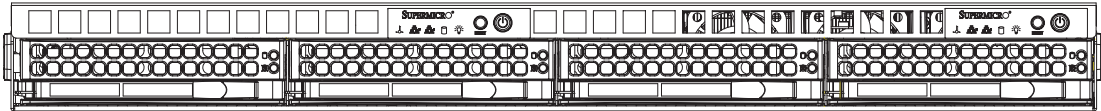


SUPERO[®]

SUPERSERVER 5015TB-T
SUPERSERVER 5015TB-10G



USER'S MANUAL

Revision 1.0

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Manual Revision 1.0
Release Date: June 27, 2008

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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 5015TB-T/5015TB-10G. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 5015TB-T/5015TB-10G is a 1U Twin (two serverboards in a 1U chassis) rackmount based on the SC808LTS-780 server chassis and the Super X7SBT/X7SBT-10G motherboard. The X7SBT/X7SBT-10G supports dual Intel® 3200/3000 Series processors.

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 Super X7SBT/X7SBT-10G motherboard and the SC808LTS-780 chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5015TB-T/5015TB-10G into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter 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 5015TB-T/5015TB-10G.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the X7SBT/X7SBT-10G motherboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC808LTS-780 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring hard or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS POST Messages

Appendix B: BIOS POST Codes

Appendix C: System Specifications

Notes

Table of Contents

Chapter 1 Introduction

1-1	Overview	1-1
1-2	Motherboard Features.....	1-2
	Processors	1-2
	Memory	1-2
	Serial ATA.....	1-2
	PCI Expansion Slots	1-2
	Ethernet Ports	1-2
	Onboard Controllers/Ports	1-3
	ATI Graphics Controller.....	1-3
	Other Features	1-3
1-3	Server Chassis Features	1-5
	System Power	1-5
	SATA Subsystem.....	1-5
	Control Panel	1-5
	Rear I/O Panel	1-5
	Cooling System	1-5
1-4	1U Twin: System Notes.....	1-6
	System Power	1-6
	SATA Backplane/Drives.....	1-6
1-5	Contacting Supermicro.....	1-7

Chapter 2 Server Installation

2-1	Overview	2-1
2-2	Unpacking the System	2-1
2-3	Preparing for Setup.....	2-1
	Choosing a Setup Location.....	2-1
	Rack Precautions	2-2
	Server Precautions.....	2-2
	Rack Mounting Considerations	2-3
	Ambient Operating Temperature	2-3
	Reduced Airflow	2-3
	Mechanical Loading	2-3
	Circuit Overloading.....	2-3
	Reliable Ground	2-3
2-4	Installing the System into a Rack	2-4
	Identifying the Sections of the Rack Rails.....	2-4

Installing the Inner Rails	2-4
Installing the Outer Rails.....	2-5
Locking Tabs	2-5
Installing the Server into the Rack.....	2-6
Installing the Server into a Telco Rack	2-6
2-5 Checking the Motherboard Setup	2-6
2-6 Preparing to Power On	2-8
Chapter 3 System Interface	
3-1 Overview	3-1
3-2 Control Panel Buttons	3-1
Reset	3-1
Power	3-1
3-3 Control Panel LEDs	3-2
Overheat/Fan Fail	3-2
NIC2	3-2
NIC1	3-2
HDD.....	3-2
Power	3-3
3-4 SATA Drive Carrier LEDs	3-3
Chapter 4 System Safety	
4-1 Electrical Safety Precautions	4-1
4-2 General Safety Precautions	4-2
4-3 ESD Precautions	4-3
4-4 Operating Precautions	4-4
Chapter 5 Advanced Motherboard Setup	
5-1 Handling the Motherboard	5-1
Precautions	5-1
Unpacking	5-2
5-2 Motherboard Installation.....	5-2
5-3 Connecting Cables.....	5-3
Connecting Data Cables	5-3
Connecting Power Cables	5-3
Connecting the Control Panel.....	5-4
5-4 I/O Ports	5-4
5-5 Processor and Heatsink Installation	5-5
Installing the Processor	5-5
Installing the Heatsink.....	5-7
Removing the Heatsink.....	5-7

5-6	Installing Memory	5-8
5-7	Adding PCI Cards	5-9
5-8	Motherboard Details.....	5-10
	X7SBT/X7SBT-10G Quick Reference	5-11
5-9	Connector Definitions.....	5-12
5-10	Jumper Settings	5-17
5-11	Onboard Indicators.....	5-19
5-12	Installing Software.....	5-20
	Supero Doctor III.....	5-21

Chapter 6 Advanced Chassis Setup

6-1	Static-Sensitive Devices.....	6-1
	Precautions	6-1
	Unpacking	6-1
6-2	Control Panel	6-2
6-3	System Fans	6-3
	System Fan Failure.....	6-3
6-4	Drive Bay Installation/Removal	6-3
	Accessing the Drive Bays	6-3
6-5	Power Supply	6-5
	Power Supply Failure.....	6-5
	Replacing the Power Supply.....	6-5

Chapter 7 BIOS

7-1	Introduction.....	7-1
7-2	Running Setup	7-2
7-3	Main BIOS Setup	7-2
7-4	Advanced Setup.....	7-5
7-5	Security Settings	7-17
7-6	Boot Settings.....	7-18
7-7	Exit	7-19

Appendix A POST Error Beep Codes

Appendix B Installing the Windows OS

Appendix C System Specifications

Chapter 1

Introduction

1-1 Overview

The SuperServer 5015TB-T/5015TB-10G is a "1U Twin" server comprised of the SC808LTS-780 1U chassis and two (twin) X7SBT/X7SBT-10G motherboards. Please refer to our web site for information on operating systems that have been certified for use with the 5015TB-T/5015TB-10G (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components may have been included with the 5015TB-T/5015TB-10G, as listed below.

- Two (2) CPU heatsinks (SNK-P0016P)
- SATA Accessories:
 - Four (4) SATA hard drive carriers [MCP-220-00001-03(01)]
 - One (1) internal SATA backplane (BPN-SAS-808)
 - One (1) SATA cable set (CBL-0226L)
 - Two (2) SATA cables (CBL-0227L)
- Two (2) PCI-E x16 riser cards (RSC-R1U-E16R)
- Six (6) 4-cm high-performance fans (FAN-0107L4)
- Rackmount hardware with screws (CSE-PT51L):
 - Two (2) rack rail assemblies
 - Six (6) brackets for mounting the rack rails in a rack/telco rack
- One (1) CD containing drivers and utilities
- SuperServer 5015TB-T/5015TB-10G User's Manual

Note: "03" at the end of a part number indicates the part is available in silver, a "01" indicates it's available in black.

1-2 Motherboard Features

At the heart of the SuperServer 5015TB-T/5015TB-10G lies two X7SBT/X7SBT-10G dual processor motherboards, which are based on Intel's X48 chipset. Below are the main features of the X7SBT/X7SBT-10G . Note that the features on each board are doubled for the server.

Processors

Each X7SBT/X7SBT-10G supports a single Intel® 3200/3000 Series processors. Please refer to our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X7SBT/X7SBT-10G has four DIMM sockets that can support up to 8 GB of unbuffered non-ECC DDR3-1333/1066/800 SDRAM (for a total of 16 GB in the system) or up to 4 GB of unbuffered non-ECC DDR3-1600 SDRAM in two DIMM slots (for 8 GB total in the system). Memory can be installed in both interleaved (dual-channel) and non-interleaved (single-channel) configurations. All memory modules used to populate the system should be the same size, type and speed.

Serial ATA

The South Bridge (ICH9R) of the X48 chipset includes a Serial ATA controller for 3 Gb/s SATA drives. The hot-swappable SATA drives are connected to a backplane that provides power, bus termination and configuration settings. RAID 0, 1, 5 and 10 are supported.

PCI Expansion Slots

Each X7SBT/X7SBT-10G board has one PCI-Express 2.0 x16 slot, so two PCI-Express 2.0 x16 slots are provided in the server. In the 5015TB-T/5015TB-10G server configuration, riser cards have been pre-installed to support two low-profile PCI-Express 2.0 x16 add-on cards.

Ethernet Ports

Two Intel® 82598EB network controllers are integrated into each of the motherboards to support two Gigabit LAN ports (100/1000Base-T/1000BaseTX, RJ45 output). The 5015TB-10G also includes an InfiniBand® 20 Gbps port.

Onboard Controllers/Ports

Onboard I/O backpanel ports include one COM port, a VGA port, two USB ports, two Gigabit LAN (NIC) ports and (on the 5015TB-10G only) an InfiniBand® 20 Gbps port. There are two sets of I/O ports included in the server (one set for each severboard).



InfiniBand Port Bracket: The InfiniBand port bracket is a small "U" shaped bracket that secures the connector to the I/O port shield. This allows the I/O shield, not the motherboard, to support the cable's weight. The bracket can be found on the connector itself.

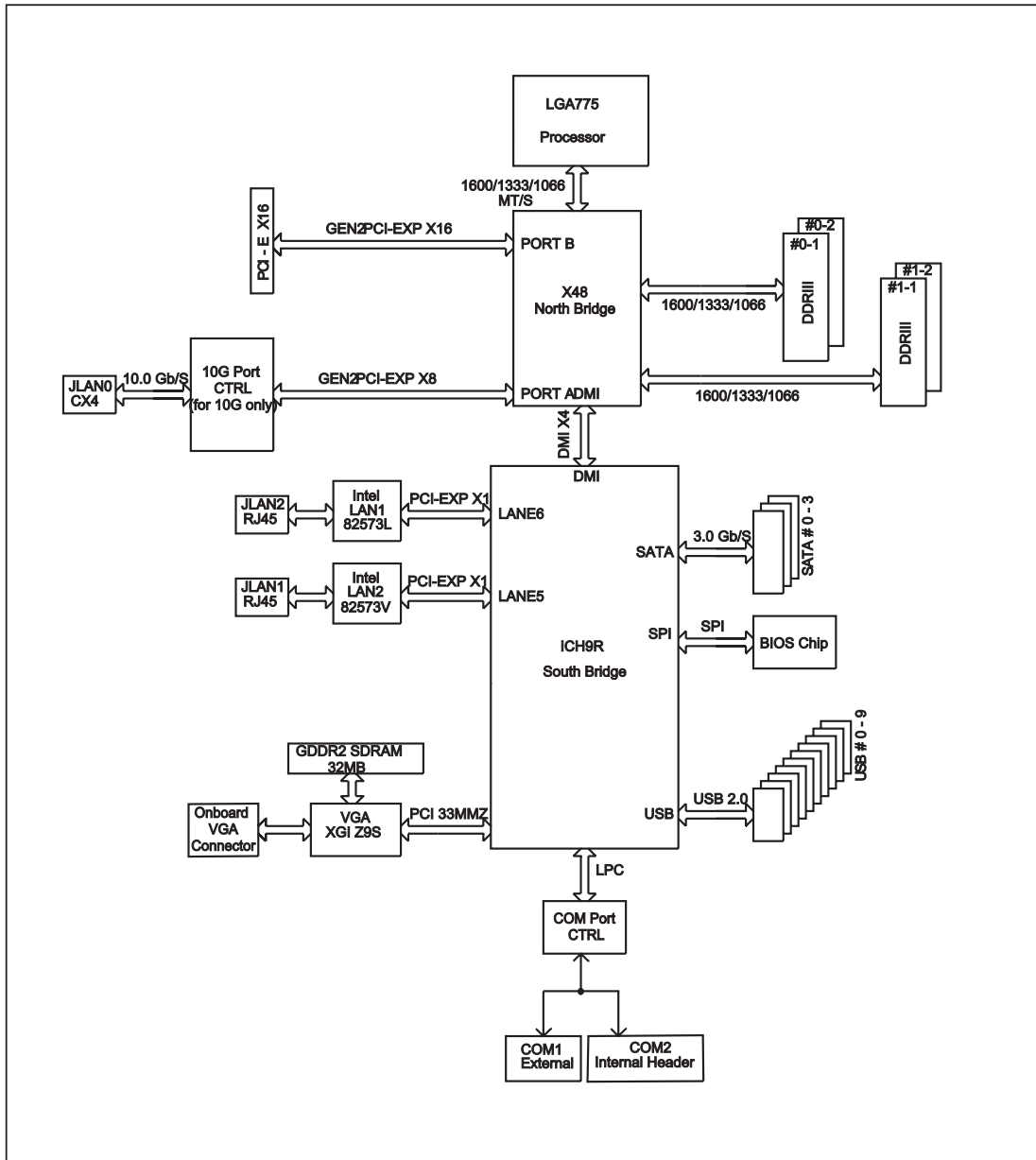
When installing the motherboard, remove the bracket from the InfiniBand port. Slide the port through the shield, and then replace the bracket to secure the port to the I/O shield.

ATI Graphics Controller

The X7SBT/X7SBT-10G features an integrated ATI video controller based on the ES1000 graphics chip. The ES1000 was designed specifically for servers, featuring low power consumption, high reliability and superior longevity.

Other Features

Other onboard features that promote system health include voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.



**Figure 1-1. Intel X48 Chipset:
System Block Diagram**

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

1-3 Server Chassis Features

The following is a general outline of the main features of the SC808LTS-780 1U chassis. Details on the chassis can be found in Chapter 6.

System Power

When configured as a SuperServer 5015TB-T/5015TB-10G, the SC808LTS-780 includes a single 780W cold-swap power supply, which provides the power to both motherboards housed in the chassis.

SATA Subsystem

The SC808LTS-780 chassis was designed to support four SATA hard drives, which are hot-swappable units.

Control Panel

The chassis features two independent control panels associated with each motherboard in the chassis. Each control panel has LEDs to indicate power on, network activity, hard disk drive activity and system overheat conditions. Each control panel also includes a main power button and a system reset button.

Rear I/O Panel

The SC808LTS-780 is a 1U rackmount chassis. Its I/O panel provides a slots for two low-profile PCI-E x16 expansion cards, two COM ports, four USB ports, two VGA ports and four Gb Ethernet ports. The 5015TB-10G also provides two InfiniBand ports. See Chapter 6 for details.

Cooling System

The SC808LTS-780 chassis has an innovative cooling design that features two sets of triple (for a total of six) 4-cm high-performance fans. A fan speed control setting in BIOS allows fan speed to be determined by system temperature.

1-4 1U Twin: System Notes

As a 1U Twin configuration, the 5015TB-T/5015TB-10G is a unique server system. With two system boards incorporated into a single chassis, there are several points you should keep in mind.

System Power

A single power supply is used to provide the power for both motherboards. Each motherboard however, can be shut down independently of the other with the power button on its own control panel.

Although they share a common power supply, the I²C signals used for power supply monitoring are received by the primary motherboard only. (When viewed from the front of the chassis, the motherboard on the left is referred to as the primary board and the motherboard on the right as the secondary.)

SATA Backplane/Drives

As a system, the 5015TB-T/5015TB-10G supports the use of four SATA drives. The SATA backplane works as a single backplane divided into two sections. This means that while a single power connector is used and functions such as overheating apply to both sections together, each pair of SATA drives is logically connected to its own motherboard. Consequently, RAID setup is limited to a two-drive scheme (RAID cannot be spread across all four drives).

1-5 Contacting Supermicro

Headquarters

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San Jose, CA 95131 U.S.A.

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Fax: +1 (408) 503-8008

Email: marketing@supermicro.com (General Information)
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Fax: +886-(2) 8226-3991

Web Site: www.supermicro.com.tw

Technical Support:

Email: support@supermicro.com.tw

Tel: 886-2-8228-1366, ext.132 or 139

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your 5015TB-T/5015TB-10G up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a motherboard, 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 5015TB-T/5015TB-10G 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 5015TB-T/5015TB-10G. 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 5015TB-T/5015TB-10G 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).

- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
- This product is not suitable for use with visual display work place devices according to §2 of the 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 SATA 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.
- Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.

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 (T_{mra}).

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 5015TB-T/5015TB-10G 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.

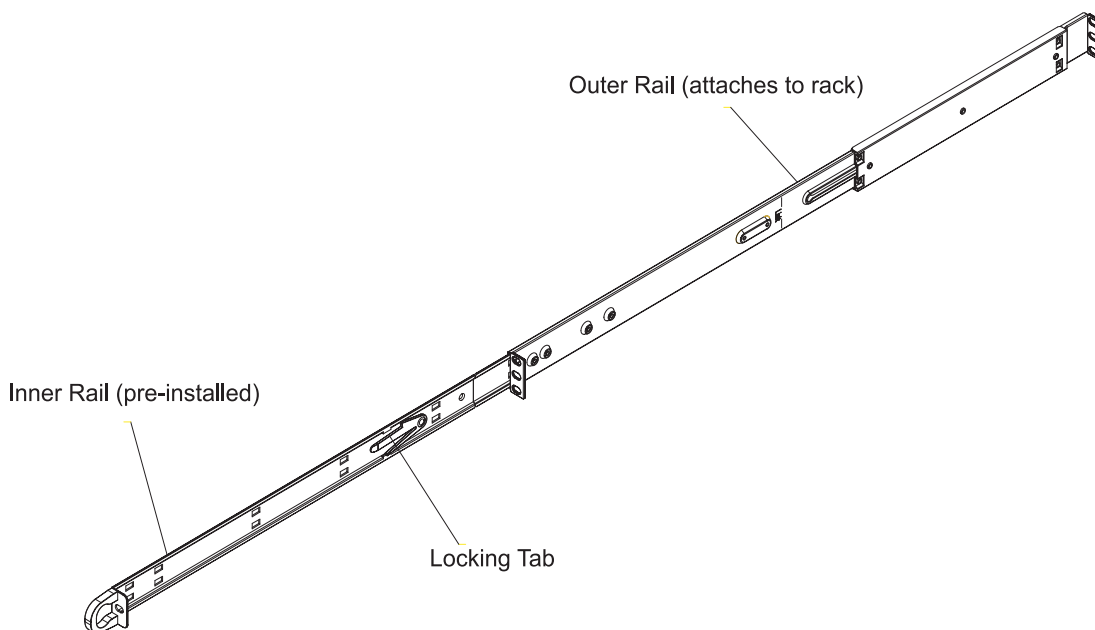
Identifying the Sections of the Rack Rails

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). Two pairs of short brackets to be used on the front side of the outer rails are also included.

Installing the Inner Rails

Both the left and right side inner rails have been pre-attached to the chassis. Proceed to the next step.

**Figure 2-1. Identifying the Sections of the Rack Rails
(right side rail shown)**



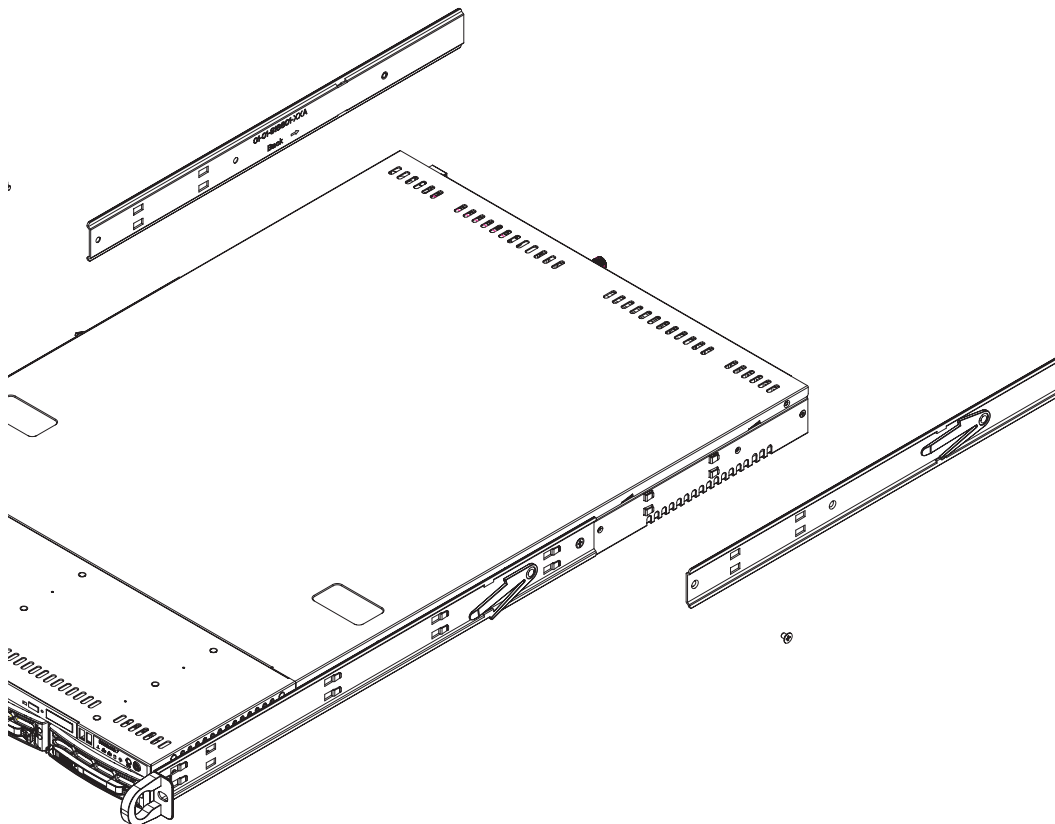
Installing the Outer Rails

Begin by measuring the distance from the front rail to the rear rail of the rack. Attach a short bracket to the front side of the right outer rail and a long bracket to the rear side of the right outer rail. Adjust both the short and long brackets to the proper distance so that the rail can fit snugly into the rack. Secure the short bracket to the front side of the outer rail with two M4 screws and the long bracket to the rear side of the outer rail with three M4 screws. Repeat these steps for the left 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 2-2. Installing the Rack Rails



Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-3.

When the server has been pushed completely into the rack, you should hear the locking tabs "click".

Installing the Server into a Telco Rack

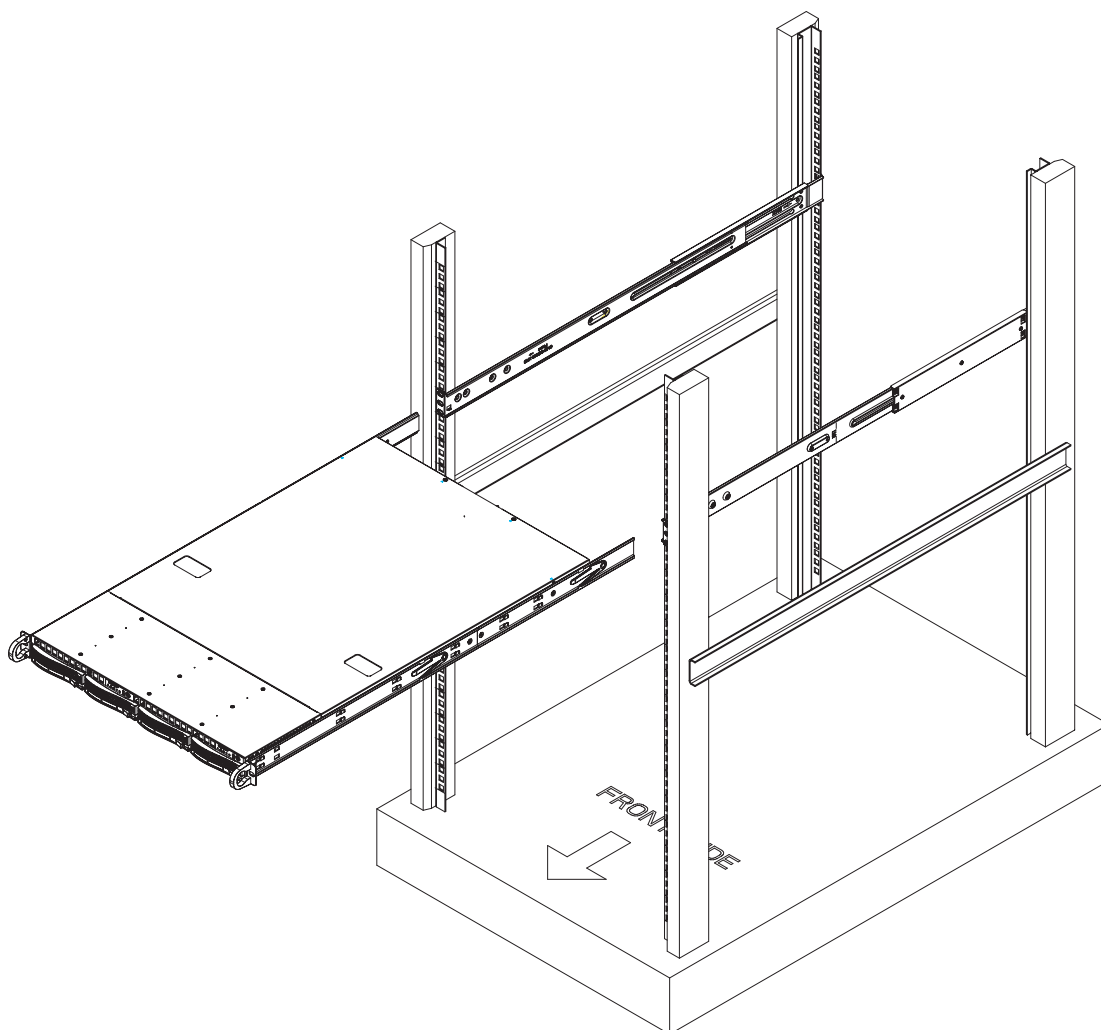
To install the SuperServer 5015TB-T/5015TB-10G into a Telco type rack, use two L-shaped brackets on either side of the chassis (four total). First, determine how far the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If 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 rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

2-5 Checking the Motherboard Setup

After you install the 5015TB-T/5015TB-10G in the rack, you will need to open the top cover to make sure the motherboard is properly installed and all the connections have been made.

Accessing the Inside of the System

1. Grasp the two handles on either side and pull the system straight out until it locks (you will hear a "click").
2. Remove the four screws (two on the sides and two on the top) that secure the top cover to the chassis. Place your thumbs in the two rectangular recesses and push the cover away from you (toward the rear of the chassis) until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server (see Figure 2-4).
3. To remove the system from the rack completely, depress the locking tabs in the chassis rails (push the right-side tab down and the left-side tab up) to continue to pull the system out past the locked position.

Figure 2-3. Installing the Server into a Rack***Checking the Components and Setup***

1. You may have one or two processors already installed in each of the two motherboards. Each processor needs its own heatsink. See Chapter 5 for instructions on processor and heatsink installation.
2. Your server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.
3. You can install two add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.
4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.

2-6 Preparing to Power On

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

Checking the SATA drives

1. All drives are accessible from the front of the server. For servicing the DVD-ROM and floppy drives, you will need to remove the top chassis cover. The SATA disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.
2. A slim DVD-ROM and floppy drive should be preinstalled in your server. Refer to Chapter 6 if you need to reinstall a DVD-ROM and/or floppy disk drive to the system.
3. Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install SATA drives, please refer to Chapter 6.

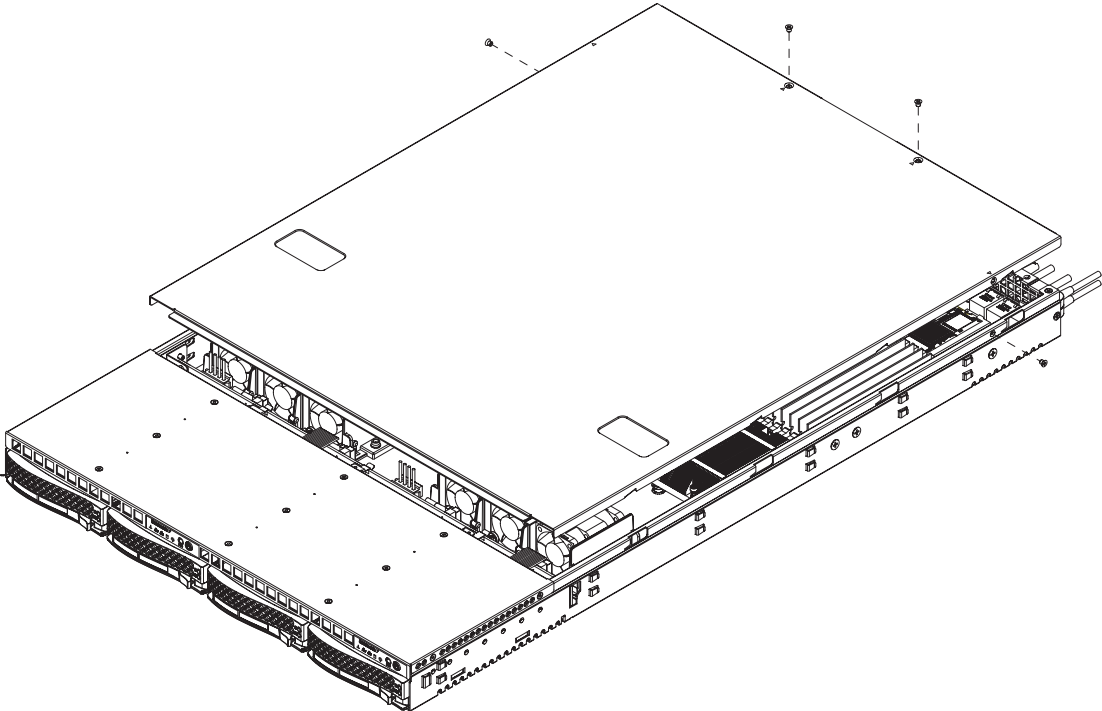
Checking the Airflow

1. Airflow is provided by six sets of 4-cm fans (each set of fans consists of two fans that are mounted back to back) and an air shroud. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.
2. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

Providing Power

1. Plug the power cords from the power supplies unit into a high-quality power strip that offers protection from electrical noise and power surges.
2. It is recommended that you use an uninterruptible power supply (UPS).
3. Finally, depress the power on button on the front of the chassis.

Figure 2-4. Accessing the Inside of the System



Notes

Chapter 3

System Interface

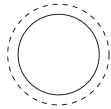
3-1 Overview

There are several LEDs on the two control panels as well as others on the SATA 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 two buttons on each control panel. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take. Note that the server has two control panels, one for each motherboard installed in the system. This allows each severboard to be controlled independently of the other.

3-2 Control Panel Buttons

There are two push-buttons located on each control panel: a reset button and a power on/off button.

RESET



Reset

Depressing the reset button will reboot only the motherboard it is associated with.



Power

This is the main power button, which is used to apply or turn off the main system power only to the motherboard it is connected to. Depressing this button removes the main power but keeps standby power supplied to the motherboard.

3-3 Control Panel LEDs

Each of the two control panels located on the front of the SC808LTS-780 chassis has five LEDs. Each LED provides you with critical information related its own specific motherboard. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



Overheat/Fan Fail

When this LED flashes, it indicates a fan failure. When on 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.



NIC2

Indicates network activity on LAN2 when flashing



NIC1

Indicates network activity on LAN1 when flashing.



HDD

Channel activity for the hard disk drives. This light indicates SATA drive activity on the 5015TB-T/5015TB-10G when flashing.



Power

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

3-4 SATA Drive Carrier LEDs

Each SATA drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SATA drive carrier indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed.
- **Red:** There is no function associated with the red LED.

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 5015TB-T/5015TB-10G 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 motherboard, 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.

- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. 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 5015TB-T/5015TB-10G clean and free of clutter.
- The 5015TB-T/5015TB-10G weighs approximately 40 lbs (~18.2 kg) when fully loaded. 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 with the retention screws 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:

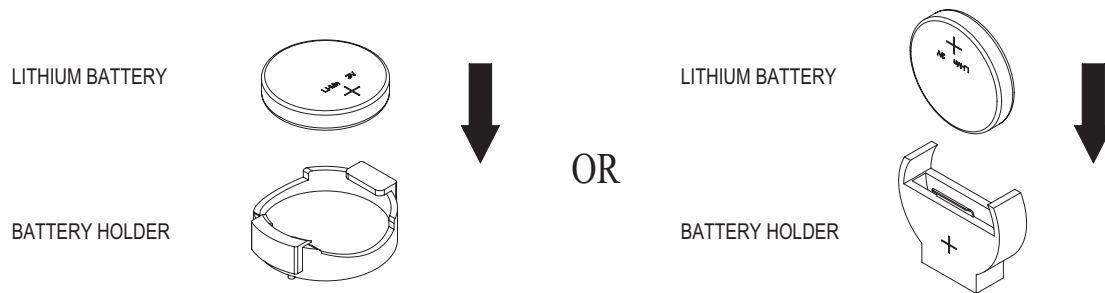
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact 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 motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

4-4 Operating Precautions



Care must be taken to assure that the chassis cover is in place when the 5015TB-T/5015TB-10G 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



Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install the X7SBT/X7SBT-10G motherboard into the SC808LTS-780 chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

5-1 Handling the Motherboard

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the X7SBT/X7SBT-10G motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

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

Unpacking

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

5-2 Motherboard Installation

This section explains the first step of physically mounting the X7SBT/X7SBT-10G into the SC808LTS-780 chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

Accessing the Inside of the System

1. Remove all four screws securing the top cover of the chassis: two at the top rear of the cover and one on each side lip, also near the back.
2. Place both thumbs in the indentations and push the cover back until it slides off.
3. Lift the top cover from the chassis to gain full access to the inside of the server. (If already installed in a rack, grasp the two handles on either side and pull the unit straight out until the rails lock into place. See Figure 2-5.)

Check Compatibility of Motherboard Ports and I/O Shield

1. The X7SBT/X7SBT-10G in a Twin 1U configuration requires the use of Supermicro's specially designed 1U Twin chassis: the SC808LTS-780.
2. Make sure that the I/O ports on the motherboards align properly with their respective holes in the I/O shield at the back of the chassis when installing.

Mounting the Motherboard onto the Motherboard Tray

1. Carefully mount the motherboards by aligning the board holes with the raised metal standoffs that are visible in the chassis.
2. Insert screws into all the mounting holes on your motherboards that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads).
3. Metal screws provide an electrical contact to the motherboard ground to provide a continuous ground for the system.

5-3 Connecting Cables

Now that the motherboards are installed, the next step is to connect the cables to the boards. These include the data cables for the peripherals and control panel and the power cables.

Connecting Data Cables

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

The following data cables (with their locations noted) should be connected. (See the motherboard layout for connector locations.) Note that each connection listed should be made for both motherboards in the chassis.

- SATA drive cables (I-SATA0 ~ I-SATA1)
- Control Panel cable (JF1)

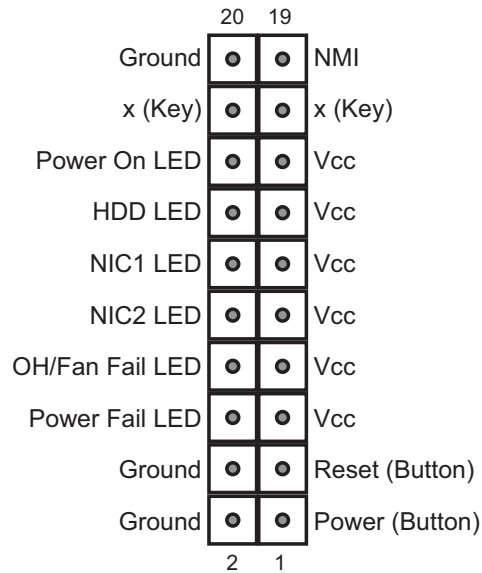
Connecting Power Cables

The X7SBT/X7SBT-10G has two 20-pin ATX power supply connectors for connection to the ATX power supply. Only one of these from each board should be connected to the power supply. "JWR1" is used to supply power to the primary motherboard and "JWR2" is used to supply power to the secondary motherboard. Connect the power supply to only one of these on both boards (primary = left, secondary = right when viewed from front of server). See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis.

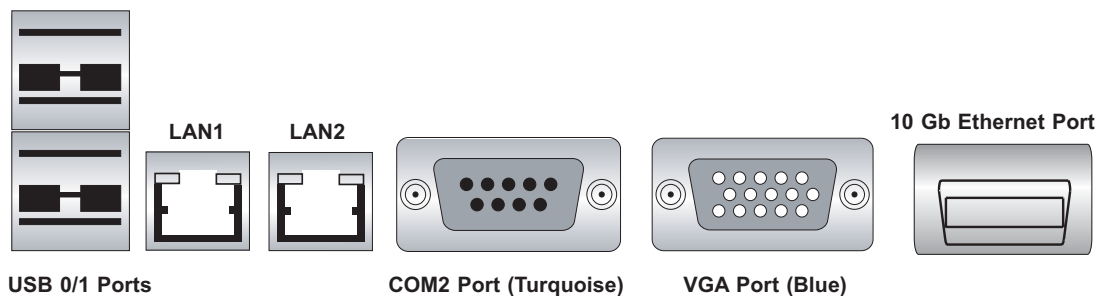
Figure 5-1. Control Panel Header Pins



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. I/O Ports



Note: The InfiniBand port is included on the X7SBT-10G (5015TB-10G) only. To prevent damage to the port or motherboard, an InfiniBand bracket (included) must be used to secure the connector to the I/O shield.

5-5 Processor and Heatsink Installation



When handling the processor, avoid placing direct pressure on the label area of the fan. Also, do not place the motherboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

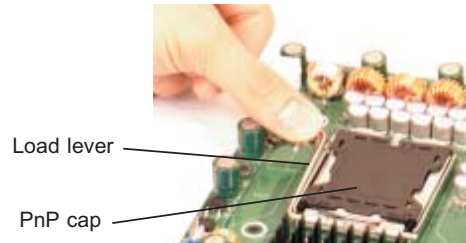
IMPORTANT! Always connect the power cord last and remove it first before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket *before* you install the heatsink and fan. If installing one processor only, install it into CPU socket #1.

Notes:

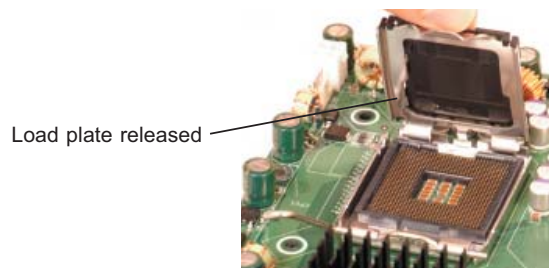
1. Intel's boxed Xeon CPU package contains a CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsinks and fans.
2. When purchasing a Xeon CPU or when receiving a motherboard with a CPU pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.
3. Please refer to the Supermicro web site for details on supported processors.

Installing the Processor

1. A black PnP cap is attached to the load plate to protect the CPU socket. Press the load lever down and away from the retention clasp to release the load plate from its locked position.



2. Gently lift the load lever to open the load plate.



3. Use your thumb and your index finger to hold the CPU at opposite sides.

4. Align pin1 of the CPU (the corner marked with a triangle) with the notched corner of the CPU socket.

5. Find the corner of the CPU that has a semi-circle cutout below a gold dot (CPU key). This corner should be aligned with the cutout on the socket (socket key).

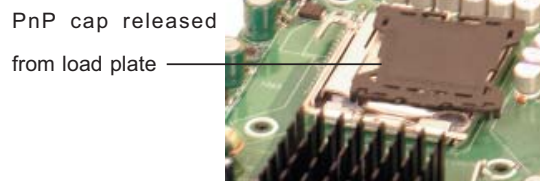
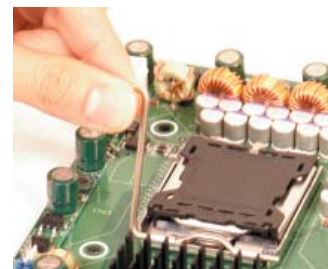
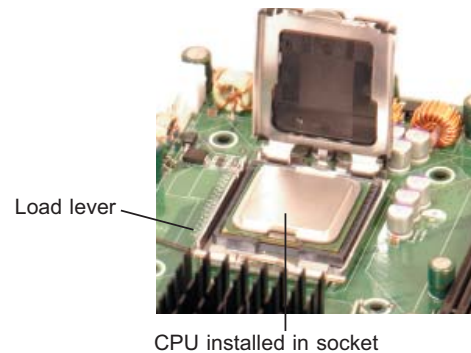
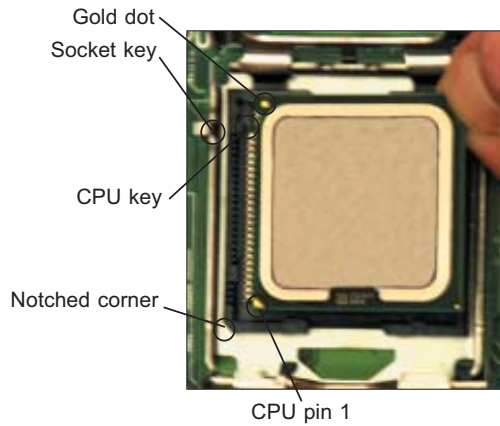
6. Once aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, do not move the CPU horizontally or vertically and do not rub the CPU against any surface or any of the contacts, which may damage the CPU and/or contacts.

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

8. Use your thumb to gently push the load lever down until it snaps into the retention clasp.

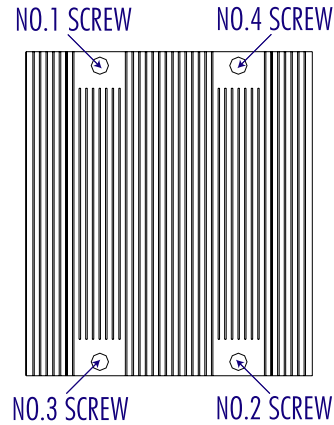
9. If the CPU is properly installed into the socket, the PnP cap will be automatically released from the load plate when the lever locks. Remove the cap. Repeat steps to install a second CPU if desired.

Warning! Keep the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket. Shipment without the PnP cap properly installed will void the warranty.



Installing the Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the (preinstalled) heatsink retention mechanism.
3. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug. Do not fully tighten the screws or you may damage the CPU.)
4. Add the two remaining screws then finish the installation by fully tightening all four screws.



Removing the Heatsink



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

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as described above.
2. Hold the heatsink and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)
3. Once the heatsink is loose, remove it from the CPU.
4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the heatsink.

5-6 Installing Memory



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

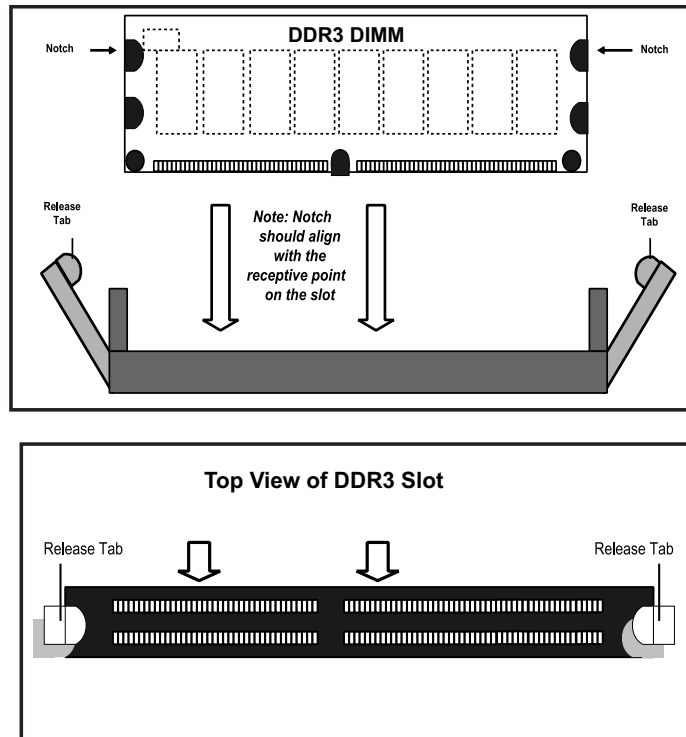
Memory support

The X7SBT/X7SBT-10G has four DIMM sockets that can support up to 8 GB of unbuffered non-ECC DDR3-1333/1066/800 SDRAM (for a total of 16 GB in the system) or up to 4 GB of unbuffered non-ECC DDR3-1600 SDRAM in two DIMM slots (for 8 GB total in the system). The memory scheme supports interleaved configurations, so you may populate two slots at a time, beginning with slot DIMM1 and DIMM3 (blue slots), then DIMM2 and DIMM4 (black slots) on each motherboard. Please refer to the Supermicro web site for a list of recommended DIMMs.

Installing memory modules

Insert each memory module vertically. Pay attention to the notches along the bottom of the module to prevent inserting it incorrectly. Gently press down on the DIMM module until it snaps into place in the slot (see Figure 5-3).

Figure 5-3. DIMM Installation



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

To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

Possible System Memory Allocation & Availability			
System Device	Size	Physical Memory Remaining (Available) (3 GB Total System Memory)	Physical Memory Remaining (Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.00	3.99
Local APIC	4 KB	3.00	3.99
Area Reserved for the chipset	2 MB	3.00	3.99
I/O APIC (4 Kbytes)	4 KB	3.00	3.99
PCI Enumeration Area 1	256 MB	3.00	3.76
PCI Express (256 MB)	256 MB	3.00	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.00	3.01
VGA Memory	16 MB	2.85	2.85
TSEG	1 MB	2.84	2.84
Memory available to OS & other applications		2.84	2.84

5-7 Adding PCI Cards

PCI-Express 2.0 Slot

The 5015TB-T/5015TB-10G includes two preinstalled riser cards designed specifically for use in the SC808LTS-780 1U rackmount chassis. These riser cards support two low-profile PCI-Express 2.0 (second generation PCI-E) cards to fit inside the chassis.

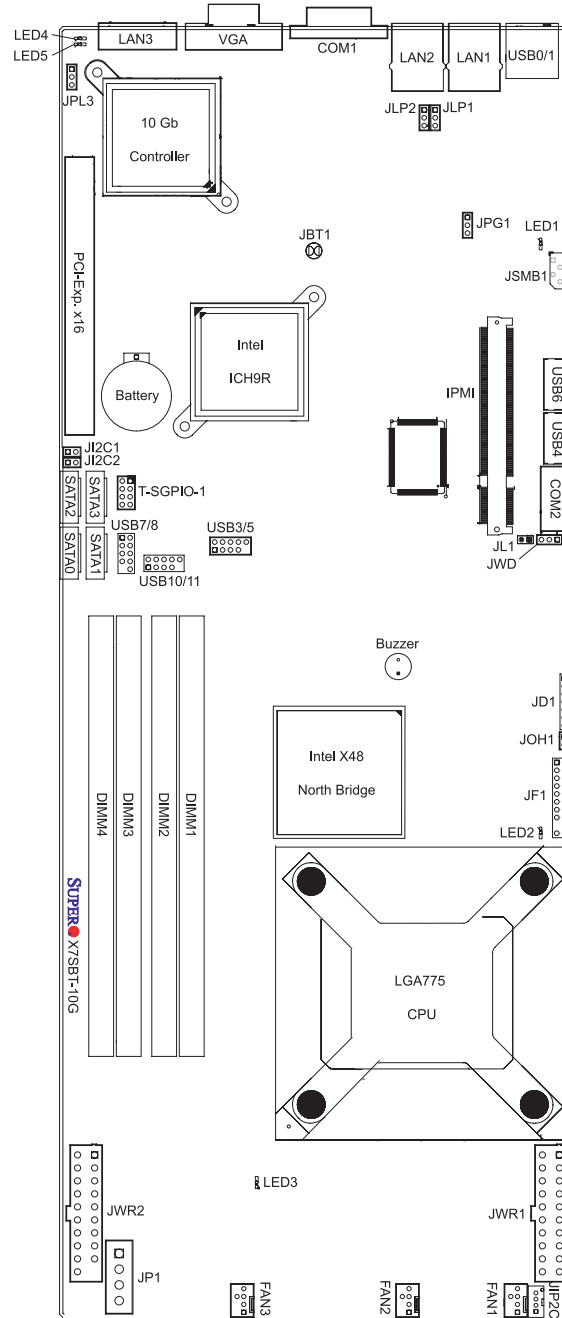
PCI Card Installation

The riser card has already been preinstalled into the motherboard. Perform the following steps to add a PCI add-on card:

1. Remove the PCI slot shield on the chassis by releasing the locking tab.
2. Insert the add-on card into the riser card.
3. Secure the add-on card with the locking tab.

5-8 Motherboard Details

Figure 5-4. X7SBT-T/X7SBT-10G Layout



Notes:

Jumpers not indicated are for test purposes only.

Only one of the ATX power connectors should be used on each board.

X7SBT/X7SBT-10G Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 5-10)
JI ² C1/JI ² C2	SMB to PCI Slot	Both Open (Disabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
JPL3*	LAN3 (10 Gb LAN) Enable/Disable	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
COM1/COM2	COM1 Port/COM2 Header
FAN 1-8	Chassis/CPU Fan Headers
JD1	Power LED/Speaker Header
JF1	Control Panel Header
JOH1	Overheat LED Header
JP1	4-pin Auxilliary Power (output for HDDs only)
JPI ² C	Power I ² C Header
JSMB1	SMBus I ² C Connector
JWR1/JWR2	20-pin ATX Power Connectors
LAN1/2	Gigabit Ethernet (RJ45) Ports
LAN3*	10 Gb LAN Port
SATA0 ~ SATA3	SATA Ports 0~3
SIMSO	SIMSO IPMI Socket
T-SGPIO1	Serial General Purpose Input/Output Header
USB0/1/4/6	Universal Serial Bus (USB) Ports
USB2/3/5/7/8/10/11	Universal Serial Bus (USB) Headers

LED	Description
LE1	Onboard Power LED
LE3	VRD Overheat LED
LE4/LED5*	10 Gb LAN LEDs

*The 10 Gb Ethernet port is included on the X7SBT-10G only.

5-9 Connector Definitions

ATX Power Connector

The main ATX power supply connectors on the X7SBT-T/X7SBT-10G are 20-pin proprietary headers. Refer to the table on the right for the pin definitions. Only one of the two ATX power connectors from each motherboard should be connected to the power supply.

ATX Power 20-pin Connector Pin Definitions (ATX Power 1/2)			
Pin#	Definition	Pin #	Definition
11	PS On	1	Ground
12	5VSB	2	Ground
13	Ground	3	Ground
14	Ground	4	Ground
15	Ground	5	Ground
16	NC2	6	NC1
17	12V	7	12V
18	12V	8	12V
19	12V	9	12V
20	12V	10	12V

Auxiliary Power Connector

A 4-pin 12V auxiliary power connector is included to provide power to hard drive disks. See the table on the right for pin definitions.

Auxiliary Power Pin Definitions (JP1)	
Pin#	Definition
1	+12V
2	Ground
3	Ground
4	+5V

PW_ON Connector

The PW_ON connector is on pins 1 and 2 of JF1. This header should be connected to the chassis power button. See the table on the right for pin definitions.

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

Reset Connector

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

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

Overheat LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

NIC2 (LAN2) LED

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

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

NIC1 (LAN1) LED

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

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

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach the hard drive LED cable here to display disk activity (for any hard drives on the system, including SAS, Serial ATA and IDE). See the table on the right for pin definitions.

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

Power On LED

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

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	5V Stby
16	Control

NMI Button

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

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

Fan Headers

There are three fan headers on each motherboard, all of which are 4-pin fans. However, pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans. See the table on the right for pin definitions. The onboard fan speeds are controlled by Thermal Management (via Hardware Monitoring) in the BIOS. The default is disabled. When using Thermal Management setting, please use all 3-pin fans or all 4-pin fans.

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

Chassis Intrusion

The Chassis Intrusion header is designated JL1. See the board layout for the location of JL1 and the table on the right for pin definitions.

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

Universal Serial Bus (USB)

There are two Universal Serial Bus ports located on the I/O panel as well as two Type A ports and seven USB headers located on the motherboard. The headers (USB2, USB3, USB5, USB7, USB8, USB10 and USB11) can be used to provide front side USB access (cables not included). See the tables on the right for pin definitions.

USB Ports Pin Definitions (USB0/1/4/6)	
Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

USB Headers Pin Definitions (USB2/3/5/7/8/10/11)			
USB3/5		USB2/4	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	No connection

LAN1/2 (Ethernet Ports)

Two gigabit Ethernet ports (designated LAN1 and LAN2) are located beside the COM port on the I/O backplane. These ports accept RJ45 type cables.



LAN3 (10 Gb Ethernet Port)

The X7SBT-10G also includes a 10Gb Ethernet port (designated LAN3) located beside the VGA port on the I/O backplane.

Wake-On-LAN

The Wake-On-LAN header is designated JWOL on the motherboard. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this function. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (JWOL)	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Serial Ports

Two serial ports are included on the motherboard: COM1 is a port located beside the VGA port and COM2 is a header located near the IPMI slot. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)			
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: NC indicates no connection.

SGPIO Header

An SGPIO (Serial General Purpose Input/Output) header is included on the motherboard. This header is used to communicate with the System Monitoring chip on the backplane to monitor SATA activity. See the table on the right for pin definitions.

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

Power I²C Header

The header at JPI2C may be used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

Power (I ² C) Header Pin Definitions (JPI ² C)	
Pin#	Definition
1	Clock
2	Data
3	Power Fail
4	Ground

SMBus I²C Connector

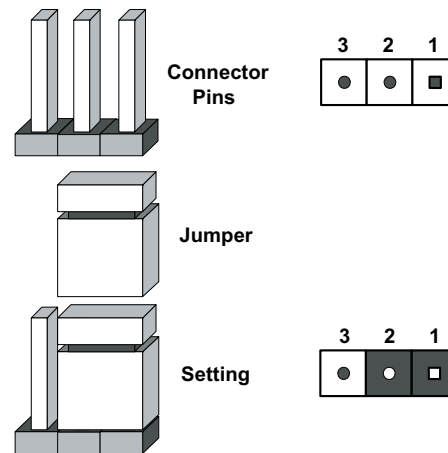
A System Management Bus connector is located at JSMB1. Connect the appropriate cable to utilize SMB on your system

SMBus I ² C Connector Pin Definitions (JSMB1)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	NC

5-10 Jumper Settings

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

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



CMOS Clear

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

To Clear CMOS

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

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

VGA Enable/Disable

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

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN1/LAN2 Enable/Disable

Change the setting of jumper JPL1 to enable or disable the LAN1 port and JPL2 to enable or disable the LAN2 port on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

LAN1/2 Enable/Disable Jumper Settings (JPL1/2)	
Jumper Setting	Definition
Open	Enabled
Pins 2-3	Disabled

I²C to PCI-Express Slot

J^I²C1/J^I²C2 allows you to enable the I²C bus to communicate with the PCI-Express slot. For the jumpers to work properly, please set both jumpers to the same setting. If enabled, both jumpers must be enabled. If disabled, both jumpers must be disabled. See the table on the right for jumper settings.

I ² C to PCI-Express Slot Jumper Settings (J ^I ² C1/J ^I ² C2)	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

Watch Dog Enable/Disable

JWD enables the Watch Dog function, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will have WD reboot the system if a program freezes. Jumping pins 2-3 will generate a non-maskable interrupt for the program that has frozen. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

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

Note: when Watch Dog is enabled, the user must write their own application software to disable the Watch Dog Timer.

5-11 Onboard Indicators

LAN1/LAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gb 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	10 MHz
Green	100 MHz
Amber	1 GHz

Onboard Power LED (LE1)

There is an Onboard Power LED (LE1) located near JF1. When the green light is on or flashing, the power is connected. Unplug the power cable before removing and changing any components. See the table on the right for indications.

Onboard Power LED Indicator (LE1)	
LED Color	Definition
Green (Solid)	Power on, system on
Green (Flashing)	Power Standby: ACPI S1 state
Off	Power off, power cable not connected

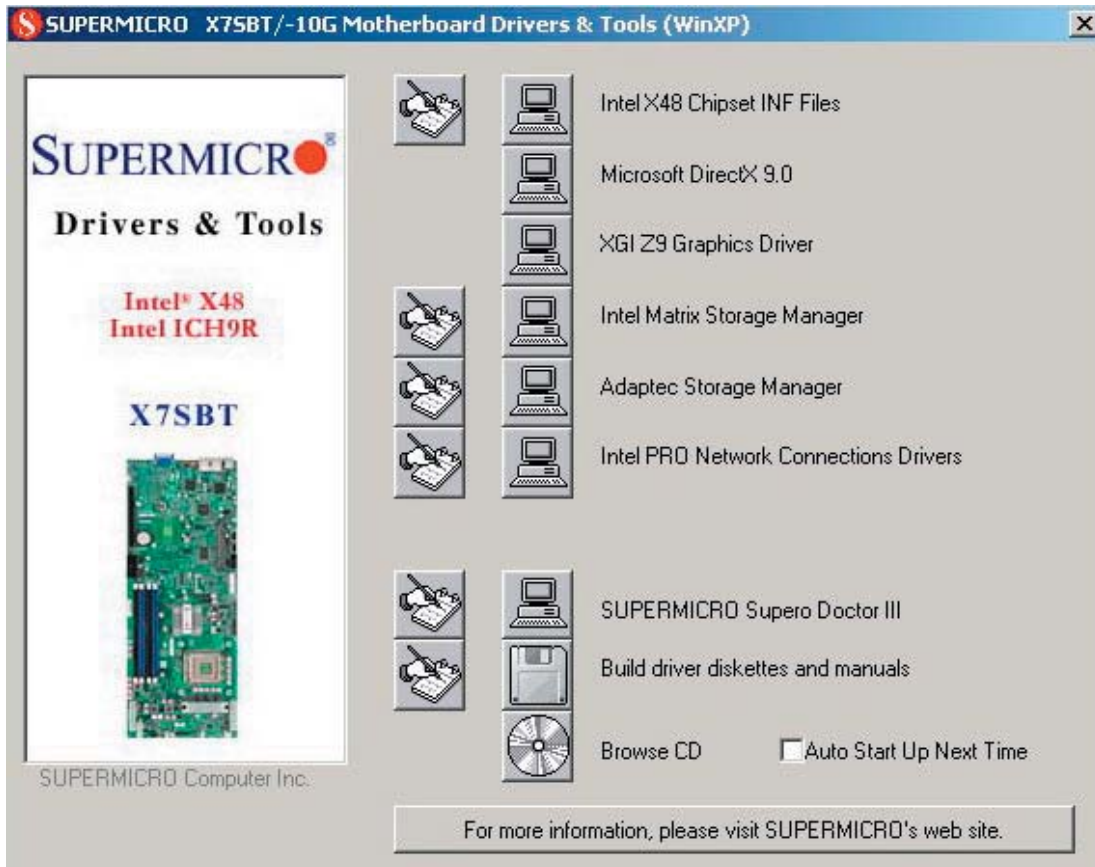
10 Gb LAN LEDs (LED4/LED5)

LED4 (Green) and LED5 (Yellow) are the 10Gb LAN LEDs. These LED indicators show the status of the 10 Gb LAN port, which is included on the 5015TB-10G only. LED4 indicates 10Gb throughput on the port while LED5 indicates a throughput of 1 Gb or less. See the table on the right for more details.

10 Gb LAN LED Indicators (LED4/LED5)		
LED	State	Definition
LED4	Blinking	10 Gb Activity
LED4	Solid	10 Gb Link
LED5	Blinking	1 Gb Activity
LED5	Solid	1 Gb Link

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 motherboard.



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.

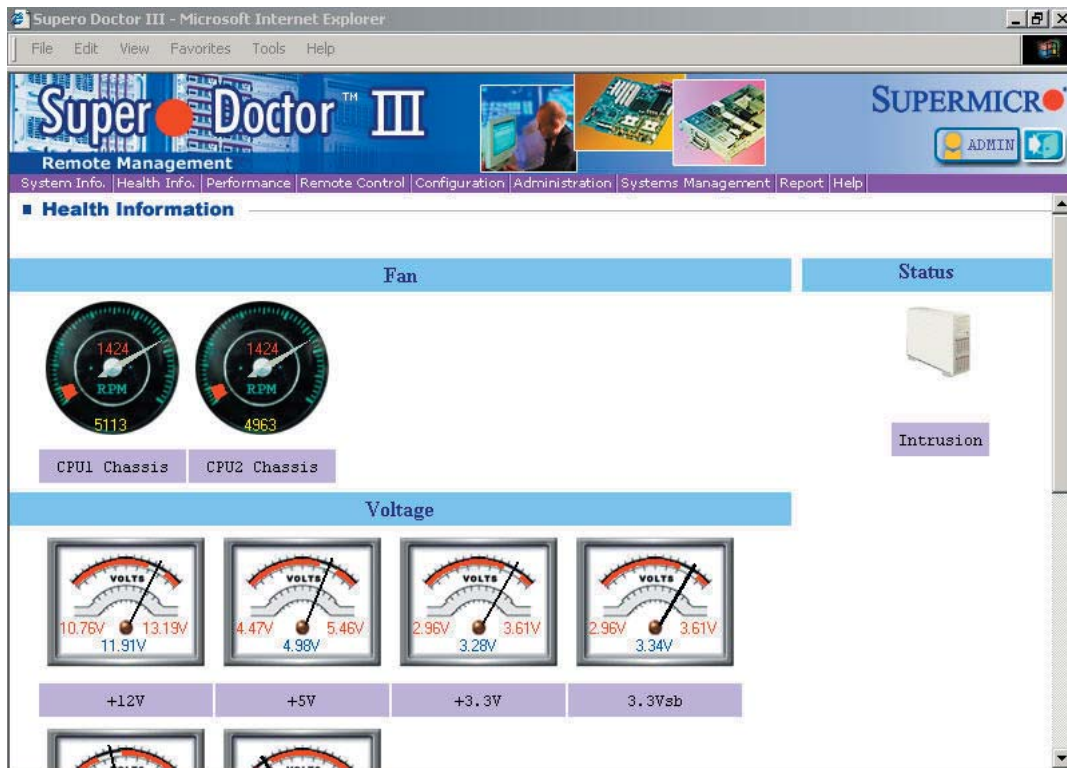
Supero Doctor III

The Supero Doctor 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 Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

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

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

Supero Doctor III Interface Display Screen (Health Information)



Supero Doctor III Interface Display Screen (Remote Control)

Graceful power control

Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.

Requirements

Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.

Power control

Note: SD III Software Revision 1.0 can be downloaded from our Web Site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we will still recommend Supero Doctor II.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC808LTS-780 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows. 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 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 motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

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

Figure 6-1. Chassis Front View

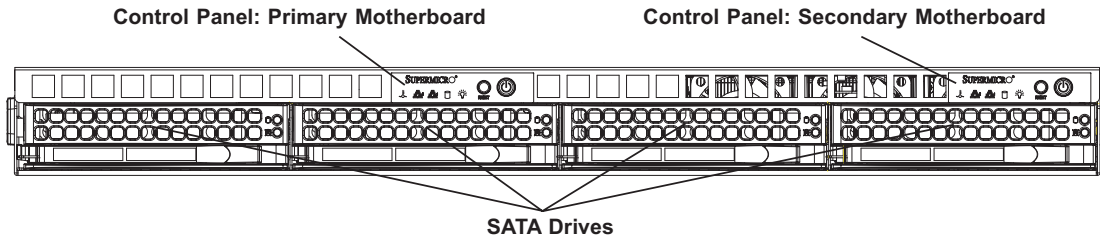
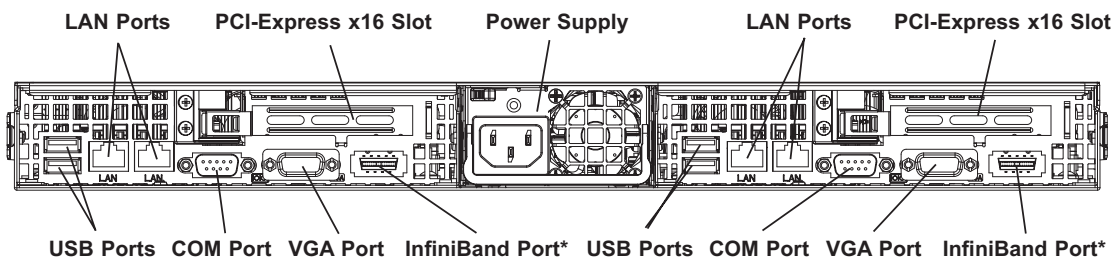


Figure 6-2. Chassis Rear View



*The InfiniBand ports are included on the 5015TB-10G only.

6-2 Control Panel

Each control panel on the front of the chassis must be connected to the JF1 connector on its associated motherboard to provide you with system control buttons and status indicators. (When viewed from the front of the chassis, the motherboard on the left is referred to as the primary motherboard and the motherboard on the right as the secondary.)

These wires have been bundled together in a ribbon cable to simplify the connection. Connect the cable from JF1 on the motherboard to the control panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path. The LEDs inform you of system status for the motherboard it is connected to. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 System Fans

Each motherboard has its own set of three 4-cm high-performance fans (for a total of six in the chassis) to provide the cooling for the SuperServer 5015TB-T/5015TB-10G. Fan speed may be controlled by a setting in BIOS (see Chapter 7).

System Fan Failure

If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will blink on and off. 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 is also recommended as a safety precaution.

6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

SATA 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 SATA drives. Proceed to the next step for instructions. **Note:** The operating system you use must have RAID support to enable the hot-swap capability of the SATA drives.



Use caution when working around the SATA backplane. Do not touch the backplane with any metal objects and make sure no cables touch the backplane. Also, regardless of how many SATA drives are installed, all four drive carriers must remain in the chassis to maintain proper airflow.

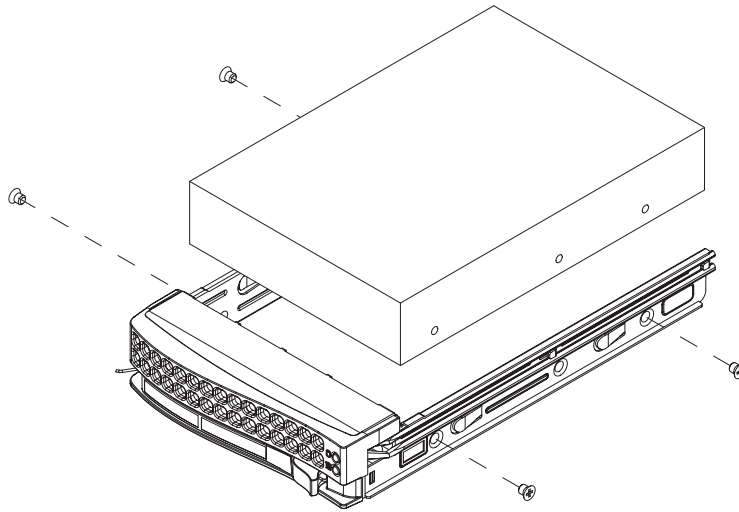
SATA Drive Installation

The SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the system. For this reason, even empty carriers without drives installed must remain in the chassis.

Mounting a SATA Drive in a Carrier

1. Install the drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.
2. Secure the drive to the carrier with four screws, as shown in Figure 6-3.

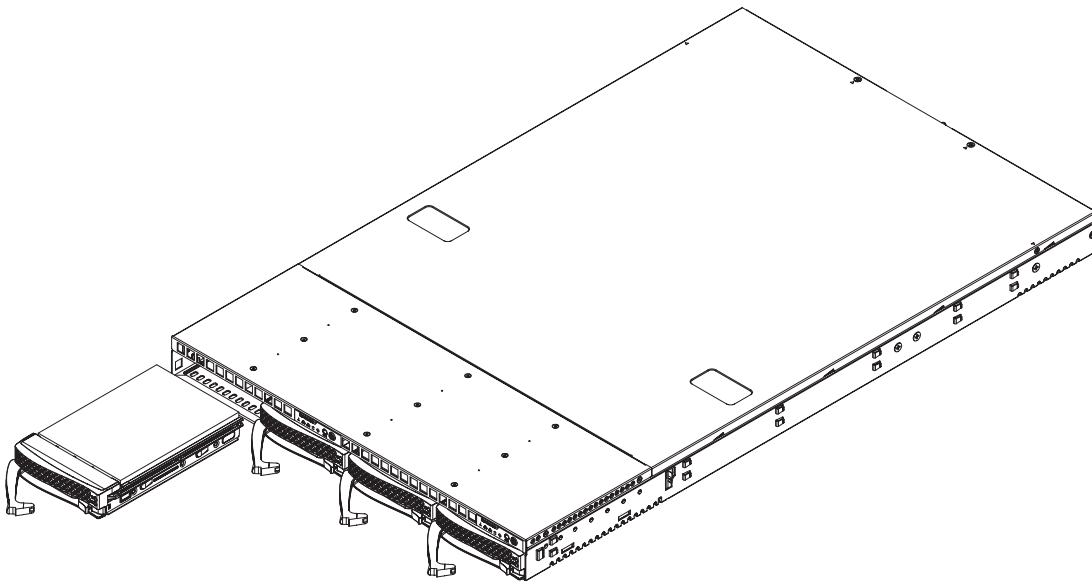
Figure 6-3. Mounting a Drive in a Carrier



Installing/Removing Hot-swap SATA Drives

1. To remove a carrier, push the release button located beside the drive LEDs.
2. Swing the handle fully out and use it to pull the unit straight out (see Figure 6-4).

Figure 6-4. Removing a SATA Drive



6-5 Power Supply

The SuperServer 5015TB-T/5015TB-10G has a single 780 watt power supply. This power supply has the capability of operating at 100 - 240 input volts. Depress both main power buttons on the front of the chassis and then unplug the AC power cord to completely remove power from the system before removing the power supply.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro (PWS-981-1S - see contact information in Chapter 1).

Replacing the Power Supply

Accessing the Inside of the System

1. Remove the top chassis cover by releasing the retention screws that secure the unit to the rack.
2. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").
3. The top cover of the chassis is secured with four screws: two at the top rear of the cover and one on each side lip, also near the back. Remove all four, then place both thumbs in the indentations and push the cover back until it slides off.
4. Lift the top cover from the chassis to gain full access to the inside of the server.

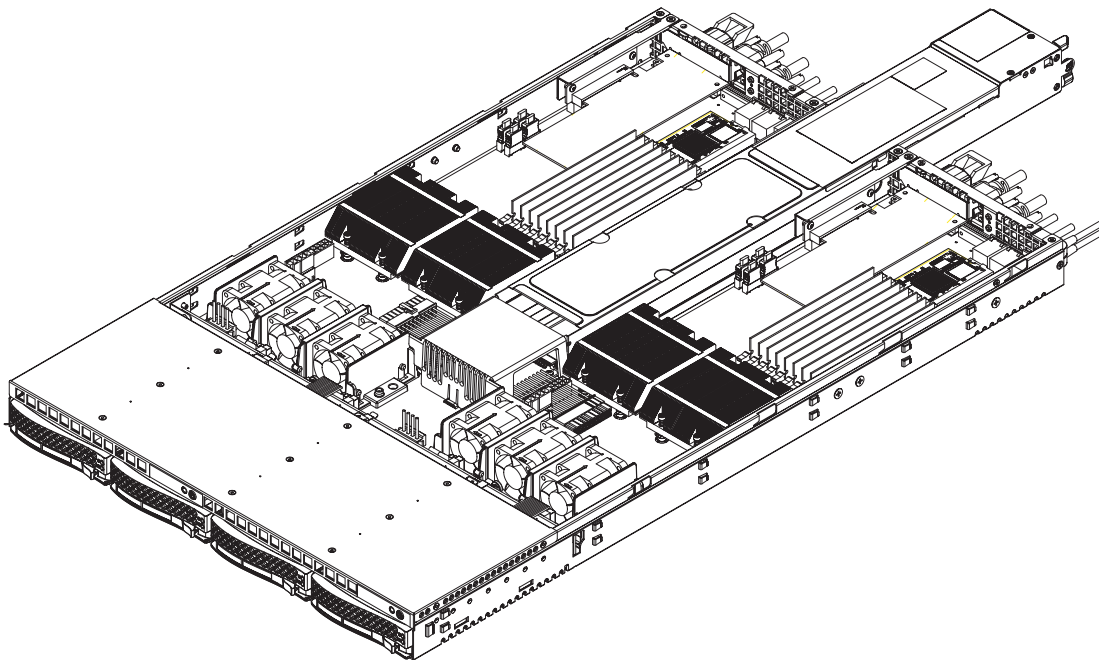
Removing the Power Supply

1. First unplug the power cord from the system.
2. To remove the failed power unit, remove the two screws on the back of the power supply, which secure it to the chassis.
3. Lift the unit straight out of the chassis. (See Figure 6-5.)

Installing a New Power Supply

1. Replace the failed unit with the exact same power supply model from Supermicro.
2. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit.
3. Before reconnecting the power cord, make sure the power switch on the power supply is in the off position.
4. Reconnect the power cord, replace the chassis top cover and push the unit back into the rack.
5. Finish by turning the power switch on the power supply on, and then depress the power buttons on the front of the chassis.

Figure 6-4. Removing the Power Supply



Chapter 7

BIOS

7-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7SBT-X7SBU-10G. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <<http://www.supermicro.com>> for any changes to the BIOS that may not be reflected in this manual.

System BIOS

BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS logic, enabling it to retain system parameters. Each time the computer is powered on the computer is configured with the values stored in the CMOS logic by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 7-3, detailed descriptions are given for each parameter setting in the Setup utility.



Warning: Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

7-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (See the next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

7-3 Main BIOS Setup

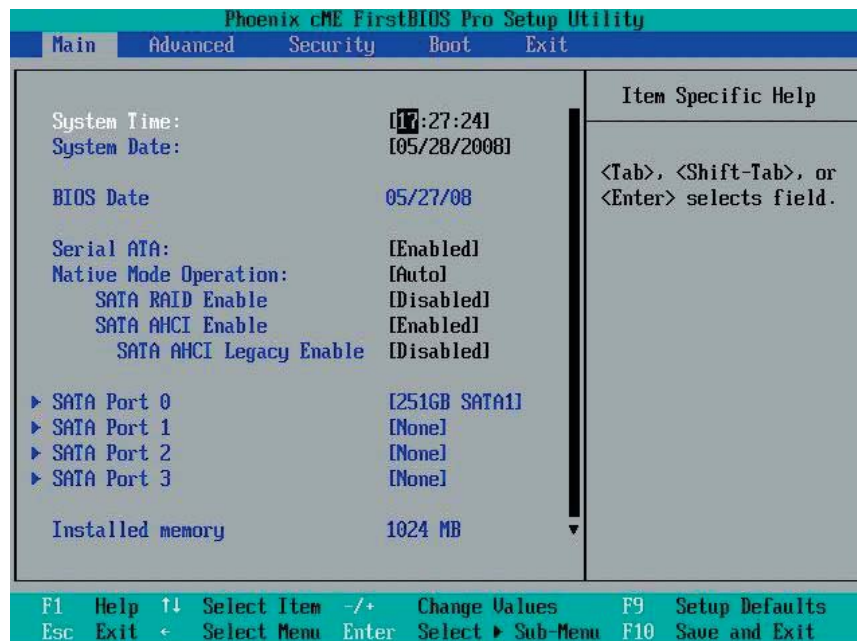
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the +/- arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ► icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu



Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

BIOS Date

The item displays the date that the BIOS was built.

Serial ATA

This setting allows the user to enable or disable the Serial ATA function. The options are Disabled and **Enabled**.

Native Mode Operation

Select Serial ATA to use the SATA mode, or select Auto to use the Native Mode for ATA. The options are: Serial ATA and **Auto**.

SATA RAID Enable

This setting allows the user to enable the Serial ATA RAID functions. The options are Enabled and **Disabled**.

SATA AHCI Enable

Select Enable to enable the Serial ATA Advanced Host Interface function. (This feature is for advanced programmers only. The Enhanced AHCI mode is available when the Windows XP-SP1 OS and the IAA driver is used.) The options are Enabled and **Disabled**.

► SATA Port 0, SATA Port 1, SATA Port 2, SATA Port 3

These settings allow the user to set the parameters for SATA Ports 0 through 3. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This option allows the user to select the type of SATA device. Select **Auto** to allow the BIOS to automatically configure the parameters of the SATA device installed on a slot. Enter a number to select a predetermined SATA device. Select User to allow the user to enter the parameters of a SATA device installed.

CHS Format

The following items will be displayed by the BIOS:

TYPE: This item displays the type of drive.

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors and 16 Sectors.

LBA Mode Control

This item determines whether the Phoenix BIOS will access a device via the LBA mode. The options are Enabled and **Disabled**.

32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

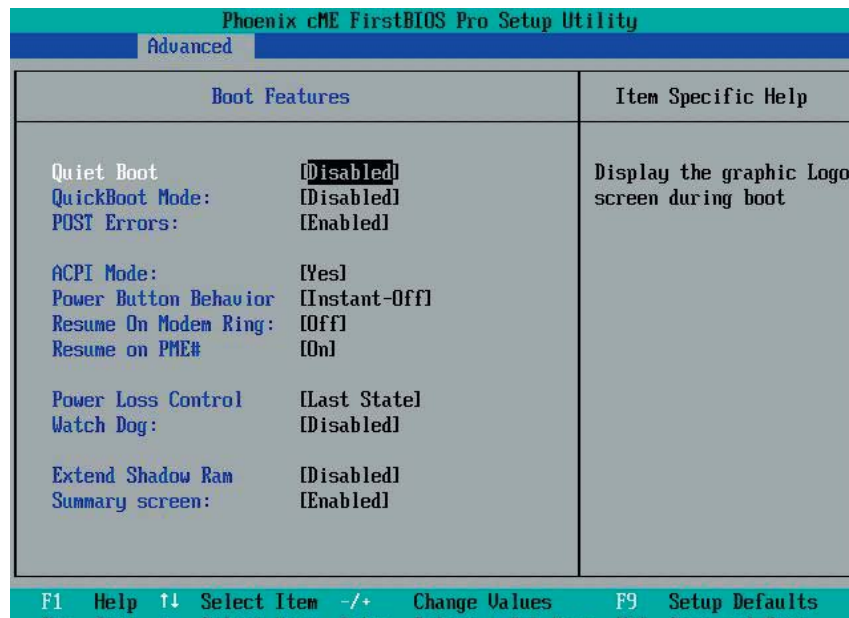
This option allows the user to configure the Ultra DMA Mode setting. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4 and Mode 5.

Installed Memory

This option allows the user to configure the UltraDMA Mode setting. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4 and Mode 5.

7-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>.



► Boot Features

Access the submenu to make changes to the following settings.

Quiet Mode

This setting allows you to **Enable** or Disable the graphic logo screen during boot-up.

QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

Post Error

Use the setting to Pause and Display SETUP entry or resume boot prompt if error occurs on boot disabled.

ACPI Mode

Select Yes to use the ACPI (Advanced Configuration and Power Interface) power management feature on your system. The options are **Yes** and No.

Power Button Behavior

If set to Instant-Off, the system will power on or power off immediately as soon as the user hits the power button. The options are **Instant-Off** and 4-Second Override.

Resume On Modem Ring

Select On to “wake your system up” when an incoming call is received by your modem. The options are On and **Off**.

Resume On PME#

Select On to “wake your system up” from the PME# of PCI slots. The options are On and **Off**.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On and **Last State**.

Watch Dog

If enabled, this option will automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

► Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Frequency Ratio (Available when supported by the CPU)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are **Default**, x6, x7, x8, x9, x10 and x11.

Frequency High Ratio (Available when supported by the CPU)

The feature allows the user to set high ratio internal frequency multiplier for Intel SpeedStep CPUs. The settings are **Default**, +6% to 11% and +12% to +27%. Note: if an incorrect ratio (one that is not supported by the CPU) is selected, the system may hang. If this happens, clear CMOS to recover the system.

Machine Checking (Available when supported by the CPU)

Set to Enabled to activate the Machine Checking function and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

Compatible FPU Code (Available when supported by the CPU)

Set to Enabled to keep the content of the last instruction Operating Code (OP-Code) in the floating point (FP) state. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

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

Set Maximum Ext. CPUID=3

When set to Enabled, the Maximum Extended CPUID will be set to 3. The options are Disabled and Enabled.

Echo TPR

Set to Enabled to prevent xTPR messages from being sent to the system. The options are Disabled and **Enabled**.

C1 Enhanced Mode (Available when supported by the CPU)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are **Enabled** and Disabled. Note: please refer to Intel's web site for detailed information.

No Execute Mode Memory Protection (Available when supported by the CPU and the OS)

Set to Enabled to enable an Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it

cannot, thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack.

Note: this feature is available when your OS and your CPU support the Execute Disable Bit function. The options are Disabled and **Enabled**. Note: For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.

Enhanced Intel Speed Step Support (Available when supported by the CPU)

Select Enabled to use the Enhanced Intel SpeedStep Technology, which allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The default setting is **GV1/GV3**. Please refer to Intel's web site for detailed information.

Hyperthreading (Available when supported by the CPU)

Set to Enabled to use the Hyperthreading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled**.

Core-Multi-Processing (Available when supported by the CPU)

Set to Enabled to use a processor's second core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled**.

Single Logical Processor Mode (Available when supported by the CPU)

This setting allows the user to choose the processor operation mode. Select **Disabled** to allow the processor to operate in single-core mode. Select Enabled to allow the processor to operate in multi-core mode.

Intel Enhanced Debug (Recommended for Maintenance)

This setting allows an operating-system level debug of issues that may be processor related. The options are **Enabled** and Disabled.

Thermal Management 2 (Available when supported by the CPU)

Set to **Enabled** to use Thermal Management 2 (TM2), which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

Intel Virtualization Technology (Available when supported by the CPU)

Select Enabled to use Virtualization Technology to 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 web site for detailed information.

► **Advanced Chipset Control**

Access the submenu to make changes to the following settings.

Warning: Use caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or an incorrect DRAM timing may cause the system to become unstable. When this occurs, reset to the default settings.

Memory Remapping

This feature allows the BIOS to reserve memory to remap the memory above the 4 GB to 5 GB area when using 4 GB of memory. The settings are **Enabled** and **Disabled**.

High Precision Event Time

Select **Yes** to activate the High Precision Event Timer (HPET), which is capable of producing periodic interrupts at a much higher frequency than a Real-time Clock (RTC) can in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC instruction embedded in a CPU. The High Precision Event Timer is used to replace the 8254 Programmable Interval Timer. The options for this feature are **Yes** and **No**.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and **Disabled**.

USB Host Controller

This feature allows the user to configure the setting for USB Host Controller in Dev 29 Functions 0, 1, 2, 3, 7. The settings are **Enabled** and **Disabled**.

► Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable this function, and this area will be reserved for BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable the function and this area will be reserved for Video BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area of Block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into the L1/L2 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 0-512K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect and **Write Back**.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the base memory area of Block 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into the L1/L2/L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 512K-640K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect and **Write Back**.

Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the extended memory area above 1 MB. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and Write Back.

► PnP Configuration

Access the submenu to make changes to the following settings for Plug & Play devices.

► Onboard LAN1 and Onboard LAN2

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughput device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

► PCI-Express Slot 1

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are Enabled and **Disabled**.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughput device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

► I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to select clock frequency for the keyboard clock. The options are 6MHz, 8MHz, **12MHz** and 16MHz.

Serial Port A

This setting allows you to assign control of Serial Port A. The options are **Enabled** (user defined), Disabled and Auto (BIOS or OS controlled).

Base I/O Address

This setting allows you to select the base I/O address for Serial Port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to assign control of Serial Port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

Mode

This setting allows you to set the type of device that will be connected to Serial Port B. The options are **Normal** and IR (for an infrared device).

Base I/O Address

This setting allows you to select the base I/O address for Serial Port A. The options are 3F8, **2F8**, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are **IRQ3** and IRQ4.

► DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

► Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

BAUD Rate

This item allows you to set the BAUD rate for the console redirection. The options are 300, 1200, 2400, 9600, 19.2K, 38.4K, 57.6K and **115.2K**.

Console Type

This item allows you to set the console redirection type. The options are VT100, VT100/8bit, PC-ANSI/7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

This item allows you to select the flow control option for the console. The options are None, XON/XOFF and **CTS/RTS**.

Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

This feature allows you to decide if you want to continue with console redirection after the POST routine. The options are **On** and Off.

► Hardware Monitoring

CPU Temperature/System Temperature

Fan 1 - Fan 3

If the Auto Fan Control feature is enabled, the BIOS will automatically display the status of each fan as specified.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. If the option is set to 3-pin fan, the fan speed is controlled by voltage. If the option is set to 4-pin, the fan speed will be controlled by Pulse Width Modulation (PWM). Select 3-pin if your chassis came with 3-pin fan headers. Select 4-pin if your chassis came with 4-pin fan headers. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select Disable to disable the fan speed control function to allow the onboard fans to constantly run at the full speed (12V). The Options are: **1. Disabled (12V)**, 2. Optimized for Server w/3-pin, 3. Optimized for Workstations w/3-pin, 4. Optimized for Servers w/4-pin and 5. Optimized for Workstations w/4-pin.

Voltage Monitoring

The following items will be monitored and displayed:

Vcore A, VDIMM, +3.3V, +12V, +5Vsb, +5VDD, P_VTT and Vbat

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes

to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

►IPMI (Available only when an IPMI card is installed in the system)

Firmware Version:

This item displays the current Firmware Version.

System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

Clear System Event Logging

Enable this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

Existing Event Log Number

This item displays the number of the existing event log.

Event Log Control

System Firmware Progress

Enable this function to log POST progress. The options are Enabled and **Disabled**

BIOS POST Errors

Enable this function to log POST errors. The options are **Enabled** and Disabled.

OS Boot Watch Dog

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and **Disabled**.

Timer for Loading OS (Minutes)

This feature allows the user to set the time value (in minutes) for the previous item (OS Boot Watch Dog) by keying-in a desired number in the blank. The default setting is 10 (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

Time Out Option

This item allows the user to decide what action to take in an event of a system boot failure. The options are **No Action**, Reset, Power Off and Power Cycles.

► System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.

► Realtime Sensor Data

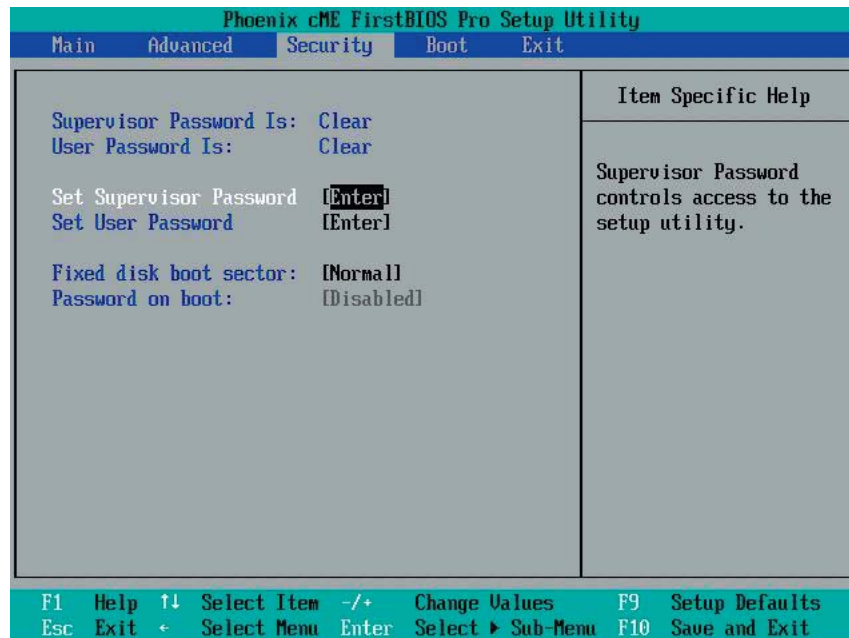
This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.

Phoenix cME FirstBIOS Pro Setup Utility					
Advanced					
Realtime Sensor Data					
Sensor Type	Sensor Name	Sensor Data	Sensor Units	Lower Limit	Upper Limit
Temp	CPU Temp	71.00	degrees C	0.00	75.00
	Sys Temp	70.00	degrees C	0.00	75.00
Voltage	CPU Ucore	1.26	Volts	0.70	1.61
	3.3V	3.26	Volts	2.96	3.63
	DIMM Volt	1.53	Volts	1.34	1.98
	5V	5.11	Volts	4.51	5.50
Fan	12V	11.90	Volts	10.75	13.18

F1	Help	↑↓	Select Item	-/+	Change Values	F9	Setup Defaults
Esc	Exit	←	Select Menu	Enter	Select ► Sub-Menu	F10	Save and Exit

7-5 Security Settings

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.



Supervisor Password Is:

This item indicates if a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password Is:

This item indicates if a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

Set User Password

When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Fixed Disk Boot Sector

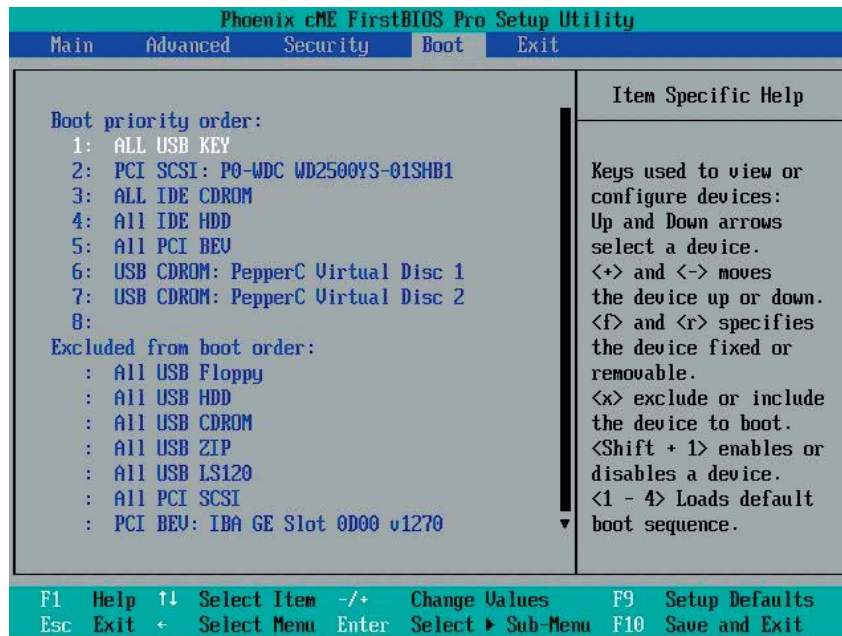
Select **Normal** to enable the feature of Write-Protect to protect the boot sector on the hard drives from virus intrusion.

Password on Boot

When set to Enabled, a user will need to key-in a password to enter the system at system boot. The options are Enabled (password required) and **Disabled** (password not required).

7-6 Boot Settings

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot settings are described in this section.

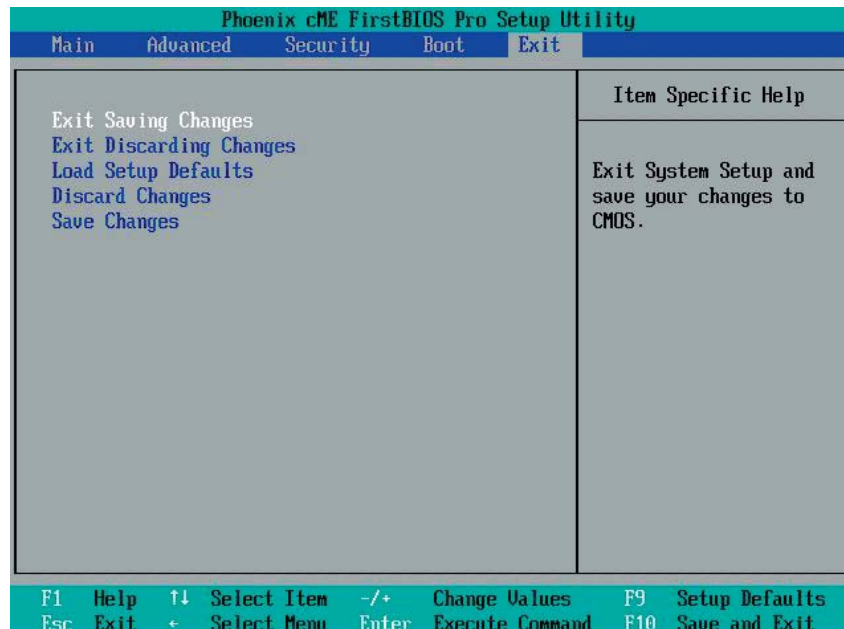


Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

7-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.



Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the Phoenix BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

A-1 Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

Notes

Appendix B

Installing the Windows OS

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

B-1 Installing Windows XP/2000/2003 for RAID Systems

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.
2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.
3. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).
4. Insert the driver diskette-"ITE RAID XP/2000/2003 Driver for IDE" into Drive A: and press the <Enter> key.
5. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).
6. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ICH9R" into Drive A: and press the <Enter> key.
7. Choose the Intel(R) ICH9R *SATA RAID Controller* from the list indicated in the XP/2000/2003 Setup Screen, and press the <Enter> key.
8. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.
9. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2000/2003 installation.
10. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

B-2 Installing Windows XP/2000/2003 for Non-RAID Systems

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.
2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.
3. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).
4. Insert the driver diskette-"ITE RAID XP/2000/2003 Driver for IDE" into Drive A: and press the <Enter> key.
5. Press the <Enter> key to proceed with the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.
6. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then continue with the Windows XP/2000/2003 installation.
7. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.
8. Insert the Supermicro Setup CD that came with your motherboard into the CD Drive during system boot, and the main screen will display.

Appendix C

System Specifications

Note: unless noted specifications apply to a complete system (both serverboards).

Processors

Two Intel® 3200/3000 Series processors

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

Chipset

Intel X48

BIOS

Phoenix BIOS in 8 Mb Flash EEPROM (each serverboard)

Memory Capacity

Four (4) DIMM slots to support up to 8 GB of ECC or non-ECC DDR3-1600/1333/1066/800 SDRAM

Note: interleaved and non-interleaved memory supported - refer to Section 5-6 for details.

Serial ATA Controller

Intel ICH9R on-chip controller to support four 3 Gb/s Serial ATA (RAID 0, 1)

SATA Drive Bays

Four (4) hot-swap drive bays to house four (4) standard SATA drives

PCI Expansion

Two (2) low-profile PCI-Express 2.0 x16 slots (with pre-installed riser cards)

Serverboard

5015TB-T: X7SBT

5015TB-10G: X7SBT-10G

Dimensions (both): 6.5 x 16.4 in (165 x 417 mm)

Chassis

SC808LTS-780 (1U Rackmount)

Dimensions: (WxHxD) 17.2 x 1.7 x 27.75 in. (437 x 43 x 705 mm)

Weight

Gross Weight: 40 lbs. (18.2 kg.)

System Cooling

Six (6) high performance 4-cm fans

System Input Requirements

AC Input Voltage: 100 - 240V AC auto-range

Rated Input Current: 12A - 5A max

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 980W (Part# PWS-981-1S)

Rated Output Voltages: +12V (81A), +5Vsb (4A)

Operating Environment

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

Non-operating Temperature: -40° to 70° C (-40° to 158° 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:

EN 60950/IEC 60950-Compliant

UL Listed (USA)

CUL Listed (Canada)

TUV Certified (Germany)

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"

Note: please visit our web site for information on supported operating systems.