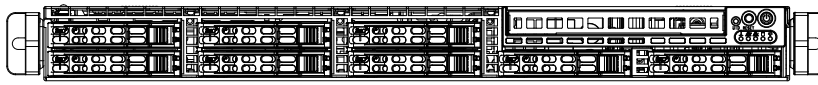
SUPERMICRO®

SUPERSERVER

1027R-WRFT+
1027R-WRF4+



USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 1027R-WRFT+/1027R-WRF4+. Installation and maintenance should be performed by experienced technicians only.

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 X9DRW-3TF+/X9DRW-3LN4F+ serverboard and the SC119TQ-R700WB chassis, which comprise the SuperServer 1027R-WRFT+/1027R-WRF4+.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 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 SuperServer 1027R-WRFT+/1027R-WRF4+.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X9DRW-3TF+/X9DRW-3LN4F+ 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 SC119TQ-R700WB server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS or peripheral drives and when replacing system power supply modules and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

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Appendix A BIOS Error Beep Codes

Appendix B System Specifications

Chapter 1

Introduction

1-1 Overview

The SuperServer 1027R-WRFT+/1027R-WRF4+ is a high-end server comprised of two main subsystems: the SC119TQ-R700WB 1U server chassis and the X9DRW-3TF+/X9DRW-3LN4F+ dual processor serverboard. 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 1027R-WRFT+/1027R-WRF4+, as listed below:

- Six sets of 4-cm counter-rotating fans (FAN-0101L4)
- One air shroud (MCP-310-19003-0N)
- Two passive CPU heatsinks (SNK-P0047PS)
- Riser Cards
  One RSC-R1UW-2E16
  One RSC-R1UW-E8R
- SAS Accessories
  One SAS backplane (BPN-SAS-113TQ)
  Eight drive carriers (MCP-220-00047-0B)
- One CD containing drivers and utilities
- SuperServer 1027R-WRFT+/1027R-WRF4+ User's Manual

1-2 Serverboard Features

At the heart of the SuperServer 1027R-WRFT+/1027R-WRF4+ lies the X9DRW-3TF+/X9DRW-3LN4F+, a dual processor serverboard based on the Intel® C606 chipset. Below are the main features of the serverboard. (See Figure 1-1 for a block diagram of the chipset).

Processors

The X9DRW-3TF+/X9DRW-3LN4F+ supports single or dual Intel® E5-2600 Series (Socket R) processors in LGA 2011 sockets. Please refer to our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X9DRW-3TF+/X9DRW-3LN4F+ features 24 DIMM slots that can support up to 768 GB of registered/unbuffered ECC DDR3-1600/1333/1066/800 SDRAM or LRDIMM type memory. Please refer to Chapter 5 for installing memory.

Onboard SAS

A SAS controller is integrated into the chipset to support eight SAS 2.0 ports. The hot-swap SAS drives are connected to a backplane that provides power, bus termination and configuration settings.

Note: RAID 0, 1, 5, 6, 10, 50 and 60 is supported. Refer to the following ftp site for setup guidelines:
<ftp://ftp.supermicro.com/driver/SAS/LSI/LSI_SAS_EmbMRAID_SWUG.pdf>.

Onboard Serial ATA

An on-chip SATA controller is integrated into the X9DRW-3TF+/X9DRW-3LN4F+ to provide a six-port, SATA subsystem (two SATA 3.0 ports and four SATA 2.0 ports), which is RAID 0, 1, 5 and 10 supported (RAID 5 is supported with Windows OS only). The SATA drives are hot-swappable units.

Note: You must have RAID set up to enable the hot-swap capability of the SATA drives. Documentation on RAID setup guidelines can be found on our web site.

Rear I/O Ports

The color-coded I/O ports include one COM port, a VGA (monitor) port, two USB 2.0 ports, PS/2 mouse and keyboard ports and one dedicated IPMI LAN port. In addition, the X9DRW-3TF+ has two 1 Gb LAN (Ethernet) ports and two 10 Gb LAN ports and the X9DRW-3LN4F+ has four 1 Gb LAN ports.

1-3 Server Chassis Features

The 1027R-WRFT+/1027R-WRF4+ is built upon the SC119TQ-R700WB chassis. Details on the chassis and on servicing procedures can be found in Chapter 6.The following is a general outline of the main features of the chassis.

System Power

The SC119TQ-R700WB features a redundant 700W power supply consisting of two power modules. The system does not need to be shut down when replacing or removing a single power supply module.

Hard Drives

The chassis was designed to support eight hot-swap SAS or SATA hard drives.

PCI Expansion Slots

Two riser cards are included. The RSC-R1UW-E8R is located on the right side of the chassis and supports one low-profile (max. length = 4.1") PCI-E x8 card. The RSC-R1UW-2E16 is located on the left side of the chassis and supports two full-height, half-length PCI-E x16 add-on cards. See section 5-6 of this manual for details.

Front Control Panel

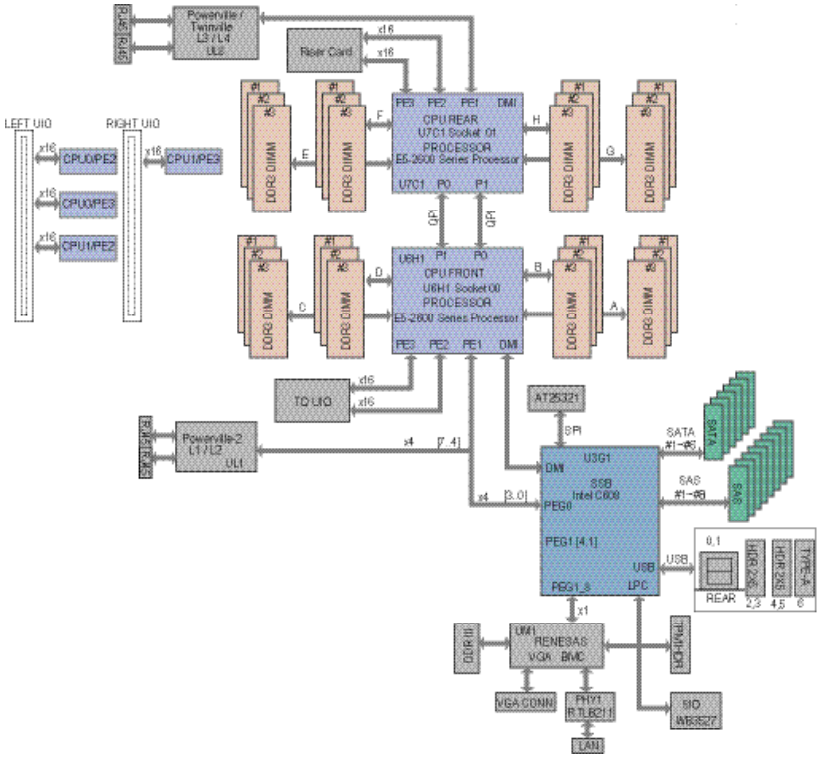
The chassis' control panel provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity (2), system information and UID (Unit Identification). A main power button and a UID button is also included.

Cooling System

The system has an innovative cooling design that features six sets of 4-cm counter-rotating fans located in the middle section of the chassis. Fan speed may be varied by IPMI to respond to fluctuations in system temperature. The power supply module also includes a cooling fan.

Figure 1-1. Intel C606 Chipset:
System Block Diagram

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



1-4 Contacting Supermicro

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Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
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Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your 1027R-WRFT+/1027R-WRF4+ 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 pre-installed. 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 1027R-WRFT+/1027R-WRF4+ 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 server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

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

Choosing a Setup Location

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

installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

Warnings and Precautions!

Rack Precautions

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

Server Precautions

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

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the 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.).

2-4 Installing the System into a Rack

This section provides information on installing the server into a rack unit with the rack rails provided. If the system has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails

You should have received two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself (see Figure 2-1).

Note: The rails will fit a rack between 26" and 33.5" deep.

Figure 2-1. Identifying the Inner Rails and Inner Rail Extensions

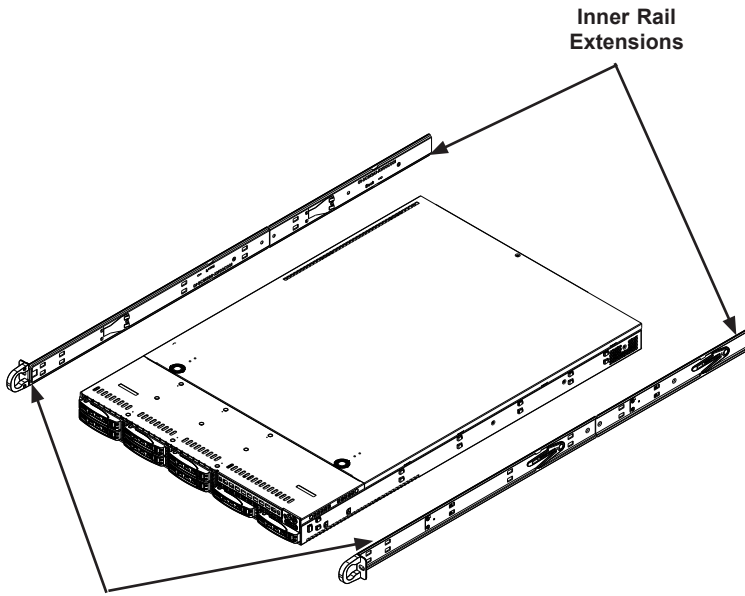
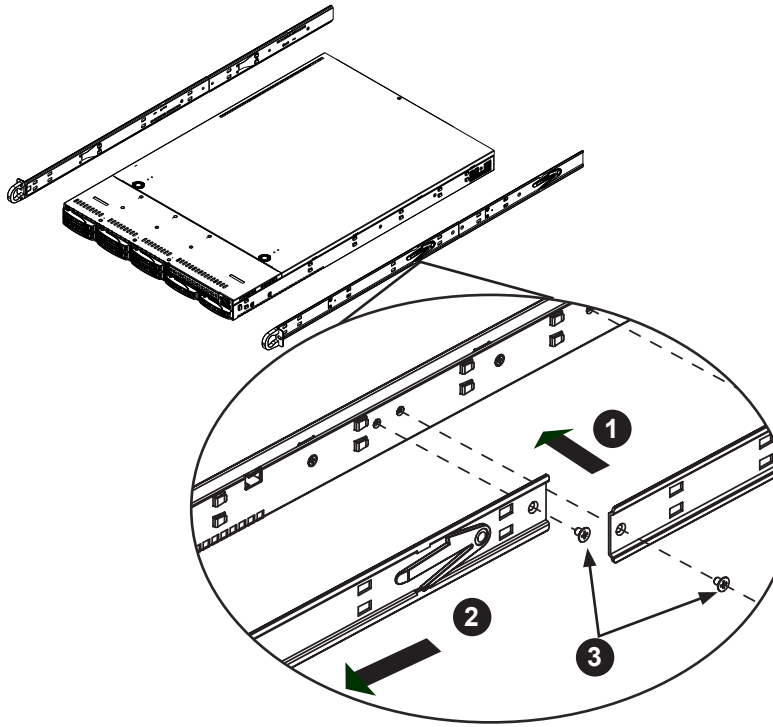


Figure 2-2: Identifying the Sections of the Rack Rails (right side rail shown)



Inner Rails

The SC119 chassis inner rails are composed of two sections: inner rails and inner rail extensions. The inner rails are pre-attached and do not interfere with normal use of the chassis if you decide not to use a server rack. Attach the inner rail extension to stabilize the chassis within the rack.

Installing the Inner Rails

1. Place the inner rail extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces "outward" just like the pre-attached inner rail.

2. Slide the extension toward the front of the chassis.

3. Secure the chassis with 2 screws as illustrated.

4. Repeat steps 1-3 for the other inner rail extension.

Outer Rails

Installing the Outer Rails to the Rack

1. Attach the shorter outer rail to the outside of the longer outer rail. You must align the pins with the slides. Both bracket ends must face the same direction.
2. Adjust the outer rails so that they fit snugly within the rack.
3. Secure the longer outer rail to the front of the rackl with two screws
4. Secire the shorter outer rail to the rear rack with three screws.
5. Repeat steps 1-4 for the remaining outer rail.

Locking Tabs

Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

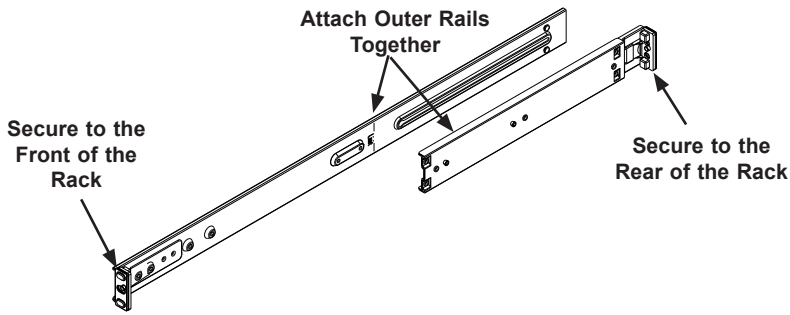


Figure 2-3. Assembling the Outer Rails

Installing the Server into the Rack

Installing the Chassis into a Rack (Figure 2-4)

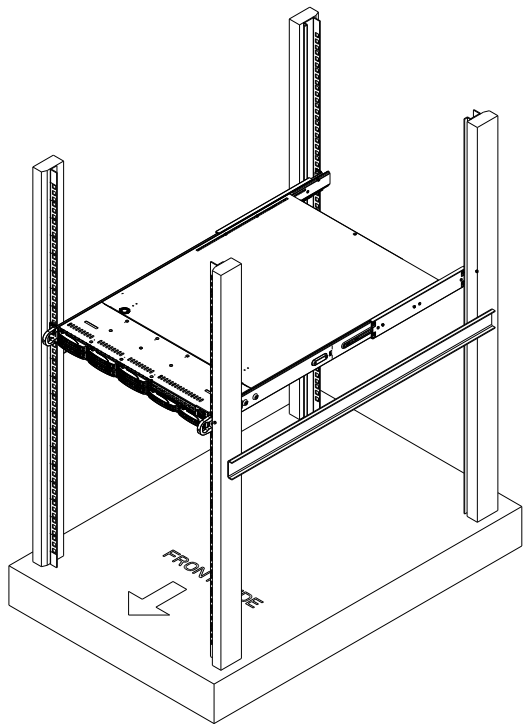
1. Confirm that the chassis includes the inner rails and rail extensions, and confirm that the outer rails are installed on the rack.

2. Align the inner rails on the chassis with the front of the outer rails on the rack.

3. Slide the inner rails into the outer rails, keeping the pressure even on both sides (it may be necessary to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs click into the locked position.

4. (Optional) Insert and tighten the thumbscrews that hold the front of the chassis to the rack.

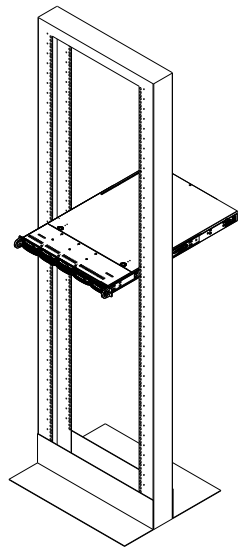
Figure 2-4. Installing the Server into a Rack



Installing the Server into a Telco Rack

To install the chassis into a Telco type rack, use two L-shaped brackets on either side of the chassis (four total). First, determine how far the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it. Then attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Figure 2-5: Installing the Server into a Telco Rack



Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the hard drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also three buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Control Panel Buttons

There are three push-buttons located on the front of the chassis: UID button, a reset button and a power on/off button.

UID

Depressing the UID (unit identifier) button illuminates an LED on both the front and rear of the chassis for easy system location in large stack configurations. The LED will remain on until the button is pushed a second time. Another UID button on the rear of the chassis serves the same function.

Reset

The reset button is used to reboot the system.

Power

The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Control Panel LEDs

The control panel located on the front of the SC119TQ chassis has five 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

This LED will be blue when the UID function has been activated. When this LED flashes red, it indicates a fan failure. When red continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.

Universal Information LED States	
State	Indication
Fast Blinking Red (1x/sec)	Fan Fail
Solid Red	CPU Overheat
Slow Blinking Red (1x/4 sec)	Power Fail
Solid Blue	Local UID Button Depressed
Blinking Blue	IPMI-Activated UID

NIC2

Indicates network activity on GLAN2 when flashing .

NIC1

Indicates network activity on GLAN1 when flashing.

HDD

Indicates IDE channel activity. On the 6016T-6RFT+/6016T-6F+ this light indicates HDD and/or DVD-ROM drive activity when flashing.

Power

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

3-4 Drive Carrier LEDs

- **Green:** Each hard drive carrier has a green LED. When illuminated, this green LED indicates drive activity. A connection to the SAS backplane enables this LED to blink on and off when that particular drive is being accessed. Please refer to Chapter 6 for instructions on replacing failed hard drives.

- **Red:** The red LED to indicate a hard drive failure. If one of the drives fail, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed hard drives.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 1027R-WRFT+/1027R-WRF4+ from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets. The unit has more than one power

supply cord. Disconnect both power supply cords before servicing to avoid electrical shock

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). 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.

- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the system clean and free of clutter.

- The 1027R-WRFT+/1027R-WRF4+ weighs approximately 46 lbs. (20.9 kg.). When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit after ensuring that all connections have been made.

4-3 ESD Precautions

Electrostatic Discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

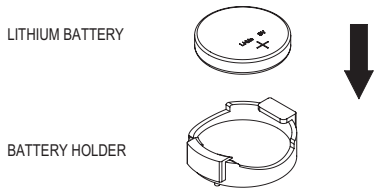
- Put the serverboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 1027R-WRFT+/1027R-WRF4+ is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



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

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install processors and heatsinks to the X9DRW-3TF+/X9DRW-3LN4F+ serverboard, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the serverboard to protect and cool the system sufficiently.

5-1 Handling the Serverboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the serverboard can cause it to bend if handled improperly, which may result in damage. To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling.

The following measures are generally sufficient to protect your equipment from static discharge.

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.

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.

5-5 Processor and Heatsink Installation

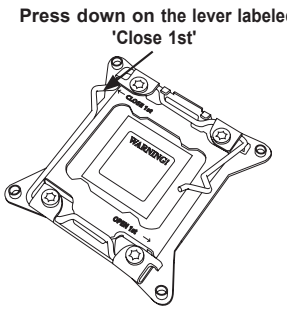
When handling the processor package, avoid placing direct pressure on the label area of the fan.

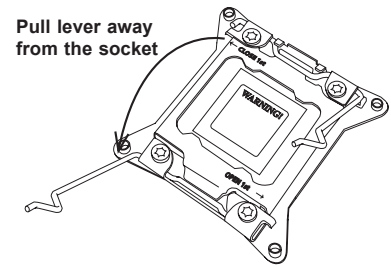
Notes:

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

Installing an LGA 2011 Processor

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



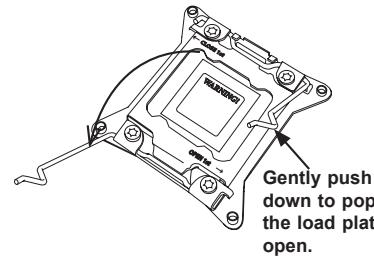


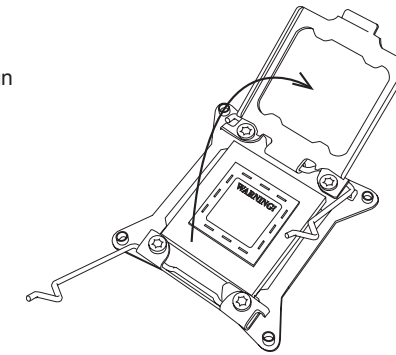
3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.

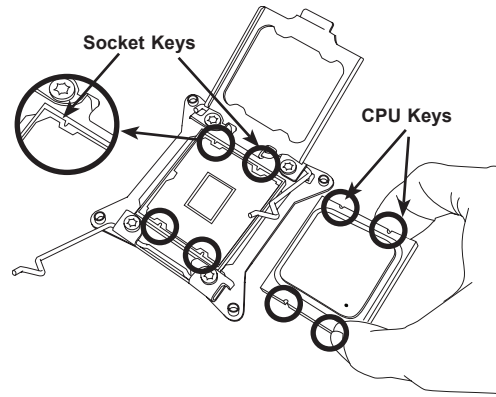
4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.

5. Use your thumb and index finger to hold the CPU by its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.

6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically and do not rub the CPU against any pins of the socket, which may damage the CPU or the socket.)



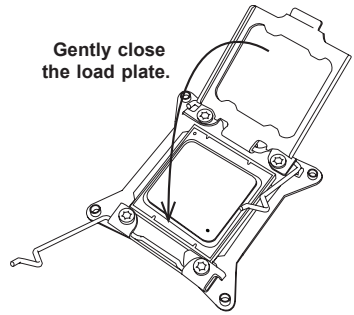


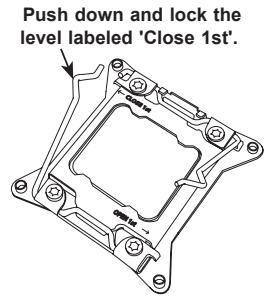


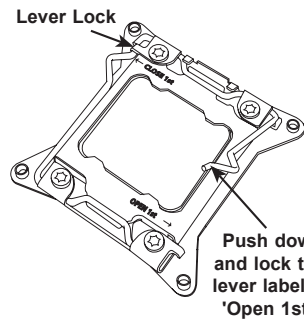
Warning: You can only install the CPU to the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is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

7. With the CPU in the socket, inspect the four corners of the CPU to make sure that they are flush with the socket.

8. Close the load plate. Lock the lever labeled 'Close 1st', then lock the lever labeled 'Open 1st'. Use your thumb to gently push the load levers down until the lever locks.



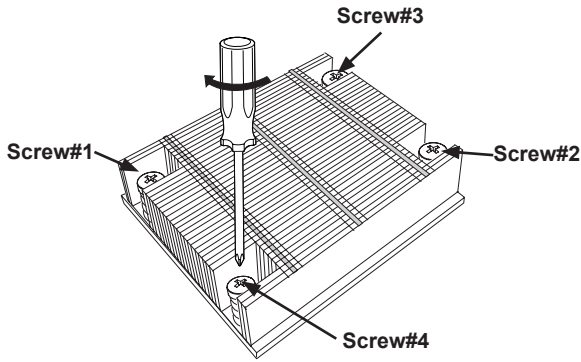




Removing the Heatsink

Warning: We do not recommend removing the CPU or the heatsink. If you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

1. Unplug the power cord from the power supply.
2. Unscrew and remove the heatsink screws in the sequence shown in the picture below.
3. Hold the heatsink and gently wiggle it to loosen it from the CPU. (Do not use excessive force when doing this!)
4. Once the heatsink is loosened, remove it from the CPU.
5. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease before you re-install the heatsink.



5-3 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 data cables (with their connector locations noted) should be connected. See the serverboard layout diagram in this chapter for connector locations.

- SAS cables (SAS0 ~ SAS3, SAS4 ~ SAS7)
- Control Panel cable (JF1, see next page)

Connecting Power Cables

The X9DRW-3TF+/X9DRW-3LN4F+ has a 24-pin primary power supply connector designated "JPW1" for connection to the ATX power supply. Connect the appropriate connector from the power supply to JPW1 to supply power to the serverboard. See the Connector Definitions section in this chapter for power connector pin definitions.

In addition, your power supply must be connected to the 8-pin Processor Power connectors at JPW2 and JPW3.

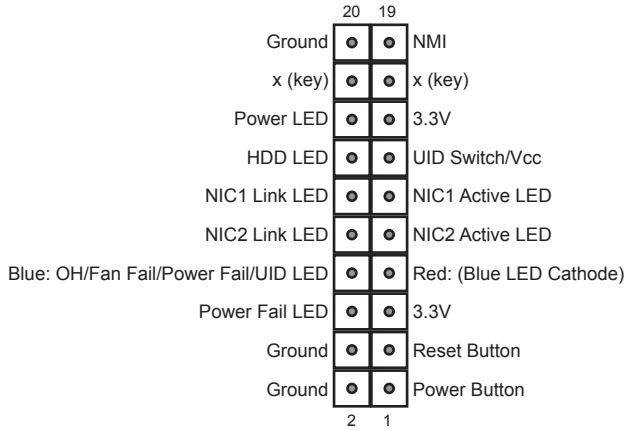
Connecting the Control Panel

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

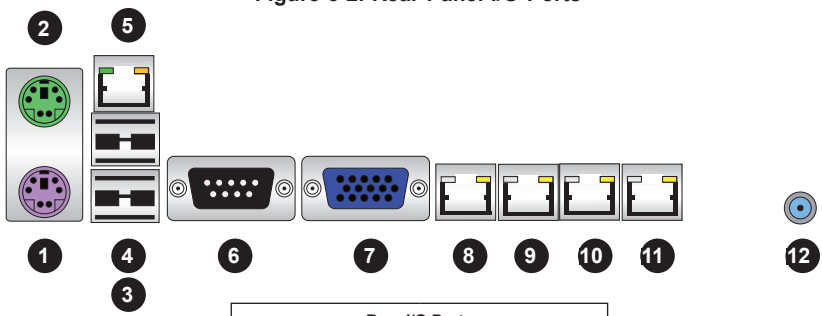
Figure 5-1. Front Control Panel Header Pins (JF1)



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. Rear Panel I/O Ports



Rear I/O Ports	
1. Keyboard	7. VGA Port
2. PS/2 Mouse	8. 1 Gb LAN1 Port
3. USB0	9. 1 Gb LAN2 Port
4. USB1	10. 10 Gb LAN3 Port
5. Dedicated IPMI LAN	11. 10 Gb LAN4 Port
6. COM1	12. UID Button

* The LAN ports on the X9DRW-3LN4F+ are all 1 Gb ports (10 Gb ports available on the X9DRW-3TF+ only).

5-5 Installing Memory

Note: Check the Supermicro web site for recommended memory modules.

CAUTION

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

Installing DIMMs

1. Insert the desired number of DIMMs into the memory slots, starting with slot P1-DIMM1A. For best performance, install memory modules of the same type and same speed in the slots as indicated in the tables below.

2. Insert each DIMM vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly (see Figure 5-5).

3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules

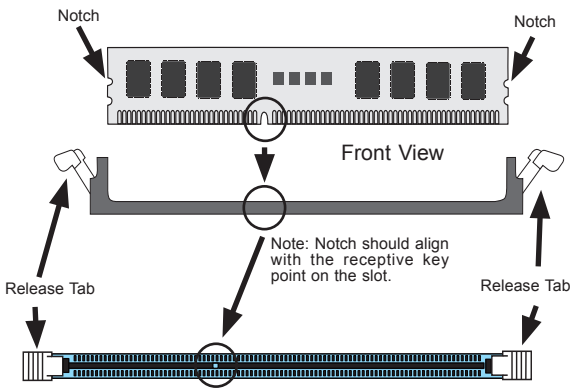
Memory Support

The X9DRW-3TF+/X9DRW-3LN4F+ supports up to 768 GB registered/unbuffered ECC DDR3-1600/1333/1066/800 MHz SDRAM or 768 GB of LRDIMM (Reduced Load) DDR3- 1600/1333/1066/800 MHz memory modules.

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.



Top View of DDR3 Slot

Processor & Memory Module Population Configuration

For memory to work properly, follow the tables below for memory installation.

Processors and their Corresponding Memory Modules												
CPU#	**Corresponding DIMM Modules**											
CPU 1	P1-A1	P1-A2	P1-A3	P1-B1	P1-B2	P1-B3	P1-C1	P1-C2	P1-C3	P1-D1	P1-D2	P1-D3
CPU2	P2-E1	P2-E2	P2-E3	P2-F1	P2-F2	P2-F3	P2-G1	P2-G2	P2-G3	P2-H1	P2-H2	P2-H3

Processor and Memory Module Population	
Number of CPUs+DIMMs	**CPU and Memory Population Configuration Table (For memory to work properly, please install DIMMs in pairs)**
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, P1-A2/P1-B2, P1-C2/P1-D2
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-A1/P1-B1, P2-E1/P2-F1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-A1/P1-B1, P2-E1/P2-F1, P1-C1/P1-D1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-A1/P1-B1, P2-E1/P2-F1, P1-C1/P1-D1, P2-G1/P2-H1
2 CPUs & 9~12 DIMMs	CPU1/CPU2 P1-A1/P1-B1, P2-E1/P2-F1, P1-C1/P1-D1, P2-G1/P2-H1, P1-A2/P1-B2, P2-E2/P2-F2
2 CPUs & 13 DIMMs~24 DIMMs	CPU1/CPU P1-A1/P1-B1, P2-E1/P2-F1, P1-C1/P1-D1, P2-G1/P2-H1, P1-A2/P1-B2, P2-E2/P2-F2, P1-C2/P1-D2, P2-G2/P2-H2, P1-A3/P1-B3, P2-E3/P2-F3, P1-C3/P1-D3, P2-G3/P2-H3

5-6 Adding PCI Cards

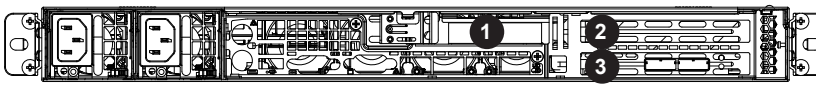
PCI Expansion Slots

The X9DRW-3TF+/X9DRW-3LN4F+ has one Universal PCI slot. Riser cards installed to the system allow you to add PCI expansion cards (see below). The SC119TQ-R700WB chassis can support the use of two standard size (full-height, half-length) expansion cards and one low-profile (4.1" length) expansion card (with pre-installed riser cards).

PCI Card Installation

Before installing a PCI add-on card, make sure you power off the system first. Begin by removing the top chassis cover. Two riser cards should be pre-installed into the system. Remove the screws that secure the riser cards to the rear of the chassis then lift the riser card assembly from the chassis. Insert the PCI card into the riser card slot, pushing down with your thumbs evenly on both sides of the card - note that the add-on card attaches to the riser card with a single screw. After the card has been installed, reinsert the riser card back into the expansion slot on the board, then secure it with the same screws you removed previously. Finish by replacing the chassis cover.

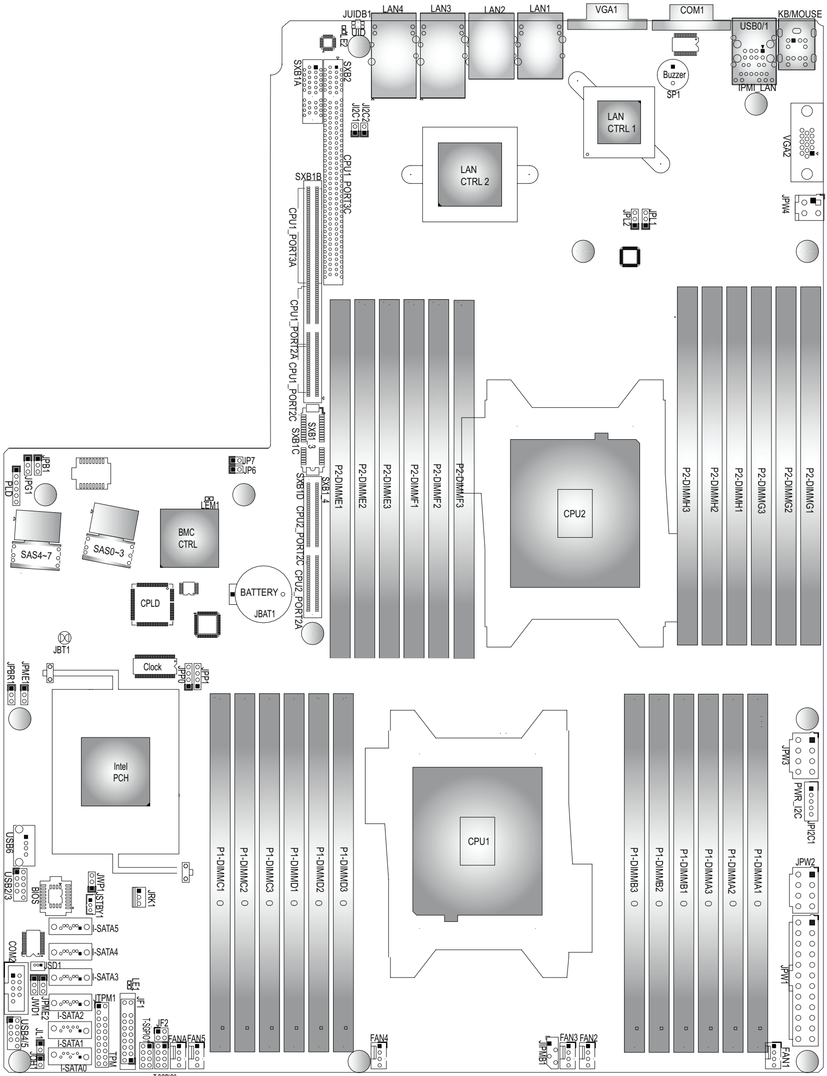
PCI Slot/Card Configurations	
Riser Card	**Expansion Card Supported**
RSC-R1UW-2E16 (left side)	1x PCI-E x16 and 1x PCI-E x8 cards (full-height, half-length)
RSC-R1UW-E8R (right side)	1x low-profile PCI-E x8 card (4.1" length)



PCI Card Locations			
#	**Expansion Card**	**#**	**Expansion Card**
1	Low-profile (2.536"), 4.1" length	3	Full-height (4.2"), 6.6" length
2	Full-height (4.2"), 10" length		

5-7 Serverboard Details

Figure 5-4. SUPER X9DRW-3TF+/X9DRW-3LN4F+ Layout



Notes:

Jumpers not indicated are for test purposes only.

X9DRW-3TF+/X9DRW-3LN4F+ Quick Reference

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 5-9
JI²C1/JI²C2	SMB to PCI-E Slots	Pins 2-3 (Normal)
JP6/JP7	I²C Bus for VRMs	Open (Normal)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPBR1	BIOS Recovery	Pins 1-2 (Normal)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	LAN1/LAN2 Enable/Disable	Pins 1-2 (Enabled)
JPL2	LAN3/LAN4 Enable/Disable	Pins 1-2 (Enabled)
JPME1	ME Recovery	Pins 2-3 (Normal)
JPME2	Flash Descriptor Security Overwrite	Pins 2-3 (Normal)
JWD1	Watch Dog	Pins 1-2 (Reset)
JWP1	BIOS Write Protect	Pins 2-3 (Normal)

Connector	Description
COM1/COM2	Backplane COM Port1/Front Accessible COM2 Header
FAN1~5, FANA	CPU/System Fan Headers
I-SATA 0~5	Intel SB SATA Connectors 0~5
JBAT1	Onboard Battery
JF1	Control Panel Header
JF2	LAN 3/4 Link/Activity LED Indicators
JIPMB1	4-pin External BMC I²C Header (for an IPMI Card)
JL1	Chassis Intrusion
JOH1	Overheat/Fan Fail LED
JPI²C1	Power Supply SMBbus I²C Header
JPW1	ATX 24-Pin Power Connector
JPW2/JPW3	12V 8-Pin Power Connectors
JPW4	12V 4-Pin Power Connector
JRK1	RAIDKey
JSD1	SATA DOM (Device On Module) Power Connector
JSTBY1	Standby Power Header
JTPM1	TPM (Trusted Platform Module)/Port 80
LAN1/2	Gb Ethernet Ports
LAN3/4	10 Gb Ethernet Ports (1 Gb ports on X9DRW-3LN4F+)
(IPMI) LAN	Dedicated IPMI LAN Port
SAS 0~3, 4~7	Serial Attached SCSI Ports

SXB1A/1B/1C	SMC-Proprietary WIO_L (Left) Add-On Card Slot
SXB2	SMC-Proprietary WIO_R (Right) Add-On Card Slot
T-SGPIO 1/2	Serial-Link General_Purpose IO Headers
USB 0/1	Back Panel USB 0/1 Ports
USB 2/3, 4/5	Front Panel Accessible USB 2/3, 4/5 Headers
USB 6	Front Panel Type A USB 6 Port
UID Switch	UID (Unit Identifier) Switch (JUID1)
VGA1/2	Backpanel VGA Port 1/Front Panel VGA Port2

LED	Description	State
LE1	Standby PWR LED	Green On, SB Power On
LE2	UID LED	Blue: On (Windows OS), Blinking (Linux)
LEM1	BMC Heartbeat LED	Green Blinking, Normal

5-8 Connector Definitions

Power Connectors

A 24-pin main power supply connector(JPW1), two 8-pin power connectors (JPW2/JPW3) and a 4-pin power connector (JPW4) are located on the serverboard. These power connectors meet the SSI EPS 12V specification. These power connectors must also be connected to your power supply. See the tables on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions

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

12V 8-pin PWR Connector Pin Definitions

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

(Required)

12V 4-pin Power Connector Pin Definitions

Pins	Definition
1~2	Ground
3~4	+12V

(Required)

Warning: To prevent damage to the power supply or serverboard, please use a power supply that contains a 24-pin, two 8-pin and one 3-pin power connectors. Be sure to connect these power supply connectors to the 24-pin power connector (JPW1), the 8-pin power connectors (JPW2/JPW3) and the 4-pin power connector (JPW4) on the serverboard.

NMI Button

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

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

Power LED

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

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	Vcc
16	Control

HDD LED/UID Switch

The HDD LED/UID switch connections are located on pins 13/14 of JF1. Attach an LED cable to display HDD activity. This connection can also be used as a front panel UID (Unit Identifier) switch. The UID LED on pin 7 of JF1 works in conjunction with this UID switch. When the user presses and releases the UID switch, the UID LED will be turned on or off to indicate the location of the unit.

HDD/UID Switch Pin Definitions (JF1)	
Pin#	Definition
13	UID Signal/3.3V SB
14	HD Active

NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

Information LED

Connect an LED to the OH connection on pins 7 and 8 of JF1 for UID and to provide advanced warning of chassis overheating and fan fail. Refer to the table on the right for pin definitions. Refer to Chapter 3 for further details on the control panel LED.

OH/Fan Fail/UID LED Pin Definitions (JF1)

Pin#	Definition
7	Vcc
8	Ground

OH/Fan Fail Indicator Status

State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

Power Fail LED

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

Power Fail LED Pin Definitions (JF1)

Pin#	Definition
5	Vcc
6	Ground

Reset Button

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

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Power Button

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

Power Button Pin Definitions (JF1)

Pin#	Definition
1	PW_ON
2	Ground

Serial Ports

The COM1 serial port is located on the I/O backplane. COM2 is a header on the serverboard (see serverboard layout for location). See the table on the right for pin definitions.

Serial Port Pin Definitions

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

Note: Pin 10 is included on the header but not on the port. NC indicates no connection.

Universal Serial Bus Ports

Two Universal Serial Bus ports (USB 0/1) are located on the I/O back panel. In addition, two USB headers, located close to the I-SATA ports, provide four front-accessible USB connections (USB 2/3, USB 4/5). A Type A connector (USB 6) also supports front panel USB connections. (Cables are not included). See the tables on the right for pin definitions.

USB Ports (USB0/1/6)

Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	NA

FP USB (2/3, 4/5, 6) Pin Definitions

USB 2, 4, 6 Pin #	Definition	USB 3, 5 Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	NC	5	Key

(NC= No connection)

Unit Identifier Switch

A Unit Identifier (UID) Switch and two LED Indicators are located on the serverboard. The UID Switch is located next to the 10G_LAN 4 port on the backplane. The Rear UID LED (LE2) is located next to the UID Switch. The Front Panel UID LED is located at Pins 7/8 of the Front Control Panel at JF1. Connect a cable to Pin 8 on JF1 for Front Panel UID LED indication. When you press the UID switch, both Rear UID LED and Front Panel UID LED Indicators will be turned on. Press the UID switch again to turn off both LED Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service.

UID Switch

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

UID LED (LE2) Status

Color/State	OS Status	
Blue: On	Windows OS	Unit Identified
Blue: Blinking	Linux OS	Unit Identified

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

Fan Headers

This serverboard has six system/CPU fan headers (Fan 1~Fan 5, Fan A). All are 4-pin fans headers and backward compatible with traditional 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by Thermal Management via Hardware Monitoring in the Advanced Setting in the BIOS. (See Chapter 7 for more details.) See the table on the right for pin definitions.

Fan Header Pin Definitions

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Chassis Intrusion Pin Definitions

Pin#	Definition
1	Intrusion Input
2	Ground

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse ports are located beside the USB ports. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Ports Pin Definitions

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Overheat/Fan Fail LED

Connect an LED to the JOH1 header to provide warning of a chassis overheating or fan fail condition. See the table on the right for pin definitions.

Overheat/Fan Fail LED Pin Definitions

Pin#	Definition
1	+5V
2	Active

OH/Fan Fail LED Status

State	Message
Solid	Overheat
Blinking	Fan Fail

Standby Power Header

The Standby Power header is located at JSTBY1 on the serverboard. See the table on the right for pin definitions. (You must also have a cable attached to use this feature.)

Standby PWR Pin Definitions

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

SGPIO

The two headers labeled T-SGPIO-1 and T-SGPIO-2 are for SGPIO (Serial General Purpose Input/Output). SGPIO supports serial link interfaces for onboard SATA and SAS ports. Connect the appropriate cables from the backplane to the SGPIO1 and SGPIO2 headers to utilize SATA/SAS management functions on your system.

SGPIO Pin Definitions

Pin#	Definition	Pin #	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	NC	8	NC

Note: NC indicates no connection.

Power SMB (I^2C) Connector

Power System Management Bus (I^2C) Connector (JPI^{2}C1) monitors power supply, fan and system temperatures. See the table on the right for pin definitions.

PWR SMB Pin Definitions

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

IPMB

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

IPMB Header Pin Definitions

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

Ethernet Ports

Two Gigabit Ethernet ports (LAN1/2) and two 10G_bit LAN ports (LAN3/4) are located on the I/O backplane on the serverboard to provide internet connections. LAN3/LAN4 ports support 1GLAN connections on the -3LN4F+/iLAN4F+ models, and 10GLAN connections on the -3TF+/-iTF+ models. In addition, an IPMI_Dedicated LAN, located above USB 0/1 ports on the backplane, provides KVM support for IPMI 2.0. All these ports accept RJ45 type cables. (**Note**: Please refer to the LED Indicator Section for LAN LED information.)

LAN Port Pin Definition

Pin#	Definition		
1	P2V5SB	10	SGND
2	TD0+	11	Act LED
3	TD0-	12	P3V3SB
4	TD1+	13	Link 100 LED (Yellow, +3V3SB)
5	TD1-	14	Link 1000 LED (Yellow, +3V3SB)
6	TD2+	15	Ground
7	TD2-	16	Ground
8	TD3+	17	Ground
9	TD3-	18	Ground

T-SGPIO 1/2 Headers

Two SGPIO (Serial-Link General Purpose Input/Output) headers are located at J17, J18 on the serverboard. These headers support a Serial Link interface for onboard SATA connections. See the table on the right for pin definitions.

T-SGPIO Pin Definitions

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

Note: NC indicates no connection.

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 DOM devices.

DOM PWR Pin Definitions

Pin#	Definition
1	+5V
2	Ground
3	Ground

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 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)

RAIDKey Header

A RAIDKey header (JRK1) provides RAID function support to enhance system performance.

RAIDKey Pin Definitions

Pin#	Definition
1	Ground
2	Signal
3	Ground

10Gb LAN3/LAN4 LEDs (X9DRW-3TF+ Only)

The LED connections for 10Gb LAN port 3 are located on pins 3 and 4 of JF2 and the LED connections for 10G LAN port 4 is on pins 1 and 2 of JF2 (X9DRW-3TF+ only). Attach NIC LED cables here to display network activities. Refer to the table on the right for pin definitions.

Note: The NIC LED connections for LAN Ports 1/2 are located on JF1.

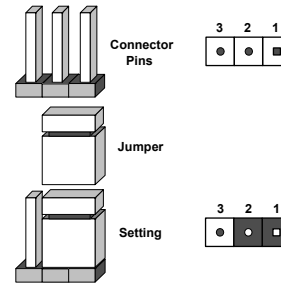
10Gb LAN Ports 3/4 LED Indicators (JF2) Pin Definitions

Pin#	Definition	Pin	Definition
1	LAN4 Activity	2	LAN4 Link
3	LAN3 Activity	4	LAN3 Link

5-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard 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 and will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS

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

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

VGA Enable/Disable

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

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

LAN/TLAN Enable/Disable

Change the setting of jumper JPL1 to enable or disable the LAN1 and LAN2 onboard Ethernet (RJ45) ports and JPL2 to enable or disable the 10 Gb LAN ports. See the table on the right for jumper settings. The default setting is enabled.

LAN Enable/Disable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

(10 Gb) TLAN Enable/Disable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog Enable/Disable

JWD1 controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application "hangs". Pins 1-2 will cause WD to reset the system if an application hangs. Pins 2-3 will generate a non-maskable interrupt signal for the application that has hung. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

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

Watch Dog Jumper Settings

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

BMC Enable

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

BMC Enable Jumper Settings

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

BIOS Write-Protect

Close Pins 1/2 of Jumper JWP1 to support BIOS Write-Protect to prevent BIOS Setup utility settings from being illegally altered. The default setting is to close 2-3 for normal operation. See the table on the right for jumper settings.

BIOS Write Protect Jumper Settings	
Jumper Setting	Definition
1-2	Enabled
2-3	Normal (Default)

Flash Descriptor Security Overwrite

Close Pins 1/2 of Jumper JPME2 to support Flash Descriptor Security Overwrite support which will allow the user to overwrite flash descriptor security settings. The default setting is to close 2-3 for normal operation. See the table on the right for jumper settings.

Flash Descriptor Security Overwrite Jumper Settings	
Jumper Setting	Definition
1-2	Enabled
2-3	Normal (Default)

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.

I^{2}C to PCI-Exp Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled (Default)

I2C Bus to VRMs

Use Jumpers JP6 and JP7 to connect the System Management Bus (I^{2}C) to VRMs. The default setting is Off to disable the connection. See the table on the right for jumper settings.

I^{2}C to VRMs Jumper Settings	
Jumper Setting	Definition
On	Enabled
Off	Disabled (Default)

Manufacture Mode

Jumper JPME1 allows the user to flash the system firmware from a host server to modify system settings. Close this jumper to bypass SPI flash security, and force ME into Recovery mode in order to use Recovery jumpers. See the table on the right for jumper settings.

ME Mode Select Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Manufacture Mode
Pins 2-3	Normal (Default)

ME Recovery

Close Jumper JPBR1 to use ME Firmware Recovery mode, which will limit system activities to support essential functions only. There will be no power use restrictions. In the single operational mode, online upgrade will be available via the Recovery mode. See the table on the right for jumper settings.

ME Recovery Jumper Settings	
Jumper Setting	Definition
On	ME Recovery
Off	Normal (Default)

5-10 Onboard Indicators

LAN LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gigabit LAN port, one LED indicates activity when blinking while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED Connection Speed Indicator	
LED Color	Definition
Off	No connection or 10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s
Green	1 Gbps (when LAN 1~4 are all used for 1G connections.

Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is included on the I/O backpanel. The amber LED indicates activity, while the Link LED indicates the speed of the connection. See the tables at right for more information.

IPMI LAN Activity Indicator		
Color	Status	Definition
Amber	Flashing	Active

IPMI LAN Indicator	
LED Color	Definition
Off	No Connection or 10 Mb/s
Green	100 Mb/s

Onboard Power LED

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

Onboard PWR LED Indicator	
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

UID LED

The rear UID LED is located at the I/O backplane. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service.

UID LED		
Color/State	OS	Status
Blue: On	Windows	Unit Identified
Blue: Blinking	Linux	Unit Identified

BMC Heartbeat LED

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

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

5-11 SAS/SATA Port Connections

SATA Ports

There are six Serial ATA Ports (I-SATA0~I-SATA 5) on the serverboard, which include four SATA 2.0 ports and two SATA 3.0 ports. See the table on the right for pin definitions for the on-board SATA ports.

SATA Port Pin Definitions

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

SAS Ports

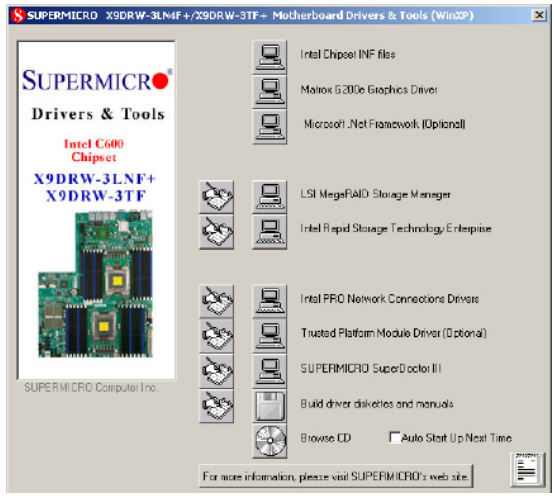
SAS Ports 0~3 and 4~7 provide Serial-Attached SCSI connections. These SAS ports are supported by the Intel C606 chipset's SCU controller. See the table on the right for pin definitions for the onboard SAS ports.

SAS Port Pin Definitions

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

5-12 Installing Software

After the hardware has been installed, you should first install the operating system and then the drivers. The necessary drivers are all included on the Supermicro CDs that came packaged with your serverboard.



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 of the CD.

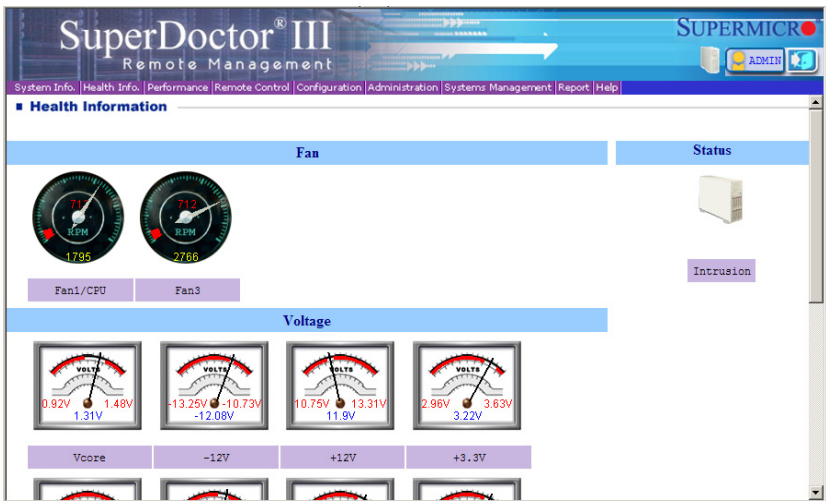
SuperDoctor III

The SuperDoctor® III program is a Web base 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 included on the CD-ROM that came with your serverboard 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 Figure below for a display of the SuperDoctor III interface.

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

Note: When SuperDoctor 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, as the SuperDoctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor.

Supero Doctor III Interface Display Screen (Health Information)



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 using SuperDoctor II.

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC119TQ 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 next step.

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

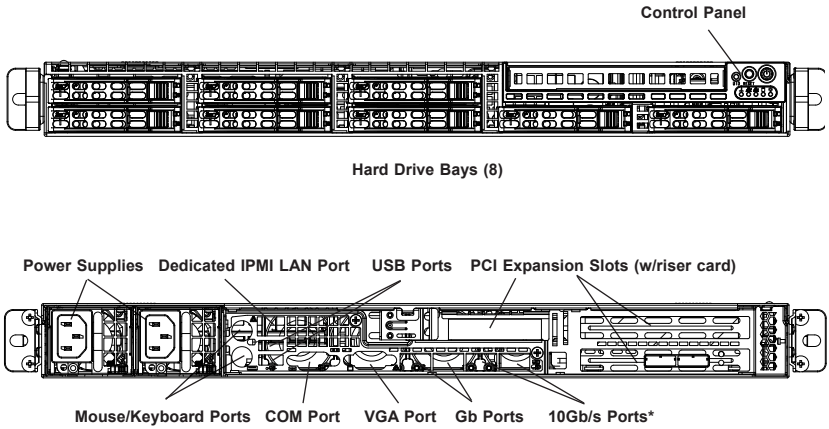
6-1 Static-Sensitive Devices

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.

Figure 6-1. Chassis: Front and Rear Views



* These two LAN ports are 1 Gb ports on the 1027R-WRFT+ (X9DRW-3LN4F).

6-2 Control Panel

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

The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons. Details on JF1 can be found in "Chapter 5: Advanced Serverboard Setup."

6-3 System Fans

The 1027R-WRFT+/1027R-WRF4+ contains six counter-rotating fans. Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels.

System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting (Fan Speed Control Modes). If a fan fails, the remaining fan will ramp up to full speed and the overheat/fan fail LED on the control panel will turn on. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

Remove the top chassis cover while the system is still running to determine which of the fans has failed. Then power down the system before replacing a fan. Removing the power cord(s) is also recommended as a safety precaution.

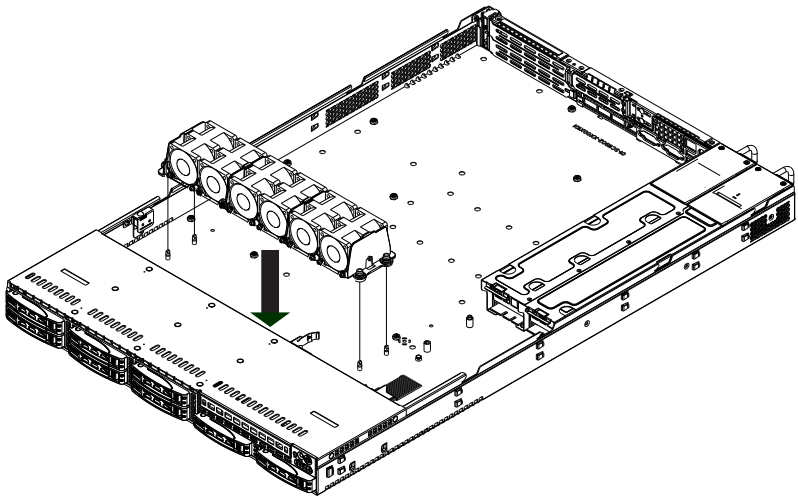
Adding a System Fan to Open Fan Housing

1. Turn off the power to the system and unplug the AC power cords.
2. Remove the dummy fan from the fan tray.
3. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
4. Connect the fan wires to the fan headers on the serverboard.
5. Power up the system and check that the fan is working properly before replacing the chassis cover.

Replacing System Fans

1. After determining which fan has failed, turn off the power to the system.
2. Unplug the fan wiring from the serverboard and remove the failed fan.
3. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
4. Reconnect the fan wiring to the exact same chassis fan header as the previous fan used.
5. Power up the system and check that the fan is working properly before replacing the chassis cover.

Figure 6-2. System Fans



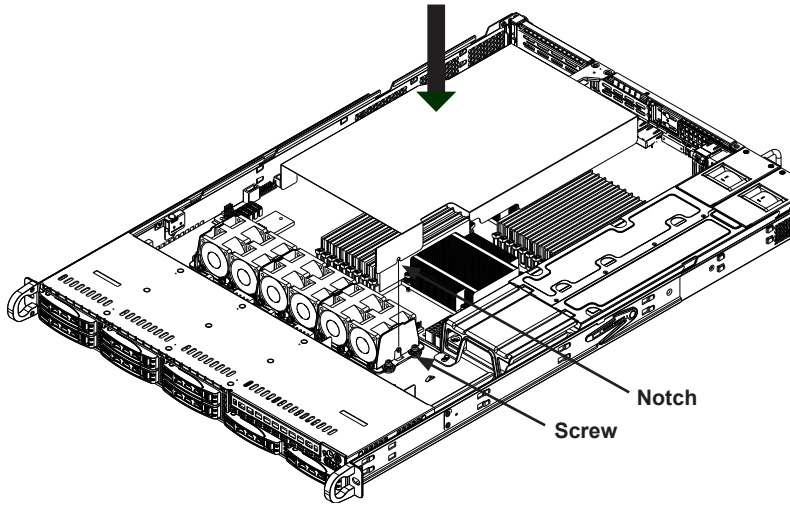
Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The SC119 chassis air shroud does not require screws to set up.

Air Shroud Installation

1. Disconnect the chassis from any power souce.
2. Align the notch on the air shroud with the screw on the side of the fan tray.
3. Lower the air shroud into position, sliding the notch over the screw on the side of the fan tray.

Figure 6-3. Air Shroud Installation



Accessing the Drive Bays

Hard Drives: Because of their hotswap capability, you do not need to access the inside of the chassis or power down the system to install or replace the hard drives. Proceed to the next section for instructions.

DVD-ROM Drive: For installing/removing a DVD-ROM drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Proceed to the "DVD-ROM Drive Installation" section later in this chapter for instructions.

Note: Only a "slim" DVD-ROM drive will fit into the 1027R-WRFT+/1027R-WRF4+.

Warning! 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/storage.cfm

Hard Drive Installation

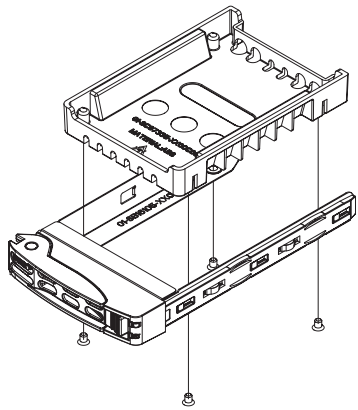
The SC119 chassis accepts eight hot-swappable 2.5" hard drives. The hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. System power may remain on when removing carriers with drives installed. These carriers also help promote proper airflow for the drive bays. For this reason, even empty carriers without drives installed must remain in the chassis.

Removing Hard Drive Carrier from the Chassis

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

2. Use the handle to pull the drive out of the chassis.

Figure 6-3. Mounting a Drive in a Carrier



Use caution when working around the hard drive backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

Important: Regardless of how many hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.

Installing a Hard Drive into a Drive Carrier

1. Remove the dummy drive, which comes pre-installed in the drive carrier, by removing the screws securing the dummy drive to the carrier. Note that these screws cannot be reused on the actual 2.5" hard drive.

2. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

3. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked “SAS” to aid in correct installation.

4. Secure the drive to the carrier with four M3 screws as illustrated below.

5. Insert the drive carrier into its bay, keeping the carrier oriented so that the hard drive is on the top of the carrier and the release button is on the right side. When the carrier reaches the rear of the bay, the release handle will retract.

6. Push the handle in until it clicks into its locked position

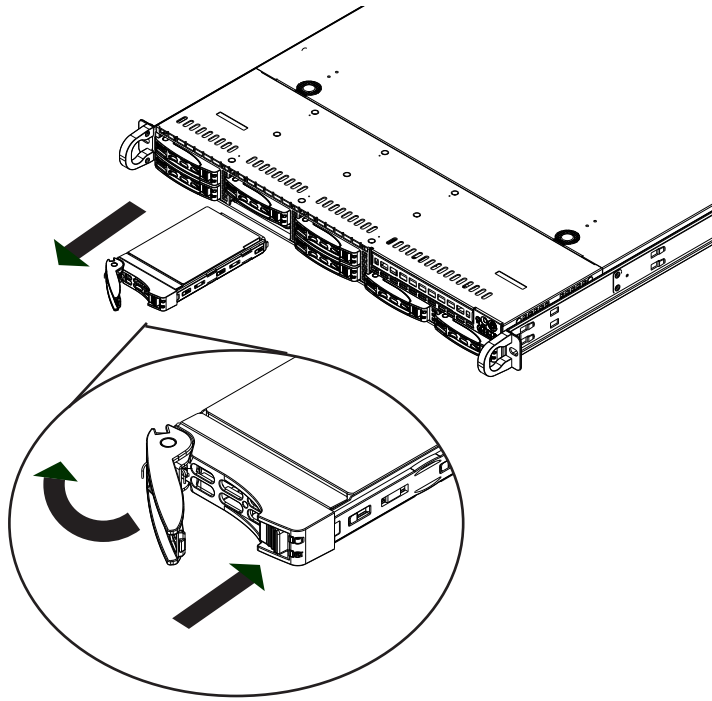


Figure 6-4. Removing a Drive from the Server

Hard Drive Backplane

The hard drives plug into a backplane that provides power and drive ID. A RAID controller can be used with the backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the drives. The backplane is already preconfigured, so there are no jumpers or switches present on it.

DVD-ROM Drive Installation

As an option, a slim DVD-ROM may be installed in the 1027R-WRFT+/1027R-WRF4+.

Installing or Replacing a DVD-ROM Drive

1. Power down the system and if necessary, remove the server from the rack.

2. Remove the chassis cover.

3. Unplug the drive's power and data cables from the serverboard and/or backplane.

4. Unlock the mini-bezel lock scew and remove the mini-bezel (grate) from the drive bay The bezel can be removed by pulling out the hard drive beneath the DVD-ROM, then pulling the mini-bezel forward.

5. When installing or removing a DVD-ROM drive, the mini bezel lock screw must be removed and the drive tray must be completely seperated from the chassis.

6. Remove the DVD-ROM from the drive tray by removing the drive screws, then secure the replacement DVD-ROM into the drive tray, using the drive screws.

7. Reattach the drive tray to the chassis by replacing the mini-bezel lock screw, and tightening it from inside the chassis.

6-4 Power Supply

The SuperServer 1027R-WRFT+/1027R-WRF4+ has a 700 watt redundant power supply consisting of two power modules. Each power supply module has an auto-switching capability, which enables it to automatically sense and operate at a 100V - 240V input voltage.

Power Supply Failure

If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The PWR Fail LED will illuminate and remain on until the failed unit has been replaced. Replacement units can be ordered directly from Supermicro. The power supply units have a hot-swap capability, meaning you can replace the failed unit without powering down the system.

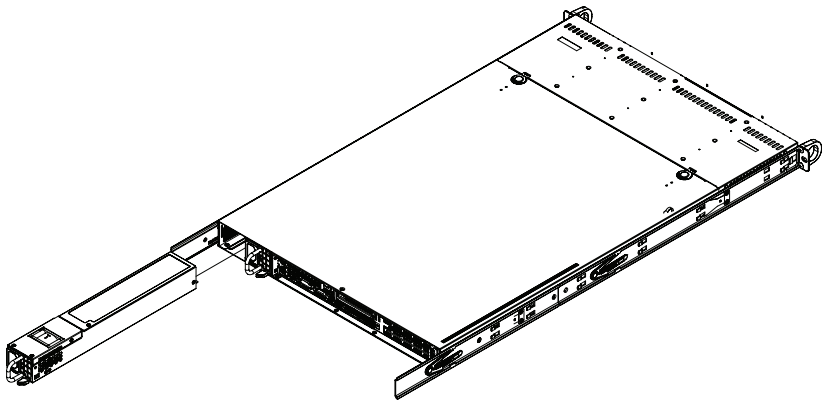
Removing the Power Supply

1. First unplug the AC power cord from the failed power supply module.
2. Depress the locking tab on the power supply module.
3. Use the handle to pull it straight out with the rounded handle.

Installing a New Power Supply

1. Replace the failed hot-swap unit with another identical power supply unit.
2. Push the new power supply unit into the power bay until you hear a click.
3. Secure the locking tab on the unit.
4. Finish by plugging the AC power cord back into the unit.

Figure 6-5. Removing/Replacing the Power Supply



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup utility for the X9DRW-3LN4F+/X9DRW-3TF+. It also provides the instructions on how to navigate the AMI BIOS Setup utility screens. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated.

Starting BIOS Setup Utility

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

Note: In most cases, the <Del> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F3>, <F4>, 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 a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

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

The AMI BIOS Setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during 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 <F2> 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/.

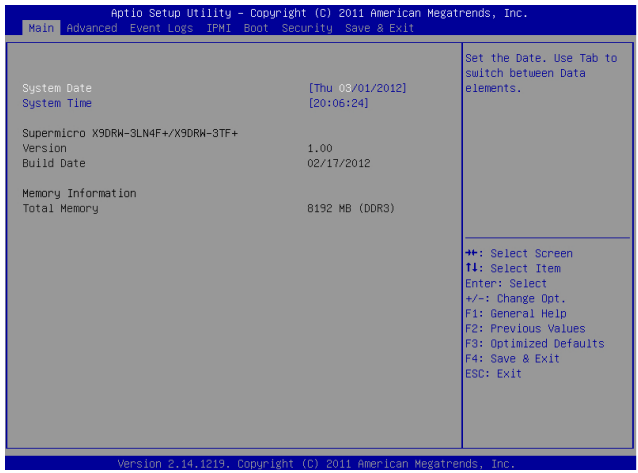
Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <F2> key to enter the main menu of the AMI BIOS Setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall 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.



The AMI BIOS main menu displays the following information:

System Date

This item displays the system date in Day MM/DD/YY format (e.g. Wed 10/12/2011).

System Time

This item displays the system time in HH:MM:SS format (e.g. 15:32:52).

Supermicro X9DRW-3LN4F+/X9DRW-3TF+

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 Setup utility was built.

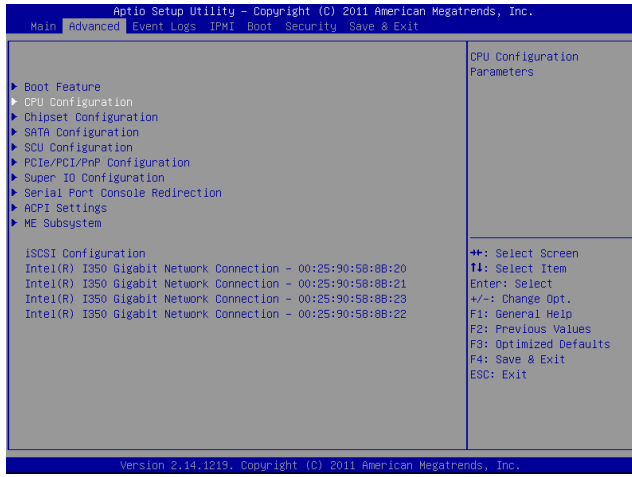
Memory Information

Total Memory

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

7-3 Advanced Setup Configurations

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



▶Boot Features

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 **Force BIOS** and Keep Current.

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.

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to reboot when it is inactive for more than 5 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 Power On, Stay Off, and **Last State**.

▶CPU Configuration

This submenu displays the information of the CPU as detected by the BIOS. It also allows the user to configuration 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 CPU Speed
- 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.

RTID (Record Types IDs)

This feature displays the total number of Record Type IDs for local and remote pools. The options are **Optimal** and Alternate.

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 Unite (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 power off and restart the system for the change to take effect. Please refer to Intel's website for detailed information.)

▶ 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 Efficiency**, 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 (GV3 Disabled), and **Enabled (GV3 Enabled)**. (**Note**: GV3 is Intel Speedstep support used on older platforms. Please refer to Intel's website for detailed information.)

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

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

C1E (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

This setting allows the user to adjust the fan speed based on performance (maximum cooling) or energy efficiency (maximum energy savings). The options are Performance, **Balanced Performance**, Balanced Energy, and Energy Efficient.

Factory Long Duration Power Limit

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

Long Duration Power Limit

This item displays the power limit set by the user during which long duration power is maintained.

Factory Long Duration Maintained (Available when Power Technology is set to Custom)

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

Long Duration Maintained

This item displays the period of time during which long duration power is maintained.

Recommended Short Duration Power

This item displays the short duration power settings recommended by the manufacturer.

Short Duration Power Limit

This item displays the time period during which short duration power is maintained.

▶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 VWM (Virtual Working Memory) 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.

Data Direct I/O

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

Select Enabled to use Intel's DCA (Direct Cache Access) Technology to improve data transfer efficiency. The options are **Enabled** and Disabled.

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.

IOU2-PCIe Port

This feature allows the user to set the bus speed between the IOU2 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, **Auto**.

IOU3-PCIe Port

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

IIO 2 PCIe Port Bifurcation Control

This submenu configures the following IO PCIe Port Bifurcation Control settings for IIO 2 PCIe ports to determine how the available PCI-Express lanes to be distributed between the PCI-Exp. Root Ports.

IOU2-PCIe Port

This feature allows the user to set the bus speed between the IOU2 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, **Auto**.

IOU3-PCIe Port

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

▶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 Ischronous 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 **Fast** and Slow.

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 performance.

▶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 Lockstep is selected, the motherboard uses two areas of memory to run the same set of operations in parallel. The options are **Independent**, Mirroring, and Lockstep.

DRAM RAPL Mode

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

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 **Auto**, Force DDR3-800, Force DDR3-1066, Force DDR3-1333, Force DDR3-1600 and Force SPD.

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 Configuration

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 Disable to have USB devices available for EFI (Extensive Firmware Interface) applications only. The settings are Disabled, **Enabled** 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 are Disabled, Enhanced, and Compatible. The default for Controller 0 is **Compatible.** The default of SATA Controller 1 is **Enhanced**.

AHCI Mode

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

Aggressive Link Power Management

Select Enabled to enable Aggressive Link Power Management support for Cougar Point B0 stepping and beyond. 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:

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**.

OnChip SCU Option ROM

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

SCU Port 0~SCU Port 7: 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 EFI Compatible ROM and **Legacy 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 L0 to force all PCI-E links to operate at L0 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 L0, and Auto.

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

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 iSCSI and **PXE**.

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM/ Load Onboard LAN3 Option ROM/ Load Onboard LAN4 Option ROM

Select Enabled to enable the onboard LAN1 Option ROM~LAN4 Option ROM. This is to boot the computer using a network device. The default setting for LAN1 Option ROM is **Enabled**, and the default setting for LAN2~LAN4 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.

▶Serial Port 1 Configuration

Serial Port

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

Device Settings

This item displays the settings of Serial Port 1.

Change Settings

Use this feature to set the optimal Environment Control Interface (PECI) setting for a serial port specified. The default setting is **Auto**, which will allow the AMI BIOS to automatically select the best setting for the PECI platform.

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 Configuration

Serial Port

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

Device Settings

This item displays the settings of Serial Port 2.

Change Settings

Use this feature to set the optimal Environment Control Interface (PECI) setting for a serial port specified. The default setting is **Auto**, which will allow the AMI BIOS to automatically select the best setting for the PECI platform.

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 serial port 2. The options are **SOL** (Serial On LAN), and COM.

▶Serial Port Console Redirection

COM 1/COM 2/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 COM1 is **Disabled**, and for COM2 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 ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

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

Data Bits

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

Parity

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

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

Stop Bits

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

Flow Control

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, SC0, 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

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

▶Console Redirection Settings

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

Out-of-Band Management Port

The feature selects a serial port used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote server. The options are **COM1** and COM2.

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.

▶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

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 **S1 (CPU_Stop_Clock)**, and Suspend Disabled.

NUMA (NON-Uniform Memory Access)

This feature enables the Non-Uniform Memory Access ACPI support. The options are **Enabled** and Disabled.

High Precision Event Timer

Select Enabled to activate the High Precision Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback, 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: This item displays the status of a pending operation.

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 indicated if the Intel TXT support is enabled or 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.

Intel® I350 Gigabit Network Connections: These items display the following information on the Intel I350 LAN 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.

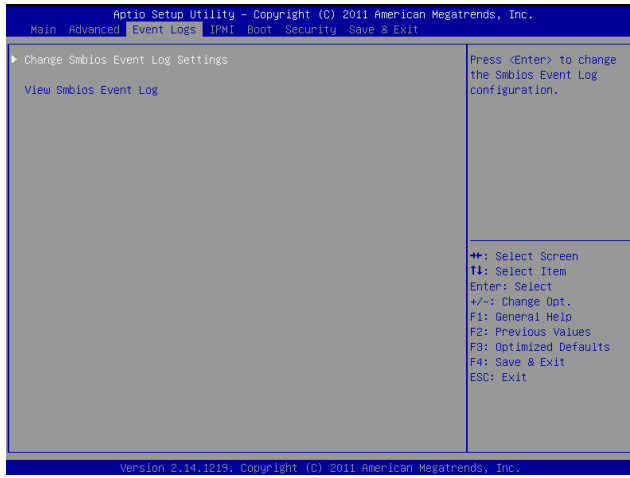
PORT CONFIGURATION INFORMATION

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

Use this feature to configure Event Log settings.



▶Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

Enabling/Disabling Options

SMBIOS Event Log

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

Runtime Error Logging Support

Select 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** and Yes.

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 between 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 between 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

View System Event Log

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

Date/Time/Sensor/Type

7-5 IPMI

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

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.

Custom EFI Logging Options

Log EFI Status Codes

Select Enabled to log EFI (Extensible Firmware Interface) Status Codes, Error Codes or Progress Codes. The options are **Enabled** and Disabled.

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

▶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 user to decide if the BIOS should configure the IPMI setting at next system boot. The options are **No** and Yes. If the option is set to Yes, the user is allow to configure the IPMI settings at next system boot:

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.

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

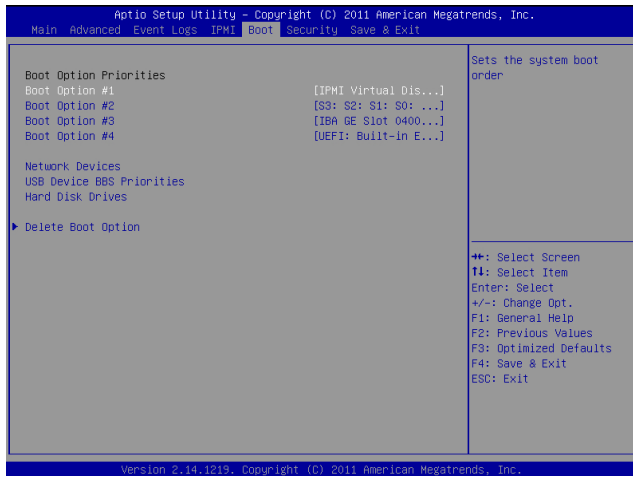
This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

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.



Boot Option Priorities

Boot Option #1/ Boot Option #2/ Boot Option #3, etc.

Use this feature to specify the sequence of boot device priority.

USB Device BBS Priorities, Network Device BBS Priorities, Hard Disk Drives

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

Add New Boot Option

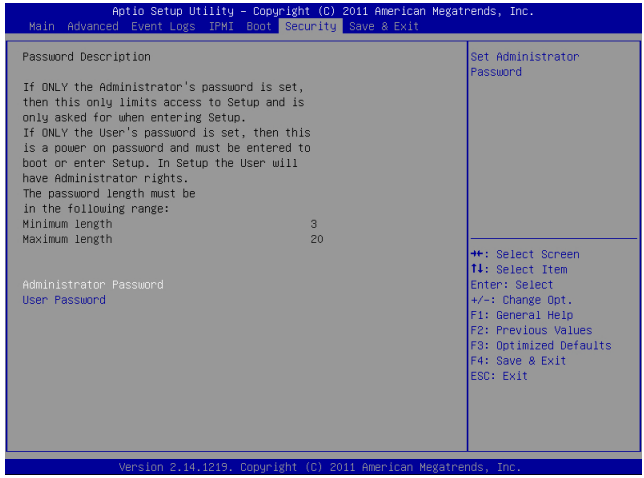
This feature allows the user to add a new EFI boot option to the boot order.

▶Delete Boot Option

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

7-7 Security

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



Administrator Password

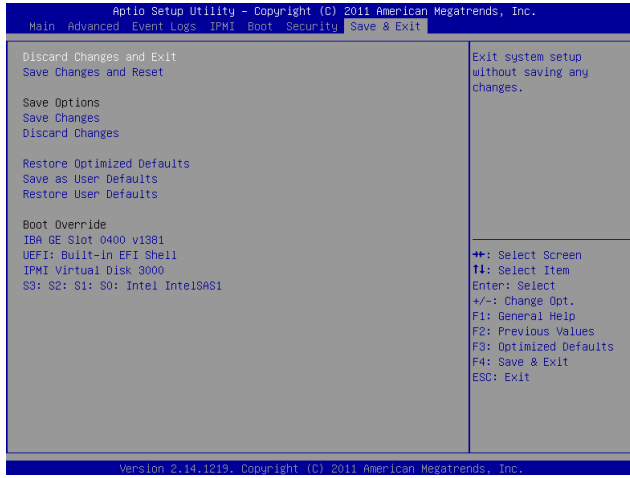
Use this feature to set the Administrator Password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 8 characters long.

User Password

Use this feature to set a User Password which is required to log into the system and to enter the BIOS setup utility. The length of the password should be from 3 characters to 8 characters long.

7-8 Save & Exit

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



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, click **Yes** to quit BIOS without saving the changes, or click 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, click **Yes** to quit BIOS without saving the changes, or click 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, click **Yes** to save the changes, or click 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, click **Yes** to load the values previous saved, or click 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, click **Yes** to load the optimized default settings, or click 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, click **Yes** to save the current values as user's default settings, or click 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, click **Yes** to restore the user's defaults previously saved in the system, or click No to abandon the user's defaults that were previously saved.

Boot Override

This feature allows the user to enter a new setting to overwrite the original setting that was saved for the devices listed:

Appendix A

BIOS Error Beep Codes

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

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

Fatal errors will not allow the system to continue with bootup procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

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

BIOS Error Beep Codes

Beep Code/LED	Error Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 long beeps + 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

Processors

Single or dual Intel® E5-2600 Series (Socket R) processors in LGA 2011 sockets

Note: Please refer to our web site for a complete listing of supported processors.

Chipset

Intel C606 chipset

BIOS

32 Mb AMI® SPI Flash ROM

Memory Capacity

Twenty-four DIMM slots that can support up to 768 GB of registered/unbuffered ECC DDR3-1600/1333/1066/800 SDRAM or LRDIMM type memory

See the memory section in Chapter 5 for details.

SAS Controller

Intel on-chip SAS controller for eight-port SAS, which supports RAID 0, 1, 5, 6, 10, 50 and 60 (RAID 5 supported with Windows OS only)

SATA Controller

Intel on-chip SATA controller for six-port SATA (two SATA 3.0 ports and four SATA 2.0 ports), which supports RAID 0, 1, 5 and 10 (RAID 5 supported with Windows OS only)

Drive Bays

Eight 2.5" hot-swap drive bays to house SAS or SATA drives

Expansion Slots

Left side: one PCI-E x16 and one PCI-E x8 add-on cards (w/ RSC-R1UW-2E16 riser)

Right side: one PCI-E x8 card of up to 4.1" length (w/ RSC-R1UW-E8R riser)

Serverboard

X9DRW-3TF+/X9DRW-3LN4F+ (Proprietary form factor)

Dimensions: 16.5 x 12.8 in (419 x 325 mm)

Chassis

SC119TQ-R700WB (1U rackmount)

Dimensions: (WxHxD) 17.2 x 1.7 x 26.6 in. (437 x 43 x 676 mm)

Weight

Gross Weight: 46 lbs. (20.9 kg.)

System Cooling

Six 4-cm counter-rotating fans

System Input Requirements

AC Input Voltage: 100-240VAC

Rated Input Current: 4-10A

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 700W (Part# PWS-703P-1R)

Rated Output Voltages: +12V (58A), +5Vsb (3A)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)

Non-operating Temperature: -40º to 60º C (-40º to 140º F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

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

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

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

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

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