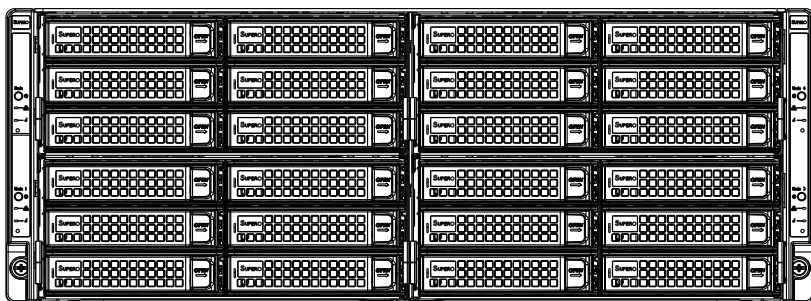# SUPER○®

FatTwin
F627R3-RTB+
F627R3-R72B+

User's Manual

Revision 1.0c

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Manual Revision 1.0c
Release Date: December 30, 2014

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the FatTwin F627R3-RTB+/R72B+. Installation and maintainance should be performed by experienced technicians only.

The FatTwin™ F627R3-RTB+/R72B+ is a high-end server based on the SCF424AS-R1K28B 4U rackmount chassis and the dual processor X9DRFR serverboard. All models have an IPMI LAN port and four serverboard nodes with eight hot-swap 3.5" SAS or SATA Hard Disk Drives (HDD) each per node.

The difference between the FatTwin F627R3-RTB+ and FatTwin F627R3-R72B+ is that the F627R3-R72B+ has SAS2 capability and the F627R3-RTB+ does not.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X9DRFR serverboard and the SCF424AS-R1K28B chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the FatTwin F627R3-RTB+/R72B+ into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

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

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the FatTwin F627R3-RTB+/R72B+.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X9DRFR serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SCF424AS-R1K28B server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS Error Beep Codes

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Chapter 1

Introduction

1-1 Overview

The FatTwin F627R3-RTB+/R72B+ is a high-end server comprised of two main subsystems: the SCF424AS-R1K28B 4U server chassis and the X9DRFR dual processor serverboard in four hot-swap nodes. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the FatTwin F627R3-RTB+/R72B+ server, as listed below:

- Heat Sinks
  Four (4) 2U passive CPU heat sinks for rear CPU (SNK-P0048P)
  Four (4) 2U passive CPU heat sinks for front CPU (SNK-P0048PS)

- Four (4) Plastic air shrouds (MCP-310-42401-0B)

- Eight (8) 80x80x38-mm chassis middle cooling fans (FAN-0129L4)

- Four (4) Round 20" 20-to-20-pin ribbon front control cables (CBL-0047L)

- Four (4) 4-pin 40-cm PDB-to-MB HF power cables (CBL-0480L)

- SAS/SATA Backplane:
  Four (4) Backplanes for two (2) 3.5" HDD (BPN-SAS-F424-A2)
  Four (4) Backplanes for six (6) 3.5" HDD (BPN-SAS-F424-A6)
  Eight (8) 29cm 30AWG SATA cables (CBL-0483L)
  Thirty-two (32) hot-swap 3.5" HDD trays (MCP-220-00094-0B)
  F627R3-RTB+ only:
  Eight (8) 27-cm PBF cables for SGPIO (CBL-0157L-02)
  Twelve (12) 81-cm SATA 30AWG cables (CBL-0481L)
  Twelve (12) 55-cm 30AWG SATA-SATA cables (CBL-0484L)
  F627R3-R72B+ only:
  Four (4) SAS add-on cards (BPN-ADP-S2208L-H8IR-O-P)
  Four (4) 23-cm, w/25.5-cm 30AWG Ipass-to-4 SATA cables (CBL-0118L-03)
  Eight (8) 43-cm SATA round S-RA PBF cables (CBL-0226L)
  Four (4) 27-cm PBF cables for SGPIO (CBL-0157L-02)

- One (1) F418/F424 Rail set (MCP-290-41803-0N)

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

- Supermicro product manuals: http://www.supermicro.com/support/manuals/

- Product drivers and utilities: ftp://ftp.supermicro.com

- Product safety information:
  http://super-dev/about/policies/safety_information.cfm

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

1-2 Serverboard Features

At the heart of the FatTwin F627R3-RTB+/R72B+ lies the X9DRFR, a dual processor serverboard based on the Intel® C602 chipset and designed to provide maximum performance. Two of these serverboards can be mounted in the SCF424AS-R1K28B chassis.

The sections below cover the main features of the X9DRFR serverboard (see Figure 1-1 for a block diagram of the chipset).

Processors

The X9DRFR supports single or dual Intel® Xeon® E5-2600 series processors (Socket R LGA 2011). Each processor supports four full-width Intel QuickPath Interconnect (QPI) links, with support of up to 25.6 GT/s per QPI link and with Data Transfer Rate of up to 8.0 GT/s per direction. Please refer to the serverboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

Each X9DRFR serverboard node has sixteen (16) DIMM slots supporting up to 512 GB of DDR3-1600/1333/1066/800 MHz speed RDIMM/LDIMM registered ECC or 128 GB of DDR3-1600/1333/1066/800 MHz speed UDIMM SDRAM in up to 1 GB, 2 GB, 4 GB, 8 GB, 16 GB or 32 GB sizes at 1.35V or 1.5V voltages. See Chapter 5 for details.

Note: For the latest CPU/memory updates, please refer to our website at http://www.supermicro.com/products/motherboard.

Serial ATA

A Serial ATA controller is integrated into the C602 to provide up to a ten-port SATA subsystem, (two SATA 3 (6 Gb/s), four SATA 2 (3 Gb/s and four SCU SATA2 (3 Gb/s)) which is either RAID 0, 1, 5 and 10 (AHCI SATA2), RAID 0 and 1 (AHCI SATA3) or RAID 0 and 1 (SCU SATA2) supported. The SATA drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the SATA drives.

SAS

An LSI® SAS2208 SAS2 controller is integrated into the BPN-ADP-S2208L-H8IR-O-P expansion card to provide an eight port 6 Gb/s SAS2 (Serial Attached SCSI) subsystem, which is RAID 0, 1, 5, 6, 10, 50 and 60 supported. The SAS drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hotswap capability and RAID function of the SAS drives.

Note: The BPN-ADP-S2208L-H8IR-O-P SAS expansion cards for the FatTwin F627R3-R72B+ have an OPTIONAL battery backup system for each motherboard node that will keep the hard drives running for a short period of time in the case of a power supply failure or power interruption. The battery backup system is not activated by default, so it needs to be configured to activate its use.

These can be purchased optionally from Supermicro as part numbers BTR-022L-LSI00279 and MCP-450-00001-ON, one each per node.

PCI Expansion Slots

Each node of the FatTwin F627R3-RTB+/R72B+ has 1x PCI-E 3.0 x16 low-profile and 1x PCI-E 3.0 x8 micro low-profile slot on the motherboard.

Onboard Controllers/Ports

One Fast UART 16550 serial port, one 9-pin RS-232 port are located on the serverboard. The color-coded I/O ports include one COM port, a VGA (monitor) port, two USB 2.0 ports, an IPMI dedicated LAN port and two Gigabit Ethernet ports.

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

Graphics Controller

The X9DRFR features an integrated Matrox G200eW Video Controller.

Nuvoton WPCM450 Controller

Note: The term "IPMI controller" and the term "BMC controller" can be used interchangeably in this section.

The Nuvoton WPCM450R Controller, a Baseboard Management Controller (BMC), supports 2D/VGA-compatible Graphic Cores with PCI interface, creating multi-media virtualization via Keyboard/Video/Mouse Redirection (KVMR). The WPCM450R Controller is ideal for remote system management.

The WPCM450R Controller interfaces with the host system via PCI connections to communicate with the graphics cores. It supports USB 2.0 and 1.1 for remote keyboard/mouse/virtual media emulation. It also provides LPC interface support to control Super IO functions. The WPCM450R Controller is connected to the network via an external Ethernet PHY module or shared NCSI connections.

The WPCM450R communicates with onboard components via six SMBus interfaces, PECI (Platform Environment Control Interface) buses, and General Purpose I/O ports.

WPCM450R DDR2 Memory Interface

The WPCM450R supports a 16-bit DDR2 memory module with a speed of up to 220 MHz. For best signal integrity, the WPCM450R provides point-to-point connection.

WPCM450R PCI System Interface

The WPCM450R provides 32-bit, 33 MHz 3.3V PCI interface, which is compliant with the PCI Local Bus Specification Rev. 2.3. The PCI system interface connects to the onboard PCI Bridge used by the graphics controller.

Other Features Supported by the WPCM BMC Controller

The WPCM450R supports the following features:

- IPMI 2.0
- Serial over LAN
- KVM over LAN
- LAN Alerting-SNMP Trap
- Event Log
- X-Bus parallel interface for I/O expansion

- Multiple ADC inputs, Analog and Digital Video outputs
- SPI Flash Host BIOS and firmware bootstrap program supported
- Reduced Media Independent Interface (RMII)
- OS (Operating System) Independency
- Provides remote Hardware Health Monitoring via IPMI. Key features
- Provides Network Management Security via remote access/console redirection.
- Supports the following Management tools: IPMIView, CLI (Command Line Interface)
- RMCP+ protocol supported

Note: For more information on IPMI configuration, please refer to the IPMI User's Guide posted on our website at http://www.supermicro.com/support/manuals/.

Power Supply

The power supply cables are wired on the motherboard, which is connected by an onboard power cable to the SMC-Proprietary Adaptor (BPN-ADP-F418) to provide power to the system.

Super I/O

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

1-3   Server Chassis Features

The following is a general outline of the main features of the SCF424AS server chassis.

System Power

Each SCF424AS chassis model includes four high-efficiency 95-plus Platinum certified redundant power supplies, each rated at 1280 Ws. In the unlikely event your power supply fails, replacement is simple and can be accomplished without tools.

SAS/SATA Subsystem

The SCF424AS supports up to eight 3.5" hot-swap SAS/SATA drives in trays for each node for a total of thirty-two (32) drives. These drives are hot-swappable units and are connected to two backplanes (one for six and one for two HDD) that provides power and control.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the drives. For more information, visit our Web site at: http://www.supermicro.com.

Front Control Panel

SCF424AS-R1K28B chassis includes four front panels on the handles of the chassis which control each of the systems. Each control panel on the FatTwin F627R3-RTB+/R72B+ provides you with system monitoring and control for one server node. LEDs indicate system power, HDD activity, network activity, system overheat and power supply failure. A main power button and a system reset button are also included.

I/O Ports

The SCF424AS is an proprietary form factor chassis designed to be used in a 4U rackmount configuration. The SCF424AS chassis provides a low-profile add-on card slot, a VGA port, two USB 2.0 ports, one IPMI Ethernet port and two gigabit Ethernet ports per node.

Cooling System

The SCF424AS chassis accepts (two (2) 8-cm system fans per node, powered from either backpane or the serverboards, for eight fans total. When one of the motherboard nodes is removed, another motherboard will continue to operate the fans.

Air Shrouds

The SCF424AS chassis requires mylar air shrouds for each node to direct the airflow where cooling is needed. The air shroud will differ for different motherboards. If using a motherboard which is not the default in the chassis, refer to the optional parts in the Appendix of this manual, or the Supermicro Web site at www.supermicro.com to puchase the proper air shroud.

Mounting Rails

The SCF424AS includes a set of rails, and can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual.

1-4   Advanced Power Management

Intel® Intelligent Power Node Manager (NM)

The Intel® Intelligent Power Node Manager (IPNM) provides your system with real-time thermal control and power management for maximum energy efficiency. Although IPNM Specification Version 1.5 is supported by the BMC (Baseboard Management Controller), your system must also have IPNM-compatible Manageability Engine (ME) firmware installed to use this feature.

Manageability Engine (ME)

The Manageability Engine, which is an ARC controller embedded in the IOH (I/O Hub), provides Server Platform Services (SPS) to your system. The services provided by SPS are different from those proveded by the ME on client platforms.

Figure 1-1. Intel C602 Chipset:
System Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your motherboard. See the previous pages for the actual specifications of your motherboard. This block diagram is intended for your reference only.
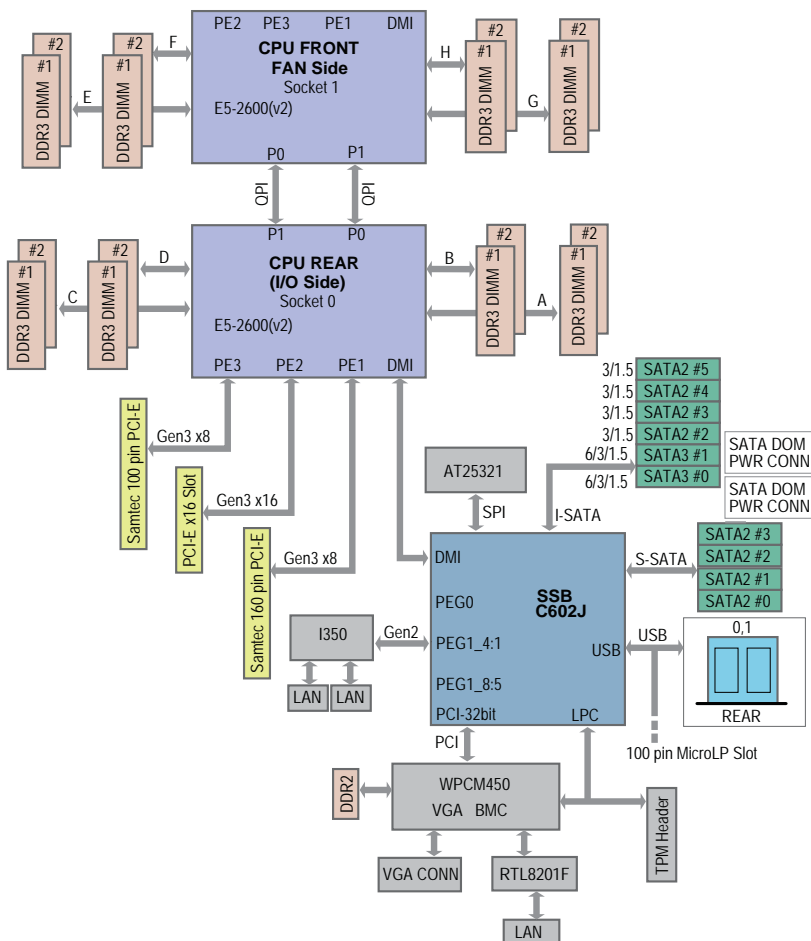
1-5   Contacting Supermicro

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1-6   Fat Twin: System Notes

As a Fat Twin configuration, the FatTwin F627R3-RTB+/R72B+ is a unique server system. With eight system boards incorporated into a single chassis acting as eight separate nodes, there are several points you should keep in mind.

Nodes

Each of the four serverboards act as a separate node in the system. As independant nodes, each may be powered off and on without affecting the others. In addition, each node is a hot-swappable unit that may be removed from the front of the chassis.

Note: A guide pin is located between the upper and lower nodes on the inner chassis wall. This guide pin also acts as a "stop" when a node is fully installed. If too much force is used when inserting a node this pin may break off. Take care to slowly slide a node in until you hear the "click" of the locking tab seating itself.

System Power

Four 1280 Watt power supplies are used to provide the power for all serverboards. Each serverboard however, can be shut down independently of the other with the power button on its own control panel.

SAS/SATA Backplane/Drives

As a system, the FatTwin F627R3-RTB+/R72B+ supports the use of up to thirty-two (32) SAS/SATA drives. Each of the eight backplanes in the system (one for six drives and one for two for each node) works to apply system-based control for power and fan speed functions, yet at the same time logically connects a set of eight SAS/SATA drives to each backplane/serverboard. Consequently, RAID setup is limited to an eight-drive scheme (RAID cannot be spread across all drives). See the Drive Bay Installation/Removal section in Chapter 6 for the logical hard drive and node configuration.

Chapter 2

Server Installation

2-1   Overview

This chapter provides a quick setup checklist to get your FatTwin F627R3-RTB+/R72B+ up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2   Unpacking the System

You should inspect the box the FatTwin F627R3-RTB+/R72B+ was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the FatTwin F627R3-RTB+/R72B+. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3   Preparing for Setup

The box the FatTwin F627R3-RTB+/R72B+ was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

2-4   Cautions!

Choosing a Setup Location

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

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

- This product is not suitable for use with visual display work place devices 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 fully extended to the floor with the full weight of the rack resting on them.

- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.

- Always make sure the rack is stable before extending a component from the rack.

- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.

- Determine the placement of each component in the rack *before* you install the rails.

- Install the heaviest server components on the bottom of the rack first, and then work up.

- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.

- Allow any hot plug drives and power supply modules to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

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 ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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

2-5   Rack Mounting Instructions

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

Note: This rail will fit a rack between 26.5" and 36.4" deep. The SCF418 is not designed for installation into a Telco post-style rack unit.

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

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.

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

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

Identifying the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of two sections: A front section which secures to the front post of the rack and a rear section which adjusts in length and secures to the rear post of the rack. These assemblies are specifically designed for the left and right side of the chassis (see Figure 2-1).

Adjusting the Rails

Each rail assembly has an adjusting screw. loosening this screw allows you to adjust the length of the rail to fit a variety of rack sizes.

Locking Tabs

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

**Figure 2-1: Identifying the Outer Rail and Inner Rails
(Left Rail Assembly Shown)**
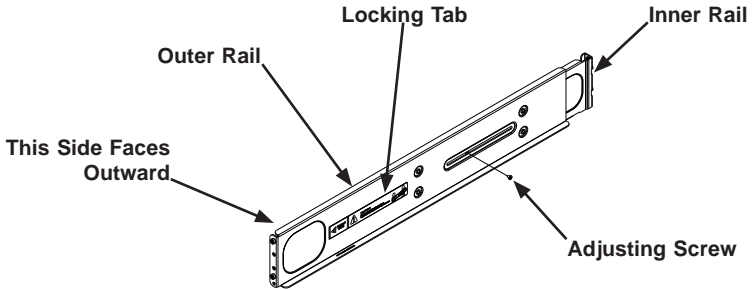
Installing the Rails on a Rack

Installing the Rails

1. Adjust the length of both rails as described on the previous page.

2. Align the front section of the outer rail with the slots on the front post of the rack. Secure the front of the outer rail to the rack with two screws.

3. Pull out the rear section of the outer rail, adjusting the length until it fits within the posts of the rack.

4. Align the rear section of the rail with the slots on the rear post of the rack. Secure the rear of the outer rail to the rear of the rack with two screws.

5. Repeat steps 1-4 for the remaining rail.

Figure 2-2: Attaching the Rails to a Rack
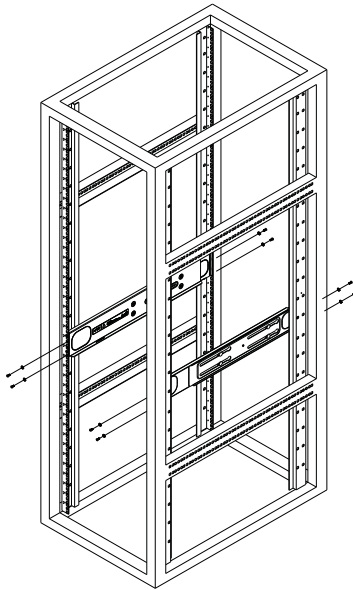
Chassis Installation

Installing the Chassis into a Rack

1. Confirm that the rails are correctly installed on the rack.

2. Align the bottom of the chassis with the bottom of the rails.

3. Insert the chassis into the rails, keeping the pressure even on both sides, pushing the chassis into the rack until it clicks into the locked position.

4. Secure the chassis handles to the front of the rack.

Figure 2-3: Installing into a Rack
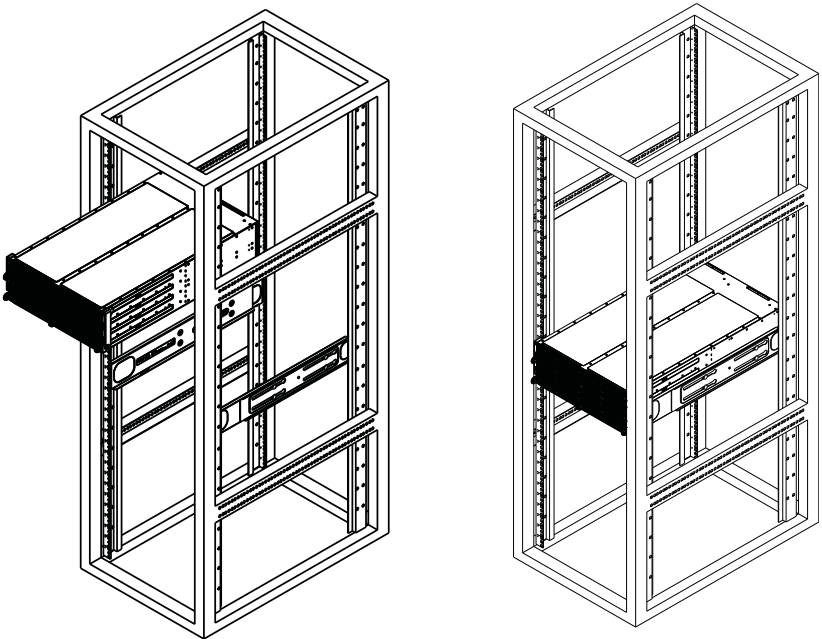
Note: The figure above is for illustration purposes only. Always install servers to the bottom of the rack first.

2-6 Checking the Serverboard Setup

After you install the FatTwin F627R3-RTB+/R72B+ in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

Accessing the inside of the System

Before operating the server for the first time, it is important to remove the protective film covering the top of the chassis, in order to allow for proper ventilation and cooling.

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

Checking the Components and Setup

1. You may have one or two processors already installed into the serverboard. Each processor needs its own heat sink. See Chapter 5 for instructions on processor and heat sink installation.

2. Your FatTwin F627R3-RTB+/R72B+ server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

3. If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.

4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. Also make sure that no cables are positioned in front of the fans. See Chapter 5 for details on cable connections.

2-7   Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SATA drives have been properly installed and all connections have been made.

Checking the Drives

1. All drives are accessable from the front and rear of the server. A hard drive can be installed and removed from the front of the chassis without removing the top chassis cover.

2. Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install hard drives, please refer to Chapter 6.

Checking the Airflow

1. Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.

2. Do not operate the server without drives or drive trays in the drive bays. Use only recommended server parts.

3. Make sure that 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 inform you of the system status. See "Chapter 3 System Interface" for details on the LEDs and the control panel buttons.

Providing Power

1. Plug the power cord(s) from the power supply unit(s) into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

2. Depress the power on button on the front of the chassis.

Notes

Chapter 3

System Interface

3-1   Overview

There are several LEDs on the control panel and on the drive carriers to keep you constantly informed of the overall status of the system. SCF424AS models include four front panels on the handles of the chassis which control each of the systems.

This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

Figure 3-1: Control Panel
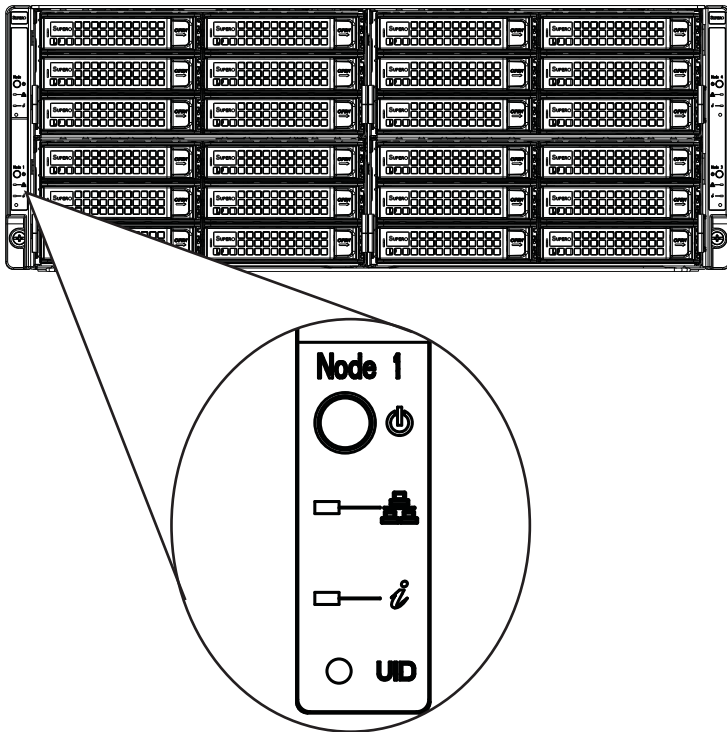
3-2   Control Panel Buttons

- **Power:** The main power button on each of the four control panels is used to apply or remove power from the power supply to each of the four systems in the chassis. Turning off system power with this button removes the main power, but keeps standby power supplied to the system. Therefore, you must unplug system before servicing. The power button has a built-in LED which will turn green when the power is on.

- **UID:** When used with a UID compatible motherboard, the UID button is used to turn on or off the blue light function of the LED. This is built into the front side of the UID button and at the rear end of each motherboard node, for those motherboards which support it. Once the blue light is activated, the unit can be easily located in very large racks and server banks.

3-3   Control Panel LEDs

The four control panels are located on the front handle of the SCF424AS chassis. Each control panel has two additional LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Information LED

See the following table for the status shown by this LED.

Information LED	
Status	**Description**
Continously on and red	An overheat ocondition has occured. (This may be caused by cable congestion.)
Blinking red (1 Hz)	Fan failure: check for an inoperative fan.
Blinking red (0.25 Hz)	Power failure: check for an inoperative power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack environment.
Blinking blue (300 msec)	Remote UID has been activated. Use this function to locate the server from a remote location.

- NIC: Indicates network activity on either LAN1 or LAN2 when flashing.

3-4 Drive Carrier LEDs

The chassis includes externally accessible SAS/SATA drives. Each drive carrier displays two status LEDs on the front of the carrier.

	LED Color	State	Status
Activity LED	Green	Solid On	SAS drive installed
	Green	Blinking	I/O activity
Status LED	Red	Solid On	Failed drive for SAS/SATA with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive for SAS/SATA with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for SAS/SATA with RSTe support
	Red	On for five seconds, then off	Power on for SAS/SATA with RSTe support
	Red	Blinking at 4 Hz	Identify drive for SAS/SATA with RSTe support

Chapter 4

Standardized Warning Statements for AC Systems

4-1   About Standardized Warning Statements

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

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

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

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.

<div dir="rtl">

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.

</div>

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-A 20 ,V 250

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

경고!

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

Waarschuwing

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

Power Disconnection Warning

Warning!

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

電源切断の警告

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

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

警告

在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!

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
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

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

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

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!

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

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 !
כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש
להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

من الممكن أن المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء
الأصابع ومفكات البراغي
وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

섀시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

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

安裝此产品时,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.

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install the X9DRFR motherboard into the chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

5-1   Handling the Motherboard

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

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2   Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard.

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed in preconfigured systems to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables.

The following cables need to be connected for the FatTwin F627R3-RTB+/R72B+ system:

- Eight (8) 29-cm 30AWG SATA cables (CBL-0483L)
- Four (4) 4-pin 40-cm PDB-to-MB HF power cables (CBL-0480L)

F627R3-RTB+ only:

- Eight (8) 27-cm PBF cables for SGPIO (CBL-0157L-02)
- Twelve (12) 81-cm SATA 30AWG cables (CBL-0481L)
- Twelve (12) 55-cm 30AWG SATA-SATA cables (CBL-0484L)

F627R3-R72B+ only:

- Four (4) 23-cm, w/25.5-cm 30AWG Ipass-to-4 SATA cables (CBL-0118L-03)
- Eight (8) 43-cm SATA round S-RA PBF cables (CBL-0226L)
- Four (4) 27-cm PBF cables for SGPIO (CBL-0157L-02)

5-3   Control Panel Connectors and I/O Ports

The rear I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-1 below for the colors and locations of the various I/O ports.

Figure 5-1. Rear I/O Ports

Back Panel I/O Port Locations and Definitions	
1.	USB Port 1
2.	USB Port 2
3.	VGA Port
4.	Gigabit LAN 1
5.	Gigabit LAN 2
6.	IPMI LAN

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. The red wire in the ribbon cable plugs into pin 1 of JF1. Connect the other end of the cable to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

Figure 5-2. Front Control Panel Header Pins (JF1)

	20	19	
PMBUS DAT	○	○	PMBUS CLK
X	○	○	X
SMBUS Alert for Hot Swap on BPN-ADD-F418 PWR Adp. Card	○	○	SMBUS DAT for Hot Swap on BPN-ADD-F418 PWR Adp. Card
PS Failure	○	○	SMBUS CLK for Hot Swap on BPN-ADD-F418 PWR Adp. Card
Red LED (Failure) Signal	○	○	UID LED Signal
PS_ON_N to PS	○	○	Front Panel PWR LED
PWR Good of BPN-ADP-F418 PWR Adaptor Card	○	○	PWM for Fan to Backplane
Fan Speed Signal 2	○	○	Fan Speed Signal 1
LAN LED Signal	○	○	UID Button
Ground	○	○	Power Button
	2	1	

5-4   Processor and Heatsink Installation

Warning! When handling the processor package, avoid placing direct pressure on the label area.

Warning! If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.

Note: Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

Note: Make sure to install the system board into the chassis before you install the CPU heatsink.

Note: When receiving a server board 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.

Note: Refer to the Supermicro website for updates on CPU support.

Note: When one CPU is installed, be sure to installed on CPU Socket 1 first.

Installing the LGA2011 Processor

1. There are two load levers on the LGA2011 socket. To open the socket cover, first press and release the load lever labeled 'Open 1st'.

Press down on Load Lever labeled 'Open 1st'.
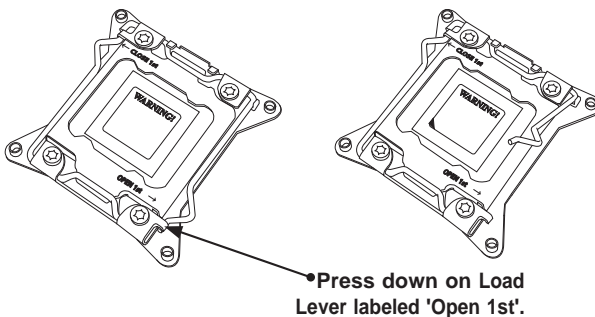
Note: Graphics and drawings shown in this manual are for illustration only. Your components may or may not look the same as the graphics shown in the manual.

2. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position.

Press down on Load the
Lever labeled 'Close 1st'

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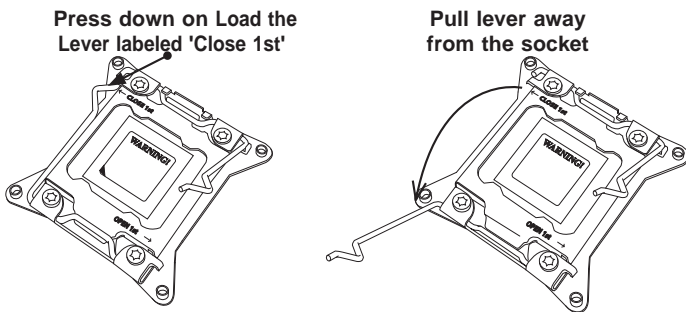
3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.

Gently push down to pop
the load plate open.
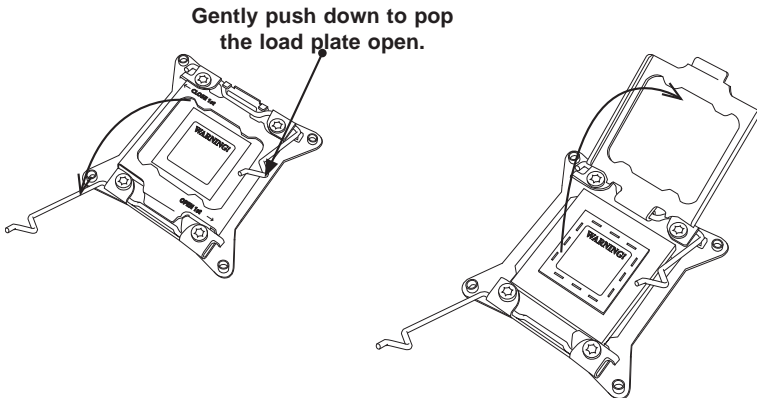
4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.
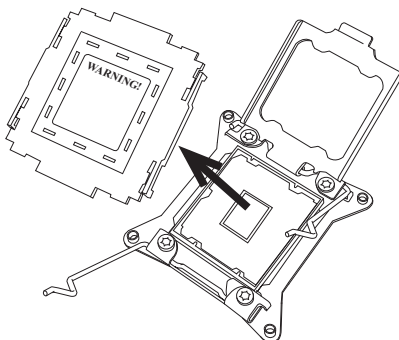
5. Use your thumb and index finger to hold the CPU on its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.

Socket Keys

CPU Keys
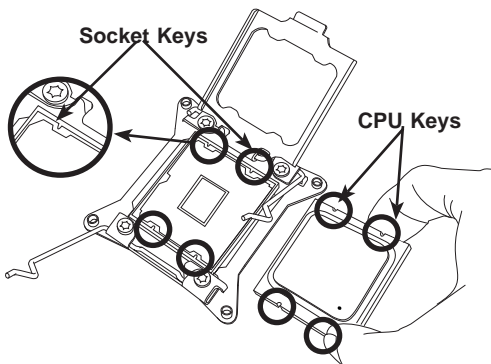
6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)
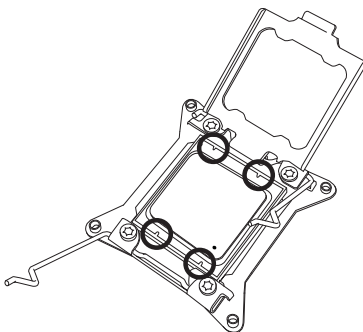
Caution: You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

8. Close the load plate with the CPU inside the socket. Lock the lever labeled 'Close 1st' first, then lock the lever labeled 'Open 1st' second. Use your thumb to gently push the load levers down to the lever locks.

Gently close the load plate.

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

Lever Lock

Push down and lock the lever labeled 'Open 1st'

Lever Lock
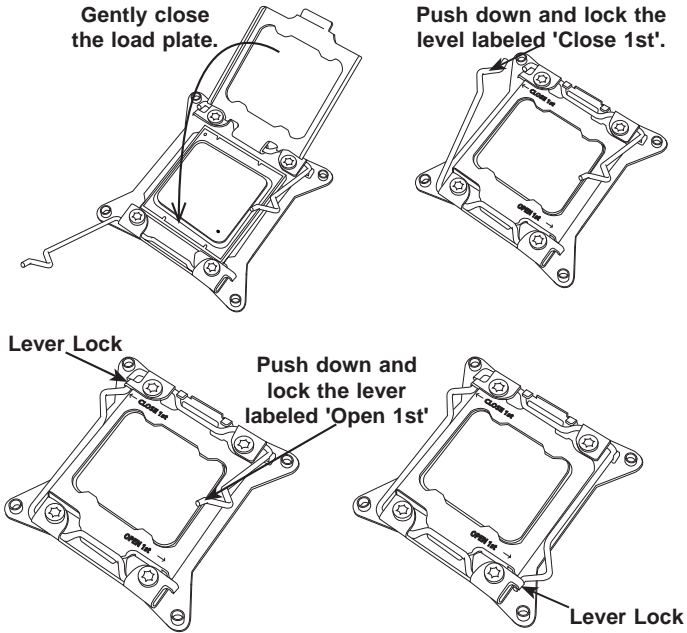
Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the Motherboard's and the Heatsink Bracket underneath.

3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (-do not over-tighten the screws to avoid possible damage to the CPU.)

4. Finish the installation by fully tightening all four screws.
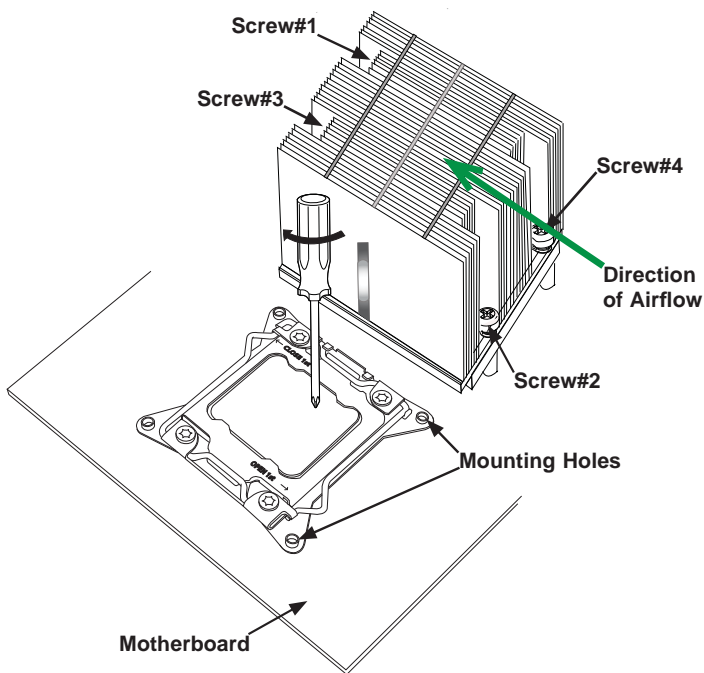
Note: Make sure the heatsink is placed so that the fins of the heatsink are in the direction of the airflow in your system.

Removing the Heatsink

Caution: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to avoid damaging the CPU or the CPU socket.

1. Unscrew the heatsink screws from the motherboard in the sequence as shown in the illustration below.

2. <u>Gently</u> wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)

3. Once the CPU is loosened from the heatsink, remove the CPU from the CPU socket.

4. Remove the used thermal grease and clean the surface of the CPU and the heatsink, Reapply the proper amount of thermal grease on the surface before reinstalling the CPU and the heatsink.

Caution: Do not reuse thermal grease!
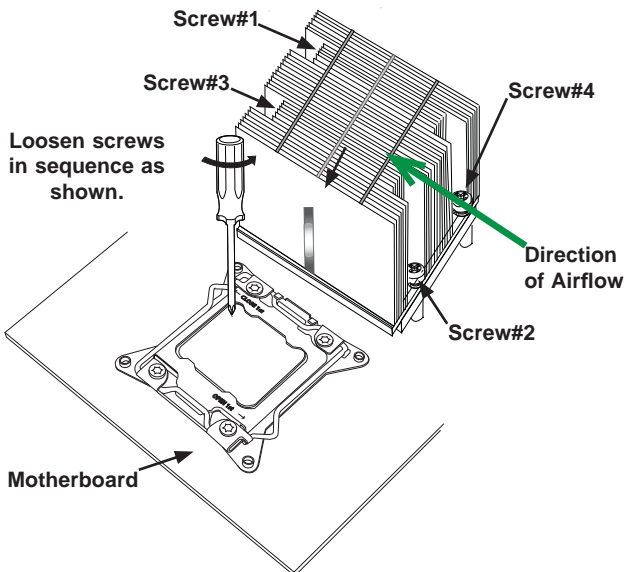
5-5   Installing Memory

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

Installing Memory

1. Insert the desired number of DIMMs into the memory slots, starting with P1-DIMM #1A. (For best performance, please use the memory modules of the same type and speed in the same bank.)

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

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

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

5. Use two thumbs together to press the notches on both ends of the module straight down into the slot until the module snaps into place.

6. Press the release tabs to the locking positions to secure the DIMM module into the slot.

Reverse the steps above to remove the DIMM modules from the motherboard.

Note: 1 GB, 2 GB, 4 GB, 8 GB, 16 GB or 32 GB size memory modules are supported. It is highly recommended that you remove the power cord from the system before installing or changing memory modules. Please refer to our web site for memory that has been tested on the X9DRFR serverboard.

Figure 5-3. Installing DIMM into Slot

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove: Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.

Notch

Notch

Front View

Note: Notch should align with the receptive key point on the slot.

Release Tab

Release Tab

Top View of DDR3 Slot
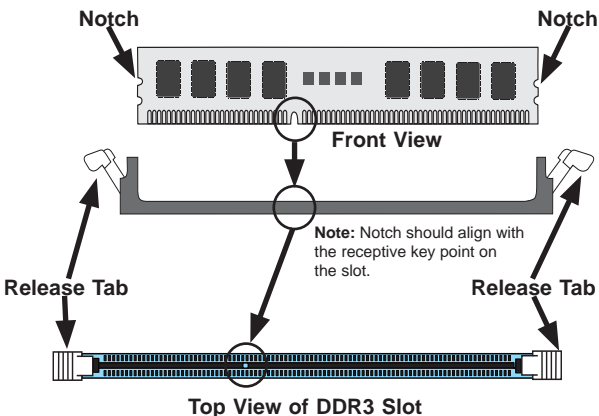
Removing Memory Modules

Press both notches on the ends of the DIMM module to unlock it. Once the DIMM module is loosened, remove it from the memory slot.

Memory Support

The X9DRFR motherboard supports up to 512 GB of 240-pin Registered (RDIMM)/ Load Reduced (LRDIMM) ECC or up to 128 GB of Unbuffered (UDIMM) ECC/ Non-ECC DDR3-1600/1333/1066/800 MHz 4- channel memory in sixteen (16) DIMM slots.

Note: For the latest CPU/memory updates, please refer to our website at http:// www.supermicro.com/products/motherboard.

Processors and their Corresponding Memory Modules								
CPU#	Corresponding DIMM Modules							
CPU 1	P1-A1	P1-B1	P1-C1	P1-D1	P1-A2	P1-B2	P1-C2	P1-D2
CPU 2	P2-E1	P2-F1	P2-G1	P2-H1	P2-E2	P2-F2	P2-G2	P2-H2

Processor and Memory Module Population	
Number of CPUs+DIMMs	**CPU and Memory Population Configuration Table (For memory to work properly, please install DIMMs in the sequence as specified)**
1 CPU & 2 DIMMs	CPU1 P1-A1/P1-B1
1 CPU & 4 DIMMs	CPU1 P1-A1/P1-B1, P1-C1/P1-D1
1 CPU & 5-8 DIMMs	CPU1 P1-A1/P1-B1, P1-C1/P1-D1 + Any memory pairs in P1-A2/-B2/-C2/-D2 DIMM slots
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-A1/P1-B1, P2-E1/P2-F1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-A1/P1-B1/P1-C1/P1-D1, P2-E1/P2-F1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-A1/P1-B1/P1-C1/P1-D1, P2-E1/P2-F1/P2-G1/P2-H1
2 CPUs & 10-16 DIMMs	CPU1/CPU2 P1-A1/P1-B1/P1-C1/P1-D1, P2-E1/P2-F1/P2-G1/P2-H1 + Any memory pairs in P1, P2 DIMM slots
2 CPUs & 16 DIMMs	CPU1/CPU2 P1-A1/P1-B1/P1-C1/P1-D1, P2-E1/P2-F1/P2-G1/P2-H1,P1-A2/P1-B2/P1-C2/P1-D2, P2-E2/P2-F2/P2-G2/P2-H2

Installing UDIMM (ECC/Non-ECC) Memory

Intel E5-2600 Series Processor UDIMM Memory Support									
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)					
				1 Slot Per Channel		2 Slots Per Channel			
				1DPC		1DPC		2DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V
SRx8 Non-ECC	1GB	2GB	4GB	NA	1066, 1333, 1600	NA	1066, 1333	NA	1066, 1333
DRx8 Non-ECC	2GB	4GB	8GB	NA	1066, 1333, 1600	NA	1066, 1333	NA	1066, 1333
SRx16 Non-ECC	512MB	1GB	2GB	NA	1066, 1333, 1600	NA	1066, 1333	NA	1066, 1333
SRx8 ECC	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333	1066	1066, 1333
DRx8 ECC	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333	1066	1066, 1333

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Intel E5-2600 Series Processor LRDIMM Memory Support						
Ranks Per DIMM & Data Width (See the Note Below)	Memory Capacity Per DIMM		Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)			
			1 Slot Per Channel		2 Slots Per Channel	
			1DPC		1DPC and 2DPC	
			1.35V	1.5V	1.35V	1.5V
QRx4 (DDP)	16GB	32GB	1066, 1333	1066, 1333	1066	1066, 1333
QRx8 (P)	8GB	16GB	1066, 1333	1066, 1333	1066	1066, 1333

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at: http://www.supermicro.com/support/resources/mem.cfm.

Installing RDIMM (ECC) Memory

Intel E5-2600 Series Processor RDIMM Memory Support								
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)				
				1 Slot Per Channel		2 Slots Per Channel		
				1DPC		1DPC		2DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V
SRx8	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600
DRx8	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600
SRx4	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600
DRx4	4GB	8GB	16GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600
QRx4	8GB	16GB	32GB	800	1066	800	1066	800	800
QRx8	4GB	8GB	16GB	800	1066	800	1066	800	800

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Note 1: For the memory modules to work properly, please install DIMM modules of the same type, same speed and same operating frequency on the motherboard. Mixing of RDIMMs, UDIMMs or LRDIMMs is not allowed. Do not install both ECC and Non-ECC memory modules on the same motherboard.

Note 2: Using DDR3 DIMMs with different operating frequencies is not allowed. All channels in a system will run at the lowest common frequency.

5-6 Motherboard Details

Figure 5-4. X9DRFR Motherboard Layout
(not drawn to scale)
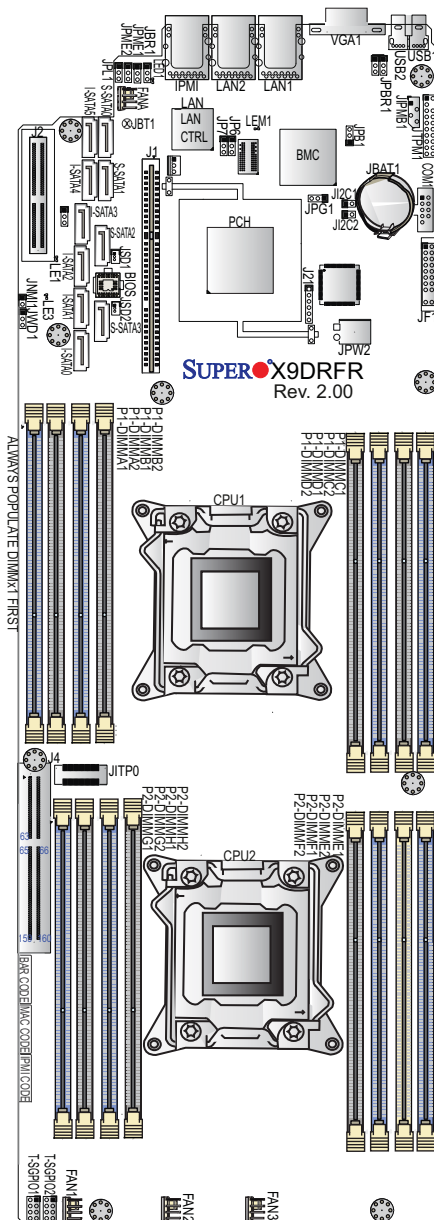
Notes:

1. For the latest CPU/Memory updates, please refer to our website at http://www.supermicro.com/products/motherboard/ for details.

2. Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

3. Jumpers not indicated are for test purposes only.

4. All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

X9DRFR Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 5-9
JBRST1	BMC (BaseBoard Controller) Reset	Off (Normal)
JI²C1/JI²C2	SMB to PCI-E Slots	Off (Disabled)
JPB1	BMC Enabled	Pins 1-2 (Enabled)
JPG1	VGA Enabled	Pins 1-2 (Enabled)
JPL1	LAN1/LAN2 Enable	Pins 1-2 (Enabled)
JWD1	Watch Dog Timer Enable	Pins 1-2 (Reset)

LED	Description	State	Status
LE1	Onboard PWR LED	Green: On	Onboard Power On
LE3	SATA Activity LED	Green: Blinking	SATA Active
LED1	UID LED	Blue: On	Unit Identified
LEM1	BMC Heartbeat LED	Green: Blinking Green: Steady On	BMC Normal BMC Disabled or Failed

Connector	Description
FAN#1-3, FANA	CPU/System (4-Pin) Fan Headers
J1	PCI-E 3.0 x16 Slot (Available when CPU1 is installed)
J2	PCI-E x8 Micro Low-Profile (MLP) Riser Card Slot w/support of 2 LANs or 10Gb LAN or InfiniBand Connections (Available when CPU1 is installed)
J4	PCI-E 3.0 x 8 Slot for SMC-Proprietary Add-On Card (Available when CPU1 is installed) (See Note 1)
JBAT1	Onboard Battery (See Section 5-13)
JF1	Front Panel Control
JIPMB1	4-pin External BMC I^{2}C Header (for an IPMI Card)
JPW2	Power Connector (See Note 2)
JSD1	SATA Device Power Connector
JTPM1	TPM (Trusted Platform Module)/Port 80
JUSB1	Backplane USB 0/1 Ports
JVGA1	VGA Port
LAN1/LAN2	G-bit Ethernet Ports 1/2
(IPMI) LAN	IPMI LAN
T-SGPIO 1/2	Serial_Link General Purpose I/O Headers
(I-)SATA 0/1	SATA 3.0 Connectors #0/1 from Intel AHCI
(I-) SATA 2-5	SATA 2.0 Connectors #2-5 from Intel AHCI
(S-) SATA 0/1	SATA 2.0 Connectors #0/1 from Intel SCU
USB1/USB2	(Backplane) USB Ports 1/2
VGA	(Backplane) VGA Port

Note 1: Slot J4 was designed to support SMC-Proprietary add-on cards. Currently, it supports the LSI 2208 SAS add-on card (BPN-ADP-S2208L-H8iR) for the FatTwin F627R3-R72B+ only.

Note 2: The power supply cables are wired on the motherboard. Please connect the onboard power cable to the SMC-Proprietary Adaptor (BPN-ADP-F418) to provide power to the system.

5-7   Connector Definitions

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 BIOS - See Chapter 4). To turn off the power when the system is in suspend mode, press the button for 4 seconds or longer. Refer to the table on the right for pin definitions.

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

UID Button/LAN LED Signal

UID Button and LAN LED signal connections are located on pins 3 and 4 of JF1. Refer to the table on the right for pin definitions.

UID Button/LAN LED Pin Definitions (JF1)	
Pin#	Definition
3	UID Button
4	LAN LED Signal

Fan Speed Signals

Fan Speed Signals for Fan 1 and Fan 2 are located on pins 5 and 6 of JF1. Attach a cable to pin 5 or pin 6 of JF1 to indicate the speed of Fan 1 or Fan 2. Refer to the table on the right for pin definitions.

Fan Speed Signals Pin Definitions (JF1)	
Pin#	Definition
5	Fan Speed Signal 1
6	Fan Speed Signal 2

PWM to Fans/PWR Good to PWR Adaptor Card

Power management for the fans connected to the backplane, and power regulation signals for 12V, 5V, 3.3V on the backplane power adaptor card (P/N: BPN_ADP_F418) are located on pins 7 and 8 of JF1. Refer to the table on the right for pin definitions.

PWR Management /PWR GOOD Pin Definitions (JF1)	
Pin#	Definition
7	PWM for Fans to Backplane
8	(12V, 5V, 3.3V) PWR Good for PWR Adaptor Card (BPN_ADP_F418)

Front Panel Power On LED

Connect an LED Cable to pins 9 and 10 of JF1 to indicate if onboard power is on. Refer to the table on the right for pin definitions.

FP PWR On LED Pin Definitions (JF1)	
Pin#	Definition
9	Front Panel PWR LED
10	PS_ON_N to PS (Turn On PS)

UID LED/Red LED Indicators

Connections for UID (Unit Identifier) LED and Red LED, which indicates system overheat or fan failure, are located on pins 11 and 12 of JF1. Refer to the table on the right for pin definitions.

UID LED/Red LED Pin Definitions (JF1)	
Pin#	Definition
11	UID LED
12	Red LED (for OH/ Fan Fail)

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

SMBUS for Hot Swap Circuit on PWR Adaptor Card & PS Failure

System Management Bus for the Hot Swap Circuit on the Power Adaptor Card (P/N: BPN_ADP_F418) and Power Failure connections are located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

SMBus for Hot Swap Circuit & PS Failure Pin Definitions (JF1)	
Pin#	Definition
13	SMBUS Clock for Hot Swap Circuit on PWR Adaptor Card
14	Power Supply Failure

SMBUS for Hot Swap Circuit on PWR Adaptor Card

System Management Bus for the Hot Swap Circuit on the Power Adaptor Card (P/N: BPN_ADP_F418) is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

SMBus for Hot Swap Circuit on PWR Adaptor Card Pin Definitions (JF1)	
Pin#	Definition
15	SMBUS Data for Hot Swap Circuit for PWR Adaptor Card
16	SMBUS Alert for Hot Swap Circuit for PWR Adaptor Card

Power Management Bus

The Power Management Bus header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

PMBUS Button Pin Definitions (JF1)	
Pin#	Definition
19	PMBUS Clock
20	PMBUS Data

Ethernet LAN Ports

Two Gigabit Ethernet ports (LAN1, LAN2) are located on the I/O backplane on the motherboard. In addition, an IPMI LAN is also on the backplane. All these ports accept RJ45 type cables. Please refer to the LED Indicator Section for LAN LED information.

Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB1, USB2) are located at (JUSB1, JUSB2) the I/O back panel. (USB Cables are not included). See the table on the right for pin definitions.

Backplane USB (USB 1/2) Pin Definitions	
Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	NA

Video Connector

A Video (VGA) port is located next to JUSB1 on the I/O backplane. Refer to the board layout below for the location.

Power Supply

The power supply cables are wired on the motherboard. Please connect the onboard power cable to the SMC-Proprietary Adaptor (PN# BPN-ADP-F418) that is installed in the chassis to provide power to the system.

Fan Headers

This motherboard has four system/CPU/ fan headers (Fan 1-Fan 3, Fan A) on the motherboard. All these 4-pin fans headers are backward compatible with the traditional 3-pin fans. The fan speeds are controlled via firmware management via IPMI interface. See the table on the right for pin definitions.

Fan Header (Fan 1~3, Fan A) Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation (Available for 4-pin fans only)

TPM Header/Port 80

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

TPM/Port 80 Header (JTPM1) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK4	14	SMB_DAT4
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

Serial Ports

A COM connection (COM1) is located next to the Front Control Panel (JF1) on the motherboard. See the table on the right for pin definitions.

IPMB I²C SMB

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I²C connection on your system.

SMB Header (JIPMB1) Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

T-SGPIO1 Header

Two SGPIO (Serial-Link General Purpose Input/Output) headers are located on the motherboard. These headers support Serial_Link interface for onboard SATA connections. See the table on the right for pin definitions.

T-SGPIO 1/2 Pin Definitions			
Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

NC indicates no connection.

SATA DOM Power Connector

A power connector for SATA DOM (Disk_On_Module) devices is located at JSD1. Connect an appropriate cable here to provide power support for your SATA devices.

DOM PWR (JSD1) Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground

5-8 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.
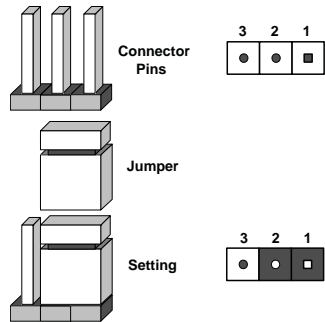
Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.
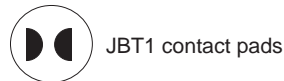
CMOS Clear

JBT1 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). It is also recommended that you remove the onboard battery from the serverboard.

2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.

3. Remove the screwdriver (or shorting device).

4. Reconnect the power cord(s) and power on the system.

Note 1. For an ATX power supply, you must completely shut down the system, remove the AC power cord, and then short JBT1 to clear CMOS.

Note 2. Be sure to remove the onboard CMOS Battery before you short JBT1 to clear CMOS.

Note 3. Clearing CMOS will also clear all passwords.

Note 4: *Do not use the PW_ON connector to clear CMOS*.

GLAN Enable/Disable

JPL1 enables or disables the LAN Port1/ LAN Port2 on the motherboard. See the table on the right for jumper settings. The default setting is Enabled.

GLAN Enable Jumper Settings	
Jumper Setting	Definition
1-2	Enabled (default)
2-3	Disabled

Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that will reboot the system when a software application hangs. Close Pins 1-2 to reset the system if an application hangs. Close Pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog (JWD1) Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset (default)
Pins 2-3	NMI
Open	Disabled

VGA Enable

Jumper JPG1 allows the user to enable the onboard VGA connectors. The default setting is 1-2 to enable the connection. See the table on the right for jumper settings.

VGA Enable (JPG1) Jumper Settings	
Jumper Setting	Definition
1-2	Enabled (Default)
2-3	Disabled

BMC Enable

Jumper JPB1 allows you to enable the onboard BMC (Baseboard Management) Controller to provide IPMI 2.O/KVM support on the motherboard. See the table on the right for jumper settings.

BMC Enable (JPB1) Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enable (Default)
Pins 2-3	Normal

I2C Bus to PCI-Exp. Slots

Jumpers JI^{2}C1 and JI^{2}C2 allow you to connect the System Management Bus (I^{2}C) to PCI-Express slots. The default setting is Open to disable the connection. See the table on the right for jumper settings.

I2C to PCI-Exp (JI2C1/JI2C2) Jumper Settings	
Jumper Setting	Definition
1-2	Enabled
2-3	Disabled (Default)

BMC Reset

Close the pins of JBRST1 to reset BMC settings. See the table on the right for jumper settings.

BMC Reset Jumper Settings	
Jumper Setting	Definition
On	BMC Reset
Off	Normal (Default)

5-9　Onboard Indicators

GLAN LEDs

There are two GLAN ports (JLAN1/2) on the motherboard. Each Ethernet LAN port has two LEDs. The Yellow LED on the right indicates connection and activity. The Link LED on the left side may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

GLAN LED
Link Speed LED
Activity LED
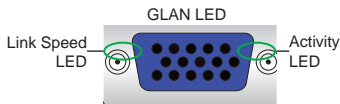
GLAN Activity Indicator (Right) LED Settings		
Color	Status	Definition
Off	No Connections	
Yellow	Flashing	Active

LAN Connection Speed Indicator (Left) LED Settings	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

IPMI Dedicated LAN LEDs

In addition to GLAN 1/2, an IPMI Dedicated LAN is also located on the I/O Backplane. The amber LED on the right indicates connection and activity, while the green LED on the left indicates the speed of the connection. See the tables at right for more information.

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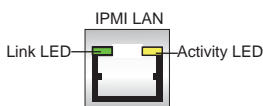
IPMI LAN Link/Speed LED (Left) & Activity LED (Right)		
Color	Status	Definition
Off	Off	No Connection
Green: Solid	Link/ Speed (Left)	100 Mb/s
Amber Blinking	Activity (Right)	Active

Onboard Power LED

An Onboard Power LED is located at LE1 on the motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the tables at right for more information.

Onboard PWR LED Indicator (LE1) LED Settings	
LED Color	Status
Off	System Off (PWR cable not connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State
Green: Flashing Slowly	ACPI S3 (STR) State

SATA Activity LED

A SATA Activity LED is located at LE3 on the motherboard. When LE3 is blinking, SATA is active and working properly. See the table at right for more information.

SATA Activity (LE3) LED Status	
Color/State	Definition
Green: Blinking	SATA: Active

UID LED

A Unit Identifier (UID) LED is located at LED1 on the motherboard. When LED1 is on, the unit that might be need of service is identified. See the table at right for more information.

UID (LED1) LED Status	
Color/State	Definition
Blue: On	Unit Identified

BMC Heartbeat LED

A BMC Heartbeat LED is located at LEM1 on the motherboard. When LEM1 is blinking, BMC functions normally. See the table at right for more information.

BMC Heartbeat (LEM1) LED Status	
Color/State	Definition
Green: Blinking	BMC: Normal
Steady On	BMC Disabled, or Failed

5-10 Serial ATA Connections

Serial ATA Ports

There are ten Serial_ATA ports on the motherboard. I-SATA ports 0/1 support SATA 3.0 connections. I-SATA 2-5 from the PCH chip, and S-SATA 0/1/2/3 from the SCU chip are SATA 2.0 connectors. These ports provide serial-link signal connections, which are faster than the connections of Parallel ATA. See the table on the right for pin definitions.

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

5-11 Installing Drivers

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 CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

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

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-4 should appear.

Figure 5-6. Driver/Tool Installation Display Screen
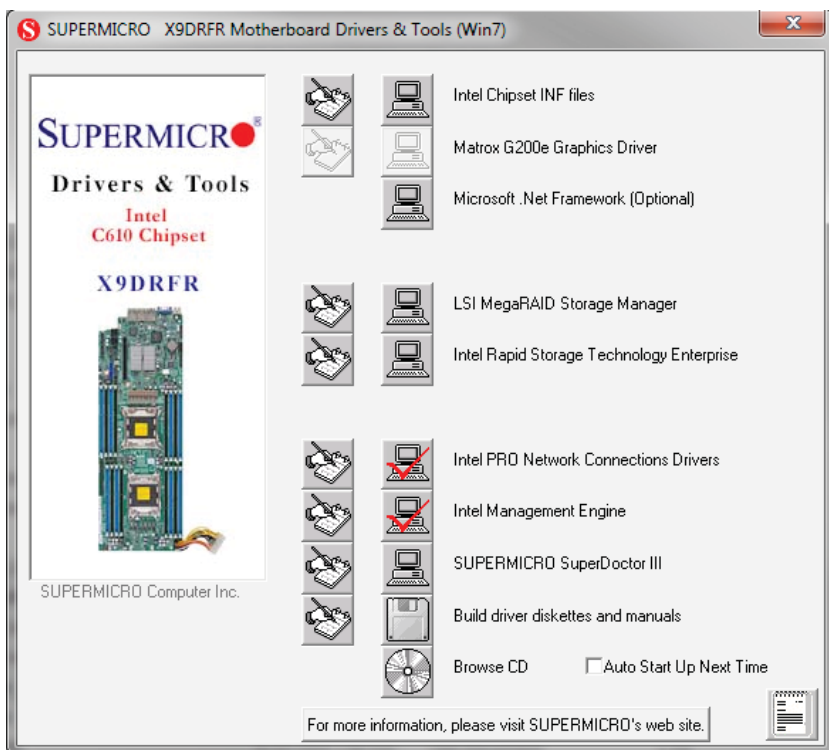
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

SuperDoctor III

The SuperDoctor® III program is a web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the figures below for examples of the SuperDoctor III interface.

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

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within SuperDoctor III, as the SuperDoctor III settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

Figure 5-7. Supero Doctor III Interface Display Screen (Health Information)
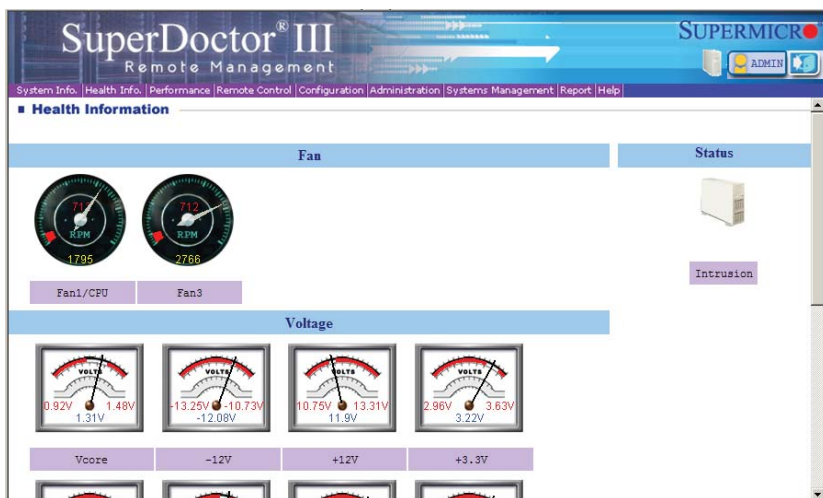
Figure 5-8. Supero Doctor III Interface Display Screen (Remote Control)
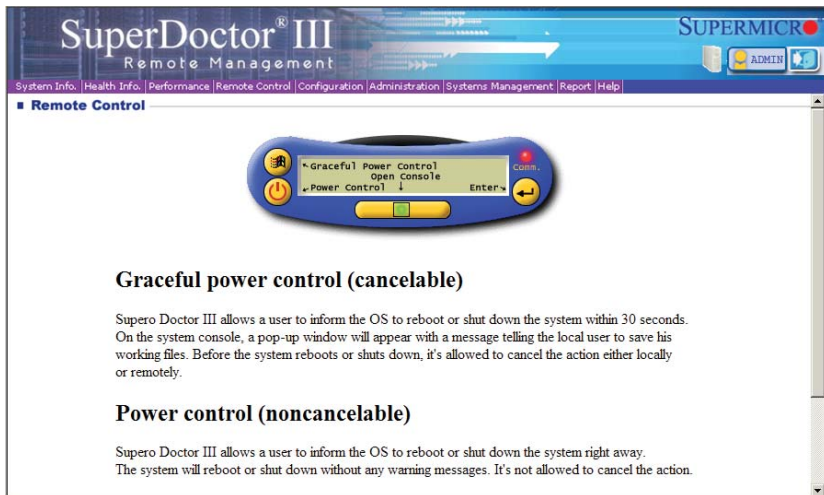
Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm.For Linux, we recommend that you use the SuperoDoctor II application instead.

5-12 Serverboard Battery

Caution: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 5-9). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

Figure 5-9. Installing the Onboard Battery

LITHIUM BATTERY

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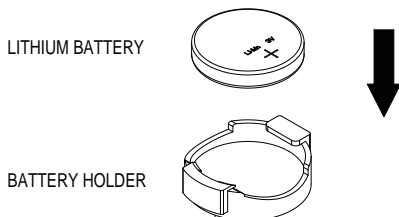
Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency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

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SCF424AS-R1K28B chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

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

6-1   Static-Sensitive Devices

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

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Front and Rear Chassis Views

Control Panel   Control Panel

SAS/SATA Drives (48)

VGA Port   IPMI LAN Port

USB Ports   Ethernet Ports
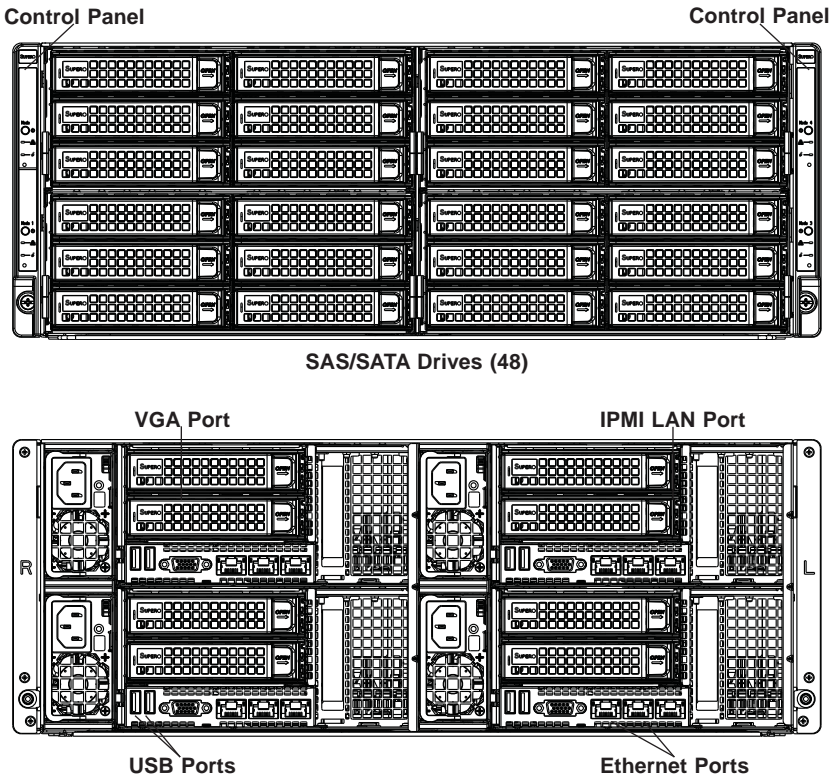
6-2 Control Panel

The control panel for each node is located on the front of the chassis. The LEDs inform you of system status.

See Chapter 3 for details on the LEDs and the control panel buttons.

6-3   Removing the Power Cord

Before performing any setup or maintenance on the chassis, use the following procedure to ensure that power has been removed disconnected from the system.

Removing the Power Cord

1. Use the operating system to power down the node, following the on-screen prompts.

2. After the system has completely shut-down, carefully grasp the head of the power cord and gently pull it out of the back of the power supply.

3. If your system has dual redundant power supplies, remove the cords from both power supplies.

4. Disconnect the cord from the power strip or wall outlet.

6-4   Removing Nodes from the Chassis

Each of the four individual motherboard nodes may be removed from the chassis. Note that any time a node is removed from the chassis, the hard drives located in the node twill shut-down.

Removing a Motherboard Node

1. Power down the system and remove the power cords from the rear of the node as described in Section 6-3.

2. Grasp the node by the handles on either side of the front of the node.

3. Carefully pull the node forward and out of the chassis.

6-5   Installing and Removing Hard Drives

The SCF424AS chassis contains individual motherboards in separate 2U nodes. Each motherboard node controls the hard drives contained within that node. Note that if a motherboard node is pulled out of the chassis, the hard drives associated with that node will power down as well. Refer to the charts below and on the following pages for your specific chassis configuration. These instructions apply to hot-swappable hard drives in both 2.5" and 3.5" sizes. Hot-swappable hard drives can be removed from the chassis without powering down the server or removing the node from the chassis.

Only enterprise level hard drives are recommended for use in Supermicro chassis.

Node Locations in the Chassis	
Node 2 Controls six front 3.5" HDDs, B1-B6 and two rear 3.5" HDDs B7-B8	**Node 4** Controls six front 3.5" HDDs, D1-D6 and two rear 3.5" HDDs D7-D8
Node 1 Controls six front 3.5" HDDs, A1-A6 and two rear 3.5" HDDs A7-A8	**Node 3** Controls six front 3.5" HDDs, C1-C6 and two rear 3.5" HDDs C7-C8

Figure 6-2: Hard Drives and the Corresponding Motherboards
(Your chassis and drives may differ from the one shown in this illustration)
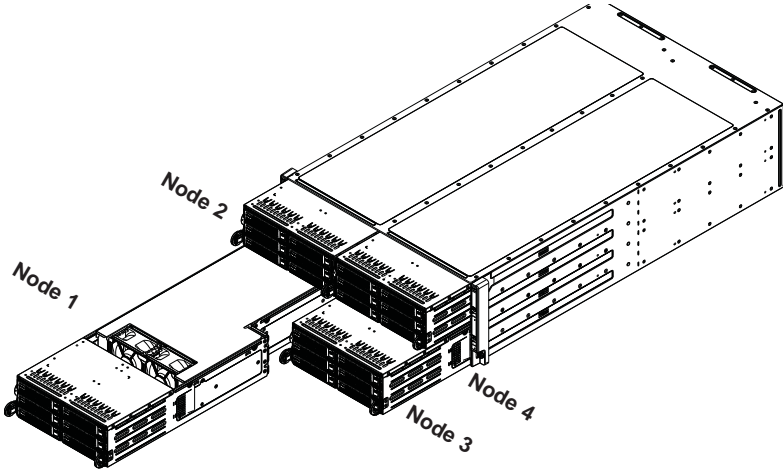
Removing Hard Drive Carriers from a Node

1. Press the release button on the drive carrier. This extends the drive bay handle.

2. Use the handle to pull the drive carrier out of the node.

Figure 6-3: Removing a 3.5" Hard Drive Carrier from the Front of the Node (Your chassis and drives may differ from the one shown in this illustration)
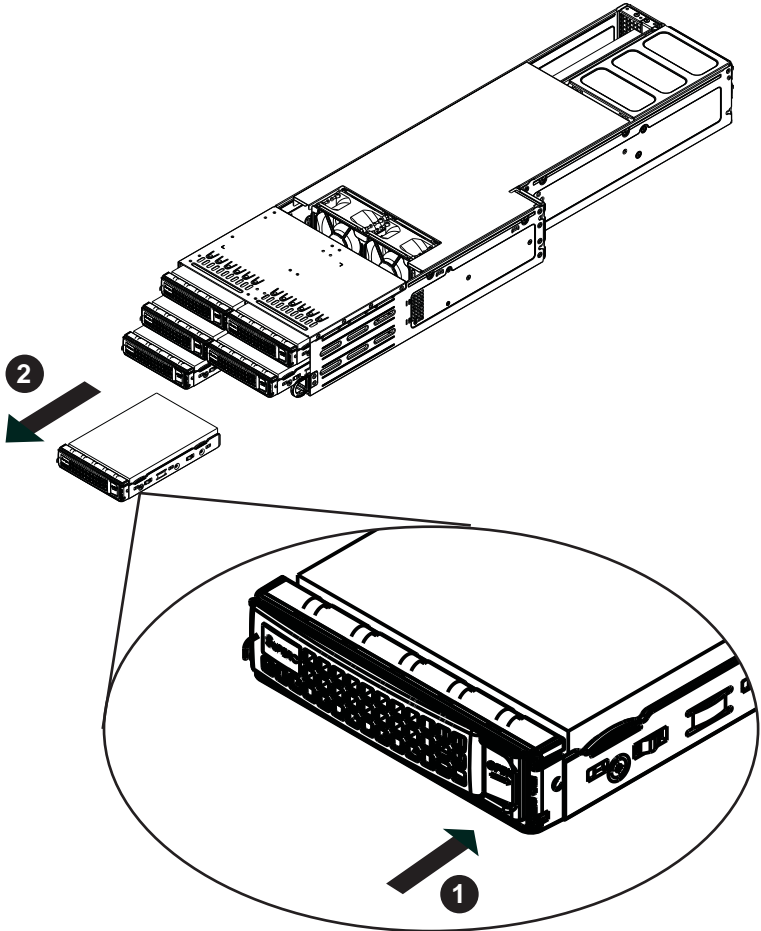
Figure 6-4: Removing a 3.5" Hard Drive Carrier from the Rear of the Node
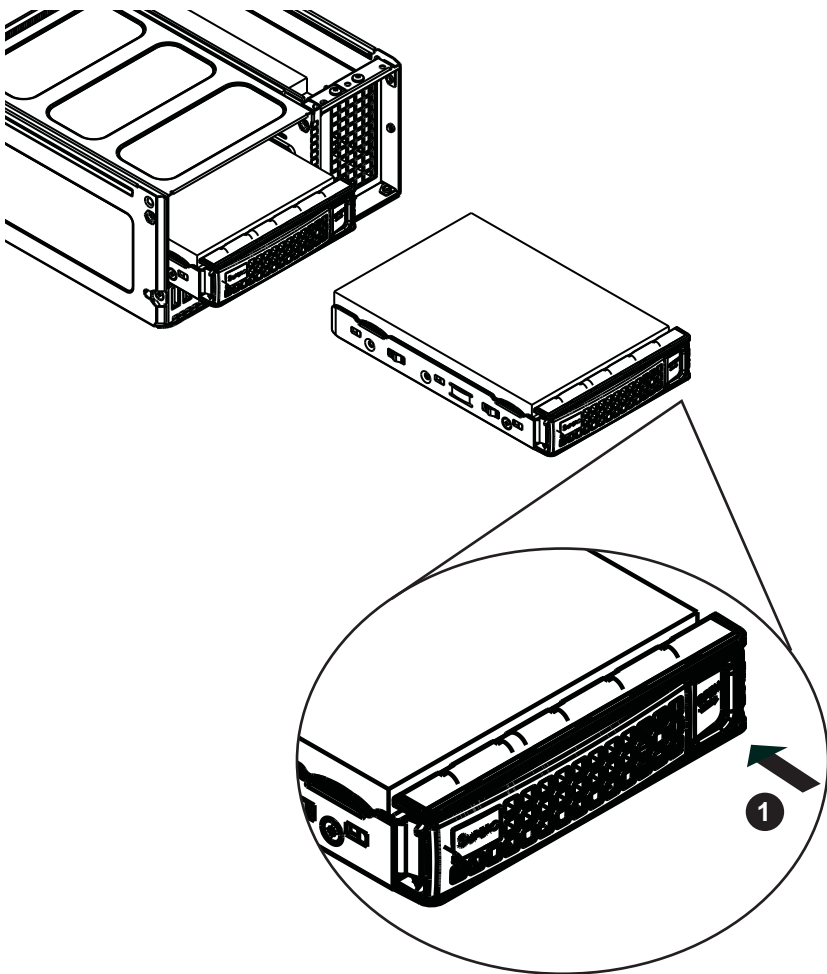
The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

Removing the Dummy Drive from the 3.5" Drive Carrier

1. Remove the hard drive carrier from the chassis as described in the previous section and lay the drive carrier on a flat surface.

2. Remove the two screws securing the dummy drive to the drive carrier.

3. Lift the dummy drive from the drive carrier.

Figure 6-5: Removing a Dummy Drive from the 3.5" Drive Carrier (Your drives may differ from the one shown in this illustration)
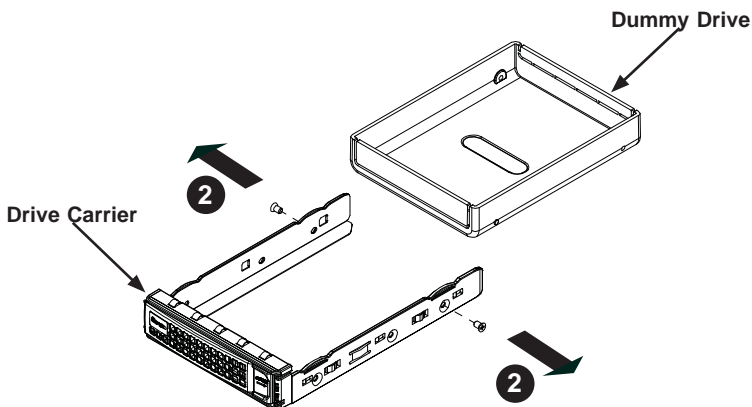
Warning: Except for short periods of time while swapping hard drives, do not operate the server with the hard drives bays empty.

Installing a 3.5" Hard Drive into the Drive Carrier

1. Place the hard drive carrier on a flat surface.

2. Insert the hard drive into the carrier with the printed circuit board side facing downward and so that the mounting holes in the drive align with those in the drive carrier.

3. Secure the hard drive to the carrier with the four screws included with the hard drive.

4. Use the open handle of the drive carrier to insert the drive carrier into the open drive bay.

5. Secure the drive carrier into the drive bay by closing the drive carrier handle.

**Figure 6-6: Installing a 3.5" Hard Drive into the Drive Carrier
(Your drives may differ from the one shown in this illustration)**
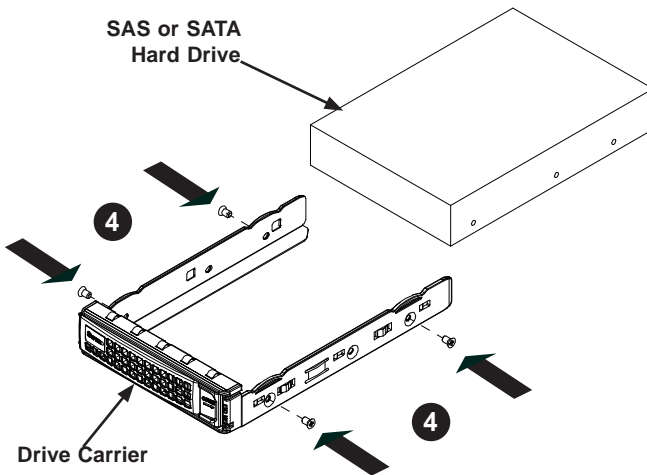
Caution: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/files/storage/SAS-CompList.pdf

6-6   Removing the Node Cover

Each node has a removable cover which will permit access to the nodes components.

Removing the Node Cover

1. Remove the motherboard node completely from the chassis and place it on a flat, stable surface.

2. Remove the six screws securing the cover to the node, as illustrated above.

3. Lift the cover up and off the node.

Figure 6-7: Removing the Node Cover
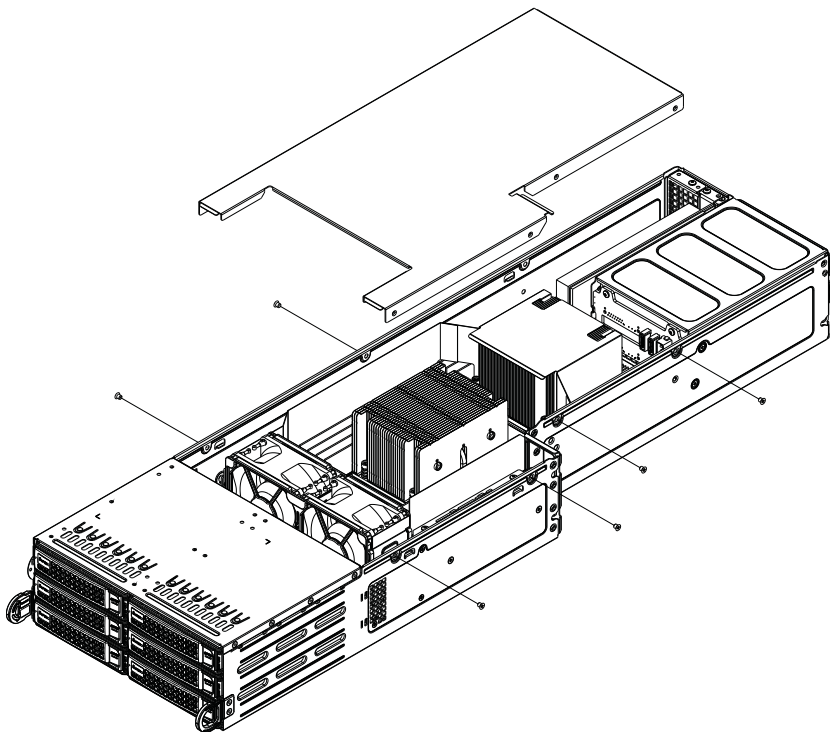
6-7 Node Configuration

Overview of the Node

**Figure 6-8: Front and Rear of the SCF424AS Motherboard Node
(Your node may differ from the one shown in this illustration)**
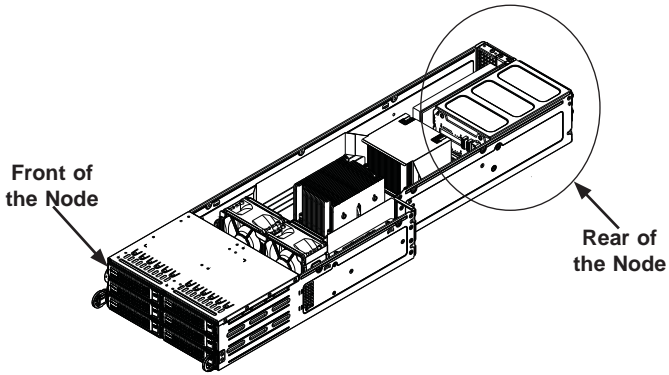
SCF424AS-R1K28BP	
Front of Node	**Rear of Node**
Six 3.5" HDDs	One Micro LP slot One low-profile PCIE slot Two 3.5" HDDs

6-8   Removing and Installing the Backplane

The SCF424AS chassis backplane is located behind the hard drives and in front of the front system fans in each motherboard node. Although backplane failure rarely occurs, in the event of a backplane failure, follow the instructions below.

Removing the Backplane

Removing the Backplane from the Chassis

1. Using the handles on the front of the motherboard node, pull the node completely out of the chassis and place it on a flat surface.

2. Remove the node cover (see Section 6-6 Removing the Node Cover) and air shroud (see Section 6-12 Installing the Air Shroud).

3. Remove the four screws securing the fan tray to the floor of the node (Figure 6-9).

Figure 6-9: Removing the Screws at the Top of the Backplane
(Your node and backplane may differ from the one shown in this illustration)
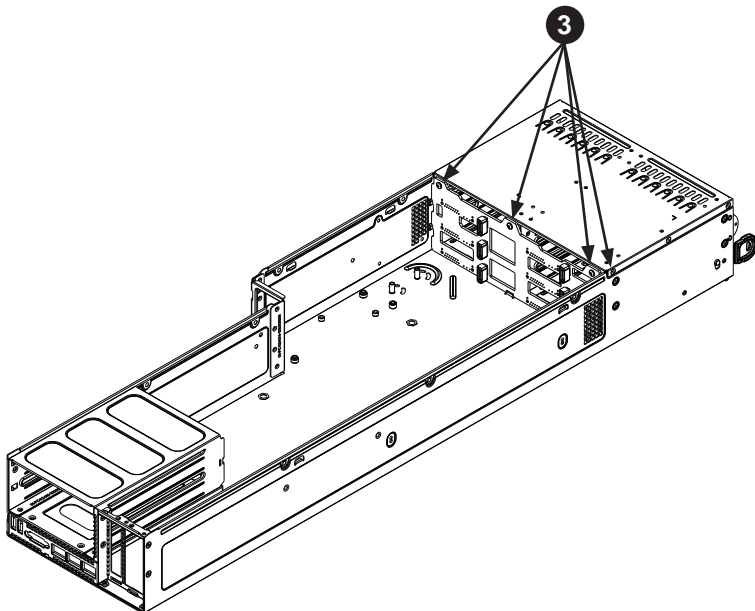
4. Remove the four screws securing the backplane to the node.

5. Lift the backplane up and out of the chassis (Figure 6-10).

Figure 6-10: Removing the Backplane from the Chassis
(Your node and backplane may differ from the one shown in this illustration)
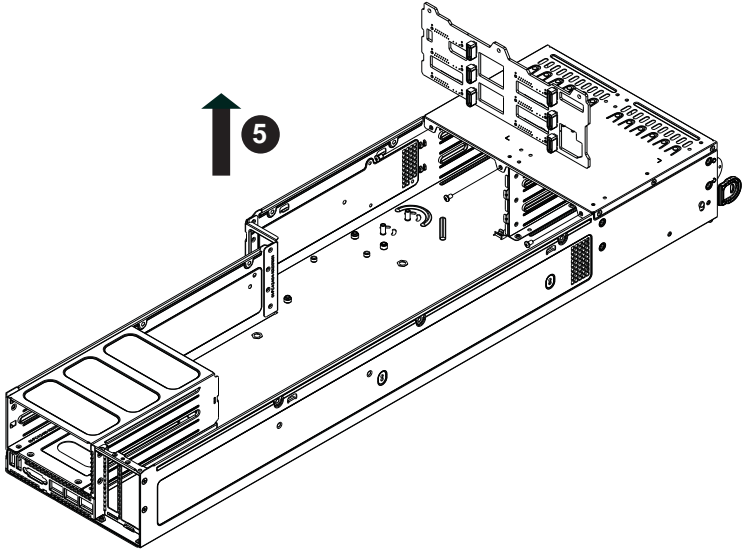
Installing the Backplane

Installing the Backplane into the Chassis

1. Ensure that all of the hard drive carriers have been removed from the bays in the front of the node (see Section 6-5 Installing and Removing Hard Drives).

2. Ease the backplane forward, against the front of the chassis.

3. Align the mounting holes in the backplane with the holes in the chassis. Replace the four screws at the top of the backplane

4. Reconnect all cables and return the hard drive trays to their bays in the front of the motherboard node.

Figure 6-11: Installing the Backplane
(Your node and backplane may differ from the one shown in this illustration)
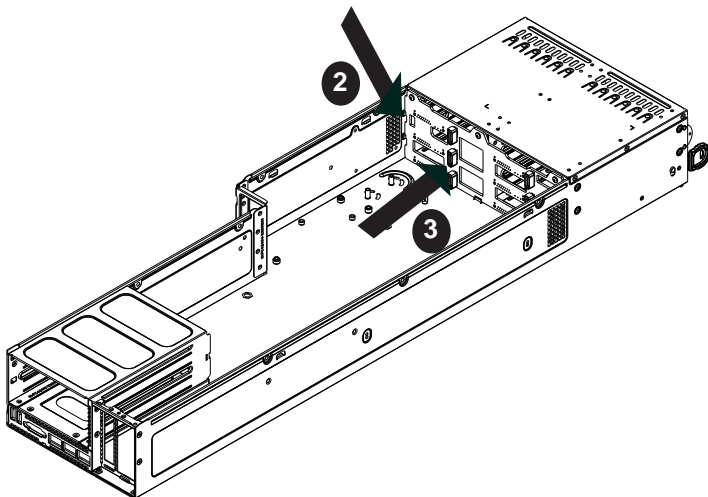
6-9   Adapter Card Replacement

Each of the motherboard nodes for the F627R3-R72B+ server includes an adapter card, which connects it to the chassis. In the unlikely event of a failure of the adapter card, replacement is simple and requires only a Phillips head screwdriver.

Changing the Adapter Card

1. Power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

2. Remove the two screws securing the adapter card to the wall of the node.

3. Disconnect all cables.

4. Carefully lift the adapter card up and out of the node. Set the screws aside for later use.

5. Install the replacement adapter card into the same position on the wall of the motherboard node, aligning the mounting holes of the board with those in the node.

6. Secure the board with the two screws previously set aside. Do not exceed eight pound of torque when tightening the power adapter board.

7. Reconnect all cables.

8. Return the motherboard node to the chassis.

Figure 6-12: Installing the Adapter Card
(Your node and backplane may differ from the one shown in this illustration)
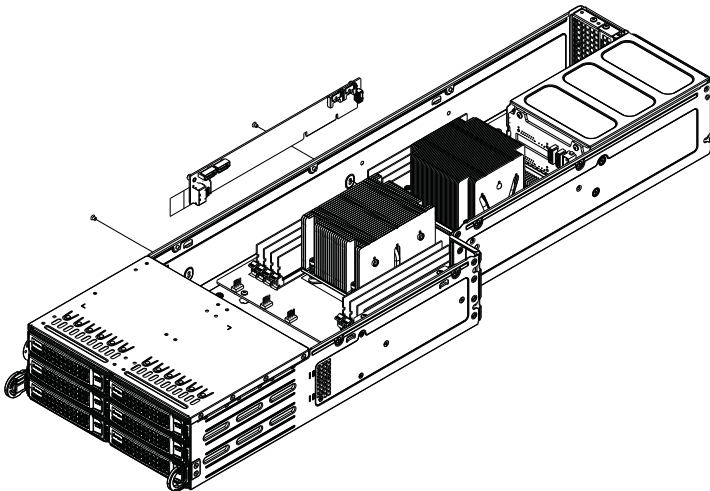
6-10 Installing the Motherboard

Compatible Motherboards

For the most up-to-date information on compatible motherboards and other parts, visit the Supermicro Web site at www.supermicro.com.

Permanent and Optional Standoffs

Standoffs prevent short circuits by creating space between the motherboard and the floor of the node. The SCF424AS chassis includes permanent standoffs in locations used by most motherboards. These standoffs use the rounded Phillips head screws included in the chassis accessories packaging.

Some motherboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are used for these motherboards.

To use an optional standoff, compare the mounting holes in the motherboard with those in the floor of the motherboard node. Then place a screw through the bottom the node and secure the screw with a hexagonal nut (rounded side up).

Depending upon the configuration of the motherboard being used, it is also possible that some of the optional standoffs which are pre-installed in the chassis, may need to be removed. Add or remove standoffs as needed.

Installing the Motherboard

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, cautions, and cable connections.

2. Power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

3. Compare the holes in the motherboard with those in the floor of the node, then add or remove standoffs as needed.

4. Secure the motherboard to the floor of the node tray using the rounded, Phillips head screws included for this purpose. Do not exceed eight pounds of torque when tightening down the motherboard.

5. Install the expansion card associated with the motherboard if the chassis is a hot-swappable version. Refer to the next section for instructions on installing the expansion card

6. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.

7. Connect the cables between the motherboard, backplane, chassis, front panel, and power supply, as needed. The fans may be temporarily removed to allow access to the backplane ports.

8. Replace the expansion card bracket and secure the bracket with a screw.

9. Repeat steps 3 - 5 for the remaining nodes.

Figure 6-13: Installing the Motherboard in the Motherboard Node Tray (Your node and motherboard may differ from the one shown in this illustration)
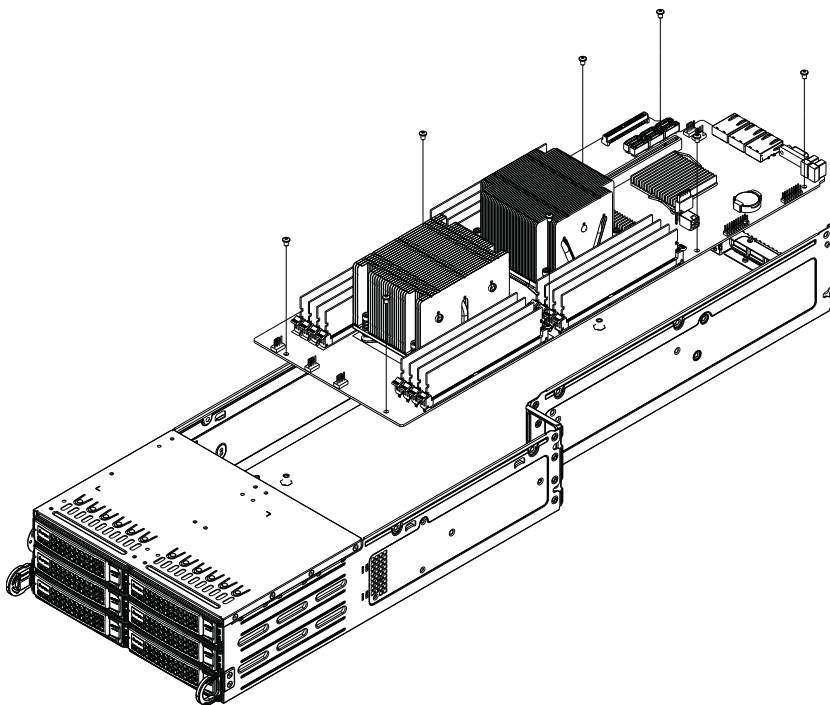
6-11 Installing Expansion Cards

PCIE Slot Setup

The nodes of some SCF424AS chassis models support expansion cards and or Micro LP cards. To install low-profile expansion cards and Micro LP expansion cards, follow the instructions on the following pages.

**Figure 6-14: PCIE Slot Shield Configuration
(Your chassis may differ from the one shown in this illustration)**
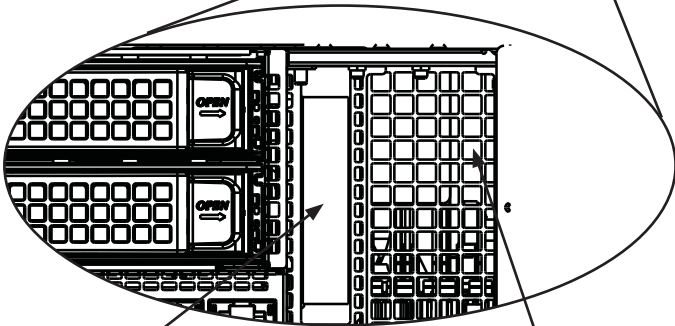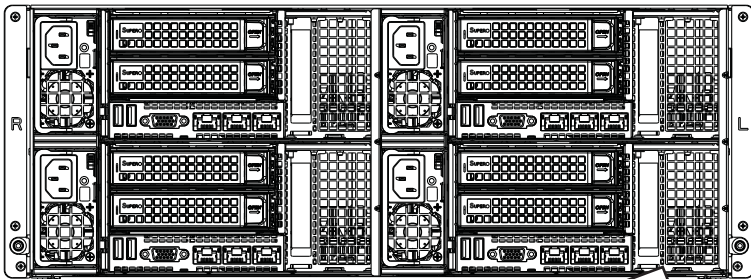
PCIE Slot Cover

**Micro Low-Profile
PCIE Slot Cover**

SCF424 PCIE Slot Configurations

Some SCF424AS chassis models support one or more expansion cards in the PCIE slots of each node, Refer to the tables below to determine the PCIE slot configuration for your particular chassis.

SCF424AS-R1K28BP	
Front of Node	**Rear of Node**
Six 3.5" HDDs	One Micro LP slot One low-profile PCIE slot Two 3.5" HDDs

Installing a Rear Low-Profile Expansion Card

Each motherboard node supports one low-profile expansion card.

Installing an Expansion Card into a Node

1. Power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

2. Remove the mounting screw which secures the PCIE slot cover in the PCIE slot and set this aside for later use.

3. Remove the PCIE slot cover by sliding it upward and out of the PCIE slot.

4. Simultaneously slide the expansion card into the PCIE slot, while inserting it into the motherboard.

5. Secure the expansion card into the PCIE slot using the screw which was previously set aside.

Figure 6-15: Installing a Rear Low-Profile Expansion Card
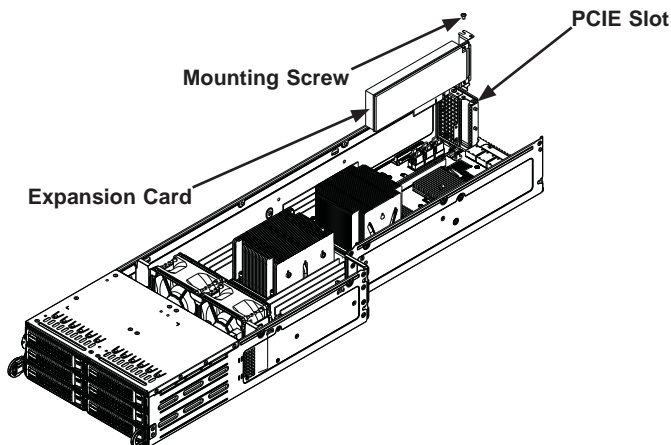
Installing a Rear Micro LP Expansion Card

Installing the Micro LP Expansion Card into the Node

1. Power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

2. Remove the mounting screw securing the Micro LP slot cover and set it aside for later use.

3. Simultaneously place the micro expansion card into the Micro LP slot of the node and plug the card into the slot on the motherboard.

4. Secure the Micro LP expansion card to the node with two mounting screws.

Figure 6-16: Installing a Rear Micro LP Expansion Card
(Your node and motherboard may differ from the one shown in this illustration)
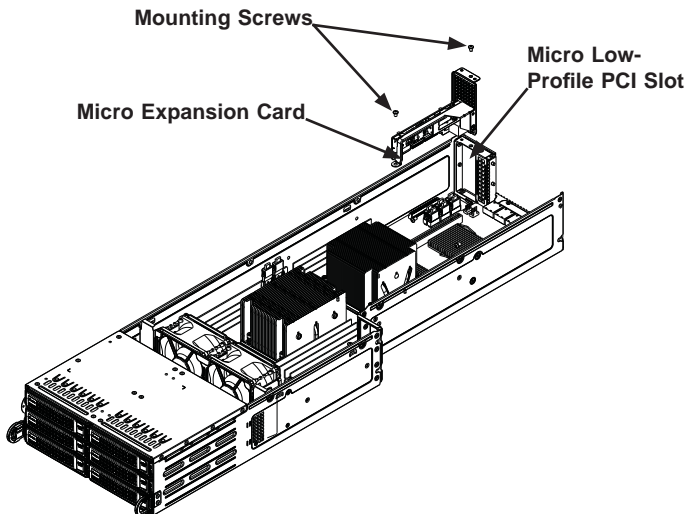
Installing a Front Low-Profile Expansion Card

Each motherboard node supports one low-profile expansion card.

Installing a Front Expansion Card into a Node

1. Power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

2. Remove the mounting screw which secures the PCIE slot cover in the PCIE slot and set this aside for later use.

Figure 6-17: Removing the Screw Securing the PCIE Slot Cover
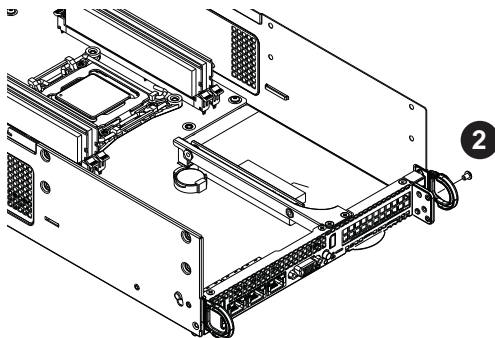
3. Remove the PCIE slot cover by sliding it upward and out of the PCIE slot.

4. Remove the screws securing the riser card bracket to the chassis and set them aside for later use.

Figure 6-18: Removing the Screw Securing the PCIE Slot Cover
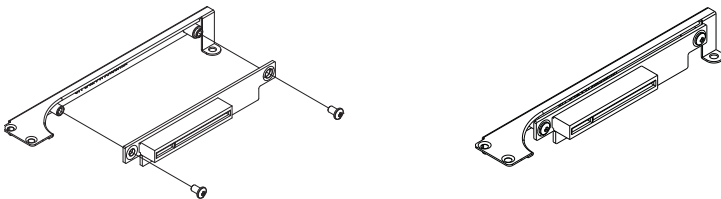
5. Lift the riser card bracket up and out of the chassis.

Figure 6-19: Removing the Riser Card Bracket from the Node
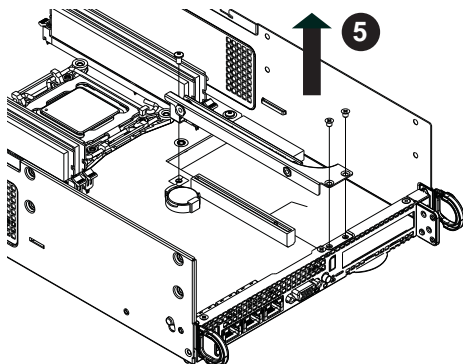
6. Assemble the riser card as illustrated below, securing the riser card to the riser card bracket with the two screws provided.

7. Insert the riser card bracket into the motherboard.

8. Inser the PCIE card into the riser card.

9. Simultaneously slide the expansion card into the open PCIE slot, while inserting the riser card into the motherboard.

10. Secure the riser card bracket to the node using the screws that were previously set aside.

11. Secure the expansion card bracket to the node as illustrated below, using the mounting screw that was perviously set aside

Figure 6-20: Securing the Expansion Card Bracket to the Node
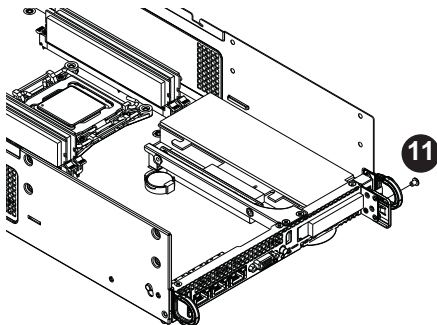
6-12 Installing the Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The SCF424 chassis requires an air shroud in each motherboard node.

Installing the Air Shroud

1. Power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

2. Make sure that the motherboard and all components are properly installed in each motherboard node.

Figure 6-21 Installing the Air Shroud
(Your node and motherboard may differ from the one shown in this illustration)
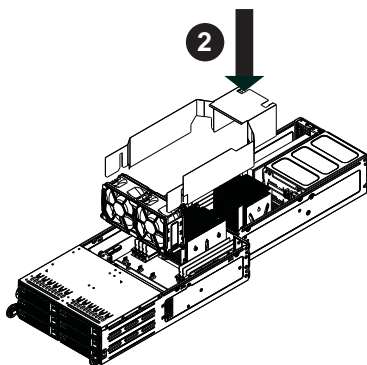
3. Place the air shroud over the motherboard, as illustrated below. The air shroud sits behind the system fans and goes over the top of the motherboard and its components.

4. Repeat the procedure for the remaining three motherboard nodes.

Figure 6-22: Air Shroud installed in the Node
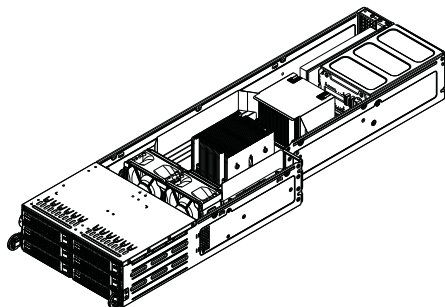
6-13 Checking the Airflow

Checking Airflow

1. Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.

2. Do not operate the server without drive carriers and either a drive or dummy drive in the carrier. Use only recommended server parts.

3. Make sure no wires or foreign objects obstruct airflow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

4. The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons.

Installation Complete

In most cases, the node power supplies and fans are pre-installed. If you need to install fans or power supplies, continue to the Systems Fan and Power Supply sections of this chapter. If the chassis will be installed into a rack, continue to the next chapter for rack installation instructions.

6-14 Replacing System Fans

System fans provide cooling for each node. Front I/O nodes have rear external fans and rear I/O nodes have front internal fans. These fans circulate air through the node as a means of lowering the internal temperature. The SCF424AS system fans are easily removed from the fan tray. There is no need to uninstall any other parts when replacing fans, and only a Phillips screwdriver is required for installation.

Figure 6-23: System Fan Tray Placement
(Your node and motherboard may differ from the one shown in this illustration)
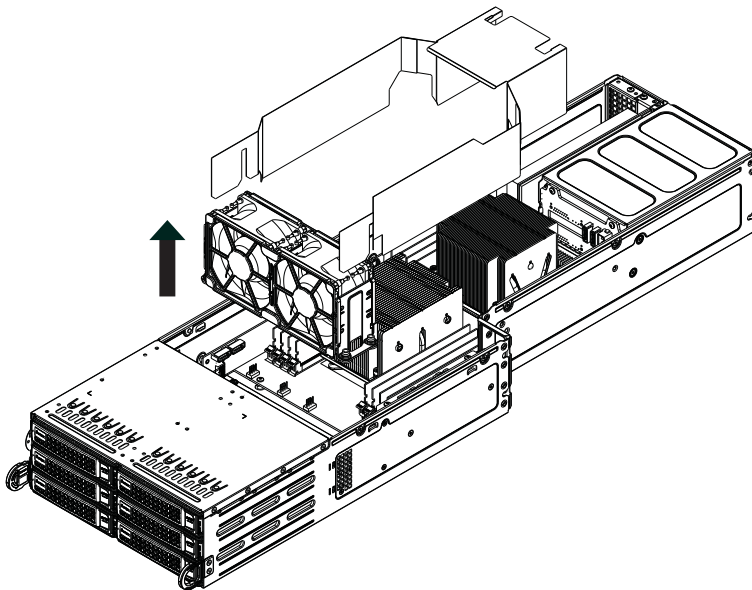
Replacing a Front Internal System Fan

1. Determine which motherboard node contains the failed fan, power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

2. Lift the air shroud up and out of the node.

3. Disconnect the failed fan's cabling and the cabling of the fan it shares the housing with, from the backplane.

4. Remove the screws securing the fan housing to the floor of the node and set them aside for later use.

5. Remove the air shroud

6. Lift the fan housing up and out of the chassis.

7. Simultaneously squeeze both sets of release tabs on each side of the fan housing. This will release the cover plate of the housing which holds the fans inside the housing. Either the front or rear cover plate may be reseased.

8. Pull the cover plate off the fan housing.

9. Remove the four rubber spacers from the housing.

10. Pull out the failed fan and replace it with a new one.

11. Reinstall the rubber spacers in the fan housing.

12. Reinstall the face cover of the fan housing, by aligning the release tabs with their slots in the housing and gently pushing the face cover onto the housing until it clicks into the locked position.

13. Reconnect the cabling to both fans.

14. Reinstall the fan housing in the motherboard node and secure it to the floor of the node with the four screws which were previously set aside.

15. Return the node to its bay in the chassis.

Figure 6-24: Removing the System Fans from the Fan Housing

Squeeze the Release Tabs

Squeeze the Release Tabs
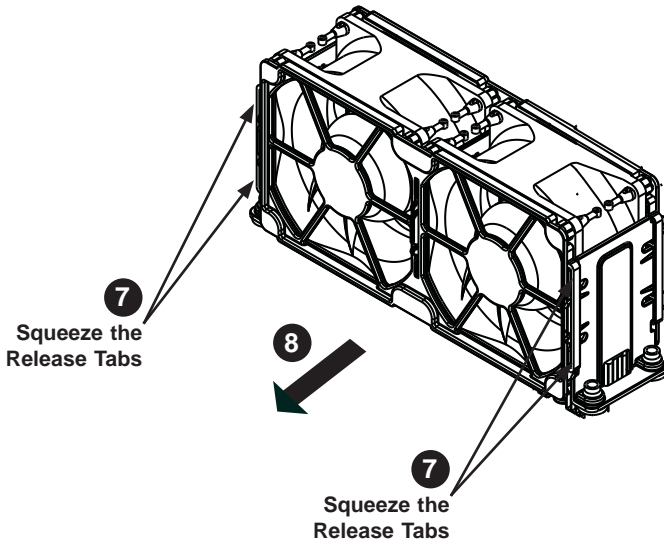
6-15 Replacing the Power Supply

The SCF424AS chassis includes a 1280 Watt power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Power Supply Replacement

The SCF424AS chassis utilizes two redundant power supplies (four in total). In the unlikely event that the power supply unit needs to be replaced, one power supply can be removed, without powering down the system. Replacement units can be ordered directly from Supermicro (See the contact information in the Preface of this manual).

Changing the Power Supply

1. Power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

2. Press the release tab on the back of the power supply and pull the power supply out using the handle provided.

3. Push the replacement power supply module into the power bay until it clicks into the locked position.

4. Plug the AC power cord back into the module and return the node to its bay in the chassis..

Figure 6-25: Changing the Power Supply

(Your chassis and nodes may differ from the one shown in the illustration)

Release Tab
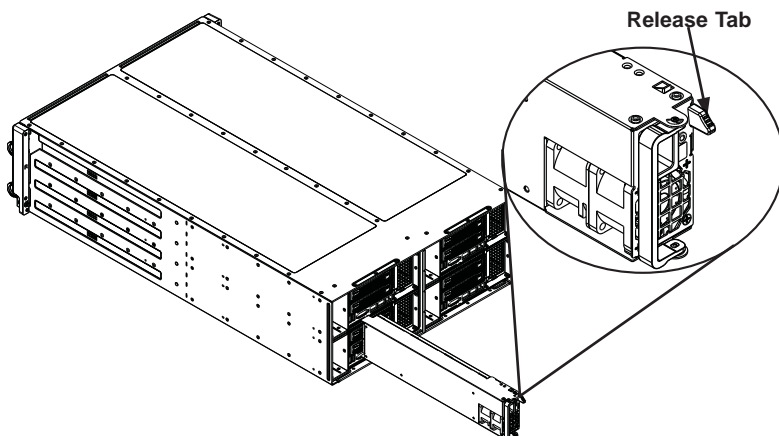
6-16 Power Distributor Board Replacement

In the unlikely event of a power adapter board failure, replacement is simple and requires only a Phillips head screwdriver.

***Changing the Power Adapter Board***

1. Power down the system and remove the power cord from the rear of the power supply as described in Section 6-3. Remove the node from the chassis as described in Section 6-4 and place the node on a flat, stable surface. Remove the cover from the node as described in Section 6-6.

2. Disconnect the wiring to the power adapter board.

3. Remove the screws securing the power adapter board to the floor of the node and carefully lift the power adapter board up and out of the node. Set the screws aside for later use.

4. Place the replacement power adapter board into the same place on the floor of the motherboard node, aligning the mounting holse of the board with those in the node.

5. Secure the board with the screws previously set aside. Do not exceed eight pound of torque when tightening the power adapter board.

6. Reconnect the wiring to the power adapter board.

7. Return the motherboard node to the chassis.

Figure 6-26: Installing the Power Distributor
(Your node may differ from the one shown in this illustration)
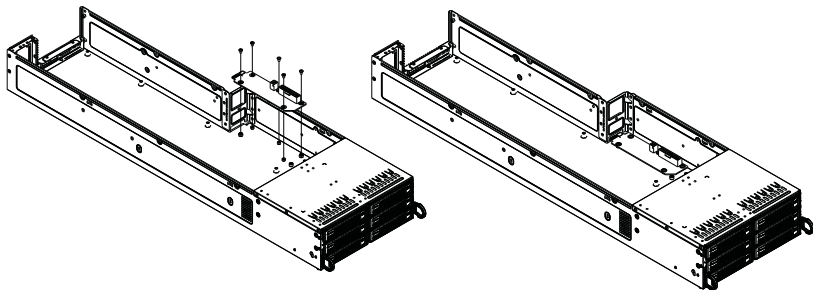
Notes

Chapter 7

BIOS

7-1　Introduction

This chapter describes the AMI BIOS Setup Utility for the X9DRFR serverboard. The 128 MB AMI BIOS® is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

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

Note: The AMI BIOS has default informational messages built in. The manufacturer retains the option to include, omit, or change any of these messages.

The AMI BIOS Setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during setup navigation. These keys include <F3>, <F4>, <Enter>, <ESC>, arrow keys, etc.

Note 1: Options printed in **Bold** are default settings.

Note 2: <F3> is used to load optimal default settings. <F4> is used to save the settings and exit the setup utility.

How To Change the Configuration Data

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

Note: For AMI UEFI BIOS Recovery, please refer to the UEFI BIOS Recovery User Guide posted @ http://www.supermicro.com/support/manuals/.

Starting the Setup Utility

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

Caution! 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 the manufacturer be liable for direct, indirect, special, incidental, or consequential damage arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is being updated to avoid possible boot failure.

7-2   Main Setup

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

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                           Set the Date. Use Tab to
                                                           switch between Data
  System Date                    [Mon 07/09/2012]          elements.
  System Time                    [10:22:02]

  Supermicro X9DRFR
  Version                        1.0
  Build Date                     06/29/2012

  Memory Information
  Total Memory                   8192 MB (DDR3)

                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit

         Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

The AMI BIOS Main menu displays the following information:

System Date/System Time

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard and press <Enter>. Press the <Tab> key to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.).

Supermicro X9DRFR

Version

This item displays the SMC version of the BIOS ROM used in this system.

Build Date

This item displays the date that the BIOS ROM was built.

Memory Information

Total Memory

This displays the amount of memory that is available in the system.

7-3 Advanced Settings Menu

Select the Advanced tab to access the following submenu items.

```
        Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                    System Boot Feature
                                                    Setting.
 ▶ Boot Feature
 ▶ CPU Configuration
 ▶ Chipset Configuration
 ▶ SATA Configuration
 ▶ SCU Configuration
 ▶ PCIe/PCI/PnP Configuration
 ▶ Super IO Configuration
 ▶ Serial Port Console Redirection
 ▶ ACPI Settings
 ▶ ME Subsystem

  iSCSI Configuration
  Intel(R) I350 Gigabit Network Connection - 00:25:90:4E:FD:EA
  Intel(R) I350 Gigabit Network Connection - 00:25:90:4E:FD:EB
                                                    ↔: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



        Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

▶Boot Feature

Quiet Boot

This feature allows the user to select bootup screen display between POST messages and the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

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

Bootup Num-Lock

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

Re-try Boot

When set to Enabled, the BIOS will continuously retry to boot from the selected boot type. The options are **Disabled**, Legacy Boot, and EFI Boot.

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to automatically reboot when a non-recoverable error occurs that lasts for more than five minutes. The options are Enabled and **Disabled.**

Power Button Function

If this feature is set to Instant Off, the system will power off immediately as soon as the user presses the power button. If this feature is set to 4 Seconds Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant Off** and 4 Seconds Override.

Restore on AC Power Loss

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

▶CPU Configuration

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

▶Socket 1 CPU Information/Socket 2 CPU Information

This submenu displays the following information regarding the CPUs installed in Socket 1/ Socket 2.

- Type of CPU
- CPU Signature
- Microcode Patch
- CPU Stepping
- Maximum / Minimum CPU Speed
- Processor Cores
- Intel HT (Hyper-Threading) Technology
- Intel VT-x Technology
- Intel SMX Technology
- L1 Data Cache / L1 Code Cache
- L2 Cache
- L3 Cache

CPU Speed

This item displays the speed of the CPU installed in Socket 1/Socket 2.

64-bit

This item indicates if the CPU installed in Socket 1 or Socket 2 supports 64-bit technology.

Clock Spread Spectrum

Select Enable to enable Clock Spectrum support, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and Enabled.

Hyper-threading

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

Active Processor Cores

Set to Enabled to use a processor's second core and above. (Please refer to Intel's website for more information.) The options are **All,** 1, 2, 4, and 6.

Limit CPUID Maximum

This feature allows the user to set the maximum CPU ID value. Enable this function to boot the legacy operating systems that cannot support processors with extended CPUID functions. The options are Enabled and **Disabled** (for the Windows OS).

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

Select Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web sites for more information.)

Intel® AES-NI

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

MLC Streamer Prefetcher (Available when supported by the CPU)

If set to Enabled, the MLC (mid-level cache) streamer prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disabled and **Enabled**.

MLC Spatial Prefetch (Available when supported by the CPU)

If this feature is set to Disabled, The CPU prefetches the cache line for 64 bytes. If this feature is set to Enabled the CPU fetches both cache lines for 128 bytes as comprised. The options are Disabled and **Enabled**.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enabled to support Data Cache Unit (DCU) prefetch of L1 data to speed up data accessing and processing in the DCU to enhance CPU performance. The options are Disabled and **Enabled**.

DCU IP Prefetcher

Select Enabled for DCU (Data Cache Unit) IP Prefetcher support, which will prefetch IP addresses to improve network connectivity and system performance. The options are **Enabled** and Disabled.

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to support Intel Virtualization Technology, which will allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled.

Note: If there is any change to this setting, you will need to reboot the system for the change to take effect. Refer to Intel's website for details.)

▶CPU Power Management Configuration

This submenu allows the user to configure the following CPU Power Management settings.

Power Technology

Select Energy Efficiency to support power-saving mode. Select Custom to customize system power settings. Select Disabled to disable power-saving settings. The options are Disabled, **Energy Efficient**, and Custom. If the option is set to Custom, the following items will display:

EIST (Available when Power Technology is set to Custom)

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 Disabled, and **Enabled**.

Turbo Mode (Available when Power Technology is set to Custom and EIST is set to Enabled)

Select Enabled to use the Turbo Mode to boost system performance. The options are **Enabled** and Disabled.

C1E Support (Available when Power Technology is set to Custom)

Select Enabled to enable Enhanced C1 Power State to boost system performance. The options are **Enabled** and Disabled.

CPU C3 Report (Available when Power Technology is set to Custom)

Select Enabled 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 Enabled and **Disabled.**

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

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

CPU C7 Report (Available when Power Technology is set to Custom)

Select Enabled to allow the BIOS to report the CPU C7 State (ACPI C3) to the operating system. CPU C7 State is a processor-specific low C-State. The options are **Enabled** and Disabled.

Package C-State limit (Available when Power Technology is set to Custom)

This feature allows the user to set the limit on the C-State package register. The options are C0, C2, **C6,** and No Limit.

Energy/Performance Bias

Use this feature to select an appropriate fan setting to achieve maximum system performance (with maximum cooling) or maximum energy efficiency with maximum power saving). The fan speeds are controlled by the firmware management via IPMI 2.0. The options are Performance, **Balanced Performance**, Balanced Energy, and Energy Efficient.

Factory Long Duration Power Limit

This item displays the power limit (in watts) set by the manufacturer during which long duration power is maintained.

Long Duration Power Limit

This item displays the power limit (in watts) set by the user during which long duration power is maintained. The default setting is 0.

Factory Long Duration Maintained

This item displays the period of time (in seconds) set by the manufacturer during which long duration power is maintained.

Long Duration Maintained

This item displays the period of time (in seconds) during which long duration power is maintained. The default setting is 0.

Recommended Short Duration Power Limit

This item displays the short duration power settings (in watts) recommended by the manufacturer.

Short Duration Power Limit

During Turbo Mode, the system may exceed the processors default power setting and exceed the Short Duration Power limit. By increasing this value, the processor can provide better performance for short duration. This item displays the time period during which short duration power is maintained. The default setting is 0.

▶Chipset Configuration

▶North Bridge

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

▶Integrated IO Configuration

Intel® VT-d

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

Intel® I/OAT

Select Enabled 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 Disabled and **Enabled**.

DCA Support

When set to Enabled, this feature uses Intel's DCA (Direct Cache Access) Technology to improve data transfer efficiency. The options are **Enabled** and Disabled.

Back Riser Card

When a back riser card is detected, this item will display its information.

Front Riser Card

When a front riser card is detected, this item will display its information.

IIO 1 PCIe Port Bifurcation Control

This submenu configures the following IO PCIe Port Bifurcation Control settings for IIO 1 PCIe ports to determine how the available PCI-Express lanes to be distributed between the PCI-Exp. Root Ports.

IOU1-PCIe Port

This feature allows the user to set the PCI-Exp bus speed between IOU3 and PCI-e port. The options are x4x4 and **x8**.

CPU1 MLP PCI-E 3.0 x8 Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for this port Select GEN2 to enable PCI-Exp Generation 2 support for this port. Select GEN3 to enable PCI-Exp Generation 3 support. The options are GEN1, GEN2, and **GEN3**.

IOU2-PCIe Port

This feature allows the user to set the PCI-Exp bus speed between IOU3 and PCI-e port. The options are x4x4x4x4, x4x4x8, x8x4x4, *x8x8*, x16, and **Auto**.

CPU1 SXB1 PCI-E 3.0 x16 Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for this port Select GEN2 to enable PCI-Exp Generation 2 support for this port. Select GEN3 to enable PCI-Exp Generation 3 support. The options are GEN1, GEN2, and **GEN3**.

IOU3-PCIe Port

This feature allows the user to set the PCI-Exp bus speed between IOU3 and PCI-e port. The options are x4x4x4x4, x4x4x8, x8x4x4, **x8x8**, and x16.

CPU1 SXB2 PCI-E 3.0 x8 Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for this port Select GEN2 to enable PCI-Exp Generation 2 support for this port. Select GEN3 to enable PCI-Exp Generation 3 support. The options are GEN1, GEN2, and **GEN3**.

Port 3C Link Speed

Select GEN1 to enable PCI-Exp Generation 1 support for this port Select GEN2 to enable PCI-Exp Generation 2 support for this port. Select GEN3 to enable PCI-Exp Generation 3 support. The options are GEN1, GEN2, and **GEN3**.

▶QPI Configuration

Current QPI Link

This item displays the current status of the QPI Link.

Current QPI Frequency

This item displays the frequency of the QPI Link.

Isoc

Select Enabled to enable Isochronous support to meet QoS (Quality of Service) requirements. This feature is especially important for virtualization technology. The options are **Enabled** and Disabled.

QPI (Quick Path Interconnect) Link Speed Mode

Use this feature to select data transfer speed for QPI Link connections. The options are Slow and **Fast**.

QPI Link Frequency Select

Use this feature to select the desired QPI frequency. The options are **Auto**, 6.4 GT/s, 7.2 GT/s, and 8.0 GT/s.

▶DIMM Configuration

This section displays the following DIMM information.

Current Memory Mode

This item displays the current memory mode.

Current Memory Speed

This item displays the current memory speed.

Mirroring

This item displays if memory mirroring is supported by the motherboard. Memory mirroring creates a duplicate copy of the data stored in the memory to enhance data security.

Sparing

This item displays if memory sparing is supported by the motherboard. Memory sparing enhances system reliability, availability, and serviceability.

▶DIMM Information

CPU Socket 1 DIMM Information, CPU Socket 2 DIMM Information

The status of the memory modules detected by the BIOS will be displayed as detected by the BIOS.

Memory Mode

When Independent is selected, all DIMMs are available to the operating system. When Mirroring is selected, the motherboard maintains two identical copies of all data in memory for data backup. When Lock Step is selected, the motherboard uses two areas of memory to run the same set of operations in parallel. The default setting is **Independent**.

DRAM RAPL Mode

RAPL (Running Average Power Limit) provides mechanisms to enforce power consumption limits on supported processors The options are Disabled, DRAM RAPL MODE0, and **DRAM RAPL MODE1**.

DDR Speed

Use this feature to force a DDR3 memory module to run at a frequency other than what is specified in the specification. The options are Force DDR3-800, Force DDR3-1066, Force DDR3-1333, Force DDR3-1600 and Force SPD, and **Auto**.

Note: To run DDR3 1600 memory, with the MEM-DR316L-SL04-ER16 (1600/1.35V), you have set the memory speed to "Forced SPD" instead.

Channel Interleaving

This feature selects from the different channel interleaving methods. The options are **Auto**, 1 Way, 2 Way, 3, Way, and 4 Way.

Rank Interleaving

This feature allows the user to select a rank memory interleaving method. The options are **Auto**, 1 Way, 2 Way, 4, Way, and 8 Way.

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enabled, 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 **Enabled** and Disabled.

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 Enabled to use Demand Scrubbing for ECC memory correction. The options are Enabled and **Disabled**.

Data Scrambling

Select Enabled to enable data scrambling to ensure data security and integrity. The options are Disabled and **Enabled**.

Device Tagging

Select Enabled to support device tagging. The options are **Disabled** and Enabled.

Thermal Throttling

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

▶South Bridge

This feature allows the user to configure the settings for the Intel PCH chip.

PCH Information

This feature displays the following PCH information:

- **Name:** This item displays the name of the PCH chip.
- **Stepping:** This item displays the status of the PCH stepping.
- **USB Devices:** This item displays the USB devices detected by the BIOS.

All USB Devices

This feature enables all USB ports/devices. The options are Disabled and **Enabled**. (If set to Enabled, EHCI Controller 1 and Controller 2 will appear.)

EHCI Controller 1/EHCI Controller 2 (Available when All USB Devices is set to Enabled)

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 1 or Controller 2. The options are Disabled and **Enabled**.

Legacy USB Support (Available when USB Functions is not Disabled)

Select Enabled to support legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disabled to have USB devices available for EFI (Extensive Firmware Interface) applications only. The settings are **Enabled** Disabled, and Auto.

Port 60/64 Emulation

Select Enabled to enable I/O port 60h/64h emulation support for the legacy USB keyboard so that it can be fully supported by the operating systems that does not recognize a USB device. The options are Disabled and **Enabled**.

EHCI Hand-Off

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

▶SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of IDE or SATA devices and displays the following items.

SATA Port0~SATA Port5

The AMI BIOS displays the status of each SATA port as detected by the BIOS.

SATA Mode

Use this feature to configure SATA mode for a selected SATA port. The options are Disabled, IDE Mode, **AHCI Mode** and RAID Mode. The following are displayed depending on your selection:

IDE Mode

The following items are displayed when IDE Mode is selected:

Serial-ATA (SATA) Controller 0~1

Use this feature to activate or deactivate the SATA controller, and set the compatibility mode. The options for SATA Controller 0 are Disabled, Enhanced, and **Compatible**. The options for SATA Controller 1 are Disabled and **Enhanced**.

AHCI Mode

The following items are displayed when the AHCI Mode is selected.

Aggressive Link Power Management

When Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link in a low power mode during extended periods of I/O inactivity, and will return the link to an active state when I/O activity resumes. The options are **Enabled** and Disabled.

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for a particular port, which will allow the user to change a hardware component or device without shutting down the system. The options are **Enabled** and Disabled.

Staggered Spin Up

Select Enabled to enable Staggered Spin-up support to prevent excessive power consumption caused by multiple HDDs spinning-up simultaneously. The options are Enabled and **Disabled**.

RAID Mode

The following items are displayed when RAID Mode is selected:

SATA RAID Option ROM

Use this feature to determine which SATA RAID device the system will boot from. The options are **Legacy** and EFI.

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for the particular port. The options are **Enabled** and Disabled.

▶SCU (Storage Control Unit) Configuration

Storage Controller Unit

Select Enabled to enable PCH SCU storage devices. The options are Disabled and **Enabled**.

SCU RAID Option ROM

Select Enabled to support the onboard SCU Option ROM to boot up the system via a storage device. The options are **Legacy** and EFI.

SCU Port 0~SCU Port 1

The AMI BIOS will automatically detect the onboard SCU devices and display the status of each SCU device as detected.

▶PCIe/PCI/PnP Configuration

PCI ROM Priority

Use this feature to select the Option ROM to boot the system when there are multiple Option ROMs available in the system. The options are **Legacy ROM** and EFI Compatible ROM.

PCI Latency Timer

Use this feature to set the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224 and 248.

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**.

PERR# Generation

Select Enabled to allow a PCI device to generate a PERR number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

SERR# Generation

Select Enabled to allow a PCI device to generate an SERR number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

Maximum Payload

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

ASPM Support

This feature allows the user to set the Active State Power Management (ASPM) level for a PCI-E device. Select Force L0s to force all PCI-E links to operate at L0s state. Select Auto to allow the system BIOS to automatically set the ASPM level for the system. Select Disabled to disable ASPM support. The options are Disabled, Force L0s, and **Auto**.

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

SXB1 PCI-E 3.0 x16 OPROM, SXB2 PCI-E 3.0 x8 OPROM, SXB3 PCI-E 3.0 x8 OPROM

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

Onboard LAN Option ROM Select

Select iSCSI to use the iSCSI Option ROM to boot the computer using a network device. Select PXE (Preboot Execution Environment) to use an PXE Option ROM to boot the computer using a network device. The options are **PXE** and iSCSI.

Load Onboard LAN 1 Option ROM, Load Onboard LAN 2 Option ROM

Select Enabled to enable the onboard LAN 1 or LAN 2 Option ROM. This is to boot the computer using a network device. The default setting for both LAN1/LAN2 Option ROM is **Disabled**.

VGA Priority

This feature allows the user to select the graphics adapter to be used as the primary boot device. The options are **Onboard**, and Offboard.

Network Stack

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

▶Super IO Configuration

Super IO Chip

This item displays the Super IO chip used in the motherboard.

▶COM Configuration

Serial Port

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

Device Settings

This item displays the settings of the COM serial port.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of the COM serial port. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3; IO=2F8h; IRQ=3; IO=3E8h; IRQ=5; IO=2E8h; IRQ=7; 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; IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

Device Mode

Use this feature to select the desired mode for a serial port specified. The options are **Normal** and High Speed.

▶SOL Configuration

Serial Port

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

Device Settings

This item displays the settings of the SOL serial port.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of the SOL Port. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3; IO=2F8h; IRQ=3; IO=3E8h; IRQ=5; IO=2E8h; IRQ=7; 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; IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

Device Mode

Use this feature to select the desired mode for a serial port specified. The options are **Normal** and High Speed.

Serial Port 2 Attribute

Use this feature to select the attribute for this serial port. The options are **SOL** (Serial Over LAN), and COM.

▶Serial Port Console Redirection

COM, SOL

These two submenus allow the user to configure the following Console Redirection settings for a COM Port specified by the user.

Console Redirection

Select Enabled to use a COM Port selected by the user for Console Redirection. The options are Enabled and Disabled. The default setting for COM is **Disabled**. The default setting for SOL is **Enabled**.

▶Console Redirection Settings

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

Terminal Type

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

Bits Per second

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

Data Bits

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

This feature allows the user 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 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.

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

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

Console Redirection (for EMS)

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

▶Console Redirection Settings (for EMS)

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

Out-of-Band Management Port

The feature selects a serial port used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote server. The options are **COM** and SOL.

Terminal Type

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

This feature allows the user 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,** Hardware RTS/CTS, and Software Xon/Xoff.

Data Bits, Parity, Stop Bits

The setting for each of these features is displayed.

▶ACPI Settings

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

ACPI Sleep State

Use this feature to select the ACPI State when the system is in sleep mode. Select S1 (CPU Stop Clock) to erase all CPU caches and stop executing instructions. Power to the CPU(s) and RAM is maintained, but RAM is refreshed. Select Suspend Disabled to use power-reduced mode. Power will only be supplied to limited components (such as RAMs) to maintain the most critical functions of the system. The options are Suspend Disabled and **S1 (CPU Stop Clock)**.

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, 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.

▶Trusted Computing (Available when a TPM device is detected by the BIOS)

Configuration

TPM Support

Select Enabled on this item and enable the TPM jumper on the motherboard to enable TPM support to improve data integrity and network security. The options are **Enabled** and Disabled.

TPM State

Select Enabled to enable TPM security settings to improve data integrity and network security. The options are Disabled and **Enabled**.

Pending Operation

Use this item to schedule an operation for the security device. The options are **None**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

Note: During restart, the computer will reboot in order to execute the pending operation and change the state of the security device.

Current Status Information

This item displays the information regarding the current TPM status.

TPM Enable Status

This item displays the status of TPM Support to indicate if TPM is currently enabled or disabled.

TPM Active Status

This item displays the status of TPM Support to indicate if TPM is currently active or deactivated.

TPM Owner Status

This item displays the status of TPM Ownership.

▶Intel TXT (LT-SX) Configuration

Intel TXT (LT-SX) Hardware Support

This feature indicates if the following hardware components support the Intel Trusted Execution Technology.

CPU: TXT (Trusted Execution Technology) Feature

Chipset: TXT (Trusted Execution Technology) Feature

Intel TXT (LT-SX) Configuration

This feature displays the following TXT configuration setting.

TXT (LT-SX) Support

This item indicates if the Intel TXT support is enabled or disabled. The default setting is **Disabled**.

Intel TXT (LT-SX) Dependencies

This feature displays the features that need to be enabled for the Intel Trusted Execution Technology to work properly in the system.

VT-d Support: Intel Virtualization Technology with Direct I/O support

VT Support: Intel Virtualization Technology support

TPM Support: Trusted Platform support

TPM State: Trusted Platform state

▶ME Subsystem

This feature displays the following ME Subsystem Configuration settings.

- **ME BIOS Interface Version**
- **ME Version**

▶iSCSI Configuration

This item displays iSCSI configuration information:

iSCSI Initiator Name

This item displays the name of the iSCSI Initiator, which is a unique name used in the world. The name must use IQN format. The following actions can also be performed:

- Add an Attempt
- Delete Attempts
  - Commit/Discard Changes and Exit
- Change Attempt Order
  - Commit/Discard Changes and Exit

▶Intel® Ethernet Controller I350 Gigabit Network Connection

These items display the following information on the Intel I350 Gigabit network connections.

NIC Configuration

Link Speed

Use this feature to change the link speed and duplex for the current port. The options are **AutoNeg**, 10Mbps Half, 10Mbps Full, 100Mbps Half, and 100Mbps full.

Wake on LAN

Select enabled to wake the system with a magic packet. The options are **Enabled** and Disabled.

Blink LEDs

This feature allows the user to specify the duration for LEDs to blink. The range is from 0 ~ 15 seconds. The default setting is **0**.

PORT CONFIGURATION INFORMATION

This section displays the following port information:

- UEFI Driver
- Adapter PBA
- Chip Type
- PCI Device ID
- PCI Bus:Device:Function
- Link Status
- Factory MAC Address / Alternate MAC Address

7-4   Event Logs

Select the Event Logs tab to access the following submenu items.

```
              Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
     Main  Advanced   Event Logs   IPMI  Boot  Security  Save & Exit

 ▶ Change Smbios Event Log Settings                      Press <Enter> to change
                                                         the Smbios Event Log
   View Smbios Event Log                                 configuration.



                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/−: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit


              Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

▶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 Enabled to support Runtime Error Logging. The options are **Enabled** and Disabled.

Memory Correctable Error Threshold

This feature allows the user to enter the threshold value for correctable memory errors. The default setting is **10**.

PCI Error Logging Support

Select Enabled to support error event logging for PCI slots. The options are Enabled and **Disabled**.

Erasing Settings

Erase Event Log

Select Enabled to erase the SMBIOS (System Management BIOS) Event Log, which is completed before a event logging is initialized upon system reboot. The options are **No,** Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately to immediately erase SMBIOS error event logs that exceed the limit when the SMBIOS 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 from 1 to 255. The default setting is **1**.

METW (Multiple Event Count Time Window)

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

View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. Select this item and press <Enter> to view the status of an event in the log.

Date/Time/Error Code/Severity

7-5   IPMI

Select the IPMI (Intelligent Platform Management Interface) tab to access the following submenu items.

```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

   IPMI Firmware Revision              1.66                    Press <Enter> to change
   IPMI STATUS                         Working                 the SEL event log
 ▶ System Event Log                                            configuration.
 ▶ BMC Network Configuration




                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit




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```

IPMI Firmware Revision

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

IPMI Status

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

▶System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled for all system event logging at bootup. The options are **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 decide what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

▶BMC Network Configuration

LAN Channel 1: This feature allows the user to configure the settings for LAN1 Port.

Update IPMI LAN Configuration

This feature allows the BIOS to implement any IP/MAC address changes at the next system boot. If the option is set to Yes, any changes made to the settings below will take effect when the system is rebooted. The options are **No** and Yes.

Configuration Address Source

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

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 separated by dots 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).

7-6   Boot

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

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                            Sets the system boot
     Boot Option Priorities                                 order
     Boot Option #1                    [IBA GE Slot 0500...]
     Boot Option #2                    [UEFI: Built-in E...]

     Network Devices

   ▶ Delete Boot Option

                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit

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```

Boot Option Priorities

Boot Option #1, Boot Option #2, etc.

Use this feature to specify the sequence of boot device priority. **Network** is default.

Network Devices

Use these options to set the order of the legacy network devices detected by the motherboard.

▶**Delete Boot Option**

This feature allows the user to select a EFI boot device to delete from the boot priority list.

Delete Boot Option

Select the desired boot device to delete.

7-7   Security

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

```
          Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

 Password Description                                   Setup: Check password
                                                        while invoking setup.
 If ONLY the Administrator's password is set,           Always: Check password
 then this only limits access to Setup and is           while invoking setup as
 only asked for when entering Setup.                     well as on each boot.
 If ONLY the User's password is set, then this
 is a power on password and must be entered to
 boot or enter Setup. In Setup the User will
 have Administrator rights.
 The password length must be
 in the following range:
 Minimum length                      3
 Maximum length                      20                 →←: Select Screen
                                                        ↑↓: Select Item
 Password Check                      [Setup]            Enter: Select
 Administrator Password                                 +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit



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```

Password Check

Use this feature to determine when a password entry is required. Select Setup to require the password only when entering setup. Select Always to require the password when entering setup and on each boot. The options are **Setup** and Always.

Administrator Password

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

7-8   Save & Exit

This submenu allows the user to configure the Save and Exit settings for the system.

```
            Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
     Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

   Discard Changes and Exit                              Exit system setup
   Save Changes and Reset                                without saving any
                                                         changes.
   Save Options
   Save Changes
   Discard Changes

   Restore Optimized Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   IBA GE Slot 0500 v1395
   UEFI: Built-in EFI Shell                              →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit


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```

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without saving, select **Yes** to quit BIOS without saving the changes, or select No to quit the BIOS and save changes.

Save Changes and Reset

When you have completed the system configuration changes, select this option to save the changes and reboot the computer so that the new system configuration settings can take effect. Select Save Changes and Exit, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without saving, select **Yes** to quit BIOS without saving the changes, or select No to quit the BIOS and save changes.

Save Options

Save Changes

Select this option and press <Enter> to save all changes you've done so far and return to the AMI BIOS utility Program. When the dialog box appears, asking you if you want to save configuration, select **Yes** to save the changes, or select No to return to the BIOS without making changes.

Discard Changes

Select this feature and press <Enter> to discard all the changes and return to the BIOS setup. When the dialog box appears, asking you if you want to load previous values, select **Yes** to load the values previous saved, or select No to keep the changes you've made so far.

Restore Optimized Defaults

Select this feature and press <Enter> to load the optimized default settings that help optimize system performance. When the dialog box appears, asking you if you want to load optimized defaults, select **Yes** to load the optimized default settings, or select No to abandon optimized defaults.

Save as User Defaults

Select this feature and press <Enter> to save the current settings as the user's defaults. When the dialog box appears, asking you if you want to save values as user's defaults, select **Yes** to save the current values as user's default settings, or select No to keep the defaults previously saved as the user's defaults.

Restore User Defaults

Select this feature and press <Enter> to load the user's defaults previously saved in the system. When the dialog box appears, asking you if you want to restore user's defaults, select **Yes** to restore the user's defaults previously saved in the system, or select No to abandon the user's defaults that were previously saved.

Boot Override

This feature allows the user to override the Boot Option Priorities setting in the Boot menu, and instead boot the system with one of the listed devices. This is a one-time override.

Appendix A

BIOS Error Beep Codes

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

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

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

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

A-1 AMIBIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short beeps and 1 long beep	Memory error	No memory detected in the system
5 long and 2 short beeps	Display memory read/write error	Video adapter missing or with faulty memory
1 continuous beep	System overheat	System overheat

Notes

Appendix B

System Specifications

Note: Unless noted specifications apply to a complete system (all serverboards). There are eight motherboard drawer nodes per system.

Processors

Two E5-2600 series processors per node in Socket R LGA 2011 type sockets

Note: please refer to our website for details on supported processors.

Chipset

One C602 chipset per node

BIOS

128 MB AMI BIOS® Flash EEPROM per node

Memory Capacity

The X9DRFR has sixteen (16) DIMM slots supporting up to 512 GB of DDR3-1600/1333/1066/800 MHz speed RDIMM/LDIMM registered ECC or 128 GB of DDR3-1600/1333/1066/800 MHz speed UDIMM SDRAM in up to 1 GB, 2 GB, 4 GB, 8 GB, 16 GB or 32 GB sizes at 1.35V or 1.5V voltages per node.

Note: refer to Section 5-6 for details on installation.

Note: Check the Supermicro website (www.supermicro.com) for the latest memory support information.

SAS/SATA Drive Bays

Each node of the FatTwin F627R3-RTB+/R72B+ contains eight hot-swap drive bays (six front, two rear) to house up to eight standard 3.5" SAS/SATA drives per node for a total of thirty-two (32) drives.

PCI Expansion

The FatTwin F627R3-RTB+/R72B+ has 1x PCI-E 3.0 x16 low-profile and 1x PCI-E 3.0 x8 micro low-profile available per node.

Serverboard

X9DRFR serverboard (proprietary form factor)
Dimensions: (LxW) 19.44 x 6.80 in. (493.78 x 172.72 mm)

Chassis

SCF424AS-R1K28B (4U rackmount)

Dimensions: (WxHxD) 17.63 x 6.96 x 29 in. (448 x 177 x 737 mm)

Weight

Gross (Bare Bone): 150 lbs. (68.04 kg.)

System Cooling

The system has two (2) 8-cm PWM system cooling fans per node

System Input Requirements

AC Input Voltage: 100-140V (1000W), 180-240V (1280W) AC auto-range
Rated Input Current: 12 - 8A (1000W), 8 - 6A (1280W)
Rated Input Frequency: 50 to 60 Hz
Efficiency: 80+ (Platinum Level)

Power Supply

Rated Output Power: 1280 Watts (Part# PWS-1K28P-SQ)
Rated Output Voltages: +12V (1000W: +12V/83A, +5Vsb/4A; 1280W:
+12V/106.7A, +5Vsb/4A)

Operating Environment

Operating Temperature: 10°C to 35°C (50°F to 95°F)
Non-operating Temperature: -40°C to 70°C (-40°F to 158°F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Ambient Temperature versus Porcessor Support		
	35°C	30°C
135 W	X_1	X
130 W	X	X
115 W	X	X
95 W	X	X

Note 1: Performance of the processors may have some impact

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

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

Notes

(continued from front)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.