

# GS-R11U4S

LGA1155 socket motherboard for Intel® E3® 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 quick set-up of the product, read the Quick Installation Guide included with the product.
- 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

- GS-R12T4S
- Driver CD

- 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 présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le règlement sur le brouillage radioélectrique édicté 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

 CPU	<ul style="list-style-type: none"> <li>◆ Support for Intel® Xeon® E3 series processors in the LGA1155 package</li> <li>◆ L3 cache varies with CPU</li> </ul>
 Chipset	<ul style="list-style-type: none"> <li>◆ Intel® BD82C202 (Cougar Point) PCH</li> </ul>
 Memory	<ul style="list-style-type: none"> <li>◆ 4 x 1.5V DDR3 DIMM sockets supporting up to 32 GB of system memory               <ul style="list-style-type: none"> <li>* Due to Windows 32-bit operating system limitation, when more than 4 GB of physical memory is installed, the actual memory size displayed will be less than 4 GB.</li> </ul> </li> <li>◆ Dual channel memory architecture</li> <li>◆ Support for DDR3 1333/1066 MHz memory modules</li> <li>◆ Support for ECC memory modules</li> </ul>
 LAN	<ul style="list-style-type: none"> <li>◆ 1 x Intel® 82579LM supports 10/100/1000 Mbps</li> <li>◆ 1 x Intel® 82574L supports 10/100/1000 Mbps (for iKVM server management)</li> </ul>
 Expansion Slot	<ul style="list-style-type: none"> <li>◆ 1 x PCI Express x16 slot, running at x8 (PCIE_SLOT4)</li> <li>◆ 1 x PCI slot 32-Bit/33MHz</li> </ul>
 Onboard Graphics	<ul style="list-style-type: none"> <li>◆ ASPEED AST2150 supports 32MB VRAM</li> </ul>
 Mass Storage	<ul style="list-style-type: none"> <li>◆ 4 x 3.5" Internal SATA HDDs</li> <li>◆ Support for Intel IRST SATA RAID 0, RAID 1, RAID 10</li> </ul>
 System Fans	<ul style="list-style-type: none"> <li>◆ 4 x 40x40x28mm 16000rpm</li> </ul>
 USB	<ul style="list-style-type: none"> <li>◆ Up to 6 USB 2.0/1.1 ports (2 on the front panel, 4 on the back panel)</li> </ul>
 Internal Connectors	<ul style="list-style-type: none"> <li>◆ 1 x 24-pin ATX main power connector</li> <li>◆ 1 x 8-pin ATX 12V power connector</li> <li>◆ 6 x SATA 3Gb/s connectors</li> <li>◆ 1 x PSM1 header</li> <li>◆ 1 x front panel header</li> <li>◆ 4 x USB 2.0/1.1 headers</li> <li>◆ 1 x Type A USB connector</li> <li>◆ 1 x serial port header</li> <li>◆ 1 x SPGIO header</li> <li>◆ 1 x HDD LED header</li> </ul>

 Rear Panel I/O	<ul style="list-style-type: none"> <li>◆ 4 x USB 2.0/1.1 ports</li> <li>◆ 2 x RJ-45 port</li> <li>◆ 1 x COM port</li> <li>◆ 1 x VGA port</li> <li>◆ 1 x ID Switch LED/button</li> </ul>
 Front Panel I/O	<ul style="list-style-type: none"> <li>◆ 2 x USB 2.0/1.1 ports</li> </ul>
 Front Panel LED/Buttons	<ul style="list-style-type: none"> <li>◆ 1 x Power button/LED</li> <li>◆ 1 x Reset button</li> <li>◆ 1 x NMI button/LED</li> <li>◆ 1 x HDD status LED</li> <li>◆ 1 x System status LED</li> <li>◆ 2 x LAN LEDs</li> </ul>
 I/O Controller	<ul style="list-style-type: none"> <li>◆ iTE IT8728 chip</li> </ul>
 Hardware Monitor	<ul style="list-style-type: none"> <li>◆ System voltage detection</li> <li>◆ CPU/System temperature detection</li> <li>◆ CPU/System fan speed detection</li> <li>◆ CPU/System fan speed control</li> </ul> <p style="margin-left: 20px;">* Whether the CPU/system fan speed control function is supported will depend on the CPU/system cooler you install.</p>
 BIOS	<ul style="list-style-type: none"> <li>◆ 1 x 64 Mbit flash</li> <li>◆ AMI BIOS</li> </ul>
 Environment Ambient Temperature	<ul style="list-style-type: none"> <li>◆ Operating Temperature: 5°C to 35°C</li> <li>◆ Non-operating Temperature: 0°C to 50°C</li> </ul>
Relative Humidity	<ul style="list-style-type: none"> <li>◆ 10-80% operating Humidity at 30°C</li> </ul>
 System Dimension	<ul style="list-style-type: none"> <li>◆ 440Wx43.5Hx570D (mm)</li> </ul>
 Electrical Power Supply	<ul style="list-style-type: none"> <li>◆ Fixed 1U PSU 350W 100-240VAC at 80% efficiency</li> </ul>

\* 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 Removing Chassis Cover

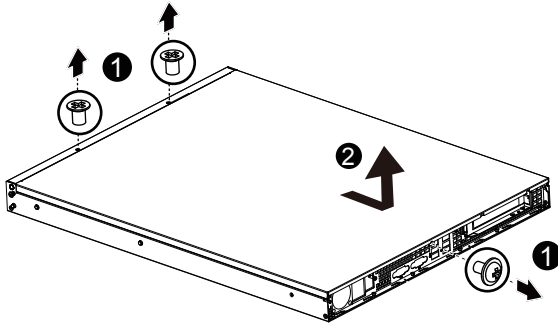


Before you remove or install the system cover

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

Follow these instructions to remove the system cover:

1. Loosen and remove the screws securing the front chassis cover.
2. Slide the cover horizontally to the back and remove the cover in the direction of the arrow.



## 2-2 Installing the CPU



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

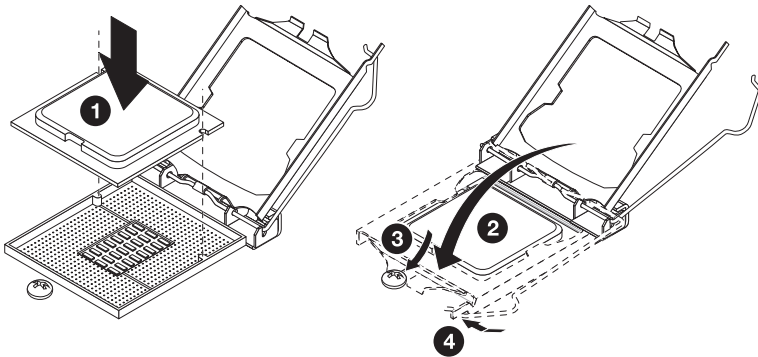
- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.
- Unplug all cables from the power outlets.
- Disconnect all telecommunication cables from their ports.
- Place the system 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:

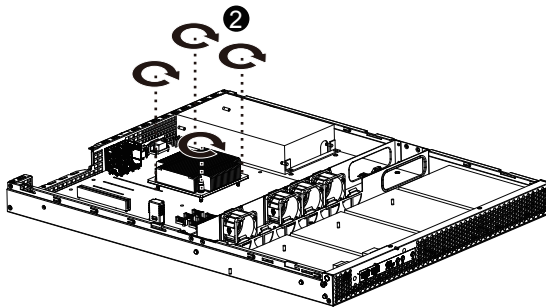
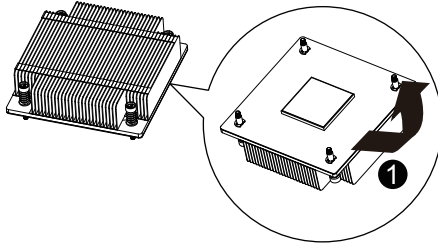
1. Raise the metal locking lever on the socket.
2. Remove the plastic covering on the CPU socket. Insert the CPU with the correct orientation. The CPU only fits in one orientation.
3. Replace the metal cover.
4. Push the metal lever back into locked position.



## 2-3 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(s) on top of the CPU and tighten the four positioning screws.





## 2-4 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.

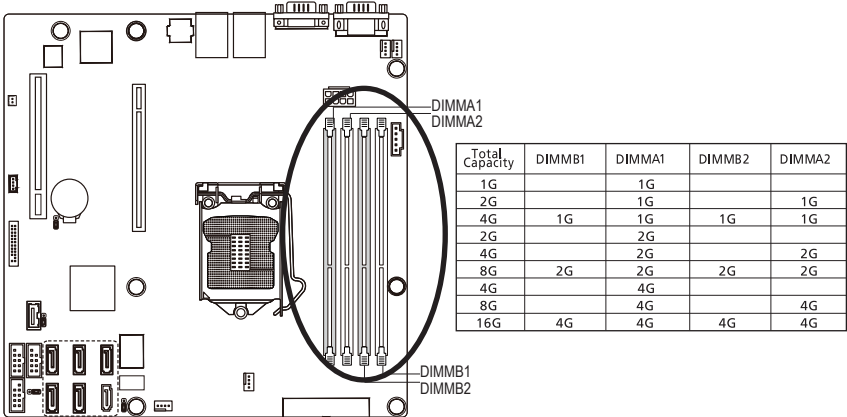
### 2-4-1 Dual Channel Memory Configuration

This motherboard provides four DDR3 memory sockets and supports Dual Channel Technology. After 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.

The four DDR3 memory sockets are divided into two channels and each channel has two memory sockets as following:

Channel A: DIMM1A, DIMM2A

Channel B: DIMM1B, DIMM2B



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.

## 2-4-2 Installing a Memory

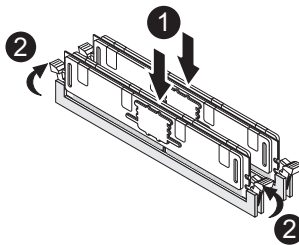


Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module.

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.



## 2-5 Installing the PCI Expansion 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 PCI card.

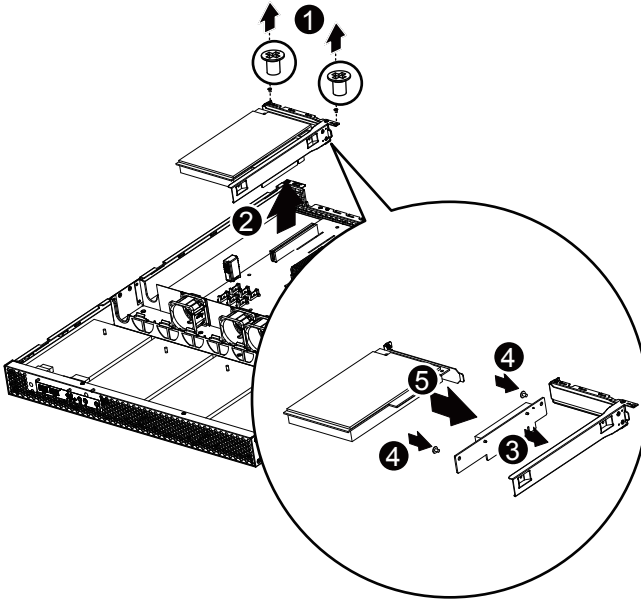
Failure to observe these warnings could result in personal injury or damage to equipment.



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

**Follow these instructions to PCI Expansion card:**

1. Loosen the riser bracket screws
2. Lift the riser bracket slightly, then pull it out from the server chassis.
3. Attach the mini card to the riser bracket.
4. Secure the mini card with screws.
5. Orient the PCI card with the riser guide slot and push in the direction of the arrow until the PCI card sits in the PCI card connector. Secure the PCI card with the screw.
6. Align the riser bracket to the system module.



## 2-6 Installing the Hard Disk Drive

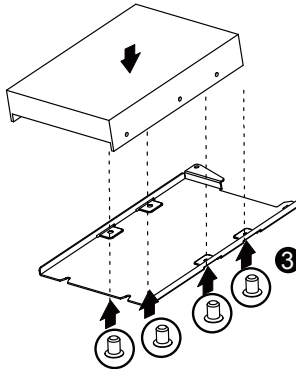
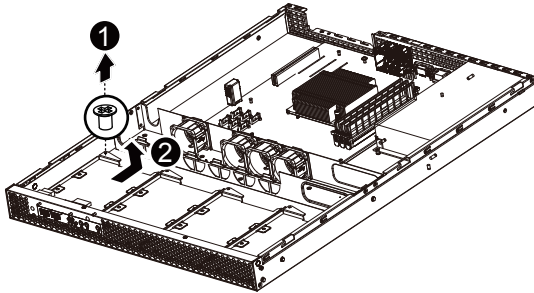
Read the following guidelines before you begin to install the Hard disk drive:



- 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:

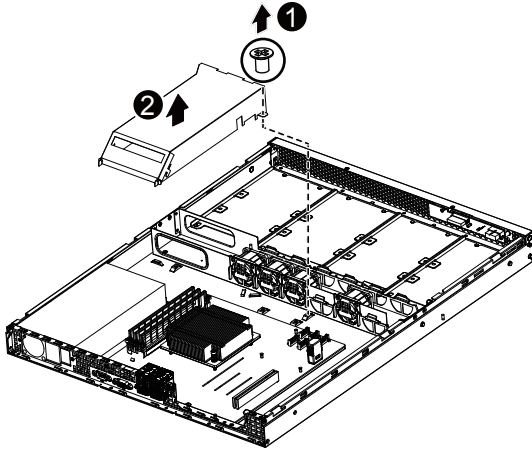
1. Loosen the screw securing the hard drive plate.
2. Slide the hard disk plate horizontally to the back and remove the plate in the direction of the arrow.
3. Secure the hard drive to the tray with four (4) screws as shown. Do not over tighten the screws. Slide the blank into the bay until it locks into place.



## 2-7 Removing and Installing the Fan Duct

Follow these instructions to remove/install the fan duct:

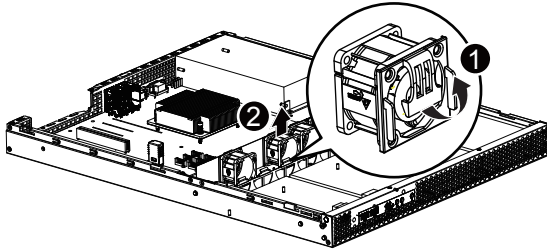
1. Loosen and remove the screws securing the fan duct.
2. Lift up to remove the fan duct
3. To install the fan duct, align the fan duct with the guiding groove. Push down the fan duct into chassis until its firmly seats



## 2-8 Replacing the FAN Assembly

Follow these instructions to replace the fan assembly:

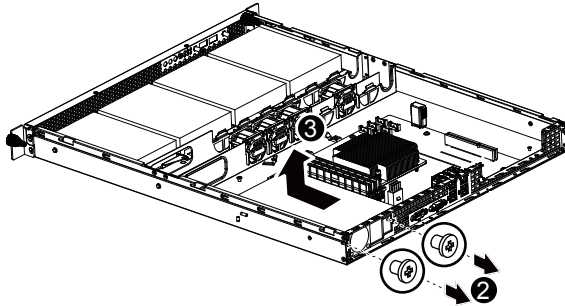
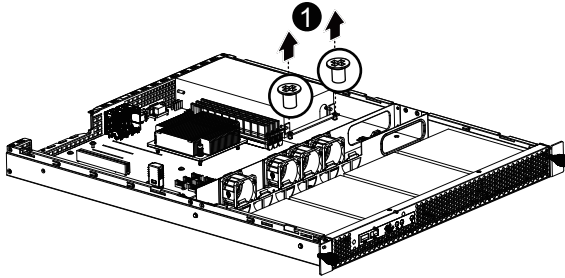
1. Pull the retaining clip on the side of the system fan along the direction of the arrow
2. Lift the system fan out of the system fan cage.
3. Reverse the previous steps to install the replacement fan assembly.



## 2-9 Replacing the Power Supply

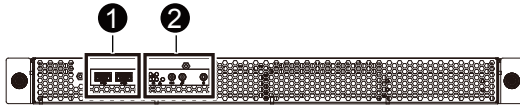
Follow these instructions to replace the power supply:

1. Disconnect all the power cables.
2. Remove the four screws securing on the power supply.
3. Lift the power supply out of the chassis in the direction of the arrow.
4. Insert the replacement power supply firmly into the chassis. Connect the AC power cord to the replacement power supply.



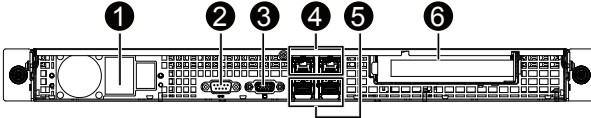
# Chapter 3 System Appearance

## 3-1 Front View



No.	Decription
1	Front USB 2.0 ports
2.	Front Panel LEDs and buttons

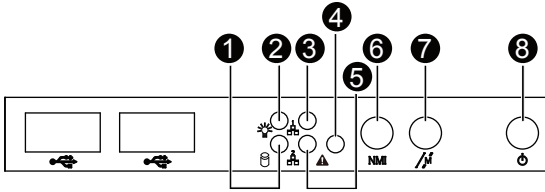
## 3-2 Rear View



No.	Decription
1	Power module
2.	Serial port
3.	VGA port
4.	RJ-45 LAN ports
5.	USB 2.0 ports
6.	Full-height riser card bay

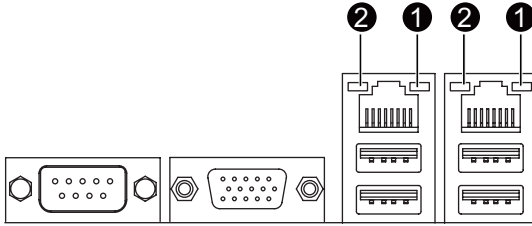


### 3-3 Front Panel LED and Buttons



No.	Name	Color	Status	Description
1	HDD Status LED	Green	On	HDD access
		N/A	Off	Idle
2	Power LED	Green	On	System has power applied to itor ACPI S0 state
		Green	Blink	System is in ACPI S1 state (sleep mode)
		N/A	Off	System is not powered on or in ACPI S5 state (power off)
		N/A	Off	System is in ACPI S4 state (hibernate mode)
3	LAN1 LED	Green	On	Link between system and network
		Green	Blink	access
		N/A	Off	No access
4	System Status LED	Green	On	Running or normal peration
		Green	Blink	System dedraged due to CPU or DIMM error
		N/A	Off	System not ready May indicate the following: <ul style="list-style-type: none"> <li>• POST error</li> <li>• NMI error</li> <li>• Processor or terminator missing</li> </ul>
5	LAN2 LED	Green	On	Link between system and network or no access
		Green	Blink	Network access
		N/A	Off	No access
7	Reset button			
8	Power button	Green	On	System is powered on.
		N/A	Off	System is powered off.

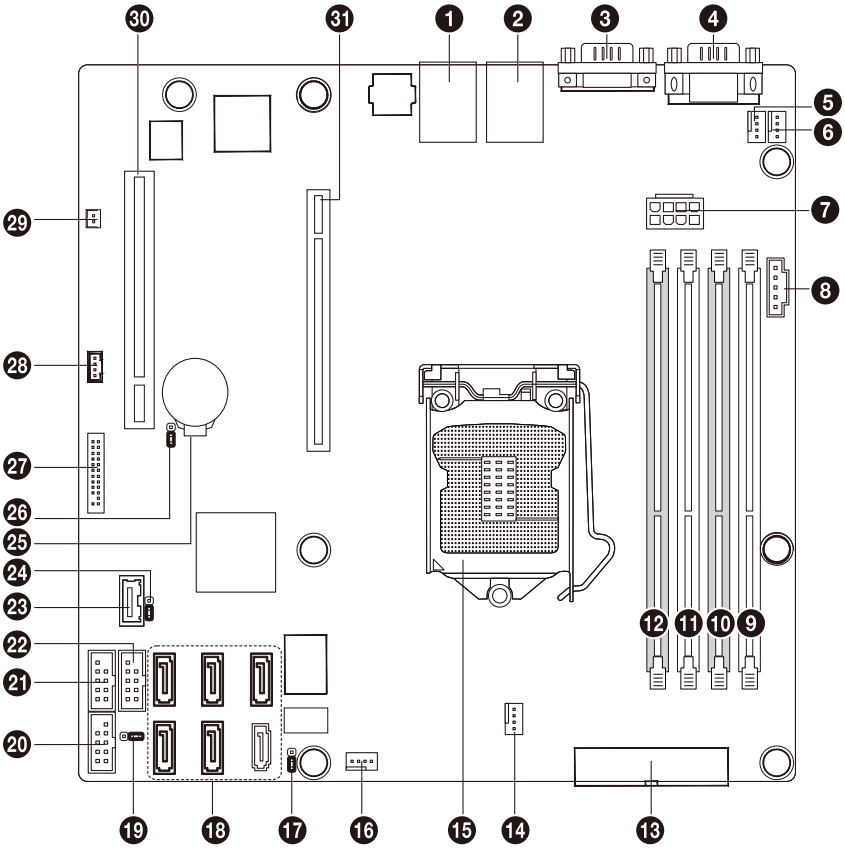
### 3-4 Rear System LAN LEDs



No.	Name	Color	Status	Description
1	Connection/ Speed LED	Orange	On	Linking at 1 Gbps data rate
		Green	On	Linking at 100 Mbps data rate
		N/A	Off	Linking at 10 Mbps data rate
2.	Activity LED	Green	Blink	Data transmission or receiving is occurring
		Green	On	No data transmission

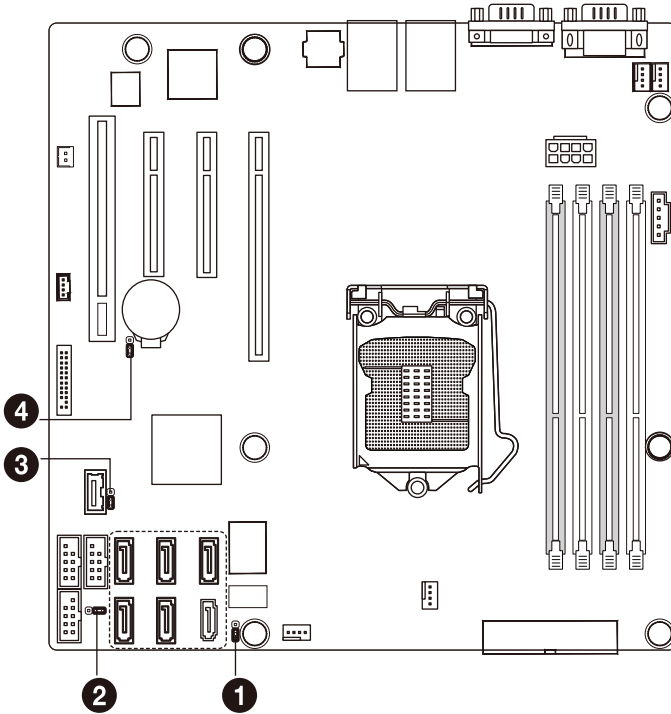
# Chapter 4 Motherboard Components

## 4-1 GA-6UASV3-SI Motherboard Components



Item	Code	Description
1	USB_LAN1	USB connectors and LAN connector
2	USB_LAN2	USB connectors and LAN connector (BMC Management LAN port)
3	VGA1	VGA port
4	COM1	Serial port
5	SYS_FAN3	System fan cable connector
6	CPU_FAN	CPU fan cable connector
7	PWR2	8 pin power connector
8	PWR_PMB	IPMB connector
9	DIMMB2	DIMM slot (channel B-2 )
10	DIMMB1	DIMM slot (channel B-1 )
11	DIMMA2	DIMM slot (channel A-2 )
12	DIMMA1	DIMM slot (channel A-1 )
13	PWR1	24 pin power connector
14	SYS_FAN2	System fan cable connector
15	CPU1	Intel LGA1155 socket
16	SYS_FAN1	System fan cable connector
17	CLR_CMOS	Clear CMOS jumper
18	SATA0~5	SATA cable connectors
19	MFGJMPR	ME recovery jumper
20	COM2	Serial cable connector
21	USB1	USB connector
22	USB2	USB connector
23	USB_A1	Type A USB connector
24	CLR_PWD	Clear passwoed jumper
25	BAT	Battery socket
26	BIOS_RVCR	BIOS recovery jumper
27	F_PANEL	Front panel cable connector
28	SGPIO	SGPIO connector
29	HDD_LED	HDD LED connector
30	PCI_SLOT1	PCI slot (32bit/33MHz)
31	PCIE_SLOT4	PCI-E slot 4 (x16 slot)

## 4-2 Jumper Setting



No.	Jumper Code	Jumper Setting
1.	MFGJMPR (ME Recovery Jumper)	1-2 Close: Enable ME recovery. (Default setting)
		2-3 Close: Disable ME recovery.
2.	CLR_CMOS (Clearing CMOS Jumper)	1-2 Close: Normal operation (Default setting)
		2-3 Close: Clear CMOS data
3.	CLR_PWD (Clearing Supervisor Password Jumper)	1-2 Close: Normal operation (Default setting)
		2-3 Close: Clear supervisor password.
4.	BIOS_RVCR (BIOS Recovery Jumper)	1-2 Close: Normal operation (Default setting)
		2-3 Close: BIOS recovery mode.

## Chapter 5 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the NVRM 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.

To access the BIOS Setup program, press the <F2> key during the POST when the power is turned on. To see more advanced BIOS Setup menu options, you can press <Ctrl> + <F1> in the main menu of the BIOS Setup program.



- 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 "Load Optimized Defaults" 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
<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: 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.

■ **Boot Options**

This setup page provides items for configuration of boot sequence.

■ **Boot Manager**

This setup page provides configuration of boot up devices.

■ **Exit**

Save all the changes made in the BIOS Setup program to the NVRM 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

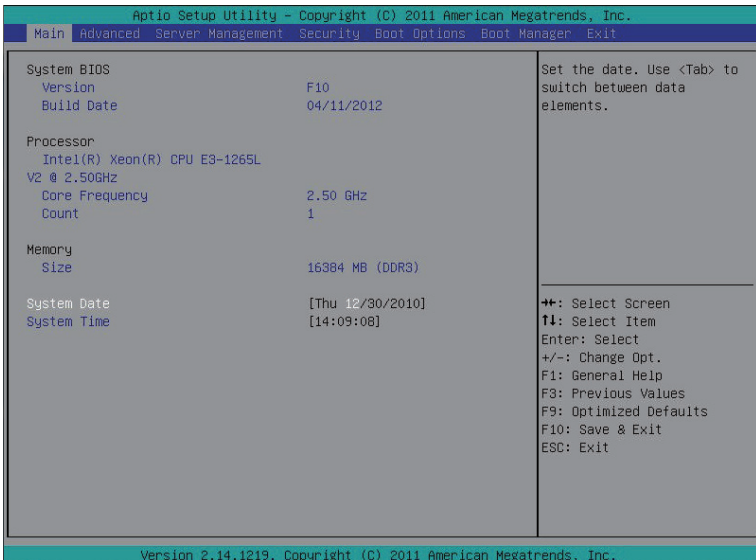
The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

## 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.



- If you do not find the settings you want in the Main Menu or a submenu, press <F1> to access more advanced options.
- When the system is not stable as usual, select the **Load User Default Values** 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.





☞ **System BIOS Information:**

☞ **BIOS Version**

Display version number of the BIOS setup utility.

☞ **BIOS Build Date**

Displays the date when the BIOS setup utility was created.

☞ **Processor Information:**

**CPU Type / CPU Core Frequency / CPU Count**

Displays the technical specifications for the installed processor.

☞ **Memory**

Determines how much total memory is present during the POST.

☞ **System Date**

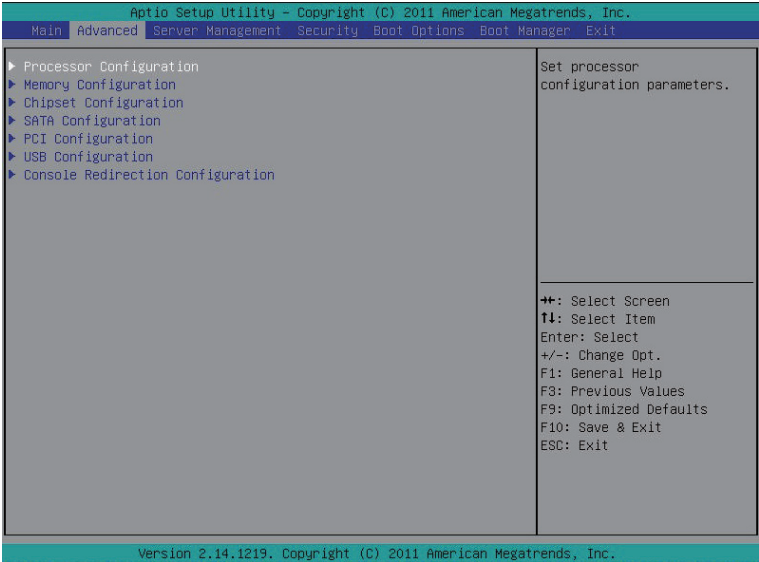
Set the date following the weekday-month-day- year format.

☞ **System Time**

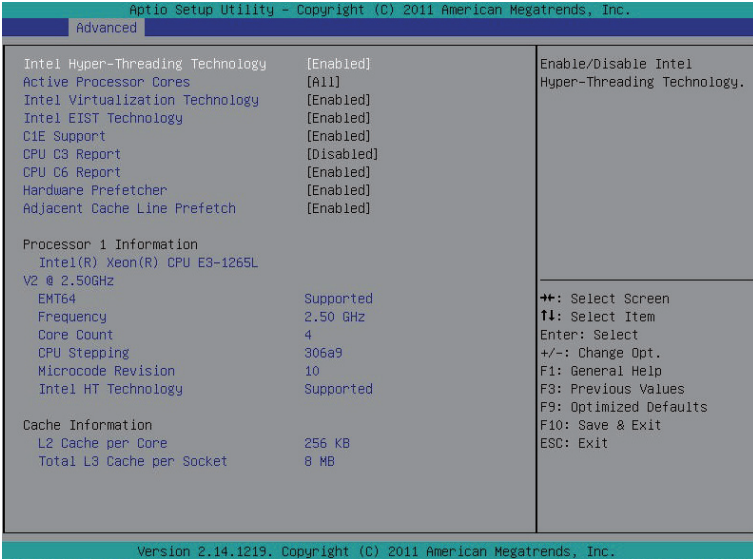
Set the system time following the hour-minute- second format.

# 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 Processor Configuration



### ☞ Intel Hyper Threading Technology

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 <sup>(Note)</sup>

Allows you to determine whether to enable all CPU cores.

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

### ☞ 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**.

### ☞ Intel EIST Support (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**.

### ☞ C1E Support (CPU Enhanced Halt) <sup>(Note)</sup>

Enables or disables Intel CPU Enhanced Halt (C1E) function, a CPU power-saving function in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption.

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

### ☞ **CPU C3/C6 Support** <sup>(Note)</sup>

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. **Auto** lets the BIOS automatically configure this setting.

Options available for CPU C3 Report: ACPI C2/ACPI C3/Disabled. Default setting is **Disabled**.

Options available for CPU C6 Report: 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**.

### ☞ **Processor Information**

#### ☞ **CPU Speed**

The processor speed is the speed at which a microprocessor executes instructions. Clock speeds are expressed in megahertz (MHz), with 1 MHz being equal to 1 million cycles per second. The faster the clock, the more instructions the CPU can execute per second.

#### ☞ **EMT64**

Displays Processor EMT64 support status.

#### ☞ **Frequency**

Displays Processor frequency information.

#### ☞ **Core Count**

Displays Processor core count information.

#### ☞ **CPU Stepping**

Display processor stepping information.

#### ☞ **Microcode Revision**

Display Microcode Revision.

#### ☞ **Intel HT Technology**

Display Intel Hyper Threading Technology function support information.

#### ☞ **Cache Information**

##### ☞ **L2 Cache per Core**

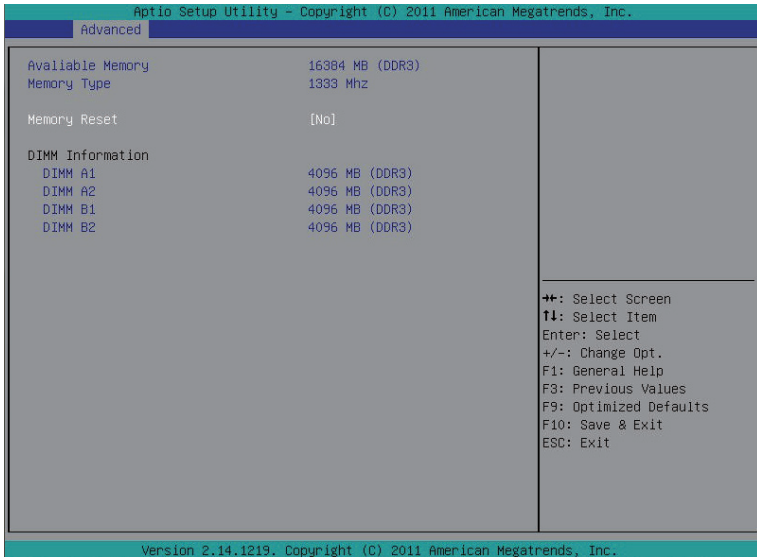
Display the information of L2 Cache per Core.

##### ☞ **Total L3 Cache per socket**

Display the information of total L3 Cache per socket.

(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.

## 5-2-2 Memory Configuration



### ☞ Available Memory

Total size of system memory detected during POST.

### ☞ Memory Type

Display information of installed memory type.

### ☞ Memory Reset

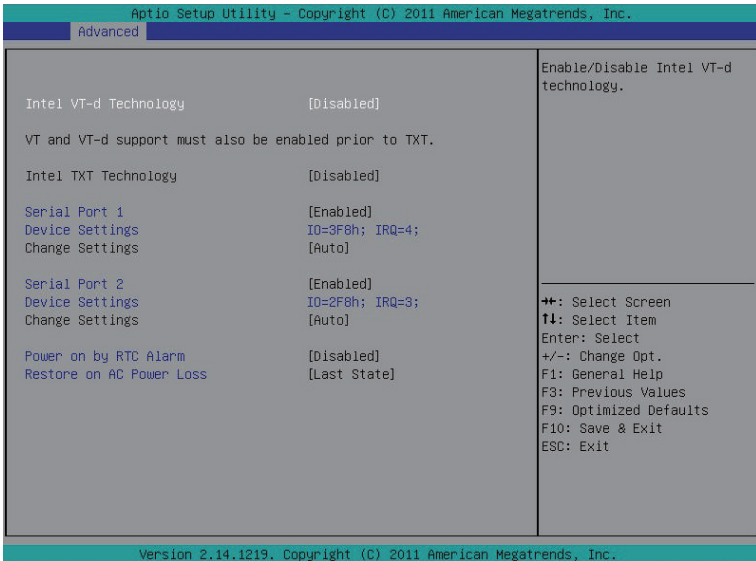
Select whether to delete the historical memory data log. System memory will be retested on the next boot-up.

Options available: Yes/No. Default setting is **No**.

### ☞ DIMM Group #A1/A2/B1/B2 Status

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

## 5-2-3 Advanced Chipset Configuration



### Intel VD-d Technology

Enable/Disable Intel VD-d Technology function.

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

### Intel TXT Technology

Enable/Disable Intel TXT Technology function.

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

### Serial Port 1/2

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

Displays Serial Port 1/2 device configuration information.

### Change Settings

Change Serial Port 1/2 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.

### Power On by RTC Alarm

Select whether to wake up the system when an RTC alarm is detected.

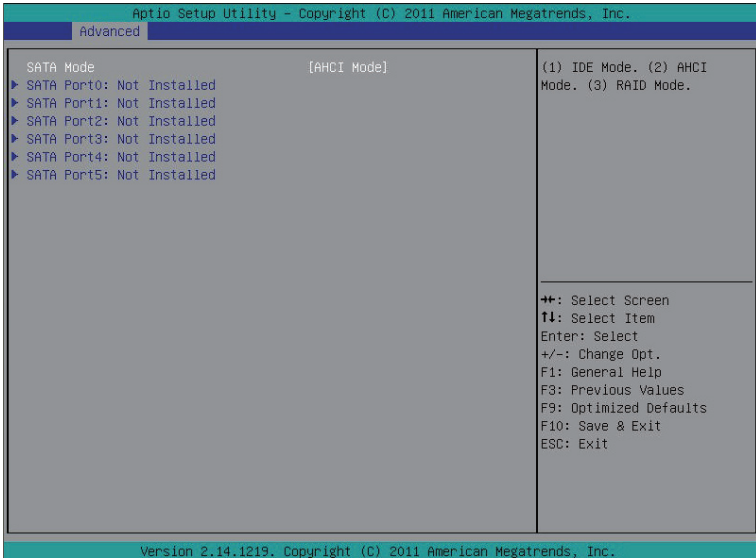
Options available: Enabled/Disabled. Default setting is **Disabled**.

### **Restore on AC Power Loss**

Defines the power state to resume to after a system shutdown that is due to an interruption in AC power. When set to Last State, the system will return to the active power state prior to shutdown. When set to Stay Off, the system remains off after power shutdown.

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

## 5-2-4 SATA Configuration



### ☞ SATA Mode

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 to the RAID setup utility at boot time.

**AHCI 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.

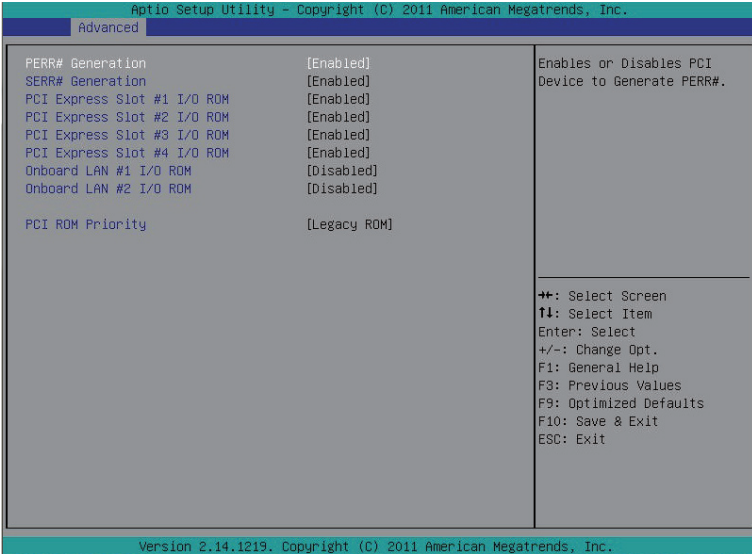
Options available: IDE/RAID/AHCI. Default setting is **AHCI Mode**.

### ☞ SATA Port 0/1/2/3/4/5

Press [Enter] to view the installed HDD devices.



## 5-2-5 PCI Configuration



### 🔗 PERR# 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 **Enabled**.

### 🔗 SERR# 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 **Enabled**.

### 🔗 PCI Express Slot 1/2/3/4 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 LAN1/2 I/O ROM

Select whether to enable the selected onboard LAN device. When enabled, device expansion ROM will be initialized.

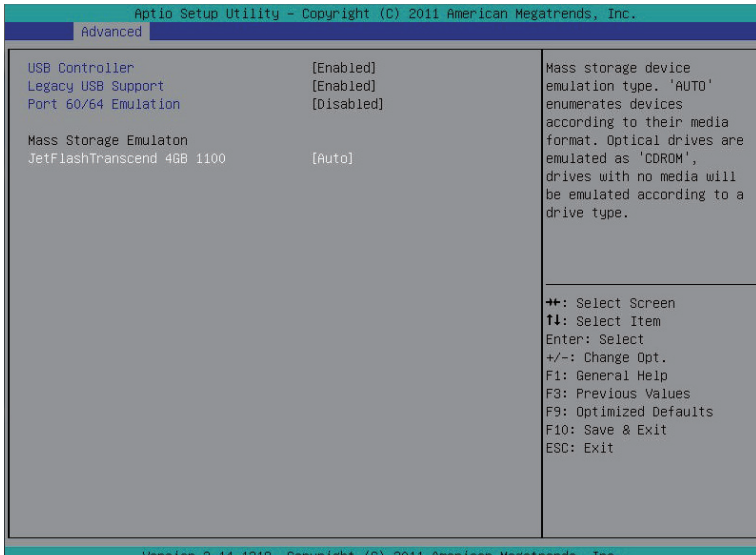
Options available: Enabled/Disabled. Default setting is **Enabled**.

### 🔗 PCI ROM Priority

In case of multiple Option ROMs (Legacy and EFI Compatible) specifies what PCI option ROM to launch.

Options available: Legacy ROM/EFI Compatible ROM. Default setting is **Legacy ROM**.

## 5-2-6 USB Configuration



### ☞ USB Controller

When enabled, the USB controller will function normally.

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

### ☞ Legacy USB Support

Enables or disables support for legacy USB devices.

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.

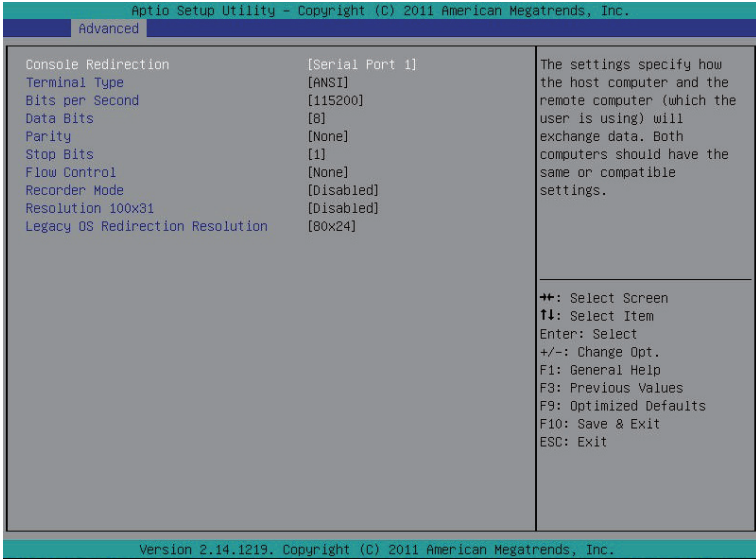
Options available: Enabled/Disabled. Default setting is **Disabled**.

### ☞ Mass Storage Emulation

Mass storage device emulation type. 'Auto' option enumerates devices according to their media format. Optical drives are emulated as 'CD-ROM', drives with no media will be emulated according to a drive type.

Options available: Auto/Floppy/Forced FDD/ Hard Disk/CD-ROM.. Default setting is **Auto**.

## 5-2-7 Console Redirection



### ☞ Console Redirection <sup>(Note)</sup>

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

Options available: Serial Port1/Serrial Port2/Disabled. Default setting is **Disabled**.

### ☞ 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.

Mark and Space Parity do not allow for error detection.

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

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

☞ **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.

☞ **Recorder Mode**

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

Options available: Enabled/Disabled.

☞ **Resolution 100x31**

Enables or disables extended terminal resolution.

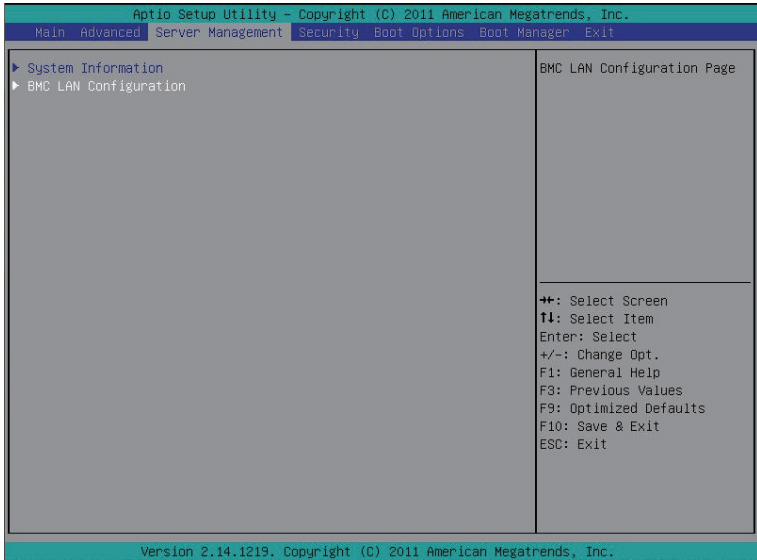
Options available: Enabled/Disabled.

☞ **Legacy OS Redirection Resolution**

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

Options available: 80x24/80X25.

## 5-3 Server Management Menu



### System Information

Displays basic system ID information, as well as BIOS version. Press Enter to access the related submenu.

### BMC LAN Configuration

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

### 5-3-1 System Information

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

The screenshot shows the 'Server Management' submenu of the Aptio Setup Utility. The window title is 'Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.' and the submenu title is 'Server Management'. The main content area is divided into two columns. The left column displays system information, and the right column contains navigation instructions.

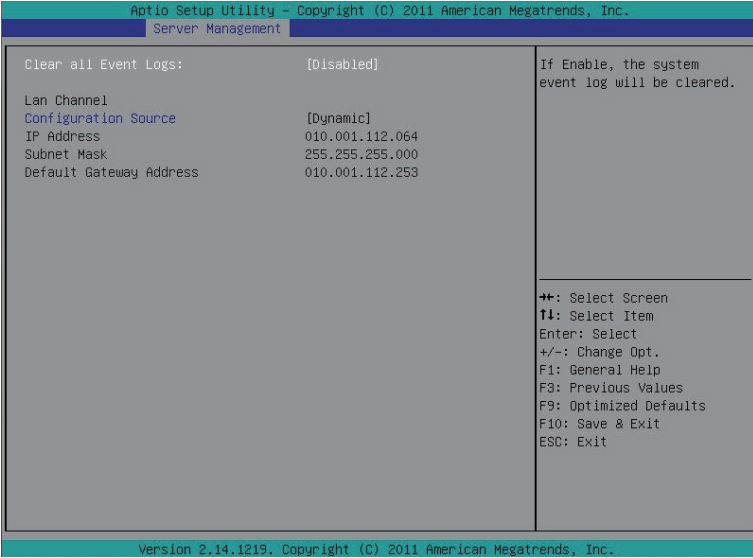
System Information	
System Product Name	GS-R11U4S
System Serial Number	0123456789AB
Base Board Product Name	GS-R11U4S
Base Board Serial Number	0123456789AB
UUID	FFFFFFFFFFFFFFFF
UUID	FFFFFFFFFFFFFFFF
NIC1 MAC Address	50-E5-49-8C-F1-65
NIC2 MAC Address	50-E5-49-8C-F1-66
BMC Information	
BMC Firmware Version	01.09
SDR Version	01.00
FRU Version	01.02

Navigation instructions:

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

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

## 5-3-2 BMC LAN Configuration



### ☞ **Clear all Event Logs**

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

### ☞ **LAN Channel**

### ☞ **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**

Display IP Address information.

### ☞ **Subnet Mask**

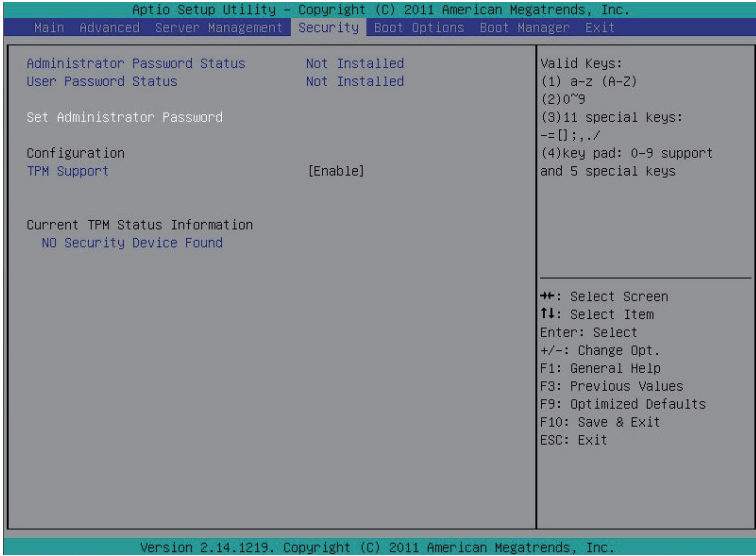
Display Subnet Mask information.

### ☞ **Default Gateway Address**

Display Default Gateway Address information.

# 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 Status**

This parameter indicates whether a Administrator Password has been assigned.

☞ **User Password Status**

This parameter indicates whether a user password has been assigned.

To clear the password, press <Enter> on the password item and when requested for the password, press <Enter> again. The message "PASSWORD DISABLED" will appear, indicating the password has been cancelled.

☞ **Set Administrator Password**

Press Enter to configure the Administrator password.

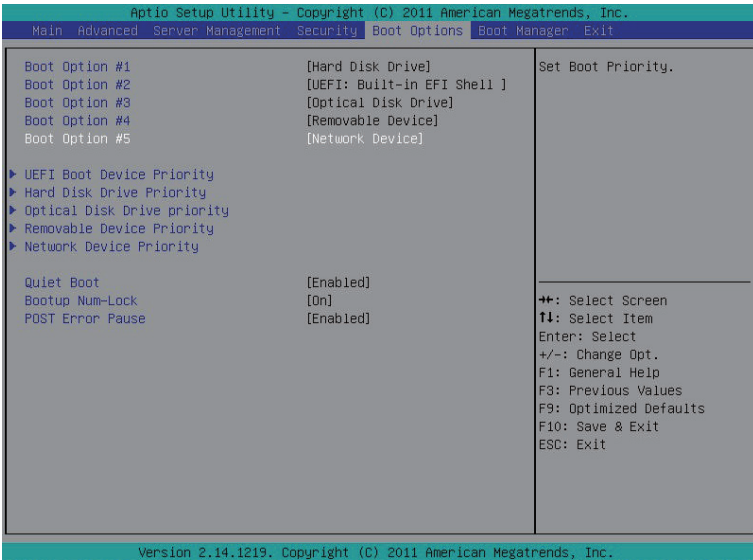
☞ **Set User Password**

Press Enter to configure the user password.



## 5-5 Boot Option Menu

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



By default, the server searches for boot devices in the following sequence:

1. UEFI device.
2. Hard drive.
3. Optical disc drive.
4. Removable device.
5. Network device

### ☞ UEFI Boot Device Priority

Press Enter to configure the boot priority.

### ☞ Hard Disk Drive Priority

Press Enter to configure the boot priority.

### ☞ Optical Disk Drive Priority

Press Enter to configure the boot priority.

### ☞ Removable Disk Drive Priority

Press Enter to configure the boot priority.

### ☞ Network Device Priority

Press Enter to configure the boot priority.

### ☞ Quiet Boot

Enables or disables the quick boot function to speed up the system boot-up process to shorten the waiting time for entering the operating system and to deliver greater efficiency for daily use.

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

☞ **Bootup NumLock**

Enable or Disable Bootup NumLock function.

Options available: On/Off. Default setting is **On**.

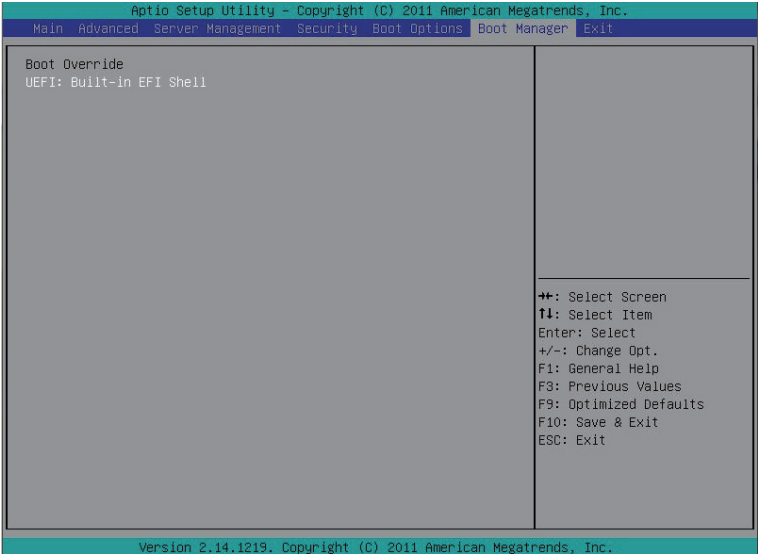
☞ **POST Error Pause**

Select whether to pause POST when a boot-up error is detected.

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

# 5-6 Boot Manager

The Boot manager menu allows you to specify the boot-up drive. BIOS setup will display an error message if the drive(s) specified is not bootable.

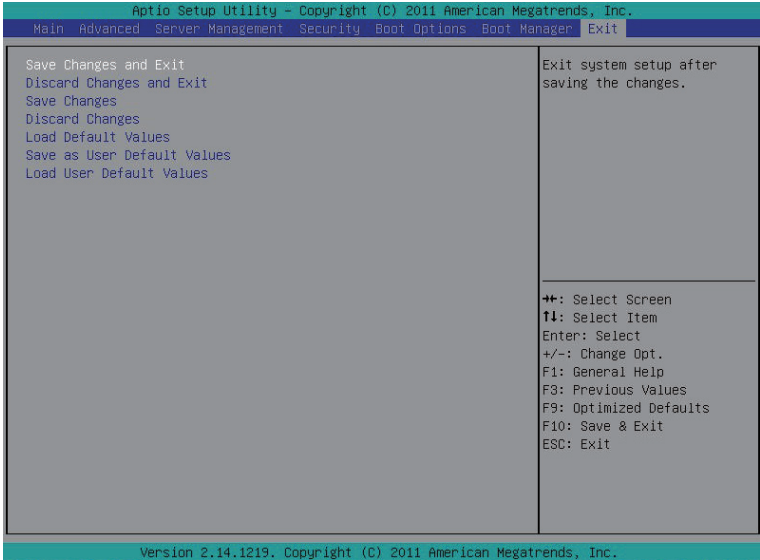


## ☞ Built-in EFI Shell

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

# 5-7 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 Changes**  
Saves changes made in the BIOS setup.  
Options available: Yes/No.
- ☞ **Discard Changes**  
Discards all changes made in the BIOS setup.  
Options available: Yes/No.
- ☞ **Load Default Values**  
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.
- ☞ **Save as User Default Values**  
Saves as user default and close the BIOS setup.  
Options available: Yes/No.

☞ **Load User Default Values**

Loads the user default settings for all BIOS setup parameters.  
Options available: Yes/No.