

GIGABYTE
GS-R12T4H2-RH
1U Rack Mount Server
Service Guide

Dual Intel® Xeon LGA1366 Processor Serverboard
Rev. 1.0

Preface

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

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

Table of Contents

Preface	2
Safety, Care and Regulatory Information	5
System Specification	9
System Hardware Installation	11
Remove the chassis cover.	12
Installing the Processor	13
Installing the Heat Sink	14
Installing the Memeory Module	15
Installing the PCI Expansion Card	19
Installing the Hard Disk Drive	21
HDD Security Lock	22
Installing and Replacing the FAN Duct	23
Replacing the FAN Assembly	24
Replacing the Motherboard	25
Replacing the Power Supply	26
Replacing the Chassis Cover	28
Appearance of GS-R12T4H2-RH	29
Front View of GS-R12T4H2-RH	29
Rear View of GS-R12T4H2-RH	30
Front Panel LED Indicator	31
LAN port LED Indicator	33
Hard Disk Drive LED Description	34
GC-BS14U-RH Back plane board Components	35
System Block Diagram	36
Connector Icon Description	37
Motherboard Placement and Jumper Setting	38
GA-7TTSE-RH Motherboard Component	38
Jumper Setting	40
Expansion Card Components Description	42
BIOS Setup	43
Main	45

Advanced	47
Processor Configuration	48
Processor Power Management	51
Memory Configuration	54
Advanced Chipset Configuration	56
PCI Configuration	60
SATA Configuration	62
I/O Device Configuration	65
Boot Device Configuration	67
Thermal and Acoustic Configuration	69
Power	71
Security	72
Server	74
System Management	75
Console Redirection	77
Boot	79
Exit	80

Safety, Care and Regulatory Information

🔑 Important safety information

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

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

🔑 Precaution for Product with Laser Devices

Observe the following precautions for laser devices:

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

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

Observe the following guidelines when working with options:

- * Do not connect or use a modem or telephone during a lightning storm. There may be a risk of electrical shock from lightning.

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

📌 Federal Communications Commission (FCC) Statement

Warning

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

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

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

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

The modem complies with Part 68 of the FCC Rules. On this equipment is a label that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. You must, upon request, provide this information to your telephone company.

If your telephone equipment causes harm to the telephone network, the Telephone Company may discontinue your service temporarily. If possible, they will notify in advance. But, if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with

GS-R12T4H2-RH Rack Mount Server

the FCC.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect proper operation of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

The FCC prohibits this equipment to be connected to party lines or coin-telephone service.

The FCC also requires the transmitter of a FAX transmission be properly identified (per FCC Rules Part 68, Sec. 68.381 (c) (3)).

/ for Canadian users only /

📌 Canadian Department of Communications Compliance Statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of Industry Canada.

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

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

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

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

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

/ for European users only /

Class A equipment

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

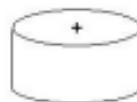
However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by tuning the device off and on, the user is encouraged to try to correct the interference by on or more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

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



CAUTION

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



System Specification

Motherboard	<ul style="list-style-type: none"> GA-7TTSE-RH
Processor Supported	<ul style="list-style-type: none"> Supports dual Intel® Xeon® processors Intel Xeon® Dual-Core/Quad-Core processor in LGA 1366 socket Supports Intel Quickpath Interconnect up to 6.4 GT/s
Chipset	<ul style="list-style-type: none"> Northbridge: Intel® 5500 Chipset Southbridge: Intel® ICH10R
System Memory:	
Memory Capacity	<ul style="list-style-type: none"> 18 x DDR 3 sockets up to 72GB/144GB (1 to 4 GB unbuffered DIMMs for up to 72GB or 1 to 8 GB registered DIMM for up to 144GB of total system memory)
Memory Type	<ul style="list-style-type: none"> DDR 3 800/1066/1333 MHz ECC registered/unbuffered DIMMs
DIMM Size	<ul style="list-style-type: none"> 512MB, 1GB, 2GB, 4GB, and 8GB capability modules support
Error Correction	<ul style="list-style-type: none"> Single-bit Errors Correction, Multiple Bit Errors Detection
Expansion Slot	
Two riser cards (optional)	
Full-height:	<ul style="list-style-type: none"> 1 PCI-E x 16 slot(PCI-E x8 throughput), Gen2
Low-profile	<ul style="list-style-type: none"> 1 PCI-E x 8 slot(PCI-E x8 throughput), Gen2
SATA RAID controller	<ul style="list-style-type: none"> Intel® ICH10R Supports Intel Software SW RAID 0/1/10/5 (Windows2008/2003)
Cooling Fans:	<ul style="list-style-type: none"> Colling System: 12 fans (N+1 redundant)
Integrated LANs:	
Controller	<ul style="list-style-type: none"> Intel® 82576EB controller support dual GbE ports Single-port 100BASE-TX (for Management)
Integrated Graphics:	
Controller	<ul style="list-style-type: none"> Integrated in ServerEngines Pilot II
Graphics Memory	<ul style="list-style-type: none"> 32MB DDR2
Mass Storage System	<ul style="list-style-type: none"> 4 x 3.5" Hot-Swap SATA HDDs 1 x DVD Combo GC-RLE087-RH, SAS 1.0 X 8 ports HW ROC (Support RAID 0, 1, 5, 10) (Option) GC-RLD0460-RH, SAS 1.0x4 SW Mega RAID PCIE SO-DIMM (Support RAID 0, 1, 10; RAID 5 with i-button) (Option) GC-RLD0461-RH, SAS 1.0x4 SW IR RAID PCIE SO-DIMM

GS-R12T4H2-RH Rack Mount Server

(Support RAID 0, 1, 1E) (Option)

Super I/O	
Controller	<ul style="list-style-type: none">• ITE IT8720F Super I/O
Front I/O	<ul style="list-style-type: none">• 2 X USB 2.0 connector
Rear I/O	<ul style="list-style-type: none">• 2 x P/S 2 ports• 1 x Serial port• 4 x USB 2.0 ports• 1 x VGA connector• 2 x RJ45 LAN ports• 1 x 10/100 LAN port (for server management)
System BIOS:	
BIOS Type	<ul style="list-style-type: none">• Phoenix BIOS on 16Mb flash ROM
Server Management Functions: (Optional device)	
BMC Chip	<ul style="list-style-type: none">• Server Engine PilotII IPMI 2.0 controller
Failure Detection	<ul style="list-style-type: none">• IPMI 2.0 specification of Server management
Event Logging	<ul style="list-style-type: none">• 64KB Nonvolatile Memory to Log System Failure Events
Remote Management	<ul style="list-style-type: none">• Follow the IPMI 2.0 specification of Server management
Environment	
Ambient Temperature	<ul style="list-style-type: none">• Operating Temperature: 5°C to 35°C• Non-operating Temperature: 0°C to 50°C
Relative Humidity	<ul style="list-style-type: none">• 10-80% operating Humidity at 30°C
System Dimention:	<ul style="list-style-type: none">• 430Wx43.5Hx710D (mm)
Electrical Power Supply	<ul style="list-style-type: none">• Fixed 1U PSU 600W at 80% efficiency

System Hardware Installation



Pre-installation Instructions

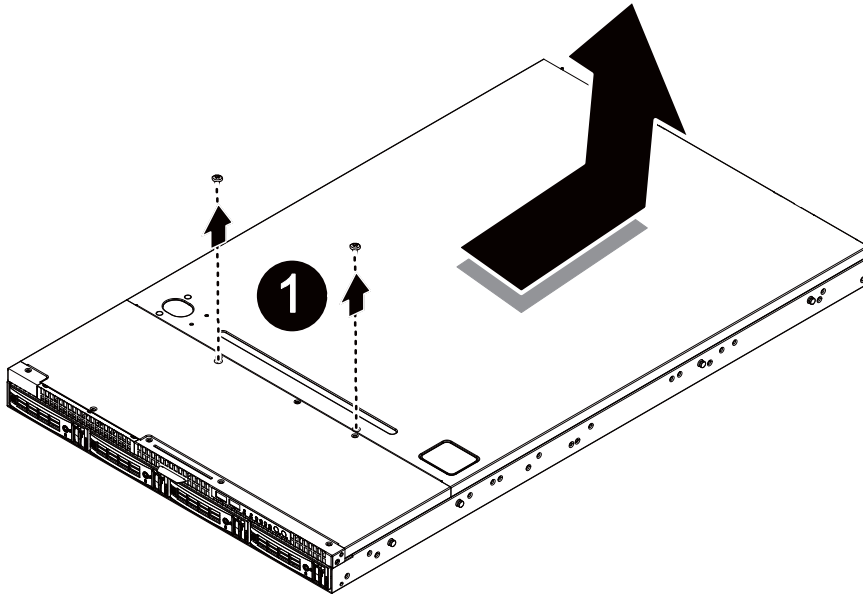
Perform the steps below before you open the server or before you remove or replace any component.

1. Back up all important system and data files before performing any hardware configuration.
2. Turn off the system and all the peripherals connected to it.
3. Unplug all cables from the power outlets.
4. Disconnect all telecommunication cables from their ports.
5. Place the system unit on a flat and stable surface.
6. 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.

Remove the chassis cover.

- Step 1 Loosen the screw on the front chassis cover.
- Step 2 Push down the indentation located at the side of the back chassis.
- Step 3 Slide toward the top chassis cover.
- Step 4 Lift up to remove the top chassis cover.

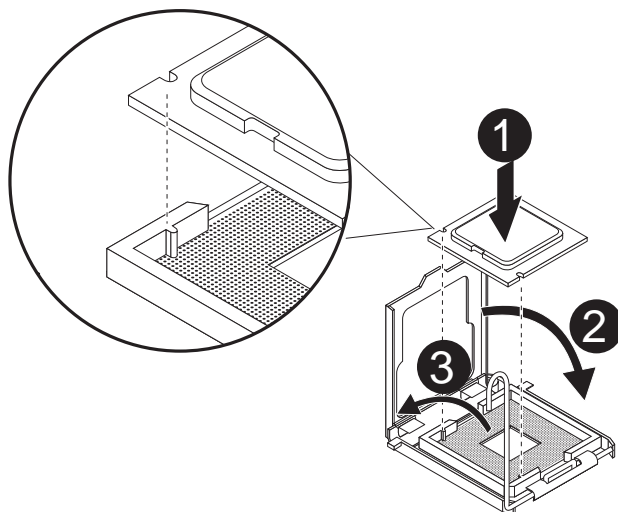


Installing the Processor



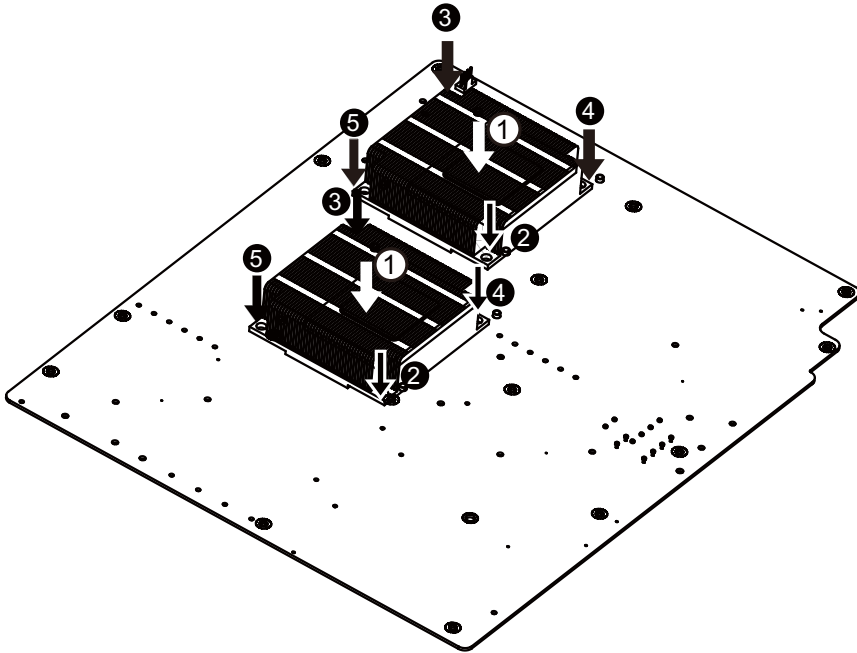
Please make sure the CPU type and speed that are supported by the motherboard.

- Step 1 Raise the metal locking lever on the socket. Insert the CPU with the correct orientation.
- Step 2 The CPU only fits in one orientation.
- Step 3 Push the metal lever back into locked position.



Installing the Heat Sink

- Step 1 Place the Heat Sink on the CPU. Before putting the heat sink on the CPU, please well remember to apply the thermal conductivity compound on the CPU.
- Step 2 Seat the heat sink in the retention modules with the four screws. Installation completed.



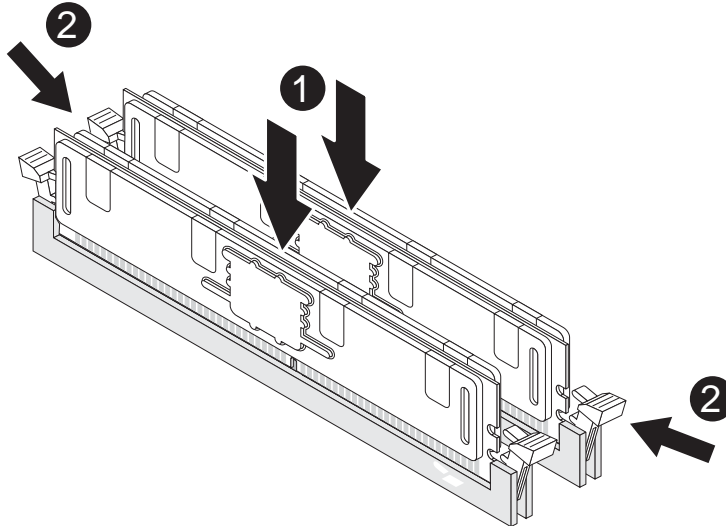
Installing the Memory Module

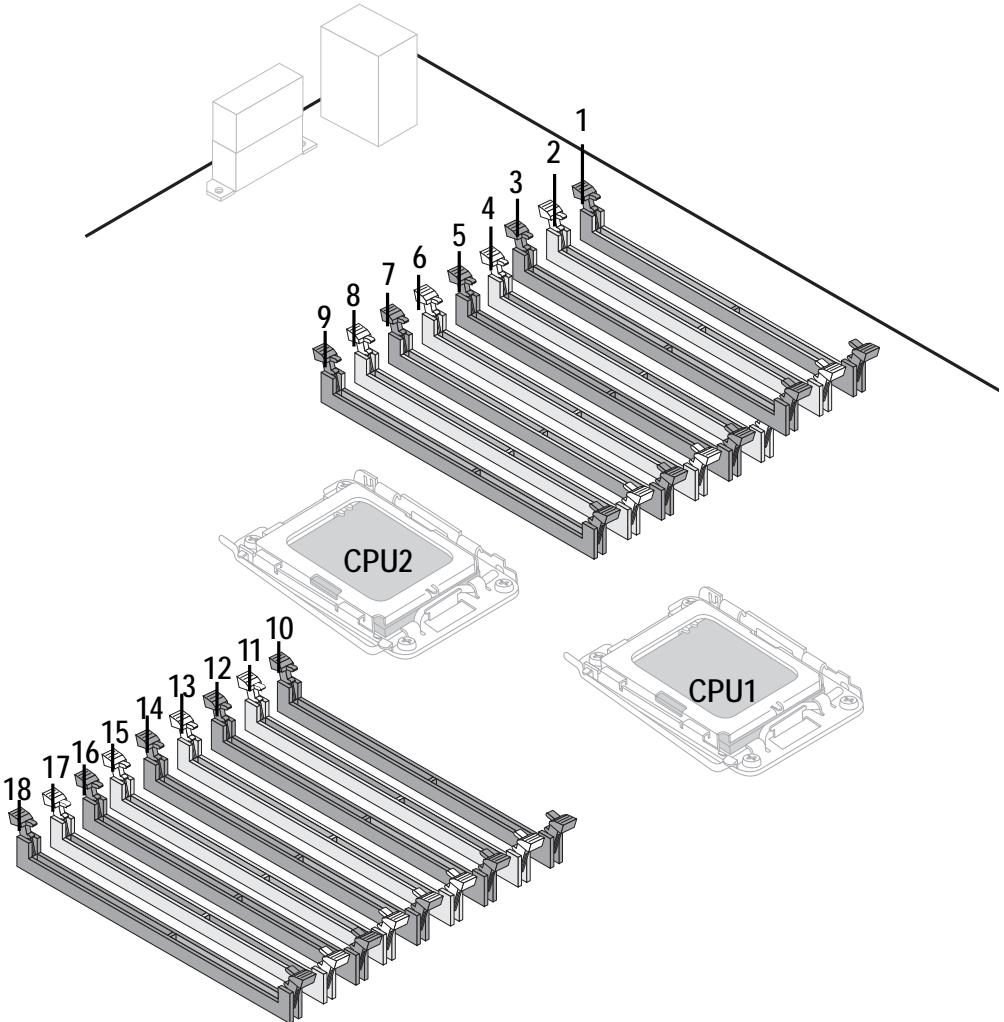
Step 1. Insert the DIMM memory module vertically into the DIMM slot, and push it down.

Step 2. Close the plastic clip at both edges of the DIMM slots to lock the DIMM module.

NOTE! DIMM must be populated in order starting from DIMMA1/D1 sockets. For dualquad channel operation, DIMMs must be installed in matched pairs.

Step 3. Reverse the installation steps when you wish to remove the DIMM module.





No.	Code	No.	Code
1	DDR_P1C2D0	10	DDR_P0C0D2
2	DDR_P1C2D1	11	DDR_P0C0D1
3	DDR_P1C2D2	12	DDR_P0C0D0
4	DDR_P1C1D0	13	DDR_P0C1D2
5	DDR_P1C1D1	14	DDR_P0C1D1
6	DDR_P1C1D2	15	DDR_P0C1D0
7	DDR_P1C0D0	16	DDR_P0C2D2
8	DDR_P1C0D1	17	DDR_P0C2D1
9	DDR_P1C0D2	18	DDR_P0C2D0

U-DIMM Population Table

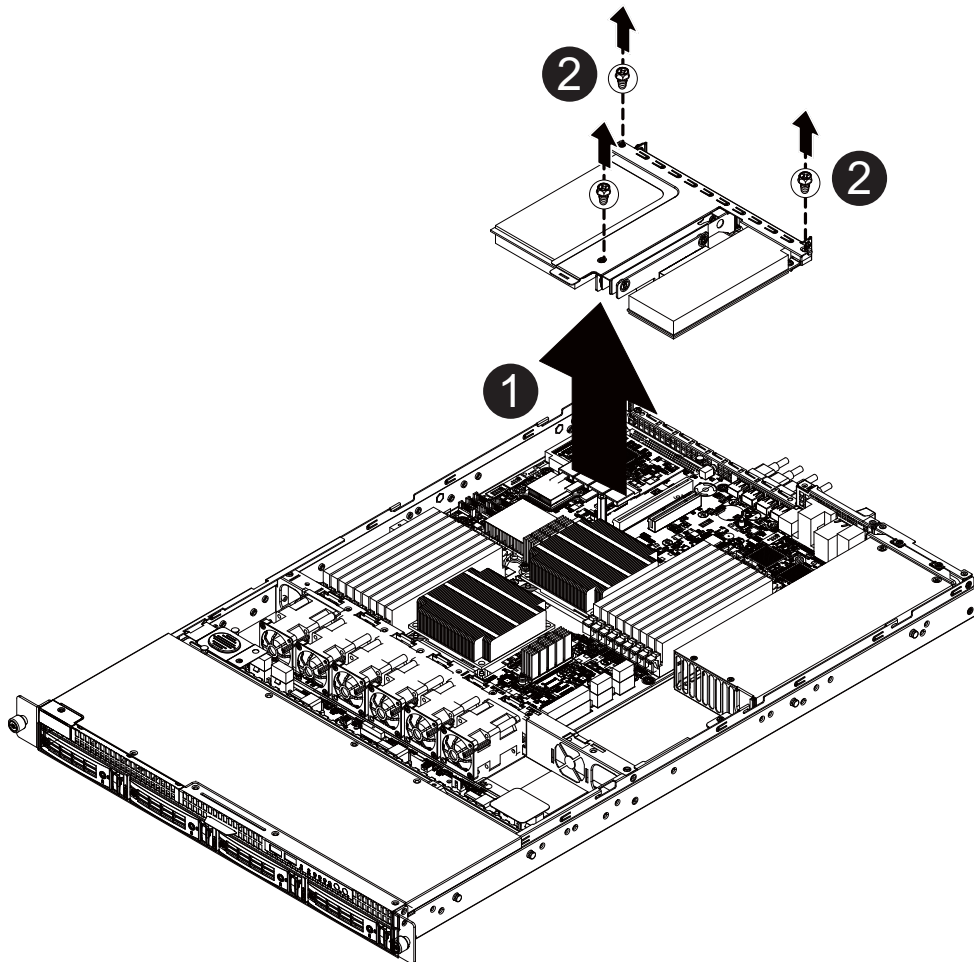
	Channel A			Channel B			Channel C		
	P0C0D0 P1C0D0	P0C0D1 P1C0D1	P0C0D2 P1C0D2	P0C1D0 P1C1D0	P0C1D1 P1C1D1	P0C1D2 P1C1D2	P0C2D0 P1C2D0	P0C2D1 P1C2D1	P0C2D2 P1C2D2
U-DIMM	Single-Rank	x	x	Single-Rank	x	x	Single-Rank	x	x
	Dual-Rank	x	x	Dual-Rank	x	x	Dual-Rank	x	x
	Single-Rank	Single-Rank	x	Single-Rank	Single-Rank	x	Single-Rank	Single-Rank	x
	Dual-Rank	Single-Rank	x	Dual-Rank	Single-Rank	x	Dual-Rank	Single-Rank	x
	Single-Rank	Dual-Rank	x	Single-Rank	Dual-Rank	x	Single-Rank	Dual-Rank	x
	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x
	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x

R-DIMM Population Table

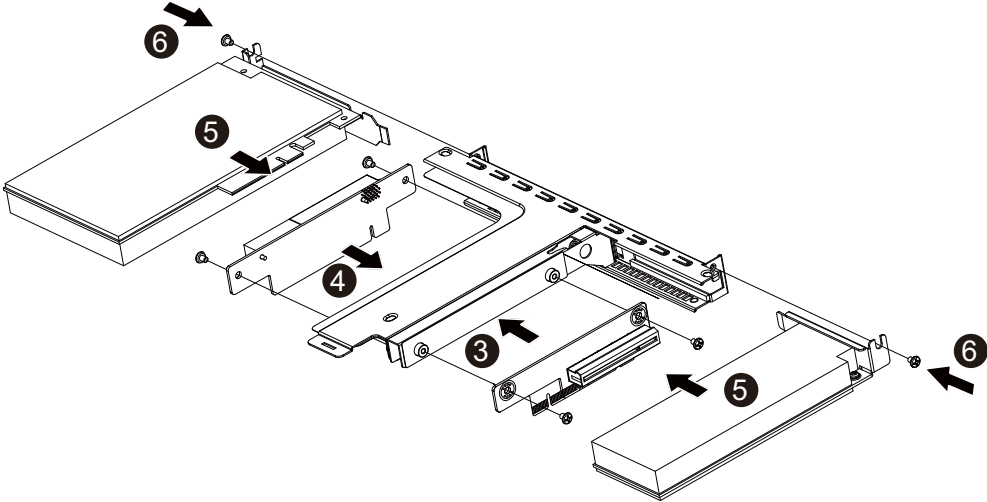
	Channel A			Channel B			Channel C		
	P0C0D0 P1C0D0	P0C0D1 P1C0D1	P0C0D2 P1C0D2	P0C1D0 P1C1D0	P0C1D1 P1C1D1	P0C1D2 P1C1D2	P0C2D0 P1C2D0	P0C2D1 P1C2D1	P0C2D2 P1C2D2
R-DIMM	Single-Rank	x	x	Single-Rank	x	x	Single-Rank	x	x
	Dual-Rank	x	x	Dual-Rank	x	x	Dual-Rank	x	x
	Quad-Rank	x	x	Quad-Rank	x	x	Quad-Rank	x	x
	Single-Rank	Single-Rank	x	Single-Rank	Single-Rank	x	Single-Rank	Single-Rank	x
	Dual-Rank	Single-Rank	x	Dual-Rank	Single-Rank	x	Dual-Rank	Single-Rank	x
	Single-Rank	Dual-Rank	x	Single-Rank	Dual-Rank	x	Single-Rank	Dual-Rank	x
	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x	Dual-Rank	Dual-Rank	x
	Quad-Rank	Single-Rank	x	Quad-Rank	Single-Rank	x	Quad-Rank	Single-Rank	x
	Quad-Rank	Dual-Rank	x	Quad-Rank	Dual-Rank	x	Quad-Rank	Dual-Rank	x
	Quad-Rank	Quad-Rank	x	Quad-Rank	Quad-Rank	x	Quad-Rank	Quad-Rank	x
	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank	Single-Rank
	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank
	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank
	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank	Single-Rank	Single-Rank	Dual-Rank
	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank
	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank
	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank	Single-Rank	Dual-Rank	Dual-Rank
	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank	Dual-Rank

Installing the PCI Expansion Card

- Step 1 Lift the riser bracket slightly, then pull it out from the server chassis.
- Step 2 Loosen the riser bracket screws.
- Step 3 Attach the mini card to the riser bracket and secure the mini card with screws.
- Step 4 Attach the mini card to the riser bracket the other side. Secure the mini card with screws.
- Step 5 Slide the expansion card into the slot until the card firmly seats.
- Step 6 Secure the expansion card with screws.
- Step 7 Align the riser bracket to the system module.

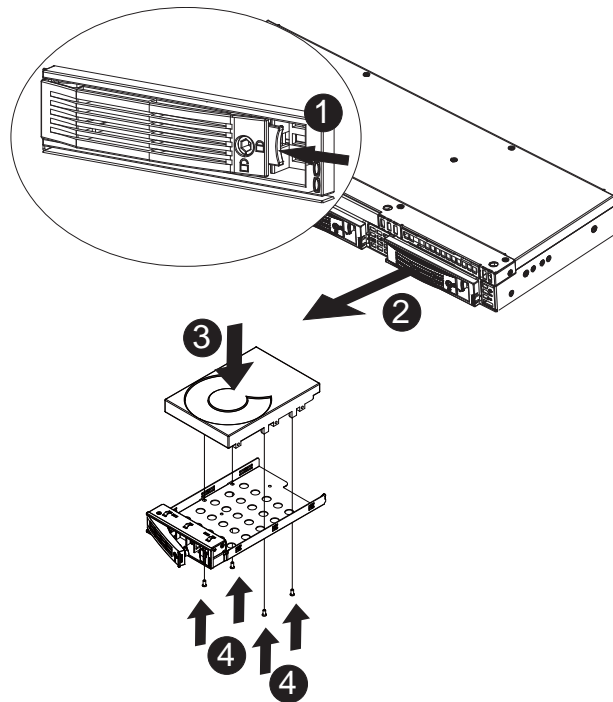


GS-R12T4H2-RH Rack Mount Server



Installing the Hard Disk Drive

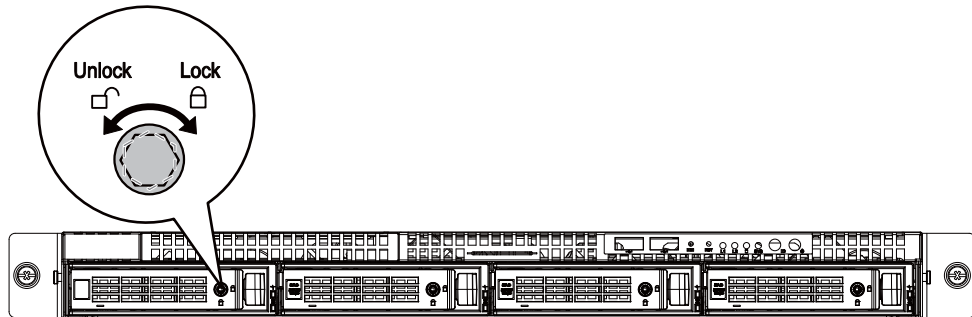
- Step 1 Press the release button.
- Step 2 Pull the locking lever to remove the HDD tray.
- Step 3 Slide hard disk into blank.
- Step 4 Secure the hard drive to the tray with four (4) screws as shown. Do not over tighten the screws. Slide the blank into the bay until it locks into place.
- Step 5 Engage the HDD Security Lock. For detail instruction, please see the following section.
- Step 6 Connect cable and power.



HDD Security Lock

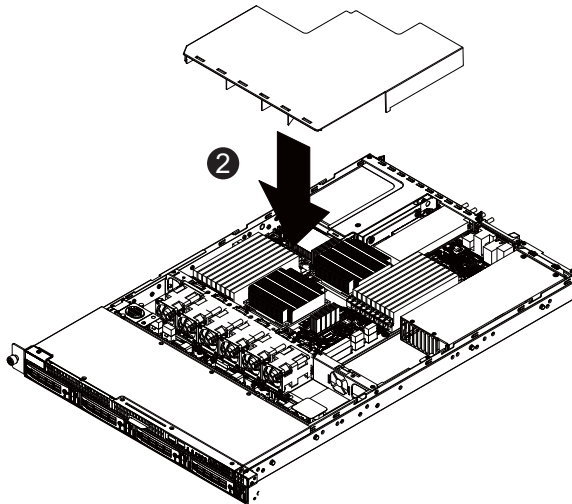
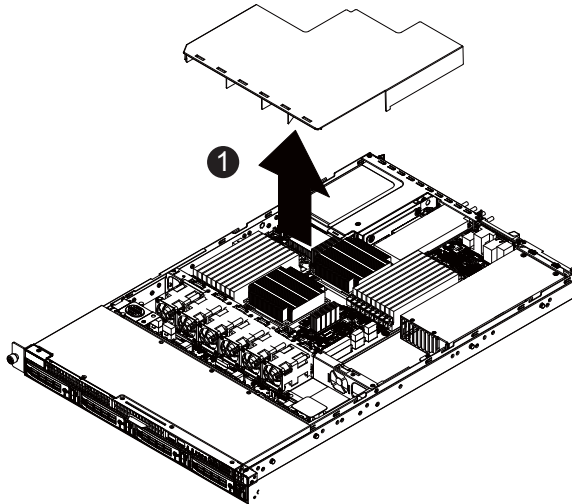
The HDD bays incorporate a security screw to prevent accidental HDD release.

To engage the lock, turn the security screw clock-wise toward the Lock symbol. To disengage the lock, turn the security screw counter clock-wise toward the Unlock symbol as shown.



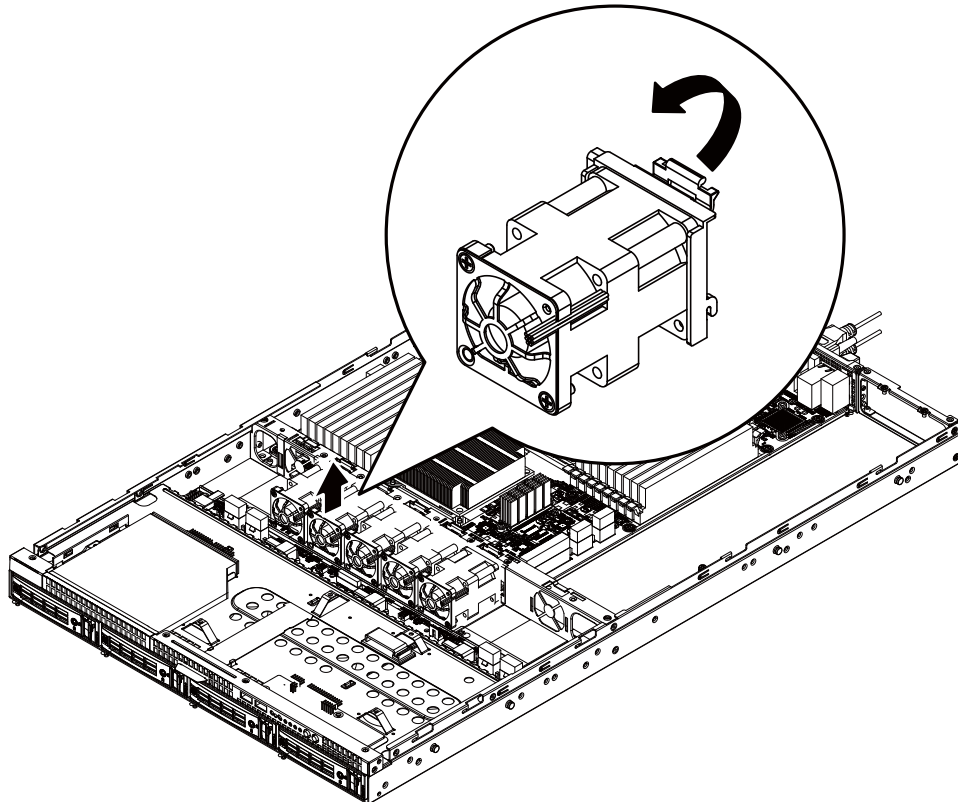
Installing and Replacing the FAN Duct

- Step 1 Remove the airducts from the chassis by pulling the rear edge in the direction of the arrow
- Step 2 With fan duct installation, align the fan duct with the guiding groove. Push down the fan duct into chassis until its firmly seats.



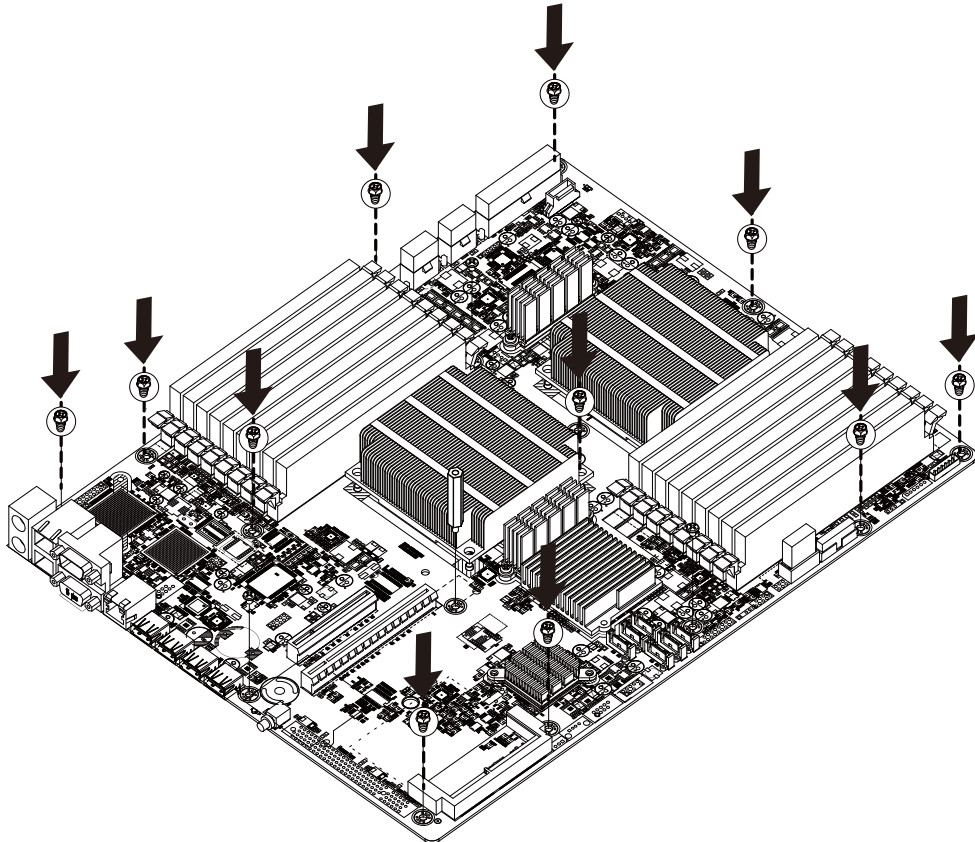
Replacing the FAN Assembly

- Step 1 Remove the fan assembly pulling the rear edge in the direction of the arrow
- Step 2 Lift up the fan assembly from the chassis.
- Step 3 Reverse the previous steps to install the replacement fan assembly.



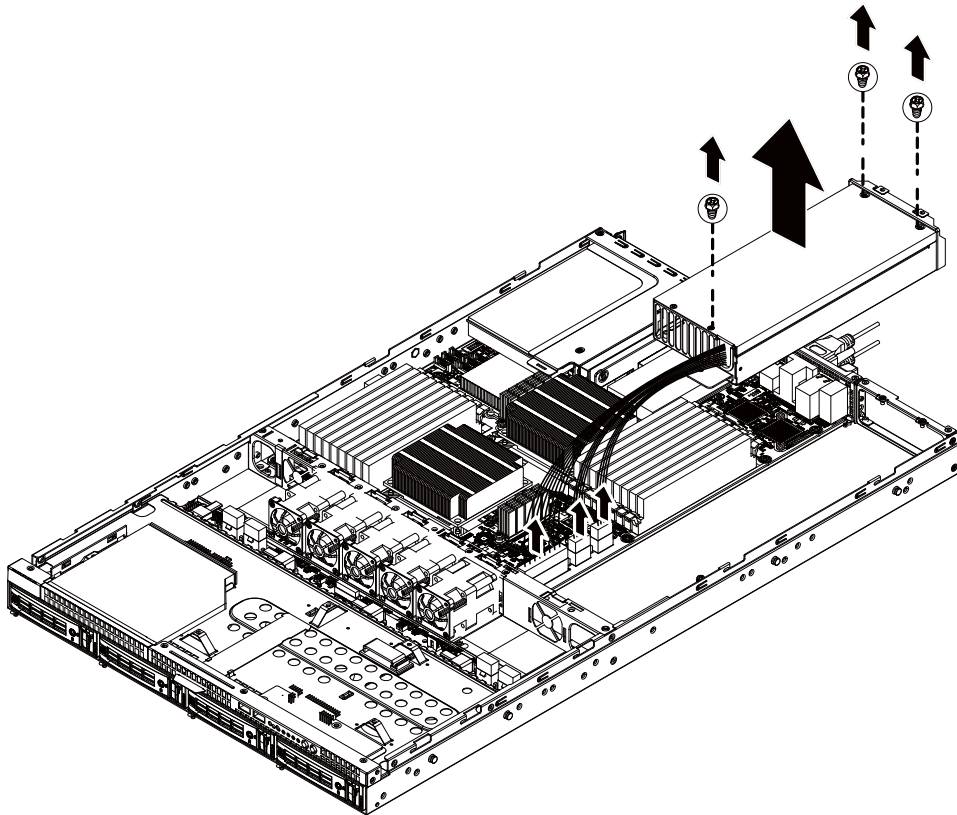
Replacing the Motherboard

- Step 1 Remove the chassis cover. See Removing the Chassis Cover on page 12.
- Step 2 Remove the fan duct from the chassis by pulling the rear edge in the direction of the arrow.
- Step 3 Remove the processor, heat sink, memory module, and PCI assembly. See previous sections for detail instruction.
- Step 4 Disconnect the power, SATA, front panel, and mainboard cable connectors. See Motherboard Placement and Jumper Setting section on page 38.
- Step 5 Remove the eleven (11) screws securing the mainboard in place.
- Step 6 Lift the mainboard out of the chassis in the direction of the arrow, front edge first, to clear the I/O ports.
- Step 7 Insert the replacement mainboard, rear edge first, to locate the I/O ports.
- Step 8 Replace the eleven (11) screws to secure the mainboard in place.

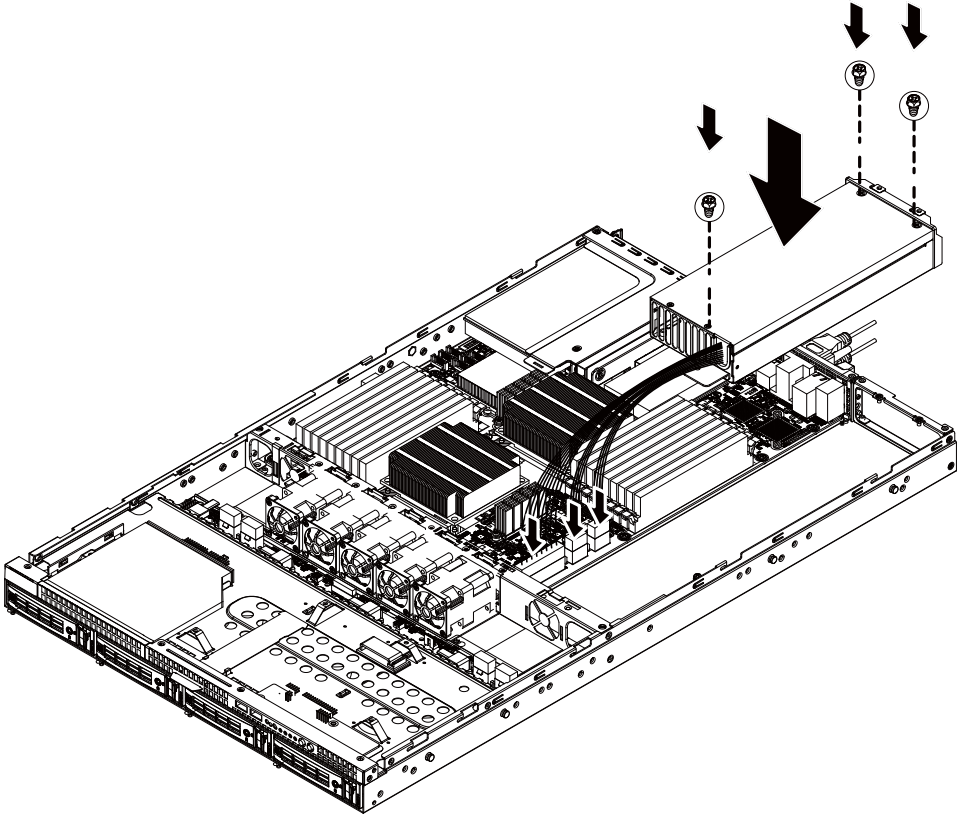


Replacing the Power Supply

- Step 1 Remove the fan duct from the chassis by pulling the rear edge.
- Step 2 Disconnect the three power cables from the chassis as shown in the following image.
- Step 3 Remove the three screws securing the power supply to the chassis.
- Step 4 Lift the power supply out of the chassis in the direction of the arrow.
- Step 5 Insert the replacement power supply and replace the two securing screws.
- Step 6 Connect the three power cables to the chassis as shown. Ensure that all the cables are flush with the chassis and do not cause an obstruction.



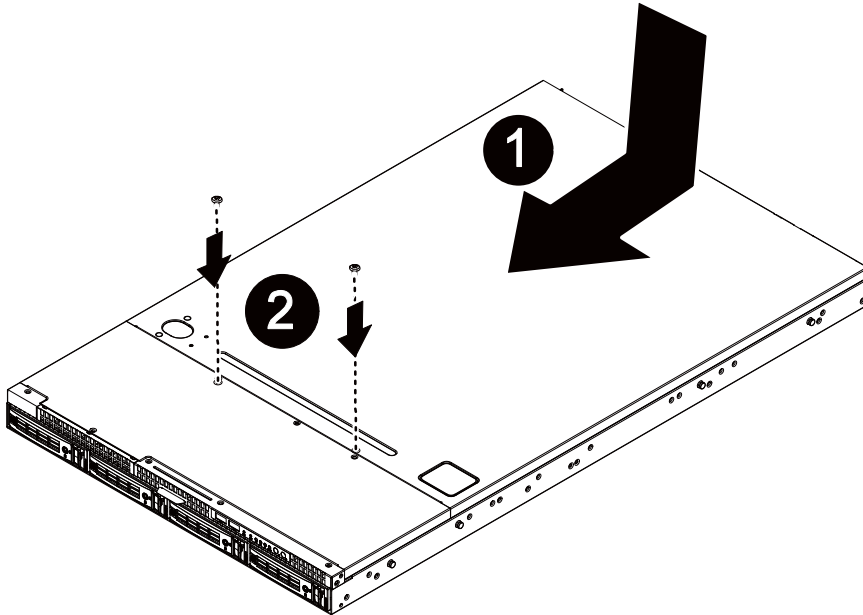
GS-R12T4H2-RH Rack Mount Server



Replacing the Chassis Cover

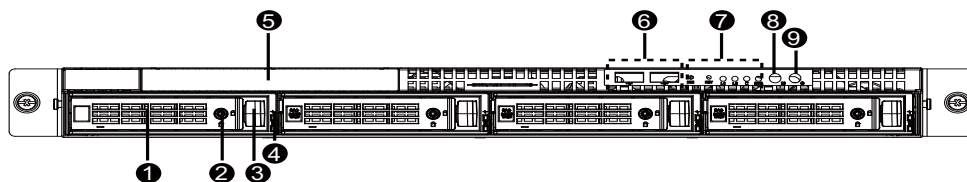
Step 1 Replace the cover, and slide the chassis in the direction of the arrow ❶ until the locking button clicks into place.

Step 2 Tighten the securing screw ❷ on top of the server until the locking button clicks into place.



Appearance of GS-R12T4H2-RH

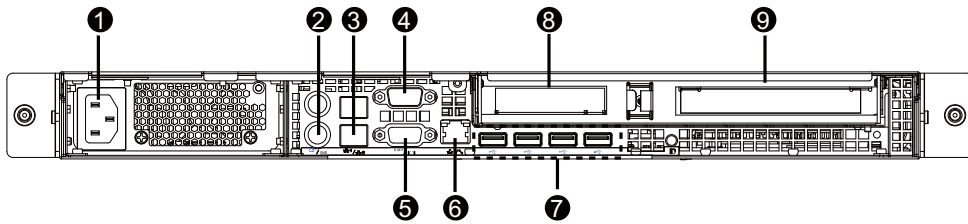
Front View of GS-R12T4H2-RH



1. HDD bay	Open to install a hard drive.
2. HDD bay lock	Turn this to lock and unlock the HDD bay.
3. HDD front release button	Slide this release to the right and pull out lever to remove HDD bay.
4. HDD LED	This LED shows HDD activity
5. ODD drive	Place ODD device in this drive.
6. Front USB ports x2	Connect USB devices to these ports.
7. System LEDs	System status LEDs.
8. ID Button	Press to light front and rear ID LEDs.
9. Power Button	Push the power button to turn the system on, and hold down to turn the system off.

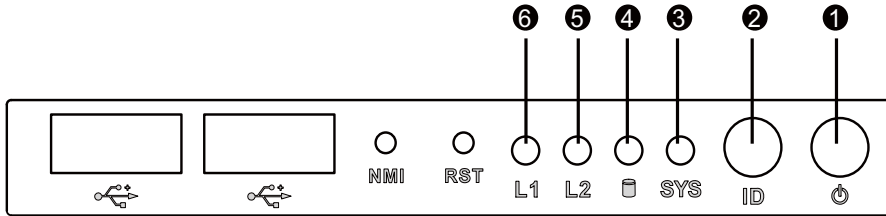
NOTE! For Front LED description, please go to Front Panel LED Indicators section.

Rear View of GS-R12T4H2-RH



1.	Power Module	Connect the power cable to the socket.
2.	PS/2 port	Connect the keyboard and mouse devices to this port.
3.	GLAN port	Connect a RJ-45 jack to this port to link to a 10/100/1000 Megabit Ethernet LAN.
4.	Serial port	Connect serial devices to this port.
5.	VGA port	Connect the monitor device to this port.
6.	LAN port	Connect a RJ-45 jack to this port to link to a 10/100 LAN. This port is for server management.
7.	USB port	Connect USB devices to these four ports.
8.	Low-profile riser card	Remove this cover before installing a PCIE card.
9.	Full-height riser card	Remove this cover before installing a PCIE card.

Front Panel LED Indicator

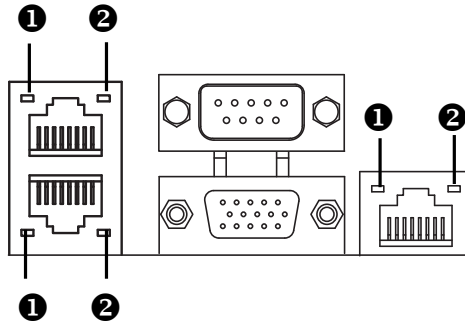


No	Indicator	Color	State	Description
1	Power status	Green	On	System has power applied to it or ACPI S0 state
		Green	Blink	System is in ACPI S1 state (sleep mode)
		N/A	Off	System is not powered on or in ACPI S5 state (power off) System is in ACPI S4 state (hibernate mode)
2	System ID	Blue	On Off	System identification is active System identification is disabled
3	System status	Green	On	Running or normal operation
		Green	Blink	System degraded due to CPU or DIMM error
		Amber	On	Critical or non-recoverable condition (Power module or voltage power supply failure or critical temperature)
		Amber	Blink	Non-critical condition
4	HDD activity	Green	Blink	HDD access
		N/A	Off	No access

GS-R12T4H2-RH Rack Mount Server

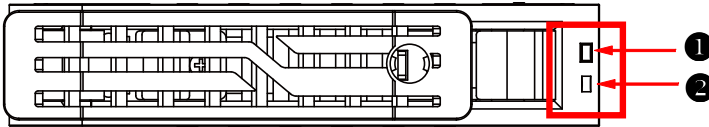
No	Indicator	Color	State	Description
5	LAN1 activity	Green	On	Link between system and network or no access
		Green	Blink	Network access
6	LAN2 activity	Green	On	Link between system and network or no access
		Green	Blink	Network access

LAN port LED Indicator



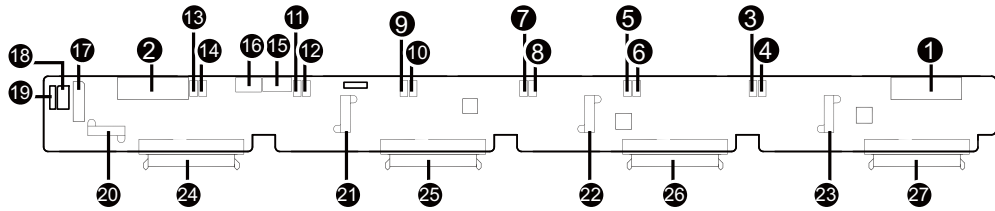
No	Name	Color	State	Description
1	Speed indicator	N/A	Off	10Mbps connection
		Green	On	100Mbps connection
		Orange	On	1000Mbps connection Note: The server management port does not support 1000Mbps connection
2	Link/activity indicator	Green	On	Active connection
		Green	Blink	Transmit or receive connection

Hard Disk Drive LED Description



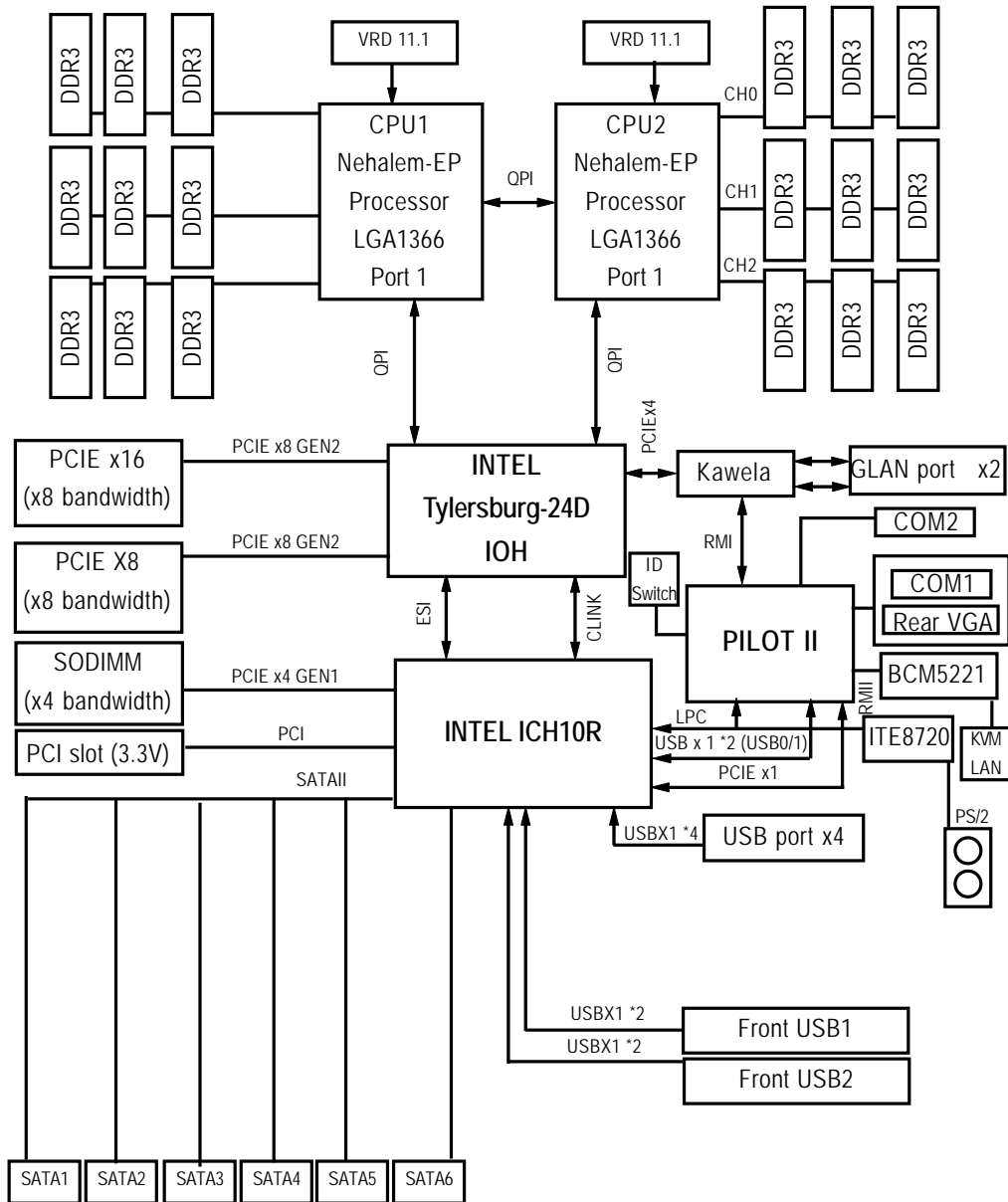
Description	SAS/SATA HDD indicator	
	Green	Red
HDD Prsent	On	Off
HDD access	Blink (4Hz)	Off
HDD failure	Off	On
HDD removed	Off	On
HDD connected and rebuilding data	On	Blink (1 Hz)
HDD locate	Blink (4Hz)	Blink (4Hz)

GC-BS14U-RH Back plane board Components









No	Code	Description
1	P2	Power Connector (14-pin)
2	P1	Power Connector (14-pin)
3-14	SF1-SF12	System fan connectors #1-12
15	CD-ROM_PWR1	CD-ROM power connector
16	J3	CD-ROM power connector
17	J2	SMBUS connector from M/B to B/P
18	SGPIO_JP2	SGPIO connector from RAID card
19	SGPIO_JP1	SGPIO connector from Enclosure IC(Motherboard)
20-23	SATA0-SATA3	SATA cable connectors #0-3
24-27	SAS0-SAS	HDD connector #0-3 (SAS & SATA)

System Block Diagram

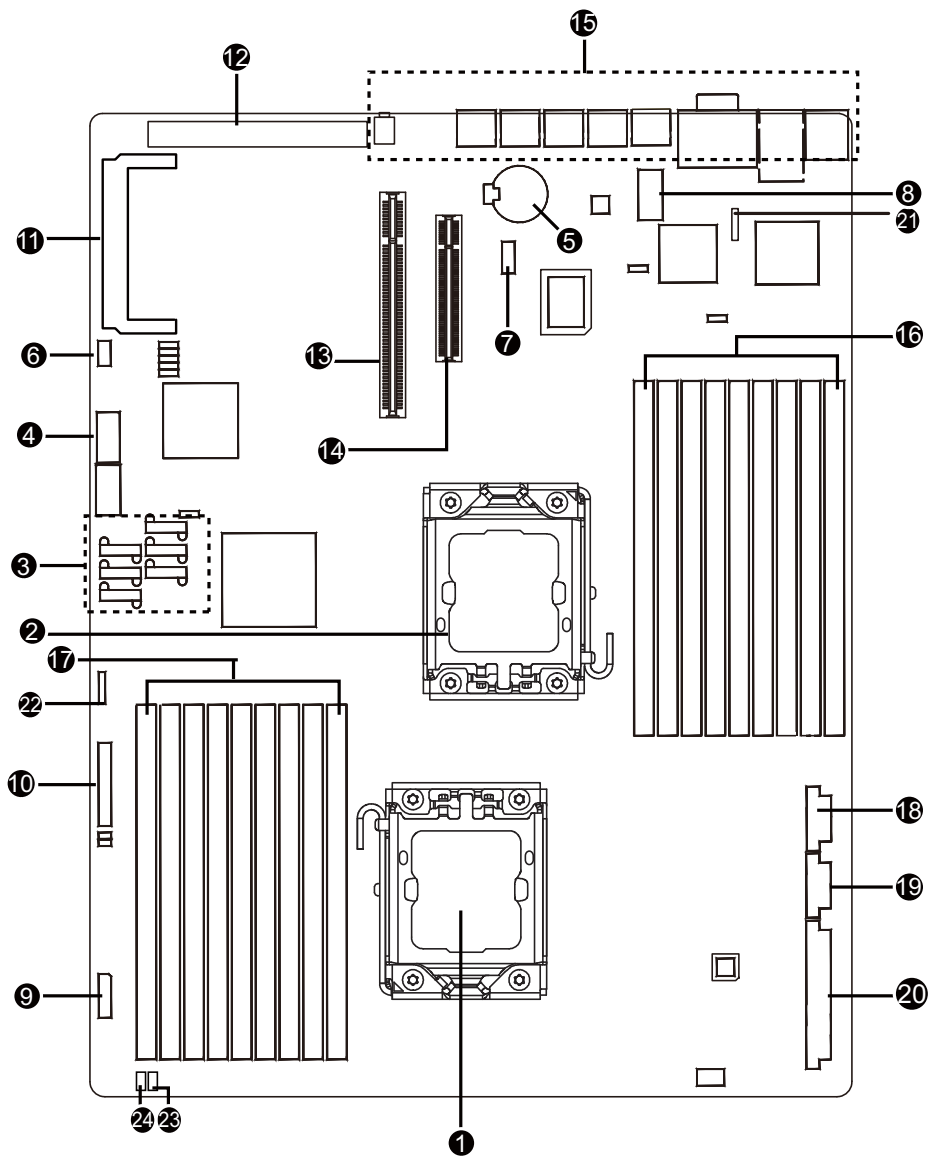


Connector Icon Description

Suggest Icon	Description
	Keyboard
	Mouse
	VGA
	COM
	LAN
	USB

Motherboard Placement and Jumper Setting

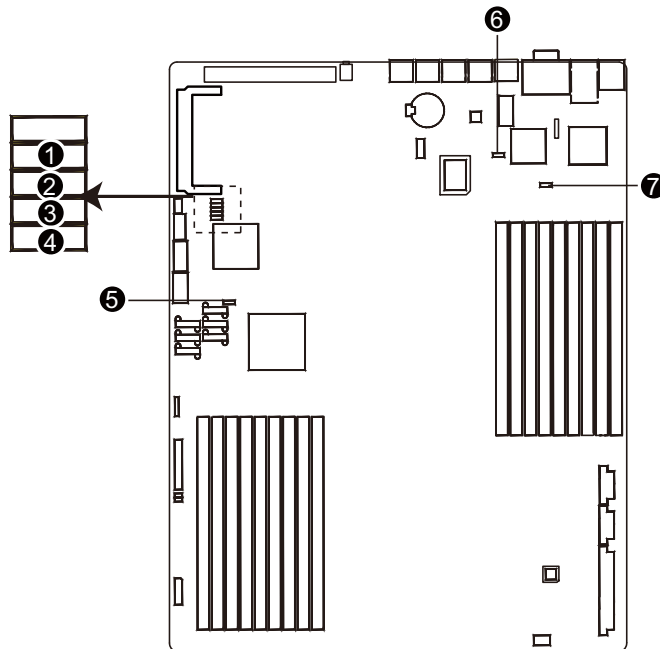
GA-7TTSE-RH Motherboard Component



Item Component

1. Processor 1 socket
2. Processor 2 socket
3. SATA data cable cable connectors
4. USB connector for internal USB (Tape device)
5. CMOS battery
6. 3-pin IPMB connector
7. LPT_DEBUG connector
8. Serial port connector
9. HDD back plane board connector
10. Front panel connector
11. SO-DIMM I/F
12. PCI 32/33 MHz slot
13. PCI- E x12 slot
14. PCI- E x8 slot
15. Rear I/O ports
16. DDR3 DIMM slots x 9 for secondary processor
17. DDR3 DIMM slots x 9 for primary processor
18. 8-pin Power connector for primary processor
19. 8-pin Power connector for secondary processor
20. 24-pin Power connector
21. SGPIO connector 1 for ICH10R
22. SGPIO connector 2 for RAID card
23. System fan connector 1 for back plane board
24. System fan connector 2 for back plane board

Jumper Setting



1) BIOS_RVCR1 (BIOS Recovery jumper)

- 1 1-2 close: Normal operation. (Default setting)
- 1 2-3 close: Enable BIOS Recovery function.



2) CLR_CMOS1 (Clear CMOS jumper)

You may clear the CMOS data to its default values by this jumper.



Default value doesn't include the "Shunter" to prevent from improper use this jumper. To clear CMOS, temporarily short 2-3 pin.

- 1 1-2 close: Normal operation (Default setting)
- 1 2-3 close: Clear CMOS



3) CLR_RTC1 (Clear RTC jumper)

- 1  1-2 close: Normal operation. (Default setting)
- 1  2-3 close: Clear RTC status









4) ME_ENABLE (BMC Selection jumper)

- 1  1-2 Close: Normal operation. (Default setting)
- 1  2-3 Close: Enable BMC function.

5) PASS_DIS1 (Skip Supervisor password jumper)

- 1  1-2 Close: Normal operation. (Default setting)
- 1  2-3 Close: Clear Supervisor Password in BIOS setup menu.

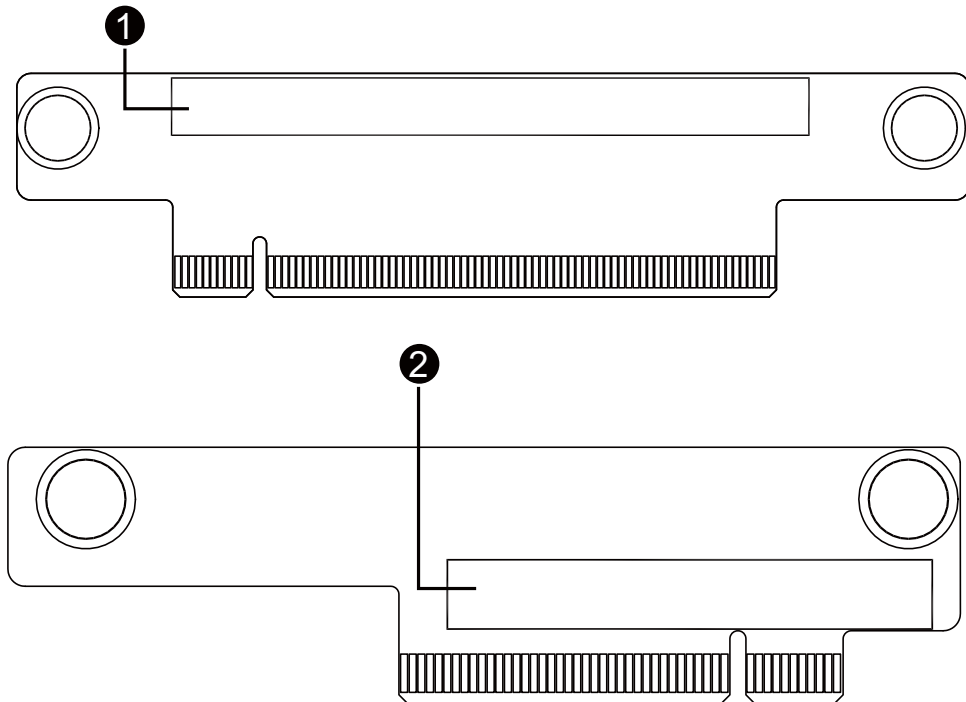
6/7) JP_STRAP2/ JP_STRAP8 (PilotII firmware upgrade jumper)

JP_STRAP2	JP_STRAP8	Describeion
1 	1 	Boot from BMC BOOT SPI Interface. (Default setting)
1 	1 	Boot From BMC LPC BOOT ROM interface.
1 	1 	Boot From internal ROM(Scratchpad Registers)
1 	1 	Boot From internal ROM(Scratchpad Registers)

Expansion Card Components Description

The two riser cards installed in the PCI riser card bracket assembly provides support for both full-height and low-profile expansion cards.

Full height and low profile PCI Express riser cards



No.	Code	Description
1	PCI-E_X16_1	Full-height riser slot
2	PCI-E_2	Low-profile riser slot

BIOS Setup

BIOS (Basic Input and Output System) includes a CMOS SETUP utility which allows user to configure required settings or to activate certain system features.

The CMOS SETUP saves the configuration in the CMOS SRAM of the motherboard.

When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS SRAM.

ENTERING SETUP

When the power is turned on, press the <F2> button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen. You can enter the BIOS setup screen by pressing "Ctrl + F1".

CONTROL KEYS

<↑>	Move to previous item
<↓>	Move to next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Esc>	Main Menu - Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu
<+/PgUp>	Increase the numeric value or make changes
<-/PgDn>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F2>	Reserved
<F3>	Reserved
<F4>	Reserved
<F6>	Reserved
<F7>	Reserved
<F8>	Reserved
<F9>	Load the Optimized Defaults
<F10>	Save all the CMOS changes, only for Main Menu

GETTINGHELP

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu / Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.

Select the **Load Setup Defaults** item in the BIOS Exit Setup menu when somehow the system is not stable as usual. This action makes the system reset to the default settings for stability.

- **Main**

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

- **Advanced**

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

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

- **Power**

This setup page includes all the items of Green function features.

- **Security**

Change, set, or disable password. It allows you to limit access the system and setup.

- **Server**

Server additional features enabled/disabled setup menus.

- **Boot**

This setup page include all the items of first boot function features.

- **Exit**

There are five options in this selection: Exit Saving Changes, Exit Discarding Changes, Load Optimal Defaults, Load Failsafe Defaults, and Discard Changes.

Main

Once you enter Phoenix BIOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

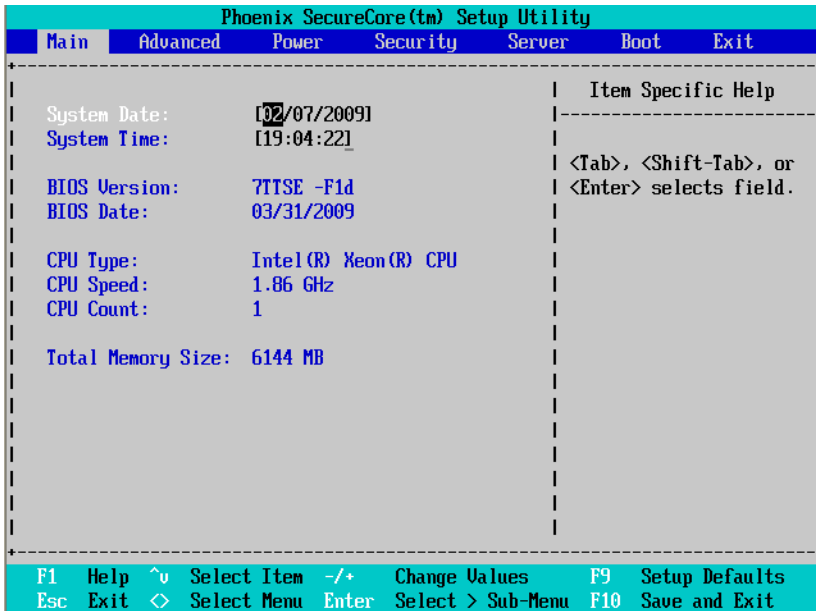


Figure 1: Main

System Date

Set the System Date. Note that the “Day” automatically changed after you set the date.

System Time

The time is calculated based on the 24-hour military time clock. Set the System Time (HH:MM:SS)

BIOS Information

- ▶▶BIOS Version: displays the BIOS version.
- ▶▶BIOS Date: displays the BIOS established date.

Processor Information

This category includes the information of CPU type, Speed ,and number of CPU count.

☞ **Total Memory**

The BIOS determines how much total memory is present during the POST.

Advanced

About This Section: Advanced

With this section, allowing user to configure your system for advanced operation. User can set the Processor configuration, Memory configuration, Advanced chipset configuration, PCI configuration, SATA configuration, I/O device configuration, Boot configuration, and Thermal and acoustic configuration.

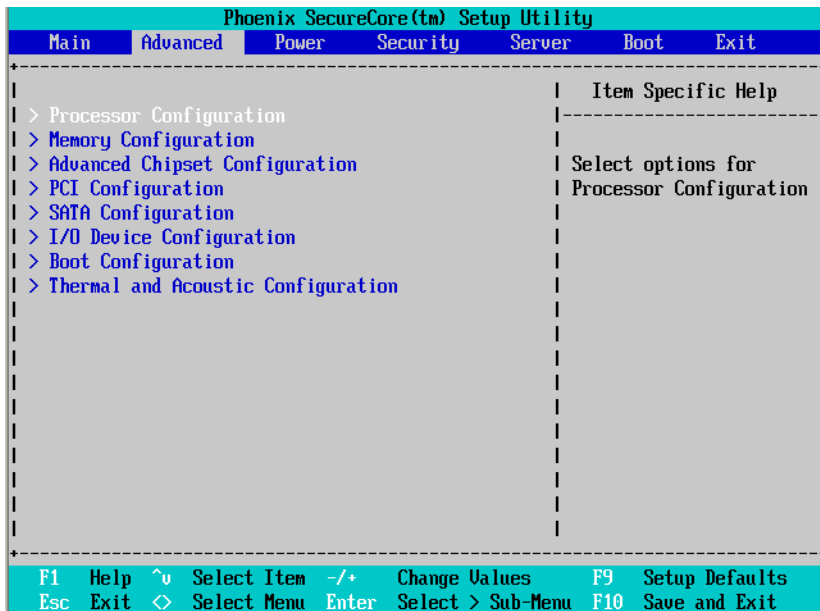


Figure 2: Advanced

Processor Configuration

```

Phoenix SecureCore(tm) Setup Utility
-----
Advanced
-----
Processor Configuration_ | Item Specific Help
-----|-----
Processor 1 Information: |
Processor Speed:         1.87 GHz | :| Configures the MP
Processor CPUID:         000106A5 | :| Specification revision
Processor L2 Cache:      1024 KB | :| level. Some operating
Processor L3 Cache:      4096 KB | :| systems will require
                           | :| 1.1 for compatibility
                           | :| reasons.
                           | :|
QPI Frequency:           4.800 GT/s | :|
Multiprocessor Specification: [1.4] | :|
                           | :|
Intel Virtualization Technology: [Enabled] | :|
Execute Disable Bit:      [Enabled] | :|
                           | :|
> Processor Power Management | :|
                           | v|
                           | |
-----|-----
F1 Help ^v Select Item -/+ Change Values F9 Setup Defaults
Esc Exit < Select Menu Enter Select > Sub-Menu F10 Save and Exit
    
```

```

Phoenix SecureCore(tm) Setup Utility
-----
Advanced
-----
Processor Configuration | Item Specific Help
-----|-----
Execute Disable Bit:    [Enabled] ^| Enable Thermal Monitor
                           | :|
> Processor Power Management | :|
                           | :|
  NUMA Aware:            [Enabled] | :|
  ACPI SRAT Report:      [Enabled] | :|
  Active Processors:     [Max. Cores] | :|
  A2OM Support:          [Enabled] | :|
  Machine Checking:      [Enabled] | :|
  Fast String operations: [Enabled] | :|
  Set Max Ext CPUID = 3: [Disabled] | :|
  Echo TPR:              [Disabled] | :|
                           | :|
  Discrete MTRR Allocation: [Disabled] | :|
  Thermal Management:    [Enabled] | :|
                           | |
-----|-----
F1 Help ^v Select Item -/+ Change Values F9 Setup Defaults
Esc Exit < Select Menu Enter Select > Sub-Menu F10 Save and Exit
    
```


☞ **Processor Configuration**

This category includes the Processor information of **CPU Speed**, **Processor ID**, **Processor L2 / L3 Cache**, and **QPI Frequency**. And setup sub-menu for **CPU Power Management**.

Please note that setup menu options will be variable depends on the type of CPU.

☞ **Multiprocessor Specification**

This option allows user to configure the multiprocessor(MP) specification revision level. Some operating system will require 1.1 for compatibility reasons.

- ▶▶1.4 Support MPS Version 1.4 . (Default setting)
- ▶▶1.1 Support M PS Version 1.1.

☞ **Intel (R) Virtualization Technology**

Intel(R) Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple "virtual" systems. With processor and I/O enhancements to Intel's various platforms, Intel Virtualization Technology can improve the performance and robustness of today's software-only virtual machine solutions.

- ▶▶Enabled Enable Intel Virtualization Technology. (Default setting)
- ▶▶Disabled Disable this function.

☞ **Execute Disable Bit**

- ▶▶Enabled Enable Execute Disable Bit. (Default setting)
- ▶▶Disabled Disable this function.

☞ **NUMAAware**

- ▶▶Enabled Enable NUMAAware. (Default setting)
- ▶▶Disabled Disable NUMA Aware.

☞ **ACPI SRAT Report**

- ▶▶Enabled Enable ACPI SRAT Report. (Default setting)
- ▶▶Disabled Disable ACPI SRAT Report.

☞ **Active Processor Cores**

- ▶▶Options One Core, Two cores, Max Cores. Default setting is Max Cores.

☞ **A20M Support**

- ▶▶Enabled Enable A20M Support. (Default setting)
- ▶▶Disabled Disable A20M Support.

GS-R12T4H2-RH Rack Mount Server

☞ **Machine Checking**

▶▶ Enabled Enable Machine Checking. (Default setting)

▶▶ Disabled Disable Machine Checking.

☞ **Fast String Operations**

▶▶ Enabled Enable Fast String Operations. (Default setting)

▶▶ Disabled Disable Fast String Operations.

☞ **Set Max Ext CPUID=3**

▶▶ Enabled Enable Set Max Ext CPUID=3.

▶▶ Disabled Disable Set Max Ext CPUID=3. (Default setting)

☞ **Echo TPR**

▶▶ Enabled Enable Echo TPR.

▶▶ Disabled Disable Echo TPR.(Default setting)

☞ **Discrete MTRR Allocation**

▶▶ Enabled Enable Discrete MTRR Allocation.

▶▶ Disabled Disable Discrete MTRR Allocation. (Default setting)

☞ **Thermal Management**

▶▶ Enabled Enable Thermal Management. (Default setting)

▶▶ Disabled Disable Thermal Management.

Processor Power Management

Phoenix SecureCore (tm) Setup Utility			
Advanced			
Processor Power Management		Item Specific Help	
EIST (GV3) & C State:	[Enabled]	Enable EIST (GV3) & C State Items	
EIST (GV3):	[Enabled]		
EIST PSD Function:	[HW_ALL]		
Turbo mode:	[Enabled]		
T-State:	[Enabled]		
CPU C State:	[Enabled]		
CPU C1E:	[Enabled]		
OS ACPI C3 Report:	[C3]		
CPU C6 Report:	[Enabled]		
CPU C7 Report:	[Enabled]		
Package C State Limit:	[No Limit]		
ACPI MWAIT extensions:	[Enabled]		
F1 Help ^v	Select Item -/+	Change Values	F9 Setup Defaults
Esc Exit <	Select Menu Enter	Select > Sub-Menu	F10 Save and Exit

Figure 2-1-1: Processor Power Management

☞ EIST (GV3) & C State

- ▶▶ Enabled Enable EIST (GV3) and C State items. (Default setting)
- ▶▶ Disabled Disable EIST (GV3) and C State items.

☞ EIST (GV3)

- ▶▶ Enabled Enable EIST (GV3). (Default setting)
- ▶▶ Disabled Disable EIST (GV3).

☞ EIST PSD Function

- ▶▶ HW_ALL In HW_ALL mode, the processor hardware is responsible for coordinating the P-state among logical processors dependencies. The OS is responsible for keeping the P-state request up to date on all logical processors. (Default setting)

- ▶▶ SW_ALL In SW_ALL mode, the OS Power Manager is responsible for coordinating the P-state among logical processors with dependencies and must initiate the transition on all of those Logical Processors.
- ▶▶ SW_ANY In SW_ANY mode, the OS Power Manager is responsible for coordinating the P-state among logical processors with dependencies and may initiate the transition on any of those Logical Processors.

☞ **TurboMode**

Turbo Mode automatically allows processor cores to run faster than marked frequency if the physical processor is operating below power, temperature and current specification limits.

Turbo Mode can be engaged with SMT (Simultaneous Multi Threading) enabled and 1 to 4 cores active and is not limited to only a single core or logical processor.

- ▶▶ Enabled Turbo Mode. (Default setting)
- ▶▶ Disabled Disable Turbo Mode.

☞ **T State**

- ▶▶ Enabled Enable CPU T-State. (Default setting)
- ▶▶ Disabled Disable T-State.

☞ **CPU C State**

- ▶▶ Enabled Enable ACPI C-State (C0, C1/C1E, C3, C6 and C7). (Default setting)
- ▶▶ Disabled Disable C-State.

☞ **CPUC1E**

- ▶▶ Enabled Enable CPU C1E. (Default setting)
- ▶▶ Disabled Disable CPU C1E.

☞ **OS ACPI C3 Report**

- ▶▶ C3 Desire state for the Nehalem core C3 state include in the CST as ACPI C3 state. (Default setting)
- ▶▶ C2 Desire state for the Nehalem core C2 state include in the CST as ACPI C2 state.
- ▶▶ Disabled Disable OS ACPI C3 Report.

☞ **CPU C6 Report**

- ▶▶ Enabled Desire state for the Nehalem core C6 state include in the CST as ACPI C3

GS-R12T4H2-RH Rack Mount Server

state. (Default setting)

- ▶▶ Disabled Disable CPU C6 Report.

☞ **CPU C7 Report**

- ▶▶ Enabled Desire state for the Nehalem core C7 state include in the CST as ACPI C3 state. (Default setting)

- ▶▶ Disabled Disable CPU C7 Report.

☞ **Package C State Limit**

Desired state for the C-State package limit.

- ▶▶ Options C0, C1 State, C3 State, C6 State, C7 State, No Limit. The default setting is No Limit.

☞ **ACPI MWAIT extensions**

- ▶▶ Enabled CST using MWAIT extension is enabled for OSPM use. (Default setting)

- ▶▶ Disabled Disable ACPI MWAIT extensions.

Memory Configuration

```

Phoenix SecureCore(tm) Setup Utility
-----
Advanced
-----
Memory Configuration | Item Specific Help
-----|-----
Base Memory:         633 KB      :| Auto - By default
Extended Memory:    6143 MB     :| value
Memory Frequency:   800 MHz     :| Manual - By user value
Memory Control Settings: [Manual] :|
Memory RAS Mode:    [Chanel for Indep] :|
Memory Frequency:   [Auto]      :|
Channel Interleave setting: [6-way] :|
Rank Interleave setting: [4-way] :|
DIMM A1 :           Not Installed .|
DIMM A2 :           Not Installed .|
DIMM A3 :           Not Installed .|
DIMM B1 :           1024 MB      .|
DIMM B2 :           1024 MB      .|
DIMM B3 :           1024 MB      v|
-----|-----
F1 Help ^v Select Item -/+ Change Values F9 Setup Defaults
Esc Exit < Select Menu Enter Select > Sub-Menu F10 Save and Exit
-----

Phoenix SecureCore(tm) Setup Utility
-----
Advanced
-----
Memory Configuration | Item Specific Help
-----|-----
DIMM B3 :           1024 MB      ^| Clears the memory error
DIMM C1 :           1024 MB      .| status.
DIMM C2 :           1024 MB      .|
DIMM C3 :           1024 MB      .|
DIMM D1 :           Not Installed .|
DIMM D2 :           Not Installed .|
DIMM D3 :           Not Installed .|
DIMM E1 :           Not Installed :|
DIMM E2 :           Not Installed :|
DIMM E3 :           Not Installed :|
DIMM F1 :           Not Installed :|
DIMM F2 :           Not Installed :|
DIMM F3 :           Not Installed :|
-----|-----
F1 Help ^v Select Item -/+ Change Values F9 Setup Defaults
Esc Exit < Select Menu Enter Select > Sub-Menu F10 Save and Exit
-----

```

GS-R12T4H2-RH Rack Mount Server

☞ **Memory Information**

These following items display all information of current Base Memory, Extended Memory, , and installed DIMM Status. These items are display-only which is determined by POST (Power On Self Test) of the BIOS.

☞ **Memory Control Settings**

- ▶▶ Manual Select 'Manual" will pops up sub-menu for configuration.
- ▶▶ Auto Auto configuration. (Default setting)

☞ **Memory RAS Mode**

- ▶▶ Identify the Memory RAS mode.

☞ **Memory Frequency**

- ▶▶ Select the desire value of Memory frequency. Options available: Auto, DDR-3 800, DDR-3 1066, and DDR-3 1333.

☞ **Change Interleave setting**

- ▶▶ Change the interleave setting. Options available: 1-way, 2-way, 3-way, 4-way, and 6-way.

☞ **Rank Interleave setting**

- ▶▶ Configure interleave setting. Options available: 1-way, 2-way, and 4-way.

Advanced Chipset Configuration

Phoenix SecureCore(tm) Setup Utility		
Advanced		
Advanced Chipset Configuration	Item Specific Help	
> Intel VT for Directed I/O (VT-d)		Press <Enter> to bring up the Intel VT for Directed I/O (VT-d) Configuration menu.
Course Grain Clocking Gating:	[Disabled]	
Intel(R) I/OAT:	[Enabled]	
IOH IOxAPIC:	[Enabled]	
4GB PCI Hole Granularity:	[1.0 GB]	
QPI Control Settings:	[Enabled]	
QPI Link Fast Mode:	[Enabled]	
QPI Frequency Selection:	[Auto]	
QPI Isoch-support:	[Disabled]	
QPI DCA support:	[Enabled]	
QPI Scramble Selection:	[Disabled]	
QPI Error Report:	[Disabled]	
Memory ECC Error Log:	[Both]	
ECC Threshold:	[0]	
Enable Multimedia Timer:	[Yes]	

F1	Help	^v	Select Item	-/+	Change Values	F9	Setup Defaults
Esc	Exit	<	Select Menu	Enter	Select > Sub-Menu	F10	Save and Exit

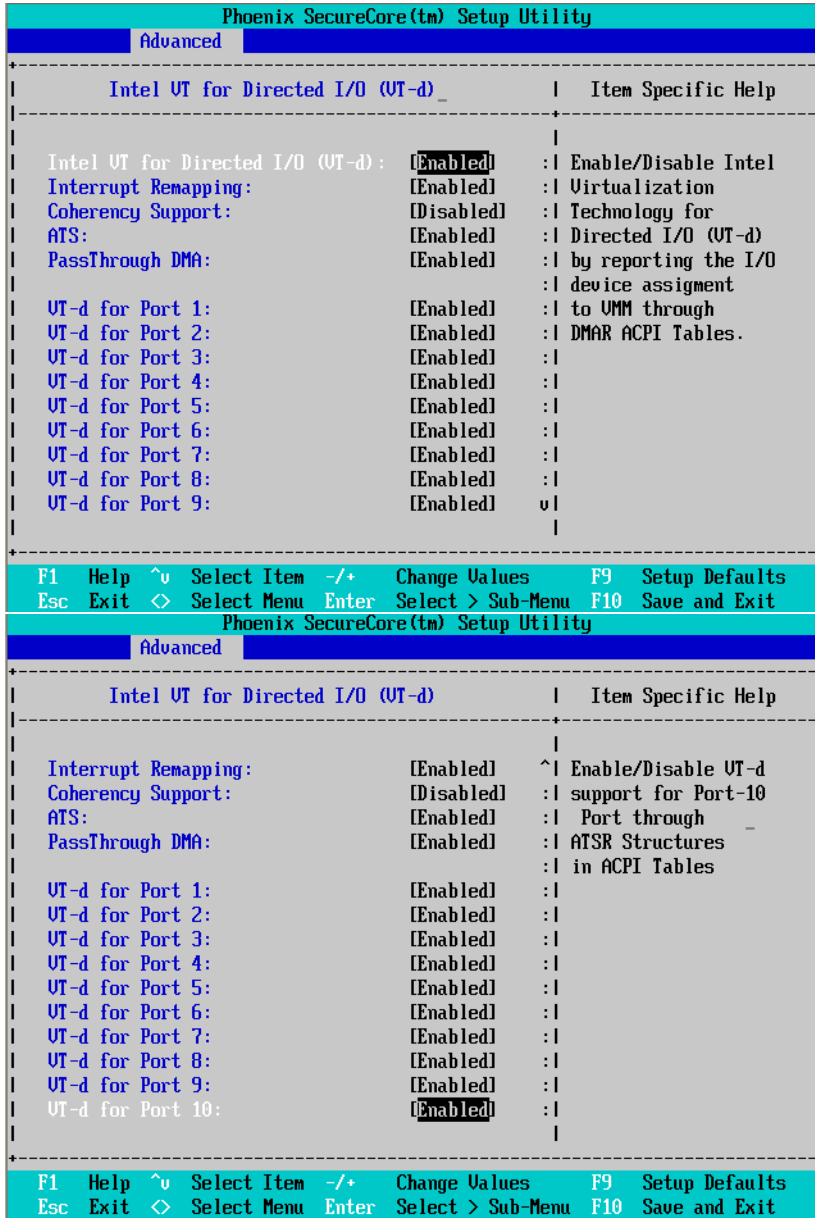


Figure 2-3-1: Intel VT for Directed I/O (VT-d)

☞ **Intel VT for Directed I/O (VT-d)**

- ▶▶ Enabled Intel VT for Directed I/O (VT-d). (Default setting)
- ▶▶ Disabled Disable Intel VT for Directed I/O (VT-d).

☞ **Interrupt Remapping**

- ▶▶ Enabled Enable Interrupt Remapping. (Default setting)
- ▶▶ Disabled Disable Interrupt Remapping.

☞ **Coherency Support**

- ▶▶ Enabled Enable Coherency Support.
- ▶▶ Disabled Disable Coherency Support. (Default setting)

☞ **ATS**

- ▶▶ Enabled Enable ATS. (Default setting)
- ▶▶ Disabled Disable ATS.

☞ **Pass Through DMA**

- ▶▶ Enabled Enable Pass Through DMA. (Default setting)
- ▶▶ Disabled Disable Pass Through DMA.

☞ **VT-d for Port1~Port 10**

- ▶▶ Enabled Enable VT-d support for Port 1~Port 10 ports through ATSR structures in ACPI Tables. (Default setting)
- ▶▶ Disabled Disable VT-d for Port1~Port 10.

☞ **Advanced Chipset Control Main Menu Options**

☞ **Course Grain Clocking Gating**

- ▶▶ Enabled Enable Course Grain Clocking Gating.
- ▶▶ Disabled Disable Course Grain Clocking Gating. (Default setting)

☞ **Intel (R) I/OAT**

- ▶▶ Enabled Enable configuration mapped accesses to the I/OAT configuration sapce. (Default setting)
- ▶▶ Disabled Disable I/OAT.

☞ **4GB PCI Hole Granularity**

Select the granularity of PCI hole for PCI resource. If MTRRS are not enough, we may use this option to reduce the MTRR occupation.

- ▶▶ 512MB Select 512MB as granularity of PCI hole.
- ▶▶ 1GB Select 1GB as granularity of PCI hole. (Default setting)

GS-R12T4H2-RH Rack Mount Server

▶▶2GB Select 2GB as granularity of PCI hole.

☞ **QPI Control Settings**

▶▶Enabled Enable QPI Control settings. (Default setting)

▶▶Disabled QPI Control settings.

☞ **QPI Link Fast Mode**

▶▶Enabled Enable QPI Link Fast Mode. (Default setting)

▶▶Disabled Disable QPI Link Fast Mode.

☞ **QPI Frequency Selection**

▶▶Identify the desire value of QPI frequency. Option available: Auto, 4.800GT, 5.866GT.
Default setting is Auto.

☞ **QPI Isoch Support**

▶▶Enabled Enable QPI Isoch Support.

▶▶Disabled Disable QPI Isoch Support. (Default setting)

☞ **QPIDCA Support**

▶▶Enabled Enable QPI DCA Support. (Default setting)

▶▶Disabled Disable QPI DCA Support.

☞ **QPI scramble selection**

▶▶Enabled Enable QPI scramble selection.

▶▶Disabled Disable QPI scramble selection. (Default setting)

☞ **QPI Error Report**

▶▶Enabled Enable QPI Error Report.

▶▶Disabled Disable QPI Error Report. (Default setting)

☞ **Memory ECC Error Log**

▶▶Identify the the memory ecc error log. Option available: Disable, Correctable Error, Uncorrectable Error, and Both. The default setting is Both.

☞ **ECC Threshold**

▶▶Use the "+" and "-" keys to adjust the desire value of ECC Threshold.

☞ **Enable Multimedia Timer**

▶▶Yes Enable Multimedia Timer support. (Default setting)

▶▶No Disable this function.

PCI Configuration

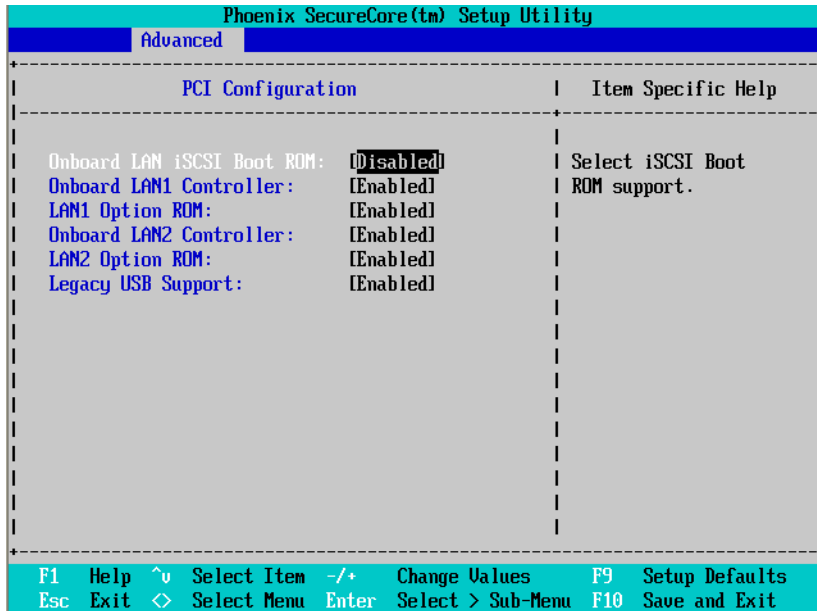


Figure 2-4: PCI Configuration

☞ Onboard LAN iSCSI Boot ROM

- ▶▶ Enabled Enable Onboard LAN iSCSI Boot ROM.
- ▶▶ Disabled Disable this function. (Default setting)

☞ Onboard LAN1 Control

- ▶▶ Enabled Enable Onboard LAN controller. (Default setting)
- ▶▶ Disabled Disable this function.

☞ LAN1OptionROM

- ▶▶ Enabled Enable onboard LAN1 device and initialize device expansion ROM. (Default setting)
- ▶▶ Disabled Disable this function.

☞ Onboard LAN2 Control

- ▶▶ Enabled Enable Onboard LAN controller. (Default setting)
- ▶▶ Disabled Disable this function.

GS-R12T4H2-RH Rack Mount Server

☞ **LAN2OptionROM**

- ▶▶ Enabled Enable onboard LAN2 device and initialize device expansion ROM. (Default setting)
- ▶▶ Disabled Disable this function.

☞ **Legacy USB Support**

This option allows user to function support for legacy USB.

- ▶▶ Enabled Enables support for legacy USB (Default setting)
- ▶▶ Disabled Disables support for legacy USB.

SATA Configuration

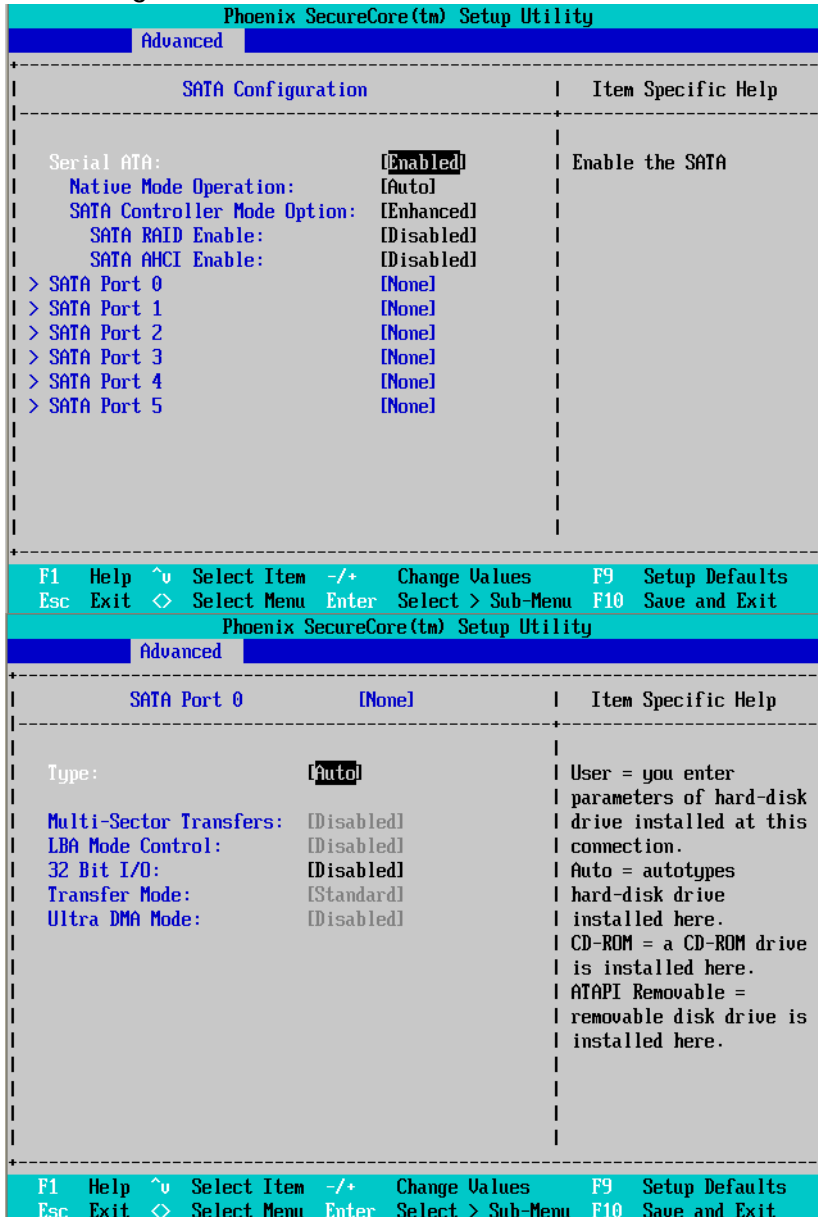


Figure 2-5: SATA Configuration

Serial ATA

- ▶▶ Enabled Enables on-board serial ATA function. (Default setting)
- ▶▶ Disabled Disables on-board serial ATA function.

▶▶ Native Mode Operation

This option allows user to set the native mode for Serial ATA function.

- ▶▶ Auto Auto detected. (Default setting)
- ▶▶ Serial ATA Set Native mode to Serial ATA.

▶▶ SATA Controller Mode Option

- ▶▶ Compatible Mode SATA and PATA drives are auto-detected and placed in Legacy mode.
- ▶▶ Enhanced Mode SATA and PATA drives are auto-detected and placed in Native mode. (Default setting)

Note: Pre-Win2000 operating system do not work in Enhanced mode.

▶▶ SATA RAID Enable

- ▶▶ Enabled Enabled SATA RAID function.
- ▶▶ Disabled Disable this function. (Default setting)

▶▶ SATA AHCI Enable

- ▶▶ Enabled Set this item to enable SATA AHCI function for WinXP-SP1+IAA driver supports AHCI mode.
- ▶▶ Disabled Disabled this function. (Default setting)

SATA Port 0/1/2/3/4/5

The category identifies the types of Serial SATA hard disk from drive 0 to 5 that has been installed in the computer. System will automatically detect HDD type.

Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category.

Hard drive information should be labeled on the outside device casing. Enter the appropriate option based on this information.

▶▶ TYPE

1-39: Predefined types.

Users: Set parameters by User.

Auto: Set parameters automatically. (Default setting)

CD-ROM: Use for ATAPI CD-ROM drives or double click [Auto] to set all HDD parameters automatically.

ATAPI Removable: Removable disk drive is installed here.

▶▶ **Multi-Sector Transfer**

This field displays the information of Multi-Sector Transfer Mode.

Disabled: The data transfer from and to the device occurs one sector at a time.

Auto: The data transfer from and to the device occurs multiple sectors at a time if the device supports it.

▶▶ **LBA Mode Control** This field shows if the device type in the specific IDE channel support LBA Mode.

▶▶ **32-Bit I/O** Enable this function to maximize the IDE data transfer rate.

▶▶ **Transfer Mode** This field shows the information of Transfer Mode.

▶▶ **Ultra DMA Mode** This field displays the DMA mode of the device in the specific IDE channel.

I/O Device Configuration

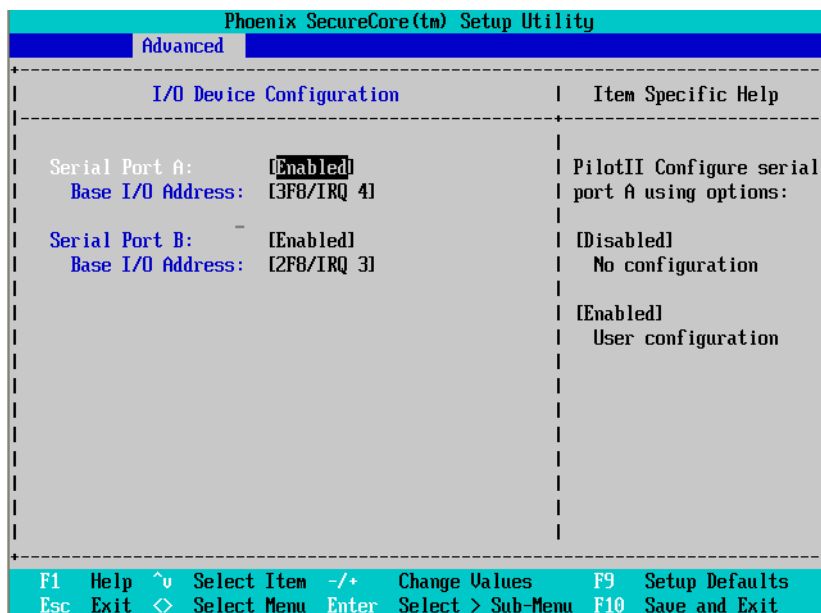


Figure 2-6: I/O Device Configuration

Serial Port A

This allows users to configure serial port A by using this option.

- ▶▶ Enabled Enable the configuration. (Default setting)
- ▶▶ Disabled Disable the configuration.
- ▶▶ Base I/O Address/IRQ
 - ▶▶ 3F8/IRQ4 Set IO address to 3F8/IRQ4.(Default setting)
 - ▶▶ 2F8/IRQ3 Set IO address to 2F8/IRQ3.
 - ▶▶ 3E8/IRQ7 Set IO address to 3E8/IRQ7.
 - ▶▶ 2E8/IRQ5 Set IO address to 2E8/IRQ5.

Serial Port B

This allows users to configure serial port B by using this option.

- ▶▶ Enabled Enable the configuration (Default setting)
- ▶▶ Disabled Disable the configuration.

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▶▶ **Base I/O Address/IRQ**

- ▶▶ 3F8/IRQ4 Set IO address to 3F8/IRQ4.
- ▶▶ 2F8/IRQ3 Set IO address to 2F8/IRQ3. (Default setting)
- ▶▶ 3E8/IRQ7 Set IO address to 3E8/IRQ7.
- ▶▶ 2E8/IRQ5 Set IO address to 2E8/IRQ5.

Boot Device Configuration

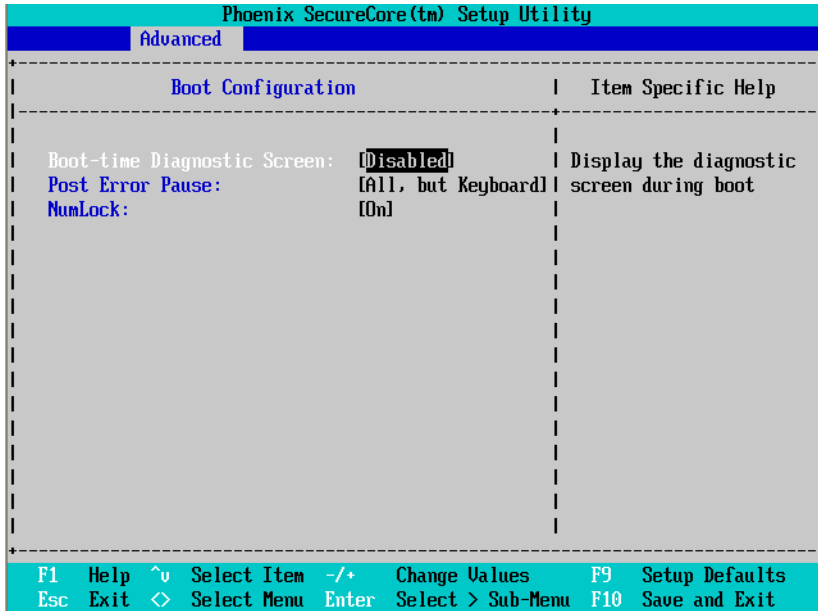


Figure 2-7: Boot Configuration

☞ Boot -time Diagnostic Screen

When this item is enabled, system will shows Diagnostic status when system boot.


- ▶▶ Enabled Enable Boot-time Diagnostic screen.
- ▶▶ Disabled Disable this function. (Default setting)

☞ Post Error Pause

The category determines whether the computer will stop if an error is detected during power up.

- ▶▶ All Error Whenever the BIOS detects a non-fatal error the system will be stopped.
- ▶▶ No Error The system boot will not stop for any error that may be detected and you will be prompted.
- ▶▶ All, But Keyboard The system boot will not stop for a keyboard error; it will stop for all other errors. (Default setting)

GS-R12T4H2-RH Rack Mount Server

 **NumLock**

This option allows user to select power-on state for NumLock.

- ▶▶ On Enable NumLock. (Default setting)
- ▶▶ Off Disable this function.

Thermal and Acoustic Configuration

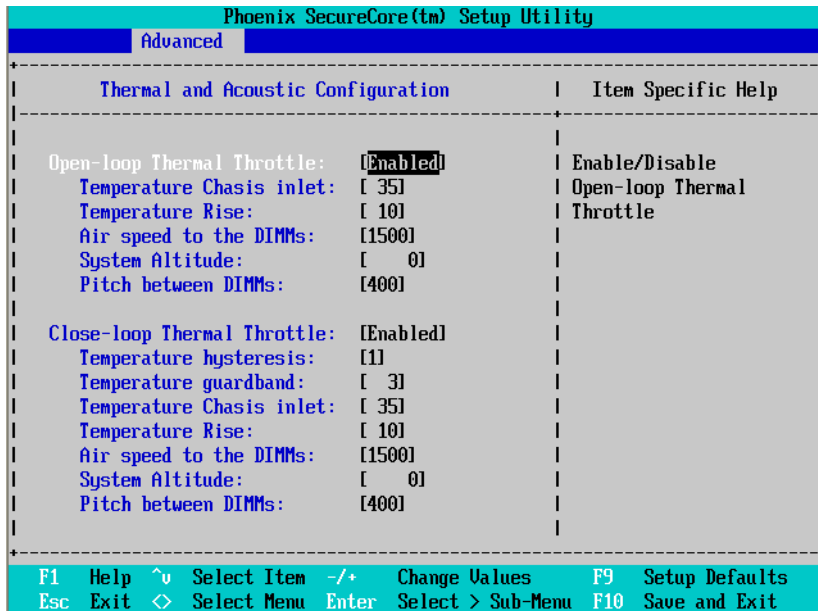


Figure 2-8: Thermal and Acoustic Configuration

Open loop Thermal Throttle

- ▶▶ Enabled Open loop Thermal Throttle. (Default setting)
- ▶▶ Disabled Disable Open loop Thermal Throttle.

Temperature Chassis inlet

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

Temperature Rise

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

Air speed to the DIMMs

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

System Altitude

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

Pitch between DIMMs

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

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☞ **Close loop Thermal Throttle**

- ▶▶ Enabled Close loop Thermal Throttle. (Default setting)
- ▶▶ Disabled Disable Close loop Thermal Throttle.

☞ **Temperature hysteresis**

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

☞ **Temperature guardband**

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

☞ **Temperature Chassis inlet**

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

☞ **Temperature Rise**

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

☞ **Air speed to the DIMMs**

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

☞ **System Altitude**

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

☞ **Pitch between DIMMs**

- ▶▶ This item is user defined. Use nuber key to adjust desired value.

Power

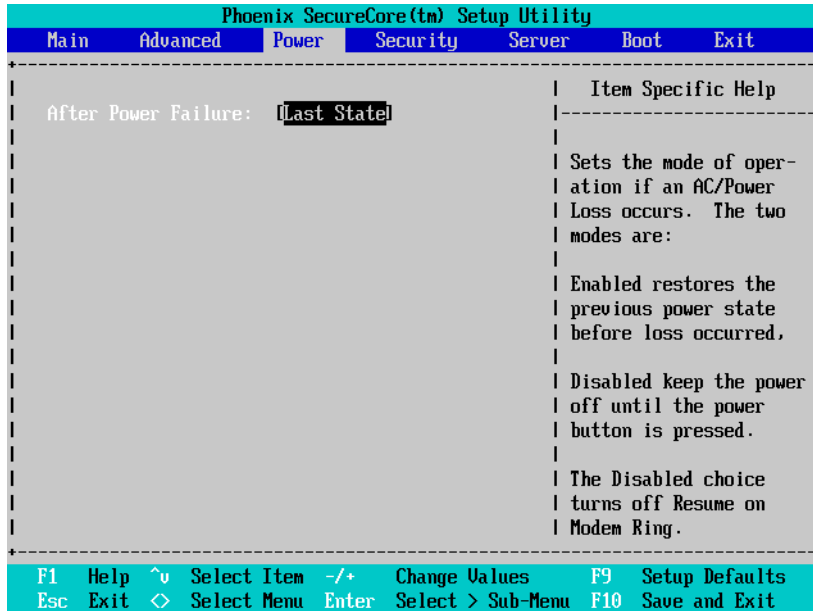


Figure 3: Power

☞ After Power Failure

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

- ▶▶ Power On System power state when AC cord is re-plugged.
- ▶▶ Stay Off Do not power on system when AC power is back.
- ▶▶ Last State Set system to the last state when AC power is removed. Do not power on system when AC power is back. (Default setting)

Security

🔑 About This Section: Security

In this section, user can set either supervisor or user passwords, or both for different level of password securities. In addition, user also can set the virus protection for boot sector.

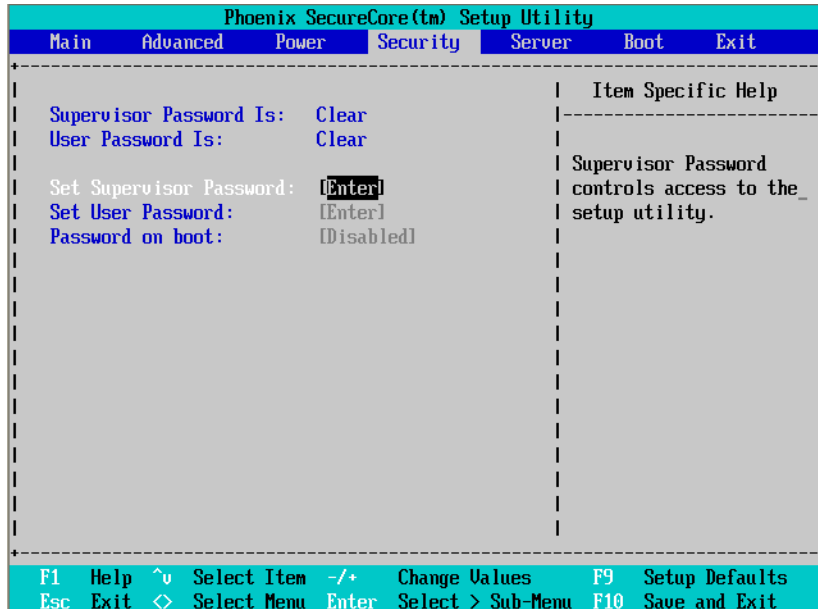


Figure 4: Security

🔑 Set Supervisor Password

You can install and change this options for the setup menus. Type the password up to 6 characters in length and press <Enter>. The password typed now will clear any previously entered password from the CMOS memory. You will be asked to confirm the entered password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a specified password or press <Enter> key to disable this option.

☞ **Set User Password**

You can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Type the password up to 6 characters in length and press <Enter>. The password typed now will clear any previously entered password from the CMOS memory. You will be asked to confirm the entered password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a specified password.

☞ **Password on boot**

Password entering will be required when system on boot.

- | | |
|-------------|---|
| ▶▶ Enabled | Requires entering password when system on boot. |
| ▶▶ Disabled | Disable this function. (Default setting) |

Server

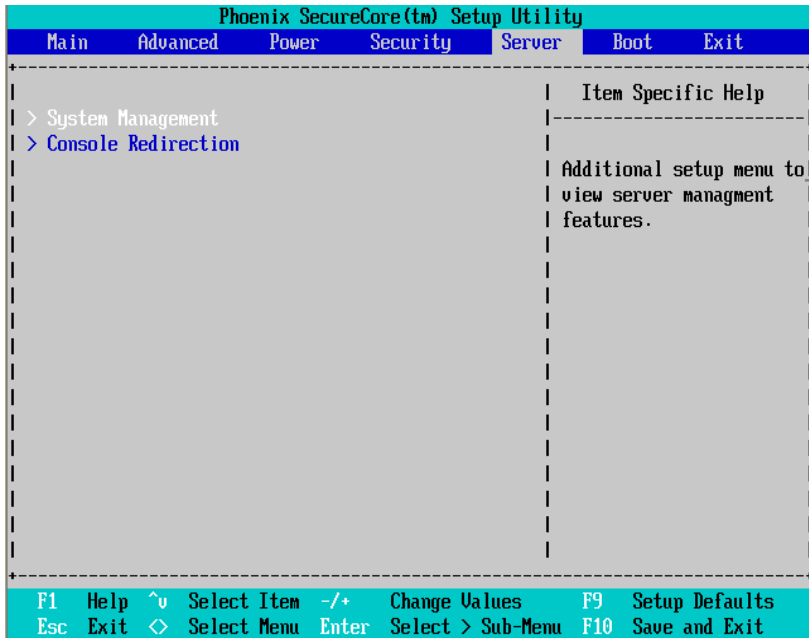


Figure 5: Server

System Management

```

Phoenix SecureCore (tm) Setup Utility
Server
-----
System Management | Item Specific Help
-----
System Manufacture: GIGABYTE          :| Address obtained by BMC
System Product Name: GS-R12T4H2       :| running DHCP or static
System Serial Number: 001              :| address (manually confi-
Base Board Product Name: GS-R12T4H2   :| gured) .
Base Board Serial Number: 001         :|
UUID: 001FD0AD16ABFFFFFFFFF          :|
NIC1 MAC Address: 00-1F-D0-AD-16-AB  :|
NIC2 MAC Address: 00-1F-D0-AD-16-AA  :|
BMC Firmware Version: 00.04          :|
SDR Version: 00.04                   :|
FRU Version: 00.04                   :|
                                     :|
BMC IP Address Source: [DHCP]         :|
IP Address: [000.000.000.000]         :|
IP Subnet Mask: [000.000.000.000]    v|
                                     |
-----
F1 Help ^v Select Item -/+ Change Values F9 Setup Defaults
Esc Exit < Select Menu Enter Select > Sub-Menu F10 Save and Exit
Phoenix SecureCore (tm) Setup Utility
Server
-----
System Management | Item Specific Help
-----
System Product Name: GS-R12T4H2       ^| Address obtained by BMC
System Serial Number: 001              :| running DHCP or static
Base Board Product Name: GS-R12T4H2   :| address (manually confi-
Base Board Serial Number: 001         :| gured) .
UUID: 001FD0AD16ABFFFFFFFFF          :|
NIC1 MAC Address: 00-1F-D0-AD-16-AB  :|
NIC2 MAC Address: 00-1F-D0-AD-16-AA  :|
BMC Firmware Version: 00.04          :|
SDR Version: 00.04                   :|
FRU Version: 00.04                   :|
                                     :|
BMC IP Address Source: [DHCP]         :|
IP Address: [000.000.000.000]         :|
IP Subnet Mask: [000.000.000.000]    :|
Default Gateway: [000.000.000.000]   :|
                                     |
-----
F1 Help ^v Select Item -/+ Change Values F9 Setup Defaults
Esc Exit < Select Menu Enter Select > Sub-Menu F10 Save and Exit
    
```

🔗 **System Management**

This category allows user to view the system management features. Including information of Motherboard Hardware information and software information.

🔗 **BMC IP Address Source**

▶▶ Address obtained by BMC running DHCP or Static address.

Option available: DHCP, Static.

Console Redirection

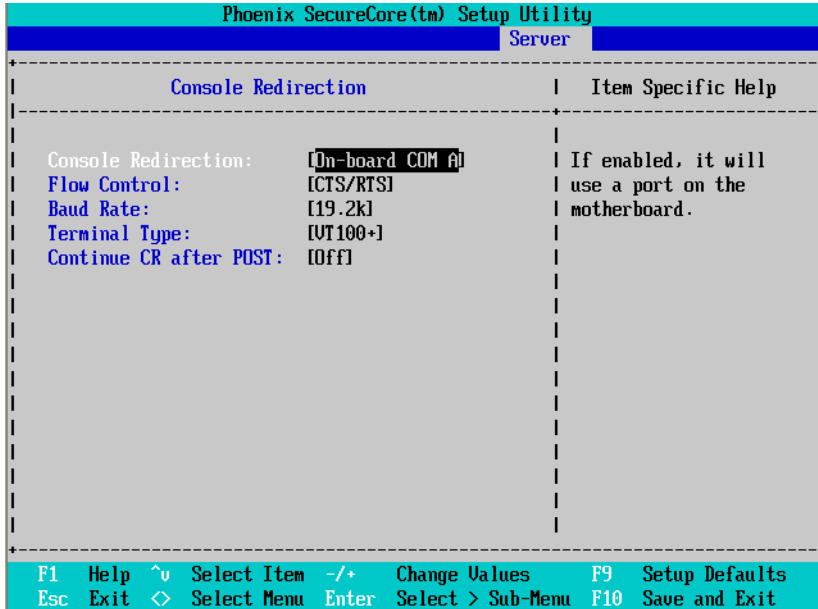


Figure 5-2: Console Redirection

☞ Console Redirection

If this option is set to enabled, it will use a port on the motherboard to run console redirection function.

- ▶▶ On-board COM A Use Serial Port A as the COM port address.
- ▶▶ On-board COM B Use Serial Port B as the COM port address.
- ▶▶ Disabled Disable this function. (Default setting)

☞ Flow Control

This option provide user to enable the flow control function.

- ▶▶ None Not supported.
- ▶▶ XON/XOFF Software control.
- ▶▶ CTS/RTS Hardware control. (Default setting)

☞ Baud Rate

This option allows user to set the specified baud rate.

▶▶Options 300, 1200, 2400, 9600, 19.2K, 38.4K, 57.6K, 115.2K.

🔑**Terminal Type**

This option allows user to select the specified terminal type. This is defined by IEEE.

▶▶Options VT100, VT100 8bit, PC-ANSI 7bit, PC-ANSI, VT100+, VT-UTF8, ASCII.

🔑**Continue C.R. after POST**

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

▶▶On Enable console redirection after O.S has loaded.

▶▶Off Disable this function. (Default setting)

Boot

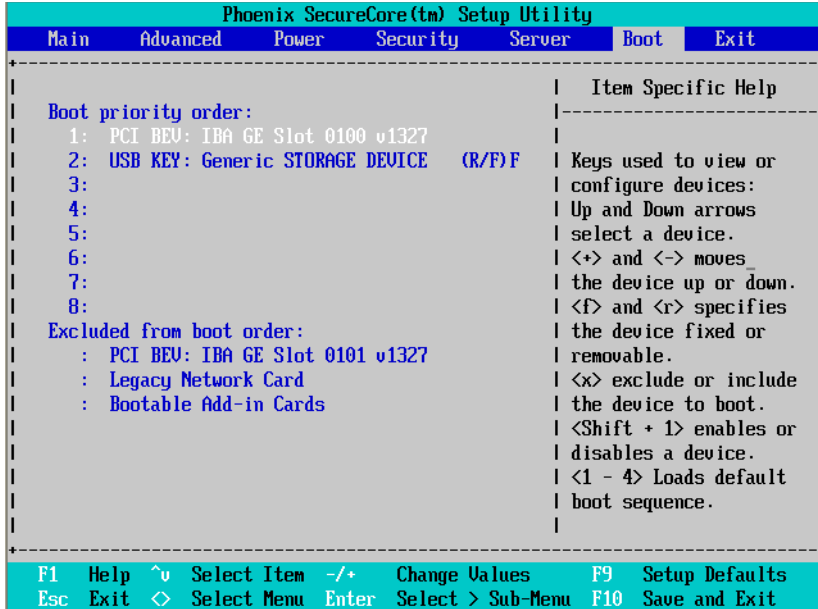


Figure 6: Boot

☞ Boot Priority Order

This field determines which type of device the system attempt to boot from after **PhoenixBIOS Post** completed. Specifies the boot sequence from the available devices. If the first device is not a bootable device, the system will seek for next available device.

Key used to view or configure devices:

- Up and Down arrows select a device.
- <+> and <-> moves the device up or down.
- <f> and <r> specifies the device fixed or removable.
- <x> exclude or include the device to boot.
- <Shift + 1> Enable or disable a device.
- <1-4> Loads default boot sequence.

Exit

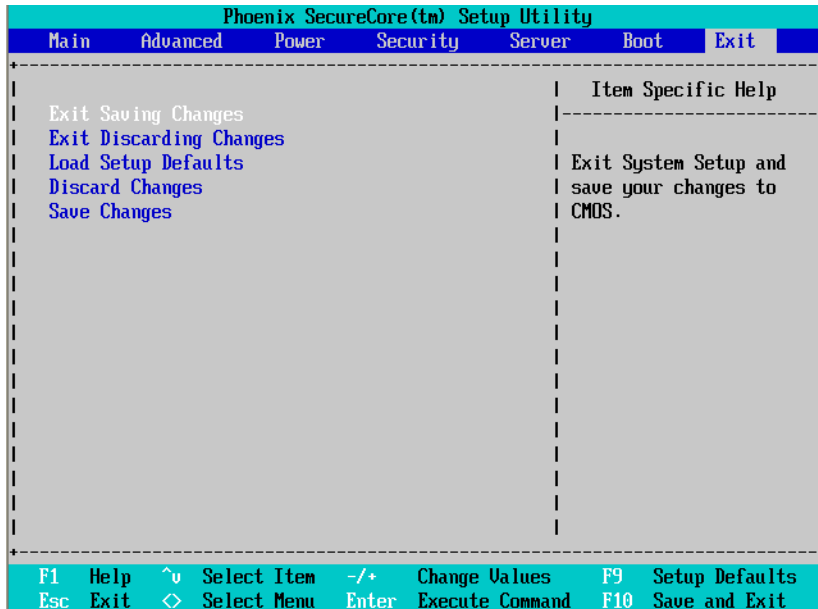


Figure 7: Exit

☞ About This Section: Exit

Once you have changed all of the set values in the BIOS setup, you should save your changes and exit BIOS setup program. Select "Exit" from the menu bar, to display the following sub-menu.

☞ Exit Saving Changes

This option allows user to exit system setup with saving the changes.

Press <Enter> on this item to ask for the following confirmation message:

Pressing 'Y' to store all the present setting values tha user made in this time into CMOS.

Therefore, whenyou boot up your computer next time, the BIOS will re-configure your system according data in CMOS.

☞ Exit Discarding Changes

This option allows user to exit system setup without changing anyprevious settings values in CMOS. The previous selection remain in effect.

This will exit the Setup Utility and restart your compuetr when selecting this option.

GS-R12T4H2-RH Rack Mount Server

↻Load Setup Default

if you highlight this item and press Enter, a dialog box asks if you want to install optimal settings for all the items in the Setup utility. Press the Y key to indicate Yes, and then press Enter to install the optimal settings.

↻Discard Changes

Select this item and press Enter to discard any changes you have made without leaving the setup utility.

↻Save Changes

This option allows user to save setup data to CMOS.

Press [Yes] to save setup data to CMOS.

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