OPEN
Industry Standard, Flexible Architecture

GREEN
Less Heat, Less Power Consumption

STABLE
Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

1U12L4E-EGS/2L2Q

User Manual

English

Version 1.00
Published Sep. 2024
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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.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

Setting up the Server in a Restricted Access Location/Restricted Access Area

- Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
- Leave enough clearance (25 inches in the front and 30 inches in the back of the rack) to allow the front door to be opened completely and to allow for sufficient airflow.
- This product is for installation merely in a Restricted Access Location.
- This product is not suitable for use with visual display work place devices according to §2 of the the German Ordinance for Work with Visual Display Units.
- Only skilled person and Instructed person can remove the chassis covers to access the inside of the system.

ASRock Rack's Website: www.ASRockRack.com

Replaceable Batteries

CAUTION

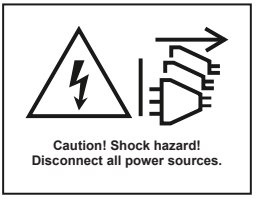
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

Warning

When removal of the chassis lid required for servicing:

- Turn off power and unplug any power cords/cables, and
- Reinstall the chassis lid before restoring power.



Important Safety Instructions

Pay close attention to the following safety instructions before performing any of the operation. Basic safety precautions should be followed to protect yourself from harm and the product from damage:

- Operation of the product should be carried out by suitably trained, qualified, and certified personnel only to avoid risk of injury from electrical shock or energy hazard.
- Disconnect the power cord from the wall outlet when installing or removing main system components, such as the motherboard and power supply unit.
- Place the system on a stable and flat surface.
- Use extreme caution when working with high-voltage components.
- When handling parts, use a grounded wrist strap designed to prevent static discharge.
- Keep the area around the system clean and clutter-free.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags when not in use.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- The power cord must be connected to a socket or outlet with a ground connection.

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Chapter 1 Introduction

Thank you for purchasing 1U12L4E-EGS/2L2Q, a reliable barebone system produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

This guide provides the instructions of insertion and extraction of chassis components, such as chassis covers, system fans, power supplies, hard disk drive trays, and other main components this system supports. If the system is pre-installed a serverboard, please refer to the user's manual of the serverboard for the information of the serverboard components, specifications and BIOS settings.

System	ASRock Rack Server Board
1U12L4E-EGS/2L2Q	SPC741D16QM3-2L2Q

Because the hardware specifications might be updated, the content of this documentation will be subject to change without notice.

The illustrations shown in this manual are for reference purposes only and may not exactly match the model purchased.

If requiring technical support related to this system, please visit the website for specific information about the using model.
http://www.asrockrack.com/support/

1.1 Shipping Box Contents

Item	Quantity
Server Barebone: 1U12L4E-EGS_2L2Q	1
CPU heatsink	1
Rail kit	1
Accessory box - 2 Power cords - 1 Quick installation guide - M2 & M3 Screws	1

If any items are missing or appear damaged, contact your authorized dealer.

English

1.2 Specifications

1U12L4E-EGS/2L2Q	
System	
Form Factor	1U Rackmount
Dimensions (D x W x H)	944.2 x 448 x 43.5 mm (37.2" x 17.6" x 1.7")
Support MB	SPC741D16QM3-2L2Q
Front Panel	
Buttons	Power Switch, ID Switch, System reset
LEDs	Power status, UID, HDD activity, System Fault
External Drive Bay / Storage	
Front Side Drive Bay	12 Hot-swap 3.5" SATA drive bays 4 Hot-swap 2.5" NVMe (PCIe4.0 x4) drive bays, supports 7mm height
Front Side Backplane	3 x 4-port SATA passive backplane (1U12L4E_HDDBP), 1 x 4-port NVMe passive backplane (1U12L4E_BPB)
Internal Side	1 M-key M2_1* (PCIe3.0 x4 or SATA 6Gb/s), supports 22110/2280 form factor [PCH] 1 M-key M2_2* (PCIe3.0 x2 or SATA 6Gb/s), supports 2280 form factor [PCH] ** M2_2 will be disabled when M2_1 populated with PCIe device.* ** M2_1 will auto-switch to support SATA only when M2_2 is occupied.* ** M2_2 supports SATA by default. Please contact ASRock Rack for PCIe3.0 x2 support.*
Power Supply	
Type	1+1 Hot-swap Slim RPSU
Output Watts	1000W @100-240Vac input
AC Input	100-240Vac, 50/60Hz
System Fan	
Fan	6 PWM Easy-swap 40x56 mm fans
Processor System	
CPU	Supports 5th and 4th Gen Intel® Xeon® Scalable Processors
Socket	Single Socket E (LGA 4677)
Thermal Design Power	max. up to 270W
Chipset	Intel® C741
System Memory	
Supported DIMM Quantity	16 DIMM slots (2DPC)
Supported Type	Supports DDR5 288-pin RDIMM, RDIMM-3DS
Max. Capacity per DIMM	RDIMM: 96G RDIMM-3DS: 2H- 128 GB / 4H- 256 GB
Max. DIMM Frequency	5600 MT/s (1DPC) / 4400 MT/s (2DPC) on 5th Gen Intel® Xeon® Scalable Processors 4800 MT/s (1DPC) / 4400 MT/s (2DPC) on 4th Gen Intel® Xeon® Scalable Processors **Memory speed and capacity support varies by CPU SKU*

Voltage	1.1V
PCIe Expansion Slots (SLOT7 close to CPU)	
PCIe x 16	1 FHHL PCIe5.0 x16 via RB1UX16R_G5 [CPU] 1 HHHL PCIe5.0 x16 via RB1UX16L_G5 [CPU]
TPM	
TPM support	1 (13-pin, SPI)
Ethernet	
Additional GbE Controller	2 SFP28 (25GbE) by Broadcom BCM57414 2 RJ45 (1GbE) by Intel® i350
OCP slot	1 OCP NIC 3.0 (PCIe5.0 x16) [CPU]
Server Management	
BMC Controller	ASPEED AST2600: IPMI2.0 with iKVM and vMedia support
IPMI Dedicated GLAN	1 RJ45 Dedicated IPMI LAN port by Realtek RTL8211F
Graphics	
Controller	ASPEED AST2600: 1 DB15 (VGA), 1 header
Rear I/O	
UID Button/ LED	1 UID button w/LED
VGA Port	1 DB15 (VGA)
Serial Port	1 rear via Type-C connector
USB 3.2 Gen1 Port	2 Type-A (USB3.2 Gen1)
RJ45	2 RJ45 (1GbE), 1 dedicated IPMI
Other network connector	2 SFP28 (25GbE)
System BIOS	
BIOS Type	AMI UEFI BIOS; 512Mb SPI Flash ROM
BIOS Features	Plug and Play (PnP), ACPI 4.0 and above compliance wake up events, SMBIOS 3.4 and above, ASRock Rack Instant Flash
Hardware Monitor	
Temperature	CPU, PCH, MB, Card Side, M.2, RAM, TR1 Temperature Sensing
Fan	Fan Tachometer CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature) Fan Multi-Speed Control
Voltage	1.05V_PCH, 1.8V_PCH, +BAT, PVNN_PCH, PVCCIN_CPU, 3.3V, 5V, 12V, 3.3VSB, 5VSB, 12V_AUX
Environment	
Temperature	Operation temperature: 10°C ~ 35°C / Non operation temperature: -40°C ~ 70°C
Humidity	Non operation humidity: 20% ~ 90% (Non condensing)

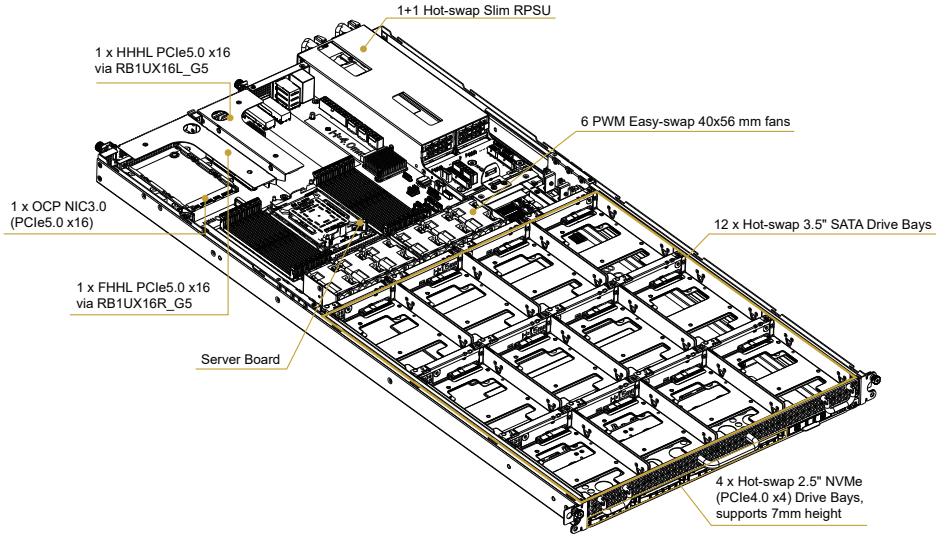
**Please be noted that the functions are supported depending on the type of the server board.*

Please refer to the user manual of the motherboard you use for detailed information about motherboard components and features.

Chapter 2 Server System Overview

This chapter provides diagrams showing the location of important components of the server system.

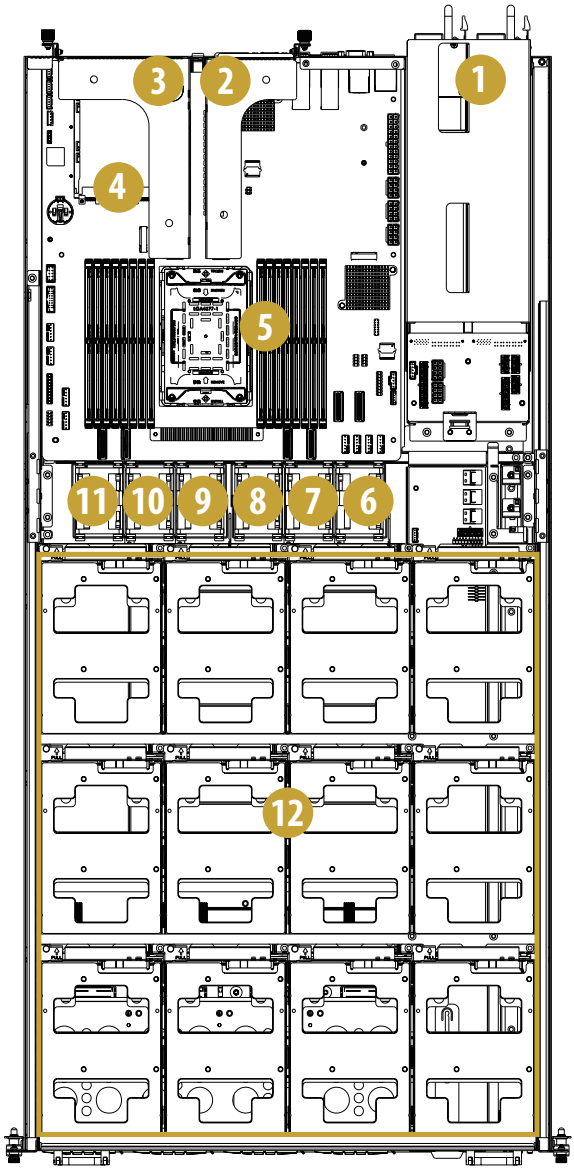
2.1 System Components



**The illustrations in this User Manual are for references only. The actual product may be slightly different by SKU.*

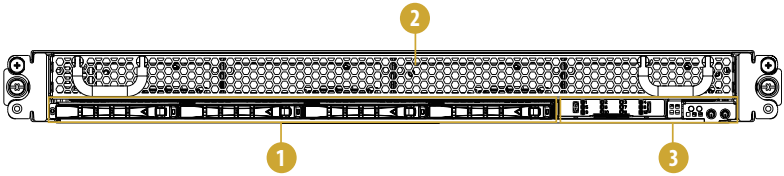
English

2.2 Internal Features



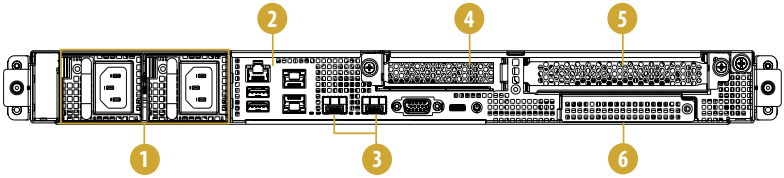
No.	Description
1	1+1 Hot-swap Slim RPSU
2	1 x HHHL PCIe5.0 x16 via RB1UX16L_G5
3	1 x FHHL PCIe5.0 x16 via RB1UX16R_G5
4	1 x OCP NIC3.0 (PCIe5.0 x16)
5	Server Board
6	PWM Easy-swap 40x56 mm Fan (FAN1)
7	PWM Easy-swap 40x56 mm Fan (FAN2)
8	PWM Easy-swap 40x56 mm Fan (FAN3)
9	PWM Easy-swap 40x56 mm Fan (FAN4)
10	PWM Easy-swap 40x56 mm Fan (FAN5)
11	PWM Easy-swap 40x56 mm Fan (FAN6)
12	12 x Hot-swap 3.5" SATA Drive Bays

2.3 System Front Panel



No.	Description
1	4 x Hot-swap 2.5"" NVMe (PCIe4.0 x4) Drive Bays supports 7mm height
2	Front Vent Panel
3	Control Panel Buttons and LED Indicators (depends on the specification of the server board)

2.4 System Rear Panel



No.	Description
1	1+1 Hot-swap Slim RPSU
2	I/O Shield (depends on the specification of the server board)
3	2 x SFP28 (25GbE) by Broadcom BCM57414
4	1 x HHHL PCIe5.0 x16 via RB1UX16L_G5
5	1 x FHHL PCIe5.0 x16 via RB1UX16R_G5
6	1 x OCP NIC3.0 (PCIe5.0 x16)

Chapter 3 Hardware Installation and Maintenance

This chapter helps you assemble the chassis and install components.

Before You Begin

Before you work with the server, pay close attention to the "Important Safety Instructions" at the beginning of this manual.

1. Make sure the server is powered off.
   Power down the server if it is still running.
   (1) Press the Power button to power off the server from full-power mode to standby-power (sleep) mode. The Power LED at the front turns from solid green to blinking green.
   (2) Disconnect the power cord first from the AC outlet and then from the server. The power LED turns off.

> *The server is not completely powered down when you press the Power button on the front panel. The Power button lets the server toggle between Power On and Standby (Sleep) modes. Some internal circuitry remain active in the Standby mode. To remove all power from the system completely, be sure to disconnect the power cord from the server.*

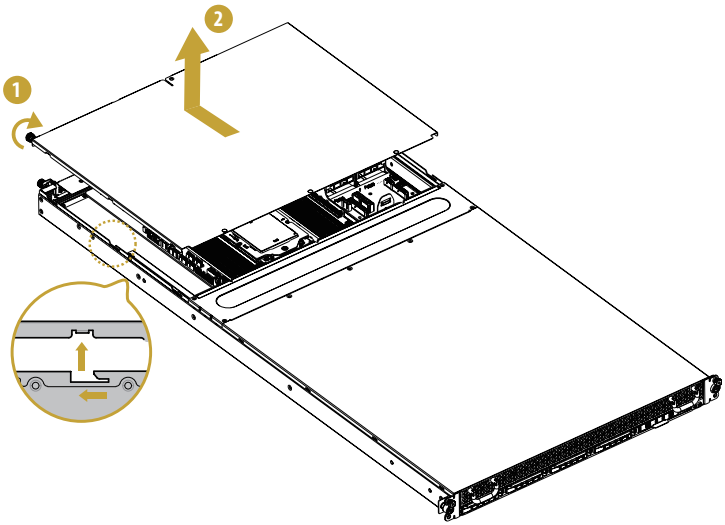
2. Ensure you have a clean and stable working environment. Avoid dust and dirt because contaminants may cause malfunctions.
3. Ground yourself properly before touching any system component. A discharge of static electricity may damage components. Wear a grounded wrist strap if available.

> 1. *Some components are already pre-installed. Simply properly connect the required cables before or after installation. See the Quick Installation Guide for more details.*
> 2. *Refer to the user manual of the server board you use for instructions on how to install server board components.*

3.1 Server Top Cover

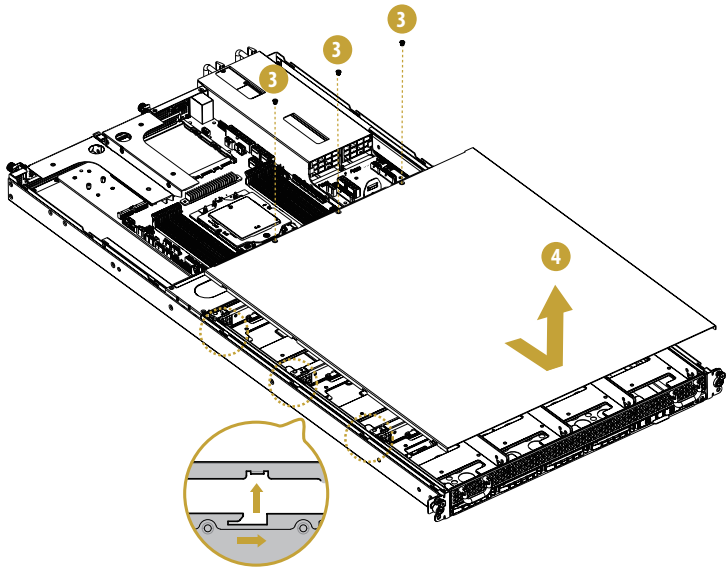
Removing the Server Top Cover

1. Before removing the top cover, power off the server and unplug the power cord.
2. The system must be operated with the chassis top cover installed to ensure proper cooling.



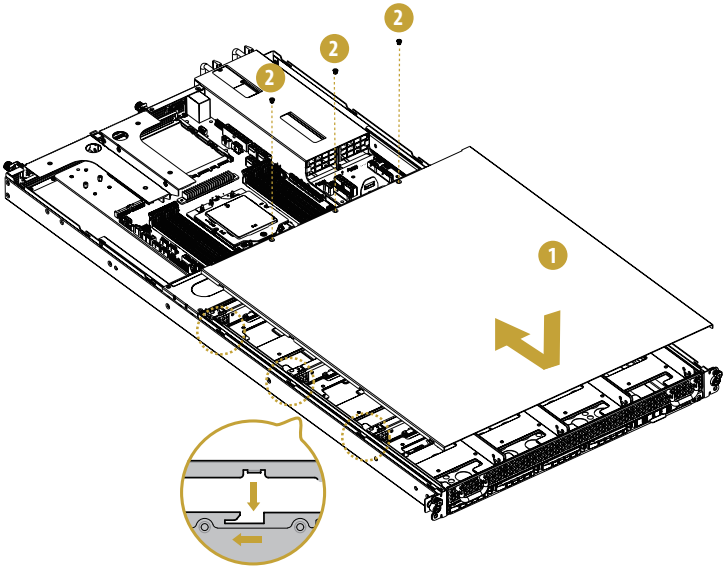
1. Hand-release the thumbscrew on the rear side of the chassis.
2. Push the top rear cover toward the REAR side of the chassis to remove the cover from the locked position. Lift up and remove the cover.

3. Remove the screws that secure the top front cover to the chassis.
4. Push the top front cover toward the FRONT of the chassis to remove the cover from the locked position. Lift up and remove the cover.

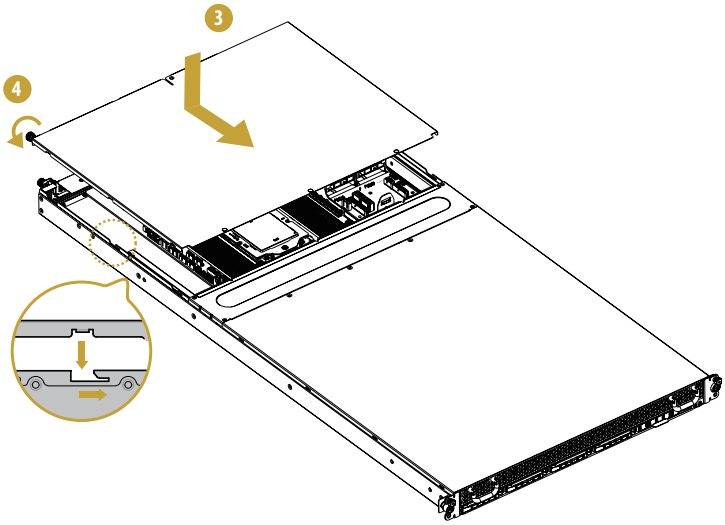


Installing the Server Top Cover

1. Lower the top front cover on the chassis, making sure the side latches align with the cutouts.
2. Slide the top front cover toward the REAR of the chassis.Secure the cover in place with screws.



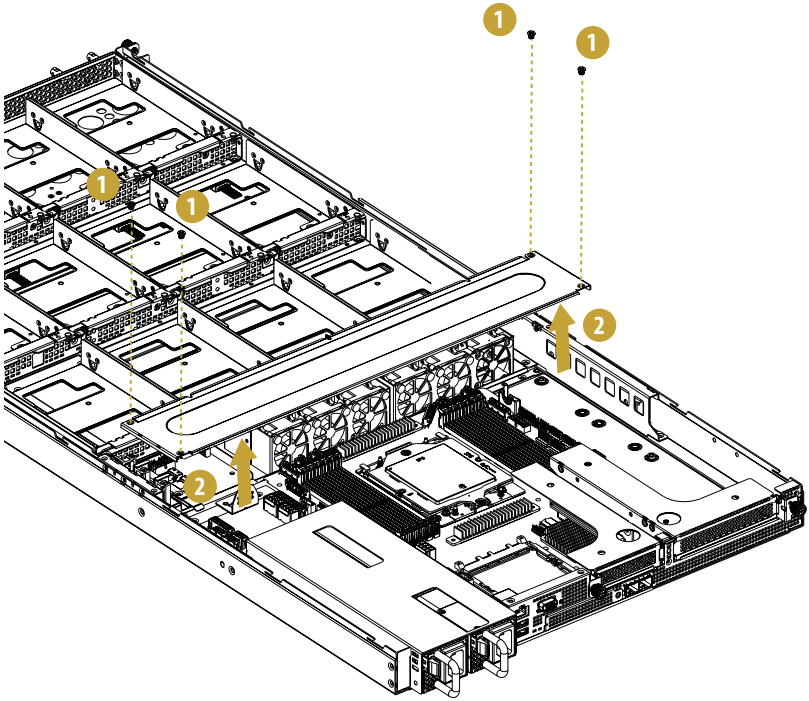
3. Lower the top rear cover on the chassis, making sure the side latches align with the cutouts. Slide the top rear cover toward the FRONT side.
4. Hand-tighten the thumbscrew on the rear side of the chassis.



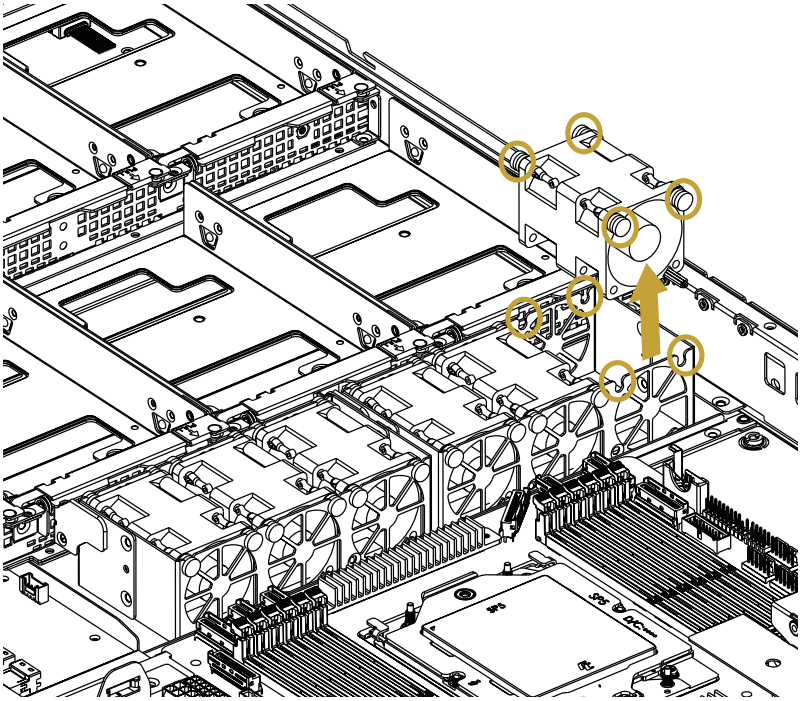
3.2 System Fan

Replacing the System Fan

1. Release the screws that secure the fan-retention bracket to the fan cage.
2. Remove the fan-retention bracket from the chassis.



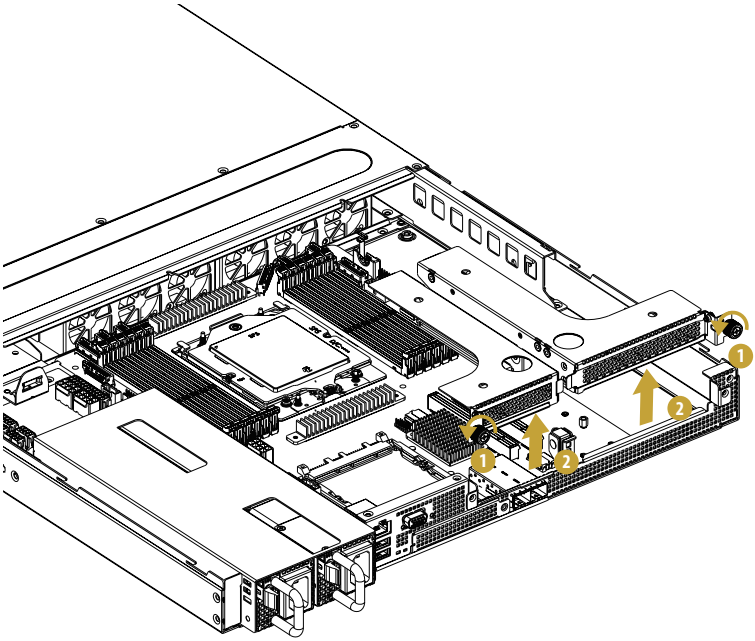
3. Press and hold the clip on the fan.
4. Align the mounting holes on the fan bar with the fan mount on the replacement fan.
5. Please be aware of the mount location of each fan.
6. Gently place the fan on the fan bar. Make sure the fan is well seated.
   Connect the end of the fan cable to the fan connector.



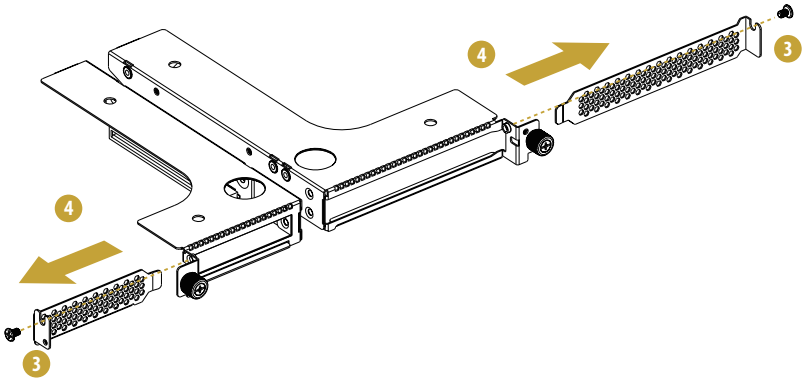
3.3 Add-in Card

If there is a hold-down bar affixed on the chassis, please remove it before installing an add-in card. Be sure to replace the hold-down bar after istalling the add-in cards. Refer to the section entitled "Hold-Down Bar (for GPU Card)" for more instructions.

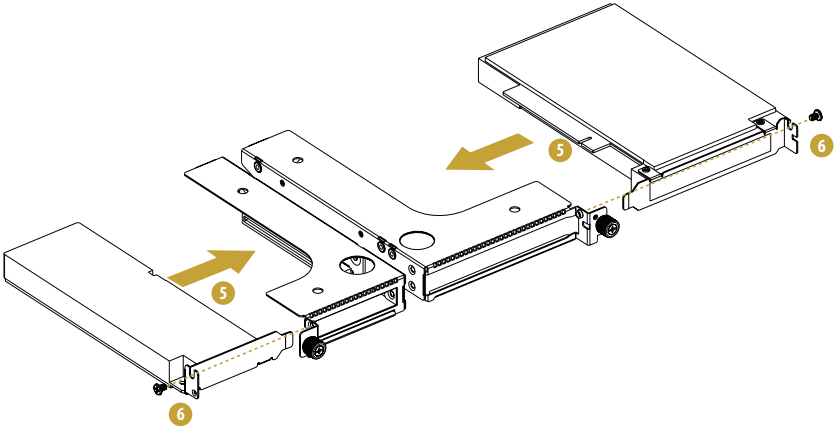
1. Release the thumbscrew that secures the riser-card bracket on the chassis.
2. Lift up and remove the riser-card bracket from the chassis.



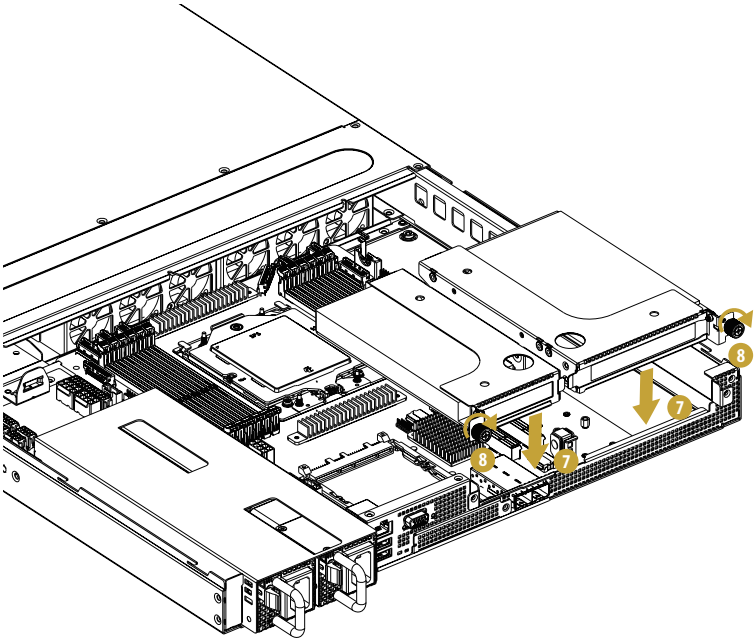
3. Remove the screws securing the blanking plates on the riser-card bracket.
4. Slide the blanking plates out sideways.



5. Install the add-in card to the riser-card bracket.
6. Secure the add-in card to the bracket with screws.



7. Align the riser-card assembly with the openings of the chassis. Place it into the chassis.
8. Hand-tighten the screw to secure the assembly to the chassis.



3.4 Power Supply

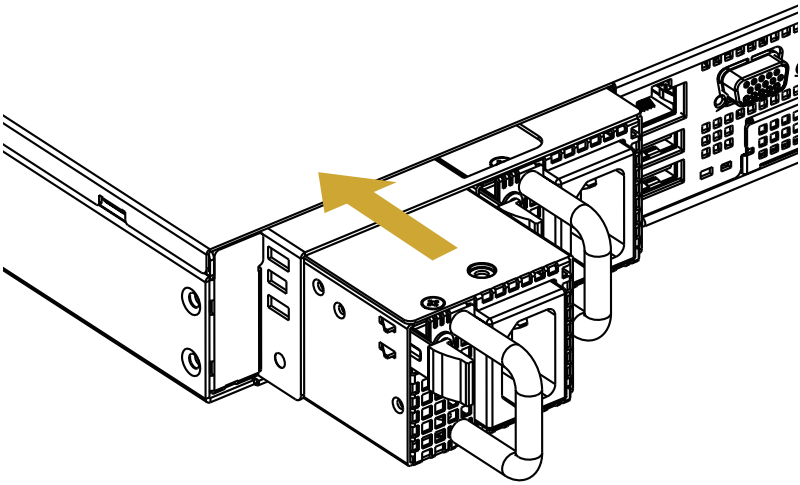
Installing and Removing the Power Supply

> *Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.*

The 1U12L4E-EGS/2L2Q system supports single PSU only.
The 1U12L4E-EGS/2L2Q system can accommodate two AC or two DC power supplies in the bay at the rear of the chassis. Each unit provides up to 1600 Watts of power. One power supply is required for full load operation, with the other power supply purely as a redundant, load-sharing backup. It can be removed without affecting system operation.

Installing the Power Supply Unit

1. Align the power supply unit with the power supply slot.
2. Carefully slide the PSU all the way into the power supply bay until it clicks into place.

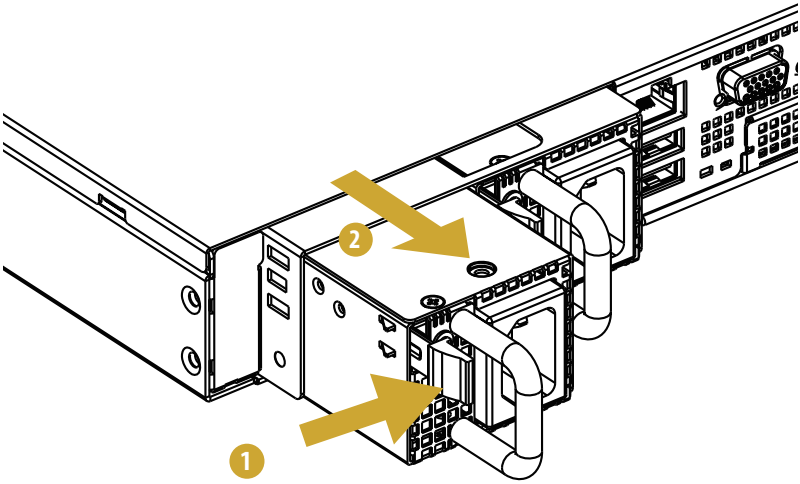


Removing the Power Supply Unit

1. Hold onto the power supply handle while pressing the locking lever towards the power supply handle.*

   **The illustration is for references only. The actual PSU type may be slightly differnet by models.*

2. Pull out the power supply from the chassis.

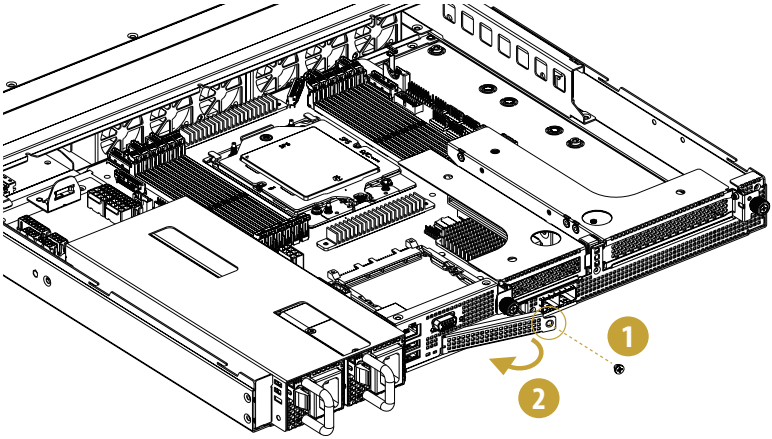


1. Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.
2. The redundant system does not require powering down the server.

3.5 Install OCP

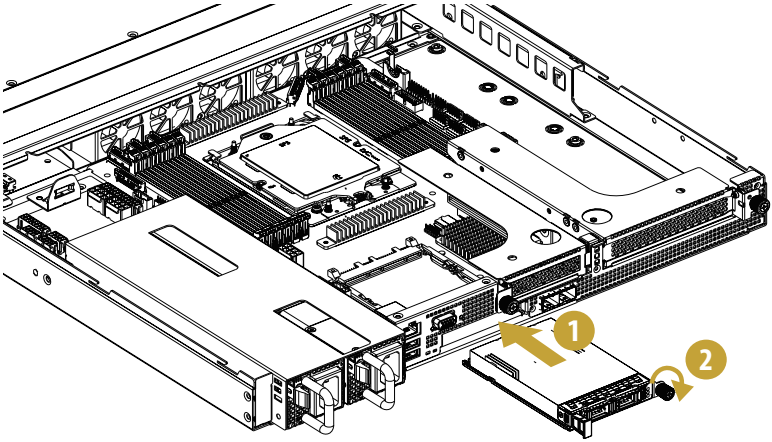
Remove Slot Cover

Release the thumbscrew that secures the slot cover to the chassis and remove the slot cover.



Install OCP Card

Install an OCP card into the slot.
Make sure the card is well seated and hand-tighten the thumbscrew on the face plate.



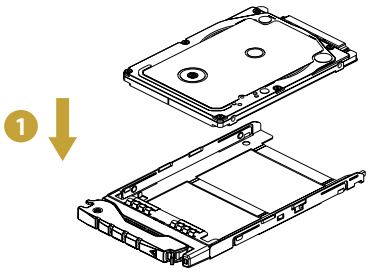
**The illustration is for references only. The actual location may be slightly differnet by models.*

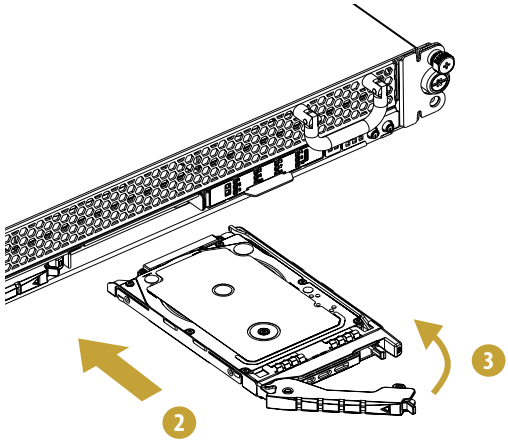
3.6 Hard Drive

Installing 2.5” Hard Drive to the Hard Drive Tray

The system supports hot-swappable 2.5" Hard Drive. The Hard Drive trays are located on the front of the chassis.

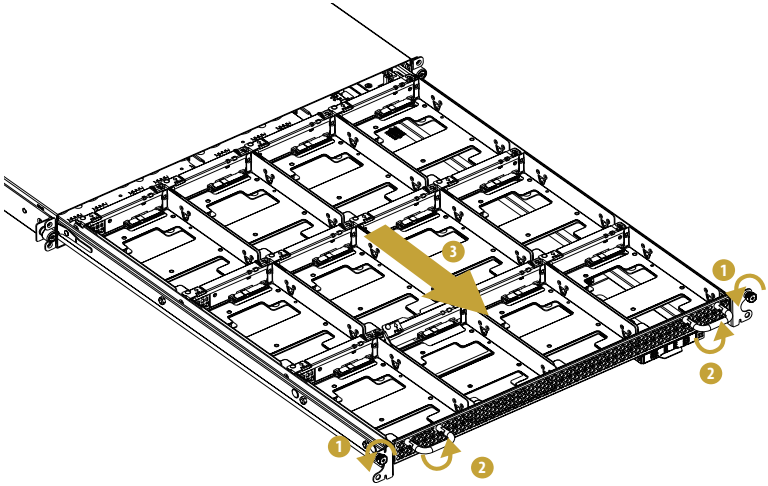
1. Place a 2.5" Hard Drive into the carrier with the printed circuit board side facing down.
2. Slide the drive tray into the Hard Drive bay until the drive is fully seated.
3. Push in the locking lever to lock the Hard Drive tray into place.



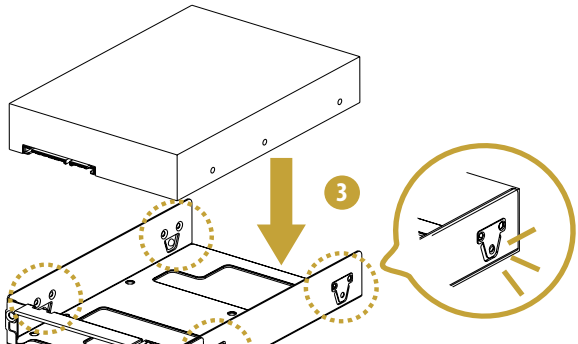


Installing 3.5” Hard Drive to the Hard Drive Tray

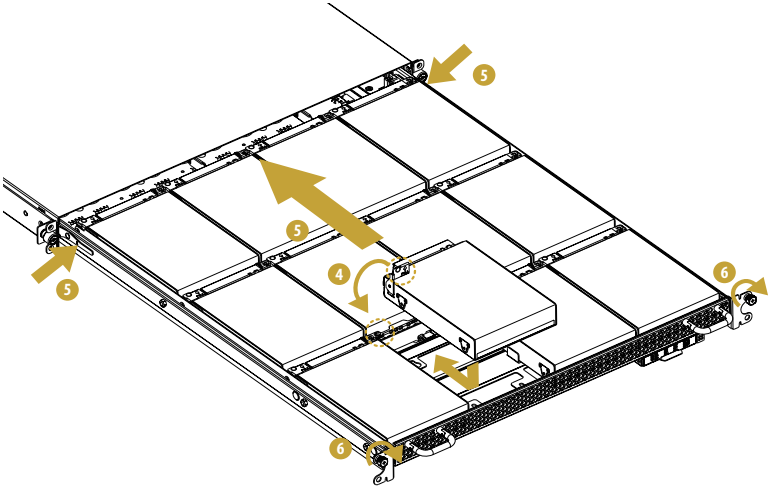
1. Hand-release the thumbscrew that secures the SATA Drive Bay.
2. Pull the SATA Drive Bay to the end until hearting click.



3. Place the 3.5" Hard Drive into the tray with the printed circuit board side facing down. Carefully align the mounting holes in the Hard Drive and the tray until installing in place.



4. Place the assembelt 3.5" Drive into the SATA Drive Bay and use the latch to lock it in place.
5. After installing the assembelt 3.5" Drive, lift the latches on the both side of SATA Drive Bay to push the tray into the chassis simultaneously.
6. Hand-tighten the thumbscrew to secure the SATA Drive Bay to the chassis.

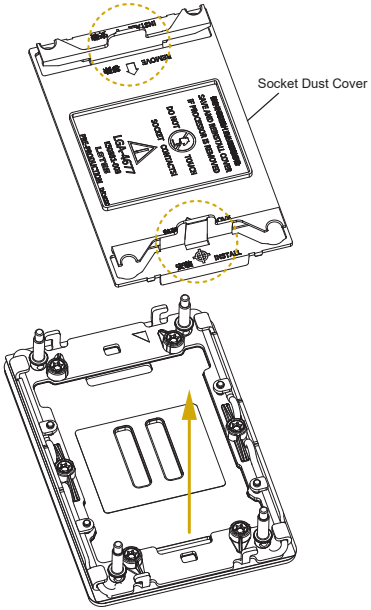


Appendix A

Installing the CPU (LGA 4677 Socket)

Unplug all power cables before installing the CPU.

1



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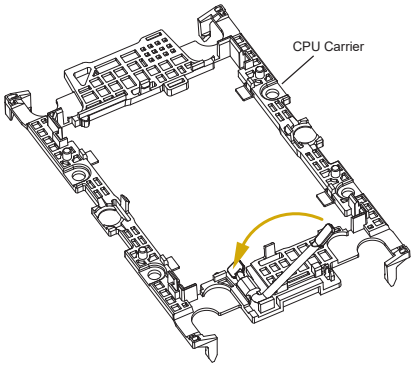

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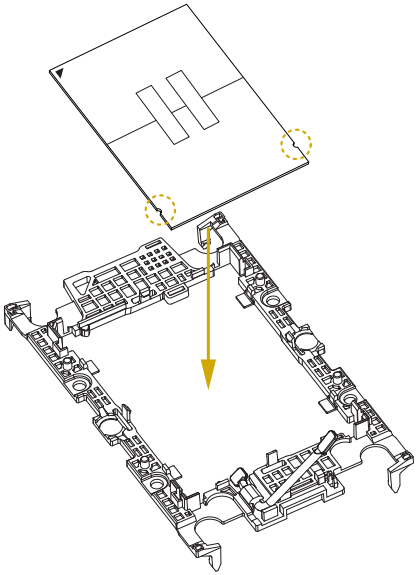

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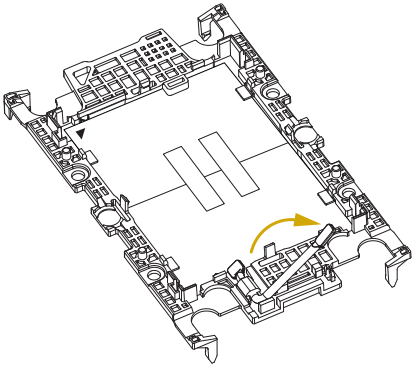

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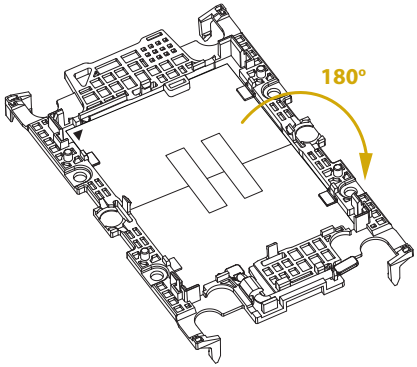

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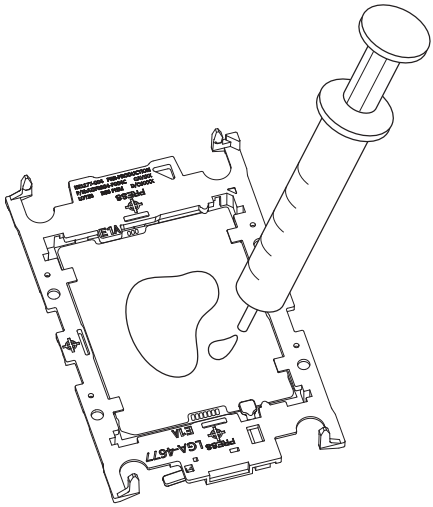

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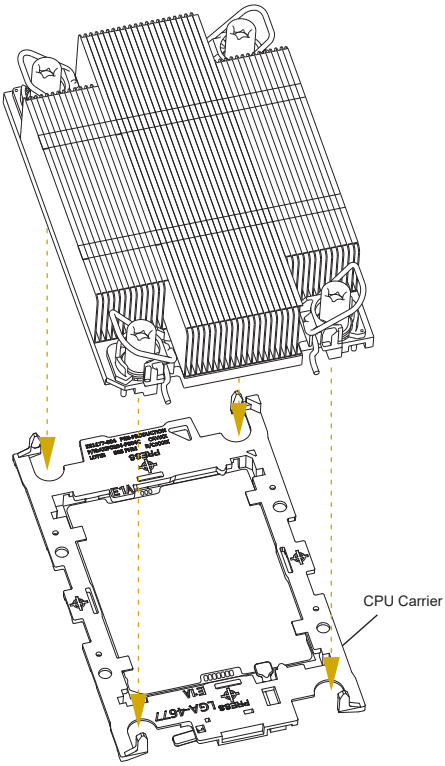

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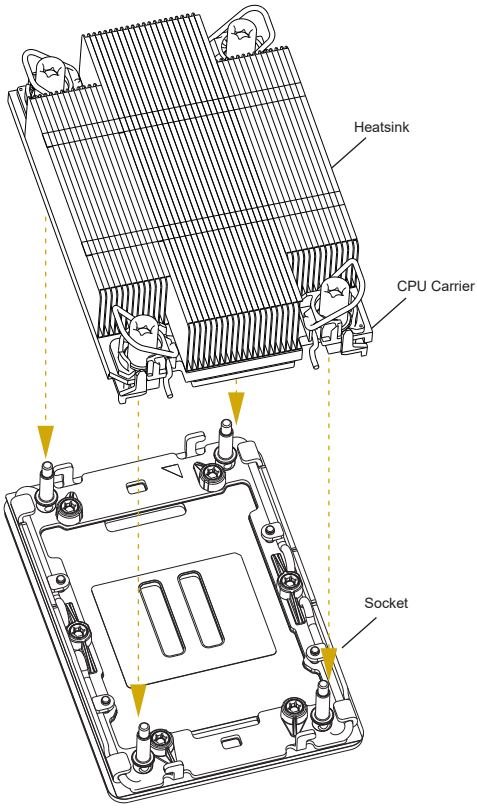

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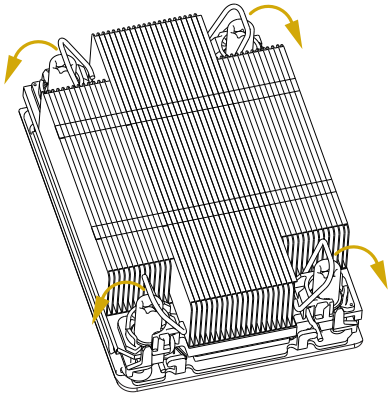

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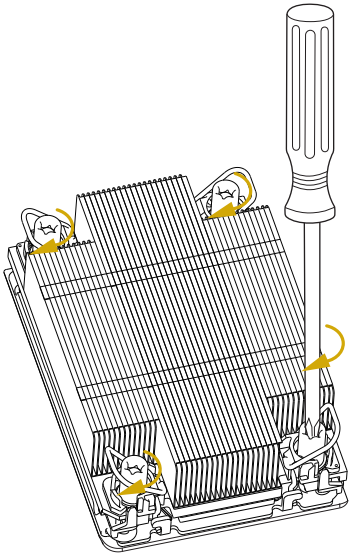


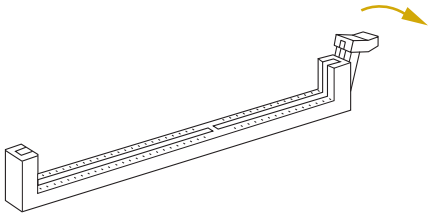
Appendix B

Installing the Memory Modules (DIMM)

The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation. For more information about DIMM installation, please refer to the User Manual that comes with the serverboard you use.

Type A (Single Clip)

1



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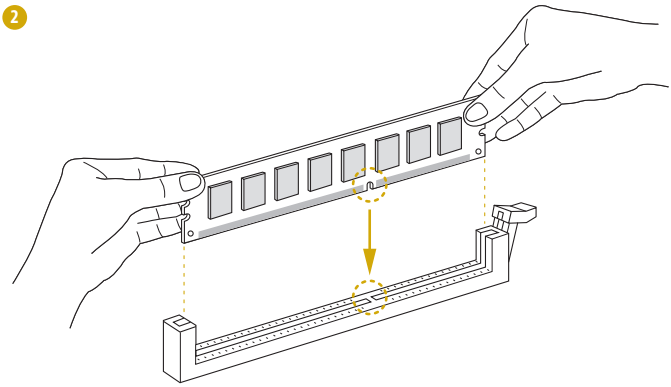

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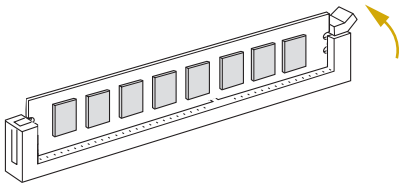
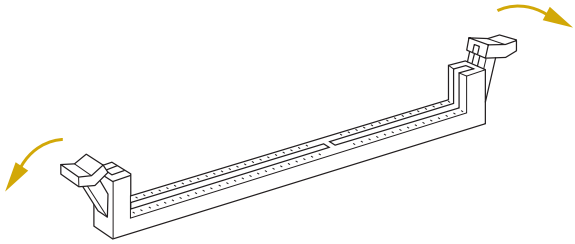


Type B (Two Clips)

1



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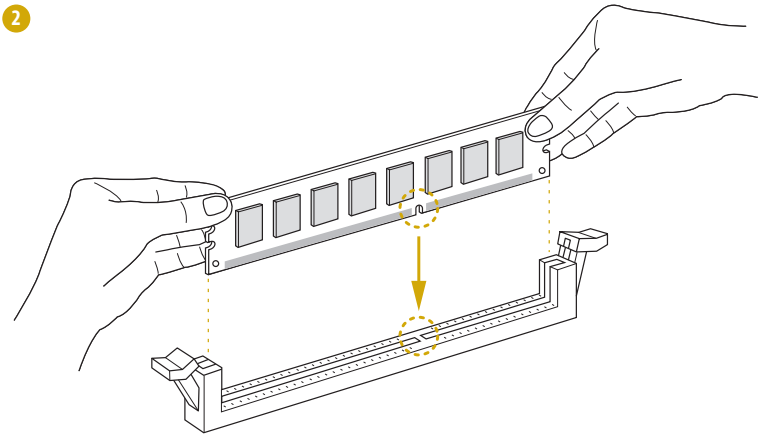

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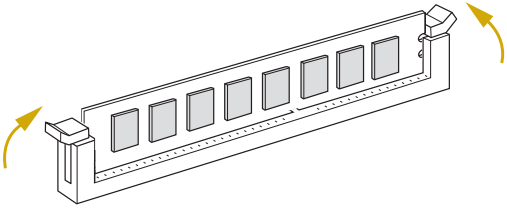
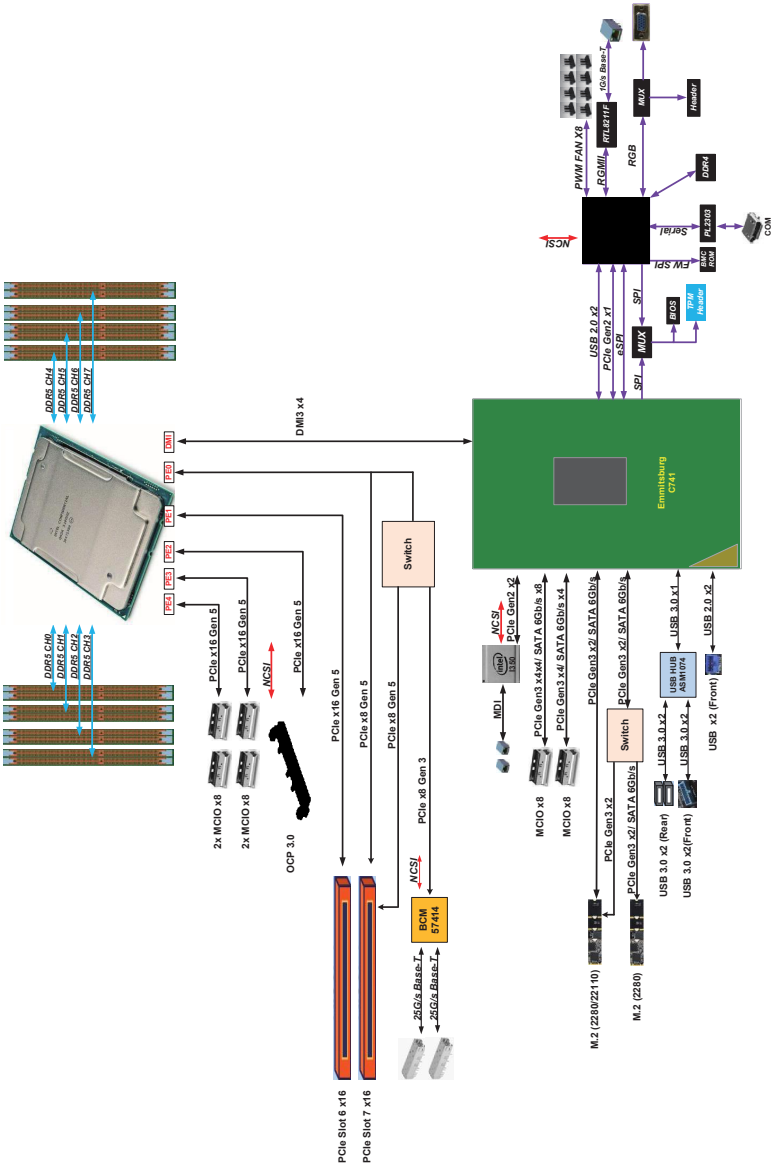


Appendix C

Block Diagram (SPC741D16QM3-2L2Q)



English

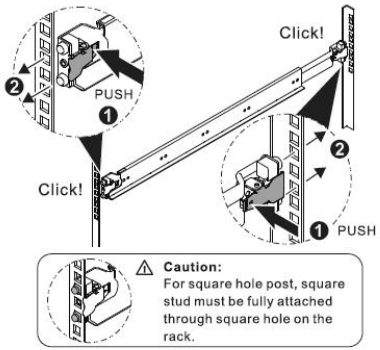
Appendix D

Installing the Server in a Rack

The rails installation instructions in this manual are example only, the actual rail assembly procedure may differ slightly.

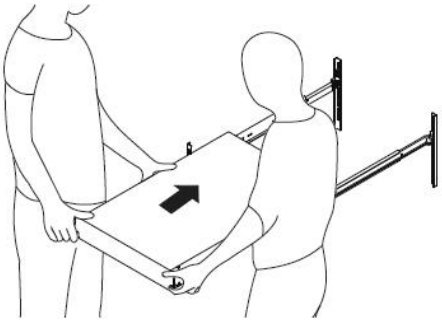
Installation

1. Attach the rails to the rack.

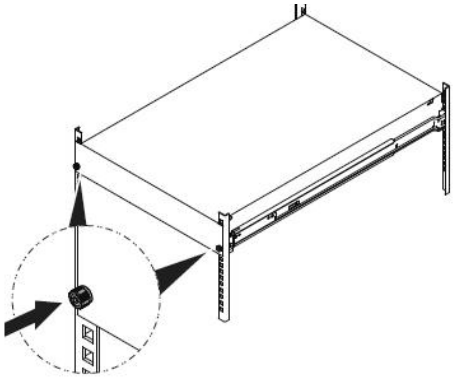


2. Install the chassis. Must be with at least 2 people. Properly place the chassis directly on the L shelf.

Some slide rails are labeled with either L or R, please identify prior to rail installation. Please install the rail labeled with L on the left side of rack, and the rail labeled with R on the right side of rack.

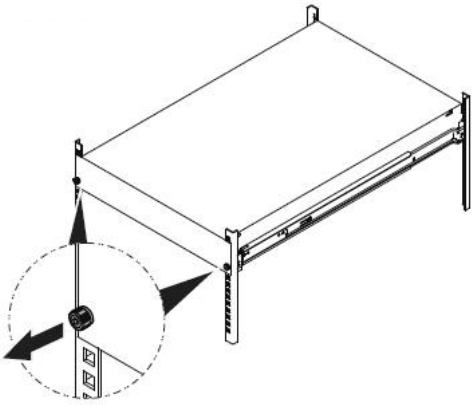


3. Screw the thumbscrew on the front bracket.

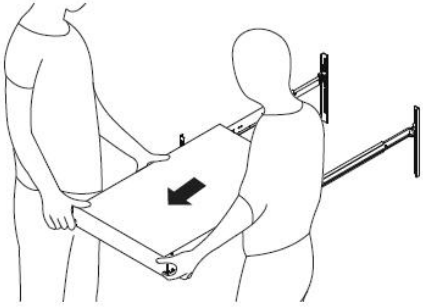


Removal

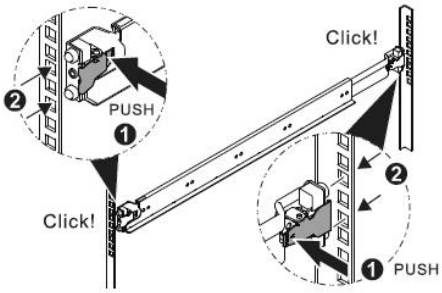
1. Unscrew the thumbscrew on the front bracket.



2. Pull out the chassis from L shelf carefully. Must be done with at least 2 people.



3. Remove slide rail from rack



1. The server is heavy. For safe lifting, two or more persons are required to install the server into the rack.
2. When connecting cables to the server, make sure there is enough cable slack so sliding the server in and out of the rack without accidentally unplugging a cable.

Contact Information

Contact ASRock Rack or want to know more about ASRock Rack, you're welcome to visit ASRock Rack's website at http://www.asrockrack.com; or contact the dealer for further information. For technical questions, please submit a support request form at https://event.asrockrack.com/tsd.asp

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