

G210-H4G

Four hot-pluggable systems (nodes)

Dual LGA1150 socket motherboard for Intel® Xeon® series processors

Service Guide

Rev. 1.0

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Documentation Classifications

In order to assist in the use of this product, GIGABYTE provides the following types of documentations:

- For detailed product information, carefully read the Service Guide.

For product-related information, check on our website at:

<http://www.gigabyte.com>

Preface

Before using this information and the product it supports, please read the following general information.

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for GIGABYTE's "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.
2. Please note WHEN ORDERING SPARE PARTS, you should check the most up-to-date information available on your regional web or channel. For whatever reason, if a part number change is made, it will not be noted in the printed Service Guide. For GIGABYTE-AUTHORIZED SERVICE PROVIDERS, your GIGABYTE office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional GIGABYTE office to order FRU parts for repair and service of customer machines.

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Box Contents

- Server System
- Driver CD
- User's Manual
- Rail Kit
- 4 x Heat sinks

- The box contents above are for reference only and the actual items shall depend on the product package you obtain. The box contents are subject to change without notice.
- The motherboard image is for reference only.

Safety, Care and Regulatory Information

Important safety information

Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.

- The product should be operated only from the type of power source indicated on the rating label.* If your computer has a voltage selector switch, make sure that the switch is in the proper position for your area. The voltage selector switch is set at the factory to the correct voltage.
- The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.
- All product shipped with a three-wire electrical grounding-type plug only fits into a grounding-type power outlet. This is a safety feature. The equipment grounding should be in accordance with local and national electrical codes. The equipment operates safely when it is used in accordance with its marked electrical ratings and product usage instructions
- Do not use this product near water or a heat source.* Set up the product on a stable work surface or so as to ensure stability of the system.
- Openings in the case are provided for ventilation. Do not block or cover these openings. Make sure you provide adequate space around the system for ventilation when you set up your work area. Never insert objects of any kind into the ventilation openings.
- To avoid electrical shock, always unplug all power cables and modem cables from the wall outlets before removing covers.
- Allow the product to cool before removing covers or touching internal components.

Precaution for Product with Laser Devices

Observe the following precautions for laser devices:

- Do not open the CD-ROM drive, make adjustments, or perform procedures on a laser device other than those specified in the product's documentation.
- Only authorized service technicians should repair laser devices.

Precaution for Product with Modems, Telecommunications, or Local Area Network Options

Observe the following precautions for laser devices:

- Do not connect or use a modem or telephone during a lightning storm. There may be a risk of electrical shock from lightning.
- To reduce the risk of fire, use only No. 26 AWG or larger telecommunications line cord.
- Do not plug a modem or telephone cable into the network interface controller (NIC) receptacle.
- Disconnect the modem cable before opening a product enclosure, touching or installing internal components, or touching an uninsulated modem cable or jack.
- Do not use a telephone line to report a gas leak while you are in the vicinity of the leak.

Federal Communications Commission (FCC) Statement

Warning

This is a class A product. In a domestic environment this product may cause radio interference.

encelIn which case the user may be required to take adequate measures.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC part 68 (applicable to products fitted with USA modems)

The modem complies with Part 68 of the FCC Rules. On this equipment is a label that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. You must, upon request, provide this information to your telephone company. If your telephone equipment causes harm to the telephone network, the Telephone Company may discontinue your service temporarily. If possible, they will notify in advance. But, if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect proper operation of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service. The FCC prohibits this equipment to be connected to party lines or coin-telephone service. The FCC also requires the transmitter of a FAX transmission be properly identified (per FCC Rules Part 68, Sec. 68.381 (c) (3)./ for Canadian users only

Canadian Department of Communications Compliance Statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of Industry Canada. Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de Classe A prescrites dans le reglement sur le brouillage radioelectrique edicte par Industrie Canada.

DOC notice (for products fitted with an Industry Canada-compliant modem)

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user satisfaction. Before installing this equipment, users ensure that it is permissible to be connected to the facilities of the local Telecommunications Company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations. Repairs to certified equipment should be made by an authorized Canadian maintenance

facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present are connected together. This precaution may be particularly important in rural areas. Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the sum of the Load Numbers of all the devices does not exceed 100./ for European users only /

Class A equipment

This device has been tested and found to comply with the limits for a class A digital device pursuant Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generate, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by tuning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the device and receiver
- Connect the device into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/television technician for help.











Chapter 1 Hardware Installation

1-1 Installation Precautions

The motherboard/system contain numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the service guide and follow these procedures:









- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

1-2 Product Specifications (Per Node)

 CPU	<ul style="list-style-type: none"> ◆ Support for Intel® Xeon® E3-1200 V3 family processors in the LGA1150 package ◆ L3 cache varies with CPU
 Chipset	<ul style="list-style-type: none"> ◆ Intel® C226 Chipset
 Memory	<ul style="list-style-type: none"> ◆ 2 x 1.35V/1.5V DDR3 DIMM sockets supporting up to 16 GB of system memory ◆ Dual channel architecture ◆ Support for DDR3 1333/1600 MHz memory modules ◆ Support for ECC/non-ECC, un-buffered memory modules
 LAN	<ul style="list-style-type: none"> ◆ 2 x Intel® I210 supports 10/100/1000 Mbps
 Expansion Slot	<ul style="list-style-type: none"> ◆ 1 x PCIe x16 slot (Gen3 x16 bus) ◆ Supports 2 x PCIe x8 slots (Gen3 x8 bus) via riser card and CFG5 jumper
 Onboard Graphics	<ul style="list-style-type: none"> ◆ ASPEED AST2300 supports 128MB VRAM
 Mass Storage	<ul style="list-style-type: none"> ◆ 4 x 2.5" Hot-Swap SATA HDDs ◆ Support for Intel IRSTe SATA RAID 0, RAID 1, RAID 5, RAID 10
 System Fans (Per node)	<ul style="list-style-type: none"> ◆ 4 x 40x40x56mm 23000rpm ◆ 1 x 38x38x48mm 17600rpm
 USB	<ul style="list-style-type: none"> ◆ Up to 4 USB 2.0 ports (2 on the back panel, 2 via the USB brackets connected to the internal USB headers) ◆ 2 x USB 3.0 ports (2 via the USB brackets connected to the internal USB headers)
 Internal Connectors (Motherboard)	<ul style="list-style-type: none"> ◆ 1 x 24-pin ATX main power connector ◆ 1 x 4-pin ATX 12V power connector ◆ 5 x SATA 6Gb/s connectors ◆ 3 x System fan header ◆ 1 x Front panel header ◆ 1 x PMBus header ◆ 1 x Front USB 3.0 header ◆ 1 x Front USB 2.0 header ◆ 1 x SATA SGPIO header ◆ 1 x Trusted Platform Module connector ◆ 1 x Front panel VGA header ◆ 1 x HDMI connector



The HDMI port is HDCP compliant and supports Dolby True HD and DTS HD Master Audio formats. It also supports up to 192KHz/24bit 8-channel LPCM audio output. You can use this port to connect your HDMI-supported monitor. The maximum supported resolution is 4096x2160@24Hz or 2560x1600@60Hz, but the actual resolutions supported are dependent on the monitor being used.

 Rear Panel I/O	<ul style="list-style-type: none"> ◆ 2 x USB 2.0 ports ◆ 2 x RJ-45 ports ◆ 1 x COM port ◆ 1 x VGA port ◆ 1 x NMI button ◆ 1 x Reset button ◆ 1 x ID Switch button/LED ◆ 1 x Power button/LED
 Front Panel LED/Buttons	<ul style="list-style-type: none"> ◆ 1 x Power button/LED ◆ 1 x ID button/LED
 BMC Controller	<ul style="list-style-type: none"> ◆ ASPEED® AST2300 BMC chip
 Hardware Monitor	<ul style="list-style-type: none"> ◆ System voltage detection ◆ CPU/System temperature detection ◆ CPU/System fan speed detection ◆ CPU/System fan speed control <ul style="list-style-type: none"> * Whether the CPU/system fan speed control function is supported will depend on the CPU/system cooler you install.
 BIOS	<ul style="list-style-type: none"> ◆ 64 Mb flash ◆ AMI BIOS
 Environment Ambient Temperature	<ul style="list-style-type: none"> ◆ Operating Temperature: 5°C to 35°C ◆ Non-operating Temperature: 0°C to 40°C
Relative Humidity	<ul style="list-style-type: none"> ◆ 10-80% operating Humidity at 30°C
 System Dimension	<ul style="list-style-type: none"> ◆ 447Wx87.2Hx780D (mm)
 Electrical Power Supply	<ul style="list-style-type: none"> ◆ 2 x Hot-swap 1600W 80 Plus Gold with redundancy function (When system total power consumption over of 1600W, the system will not support PSU redundancy function.)

* GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice.

Chapter 2 System Hardware Installation

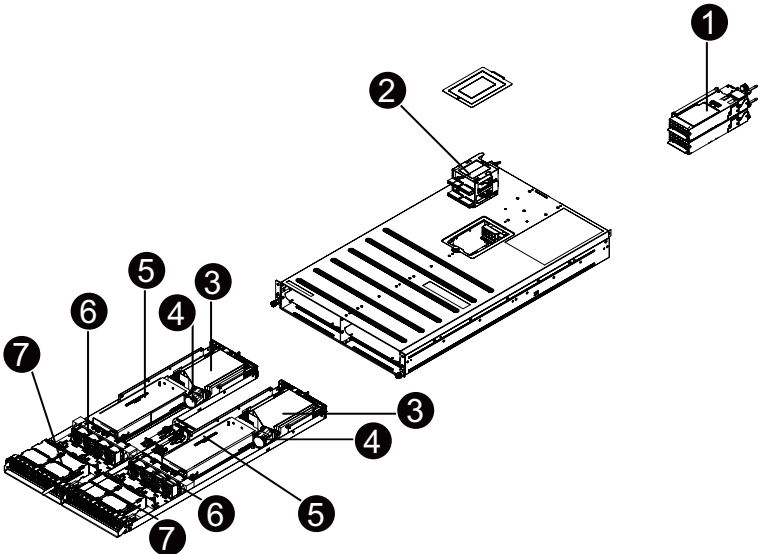


Pre-installation Instructions

Perform the steps below before you open the server or before you remove or replace any component.

- Back up all important system and data files before performing any hardware configuration.
- Turn off the system and all the peripherals connected to it.
- Locate the pin one of the CPU. The CPU cannot be inserted if oriented incorrectly. (Or you may locate the notches on both sides of the CPU and alignment keys on the CPU socket.)
- Apply an even and thin layer of thermal grease on the surface of the CPU.
- Do not turn on the computer if the CPU cooler is not installed, otherwise overheating and damage of the CPU may occur.
- Set the CPU host frequency in accordance with the CPU specifications. It is not recommended that the system bus frequency be set beyond hardware specifications since it does not meet the standard requirements for the peripherals. If you wish to set the frequency beyond the standard specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc.

2-1 System Components



Item	Decription
1.	Power module
2.	Power supply board cage
3.	Fan duct
4.	GPU cooling fan
5.	GPGPU card
6.	System fans
7.	Hard drive

2-2 Replacing Power Supply Board Cage Cover

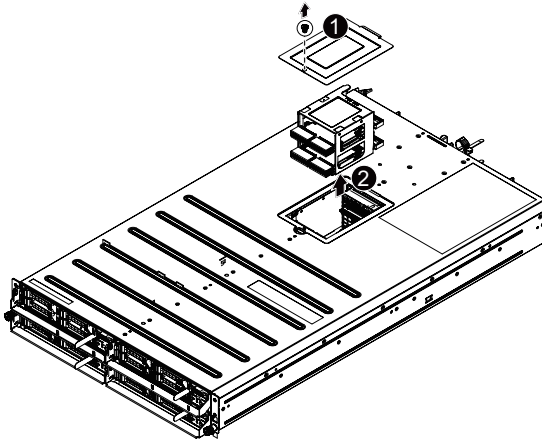


Before you remove or install the power supply board cage cover

- Make sure the system is not turned on or connected to AC power.

Follow these instructions to remove the power supply board cage cover:

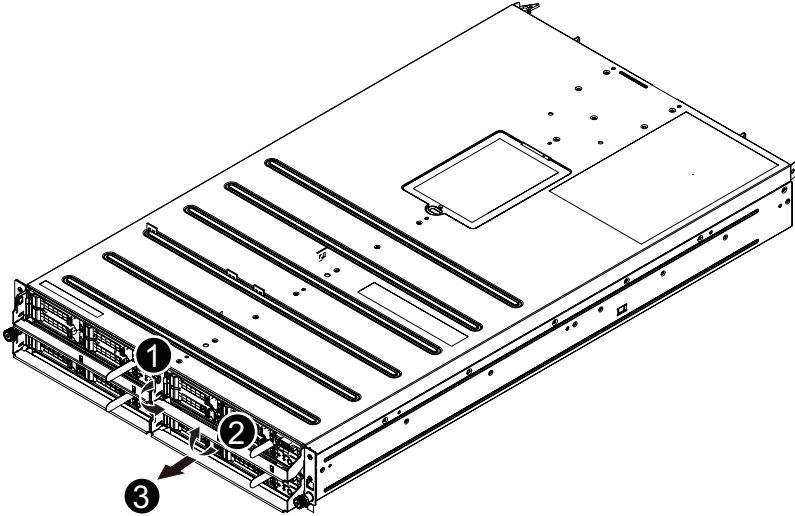
1. Loosen and remove the screw securing the cover.
2. Holding the cage and vertically lift it from the system.



2-3 Replacing the Motherboard Tray

Follow these instructions to replace the motherboard tray:

1. Disconnect the power, SATA, front panel, and mainboard cable connectors.
2. Press the retaining clip on the left side of the tray along the direction of the arrow.
3. At the same time, pull out the tray by using its handle. Pull up the tray handle and slide of the motherboard tray along the direction of the arrow.

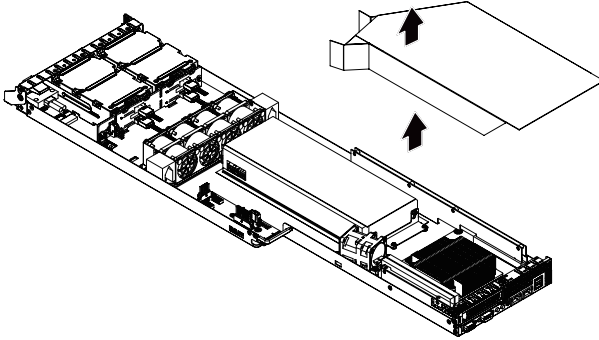


2-4 Removing and Installing the Fan Duct

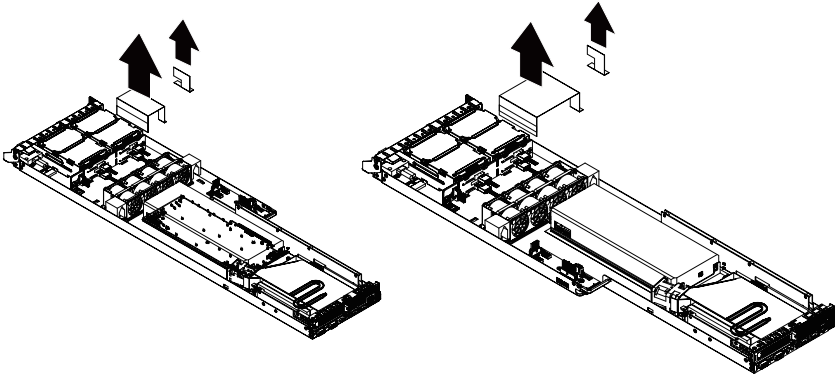
Follow these instructions to remove/install the fan duct:

1. Lift up to remove the fan duct
2. To install the fan duct, align the fan duct with the guiding groove. Push down the fan duct into chassis until its firmly seats.
3. Reverse the steps above to install the fan duct.

Rear Fan Duct



Front Fan Duct



2-5 Installing the CPU



Read the following guidelines before you begin to install the CPU:

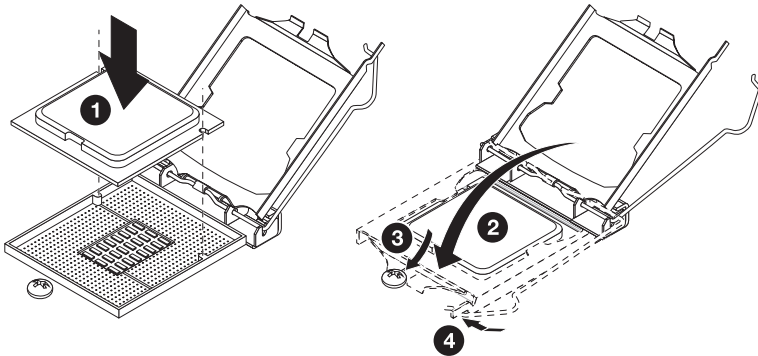
- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.
- Unplug all cables from the power outlets.
- Disconnect all telecommunication cables from their ports.
- Place the system unit on a flat and stable surface.
- Open the system according to the instructions.

WARNING!

Failure to properly turn off the server before you start installing components may cause serious damage. Do not attempt the procedures described in the following sections unless you are a qualified service technician.

Follow these instructions to install the CPU:

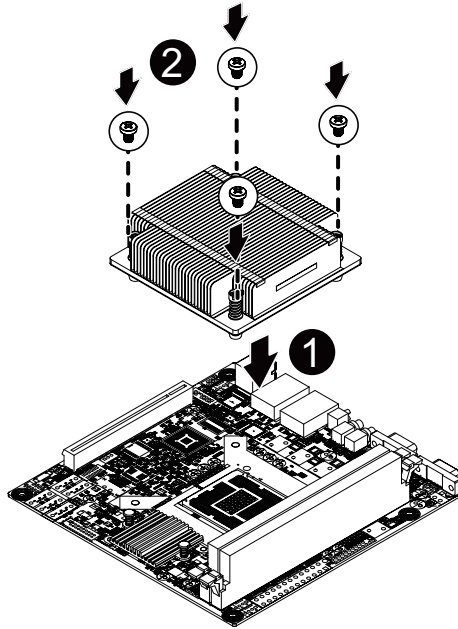
1. Raise the metal locking lever on the socket.
2. Remove the plastic covering on the CPU socket. Insert the CPU with the correct orientation. The CPU only fits in one orientation.
3. Replace the metal cover.
4. Push the metal lever back into locked position.



2-6 Installing the Heat Sink

Follow these instructions to install the heat sinks:

1. Apply thermal compound evenly on the top of the CPU.
2. Remove the protective cover from the underside of the heat sink.
3. Place the heat sink on top of the CPU and tighten the four positioning screws.



2-7 Installing the Memory

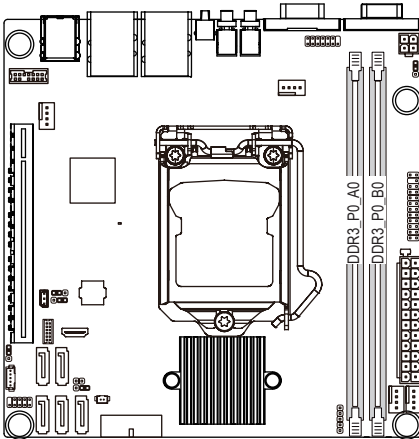


Read the following guidelines before you begin to install the memory:

- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

2-7-1 Dual Channel Memory Configuration

This motherboard provides two DDR3 memory sockets and supports Dual Channel Technology. When the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling Dual Channel memory mode will double the original memory bandwidth.



Due to CPU limitations, read the following guidelines before installing the memory in Dual Channel mode.

1. Dual Channel mode cannot be enabled if only one DDR3 memory module is installed.
2. When enabling Dual Channel mode with two or four memory modules, it is recommended that memory of the same capacity, brand, speed, and chips be used for optimum performance.

2-7-2 Installing a Memory

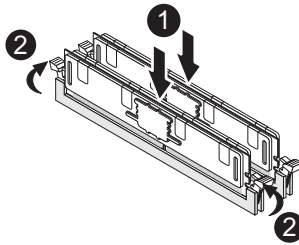


Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module.

Be sure to install DDR3 DIMMs on this motherboard.

Follow these instructions to install the Memory:

1. Insert the DIMM memory module vertically into the DIMM slot, and push it down.
2. Close the plastic clip at both edges of the DIMM slots to lock the DIMM module.
3. Reverse the installation steps when you wish to remove the DIMM module.



2-8 Installing the GPGPU Card



- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered-down and all power sources have been disconnected from the server prior to installing a GPGPU card.

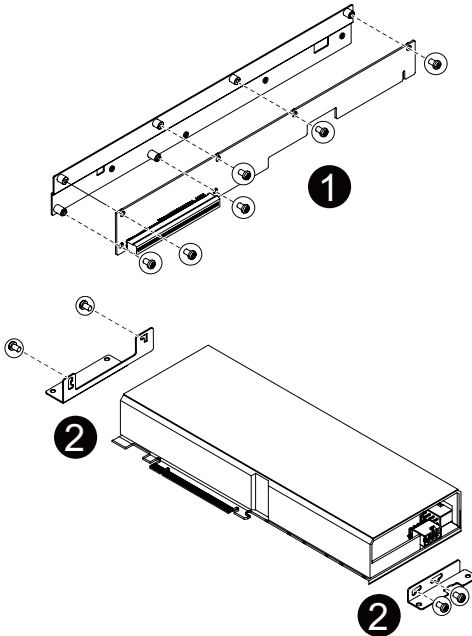
Failure to observe these warnings could result in personal injury or damage to equipment.

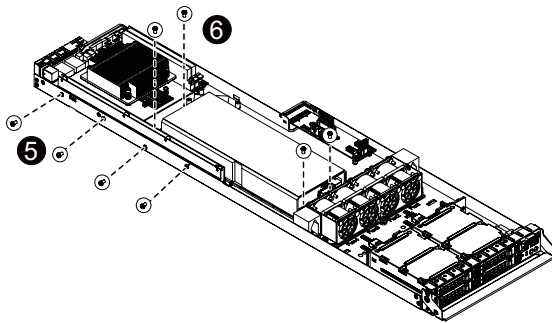
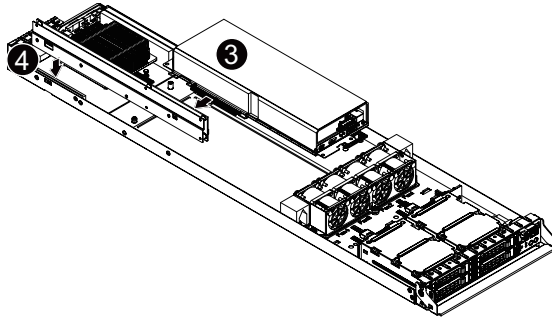


- The riser assembly does not include a riser card or any cabling as standard. To install a GPGPU card, a riser card must be installed.

Follow these instructions to GPGPU card:

1. Remove the front fan duct from the system following the steps outlined in Section **2-4 Removing and Installing the Fan Duct**.
2. Attach the mini card to the riser bracket and fix the mini card with screws.
3. Attach the support bracket with two screws to the GPGPU card.
4. Insert the GPGPU card to the mini card slot
5. Orient the GPGPU card with the riser guide slot and push in the direction of the arrow until the GPGPU card sits in the PCI card connector.
6. Fix the riser bracket with screws.
7. Fix the GPGPU card with the screws.





2-9 Installing the Hard Disk Drive

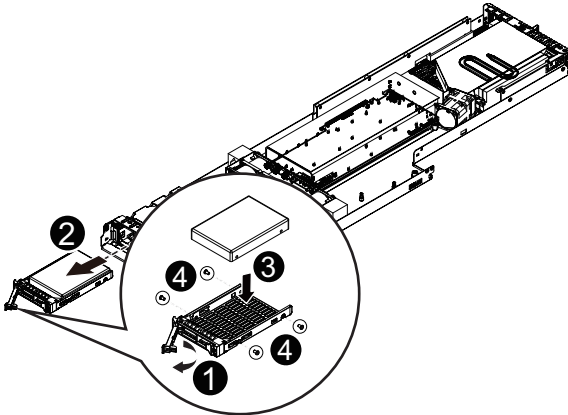


Read the following guidelines before you begin to install the Hard disk drive:

- Take note of the drive tray orientation before sliding it out.
- The tray will not fit back into the bay if inserted incorrectly.
- Make sure that the HDD is connected to the HDD connector on the backplane.

Follow these instructions to Hard disk drive:

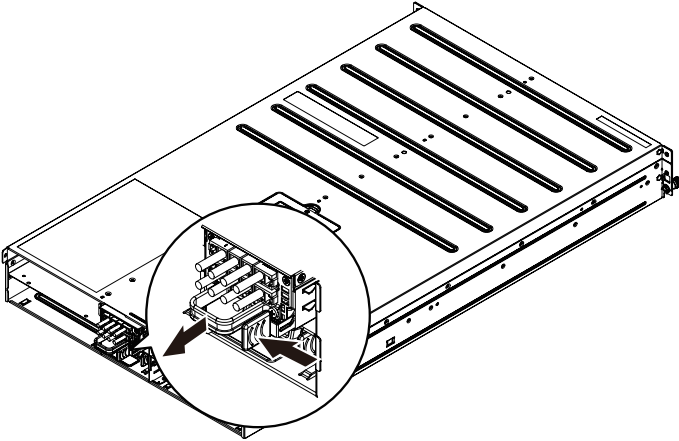
1. Press the release button.
2. Pull the locking lever to remove the HDD tray.
3. Slide hard disk into blank.
4. Secure the hard drive to the tray with four (4) screws as shown. Do not over tighten the screws. Slide the blank into the bay until it locks into place.
5. Engage the HDD Security Lock. For detail instruction, please see the following section.



2-10 Replacing the Power Supply

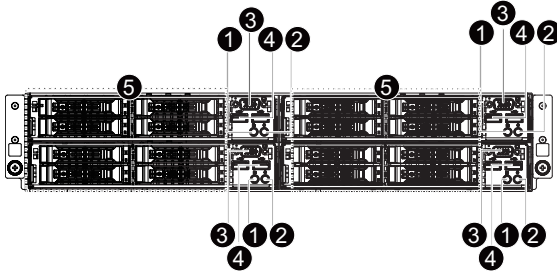
Follow these instructions to replace the power supply:

1. Disconnect the three power cables.
2. Pull up the power supply handle.
3. Press the retaining clip on the right side of the power supply along the direction of the arrow.
4. At the same time, pull out the power supply by using its handle.
5. Insert the replacement power supply firmly into the chassis. Connect the AC power cord to the replacement power supply.



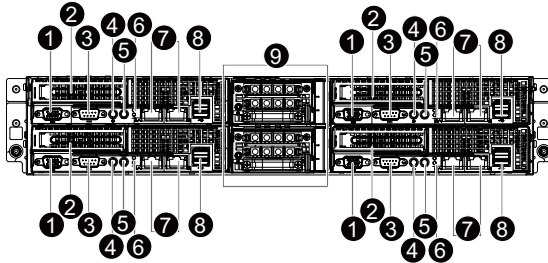
Chapter 3 System Appearance

3-1 Front View



No.	Description
1	ID button and LED
2.	Power button and LED
3.	VGA port
4.	USB 3.0 ports
5.	HDD bays

3-2 Rear View

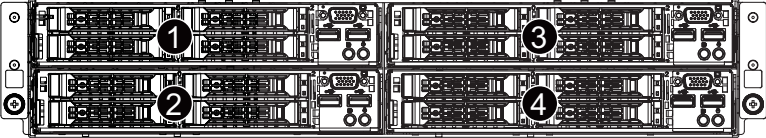


No.	Description
1	VGA port
2.	PCIe slot cover
3.	Serial port
4.	Power button and LED
5.	ID Button and LED
6.	Reset button (top)/NMI button (bottom)
7.	LAN ports
8.	USB 2.0 ports
9.	Power module

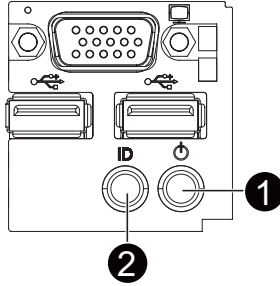


NOTE! For detail LED description, please see the following section:
Front Panel LED and Buttons and Rear System LEDs and Button.

3-3 HDD and Nodes Connection

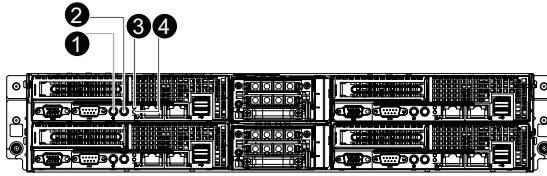


3-4 Front Panel LED and Buttons



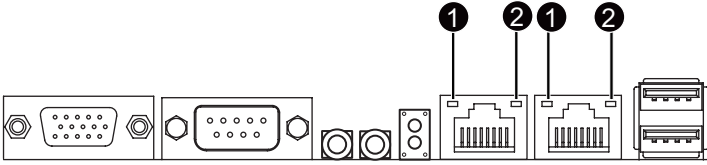
No.	Name	Color	Status	Critical Event	Description
1.	Power button and LED	Amber	On	No	System has power applied to it or ACPI S0 state
			Blink	Yes	System is in ACPI S5 state (Power off)
		Green	On	No	System has power applied to it or ACPI S0 State
				No	System is in ACPI S1 state (Entry S1)
2.	ID button and LED	Blue	On	N/A	Unit selected for identification.
		N/A	Off	N/A	No identification.

3-5 Rear System LEDs and Button



No.	Name	Color	Status	Critical Event	Description
1.	Power button and LED	Green	On	N/A	System has power applied to it or ACPI S0 state
		Green	Blink	N/A	System is in ACPI S1 state (sleep mode)
		N/A	Off	N/A	System is powered off. System is in ACPI S4 state (hibernate mode)
2.	ID button and LED	Blue	On	N/A	Unit selected for identification.
		N/A	Off	N/A	No identification.
3.	Reset button				Press this button to reset the system.
4.	NMI button				The NMI button allows a technician servicing the server to generate a NMI to the processor to help solve server errors.

3-6 Rear System LAN LEDs



No.	Name	Color	Status	Description
1	Speed LED	Yellow	On	1 Gbps data rate
			Blink	Identify 1 Gbps data rate
		Green	On	100 Mbps data rate
			Blink	Identify 100 Mbps data rate
N/A	Off	10 Mbps data rate		
2.	Link/ Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or receiving is occurring
		N/A	Off	No data transmission or receiving is occurring

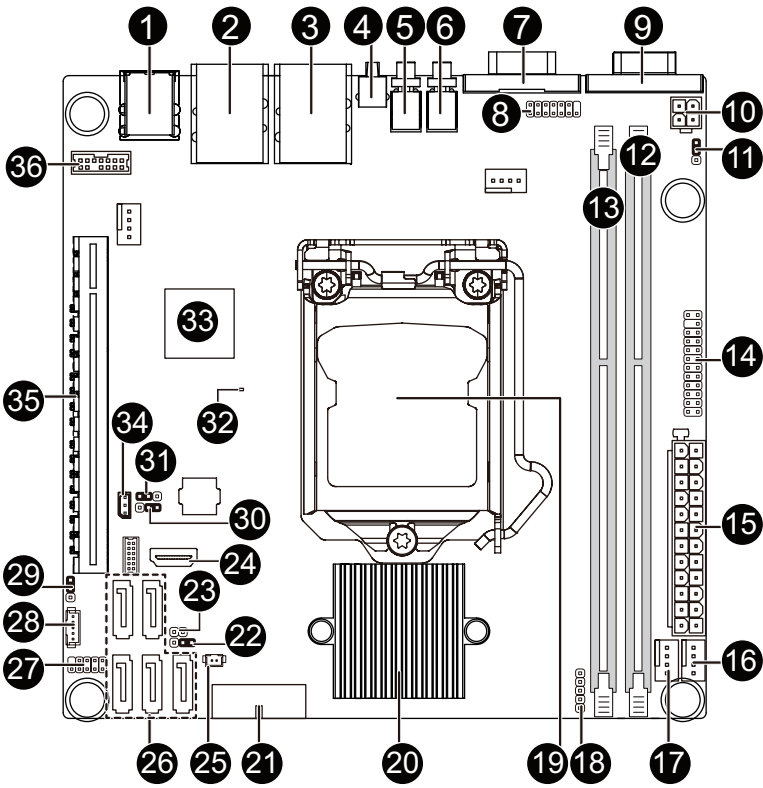
3-7 Hard Disk Drive LEDs



LED No.	Mode	Description	Multi-Color LED		
			LED Active Green	LED Active Amber	
1	Non-RAID	Hard disk drive is not present	Off	Off	
		Hard disk drive is present but not active	On	Off	
		Hard disk drive is present and active	Blink	Off	
	Onboard RAID	Hard disk drive is not present	Off	Off	
		Hard disk drive is present but not active	On	Off	
		Hard disk drive is present and active	Blink	Off	
		Location	On	Blink @ 4 Hz (Alternative)	
		RAID failed	On	On	
		Hard disk drive is rebuilding	Blink	Blink @ 1 Hz	
	SAS RAID Card	Hard disk drive is not present	Off	Off	
		Hard disk drive is present but not active	On	Off	
		Hard disk drive is present and active	Blink	Off	
		Location	On	Blink @ 4 Hz (Alternative)	
		RAID failed	On	On	
		Hard disk drive is rebuilding	Blink	Blink @ 1 Hz	
	2	Reserve	Reserve	Reserve	Reserve

Chapter 4 Motherboard Components

4-1 GA-6LISL Motherboard Components

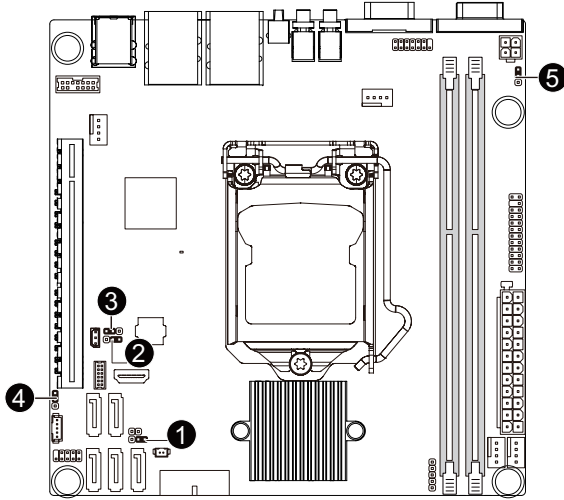


Item	Code	Description
1	R_USB1	USB 2.0 ports
2	LAN2	LAN2 port
3	LAN1	LAN1 port
4	NMI_BMCRST	Reset button (top)/NMI button (bottom)
5	ID_SW	ID Switch button
6	PWR_SW	Power button
7	COM1	Serial port
8	FP_VGA1	Front panel VGA header
9	VGA1	VGA port
10	P12V_AUX1	4 pin power connector
11	CFG5	PCI-E x16 and x8 bandwidth switch jumper
12	DDR3_P0_B0	DIMM slot
13	DDR3_P0_A0	DIMM slot
14	FP_1	Front panel header
15	ATX1	24 pin main power connector
16	SYS_FAN2	System fan connector#2
17	SYS_FAN3	System fan connector#3
18	PWR_DET	PMBus connector
19	CPU0	Intel LGA1150 socket
20	U516	Intel C226 chipset
21	F_USB3	USB 3.0 header
22	SATA_DOM4	SATA port 4 DOM support jumper
23	CASE_OPEN	Case open intrusion header
24	HDMI*	HDMI connector*
25	BAT	Battery power cable connector
26	SATA0~4	SATA 6Gb/s connectors
27	F_USB2_1	USB 2.0 header
28	SATA_SGPIO	SATA SGPIO header
29	CLRCMOS	Clear CMOS jumper
30	ME_UPDATE	ME Update jumper
31	BIOSRCVR	BIOS recovery jumper
32	BMC_LED1	BMC readiness LED
33	U546	ASPEED 2300 BMC chipset
34	IPMB1	IPMB connector
35	PCIE_1	PCI-E x16 slot
36	TPM	TPM module connector



The HDMI connector is HDCP compliant and supports Dolby True HD and DTS HD Master Audio formats. It also supports up to 192KHz/24bit 8-channel LPCM audio output. You can use this port to connect your HDMI-supported monitor. The maximum supported resolution is 4096x2160@24Hz or 2560x1600@60Hz, but the actual resolutions supported are dependent on the monitor being used.

4-2 Jumper Setting



No.	Jumper Code	Jumper Setting						
1.	SATA_DOM4 (SATA port 4 DOM Jumpers)	<p>CAUTION!</p> <p>If the SATA DOM power is supplied by the motherboard, set the jumper to pin 1-2.</p> <p>If the SATA DOM power is supplied by external power, set the jumper to pin 2-3.</p> <p>If a SATA type hard drive is connected to the motherboard, please ensure the jumper is closed and set to 2-3 pins (Default setting), in order to reduce any risk of hard disk damage.</p>						
		<table border="1"> <thead> <tr> <th>Pin No.</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>P5V</td> </tr> <tr> <td>2</td> <td>SATA_DOM4</td> </tr> <tr> <td>3</td> <td>GND</td> </tr> </tbody> </table>	Pin No.	Definition	1	P5V	2	SATA_DOM4
Pin No.	Definition							
1	P5V							
2	SATA_DOM4							
3	GND							
2.	ME_UPDATE (ME Recover Jumpers)	1-2 Close: ME recovery mode. 2-3 Close: Normal operation (Default setting)						
3.	BIOSRCVR (BIOS Recovery Jumper)	1-2 Close: Normal operation (Default setting) 2-3 Close: BIOS recovery mode.						
4.	CLR_CMOS (Clearing CMOS Jumper)	1-2 Close: Normal operation (Default setting) 2-3 Close: Clear CMOS data						
5.	CFG5 (PCIE_1 bandwidth switch Jumper)	1-2 Close: PCIE_1 operates in x16 bandwidth. (Default setting)						
		2-3 Close: PCIE_1 operates in x8 bandwidth.						

Chapter 5 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the EFI on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the <F2> key during the POST when the power is turned on.



- BIOS flashing is potentially risky, if you do not encounter problems of using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the **Exit** section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

BIOS Setup Program Function Keys

<<-><->>	Move the selection bar to select the screen
<↑><↓>	Move the selection bar to select an item
<+>	Increase the numeric value or make changes
<->	Decrease the numeric value or make changes
<Enter>	Execute command or enter the submenu
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu
<F1>	Show descriptions of general help
<F3>	Restore the previous BIOS settings for the current submenus
<F9>	Load the Optimized BIOS default settings for the current submenus
<F10>	Save all the changes and exit the BIOS Setup program

■ **Main**

This setup page includes all the items in standard compatible BIOS.

■ **Advanced**

This setup page includes all the items of AMI BIOS special enhanced features.

(ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)

■ **Chipset**

This setup page includes all the submenu options for configuring the function of North Bridge and South Bridge.

(ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)

■ **Security**

Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.

A supervisor password allows you to make changes in BIOS Setup.

A user password only allows you to view the BIOS settings but not to make changes.

■ **Server Management**

Server additional features enabled/disabled setup menus.

■ **Event Logs**

This setup page provides items for configuration of Smbios Event Log settings and display the Smbios event logs information.

■ **Boot**

This setup page provides items for configuration of boot sequence.

■ **Exit**

Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)

Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

5-1 The Main Menu

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter other sub-menu.

Main Menu Help

The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

Submenu Help

While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side of the submenu.



- When the system is not stable as usual, select the **Restore Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.

```
Bios Setup Utility
Main Advanced Chipset Security Server Mgmt Event Logs Boot Save & Exit

BIOS Information
BIOS Version          F02
Build Date and Time   12/04/2013

BMC Information
BMC Firmware Version  02.08
SDR Version           00.24
FRU Version           01.00

Processor Information
Name                  Haswell
Brand String          Genuine Intel(R) CPU 0000 @
                      2.70GHz
Frequency             2700 MHz
Processor ID          306c2
Stepping              B0
Number of Processors  4Core(s) / 8Thread(s)
Microcode Revision    ffff0006

Total Memory          4096 MB (DDR3)
Memory Frequency      1333 Mhz

System Date           [Wed 12/11/2013]
System Time           [17:06:36]

Set the Date. Use Tab to
switch between Date
elements.

++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F3: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit
```

☞ **BIOS Information**

☞ **BIOS Version**

Display version number of the BIOS setup utility.

☞ **BIOS Build Date and Time**

Displays the date and time when the BIOS setup utility was created.

☞ **BMC Information**

☞ **BMC Firmware Version**

Display version number of the BMC setup utility.

☞ **SDR Version**

Display the SDR version of the BMC setup utility.

☞ **FRU Version**

Display the FRU version of the BMC setup utility.

☞ **Processor Information**

☞ **Processor Information**

☞ **CPU Type/Brand String/Frequency/Processor ID/Stepping/Number of Processors/
Microcode Revision**

Displays the technical specifications for the installed processor.

☞ **Memory Information**

☞ **Memory Frequency**

Display the frequency information of the installed memory.

☞ **System Date**

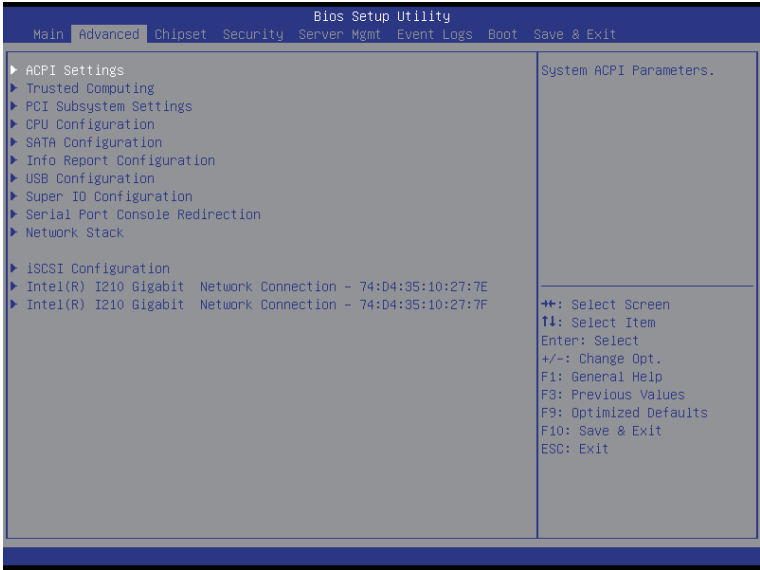
Set the date following the weekday-month-day- year format.

☞ **System Time**

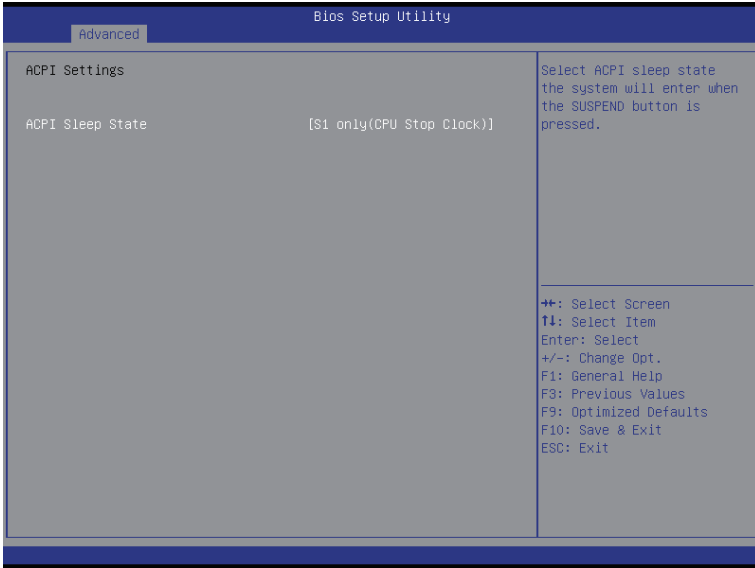
Set the system time following the hour-minute- second format.

5-2 Advanced Menu

The Advanced menu display submenu options for configuring the function of various hardware components. Select a submenu item, then press Enter to access the related submenu screen.



5-2-1 ACPI Configuration



☞ ACPI Settings

☞ ACPI Sleep State

Select the highest ACPI sleep state the system will enter, when the suspend button is pressed.

Options available: Suspend Disabled/S1 only (CPU Stop Clock) for OS to choose from.

Default setting is **S1 only (CPU Stop Clock)**.

5-2-2 Trusted Computing (Optional)



☞ **Configuration**

☞ **Security Device Support**

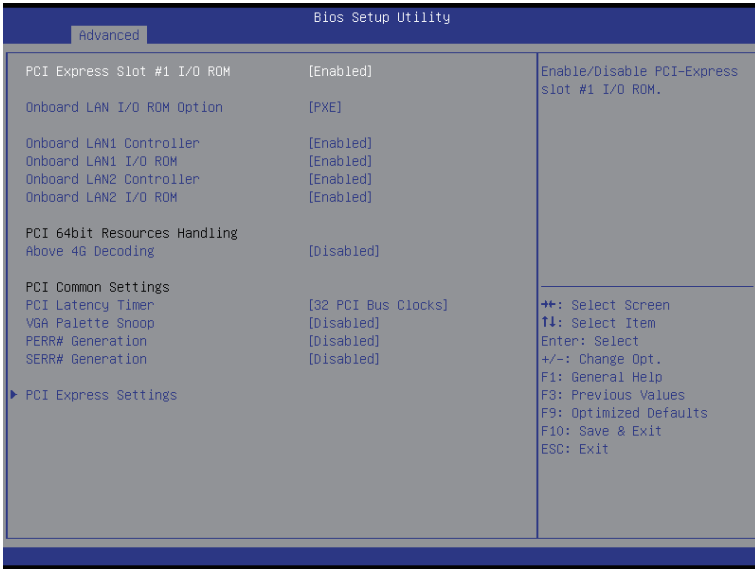
Select Enabled to activate TPM support feature.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Current Status Information**

Display current TPM status information.

5-2-3 PCI Subsystem Settings



☞ PCI Express Slot #1 I/O ROM

When enabled, This setting will initialize the device expansion ROM for the related PCI-E slot.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Onboard LAN I/O ROM Option

Configure onboard LAN devices and initialize device expansion ROM.
Options available: PXE/SCSI. Default setting is **PXE**.

☞ Onboard LAN1/2 I/O ROM

Enable/Disable onboard LAN devices and initialize device expansion ROM.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ PCI 64bit Resources Handling

☞ Above 4G Decoding

Enable/Disable Above 4G Decoding.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ PCI Common Settings

☞ PCI Latency Timer

Value to be programmed into PCI Latency Timer Register.
Options available: 32 PCI Bus Clocks/64 PCI Bus Clocks/96 PCI Bus Clocks/128 PCI Bus Clocks/160 PCI Bus Clocks/192 PCI Bus Clocks/224 PCI Bus Clocks/248 PCI Bus Clocks/.
Default setting is **32 PCI Bus Clocks**.

☞ **VGA Palette Snoop**

Enable/Disable VGA Palette Registers Snooping.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **PERR Generation**

When this item is set to enabled, PCI bus parity error (PERR) is generated and is routed to NMI.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **SERR Generation**

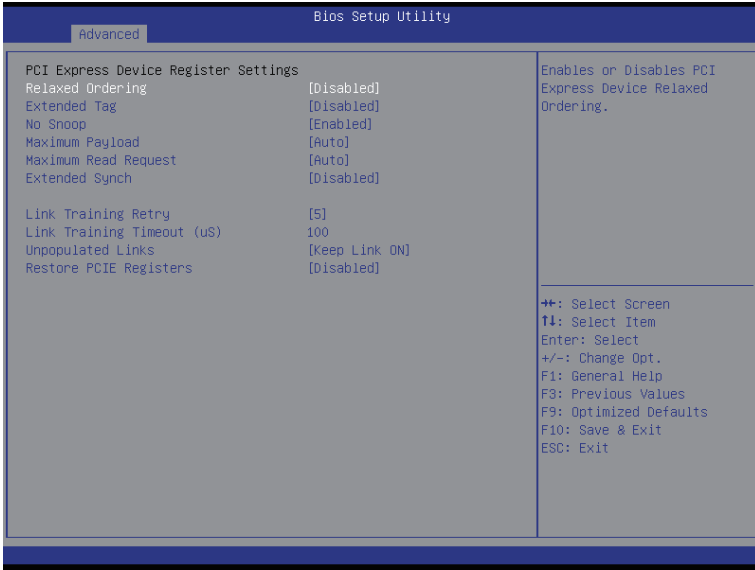
When this item is set to enabled, PCI bus system error (SERR) is generated and is routed to NMI.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **PCI Express Settings**

Press [Enter] for configuration of advanced items.

5-2-3-1 PCI Express Settings



☞ PCI Express Device Register Settings

☞ Relaxed Ordering

Enable/Disable PCI Express Device Relaxed Ordering feature.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ Extended Tag

When this feature is enabled, the system will allow device to use 8-bit Tag field as a requester.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ No Snoop

Enable/Disable PCI Express Device No Snoop option.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Maximum Payload

Set maximum payload for PCI Express Device or allow system BIOS to select the value.
Options available: Auto/128 Bytes/256 Bytes/512 Bytes/1024 Bytes/2048 Bytes/4096 Bytes.
Default setting is **Auto**.

☞ Maximum Read Request

Set maximum Read Request size for PCI Express Device or allow system BIOS to select the value.
Options available: Auto/128 Bytes/256 Bytes/512 Bytes/1024 Bytes/2048 Bytes/4096 Bytes.
Default setting is **Auto**.

☞ Extended Synch

When this feature is enabled, the system will allow generation of Extended Synchronization patterns.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Link Training Retry**

Define the number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful. Press <+> / <-> keys to increase or decrease the desired values.

☞ **Link Training Timeout (us)**

Define the number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Press <+> / <-> keys to increase or decrease the desired values. Value rang is from 10 to 10000 us.

☞ **Unpopulated Links**

When this item is set to 'Disable Link, the system will operate power save feature for those unpopulated PCI Express links.

Options available: Keep Link ON/ Disable Link. Default setting is **Keep Link ON**.

☞ **Restore PCIE Registers**

When this item is enabled, the system will restore PCI Express device configuration on S3 resume.

Warning: Enabling this may cause issues with other hardware after S3 resume.

Options available: Enabled/Disabled. Default setting is **Disabled**.

5-2-4 CPU Configuration

Bios Setup Utility

Advanced

CPU Configuration	
Genuine Intel(R) CPU 0000 @ 2.70GHz	
CPU Signature	306c2
Processor Family	6
Microcode Patch	ffff0006
FSB Speed	100 MHz
Max CPU Speed	2700 MHz
Min CPU Speed	800 MHz
CPU Speed	2700 MHz
Processor Cores	4
Intel HT Technology	Supported
Intel VT-x Technology	Supported
Intel SMX Technology	Supported
64-bit	Supported
EIST Technology	Supported
CPU C3 state	Supported
CPU C6 state	Supported
CPU C7 state	Supported
L1 Data Cache	32 kB x 4
L1 Code Cache	32 kB x 4
L2 Cache	256 kB x 4
L3 Cache	8192 kB

Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F3: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit

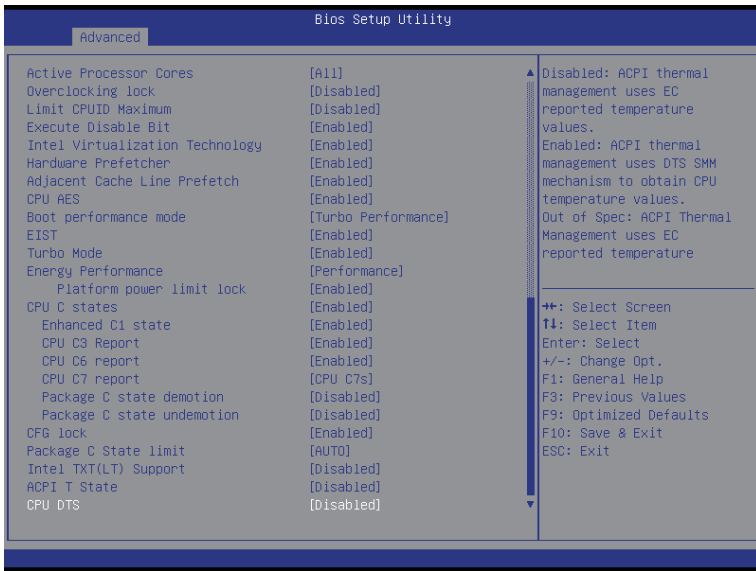
Bios Setup Utility

Advanced

Hyper-threading	[Enabled]
Active Processor Cores	[All]
Overclocking lock	[Disabled]
Limit CPUID Maximum	[Disabled]
Execute Disable Bit	[Enabled]
Intel Virtualization Technology	[Enabled]
Hardware Prefetcher	[Enabled]
Adjacent Cache Line Prefetch	[Enabled]
CPU AES	[Enabled]
Boot performance mode	[Turbo Performance]
EIST	[Enabled]
Turbo Mode	[Enabled]
Energy Performance	[Performance]
Platform power limit lock	[Enabled]
CPU C states	[Enabled]
Enhanced C1 state	[Enabled]
CPU C3 Report	[Enabled]
CPU C6 Report	[Enabled]
CPU C7 report	[CPU C7s]
Package C state demotion	[Disabled]
Package C state undemotion	[Disabled]
CFG lock	[Enabled]
Package C State limit	[AUTO]
Intel TXT(LT) Support	[Disabled]
ACPI T State	[Disabled]

Enable/Disable ACPI T state support

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F3: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit



☞ CPU Configuration

☞ CPU Type/Signature/Processor Family/Microcode Patch/FSB Speed/Max CPU Speed/Min CPU Speed/Processor Cores/Intel HT Technology/Intel VT-x Technology/Intel SMX Technology

Displays the technical specifications for the installed processor.

☞ 64-bit

Display the supported information of installed CPU.

☞ EIST Technology

Display Intel EIST Technology function support information.

☞ CPU C3 state

Display the support information of CPU C3 state feature.

☞ CPU C6 state

Display the support information of CPU C6 state feature.

☞ CPU C7 state

Display the support information of CPU C7 state feature.

☞ Cache Information

☞ L1 Data Cache / L1 Code Cache / L2 Cache / L3 Cache

Displays the technical specifications for the installed processor.

☞ Hyper-threading

The Intel Hyper Threading Technology allows a single processor to execute two or more separate threads concurrently. When hyper-threading is enabled, multi-threaded software applications can execute their threads, thereby improving performance.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Active Processor Cores** ^(Note)

Allows you to determine whether to enable all CPU cores.

Options available: All/1/2/3. Default setting is **All**.

☞ **Overclocking lock**

Enable/Disable Overclocking lock.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Limit CPUID Maximum**

When enabled, the processor will limit the maximum CPUID input values to 03h when queried, even if the processor supports a higher CPUID input value.

When disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Execute Disable Bit**

When enabled, the processor prevents the execution of code in data-only memory pages. This provides some protection against buffer overflow attacks.

When disabled, the processor will not restrict code execution in any memory area. This makes the processor more vulnerable to buffer overflow attacks.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Intel Virtualization Technology**

Select whether to enable the Intel Virtualization Technology function. VT allows a single platform to run multiple operating systems in independent partitions.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Hardware Prefetcher**

Select whether to enable the speculative prefetch unit of the processor.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Adjacent Cache Line Prefetch**

When enabled, cache lines are fetched in pairs. When disabled, only the required cache line is fetched.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **CPU AES**

Enable/Disable CPU Advanced Encryption Standard instructions.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Boot performance mode**

Configure the Boot performance mode.

Options available: Turbo Performance/Max Non-Turbo Performance/Max battery/Turbo Performance.

Default setting is **Turbo Performance**.

☞ **EIST (Enhanced Intel SpeedStep Technology)**

Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load.

Options available: Enabled/Disabled. Default setting is **Enabled**.

(Note) This item is present only if you install a CPU that supports this feature. For more information about Intel CPUs' unique features, please visit Intel's website.

☞ **Turbo Mode**

When this item is enabled, the processor will automatically ramp up the clock speed of 1-2 of its processing cores to improve its performance.

When this item is disabled, the processor will not overclock any of its core.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Energy Performance**

Energy Performance Bias is Intel CPU function.

The larger value in MSR_ENERGY_PERFORMANCE_BIAS register,

CPU will save more power but lose more performance.

Note: This register will be changed by OS too if OS support it like Windows 2008 or newer Linux.

Options available:

Performance : Write value 0 into MSR_ENERGY_PERFORMANCE_BIAS

Balanced Performance: Write value 7 into MSR_ENERGY_PERFORMANCE_BIAS

Balanced Energy: Write value 11 into MSR_ENERGY_PERFORMANCE_BIAS

Energy Efficient: Write value 15 into MSR_ENERGY_PERFORMANCE_BIAS

Default setting is **Performance**.

☞ **Platform power limit lock**

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **CPU C State**

Enable/Disable CPU C State feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Enhanced C1 state**

Enable/Disable C1E State feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **CPU C3/C6 Report** ^(Note)

Allows you to determine whether to let the CPU enter C3/C6 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C3/C6 state is a more enhanced power-saving state than C1.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **CPU C7 Report** ^(Note)

Allows you to enable or disable the CPU C7 (ACPI C3) report.

Options available: Disabled/CPU C7/CPU C7s. Default setting is **CPU C7s**.

☞ **Package C state demotion**

Configure state for the C-State package demotion.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Package C state undemotion**

Configure state for the C-State package undemotion.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **CFG lock**

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Package C State Limit**

Configure state for the C-State package limit.

Options available: C0/C1/C3/C6/C7/C7s/C8/C9/C10/Auto. Default setting is **Auto**.

☞ **Intel TXT (LT) Support**

Enable/Disable Intel TXT (LT) support.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **ACPI T State**

Enable/Disable ACPI T state support.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **CPU DTS**

Enable/Disable CPU DTS support.

Options available: Enabled/Disabled. Default setting is **Disabled**.

(Note) This item is present only if you install a CPU that supports this feature. For more information about Intel CPUs' unique features, please visit Intel's website.

5-2-5 SATA Configuration

Bios Setup Utility

Advanced

SATA Controller(s)	[Enabled]	▲ Enable or disable SATA Device.
SATA Mode Selection	[AHCI]	
SATA Test Mode	[Disabled]	
Aggressive LPM Support	[Enabled]	
SATA Controller Speed	[Default]	
▶ Software Feature Mask Configuration		
Serial ATA Port 0	Empty	
Software Preserve Port 0	Unknown [Enabled]	
Hot Plug	[Disabled]	
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
Spin Up Device	[Disabled]	▼
Serial ATA Port 1	Empty	
Software Preserve Port 1	Unknown [Enabled]	
Hot Plug	[Disabled]	
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
Spin Up Device	[Disabled]	
Serial ATA Port 2	Empty	
Software Preserve Port 2	Unknown [Enabled]	
Hot Plug	[Disabled]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F3: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit

Bios Setup Utility

Advanced

Hot Plug	[Disabled]	▲ On an edge detect from 0 to 1, the PCH starts a COMRESET initialization sequence to the device.
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
Spin Up Device	[Disabled]	
Serial ATA Port 2	Empty	
Software Preserve Port 2	Unknown [Enabled]	
Hot Plug	[Disabled]	
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
Spin Up Device	[Disabled]	
Serial ATA Port 3	Empty	
Software Preserve Port 3	Unknown [Enabled]	
Hot Plug	[Disabled]	
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
Spin Up Device	[Disabled]	
Serial ATA Port 4	Empty	
Software Preserve Port 4	Unknown [Enabled]	
Hot Plug	[Disabled]	
External SATA	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
Spin Up Device	[Disabled]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F3: Previous Values
 F9: Optimized Defaults
 F10: Save & Exit
 ESC: Exit

☞ **SATA Controller(s)**

Enable/Disable the SATA controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **SATA Mode Selection**

Select the on chip SATA type.

IDE Mode: When set to IDE, the SATA controller disables its RAID and AHCI functions and runs in the IDE emulation mode. This is not allowed to access RAID setup utility.

RAID Mode: When set to RAID, the SATA controller enables both its RAID and AHCI functions. You will be allowed access the RAID setup utility at boot time.

ACHI Mode: When set to AHCI, the SATA controller enables its AHCI functionality. Then the RAID function is disabled and cannot access the RAID setup utility at boot time.

Options available: IDE/RAID/AHCI/Disabled. Default setting is **ACHI Mode**.

☞ **SATA Test Mode**

Enable/Disable SATA Test Mode.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Aggressive LPM Support**

Enable PCH to aggressively enter link power state.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **SATA Controller Speed**

Indicates the maximum speed that the SATA controller can support.

Options available: Default/Gen1/Gen2/Gen3. Default setting is **Default**.

☞ **Software Feature Mask Configuration**

Press [Enter] for configuration of advanced items.

☞ **Serial Port 0/1/2/3/4/5**

The category identifies Serial ATA type of hard disk that are installed in the computer. System will automatically detect HDD type.

☞ **Port 0/1/2/3/4/5**

Enable/Disable Port 0/1/2/3/4/5.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Hot Plug (for Serial SATA Port 0/1/2/3/4/5)**

Enable/Disable Hot Plug support for Serial ATA Port 0/1/2/3/4/5.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **External SATA (for Serial SATA Port 0/1/2/3/4/5)**

Enable/Disable External SATA support for Serial ATA Port 0/1/2/3/4/5.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **SATA Device Type (for Serial SATA Port 0/1)**

Define the SATA Device for Serial ATA Port 0/1.

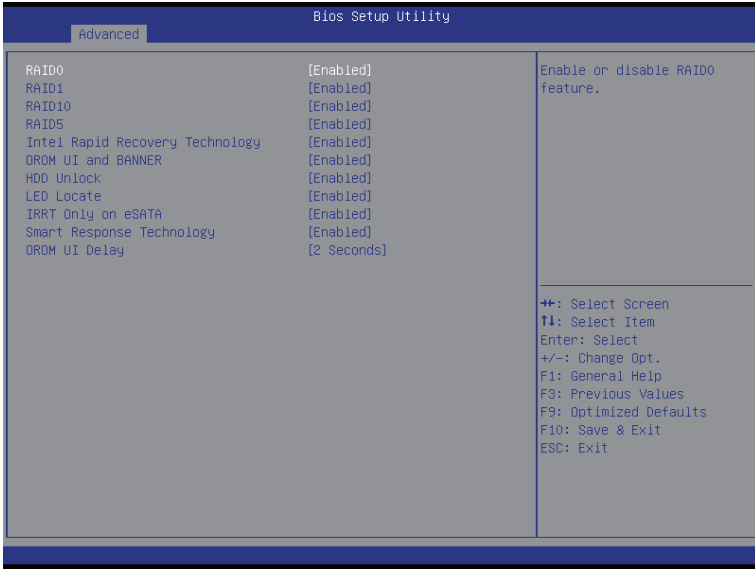
Options available: Hard Disk Drive/Solid State Drive. Default setting is **Disabled**.

☞ **Spin Up Device (for Serial SATA Port 0/1/2/3/4/5)**

On an edge detect from 0 to 1, the PCH starts a COMreset initialization to the device.

Options available: Enabled/Disabled. Default setting is **Disabled**.

5-2-5-1 Software Feature Mask Configuration



☞ RAID 0

Enable/Disable RAID 0 feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ RAID 1

Enable/Disable RAID 1 feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ RAID 10

Enable/Disable RAID 10 feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ RAID 5

Enable/Disable RAID 5 feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Intel Rapid Recovery Technology

Enable/Disable the Intel Rapid Start Technology (IRSTe) function. The IRSTe enables your system to get up and running faster from even the deepest sleep, saving time and power consumption.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ OROM UI and BANNER

Enable/Disable OROM UI and BANNER feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ HDD Unlock

When this item is enabled, the HDD password unlock in the OS is enabled.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **LED Locate**

When this item is enabled, the LED/SGPIO hardware is attached and ping to locate feature is enabled on the OS.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **IRRT Only on eSATA**

When this item is enabled, only IRRT volumes can span internal and eSATA drives. If disabled, then any RAID volume can span internal and eSATA drives

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Smart Response Technology**

Enable/Disable Intel Smart Response Technology.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **OROM UI Delay**

Options available: 2 Seconds/4 Seconds/6 Seconds/8 Seconds. Default setting is **2 Seconds**.

5-2-6 Info Report Configuration



☞ Info Report Configuration

☞ Post Report

Enable/Disable Post Report support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Delay Time

Options available: 0/1/2/3/4/5/6/7/8/9/10/Util Press ESC. Default setting is **Until Press ESC**.

☞ Error Message Report

☞ Info Error Message

Enable/Disable Info Error Message support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

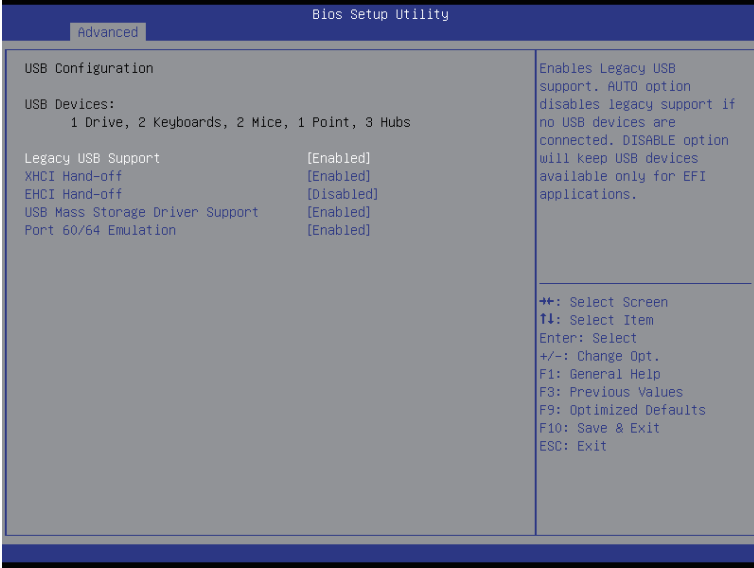
☞ Summary Screen

☞ Summary Screen

Enable/Disable Summary Screen support.

Options available: Enabled/Disabled. Default setting is **Disabled**.

5-2-7 USB Configuration



☞ Legacy USB Support

Enables or disables support for legacy USB devices.

Options available: Auto/Enabled/Disabled. Default setting is **Enabled**.

☞ XHCI Hand-off

Enable/Disable XHCI (USB 3.0) Hand-off support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ EHCI Hand-off

Enable/Disable EHCI (USB 2.0) Hand-off function.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ USB Mass Storage Driver Support^(Note)

Enable/Disable USB Mass Storage Driver Support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Port 60/64 Emulation

Enable I/O port 60h/64h emulation support. This should be enabled for the complete USB Keyboard Legacy support for non-USB aware OS.

Options available: Enabled/Disabled. Default setting is **Enabled**.

(Note) This item is present only if you attach USB types of device.

5-2-8 Super IO Configuration



☞ **Super IO Chip**

Display the model name of Super IO chip.

☞ **Serial Port 0 Configuration**

☞ **Serial Port 0**

When enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Device Settings**

Display the Serial Port 0 base I/O address and IRQ.

☞ **Change Settings**

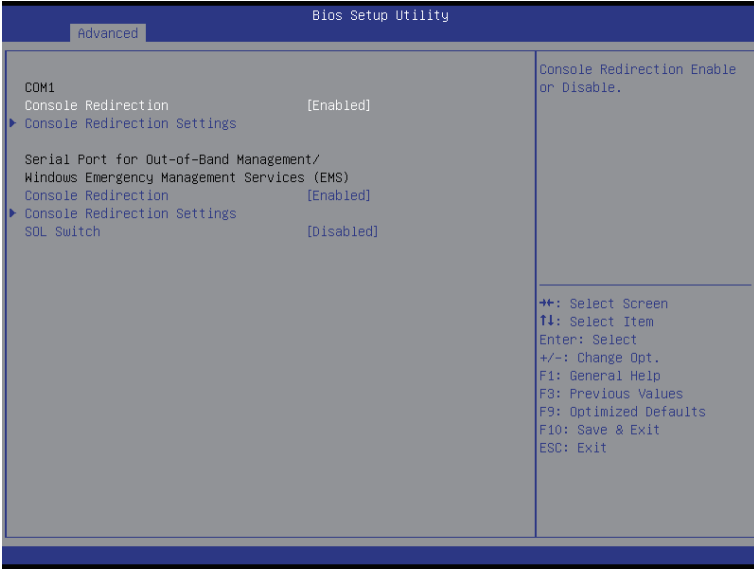
Change Serial Port 0 device settings. When set to Auto allows the server's BIOS or OS to select a configuration.

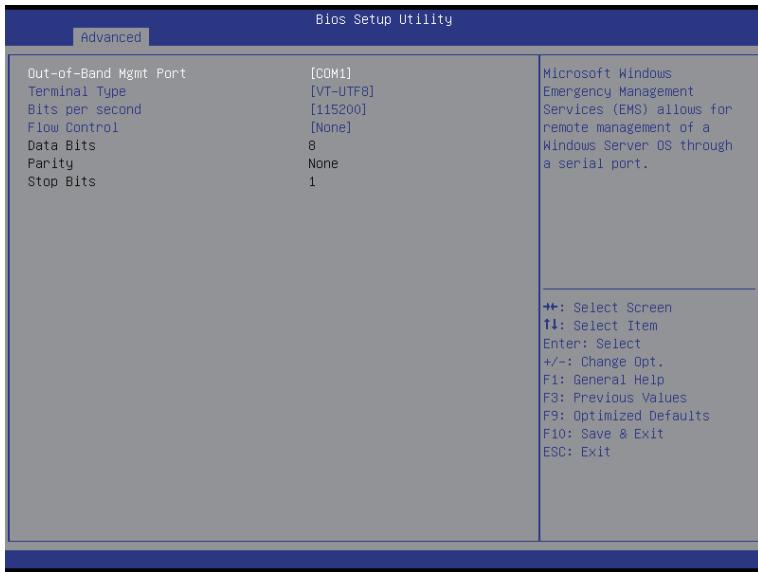
Options available: Auto/IO=3F8; IRQ=4/IO=3F8h; IRQ=3,4,5,6,7,10,11,12/

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

Default setting is **Auto**.

5-2-9 Serial Port Console Redirection





☞ COM1/Serial Port for Out-of Band Management/Windows Emergency Management Service (EMS)

☞ Console Redirection ^(Note)

Select whether to enable console redirection for specified device. Console redirection enables users to manage the system from a remote location.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ Console Redirection Settings

☞ Terminal Type

Select a terminal type to be used for console redirection.

Options available: VT100/VT100+/ANSI /VT-UTF8.

☞ Bits per second

Select the baud rate for console redirection.

Options available: 9600/19200/57600/115200.

☞ Data Bits

Select the data bits for console redirection.

Options available: 7/8.

☞ Parity

A parity bit can be sent with the data bits to detect some transmission errors.

Even: parity bit is 0 if the num of 1's in the data bits is even.

Odd: parity bit is 0 if num of 1's the data bits is odd.

Mark: parity bit is always 1. Space: Parity bit is always 0.

(Note) Advanced items prompt when this item is defined.

Mark and Space Parity do not allow for error detection.

Options available: None/Even/Odd/Mark/Space.

☞ **Stop Bits**

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

Options available: 1/2.

☞ **Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

Options available: None/Hardware RTS/CTS.

☞ **VT-UTF8 Combo Key Support** ^(Note)

Enable/Disable VT-UTF8 Combo Key Support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Recorder Mode** ^(Note)

When this mode enabled, only text will be send. This is to capture Terminal data.

Options available: Enabled/Disabled.

☞ **Resolution 100x31** ^(Note)

Enables or disables extended terminal resolution.

Options available: Enabled/Disabled.

☞ **Legacy OS Redirection Resolution** ^(Note)

On Legacy OS, the number of Rows and Columns supported redirection.

Options available: 80x24/80X25.

☞ **Putty KeyPad** ^(Note)

Select function FunctionKey and KeyPad on Putty.

Options available: VT100/LINUX/XTERMR6/SCO/ESCN/VT400.

☞ **Redirection After BIOS POST** ^(Note)

This option allows user to enable console redirection after O.S has loaded.

Options available: Always Enable/Boot Loader. Default setting is **Always Enable**.

☞ **Out-of-Bnad Mgmt Port**

Microsoft Windows Emergency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port.

Options available: COM1/COM2.

☞ **SOL Switch**

When enabled, COM1 Switch to AST2300 SOL UART.

When disabled, COM1 Switch to IT8728 SOL UART.

Options available: Enabled/Disabled. Default setting is **Disabled**.

^(Note) Advanced items prompt when this item is defined.

5-2-10 Network Stack



🔗 Network stack

Enable/Disable UEFI network stack.

Options available: Enabled/Disabled. Default setting is **Disabled**.

🔗 Ipv4 PXE Support^(Note)

Enable/Disable Ipv4 PXE feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

🔗 Ipv6 PXE Support^(Note)

Enable/Disable Ipv6 PXE feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

(Note) This item appears when **Network Stack** is set to **Enabled**.

5-2-11 iSCSI Configuration



☞ **iSCSI Initiator Name**

☞ **Add an Attempts**

Press [Enter] for configuration of advanced items.

☞ **Delete Attempts**

Press [Enter] for configuration of advanced items.

☞ **Change Attempt Order**

Press [Enter] for configuration of advanced items.

5-2-12 Intel (R) I210 Gigabit Network Connection

Bios Setup Utility	
Advanced	
PORT CONFIGURATION MENU ▶ NIC Configuration Blink LEDs 0 PORT CONFIGURATION INFORMATION UEFI Driver: Intel(R) PRO/1000 5.7.06 PCI-E Adapter PBA: 130410-004 Chip Type: Intel i210 PCI Device ID: 1539 Bus:Device:Function: 01:00:00 Link Status: [Disconnected] MAC Address: 74:D4:35:10:27:7E Virtual MAC Address: 74:D4:35:10:27:7E	Configure Boot Protocol, Wake on LAN, Link Speed, and VLAN. ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Bios Setup Utility	
Advanced	
Link Speed [Auto Negotiated] Wake On LAN [Enabled]	Specifies the port speed used for the selected boot protocol. ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

☞ **PORT CONFIGURATION MENU**

☞ **NIC Configuration**

Press [Enter] for configuration of advanced items.

☞ **Blink LEDs (range 0-15 seconds)**

Blink LEDs for the specified duration (up to 15 seconds).

Press the numeric keys to input the desired value.

☞ **PORT CONFIGURATION INFORMATION**

☞ **UEFI Driver**

Display the UEFI driver information.

☞ **Adapter PBA**

Display the Adapter PBA information.

☞ **Chip Type**

Display the Chip type.

☞ **PCI Device ID**

Display the PCI device ID.

☞ **Bus:Device:Function**

Display the number of Bus/Device/Function

☞ **Link Status**

Display the link status.

☞ **MAC Address**

Display the Factory MAC address information.

☞ **Virtual MAC Address**

Display the virtual MAC address information.

☞ **Link Speed**

Change link speed duplex for current port.

Options available: Auto Negotiated/10Mbps Half/10Mbps Half/10Mbps Full.

Default setting is **Auto Negotiated**.

☞ **Wake On LAN**

Enable/Disable Wake On LAN feature.

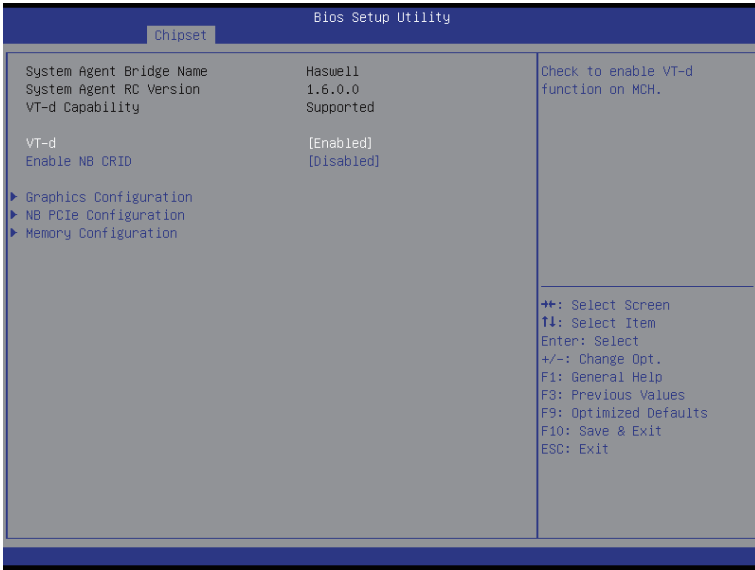
Options available: Enabled/Disabled. Default setting is **Enabled**.

5-3 Chipset Menu

The Chipset menu display submenu options for configuring the function of North Bridge and South Bridge. Select a submenu item, then press Enter to access the related submenu screen.



5-3-1 System Agent (SA) Configuration



System Agent Bridge Name

Display the System Agent (SA) Bridge Name.

System Agent RC Version

Display the version number of System Agent RC.

VT-d Capability

Display the VT-d support information.

VT-d

Enable/Disable Intel Virtualization Technology for Directed I/O (VT-d) feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Enable NB CRID

Options available: Enabled/Disabled. Default setting is **Disabled**.

Graphics Configuration

Press [Enter] for configuration of advanced items.

NB PCIe Configuration

Press [Enter] for configuration of advanced items.

Memory Configuration

Press [Enter] for configuration of advanced items.

5-3-1-1 Graphic Configuration



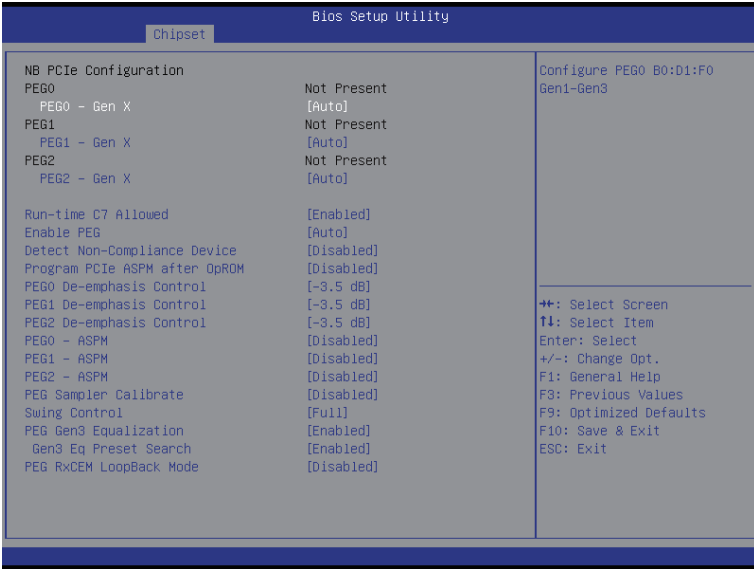
☞ Graphic Configuration

☞ Primary Display Device

Configure the Primary display device.

Options available: Auto/IGFX(if the CPU support graphic)/PEG/Onboard VGA. Default setting is **Auto**.

5-3-1-2 NB PCIe Configuration



☞ NB PCIe Configuration

☞ PEG0

Display PEG0 configuration information.

☞ PEG0 - Gen X

Configure PEG0 B0:D1:F0 Gen1-Gen3.

Options available: Auto/Gen1/Gen2/Gen3. Default setting is **Auto**.

☞ PEG1

Display PEG1 configuration information.

☞ PEG1 - Gen X

Configure PEG1 B0:D1:F1 Gen1-Gen3.

Options available: Auto/Gen1/Gen2/Gen3. Default setting is **Auto**.

☞ PEG2

Display PEG2 configuration information.

☞ PEG2 - Gen X

Configure PEG2 B0:D1:F2 Gen1-Gen3.

Options available: Auto/Gen1/Gen2/Gen3. Default setting is **Auto**.

☞ Run-time C7 Allowed

Configure Run-time C7 feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Enable PEG

Enable/Disable PEG.

Options available: Enabled/Disabled. Default setting is **Auto**.

☞ **Detect Non-Compliance Device**

Detect Non-Compliance PCI Express Device in PEG.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Program PCIe ASPM after OpROM**

Enable/Disable Program PCIe ASPM after OpROM.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **PEG0 De-emphasis Control**

PEG0:Configure the De-emphasis control on PEG.

Options available: Options available: -6 dB/-3.5 dB. Default setting is **-3.5 dB**.

☞ **PEG1 De-emphasis Control**

PEG1:Configure the De-emphasis control on PEG.

Options available: Options available: -6 dB/-3.5 dB. Default setting is **-3.5 dB**.

☞ **PEG2 De-emphasis Control**

PEG2:Configure the De-emphasis control on PEG.

Options available: Options available: -6 dB/-3.5 dB. Default setting is **-3.5 dB**.

☞ **PEG0 - ASPM**

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **PEG1 - ASPM**

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **PEG2 - ASPM**

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **PEG Sampler Calibrate**

Enable or disable PEG Sampler Calibrate\nAuto means Disabled for SNB MB/DT, Enabled for IVB A0 B0.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Swing Control**

Perform PEG Swing Control, on IVB C0 and Later.

Options available: Reduced/Half/Full. Default setting is **Full**.

☞ **PEG Gen3 Equalization**

Perform PEG Gen3 Equalization steps.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Gen3 Eq Preset Search**

Perform PEG Gen3 Preset Search algorithm, on IVB C0 and Later.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **PEG RxCEM LoopBack Mode**

Options available: Enabled/Disabled. Default setting is **Disabled**.

5-3-1-3 Memory Configuration



☞ **Memory Information**

☞ **Memory RC Version**

Display version number of installed memory.

☞ **Memory Frequency**

Display the frequency information of installed memory.

☞ **Total Memory**

Determines how much total memory is present during the POST.

☞ **Memory Voltage**

Display the voltage information of installed memory.

☞ **DIMM Information:**

☞ **DDR3_P0_A0/DDR3_P0_A1/DDR3_P0_B0/DDR3_P0_B1 Status**

The size of memory installed on each of the DDR3 slots.

☞ **CAS Latency (tCL)**

Display the CAS Latency (tCL) information of installed memory.

☞ **Minimum delay time**

☞ **CAS to RAS (tRCDmin)**

Display the CAS to RAS (tRCDmin) information of installed memory.

☞ **Row Precharge (tRPmin)**

Display the Row Precharge (tRPmin) information of installed memory.

☞ **Active to Precharge (tRASmin)**

Display the Active to Precharge (tRASmin) information of installed memory.

☞ **Memory Frequency Limiter**

Maximum Memory Frequency Selections in Mhz.

Options available: Auto/1067/1333/1600/1867/2133/2400/2667. Default setting is **Auto**.

☞ **Max TOLUD**

Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.

Options available: Dynamic/3.5 GB/3.25 GB/3 GB/2.75 GB/2.5 GB/2.25 GB/2 GB/1.75 GB/1.5 GB/1.25 GB/1 GB. Default setting is **Dynamic**.

5-3-2 PCH-IO Configuration



☞ Intel PCH RC Version/Intel PCH SKU/Intel PCH Rev ID Information

Displays the RC version, SKU and Revision ID information of PCH.

☞ PCI Express Configuration

Press [Enter] for configuration of advanced items.

☞ USB Configuration

Press [Enter] for configuration of advanced items.

☞ DeepSx Power Policies

Configure the DeepSx Mode configuration.

Options available: Disabled/Enabled in S5/Enabled in S4-S5. Default setting is **Disabled**.

☞ GP27 Wake From DeepSx

Wake from DeepSx by the assertion of GP27 pin.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ PCIE Wake From DeepSx

Wake from DeepSx by the assertion of PCIe.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ Serial IRQ Mode

Configure Serial IRQ Mode.

Options available: Quiet/Continuous. Default setting is **Quiet**.

☞ SB CRID

Enable/Disable SB CRID.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **SLP_S4 Assertion Width**

Select a minimum assertion width of the SLP_S4# signal.

Options available: 1-2 Seconds/2-3 Seconds/3-4 Seconds/4-5 Seconds.

Default setting is **4-5 Seconds**.

☞ **Restore AC Power Loss**

This option provides user to set the mode of operation if an AC / power loss occurs.

Power On: System power state when AC cord is re-plugged.

Power Off: Do not power on system when AC power is back.

Last State: Set system to the last state when AC power is removed.

Options available: Power On/Power Off/Last State. Default setting is **Last State**.

5-3-2-1 PCI Express Configuration



⤵ PCI Express Clock Gating

Enable/Disable PCI Express Clock Gating for each root port.

Options available: Enabled/Disabled. Default setting is **Enabled**.

⤵ DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI Link.

Options available: Enabled/Disabled. Default setting is **Disabled**.

⤵ DMI Link Extended Synch Control

The control of Extended Synch on SB side of the DMI Link.

Options available: Enabled/Disabled. Default setting is **Disabled**.

⤵ PCIe-USB Glitch W/A

PCIe-USB Glitch W/A for bad USB device(s) connected behind PCIe/PEG Port.

Options available: Enabled/Disabled. Default setting is **Disabled**.

⤵ PCIe Root Port Function Swapping

Options available: Enabled/Disabled. Default setting is **Disabled**.

5-3-2-2 USB Configuration



☞ USB Configuration

☞ USB Precondition

Precondition work on USB host controller and root ports for faster enumeration.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ XHCI Mode

Mode of operation of xHCI controller.

Options available: Smart Auto/Auto/Enabled/Disabled/Manual. Default setting is **Smart Auto**.

☞ BT CG

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ USB Ports Per-Port Disable Control

Control each of the USB ports (0~13) disabling.

Options available: Enabled/Disabled. Default setting is **Disabled**.

5-3-3 Intel Server Platform Services

Chipset		Bios Setup Utility	
Intel Server Platform Services Configuration		Intel Server Platform Services Help	
Intel Server Platform Services	[Enabled]		
ME BIOS Interface Ver	1.0		
SPS Version 3.0.4.164			
ME FW Status Value :	0xf0345		
ME FW State :	SPS ME FW Active		
ME FW Operation State :	MO without UMA		
ME FW Error Code :	No Error	++: Select Screen	
ME NM FW Status Value :	0x80000001	↑↓: Select Item	
BIOS Booting Mode :	Performance Optimized mode	Enter: Select	
Cores Disabled :	0	+/-: Change Opt.	
ME FW SKU Information :	NM + SiEn	F1: General Help	
End-of-POST Status :	EOP disabled in POST	F3: Previous Values	
		F9: Optimized Defaults	
		F10: Save & Exit	
		ESC: Exit	

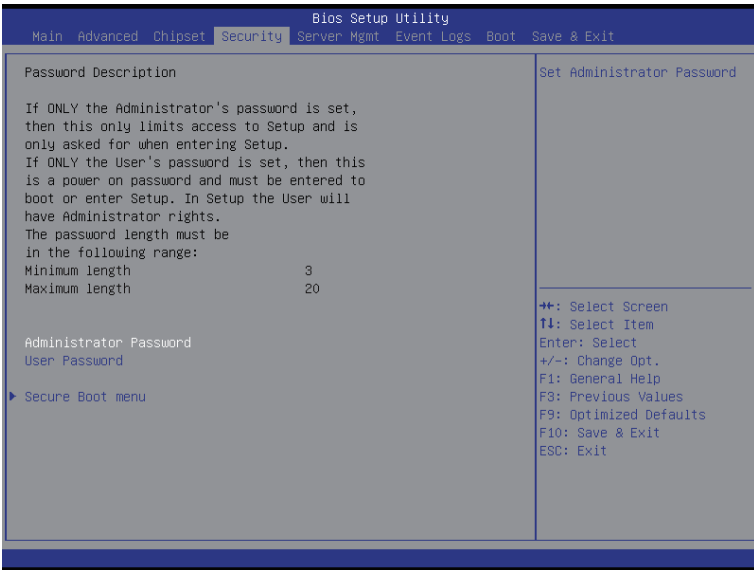
Intel Server Platform Services

Enable/Disable Intel Server Platform Services Help.

Options available: Enabled/Disabled. Default setting is **Enabled**.

5-4 Security Menu

The Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.



There are two types of passwords that you can set:

- **Administrator Password**
Entering this password will allow the user to access and change all settings in the Setup Utility.
- **User Password**
Entering this password will restrict a user's access to the Setup menus. To enable or disable this field, a Administrator Password must first be set. A user can only access and modify the System Time, System Date, and Set User Password fields.

⌂ Administrator Password

Press Enter to configure the Administrator password.

⌂ User Password

Press Enter to configure the user password.

⌂ Secure Boot menu

Press [Enter] for configuration of advanced items.

5-4-1 Secure Boot menu

The Secure Boot Menu is applicable when your device is installed the Windows® 8 operatin system.



🔗 Platform Mode

Display the System Platform Mode State.

🔗 Secure Boot

Display the status of Secure Boot.

🔗 Secure Boot Control

Enable/Disable Secure Boot function.

Options available: Enabled/Disabled. Default setting is **Disabled**.

🔗 Secure Boot Mode

Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all the files being loaded before Windows 8 loads and gets to the login screen have not been tampered with.

When set to Standard, it will automatically load the Secure Boot keys from the BIOS databases.

When set to Custom, you can customize the Secure Boot settings and manually load its keys from the BIOS database.

Options available: Standard/Custom. Default setting is **Standard**.

🔗 Image Execution Policy^(Note)

Press [Enter] for configuration of advanced items.

🔗 Key Management^(Note)

Press [Enter] for configuration of advanced items.

(Note) Advanced items prompt when this item is set to **Custom**.

5-4-1-1 Image Execution Policy



Image Execution policy

Internal FV

Image Execution Policy per device path on Security Violation.

Options available: Always Execute. Default setting is **Always Execute**.

Option ROM

Image Execution Policy per device path on Security Violation.

Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

Removable Media

Image Execution Policy per device path on Security Violation.

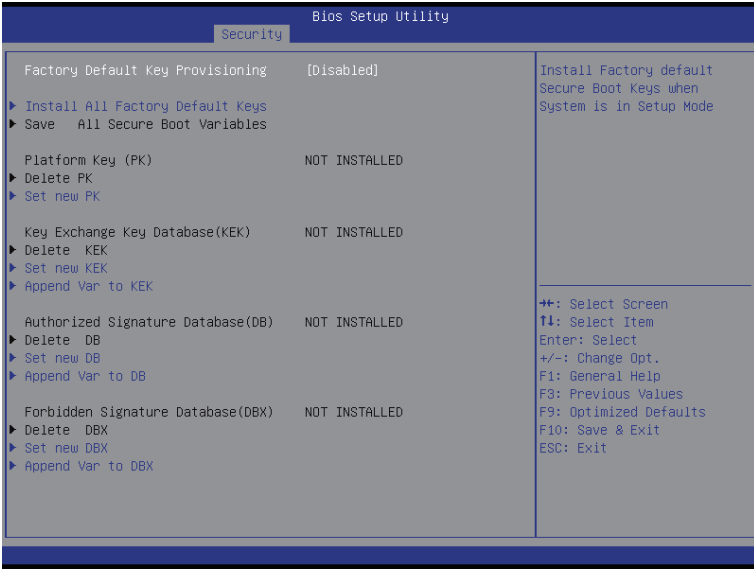
Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

Fixed Media

Image Execution Policy per device path on Security Violation.

Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

5-4-1-2 Key Management



Key Management

This item appears only when the **Secure Boot Mode** is set to **Custom**.

Factory Default Key Provisioning

Force the system to Setup Mode. This will clear all Secure Boot Variables such as Platform Key (PK), Key-exchange Key (KEK), Authorized Signature Database (db), and Forbidden Signatures Database (dbx).

Options available: Enabled/Disabled. Default setting is **Disabled**.

Install All Factory Default Keys

Press [Enter] to install all factory default keys.

Save All Secure Boot Variables

Press [Enter] to save all Secure Boot Variables.

Platform Key (PK)

Display the status of Platform Key.

Delete the PK

Press [Enter] to delete the existed PK. Once the PK is deleted, all the system's Secure Boot keys will not be activated.

Set new PK File

Press [Enter] to configure a new PK.

Key Exchange Key Database (KEK)

Display the status of Platform Key.

Delete KEK

Press [Enter] to delete the KEK from your system.

☞ **Set new KEK**

Press [Enter] to configure a new KEK.

☞ **Append Var to KEK**

Press [Enter] to load additional KEK from a storage devices for an additional db and dbx management.

☞ **Authorized Signature Database (DB)**

Display the status of Authorized Signature Database.

☞ **Delete DB**

Press [Enter] to delete the db from your system.

☞ **Set new DB**

Press [Enter] to configure a new db.

☞ **Append aVar to DB**

Press [Enter] to load additional db from a storage devices.

☞ **Forbidden Signature Database (DBX)**

Display the status of Forbidden Signature Database.

☞ **Delete the DBX**

Press [Enter] to delete the dbx from your system.

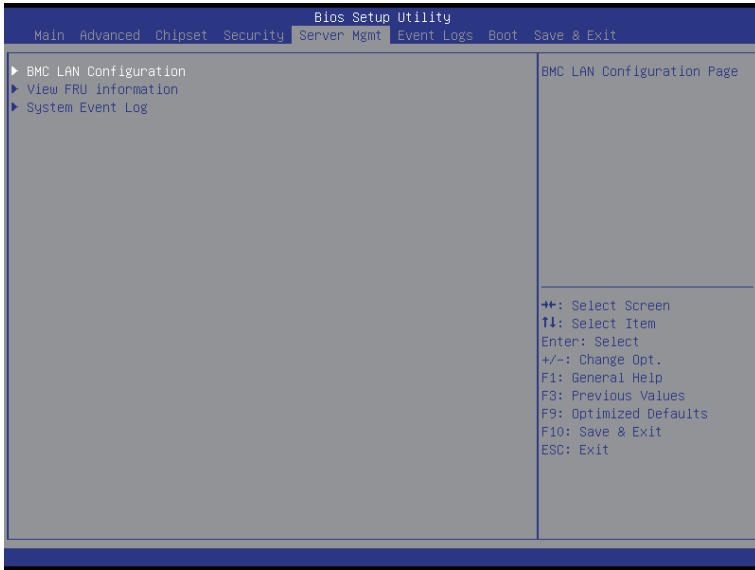
☞ **Set DBX from File**

Press [Enter] to configure a new dbx.

☞ **Append Var to DBX**

Press [Enter] to load additional db from a storage devices.

5-5 Server Management Menu



☞ **BMC LAN Configuration**

BMC LAN Configuration. Press Enter to access the related submenu.

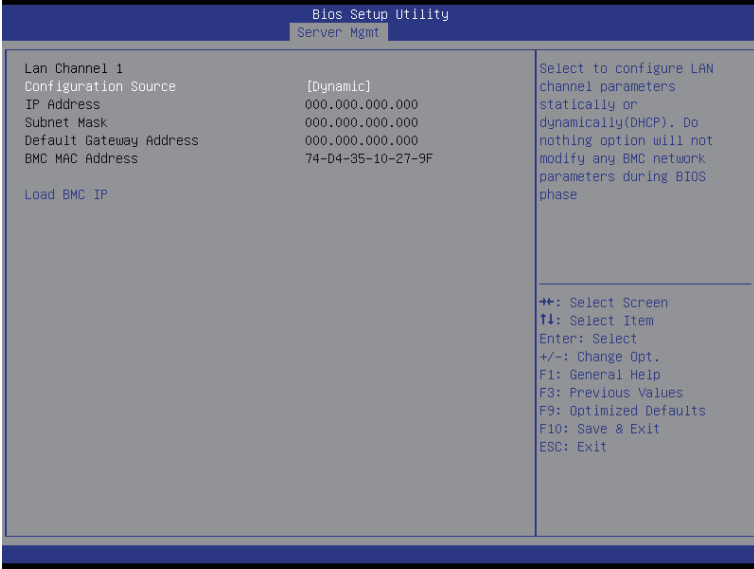
☞ **View FRU information**

The FRU information submenu is a simple display page for basic system ID information, as well as system product information. Items on this window are non-configurable.

☞ **System Event Log**

Displays Event Log advanced settings. Press Enter to access the related submenu.

5-5-1 BMC LAN Configuration



☞ Lan Channel 1

☞ Configuration Source

Select to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase.

Options available: Static/Dynamic/Do Nothing.

☞ IP Address^(Note)

Display IP Address information.

☞ Subnet Mask^(Note)

Display Subnet Mask information.

Please note that the IP address must be in three digitals, for example, 192.168.000.001.

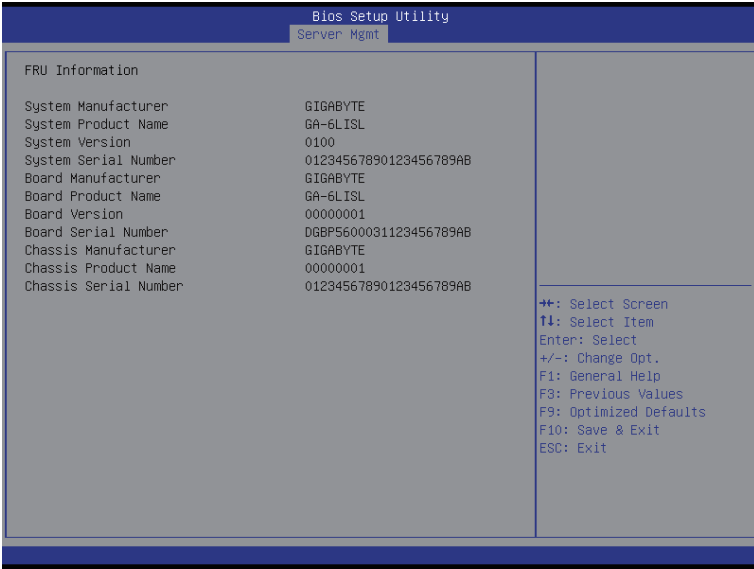
☞ Default Gateway Address^(Note)

Display Default Gateway Address information.

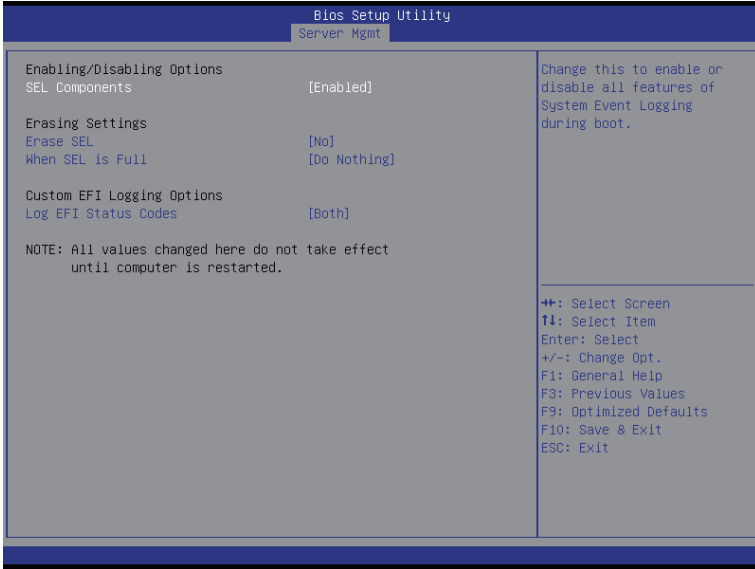
(Note) This item appears when **Configuration Source** is set to **Dynamic**.

5-5-2 View FRU Information

The FRU Information menu is a simple display page for basic system ID information, as well as System product information. Items on this window are non-configurable.



5-5-3 System Event Log



☞ Enabling/Disabling Options

☞ SEL Components

Change this to enable or disable all features of System Event Logging during boot.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ Erasing Settings

☞ Erasing SEL

Choose options for erasing Smbios Event Log Erasing is done prior to any logging activation during reset.

Options available: No/Yes, On next reset/Yes, On every reset. Default setting is **No**.

☞ When SEL is Full

Choose options for reactions to a full System Event Log.

Options available: Do Nothing/Erase Immediately. Default setting is **Do Nothing**.

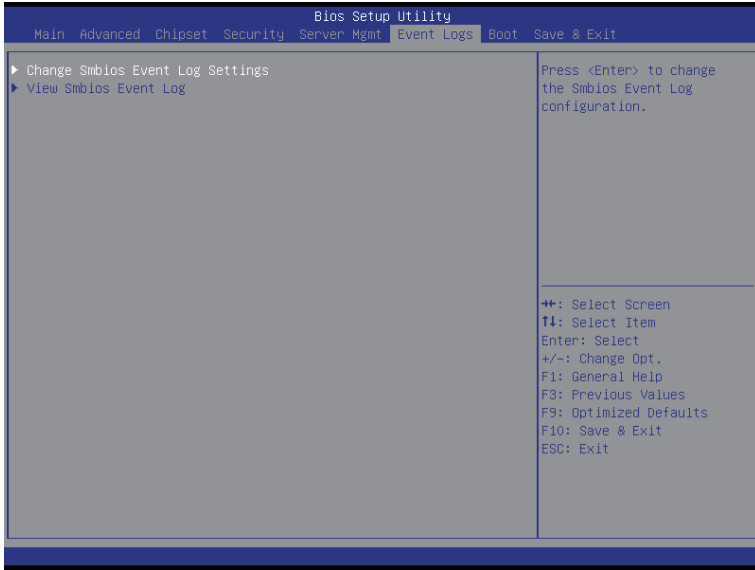
☞ Custom EFI Logging Options

☞ Log EFI Status Codes

Enable/Disable the logging of EFI Status Codes (if not already converted to legacy).

Options available: Disabled/Both/Error code/Progress code. Default setting is **Both**.

5-6 Event Logs Menu



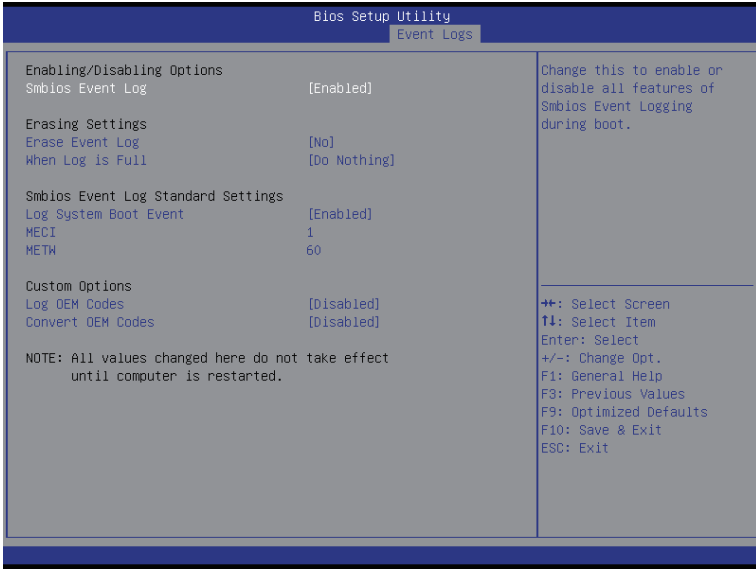
☞ **Change Smbios Event Log Settings**

Press [Enter] for configuration of advanced items.

☞ **View Smbios Event Log**

Press [Enter] to view event logs.

5-6-1 Change Smbios Event Log Settings



☞ Enabling/Disabling Options

☞ Smbios Event Log

Choose options to Enable/Disable logging of System boot event.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Erasing Settings

☞ Erasing Event Log

Choose options for erasing Smbios Event Log Erasing is done prior to any logging activation during reset.

Options available: No/Yes, On next reset/Yes, On every reset. Default setting is **No**.

☞ When Log is Full

Choose options for reactions to a full Smbios Event Log.

Options available: Do Nothing/Erase Immediately. Default setting is **Do Nothing**.

☞ Smbios Event Log Standard Settings

☞ Log System Boot Event

Choose options to Enable/Dsiable logging of System boot event.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ MECI

Multiple Event Count Increment: The number of occurrences of a duplicate event that must pass before the multi-event counter associated with the log entry is updated, specified as numeric value in the range 1 to 33. Press <+> / <-> keys to increase or decrease the desired values.

☞ **METW**

Multiple Event Time Window: The number of minutes which must pass between duplicate log entries which utilize a multiple-event counter. The value ranges from 0 to 99 minutes. Press <+> / <-> keys to increase or decrease the desired values.

☞ **Custom Options**

☞ **Log OEM Codes**

Enable/Disable the logging of EFI Status Codes as OEM Codes.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Convert OEM Codes**

Enable/Disable the converting of EFI Status Codes to Standard Smbios Type.

Options available: Enabled/Disabled. Default setting is **Disabled**.

5-6-2 View Smbios Event Log

The Smbios Event Log is a display page of Smbios Event Log information. Items on this window are non-configurable. Press Enter to View Smbios Event Log

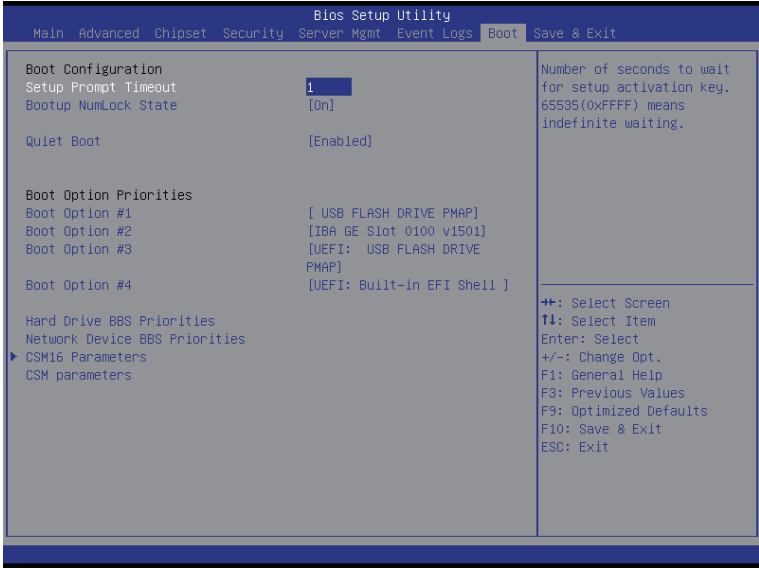
Bios Setup Utility			
Event Logs			
DATE	TIME	ERROR CODE	SEVERITY
01/01/12	00:00:01	Smbios 0x16	N/A
01/01/12	00:00:01	Smbios 0x17	N/A
01/01/12	00:00:27	Smbios 0x17	N/A
01/01/12	00:01:00	Smbios 0x17	N/A
01/01/12	00:01:49	Smbios 0x17	N/A
01/01/12	00:02:27	Smbios 0x17	N/A
11/12/13	18:41:37	Smbios 0x17	N/A
11/12/13	18:42:22	Smbios 0x17	N/A
11/12/13	18:43:58	Smbios 0x17	N/A
11/12/13	18:47:40	Smbios 0x17	N/A
11/12/13	18:48:21	Smbios 0x17	N/A
11/18/13	16:36:25	Smbios 0x17	N/A
11/18/13	16:36:53	Smbios 0x17	N/A
11/18/13	16:38:29	Smbios 0x17	N/A
11/18/13	16:39:10	Smbios 0x17	N/A
11/18/13	16:39:38	Smbios 0x17	N/A
11/18/13	16:40:48	Smbios 0x17	N/A
11/18/13	16:41:42	Smbios 0x17	N/A
12/11/13	15:49:25	Smbios 0x17	N/A
12/11/13	15:51:54	Smbios 0x17	N/A
12/11/13	15:52:32	Smbios 0x17	N/A
12/11/13	15:58:07	Smbios 0x17	N/A
12/11/13	17:00:50	Smbios 0x17	N/A

DESCRIPTION
Log Area Reset

++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F3: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

5-7 Boot Menu

The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.



☞ **Boot Configuration**

☞ **Setup Prompt Timeout**

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting." Press the numeric keys to input the desired value.

☞ **Bootup NumLock State**

Enable or Disable Bootup NumLock function.
Options available: On/Off. Default setting is **On**.

☞ **Quiet Boot**

Enables or disables showing the logo during POST.
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Boot Priority Order**

☞ **Boot Option #1/#2/#3/#4**

Press Enter to configure the boot priority.
By default, the server searches for boot devices in the following sequence:

1. UEFI device.
2. Hard drive.
3. Network device.
4. Removable device.

☞ **Hard Drive BBS Priorities**

Press Enter to configure the boot priority.

☞ **Network Device BBS Priorities**

Press Enter to configure the boot priority.

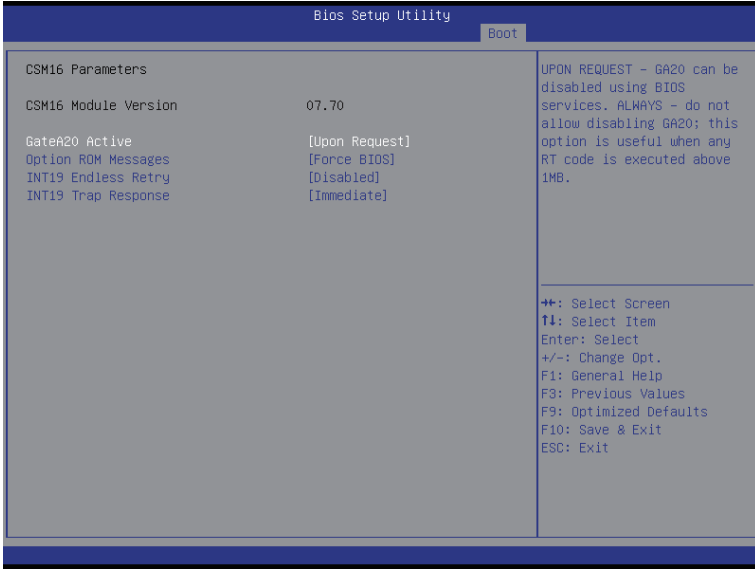
☞ **CSM16 Parameters**

Press [Enter] for configuration of advanced items.

☞ **CSM parameters**

Press [Enter] for configuration of advanced items.

5-7-1 CSM16 Parameters



☞ CSM16 Module Version

Display CSM Module version information.

☞ Gate20 Active

Upon Request: GA20 can be disabled using BIOS services.

Always: Do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Options available: Upon Request/Always. Default setting is **Upon Request**.

☞ Option ROM Messages

Option ROM Messages.

Options available: Force BIOS/Keep Current. Default setting is **Force BIOS**.

☞ INT19 Endless Retry

Enabled: Allowed headless retry boot

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ INT19 Trap Response

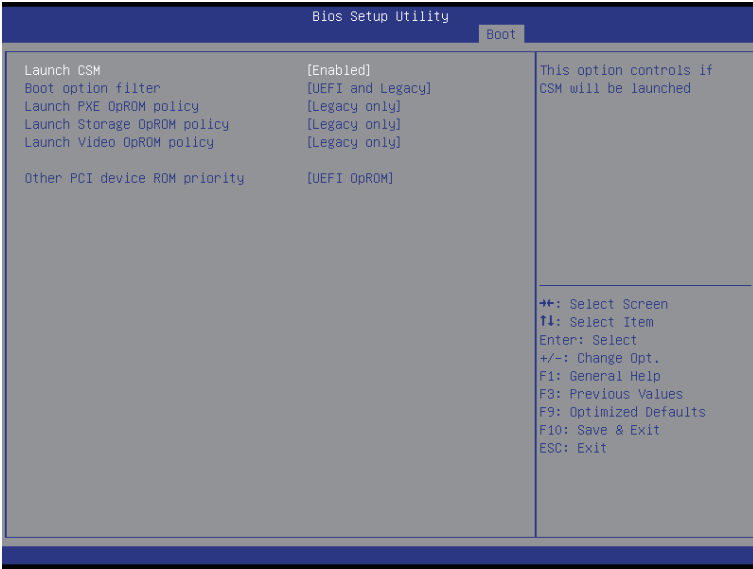
BIOS reaction on INT19 trapping by Option ROM

Immediate: execute the trap right away.

Postpone: execute the trap during legacy boot.

Options available: Immediate/Postpone. Default setting is **Immediate**.

5-7-2 CSM Parameters



☞ CSM parameters

Press Enter to configure the advanced items.

☞ Launch CSM (Compatibility Support Module)

Enable/Disable Compatibility Support Module (CSM) launch.

Options available: Enabled/Disabled. Default setting is **Enabled**.



- The following five items appear and are configurable when the **Launch CSM** is set to **Enabled**.
- If the **Launch CSM** is set to **Disabled**, the following five items will not be able to support Legacy mode.

☞ Boot option filter

Determines which devices system will boot to.

Options available: UEFI and Legacy/Legacy only/UEFI only. Default setting is **UEFI and Legacy**.

☞ Launch PXE OpROM policy

Determines which devices system will boot to.

Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first. Default setting is **Legacy Only**.

☞ Launch Storage OpROM policy

Determines which devices system will boot to.

Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first. Default setting is **Legacy only**.

☞ Launch Video OpROM policy

Determines which devices system will boot to.

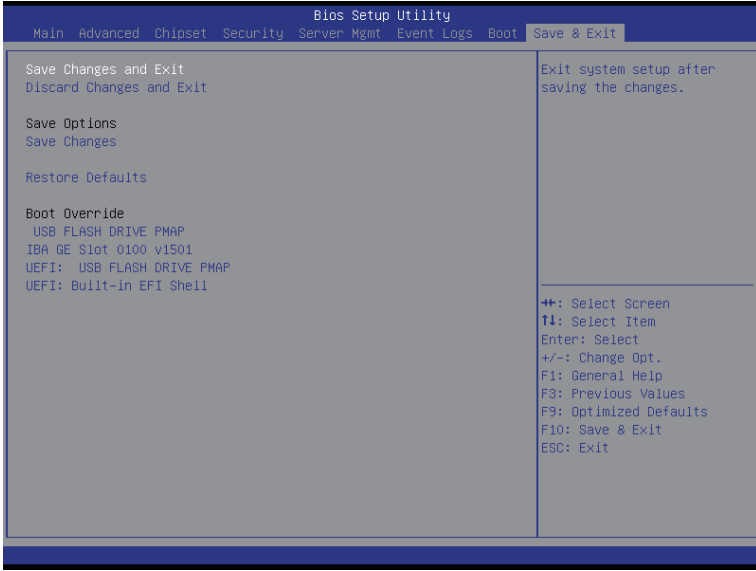
Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first. Default setting is **Legacy only**.

☞ **Other PCI device ROM priority**

For PCI devices other than Network, Mass storage or Video device, defines which OpROM to launch.
Options available: UEFI OpROM/Legacy OpROM. Default setting is **UEFI OpROM**.

5-8 Exit Menu

The Exit menu displays the various options to quit from the BIOS setup. Highlight any of the exit options then press **Enter**.



☞ **Save Changes and Exit**

Saves changes made and close the BIOS setup.

Options available: Yes/No.

☞ **Discard Changes and Exit**

Discards changes made and close the BIOS setup.

Options available: Yes/No.

☞ **Save Options**

☞ **Save Changes**

Saves changes made in the BIOS setup.

Options available: Yes/No.

☞ **Restore Defaults**

Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly.

Options available: Yes/No.

☞ **Boot Override**

Press Enter to configure the device as the boot-up drive.

☞ **UEFI: Built-in in EFI Shell**

Press <Enter> on this item to Launch EFI Shell from filesystem device.

5-9 BIOS Beep Codes

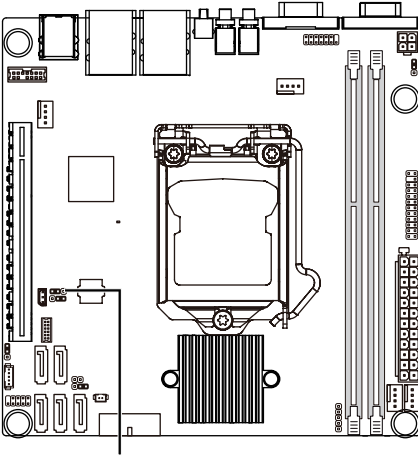
# of Beeps	Description
1	Invalid password
2	Recovery started
4	S3 Resume failed
4	DXE IPL was not found
5	No Console Input/Output Devices are found
6	Flash update is failed

5-10 BIOS Recovery Instruction

The system has an embedded recovery technique. In the event that the BIOS becomes corrupt the boot block can be used to restore the BIOS to a working state. To restore your BIOS, please follow the instructions listed below:

Recovery Instruction:

1. Change xxx.CAP to flashabl.CAP.
2. Copy flashabl.CAP to USB diskette.
3. Setting BIOS Recovery jump to enabled status.



BIOS Recovery Jumper

4. Boot into BIOS recovery.
5. Run Proceed with flash update.
6. BIOS update.

