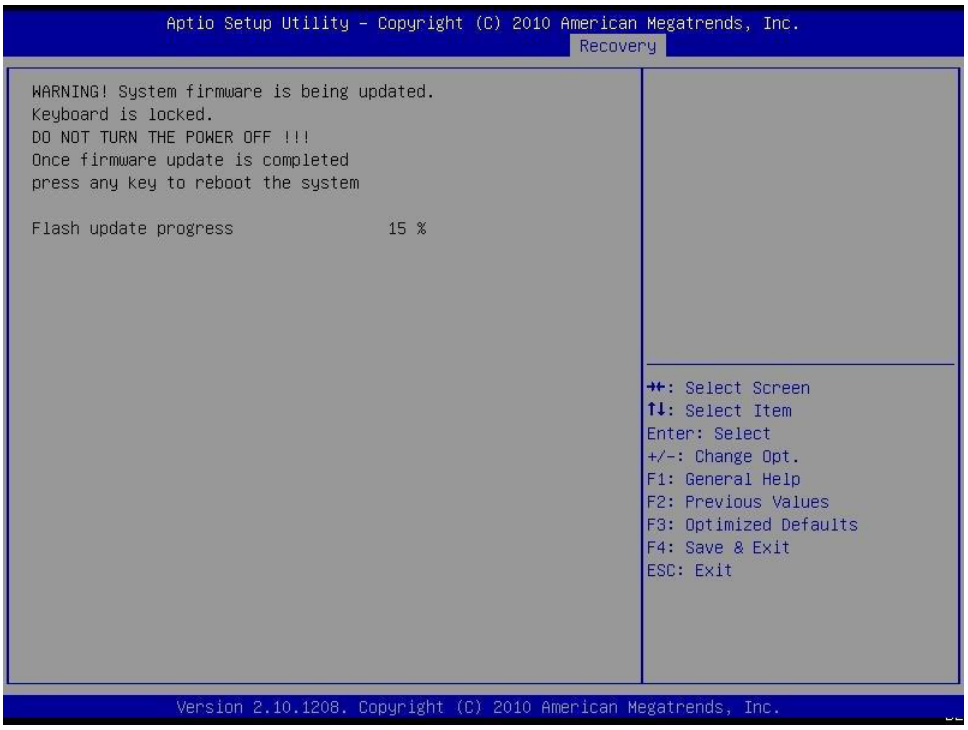
4. After locating the new BIOS binary image, the system will enter the BIOS recovery menu as shown below.

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

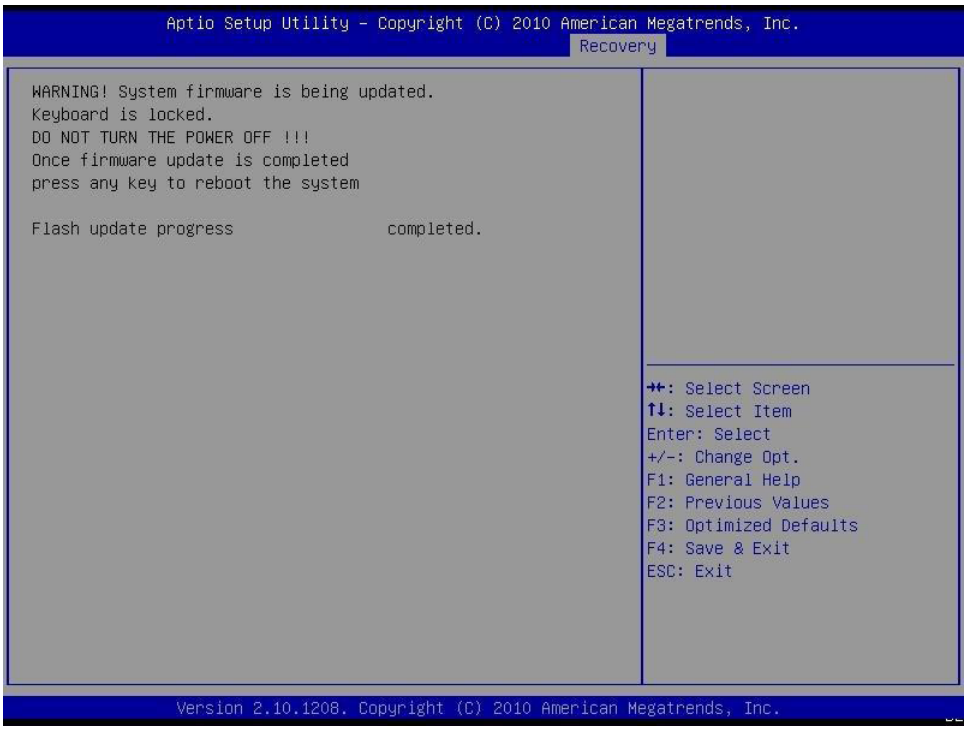
5. When the screen shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.



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



6. After the process has completed, press any key to reboot the system.



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

8. When the DOS prompt appears, enter AMI.BAT BIOSname.###.

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

9. After receiving the message that the BIOS update is complete, unplug the AC power cable from the power supply to clear CMOS, then plug the AC power cable in the power supply again to power on the system.
10. Press <Del> continuously to enter the BIOS Setup utility.
11. Press <F3> to load the default settings.
12. After loading the default settings, press <F4> to save the settings and exit the BIOS Setup utility.

Appendix D

System Specifications

Processors

Dual Intel Xeon E5-2600 v4/v3 family, QPI up to 9.6GT/s

Chipset

Intel PCH C612

BIOS

128Mb AMI BIOS SPI Flash BIOS

Memory

Eight 288-pin DDR4 DIMM slots support up to:
- 1 TB of ECC 3DS LRDIMM memory
- 512 GB of ECC LRDIMM memory
- 256 GB of ECC RDIMM memory

Type: 2400/2133/1866/1600/1333MHz ECC DDR4 SDRAM 72-bit
DIMM sizes: LRDIMM--64GB, 32GB; RDIMM--32GB, 16GB, 8GB, 4GB

Drive Bays

Ninety 3.5" SATA3 drives, or 2.5" drives with a kit
Two 2.5" rear SATA3 drive bays

Input/Output

Quad LAN with Intel XL710 10G SFP+
SIOM card for multiple I/O options

Motherboard

X10DSC-TP4S (proprietary form factor),
Dimensions: 10.47" (L) x 16.97" (W) (265.94 mm x 431.04 mm)

Chassis

SC946E1C-R3KB; 4U, slide mounting rails and cable management arm
Dimensions: (WxHxD) 17.6 x 7.0 x 35.7 in. (447 x 178 x 906 mm)

Weight

Net Weight: 160 lbs (72.6 kg)
Gross Weight: 235 lbs (106.6 kg)

System Cooling

Five 8-cm 7.5 K RPM, 4-pin PWM rear exhaust fans

Power Supply

Four (N+2) redundant 800W/1000W modules, 80+ Titanium level
Model: PWS-1K04A-1R
AC Input Voltages: 100-240 VAC
Rated Input Current: 800W Output @ 100-127Vac: 9.8-7A; 1000W Output @ 200-240Vac: 7-5A
Rated Input Frequency: 50-60 Hz
Rated DC Output Power: 800W: +12V: 67A, +12Vsb: 2.1A; 1000W: +12V: 83A, +12Vsb: 2.1A

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º 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)

Perchlorate Warning

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