OPEN

Industry Standard, Flexible Architecture

GREEN

Less Heat, Less Power Consumption

STABLE

Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

1U12E-EGS/2L2Q

User Manual

English

Version 1.01
Published Aug. 2025
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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 server 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"

ASRock Rack's Website: www.ASRockRack.com

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.

Replaceable Batteries

CAUTION

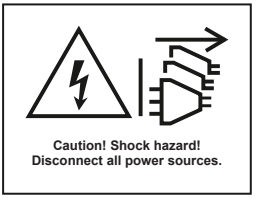
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

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 server 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 1U12E-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 drive trays, and other main components this system supports. If the system is pre-installed a server motherboard, refer to the server motherboard user manual for the information of the server motherboard components, specifications and BIOS settings.

System	ASRock Rack Server Motherboard
1U12E-EGS/2L2Q	SP2C621D32TM3/1U

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
1U12E-EGS/2L2Q Barebone (1U form factor)	1
System Motherboard (MB)*	1
Power Supply Unit*	2
System Fan*	6
Hard Drive Backplane Board (BPB)*	1
Power Distribution Board (PDB)*	1
Riser-card*	2
Accessory Box	1
1U Cooler	1
Slide Rail	1
Quick Installation Guide	1

** The components are pre-installed.*

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

1.2 Specifications

1U12E-EGS/2L2Q	
System	
Form Factor	1U Rackmount
Dimension	676.5 x 438 x 43.4mm (26.63" x 17.24" x 1.71")
Support MB	SPC741D16QM3-2L2Q
Front Panel	
Button	Power on/off, Reset, ID, NMI
LED	Power, LAN 1/2, System Event, ID, Hard Drive
I/O Port	1 Type-A (USB3.2 Gen1)
External Drive Bay / Storage	
Front Side Drive Bay	12 Hot-swap 2.5" NVMe (PCIe5.0 x4)/SATA/SAS* drive bays *SAS drive is only supported with additional RAID/HBA cards.
Front Side Backplane	12-ports NVMe/SATA/SAS passive backplane
Internal Side	M2_1* (PCIe3.0 x4 or SATA 6Gb/s), supports 22110/2280 form factor [PCH] 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 Slim PSU
Output Watt	1000W
Efficiency	80-PLUS Platinum
AC Input	100-240V, 60/50Hz
System Fan	
Fan	6 PWM hot-swap 40x56mm fans

Processor System	
CPU	5th and 4th Gen Intel® Xeon® Scalable Processors
Socket	Single Socket E (LGA 4677)
Chipset	Intel® C741
System Memory	
Supported DIMM Quantity	16 DIMM slots (2DPC)
Supported Type	288-pin DDR5 RDIMM/RDIMM-3DS
Max. Capacity per DIMM	RDIMM: 96GB RDIMM-3DS: 2H- 128GB / 4H- 256GB
Max. DIMM Frequency	5600MT/s* (1DPC) / 4400MT/s* (2DPC) on 5th Gen Intel® Xeon® Scalable Processors 4800MT/s* (1DPC) / 4400MT/s* (2DPC) on 4th Gen Intel® Xeon® Scalable Processors *Memory speed and capacity support vary by CPU SKU.
Voltage	1.1V
PCIe Expansion Slot	
PCIe x8	1 FHHL PCIe5.0 x8
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

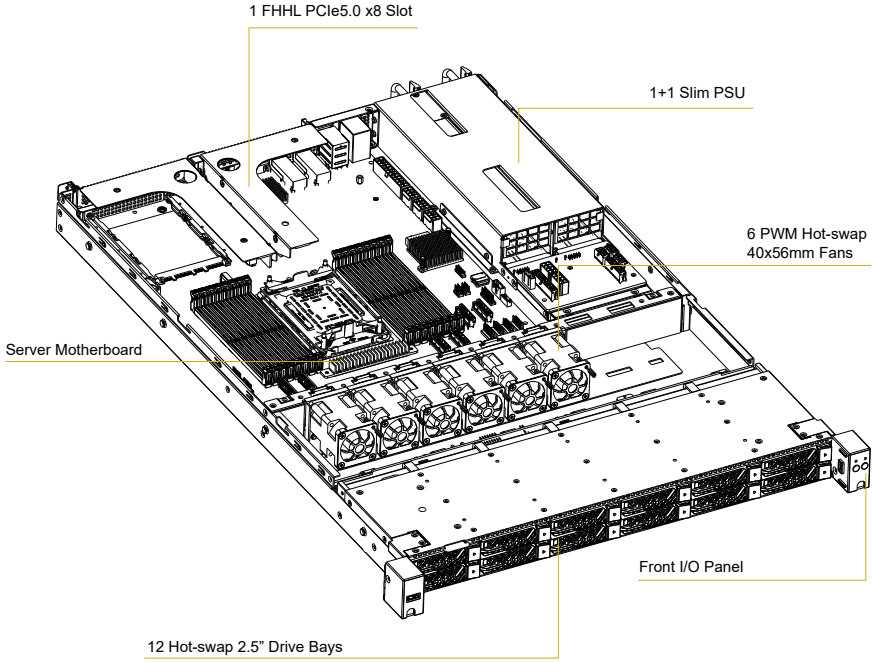
Rear I/O	
UID Button/ LED	1 UID button w/ LED
Video Port	1 DB15 (VGA)
Serial Port	1 Rear via Type-C connector
USB3.2 Gen1 Port	2 Type-A (USB3.2 Gen1)
RJ45	2 RJ45 (1GbE), 1 dedicated IPMI
Other Network Connector	2 SFP28 (25GbE)
System BIOS	
BIOS Type	AMI UEFI BIOS; 512Mb SPI Flash ROM
BIOS Features	Plug 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 (allows 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)

The functions are supported depending on the type of the server motherboard. Refer to the server motherboard user manual for detailed information.

Chapter 2 Server System Overview

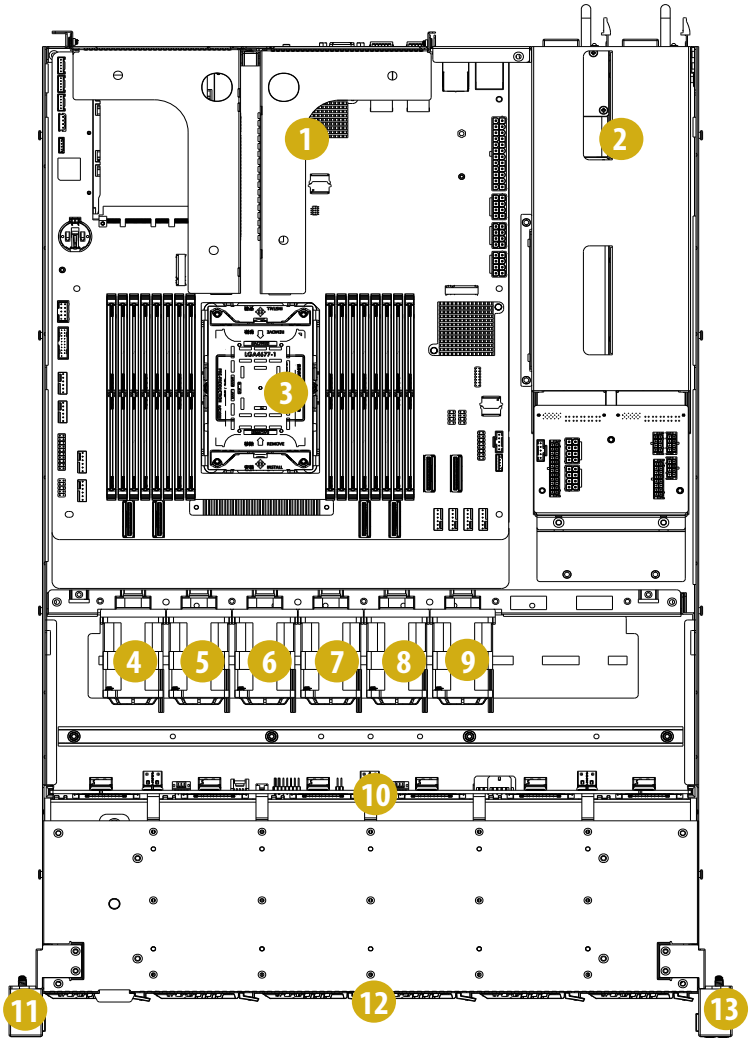
This chapter provides diagrams showing the location of important components of the server system.

2.1 System Components



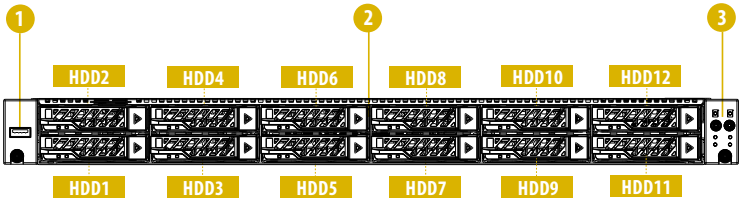
English

2.2 Internal Features



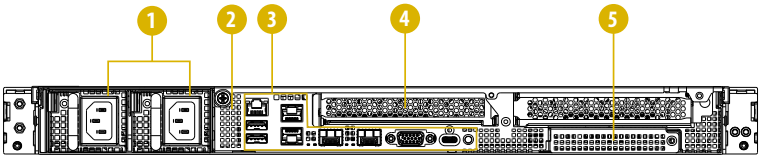
No.	Description
1	1 FHHL PCIe5.0 x8 slot
2	1+1 Slim PSU
3	Server motherboard
4	PWM hot-swap 40x56mm fan (FAN6)
5	PWM hot-swap 40x56mm fan (FAN5)
6	PWM hot-swap 40x56mm fan (FAN4)
7	PWM hot-swap 40x56mm fan (FAN3)
8	PWM hot-swap 40x56mm fan (FAN2)
9	PWM hot-swap 40x56mm fan (FAN1)
10	2.5" Hard drive backplane board (BPB)
11	1 Type-A (USB3.2 Gen1) port
12	12 Hot-swap 2.5" NVMe (PCIe5.0 x4)/SATA/SAS* drive bays *SAS drive is only supported with additional RAID/HBA cards.
13	Front I/O panel

2.3 System Front Panel



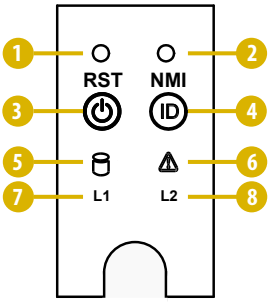
No.	Description
1	1 Type-A (USB3.2 Gen1) port
2	12 Hot-swap 2.5" NVMe (PCIe5.0 x4)/SATA/SAS* drive bays *SAS drive is only supported with additional RAID/HBA cards.
3	Front I/O panel

2.4 System Rear Panel



No.	Description
1	1+1 Slim PSU
2	Rear vent
3	Rear I/O panel (depends on the specification of the server motherboard)
4	1 FHHL PCIe5.0 x8 slot
5	1 OCP NIC 3.0 (PCIe5.0 x16) slot [CPU]

2.5 Front I/O Panel



No.	Description
1	Reset button
2	NMI button
3	Power on/off button w/ LED
4	ID button w/ LED
5	Hard drive LED
6	System event LED
7	LAN1 LED
8	LAN2 LED

Reset Button

When the system is completely unresponsive, press the system reset button to reboot the server without shutting it off and initialize the system.

NMI (Nonmaskable Interrupt) Button

Press the NMI button with a paper clip or pin to generate a nonmaskable interrupt and to put the server in a halt state for examination.

Power On/Off Button

Press the power switch button to toggle the system power-on and power-off modes. To remove all power from the system completely, disconnect the power cord from the server.

Status LED Definitions

Power LED	
Status	**Description**
Off	Power off
Green	Power on

LAN1, LAN2 LEDs	
Status	**Description**
Green	Link between system and network or no access
Blinking Green	Network access

2.6 Hard Drive Tray LED

No.	Description
1	Hard drive tray status LED
2	Hard drive tray activity LED

LED Definitions

Status (No. 1)	Activity (No. 2)	Description
Off	Off	Drive not present
Blue	Green	Drive present (not active)
Blue	Blinking Green at 4Hz	Drive present (active)
Blinking Blue at 4Hz	Green	Locate
Red	Green	Fail
Blinking Red at 1Hz	Blinking Green at 4Hz	Rebuild

Chapter 3 Hardware Installation and Maintenance

This chapter helps user assemble the chassis and install components.

Before You Begin

Before working 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. The Power LED at the front turns from solid green to dark.
   (2) Disconnect the power cord first from the AC outlet and then from the server. The power LED turns off.
2. Ensure having a clean and stable working environment. Avoid dust and dirt because contaminants may cause malfunctions.
3. Ground properly before touching any system component. A discharge of static electricity may damage components. Wear a grounded wrist strap if available.

Installing Procedures

The followings are prerequisite to be installed.

- 2.5" Hard Drives
- Power Supply Units (Pre-installed)
- System Fans (Pre-installed)
- Server Motherboard (Pre-installed)
- Hard Drive Backplane Board (Pre-installed)

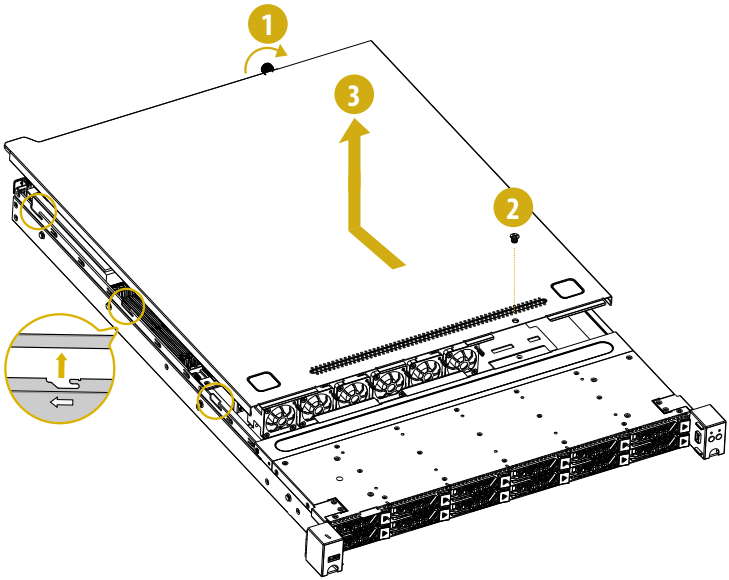
1. Some components are already pre-installed. Simply properly connect the relavant cables before or after installation.
2. Refer to the server motherboard user manual for instructions on how to install server motherboard components.

3.1 Server Top Cover

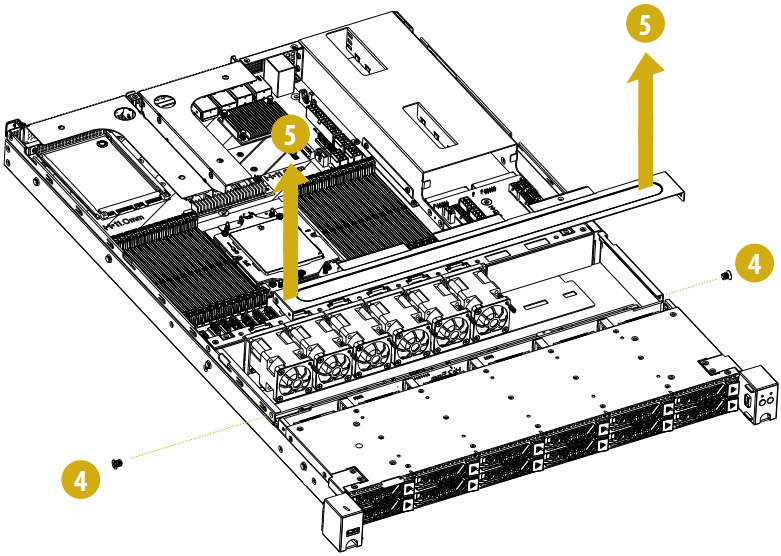
Removing the Server Top Cover

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. Remove the screw securing the top rear cover to the chassis.
3. Push the cover toward the REAR of the chassis to release the cover from the locked position. Lift up and remove the cover.

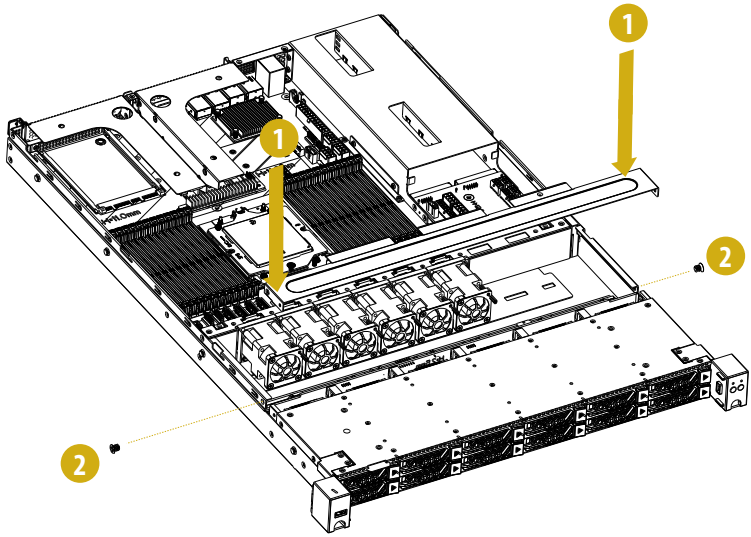


4. Remove the screws securing the hard drive backplane board cover.
5. Lift up and remove the cover.

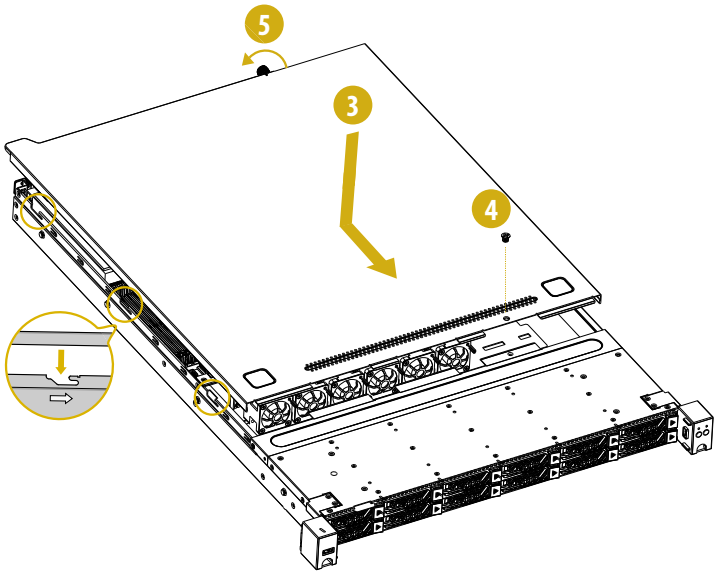


Installing the Server Top Cover

1. Place the hard drive backplane board cover on the chassis.
2. Secure the cover in place with the screws.



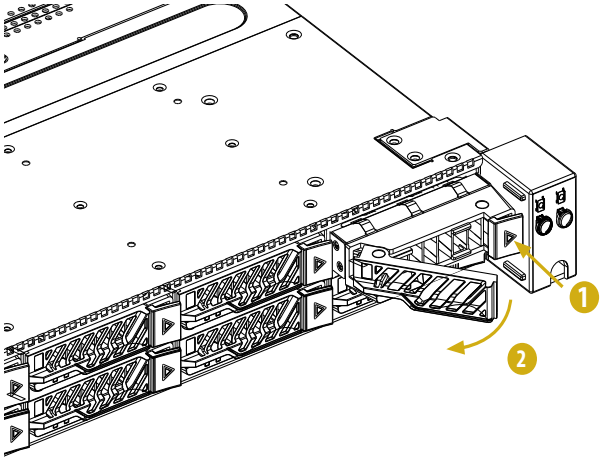
3. Lower the top rear cover on the chassis, making sure the side latches align with the cutouts. Slide the cover toward the FRONT of the chassis.
4. Secure the cover in place with the screw.
5. Hand-tighten the thumbscrew on the REAR side of the chassis.



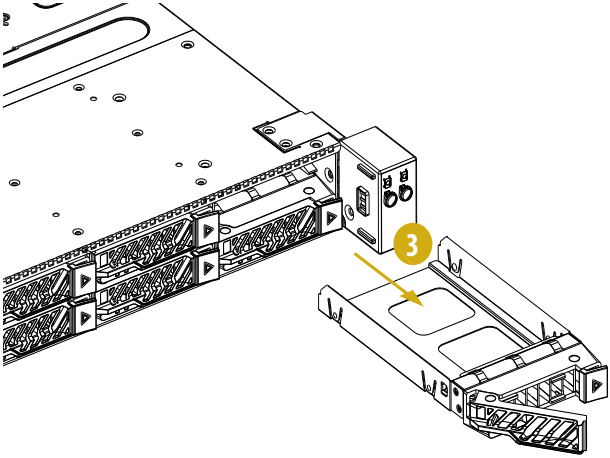
3.2 Hard Drive

Removing Hard Drive Tray from the Chassis

1. Press the locking lever latch on the hard drive tray to unlock the retention lever.
2. Rotate the lever out and away from the module bay.

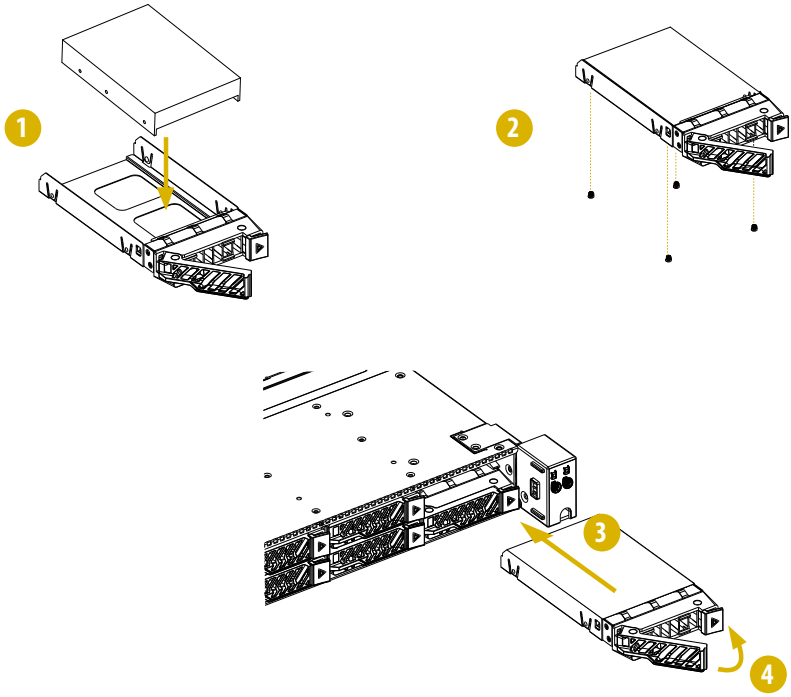


3. Pull the tray out.



Installing 2.5" Hard Drive to the Chassis

1. Place the hard drive into the hard drive tray with printed circuit board side facing down.
2. Secure the hard drive in place with the screws.
3. Slide the tray into the hard drive bay until the drive is fully seated.
4. Push in the locking lever to lock the tray in place.



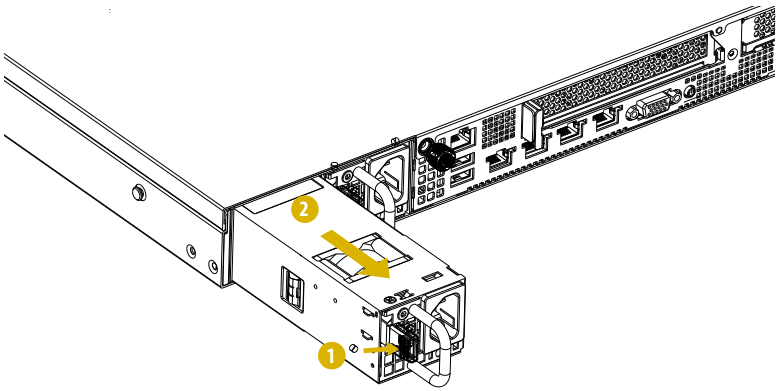
3.3 Power Supply

1. Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.
2. In a redundant system, it does not need to power down the server.

Removing the Power Supply Unit

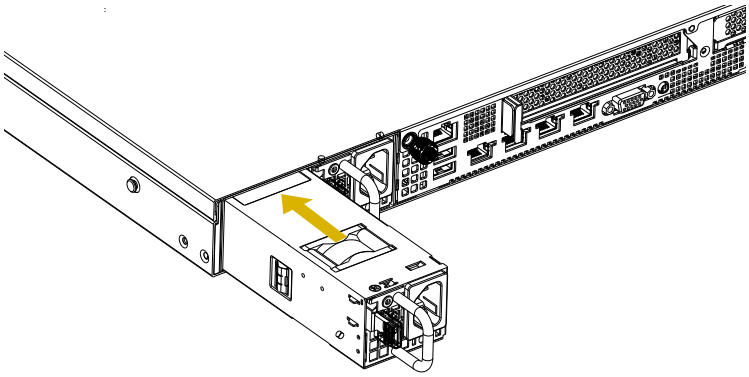
To remove a failed power supply unit, identify the failed PSU by checking the power supply LEDs on the PSUs.

1. Hold onto the power supply handle while pressing the locking lever.
2. Pull to remove the PSU from the chassis.



Installing the Power Supply Unit

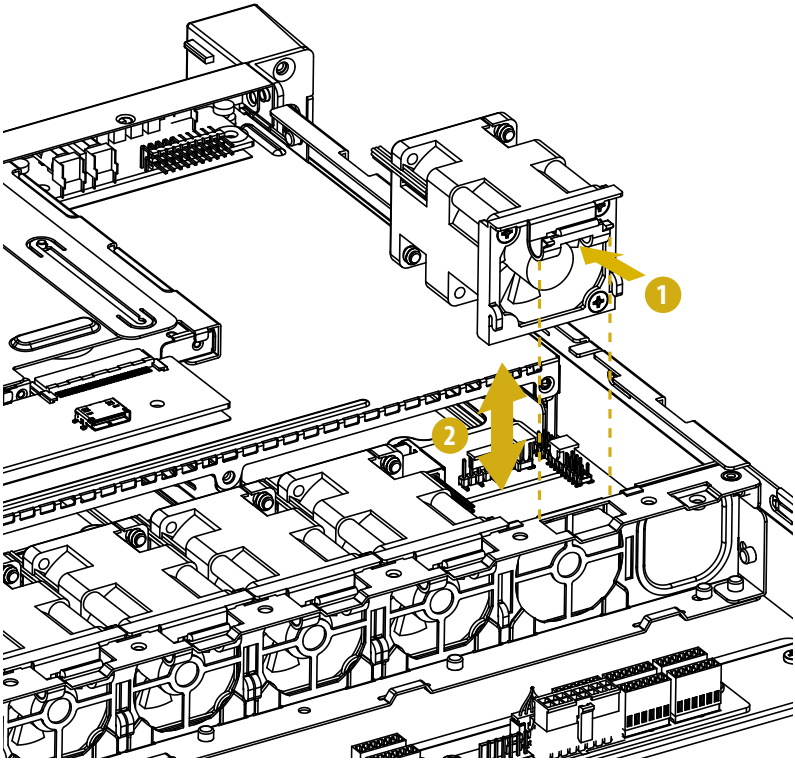
Slide the new PSU all the way into the power supply bay.



3.4 System Fan

Replacing the System Fan

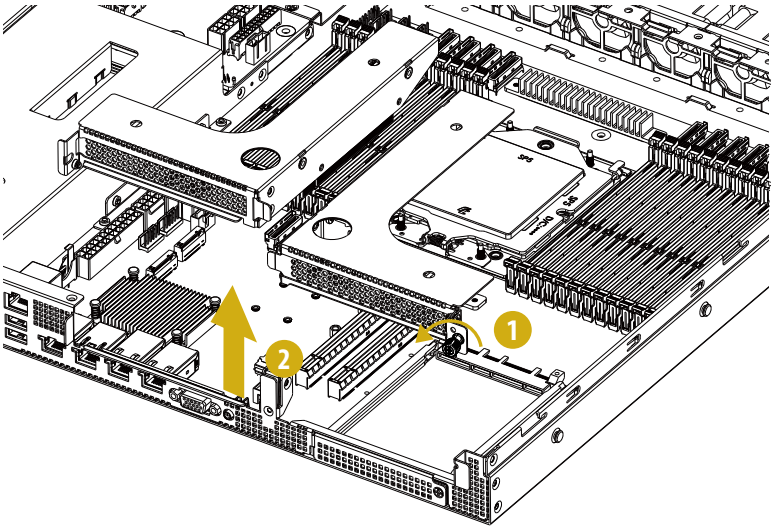
Press and hold the fan clip on to replace the fan.

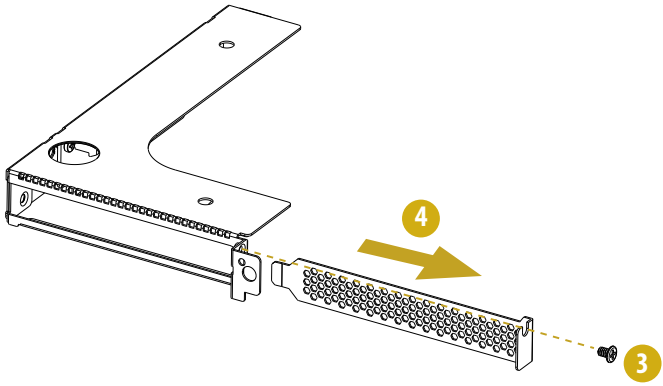


3.5 Add-in Card

Installing the Add-in Card

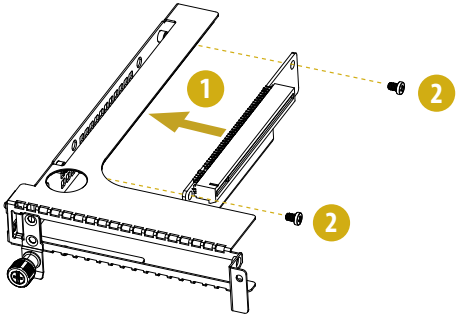
1. Hand-release the thumbscrew securing the riser-card bracket to the chassis.
2. Lift up the bracket.
3. Remove the screw securing the blanking plate.
4. Slide the blanking plate out sideways.

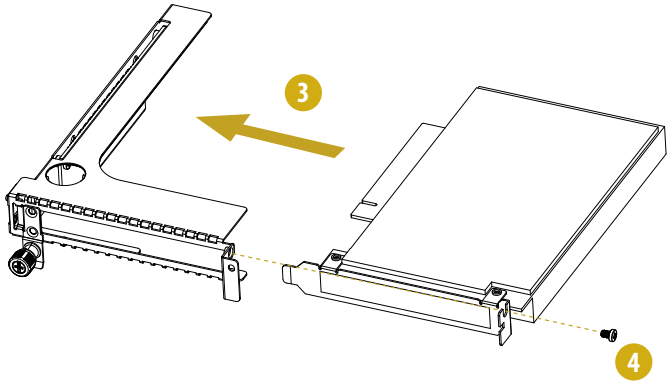




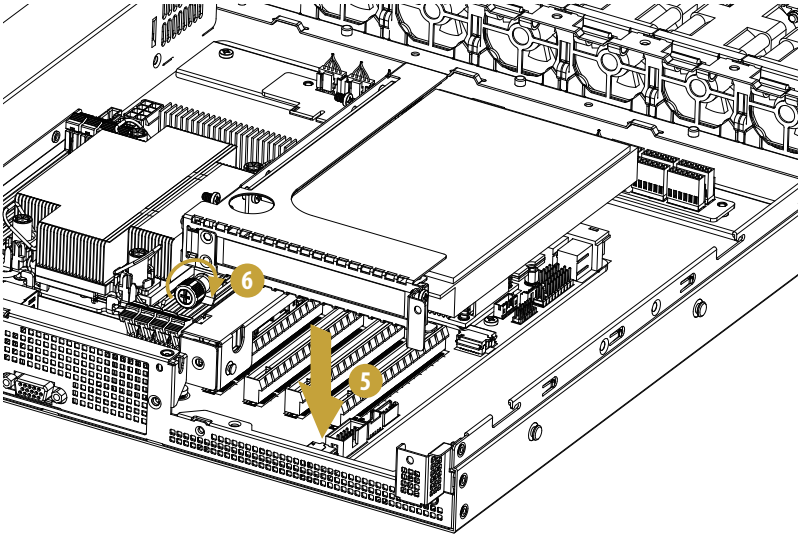
Installing Riser-card and Add-in Card to the Chassis

1. Install riser-card to the riser-card bracket.
2. Secure the riser-card to the bracket with the screws.
3. Install the add-in card to the riser-card assembly.
4. Secure the add-in card assembly with the screw.





5. Align the add-in card assembly with the opening of the chassis. Place the assembly on the chassis.
6. Hand-tighten the thumbscrew to secure the assembly in place.

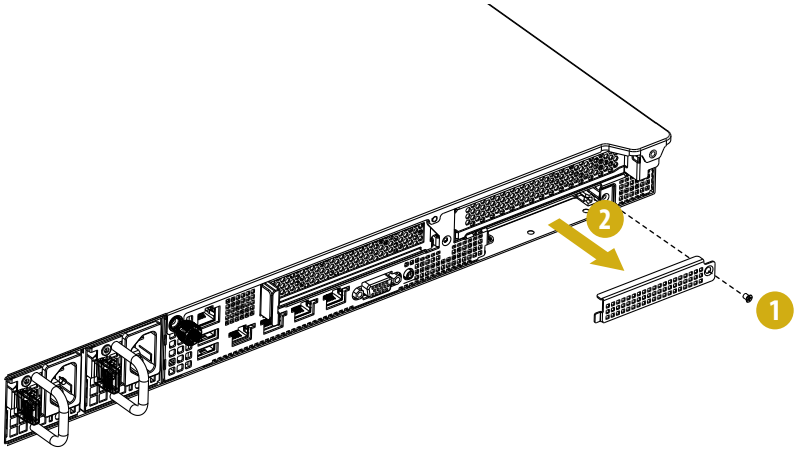


The illustration is for references only. The actual location may be slightly different by models.

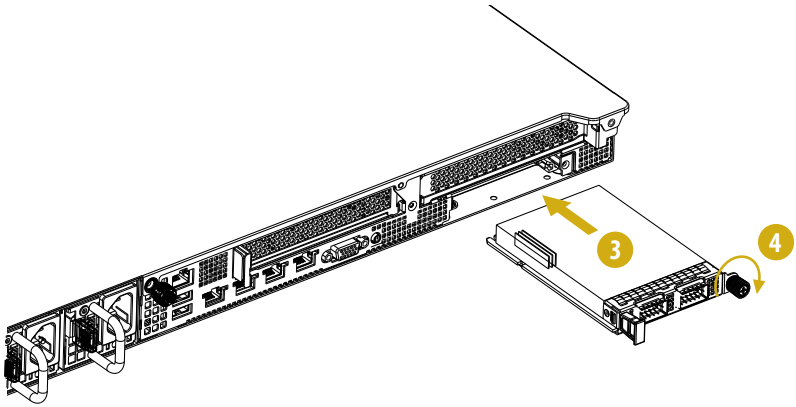
3.6 OCP Card

Installing the OCP Card

1. Remove the screw securing the slot cover to the chassis.
2. Remove the slot cover.

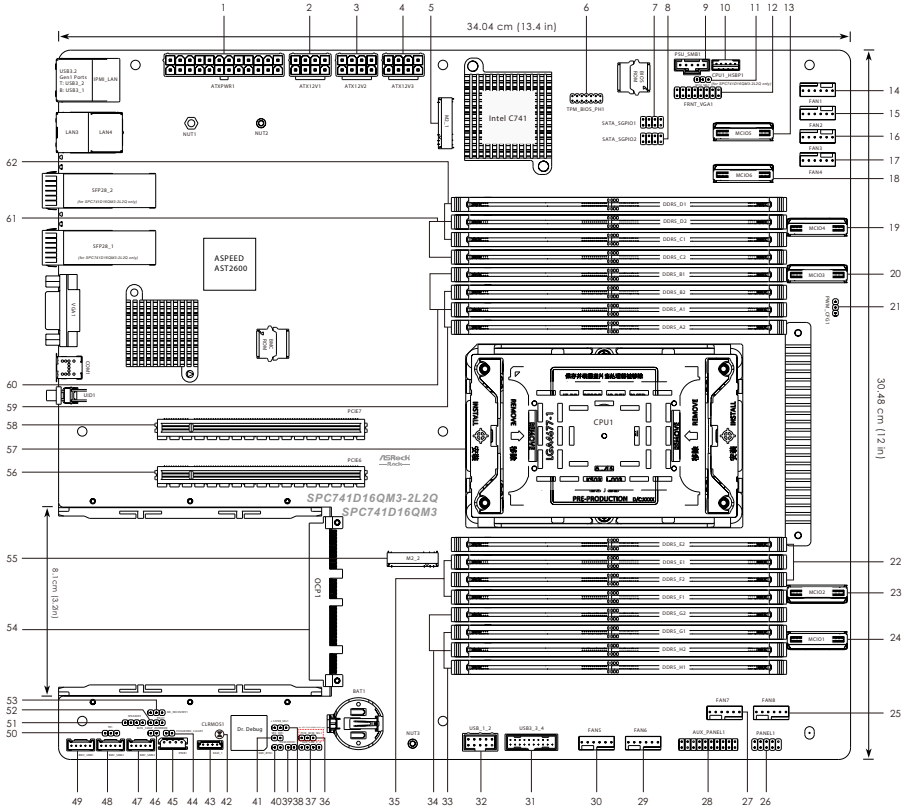


3. Install an OCP card into the slot.
4. Make sure the card is well seated and hand-tighten the thumbscrew on the face plate.



Chapter 4 Server Motherboard (SPC741D16QM3-2L2Q)

4.1 Layout

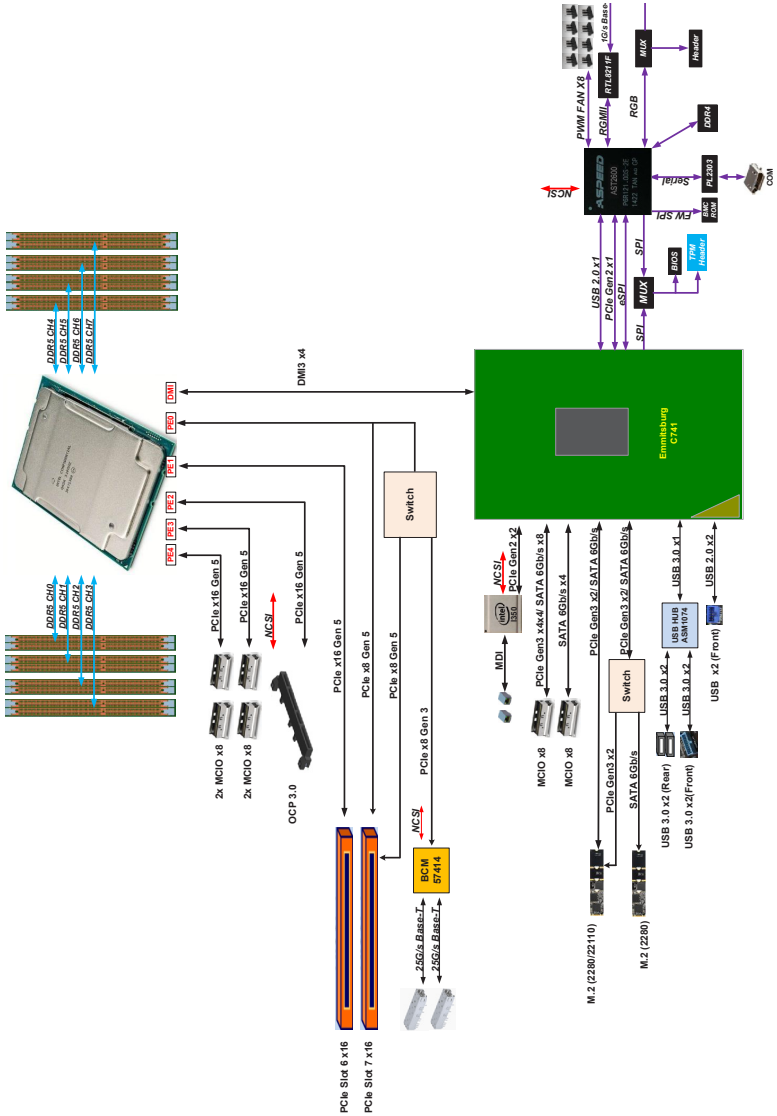


No.	Description
1	ATX Power Connector (ATXPWR1)
2	ATX 12V Power Connector (ATX12V1)
3	ATX 12V Power Connector (ATX12V2)
4	ATX 12V Power Connector (ATX12V3)
5	M-key M.2 Socket (M2_1) (Type 2280/22110)
6	TPM-SPI Header (TPM_BIOS_PH1)
7	SATA SGPIO Connector (SATA_SGPIO1)
8	SATA SGPIO Connector (SATA_SGPIO2)
9	PSU SMBus Header (PSU_SMB1)
10	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
11	NCSI Mode Jumper (NCSI_SEL1) *(for SPC741D16QM3-2L2Q only)*
12	Front VGA Header (FRNT_VGA1)
13	Mini Cool Edge IO Connector (MCIO5)
14	System Fan Connector (FAN1)
15	System Fan Connector (FAN2)
16	System Fan Connector (FAN3)
17	System Fan Connector (FAN4)
18	Mini Cool Edge IO Connector (MCIO6)
19	Mini Cool Edge IO Connector (MCIO4)
20	Mini Cool Edge IO Connector (MCIO3)
21	PWM Configuration Header (PWM_CFG1)
22	2 x 288-pin DDR5 DIMM Slots (DDR5_E2, DDR5_F2)
23	Mini Cool Edge IO Connector (MCIO2)
24	Mini Cool Edge IO Connector (MCIO1)
25	System Fan Connector (FAN8)
26	System Panel Header (PANEL1)
27	System Fan Connector (FAN7)
28	Auxiliary Panel Header (AUX_PANEL1)
29	System Fan Connector (FAN6)
30	System Fan Connector (FAN5)
31	USB 3.2 Gen1 Header (USB3_3_4)
32	USB 2.0 Header (USB_1_2)
33	2 x 288-pin DDR5 DIMM Slots (DDR5_G1, DDR5_H1)
34	2 x 288-pin DDR5 DIMM Slots (DDR5_G2, DDR5_H2)

No.	Description
35	2 x 288-pin DDR5 DIMM Slots (DDR5_E1, DDR5_F1)
36	PCIE Mode Jumper (PCIE_BCM_SEL1) *(for SPC741D16QM3-2L2Q only)*
37	Front LAN LED Connector (LED_LAN_3_4) *(for SPC741D16QM3-2L2Q only)*
38	OCP +12VSB Power Jumper (+12VSB_SEL1)
39	Chassis Intrusion Header (CASEOPEN1)
40	Non Maskable Interrupt Button (NMI_BTN1)
41	Flash Override Jumper (SEC_OR1)
42	Clear CMOS Pad (CLRMOS1)
43	Virtual RAID On CPU Header (RAID_1)
44	Password Reset Jumper (PASSWORD_CLEAR1)
45	Intelligent Platform Management Bus Header (IPMB1)
46	BIOS Swap Override Jumper (BIOS_SWAP_OVERRIDE)
47	MC SMBus Header (BMC_SMB3)
48	MC SMBus Header (BMC_SMB2)
49	MC SMBus Header (BMC_SMB1)
50	Thermal Sensor Header (TR1)
51	Speaker Header (SPEAKER1)
52	CPU PECI Mode Jumper (PECI1)
53	ME Recovery Jumper (ME_RECOVERY1)
54	OCP 3.0 Gen5 x16 NIC Slot (OCP1)
55	M-key M.2 Socket (M2_2) (Type 2280)
56	PCI Express 5.0 x16 Slot (PCIE6)
57	LGA 4677 CPU Socket (CPU1)
58	PCI Express 5.0 x16 Slot (PCIE7)
59	2 x 288-pin DDR5 DIMM Slots (DDR5_A2, DDR5_B2)
60	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_B1)
61	2 x 288-pin DDR5 DIMM Slots (DDR5_C2, DDR5_D2
62	2 x 288-pin DDR5 DIMM Slots (DDR5_C1, DDR5_D1)

4.2 Block Diagram

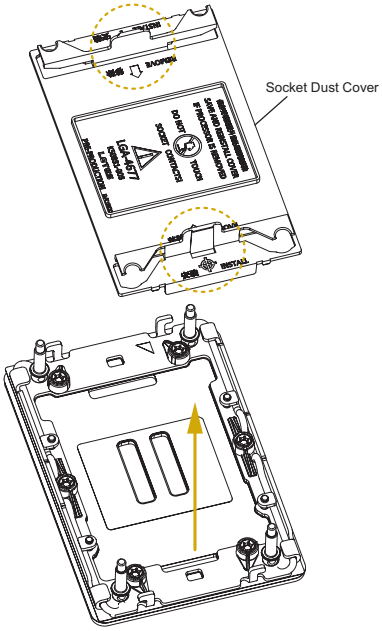
SPC741D16QM3-2L2Q Block Diagram



4.3 Installing the CPU and Heatsink (LGA 4677 Socket)

Unplug all power cables before installing the CPU.

1



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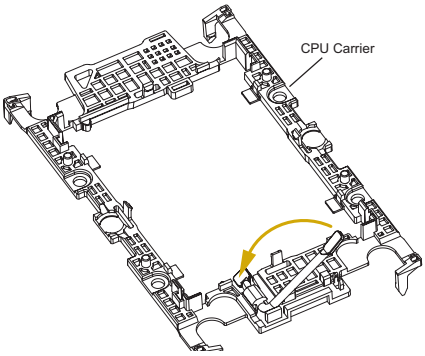

English

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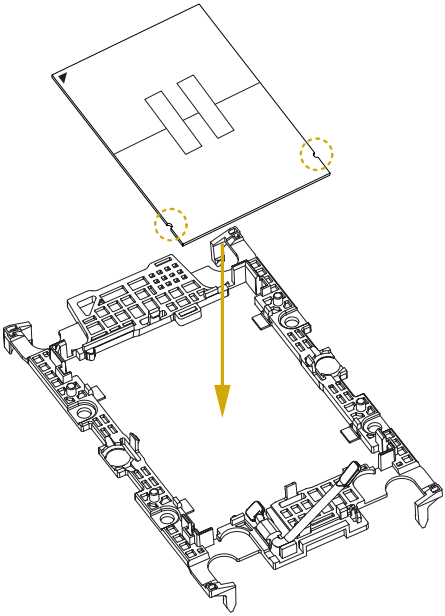

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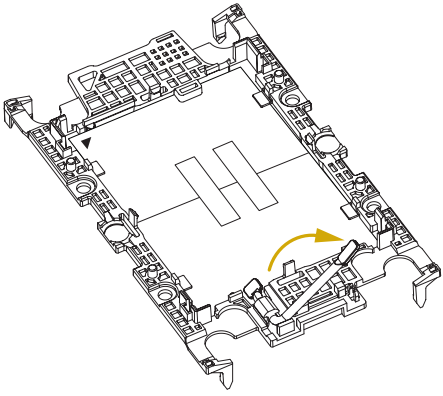

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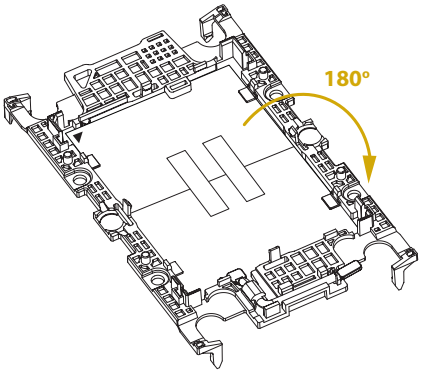

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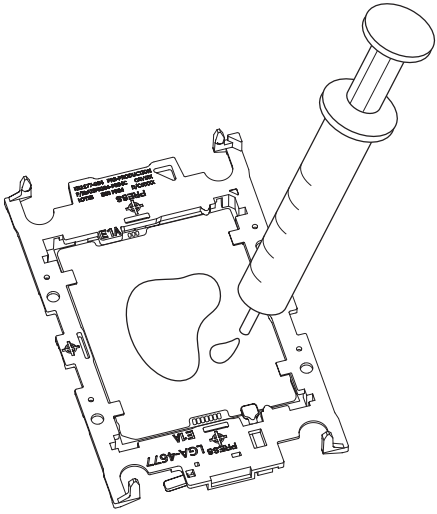

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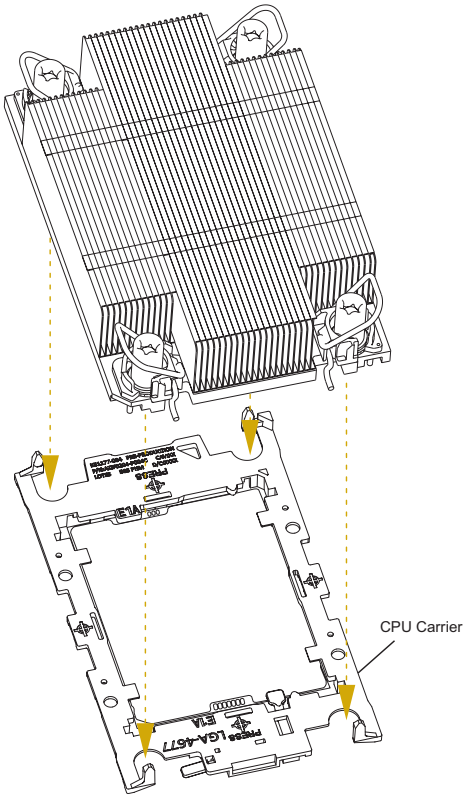

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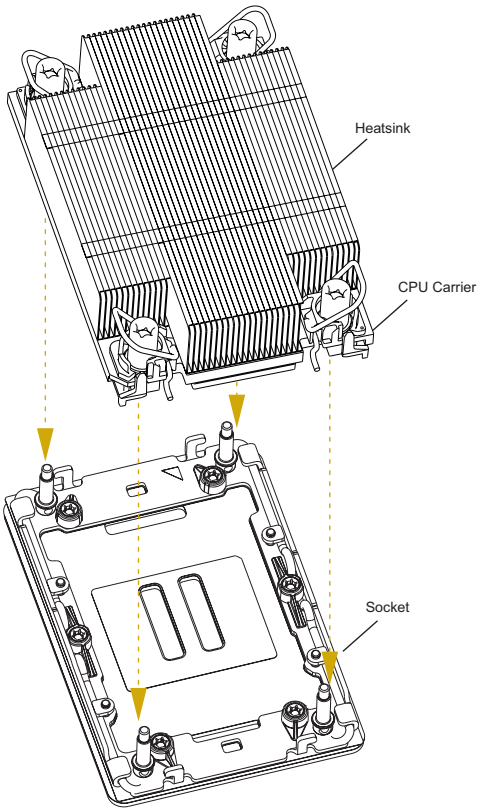

English

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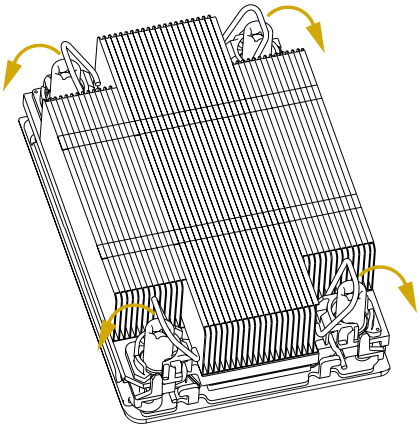

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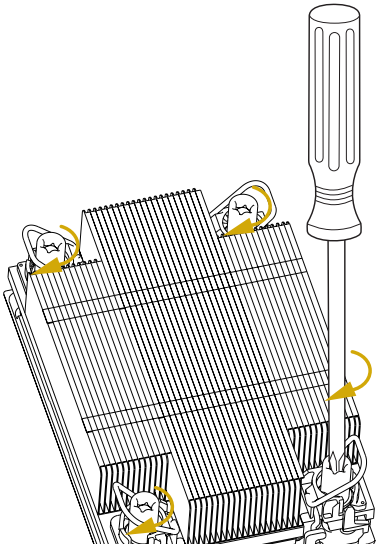
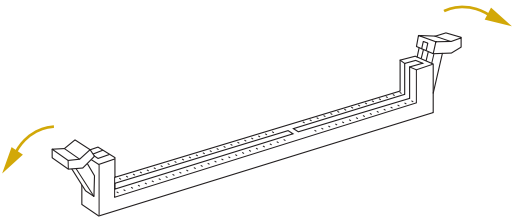


4.4 Installing the Memory Modules (DIMM)

The DIMM only fits in one correct orientation. It will cause permanent damage to the server motherboard and the DIMM if forcing the DIMM into the slot at incorrect orientation. For more information about DIMM installation, refer to the server motherboard user manual.

1



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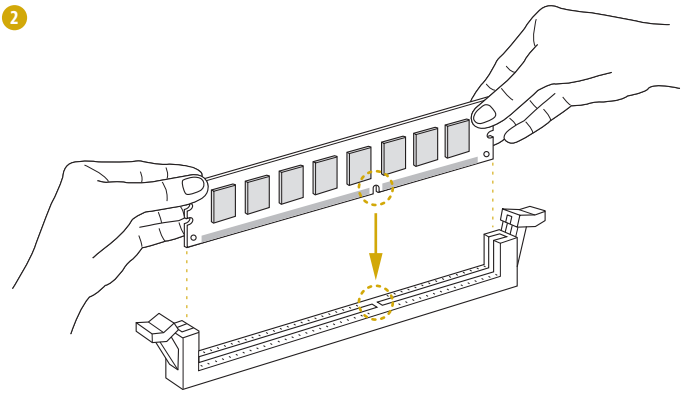

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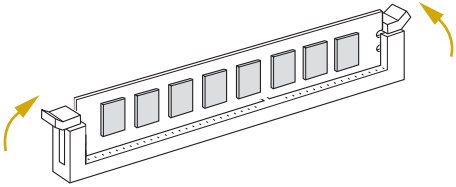

Contact Information

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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