OPEN

Industry Standard, Flexible Architecture

GREEN

Less Heat, Less Power Consumption

STABLE

Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

3U16L2S-SIENA

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

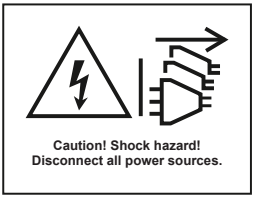
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

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 3U16L2S-SIENA, 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
3U16L2S-SIENA	SIENAD8UD3

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
Server Barebone: 3U16L2S-SIENA	1
CPU Heatsink	1
Rail Kit	1
Accessory Box - 2 Power Cords - 1 Quick Installation Guide - 2 Screws for M.2	1

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

1.2 Specifications

3U16L2S-SIENA	
System	
Form Factor	3U Rackmount
Dimension	680 x 430 x 133mm (26.7" x 16.9" x 5.2")
Support MB	SIENAD8UD3
Front Panel	
Button	Power button, ID button, system reset
LED	Power, ID, hard drive activity, LAN 1/2, system event
I/O Port	2 Type-A (USB3.2 Gen1)
External Drive Bay / Storage	
Front Side Drive Bay	16 Hot-swap 3.5" SATA drive bays
Front Side Backplane	16-port SATA passive backplane
Rear Side	2 Hot-swap 2.5" SATA drive bays, support 15mm height
Rear Side Backplane	2-port SATA passive backplane
Internal Side	2 M-key (PCIe5.0 x4), support 22110/2280 form factor
Power Supply	
Type	1+1 CRPS
Output Watts	800W
Efficiency	80-PLUS Platinum/Titanium
AC Input	100-240V, 60/50Hz
System Fan	
Fan	3 PWM hot-swap 80x38mm fans
Processor System	
CPU	Supports AMD EPYC™ 8004 series processors
Socket	Single Socket SP6 (LGA 4844)
Chipset	System on Chip

System Memory	
Supported DIMM Quantity	8 DIMM slots (2DPC/1DPC)
Supported Type	Supports DDR5 288-pin RDIMM
Max. Capacity per DIMM	96GB (2Rx4)
Max. DIMM Frequency	4800MHz
Voltage	1.1V
PCIe Expansion Slot	
PCIe x16	2 FHHL PCIe5.0 x16
Ethernet	
Additional GbE Controller	Intel® i210: 2 RJ45 (1GbE)
Server Management	
BMC Controller	ASPEED AST2600
IPMI Dedicated GLAN	1 Realtek RTL8211F for dedicated management GLAN
Graphics	
Controller	ASPEED AST2600
VRAM	DDR4 512MB
Rear I/O	
UID Button/ LED	1 UID button w/ LED
VGA Port	1 DB15 (VGA)
USB Port	2 Type-A (USB3.2 Gen1)
RJ45	2 RJ45 (1GbE) 1 Dedicated IPMI
System BIOS	
BIOS Type	AMI UEFI BIOS; 256Mb SPI Flash ROM
BIOS Features	ASRock Rack Instant Flash, ACPI 6.4 and above compliance wake up events, SMBIOS 3.5.0 and above, Plug and Play (PnP)

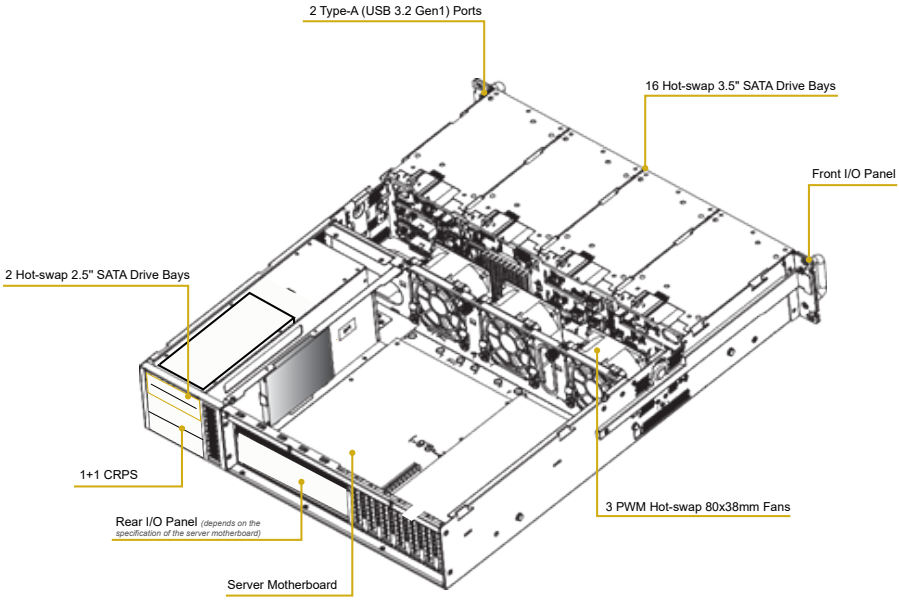
Hardware Monitor	
Temperature	CPU, MB, card side, TR1 temperature sensing
Fan	Fan tachometer Quiet fan (allows chassis fan speed auto-adjust by CPU temperature) Fan multi-speed control
Voltage	VDDCR_CPU, VDDCR_SOC, VDDIO, VDD_18_S5, VDD_33_S5, VDD_11_S3, +3V, +5V, +12V, +BAT, +1V8SB, 3VSB, 5VSB
Environment	
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.

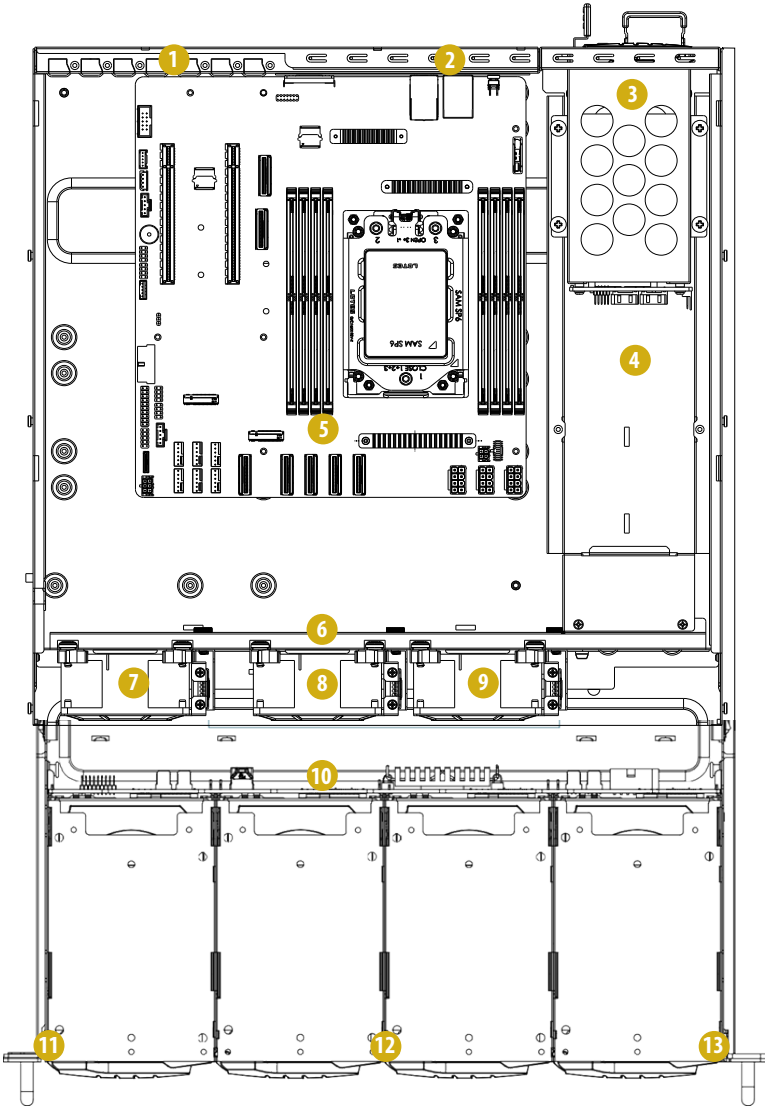
2.1 System Components



Note: The illustrations in this user manual are for references only. The actual product may be slightly different by SKU.

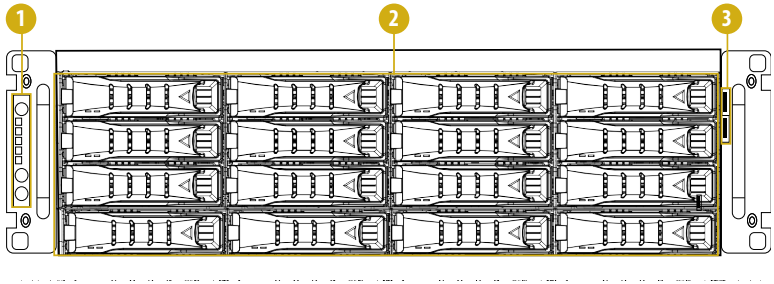
English

2.2 Internal Features



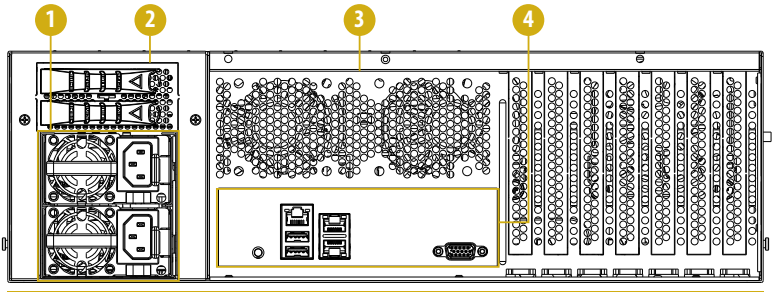
No.	Description
1	Spare slot brackets
2	Rear I/O panel *(depends on the specification of the server motherboard)*
3	2 Hot-swap 2.5" SATA drive bays
4	1+1 CRPS
5	Server motherboard
6	Fan bracket
7	PWM Hot-swap 80x38mm fan (FAN1)
8	PWM Hot-swap 80x38mm fan (FAN2)
9	PWM Hot-swap 80x38mm fan (FAN3)
10	16-port SATA passive backplane (BPB)
11	Front I/O panel
12	16 Hot-swap 3.5" SATA drive bays
13	Front I/O panel

2.3 System Front Panel



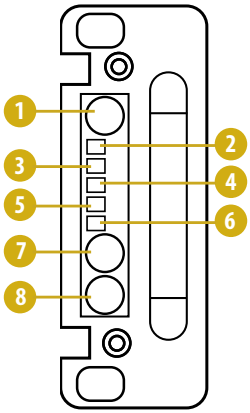
No.	Description
1	Front I/O panel
2	16 Hot-swap 3.5" SATA drive bays
3	2 Type-A (USB 3.2 Gen1) ports

2.4 System Rear Panel



No.	Description
1	1+1 CRPS
2	2 Hot-swap 2.5" SATA drive bays, support 15mm height
3	Rear vent
4	Rear I/O panel *(depends on the specification of the server motherboard)*

2.5 Front I/O Panel



No.	Descriptions	
1		Power button
2		Power LED
3		Hard drive activity LED
4		LAN LED
5		System event LED
6		ID LED
7		ID button
8		System reset button

Power Button

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

ID Button

Press the System ID button to toggle the front panel ID LED and the baseboard ID LED on and off. Use this button to locate the server working on behind a rack of servers.

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.

LED Definitions

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

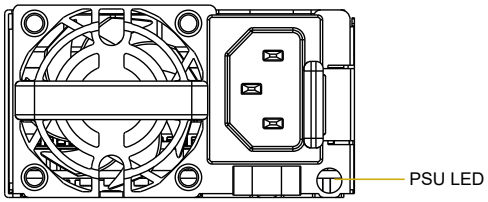
Hard Drive Activity LED	
Status	**Description**
Off	Hard drive not connected or power-off
Blue	Hard drive is active.
Blinking Blue	Detect or locate hard drive

LAN LED	
Status	**Description**
Off	No access
Blue	Link between system and network
Blinking Blue	Detect LAN activity

System Event LED	
Status	**Description**
Off	Running or normal operation
Red	System error

ID LED	
Status	**Description**
Off	System identification is disabled.
Blue	System identification is active.

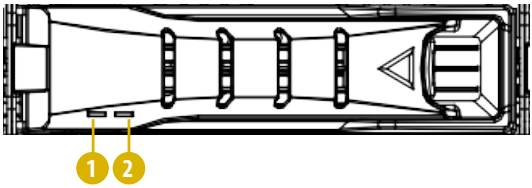
2.6 PSU LED



PSU Status LED (Platinum)	
Status	**Description**
Off	NO AC power to all power supplies
Green	Output on and ok
Blinking Green at 1Hz	AC present/Only 12Vsb on (PS off) or PSU in Cold redundant state
Amber	- AC cord unplugged, or AC power lost; with a second power supply in parallel still with AC input power. - Powr supply critical event is causing a shutdown; failure, OCP, OVP, FAN fail.
Blinking Amber at 1Hz	Power supply warning events where the power supply continues to operate; high temp, high power, high current, slow fan.

PSU Status LED (Titanium)	
Status	**Description**
Off	NO AC power to all power supplies
Green	Output on and ok
Blinking Green at 1Hz	AC present/Only 12Vsb on (PS off) or PS in Smart redundant state / Off line mode.
Blinking Green at 2Hz	FW updating for power supply.
Amber	- AC cord unplugged, or AC power lost; with a second power supply in parallel still with AC input power. - Powr supply critical event is causing a shutdown; failure, OCP, OVP, FAN fail.
Blinking Amber at 1Hz	Power supply warning events where the power supply continues to operate; high temp, high power, high current, slow fan.

2.7 Hard Drive Tray LED



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

LED Definitions

Hard Drive Fault/Status LED	
Status	**Description**
Off	Normal
Red	Hard drive fault or locate hard drive
Blinking Red	Re-build status

Hard Drive Activity LED	
Status	**Description**
Off	Hard drive not connected or powered-off
Blue	Hard drive present
Blinking Blue	Detect or locate hard drive activity

Chapter 3 Hardware Installation and Maintenance

This chapter helps user to 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 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 pressing 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 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.

- 3.5" Hard Drives
- 2.5" Hard Drives
- Power Supply Units (Pre-installed)
- System Fans (Pre-installed)
- Fan Board (Pre-installed)
- Server Motherboard (Pre-installed)
- Hard Drive Backplane Boards (Pre-installed)
- Front Panel Boards (Pre-installed)

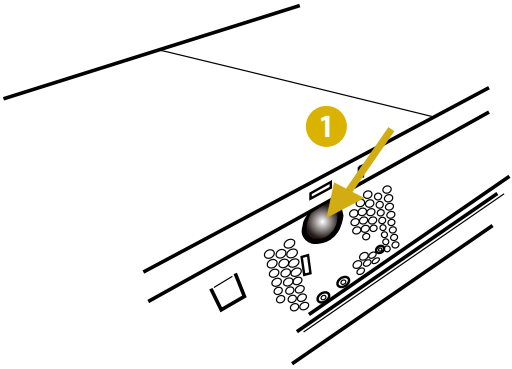
> 1. *Some components are already pre-installed. Simply properly connect the required cables before or after installation.*
> 2. *Refer to the server motherboard user manual for instructions on how to install server motherboard components.*

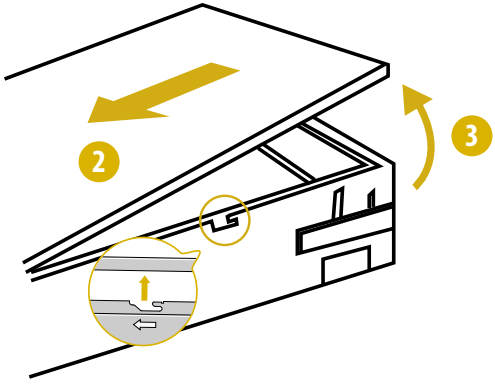
3.1 Server Top Cover

Removing the Top Cover

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

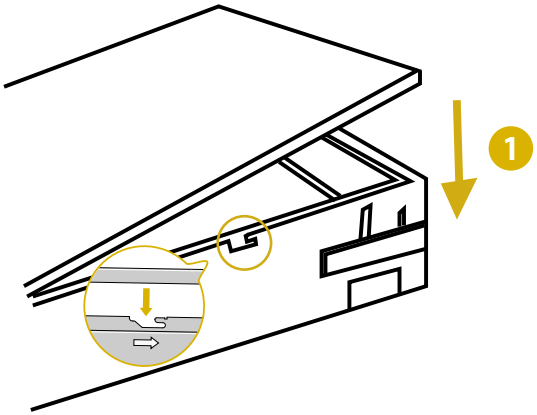
1. Press the locking button on both sides of the chassis.
2. Push the top cover toward the REAR of the chassis.
3. Lift up and remove the top cover.

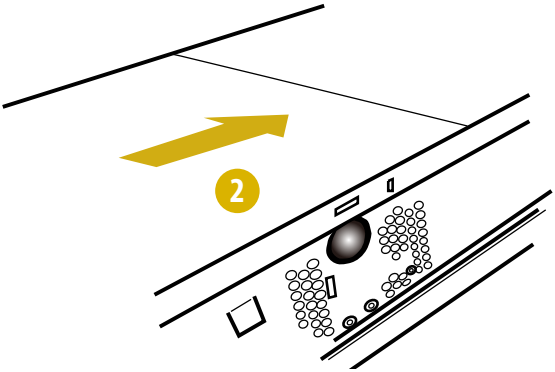




Installing the Top Cover

1. Lower the top cover on the chassis, making sure the side latches align with the cutouts.
2. Push the top cover toward the FRONT of the chassis until hearing clicks to secure the cover with the chassis.



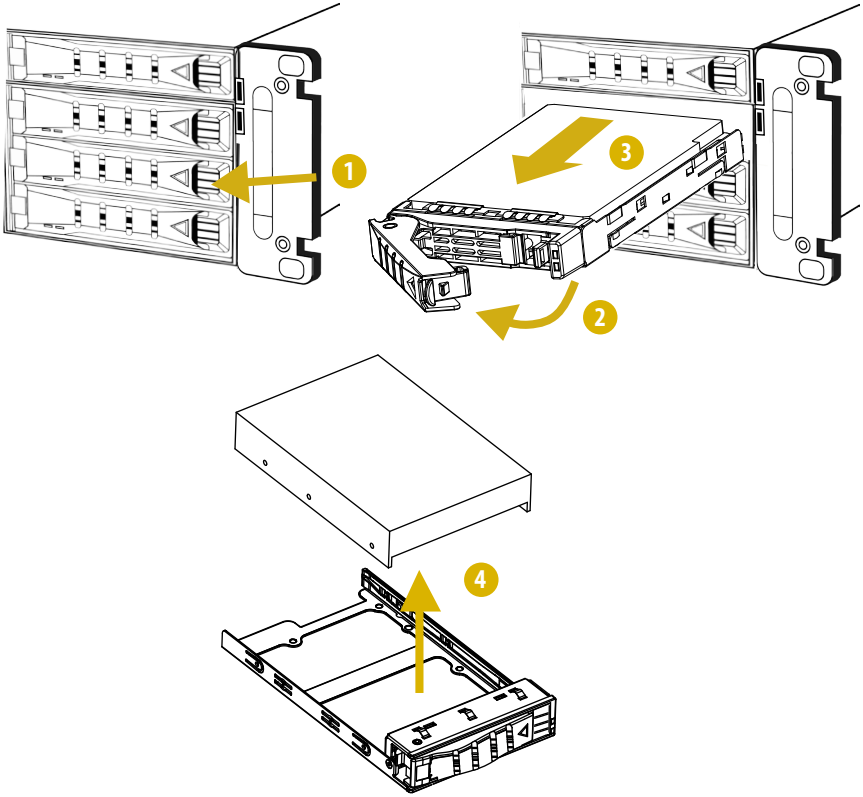


3.2 Hard Drive

The system supports 16 hot-swap 3.5" hard drive bays on the front panel and 2 hot-swap 2.5" hard drive bays on the rear panel.

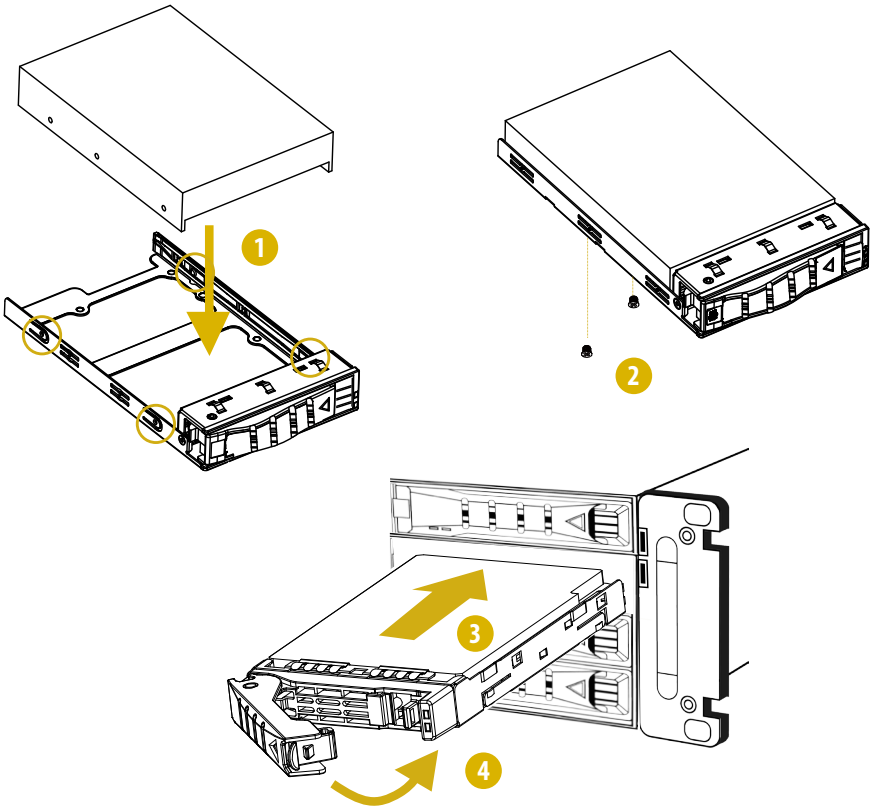
Removing the 3.5" Hard Drive

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 hard drive bay.
3. Pull the tray out of the chassis.
4. Remove the hard drive by pushing the hard drive out from the backside of the tray.



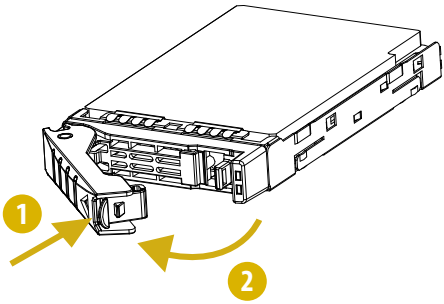
Installing the 3.5" Hard Drive

1. Align the tray's dimples to insert the hard drive into the hard drive tray until the side dimples lock in place.
2. Secure the hard drive to the tray with two screws.
3. Insert 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.



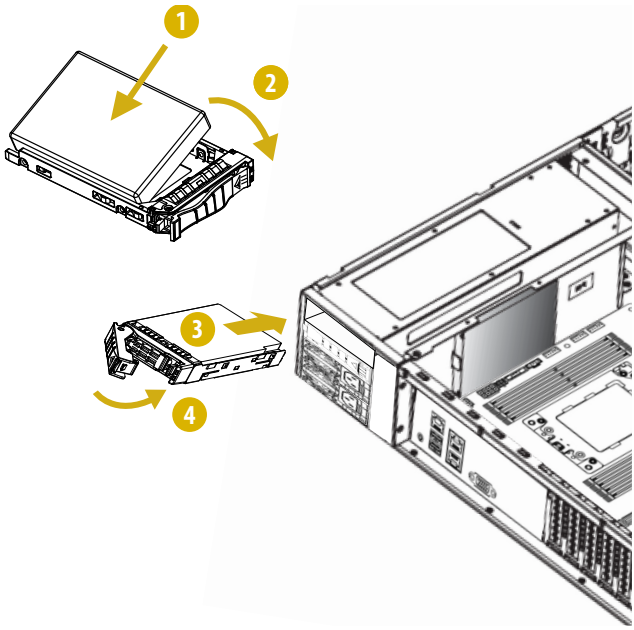
Removing the 2.5" Hard Drive

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 hard drive bay and pull the tray out of the chassis.



Installing the 2.5" Hard Drive

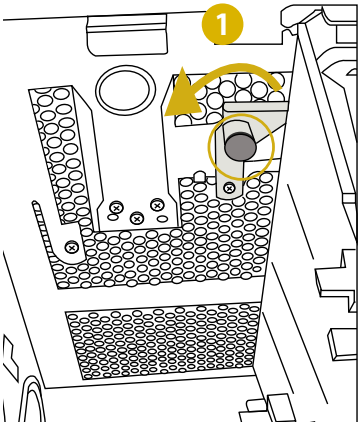
1. Engage two embossed pins into the side dimples on the hard drive tray.
2. Carefully push down the other side of the hard drive until the other two embossed pins and side dimples lock in place.
3. Slide the tray into the hard drive bay until the drive is fully seated.
4. Push in the locking lever to lock the tray in place.

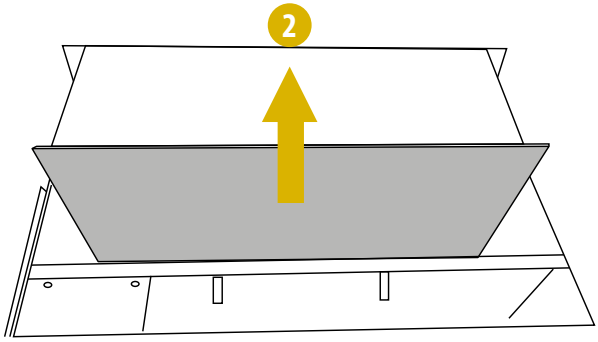


3.3 Hard Drive Backplane Module

Removing the Hard Drive Backplane Module (BPB)

1. Unplug all cables from the backplane module and release the module by shifting the hook.
2. Hold on both sides of the module to lift the module upward.





3.4 Power Supply

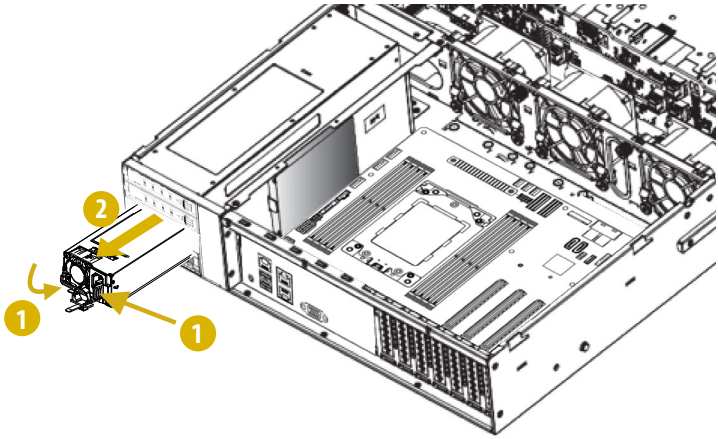
The system can accommodate two power supply units in the bay at the rear of the chassis. Each unit provides up to 800W of power. One PSU is required for full load operation, with the other PSU purely as a redundant, load-sharing backup. One PSU can be removed without affecting system operation.

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

Replacing 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 on the power supply handle while pressing the locking lever towards the power supply handle.
2. Pull the power supply unit out from the chassis.
3. Install a new PSU by pushing it into the chassis. Ensure the PSU is fully inserted and securely seated on the chassis.

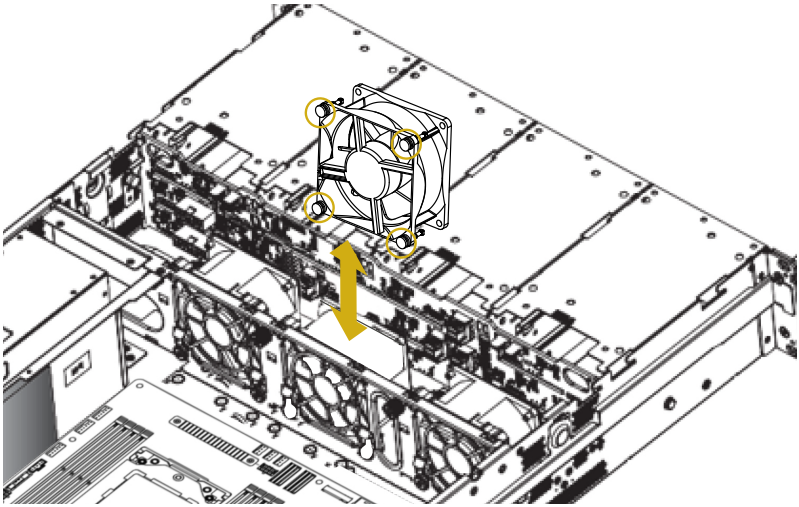


3.5 System Fan

The system supports 3 hot-swappable system fans.

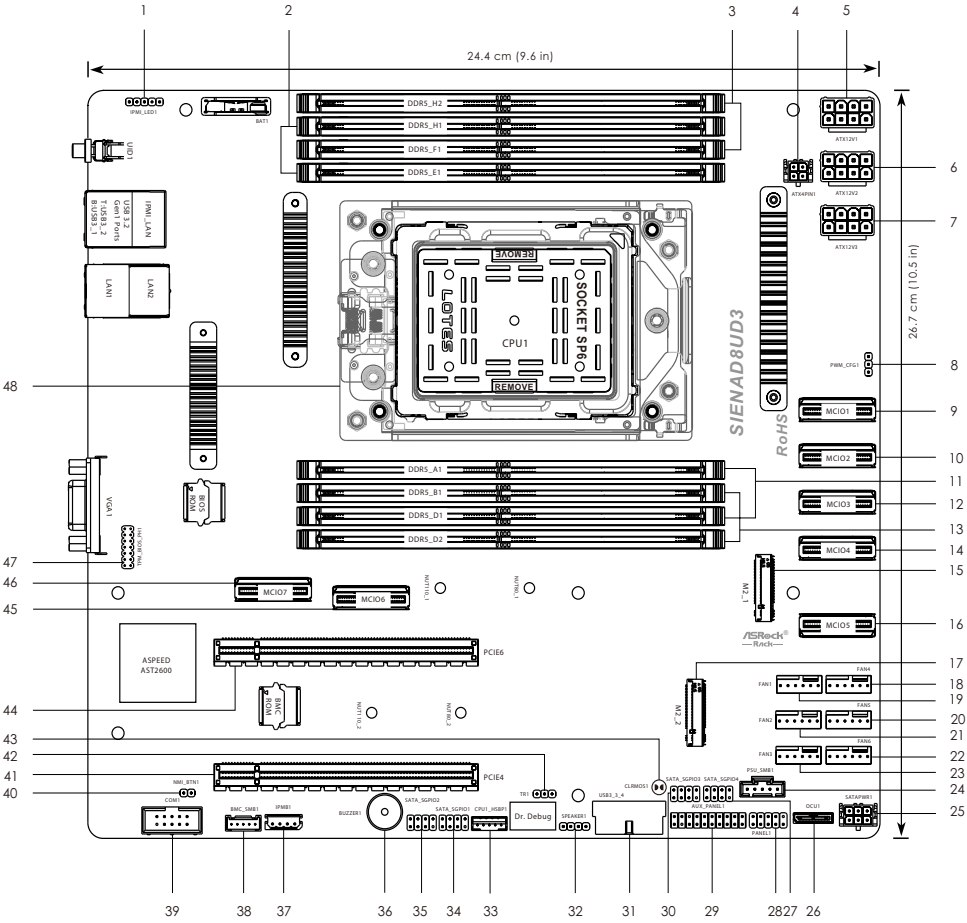
Replacing the System Fan

1. Unplug all the cables around the fan.
2. Lift to remove the failed fan.
3. Align the mounts on the fan with the mounting holes on the fan bracket to insert a new fan into the chassis.
4. Make sure the fan is well seated.



Chapter 4 Server Motherboard (SIENAD8UD3)

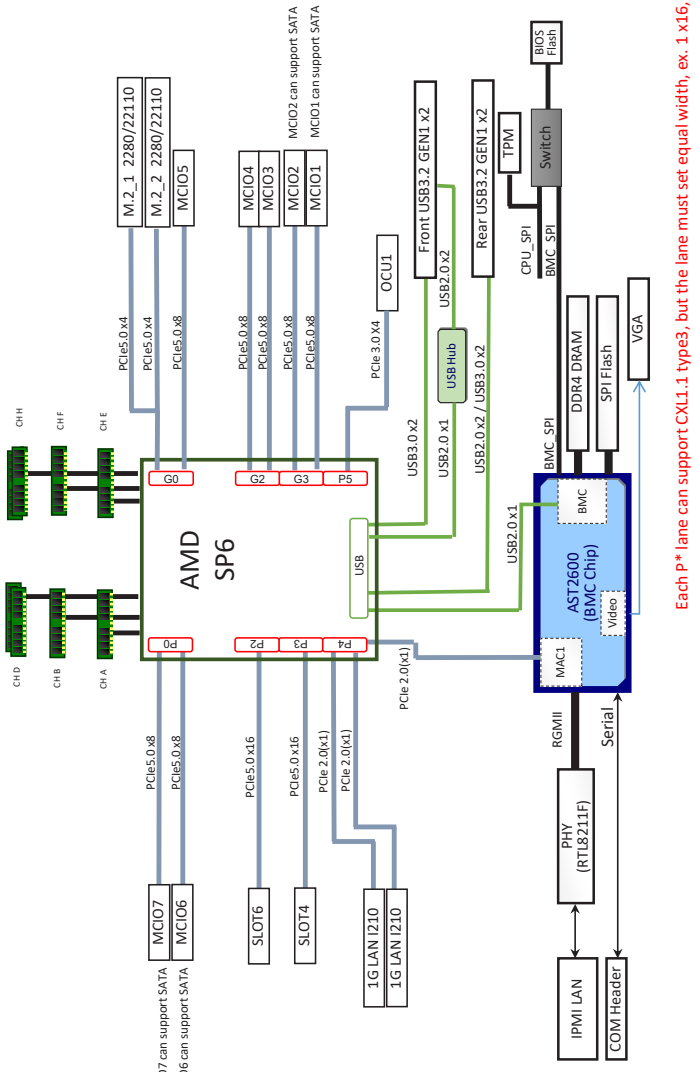
4.1 Layout



No.	Description
1	IPMI LAN LED Header (IPMI_LED1)
2	2 x 288-pin DDR5 DIMM Slots (DDR5_E1, DDR5_H1)
3	2 x 288-pin DDR5 DIMM Slots (DDR5_F1, DDR5_H2)
4	Micro-Fit Power Connector (ATX4PIN1)
5	ATX 12V Power Connector (ATX12V1)
6	ATX 12V Power Connector (ATX12V2)
7	ATX 12V Power Connector (ATX12V3)
8	PWM Configuration Header (PWM_CFG1)
9	Mini Cool Edge IO Connector (PCIe5.0 x8 or 8 SATA 6Gb/s) (MCIO1)
10	Mini Cool Edge IO Connector (PCIe5.0 x8 or 8 SATA 6Gb/s) (MCIO2)
11	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_D1)
12	Mini Cool Edge IO Connector (PCIe5.0 x8) (MCIO3)
13	2 x 288-pin DDR5 DIMM Slots (DDR5_B1, DDR5_D2)
14	Mini Cool Edge IO Connector (PCIe5.0 x8) (MCIO4)
15	M.2 Socket (M2_1) (Type 2280 / 22110)
16	Mini Cool Edge IO Connector (PCIe5.0 x8) (MCIO5)
17	M.2 Socket (M2_2) (Type 2280 / 22110)
18	System Fan Connector (FAN4)
19	System Fan Connector (FAN1)
20	System Fan Connector (FAN5)
21	System Fan Connector (FAN2)
22	System Fan Connector (FAN6)
23	System Fan Connector (FAN3)
24	PSU SMBus (PSU_SMB1)
25	SATA Power Connector (SATAPWR1)
26	OCuLink Connector (PCIe3.0 x4) (OCU1)
27	SATA SGPIO Connector (SATA_SGPIO4)
28	System Panel Header (PANEL1)
29	Auxiliary Panel Header (AUX_PANEL1)
30	SATA SGPIO Connector (SATA_SGPIO3)
31	USB 3.2 Gen1 Header (USB3_3_4)
32	Speaker Header (SPEAKER1)
33	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
34	SATA SGPIO Connector (SATA_SGPIO1)

No.	Description
35	SATA SGPIO Connector (SATA_SGPIO2)
36	BUZZER1
37	Intelligent Platform Management Bus header (IPMB1)
38	BMC SMBus Header (BMC_SMB1)
39	COM Port Header (COM1)
40	Non Maskable Interrupt Button (NMI_BTN1)
41	PCI Express 5.0/CXL1.1 x16 Slot (PCIE4)
42	Thermal Sensor Header (TR1)
43	Clear CMOS Pad (CLRMOS1)
44	PCI Express 5.0/CXL1.1 x16 Slot (PCIE6)
45	Mini Cool Edge IO Connector (PCIe5.0 x8 or 8 SATA 6Gb/s) (MCIO6)
46	Mini Cool Edge IO Connector (PCIe5.0 x8 or 8 SATA 6Gb/s) (MCIO7)
47	SPI TPM Header (TPM_BIOS_PH1)
48	AMD Socket SP6 (LGA4844) (CPU1)

4.2 Block Diagram



Each P* lane can support CXL1.1 type3, but the lane must set equal width, ex. 1 x16, 2 x8, 4 x4 .

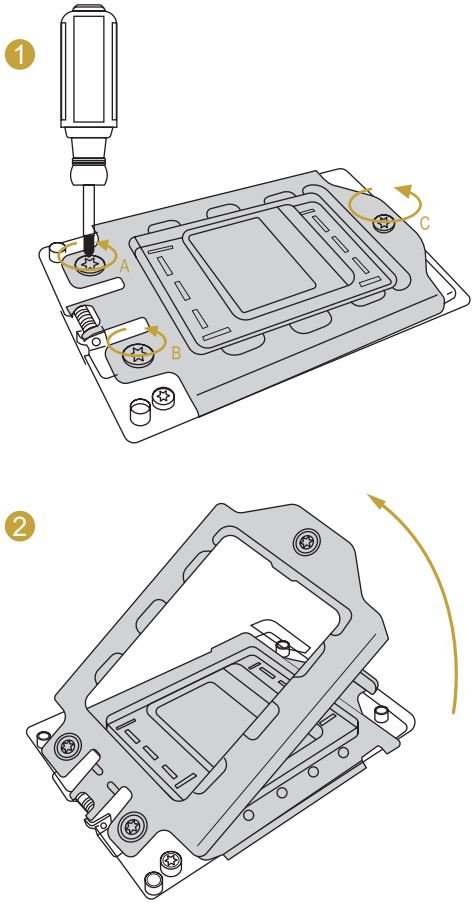
P0, G3 can support SATA, max 32 SATA ports

P4, P5 are limited to Gen3 X4.

English

4.3 Installing the CPU (LGA 4844 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.*



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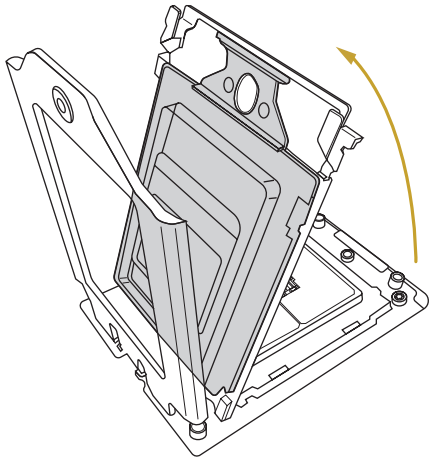

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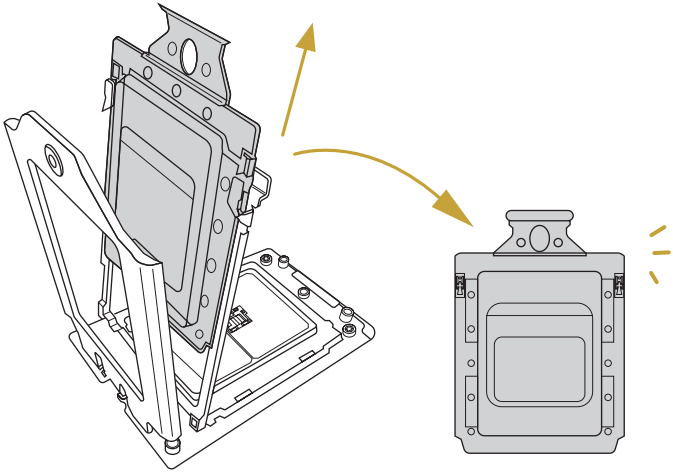

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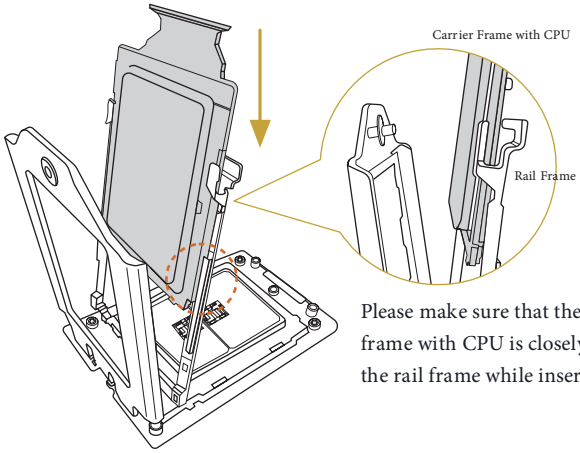
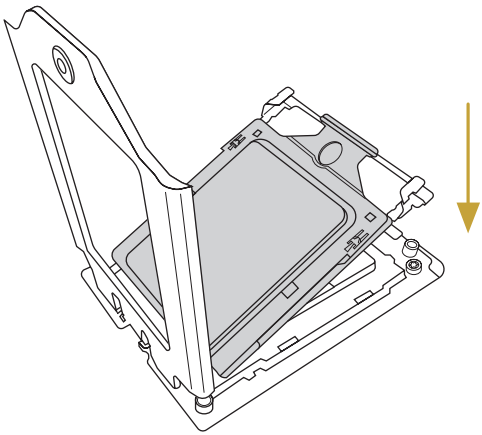


Please make sure that the carrier frame with CPU is closely attached to the rail frame while inserting it.

⚠

Install the carrier frame with CPU. Don't separate them.

6



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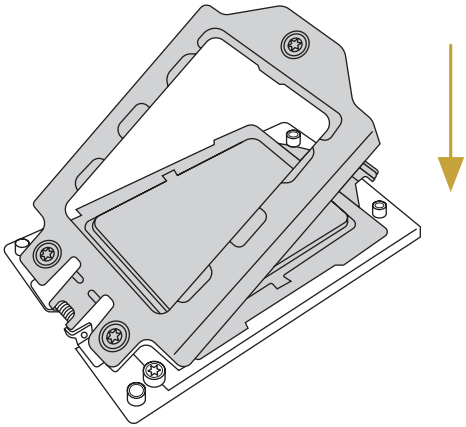

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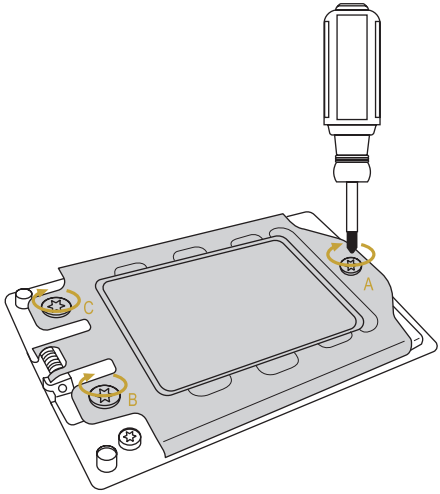
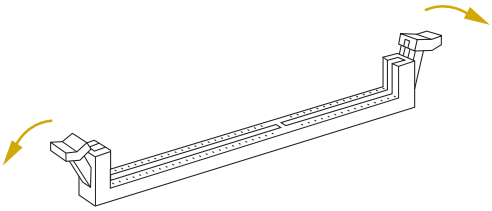


4.4 Installing the Memory Modules (DIMM)

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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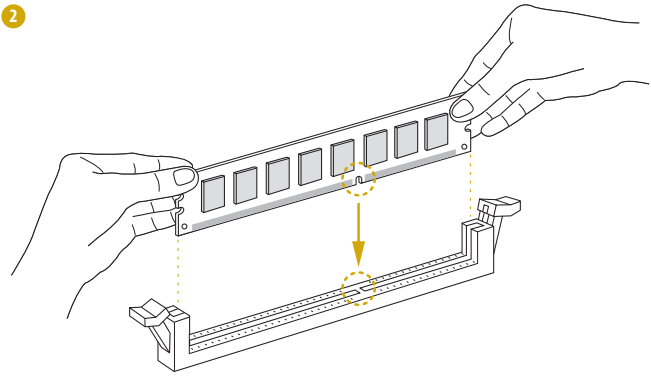
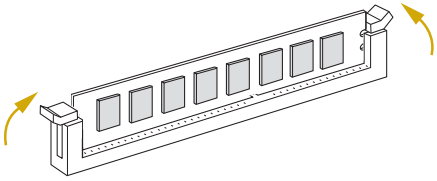


3



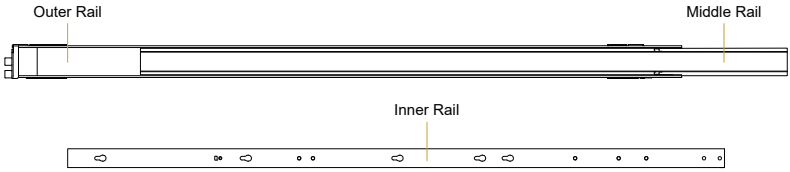
Appendix

Installing the Server in a Rack

This section describes how to rackmount the 3U16L2S-SIENA server with slide rail assembly.

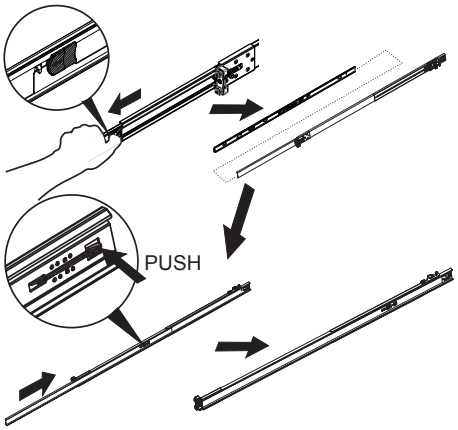
The rails installation instructions in this manual are example only, the actual rail assembly procedure may differ slightly.

The rail assembly consists of outer, middle and inner rail.

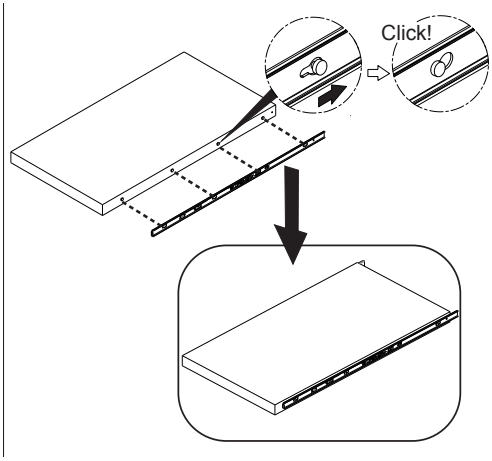


Some slide rails are labeled with either L or R, please identify prior to rail installation. Install the rail labeled with L on the left side of rack, and the rail labeled with R on the right side.

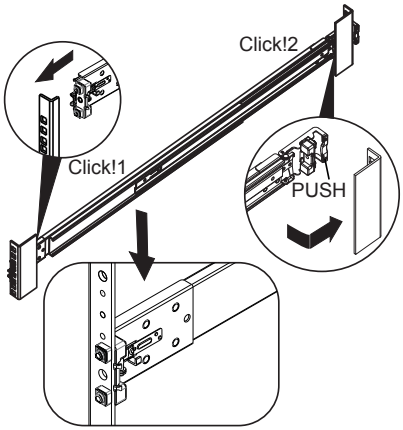
1. Release and detach the inner rail from the slide.



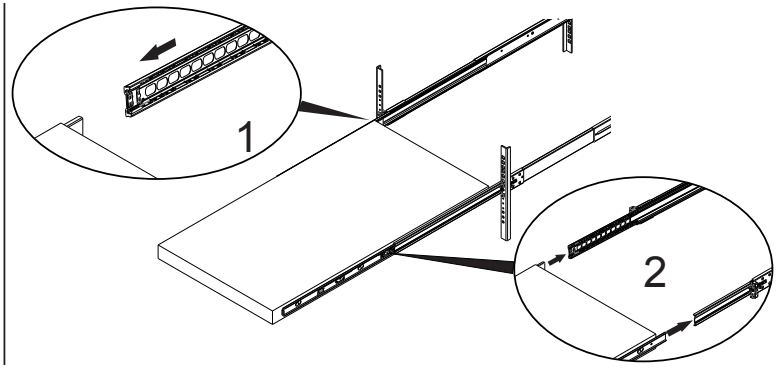
2. Attach inner rail to the system.



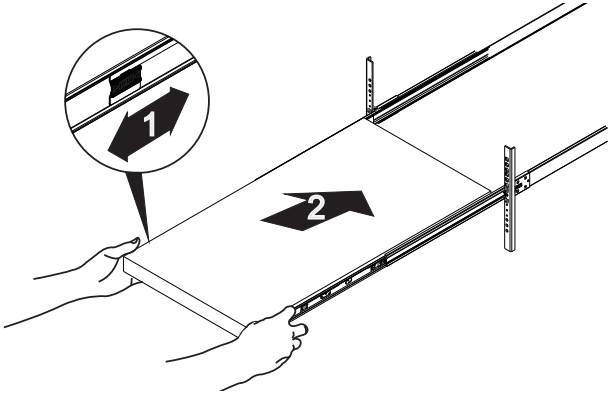
3. Attach outer rail to the rack.



4. (1) Caution! Verify ball bearing retainer is locked forward.
   (2) Pull out the middle rail until locked out.



5. Slide release tab and push system into rack.



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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