H12DSɪ-N6
H12DSɪ-NT6

USER'S MANUAL

Revision 1.0b

Preface

About This Manual

This manual is written for system integrators, IT technicians and knowledgeable end users. It provides information for the installation and use of the H12DSi-N6/H12DSi-NT6 motherboard.

About This Motherboard

Built upon the functionality and capability of the AMD EPYC™ 7002/7003 Series processors, the H12DSi-N6/H12DSi-NT6 motherboard provides superior graphics capability and system performance while consuming little power. Please note that this motherboard is intended to be installed and serviced by professional technicians only. For processor/memory updates, please refer to our website at http://www.supermicro.com/products/.

Conventions Used in the Manual

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

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

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

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Table of Contents

Chapter 5 UEFI BIOS (EPYC 7003)

Appendix A Software

Appendix B Standardized Warning Statements

Appendix C UEFI BIOS Recovery

Chapter 1

Introduction

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

In addition to the motherboard, several important parts that are included with the system are listed below. If anything listed is damaged or missing, please contact your retailer.

Important Links

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

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

- Product drivers and utilities: https://www.supermicro.com/wdl/driver/

- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm

- A secure data deletion tool designed to fully erase all data from storage devices can be found at our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility

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

This manual may be periodically updated without notice. Please check the Supermicro website for possible updates to the manual revision level.
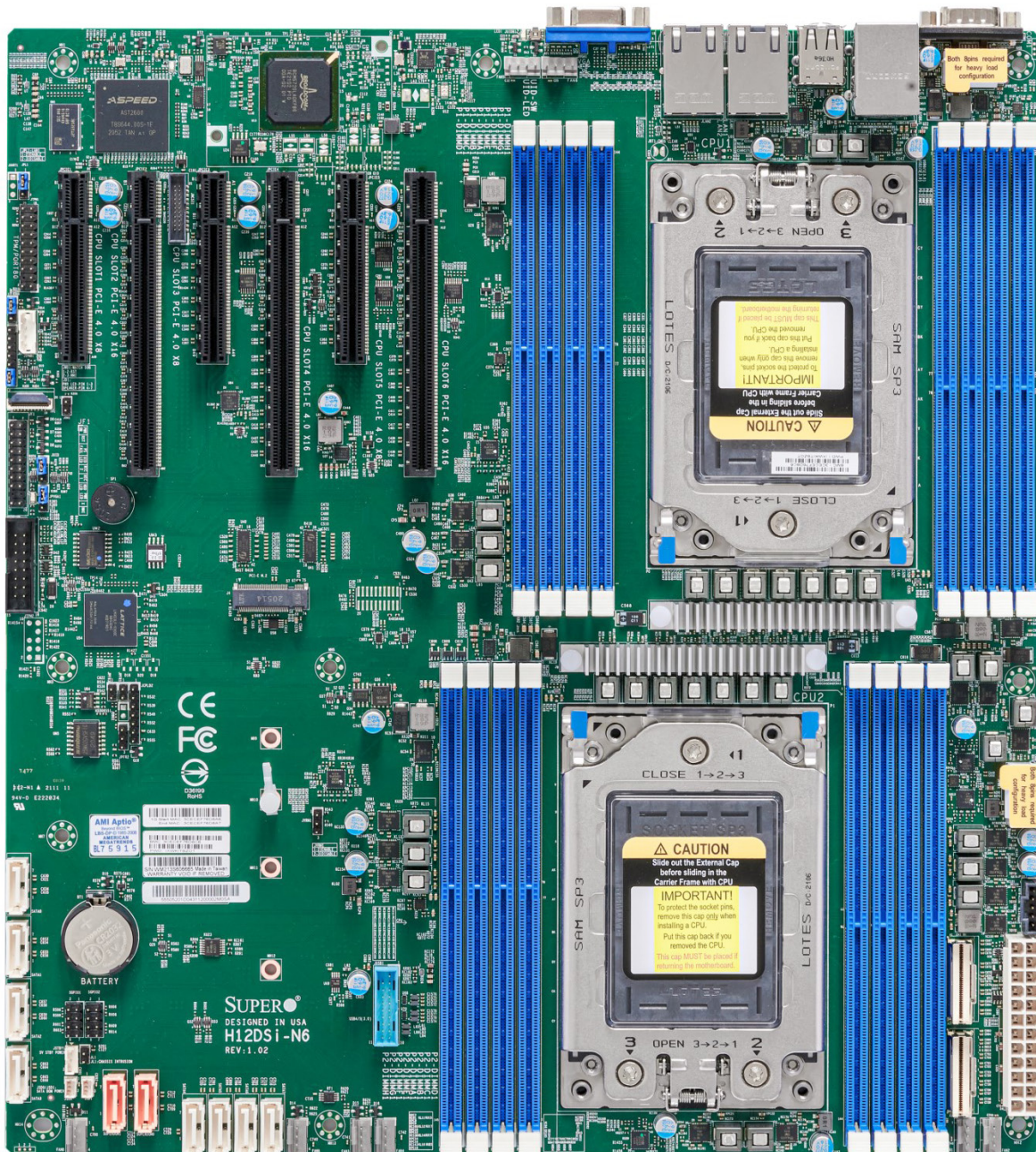
Figure 1-1. H12DSi-N6 Image

Note: All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.
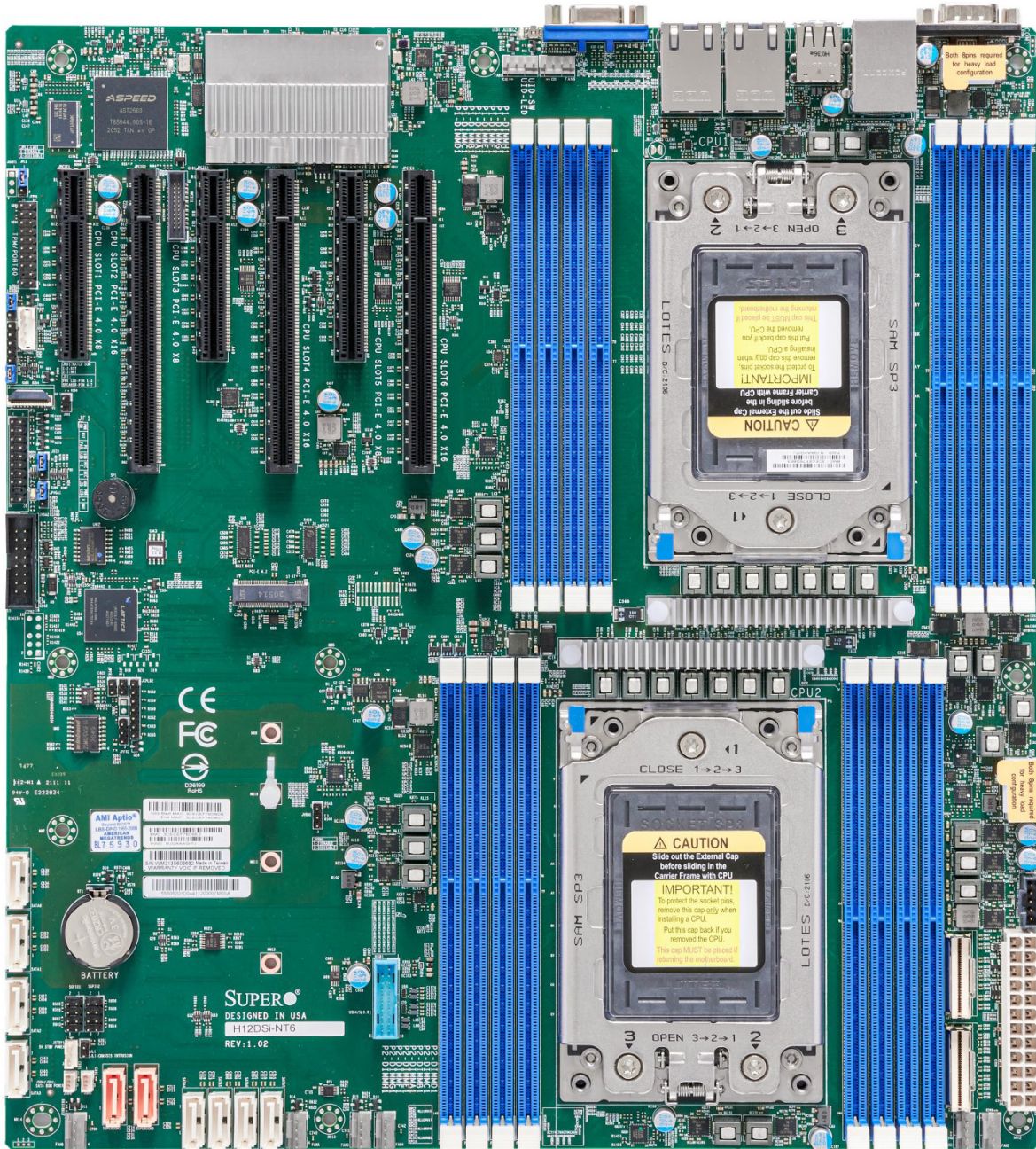
Figure 1-2. H12DSi-NT6 Image

1.1 Quick Reference
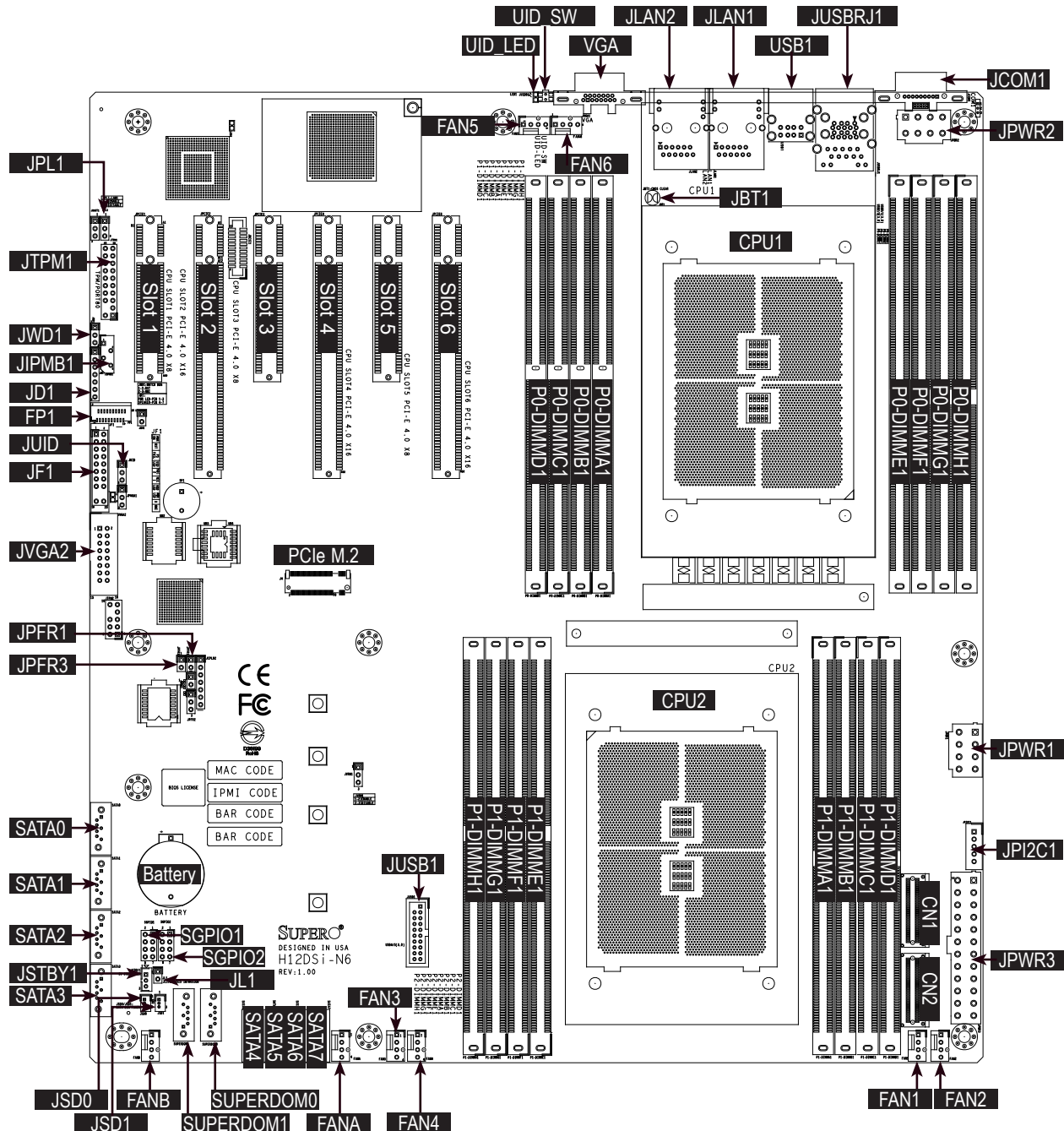
Figure 1-3. H12DSi-N6/H12DSi-NT6 Layout

Note: Jumpers, connectors, switches, and LED indicators that are not described in the preceding table are for manufacturing testing purposes only and not covered in this manual.

Quick Reference Table

Jumper	Description	Default Setting
JBT1	Clear CMOS	Open (Normal)
JD1	Power LED and Speaker/Buzzer	Pins 4-7
JPFR1	Manufacturer Mode	Open (Normal)
JPFR3	PFR Function	Open (Normal)
JPL1	Onboard LAN Enable/Disable	Pins 1-2 (Enabled)
JPVGA1	VGA I/O Enable/Disable	Pins 1-2 (Enabled, rear VGA output)
JUID	FP1 Switch	Pins 1-2
JWD1	Watch Dog	Pins 1-2 (Reset)

LED	Description	Status
LED2	Overheat/Fan Failure LED	Green: Blinking (BMC normal), Green: Fast blinking (BMC initializing)
LED3	Onboard Power LED	Off: System Off, Solid Green: System On
LEDM1	BMC Heartbeat LED	Blinking Green: Normal
UID LED1	Unit ID LED	Solid Blue: UID switched to ON

Connector	Description
Battery	Onboard CMOS battery
CN1/CN2	NVMe0-1/NVMe2-3 Connectors (both from CPU2)
P0-DIMMA1 - P1-DIMMH1	DIMM (memory) Slots (P0 slots: CPU1, P1 slots: CPU2)
FAN1 - FAN6, FANA, FANB	System Fan Headers
FP1	Supermicro Front Control Panel Connector for FPB-FP826-T
JCOM1	COM Port
JF1	Front Control Panel Header
JIPMB1	4-pin BMC External I²C Header
JL1	Chassis Intrusion Header
JLAN1/2	RJ45 LAN Ports (H12DSi-NT6: 10Gbe ports, H12DSi-N6: 1Gbe ports)
JPWR1/2	8-pin Auxiliary Power Connectors (+12V)
JPWR3	24-pin Main Power Connector
JSD0/1	SATA3 DOM (Device on Module) Power Connectors
JSTBY1	Standby Power Connector (+5V)
JTPM1	Trusted Platform Module (TPM)/Port 80 Connector
JUSB1	USB 3.0 Header (USB4/USB5 for front access)
JUSBRJ1	Rear USB 3.0 Ports (USB3/4) / IPMI LAN Port
JVGA2	Front VGA Connector
PCIe M.2	M.2 Connector
SATA0-7	Onboard SATA3 Ports
SGPIO1/2	Serial General Purpose I/O Ports 1/2
SUPERDOM1/2	Supermicro SATA3 DOM Ports
Slot1- Slot6	PCIe Expansion Card Slots
UID_SW	UID Switch (push-button to toggle UID on/off)
USB1	Rear USB 2.0 Ports (USB1/USB2) from CPU2
VGA	VGA Port

Motherboard Features

Motherboard Features

CPU

- Dual AMD EPYC™ 7002/7003 Series processors in a Socket SP3

Memory

- 4TB registered ECC DDR4-3200 SDRAM in 16 DIMM slots

DIMM Size

- Up to 256GB size at 1.2V

Chipset

- System on Chip

Expansion Slots

- Three PCIe 4.0 x16
- Three PCIe 4.0 x8
- One M.2 Interface: SATA/PCIe 4.0 x4
- M.2 Form Factor: 2280, 22110
- M.2 Key: M-Key

Network

- H12DSi-NT6: Two 10Gbe ports (Broadcom 57416)
- H12DSi-N6: Two 1Gbe ports (Broadcom 5720L)

Graphics

- ASPEED AST2600 BMC chip with one VGA port

I/O Devices

- One COM port
- Eight SATA3 ports
- Four NVMe ports
- Two SATA DOM ports

BIOS

- 256Mb SPI AMI BIOS
- ACPI 6.2, SMBIOS 3.1.1, Plug-and-Play (PnP), BIOS rescue hot-key, RTC (Real Time Clock) wake up, Riser Card Auto-Detection Support

Power Management

- ACPI power management (S5)
- Power button override mechanism
- Power-on mode for AC power recovery

Note: Table continues on the next page.

Motherboard Features

System Health Monitoring

- Onboard voltage monitoring for +1.8V, 3.3V, +5V, +12V, +3.3V Standby, +5V Standby, VBAT, Memory
- Onboard monitoring for CPU, system, and memory temperature
- CPU switching phase voltage regulator
- CPU Thermal Trip support

Fan Control

- Single cooling zone
- Low-noise fan speed control
- Pulse Width Modulation (PWM) fan control

System Management

- Trusted Platform Module (TPM) support
- System resource alert via SuperDoctor® 5
- SuperDoctor® 5, Watch Dog
- Non-Maskable Interrupt (NMI)
- SUM-InBand, SUM-OOB, IPMICFG, IPMIView, SMCIPMITOOL
- Power Supply Monitoring

LED Indicators

- Power State Indicator
- CPU/Overheating
- Fan Failure
- LAN activity
- UID / Remote UID
- HDD Activity LED

Dimensions

- EATX form factor
- W x L: 12" x 13.05" (30.48 x 33.15mm)
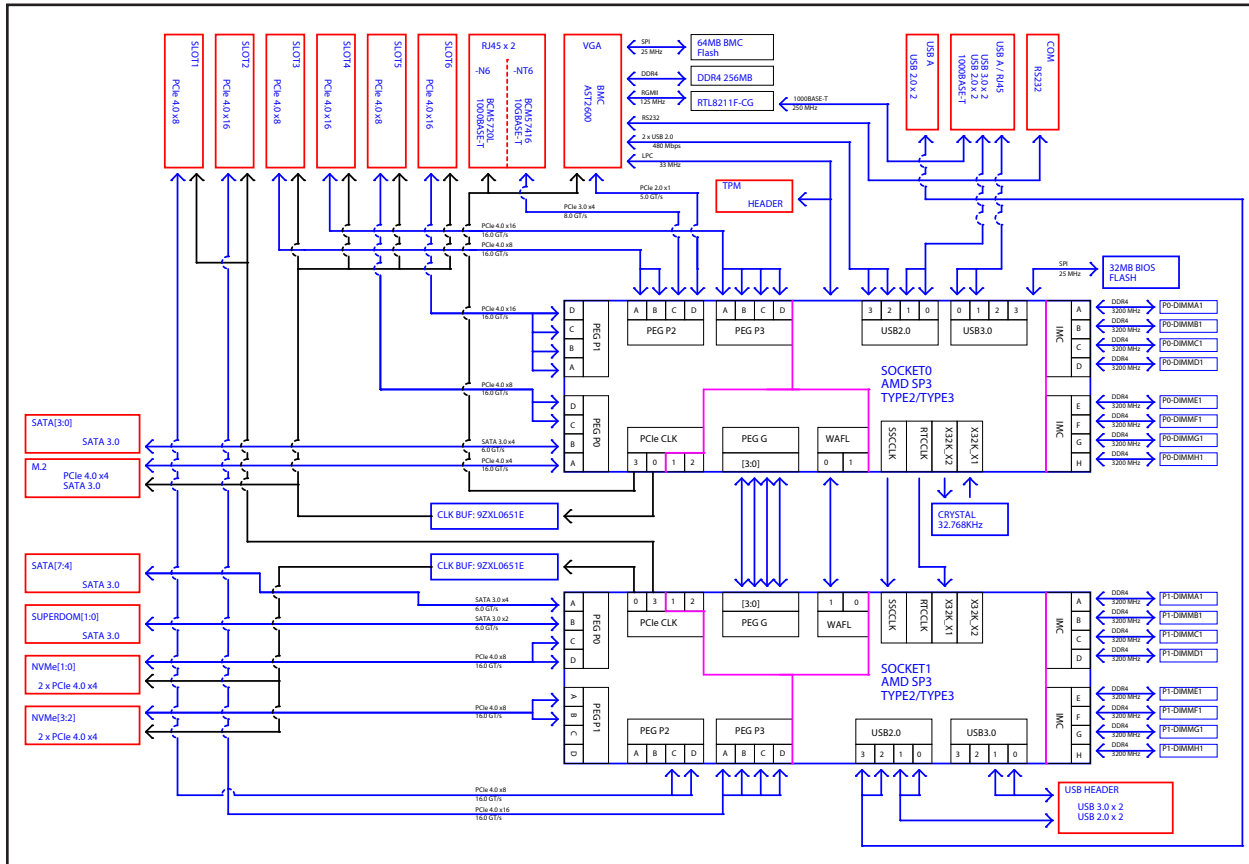
Figure 1-4. System Block Diagram

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

1.2 Processor and Chipset Overview

The H12DSi-N6/H12DSi-NT6 motherboards offer maximum I/O expandability, energy efficiency, and data reliability in a 7-nm process architecture, and is optimized for high performance computing, NVMe storage solutions, and ideal for High Density Data Center applications.

The H12DSi-N6/H12DSi-NT6 supports the new microarchitecture 7-nm process technology, which drastically increases system performance for a multitude of server applications.

The AMD EPYC™ 7002/7003 Series processors supports the following features:

* ACPI Power Management Logic Support Rev. 6.2

* Adaptive Thermal Management/Monitoring

* PCIe 4.0, SATA 3.0 w/transfer rates of up to 6 Gb/s

* System Management Bus (SMBus) Specification Version 3.1.1

1.3 Special Features

This section describes the health monitoring features of the H12DSi-N6/H12DSi-NT6. The motherboard has an onboard System Hardware Monitor chip that supports system health monitoring.

Recovery from AC Power Loss

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

1.4 System Health Monitoring

This section describes the health monitoring features of the H12DSi-N6/H12DSi-NT6 motherboard. The motherboard has an onboard Baseboard Management Controller (BMC) chip that supports system health monitoring. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Onboard Voltage Monitors

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

adjust the voltage thresholds to define the sensitivity of the voltage monitor. Real time readings of these voltage levels are all displayed in BMC.

Fan Status Monitor with Firmware Control

Users can check the RPM status of the cooling fans through the IPMI Web interface. The chassis fans are controlled by Thermal Management.

Environmental Temperature Control

The thermal control sensor 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 thermal sensor detects that the CPU temperature is too high, it will automatically turn on the thermal fans to prevent the CPU from overheating. The onboard chassis thermal circuitry can monitor the overall system temperature and alert the user when the chassis 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®. SuperDoctor 5 is used to notify the user of certain system events. For example, you can configure SuperDoctor 5 to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond a predefined range.

1.5 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 computer system including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures

while providing a processor architecture-independent implementation that is compatible with Windows 2012/R2 and Windows 2016 operating systems.

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. In areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1.7 Super I/O

The ASpeed AST2500 Super I/O provides one high-speed, 16550 compatible Universal Asynchronous Receiver/Transmitter (UART), which support serial infrared communications. This UART includes a send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. This UART provides legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

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

Chapter 2

Installation

2.1 Static-Sensitive Devices

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

Precautions

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

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

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

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

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

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

- Use only the correct type of CMOS onboard battery as specified by the manufacturer. Do not install the CMOS battery upside down, which may result in a possible explosion.

Unpacking

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

2.2 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly.
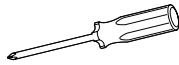
Phillips Screwdriver (1)   **Phillips Screws**   **Standoffs (11) Only if Needed**

Tools Needed

Location of Mounting Holes

Notes:

1. To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.

2. Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.
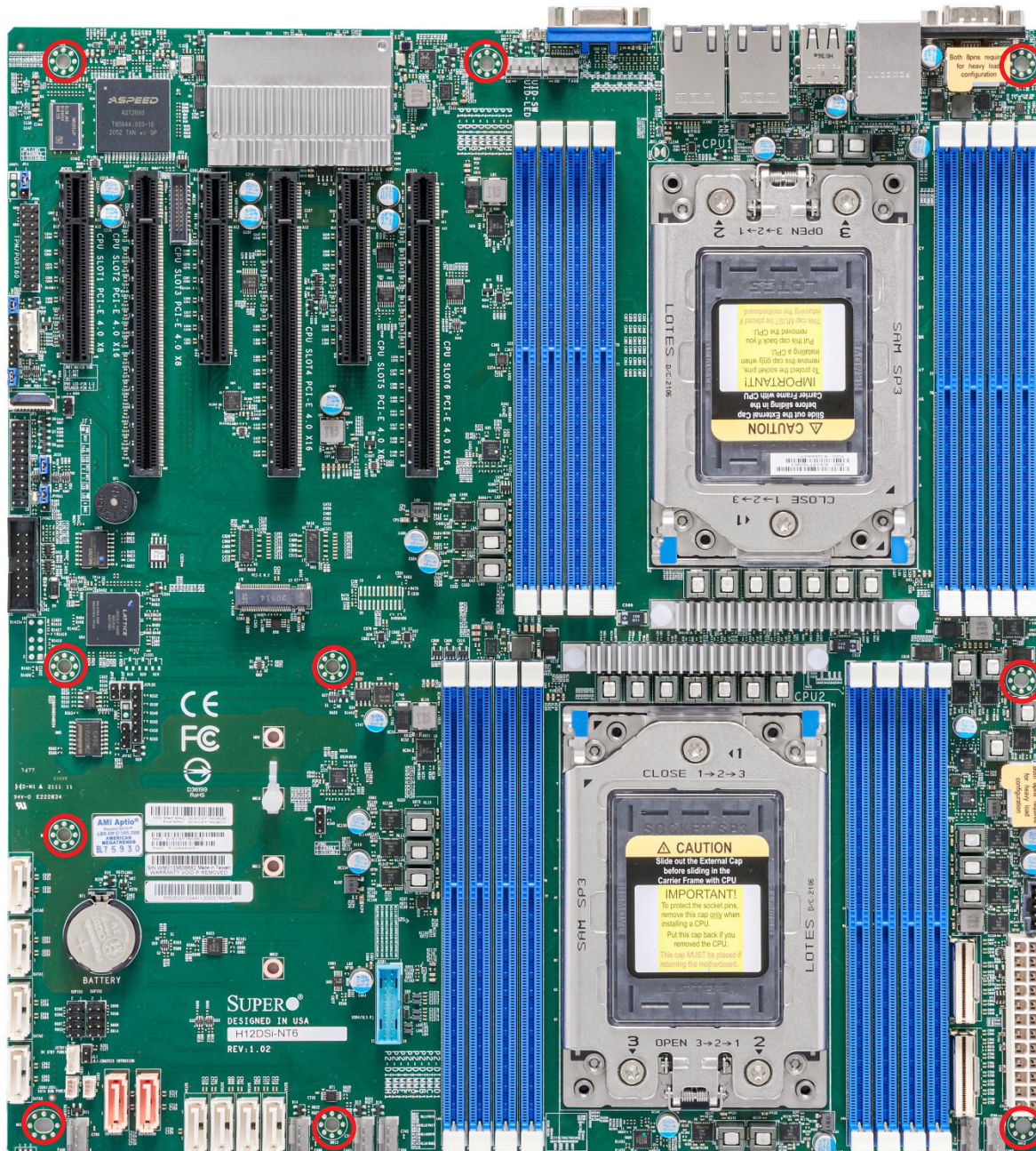
Figure 2-1. Motherboard Mounting Holes

Installing the Motherboard

1. Install the I/O shield into the back of the chassis.
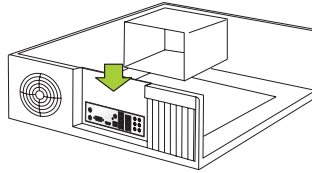
2. Locate the mounting holes on the motherboard. See the previous page for the locations.
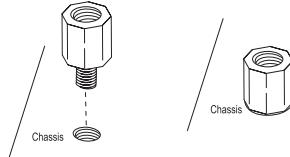
3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard with the mounting holes on the chassis.
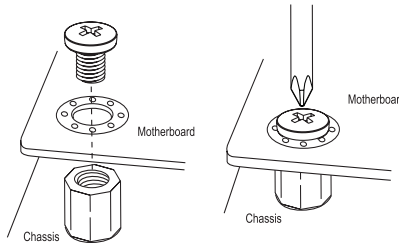
4. Install standoffs in the chassis as needed.

5. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.

6. Using the Phillips screwdriver, insert a Phillips 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.

2.3 Processor and Heatsink Installation

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

Important:

- For the processor/heatsink installation you need to use a T20 screwdriver when opening/closing the CPU socket.

- 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 AMD-certified multi-directional heatsink only.

- Make sure to install the motherboard into the chassis before you install the CPU heatsink.

- When receiving a motherboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.

- Refer to the Supermicro website for updates on CPU support.

Installing the Processor and Heatsink

1. Unscrew the screws holding down Force Frame in the sequence of 3-2-1. The screws are numbered on the Force Frame next to each screw hole.
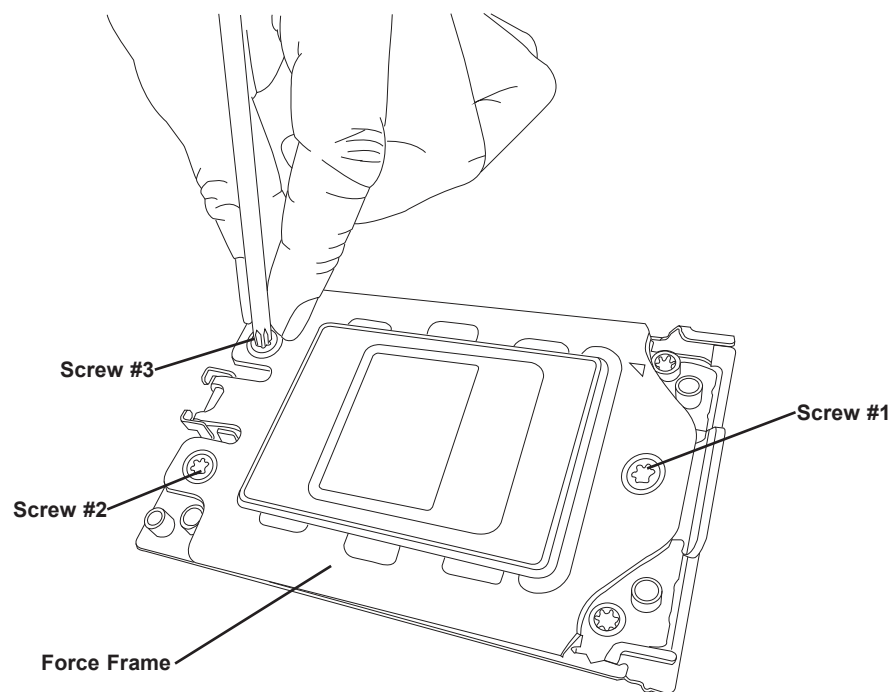
2. The spring-loaded Force Frame will raise up after the last screw securing it (#1) is removed. Gently allow it to lift up to its stopping position.
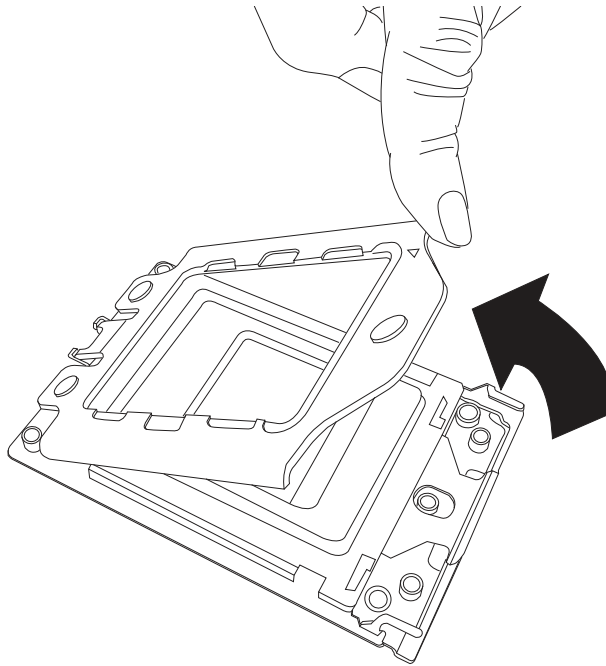
3. Lift the Rail Frame up by gripping the lift tabs near the front end of the rail frame. While keeping a secure grip of the Rail Frame, lift it to a position so you can do the next step of removing the External Cap.

   Note: The Rail Frame is spring loaded, so keep a secure grip on it as you lift it so it does not snap up.

PnP Cover Cap
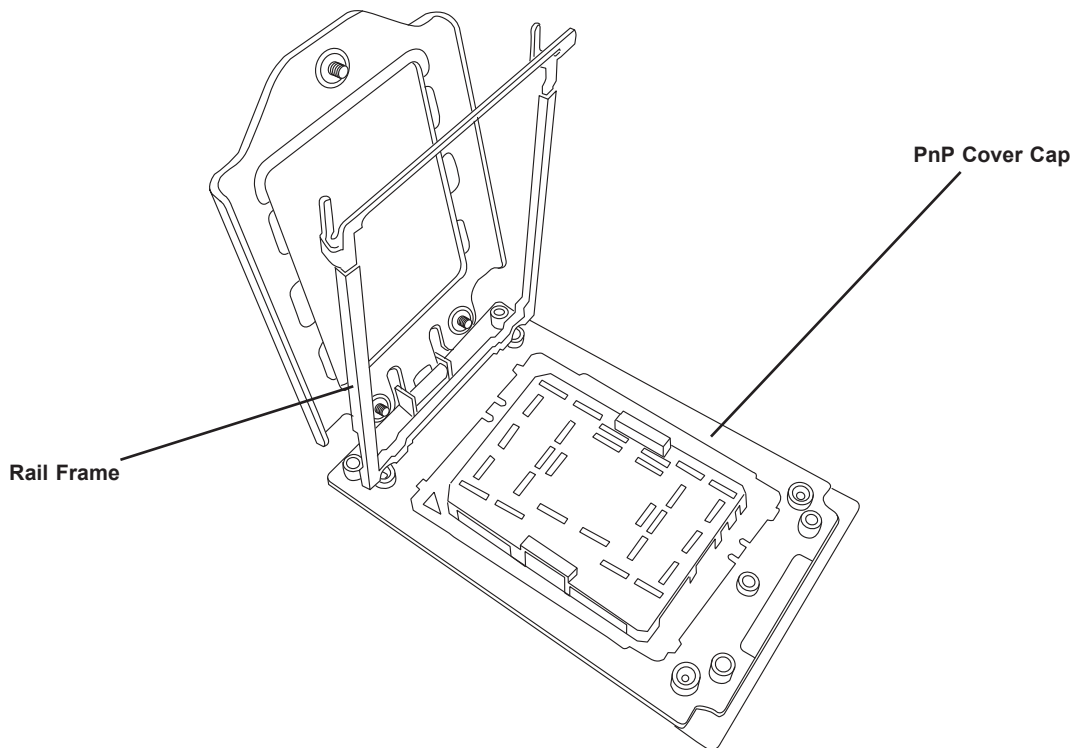
Rail Frame

4. Remove the External Cap from the Rail Frame by pulling it upwards through the rail guides on the Rail Frame.

External Cap

PnP Cover Cap
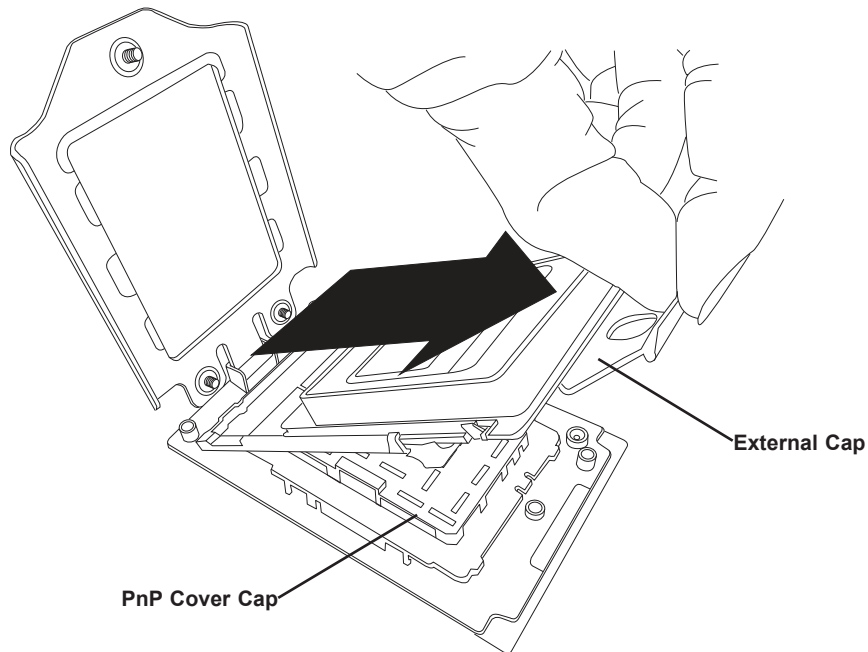
5. The CPU Package is shipped from the factory with the Carrier Frame pre-assembled. Grip the handle of the Carrier Frame/CPU Package assembly from its shipping tray, and while gripping the handle, align the flanges of the Carrier Frame onto the rails of the Rail Frame so its pins will be at the bottom when the Rail Frame is lowered later.

6. Slide the Carrier Frame/CPU Package downwards to the bottom of the Rail Frame. Ensure the flanges are secure on the rails as you lower it downwards.

**Carrier Frame/
CPU Package**
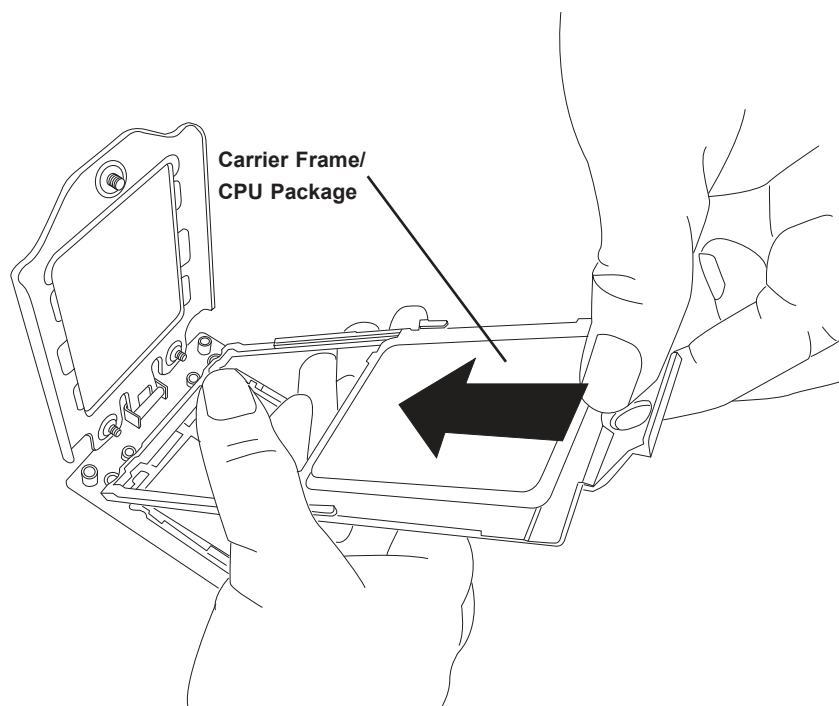
Note: You can only install the CPU inside the socket in one direction with the handle at the top. Make sure that it is properly inserted into the CPU socket before closing the Rail Frame plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the Rail Frame plate again, and double-check that the CPU is aligned properly.

7. Lift up the Rail Frame till it securely rests in upright position. Then remove the PnP Cover Cap from the CPU socket below. Grip the two lift tabs marked "Remove" at the middle of the cap and pull vertically upwards to remove the PnP Cover Cap.
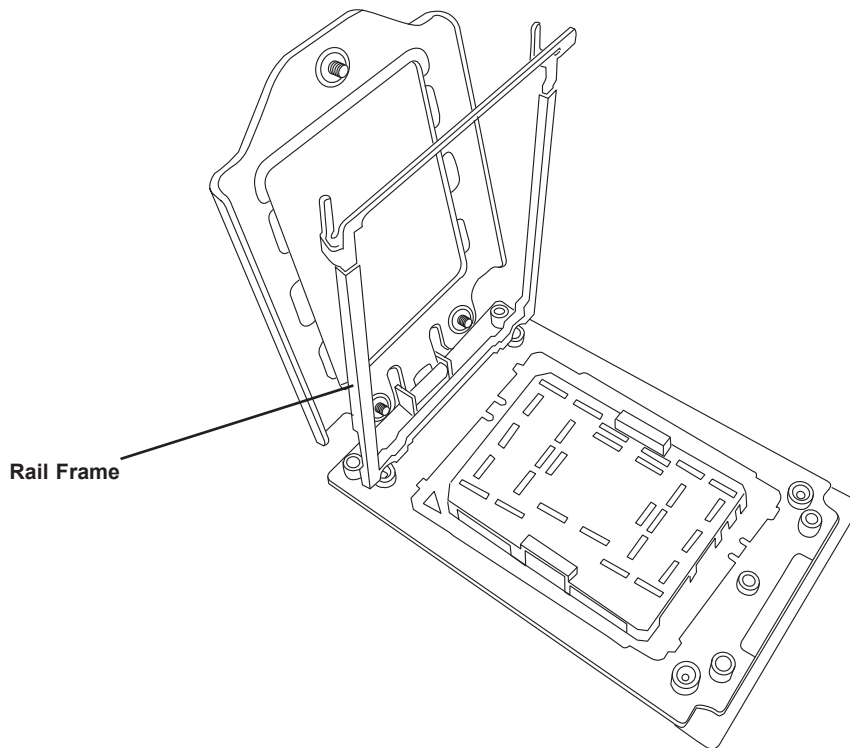
Rail Frame

Warning! The exposed socket contacts are extremely vulnerable and can be damaged easily. Do not touch or drop objects onto the contacts and be careful removing the PnP Cover Cap and when placing the Rail Frame over the socket.

8. Gently lower the Rail Frame down onto the socket until the latches on the Rail Frame engage with the Socket housing. and it rests in place. DO NOT force it into place!
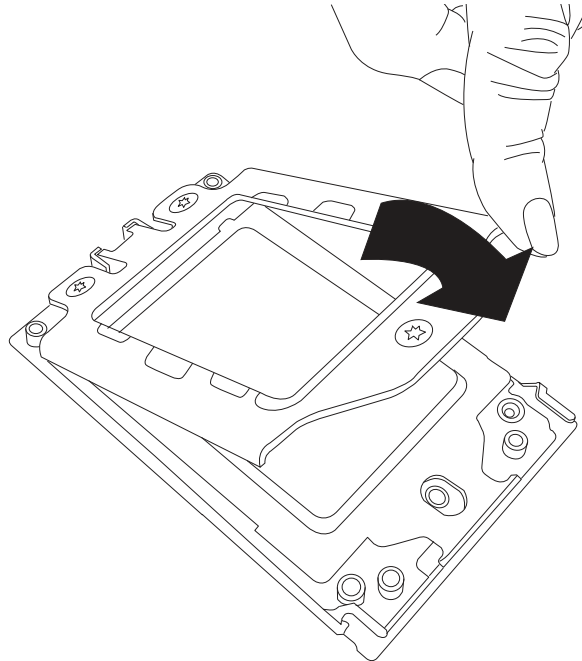
9. Gently lower the Force Frame down onto the Rail Frame and hold it in place until it is seated in the Socket housing. Note that the Force Frame is spring loaded and has to be held in place before it is secured. **Important: Use a torque screwdriver, set it at 16.1 kgf-cm (14.0 lbf-in) with a Torx T20 screw head bit, to prevent damage to the CPU.**
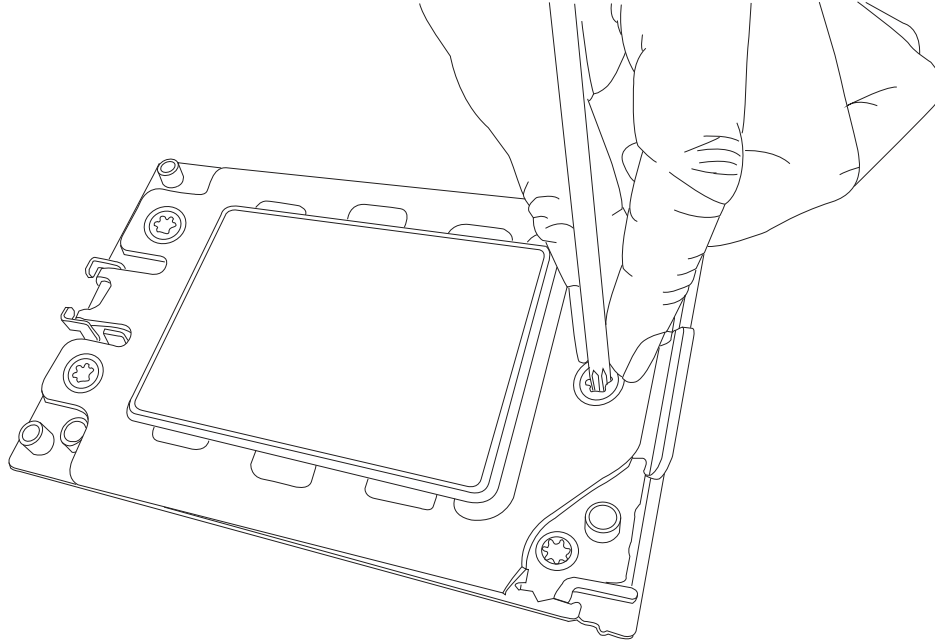
10. Place and re-screw the screws in the reverse order to the way you removed them (holes 1-2-3 in order). When finished, the Force Frame will be secure over both the Rail Frame and CPU Package.
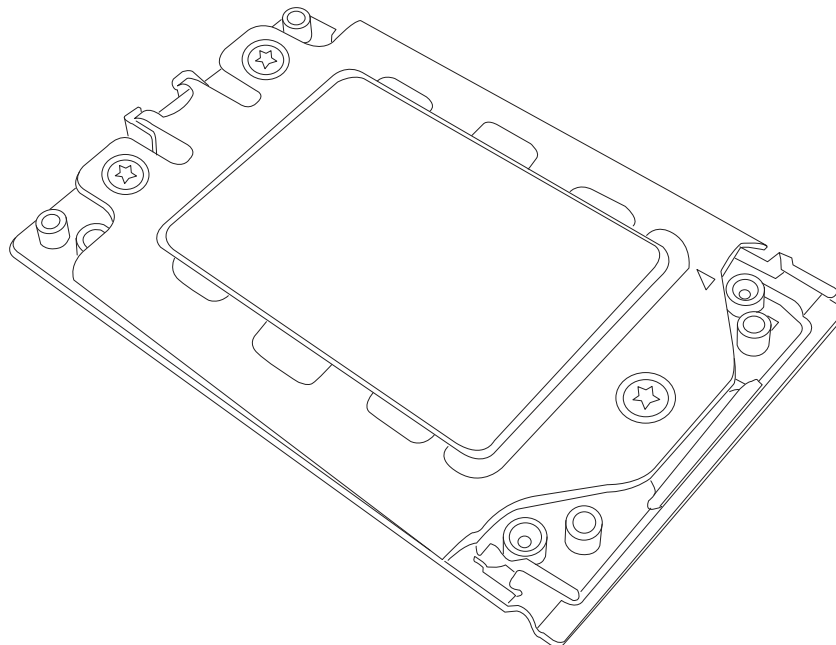
11. After the Force Frame is secured and the CPU package is in place, now you must install the heatsink to the frame. Lower the heatsink down till it rests securely over the four screw holes on CPU Package on the socket frame.
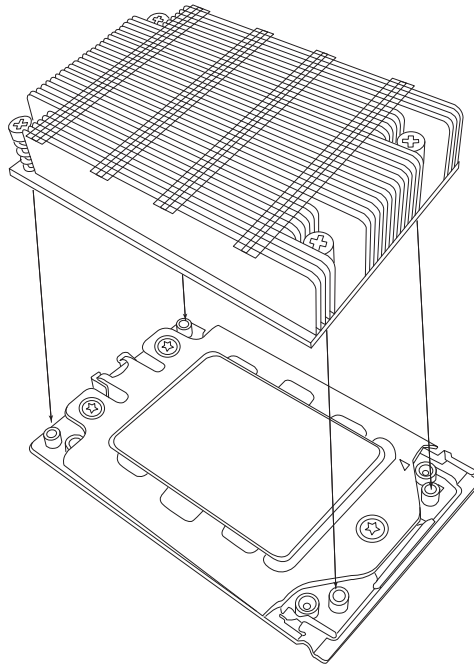
12. Using a diagonal pattern, tighten the four screws down on the heatsink in a clockwise fashion till it is secure. The heatsink will now be secured and you have finished installing the processor and heatsink onto the motherboard. Repeat this procedure for any remaining CPU sockets on the Motherboard.

#1 Screw

#4 Screw

#3 Screw

#2 Screw
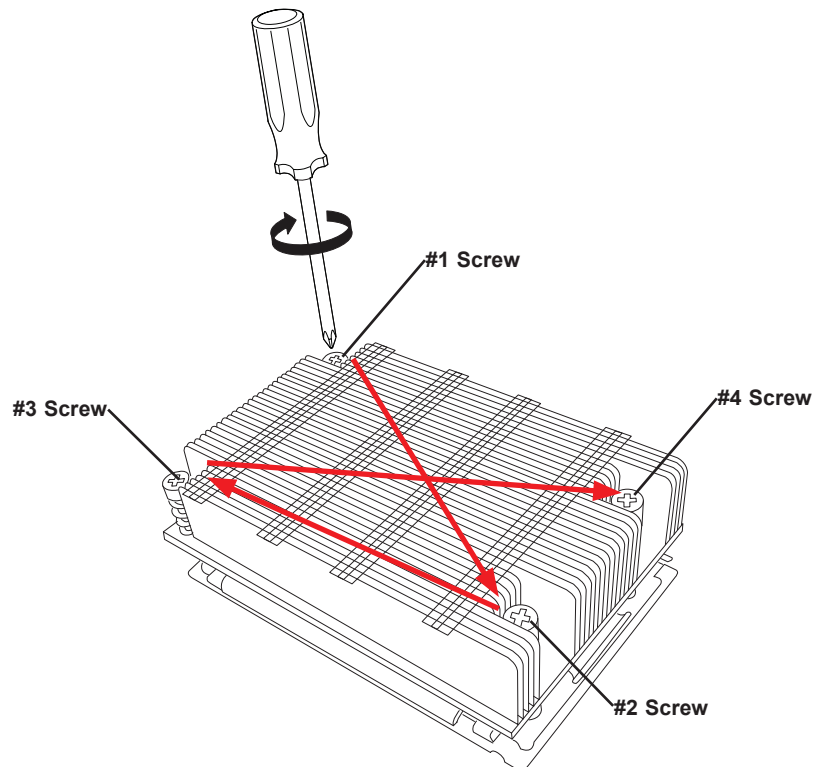
Un-installing the Processor and Heatsink

1. Remove the heatsink attached to the top of the CPU Package by reversing the installation procedure.

2. Clean the Thermal grease left by the heatsink on the CPU package lid to limit the risk of it contaminating the CPU package land pads or contacts in the socket housing.

3. Reverse the procedure for installing the Force Frame onto the socket, unscrewing the plate in the 3-2-1 screw order and lift the Force Frame to the vertical position.

4. Lift the Rail Frame using the lift tabs near the front end of the Rail Frame. Note that the Rail Frame is spring loaded, so be careful lifting it up into a vertical position.

5. Grip the handle of the Carrier Frame and pull upwards to extract it from the Rail Frame. Return the Carrier Frame/CPU Package to its original shipping container.

6. Grip the handle on the External Cap and return it to the Rail Frame sliding it downwards till it rests in the frame.

7. Gripping the Rail Frame, rotate it downwards till it rests above and locks over the socket housing in its horizontal position.

8. Push and rotate down the Force Frame till it is over the External Cap and Rail Frame into a horizontal position.

9. While holding down the Force Frame, secure it back to the socket frame by securing screw 1 in place. Note that without a CPU Package in place, it is not necessary to tighten down screws 2 and 3 at this time.

2.4 Memory Support and Installation

Note: Check the Supermicro website for recommended memory modules.

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

Memory Support

The H12DSi-N6/H12DSi-NT6 supports up to 4TB registered ECC DDR4-3200 SDRAM memory in 16 DIMM slots. Refer to the tables below for additional memory information.

Populating RDIMM/RDIMM 3DS/LRDIMM/LRDIMM 3DS DDR4 Memory Modules with 7002/ 7003 Processor				
Type	**DIMM Population**	**Maximum DIMM Capacity (GB)**		**Maximum Frequency (MHz)**
	DIMM1	**1 Channel**	**8 Channel**	
RDIMM	1R (1 rank)	32GB	256GB	3200
	2R or 2DR (2 ranks)	64GB	512GB	3200
LRDIMM dual die	4DR (4 ranks)	128GB	1TB	3200
LRDIMM 3DS	2S2R (4 ranks)	128GB	1TB	3200
	2S4R (8 ranks)	256GB	2TB	3200
3DS RDIMM	2S2R (4 ranks)	128GB	1TB	3200
	2S4R (8ranks)	256GB	2TB	3200

DIMM Population Guide (with AMD 7002 Processor)								
CPU#	**Channel**							
	D1	C1	B1	A1	E1	F1	G1	H1
1 DIMM (supported but not recommend)								
CPU1		V						
2 DIMMS (supported but not recommend)								
CPU1	V	V						
4 DIMMS (Conditionally Recommended if 32 Cores or Fewer)								
CPU1	V	V					V	V
8 DIMMS								
CPU1	V	V	V	V	V	V	V	V
16 DIMMS								
CPU1	V	V	V	V	V	V	V	V
CPU2	V	V	V	V	V	V	V	V

DIMM Population Guide (with AMD 7003 Processor)								
CPU#	Channel							
	D1	C1	B1	A1	E1	F1	G1	H1
1 DIMM (supported but not recommend)								
CPU1		V						
2 DIMMS (supported but not recommend)								
CPU1	V	V						
4 DIMMS (Conditionally Recommended if 32 Cores or Fewer)								
CPU1	V	V					V	V
6 DIMMS (Conditionally Recommended if only 6 channels can be populated)								
CPU1	V	V		V	V		V	V
8 DIMMS								
CPU1	V	V	V	V	V	V	V	V
16 DIMMS								
CPU1	V	V	V	V	V	V	V	V
CPU2	V	V	V	V	V	V	V	V

1R: 1 package rank of SDP DRAMs

2R: 2 package rank of SDP DRAMs

2DR: 2 package rank of DDP DRAMs

4DR: 4 package rank of DDP DRAMs

2S2R/2S4R/2S8R: 2 package rank of 2/4/8 high 3DS DRAMs

DIMM Module Population

There is no specific order or sequence required when installing memory modules. However do keep the following in mind:

* It is recommended that you use DDR4 DIMM modules of the same type, size and speed.

* Mixed DIMM speeds can be installed, however all memory will run at the speed of the slowest DIMM.

* The motherboard will support odd-numbered modules (1 or 3 modules installed). However, to achieve the best memory performance, a balanced memory population is recommended.
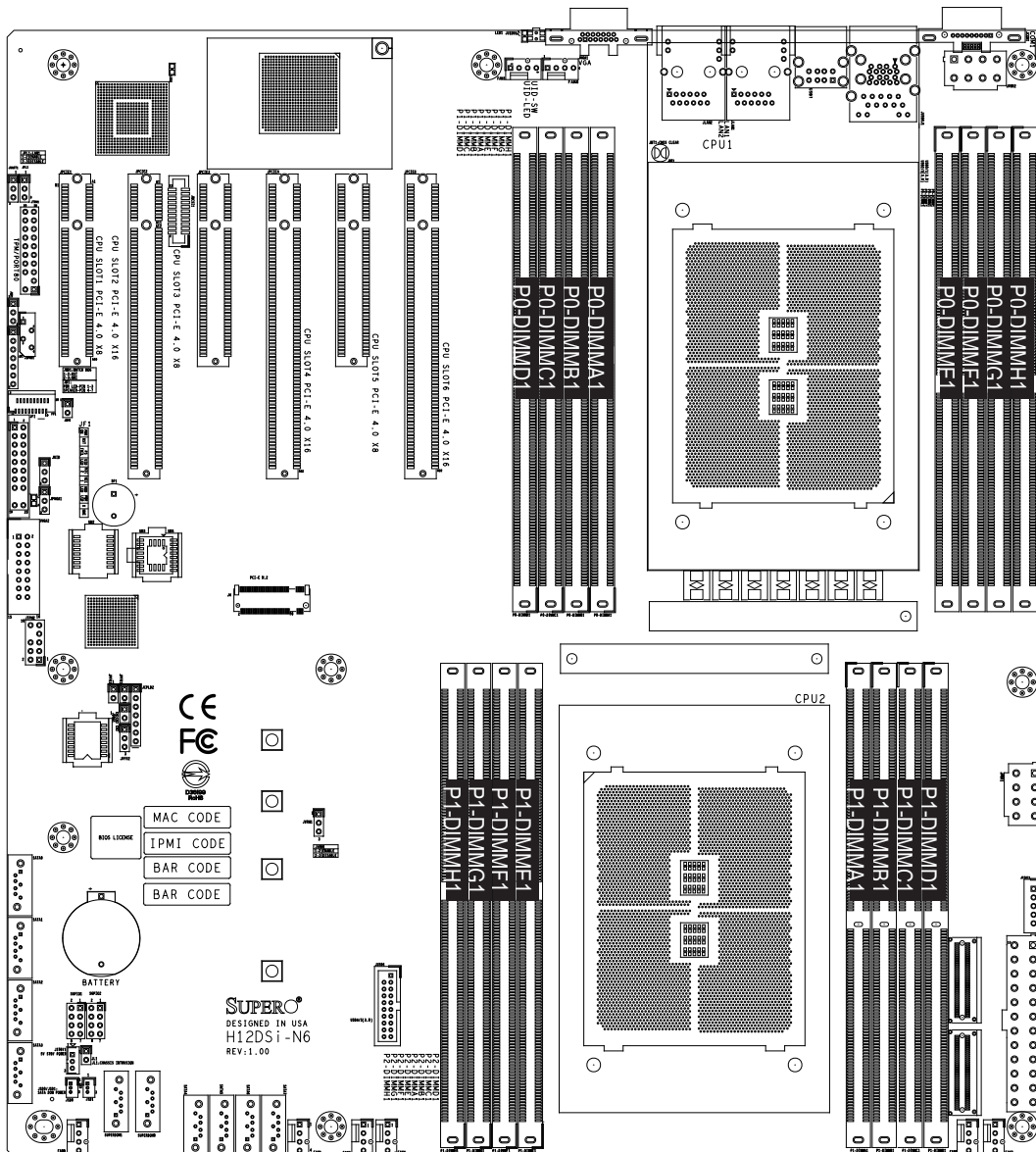
Figure 2-2. DIMM Numbering

DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, there is no specific sequence or order required.

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

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

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

5. Press both ends of the module straight down into the slot until the module snaps into place.

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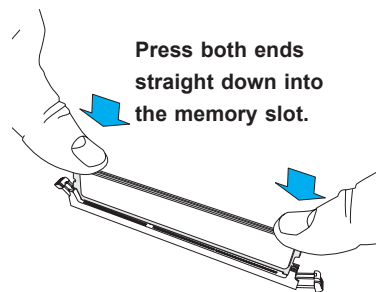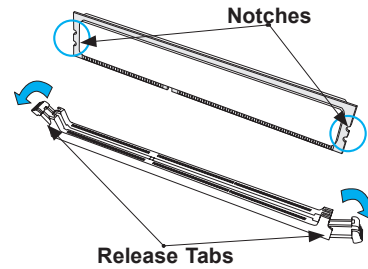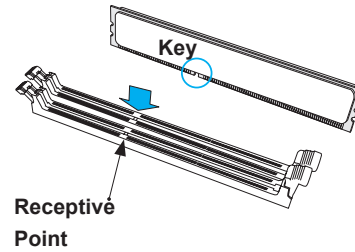
DIMM Removal

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

Key

Receptive Point

Notches

Release Tabs

Press both ends straight down into the memory slot.

2.5 Rear I/O Ports

See Figure 2-1 below for the locations and descriptions of the various I/O ports on the rear of the motherboard.
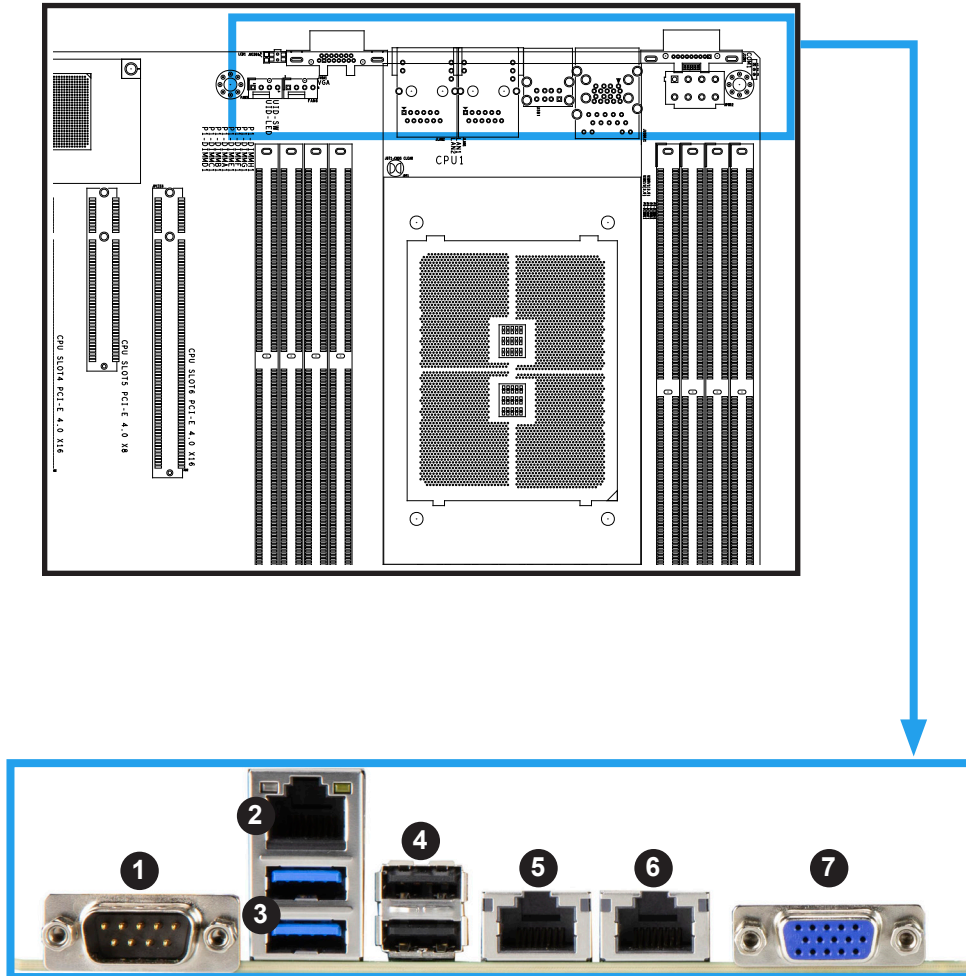
Figure 2-3. Rear I/O Port Locations

Rear I/O Ports			
#	**Description**	**#**	**Description**
1	COM Port	5	LAN1 Port*
2	IPMI LAN Port	6	LAN2 Port*
3	USB2/3 Ports (USB 3.0)	7	VGA Port
4	USB0/1 Ports (USB 2.0)		

*For the LAN1/2 ports, the H12DSi-NT6 features 10Gbe ports and the H12DSi-N6 features 1Gbe ports.

COM Port

There is one COM (serial) port on the rear I/O panel.

IPMI LAN Port

There is one gigabit LAN port located on the I/O panel. This is a dedicated IPMI port and accepts an RJ45 type cable.

Universal Serial Bus (USB) Ports

There are two USB 2.0 ports (USB0/1) and two USB 3.0 ports (USB2/3) on the I/O panel. (An additional USB 3.0 header is located at JUSB1 for front side USB acccess.)

LAN Ports

Two LAN ports (LAN1 and LAN2) are included on the rear I/O panel. These Ethernet ports accept RJ45 type cables.

VGA Port

There is one VGA port on the rear I/O panel.

2.6 Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro chassis. See the figure below for the descriptions of the front control panel buttons and LED indicators.

	20	19	
Ground	⊙	⊙	NMI
X	⊙	⊙	X
FP PWR LED	⊙	⊙	3.3V Stby
HDD LED	⊙	⊙	3.3V Stby
NIC1 Activity LED	⊙	⊙	3.3V Stby
NIC2 Activity LED	⊙	⊙	3.3V Stby
OH/Fan Fail LED	⊙	⊙	UID LED
Power Fail LED	⊙	⊙	3.3V
Ground	⊙	⊙	Reset Button
Ground	⊙	⊙	Power Button
	2	1	
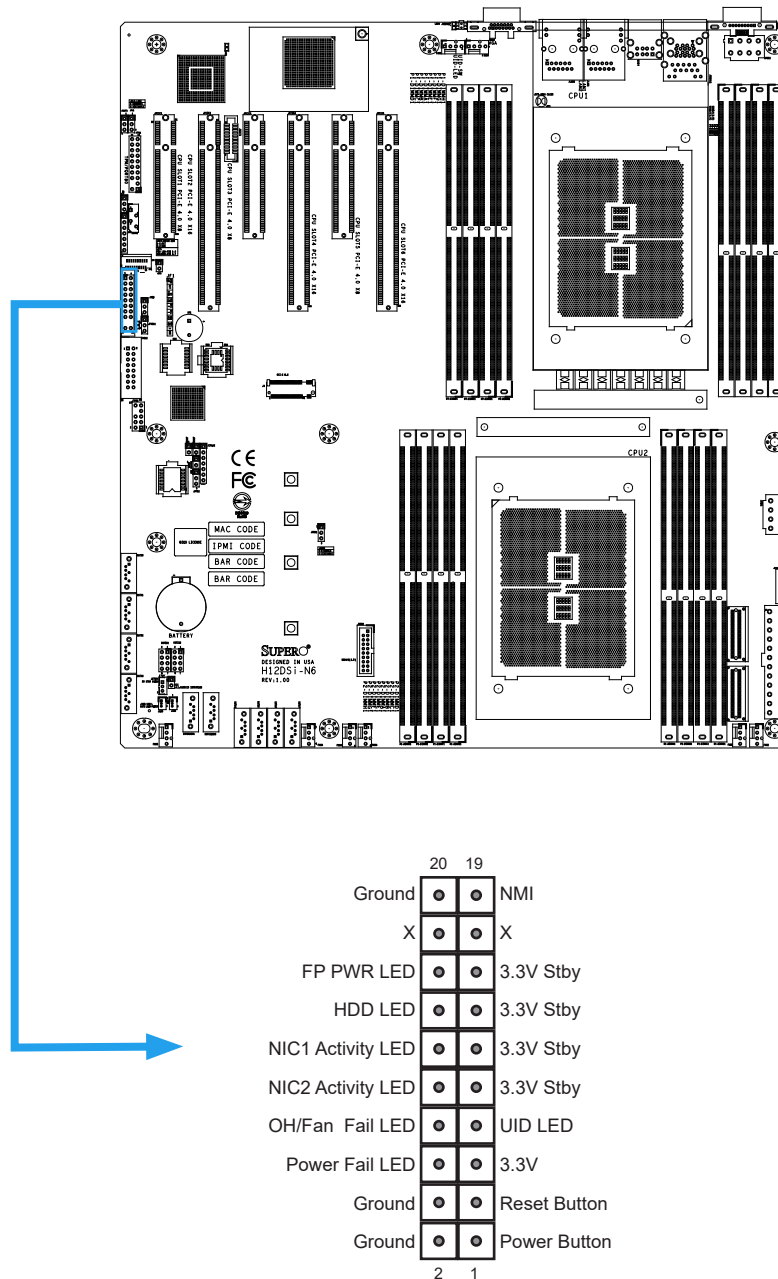
Figure 2-4. JF1 Header Pins

Power Button

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

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

Reset Button

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

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

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1.

Power Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	3.3V
6	PWR Supply Fail

OH/Fan Fail LED

The Overheat (OH) / Fan Fail LED is located on pin 8 of JF1. When this is on, it indicates that there is a system overheat or the internal fan(s) have failed.

The front UID LED is located on pin 7 of JF1.

OH/Fan Fail/UID Pin Definitions (JF1)	
Pin#	Definition
7	UID Signal
8	OH/Fan Fail

NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN Port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity.

Note: the H12DSi-NT6 features 10Gbe ports and the H12DSi-N6 features 1Gbe ports.

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	Definition
9	NIC2 Activity LED
10	NIC2 Link LED
11	NIC1 Activity LED
12	NIC1 Link LED

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	3.3V
16	Power LED

Power LED

The Power LED connection is located on pins 15 and 16 of JF1.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	3.3V
16	Power LED

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1.

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

2.7 Connectors

Headers

Onboard Fan Headers

There are eight fan headers on the motherboard (FAN1-6 and FANA-B). These are 4-pin fan headers; pins 1-3 are backward compatible with traditional 3-pin fans. The onboard fan speeds are controlled by Thermal Management (via Hardware Monitoring) in the BMC. When using Thermal Management setting, please use all 4-pin fans.

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

Disk-On-Module Power Connector

The Disk-On-Module (DOM) power connectors at JSD0 and JSD1 provide 5V power to a solid-state DOM storage device connected to one of the SATA ports. See the table below for pin definitions.

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

SATA Ports

The H12DSi-N6/H12DSi-NT6 has eight standard onboard SATA3 ports (SATA0 through SATA7) supported by CPU1 and CPU2. (CPU1: SATA0~3, CPU2: SATA4~7).)

M.2 Connectors

The M.2 connector (PCIe M.2) supports M.2 devices such as memory cards, wireless adapters, SATA, etc. These devices must conform to the PCIe M.2 specifications (formerly known as NGFF). This particular PCIe M.2 supports M-Key (PCIe x4) storage cards. Form factors 2280 and 22110 are supported.

SuperDOM

The SUPERDOM1 and SUPERDOM2 ports are Supermicro SATA DOM (Disk on Module) ports. SuperDOM, is a small SATA3 (6Gb/s) flash memory module that conveniently inserts directly into the mothrboard.

TPM Header/Port 80 Connector (TPM Port)

The JTPM1 header is used to connect a Trusted Platform Module (TPM), which is available from a third-party vendor. A TPM is a security device that supports encryption and authentication in hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive is not installed in the system.

Please go to the following link for more information on TPM: http://www.supermicro.com/manuals/other/TPM.pdf.

Trusted Platform Module Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	LCLK	2	GND
3	LFRAME#	4	Key
5	LRESET#	6	N/C
7	LAD3	8	LAD2
9	3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK (optional)	14	SMB_DAT (optional)
15	P3V3_STBY	16	SERIRQ
17	GND	18	LP_CLKRUN (optional)
19	LPC_PD (optional)	20	LPC_DRQ (optional)

Expansion Slots

The motherboard includes six expansion slots (Slot1 through Slot6). Slots 1, 3 and 5 are PCIe 4.0 x8 slots and Slots 2, 4 and 6 are PCIe 4.0 x16 slots.

Battery

The onboard battery provides backup power to the on chip CMOS, which stores the BIOS' setup information. It also provides power to the Real Time Clock (RTC) to keep it running.

UID Switch and LED Indicator

A Unit Identifier switch (UID_SW) and a UID LED (UID LED1) are located on the I/O backpanel, to the right of the VGA port. A front UID LED is also provided on pins 7 & 8 of JF1 (front control panel header). When you press the UID switch, both rear and front UID LED indicators will turn on. Press the UID switch again to turn off the LED indicators. Use this UID Indicator system to allow for easy identification of a system in a rack.

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

SGPIO Headers

The SGPIO1 and SGPIO2 (Serial General Purpose Input/Output) headers are used to communicate with the enclosure management chip on the backplane.

SGPIO Headers Pin Definitions			
Pin#	Definition	Pin#	Definition
1	Ground	2	DATA IN
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

4-pin BMC External I²C Header

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

External I²C Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to the header to inform you when the chassis is opened.

Chassis Intrusion Pin Definitions	
Pins	Definition
1	Ground
2	Intrusion Input

NVMe Connectors

CN1 and CN2 provide support for NVMe connections to attach high-speed PCIe storage devices.

Power Connections

Main Power Supply Connector

The primary power supply connector (JPWR3) is an ATX power connector that the power supply plugs into directly.

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

+12V 8-pin Auxilliary Power Connectors

JPWR1 and JPWR2 are 8-pin ATX power inputs to provide auxiliary power to the processors that are installed in the system. Refer to the table below for pin definitions.

12V 8-pin Auxilliary Power Connectors	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

Standby Power Connector

JSTBY is a power connection to supply +5V standby power. Refer to the table below for pin definitions.

2.8 Jumper Settings

How Jumpers Work

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

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.
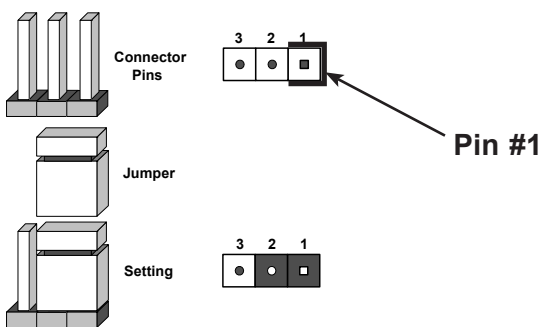
Clear CMOS (JBT1)

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

To Clear CMOS

1. First power down the system and unplug the power cord(s).

2. Remove the cover of the chassis to access the motherboard.

3. Remove the onboard battery from the motherboard.

4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.

5. Remove the screwdriver (or shorting device).

6. Replace the cover, reconnect the power cord(s), and power on the system.

Note: Clearing CMOS will also clear all passwords.

Do not use the PW_ON connector to clear CMOS.

Watch Dog (JWD1)

JWD1 controls the Watch Dog function. Watch Dog is a monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause Watch Dog to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. Watch Dog must also be enabled in BIOS. The default setting is Reset.

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

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

VGA Enable/Disable

JPVGA1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table below for jumper settings.

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

LAN Enable/Disable

Jumper JPL1 will enable or disable the LAN ports on the motherboard. See the table below for jumper settings. The default setting is enabled.

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

2.9 LED Indicators

LAN Port LEDs

The LAN ports have two LED indicators. The Activity LED is yellow and the Link LED may be green, amber, or off to indicate the speed of the connection. Refer to the tables below for more information.

LAN1/2 LED (Connection Speed Indicator)	
LED Color	**Definition**
Off	10 Mb/s
Green	100 Mb/s or 10Gb/s (X550)
Amber	1 Gb/s

Activity Indicator		
Color	**Status**	**Definition**
Off	No Connection	
Yellow	Flashing	Active

BMC LAN Port LEDs

A dedicated BMC LAN is located on the rear I/O panel and has two LED indicators. The LED on the right indicates activity, while the LED on the left indicates the speed of connection. The Link LED may be green, amber, or off to indicate the speed of the connection. Refer to the tables below for more information.

BMC LAN LEDs		
LED Color	**Color/State**	**Definition**
Link (Left)	Solid Green	100 Mbps
	Solid Amber	1 Gbps
Activity (Right)		Active

Link LED   Activity LED
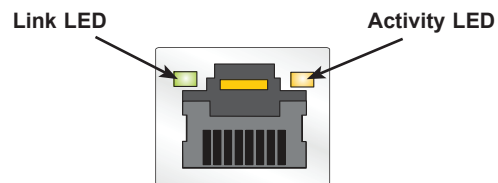
BMC Hearbeat LED

A BMC Heartbeat LED is located at LEDM1 on the motherboard. When LEDM1 is blinking, the BMC is functioning normally. See the table below for more information.

BMC Heartbeat LED State	
LED Color	**Definition**
Green: Blinking	BMC: Normal

UID LED

A UID LED (UID LED1) is located on the I/O backpanel, to the right of the VGA port. This LED turns on when initiated via the UID Switch or IPMI to easily identify a systen in a rack.

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

Onboard Overheat and Fan Failure LED

LED2 is an onboard overheat and fan failure indicator. When this LED is lit, and is solid red, it means that a system overheat condition has been detected. When the indicator is red and blinking, this means that a system fan failure has occured.

Onboard Overheat / Fan Failure LED Indicator	
LED Color	**Definition**
Solid Red	Overheat
Blinking	Fan Failure

Onboard Power LED

LED3 is an onboard power LED. When this LED is lit, it means power is present on the motherboard. Turn off the system and unplug the power cord before removing or installing components.

Onboard Power LED Indicator	
LED Color	**Definition**
Off	System Off (power cable not connected)
Green	System On

Chapter 3

Troubleshooting

3.1 Troubleshooting Procedures

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

Before Power On

1. Check that the Power OK LED on the motherboard is on.

2. Make sure that the power connector is connected to your power supply.

3. Make sure that no short circuits exist between the motherboard and chassis.

4. Disconnect all cables from the motherboard, including those for the keyboard and mouse.

5. Remove all add-on cards.

6. Install a CPU, a heatsink, and at least one DIMM on the motherboard. Check all jumper settings properly. *Make sure that the heatsink is fully seated.

7. Use the correct type of onboard CMOS battery (CR2032) as recommended by the manufacturer. To avoid possible explosion, do not install the CMOS battery upside down.

No Power

1. Make sure that no short circuits exist between the motherboard and the chassis.

2. Verify that all jumpers are set to their default positions.

3. Turn the power switch on and off to test the system.

4. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3VDC. If it does not, replace it with a new one.

No Video

1. Check that the VGA cable is connected properly, and the monitor is on.

2. Make sure you followed the guidelines to install memory (see *DIMM Module Population* in chapter 2).

3. Reseat the DIMM modules

Note: If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended.

System Boot Failure

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

1. Clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS Clear Jumper (JBT1). See Section 2.8 for details.

2. Remove all components from the motherboard, especially the DIMM modules.

3. Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure in this chapter.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.

2. Confirm that you are using the correct memory. Also, it is recommended that you use the same memory type and speed for all DIMMs in the system. See Section 2.4 for memory details.

3. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.

When the System Loses its Setup Configuration

1. Always replace power supplies with the exact same model that came with the system. A poor quality power supply may cause the system to lose the CMOS setup configuration. 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 approximately 3VDC. If it does not, replace it with a new one.

3. If the above steps do not fix the setup configuration problem, contact your vendor for repairs.

When the System Becomes Unstable

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

1. CPU/BIOS support: Make sure that your CPU is supported and that you have the latest BIOS installed in your system.

2. Memory support: Make sure that the memory modules are supported by testing the modules using memtest86 or a similar utility.

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

3. HDD/SSD support: Make sure that all disk drives work properly. Replace any bad HDDs/ SSDs with good ones.

4. System cooling: Check the system cooling to make sure that all heatsink fans and CPU/ system fans, etc., work properly. Check the hardware monitoring settings in IPMI to make sure that the CPU and system temperatures are within the normal range. Also check the front panel and make sure 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 the minimum power requirements.

6. Proper software support: Make sure that the correct drivers are used.

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

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as CD/DVD and CD/DVD-ROM.

2. Cable connection: Check to make sure that all cables are connected and working properly.

3. Use the minimum system configuration for troubleshooting: remove all unnecessary components (starting with add-on cards first), leaving only a CPU and a memory module installed to identify any trouble areas. Refer to the steps listed in Section A above for proper troubleshooting procedures.

4. Identify bad components by isolating them: if necessary, remove a component in question and test it in isolation to make sure that it works properly. Replace any 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 it with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

3.2 Technical Support Procedures

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

1. Please review the 'Troubleshooting Procedures' and 'Frequently Asked Questions' (FAQs) sections in this chapter or see the FAQs on our website before contacting Technical Support.

2. BIOS upgrades can be downloaded from our website.

   Note: Not all BIOS can be flashed depending on the modifications to the boot block code.

3. If you still cannot resolve the problem, include the following information when contacting us for technical support:

- Motherboard model and PCB revision number

- BIOS release date/version (this can be seen on the initial display when your system first boots up)

- System configuration

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

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

3.3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The H12DSi-N6/H12DSi-NT6 supports up to 4TB registered ECC DDR4-3200 SDRAM in 16 DIMM slots. See Section 2.4 for details on installing memory.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at http://www.supermicro.com. Please check our BIOS warning message and the information on how to update your BIOS on our website. Select your 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 FLASH.BAT filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot.

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

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

Question: For the AMD EPYC platform, we found that the Windows Server 2012/2016 OS would not install properly. It however works fine with Linux OS, any suggestions?

Answer: This issue is due to Windows server OS' compatibility with the virtualization function, we suggest to disable IOMMU (Input/Output Memory Management Unit) before installing the Windows Server OS. After installing the OS and hot fix update is finished, then you could enable the IOMMU in BIOS.

BIOS >> Advanced >> NB Configuration >> IOMMU >> Change from Auto to Disabled.

Microsoft KB: 4022723

Enabled machines with AMD I/O Virtualization Technology (IOMMU) to boot without BIOS restriction.

https://support.microsoft.com/en-us/help/4022723/windows-10-update-kb4022723

Question: When I ran the setup.exe to install the AMD SP3 I/O driver on Windows, the following message showed up:
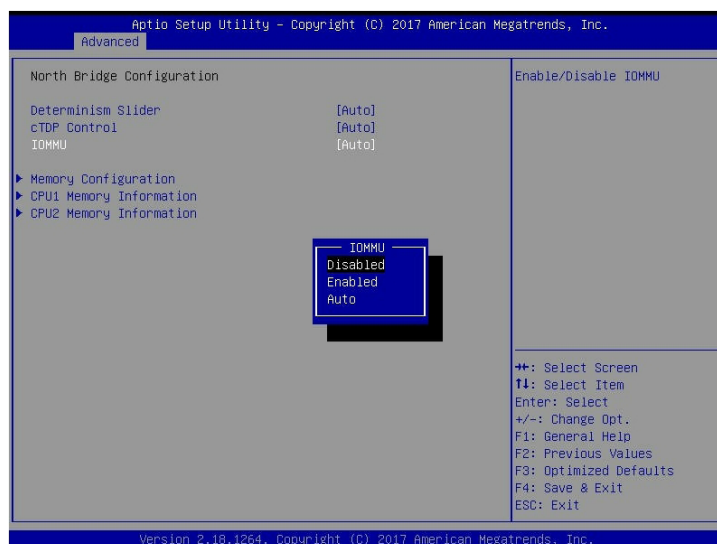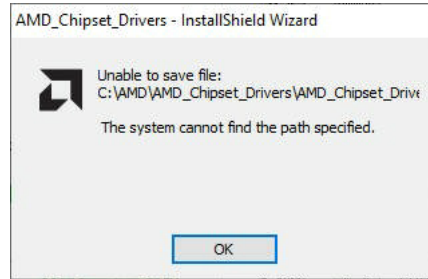
Answer: It happens in some environments. To solve this problem, click **OK** and save the installation package to the location you specify. The driver is then installed automatically.

3.4 Returning Merchandise for Service

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

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

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

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

3.5 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 as shown below.

3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.

4. Remove the battery.

Proper Battery Disposal

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

Battery Installation

1. To install an onboard battery, follow the steps 1& 2 above and continue below:

2. Identify the battery's polarity. The positive (+) side should be facing up.
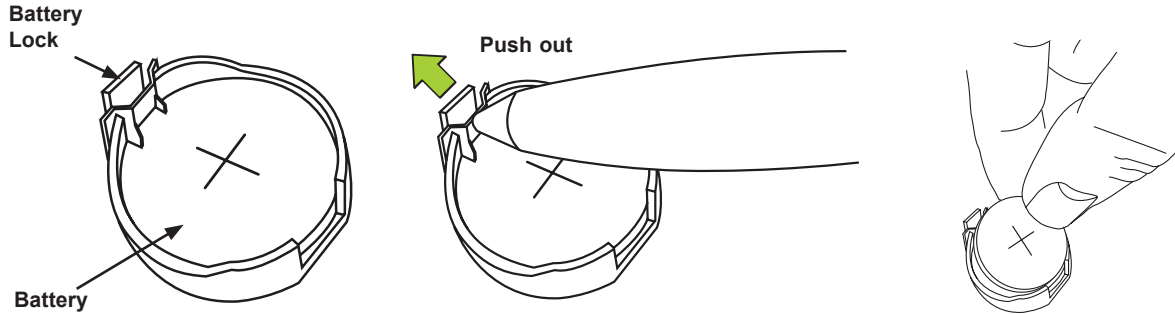
3. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.

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

This side up

Battery Holder

Press down until you hear a click.

Battery Lock

Battery
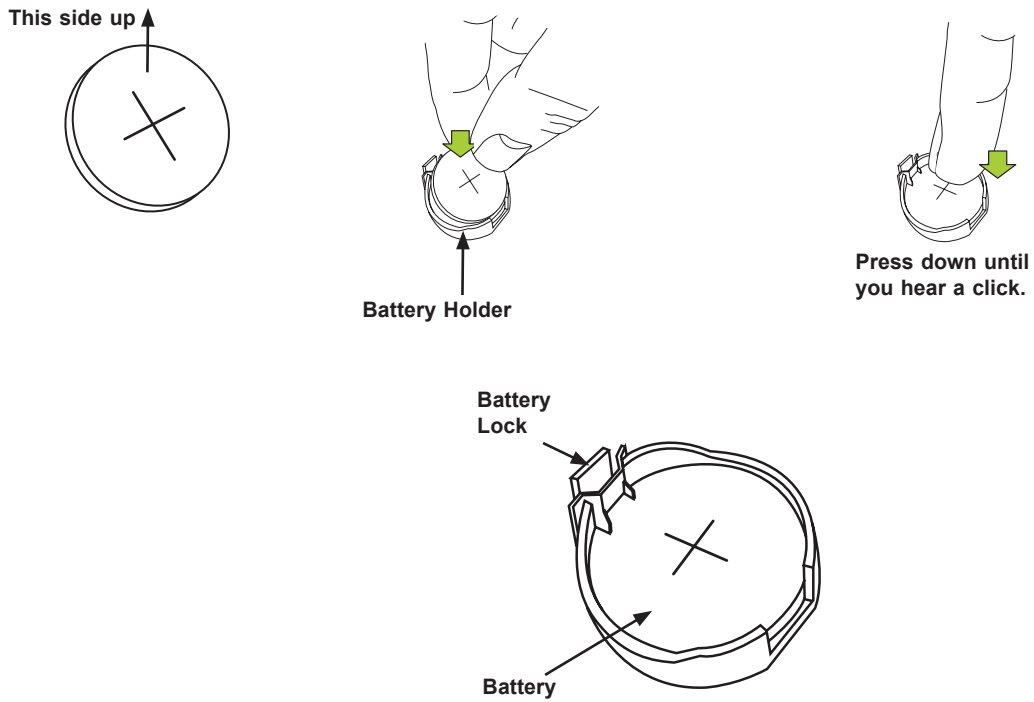
Chapter 4

UEFI BIOS (EPYC 7002)

4.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for H12DSi-N6/H12DSi-NT6 motherboards that are equipped with the AMD EPYC™ 7002 Series processor. The BIOS is stored on a chip and can be easily upgraded using a flash program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of our website for any changes to BIOS that may not be reflected in this manual.

Starting the Setup Utility

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

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

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

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

4.2 Main Setup

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

```
                              Aptio Setup - AMI
   Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

                                                    Set the Date. Use Tab to
                                                    switch between Date
   System Date                    [Fri 10/22/2021]  elements.
   System Time                    [01:36:16]        Default Ranges:
                                                    Year: 1998-9999
   Supermicro H12DSi-N6                             Months: 1-12
   BIOS Version                   2.3               Days: Dependent on month
   Build Date                     10/21/2021        Range of Years may vary.
   CPLD Version                   F1.A0.01

   Memory Information
   Total Memory                   16 GB


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

                      Version 2.21.1280 Copyright (C) 2021 AMI
```

System Date/System Time

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

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

Supermicro H12DSi-N6/H12DSi-NT6

BIOS Version

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

Build Date

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

CPLD Version

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

Memory Information

Total Memory

This feature displays the total system memory detected.

4.3 Advanced

Use the arrow keys to select a top item and press <Enter> to access the submenu items.

```
                          Aptio Setup - AMI
   Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

 ▶ Boot Feature                                      CPU Configuration Parameters
 ▶ Trusted Computing
 ▶ PSP Firmware Versions
 ▶ ACPI Settings
 ▶ Super IO Configuration
 ▶ Serial Port Console Redirection
 ▶ CPU Configuration
 ▶ NB Configuration
 ▶ PCIe/PCI/PnP Configuration
 ▶ USB Configuration
 ▶ Network Configuration
 ▶ SATA Configuration
 ▶ HTTP Boot Configuration
 ▶ SMC-KMS Server Configuration

 ▶ Broadcom Gigabit Ethernet BCM5720 - 3C:EC:EF:76:D8:9E
 ▶ Broadcom Gigabit Ethernet BCM5720 - 3C:EC:EF:76:D8:9F
 ▶ TLS Authenticate Configuration        →←: Select Screen
                                          ↑↓: Select Item
 ▶ Driver Health                          Enter: Select
                                          +/-: Change Opt.
                                          F1: General Help
                                          F2: Previous Values
                                          F3: Optimized Defaults
                                          F4: Save & Exit
                                          ESC: Exit

            Version 2.21.1280 Copyright (C) 2021 AMI
```

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

▶Boot Feature

Quiet Boot

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

Option ROM Messages

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

Bootup NumLock State

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

Wait For "F1" If Error

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

INT19 (Interrupt 19) Trap Response

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

Re-try Boot

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

Power Configuration

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reset or generate NMI based on jumper settings when it is expired for more than 5 minutes. The options are **Disabled** and Enabled.

Restore on AC Power Loss

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

Power Button Function

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

▶Trusted Computing

Security Device Support

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

▶PSP Firmware Versions

This section displays the Platform Security Processor (PSP) firmware versions.

PSP Directory Level 1 (Fixed)

• PSP Recovery BL Ver

• SMU FW Version

• ABL Version

PSP Directory Level 2 (Updateable)

• PSP Bootloader Version

• SMU FW Version

• ABL Version

▶ACPI Settings

PCI AER Support

The options are **Disabled** and Enabled.

High Precision Event Timer

The High Precision Event Timer (HPET) can produce periodic interrupts and is used to synchronize multimedia streams, providing smooth playback and reducing the need to use other timestamp calculations. The options are Disabled and **Enabled**.

NUMA Nodes Per Socket

This feature specifies the number of desired Non-Uniform Memory Access (NUMA) nodes per socket. Setting this to zero will attempt to interleave the two sockets together. The options are NPS0, NPS1, NPS2, NPS4 and **Auto**.

ACPI SRAT L3 Cache As NUMA Domain

Use this setting to enable/disable ACPI SRAT L3 Cache As NUMA Domain. The options are Disabled, Enabled, and **Auto**.

▶Super IO Configuration

The following Super IO information will display:

• Super IO Chip AST2600

▶Serial Port 1 Configuration

Serial Port

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

Device Settings

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

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=3F8h; IRQ=4;); (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;).

▶SOL Configuration

Serial Port

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

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=2F8h; IRQ=3;); (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;).

▶Serial Port Console Redirection

COM1

Console Redirection

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

If the item above set to Enabled, the following items will become available for user's configuration:

▶Console Redirection Settings

Terminal Type

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

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Putty KeyPad

This feature selects the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

SOL

Console Redirection

Select Enabled to enable SOL console redirection support for a serial port specified by the user. The options are Disabled and **Enabled**.

If the item above set to Enabled, the following items will become available for user's configuration:

▶**Legacy Console Redirection Settings**

Legacy Serial Redirection Port

For this setting, select a COM port to display redirection of Legacy OS and Legacy OPROM messages. The options include **COM1** and SOL.

Legacy OS Redirection Resolution

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

Redirection After BIOS POST

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

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

Console Redirection

Select Enabled to enable EMS console redirection support for a serial port specified by the user. The options are **Disabled** and Enabled.

If the item above set to Enabled, the following items will become available for user's configuration:

▶Console Redirection Settings

Out-of-Band Mgmt Port

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

Terminal Type

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

Bits per second

This 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 EMS

Use this item 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 EMS

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

Parity EMS

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 EMS

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.

▶CPU Configuration

SMT Control

Use this setting to specify Simultaneous Multithreading. The options are Disabled and **Auto**.

Core Performance Boost

This setting is used to configure for Core Performance Boost. Options include Disabled and **Auto**.

Global C-state Control

This setting is used to configure for Global C-state Control. Options include Disabled, Enabled, and **Auto**.

Local APIC Mode

This setting is used for Local APIC Mode. The options include xAPIC, x2APIC, and **Auto**.

CCD Control

This setting sets the number of CCDs to be used. The options include **Auto,** 2 CCDs, 3 CCDs, 4 CCDs, and 6 CCDs.

Core Control

This sets the number of cores to be used by your system. Once this option has been used to remove any cores, a power cycle is required in order for the future selections to take effect. Options include **Auto**, TWO (1+1), Four (2 + 2), Four (4+0), and Six (3 + 3). If unsure, leave this to Auto.

L1 Stream HW Prefetcher / L2 Stream HW Prefetcher

This setting is used to enable or disable the L1/L2 Stream Hardware Prefetcher. The options are Disabled, Enabled, and **Auto**.

SMEE

This feature sets the option to enable or disable Secure Memory Encryption. The options are **Disabled** and Enabled.

SEV ASID Count

The Secure Encrypted Virtualization Address Space ID (ASID) Count specifies the maximum value of ASID, which affects the maximum physical address space available for systems that support 253 ASIDs, while 8TB of physical address space is available for systems that support 509 ASIDs. The options are 253 ASIDs, 509 ASIDs, and **Auto**.

SEV-ES ASID Space Limit Control

Choose **Auto** or Manual to control the SEV-ES ASID Space Limit.

SVM Mode

Use to **Enable** or Disable CPU Virtualization.

CPU 1/2 Information

View information related to CPU1 or CPU2.

▶NB Configuration

Determinism Control

Use this setting to configure the Determinism Slider. Options include Manual and **Auto**.

cTDP Control

Use this setting to configure the cTDP Control. Options include Manual and **Auto**.

IOMMU

Use this setting to enable/disable IOMMU. Options include Disabled, Enabled, and **Auto**.

Package Power Limit Control

Options include Manual and **Auto**.

APBDIS

Options include 0, 1, and **Auto**.

DF Cstates

Options include Disabled, Enabled and **Auto**.

Preferred IO

Options include Manual and **Auto**.

EDC Control

Electrical Design Current (EDC) is the total current capacity in amps that can be supplied to the socket. **Auto** = use the fused VDDCR_CPU EDC limit. Manual = user can set a customized VDDCR_CPU EDC limit.

▶xGMI Configuration

xGMI Link Width Control

Auto = use the default xGMI link width modulator settings. Manual = user can set the GMI link width modulator settings.

xGMI Link Max Speed

Select the xGMI link max speed. Settings are 10.667Gbps, 11Gbps, 12Gbps, 13Gbps, 14Gbps, 15Gbps, 16Gbps, 17Gbps, 18Gbps, 19Gbps, 20Gbps, 21Gbps, 22Gbps and **Auto**.

▶Memory Configuration

Memory Clock

This setting allows you to select different memory clock speed. Options include **Auto** and supported frequencies.

Memory Interleaving

This setting controls fabric level memory interleaving. Note that the channel, die and socket have requirements on memory populations and it will be ignored if the memory doesn't support the selected option. The options are Disabled and **Auto.**

Memory Interleaving Size

This setting controls the memory interleaving size. This determines the starting address of the interleave (bit 8, 9, 10 or 11). The options are 256 Bytes, 512 Bytes, 1 KB, 2 KB or **Auto**.

Chipset Interleaving

This setting controls interleave memory blocks across the DRAM chip for node 0. The options are Disabled and **Auto**.

BankGroupSwap

This setting controls the Bank Group Swap. The options are Enabled, Disabled and **Auto**.

DRAM Scrub Time

This provides a value that is the number of hours to scrub memory. The options are Disabled, 1 hour, 4 hours, 8 hours, 16 hours, 24 hours, 48 hours, and **Auto**.

▶CPU1/2 Memory Information

These sections are for informational purposes. They will display details about the detected memory according to the CPU, such as:

- Detected Size (per slot, in MB)
- Current Speed (MT/s)

▶PCIe/PCI/PnP Configuration

This menu provides PCIe/PCI/PnP configuration settings and information.

PCI Bus Driver Version

PCI Devices Common Settings:

Above 4G Decoding

This setting Disables or **Enables** 64-bit capable devices ability to be decoded in above 4G address space (only if the system supports 64-bit PCI decoding).

SR-IOV Support

If the system has SR-IOV capable PCI-E devices, this setting will **Disable** or Enable the Single Root IO Virtualization Support for the system.

BME DMA Mitigation

Use this setting to re-enable the Bus Master Attribute that was disabled during PCI enumeration for PCI bridges after SMM is locked. The options are **Disabled** and Enabled.

PCIe ARI Support

The options are Disabled, Enabled, and **Auto**.

PCIe ARI Enumeration

ARI forwarding enable for downstream port. The options are Disabled, Enabled, and **Auto**.

PCIe Ten Bit Tag Support

Enables PCIe ten bit tags for supported devices. The options are Disabled, Enabled, and **Auto**.

PCIe Spread Spectrum

Use this setting to **Disable** or Enable PCIe Spread Spectrum for your system.

Relaxed Ordering

Enables or disables PCIe device relaxed ordering. The options are Disabled and **Enabled**.

No Snoop

Enables or disables the PCIe device no snoop option. The options are Disabled and **Enabled**..

VGA Priority

Use this setting to select between onboard or offboard VGA support. The options are **Onboard** and Offboard

NVMe Firmware Source

Use this setting to select between the AMI Native firmware support or the device vendor-defined firmware support. The options are **Vendor Defined Firmware** and AMI Native Support.

CPU Slot1 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot2 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot3 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot4 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot5 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot6 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

PCI-E M.2 OPROM

This setting enables or disables the PCIe M.2 OPROM. The options are Disabled and **EFI**.

Onboard LAN1 Option ROM

This setting selects which firmware function to be loaded for the onboard LAN1. The options are Disabled and **EFI**.

Onboard NVMe1 Option ROM

Select which firmware function is to be loaded for onboard NVMe1. The options include Disabled and **EFI**.

Onboard NVMe2 Option ROM

Select which firmware function is to be loaded for onboard NVMe2. The options include Disabled and **EFI**.

Onboard NVMe3 Option ROM

Select which firmware function is to be loaded for onboard NVMe3. The options include Disabled and **EFI**.

Onboard NVMe4 Option ROM

Select which firmware function is to be loaded for onboard NVMe4. The options include Disabled and **EFI**.

Onboard Video Option ROM

Select Legacy to boot the system using a legacy video device installed on the motherboard. The options include Disabled and **EFI**

CPU Slot1 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** and x4x4.

CPU Slot2 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** x16, x8x8, x4x4x8, x4x4x4x4.

CPU Slot3 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** and x4x4.

CPU Slot4 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** x16, x8x8, x4x4x8, x4x4x4x4.

CPU Slot5 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** and x4x4.

CPU Slot6 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** x16, x8x8, x4x4x8, x4x4x4x4.

▶USB Configuration

Legacy USB Support

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

XHCI Hand-Off

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

Port 60/64 Emulation

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

▶Network Configuration

Network Stack

This setting allows you to Disable or **Enable** the UEFI Network Stack.

IPv4 PXE Support

This setting allows you to Disable or **Enable** IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

IPv4 HTTP Support

This setting allows you to **Disable** or Enable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.

IPv6 PXE Support

This setting allows you to Disable or **Enable** IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.

IPv6 HTTP Support

This setting allows you to **Disable** or Enable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.

PXE Boot Wait Time

This setting allows you to set in a number field the wait time to press the ESC key to abort the PXE boot. The default value is **0**.

Media Detect Count

This setting allows you set in a number field the number of times presence of media will be checked. The default value is **1**.

▶MAC:3CDCEF76D89E-IPv6 Network Configuration

This setting allows you configure the network parameters for the listed MAC address.

▶MAC:3CDCEF76D89E-IPv4 Network Configuration

This setting allows you configure the network parameters for the listed MAC address.

▶MAC:3CDCEF76D89F-IPv4 Network Configuration

This setting allows you configure the network parameters for the listed MAC address.

▶**MAC:3CDCEF76D89F-IPv6 Network Configuration**

This setting allows you configure the network parameters for the listed MAC address.

▶SATA Configuration

This section displays the detected SATA devices installed on the system.

SATA Information

SATA Enable

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

SATA Hotplug

This item enables or disables the onboard SATA controller's hot plug feature (PCH). The options are Disabled and **Enabled**.

▶SATA Information

This section displays information on the detected SATA devices:

- I-SATA0~1

- SATA0~13

▶HTTP Boot Configuration

HTTP Boot Policy

Sets the HTTP boot policy to Apply to all LANs, **Apply to each LAN**, or Boot Priority #1 instantly.

Instance of Priority 1

Default to 1.

Select IPv4 or IPv6

Choose to set the targeted LAN port to boot from **IPv4** or IPv4.

Boot Description

Must be filled out, otherwise the boot option for the URI will not be created. Length of description cannot exceed 75 characters.

Boot URI

This option is an input field used to enter a web or network address to point to the HTTP boot files. This supports the HTTP or HTTPS protocols only.

Instance of Priority 2

Default to 0.

▶iSCSI Configuration

iSCSI Initiator Name

This feature allows the user to enter the unique name of the iSCSI Initiator in IQN format. Once the name of the iSCSI Initiator is entered into the system, configure the proper settings for the following items.

▶**Add an Attempt**

▶**Delete Attempts**

▶**Change Attempt Order**

▶Broadcom Gigabit Ethernet BCM5720 - 3C:EC:EF:76:D8:9E /9F

▶Firmware Image Menu

This section displays the bootcode, MBA, EFI, iSCSI Boot, NC-SI, and CCM information on the listed Ethernet device:

▶MBA Configuration Menu

Legacy Boot Protocol

Selects the non-UEFI boot protocol. Options are **PXE**, iSCSI, and None.

Boot Strap Type

Selects the boot strap type. Options are **Auto Detect**, BBS, Int 18h, and Int 19h.

Hide Setup Prompt

Selects whether the setup prompt is displayed during ROM initialization. Options are **Disabled** and Enabled.

Setup Key Stroke

Configures the keystrokes to invoke the configuration menu. Options are **Ctrl-S** and Ctrl-B.

Banner Message Timeout

Selects the timeout value Options are seconds chosen.

Link Speed

Selects the link speed. Options are **AutoNeg**, 10Mbps Half, 10Mbps Full , 100Mbps Half, and 100Mbps Full.

Pre-boot Wake On LAN

Configures the pre-boot wake on LAN (WOL). Options are **Disabled** and Enabled.\

VLAN Mode

Configures virtual LAN mode. Options are **Disabled** and Enabled.

VLAN ID

Displays the VLAN ID.

▶iSCSI Boot Configuration Menu

▶iSCSI General Parameters

TCP/IP Parameters via DHCP

Acquire TCP/IP configuration via DHCP. Options are Disabled and **Enabled**.

iSCSI Parameters via DHCP

Enables or Disables CHAP authentication. Options are **Disabled** and Enabled.

Boot to iSCSI Target

Enables or Disables booting to iSCSI target after login. Options are **Enabled,** Disabled, and One Time Disabled.

DHCP Vendor ID

Configures DHCP vendor ID (up to 32 bytes long).

Link Up Delay Time

Configures link up delay time in seconds (0 to 255).

Use TCP Timestamp

Enables or Disables TCP timestamp. Options are **Disabled** and Enabled.

Target as First HDD

Enables or Disables target appearing as first HDD in the system. Options are **Disabled** and Enabled.

LUN Bust Retry Type

Configures the number of retries in 2 second intervals ((0 to 60) when LUN is busy.

IP Version

IP version support. Modifying this parameter will reset all IP-related fields.

▶**iSCSI Initiator Parameters**

Displays the IP address, subnet mask, submet mask prefix, default gateway, primary DNS, secondary DNS, iSCSI name, CHAP ID, and CHAP secret.

▶**iSCSI First/Second Target Parameters**

Connect

Enables or Disables target establishment. Options are **Disabled** and Enabled.

This submenu also displays the IP address, TCP port, boot LUN, iSCSI name, CHAP ID, and CHAP secret.

▶**Secondary Device**

Secondary Device

Input the secondary device MAC address here.

Use Independent Target Portal

Use the independent target portal when multipath I/O is enabled. Options are **Disabled** and Enabled.

Use Independent Target Name

Use the independent target name when multipath I/O is enabled. Options are **Disabled** and Enabled.

The iSCSI Boot Configuration Menu also displays the blink LEDS, chip type, PCI device ID, Bus:Device:Function, link status, permanent MAC address and virtual MAC address.

▶TLS Authenticate Configuration

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

▶Server CA Configuration

▶Enroll Certification

▶Enroll Certification using File

Use this feature to enroll certification from a file.

Certification GUID

Use this feature to input the certification GUID.

▶Commit Changes and Exit

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

▶Discard Changes and Exit

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

▶Delete Certification

Use this feature to delete certification. The options include **Disabled** and Enabled.

▶Driver Health

This submenu provides driver health status for the drivers and controllers.

4.4 IPMI

This tab allows you to configure the following IPMI settings for the system.

```
                             Aptio Setup - AMI
     Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

   BMC Firmware Revision                    01.00.19          Press <Enter> to change the
   IPMI STATUS                              Working           SEL event log configuration.

 ▶ System Event Log
 ▶ BMC Network Configuration




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

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```

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

BMC Firmware Revision

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

IPMI STATUS

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

▶System Event Log

Enabling/Disabling Options

SEL Components

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

Erasing Settings

Erase SEL

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

When SEL is Full

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

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

▶BMC Network Configuration

BMC Network Configuration

Update IPMI LAN Configuration

Select Yes to enable BMC Network Configuration.

IPMI LAN Selection

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

IPMI Network Link Status

This item displays the IPMI Network Link status. The default setting is **Shared LAN**.

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 Static and **DHCP**.

If the item above is set to Static, the following items will become available for configuration:

Station IP Address

This item displays the Station IP address for this computer. This should be in decimal and in dotted quad form.

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., 172.31.0.1).

VLAN

This item displays the virtual LAN settings. The options are Disable and Enable.

Configure IPv6 Support

This section displays configuration features for IPv6 support.

IPv6 Support

Use this feature to enable IPV6 support. The options are **Enabled** and Disabled.

If the item above is set to Enabled, the following items will become available for configuration:

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.

If the item "Configuration Address Source" above is set to Static, the following items will become available for configuration:

- Station IPv6 Address

- Prefix Length

- IPv6 Router1 IP Address

4.5 Event Logs

This tab allows the user to configure the following event logs settings for the system.

```
                              Aptio Setup - AMI
     Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

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









                                                  ─────────────────────────

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

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```
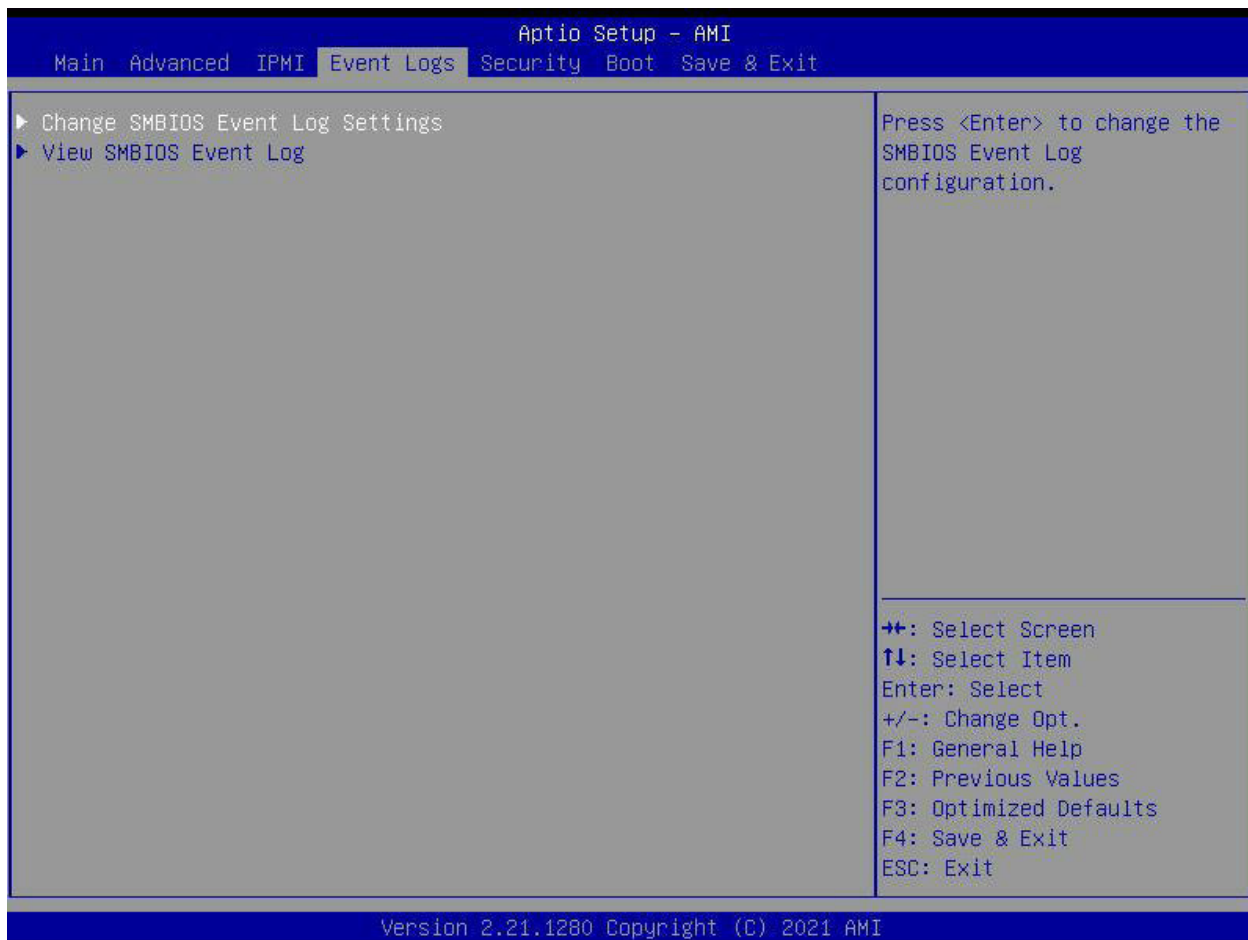
Enabling/Disabling Options

Change SMBIOS Event Log Settings

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

Erasing Settings

Erase Event Log

Select Yes to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No,** Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the 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 Enabled and **Disabled**.

MECI (Multiple Event Count Increment)

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

METW (Multiple Event Count Time Window)

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

Note: Please reboot the system for these changes to take effect.

▶View SMBIOS Event Log

When Event Logging is on, this item allows the user to view the entries in the SMBIOS event log. The following categories are displayed:

Date/Time/Error Code/Severity

4.6 Security

This tab allows you to configure the following security settings for the system.

```
                          Aptio Setup - AMI
    Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

   Administrator Password                  Not Installed      ▲ Set Administrator Password
   User Password                           Not Installed

   Password Description

   If the Administrator's / User's password is set,
   then this only limits access to Setup and is
   asked for when entering Setup.
   Please set Administrator's password first in order
   to set User's password, if clear Administrator's
   password, the User's password will be cleared as well.

   The password length must be
   in the following range:
   Minimum length                          8
   Maximum length                          20

   Administrator Password
   Password Check                          [Setup]             ⟷: Select Screen
                                                               ↑↓: Select Item
 ▶ SMCI Security Erase Configuration                           Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                             ▼ F4: Save & Exit
                                                               ESC: Exit

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```

Administrator Password

Press Enter to create a new, or change an existing Administrator password. Note that if the Administrator Password is erased, the User Password will be cleared as well.

Password Check

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

▶VSMCI Security Erase Configuration

Displays rhe HDD name, HDD serial number, security mode, estimated time, and HDD user pwd status.i

▶**Security Function**

Options are **Disabled**, Set Password, Security erase - Password, and Security Erase -0 Without Password. .

Password

Set the password here.

4.7 Boot

Use this tab to configure Boot Settings:

```
                              Aptio Setup - AMI
     Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

  Boot Configuration                                    ▲  Select boot mode Legacy/UEFI

  Boot Mode Select                      [UEFI]
  LEGACY to EFI Support                 [Disabled]

  FIXED BOOT ORDER Priorities
  Boot Option #1                        [UEFI Hard
                                         Disk:CentOS]
  Boot Option #2                        [UEFI CD/DVD]
  Boot Option #3                        [UEFI USB Hard Disk]
  Boot Option #4                        [UEFI USB CD/DVD]
  Boot Option #5                        [UEFI USB Key]
  Boot Option #6                        [UEFI USB Floppy]
  Boot Option #7                        [UEFI USB Lan]
  Boot Option #8                        [UEFI
                                         Network:(B1/D0/F0)
                                         UEFI PXE: IPv4
                                         Broadcom NetXtreme      ↔: Select Screen
                                         Gigabit Ethernet        ↑↓: Select Item
                                         (BCM5720)(MAC:3cecef7    Enter: Select
                                         6d89e)]                 +/-: Change Opt.
  Boot Option #9                        [UEFI AP:UEFI:           F1: General Help
                                         Built-in EFI Shell]     F2: Previous Values
                                                                 F3: Optimized Defaults
  ▶ Add New Boot Option                                       ▼  F4: Save & Exit
                                                                 ESC: Exit

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```

Boot Mode Select

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

LEGACY to EFI Support

This option **Disables** or Enables the system to boot to an EFI OS after the boot failed from the legacy boot order.

FIXED BOOT ORDER Priorities

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

▶Add New Boot Option

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

▶Delete Boot Option

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

▶NETWORK Drive BBS Priorities

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

▶NETWORK Network Drive BBS Priorities

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

▶UEFI Application Boot Priorities

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

- UEFI Boot Order #1

4.8 Save & Exit

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

```
                              Aptio Setup - AMI
     Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

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

     Default Options
     Restore Optimized Defaults
     Save as User Defaults
     Restore User Defaults

     Boot Override
     CentOS (P4: INTEL SSDSC2CW240A3)
     (B1/D0/F0) UEFI PXE: IPv4 Broadcom NetXtreme Gigabit Ethernet
     (BCM5720)(MAC:3cecef76d89e)
     (B1/D0/F1) UEFI PXE: IPv4 Broadcom NetXtreme Gigabit Ethernet
     (BCM5720)(MAC:3cecef76d89f)
     (B1/D0/F0) UEFI PXE: IPv6 Broadcom NetXtreme Gigabit Ethernet   →←: Select Screen
     (BCM5720)(MAC:3cecef76d89e)                                     ↑↓: Select Item
     (B1/D0/F1) UEFI PXE: IPv6 Broadcom NetXtreme Gigabit Ethernet   Enter: Select
     (BCM5720)(MAC:3cecef76d89f)                                     +/-: Change Opt.
     UEFI: Built-in EFI Shell                                        F1: General Help
     Launch EFI Shell from filesystem device                        F2: Previous Values
                                                                     F3: Optimized Defaults
                                                                     F4: Save & Exit
                                                                     ESC: Exit

     DXE--USB Device Hot-plug..
                         Version 2.21.1280 Copyright (C) 2021 AMI                    B4
```

Save Options

Discard Changes and Exit

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

Save Changes and Reset

Select this option to reset the system after saving the changes.

Save Changes

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

87

Discard Changes

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

Default Options

Restore Optimized Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Boot Override Section

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

Chapter 5

UEFI BIOS (EPYC 7003)

5.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for H12DSi-N6/H12DSi-NT6 motherboards that are equipped with the AMD EPYC™ 7003 Series processor. The BIOS is stored on a chip and can be easily upgraded using a flash program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of our website for any changes to BIOS that may not be reflected in this manual.

Starting the Setup Utility

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

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

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

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

5.2 Main Setup

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

```
                              Aptio Setup - AMI
   Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

                                                    Set the Date. Use Tab to
                                                    switch between Date
   System Date                    [Fri 10/22/2021]  elements.
   System Time                    [01:36:16]        Default Ranges:
                                                    Year: 1998-9999
   Supermicro H12DSi-N6                             Months: 1-12
   BIOS Version                   2.3               Days: Dependent on month
   Build Date                     10/21/2021        Range of Years may vary.
   CPLD Version                   F1.A0.01

   Memory Information
   Total Memory                   16 GB


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

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```

System Date/System Time

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

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

Supermicro H12DSi-N6/H12DSi-NT6

BIOS Version

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

Build Date

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

CPLD Version

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

Memory Information

Total Memory

This feature displays the total system memory detected.

5.3 Advanced

Use the arrow keys to select a top item and press <Enter> to access the submenu items.

```
                            Aptio Setup – AMI
   Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

 ▶ Boot Feature                                  CPU Configuration Parameters
 ▶ Trusted Computing
 ▶ PSP Firmware Versions
 ▶ ACPI Settings
 ▶ Super IO Configuration
 ▶ Serial Port Console Redirection
 ▶ CPU Configuration
 ▶ NB Configuration
 ▶ PCIe/PCI/PnP Configuration
 ▶ USB Configuration
 ▶ Network Configuration
 ▶ SATA Configuration
 ▶ HTTP Boot Configuration
 ▶ SMC-KMS Server Configuration

 ▶ Broadcom Gigabit Ethernet BCM5720 – 3C:EC:EF:76:D8:9E
 ▶ Broadcom Gigabit Ethernet BCM5720 – 3C:EC:EF:76:D8:9F
 ▶ TLS Authenticate Configuration            ↔: Select Screen
                                             ↑↓: Select Item
 ▶ Driver Health                             Enter: Select
                                             +/-: Change Opt.
                                             F1: General Help
                                             F2: Previous Values
                                             F3: Optimized Defaults
                                             F4: Save & Exit
                                             ESC: Exit

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```

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

▶Boot Feature

Quiet Boot

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

Option ROM Messages

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

Bootup NumLock State

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

Wait For "F1" If Error

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

INT19 (Interrupt 19) Trap Response

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

Re-try Boot

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

Power Configuration

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reset or generate NMI based on jumper settings when it is expired for more than 5 minutes. The options are **Disabled** and Enabled.

Restore on AC Power Loss

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

Power Button Function

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

▶Trusted Computing

Security Device Support

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

▶PSP Firmware Versions

This section displays the Platform Security Processor (PSP) firmware versions.

PSP Directory Level 1 (Fixed)

• PSP Recovery BL Ver

• SMU FW Version

• ABL Version

PSP Directory Level 2 (Updateable)

• PSP Bootloader Version

• SMU FW Version

• ABL Version

▶ACPI Settings

PCI AER Support

The options are **Disabled** and Enabled.

High Precision Event Timer

The High Precision Event Timer (HPET) can produce periodic interrupts and is used to synchronize multimedia streams, providing smooth playback and reducing the need to use other timestamp calculations. The options are Disabled and **Enabled**.

NUMA Nodes Per Socket

This feature specifies the number of desired Non-Uniform Memory Access (NUMA) nodes per socket. Setting this to zero will attempt to interleave the two sockets together. The options are NPS0, NPS1, NPS2, NPS4 and **Auto**.

ACPI SRAT L3 Cache As NUMA Domain

Use this setting to enable/disable ACPI SRAT L3 Cache As NUMA Domain. The options are Disabled, Enabled, and **Auto**.

▶Super IO Configuration

The following Super IO information will display:

* Super IO Chip AST2600

▶Serial Port 1 Configuration

Serial Port

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

Device Settings

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

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=3F8h; IRQ=4;); (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;).

▶SOL Configuration

Serial Port

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

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of a serial port specified by the user. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=2F8h; IRQ=3;); (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;); and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;).

▶Serial Port Console Redirection

COM1

Console Redirection

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

*If the item above set to Enabled, the following items will become available for user's configuration:

▶Console Redirection Settings

Terminal Type

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

Bits per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Putty KeyPad

This feature selects the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

SOL

Console Redirection

Select Enabled to enable SOL console redirection support for a serial port specified by the user. The options are Disabled and **Enabled**.

If the item above set to Enabled, the following items will become available for user's configuration:

▶**Legacy Console Redirection Settings**

Legacy Serial Redirection Port

For this setting, select a COM port to display redirection of Legacy OS and Legacy OPROM messages. The options include **COM1** and SOL.

Legacy OS Redirection Resolution

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

Redirection After BIOS POST

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

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

Console Redirection

Select Enabled to enable EMS console redirection support for a serial port specified by the user. The options are **Disabled** and Enabled.

*If the item above set to Enabled, the following items will become available for user's configuration:

▶**Console Redirection Settings**

Out-of-Band Mgmt Port

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

Terminal Type

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

Bits per second

This 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 EMS

Use this item 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 EMS

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

Parity EMS

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 EMS

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.

▶CPU Configuration

SMT Control

Use this setting to specify Simultaneous Multithreading. The options are Disabled and **Auto**.

Core Performance Boost

This setting is used to configure for Core Performance Boost. Options include Disabled and **Auto**.

Global C-state Control

This setting is used to configure for Global C-state Control. Options include Disabled, Enabled, and **Auto**.

Local APIC Mode

This setting is used for Local APIC Mode. The options include xAPIC, x2APIC, and **Auto**.

CCD Control

This setting sets the number of CCDs to be used. The options include **Auto,** 2 CCDs, 3 CCDs, 4 CCDs, and 6 CCDs.

Core Control

This sets the number of cores to be used by your system. Once this option has been used to remove any cores, a power cycle is required in order for the future selections to take effect. Options include **Auto**, TWO (1+1), Four (2 + 2), Four (4+0), and Six (3 + 3). If unsure, leave this to Auto.

L1 Stream HW Prefetcher / L2 Stream HW Prefetcher

This setting is used to enable or disable the L1/L2 Stream Hardware Prefetcher. The options are Disabled, Enabled, and **Auto**.

SMEE

This feature sets the option to enable or disable Secure Memory Encryption. The options are **Disabled** and Enabled.

SEV ASID Count

The Secure Encrypted Virtualization Address Space ID (ASID) Count specifies the maximum value of ASID, which affects the maximum physical address space available for systems that support 253 ASIDs, while 8TB of physical address space is available for systems that support 509 ASIDs. The options are 253 ASIDs, 509 ASIDs, and **Auto**.

SEV-ES ASID Space Limit Control

Choose **Auto** or Manual to control the SEV-ES ASID Space Limit.

SVM Mode

Use to **Enable** or Disable CPU Virtualization.

CPU 1/2 Information

View information related to CPU1 or CPU2.

▶NB Configuration

Determinism Control

Use this setting to configure the Determinism Slider. Options include Manual and **Auto**.

cTDP Control

Use this setting to configure the cTDP Control. Options include Manual and **Auto**.

IOMMU

Use this setting to enable/disable IOMMU. Options include Disabled, Enabled, and **Auto**.

Package Power Limit Control

Options include Manual and **Auto**.

APBDIS

Options include 0, 1, and **Auto**.

DF Cstates

Options include Disabled, Enabled and **Auto**.

Preferred IO

Options include Manual and **Auto**.

EDC Control

Electrical Design Current (EDC) is the total current capacity in amps that can be supplied to the socket. **Auto** = use the fused VDDCR_CPU EDC limit. Manual = user can set a customized VDDCR_CPU EDC limit.

▶xGMI Configuration

xGMI Link Width Control

Auto = use the default xGMI link width modulator settings. Manual = user can set the GMI link width modulator settings.

xGMI Link Max Speed

Select the xGMI link max speed. Settings are 10.667Gbps, 11Gbps, 12Gbps, 13Gbps, 14Gbps, 15Gbps, 16Gbps, 17Gbps, 18Gbps, 19Gbps, 20Gbps, 21Gbps, 22Gbps and **Auto**.

▶Memory Configuration

Memory Clock

This setting allows you to select different memory clock speed. Options include **Auto** and supported frequencies.

Memory Interleaving

This setting controls fabric level memory interleaving. Note that the channel, die and socket have requirements on memory populations and it will be ignored if the memory doesn't support the selected option. The options are Disabled and **Auto.**

Memory Interleaving Size

This setting controls the memory interleaving size. This determines the starting address of the interleave (bit 8, 9, 10 or 11). The options are 256 Bytes, 512 Bytes, 1 KB, 2 KB or **Auto**.

Chipset Interleaving

This setting controls interleave memory blocks across the DRAM chip for node 0. The options are Disabled and **Auto**.

BankGroupSwap

This setting controls the Bank Group Swap. The options are Enabled, Disabled and **Auto**.

DRAM Scrub Time

This provides a value that is the number of hours to scrub memory. The options are Disabled, 1 hour, 4 hours, 8 hours, 16 hours, 24 hours, 48 hours, and **Auto**.

▶CPU1/2 Memory Information

These sections are for informational purposes. They will display details about the detected memory according to the CPU, such as:

- Detected Size (per slot, in MB)
- Current Speed (MT/s)

▶PCIe/PCI/PnP Configuration

This menu provides PCIe/PCI/PnP configuration settings and information.

PCI Bus Driver Version

PCI Devices Common Settings:

Above 4G Decoding

This setting Disables or **Enables** 64-bit capable devices ability to be decoded in above 4G address space (only if the system supports 64-bit PCI decoding).

SR-IOV Support

If the system has SR-IOV capable PCI-E devices, this setting will **Disable** or Enable the Single Root IO Virtualization Support for the system.

BME DMA Mitigation

Use this setting to re-enable the Bus Master Attribute that was disabled during PCI enumeration for PCI bridges after SMM is locked. The options are **Disabled** and Enabled.

PCIe ARI Support

The options are Disabled, Enabled, and **Auto**.

PCIe ARI Enumeration

ARI forwarding enable for downstream port. The options are Disabled, Enabled, and **Auto**.

PCIe Ten Bit Tag Support

Enables PCIe ten bit tags for supported devices. The options are Disabled, Enabled, and **Auto**.

PCIe Spread Spectrum

Use this setting to **Disable** or Enable PCIe Spread Spectrum for your system.

Relaxed Ordering

Enables or disables PCIe device relaxed ordering. The options are Disabled and **Enabled**.

No Snoop

Enables or disables the PCIe device no snoop option. The options are Disabled and **Enabled**..

VGA Priority

Use this setting to select between onboard or offboard VGA support. The options are **Onboard** and Offboard

NVMe Firmware Source

Use this setting to select between the AMI Native firmware support or the device vendor-defined firmware support. The options are **Vendor Defined Firmware** and AMI Native Support.

CPU Slot1 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot2 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot3 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot4 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot5 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

CPU Slot6 PCI-E 4.0 x8 OPROM

This setting enables or disables the listed OPROM option. The options are Disabled and **EFI**.

PCI-E M.2 OPROM

This setting enables or disables the PCIe M.2 OPROM. The options are Disabled and **EFI**.

Onboard LAN1 Option ROM

This setting selects which firmware function to be loaded for the onboard LAN1. The options are Disabled and **EFI**.

Onboard NVMe1 Option ROM

Select which firmware function is to be loaded for onboard NVMe1. The options include Disabled and **EFI**.

Onboard NVMe2 Option ROM

Select which firmware function is to be loaded for onboard NVMe2. The options include Disabled and **EFI**.

Onboard NVMe3 Option ROM

Select which firmware function is to be loaded for onboard NVMe3. The options include Disabled and **EFI**.

Onboard NVMe4 Option ROM

Select which firmware function is to be loaded for onboard NVMe4. The options include Disabled and **EFI**.

Onboard Video Option ROM

Select Legacy to boot the system using a legacy video device installed on the motherboard. The options include Disabled and **EFI**

CPU Slot1 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** and x4x4.

CPU Slot2 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** x16, x8x8, x4x4x8, x4x4x4x4.

CPU Slot3 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** and x4x4.

CPU Slot4 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** x16, x8x8, x4x4x8, x4x4x4x4.

CPU Slot5 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** and x4x4.

CPU Slot6 PCI-E 4.0 x8 Bifurcation

This setting selects the PCIe slot bifurcation for the stated slot number. The options include **Auto** x16, x8x8, x4x4x8, x4x4x4x4.

▶USB Configuration

Legacy USB Support

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

XHCI Hand-Off

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

Port 60/64 Emulation

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

▶Network Configuration

Network Stack

This setting allows you to Disable or **Enable** the UEFI Network Stack.

IPv4 PXE Support

This setting allows you to Disable or **Enable** IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

IPv4 HTTP Support

This setting allows you to **Disable** or Enable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.

IPv6 PXE Support

This setting allows you to Disable or **Enable** IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.

IPv6 HTTP Support

This setting allows you to **Disable** or Enable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.

PXE Boot Wait Time

This setting allows you to set in a number field the wait time to press the ESC key to abort the PXE boot. The default value is **0**.

Media Detect Count

This setting allows you set in a number field the number of times presence of media will be checked. The default value is **1**.

▶**MAC:3CDCEF76D89E-IPv6 Network Configuration**

This setting allows you configure the network parameters for the listed MAC address.

▶**MAC:3CDCEF76D89E-IPv4 Network Configuration**

This setting allows you configure the network parameters for the listed MAC address.

▶**MAC:3CDCEF76D89F-IPv4 Network Configuration**

This setting allows you configure the network parameters for the listed MAC address.

▶**MAC:3CDCEF76D89F-IPv6 Network Configuration**

This setting allows you configure the network parameters for the listed MAC address.

▶SATA Configuration

This section displays the detected SATA devices installed on the system.

SATA Information

SATA Enable

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

SATA Hotplug

This item enables or disables the onboard SATA controller's hot plug feature (PCH). The options are Disabled and **Enabled**.

▶SATA Information

This section displays information on the detected SATA devices:

- I-SATA0~1

- SATA0~13

▶HTTP Boot Configuration

HTTP Boot Policy

Sets the HTTP boot policy to Apply to all LANs, **Apply to each LAN**, or Boot Priority #1 instantly.

Instance of Priority 1

Default to 1.

Select IPv4 or IPv6

Choose to set the targeted LAN port to boot from **IPv4** or IPv4.

Boot Description

Must be filled out, otherwise the boot option for the URI will not be created. Length of description cannot exceed 75 characters.

Boot URI

This option is an input field used to enter a web or network address to point to the HTTP boot files. This supports the HTTP or HTTPS protocols only.

Instance of Priority 2

Default to 0.

▶Broadcom Gigabit Ethernet BCM5720 - 3C:EC:EF:76:D8:9E /9F

▶Firmware Image Menu

This section displays the bootcode, MBA, EFI, iSCSI Boot, NC-SI, and CCM information on the listed Ethernet device:

▶MBA Configuration Menu

Legacy Boot Protocol

Selects the non-UEFI boot protocol. Options are **PXE**, iSCSI, and None.

Boot Strap Type

Selects the boot strap type. Options are **Auto Detect**, BBS, Int 18h, and Int 19h.

Hide Setup Prompt

Selects whether the setup prompt is displayed during ROM initialization. Options are **Disabled** and Enabled.

Setup Key Stroke

Configures the keystrokes to invoke the configuration menu. Options are **Ctrl-S** and Ctrl-B.

Banner Message Timeout

Selects the timeout value Options are seconds chosen.

Link Speed

Selects the link speed. Options are **AutoNeg**, 10Mbps Half, 10Mbps Full , 100Mbps Half, and 100Mbps Full.

Pre-boot Wake On LAN

Configures the pre-boot wake on LAN (WOL). Options are **Disabled** and Enabled.\

VLAN Mode

Configures virtual LAN mode. Options are **Disabled** and Enabled.

VLAN ID

Displays the VLAN ID.

▶TLS Authenticate Configuration

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

▶Server CA Configuration

▶Enroll Certification

▶Enroll Certification using File

Use this feature to enroll certification from a file.

Certification GUID

Use this feature to input the certification GUID.

▶Commit Changes and Exit

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

▶Discard Changes and Exit

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

▶Delete Certification

Use this feature to delete certification. The options include **Disabled** and Enabled.

▶Driver Health

This submenu provides driver health status for the drivers and controllers.

5.4 IPMI

This tab allows you to configure the following IPMI settings for the system.

```
                          Aptio Setup - AMI
    Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

   BMC Firmware Revision               01.00.19          Press <Enter> to change the
   IPMI STATUS                         Working           SEL event log configuration.

  ▶ System Event Log
  ▶ BMC Network Configuration




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

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```

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

BMC Firmware Revision

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

IPMI STATUS

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

▶System Event Log

Enabling/Disabling Options

SEL Components

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

Erasing Settings

Erase SEL

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

When SEL is Full

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

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

▶BMC Network Configuration

BMC Network Configuration

Update IPMI LAN Configuration

Select Yes to enable BMC Network Configuration.

IPMI LAN Selection

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

IPMI Network Link Status

This item displays the IPMI Network Link status. The default setting is **Shared LAN**.

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 Static and **DHCP**.

*If the item above is set to Static, the following items will become available for configuration:

Station IP Address

This item displays the Station IP address for this computer. This should be in decimal and in dotted quad form.

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., 172.31.0.1).

VLAN

This item displays the virtual LAN settings. The options are Disable and Enable.

Configure IPv6 Support

This section displays configuration features for IPv6 support.

IPv6 Support

Use this feature to enable IPV6 support. The options are **Enabled** and Disabled.

If the item above is set to Enabled, the following items will become available for configuration:

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.

If the item "Configuration Address Source" above is set to Static, the following items will become available for configuration:

- Station IPv6 Address

- Prefix Length

- IPv6 Router1 IP Address

5.5 Event Logs

This tab allows the user to configure the following event logs settings for the system.

```
                            Aptio Setup - AMI
   Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

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



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

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```

Enabling/Disabling Options

SMBIOS Event Log

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

Erasing Settings

Erase Event Log

Select Yes to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No,** Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the 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 Enabled and **Disabled**.

MECI (Multiple Event Count Increment)

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

METW (Multiple Event Count Time Window)

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

Note: Please reboot the system for these changes to take effect.

5.6 Security

This tab allows you to configure the following security settings for the system.

```
                              Aptio Setup - AMI
    Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

   Administrator Password                  Not Installed          Set Administrator Password
   User Password                           Not Installed

   Password Description

   If the Administrator's / User's password is set,
   then this only limits access to Setup and is
   asked for when entering Setup.
   Please set Administrator's password first in order
   to set User's password, if clear Administrator's
   password, the User's password will be cleared as well.

   The password length must be
   in the following range:
   Minimum length                    8
   Maximum length                    20

   Administrator Password                                         →←: Select Screen
   Password Check                         [Setup]                 ↑↓: Select Item
                                                                  Enter: Select
                                                                  +/-: Change Opt.
 ▶ Secure Boot                                                    F1: General Help
                                                                  F2: Previous Values
                                                                  F3: Optimized Defaults
                                                                  F4: Save & Exit
                                                                  ESC: Exit

                        Version 2.21.1280 Copyright (C) 2021 AMI
```

Administrator Password

Press Enter to create a new, or change an existing Administrator password. Note that if the Administrator Password is erased, the User Password will be cleared as well.

Password Check

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

Secure Boot

The Secure Boot feature is active if Secure Boot is enabled, a Platform Key is enrolled and the system is in User mode. The mode requires a platform reset. The options are **Disabled** and Enabled.

Secure Boot Mode

The options are **Custom** and Standard. In Custom mode, secure boot policy variables can be configured by a physically present user without full authentication.

CSM Support

This setting is used to **Enable** or Disable CSM support.

▶Key Management

```
                          Aptio Setup - AMI
                            Security

  Vendor Keys                          Valid              Force System to User Mode.
                                                          Install factory default
  Provision Factory Defaults           [Disabled]         Secure Boot key databases
▶ Restore Factory Keys
▶ Reset To Setup Mode
▶ Export Secure Boot variables
▶ Enroll Efi Image

  Device Guard Ready
▶ Remove 'UEFI CA' from DB
▶ Restore DB defaults

  Secure Boot variable | Size| Keys| Key Source
▶ Platform Key(PK)    |    0|    0| No Keys
▶ Key Exchange Keys   |    0|    0| No Keys
▶ Authorized Signatures|   0|    0| No Keys            ◄►: Select Screen
▶ Forbidden  Signatures|   0|    0| No Keys            ▲▼: Select Item
▶ Authorized TimeStamps|   0|    0| No Keys            Enter: Select
▶ OsRecovery Signatures|   0|    0| No Keys            +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit

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```
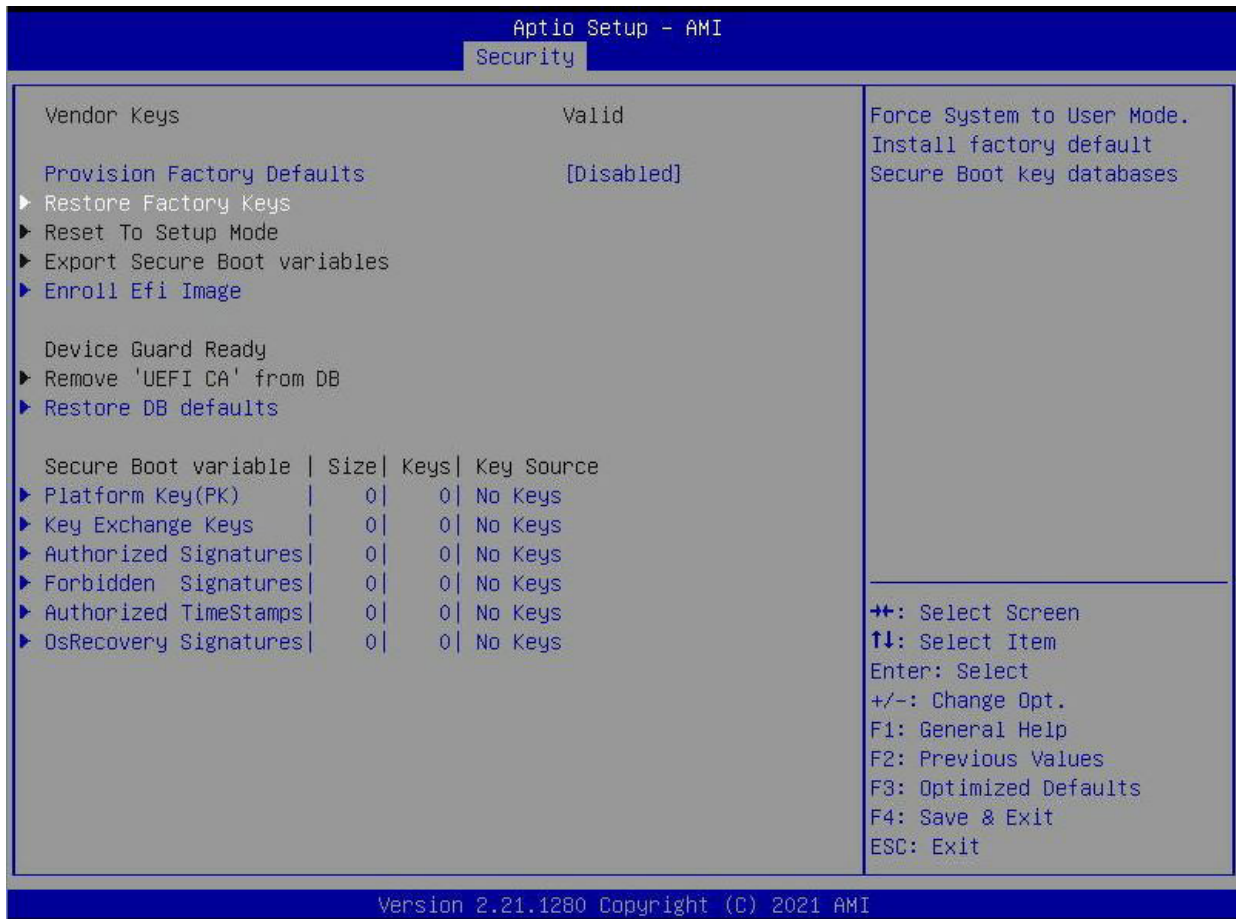
Provision Factory Defaults

Install factory Secure Boot keys after a platform reset and while the system is in setup mode.

▶Restore Factory Keys

Forces system into User mode. Will install factory default Secure Boot key databases.

▶Reset to Setup Mode

Forces system into Setup mode. Will install factory default Secure Boot key databases.

▶Export Secure Boot variables

Forces system into User mode. Will install factory default Secure Boot key databases.

▶Enroll Efi Image

Allows the image to run in Secure Boot mode. Enroll SHA256 Hash Certificate of a PE image into the Authorized Signature Database.

Device Guard Ready

▶Remove 'UEFI CA' from DB

Restores .

▶Restore DB Defaults

Restores the DB variable to factory defaults.

Secure Boot Variable

Displays Size, Keys, and Key Source for the below variables.

▶Platform Key (PK)

Updates the PK.

▶Key Exchange Keys

Updates or Appends the key exchange keys.

▶Authorized Signatures

Updates or Appends the authorized signatures.

▶Forbidden Signatures

Updates or Appends the forbidden signatures.
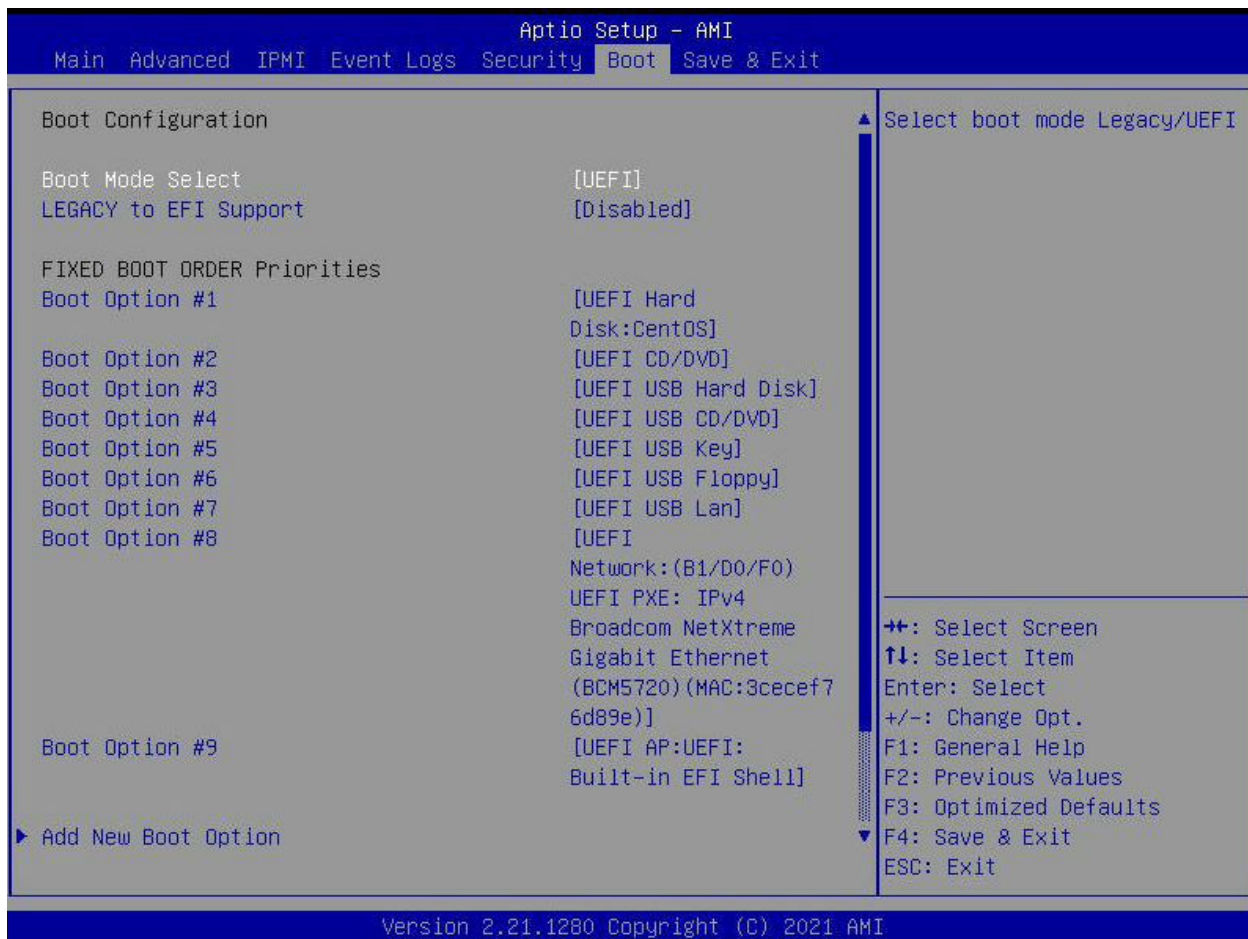
▶Authorized Time Stamps

Updates or Appends the time stamps.

▶OsRecovery Signatures

Updates or Appends the OS recovery signatures.

5.7 Boot

Use this tab to configure Boot Settings:

```
                              Aptio Setup - AMI
    Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

 Boot Configuration                               ▲ Select boot mode Legacy/UEFI

 Boot Mode Select                     [UEFI]
 LEGACY to EFI Support                [Disabled]

 FIXED BOOT ORDER Priorities
 Boot Option #1                       [UEFI Hard
                                      Disk:CentOS]
 Boot Option #2                       [UEFI CD/DVD]
 Boot Option #3                       [UEFI USB Hard Disk]
 Boot Option #4                       [UEFI USB CD/DVD]
 Boot Option #5                       [UEFI USB Key]
 Boot Option #6                       [UEFI USB Floppy]
 Boot Option #7                       [UEFI USB Lan]
 Boot Option #8                       [UEFI
                                      Network:(B1/D0/F0)
                                      UEFI PXE: IPv4         ⇆: Select Screen
                                      Broadcom NetXtreme     ↑↓: Select Item
                                      Gigabit Ethernet       Enter: Select
                                      (BCM5720)(MAC:3cecef7  +/-: Change Opt.
                                      6d89e)]                F1: General Help
 Boot Option #9                       [UEFI AP:UEFI:         F2: Previous Values
                                      Built-in EFI Shell]    F3: Optimized Defaults
                                                             F4: Save & Exit
 ▶ Add New Boot Option                                     ▼ ESC: Exit

                 Version 2.21.1280 Copyright (C) 2021 AMI
```

Boot Mode Select

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

LEGACY to EFI Support

This option **Disables** or Enables the system to boot to an EFI OS after the boot failed from the legacy boot order.

FIXED BOOT ORDER Priorities

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

▶Add New Boot Option

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

▶Delete Boot Option

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

▶NETWORK Drive BBS Priorities

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

▶NETWORK Network Drive BBS Priorities
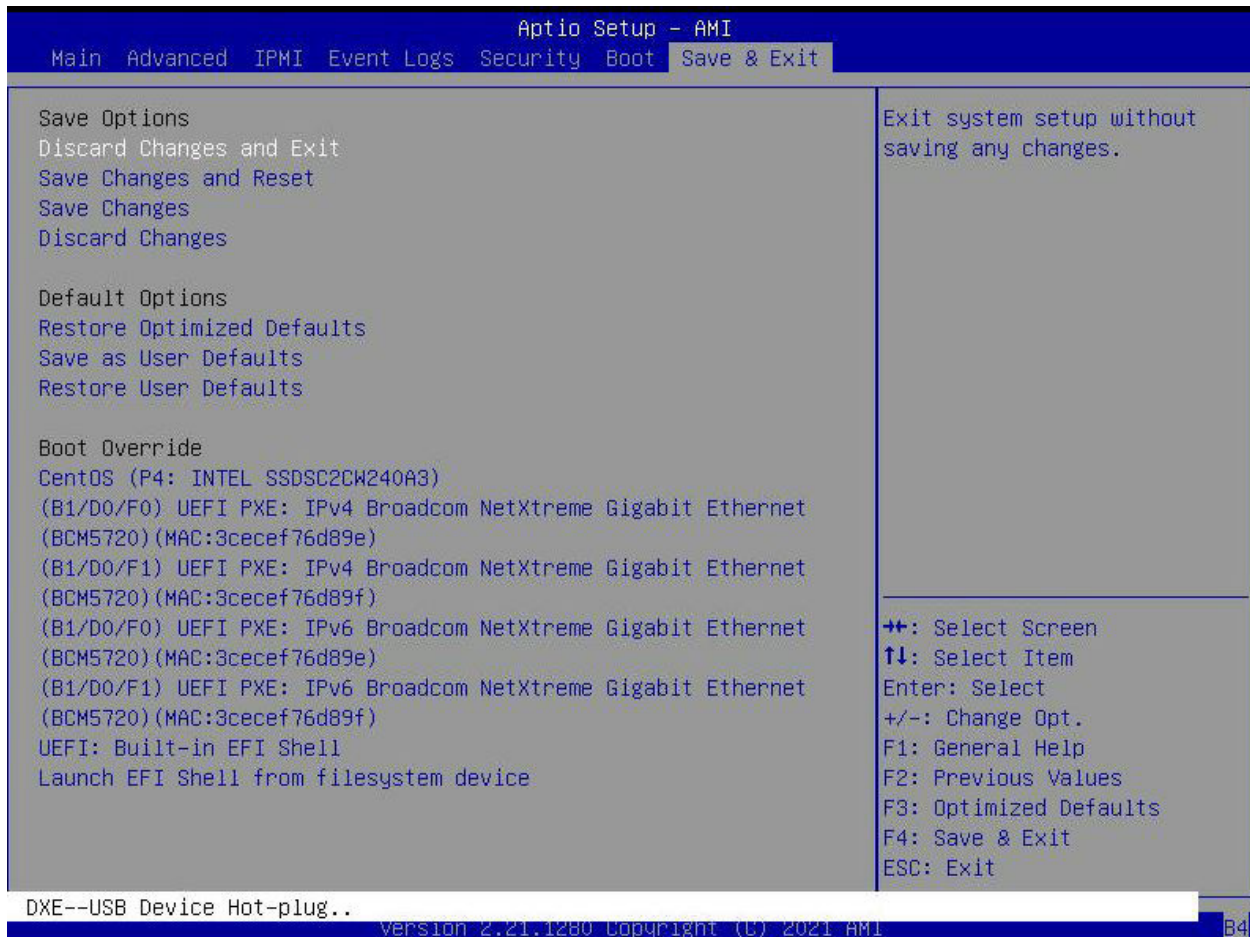
This feature allows the user to specify which UEFI network drive devices are boot devices.

▶UEFI Application Boot Priorities

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

- UEFI Boot Order #1

Chapter 5: UEFI BIOS (EPYC 7003)

5.8 Save & Exit

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

```
                              Aptio Setup – AMI
     Main  Advanced  IPMI  Event Logs  Security  Boot  Save & Exit

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

   Default Options
   Restore Optimized Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   CentOS (P4: INTEL SSDSC2CW240A3)
   (B1/D0/F0) UEFI PXE: IPv4 Broadcom NetXtreme Gigabit Ethernet
   (BCM5720)(MAC:3cecef76d89e)
   (B1/D0/F1) UEFI PXE: IPv4 Broadcom NetXtreme Gigabit Ethernet
   (BCM5720)(MAC:3cecef76d89f)
   (B1/D0/F0) UEFI PXE: IPv6 Broadcom NetXtreme Gigabit Ethernet   →←: Select Screen
   (BCM5720)(MAC:3cecef76d89e)                                     ↑↓: Select Item
   (B1/D0/F1) UEFI PXE: IPv6 Broadcom NetXtreme Gigabit Ethernet   Enter: Select
   (BCM5720)(MAC:3cecef76d89f)                                     +/-: Change Opt.
   UEFI: Built-in EFI Shell                                        F1: General Help
   Launch EFI Shell from filesystem device                        F2: Previous Values
                                                                   F3: Optimized Defaults
                                                                   F4: Save & Exit
                                                                   ESC: Exit

   DXE--USB Device Hot-plug..
                     Version 2.21.1280 Copyright (C) 2021 AMI                 B4
```

Save Options

Discard Changes and Exit

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

Save Changes and Reset

Select this option to reset the system after saving the changes.

Save Changes

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

119

Discard Changes

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

Default Options

Restore Optimized Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Boot Override Section

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

Appendix A

Software

After the hardware has been installed, you can install the Operating System (OS), configure RAID settings and install the drivers.

A.1 Microsoft Windows OS Installation

If you will be using RAID, you must configure RAID settings before installing the Windows OS and the RAID driver. Refer to the RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

Installing the OS

1. Create a method to access the MS Windows installation ISO file. That might be a DVD, perhaps using a USB flash or media drive, or the IPMI KVM console.

2. Go to the Supermicro web page for your motherboard and click on "Download the Latest Drivers and Utilities", select the proper driver, and copy it to a USB flash drive.

3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing **F11** during the system startup.
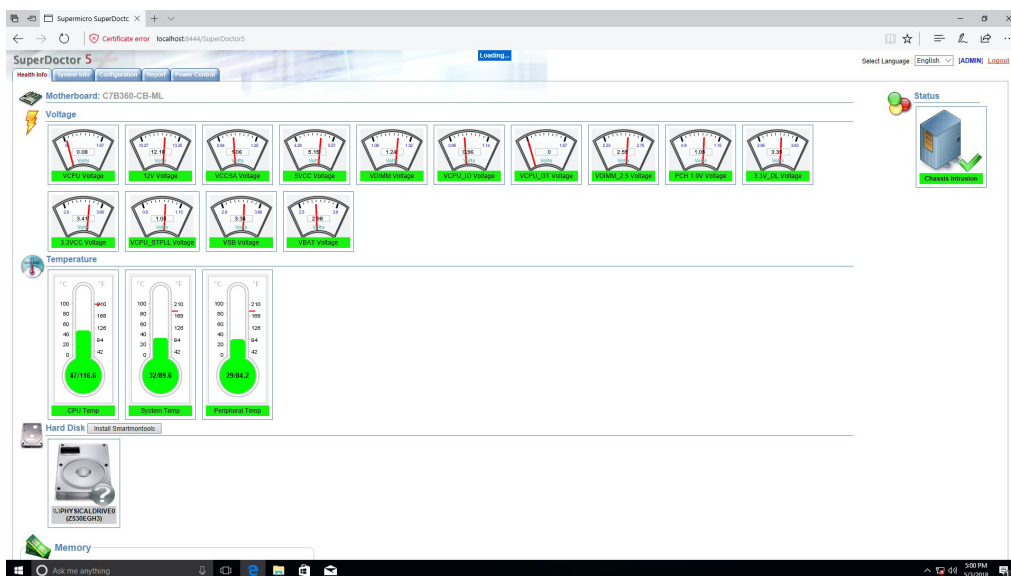
Figure A-1. Select Boot Device

1. During Windows Setup, continue to the dialog where you select the drives on which to install Windows. If the disk you want to use is not listed, click on "Load driver" link at the bottom left corner.
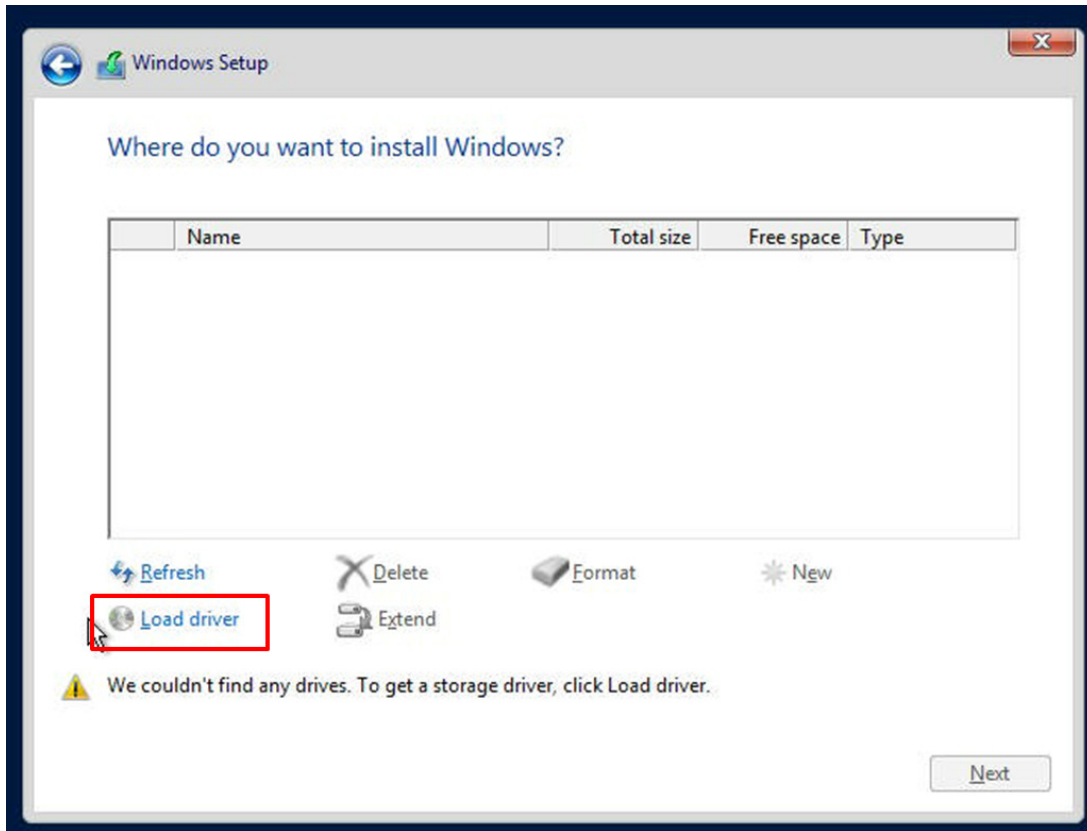
Figure A-2. Load Driver Link

To load the driver, browse the USB flash drive for the proper driver files.

- For RAID, choose the SATA/sSATA RAID driver indicated then choose the storage drive on which you want to install it.

- For non-RAID, choose the SATA/sSATA AHCI driver indicated then choose the storage drive on which you want to install it.

2. Once all devices are specified, continue with the installation.

3. After the Windows OS installation has completed, the system will automatically reboot multiple times.

A.2 Driver Installation

The Supermicro website contains drivers and utilities for your system at https://www.supermicro.com/wdl/driver. Some of these must be installed, such as the chipset driver.

After accessing the website, go into the CDR_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to a USB flash or media drive. (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, and "Download the Latest Drivers and Utilities".

Insert the flash or media drive and the screenshot shown below should appear.
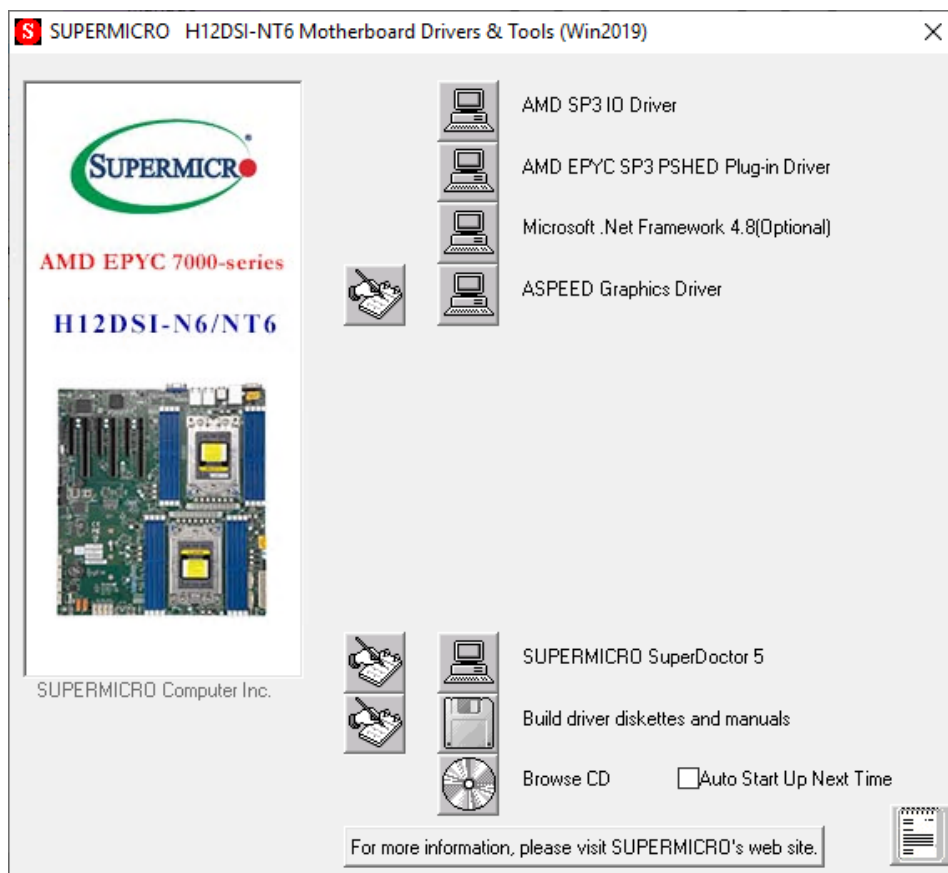
Figure A-3. Driver & Tool Installation Screen

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

A.3 SuperDoctor® 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface for Windows and Linux operating systems. The program monitors such system health information 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. SuperDoctor 5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.
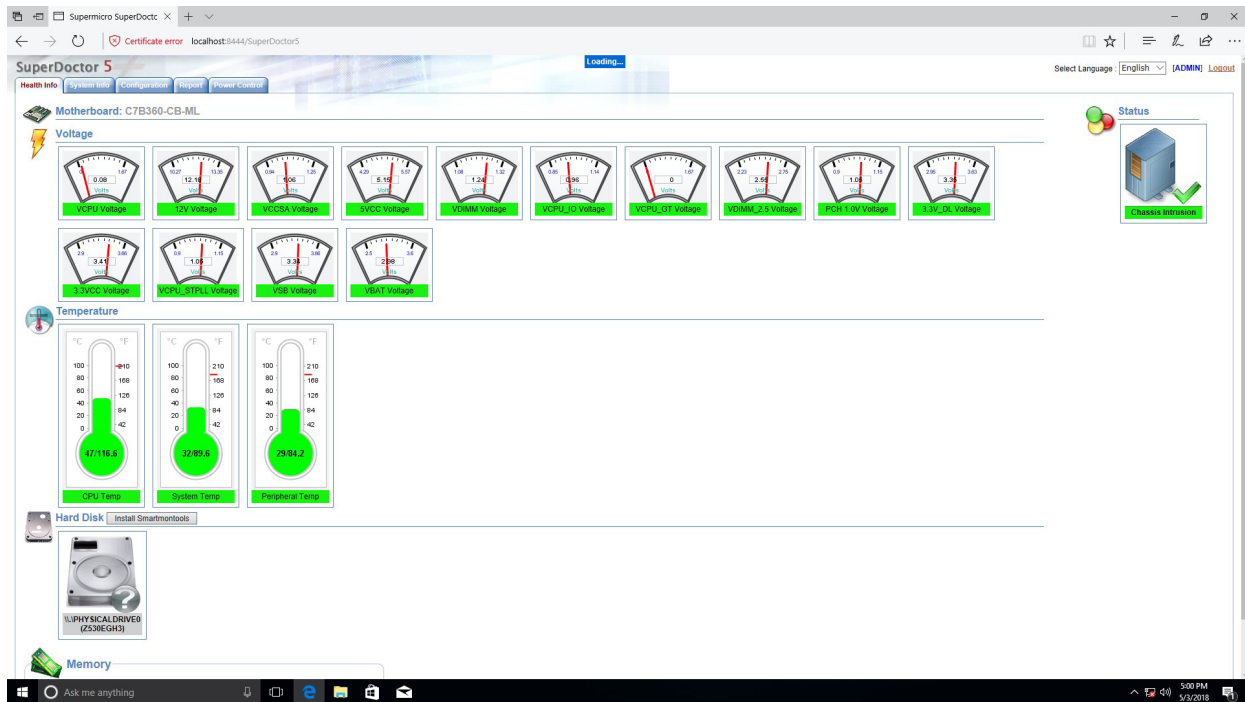
Figure A-4. SuperDoctor 5 Interface Display Screen (Health Information)

A.4 IPMI

The H12DSi-N6/H12DSi-NT6 supports the Intelligent Platform Management Interface (IPMI). IPMI is used to provide remote access, monitoring and management. There are several BIOS settings that are related to IPMI.

For general documentation and information on IPMI, please visit our website at: http://www.supermicro.com/products/nfo/IPMI.cfm.

Appendix B

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.

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

B.1 Battery Handling

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

電池の取り扱い

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

警告

电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

<div dir="rtl">

אזהרה !

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

</div>

<div dir="rtl">

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

</div>

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.

B.2 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.

Appendix C

UEFI BIOS Recovery

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

C.1 Overview

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

C.2 Recovering the UEFI BIOS Image

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

C.3 Recovering the BIOS Block with a USB Device

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

The file system supported by UEFI is FAT (including FAT12, FAT16, and FAT32) installed on a bootable or non-bootable USB-attached device. Note that the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large because it contains too many folders and files.

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

1. Using a different system, 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 to download the BIOS image into a USB flash device and rename it "Super.ROM".

2. While the system is turned off, insert the USB device that contains the new BIOS binary image (SUPER.ROM).

3. Power on the system.

4. After the system is turned on, the system will enter the BIOS Recovery menu. Select "Proceed with flash update" to start the BIOS recovery process. DO NOT INTERRUPT THIS PROCESS UNTIL IT IS FINISHED!
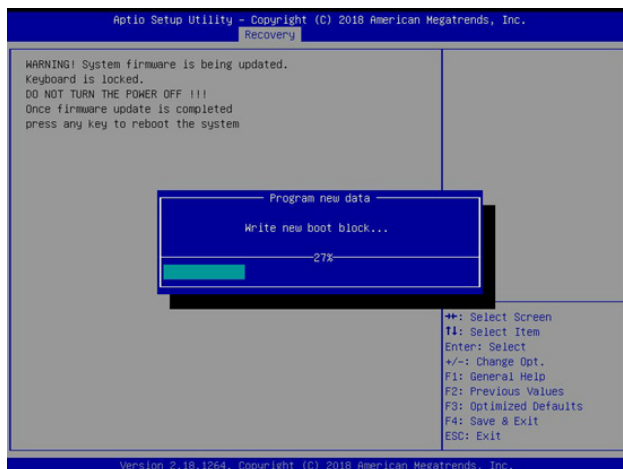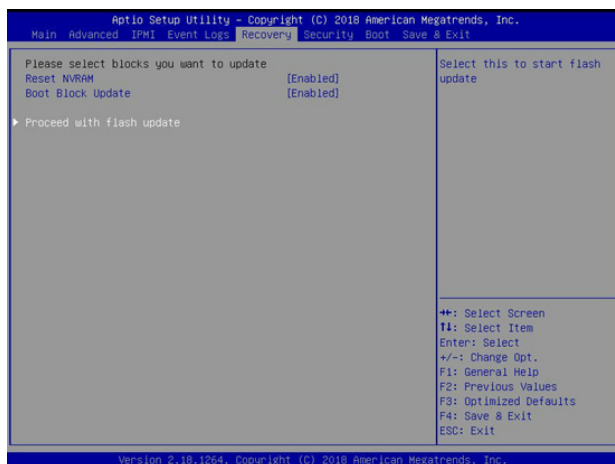
5. After the Boot Sector Recovery Process is complete, press any key to reboot the system.
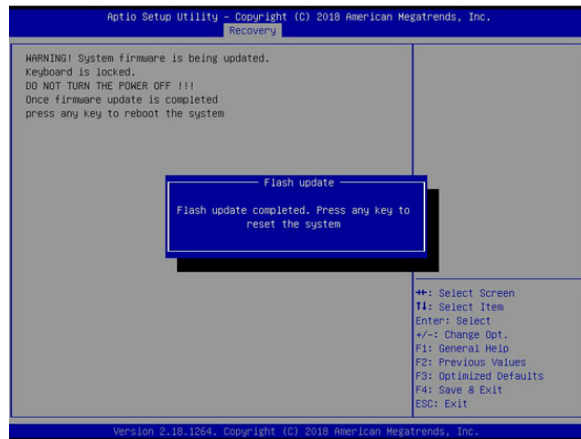
Notes:

- The BIOS recovery (SUPER.ROM) will not work if BIOS has a multi-block crash.

- If you have purchased an OOB license, you can do a BIOS flash again through BMC WebGUI or SUM. Please refer to these SUPERMICRO software-related videos:

  - Activate OOB license: https://www.youtube.com/watch?v=V4spX_DOV7I

  - SUPERMICO BIOS Update: https://www.youtube.com/watch?v=S8z6iOEHGwY

- If the BIOS flash recovery fails, contact our RMA Department to have the BIOS chip reprogrammed. This will require shipping the board to Supermicro for repair.

  - Submit your RMA request at https://www.supermicro.com/support/rma

- Please make sure to follow all instructions when returning the motherboard.