GS-R22PXL
GS-R22PFL

Dual LGA1356 socket motherboard for Intel® Xeon® series processors

Service Guide

Rev. 1.0

Copyright

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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 Serice 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 toextend 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 suchcases, please contact your regional offices or the responsible personnel/channel to provide youwith further technical details.

2. Please note WHEN ORDERING SPARE PARTS, you should check the most up-to-date informationavailable 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 SERVICEPROVIDERS, your GIGABYTE office may have a DIFFERENT part number code to thosegiven in the FRU list of this printed Service Guide. You MUST use the list provided by yourregional GIGABYTE office to order FRU parts for repair and service of customer machines.

Table of Contents

Box Contents

☑ GS-R22PXL/GS-R22PFL
☑ 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 operateyour 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 foryour 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 poweroutlet. This is a safety feature. The equipment grounding should be in accordance with local and nationalelectrical codes. The equipment operates safely when it is used in accordance with its marked electricalratings 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 youprovide adequate space around the system for ventilation when you set up your work area. Never insertobjects of any kind into the ventilation openings.
- To avoid electrical shock, always unplug all power cables and modem cables from the wall outletsbefore 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, ot Local AreaNetwork 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 electricalshock 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 internalcomponents, 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 radiointerfer-enceIn 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 againstharmful interference when the equipment is operated in a commercial environment. This equipmentgenerates, uses, and can radiate radio frequency energy and, if not installed and used in accordance withthe instruction manual, may cause harmful interference to radio communications. Operation of thisequipment in a residential area is likely to cause harmful interference in which case the user will berequired 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 interferencecaused by using other than recommended cables and connectors or by unauthorized changes ormodifications to this equipment. Unauthorized changes or modifications could void the user's authority tooperate 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.

Canadian Department of Communications Compliance Statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digitalapparatus 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 auxappareils numeriques de Classe A prescrites dans le reglement sur le brouillage radioelectrique edicte parIndustrie Canada.

Class A equipment

This device has been tested and found to comply with the limits for a class A digital device pursuantPart 15 of the FCC Rules. These limits are designed to provide reasonable protection againstharmful interference when the equipment is operated in a commercial environment. This equipmentgenerate, uses, and can radiate radio frequency energy, and if not installed and used in accordancewith the instructions, may cause harmful interference to radio communication. Operation of thisequipment in a residential area is likely to cause harmful interference, in which case the user will berequired to correct the interference at personal expence.

However, there is no guarantee that interference will not occur in a particular installation. If thisdevice does cause harmful interference to radio or television reception, which can be determined bytuning the device off and on, the user is encouraged to try to correct the interference by on or more ofthe 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 isconnected'Consult the dealer or an experienced radio/television technician for help.

WEEE Symbol Statement

The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or where you purchased the product for details of environmentally safe recycling.

 When your electrical or electronic equipment is no longer useful to you, "take it back" to your local or regional waste collection administration for recycling.

 If you need further assistance in recycling, reusing in your "end of life" product, you may contact us at the Customer Care number listed in your product's user's manual and we will be glad to help you with your effort.

Battery Warning: Incorrectly installing a battery or using incompatible battery may increase the risk of ifre explosion. Replace the battery only with the same or equivalent type.

- Do not disassemble, crush, punchture batteries.
- Do not store or place your battery pack next to or in a heat source such as a fire, heatgenerating appliance, can or exhaust vent. Heating battery cells to temperatures above $65^{\circ}C$ ($149^{\circ}F$) can cause explosion or fire.
- Do not attempt to open or service batteries. Do not dispose of batteries in a fire or with household waste.

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	◆	Support for Dual Intel® Xeon® E5-2400 processors in 1356 sockets
	◆	Intel® Xeon® Quad/Eight Core in LGA 1356 socket
	◆	Supports QuickPath Interconnect up to 8GT/s
	◆	Enhanced Intel SpeedStep Technology (EIST) & Demand BasedSwitch (DBS)
	◆	Enhanced Intel SpeedStep Technology (EIST)
	◆	Support Intel Virtualization Technology (VT)
Chipset	◆	Intel® C602 (Patsburg) Chipset
Memory	◆	12 x 1.5V DDR3 DIMM sockets supporting up to 384 GB of systemmemory
	◆	12 x 1.35V DDR3L DIMM sockets supporting up to 384 GB of system memory
	◆	3 channel memory architecture
	◆	Support for 1066/1333/1600 memory modules
	◆	Support for ECC RDIMM/ UDIMM memory modules
LAN	◆	2 x Intel® 82574L supports 10/100/1000 Mbps
	◆	1 x KVM management LAN port
Expansion Slot	◆	2 x PCI Express x16 slot, running at x16 (Gen3/PCIE_1/PCIE_2)
	◆	1 x PCI Express x8 slot, running at x4 (Gen3/PCIE_3)
	◆	1 x PCI Express x8 slot, running at x4 (Gen3/PCIE_4)
	◆	1 x PCI Express x4 slot, running at x1 (Gen2/PCIE_5)
Onboard Graphics	◆	ASPEED® AST2300 supports 128MB VRAM
Mass Storage	◆	12 x 3.5" Hot-Swap SATA HDDs (GS-R22PXL)
	◆	24 x 2.5" Hot-Swap SATA HDDs (GS-R22PFL)
	◆	Support for Intel IRST SATA RAID 0, RAID 1, RAID 5, RAID 10
System Fans	◆	4 x 80x80x38mm 9000rpm
USB	◆	Up to 8 USB 2.0/1.1 ports (4 on the back panel, 4 additional ports via the USB brackets connected to the internal USB headers)
Internal Connectors	◆	1 x 24-pin ATX main power connector
	◆	2 x 8-pin ATX 12V power connector
	◆	2 x Mini SAS connectors
	◆	2 x SATA 6Gb/s connectors
	◆	4 x SATA 3Gb/s connectors
	◆	1 x PMBus header
	◆	2 x CPU fan header
	◆	4 x System fan header
	◆	1 x Front panel header
	◆	2 x USB 2.0/1.1 header
	◆	1 x TPM header
	◆	1 x RAID KEY header
	◆	1 x Serial port header
	◆	1 x IPMB header
	◆	1 x SATA SPGIO header

	Rear Panel I/O	◆ 4 x USB 2.0/1.1 ports
		◆ 2 x RJ-45 port
		◆ 1 x 10/100 server management LAN
		◆ 1 x COM port
		◆ 1 x VGA port
		◆ 1 x ID Switch button
	Front Panel LED/Buttons	◆ 1 x Power button/LED
		◆ 1 x System status LED
		◆ 1 x ID Switch button/LED
		◆ 1 x Reset button
		◆ 2 x LAN LEDs
		◆ 1 x HDD status LED
	I/O Controller	◆ ASPEED® AST2300 BMC chip
	Hardware Monitor	◆ System voltage detection
		◆ CPU/System temperature detection
	BIOS	◆ 1 x 64 Mbit flash
		◆ AMI BIOS
	Environment Ambient Temperature	◆ Operating Temperature: 5○C to 35○C
		◆ Non-operating Temperature: 0○C to 50○C
	Relative Humidity	◆ 10-80% operating Humidity at 30○C
	System Dimension	◆ 430Wx87Hx711.2D (mm)
	Electrical Power Supply	◆ Hot-plug 1U PSU 600W 100-240VAC at 80 plus gold level (GS-R22PXL)
		◆ Hot-plug 2U PSU 750W 100-240VAC at 80 plus gold level (GS-R22PFL)

Intel C600 Upgrade ROM SKUs:

Upgrade ROM SKU#	SCU Ports	Protocol Enabled	Intel RSTe SAS RAID 5
Patsburg-A; no upgrade ROM	4 ports	SATA Only	SATA RAID 5
1	4 ports	SATA/SAS	No
2	4 ports	SATA/SAS	Yes
5	8 ports	SATA/SAS	No
6	8 ports	SATA/SAS	Yes
9	8 ports	SATA Only	SATA RAID 5

* 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 replaceany component.

- Back up all important system and data files before performing any hardwareconfiguration.
- 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 back cover.
2. Loosen and remove the screws securing the front cover.
3. Remove the front cover.
4. Slide the back cover toward the rear of the chassis to disengage it.
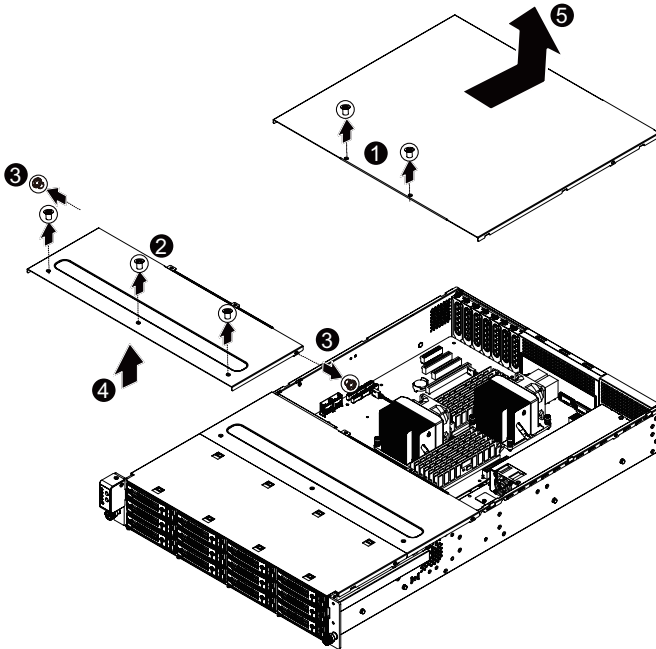
2-2   Installing the CPU

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.   Push down the indentation located at the side of the back chassis and slide toward to remove the back chassis cover.
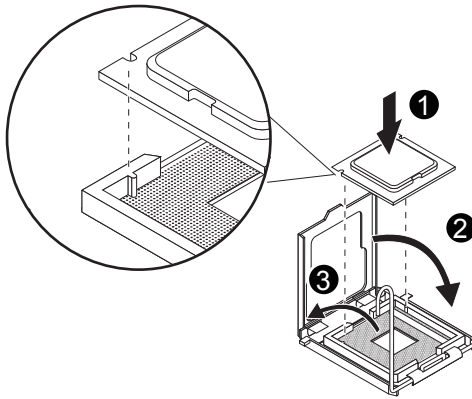
2-3   Installing the Heat Sink

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.

WARNING!
- When you are installing the heat sink on the CPU, ensure the cooling fan is facing the rear I/O of the system.
- Improper installation could cause system overheating and damage to equipment.
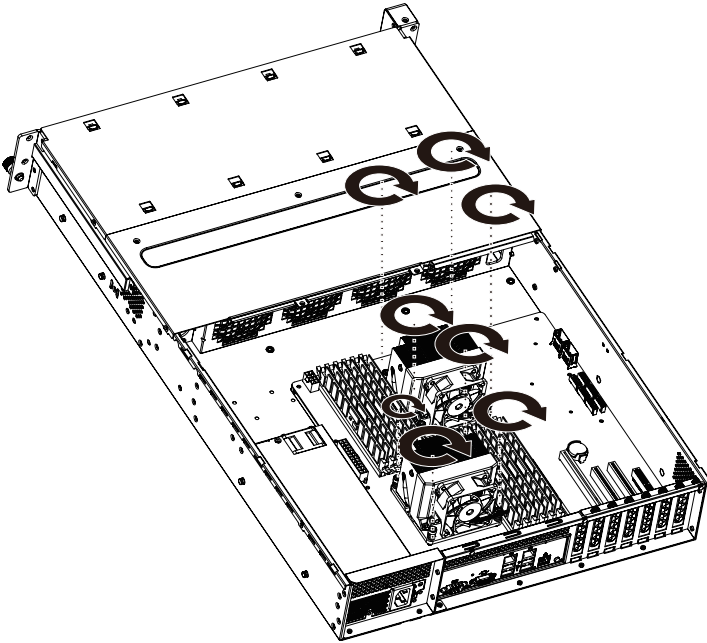
2-4 Installing the Memory

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 Three Channel Memory Configuration

The system provides 12 DDR3 memory sockets for per CPU and supports Three Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling Three Channel memory mode will be triple of the original memory bandwidth.

The six DDR3 memory sockets are divided into three channels each channel has two memory sockets as following:

Channel 1: DDR3_P0_A0, DDR3_P0_A1 (For pimary CPU)
　　　　　 DDR3_P1_D0, DDR3_P1_D1 (For secondary CPU)
Channel 2: DDR3_P0_B0, DDR3_P0_B1(For pimary CPU)
　　　　　 DDR3_P1_E0, DDR3_P1_E1 (For secondary CPU)
Channel 3: DDR3_P0_C0, DDR3_P0_C1(For pimary CPU)
　　　　　 DDR3_P1_F0, DDR3_P1_F1 (For secondary CPU)

R-DIMM	Channel 1	Channel 2	Channel 3
	DDR3_P0_A0 DDR3_P0_A1 DDR3_P1_D0 DDR3_P1_D1	DDR3_P0_B0 DDR3_P0_B1 DDR3_P1_E0 DDR3_P1_E1	DDR3_P0_C0 DDR3_P0_C1 DDR3_P1_F0 DDR3_P1_F1
	Single-Rank	Single-Rank	Single-Rank
	Dual-Rank	Dual-Rank	Dual-Rank
	Quad-Rank	Quad-Rank	Quad-Rank

U-DIMM	Channel 1	Channel 2	Channel 3
	DDR3_P0_A0 DDR3_P0_A1 DDR3_P1_D0 DDR3_P1_D1	DDR3_P0_B0 DDR3_P0_B1 DDR3_P1_E0 DDR3_P1_E1	DDR3_P0_C0 DDR3_P0_C1 DDR3_P1_F0 DDR3_P1_F1
	Single-Rank	Single-Rank	Single-Rank
	Dual-Rank	Dual-Rank	Dual-Rank

Due to CPU limitation, read the following guidelines before installing the memory in Dual or 3 Channel mode.

Dual Channel--
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 modules, it is recommended that memory of th same capacity, brand, speed, and chips be used. When enabling Dual Channel mode with two memory modules, be sure to install them in the DDR3_P0_C0 and DDR3_P0_C1 sockets for primary CPU; install DDR3_P1_F0 and DDR3_P1_F1 for secondary CPU.

3 Channel--
1. 3 Channel mode cannot be enabled if only one or two DDR3 memory modules are installed.
2. When enabling 3 Channel mode with three, four or six modules, it is recommended that memory of the same capacity, brand, speed, and chips be used. When enabling 3 Channel mode with three memory modules, be sure to install them in the DDR3_P0_A0, DDR3_P0_B0 and DDR3_P0_C0 sockets for primary CPU; install DDR3_P1_D0, DDR3_P1_E0 DDR3_P1_F0 for secondary CPU.

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 want to remove the DIMM module.

Hardware Installation
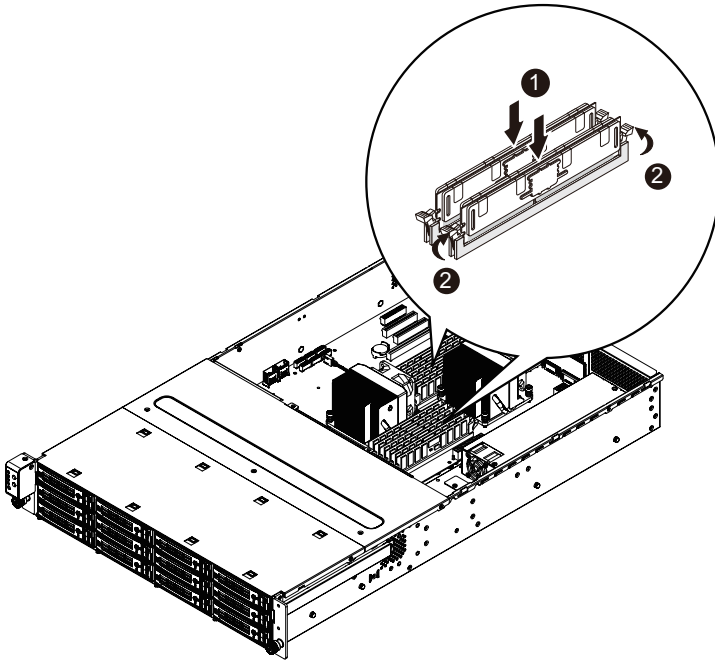
2-5 Installing the PCI Expansion Card

⚠ • 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. Remove the securing screw on the PCI bracket.
2. Insert the card into the selected slot and secure the expansion card with screw.
   Make sure that the card is properly seated.
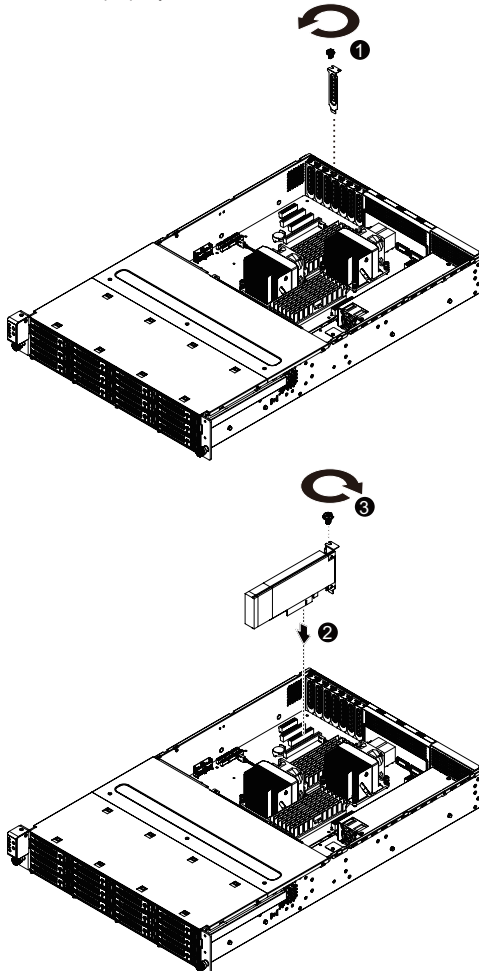
2-6   Installing the Hard Disk Drive

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.

2-6-1   GS-R22PXL Hard Disk Drive Installation

Follow these instructions to install the 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 thescrews.
5.   Slide the blank into the bay until it locks into place.
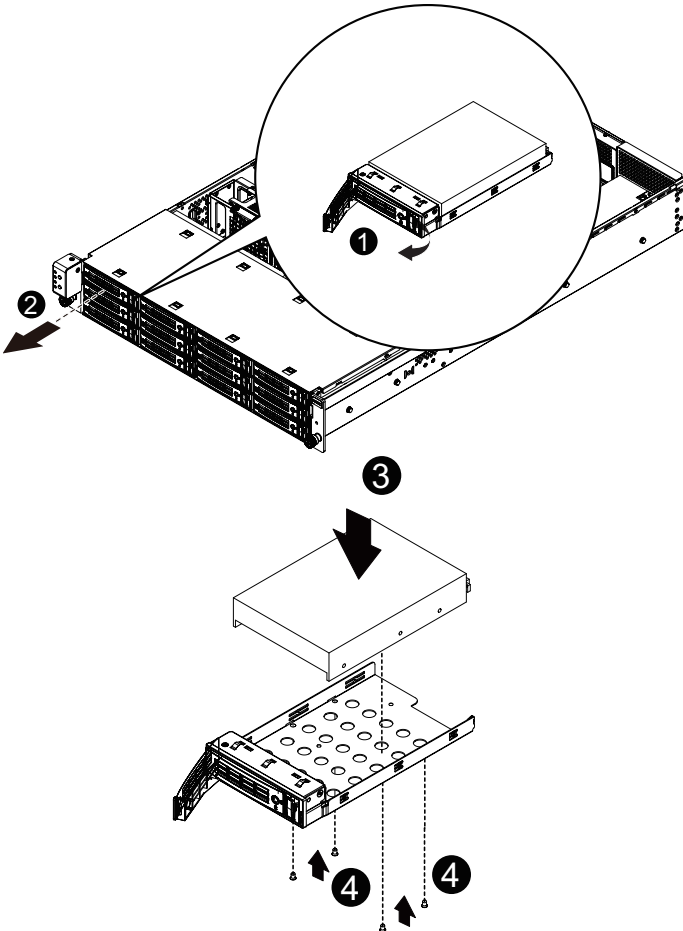
2-6-1   GS-R22PFL Hard Disk Drive Installation

Follow these instructions to install the 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 thescrews. Slide the blank into the bay until it locks into place.
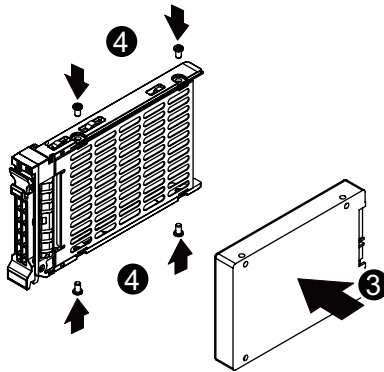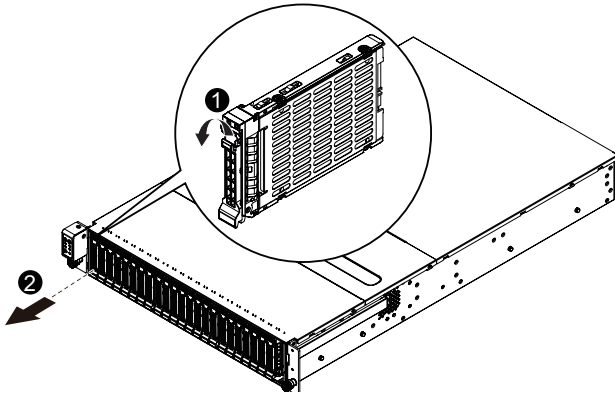
2-7   Replacing the FAN Assemblly

Follow these instructions to replace the fan assembly:

1.   Lift up the fan assembly from the chassis.
2.   Reverse the previous step to install the replacement fan assembly.
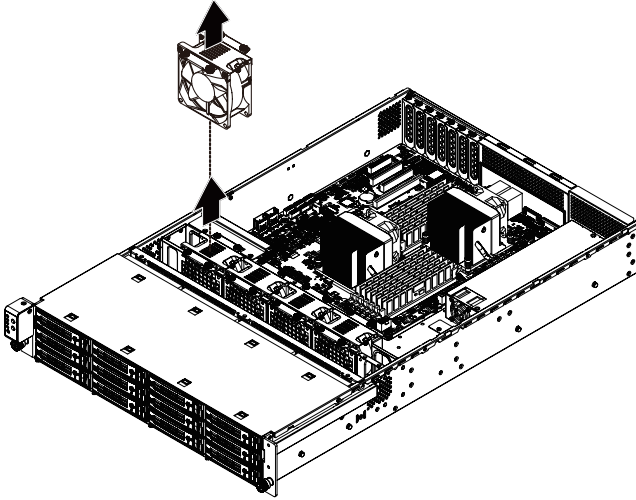
2-8 Replacing the Power Supply

2-8-1 Install a fixed power supply module (GS-R22PXL)
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.
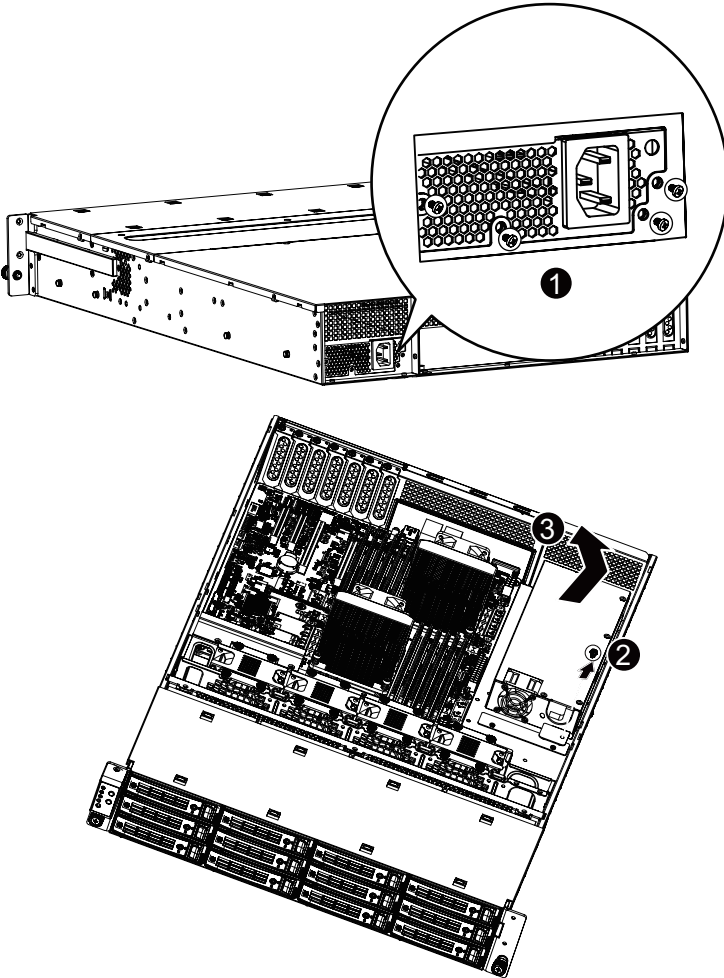
2-8-2 Install a hot-swap power supply module (GS-R22PFL)
Follow these instructions to replace the power supply:

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

Hardware Installation
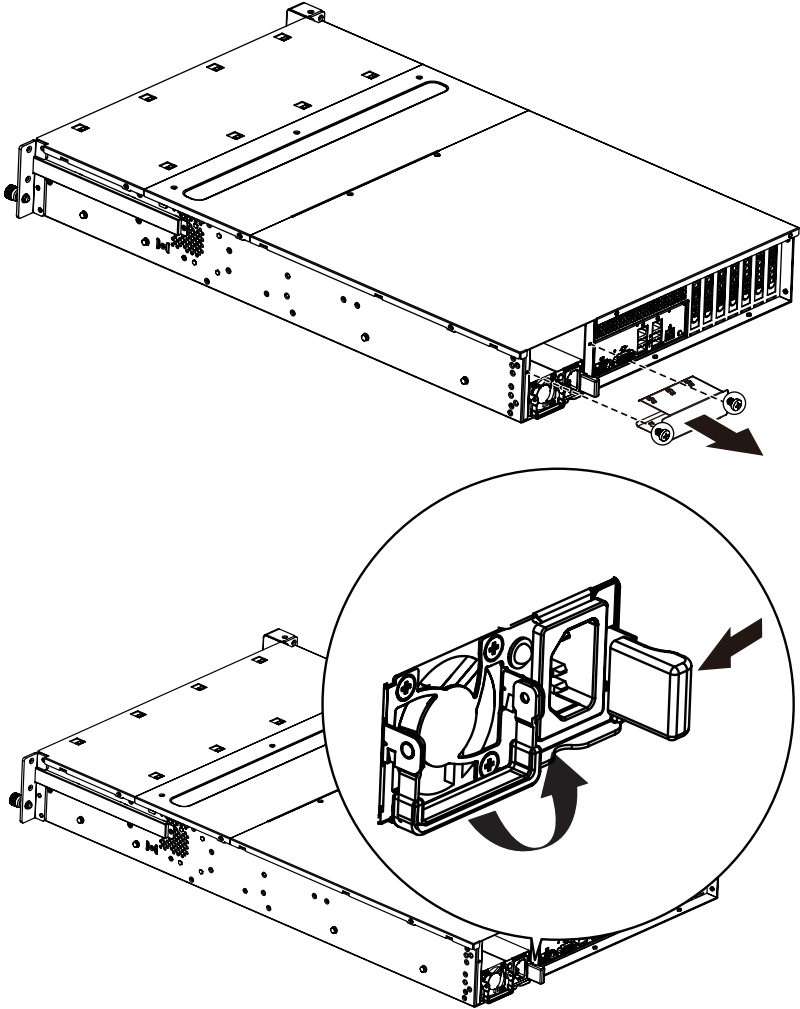
Chapter 3   System Appearance

3-1   Front View

GS-R22PXL
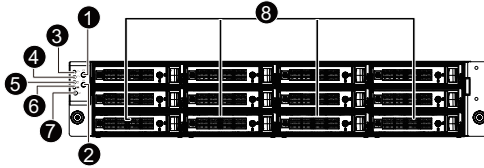
No.	Decription
1.	System Power button/System Power indicator
2.	System ID button/System ID LED
3.	LAN1 activity indicator
4.	LAN2 activity indicator
5.	HDD activity indicator
6.	System fault indicator
7.	System Reset button
8.	3.5-inch hard disk drive (HDD)

GS-R22PFL
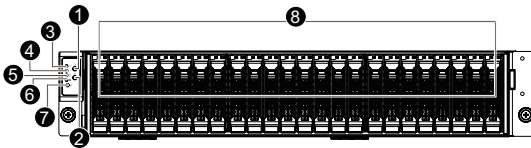
No.	Decription
1.	System Power button/System Power indicator
2.	System ID button/System ID LED
3.	LAN1 activity indicator
4.	LAN2 activity indicator
5.	HDD activity indicator
6.	System fault indicator
7.	System Reset button
8.	2.5-inch hard disk drive (HDD)

3-2 Rear View

GS-R22PXL
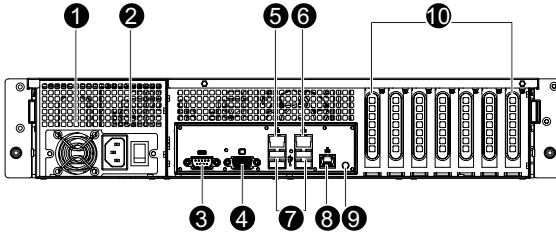
No.	Decription
1.	Power supply fan
2.	Power supply module cord socket
3.	Serial port
4.	VGA port
5.	10/100/1000M LAN port 2
6.	10/100/1000M LAN port 1 (Share NIC)
7.	USB 2.0 Ports
8.	10/100 Server management LAN port
9.	ID switch button
10.	Low-profile card bay

GS-R22PFL
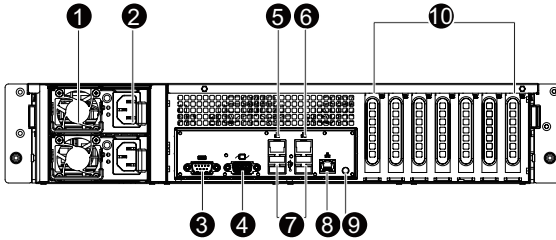
No.	Decription
1.	Power supply fan
2.	Power supply module cord socket
3.	Serial port
4.	VGA port
5.	10/100/1000M LAN port 2
6.	10/100/1000M LAN port 1 (Share NIC)
7.	USB 2.0 Ports
8.	10/100 Server management LAN port
9.	ID switch button
10.	Low-profile riser card bay

3-3   Front Panel LED and Buttons
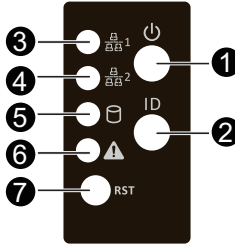
No.	Name	Color	Status	Description
1.	Power button and LED	Green	On	System has power applied to itor ACPI S0 state
		Green	Blink	System is in ACPI S1 state (sleep mode)
		N/A	Off	System is not powered on or in ACPI S5 state (power off) System is in ACPI S4 state (hlbernate mode)
2.	ID button and LED	Blue	On	System identification is active
		N/A	Off	System identification is disabled
3.	LAN1 LED	Green	On	Link between system and network
		Green	Blink	Network access
		N/A	Off	No access
4.	LAN 2 LED	Green	On	Link between system and network
		Green	Blink	Network access
		N/A	Off	No access
5.	HDD Status LED	Green	On	HDD locate
			Blink	HDD access
		Amber	On	HDD fault
		Green/ Amber	Blink	HDD rebuilding
		N/A	Off	• No HDD access • No HDD fault

6.	System Status LED	Amber	On	Critical condition. May indicate the following: • Power module failure • System fan failure • Power supply voltage issue • System temperature/voltage issue
				Non-critical condition. May indicate the following: • Redundant fan failure • Redundant power module failure • System temperature/voltage issue • HDD fault on RAID • Chassis intrusion
		N/A	Off	System not ready. May indicate the following: • POST error • NMI error • Processor or terminator missing
7.	Reset button			

3-4 Rear System LAN LEDs
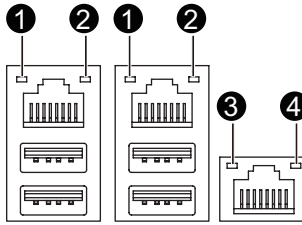
No.	Name	Color	Status	Description
1	Connection/ Speed LED	Yellow	On	Linking at 1 Gbps data rate
		Yellow	Blink	Identify at 1 Gbps data rate
		Green	On	Linking at 100 Mbps data rate
		Green	Blink	Identify at 100 Mbps data rate
		N/A	Off	Linking at 10 Mbps data rate
2.	Activity LED	Green	Blink	Data transmission or receiving is occurring
		Green	On	No data transmission
		N/A	Off	No data transmission or receiving is occuring
3.	Connection/ Speed LED	Green	On	Linking at 100 Mbps data rate
		Green	Blink	Linking at 10 Mbps or 100 Mbps data rate
		N/A	Off	Linking at 10 Mbps data rate
4.	Activity LED	Green	Blink	Data transmission or receiving is occurring
		Green	On	No data transmission
		N/A	Off	No data transmission or receiving is occuring

3-5 Hard Disk Drive LEDs
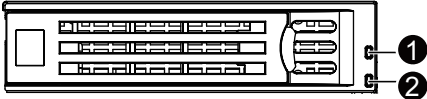
No	Description	Multi Color LEDs	
		LED Active Green	LED Active Amber
1	HDD Access	Blink	Off
	HDD Locate	On	Off
	HDD Failure	Off	On
	HDD connected and rebuilding data	Blink	Blink (Alternative)
2	Reserve		

Chapter 4   Motherboard Components

4-1   GA-7PESLX Motherboard Components
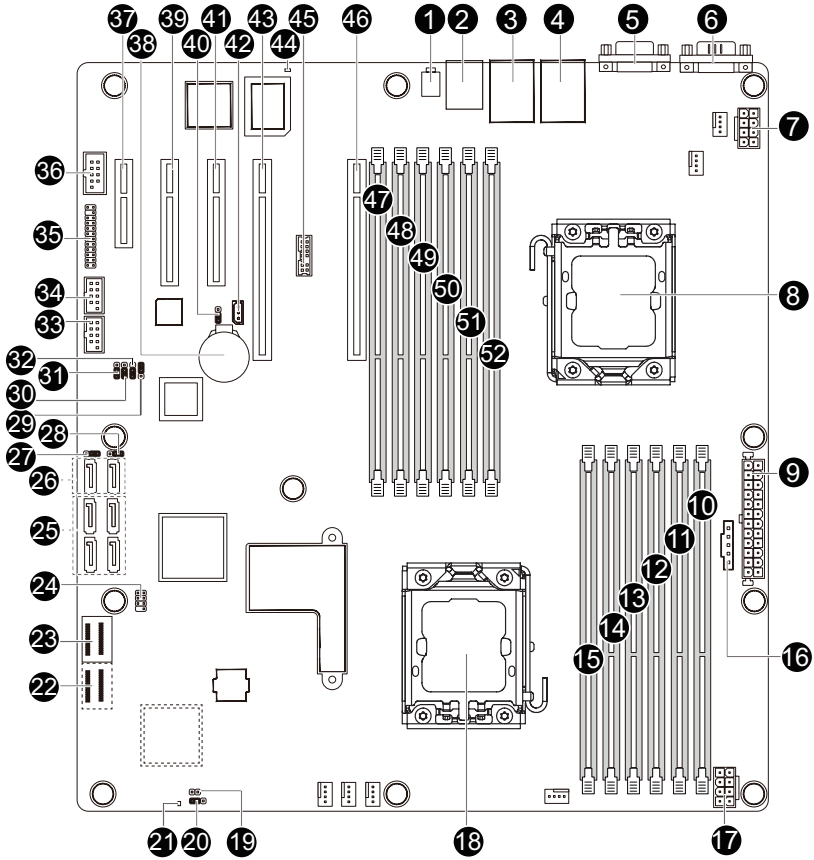
Item	Code	Description
1	ID_SW	ID switch
2	MLAN	BMC Management LAN port
3	USB_LANB1	LAN1 port (top) / USB ports (bottom)
4	USB_LANB2	LAN2 port (top) / USB ports (bottom)
5	VGA_1	VGA port
6	COM1	Serial port
7	P12V_AUX2	8 pin power connector
8	CPU1	Intel LGA1356 socket (Secondary CPU)
9	ATX1	24-pin power connector
10	DDR3_P0_A0	Channel 1 slot 0 (for primary CPU)
11	DDR3_P0_A1	Channel 1 slot 1 (for primary CPU)
12	DDR3_P0_B0	Channel 2 slot 0 (for primary CPU)
13	DDR3_P0_B1	Channel 2 slot 1 (for primary CPU)
14	DDR3_P0_C0	Channel 3 slot 0 (for primary CPU)
15	DDR3_P0_C1	Channel 3 slot 1 (for primary CPU)
16	PMBUS_CN_1	PM Bus connector
17	P12V_AUX1	8 pin power connector
18	CPU0	Intel LGA1356 socket (Primary CPU)
19	RAID_KEY2	LSI RAID Select connector
20	BIOS_WP	BIOS write protect jumper
21	LED2	LSI Firmware Readiness LED
22	MINI_CN2	Mini SAS connector
23	MINI_CN1	Mini SAS connector
24	SATA_SGPIO	SATA SGPIO connector
25	SATA2/3/4/5	SATA 3Gb/s connectors
26	SATA0/1	SATA 6Gb/s connectors
27	SATA3_D	SATA3 port DOM support jumper
28	SATA2_D	SATA2 port DOM support jumper
29	SSB_ME1	ME enable/disable jumper
30	BIOS_RVCR	BIOS recovery jumper
31	PASSWORD	Clear password jumper
32	ROMST_FRB3	Force to Stop FRB3 Timer jumper
33	F_USB1	Front USB connector
34	F_USB2	Front USB connector
35	FP_1	Front panel connector
36	COM2	Serial port connector

37	PCIE_5	PCI-E slot 5 (x4 slot / x1 signal)
38	BAT	Battery socket
39	PCIE_4	PCI-E slot 4 (x8 slot / x4 signal)
40	CLR_CMOS	Clear CMOS jumper
41	PCIE_3	PCI-E slot 3 (x8 slot / x4 signal)
42	IPMB	IPMB connector
43	PCIE_2	PCI-E slot 2 (x16 slot / x16 signal)
44	BMC_LED1	BMC firmware readiness LED
45	TPM_MEZZ1	TPM connector
46	PCIE_1	PCI-E slot 1 (x16 slot / x16 signal/From secondary CPU)
47	DDR3_P1_D0	Channel 1 slot 0 (for secondary CPU)
48	DDR3_P1_D1	Channel 1 slot 1 (for secondary CPU)
49	DDR3_P1_E0	Channel 2 slot 0 (for secondary CPU)
50	DDR3_P1_E1	Channel 2 slot 1 (for secondary CPU)
51	DDR3_P1_F0	Channel 3 slot 0 (for secondary CPU)
52	DDR3_P1_F1	Channel 3 slot 1 (for secondary CPU)

CAUTION! If a SATA type hard drive is connected to the motherboard, please ensure the jumper is closed and set to **2-3 pins** (Normal mode), in order to reduce any risk of hard disk damage. Please refer to the following for SATA2_D and SATA3_D jumper setting instruction.

4-2   Jumper Setting
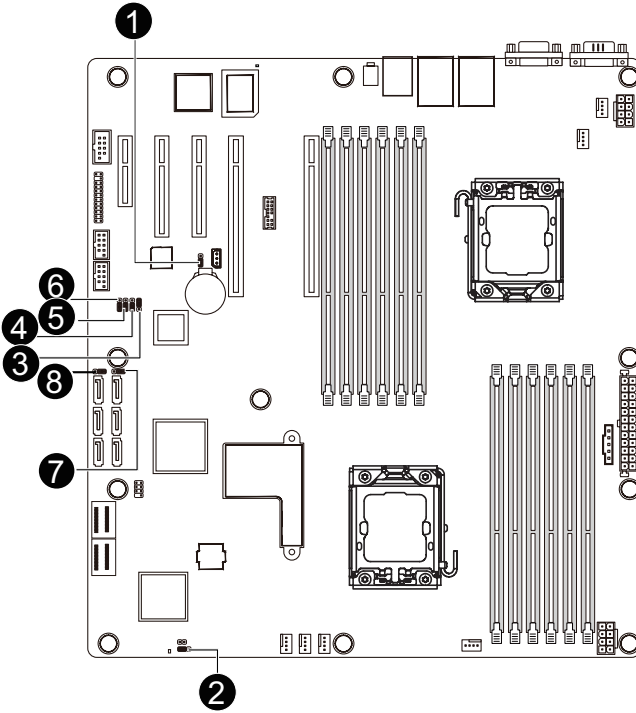
No.	Jumper Code	Jumper Setting
1.	CLR_CMOS (Clearing CMOS Jumper)	1-2 Close: Normal operation (Default setting)
		2-3 Close: Clear CMOS data
2.	BIOS_WP (BIOS Write Protect Jumper)	1-2 Close: Normal operation. (Default setting)
		2-3 Close: Disable ME function.
3.	SSB_ME1 (ME enable/ disable Jumper)	1-2 Close: Normal operation. (Default setting)
		2-3 Close: ME recovery mode (S/W).
4.	BMC_FRB3 (Force to Stop FRB3 Timer Jumper)	1-2 Close: Normal operation (Default setting)
		2-3 Close: Force to Stop FRB3 Timer
5.	BIOS_RVCR (BIOS Recovery Jumper)	1-2 Close: Normal operation (Default setting)
		2-3 Close: BIOS recovery mode.

No.	Jumper Code	Jumper Setting
6.	PASSWORD (Skip Supervisor Password Jumper)	1-2 Close: Normal operation (Default setting)
		2-3 Close: Skip supervisor password.
7/8.	SATA2_D/SATAD_3 (SATA port 2/3 DOM Jumper)	1-2 Close: Enable SATA2/SATA3 port DOM support.
		2-3 Close: Normal mode. (Default setting)

CAUTION! If a SATA type hard drive is connected to the system, please ensure the jumper is closed and set to **2-3 pins** (Normal mode), in order to reduce any risk of hard disk damage.

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 "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: 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.

■ **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 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 **Load 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.

```
           Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Main  Advanced  Chipset  Security  Server Management  Boot Options  Boot Manager          ▶

   BIOS Information                                        Set the date. Use <Tab> to
   BIOS Version                      F02                   switch between data
                                                           elements.
   Memory Information
   Total Memory                      8192 MB (DDR3)

   System Date                       [Thu 06/28/2012]
   System Time                       [06:18:23]

   Access Level                      Administrator

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

           Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **BIOS Information**

  ☞ **BIOS Version**

      Display version number of the BIOS setup utility.

  ☞ **Memory Information**

  ☞ **Total 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.

  ☞ **Access Level**

      Display the current accessing level information.

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.

```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Server Management  Boot Options  Boot Manager          ▶

 ▶ PCI Configuration                                      Set PCI configuration
 ▶ Trusted Computing                                      parameters.
 ▶ CPU Configuration
 ▶ Runtime Error Logging
 ▶ SATA Configuration
 ▶ SAS Configuration
 ▶ Super IO Configuration
 ▶ Serial Port Console Redirection

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



                Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Setup

5-2-1   PCI Configuration

```
               Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
      Advanced

 PCI Express Slot #1 I/O ROM         [Enabled]              Enable/Disable PCI-Express
 PCI Express Slot #2 I/O ROM         [Enabled]              slot #1 I/O ROM.
 PCI Express Slot #3 I/O ROM         [Enabled]
 PCI Express Slot #4 I/O ROM         [Enabled]
 PCI Express Slot #5 I/O ROM         [Enabled]

 Onboard LAN #1 Controller           [Enabled]
 Onboard LAN #2 Controller           [Enabled]
 Onboard LAN1 I/O ROM                [Disabled]
 Onboard LAN2 I/O ROM                [Disabled]

 PERR# Generation                    [Disabled]
 SERR# Generation                    [Disabled]            →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F3: Previous Values
                                                           F9: Optimized Defaults
                                                           F10: Save  ESC: Exit




               Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

' **PCI Express Slot 1/2/3/4/5 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 Controller**

Enable/Disable Onboard LAN controller .
Options available: Enabled/Disabled. Default setting is **Enabled**.

' **LAN1/2 Option ROM**

Enable/Disable onboard LAN1 device and initialize device expansion ROM.
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**.

' **Maximum Playload**

Set maximum playlooad 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 **4096 Bytes**.

5-2-2 Trusted Computing

```
                    Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
        Advanced

   Configuration                                                        Enables or Disables BIOS
     TPM SUPPORT                         [Enable]                       support for security
     TPM State                           [Enabled]                      device. O.S. will not show
   Pending operation                     [None]                         Security Device. TCG EFI
                                                                        protocol and INT1A
                                                                        interface will not be
   Current Status Information                                           available.
     TPM Enabled Status:                 [Enabled]
     TPM Active Status:                  [Activated]
     TPM Owner Status:                   [UnOwned]

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

                    Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **TPM Support**

Select Enabled to activate TPM support feature.

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

☞ **TPM State** (Note)

Select Enabled to activate TPM State function.

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

☞ **Pending Operation** (Note)

Determine the action when operation is pending.

Options available: None. Default setting is **None**.

☞ **Current Status Information**

Display current TPM status information.

(Note)   This item appears when the TPM module is attached.

5-2-3 CPU Configuration

```
                 Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
        Advanced

   CPU Configuration                                            Socket specific CPU
                                                                Information
 ▶ Socket 0 CPU Information
 ▶ Socket 1 CPU Information

   CPU Speed
   64-bit                               Supported

   Hyper-threading                      [Enabled]
   Limit CPUID Maximum                  [Disabled]
   Execute Disable Bit                  [Enabled]
   Intel Virtualization Technology      [Enabled]
   Energy Performance                   [Performance]
 ▶ CPU Power Management Configuration                           ➨➨: Select Screen
                                                                ↑↓: Select Item
                                                                Enter: Select
                                                                +/-: Change Opt.
                                                                F1: General Help
                                                                F3: Previous Values
                                                                F9: Optimized Defaults
                                                                F10: Save  ESC: Exit




                 Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

```
                 Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
        Advanced

   Socket 0 CPU Information


   Intel(R) Xeon(R) CPU E5-2620 0 @ 2.00GHz
   CPU Signature                        206d7
   Microcode Patch                      70b
   Max CPU Speed                        2000 MHz
   Min CPU Speed                        1200 MHz
   Processor Cores                      6
   Intel HT Technology                  Supported
   Intel VT-x Technology                Supported

   L1 Data Cache                        32 kB x 6
   L1 Code Cache                        32 kB x 6
   L2 Cache                             256 kB x 6                ➨➨: Select Screen
   L3 Cache                             15360 kB                  ↑↓: Select Item
                                                                 Enter: Select
                                                                 +/-: Change Opt.
                                                                 F1: General Help
                                                                 F3: Previous Values
                                                                 F9: Optimized Defaults
                                                                 F10: Save  ESC: Exit




                 Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

```
                 Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Advanced

   CPU Power Management Configuration                       Enable the power
                                                            management features.
   Power Technology                  [Custom]
   EIST                              [Enabled]
   Turbo Mode                        [Enabled]
   CPU C3 Report                     [Enabled]
   CPU C6 report                     [Enabled]
   CPU C7 report                     [Enabled]
   Package C State limit             [No Limit]


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


                 Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **Socket 0/1 Information**

☞ **CPU Signature**

Displays the processor ID information.

☞ **Microcode Patch**

Display Microcode patch.

☞ **Max CPU Speed**

Display the maximum processor speed.

☞ **Min CPU Speed**

Display the minimum processor speed.

☞ **Processor Cores**

Display the information of the processor core.

☞ **Intel HT Technology**

Display Intel Hyper Threading Technology function support information.

☞ **Intel VT-x Technology**

Display Intel Virtualization Technology function support information.

☞ **Cache Information**

☞ **L1 Data Cache**

Display the information of L1 Data Cache.

☞ **L1 Code Cache**

Display the information of L1 Code Cache.

☞ **L2 Cache**

Display the information of L2 Cache per Core.

☞ **L3 Cache**

Display the information of total L3 Cache per socket.

☞ **CPU Speed**

Display the current installed CPU speed.

☞ **64-bit**

Display the supported infprmation of installed CPU.

☞ **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**.

☞ **Limit CPUID Maximum**

When enabled, the processor will limit the maximum COUID input values to 03h when queried, even if the processor suppports 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 **Enabled**.

☞ **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**.

☞ **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**.

☞ **CPU Management**

☞ **Power Technology**

Configure the power management features.

Options available: Disable/Energy Efficient/Custom. Default setting is **Custom**.

(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.

⍞ **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**.

⍞ **Turbo Mode**

When this feature is enabled, the processor can dynamically overclock one or two of its four processing cores to improve performance with applications that are not multi-threaded or optimized for quad-core processors.

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

Options available for C6 Report: Enabled/Disabled. Default setting is **Enabled**.

⍞ **CPU C7 Report** (Note)

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

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

⍞ **Package C State Limit**

Configure state for the C-State package limit.

Options available: C0/C1/C6/C7/No Limit. Default setting is **No Limit**.

5-2-4 Runtime Error Logging

```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Advanced

Runtime Error Logging Support        [Disabled]              Enable/Disable Runtime
                                                             Error Logging Support.




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

                Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```
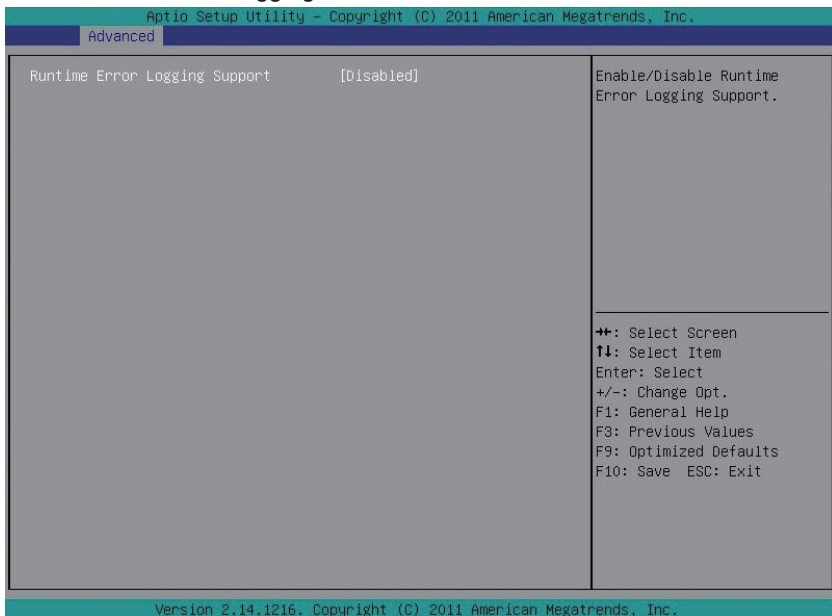
☞ **Runtime Error Logging Support**

Enable/Disable Runtime error logging support.

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

5-2-5 SATA Configuration

```
             Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Advanced

   SATA Configuration                                          (1) IDE Mode. (2) AHCI
                                                               Mode. (3) RAID Mode.
   SATA Port0                        Not Present
   SATA Port1                        Not Present
   SATA Port2                        Not Present
   SATA Port3                        Not Present
   SATA Port4                        Not Present
   SATA Port5                        Not Present

   SATA Mode                         [AHCI Mode]
   Serial-ATA Controller 0           [Compatible]
   Serial-ATA Controller 1           [Enhanced]

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


             Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **SATA Port 0/1/2/3/4/5** (Note)

Displays the installed HDD devices information.

☞ **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 controllerenables both its RAID and AHCI functions. You will be allows access 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 be access the RAID setup utility at boot time.

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

☞ **Serial ATA Controller 0/1**

Determine the onboard SATA controller mode.

Compatible: SATA and PATA drives are auto-detected and placed in Legacy mode.

Enhanced: SATA and PATA drives are auto-detected and placed inNative mode.

Options available: Disabled/Enhanced/Compatible.

Default setting for Serial ATA 0 is **Compatible**.

Default setting for Serial ATA 1 is **Enhanced**.

(Note)   This item is will not appear when the SATA mode is set ot RAID mode.

5-2-6 SAS Configuration

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Advanced

 SAS Configuration

 Device0                        Not Present
 Device1                        Not Present
 Device2                        Not Present
 Device3                        Not Present




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



              Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```
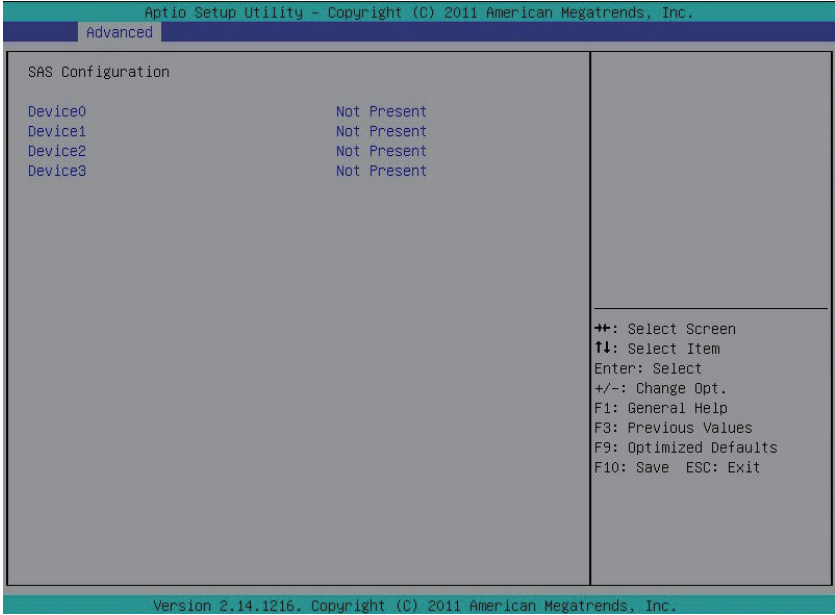
☞ **SAS Configuration** (Note)

☞ **Device 0/1/2/3**

Displays the installed HDD devices information.

5-2-7 Super IO Configuration

```
          Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
      Advanced

   Super IO Configuration                                      Set Parameters of Serial
                                                               Port 1 (COMA)
   Super IO Chip                    IT8728
 ▶ Serial Port 1 Configuration
 ▶ Serial Port 2 Configuration





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



          Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```
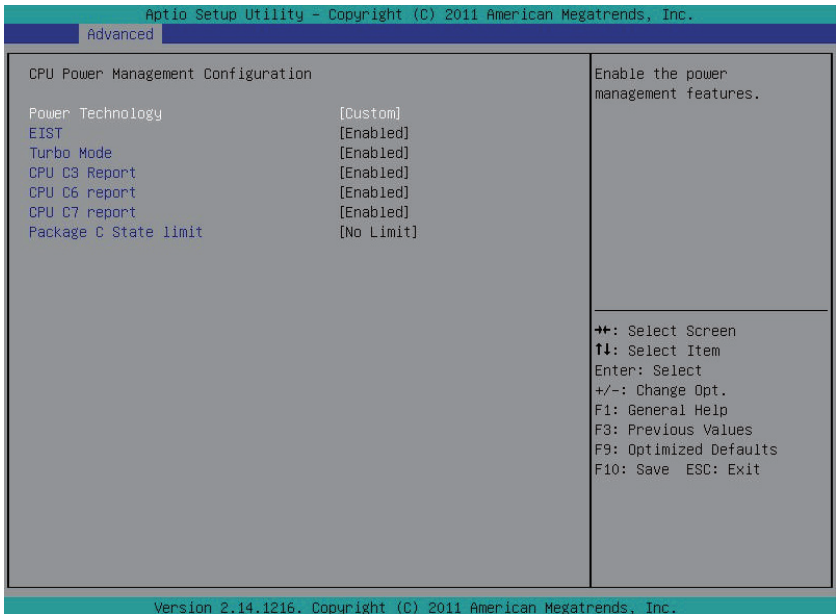
```
          Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
      Advanced

   Serial Port 1 Configuration                                 Enable or Disable Serial
                                                               Port (COM)
   Serial Port                      [Enabled]
   Device Settings                  IO=3F8h; IRQ=4;

   Change Settings                  [Auto]
   Device Mode                      [Normal]




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



          Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

   ☞ **Serial Port 1/2 Configuration**

☞ **Serial Port Configuration**

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 the Serial Port 1/2 base I/O addressand IRQ.

☞ **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.

☞ **Device Mode**

Change the Serial Port mode.

Options available: Standard Serial Port Mode (Normal Mode)/IrDA 1.0 (HP SIR) Mode (High Speed)/ ASKIRfdgdg Mode.

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.

```
                 Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
      Main   Advanced   Chipset   Security   Server Management   Boot Options   Boot Manager

    ▶ North Bridge                                    North Bridge Parameters
    ▶ South Bridge



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



                 Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```
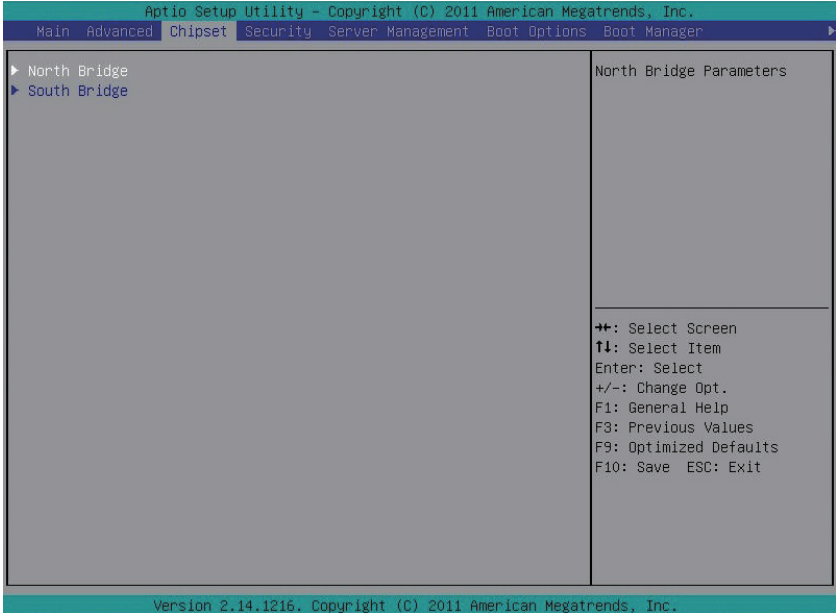
5-3-1 North Bridge Configuration

```
                  Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                      Chipset

                                                                    IOH Configuration Page
  ▶ IOH Configuration

    Compatibility RID                  [Enabled]

    Memory Configuration

    Total Memory                       4096 MB (DDR3)
    Current Memory Mode                Independent
    Current Memory Speed               1333 MHz
    Memory Mode                        [Independent]
    Numa                               [Enabled]
    DIMM Voltage                       [Auto]
    Enforce DIMM                       [Enforce EN]         ←→: Select Screen
                                                            ↑↓: Select Item
  ▶ DIMM Information                                        Enter: Select
                                                            +/-: Change Opt.
    To clear ECC Flag                  [None]               F1: General Help
                                                            F3: Previous Values
                                                            F9: Optimized Defaults
                                                            F10: Save  ESC: Exit



                   Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

 ☞ **Compatibility RID**

  Enable/Disable Compatibility RID function.
  Options available: Enabled/Disabled. Default setting is **Enabled**.

 ☞ **Memory Configuration**

 ☞ **Total Memory**

  Determines how much total memory is present during the POST.

 ☞ **Current Memory Mode**

  Displays the cuurent memory mode. Memory mode can be determined in **Memory Mode** item.

 ☞ **Current Memory Speed**

  Displays the cuurent memory speed.

 ☞ **Memory Mode**

  Determine the memory mode.
  When set to Indendent mode, all DIMMs are available to the operation system.
  When set to Mirroring mode, the motherboard maintains two identical (redundant) copies of all data in
  memory.
  When set to Lockstep mode, the motherboard uses two areas of memory to run the same set of
  operations in parallel.
  When set to Sparing mode, a preset threshold of coorectable errors is used to trigger fail-over.
  The spare memory is put online and used as active memory in place of the failed memory.
  Options available: Indpendent /Mirroring/ Lockstep/Sparing.

⍜ **DIMM Voltage**

Configure the DIMM voltage.

Options available: Auto/ Force 1.5v/Force 1.35v. Default setting is **Auto**.

⍜ **Enforce DIMM**

To enforce POR function. When disabled, the system will enforce 1600MHz LRDIMM.

Options available: Enforce EN/Stretch EN/Enforce DIS. Default setting is **Enforce EN**.

⍜ **To clear ECC Flag**

To clear ECC flag function.

Options available: None. Default setting is **None**.

5-3-1-1 IOH Configuration

```
           Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
           Chipset

                                                           Intel(R) VT for Directed
                                                           I/O Configuration
  ▶ Intel(R) VT for Directed I/O Configuration

  Intel(R) I/OAT                      [Disabled]
  DCA Support                         [Enabled]
  VGA Priority                        [Offboard]
  TargetVGA                           Vga From CPU 0
  Gen3 Equalization WA's              [Disabled]




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




           Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

```
           Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
           Chipset

  Intel(R) VT-d                       [Disabled]        Enable/Disable Intel(R)
                                                        Virtualization Technology
                                                        for Directed I/O.




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




           Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

🖉 **IOH Configuration**

🖉 **Intel(R) VT for Directed I/O Configuration**

🖉 **Intel(R) I/OAT**

Enable/Disable Intel OAT Technology function.
Options available: Enabled/Disabled. Default setting is **Disabled**.

🖉 **DCA Support**

Enable/Disable Direct Cache Access Support function.
Options available: Enabled/Disabled. Default setting is **Enabled**.

🖉 **VGA Priority**

Define the display device priority.

🖉 **Target VGA**

Displays the information of Target VGA.
Options available: Onboard/Offboard. Default setting is **Offboard**.

🖉 **Gen3 Equalization WA's**

Enable/DIsable the support for Gen3 Equalization Workaround.
Options available: Enabled/Disabled. Default setting is **Disabled**.

🖉 **Intel(R) VT-d**

Enable/Disable Intel VT-d Technology function.
Options available: Enabled/Disabled. Default setting is **Disabled**.

5-3-1-2 DIMM Information

```
            Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                    Chipset

   CPU Socket 0 DIMM Information

   DDR3_P0_A0                       Present 2048 MB (DDR3)
   DDR3_P0_A1                       Not Present
   DDR3_P0_B0                       Not Present
   DDR3_P0_B1                       Not Present
   DDR3_P0_C0                       Not Present
   DDR3_P0_C1                       Not Present

   CPU Socket 1 DIMM Information

   DDR3_P1_D0                       Present 2048 MB (DDR3)
   DDR3_P1_D1                       Not Present          →←: Select Screen
   DDR3_P1_E0                       Not Present          ↑↓: Select Item
   DDR3_P1_E1                       Not Present          Enter: Select
   DDR3_P1_F0                       Not Present          +/-: Change Opt.
   DDR3_P1_F1                       Not Present          F1: General Help
                                                         F3: Previous Values
                                                         F9: Optimized Defaults
                                                         F10: Save  ESC: Exit




            Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

  DIMM Information:

  DIMM Group: CPU Socket 0/1 DIMM Information

   CPU Socket 0:

   DDR3_P0_A0/DDR3_P0_A1/DDR3_P0_B0/DDR3_P0_B1/DDR3_P0_C0/DDR3_P0_C1

   Status

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

   CPU Socket 1:

   DDR3_P0_E0/DDR3_P0_E1/DDR3_P0_F0/DDR3_P0_F1/DDR3_P0_F0/DDR3_P0_F1

   Status

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

5-3-2 South Bridge Configuration

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                Chipset

                                                                 Support for PCH
                                                                 Compatibility Revision ID
        PCH Information                                          (CRID) Functionality.
        Name                         Patsburg
        Stepping                     06

        SB Chipset Configuration
        PCH Compatibility RID        [Disabled]

        Restore AC Power Loss        [Last State]
        Onboard SAS Oprom            [Disabled]
        Onboard SATA RAID Oprom      [Enabled]

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

              Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **PCH Information:**

☞ **Name/Stepping Information**

Displays the name and stepping information of the south bridge.

☞ **SB Chipset Configuration**

☞ **PCH Compatibility RID**

Enable/Disable PCH Compatibility RID support.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Restore on AC Power Loss** (Note)

Defines the power state to resume to after a sys- tem 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. The default setting depends on the BMC setting.

☞ **Onboard SAS oprom**

Enable/Disable onboard SAS option ROM.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Onboard SATA RAID oprom**

Enable/Disable onboard SATA RAID option ROM.
Options available: Enabled/Disabled. Default setting is **Enabled**.

(Note)   When the power policy is controlled by BMC, please wait for 15-20 seconds for BMC to save the last power state.

5-4 Security Menu

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

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Server Management  Boot Options  Boot Manager          ▶

     Password Description                                    Set Administrator Password

     If ONLY the Administrator's password is set,
     then this only limits access to Setup and is
     only asked for when entering Setup.
     If ONLY the User's password is set, then this
     is a power on password and must be entered to
     boot or enter Setup. In Setup the User will
     have Administrator rights.
     The password length must be
     in the following range:
     Minimum length                   3
     Maximum length                   20                    →←: Select Screen
                                                            ↑↓: Select Item
     Administrator Password                                 Enter: Select
     User Password                                          +/-: Change Opt.
                                                            F1: General Help
                                                            F3: Previous Values
                                                            F9: Optimized Defaults
                                                            F10: Save  ESC: Exit



              Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

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.

5-5 Server Management Menu

```
  Main   Advanced   Chipset   Security   Server Management   Boot Options   Boot Manager          ▶

▶ System Information                                         System Information
▶ BMC LAN Configuration                                     Parameters
▶ System Event Log
  Select NCSI and Dedicated LAN        [Mode1 (Dedicated)]




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

          Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **System Information**

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

☞ **BMC LAN Configuration**

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

☞ **System Event Log**

Press Enter to access the related system event log.

☞ **Select NCSI and Dedicated LAN**

Switch NCSI and dedicated LAN and send KCS command.
Options available: Mode2(NSCI)/ Mode1 (Dedicated).

5-5-1 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.

```
            Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                                  Server Management

     BMC Information
     BMC Firmware Version              01.01
     SDR Version                       00.14
     FRU Version                       00.02


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


            Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

5-5-2 BMC LAN Configuration

```
            Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                              Server Management

   Lan Channel 1                                           Select to configure LAN
   Configuration Source              [Do Nothing]          channel parameters
                                                           statically or
                                                           dynamically(DHCP). Do
                                                           nothing option will not
                                                           modify any BMC network
                                                           parameters during BIOS
                                                           phase


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


            Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

🎧 **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.

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

🎧 **Default Gateway Address**

Display Default Gateway Address information.

5-5-3 System Event Log

```
            Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
                                  Server Management

   Enabling/Disabling Options                         │ Change this to enable or
   SEL Components                    [Disabled]        │ disable all features of
                                                       │ System Event Logging
   Erasing Settings                                    │ during boot.
   Erase SEL                         [No]              │
                                                       │
   NOTE: All values changed here do not take effect    │
         until computer is restarted.                  │
                                                       │
                                                       │
                                                       │
                                                       │
                                                       │───────────────────────────
                                                       │ ++: Select Screen
                                                       │ ↑↓: Select Item
                                                       │ Enter: Select
                                                       │ +/-: Change Opt.
                                                       │ F1: General Help
                                                       │ F3: Previous Values
                                                       │ F9: Optimized Defaults
                                                       │ F10: Save  ESC: Exit
                                                       │
            Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **SEL Components**

Enable/Disable all features fo system event logging during system boot.
Options available: Enabled/Disabled.

☞ **Erase SEL**

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

5-6 Boot Option Menu

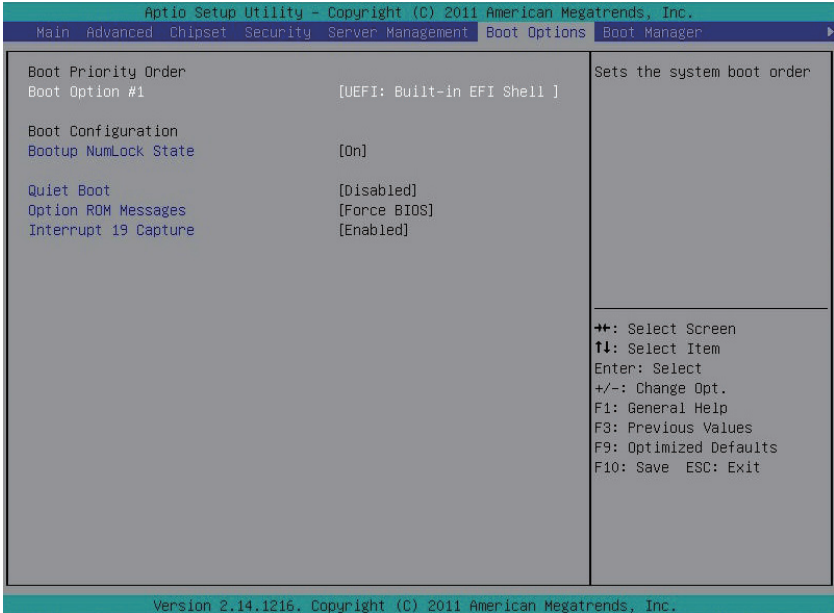The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.

```
                  Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Main   Advanced   Chipset   Security   Server Management   Boot Options   Boot Manager          ▶

   Boot Priority Order                                             Sets the system boot order
   Boot Option #1                   [UEFI: Built-in EFI Shell ]

   Boot Configuration
   Bootup NumLock State             [On]

   Quiet Boot                       [Disabled]
   Option ROM Messages              [Force BIOS]
   Interrupt 19 Capture             [Enabled]



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



                  Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **Boot Priority Order**

☞ **Boot Option**

Press Enter to configure the boot priority.

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

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

☞ **Bootup Configuration**

☞ **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 **Disabled**.

☞ **Option ROM Message**

Set display mode for option ROM..

Options available: Force BIOS/Keep Current. Default setting is **Force BIOS**.
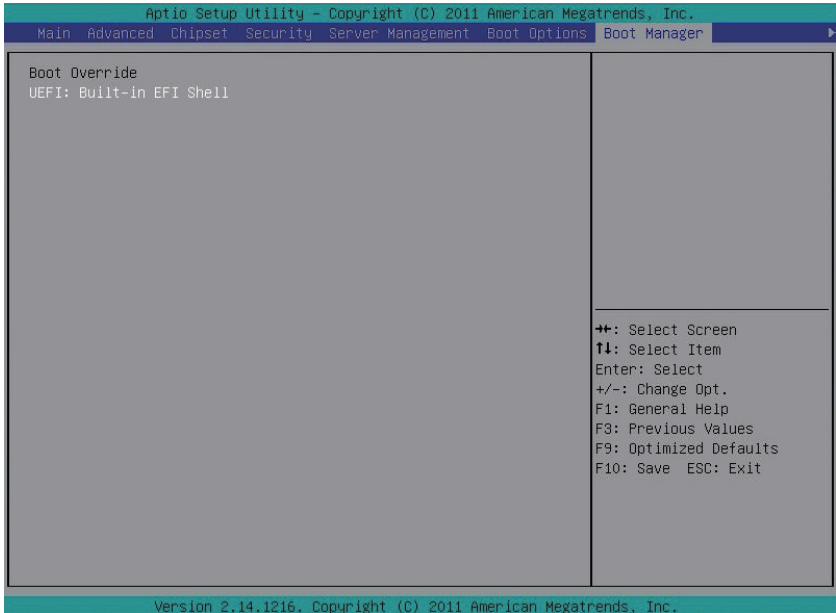
☙ **Interrupt 19 Capture**

Interrupt 19 is the software interrupt that handles the boot disk function. When enabled, this BIOS feature allows the ROM BIOS of those host adaptors to "capture" Interrupt 19 during the boot process so that drives attached to these adaptors can function as bootable disks.

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

5-7 Boot Manager

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

```
               Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main   Advanced   Chipset   Security   Server Management   Boot Options   Boot Manager         ▶

    Boot Override
    UEFI: Built-in EFI Shell



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



               Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```
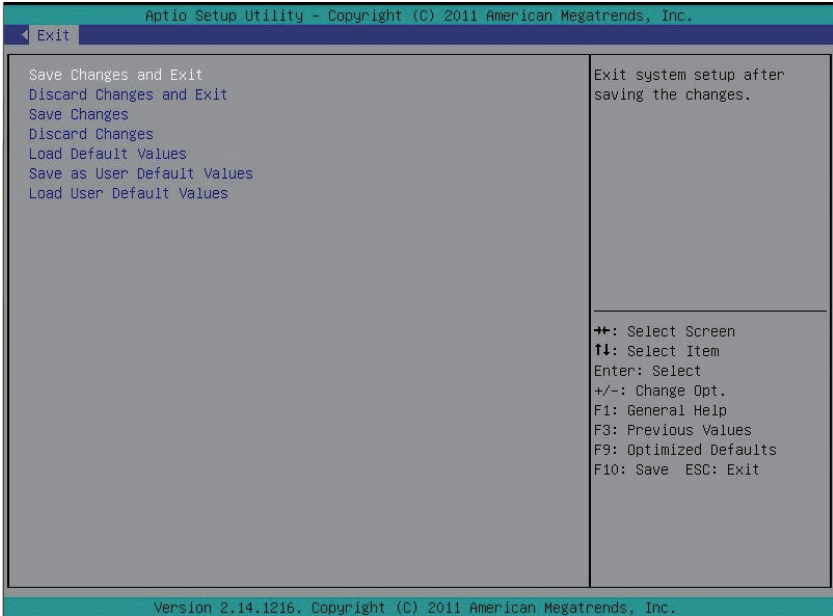
☞ **Boot Override**
☞ **UEFI: Built-in EFI Shell**

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

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**.

```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Exit

   Save Changes and Exit                              Exit system setup after
   Discard Changes and Exit                           saving the changes.
   Save Changes
   Discard Changes
   Load Default Values
   Save as User Default Values
   Load User Default Values



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



                Version 2.14.1216. Copyright (C) 2011 American Megatrends, Inc.
```

☞ **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.

5-9　BIOS Beep Codes

5-9-1　PEI Beep Codes

# of Beeps	Description
1	Memory not Installed.
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXEIPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

5-9-2　DXE Beep Codes

| # of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met

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.ROM to amiboot.rom.
2.   Copy amiboot.rom and AFUDOS.exe to USB diskette.
3.   Setting BIOS Recovery jump to enabled status.

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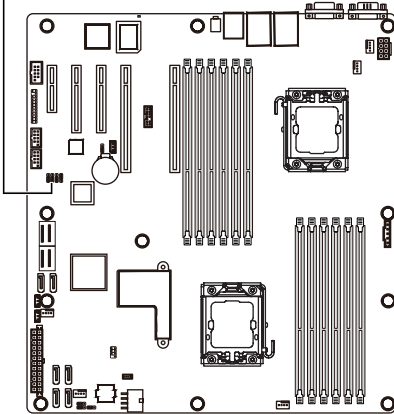
4.   Boot into BIOS recovery.
5.   Run Proceed with flash update.

6. BIOS update.

```
      Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
/--------------------------------------------------+------------------------\
| WARNING! System firmware is being updated.       |                        |
| Keyboard is locked.                              |                        |
| DO NOT TURN THE POWER OFF !!!                     |                        |
| Once firmware update is completed                |                        |
| press any key to reboot the system               |                        |
|                                                  |                        |
| Flash update progress   completed.               |                        |
|                                                  |                        |
|                                                  |                        |
|                                                  |------------------------|
|                                                  |><: Select Screen       |
|                                                  |^v: Select Item         |
|                                                  |Enter: Select           |
|                                                  |+/-: Change Opt.         |
|                                                  |F1: General Help        |
|                                                  |F3: Previous Values     |
|                                                  |F9: Optimized Defaults  |
|                                                  |F10: Save  ESC: Exit    |
|                                                  |                        |
\--------------------------------------------------+------------------------/
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