



B2SC2-TF

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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Preface

About This Manual

This manual is written for system integrators, IT technicians and knowledgeable end users. It provides information for the installation and use of the B2SC2-TF motherboard.

About This Motherboard

The Supermicro B2SC2-TF motherboard supports an Intel® Xeon E-2100/E-2200 processor in an LGA1151 socket. With the Intel C246 chipset built in, the B2SC2-TF offers superior performance, power efficiency, and reliability while supporting cutting-edge technology such as Intel Virtualization Technology and Turbo Boost Technology. This motherboard offers advanced I/O and Ethernet controllers for storage and networking capability for 64-bit applications. This motherboard also provides support support up to 64GB DDR4 ECC UDIMM with speeds of up to 2666MHz, SATA 3.0, and two 2.5" U.2 NVMe SSD per node. Please note that this motherboard is intended to be installed and serviced by professional technicians only. For processor/memory updates, please refer to our website at <http://www.supermicro.com/products/>.

Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:



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



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



Important: Important information given to ensure proper system installation or to relay safety precautions.



Note: Additional Information given to differentiate various models or provides information for correct system setup.

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Table of Contents

Chapter 1 Introduction

Quick Reference	11
Quick Reference Table.....	12
Motherboard Features.....	13
1.1 Processor and Chipset Overview.....	16
1.2 Special Features	16
Recovery from AC Power Loss.....	16
1.3 System Health Monitoring.....	17
Onboard Voltage Monitors	17
Environmental Temperature Control	17
System Resource Alert.....	17
1.4 ACPI Features.....	17
1.5 Power Supply	18
1.6 Advanced Power Management.....	18
Intel® Intelligent Power Node Manager (IPNM).....	18
Management Engine (ME).....	18

Chapter 2 Installation

2.1 Static-Sensitive Devices.....	19
Precautions	19
Unpacking	19
2.2 Processor and Heatsink Installation.....	20
Installing the LGA1151 Processor.....	20
Installing a Passive CPU Heatsink	23
Removing the Heatsink.....	24
2.3 Motherboard Installation.....	25
Tools Needed	25
Location of Mounting Holes	25
Installing the Motherboard into the Mounting Tray	26
Installing the Motherboard into the Microblade Chassis.....	27
2.4 Memory Support and Installation	28
Memory Support.....	28
DIMM Module Population Configuration	28

DIMM Installation	29
DIMM Removal	29
2.5 Connectors	30
2.6 Jumper Settings	33
How Jumpers Work.....	33
2.7 LED Indicators.....	38

Chapter 3 Troubleshooting

3.1 Troubleshooting Procedures	39
Before Power On	39
No Power	39
No Video	40
System Boot Failure	40
Memory Errors	40
Losing the System's Setup Configuration.....	41
When the System Becomes Unstable	41
3.2 Technical Support Procedures	43
3.3 Frequently Asked Questions	44
3.4 Battery Removal and Installation	45
Battery Removal.....	45
Proper Battery Disposal	45
Battery Installation.....	45
3.5 Returning Merchandise for Service.....	46

Chapter 4 BIOS

4.1 Introduction.....	47
Starting the Setup Utility	47
4.2 Main Setup	48
4.3 Advanced.....	50
4.4 Event Logs	73
4.5 IPMI	75
4.6 Security.....	77
4.7 Boot	79
4.8 Save & Exit.....	82

Appendix A BIOS Codes**Appendix B Software Installation**

B.1 Installing Software Programs86

B.2 SuperDoctor® 5.....87

Appendix C Standardized Warning Statements

Battery Handling.....88

Product Disposal90

Appendix D UEFI BIOS Recovery

Chapter 1

Introduction

Congratulations on purchasing your computer motherboard from an industry leader. Supermicro boards are designed to provide you with the highest standards in quality and performance.

Important Links

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

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wftp/driver>
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm
- A secure data deletion tool designed to fully erase all data from storage devices can be found at our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wftp/utility/Lot9_Secure_Data_Deletion_Utility/
- If you have any questions, please contact our support team at: support@supermicro.com

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

Figure 1-1. B2SC2-TF Motherboard Image




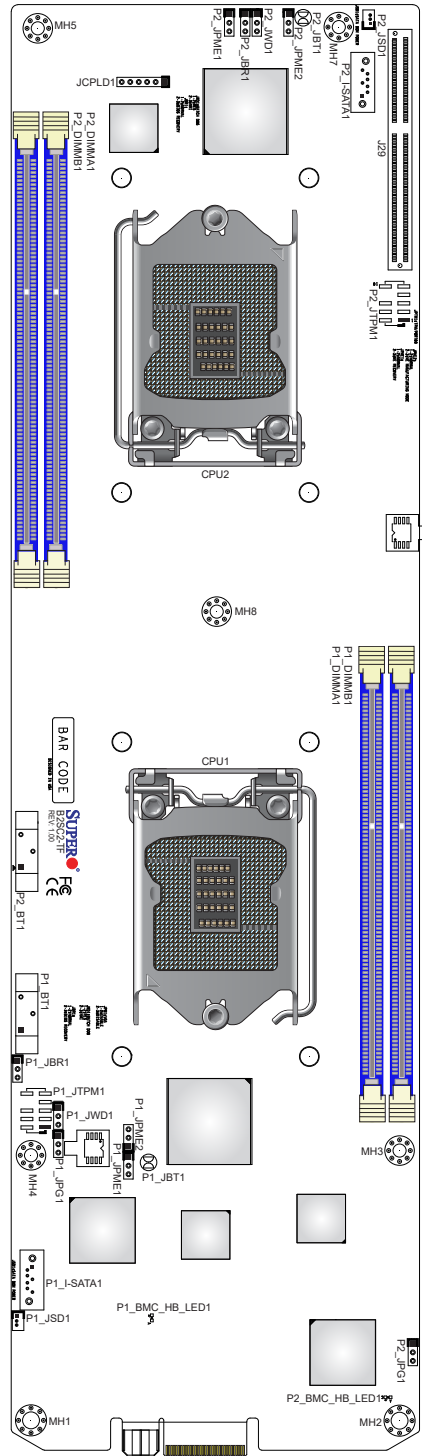
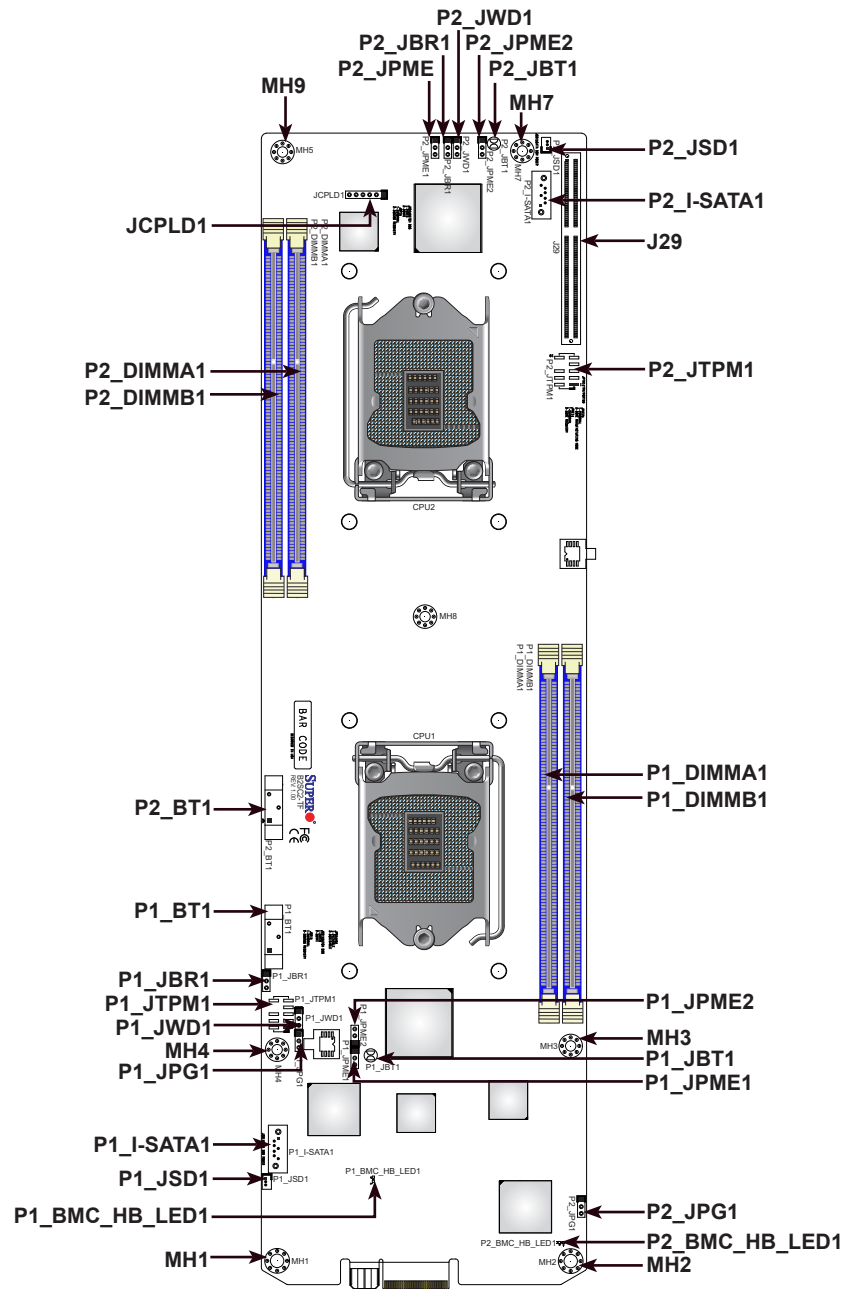
 **Note:** All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.

Figure 1-2. B2SC2-TF Motherboard Layout
(not drawn to scale)



Note: Components not documented are for internal testing only.

Quick Reference


 Notes:

- See Chapter 2 for detailed information on jumpers, I/O ports, and JF1 front panel connections.
- "1" indicates the location of Pin 1.
- Jumpers/LED indicators not indicated are used for testing only.

Quick Reference Table

Jumper	Description	Default Setting
P1_JBR1, P2_JBR1	BIOS Recovery (Node 1, Node 2)	Pins 1-2 (Normal)
P1_JBT1, P2_JBT1	CMOS Clear (Node 1, Node 2)	Open (Normal)
P1_JPG1, P2_JPG1	VGA Enable/Disable (Node 1, Node 2)	Pins 1-2 (Enabled)
P1_JPME1, P2_JPME1	ME Recovery Node (Node 1, Node 2)	Pins 1-2 (Normal)
P1_JPME2, P2_JPME2	Manufacturing Mode (Node 1, Node 2)	Pins 1-2 (Normal)
P1_JWD1, P2_JWD1	Watch Dog (Node 1, Node 2)	Pins 1-2 (Reset)


LED	Description	Status
P1_BMC_HB_LED1 P2_BMC_HB_LED2	Heartbeat LED (Node 1, Mode 2)	Blinking Green: BMC Normal

Connector	Description
J29	NVMe Front Panel BPN Connector
P1_BT1, P2_BT1	Onboard Battery (Node 1, Node 2)
P1_I-SATA1, P2_I-SATA1	SATA 3.0 Ports (Node 1, Node 2)
P1_JSD1, P2_JSD1	SATA DOM Power (Node 1, Node 2)
P1_JTPM1, P2_JTPM1	Trusted Platform Module/Port 80 Connector (Node 1, Node 2)
MH1 - MH5 MH7, MH8	Mounting Holes



Note: Please go to the following link for more information on TPM: <http://www.super-micro.com/manuals/other/TPM.pdf>

Motherboard Features

Motherboard Features	
CPU	
<ul style="list-style-type: none"> Intel Xeon E-2100/E-2200 processor in an LGA1151 socket 	
Memory	
<ul style="list-style-type: none"> Up to 64GB of DDR4 ECC UDIMM with speeds of up to 2666MHz in two slots per node. 	
DIMM Size	
<ul style="list-style-type: none"> 4GB, 8GB, 16GB, 32GB. Each node supports up to 64GB. 	
	Note: For the latest CPU/memory updates, please refer to our website at http://www.supermicro.com/products/motherboard .
Chipset	
<ul style="list-style-type: none"> Intel PCH C246 	
Network Controller	
<ul style="list-style-type: none"> Broadcom BCM57414 10G Ethernet 	
BaseBoard Management Controller (BMC)	
<ul style="list-style-type: none"> ASpeed AST 2500 	
Graphics	
<ul style="list-style-type: none"> Graphics controller via ASpeed 2500 BMC 	
I/O Devices	
<ul style="list-style-type: none"> SATA 3.0 PCI-E 3.0 NVMe 	<ul style="list-style-type: none"> Supports one SATA-III SATA DOM per node Two U.2 NVMe SSD per node
BIOS	
<ul style="list-style-type: none"> 128 Mb SPI AMI BIOS® SM Flash UEFI BIOS ACPI 3.0, SMBIOS 2.7, PCI F/W 3.0, BIOS Rescue hot-key, SPI dual/quad speed support, RTC Wakeup 	
Power Management	
<ul style="list-style-type: none"> ACPI Power Management (S5) Power-on mode for AC power recovery Wake-On-LAN (JWOL) 	



Note: The table above is continued on the next page.

Motherboard Features	
System Health Monitoring	
	<ul style="list-style-type: none">• Onboard voltage monitoring for VBAT, 12V, 5V, 5VSB, 3.3VCC, 3.3VSB, Vcpu, VDIMMABCD, VCCSA, VCCIO, 1.8V PCH, 1.05V PCH• CPU Thermal Trip support
Fan Control	
	<ul style="list-style-type: none">• Low noise fan speed control
System Management	
	<ul style="list-style-type: none">• CPU 3+2 phase switching voltage regulator• PECL (Platform Environment Control Interface)/TSI• UID (Unit Identification)/Remote UID• System resource alert via SuperDoctor® 5• SuperDoctor® 5, Watch Dog, NMI• IPMIView, SMCIPMITOOL, IPMICFG
LED Indicators	
	<ul style="list-style-type: none">• Power/Suspend-state indicator LED• UID/remote UID• LAN activity LED
Dimensions	
	<ul style="list-style-type: none">• 4.8" (W) x 18" (L) (121.9mm x 457.2mm)

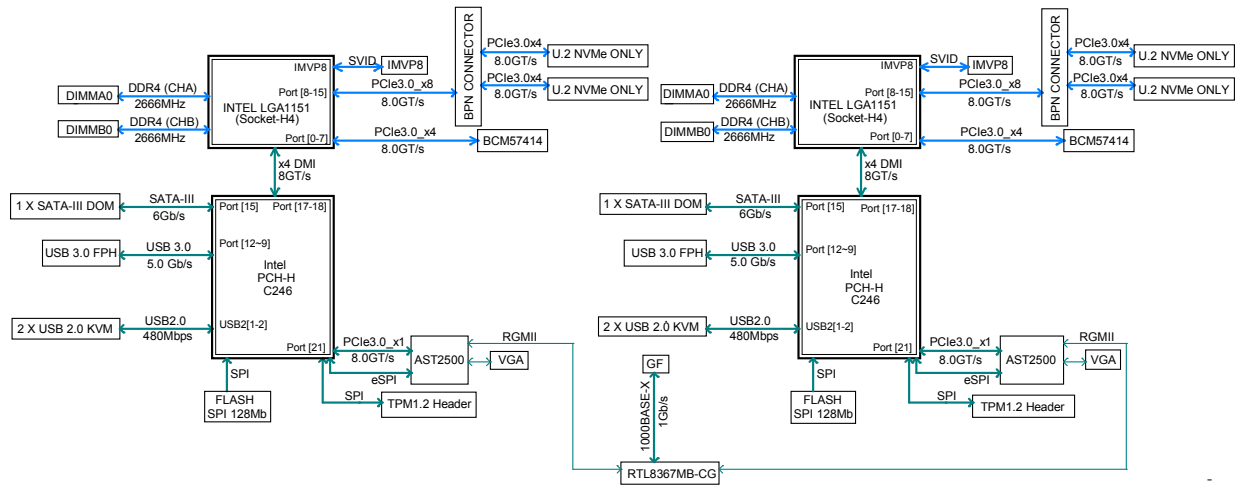



Note 1: The CPU maximum thermal design power (TDP) is subject to chassis and heatsink cooling restrictions. For proper thermal management, please check the chassis and heatsink specifications for proper CPU TDP sizing.

Note 2: For IPMI configuration instructions, please refer to the Embedded IPMI Configuration User's Guide available at <http://www.supermicro.com/support/manuals/>.

Note 3: It is strongly recommended that you change BMC log-in information upon initial system power-on. The manufacture default username is ADMIN and the password is ADMIN. For proper BMC configuration, please refer to http://www.supermicro.com/products/info/files/IPMI/Best_Practices_BMC_Security.pdf

Figure 1-3.
System Block Diagram



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

1.1 Processor and Chipset Overview

Built upon the functionality and capability of the Intel Xeon E-2100/E-2200 processor (LGA1151) and the Intel PCH C246, the B2SC2-TF motherboard offers maximum I/O expandability, energy efficiency, and data reliability in a 14-nm process architecture, and is optimized for embedded storage solutions, networking applications, or cloud-computing platforms.

The Intel Xeon E-2100/E-2200 and PCH C246 platform supports the following features:

- ACPI Power Management Logic Support Rev. 4.0a
- SATA 3.0 with transfer rates of up to 6 Gb/s
- DDR4 ECC Memory support
- Intel Turbo Boost Technology
- Intel Trusted Execution Technology (Intel TXT)
- Intel Rapid Storage Technology
- Intel Virtualization Technology for Directed I/O (Intel VT-d)

1.2 Special Features

This section describes the health monitoring features of the B2SC2-TF motherboard. The motherboard has an onboard System Hardware Monitor chip that supports system health monitoring.

Recovery from AC Power Loss

The Basic I/O System (BIOS) provides a setting that determines how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the power switch to turn it back on), or for it to automatically return to the power-on state. See the Advanced BIOS Setup section for this setting. The default setting is Last State.

1.3 System Health Monitoring

This section describes the health monitoring features of the B2SC2-TF motherboard. The motherboard has an onboard Baseboard Management Controller (BMC) chip that supports system health monitoring. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen.

Onboard Voltage Monitors

The onboard voltage monitor will continuously scan crucial voltage levels. Once a voltage becomes unstable, it will give a warning or send an error message to the screen.

Environmental Temperature Control

System Health sensors in the BMC monitor the temperatures and voltage settings of onboard processors and the system in real time via the IPMI interface. Whenever the temperature of the CPU or the system exceeds a defined threshold, the MicroBlade cooling fans will dynamically adjust the fan speed RPM to prevent the CPU or the system from overheating.



Note: To avoid possible system overheating, please be sure to provide adequate air-flow to your system.

System Resource Alert

This feature is available when used with SuperDoctor 5[®]. SuperDoctor 5 is used to notify the user of certain system events. For example, you can configure SuperDoctor 5 to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond a predefined range.

1.4 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a computer system including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 8/R2, and Windows 2012/R2 operating systems.

1.5 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates. In areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1.6 Advanced Power Management

The following new advanced power management features are supported by the motherboard.

Intel® Intelligent Power Node Manager (IPNM)

Available when the Supermicro Power Manager (SPM) is installed, Intel's Intelligent Power Node Manager (IPNM) provides your system with real-time thermal control and power management for maximum energy efficiency. Although IPNM Specification Version 2.0/3.0 is supported by the BMC (Baseboard Management Controller), your system must also have IPNM-compatible Management Engine (ME) firmware installed to use this feature.



Note: Support for IPNM 2.0/3.0 support is dependent on the power supply used in the system.

Management Engine (ME)

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

Chapter 2

Installation

2.1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your motherboard, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the 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 and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure that your chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of CMOS onboard battery as specified by the manufacturer. Do not install the CMOS battery upside down, which may result in a possible explosion.

Unpacking

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

2.2 Processor and Heatsink Installation

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

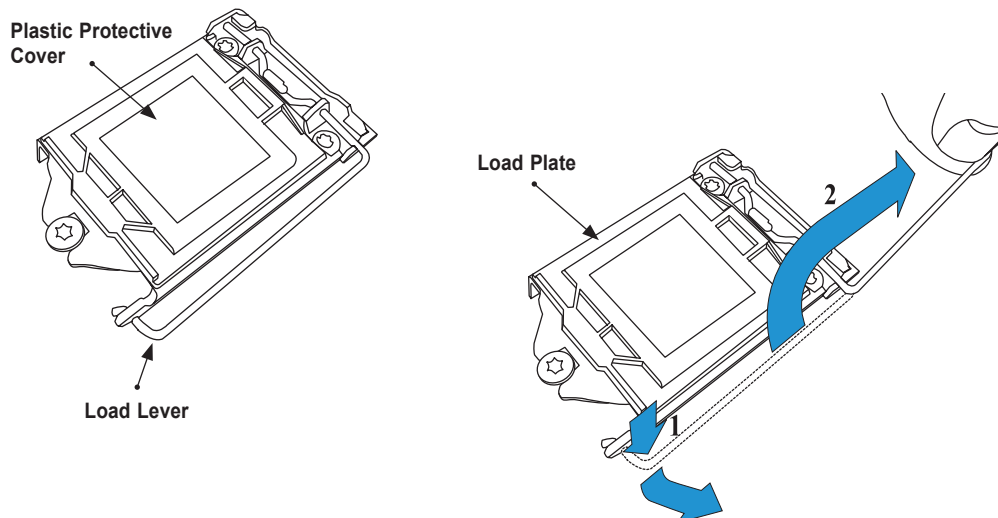


Important:

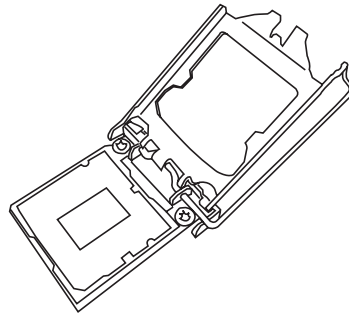
- Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional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

Installing the LGA1151 Processor

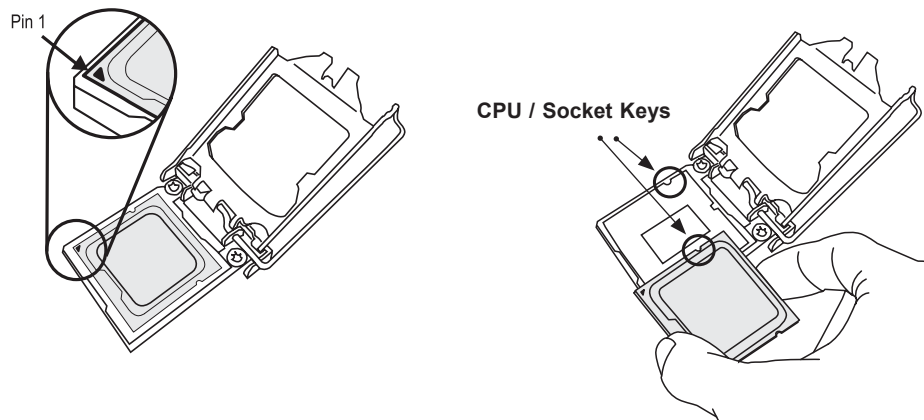
1. Press the load lever down to release the load plate from its locking position.



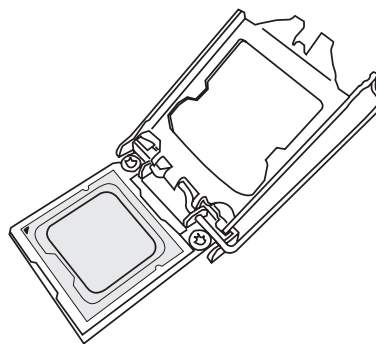
2. Gently lift the load lever to open the load plate. Remove the plastic protective cover. Do not touch the CPU socket contacts.



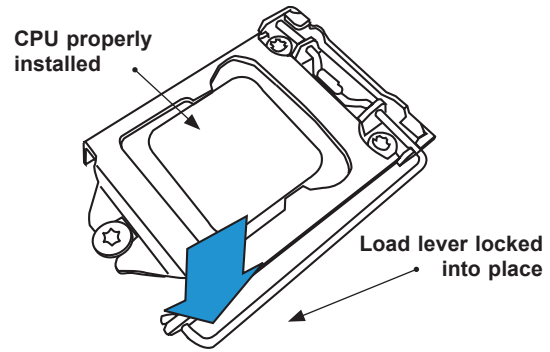
3. Locate the triangle on the CPU and CPU socket, which indicates the location of Pin 1. Holding the CPU by the edges with your thumb and index finger, align the triangle on the CPU with the triangle on the socket. The CPU keys (the semi-circle cutouts) may also be aligned against the socket keys as a guide.



4. Carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, or move it horizontally or vertically to avoid damaging the CPU or socket. Inspect the four corners of the CPU to make sure that the CPU is properly installed.

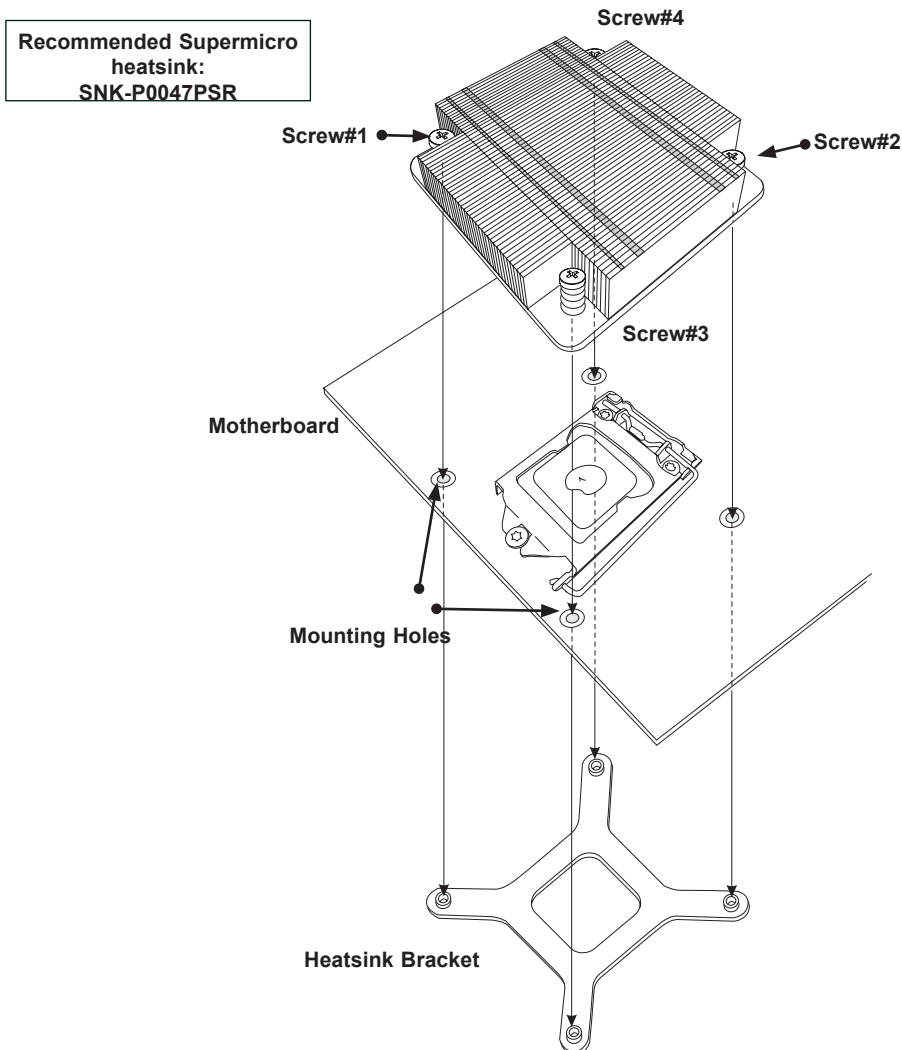


5. Close the load plate, then gently push down the load lever into its locking position.




Installing a Passive CPU Heatsink

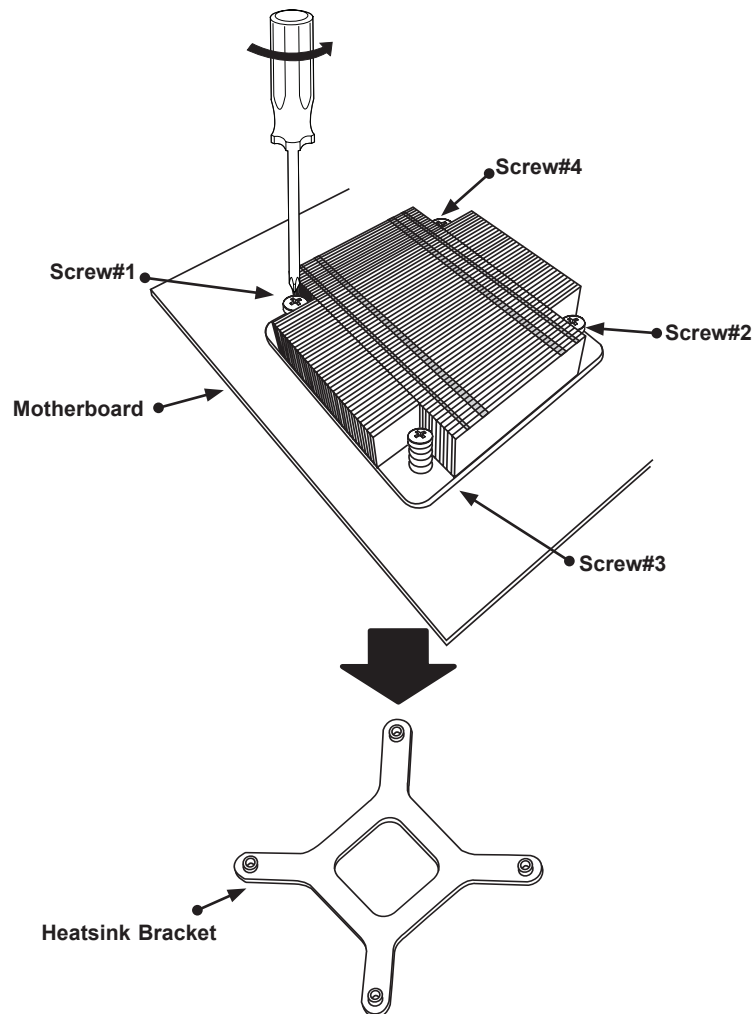
1. Do not apply thermal grease to the heatsink or the CPU; the required amount has already been applied.
2. Align the four holes of the heatsink with the four mounting holes on the motherboard.
3. With a Phillips screwdriver, gradually tighten screws #1, #2, then #3, #4 to assure even pressure. The order of the screws is shown below. To avoid damaging the processor or socket, do not use a force greater than 12 lbf-in when tightening the screw.
4. Examine all corners to ensure the heatsink is firmly attached to the motherboard.



Removing the Heatsink

 **Note:** We do not recommend that the CPU or heatsink be removed. However, if you do need to remove the heatsink, please follow the instructions below to remove the heatsink and prevent damage done to the CPU or other components.

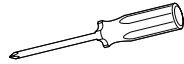
1. Unplug the power connector from the power supply.
2. Unscrew the heatsink screws in the sequence shown below.
3. Gently lift the heatsink up and remove it from the CPU.



2.3 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly.

Tools Needed



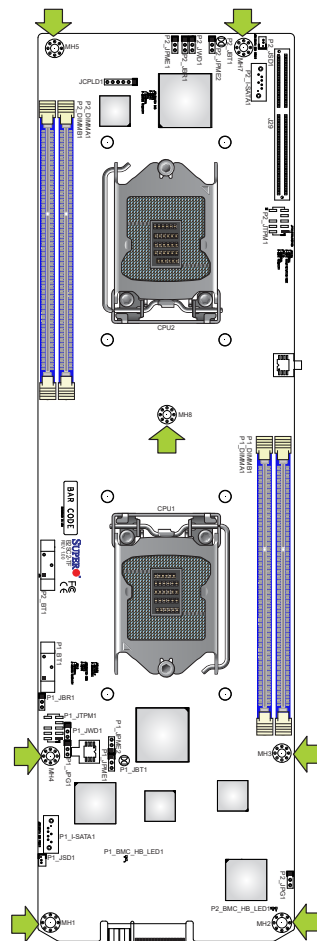
Philips
Screwdriver (1)



Philips Screws (7)



Standoffs (7)
Only if Needed



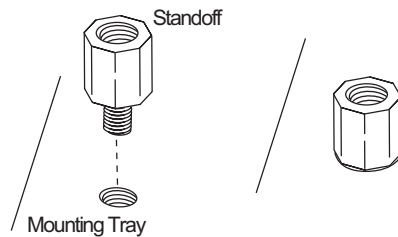
Location of Mounting Holes



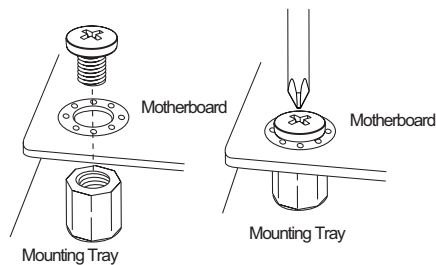
Note: 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.
2) Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

Installing the Motherboard into the Mounting Tray

1. Locate the mounting holes on the motherboard and the mounting tray. Refer to the previous page for the mounting holes.
2. Install the standoffs on the mounting tray. Align the mounting holes on the motherboard against the mounting holes on the tray.



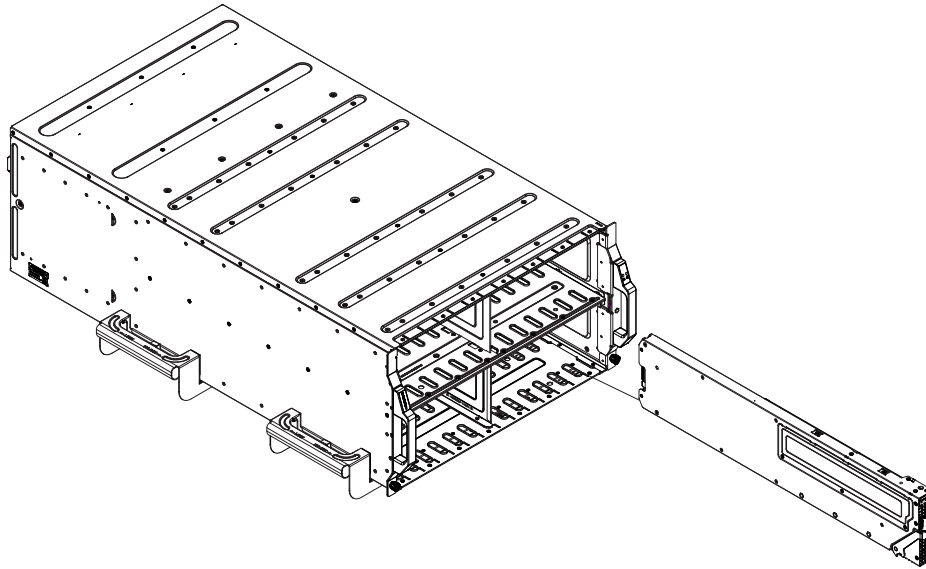
3. Using the Phillips screwdriver, insert a Phillips head #6 screw into a mounting hole on the motherboard and its matching hole on the tray.




4. Repeat step 2 to insert #6 screws to all mounting holes located on the motherboard and tray and securely install the motherboard onto the tray.

Installing the Motherboard into the Microblade Chassis

1. When the motherboard is securely installed on the mounting tray, push the tray into the Microblade chassis as shown below.



2. Once the mounting tray is pushed in the chassis, the connectors on the motherboard's edge will make contact with the chassis' backplane, which provides the connections to the chassis power, network and other I/O devices.

 **Note:** Images displayed are for illustration only. Your chassis or components may look different from those shown in this manual.

2.4 Memory Support and Installation



Note: Check the Supermicro website for recommended memory modules.



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

Memory Support

The B2SC2-TF supports up to 64GB (per node) of DDR4 ECC UDIMM with speeds of up to 2666MHz in two slots. Populating these DIMM slots with a pair of memory modules of the same type and size will result in interleaved memory, which will improve memory performance.

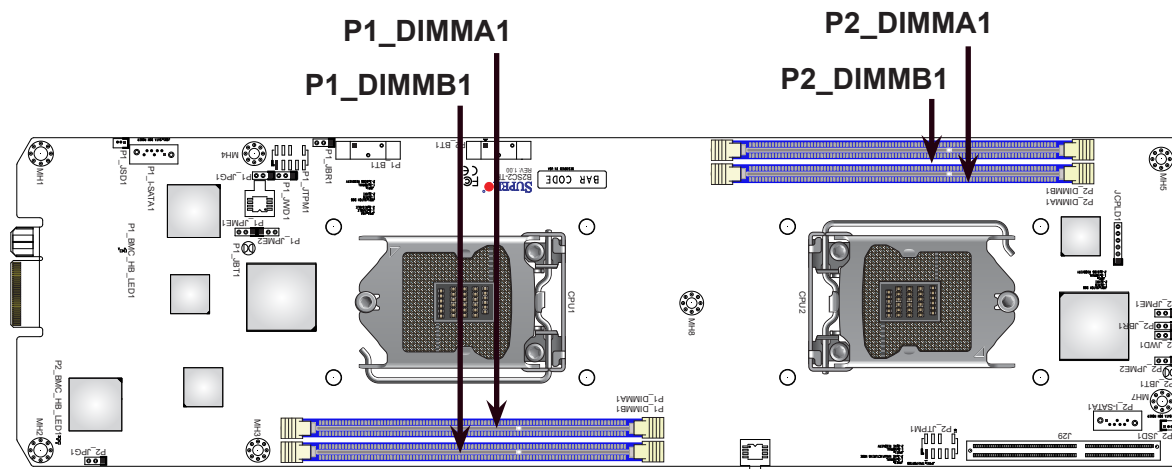


Note: Be sure to use memory modules of the same type and speed. Mixing of memory modules of different types and speeds is not allowed.

DIMM Module Population Configuration

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

Recommended Population (Balanced)		
Node #1		Total Memory (Per Node)
P1-DIMMA1	P1-DIMMB1	
Node #2		
P2-DIMMA1	P2-DIMMB1	
4GB		4GB
4GB	4GB	8GB
8GB		8GB
8GB	8GB	16GB
16GB		16GB
16GB	16GB	32GB
32GB		32GB
32GB	32GB	64GB

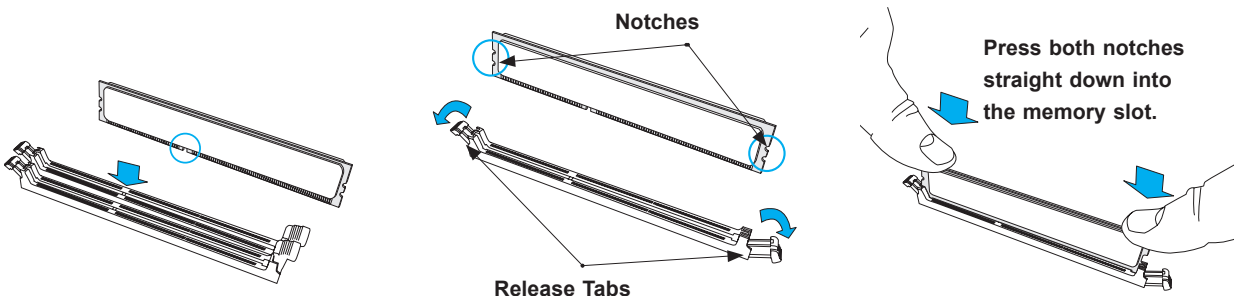
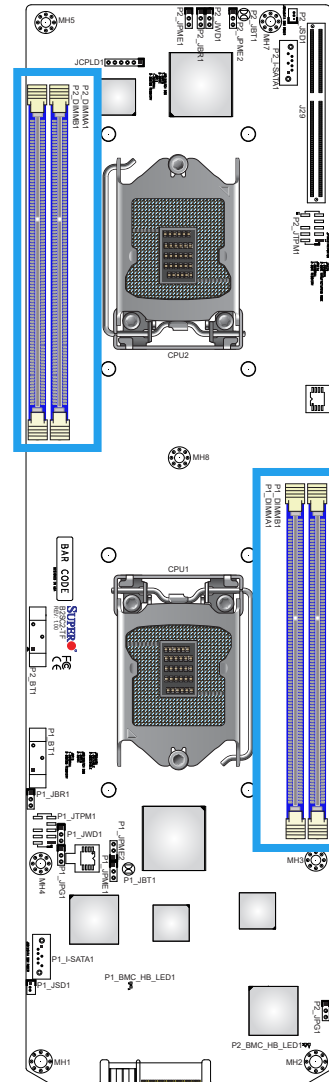


DIMM Installation

1. Insert DIMM modules in the following order: P1_DIMMBA1, P1_DIMMB1, then P2_DIMMA1, P2_DIMMB1. For the system to work properly, please use memory modules of the same type and speed.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
3. Align the key of the DIMM module with the receptive point on the memory slot.
4. Align the notches on both ends of the module against the receptive points on the ends of the slot.
5. Press the notches on both ends of the module straight down into the slot until the module snaps into place.
6. Press the release tabs to the lock positions to secure the DIMM module into the slot.

DIMM Removal

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

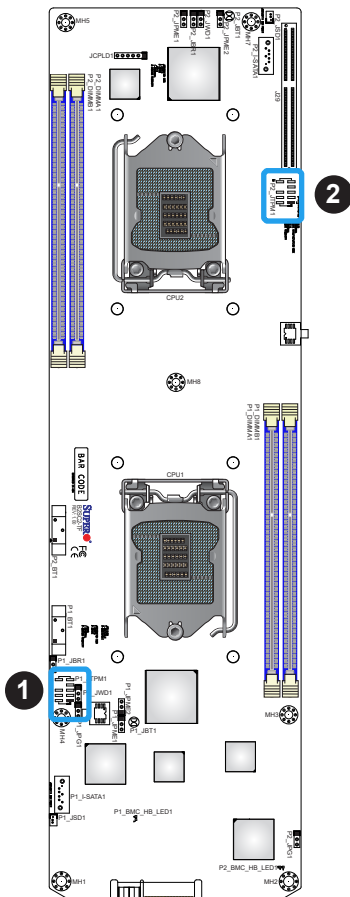


2.5 Connectors

TPM Headers

There are two TPM headers on the motherboard. P1_JTPM1 is for Node 1 and P2_JTPM1 is for Node 2. A TPM is a security device that supports encryption and authentication in hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. Please go to the following link for more information on TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>

Trusted Platform Module Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+3.3V	2	SPI_CS#
3	RESET#	4	SPI_MISO
5	SPI_CLK	6	GND
7	SPI_MOSI	8	NC
9	+3.3V Stdbby	10	SPI_IRQ#

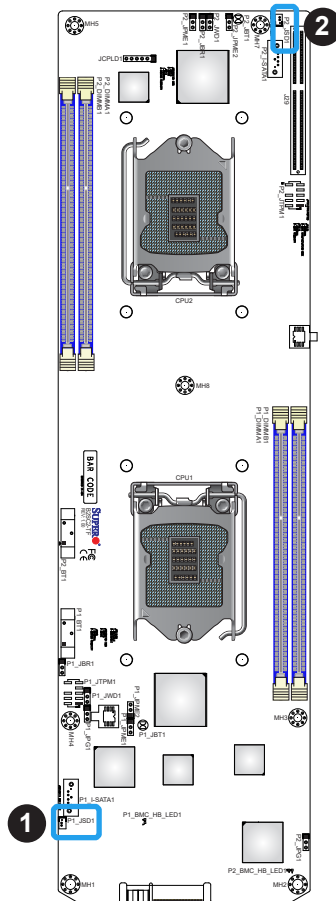


1. P1_JTPM1 - TPM Module for Node 1
2. P2_JTPM1 - TPM Module for Node 2

Disk-On-Module Power Connector

The Disk-On-Module (DOM) power connectors at P1_JSD1 and P2_JSD1 provide 5V power to a solid-state DOM storage device connected to one of the SATA ports. Refer to the table below for pin definitions.

DOM Power Pin Definitions	
Pin#	Definition
1	5V
2	Ground
3	Ground

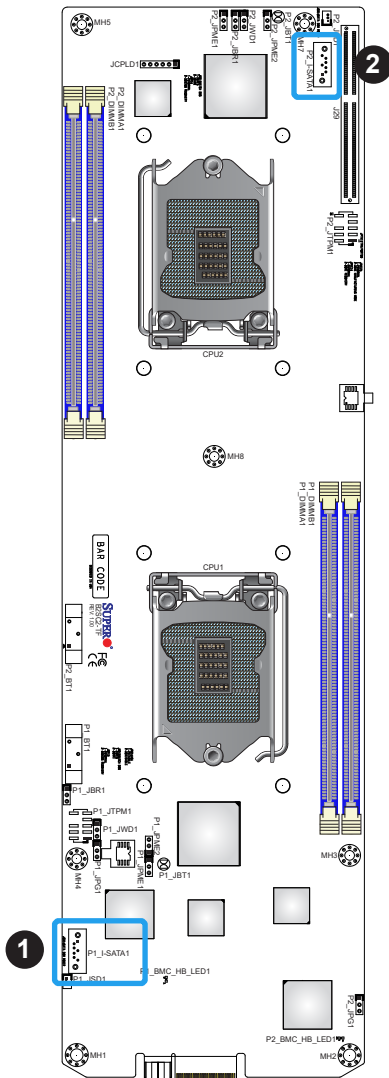


1. P1_JSD1 - DOM for Node 1
2. P2_JSD1 - DOM for Node 2

SATA Ports

The B2SC2-TF has two SATA 3.0 ports. P1_I-SATA1 is for Node 1 and P2_I-SATA1 is for Node 2.

SATA 3.0 Port Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground




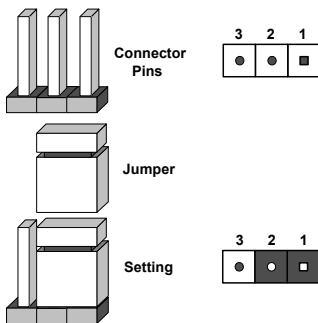
1. P1_I-SATA1 - SATA port for Node 1
2. P2_I-SATA1 - SATA port for Node 2

2.6 Jumper Settings

How Jumpers Work

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

 **Note:** On two-pin jumpers, Closed means the jumper is on and Open means the jumper is off the pins.



CMOS Clear

P1_JBT1 (for Node 1) and P2_JBT1 (for Node 2) are 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

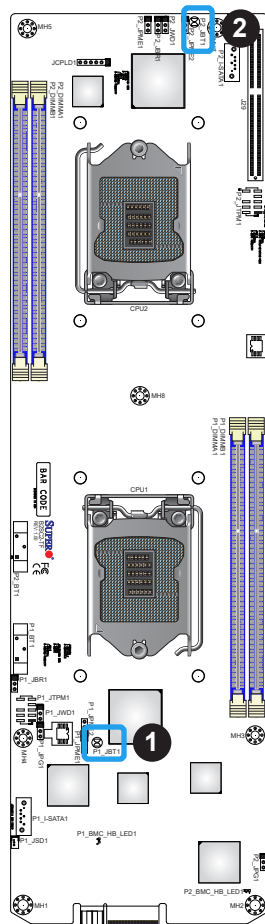
1. First power off the server blade system.
2. Remove the server blade from the MicroBlade enclosure.
3. Remove the onboard battery from the motherboard.
4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.
5. Remove the screwdriver (or shorting device).
6. Reinstall the server blade into the MicroBlade enclosure.



Note: Clearing CMOS will also clear all passwords.



JBT1 contact pads



1. P1_JBT1 - Clear CMOS for Node 1
2. P2_JBT1 - Clear CMOS for Node 2

Management Engine (ME) Recovery

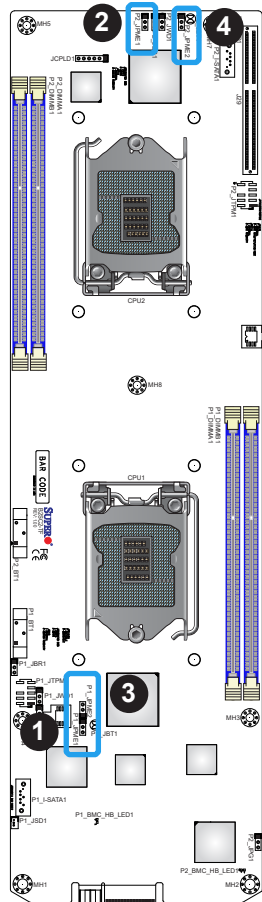
Use P1_JPME1 (for Node 1) and P2_JPME1 (for Node 2) to select ME Firmware Recovery mode, which will limit resource allocation for essential system operation only in order to maintain normal power operation and management. In the single operation mode, online upgrade will be available via Recovery mode. Refer to the table below for jumper settings.

ME Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	ME Recovery

Manufacturing Mode Select

Close P1_JPME2 (for Node 1) and P2_JPME2 (for Node 2) to bypass SPI flash security and force the system to use the Manufacturing Mode, which will allow you to flash the system firmware from a host server to modify system settings. Refer to the table below for jumper settings.


Manufacturing Mode Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacturing Mode



1. P1_JPME1 - ME Recovery for Node 1
2. P2_JPME1 - ME Recovery for Node 2
3. P1_JPME2 - Manufacturing Mode Select for Node 1
4. P2_JPME2 - Manufacturing Mode Select for Node 2

Watch Dog

P1_JWD1 (for Node 1) and P2_JWD1 (for Node 2) control the Watch Dog function. Watch Dog is a monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause Watch Dog to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. Watch Dog must also be enabled in BIOS. The default setting is Reset.

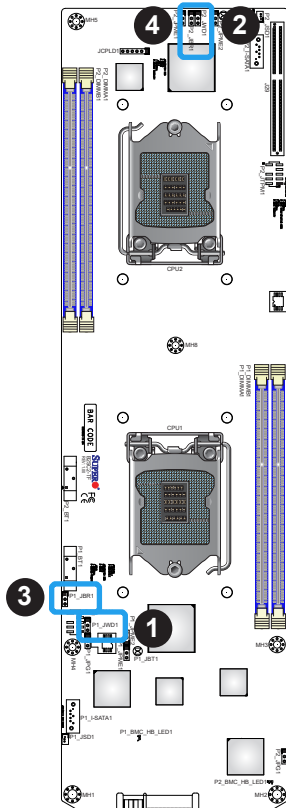
 **Note:** When Watch Dog is enabled, the user needs to write their own application software to disable it.

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

BIOS Recovery

Close pins 2 and 3 of jumper P1_JBR1 (for Node 1) and P2_JBR1 (for Node 2) for BIOS recovery. The default setting is on pins 1 and 2 for normal operation. See the table below for jumper settings.

BIOS Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	BIOS Recovery

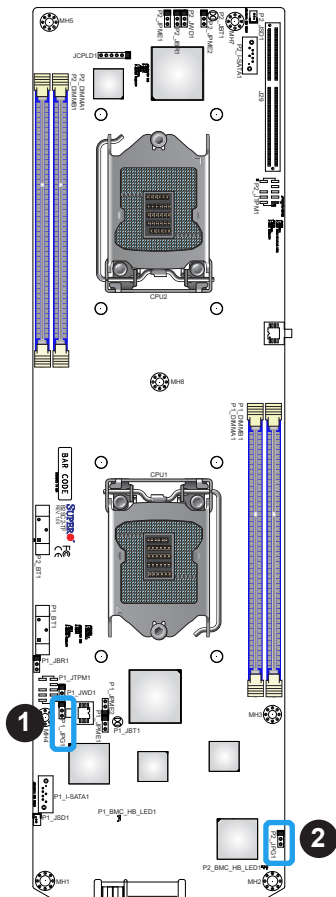


1. P1_JWD1 - Watch Dog for Node 1
2. P2_JWD1 - Watch Dog for Node 2
3. P1_JBR1 - BIOS Recovery for Node 1
4. P2_JBR1 - BIOS Recovery for Node 2

VGA Enable/Disable

P1_JPG1 (for Node 1) and P2_JPG1 (for Node 2) allow you to enable or disable the VGA port using the onboard graphics controller. The default setting is Enabled.

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



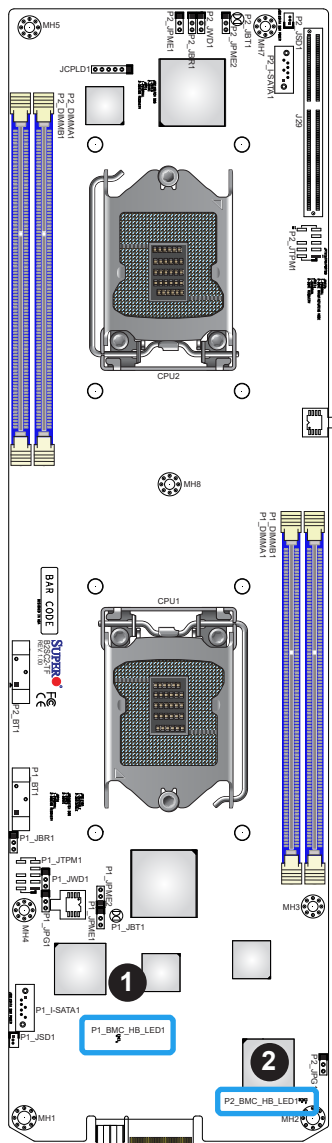
1. P1_JPG1 - VGA Enable/Disable for Node 1
2. P2_JPG1 - VGA Enable/Disable for Node 2

2.7 LED Indicators

BMC Heartbeat LED

P1_BMC_HB_LED1 is the BMC heartbeat LED for Node 1, and P2_BMC_HB_LED1 is the BMC heartbeat LED for Node 2. When the LED is blinking green, BMC is functioning normally. See the table below for the LED status.

Onboard Power LED Indicator	
LED Color	Definition
Blinking Green	BMC Normal



1. BMC Heartbeat LED for Node 1
2. BMC Heartbeat LED for Node 2

Chapter 3

Troubleshooting

3.1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components.

Before Power On

1. Check that the power LED on the motherboard is on.
2. Make sure that the power connector is connected to your power supply.
3. Make sure that no short circuits exist between the motherboard and chassis.
4. Disconnect all cables from the motherboard, including those for the keyboard and mouse.
5. Remove all add-on cards.
6. Install a CPU, a heatsink*, and connect the internal speaker and the power LED to the motherboard. Check all jumper settings as well. (Make sure that the heatsink is fully seated.)
7. Use the correct type of onboard CMOS battery (CR2032) as recommended by the manufacturer. To avoid possible explosion, do not install the CMOS battery upside down.

No Power

1. Make sure that no short circuits exist between the motherboard and the chassis.
2. Verify that all jumpers are set to their default positions.
3. Check that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to Appendix A for details on beep codes.



Note: If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to Appendix B.

System Boot Failure

If the system does not display POST (Power-On-Self-Test) or does not respond after the power is turned on, check the following:

1. Check for any error beep from the motherboard speaker.
 - If there is no error beep, try to turn on the system without DIMM modules installed. If there is still no error beep, replace the motherboard.
 - If there are error beeps, clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS Clear Jumper (JBT1). Refer to chapter 2.
2. Remove all components from the motherboard, especially the DIMM modules. Make sure that system power is on and that memory error beeps are activated.
3. Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure in this Chapter.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.
2. Confirm that you are using the correct memory. Also, it is recommended that you use the same memory type and speed for all DIMMs in the system. See Section 2.4 for memory details.
3. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.
4. Check the power supply voltage 115V/230V switch.

Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1.5 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the setup configuration problem, contact your vendor for repairs.

When the System Becomes Unstable

A. If the system becomes unstable during or after OS installation, check the following:

1. CPU/BIOS support: Make sure that your CPU is supported and that you have the latest BIOS installed in your system.
2. Memory support: Make sure that the memory modules are supported by testing the modules using memtest86 or a similar utility.



Note: Refer to the product page on our website at <http://www.supermicro.com> for memory and CPU support and updates.

3. HDD support: Make sure that all hard disk drives (HDDs) work properly. Replace the bad HDDs with good ones.
4. System cooling: Check the system cooling to make sure that all heatsink fans and CPU/system fans, etc., work properly. Check the hardware monitoring settings in the IPMI to make sure that the CPU and system temperatures are within the normal range. Also check the front panel Overheat LED and make sure that it is not on.
5. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Please refer to our website for more information on the minimum power requirements.
6. Proper software support: Make sure that the correct drivers are used.

B. If the system becomes unstable before or during OS installation, check the following:

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as CD/DVD and CD/DVD-ROM.
2. Cable connection: Check to make sure that all cables are connected and working properly.

3. Using the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with a CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in Section A above for proper troubleshooting procedures.
4. Identifying bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

3.2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, we do not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please review the 'Troubleshooting Procedures' and 'Frequently Asked Questions' (FAQs) sections in this chapter or see the FAQs on our website before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website. **Note:** Not all BIOS can be flashed depending on the modifications to the boot block code.
3. If you still cannot resolve the problem, include the following information when contacting us for technical support:
 - Motherboard model and PCB revision number
 - BIOS release date/version (this can be seen on the initial display when your system first boots up)
 - System configuration

An example of a Technical Support form is posted on our website.

Distributors: For immediate assistance, please have your account number ready when contacting our technical support department by e-mail.

3.3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The B2SC2-TF motherboard supports up to 64GB (per node) of DDR4 ECC DIMM of speeds up to 2666MHz in two slots. See Section 2.2 for details on installing memory.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at <http://www.supermicro.com>. Please check our BIOS warning message and the information on how to update your BIOS on our website. Select your MicroBlade Server Blade model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable USB device. Run the batch file using the format FLASH.BAT filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot.

Question: Why can't I turn off the power using the momentary power on/off switch?

Answer: The instant power off function is controlled in BIOS by the Power Button Mode setting. When the On/Off feature is enabled, the motherboard will have instant off capabilities as long as the BIOS has control of the system. When the Standby or Suspend feature is enabled or when the BIOS is not in control such as during memory count (the first screen that appears when the system is turned on), the momentary on/off switch must be held for more than four seconds to shut down the system. This feature is required to implement the ACPI features on the motherboard.

3.4 Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off the server blade system and remove the blade from the MicroBlade enclosure.
2. Locate the onboard battery as shown below.
3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.
4. Remove the battery.

Proper Battery Disposal

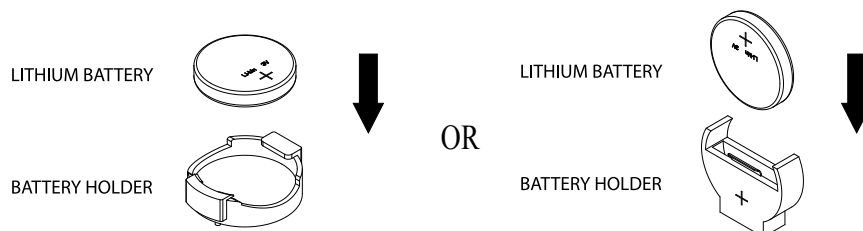
Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency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

Battery Installation

1. To install an onboard battery, follow the steps 1 & 2 above and continue below:
2. Identify the battery's polarity. The positive (+) side should be facing up.
3. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.



Important: When replacing a battery, be sure to only replace it with the same type.



3.5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.


During the warranty period, contact your distributor first for any product problems.

Chapter 4

BIOS

4.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the B2SC2-TF motherboard. The BIOS is stored on a chip and can be easily upgraded using a flash 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 our website for any changes to BIOS that may not be reflected in this manual.

Starting the Setup Utility

To enter the BIOS Setup Utility, hit the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.) Each main BIOS menu option is described in this manual.

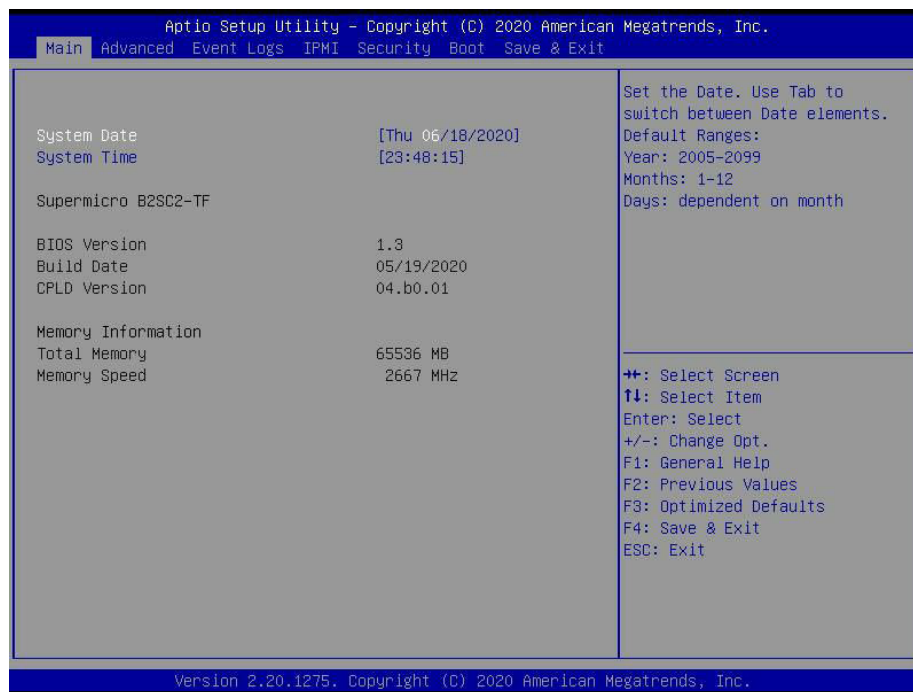
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

A " ►" indicates a submenu. Highlighting such an item and pressing the <Enter> key will open the list of settings within that submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.


4.2 Main Setup

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



System Date/System Time

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

 **Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00. The date's default value is 01/01/2015 after RTC reset.

Supermicro B2SC2-TF

BIOS Version

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

Build Date

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

CPLD Version

Memory Information

Total Memory

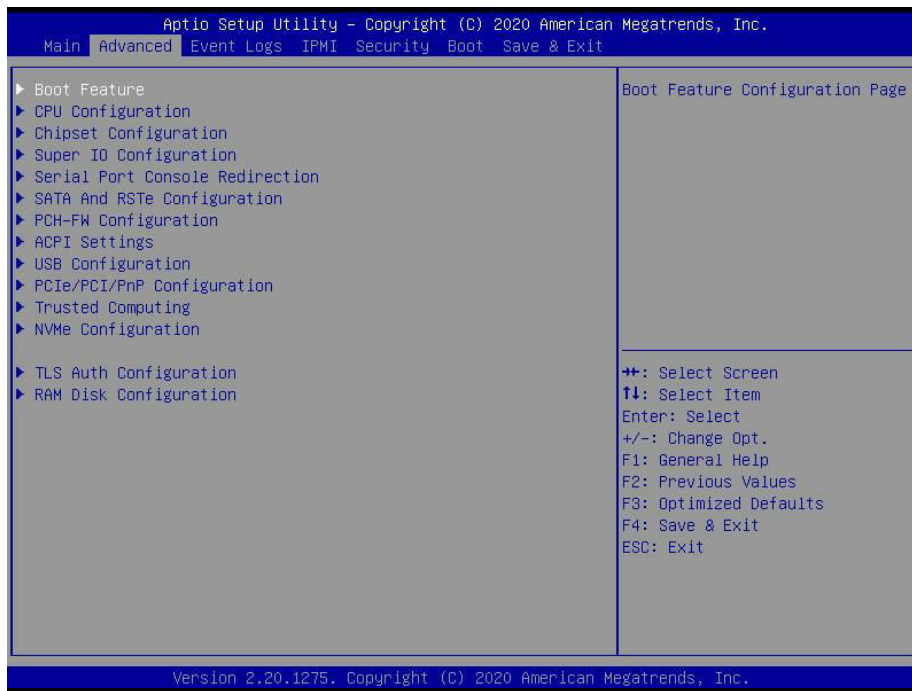
This item displays the total size of memory available in the system.

Memory Speed

This item displays the memory speed.

4.3 Advanced

Use the arrow keys to select Boot Setup and press <Enter> to access the submenu items.



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

► Boot Feature

Quiet Boot

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

Option ROM Messages

Use this feature to set the display mode for the Option ROM. The options are **Force BIOS** and Keep Current.

Bootup NumLock State

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

Wait For "F1" If Error

Use this feature to force the system to wait until the F1 key is pressed if an error occurs. The options are Disabled and **Enabled**.

INT19 Trap Response

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

Re-try Boot

If this item is enabled, the BIOS will automatically reboot the system from a specified boot device after its initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

►Power Configuration**Watch Dog Function**

If enabled, the Watch Dog Timer will allow the system to reset or generate NMI based on jumper settings when it is expired for more than five minutes. The options are Disabled and **Enabled**.

Power Button Function

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

DeepSx Power Policies

Use this feature to configure the Advanced Configuration and Power Interface (ACPI) settings for the system. Enable S4 to use Hibernation mode (Suspend to Disk) so that all data stored in of the main memory can be saved in a non-volatile memory area such as in a hard drive and then power down the system. Enable S5 to power off the whole system except the power supply unit (PSU) and keep the power button alive so that the user can wake up the system by using an USB keyboard or mouse. The options are **Disabled** and Enabled in S4-S5.

Restore on AC Power Loss

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

► CPU Configuration

The following CPU information will display:

- Displays the CPU type and speed
- CPU Signature
- Microcode Revision
- CPU Speed
- L1 Data Cache
- L1 Instruction Cache
- L2 Cache
- L3 Cache
- L4 Cache
- VMX
- SMX/TXT

CPU Flex Ratio Override

Use this feature to enable or disable the CPU Flex Ratio. The options are **Disabled** and **Enabled**.

CPU Flex Ratio Settings

If the feature above is **Enabled**, this feature is available for configuration. Use this feature to set the flex ratio value. The default is

Hardware Prefetcher (Available when supported by the CPU)

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

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

The CPU prefetches the cache line for 64 bytes if this feature is set to **Disabled**. The CPU prefetches both cache lines for 128 bytes as comprised if this feature is set to **Enabled**.

Intel Virtualization Technology

Select Enable to use Intel Virtualization Technology so that I/O device assignments will be reported directly to the VMM (Virtual Memory Management) through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Disabled and **Enabled**.

Active Processor Cores

This feature determines how many CPU cores will be activated for each CPU. When all is selected, all cores in the CPU will be activated. Please refer to the Intel website for more information. The options are **All** and 1, 2, 3, 4, 5, 6, and 7.

Hyper-threading (Available when supported by the CPU)

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

BIST

Use this feature to enable or disable the built-in self test during reset. The options are **Disabled** and Enabled.

CPU AES

Select Enabled to enable Intel CPU Advanced Encryption Standard (AES) Instructions for CPU to enhance data integrity. The options are Disabled and **Enabled**.

► CPU Power Management Control

Boot Performance Mode

This feature allows the user to select the performance state that the BIOS will set before the operating system handoff. The options are Power Saving, **Max Non-Turbo Performance** and Turbo Performance.

Intel® SpeedStep™

Intel SpeedStep Technology allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disabled and **Enabled**.

Intel® Speed Shift Technology

Use this feature to enable or disable Intel Speed Shift Technology support. When this feature is enabled, the Collaborative Processor Performance Control (CPPC) version 2 interface will be available to control CPU P-States. The options are Disabled and **Enabled**.

Turbo Mode

Select Enabled for processor cores to run faster than the frequency specified by the manufacturer. The options are Disabled and **Enabled**.

MonitorMWait

Select Enabled to enable the Monitor/Mwait instructions. The Monitor instructions monitors a region of memory for writes, and MWait instructions instruct the CPU to stop until the monitored region begins to write. The options are **Disabled** and Enabled.

C-States

Use this feature to enable the C-State of the CPU. The options are Disabled and **Enabled**.

Enhanced C-states

Use this feature to enable the enhanced C-State of the CPU. The options are Disabled and **Enabled**.

C-State Auto Demotion

Use this feature to prevent unnecessary excursions into the C-states to improve latency. The options are Disabled, C1, C3, and **C1 and C3**.

C-State Un-demotion

This feature allows the user to enable or disable the un-demotion of C-State. The options are Disabled, C1, C3, and **C1 and C3**.

Package C-State Demotion

Use this feature to enable or disable the Package C-State demotion. The options are **Disabled** and Enabled.

Package C-State Un-demotion

Use this feature to enable or disable the Package C-State un-demotion. The options are **Disabled** and Enabled.

CState Pre-Wake

This feature allows the user to enable or disable the C-State Pre-Wake. The options are Disabled and **Enabled**.

Package C-State Limit

Use this feature to set the Package C-State limit. The options are C0/C1, C2, C3, C6, C7, C7s, C8, and **Auto**.

ACPI T-States

Select Enabled to support CPU throttling by the operating system to reduce power consumption. The options are **Disabled** and Enabled.

SMC Power Profile

Use this feature to select a power profile. The options are Maximum, **Standard**, Optimal, and Power Saving.

► Chipset Configuration

Warning: Setting the wrong values in the following features may cause the system to malfunction.

► System Agent (SA) Configuration

The following System Agent information will display:

- System Agent Bridge Name
- SA PCIe Code Version
- VT-d

► Memory Configuration

The following memory information will display:

- Memory RC Version
- Memory Frequency
- Total Memory
- VDD
- DIMMA1
- DIMMB1

Maximum Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1067, 1200, 1333, 1400, 1600, 1800, 1867, 2000, 2133, 2200, 2400, 2600, 2667, 2800, 2933, 3000, 3200, 3400, 3467, 3600, 3733, 3800, 4000, 4200, 4267, 4400, 4533, 4600, 4800, 5000, 5067, 5200, 5333, 5400, 5600, and 5800.

ECC Support

Use this feature to enable or disable ECC memory support. The options are Disabled and **Enabled**.

Max TOLUD

This feature sets the maximum TOLUD value, which specifies the "Top of Low Usable DRAM" memory space to be used by internal graphics devices, GTT Stolen Memory, and TSEG, respectively, if these devices are enabled. The options are **Dynamic**, 1 GB, 1.25 GB, 1.5 GB, 1.75 GB, 2 GB, 2.25 GB, 2.5 GB, 2.75 GB, 3 GB, 3.25 GB, and 3.5 GB.

Memory Scrambler

Select Enabled to enable memory scrambler support. The options are Disabled and **Enabled**.

Fast Boot

Use this feature to enable or disable fast path through the memory reference code. The options are **Enabled** and Disabled.

REFRESH_2X_MODE

Use this feature to select the refresh mode. The options are **Disabled**, 1- Enabled for WARM or HOT, and 2- Enabled HOT only.

Late Command Training Relaxed

Use this feature to enable or disable JEDEC reset during late command training. The options are Enabled and **Disabled**.

► DMI/OPI Configuration

The following DMI information will display:

- DMI

DMI Link ASPM Control

Use this feature to set the ASPM (Active State Power Management) state on the SA (System Agent) side of the DMI Link. The options are Disabled, L0s, **L1**, and L0sL1.

DMI Extended Sync Control

Use this feature to enable or disable the DMI extended synchronization. The options are **Disabled** and Enabled.

DMI De-emphasis Control

Use this feature to configure the De-emphasis control on DMI. The options are -6dB and **-3.5dB**.

► PEG Port Configuration

PEG Port 0:1:0

Enable Root Port

Use this feature to enable or disable the PCI Express Graphics (PEG) device in the port specified by the user. The options are Disable, Enable, and **Auto**.

Max Link Speed

Use this feature to select PCI-E support for the device installed on the specified port. The options are **Auto**, Gen 1, Gen 2, and Gen 3.

Max Link Width

Use this feature to select the link width. The options are **Auto**, Force X1, Force X2, Force X4, and Force X8.

ASPM

Use this item to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disabled, **Auto**, ASPM L0s, ASPM L1, and ASPM L0s & L1.

De-emphasis Control

Use this feature to configure the De-emphasis control on PEG. The options are -6dB and **-3.5dB**.

PEG0 Slot Power Limit Value

Use this feature to set the upper limit value for the power supplied to a PCI-E device specified by to user. The value should be between 0-255. The default value is **75**.

PEG0 Slot Power Limit Scale

Use this feature to set the scale used for calculating the power limit value for a PCI-E device specified by to user. The options are **1.0x**, 0.1x, 0.01x, and 0.001x.

PEG0 Physical Slot Number

Use this feature to set the slot number for this port. Enter a value to set the port.

Program PCIe ASPM after OPROM

PCIe ASPM, the Active State Power Management for PCI-Express slots, is a power management protocol used to manage power consumption of serial-link devices installed on PCI-Exp slots during a prolonged off-peak time. If this item is set to Enabled, PCI-E ASPM will be programmed after OPROM. If this item is set to Disabled, the PCI-E ASPM will be programmed before OPROM. The options are **Disabled** and Enabled.

VT-d

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

SW Guard Extensions (SGX)

Use this feature to enable or disable the Intel Software Guard Extensions (SGX). SGX is a set of CPU instructions that increases software security. The options are Disabled, **Enabled**, and Software Controlled.

Select Owner EPOCH Input Type

Use this item to select the Owner EPOCH mode. The options are Change to New Random Owner EPOCHs, **No Change in Owner EPOCHs**, and Manual User Defined Owner EPOCHs.

GNA Device (B0:D8:F0)

Use this feature to enable SA GNA device. The options are **Enabled** and Disabled.

Internal Graphics

Select Auto to keep an internal graphics device installed on an expansion slot supported by the CPU to be automatically enabled. The options are **Auto**, Disabled, and Enabled.

X2APIC Opt Out

The feature "VT-D" must be enabled for this feature to be configurable. Use this feature to enable or disable X2APIC Opt Out. The options are Enabled and **Disabled**.

► PCH-IO Configuration

► PCI Express Configuration

DMI Link ASPM Control

Use this feature to set the ASPM (Active State Power Management) state on the SA (System Agent) side of the DMI Link. The options are Disabled and **Enabled**.

Peer Memory Write Enable

Use this feature to enable or disable peer memory write. The options are **Disabled** or Enabled.

M.2-H_1 ASPM Support

Use this feature to activate the Active State Power Management (ASPM) level for an M.2 device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disabled, L0s, L1, L0sL1, and **Auto**.

M.2-H_1 Substates

Use this feature to set the M.2 L1 Substates. The options are Disabled, L1.1, and **L1.1 & L1.2**.

M.2-H_1 PCIe Speed

Use this feature to select the M.2 PCI Express port speed. The options are **Auto**, Gen1, Gen2, and Gen3.

PCIe PLL SSC

Enable this feature to reduce EMI interference by down spreading the clock 0.5%. Disable this feature to centralize the clock without spreading. The options are **Disabled** and Enabled.

► Super IO Configuration

Super IO Chip AST2500

► Serial Port 1 Configuration

This submenu allows the user the configure settings of the serial port .

Serial Port

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

Device Settings

This item displays the status of a serial part specified by the user.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=3F8h; IRQ=4); (IO=2F8h; IRQ=4); (IO=3E8h; IRQ=4); and (IO=2E8h; IRQ=4).

► Serial Port 2 Configuration

This submenu allows the user the configure settings of the serial port .

Serial Port

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

Device Settings

This item displays the status of a serial part specified by the user.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=3F8h; IRQ=3); (IO=2F8h; IRQ=3); (IO=3E8h; IRQ=3); and (IO=2E8h; IRQ=3).

► Serial Port Console Redirection

COM1

Console Redirection

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

**If the feature above is set to Enabled, the following features will become available for configuration:*

► Console Redirection Settings

Terminal Type

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

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

SOL/COM2

Console Redirection

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

**If the feature above is set to Enabled, the following features are available for configuration:*

► Console Redirection Settings

Terminal Type

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

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Putty KeyPad

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

Legacy Console Redirection**Redirection COM Port**

Use this feature to select a COM port to display redirection of Legacy OS and Legacy OPROM messages. The options are **COM1** and SOL/COM2.

Legacy OS Redirection Resolution

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

Redirection After BIOS POST

Use this feature to enable or disable legacy Console Redirection after BIOS POST. When set to Bootloader, legacy Console Redirection is disabled before booting the OS. When set to Always Enable, legacy Console Redirection remains enabled when booting the OS. The options are **Always Enable** and Bootloader.

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

This submenu allows you to configure Console Redirection settings to support Out-of-Band Serial Port management.

Console Redirection

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

****If the feature above is set to Enabled, the following features are available for configuration:***

► Console Redirection Settings

Out-of-Band Mgmt Port

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

Terminal Type

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

Bits per second

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

Flow Control

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

Data Bits

Parity

Stop Bits

► SATA and RSTe Configuration

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

SATA Controller(s)

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

SATA Mode Selection

Use this feature to select the mode for the installed SATA drives. The options are **AHCI** and RAID.

SATA Frozen

Use this feature to enable the HDD Security Frozen Mode. The options are Enabled and **Disabled**.

****If the feature above "SATA Mode Selection" is set to RAID, the next two features below will be available for configuration:***

SATA RAID Option ROM/UEFI Driver

Select UEFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are **Legacy ROM** and UEFI Driver.

Sata Interrupt Selection

Use this feature to select an interrupt. The options are Msix, **Msi**, and Legacy.

Serial ATA Port

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

- Model number of drive and capacity
- Software Preserve Support

SATA Port

Use this feature to enable or disable the SATA port. The options are Disabled and **Enabled**.

Hot Plug

This feature designates the SATA port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA disk drive without shutting down the system. The options are **Disabled** and Enabled.

Spin Up Device

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

SATA Device Type

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

►PCH-FW Configuration

PCH-FW Conifguration

- Operational Firmware Version
- Backup Firmware Version
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1
- ME Firmware Status #2
- Current State
- Error Code

►ACPI Settings

WHEA Support

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

High Precision Event Timer

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

►USB Configuration

The following USB information will display:

- USB Module Version
- USB Controllers
- USB Devices

Legacy USB Support

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

XHCI Hand-Off

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

Port 60/64 Emulation

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

USB hardware delays and time-outs:

USB transfer time-out

Use this feature to set the timeout value for control, bulk, and interrupt transfers. The options are 1 sec, 5 sec, 10 sec, and **20 sec**.

Device reset time-out

Use this feature to set the timeout value for the USB mass storage device start unit command. The options are 1 sec, 5 sec, 10 sec, and **20 sec**.

Device power-up delay

Use this feature to set the time for a device to report itself to the host controller. Select **Auto** for the default value and select Manual to enter a value.

► PCIe/PCI/PnP Configuration

The following information will display:

- PCI Bus Driver Version

PCI Latency Timer

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

PERR Generation

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

SERR Generation

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

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

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

SR-IOV Support

Use this feature to enable or disable Single Root IO Virtualization Support. The options are **Disabled** and Enabled.

Maximum Payload

Use this feature to set the maximum payload for a PCI Express device. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

Maximum Read Request

Use this feature to set the maximum read request size for PCI Express device. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

PCI Devices Option Rom Setting

Onboard Video OPROM

Use this feature to select which firmware type to be loaded for the onboard video controller. The options are Disabled, UEFI, and **Legacy**.

Storage

Use this feature to select which firmware type to be loaded for the UEFI and legacy storage device. The options are Disabled, UEFI, and **Legacy**.

Onboard LAN1 Option ROM

Use this feature to select which firmware function to be loaded for LAN Port 1 used for system boot. The options are Disabled, EFI, **Legacy PXE**, and Legacy iSCSI.

Onboard LAN2 Option ROM

Use this feature to select which firmware function to be loaded for LAN Port 2 used for system boot. The options are **Disabled**, EFI, Legacy PXE, and Legacy iSCSI.

Network Stack

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

IPv4 PXE Support

Select Enabled to enable IPv4 PXE boot support. The options are Disabled and **Enabled**.

IPv6 PXE Support

Select Enabled to enable IPv6 PXE boot support. The options are **Disabled** and Enabled.

IPSEC Certificate

Use feature to enable or disable the IP security certificate. The options Disabled and **Enabled**.

PXE boot wait time

Use this option to specify the wait time to press the ESC key to abort the PXE boot. Press "+" or "-" on your keyboard to change the value. The default setting is **0**.

Media detect count

Use this option to specify the number of times media will be checked. Press "+" or "-" on your keyboard to change the value. The default setting is **1**.

► Trusted Computing (Available when a TPM module is connected)

The motherboard supports TPM 1.2 and 2.0. The following Trusted Platform Module (TPM) information will display if a TPM 2.0 module is detected:

- Vendor Name
- Firmware Version

Security Device Support

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for TPM (Trusted Platform Module) support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Disable and **Enable**.

- Active PCR Bank
- Available PCR banks
- SHA256 PCR Bank

****If the feature above is set to Enable, SHA-1 PCR Bank and SHA256 PCR Bank will become available for configuration:***

SHA-1 PCR Bank

Use this feature to disable or enable the SHA-1 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

SHA256 PCR Bank

Use this feature to disable or enable the SHA256 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

Pending Operation

Use this feature to schedule a TPM-related operation to be performed by a security device for system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **None** and TPM Clear.

Platform Hierarchy

Use this feature to disable or enable platform hierarchy for platform protection. The options are Disabled and **Enabled**.

Storage Hierarchy

Use this feature to disable or enable storage hierarchy for cryptographic protection. The options are Disabled and **Enabled**.

Endorsement Hierarchy

Use this feature to disable or enable endorsement hierarchy for privacy control. The options are Disabled and **Enabled**.

PH Randomization

Use this feature to disable or enable Platform Hierarchy (PH) Randomization. The options are **Disabled** and Enabled.

SMCI BIOS-Based TPM Provision Support

Use feature to enable the Supermicro TPM Provision support. The options are **Disabled** and Enabled.

TXT Support

Intel Trusted Execution Technology (TXT) helps protect against software-based attacks and ensures protection, confidentiality, and integrity of data stored or created on the system. Use this feature to enable or disable TXT Support. The options are **Disabled** and Enabled.

▶ NVMe Configuration

This submenu displays NVMe information.

▶ Tls Auth Configuration

This submenu allows the user to configure Transport Layer Security (TLS) settings.

▶ Server CA Configuration

▶ Enroll Cert

Enroll Certificate Using File

Use this feature to enroll certification from a file.

Certificate GUID

Use this feature to input the certification GUID.

▶ Commit Changes and Exit

Use this feature to save all changes and exit TLS settings.

▶ Discard Changes and Exit

Use this feature to discard all changes and exit TLS settings.

▶ Delete Certificate

Use this feature to delete certification.

▶ RAM Disk Configuration

Disk Memory Type:

Use this feature to specify the type of memory to use from the available memory pool to create a disk. The options are **Boot Service Data** and Reserved.

▶ Create raw

Size (Hex):

Use this feature to specify a valid RAM disk size. The default is **1**.

Create & Exit

Create a RAM Disk and exit.

Discard & Exit

Discard any changes and exit.

► Create from file

Create a RAM disk from a file.

4.4 Event Logs

Use this menu to configure Event Log settings.



► Change SMBIOS Event Log Settings

Enabling/Disabling Options

Smbios Event Log

Change this item to enable or disable all features of the SMBIOS Event Logging during system boot. The options are Disabled and **Enabled**.

Erasing Settings

Erase Event Log

If No is selected, data stored in the event log will not be erased. Select Yes, Next Reset, data in the event log will be erased upon next system reboot. Select Yes, Every Reset, data in the event log will be erased upon every system reboot. The options are **No**, Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately for all messages to be automatically erased from the event log when the event log memory is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Long Standard Settings

Log System Boot Event

This option toggles the System Boot Event logging to enabled or disabled. The options are **Disabled** and **Enabled**.

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurrences that a duplicate event must happen before the MECI counter is incremented. This is a numeric value. The default value is **1**.

METW

The Multiple Event Time Window (METW) defines number of minutes must pass between duplicate log events before MECI is incremented. This is in minutes, from 0 to 99. The default value is **60**.



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

Log EFI Status Code

Use this feature to enable or disable the logging of EFI status codes. The options are **Disabled** and **Enabled**.

Convert EFI Status Code to Standard Smbio Type

Use this feature to enable or disable the converting of EFI status codes to standard Smbios types. The options are **Disabled** and **Enabled**.

►View SMBIOS Event Log

This section displays the contents of the SMBIOS Event Log.

4.5 IPMI

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



IPMI Firmware Revision

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

IPMI STATUS

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

► System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled for all system event logging at bootup. The options are **Enabled** and Disabled.

Erasing Settings

Erase SEL

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

When SEL is Full

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



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

► BMC Network Configuration

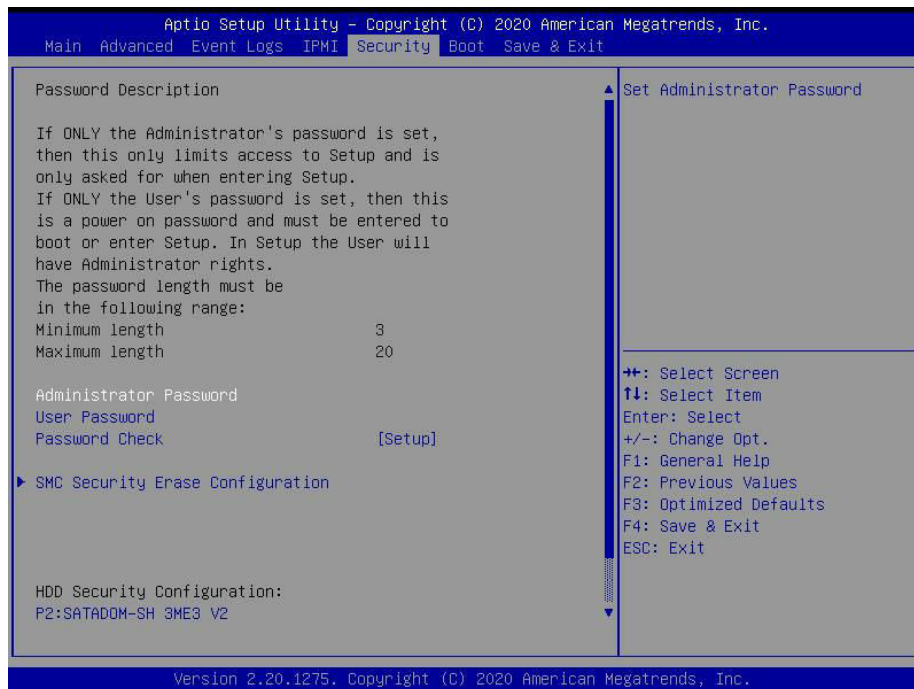
- IPMI LAN Selection
- IPMI Network Link Status
- Station MAC Address
- VLAN
- IPv4 Address Source
- Station IP Address
- Subnet Mask
- Gateway IP Address
- IPv6 address status
- Station Ipv6 address
- Prefix Length

Update IPMI LAN Configuration

Select Yes for the BIOS to implement all IP/MAC address changes at the next system boot. The options are **No** and Yes.

4.6 Security

Use this menu configure the following security settings for the system.



User Password

Press Enter to create a new or change an existing user password.

Administrator Password

Press Enter to create a new or change an existing Administrator password.

Password Check

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

► SMC Security Erase Configuration

This section displays the following HDD information:

- HDD Name
- HDD Serial Number
- Security Erase Mode
- Estimated Time
- HDD User Pwd Status

Security Function

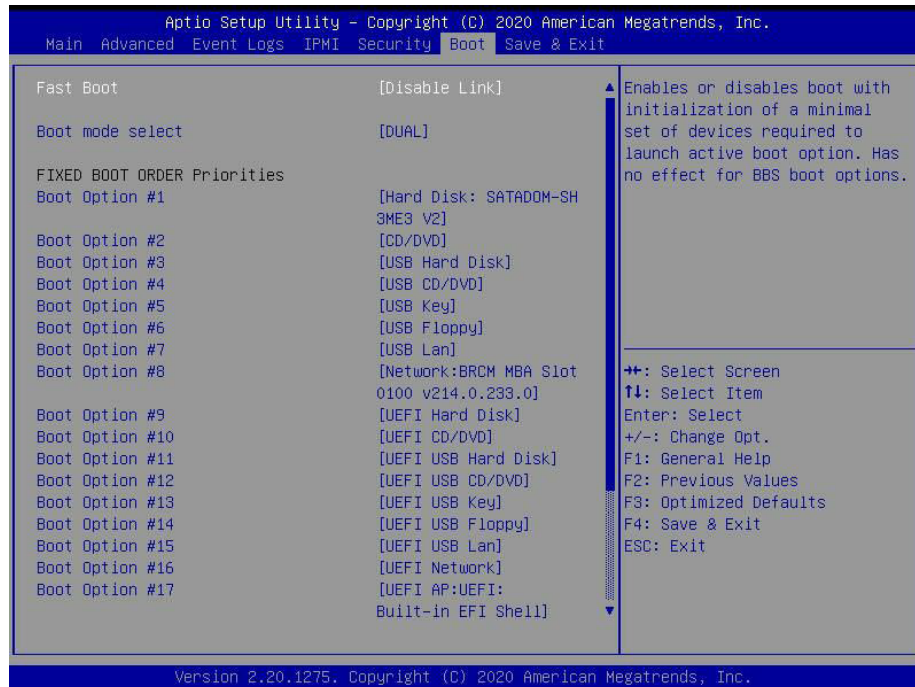
Use this feature to set a security function for the HDD. The options are Disable, Security Erase, and Set Password.

Password

Use this feature to set a password for the HDD Security function.

4.7 Boot

Use this feature to configure Boot Settings:



Fast Boot

Enable this feature to reduce the time the computer takes to boot up. The computer will boot with a minimal set of required devices. The options are **Disable Link** and **Enabled**.

****If the feature above is set to Enabled, the next seven features will become available for configuration:***

SATA Support

Use this feature to set the last bootable device or all bootable devices to show during POST. The options are **Last Boot SATA Devices** Only and **All SATA Devices**.

NVMe Support

Use this feature to display or skip the NVMe device during boot. The options are **Disable Link** and **Enabled**.

VGA Support

Video information and the VGA logo will display during POST if this feature is set to **EFI Driver**. The options are **Auto** and **EFI Driver**.

USB Support

If this feature is disabled, all USB devices will not be available until after the OS boot. The options are **Disable Link**, **Full Initial**, and **Partial Initial**.

PS2 Devices Support

PS2 devices will be skipped during POST if this feature is disabled. The options are **Disable Link** and Enabled.

Network Stack Driver Support

The network stack driver will be skipped during POST if this feature is disabled. The options are **Disable Link** and Enabled.

Redirection Support

The network stack driver will be skipped during POST if this feature is disabled. The options are **Disable Link** and Enabled.

Boot Mode Select

Use this feature to select the type of device that the system is going to boot from. The options are Legacy, UEFI, and **Dual**. The default setting is Dual.

FIXED BOOT ORDER Priorities

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

****If the feature above set to Legacy, UEFI/Dual, the following features will be displayed:***

- Legacy/UEFI/Dual/Boot Option #1
- Legacy/UEFI/Dual/Boot Option #2
- Legacy/UEFI/Dual/Boot Option #3
- Legacy/UEFI/Dual/Boot Option #4
- Legacy/UEFI/Dual/Boot Option #5
- Legacy/UEFI/Dual/Boot Option #6
- Legacy/UEFI/Dual/Boot Option #7
- Legacy/UEFI/Dual/Boot Option #8
- Legacy/UEFI/Dual/Boot Option #9
- Legacy/UEFI/Dual/Boot Option #10
- Legacy/UEFI/Dual/Boot Option #11
- Legacy/UEFI/Dual/Boot Option #12
- Legacy/UEFI/Dual/Boot Option #13

- Legacy/UEFI/Dual/Boot Option #14
- Legacy/UEFI/Dual/Boot Option #15
- Legacy/UEFI/Dual/Boot Option #16
- Legacy/UEFI/Dual/Boot Option #17

▶ **Delete Boot Option**

Use this feature to remove a pre-defined boot device from which the system will boot during startup.

The settings are [any pre-defined boot device].

▶ **Delete Driver Option**

Use this feature to remove an EFI driver option from the driver order.

▶ **UEFI Application Boot Priorities**

This feature allows the user to specify which UEFI devices are boot devices.

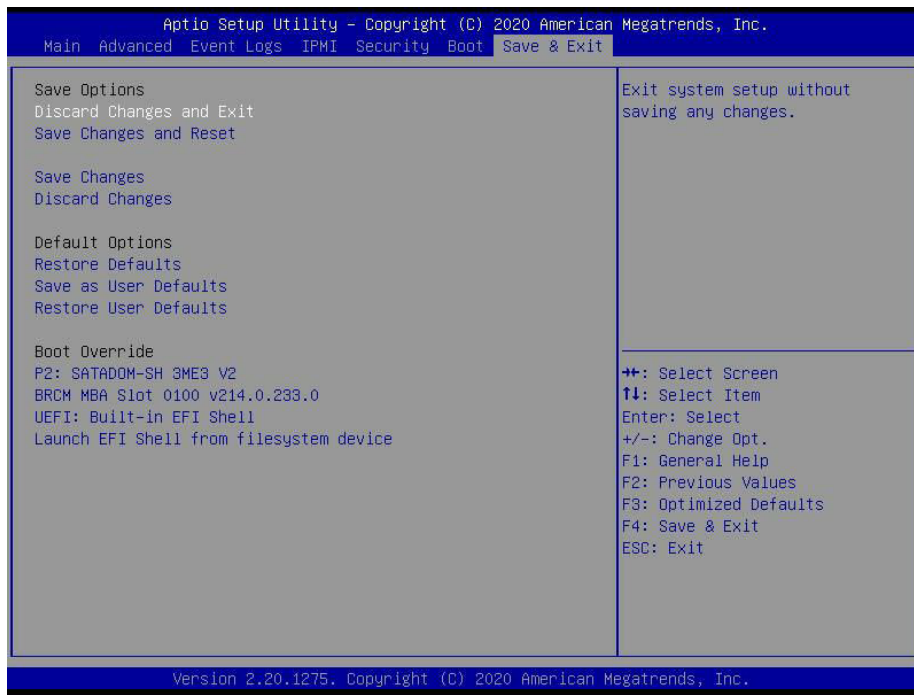
- UEFI Boot Order #1

▶ **Hard Disk Drive BBS Priorities**

- Legacy Boot Order #1 - This feature sets the system boot order of detected devices. The options are **[the list of detected boot device(s)]** and Disabled.

4.8 Save & Exit

Select the Save & Exit tab from the BIOS setup utility screen to enter the Exit BIOS Setup screen.



Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Save Changes and Reset

When you have completed the system configuration changes, select this option to leave the BIOS setup utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Save Changes

After completing the system configuration changes, select this option to save the changes you have made. This will not reset (reboot) the system.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS utility Program.

Default Options

Restore Optimized Defaults

To set this feature, select Restore Optimized Defaults from the Save & Exit menu and press <Enter>. These are factory settings designed for maximum system stability, but not for maximum performance.

Save as User Defaults

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use.

Restore User Defaults

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

Listed on this section are other boot options for the system (i.e., Built-in EFI shell). Select an option and press <Enter>. Your system will boot to the selected boot option.

P2: SATADOM-SH 3ME3 V2

BRCM MBA Slot 0100 v214.0.233.0

UEFI: Built-in EFI Shell

Launch EFI Shell from filesystem device

Appendix A

BIOS Codes

A.1 BIOS Error POST (Beep) Codes

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

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

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

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

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

A.2 Additional BIOS POST Codes

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

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

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

Appendix B

Software Installation


B.1 Installing Software Programs

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

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

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

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

 **Note:** To install the Windows OS, please refer to the instructions posted on our website at <http://www.supermicro.com/support/manuals/>.

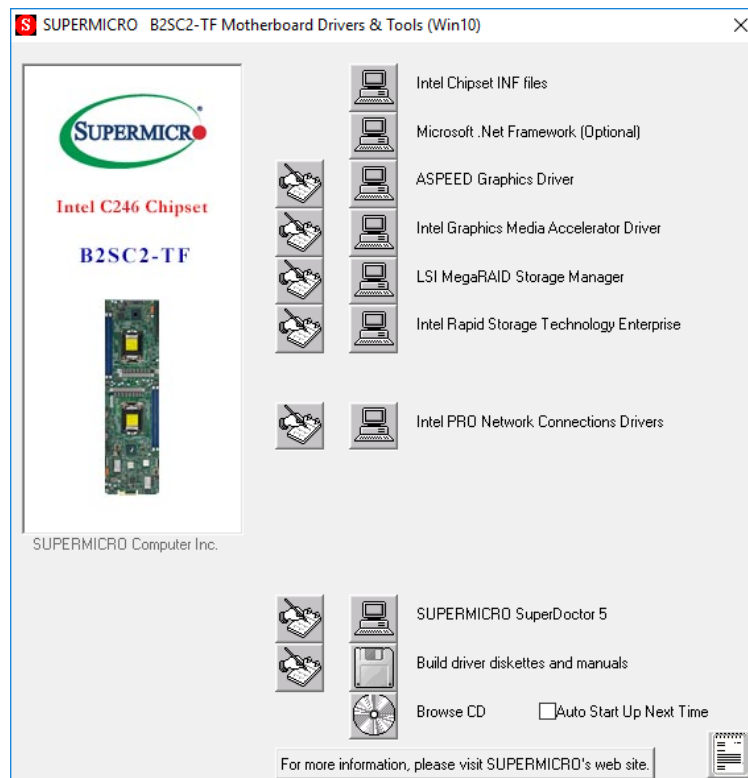


Figure B-1. Driver/Tool Installation Display Screen

Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to the bottom) one at a time. After installing each item, you must reboot the system before proceeding with the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.

When making a storage driver diskette by booting into a driver CD, please set the SATA Configuration to "Compatible Mode" and configure SATA as IDE in the BIOS Setup. After making the driver diskette, be sure to change the SATA settings back to your original settings.

B.2 SuperDoctor® 5

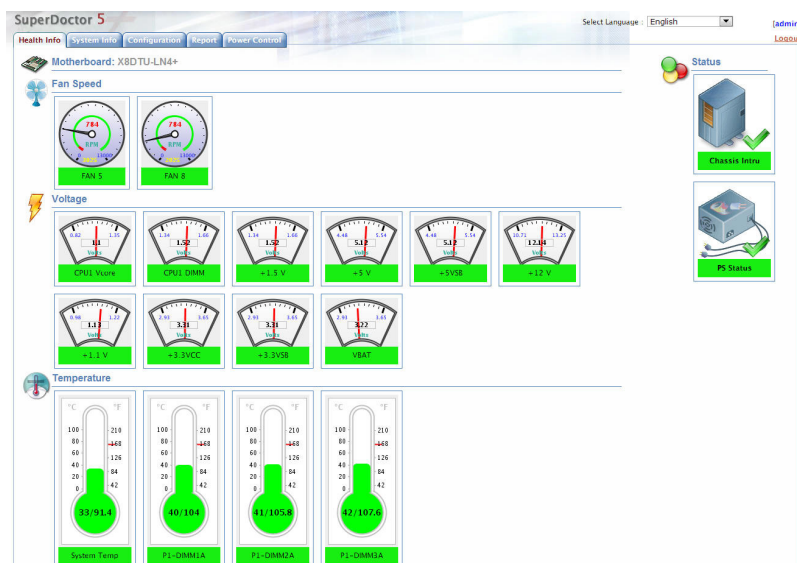
The Supermicro SuperDoctor 5 is a hardware monitoring program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts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

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



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

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



Note: The SuperDoctor 5 program and user's manual can be downloaded from the Supermicro website at http://www.supermicro.com/products/info/sms_sd5.cfm.

Attention

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

¡Advertencia!

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

אזהרה!

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Appendix D

UEFI BIOS Recovery

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

D.1 Overview

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

D.2 Recovering the UEFI BIOS Image

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



Note: Follow the BIOS recovery instructions below for BIOS recovery when the main BIOS boot crashes. However, if the BIOS boot block crashes, you will need to follow the procedures below for BIOS recovery.

D.3 Recovering the BIOS Block with a USB Device


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

The file system supported by the recovery block is FAT (including FAT12, FAT16, and FAT32), which is installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large due to the huge volumes of folders and files stored in the device.

The file system supported by the recovery block is FAT (including FAT12, FAT16, and FAT32), which is installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large due to the huge volumes of folders and files stored in the device.

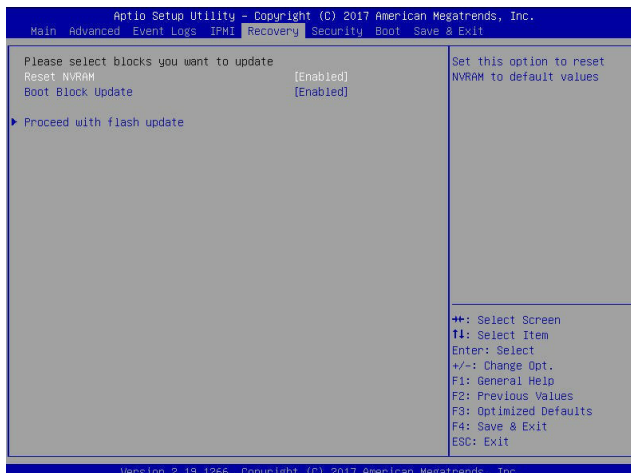
To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below:

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


 **Note 1:** If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

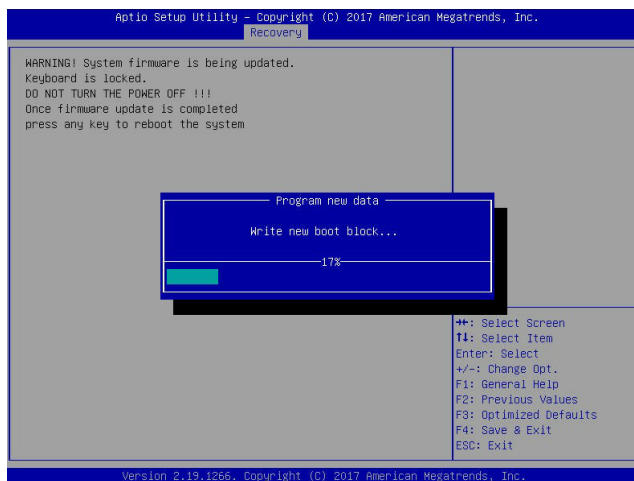
Note 2: Before recovering the main BIOS image, confirm that the "Super.ROM" binary image file you download is the same version or a close version meant for your motherboard.



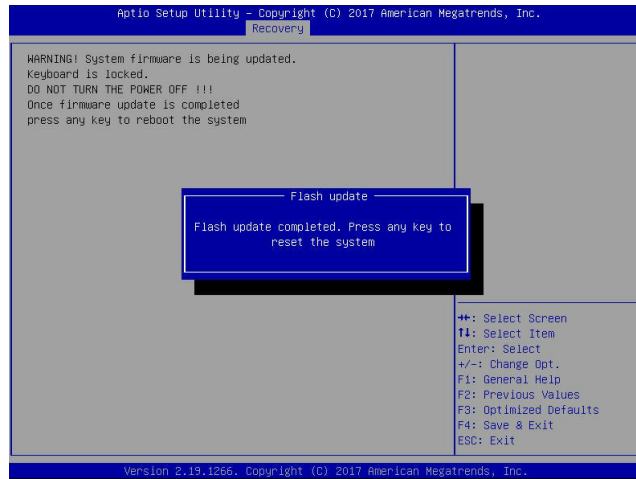



2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB port and reset the system until the following screen appears:
3. After locating the new BIOS binary image, the system will enter the BIOS Recovery menu as shown below:

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

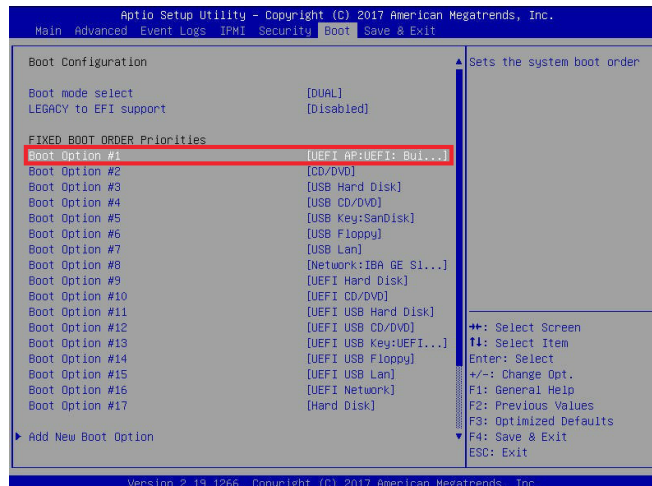


- When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below:



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

- After the BIOS recovery process is completed, press any key to reboot the system.
- Using a different system, extract the BIOS package into a USB flash drive.
- Press during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings and exit the BIOS Setup utility.



- When the UEFI Shell prompt appears, type `fs#` to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter `flash.nsh BIOSname.###` at the prompt to start the BIOS update process.

```

UEFI Interactive Shell v2.1
EDK II
UEFI v2.50 (American Megatrends, 0x0005000D)
Mapping table
FS0: Alias(s):HD0:0:1:BLK1:
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,MBR,0x3791072,0x800,0x1
      0A9592)
BLK0: Alias(s):
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
Press F8C in 4 seconds to skip startup.nsh or any other key to continue.
Shell> fs0:
FS0:\> cd #FUD05
FS0:\#FUD05> cd SNIJME2_03162017
FS0:\#FUD05\SNIJME2_03162017> flash.nsh X11DPU7_314_

```

 **Note:** Do not interrupt this process until the BIOS flashing is complete.

```

Done.
[ Access Cmos Port Ex ]
<Read>
Index 0x51: 0x1B

Done.
*****
* Program BIOS and ME (including FDT) regions...
*****
| BIOS Firmware update UEFI11ty_v5_09_04_1817 |
| Copyright (C)2017 American Megatrends Inc. All Rights Reserved. |
-----
CPUID = 50652
Reading flash ..... done
- ME Data Size checking - ok
- FFS checksums ..... ok
- Check Rollout ..... Ok.
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
_Erasing Main Block ..... 0x00132000 (0X)

```

```

Verifying NDB Block ..... done
- Update success for FDR
- Update success for IE. =
- Successful Update Recovery Loader to DPRX!!
- Successful Update MFSB!!
- Successful Update FTRP!!
- Successful Update MFS, IVB1 and IVB2!!
- Successful Update FUDS and UTRX!!
- ME Entire Image update success !!
WARNING : System must power-off to have the changes take effect!
Moving FS0:\#FUD05\SNIJME2_03162017\Fdtx64.efi -> FS0:\#FUD05\SNIJME2_03162017\F
dt1.smc
- [ok]
Moving FS0:\#FUD05\SNIJME2_03162017\Fuef1x64.efi -> FS0:\#FUD05\SNIJME2_0316201
7\Fuef1.smc
- [ok]
*****
* Please ignore this 'Shell: Cannot read from file - Device Error'
* warning message due to it does not impact flashing process.
*****
Deleting "fs0:\startup.nsh"
Delete successful.
FS0:\>

```

- The screen above indicates that the BIOS update process is complete. When you see the screen above, unplug the AC power cable from the power supply, clear CMOS, and plug the AC power cable in the power supply again to power on the system.
- Press `` to enter the BIOS Setup utility.
- Press `<F3>` to load the default settings.
- After loading the default settings, press `<F4>` to save the settings and exit the BIOS Setup utility.