

**SUPER**  <sup>®</sup>

X9DRT-P  
X9DRT-PT  
X9DRT-PIBQ  
X9DRT-PIBF

**USER'S MANUAL**

Revision 1.0

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Manual Revision 1.0

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## Preface

This manual is written for system integrators, IT professionals, and knowledgeable PC users. It provides information for the installation and use of the X9DRT-P/-PT/-PIBQ/-PIBF motherboard.

### About This Motherboard

The Super X9DRT-P/-PT/-PIBQ/-PIBF motherboard supports dual Intel E5-2600(V2) Series (Socket R) processors that offer QPI (Intel QuickPath Interface) Technology, providing point-to-point connection with a transfer speed of up to 8.0 TG/s. With the C602 PCH built in, the X9DRT-P series motherboard supports Intel® Management Engine (ME), Rapid Storage Technology, Digital Media Interface (DMI), PCI-E Gen. 3.0, and DDR3 memory of up to 1866 MHz. This motherboard is ideal for 2U TwinPro & 2U TwinPro^2 system platforms. Please refer to our Website (<http://www.supermicro.com>) for processor and memory support updates.

### Manual Organization

**Chapter 1** describes the features, specifications and performance of the motherboard. It also provides detailed information about the Intel C602 chipset.

**Chapter 2** provides hardware installation instructions. Read this chapter when installing the processor, memory modules, and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for video, memory, and system setup stored in CMOS.

**Chapter 4** includes an introduction to BIOS, and provides detailed information on the CMOS Setup utility.

**Appendix A** provides BIOS POST Beep codes information.

**Appendix B** lists software installation instructions.

**Appendix C** contains UEFI BIOS Recovery instructions.

## Conventions Used in the Manual

Pay special attention to the following symbols for proper system installation:

**Warning:** Important information given to ensure proper system installation and to avoid damaging the components,



**Note:** Additional information given for proper system setup.

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# Chapter 1

## Overview

### 1-1 Overview

#### Checklist

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

This motherboard was designed to be installed in an SMC-Proprietary chassis as a part of the integrated 2U TwinPro & 2U TwinPro^2 server platform. No retail packaging will be included in your shipment.



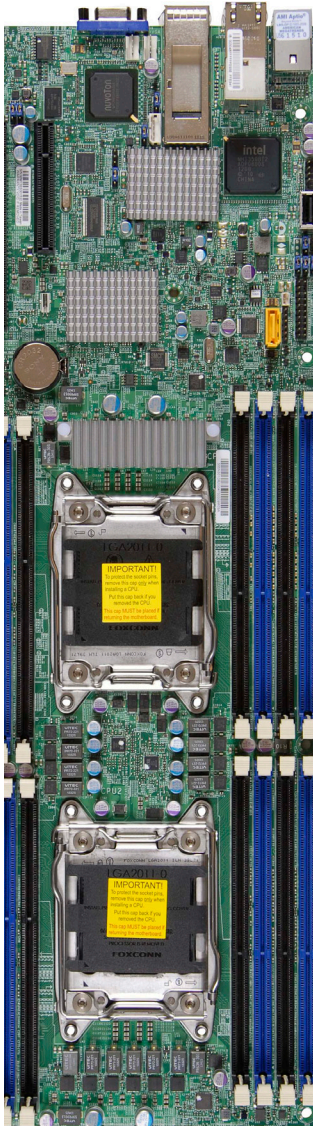
**Note:** For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your motherboard.


SMC product manuals: <http://www.supermicro.com/support/manuals/>

Product Drivers and utilities: <ftp://ftp.supermicro.com/>

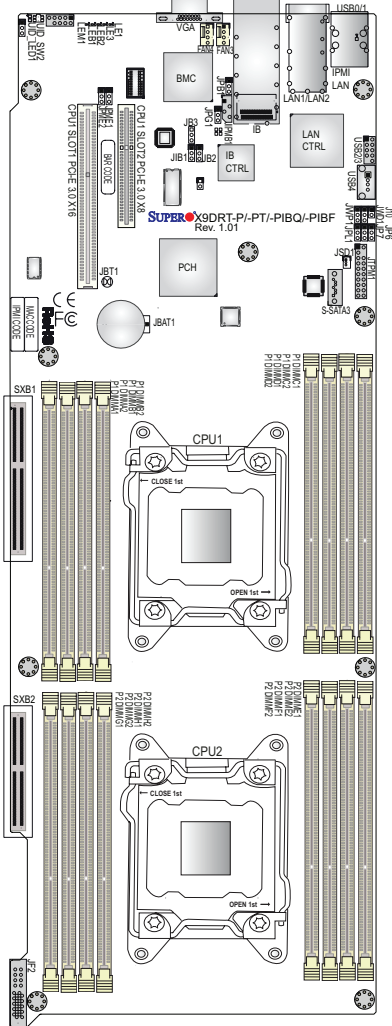
If you have any questions, please contact our support team at [support@supermicro.com](mailto:support@supermicro.com).


SUPER® Motherboard Image



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

### Motherboard Layout

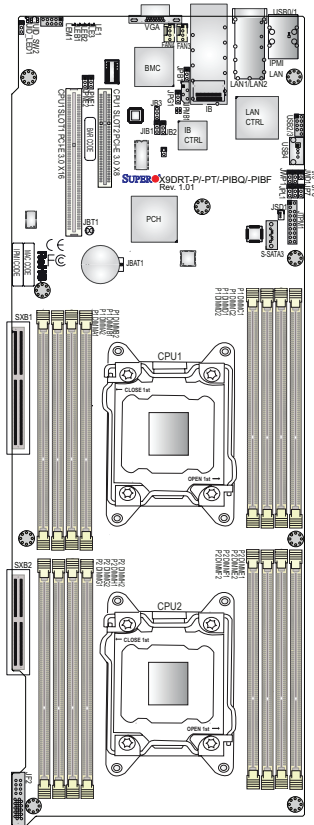



 **Note 1:** For the latest CPU/Memory updates, refer to our website at <http://www.supermicro.com/products/motherboard/> for details.

**Note 2:** Use only the correct type of onboard CMOS battery as specified by the manufacturer. Refer to Chapter 3 for battery installation instructions.

**Note 3:** IPMI 2.0 support is available on the X9DRT-PIBF. Changing BMC log-in information is recommended upon initial system bootup. The default username is ADMIN and password is ADMIN. For BMC best practices, please refer to: [http://www.supermicro.com/products/nfo/files/IPMI/Best Practices\\_BMC\\_Security.pdf](http://www.supermicro.com/products/nfo/files/IPMI/Best Practices_BMC_Security.pdf).

## X9DRT-P/-PT/-PIBQ/-PIBF Quick Reference



 **Notes:**

- See Chapter 2 for detailed information jumpers, I/O ports, connectors and expansion slots. Jumpers/components not indicated are for testing only.
- "■" indicates the location of "Pin 1".
- The Add-On card header located at JF2 for an SMC-proprietary Add-On card to provide power, SATA and front panel control support. See Chapter 2 for details.
- When the Onboard Power LED (LE1) is on, the system power is on. Unplug the power cable before installing or removing any components.
- Changing BMC log-in information is recommended upon initial system bootup. The default username is ADMIN and password is ADMIN. For BMC best practices, please refer to: [http://www.supermicro.com/products/info/files/IPMI/Best\\_Practices\\_BMC\\_Security.pdf](http://www.supermicro.com/products/info/files/IPMI/Best_Practices_BMC_Security.pdf).

**X9DRT-P/-PT/-PIBQ/-PIBF Motherboard Jumpers**

<b>Jumper</b>	<b>Description</b>	<b>Default Setting</b>
JBT1	Clear CMOS	Open (Normal)
JIB1	InfiniBand (IB) Enable (for X9DRT-PIBQ/ PIBF Only)	Pins 1-2 (Enabled)
JPB1	BMC Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	Onboard LAN (Ethernet) Port1 Enable	Pins 1-2 (Enabled)
JPME1	Management Engine (ME) Recovery Mode	Pins 1-2 (Normal)
JPME2	Management Engine (ME) Manufacture Mode	Pins 1-2 (Normal)
JWD1	Watch Dog	Pins 1-2 (Reset)


**X9DRT-P/-PT/-PIBQ/-PIBF Motherboard Connectors**

<b>Connectors</b>	<b>Description</b>
IB	InfiniBand Connector supported by the Mellano Connect-X3 QDR/ FDR IB chip (for X9DRT-PIBQ/PIBF Only)
JBAT1	Onboard CMOS Battery
JF2	SMC Proprietary Add-On Card for Power and FP Control
JIPMB1	4-pin External BMC I <sup>2</sup> C Header (for an IPMI Card)
JSD1	SATA DOM (Device_on_Module) Power Connector
JTPM1	TPM (Trust Platform Module)/Port 80 Header
LAN1/LAN2	1Gigabit Ethernet LAN Port 1/Port 2 supported by the Intel i350 chip (for X9DRT-P/PIBQ/ PIBF)
LAN1/LAN2	10Gigabit Ethernet LAN Port 1/Port 2 by the Intel X540 chip (for X9DRT-PT only)
(CPU1) Slot1	PCI-E 3.0 x16 Slot
(CPU1) Slot2	PCI-E 3.0 x8 Slot
S-SATA3	SATA DOM (Device_on_Module) Connector
SXB1	PCI-E 3.0 x16 Slot1 for SMC-Proprietary Daughter (Add-On) Card supported by CPU2
SXB2	PCI-E 3.0 x8 Slot2 for SMC-Proprietary Storage Add-On Card supported by CPU2
UIDSW2	UID (Unit Identifier) Switch
USB 0/1	Back Panel USB Ports 0/1
USB 2/3	Front Accessible USB Connections 2/3
USB 4	Type A USB Connection (USB 4) for Front Access
VGA	Backpanel VGA Port

**X9DRT-P/-PT/-PIBQ/-PIBF Motherboard LED Indicators**

<b>LED</b>	<b>Description</b>	<b>State</b>	<b>Status</b>
LE1	Onboard Power LED	On	Power On
LE3	HDD LED	Green: On	HDD/SATA Active
LEB1	IB (InfiniBand) Link	Green: On	IB Connected
LEB2	IB (InfiniBand) Activity	Yellow: Blinking	IB Active
LEM1	BMC Heartbeat LED	Green: Blinking	BMC Normal
UID LED1	UID LED	Blue: On	Unit Identified

## Motherboard Features

<b>CPU</b>	<ul style="list-style-type: none"> <li>Dual Intel® E5-2600(V2) Series (Socket R LGA 2011) processors; each processor supports two full-width Intel QuickPath Interconnect (QPI) links (with Data Transfer Rate of up to 8.0GT/s per QPI)</li> </ul>						
<b>Memory</b>	<p>Integrated memory controller supports up to 1 TB of Load Reduced (LRDIMM) ECC, 512 GB of Registered (RDIMM) ECC, or 128 GB of Unbuffered (UDIMM) ECC/ Non-ECC DDR3 800/1066/1333/1600/1866 MHz 240-pin 4-channel memory modules in 16 DIMM slots.</p> <p> <b>Note 1:</b> 1866 MHz memory speed is dependent on Intel E5-2600v2 CPUs.</p> <p><b>Note 2:</b> For the latest memory updates, please refer to the Tested Memory List posted on our website (<a href="http://www.supermicro.com/products/motherboard">http://www.supermicro.com/products/motherboard</a>).</p>						
<b>Chipset</b>	<ul style="list-style-type: none"> <li>Intel® C602 PCH</li> </ul>						
<b>Expansion Slots</b>	<ul style="list-style-type: none"> <li>One (1) PCI-E 3.0 x16 Slot (CPU1 Slot1)</li> <li>One (1) PCI-E 3.0 x8 Slot (CPU1 Slot2)</li> <li>One (1) PCI-E 3.0 x16 Slot for SMC-Proprietary Daughter (Add-On) Card supported by CPU2 (SXB1)</li> <li>One (1) PCI-E 3.0 x8 Slot for SMC-Proprietary Storage (Add-On) Card supported by CPU2 (SXB2)</li> </ul>						
<b>Graphics</b>	<ul style="list-style-type: none"> <li>Nuvoton WPCM450R BMC Video Controller (Matrox G200)</li> </ul>						
<b>Network</b>	<b>LAN (Ethernet) Connections</b>						
	<ul style="list-style-type: none"> <li>One Intel i350 Gigabit (10/100/1000 Mb/s) Ethernet Controller for GLAN ports (for X9DRT-P/PIBQ/ PIBF)</li> <li>One Intel X540 10Gigabit Ethernet Controller for 10G_LAN ports (for X9DRT-PT)</li> </ul>						
	<b>BMC (Baseboard Management Control)</b>						
	<ul style="list-style-type: none"> <li>Nuvoton WPCM450R BMC supports IPMI 2.0</li> </ul>						
<b>I/O Devices</b>	<b>SATA/SATA DOM Connections</b>						
	<table border="1"> <tr> <td> <ul style="list-style-type: none"> <li>SATA</li> </ul> </td> <td>Six (6) SATA Connections: Two SATA 3.0 ports (SATA0/1), Four SATA 2.0 Ports (SATA 2-5).</td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>SCU-SATA</li> </ul> </td> <td>Three (3) SATA2 Connections (S-SATA 0-2)</td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>RAID</li> </ul> </td> <td>RAID 0, 1, 5, 10 (AHCI/SCU)</td> </tr> </table>	<ul style="list-style-type: none"> <li>SATA</li> </ul>	Six (6) SATA Connections: Two SATA 3.0 ports (SATA0/1), Four SATA 2.0 Ports (SATA 2-5).	<ul style="list-style-type: none"> <li>SCU-SATA</li> </ul>	Three (3) SATA2 Connections (S-SATA 0-2)	<ul style="list-style-type: none"> <li>RAID</li> </ul>	RAID 0, 1, 5, 10 (AHCI/SCU)
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<ul style="list-style-type: none"> <li>SCU-SATA</li> </ul>	Three (3) SATA2 Connections (S-SATA 0-2)						
<ul style="list-style-type: none"> <li>RAID</li> </ul>	RAID 0, 1, 5, 10 (AHCI/SCU)						

	<ul style="list-style-type: none"> <li>SATA DOM</li> </ul>	One (1) SATA DOM (Device_On_Disk) Connector (S-SATA3)
	<b>InfiniBand (IB) Connector</b>	
	<ul style="list-style-type: none"> <li>IB Connector</li> </ul>	One (1) QSFP Connector (Available on the PIBQ/PIBF)
	<b>VGA</b>	
	<ul style="list-style-type: none"> <li>Backplane VGA Port</li> </ul>	
<b>Peripheral Devices</b>	<b>USB Devices</b>	
	<ul style="list-style-type: none"> <li>Two (2) USB ports on the I/O backpanel (USB 0/1)</li> </ul>	
	<ul style="list-style-type: none"> <li>Two (2) Onboard USB ports in one header for front access (USB 2/3)</li> </ul>	
	<ul style="list-style-type: none"> <li>One (1) Type A USB Connection (USB 4)</li> </ul>	
<b>BIOS</b>	<ul style="list-style-type: none"> <li>16MB AMI BIOS<sup>®</sup> Flash EEPROM</li> </ul>	
	<ul style="list-style-type: none"> <li>APM 1.2, DMI 2.3, PCI 2.3, ACPI 1.0/2.0/3.0, USB Keyboard, Plug &amp; Play (PnP) and SMBIOS 2.3</li> </ul>	
<b>Power Management</b>	<ul style="list-style-type: none"> <li>ACPI/ACPM Power Management</li> </ul>	
	<ul style="list-style-type: none"> <li>Main switch override mechanism</li> </ul>	
	<ul style="list-style-type: none"> <li>NM/ME Advanced Power Management support (available when the supporting firmware and power supply cables are installed in the system. See Section 1-7 on Page 1-14.)</li> </ul>	
	<ul style="list-style-type: none"> <li>Power-on mode for AC power recovery</li> </ul>	
<b>PC Health Monitoring</b>	<b>CPU Monitoring</b>	
	<ul style="list-style-type: none"> <li>Onboard voltage monitors for +3.3V, 3.3VSB, +5V, Battery Voltage, CPU, memory, and VTT.</li> </ul>	
	<ul style="list-style-type: none"> <li>CPU Thermal Design Power (TDP): support up to 135W (See Note 1 next page)</li> </ul>	
	<ul style="list-style-type: none"> <li>CPU 5-Phase switching voltage regulator</li> </ul>	
	<ul style="list-style-type: none"> <li>CPU/System overheat LED and control</li> </ul>	
	<ul style="list-style-type: none"> <li>CPU Thermal Trip support</li> </ul>	
	<ul style="list-style-type: none"> <li>Thermal Monitor 2 (TM2) support</li> </ul>	
	<ul style="list-style-type: none"> <li>Intel<sup>®</sup> Intelligent Power Node Manager</li> </ul>	
	<ul style="list-style-type: none"> <li>Management Engine (ME)</li> </ul>	
	<b>Fan Control</b>	
	<ul style="list-style-type: none"> <li>Fan status monitoring with firmware thermal management via IPMI</li> </ul>	
	<ul style="list-style-type: none"> <li>Low noise fan speed control</li> </ul>	

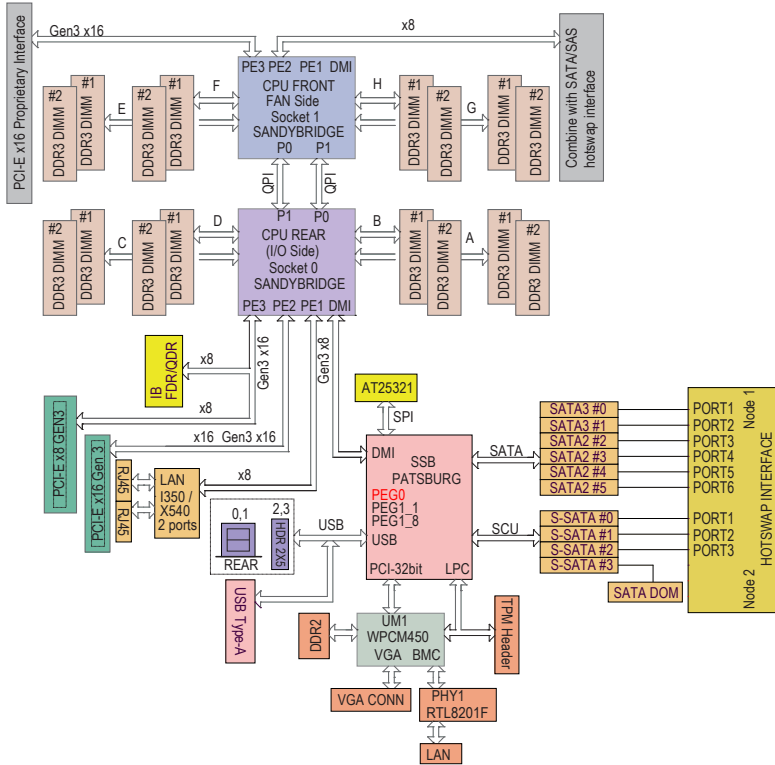


	LED Indicators
	<ul style="list-style-type: none"> <li>• System/CPU Overheat LED</li> </ul>
	<ul style="list-style-type: none"> <li>• Suspend-state LED</li> </ul>
	<ul style="list-style-type: none"> <li>• HDD/SATA LED</li> </ul>
	<ul style="list-style-type: none"> <li>• BMC (BaseBoard Management) LED</li> </ul>
	<ul style="list-style-type: none"> <li>• UID/Remote UID LED</li> </ul>
<b>System Management</b>	<ul style="list-style-type: none"> <li>• PECl (Platform Environment Configuration Interface) 2.0 support</li> </ul>
	<ul style="list-style-type: none"> <li>• System resource alert via SuperDoctor® 5</li> </ul>
	<ul style="list-style-type: none"> <li>• Thermal Monitor 2 (TM2) support</li> </ul>
	<ul style="list-style-type: none"> <li>• SuperDoctor® 5, Watch Dog, NMI</li> </ul>
	<ul style="list-style-type: none"> <li>• Chassis Intrusion Header and Detection</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>• 18.64" (L) x 6.80" (W) (473.46.72 mm x 172.72 mm)</li> </ul>



**Note 1:** 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 @ <http://www.supermicro.com/support/manuals/>.



### System Block Diagram



**Note:** This is a general block diagram and may not exactly represent the features on your motherboard. See the Motherboard Features pages for the actual specifications of each motherboard. 2. This block diagram is intended for your reference only. 3. This diagram does not display all memory modules for the motherboard

## 1-2 Processor and Chipset Overview

Built upon the functionality and the capability of the Intel E5-2600(V2) Series (Socket R) processor and the C602 PCH, the X9DRT-P series motherboard provides the performance and feature sets required for dual-processor-based 2U TwinPro & 2U TwinPro^2 server platforms.

With support of Intel QuickPath interconnect (QPI) Technology, this motherboard offers point-to-point serial interconnect interface with a transfer speed of up to 8.0GT/s, providing superb system performance and functionality enhancement.

The C602 chipset provides extensive IO support, including the following functions and capabilities:

- PCI-Express Rev. 2.0 support
- PCI-Express Gen. 3 support
- ACPI Power Management Logic Support Rev. 3.0b or Rev. 4.0
- USB host interface backplane and front access support
- Intel Rapid Storage Technology supported
- Intel Virtualization Technology for Directed I/O (Intel VT-d) supported
- Intel Trusted Execution Technology supported
- Serial Peripheral Interface (SPI) Supported
- Digital Media Interface (DMI) supported
- Advanced Host Controller Interface (AHCI) supported

## 1-3 Special Features

### 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**.

## 1-4 PC Health Monitoring

This section describes the features of PC health monitoring of the motherboard. This motherboard has an onboard System\_Hardware\_Monitor chip that supports PC health monitoring. An onboard voltage monitor will scan the following onboard voltages continuously: +3.3V, 3.3VSB, +5V, CPU, memory, chipset, and battery voltages. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

### Fan Status Monitor with Firmware Control

The PC health monitor chip can check the RPM status of a cooling fan. The onboard cooling and chassis fans are controlled by firmware thermal management via IPMI interface.

### Environmental Temperature Control

A thermal management controller monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once the CPU temperature is too high, the thermal control manager will automatically turn on the thermal fan control to prevent the CPU from overheating, and the overheat beep will be activated to alert the user when the temperature is too high.



**Note:** To avoid possible system overheating, please be sure to provide adequate airflow to your system.

### System Resource Alert

This feature is available when used with SuperDoctor® 5 in the Windows or Linux environment. SuperDoctor is used to notify the user of certain system events. For example, you can configure SuperDoctor to provide you with warnings when the

system temperature, CPU temperatures, voltages and fan speeds go beyond a predefined range.

## 1-5 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 PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, 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 7, Windows 8, Windows 2008 and Windows 2012 Operating Systems.

### Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will "wake up" and the LED will automatically stop blinking and remain on.

## 1-6 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.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant (For more information, please refer to the website at <http://www.ssiforum.org/>). Additionally, 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.



**Note:** The X9DRT-P series motherboard supports proprietary power connectors. Please refer to page 2-19 for power supply information.

## 1-7 Advanced Power Management

The new advanced power management features supported by this motherboard include IPNM and ME. Please note that you will need to do the following to use these two new features:

- Use a power supply that supports PMBus 1.1 or 1.2.
- Install the NMView software in your system. NMView is optional and can be purchased from Supermicro.

### Intel® Intelligent Power Node Manager (IPNM)

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



**Note:** Support for IPNM Specification Version 1.5 or Vision 2.0 depends on the power supply used in the system.

### Management Engine (ME)

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

## 1-8 Overview of the Nuvoton WPCM450R Controller

The Nuvoton WPCM450R controller, a Baseboard-Management controller (BMC), features 2D/VGA-compatible graphic cores that provide excellent graphics display support of 1280 x 1024 @ 85Hz. The WPCM450R offers versatile PCI interface capability, creating multimedia virtualization via Keyboard/Video/Mouse Redirection (KVMR) and is ideal for remote system management.

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

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

### **WPCM450R DDR2 Memory Interface**

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

### **WPCM450R PCI System Interface**

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

### **Other Features Supported by the WPCM BMC Controller**

The WPCM450R supports the following features:

- IPMI 2.0
- Serial over LAN
- KVM over LAN
- LAN Alerting-SNMP Trap
- Event Log
- X-Bus parallel interface for I/O expansion
- Multiple ADC inputs, Analog and Digital Video outputs
- SPI Flash Host BIOS and firmware bootstrap program supported
- Reduced Media Independent Interface (RMII)
- OS (Operating System) Independency
- Provides remote Hardware Health Monitoring via IPMI. Key features
- Provides Network Management Security via remote access/console redirection.
- Supports the following Management tools: IPMIView, CLI (Command Line Interface)
- RMCP+ protocol supported



**Note 1:** For BMC Configuration Instructions, please refer to the Embedded BMC Configuration User's Guide available @ <http://www.supernmicro.com/support/manuals/>.

**Note 2:** Changing BMC log-in information is recommended upon system bootup. The default username is ADMIN and password is ADMIN. For BMC best practices, please refer to: [http://www.supermicro.com/products/info/files/IPMI/Best\\_Practices\\_BMC\\_Security.pdf](http://www.supermicro.com/products/info/files/IPMI/Best_Practices_BMC_Security.pdf).



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## Chapter 2

### Installation

#### 2-1 Standardized Warning Statements

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

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

#### Battery Handling



##### Warning!

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

##### 電池の取り扱い

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

##### 警告

電池更換不當會有爆炸危險。請只使用同類電池或製造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢舊電池。

##### 警告

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

##### Warnung

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

Attention

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

¡Advertencia!

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

**אזהרה!**

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

סילוק הסוללות המושמשות 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.

## Product Disposal



### Warning!

Ultimate disposal of this product should be handled according to all national laws and regulations.

### 製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

### 警告

本产品的废弃处理应根据所有国家的法律和规章进行。

### 警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

### Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

### ¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

### Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

## סילוק המוצר

### אזהרה!

סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

## 2-2 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your system board, 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 system chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

### Unpacking

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

## 2-3 Processor and Heatsink Installation

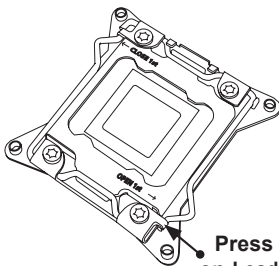
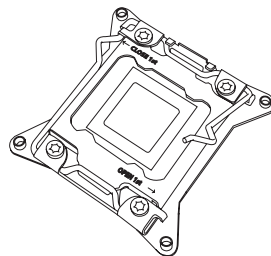
**Warning:** When handling the processor package, avoid placing direct pressure on the label area.

 **Notes:**

- Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the system board 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.
- When one CPU is installed, be sure to installed on CPU Socket 1 first.

### Installing the LGA2011 Processor

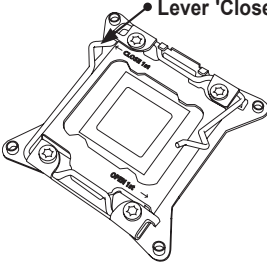
1. There are two load levers on the LGA2011 socket. To open the socket cover, first press and release the load lever labeled 'Open 1st'.

**1****2**

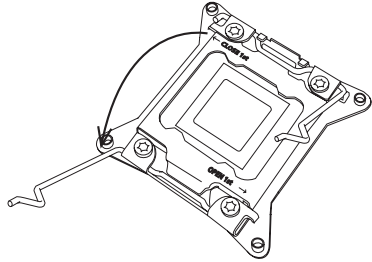
2. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position.

**1**

Press down on Load  
Lever 'Close 1st'



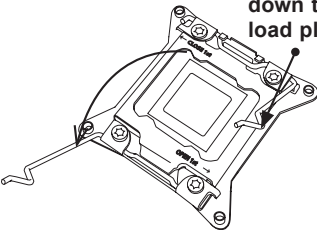
**2** Pull lever away from  
the socket



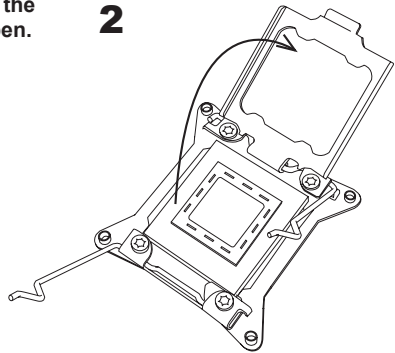
3. With the 'Close 1st' lever fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.

**1**

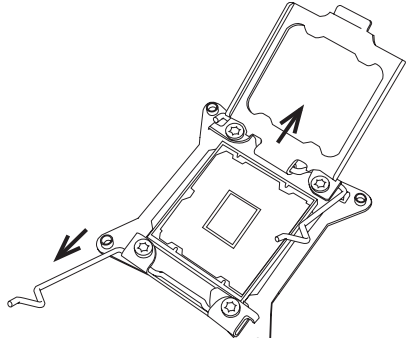
Gently push  
down to pop the  
load plate open.



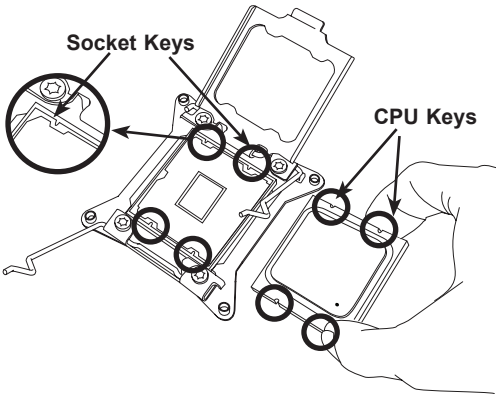
**2**



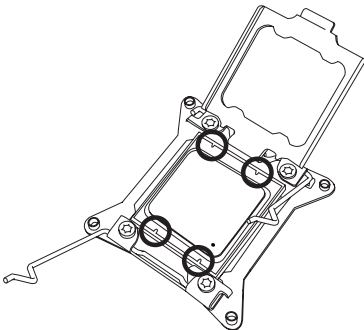
1. Using your thumb and the index finger, loosen the CPU lever and open the load plate.



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



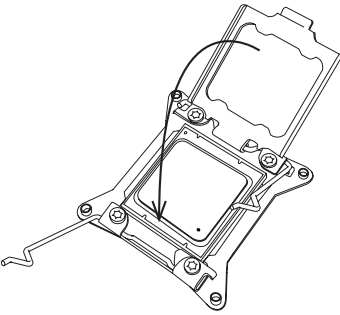
3. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)



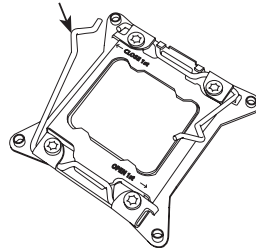
**Warning:** You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the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

4. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.
5. Close the load plate with the CPU inside the socket. Lock the 'Close 1st' lever first, then lock the 'Open 1st' lever second. Use your thumb to gently push the load levers down to the lever locks.

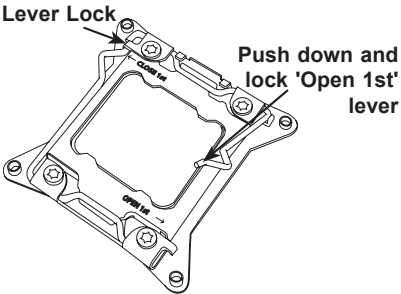
**1** Gently close the load plate.



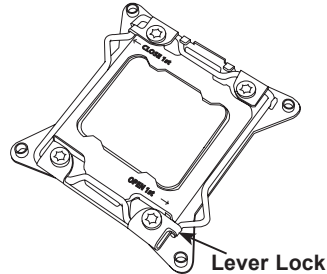
**2** Push down and lock 'Close 1st' lever.



**3** Push down and lock 'Open 1st' lever



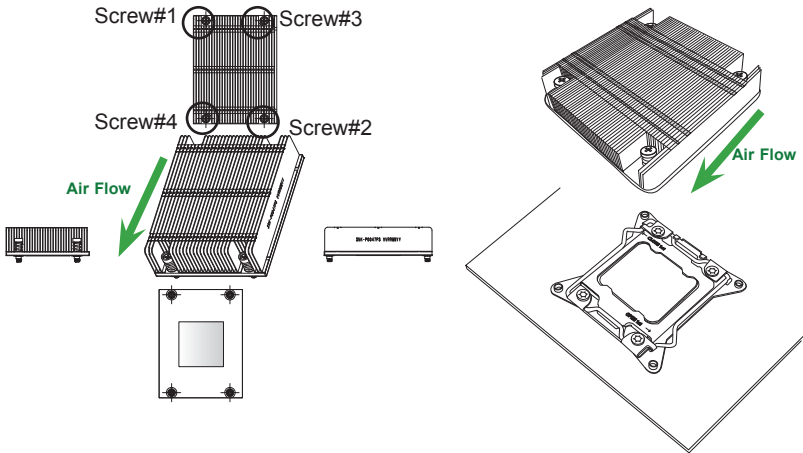
**4** Lever Lock






## Installing a Passive CPU Heatsink

1. Apply the proper amount of thermal grease to the heatsink.
2. Place the heatsink on top of the CPU so that the two mounting holes on the heatsink are aligned with those on the retention mechanism.
3. Install two screws on each side of the heatsink through the mounting holes on the motherboard, and turn the push-pins clockwise to lock them.



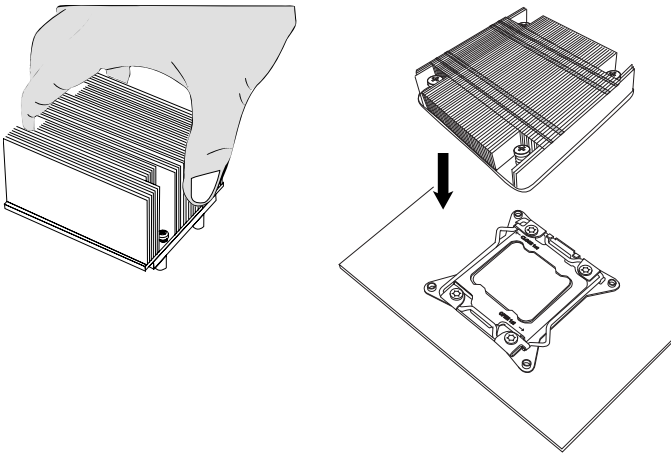
 **Note 1:** Graphic drawings included in this manual are for reference only. They might look different from the components installed in your system.

**Note 2:** For optimized airflow, please follow your chassis airflow direction to install the correct CPU heatsink direction.

## Removing the Passive Heatsink

**Warning:** We do not recommend that the CPU or the heatsink be removed. However, if you do need to remove the heatsink, please follow the instructions below to uninstall the heatsink to avoid damaging the CPU or other components.

1. Unplug the power cord from the power supply.
2. Press down the screw on the heatsink, and turn counter-clock-wise to loosen it. Repeat the same step to loosen the second screw.
3. Hold the heatsink as shown in the picture below, and gently wriggle the heatsink to loosen it. (Do not use excessive force when wriggling the heatsink.)



4. Once the heatsink is loosened, remove it from the motherboard.



**Note:** To reinstall the CPU and the heatsink, clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before reinstalling them on the motherboard.

## 2-4 Installing and Removing the Memory Modules

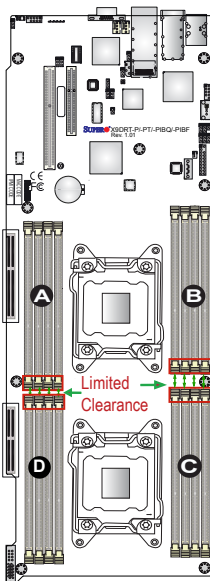
 **Note:** Check Supermicro's Website for recommended memory modules.

### CAUTION

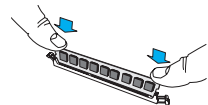
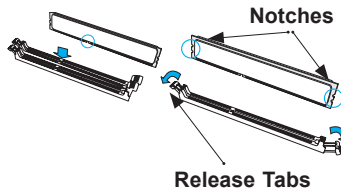
Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

### Installing DIMM Modules

1. Insert the desired number of DIMMs into the memory slots, starting with P1-DIMMA1. Push the release tabs outwards on both ends of the DIMM slot to unlock it. (Refer to the following pages for memory support and memory population configuration.)



**Warning:** Due to insufficient distance (limited clearance) between memory blocks A & D and B & C, be sure to put the release tabs of the memory slots in block D into the upright position before you install memory modules in block A, and vice versa. Also, be sure to put the release tabs of the memory slots in block C into an upright position before installing memory modules in block B, and vice versa. For example, put the release tabs of P2-DIMMG1/G2/H1/H2 into an upright position before installing memory modules into Slots P1-DIMMA1/A2/B1/B2. Refer to the graphic on the right for proper memory installation.



**Press both notches straight down into the memory slot at the same time.**


2. Align the key of the DIMM module with the receptive point on the memory slot.
3. Align the notches on both ends of the module against the receptive points on the ends of the slot.
4. Use two thumbs together to press the notches on both ends of the module straight down into the slot until the module snaps into place.
5. Press the release tabs to the locking positions to secure the DIMM module into the slot.

## Removing Memory Modules

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

### Memory Support for the X9DRT-P/-PT/-PIBQ/-PIBF Motherboard

The X9DRT-P/-PT/-PIBQ/-PIBF motherboard supports up to 1 TB of Load Reduced (LRDIMM) ECC, 512 GB of Registered (RDIMM) ECC, or 128 GB of Unbuffered (UDIMM) ECC/Non-ECC DDR3 800/1066/1333/1600/1866 MHz 240-pin 4-channel memory modules in 16 DIMM slots.

 **Note 1:** 1866 MHz memory speed is dependent on Intel E5-2600v2 CPUs.

**Note 2:** For the latest memory updates, please refer to the Tested Memory List posted on our website (<http://www.supermicro.com/products/motherboard>).

### Processor & Memory Module Population Configuration

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

Processors and their Corresponding Memory Modules								
CPU#	Corresponding DIMM Modules							
CPU 1	P1-DIMMA1	P1-DIMMB1	P1-DIMMC1	P1-DIMMD1	P1-DIMMA2	P1-DIMMB2	P1-DIMMC2	P1-DIMMD2
CPU2	P2-DIMME1	P2-DIMMF1	P2-DIMMG1	P2-DIMMH1	P2-DIMME2	P2-DIMMF2	P2-DIMMG2	P2-DIMMH2

Processor and Memory Module Population for Optimal Performance	
Number of CPUs+DIMMs	CPU and Memory Population Configuration Table (For memory to work properly, follow the instructions below.)
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
1 CPU & 5-8 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1 + Any memory pairs in P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2 slots
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 9-16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1 + Any memory pairs in P1, P2 DIMM slots
2 CPUs & 16 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1, P1-DIMMA2/P1-DIMMB2/P1-DIMMC2/P1-DIMMD2, P2-DIMME2/P2-DIMMF2/P2-DIMMG2/P2-DIMMH2

## Memory Installation for the Processor E5-2600 Series-based Platforms

### Populating UDIMM (ECC/Non-ECC) Modules (in the E5-2600-based Systems)

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

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

### Populating RDIMM (ECC) Modules (in the E5-2600-based Systems)

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

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

*Populating LRDIMM (ECC) Modules (in the E5-2600-based Systems)*

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

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

**Memory Installation for the Processor E5-2600v2-based Platforms**

*Populating UDIMM (ECC/Non-ECC) Modules (in the E5-2600v2-based Systems)*

Intel E5-2600(v2) Series Processor UDIMM Memory Support							
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM  (See the Note below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)			
				2 Slots Per Channel			
				1DPC		2DPC	
				1.35V	1.5V	1.35V	1.5v
SRx8 Non-ECC	1GB	2GB	4GB	NA	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
DRx8 Non-ECC	2GB	4GB	8GB	NA	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
SRx16 Non-ECC	512MB	1GB	2GB	NA	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
SRx8 ECC	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600
DRx8 ECC	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600

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

### Populating RDIMM (ECC) Modules (in the E5-2600v2-based Systems)

Intel E5-2600(v2) Series Processor RDIMM Memory Support							
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM  (See the Note Below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)			
				2 Slots Per Channel			
	1DPC		2DPC				
	1.35V	1.5V	1.35V	1.5V			
SRx8	1GB	2GB	4GB	1066, 1333, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600
DRx8	2GB	4GB	8GB	1066, 1333, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600
SRx4	2GB	4GB	8GB	1066, 1333, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600
DRx4	4GB	8GB	16GB	1066, 1333, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600
QRx4	8GB	16GB	32GB	800	800, 1066	800	800
QRx8	4GB	8GB	16GB	800	800, 1066	800	800

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

### Populating LRDIMM (ECC) Modules (in the E5-2600v2-based Systems)

Intel E5-2600(v2) Series Processor LRDIMM Memory Support							
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM  (See the Note Below)		Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)				
			2 Slots Per Channel				
	1DPC		2DPC				
	1.35V	1.5V	1.35V	1.5V			
QRx4 (DDP)	16GB	32GB	1066, 1333, 1600	1066, 1333, 1600, 1866	1066, 1333, 1600		1066, 1333, 1600
8Rx4 (QDP)	32GB	64GB	1066	1066	1066		1066

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



#### Other Important Notes and Restrictions

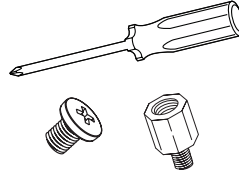
- For the memory modules to work properly, please install DIMM modules of the same type, same speed and same operating frequency on the motherboard. Mixing of RDIMMs, UDIMMs or LRDIMMs is not allowed. Do not install both ECC and Non-ECC memory modules on the same motherboard.
- Using DDR3 DIMMs with different operating frequencies is not allowed. All channels in a system will run at the lowest common frequency.

## 2-5 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 motherboard and 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. Then use a screwdriver to secure the motherboard onto the motherboard tray.

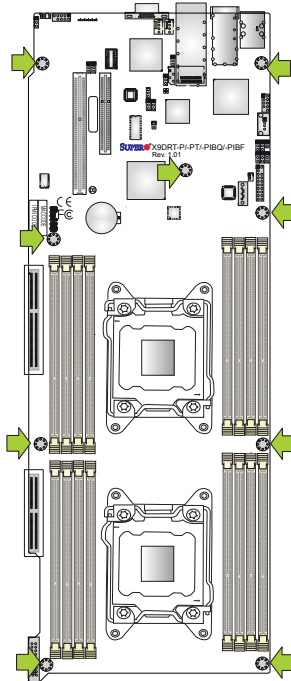
### Tools Needed

- Phillips Screwdriver
- Pan head screws (9 pieces)
- Standoffs (9 pieces, if needed)



### Location of Mounting Holes

There are nine (9) mounting holes on this motherboard indicated by the arrows.

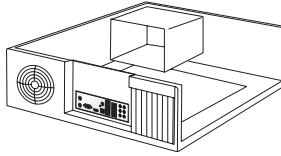


**Warning:** 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components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

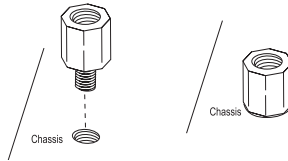


## Installing the Motherboard

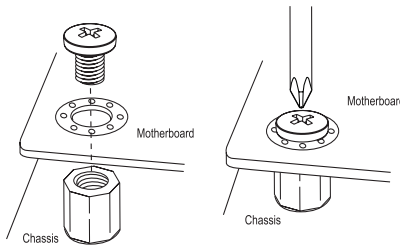
1. Install the I/O shield into the chassis.




2. Locate the mounting holes on the motherboard.
3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.
4. Install standoffs in the chassis as needed.



5. Install the motherboard into the chassis carefully to avoid damaging motherboard components.
6. Using the Phillips screwdriver, insert a Pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis.



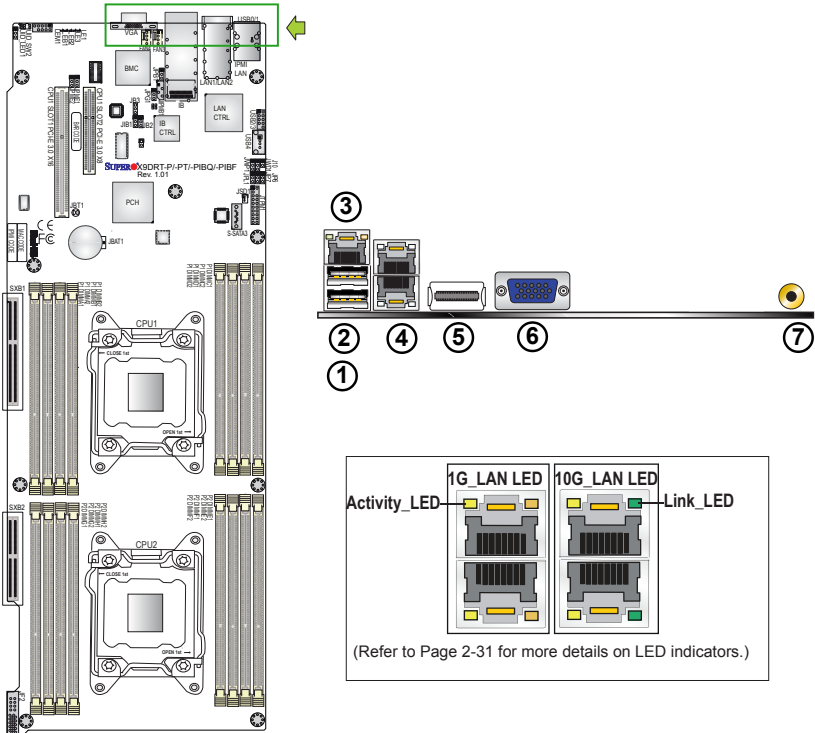
7. Repeat Step 5 to insert #6 screws into all mounting holes.
8. Make sure that the motherboard is securely placed in the chassis.

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

## 2-6 Control Panel Connectors and I/O Ports

The I/O ports are color coded in compliance with the industry standards. See the picture below for the colors and locations of the various I/O ports.

### Back Panel Connectors and I/O Ports



### Back Panel I/O Port Locations and Definitions

1. Backplane USB0
2. Backplane USB1
3. IPMI LAN
4. Gigabit LAN Ports (for X9DRT-P/-PIBQ/-PIBF), 10G LAN Ports (for X9DRT-PT)
5. InfiniBand (IB) Connector (for X9DRT-PIBQ/-PIBF)
6. Backplane VGA (Blue)
7. UID Switch
8. UID LED (on the motherboard)

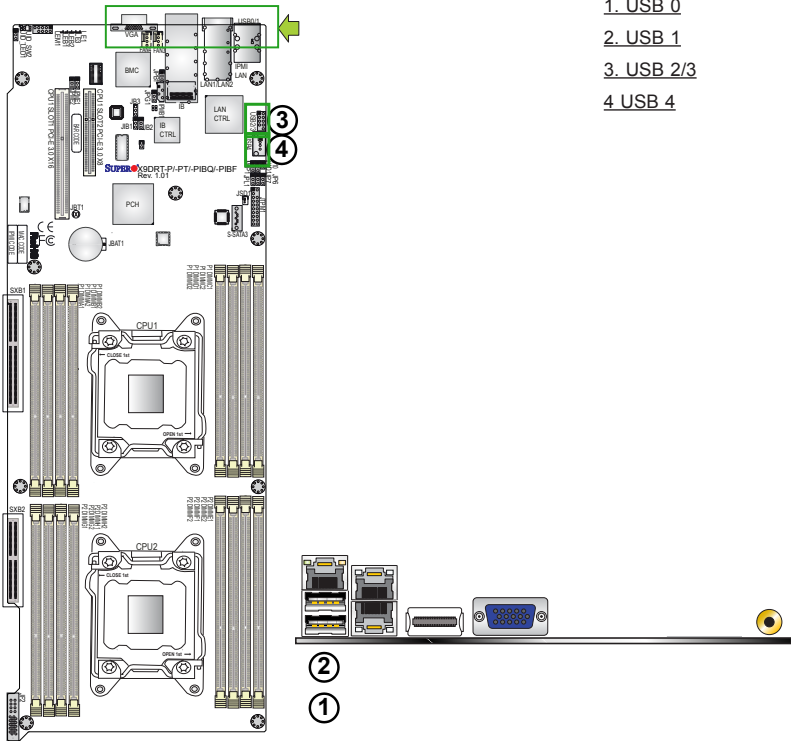
### Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB 0/1) are located on the I/O back panel. In addition, a USB header, located next to the LAN controller, provides two front-accessible USB connections (USB 2/3). In addition, a Type A USB connection (USB 4), located next to the USB 2/3 header, also provides front panel USB support on the motherboard. (Cables are not included.) See the tables on the right for pin definitions.

Backplane USB (USB 0/1) Pin Definitions	
Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground

(USB 2/3, USB 4) Pin Definitions			
USB 2, 4 Pin # Definition		USB 3 Pin # Definition	
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	NC	5	Key

(NC= No connection)

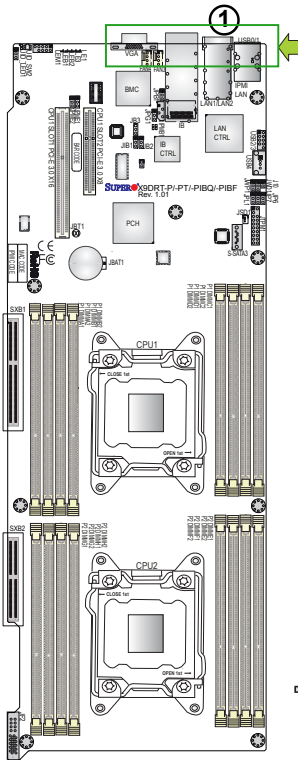


- 1. USB 0
- 2. USB 1
- 3. USB 2/3
- 4. USB 4

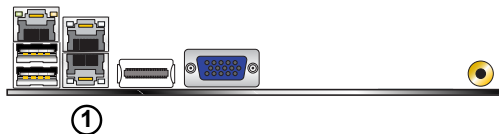
**Onboard LAN Ports**

Onboard LAN (Ethernet) Ports are located at JLAN1 on the I/O backplane on the motherboard. These LAN ports support Gigabit LAN on the X9DRT-P/PIBQ/PIBF, and support 10G LAN on the X9DRT-PT. These ports use RJ45 type cables. **(Note:** Please refer to the LED Indicator Section for LAN LED information.)

LAN Ports Pin Definition			
Pin#	Definition		
JLAN.A1	MDIO_P0	JLAN.B1	MDI1_P0
JLAN.A2	MDIO_N0	JLAN.B2	MDI1_N0
JLAN.A3	MDIO_TRDCT	JLAN.B3	MDI1_TRDCT
JLAN.A4	MDIO_P1	JLAN.B4	MDI1_P1
JLAN.A5	MDIO_N1	JLAN.B5	MDI1_N1
JLAN.A6	MDIO_TRDCT	JLAN.B6	MDI1_TRDCT
JLAN.A7	MDIO_P2	JLAN.B7	MDI1_P2
JLAN.A8	MDIO_N2	JLAN.B8	MDI1_N2
JLAN.A9	MDIO_TRDCT	JLAN.B9	MDI1_TRDCT
JLAN.A10	MDIO_P3	JLAN.B10	MDI1_P3
JLAN.A11	MDIO_N3	JLAN.B11	MDI1_N3
JLAN.A12	MDIO_TRDCT	JLAN.B12	MDI1_TRDCT
JLAN.A13	MDIO_P4_L2	JLAN.B13	MDI1_P4_L2
JLAN.A14	MDIO_N4_L2	JLAN.B14	MDI1_N4_L2
JLAN.A15	LAN_LINK0_ACT	JLAN.B15	LAN_LINK1_ACT
JLAN.A16	10G_LED0_13	JLAN.B16	10G_LED1_16
JLAN.A17	LAN_LINK0_1G_N	JLAN.B17	LAN_LINK1_1G_N
JLAN.A18	LAN_LINK0_10G_N	JLAN.B18	LAN_LINK1_10G_N



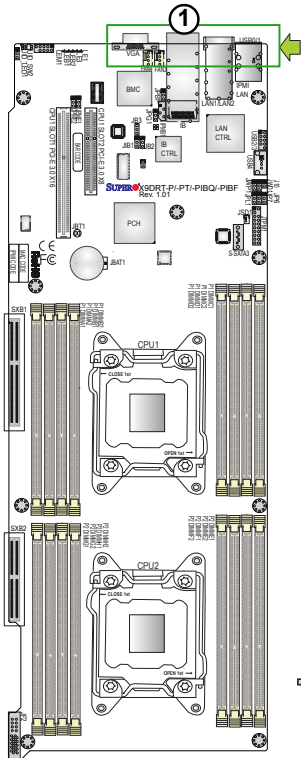
- 1. LAN ports (GLAN on X9DRT-P/-PIBQ/-PIBF)
- 1. LAN ports (10G LAN on X9DRT-PT)



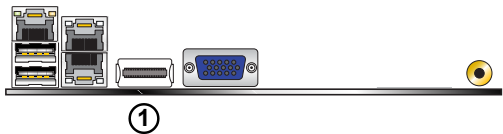
## InfiniBand Connection (For X9DRT-PIBQ/PIBF)

The onboard InfiniBand (IB) connector is located on the backplane on the motherboard. The IB switch is primarily used for High-performance computing. See the table on the right for pin definitions.

Pin	Description
1	Ground
2	Transmitter Inverted Data Input
3	Transmitter Non-Inverted Data Input
4	Ground
5	Transmitter Inverted Data Input
6	Transmitter Non-Inverted Data Input
7	Ground
8	Module Select
9	Module Reset
10	+3.3 V Power supply receiver
11	2-wire serial interface clock
12	2-wire serial interface data
13	Ground
14	Receiver Non-Inverted Data Output
15	Receiver Inverted Data Output
16	Ground
17	Receiver Non-Inverted Data Output
18	Receiver Inverted Data Output
19	Ground
20	Ground
21	Receiver Inverted Data Output
22	Receiver Non-Inverted Data Output
23	Ground
24	Receiver Inverted Data Output
25	Receiver Non-Inverted Data Output
26	Ground
27	Module Present
28	Interrupt
29	+3.3 V Power supply transmitter
30	+3.3 V Power Supply
31	Low Power Mode
32	Ground
33	Transmitter Non-Inverted Data Input
34	Transmitter Inverted Data Input
35	Ground
36	Transmitter Non-Inverted Data Input
37	Transmitter Inverted Data Input
38	Ground

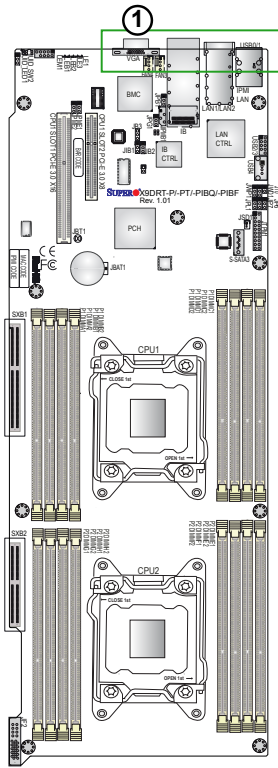


1. IB Port (For X9DRT-PIBQ/PIBF)

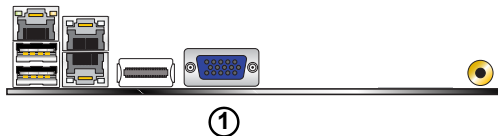


## Video Connector

A Video (VGA) connector is located next to Fan 4 on the IO backplane. This connector is used to provide video and CRT display. Refer to the board layout below for the location.



1. VGA Port

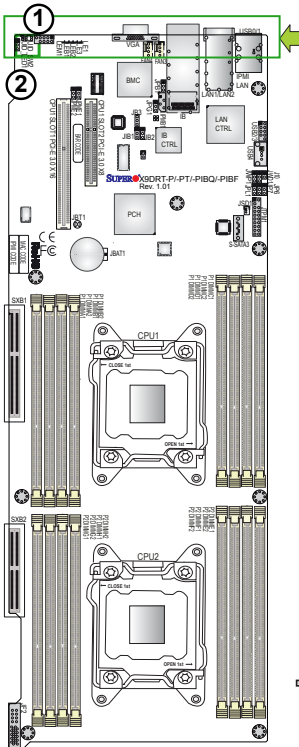


## Unit Identifier Switches

A Unit Identifier (UID) switch is located at UIDSW2 on the I/O panel, and a UID LED indicator is located at UIDLED1 on the motherboard. When the user presses the UID switch, the UID LED indicator will be turned on. Press the UID switch again to turn off the LED indicator. The UID LED Indicator provides easy identification of a system unit that may be in need of service. See the table on the right for pin definitions.

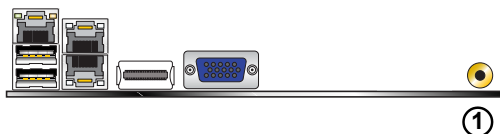
UID Switch	
Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Ground

UID Switch & LED	
Description	Location
Rear Switch	UIDSW2
Rear UID LED	UIDLED1



1. UID Switch

2. UID LED

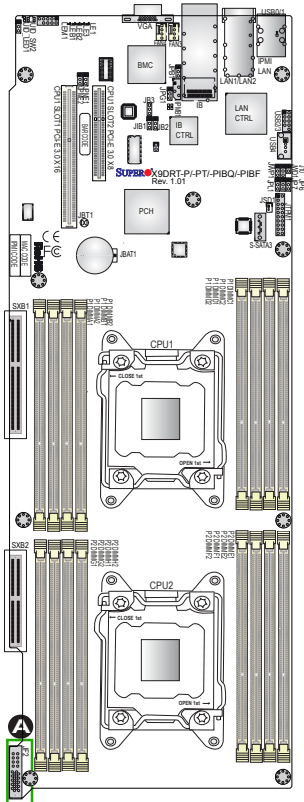


## SMC-Proprietary Add-On Card Slot for PWR Supply/FP Control/SATA Connections

JF2 is an SMC-Proprietary Add-On card slot to provide power supply, front panel control, and SATA connections. The adapter cards listed in the table below are supported by this motherboard. These adapter cards are designed specifically for use with Supermicro's server chassis. For your system to work properly, be sure to have an appropriate adapter card installed in JF2 on your motherboard. See the layout below for JF2 location.

### Adapter Cards supported by JF2 on this motherboard

Part	Description
BPN-ADP-6SATA3P	6-port SATA Adapter for Twin Pro System
BPN-ADP-S3008L-L61R	BPN-ADP-S3008L-L61R, LSI3008,PBF (3008)
BPN-ADP-S3108L-H61R	BPN-ADP-S3108L-L61R, LSI3108,PBF (3108)
BPN-ADP-8SATA3P	8-Port SATA Adofter for Twin Pro System



A. JF2



## 2-7 Connecting Cables

### IPMB I<sup>2</sup>C SMB

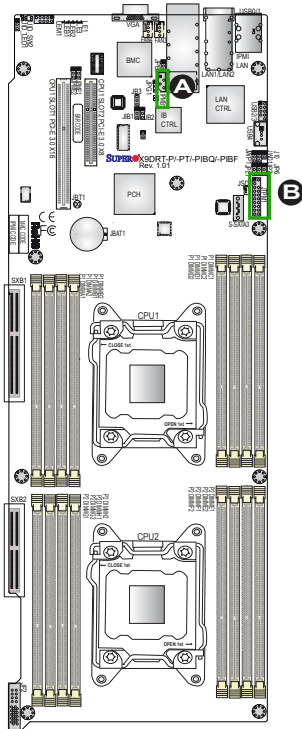
A System Management Bus header for the IPMI slot is located at JIPMB1. Connect an appropriate cable here to use the IPMB I<sup>2</sup>C connection on your system.

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

### TPM Header/Port 80

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

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



A. IPMB

B. TPM/Port80

**DOM Power Connector**

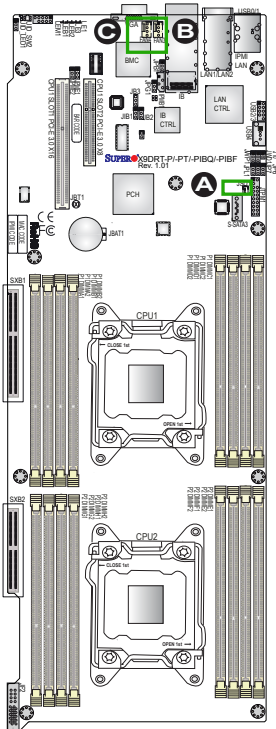
A power connector for SATA DOM (Disk\_ On\_Module) devices is located at JSD1. Connect an appropriate cable here to provide power for your SATA DOM devices.

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

**Fan Headers**

This motherboard has two system/CPU fan headers (Fan 3/Fan 4) on the motherboard. These 4-pin fans headers are backward compatible with the traditional 3-pin fans. The fan speeds are controlled by firmware thermal management via IPMI 2.0. See the table on the right for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	Firmware Thermal Control

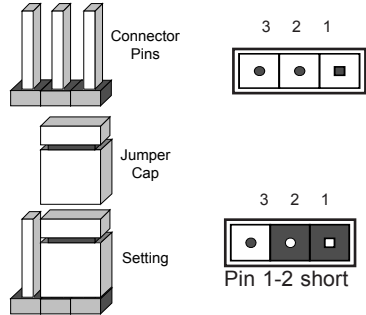



- A. [SATA DOM PWR](#)
- B. [Fan3](#)
- C. [Fan4](#)

## 2-8 Jumper Settings

### Explanation of Jumpers

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



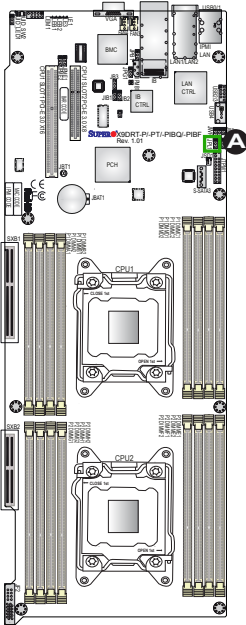
 **Note:** On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

### Onboard LAN Enable/Disable

JPL1 enables or disables the LAN Port 1 (JPLAN1) on the motherboard. See the table on the right for jumper settings. The default setting is Enabled.


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

#### A. Onboard LAN Enable



### CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS. ⌚

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

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

**Note 3:** Clearing CMOS will also clear all passwords.

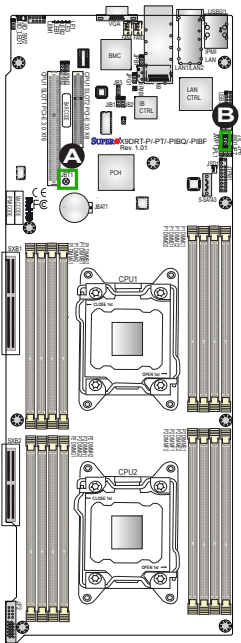
### Watch Dog Enable/Disable

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

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

A. Clear CMOS

B. Watch Dog Enable



## VGA Enable

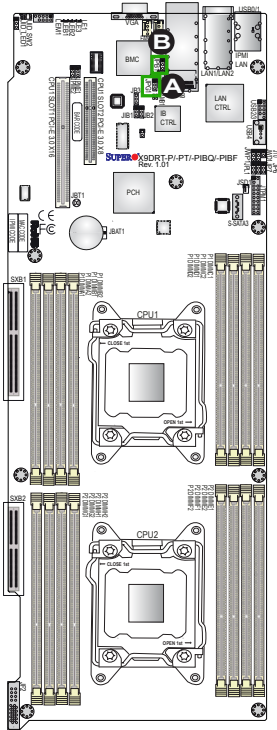
Jumper JPG1 allows the user to enable the onboard VGA connectors. The default setting is 1-2 to enable the connection. See the table on the right for jumper settings.

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

## BMC Enable

Jumper JPB1 allows you to enable the onboard BMC (Baseboard Management) Controller to provide IPMI 2.0/KVM support on the motherboard. See the table on the right for jumper settings.

BMC Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enabled (Default)
Pins 2-3	BMC Disabled



A. VGA Enabled

B. BMC Enabled

### Management Engine (ME) Recovery

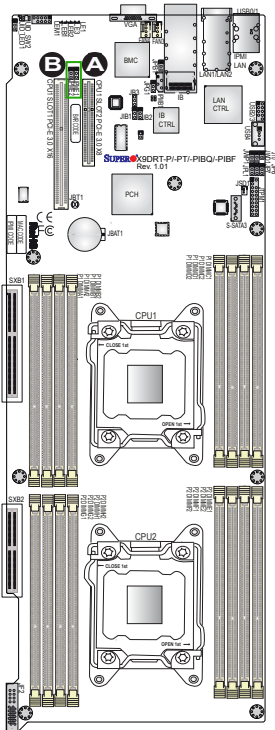
Use Jumper JPME1 to select ME Firmware Recovery mode, which will limit resource allocation for essential system operation only in order to maintain normal power operation and management. In the single operation mode, online upgrade will be available via Recovery mode. See the table on the right for jumper settings.

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

### Manufacture Mode Select

Close Pin 2 and Pin 3 of Jumper JPME2 to bypass SPI flash security and force the system to operate in the Manufacture Mode, allowing the user to flash the system firmware from a host server for system setting modifications. See the table on the right for jumper settings.

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

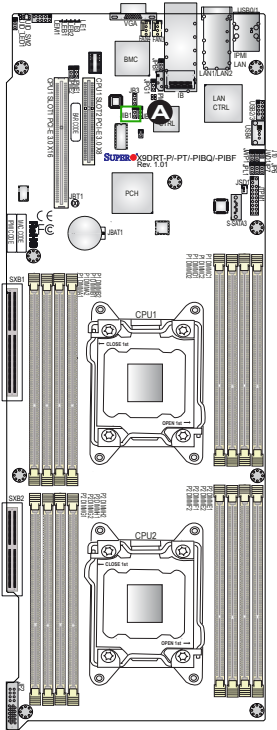


- A. JPME1
- B. JPME2

## InfiniBand (IB) Enable (For X9DRT-PIBQ/PIBF)

Jumper JIB1 allows the user to enable the onboard InfiniBand connector. The default setting is 1-2 to enable the connection. See the table on the right for jumper settings.

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

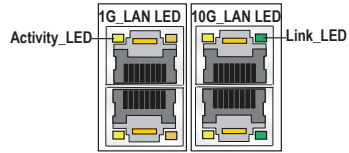


A. IB Enable

## 2-9 Onboard LED Indicators

### LAN LEDs

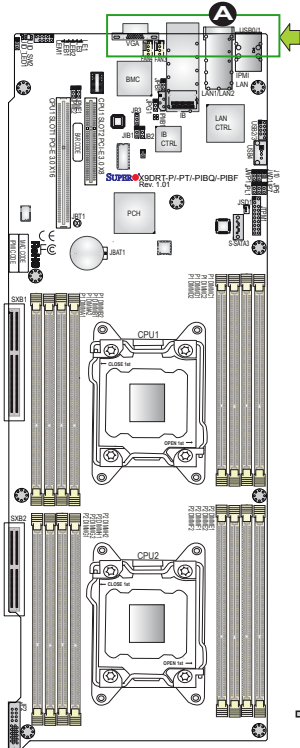
The Ethernet LAN ports are located on the IO Backplane on the motherboard. Each LAN port has two LEDs. The Yellow LED indicates activity. The Link LED on the right side of the LAN port may be green, amber or off to indicate the speed of the connection. See the tables on the right for more information.



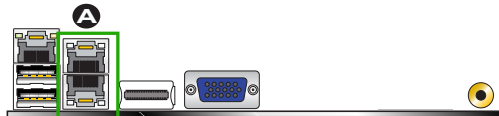
**Rear View** (when facing the rear side of the chassis)

LAN Activity Indicator (Left) LED Settings		
Color	Status	Definition
Yellow	Flashing	Active

1G_LAN/10_GLAN Link Indicator LED Settings (Right)	
LED Color	Definition
Off	No Connection, 10 or 100 Mbps
Amber	1 Gbps
Green	10 Gbps (X9DRT-PT only)



A. LAN Port LEDs  
(See graphics above)





### HDD/SATA LED (LE3)

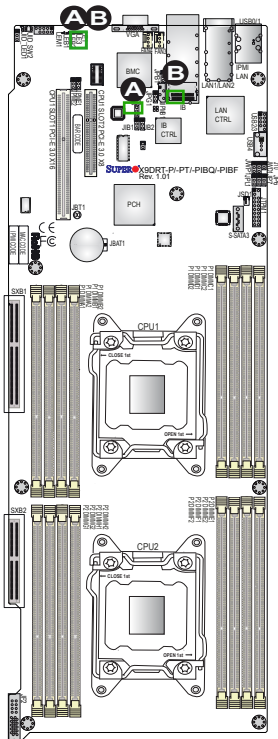
An HDD/SATA LED Indicator is located at LE3 on the motherboard. This LED indicates the status of hard drive activities or SATA activities. Also see the layout below for the LED locations.

HDD/SATA LED Settings	
Status	Definition
On	HDD/SATA Connected
Off	No connection

### Onboard Power LED

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

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



A. HDD LED

B. Onboard PWR

LED

**Rear UID LED**

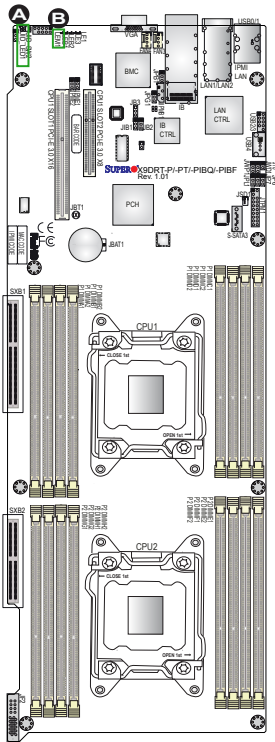
The rear UID LED is located at UIDLED1 on the rear of the motherboard. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service. Refer to UID Switch on page 2-22 for more information.

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

**BMC Heartbeat LED**

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

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

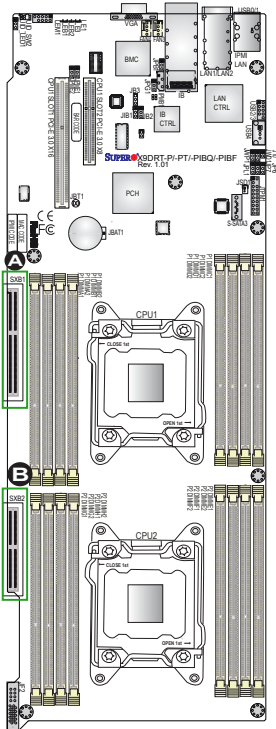


- A. UID LED
- B. BMC LED

## 2-10 PCI-Express and SATA DOM Port

### PCI-Express 3.0 x8 Slots

Two PCI-Express 3.0 x8 slots (SXB1/SXB2) are on the motherboard. SXB1 supports an SMC-proprietary daughter card; while SXB2 is used for the SMC-Proprietary add-on card. Both SXB1 and SXB2 slots are supported by CPU2. Refer to the layout below for the locations.



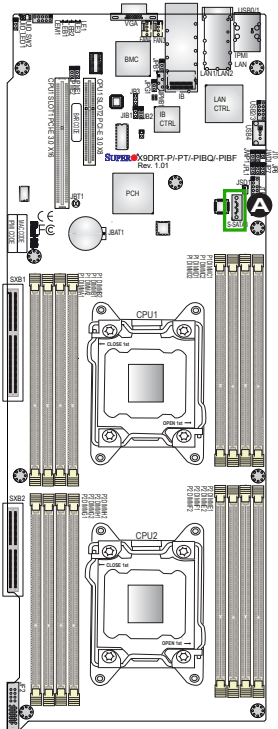
A. SXB1

B. SXB2

**SATA DOM (Device\_On\_Disk) Port**

A SATA DOM port (S-SATA 3) is located on the motherboard. This port provides serial-link DOM support. See the table on the right for pin definitions.

SATA DOM Pin Definitions	
Pin#	Definition
1	Ground
2	TX_P
3	TX_N
4	Ground
5	RX_N
6	RX_P
7	Ground
8	5V
9	GND



A. S-SATA 3

## 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.

**Warning:** Always disconnect the power cord before adding, changing or installing any hardware components.

#### **Before Power On**

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including keyboard and mouse cables.
3. Remove all add-on cards.
4. Install CPU 1 first (making sure it is fully seated), and connect the front panel connectors to the motherboard.

#### **No Power**

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Check that the 115V/230V switch on the power supply is properly set, if available.
3. 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.

## 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 1-6 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 steps indicated above do not fix setup configuration problems, contact your vendor for repairs.

## When the System Becomes Unstable

### ***A. The system becomes unstable during or after OS system installation***

When the system becomes unstable during or after OS system installation, check the following:

1. CPU/BIOS support: Make sure that your CPU is supported, and 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 system cooling to make sure that all cooling fans and system fans work properly. Check Hardware Monitoring settings in the BIOS 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 the Overheat LED 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 minimum power requirement.
6. Proper software support: Make sure that the correct disk drivers are used.

***B. The system becomes unstable before or during OS installation***

When 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 disc, CD/DVD-ROM.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Using minimum configuration for troubleshooting: Remove all unnecessary components (-starting with add-on cards first), and use minimum configuration (with a CPU and a memory module installed) to identify the problematic areas.
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 the 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, please note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, 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 go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our website (<http://www.supermicro.com/>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (<http://www.supermicro.com>).
3. If you still cannot resolve the problem, include the following information when contacting Supermicro 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
4. An example of a Technical Support form is on our website at (<http://www.supermicro.com>).
  - Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at [support@supermicro.com](mailto:support@supermicro.com).



## 3-3 Battery Removal and Installation

### Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Locate the onboard battery.
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.

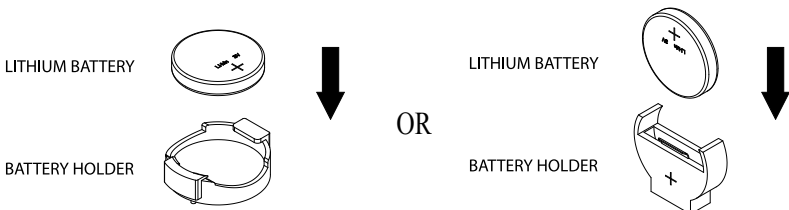
### Proper Battery Disposal

**Warning:** 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.

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



## 3-4 Frequently Asked Questions

**Question: What are the various types of memory that my motherboard can support?**

**Answer:** The motherboard supports RDIMM/LRDIMM ECC or UDIMM ECC/Non-ECC DDR3 DIMM modules. To enhance memory performance, do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on Section 2-4 in Chapter 2.

**Question: How do I update my BIOS?**

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 motherboard 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 AMI.bat filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot.

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



**Note:** The SPI BIOS chip used on this motherboard cannot be removed. Send your motherboard back to our RMA Department at Supermicro for repair. For BIOS Recovery instructions, please refer to the AMI BIOS Recovery Instructions posted at <http://www.supermicro.com>.

**Question: How do I handle the used battery?**

**Answer:** 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. (Refer to Section 3-3.)

### 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 the motherboard to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is 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, you can also request a RMA authorization online (<http://www.supermicro.com/RmaForm/>).

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

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

## Notes

## Chapter 4


# BIOS

### 4-1 Introduction


This chapter describes the AMI BIOS setup utility for the X9DRT-P/-PT/-PIBQ/-PIBF. It also provides the instructions on how to navigate the AMI BIOS setup utility screens. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated.

#### Starting BIOS Setup Utility


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

 **Note:** In most cases, the <Del> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F3>, <F4>, etc.

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

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


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

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

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

## How To Change the Configuration Data

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

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

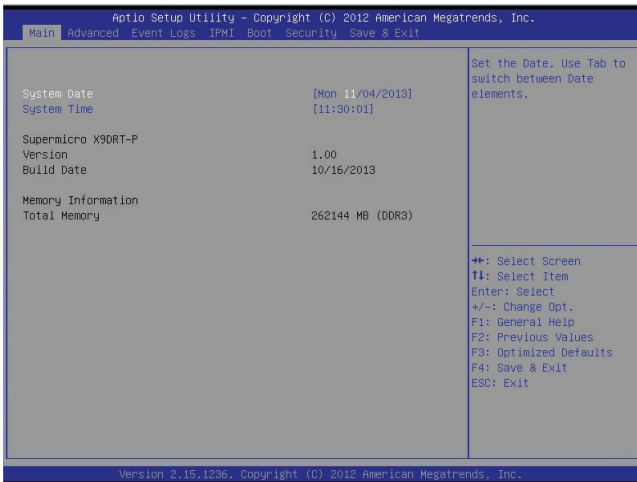
## Starting the Setup Utility

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

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

## 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 AMI BIOS Main menu displays the following information:

**System Date/System Time**

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

**Supermicro X9DRT-P/-PT/-PIBQ/-PIBF**

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

**Build Date**

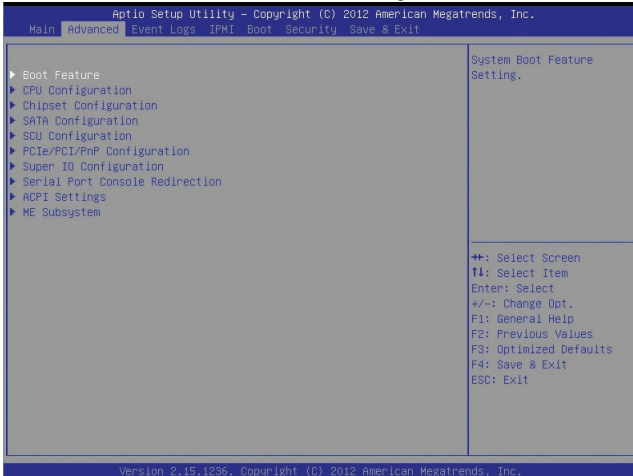
This item displays the date that the BIOS Setup utility was built.

**Memory Information****Total Memory**

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

## 4-3 Advanced Setup Configurations

Select the Advanced tab to access the following submenu items.



### ► Boot Features

#### Quiet Boot

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

#### AddOn ROM Display Mode

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

#### Bootup Num-Lock

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

#### Wait For 'F1' If Error

Select Enabled to force the system to wait until the 'F1' key is pressed when an error occurs. The options are Disabled and **Enabled**.



### Interrupt 19 Capture

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

### Re-try Boot

If this feature is set to Enabled, the BIOS will continuously try to boot from the selected boot drive. The options are **Disabled**, Legacy Boot, and EFI Boot.

## Power Configuration

### Watch Dog Function

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

### Power Button Function

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

### Restore on AC Power Loss

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

## ► CPU Configuration

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

### ► Socket 1 CPU Information, Socket 2 CPU Information

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

- Type of CPU

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

### **CPU Speed**

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

### **64-bit**

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

### **Clock Spread Spectrum**

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

### **RTID (Record Types IDs)**

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

**Hyper-threading**

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

**Active Processor Cores**

Set to Enabled to use a processor's second core and above. (Please refer to Intel's website for more information.) The options are **All**, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11.

**Limit CPUID Maximum**

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

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

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

**Intel® AES-NI**

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

**MLC Streamer Prefetcher (Available when supported by the CPU)**

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

**MLC Spatial Prefetcher (Available when supported by the CPU)**

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

**DCU Streamer Prefetcher (Available when supported by the CPU)**

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

**DCU IP Prefetcher**

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

---

### Intel<sup>®</sup> Virtualization Technology (Available when supported by the CPU)

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



**Note:** If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's website for detailed information.)

### PPIN Support (Available when supported by the CPU)

Select Enabled for Protected\_Processor\_Inventory\_Number (PPIN) support, which will allow the BIOS setup returns a 64-bit ID number via the PPIN MSR (Magnetic Stripe Reader.) The options are **Enabled** and Disabled.

## ► CPU Power Management Configuration

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

### Power Technology

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

#### EIST (Available when Power Technology is set to Custom)

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

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

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

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

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

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

Select Enabled to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are Enabled and **Disabled**.

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

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

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

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

**Energy/Performance Bias**

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

**Factory Long Duration Power Limit**

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

**Long Duration Power Limit**

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

**Factory Long Duration Maintained**

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

**Long Duration Maintained**

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

**Recommended Short Duration Power Limit**

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

### Short Duration Power Limit

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

## ► Chipset Configuration

### ► North Bridge

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

### ► Integrated IO Configuration

#### Intel® VT-d

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

#### Ageing Timer Rollover

Use this feature to configure the Ageing timer setting. Use the default setting to comply with the BIOS setting. The options are Disabled, 32 us, **128 us**, and 512 us.

#### Intel® I/OAT

Select Enabled to enable Intel I/OAT (I/O Acceleration Technology), which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The options are Disabled and **Enabled**.

#### DCA Support

When set to Enabled, this feature uses Intel's DCA (Direct Cache Access) Technology to improve data transfer efficiency. The default setting is **Enabled**.

#### IIO 1 PCIe Port Bifurcation Control

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

**CPU1 Slot1 PCI-E Link Speed**

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

**CPU1 Slot2 PCI-E Link Speed**

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

**IIO 2 PCIe Port Bifurcation Control**

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

**►QPI Configuration****Current QPI Link Speed**

This item displays the current status of the QPI Link.

**Current QPI Link Frequency**

This item displays the frequency of the QPI Link.

**Isoc**

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

**MesegEn**

Select Enabled to allow the BIOS to send and to receive messages regarding QPI links. The options are Enabled and **Disabled**.

**QPI (Quick Path Interconnect) Link Speed Mode**

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

**QPI Link Frequency Select**

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

### **Snoop Mode**

Use this feature to select the snoop mode. The options are **Auto**, Early Snoop, Home Snoop, Home Directory Snoop, and Home Directory Snoop with OSB.

### **► DIMM Configuration**

This section displays the following DIMM information.

#### **Current Memory Mode**

This item displays the current memory mode.

#### **Current Memory Speed**

This item displays the current memory speed.

#### **Mirroring**

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

#### **Sparing**

This item displays if memory sparing is supported by the motherboard. Memory sparing enhances system performance.

### **► DIMM Information**

The status of the memory modules detected by the BIOS is displayed.

#### **CPU Socket 1 DIMM Information**

P1-DIMMA1/P1-DIMMA2/P1-DIMMB1/P1-DIMMB2/P1-DIMMC1/P1-DIMMC2/  
P1-DIMMD1/P1-DIMMD2

#### **CPU Socket 2 DIMM Information**

P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMF2/P2-DIMMG1/P2-DIMMG2/  
P2-DIMMH1/P2-DIMMH2

### **Memory Mode**

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



### **DRAM RAPL Mode**

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

### **DDR Speed**

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

### **Channel Interleaving**

Use this feature to set the DIMM channel interleaving mood. The options are **Auto**, 1 Way, 2 Way, 3, Way, and 4 Way.

### **Rank Interleaving**

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

### **Patrol Scrub**

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enabled, the IO hub will read and write back one cache line every 16K cycles, if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Enabled** and Disabled.

### **Demand Scrub**

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select Enabled to use Demand Scrubbing for ECC memory correction. The options are **Enabled** and Disabled.

### **Data Scrambling**

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

### **Device Tagging**

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

### Thermal Throttling

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

### Double Refresh

Select Enabled to support double refresh for onboard memory to enhance memory and system performance. The options are **Auto**, Enabled, and Disabled.

## ► South Bridge Configuration

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

### PCH Information

This feature displays the following PCH information.

**Name:** This item displays the name of the PCH chip.

**Stepping:** This item displays the status of the PCH stepping.

**USB Devices:** This item displays the USB devices detected by the BIOS.

### All USB Devices

Select Enabled to enable USB port/device support. The options are Disabled and **Enabled**.

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

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

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

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

### Port 60/64 Emulation

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

## **EHCI Hand-Off**

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

## **►SATA Configuration**

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA Devices and displays the following items:

### **SATA Controllers**

This item Enables or Disables the built-in SATA controllers on the motherboard. The options are **Enabled** and Disabled.

### **SATA Mode Selection**

This item selects the mode for the installed SATA drives. The options are IDE, **AHCI** and RAID.

### **SATA RAID Option ROM/UEFI Driver (Available if the item above - SATA Mode Select is set to AHCI or RAID)**

Select Enabled to use the SATA RAID Option ROM/UEFI driver for system boot. The options are **Enabled** and Disabled.

**If the item above -SATA Mode Select is set to AHCI, the following items are displayed:**

#### **Serial ATA Port 0~ Port 5**

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

- Model number of drive and capacity
- Software Preserve Support

#### **Port 0 ~ Port 5 Hot Plug**

This feature designates the 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 **Enabled** and Disabled.

#### **Port 0 ~ Port 5 SATA Device Type**

This feature configures the selected SATA port to support either a solid state drive or hard disk drive. The options are **Hard Disk Drive** and Solid Sate Drive.

### Port 0 ~ Port 5 Spin Up Device

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

**If the item above - SATA Mode Select is set to IDE, the following items are displayed:**

#### Serial ATA Port 0~ Port 5

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

- Model number of drive and capacity
- Software Preserve Support

**If the item above - SATA Mode Select is set to RAID, the following items are displayed:**

#### Serial ATA Port 0~ Port 5

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

- Model number of drive and capacity
- Software Preserve Support

### Port 0 ~ Port 5 Hot Plug

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

### Port 0 ~ Port 5 SATA Device Type

This feature configures the selected SATA port to support either a solid state drive or hard disk drive. Set this item to Enabled to enable hot-plugging. The options are **Hard Disk Drive** and Solid Sate Drive.

### Port 0 ~ Port 5 Spin Up Device

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

#### Port 0~5 Staggered Spin Up

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

## RAID Mode

The following items are displayed when RAID Mode is selected:

### PCH RAID CodeBase

Select Intel to configure RAID settings using the Intel PCH controller. Select LSI to configure RAID settings using the LSI controller. The options are **Intel** and LSI.

### SATA RAID Option ROM/UEFI Driver (Available if the item above - SATA Mode Select is set to AHCI or RAID)

Select Enabled to use the SATA RAID Option ROM/UEFI driver for system boot. The options are **Enabled** and Disabled.

### Port 0~5 Hot Plug

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

## ► SCU (System Configuration Unit) Configuration

### Storage Control Unit

Select Enabled to support Intel PCH devices. The options are Disabled and **Enabled**.

### SATA RAID Option ROM/UEFI Driver

Select Enabled to use the SATA RAID Option ROM/UEFI driver for system boot. The options are **Enabled** and Disabled.

### SCU Devices

Select Enabled to enable support for PCH SCU (System Configuration Utility) devices. The options are Disabled and **Enabled**.

### SCU Ports 0~3

The status of each of the SCU ports indicated above will be displayed.

## ► PCIe/PCI/PnP Configuration

### Launch Storage OPROM Policy

This feature controls how the system executes UEFI (Unified Extensible Firmware Interface), and legacy storage OPROM. Select Legacy Only to boot the system using a legacy device installed in a PCI slot. The options are UEFI Only and **Legacy Only**.

### PCI Latency Timer

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

### SERR# Generation

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

### Maximum Payload

Select Auto to allow the system BIOS to automatically set the maximum payload value for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes and 256 Bytes.

### Maximum Read Request

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

### ASPM Support

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

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

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

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

### CPU1 Slot 1 PCI-E 3.0 x16 OPROM/ CPU1 Slot 2 PCI-E 3.0 x8 OPROM

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

### **Onboard LAN Option ROM Select**

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

### **Load Onboard LAN1 Option ROM, Load Onboard LAN2 Option ROM**

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

### **VGA Priority**

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

### **Network Stack**

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

## **► Super IO Configuration**

**Super IO Chip:** This item displays the Super IO chip used in the motherboard.

### **Serial Port Attribute**

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

## **► COM Configuration**

### **Serial Port**

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

### **Device Settings**

This item displays the settings of Serial Port 1 (COM).

### **Change Settings**

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 (COM). Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3; IO=2F8h; IRQ=3; IO=3E8h; IRQ=5; IO=2E8h; IRQ=7; IO=3F8h; IRQ=3,

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

#### **Device Mode**

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

### **► SOL (Serial\_Over\_LAN) Configuration**

#### **SOL Serial Port**

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

#### **Device Settings**

This item displays the settings of Serial Port 2 (SOL).

#### **Change Settings**

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

#### **SOL Device Mode**

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

### **► Serial Port Console Redirection**

#### **COM**

This submenu allows the user to configure the following Console Redirection settings for this Port.

#### **Console Redirection**

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

#### **SOL**

This submenu allows the user to configure the following Console Redirection settings for the SOL Port specified by the user.



## Console Redirection

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

### ► Console Redirection Settings

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

#### Terminal Type

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

#### Bits Per second

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

#### Data Bits

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

#### Parity

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

#### Stop Bits

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

#### Flow Control

This feature allows the user to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop send-

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ing data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

#### **VT-UTF8 Combo Key Support**

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

#### **Recorder Mode**

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

#### **Resolution 100x31**

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

#### **Legacy OS Redirection Resolution**

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

#### **Putty KeyPad**

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

#### **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)**

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

#### **Console Redirection (for EMS)**

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

## ► Console Redirection Settings (for EMS)

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

### Out-of-Band Management Port

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

### Terminal Type

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

### Bits Per Second

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

### Flow Control

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

### Data Bits, Parity, Stop Bits

The setting for each these features is displayed.

## ► ACPI Settings

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

### ACPI Sleep State

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

components (such as RAMs) to maintain the most critical functions of the system. The options are **S1 (CPU Stop Clock)** and Suspend Disabled.

### **NUMA (NON-Uniform Memory Access)**

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

### **High Precision Event Timer**

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

## **► Trusted Computing (Available when a TPM device is detected by the BIOS)**

### **Configuration**

#### **TPM Support**

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

#### **TPM State**

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

#### **Pending Operation**

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



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

**Current Status Information:** This item displays the information regarding the current TPM status.

#### **TPM Enable Status**

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

**TPM Active Status**

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

**TPM Owner Status**

This item displays the status of TPM Ownership.

**► Intel TXT (LT-SX) Configuration****Intel TXT (LT-SX) Hardware Support**

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

**CPU:** TXT (Trusted Execution Technology) Feature

**Chipset:** TXT (Trusted Execution Technology) Feature

**Intel TXT (LT-SX) Configuration**

This feature displays the following TXT configuration setting.

**TXT (LT-SX) Support:** This item indicates if the Intel TXT support is enabled or disabled. The default setting is **Disabled**.

**Intel TXT (LT-SX) Dependencies**

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

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

**VT Support:** Intel Virtualization Technology support

**TPM Support:** Trusted Platform support

**TPM State:** Trusted Platform state

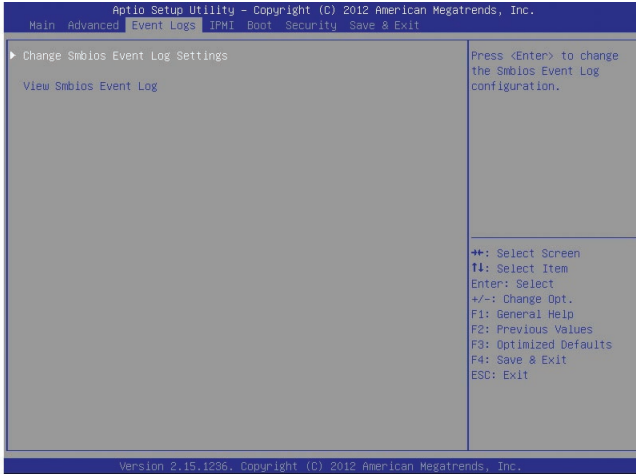
**► ME Subsystem**

This feature displays the following ME Subsystem Configuration settings.

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

## 4-4 Event Logs

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



### ► Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

#### Enabling/Disabling Options

##### SMBIOS Event Log

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

##### Runtime Error Logging Support

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

##### Memory Correctable Error Threshold

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

##### PCI Error Logging Support

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

##### Erasing Settings

### Erase Event Log

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

### When Log is Full

Select **Erase Immediately** to immediately erase SMBIOS error event logs that exceed the limit when the SMBIOS event log is full. Select **Do Nothing** for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and **Erase Immediately**.

### SMBIOS Event Log Standard Settings

#### Log System Boot Event

Select **Enabled** to log system boot events. The options are **Disabled** and **Enabled**.

#### MECI (Multiple Event Count Increment)

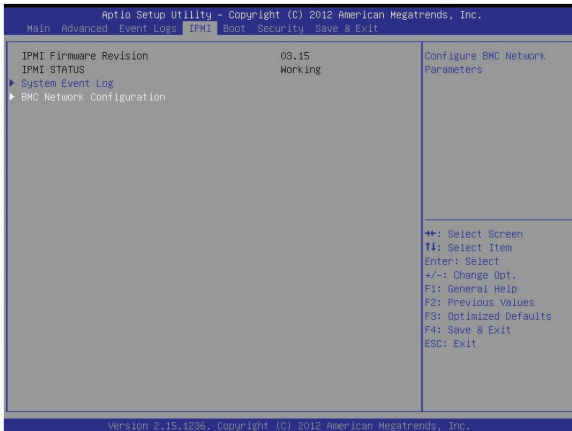
Enter the increment value for the multiple event counter. Enter a number from 1 to 255. The default setting is **1**.

#### METW (Multiple Event Count Time Window)

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

## 4-5 IPMI

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



## IPMI Firmware Revision, IPMI Status

These items indicates your system IPMI firmware revision number and status.

## ►System Event Log

### SEL Components

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

### Erasing Settings

#### Erase SEL

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

#### When SEL is Full

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

### Custom EFI Logging Options

#### Log EFI Status Codes

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



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

## ►BMC Network Configuration

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

### IPMI LAN Selection

This feature displays the IPMI LAN Selection setting. The default setting is **Failover**.

### IPMI Network Link Status

This feature displays the IPMI Network Link status. The default setting is **Dedicated LAN**.



### **Update IPMI LAN Configuration**

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

### **Configuration Address Source**

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

### **Update IPMI LAN Configuration**

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

### **Station IP Address**

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

### **Subnet Mask**

This item displays the sub-network that this computer belongs to. The value of each three-digit number separated by dots should not exceed 255.

### **Station MAC Address**

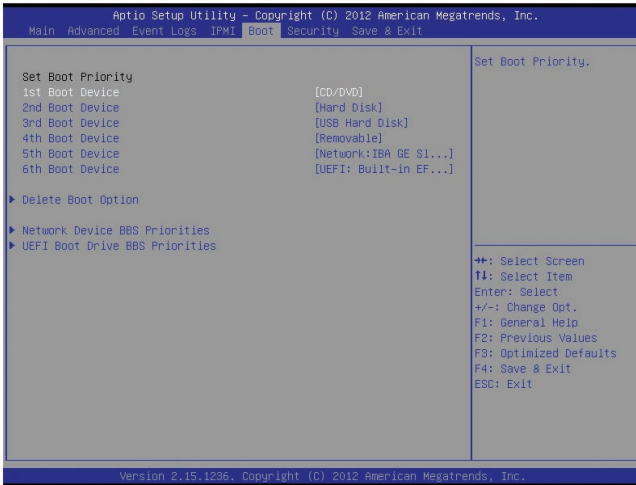
This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

### **Gateway IP Address**

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

## 4-6 Boot

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



### Set Boot Priority

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.

- 1st Boot Device
- 2nd Boot Device
- 3rd Boot Device
- 4th Boot Device
- 5th Boot Device
- 6th Boot Device

#### ►CD/DVD ROM Drive BBS Priorities (Available when a device is installed in this drive)

- 1st Device

#### ►Hard Disk Drive BBS Priorities (Available when a device is installed in this drive)

- 1st Device

- 2nd Device

▶ **USB Hard Disk Drive BBS Priorities (Available when a device is installed in this drive)**

- 1st Device

▶ **Network Device BBS Priorities**

- 1st Device

▶ **UEFI Boot Drive BBS Priorities**

- 1st Boot Device

▶ **Add New Boot Option**

Use this feature to add a new boot device from which the system will boot during startup.

The settings are [any pre-defined boot device]

▶ **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]

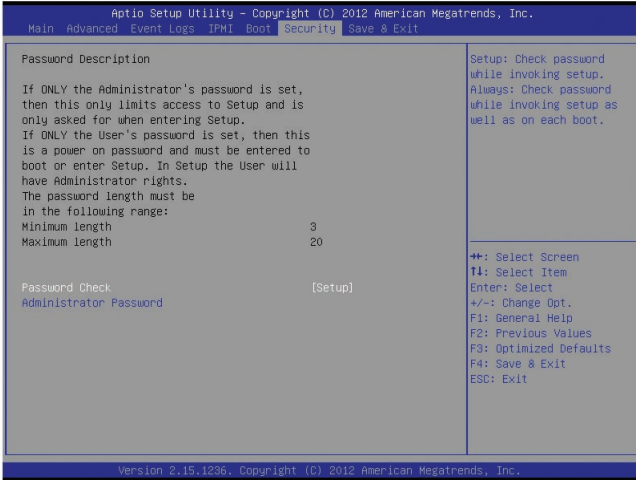
▶ **Delete Driver Option**

This feature allows the user to delete a previously defined boot device from which the systems boots during startup.

The settings are [any pre defined boot device]

## 4-7 Security

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



### Password Check

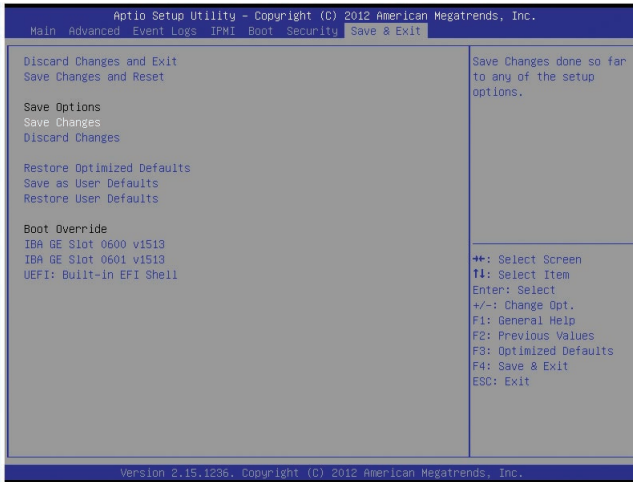
Use this feature to determine when a password entry is required. Select Setup to require the password only when entering setup. Select Always to require the password when entering setup and at each bootup. The options are **Setup** and Always.

### Administrator Password

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

## 4-8 Save & Exit

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



### Discard Changes and Exit

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

### Save Changes and Reset

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

### Save Options

#### Save Changes

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

### **Discard Changes**

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

### **Restore Optimized Defaults**

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

### **Save as User Defaults**

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

### **Restore User Defaults**

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

### **Boot Override**

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

## Appendix A

### BIOS Error Beep Codes

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

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

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

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

#### A-1 BIOS Error Beep Codes

BIOS Error Beep Codes		
Beep Code/LED	Error Message	Description
1 beep	Refresh	Ready to boot
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	No Con-In or No Con-Out devices	Con-In: USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL  Con-Out: Video Controller, PCI or Serial Console Redirection, IPMI SOL
<b>X9 IPMI Error Codes</b>		
1 Continuous Beep	System OH	System Overheat

## Notes



## Appendix B

### Software Installation Instructions

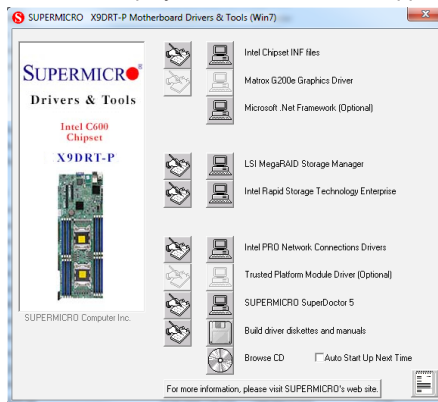
#### B-1 Installing Software Programs

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


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

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

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



**Driver/Tool Installation Display Screen**

 **Note 1:** Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

**Note 2:** 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 Installing SuperDoctor<sup>®</sup> 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 User Name and Password for SuperDoctor 5 is admin / admin.

### SuperDoctor 5 Interface Display Screen (Health Information)



## Appendix C

### UEFI BIOS Recovery Instructions

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

#### C-1 An Overview to the UEFI BIOS

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

#### C-2 How to Recover the UEFI BIOS Image (-the Main BIOS Block)

An AMIBIOS flash chip consists of a boot sector block and a main BIOS code block (a main BIOS image). The boot sector block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a new BIOS image if the original BIOS image is corrupted. When the system power is on, the boot sector 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 block crashes. However, when the BIOS Boot sector crashes, you will need to send the motherboard back to Supermicro for RMA repair.

#### C-3 To Recover the Boot Sector Using a USB-Attached Device

This feature allows the user to recover a BIOS image using a USB-attached device without additional utilities used. A USB flash device such as a USB Flash Drive, or a USB CD/DVD ROM/RW device can be used for this purpose. However, a USB Hard Disk drive cannot be used for BIOS recovery at this time.

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

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

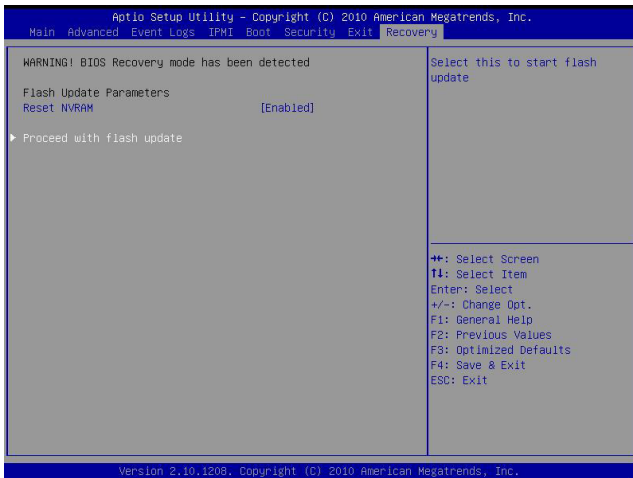


**Note:** If you cannot locate the "Super.ROM" file in your driver disk, visit our website at [www.supermicro.com](http://www.supermicro.com) to download the BIOS image into a USB flash device and rename it to "Super ROM" for BIOS recovery use.

- Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system
- While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your USB keyboard until you hear two short beeps. This may take from a few seconds to one minute.
- After locating the new BIOS binary image, the system will enter the BIOS Recovery menu as shown below.



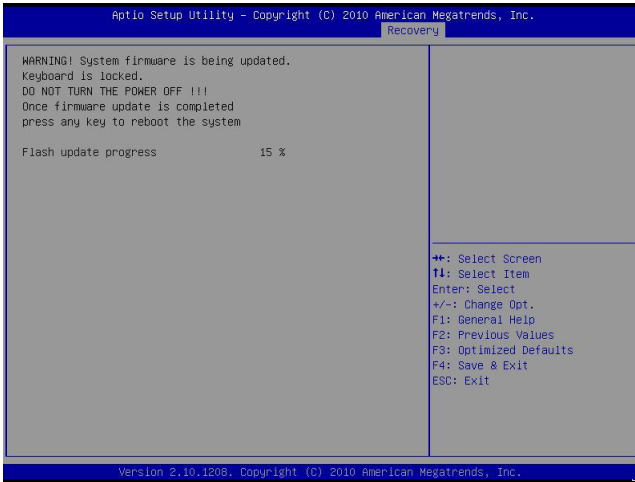
**Note:** At this point, you may decide if you want to start with BIOS Recovery. If you decide to proceed with BIOS Recovery, follow the procedures below.



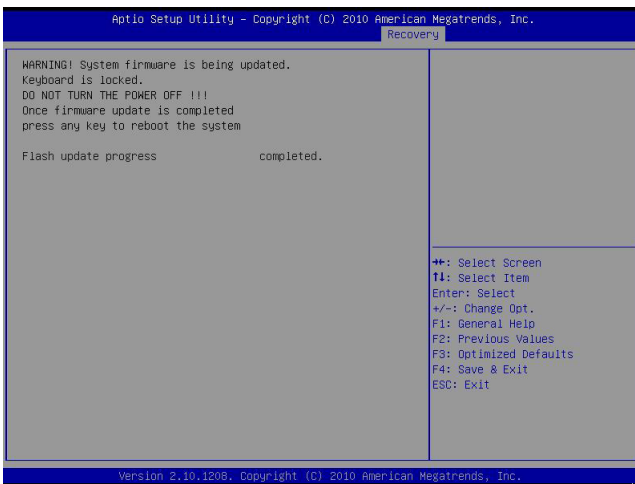
- When the screen as shown above displays, using the arrow key, select the item- "Proceed with flash update" and press the <Enter> key. You will see the progress of BIOS Recovery as shown in the screen below.



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



- After the process of BIOS Recovery is complete, press any key to reboot the system.



- Using a different system, extract the BIOS package into a bootable USB flash drive.
- When a DOS prompt appears, enter `AMI.BAT BIOSname.###` at the prompt.



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

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

(Disclaimer Continued)

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