OPEN

Industry Standard, Flexible Architecture

GREEN

Less Heat, Less Power Consumption

STABLE

Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

1U10E-ALTRA/1L2T

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

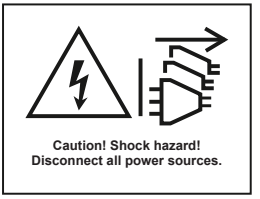
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

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 1U10E-ALTRA/1L2T, 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
1U10E-ALTRA/1L2T	ALTRAD8UD-1L2T

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/

English

1.1 Shipping Box Contents

Item	Quantity
1U10E Barebone	1
System Motheroard (MB)*	1
Power Supply Unit*	2
System Fan*	5
Hard Drive Backplane Board (BPB)*	1
Front Panel Board (FPB)*	1
Fan Board (FB)*	1
Accessory Box	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

1U10E-ALTRA/1L2T	
System	
Form Factor	1U Rackmount
Dimension	625.0 x 430.0 x 43.5 mm (24.6" x 16.9" x 1.7")
Support MB	ALTRAD8UD-1L2T
Front Panel	
Button	Power, System reset
LED	LAN Activity, HDD Activity, Power
I/O Port	1 Type-A (USB3.2 Gen1)
External Drive Bay / Storage	
Front Side Drive Bay	10 Hot-swap NVMe (PCIe4.0 x4) drive bays
Front Side Backplane	10-port NVMe passive backplane (1U10E-BPB_G4)
Internal Side	2 M-key (PCIe4.0 x4); support 2280/2230 form factor
Power Supply	
Type	1+1 Slim PSU
Output Watt	650W @ 100-240Vac input
Efficiency	80-PLUS Platinum
AC Input	AC 100-240V/9A, 50-60Hz
System Fan	
Fan	5 PWM easy-swap 40x56 mm fans
Processor System	
CPU	Supports Ampere Altra Max/Ampere Altra processors
Socket	Single Socket (LGA 4926)
Chipset	System on Chip
System Memory	
Supported DIMM Quantity	8 DIMM slots (1DPC)
Supported Type	Supports DDR4 288-pin RDIMM, LRDIMM

Max. Capacity per DIMM	256GB
Max. DIMM Frequency	3200MHz
Voltage	1.2V
PCIe Expansion Slot	
PCIe x16	1 FHFL single-slot PCIe4.0 x16* via RB1UX16_G4 *Supports PCIe4.0 x8 when using Ampere Altra processors
Ethernet	
Additional GbE Controller	Intel® X550: 2 RJ45 (10GbE) Intel® i210: 1 RJ45 (1GbE)
Server Management	
BMC Controller	ASPEED AST2500
IPMI Dedicated GLAN	1 Realtek RTL8211E for dedicated management GLAN
Graphics	
Controller	ASPEED AST2500
VRAM	DDR4 512MB
Rear I/O	
UID Button/ LED	1 UID button w/ LED
Video Port	1 DB15 (VGA)
USB3.2 Gen1 Port	4 Type-A (USB3.2 Gen1)
RJ45	2 RJ45 (10GbE) 1 RJ45 (1GbE) 1 Dedicated IPMI
System BIOS	
BIOS Type	AMI UEFI BIOS; 256 Mb (32MB) SPI Flash ROM
BIOS Features	ASRock Rack Instant Flash, ACPI 6.2, SMBIOS 3.4.0 and above, Plug and Play (PnP)

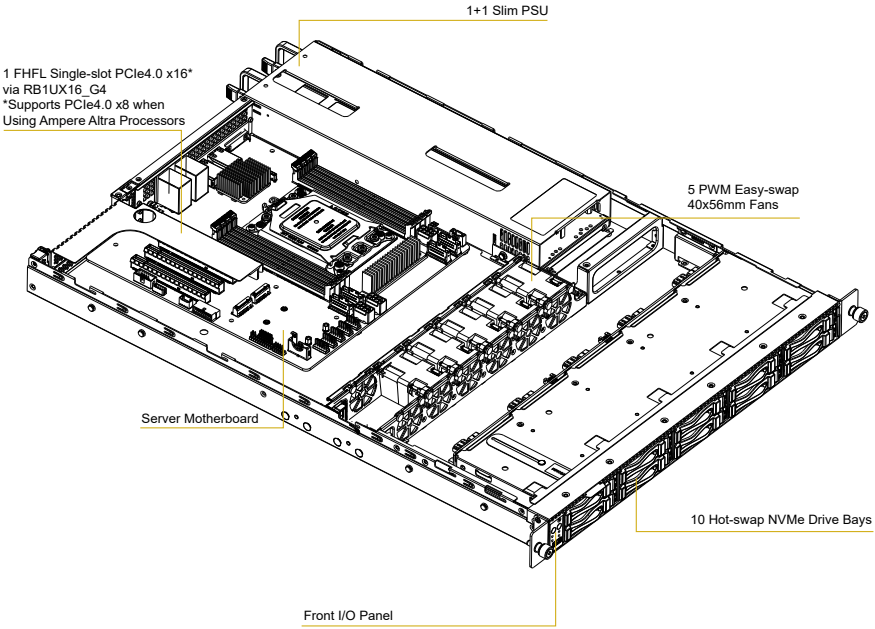
Hardware Monitor	
Temperature	SOC, MB Temperature sensing
Fan	Fan tachometer CPU quiet fan (allows chassis fan speed auto-adjust by CPU temperature) Fan multi-speed control
Voltage	12V, 5V, 3V3, 5VSB, 0V8_VDDC_SOC, BAT, 0V75_PCP_CPU, 1V8_PCP, 1V2_VDDQ0123, 1V2_VDDQ4567, 0V6_VTT0123, 0V6_VTT4567, 3V3_SOC, 1V8_VDDH, 1V5_VDDH, 0V85_VDDC_RCA
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 more information.

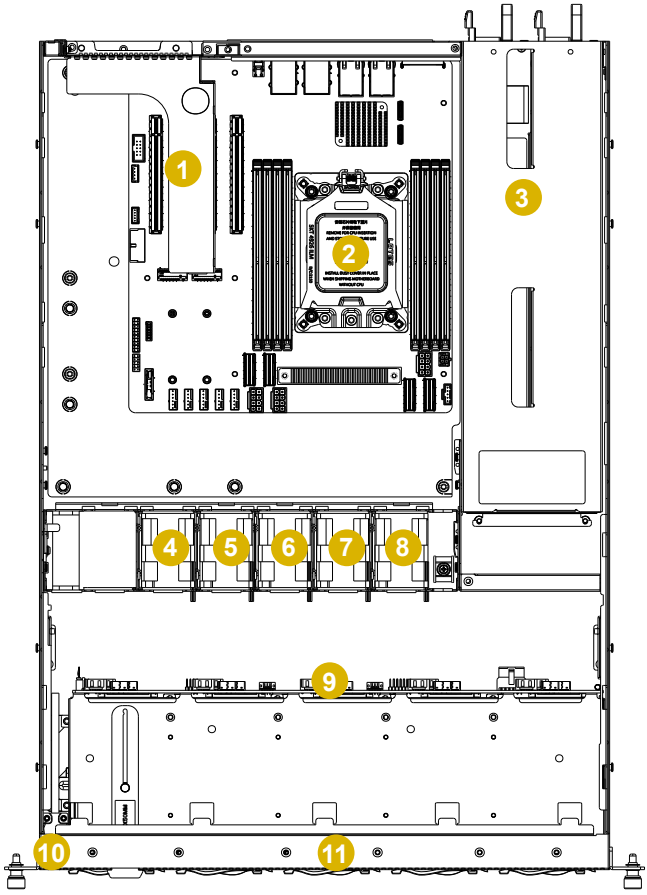
Chapter 2 Server System Overview

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

2.1 System Components

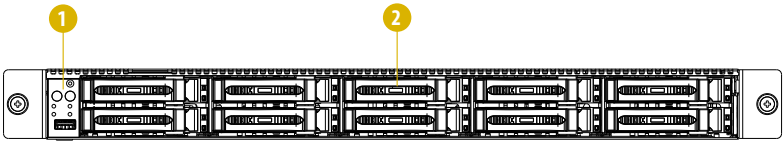


2.2 Internal Features



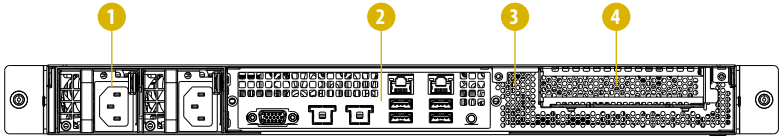
No.	Description
1	1 FHFL single-slot PCIe4.0 x16* via RB1UX16_G4 *Supports PCIe4.0 x8 when using Ampere Altra processors
2	Server motherboard
3	1+1 Slim PSU
4	PWM easy-swap 40x56mm fan (FAN5)
5	PWM easy-swap 40x56mm fan (FAN4)
6	PWM easy-swap 40x56mm fan (FAN3)
7	PWM easy-swap 40x56mm fan (FAN2)
8	PWM easy-swap 40x56mm fan (FAN1)
9	Hard drive backplane board (BPB)
10	Front panel board (FPB)
11	10 Hot-swap NVMe (PCIe4.0 x4) drive bays

2.3 System Front Panel



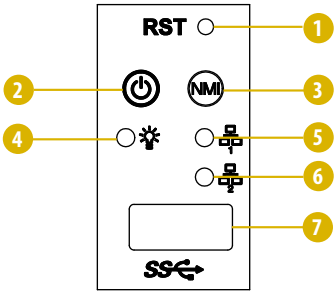
No.	Description
1	Front I/O panel
2	10 Hot-swap NVMe (PCIe4.0 x4) drive bays

2.4 System Rear Panel



No.	Description
1	1+1 Slim PSU
2	Rear I/O panel
3	Rear vent
4	1 FHFL single-slot PCIe4.0 x16* via RB1UX16_G4 *Supports PCIe4.0 x8 when using Ampere Altra processors

2.5 Front I/O Panel



No.	Description
1	System reset button
2	Power button
3	NMI button
4	Power LED
5	LAN1 Activity LED
6	LAN2 Activity LED
7	Type-A (USB3.2 Gen1) port

System 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.

Power 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.

NMI (Nonmaskable Interrupt) Button

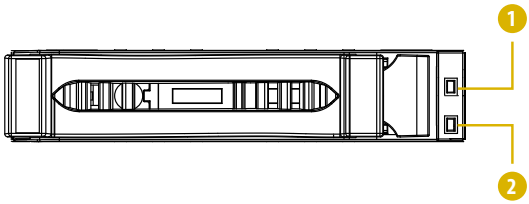
Press the NMI button with a paper clip or pin to generate a nonmaskable interrupt and to put the server in a halt state for examination.

Status LED Definitions

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

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

2.6 Hard Drive Tray LED



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

Status LED Definitions

Hard Drive Activity LED	
Status	**Description**
Off	Hard drive not present
Green	Hard drive present, not active
Blinking Green	Hard drive accessing / RAID rebuild *(with hard drive status LED blinking red alternatively)*

Hard Drive Status LED	
Status	**Description**
Off	Hard drive not present
Blue	Hard drive present
Blinking Blue	Hard drive locate (identify)*
Red	Hard drive failed*
Blinking Red	RAID rebuild*

**When the HDD0/HDD1 tray is installed with a 2.5" SATA SSD / hard drive, the LED indicators for hard drive failed, hard drive locate, and RAID rebuild will be disabled.*

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)
- Fan Board (Pre-installed, if Supported)

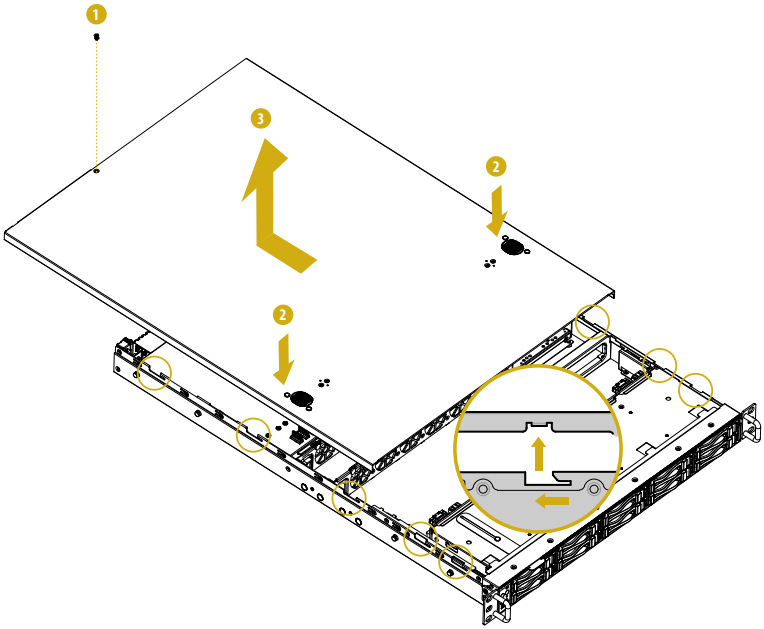
1. *Some components are already pre-installed. Simply properly connect the relavant cables before or after installation.*
2. *Refer to the server motherboard user manual for instructions on how to install server motherboard components.*

3.1 Server Top Cover

Removing the Server Top Cover

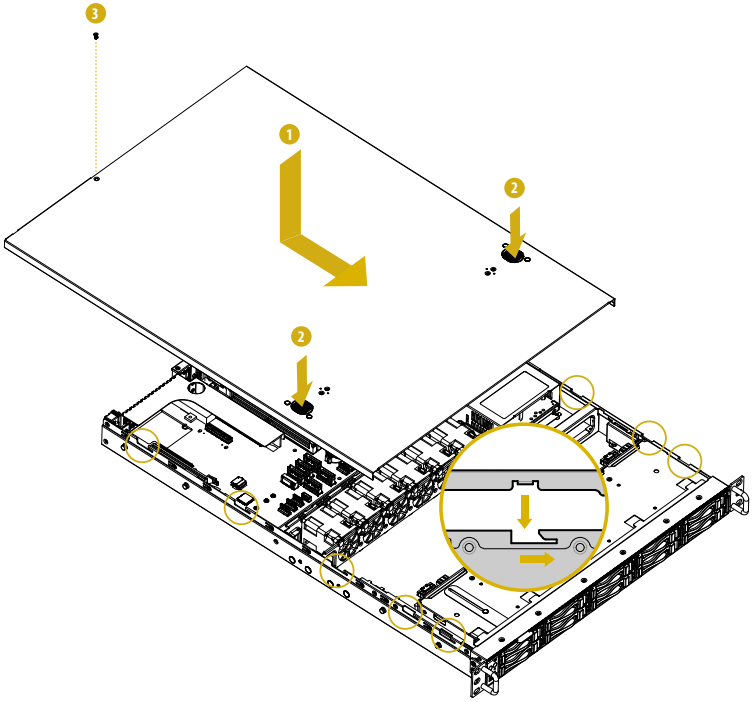
> *1. Before removing the top cover, power off the server and unplug the power cord.*
> *2. The system must be operated with the chassis top cover installed to ensure proper cooling.*

1. Remove the screw securing the top cover to the chassis.
2. Press the latches on the cover.
3. Push the cover toward the REAR of the chassis to release the cover from the locked position. Lift up and remove the cover.



Installing the Server Top Cover

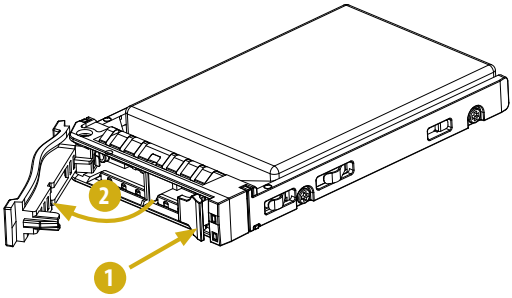
1. Lower the top cover on the chassis, making sure the side latches align with the cutouts. Slide the cover toward the FRONT of the chassis.
2. Press down on the latches and slide the cover in place.
3. Secure the cover with the screw.



3.2 Hard Drive

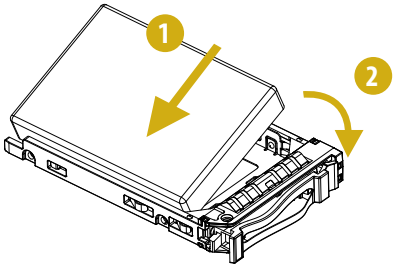
Removing Hard Drive Tray from the Chassis

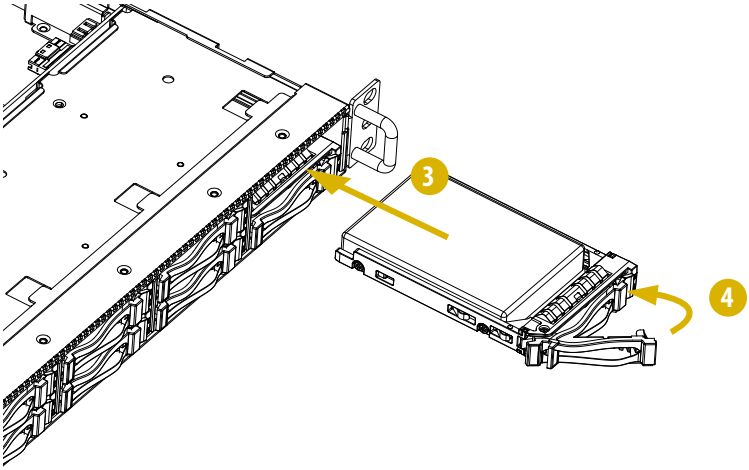
1. Press the locking lever latch on the hard drive tray to unlock the retention lever.
2. Rotate the lever out and away from the module bay and pull the tray out of the chassis.



Installing a Hard Drive to the Chassis

1. Engage two embossed pins into the side dimples on the hard drive tray.
2. Carefully push down the other side of the hard drive until the other two embossed pins and side dimples lock in place.
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.



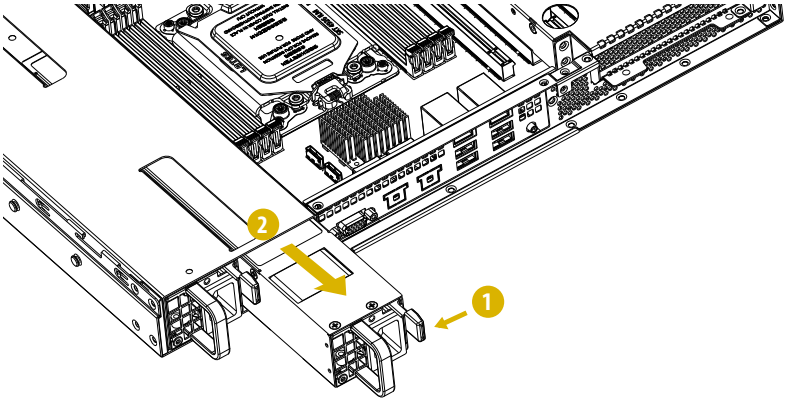


3.3 Power Supply

Removing the Power Supply Unit

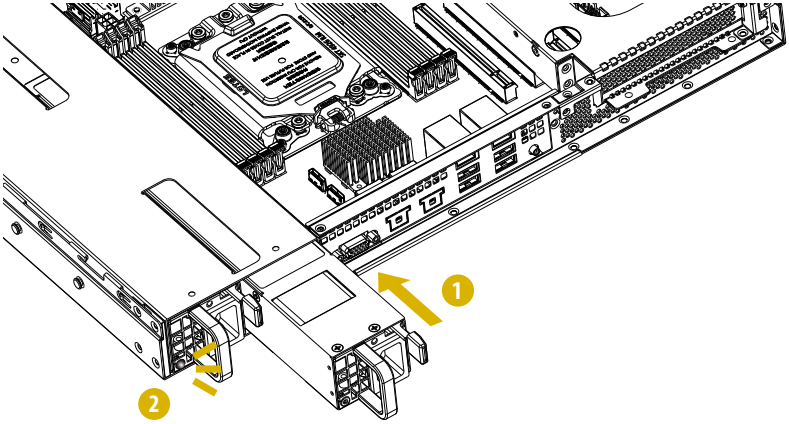
To remove a failed power supply unit, identify the failed PSU by checking the power supply LEDs on the PSUs.

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



Installing the Power Supply Unit

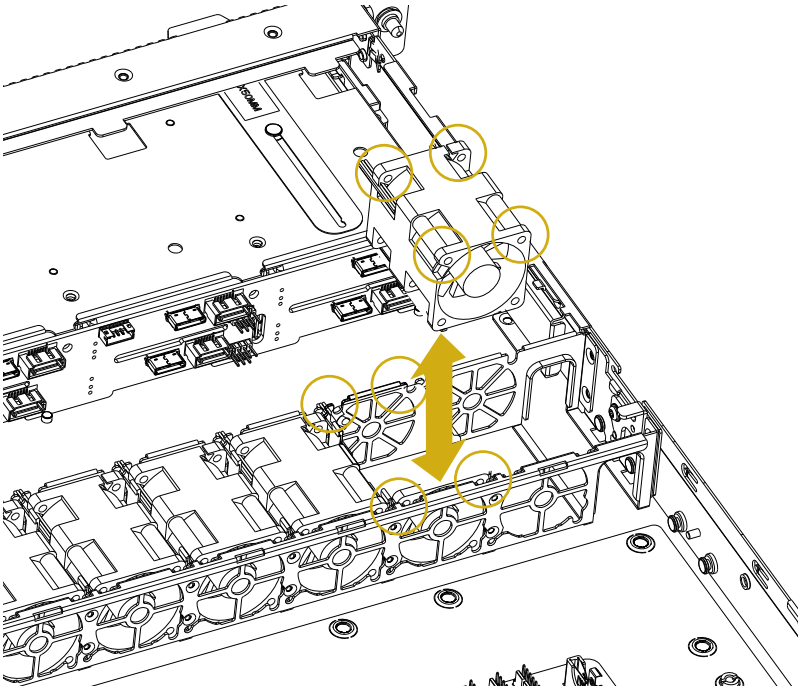
1. Align the power supply unit with the power supply bay. Ensure the LED appears on the lower left when installing the PSU.
2. Carefully slide the PSU all the way into the bay until the PSU clicks in place.



3.4 System Fan

Replacing the Easy-swap Fan

1. Unplug the fan connecter and remove the failed fan.
2. Align the mounting holes on the fan bar with the fan mounts on the replacement fan corners.
3. Gently place the fan on the fan bar. Make sure the fan is well seated.
4. Connect the end of the fan cable to the fan connector.

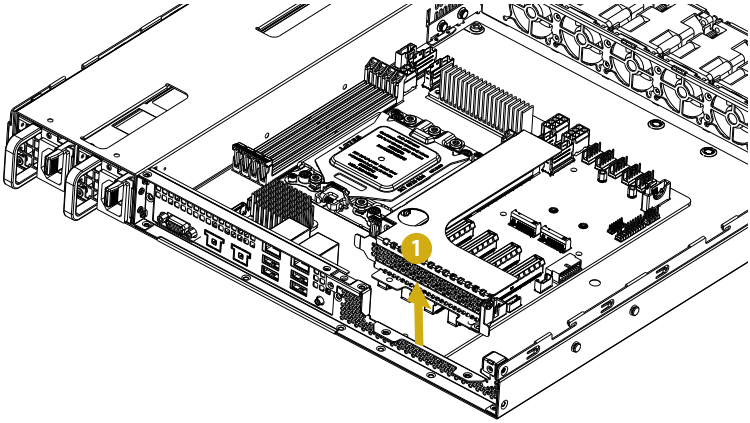


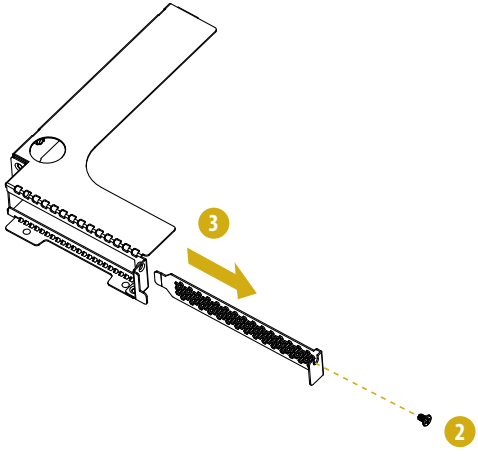
3.5 Add-in Card

1. *Install an add-in card to the chassis only when having a riser-card installed on the server motherboard.*
2. *Before installing the add-in card, power off the server and unplug the power cord.*

Removing the Blanking Plate from the Chassis

1. Lift up the riser-card bracket.
2. Remove the screw securing the blanking plate on the bracket.
3. Slide the blanking plate out sideways.

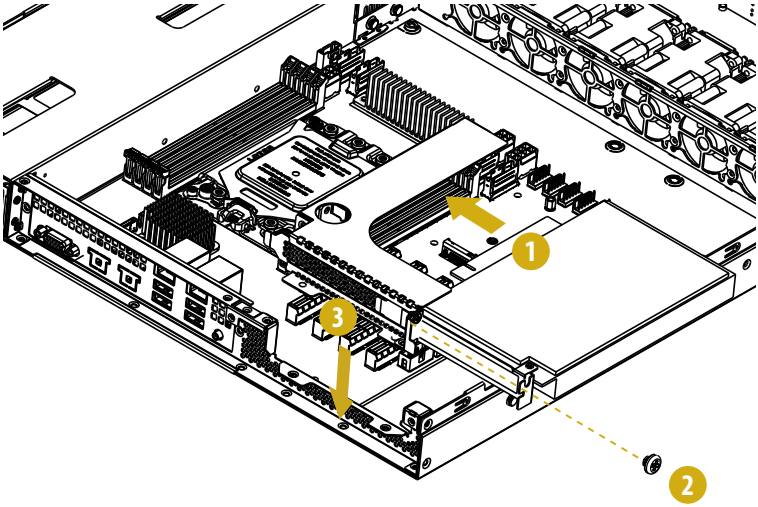




Installing the Add-in Card

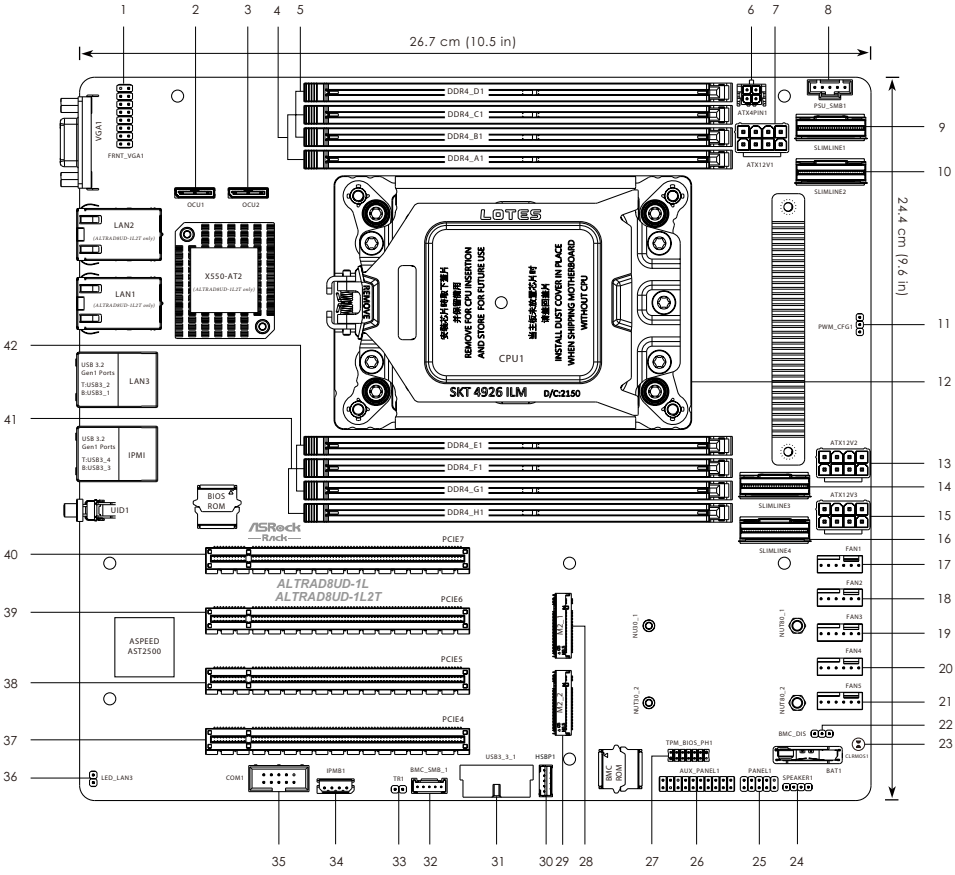
Before installing an add-in card, install a mezzaine card and a riser-card first.

1. Install the add-in card to the assembly.
2. Secure the add-in card to the assembly with the screw.
3. Align the assembly with the opening of the chassis. Make sure it is properly installed.



Chapter 4 Server Motherboard (ALTRAD8UD-1L2T)

4.1 Layout

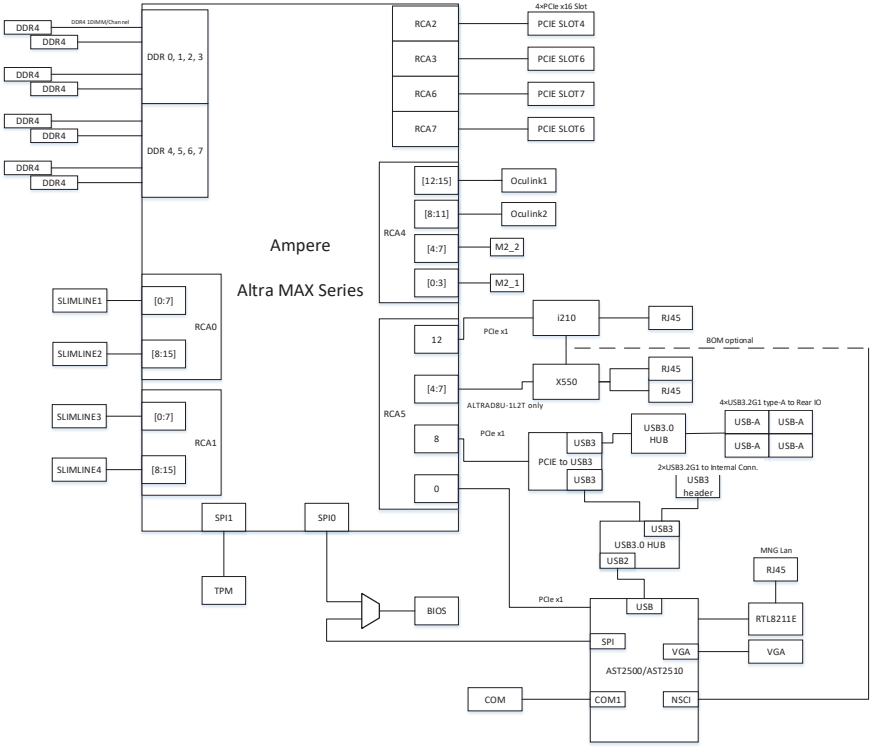


No.	Description
1	Front VGA Header (FRNT_VGA1)
2	OCuLink Connector (PCIe4.0 x4) (OCU1)
3	OCuLink Connector (PCIe4.0 x4) (OCU2)
4	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_C1)
5	2 x 288-pin DDR4 DIMM Slots (DDR4_B1, DDR4_D1)
6	Micro-Fit ATX 4Pin Power Connector (ATX4PIN1)
7	ATX 12V Power Connector (ATX12V1)
8	PSU SMBus Header (PSU_SMB1)
9	Slimline x8 Connector (SLIMLINE1)
10	Slimline x8 Connector (SLIMLINE2)
11	PWM Configuration Header (PWM_CFG1)
12	LGA 4926 CPU Socket (CPU1)
13	ATX 12V Power Connector (ATX12V2)
14	Slimline x8 Connector (SLIMLINE3)
15	ATX 12V Power Connector (ATX12V3)
16	Slimline x8 Connector (SLIMLINE4)
17	System Fan Connector (FAN1)
18	System Fan Connector (FAN2)
19	System Fan Connector (FAN3)
20	System Fan Connector (FAN4)
21	System Fan Connector (FAN5)
22	BMC Disabled Jumper (BMC_DIS)
23	Clear CMOS Pad (CLRMOS1)
24	Speaker Header (SPEAKER1)
25	System Panel Header (PANEL1)
26	Auxiliary Panel Header (AUX_PANEL1)
27	SPI TPM Header (TPM_BIOS_PH1)
28	M-key M.2 Socket (M2_1) (Type 2230/2280)
29	M-key M.2 Socket (M2_2) (Type 2230/2280)
30	Backplane PCI Express Hot-Plug Connector (HSBP1)
31	USB 3.2 Gen1 Header (USB3_3_1)
32	BMC SMBus Header (BMC_SMB_1)
33	Thermal Sensor Header (TR1)
34	Intelligent Platform Management Bus Header (IPMB1)
35	Serial Port Header (COM1)

No.	Description
36	Front LAN LED Connector (LED_LAN3)
37	PCI Express 4.0 x16 Slot (PCIE4)
38	PCI Express 4.0 x16 Slot (PCIE5)
39	PCI Express 4.0 x16 Slot (PCIE6)
40	PCI Express 4.0 x16 Slot (PCIE7)
41	2 x 288-pin DDR4 DIMM Slots (DDR4_F1, DDR4_H1)
42	2 x 288-pin DDR4 DIMM Slots (DDR4_E1, DDR4_G1)

4.2 Block Diagram

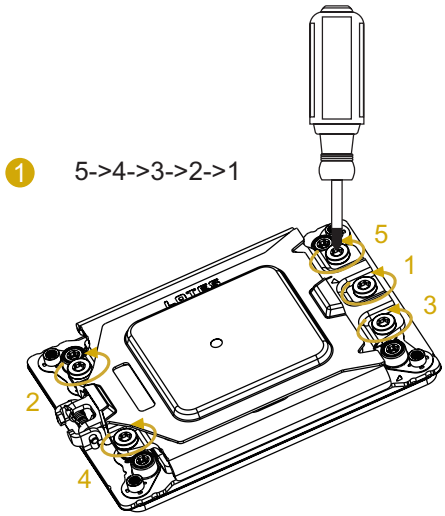
ALTRAD8UD-1L2T Block Diagram

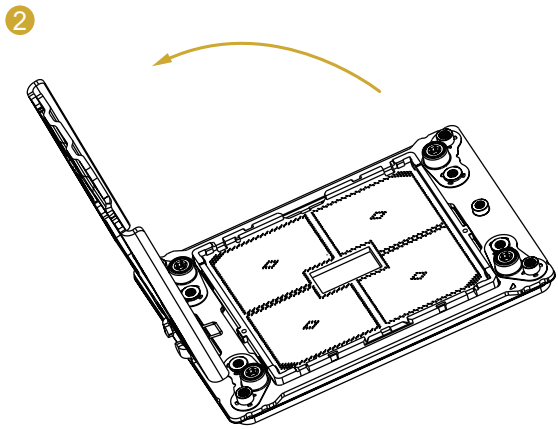


4.3 Installing the CPU and Heatsink (LGA 4926 Socket)

1. *Before inserting the CPU into the socket, check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.*
2. *Unplug all power cables before installing the CPU.*

LOTES SKT4926





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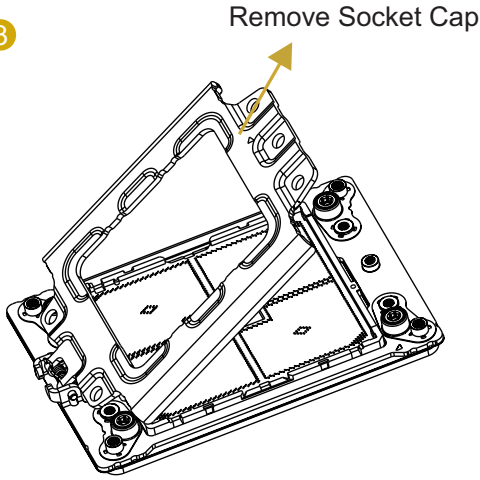

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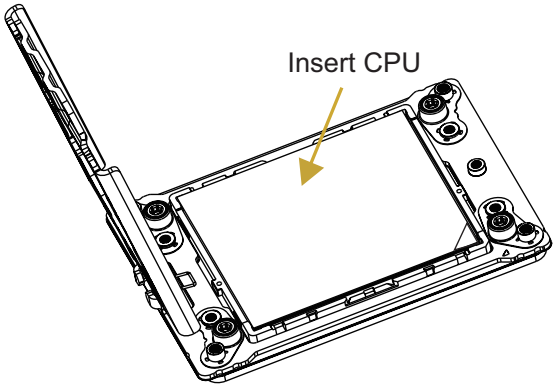
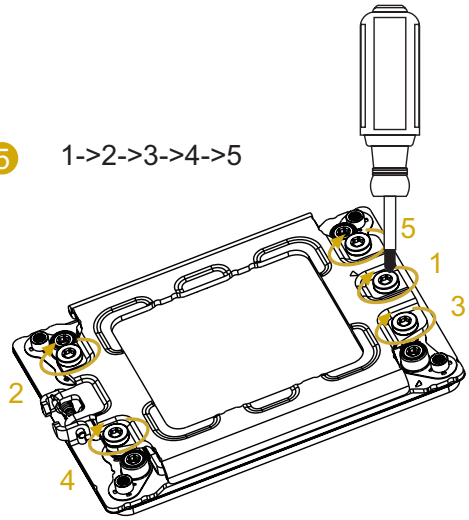


5 1->2->3->4->5



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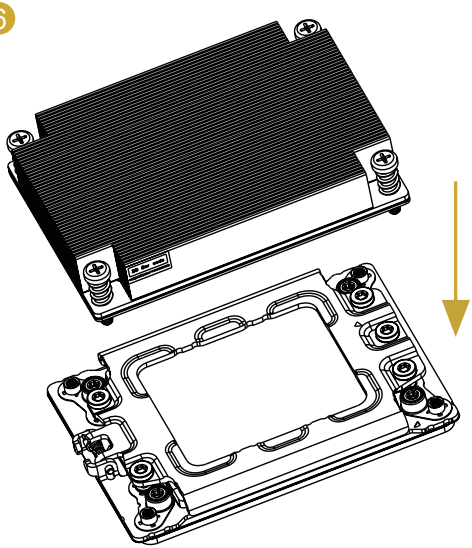

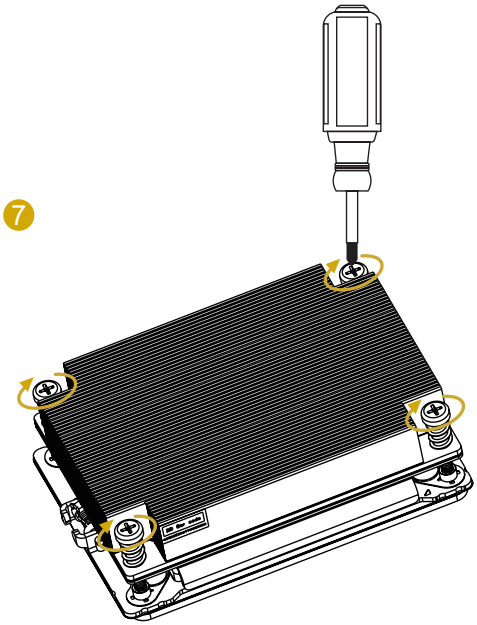
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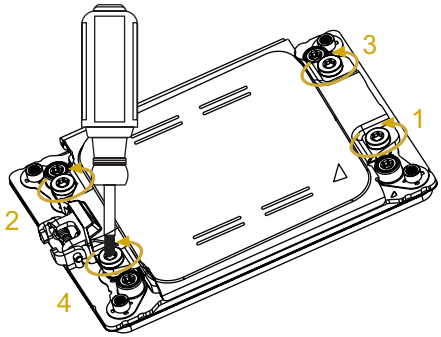
FOXCONN SKT4926

1 4->3->2->1



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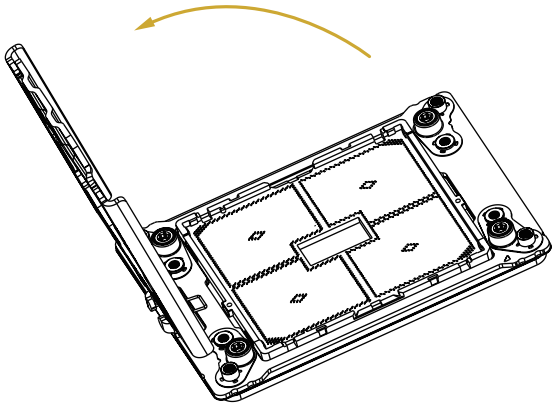

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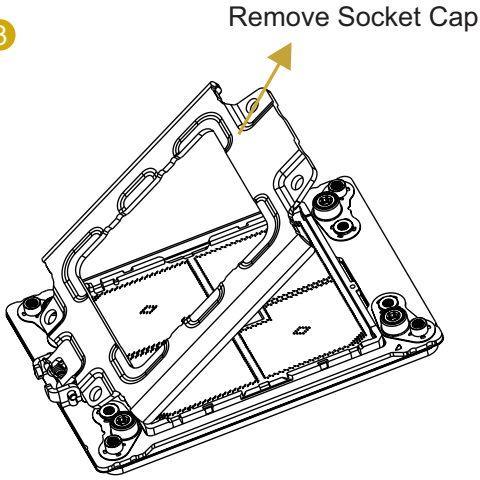

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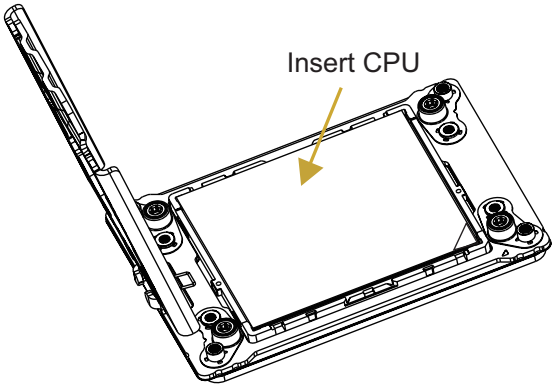
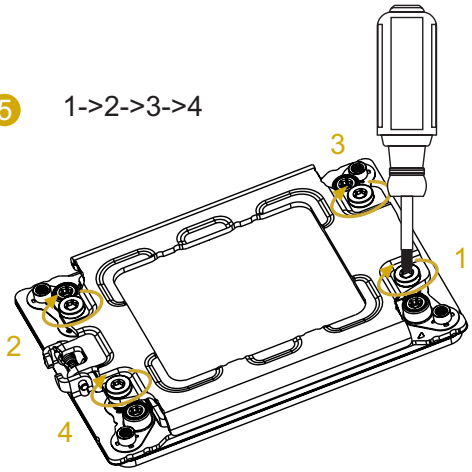


5 1->2->3->4



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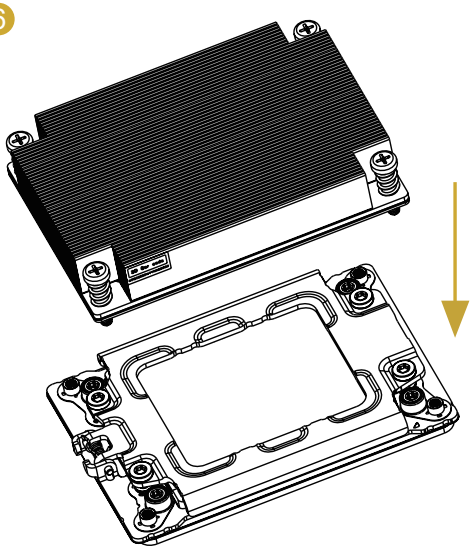

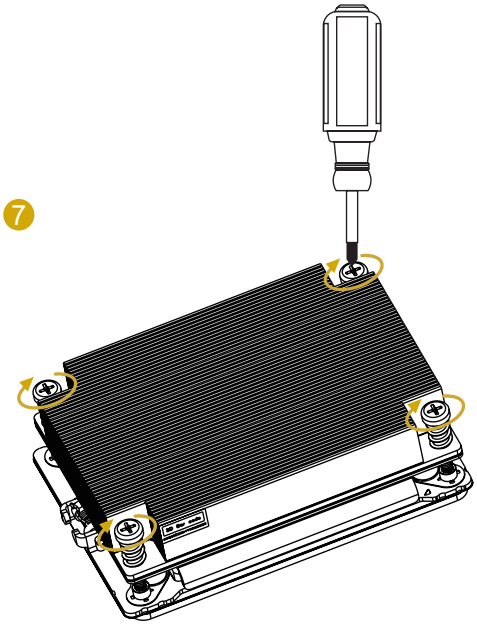
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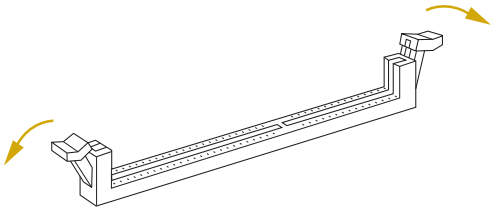
4.4 Installing the Memory Modules (DIMM)

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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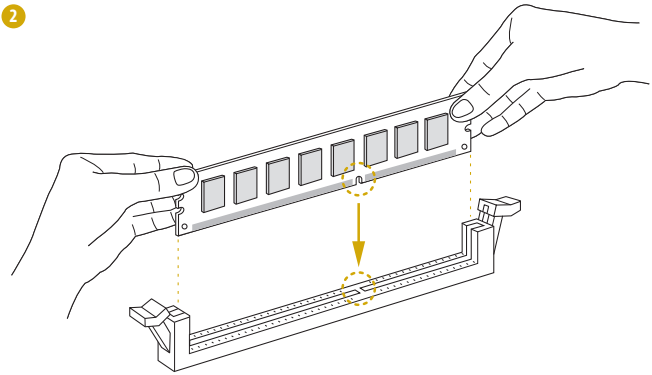

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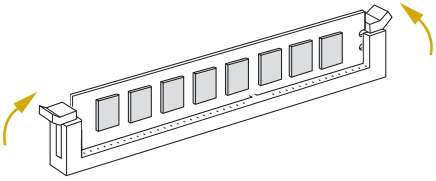

Contact Information

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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