ASRock Rack

OPEN
Industry Standard, Flexible Architecture

GREEN
Less Heat, Less Power Consumption

STABLE
Robust Design, Quality Parts

Stable and
Reliable Solution

Barebone

2U2G

User Manual

Version 1.0
Published June 2016
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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"

ASRockRack's Website: www.ASRockRack.com

Setting up the Server in a Restricted Access Location

- 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.

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.

Contact Information

If you need to contact ASRockRack or want to know more about ASRockRack, you're welcome to visit ASRockRack's website at www.ASRockRack.com; or you may contact your dealer for further information.

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Chapter 1 Introduction

Thank you for purchasing 2U2G, a reliable barebone system produced under ASRockRack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRockRack's commitment to quality and endurance.

1. *Because the hardware specifications might be updated, the content of this documentation will be subject to change without notice. In case any modifications of this documentation occur, the updated version will be available on ASRockRack's website without further notice. If you require technical support related to this product, please visit our website for specific information about the model you are using.*
   ASRockRack's Website: www.ASRockRack.com
2. *The illustrations shown in this manual are examples only, the actual system may differ slightly .*

1.1 Shipping Box Contents

Item	Quantity
2U2G Barebone (2U form factor)	1
System Boards (MB)	1
Power Supply Units	2
System Fans	4
HDD Backplane (BPB)	1
Front Panel Board (FPB)	1
Power Distribution Boards (PDB)	4
Power Cable, ATX 8Pin, PDB to MB, 200mm	1
Power Cable, ATX 8Pin, PDB to MB, 700mm	1
Power Cable, ATX 24Pin, PDB to MB, 520mm	1
Power Cable, ATX 12Pin to 4*4Pin, PDB to BPB	1
PMBus Cable, 1*5Pin, PDB to MB, 500mm	1
Front Panel Cable, 2*10Pin to 2*10Pin+2*5Pin, FPB to MB, 700mm	1
USB 2.0 Cable, FPB to MB, 2*5Pin, 1250mm	1
VGA Cable, 2*8Pin, 850mm	1
BPB Cable, MiniSAS HD to 8087(L/A), 650mm	1
BPB Cable, MiniSAS HD to 8087(R/A), 650mm	1
SMBus Cable, 1*5Pin, PDB to MB, 650mm	1
GPGPU Power Cable, 2*8Pin to 4*(4+2Pin)	1
1U Narrow Passive Coolers	2
US Power Cords	2
Rail Kit	1
Accessory Box	1
Support CD	1
Quick Installation Guide	1

Note: Type and quantity of the cables vary depending on the server board that comes with your system.

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

1.2 Specifications

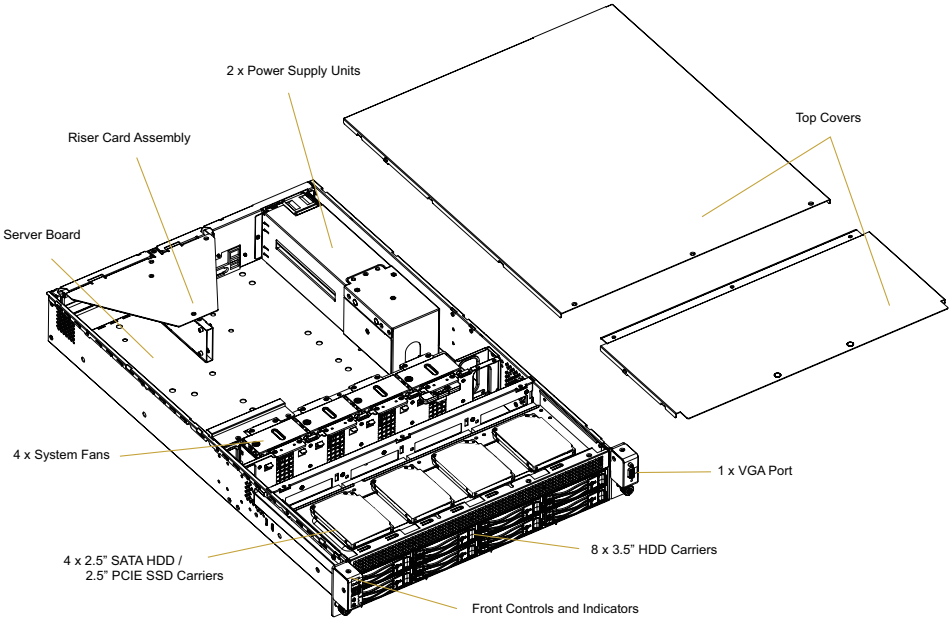
2U2G	
System	
Form Factor	2U Rackmount
Chassis Model	2U2G
Dimensions	715mm x 448mm x 86mm (L/W/H, w/o ear)
Support MB	EEB, 12”x13”'
Front Panel	
Buttons	• Power Button • UID Button
LEDs	• POWER LED • UID LED • System event LED • 2 x Network activity LEDs
I/O Ports	• 2 x USB 2.0 ports • VGA port
External Drive Bay	
Front Side Drive Bay	8 Bay 3.5” SATA HDD (6Gb/s)
Front Side Backplane	backplane with 8 SATA ports
Internal Side Drive Bay	4x 2.5” SATA HDDs(6GB/s) / 4 Bay 2.5” PCIE SSD(option)
Power Supply	
Type	2U, Redundant
Output Watts	1200W
System Fan	
Fan	4 x 8038 mm Fans
Riser Card Support	
Riser card Type	2 x Symmetry Riser card(x16/x8x8) support 4 x Full High PCIE card
Other	
Support MB	FH-C612NM (SSI EEB, 12” x 13”)

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

Chapter 2 Server System Overview

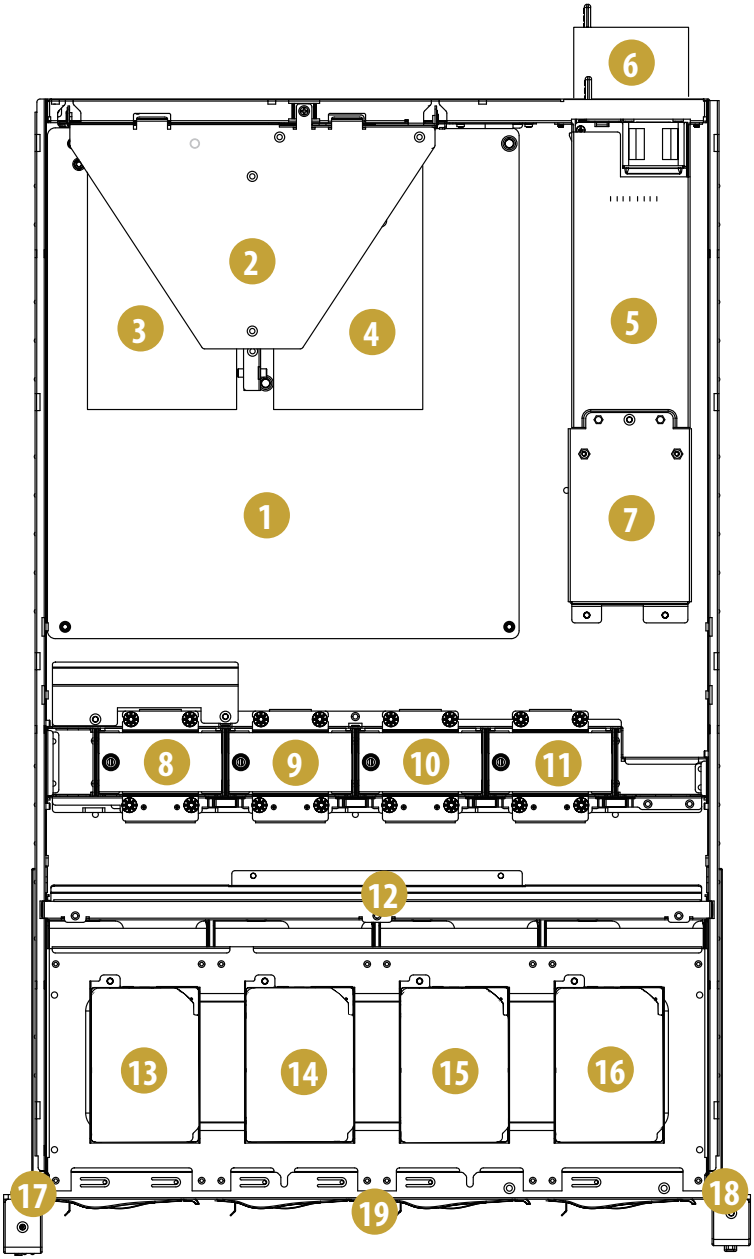
This chapter provides diagrams showing the location of important components of the server system.

2.1 System Components



English

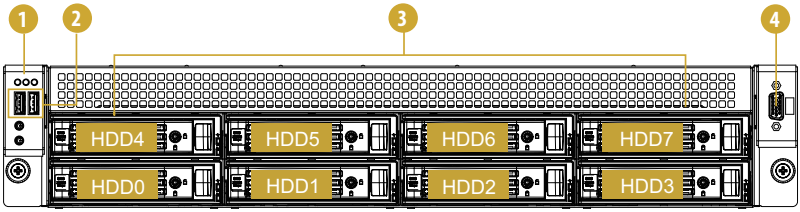
2.2 Internal Features



No.	Item
1	Server Board (SB)
2	Riser Card Assembly
3	Add-in Card Slots: 2 x PCIE Add-in Cards or 1 x GPGPU Card (on the riser card assembly)* Mezzanine Slot: 1 x Storage Mezzanine Card (on the server board)**
4	Add-in Card Slots: 2 x PCIE Add-in Cards or 1 x GPGPU Card(on the riser card assembly)* Mezzanine Slot: 1 x LAN Mezzanine Card (on the server board)**
5	Power Supply Unit (PSU2)
6	Power Supply Unit (PSU1)
7	4 x Power Distribution Boards (PDB)
8	System Fan (FAN1)
9	System Fan (FAN2)
10	System Fan (FAN3)
11	System Fan (FAN4)
12	HDD Backplane Board (BPB)
13	2.5” SATA HDD or 2.5” PCIE SSD Carrier (HDD8)
14	2.5” SATA HDD or 2.5” PCIE SSD Carrier (HDD9)
15	2.5” SATA HDD or 2.5” PCIE SSD Carrier (HDD10)
16	2.5” SATA HDD or 2.5” PCIE SSD Carrier (HDD11)
17	Front Panel Board (FPB)
18	VGA Port
19	8 x 3.5" Hot-Swap HDD Trays (HDD0~HDD7)

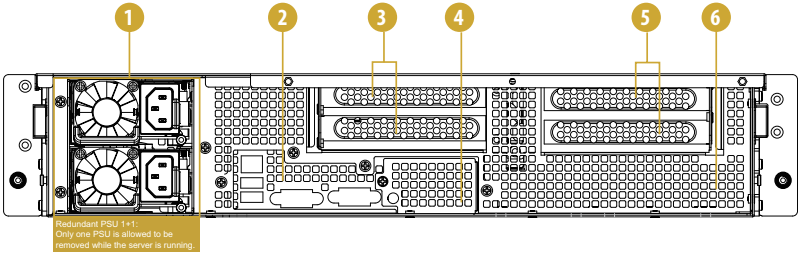
**Supports Low profile and FHHL (Full High Half Length) PCIe cards*
***Supports 1GbE x 2, 10GbE x2 or SFP+ (Fiber) mezzaine cards (M350R/M540R/M599R/M599RS)*

2.3 System Front Panel



No.	Description
1	Control Panel Buttons and LEDs
2	2 x USB 2.0 Ports
3	8 x 3.5” Hot-Swap HDD Trays (HDD0~HDD7)
4	VGA Port

2.4 System Rear Panel

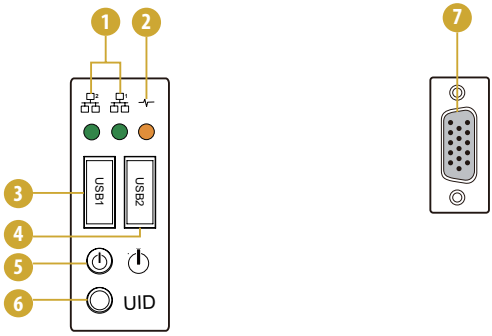


No.	Description
1	2 x Power Supply Units (Redundant PSU 1+1) **Server requires 1 working PSU, with 1 redundant PSU. You must have at least one active supply, installed, functioning and connected to AC. Only one of the PSUs is allowed to be removed while the server is running.*
2	I/O Shield (depends on the specification of the server board)*
3	2 x PCI Express Slots (on the riser card assembly) **Supports Low profile and FHHL (Full High Half Length) PCIe cards*
4	1 x LAN Mezzanine Card Slot **Support for 1GbE x 2, 10GbE x2 or SFP+ (Fiber) x2*
5	2 x PCI Express Slots (on the riser card assembly) **Supports Low profile and FHHL (Full High Half Length) PCIe cards*
6	Rear Vent*

**The locations of I/O shield and rear vent may vary depending on the system and server board models.*

2.5 Front Control Panel Buttons and LEDs

Front Control Panel



No.	Description
1	LAN1, LAN2 Activity LED*
2	System Health LED*
3	USB 2.0 Port (USB1)
4	USB 2.0 Port (USB2)
5	Power Button and LED
6	UID Button and LED*
7	VGA Port

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

UID Button

Press the UID button to toggle the front panel UID LED and the baseboard UID LED on and off. You are able to locate the server you're working on from behind a rack of servers.

Power Button

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

Status LED Definitions

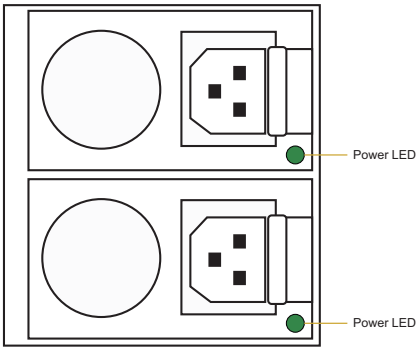
Power LED	
Status	**Description**
Green	Power on
Off	Power off

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

System Health LED	
Status	**Description**
Solid Red	There is a fault in the system.
Off	System is normally operating.

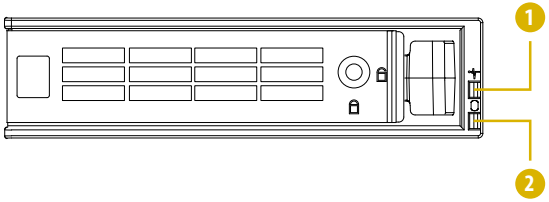
LAN1, LAN2 LED	
Status	**Description**
Blinking Green	Network access
Solid Green	MEZZ LAN1/LAN2 is present.
Off	No MEZZ LAN1/LAN2 is present.

2.6 PSU LED



PSU Status LED	
Status	**Description**
Green	Normal work; output ON and OK
Amber	Module fault/protection in operating mode (failure, OCP, OVP, Fan Fail, OTP, UVP) AC cord unplugged

2.7 3.5-inch Hard Drive Tray LEDs



No.	Description
1	HDD Power LED
2	HDD Activity LED

Status LED Definitions

HDD Power LED	
Status	**Description**
Blue	HDD powered-on
Off	No power to HDD

HDD Activity LED	
Status	**Description**
Solid Green	HDD active
Blinking Green	HDD accessing or reading
Red	HDD failed
Off	HDD powered-off

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.

Installing Procedures

The followings are prerequisite to be installed.

- 3.5" HDD(s) or 2.5" SATA HDD(s) / 2.5" PCIE SSD(s)
- Power Supplies (Pre-installed)
- Server Board (Pre-installed)
- Front Panel Board (Pre-installed)
- HDD Backplanes (Pre-installed)
- Power Distribution Boards (Pre-installed)
- Fans (Pre-installed)

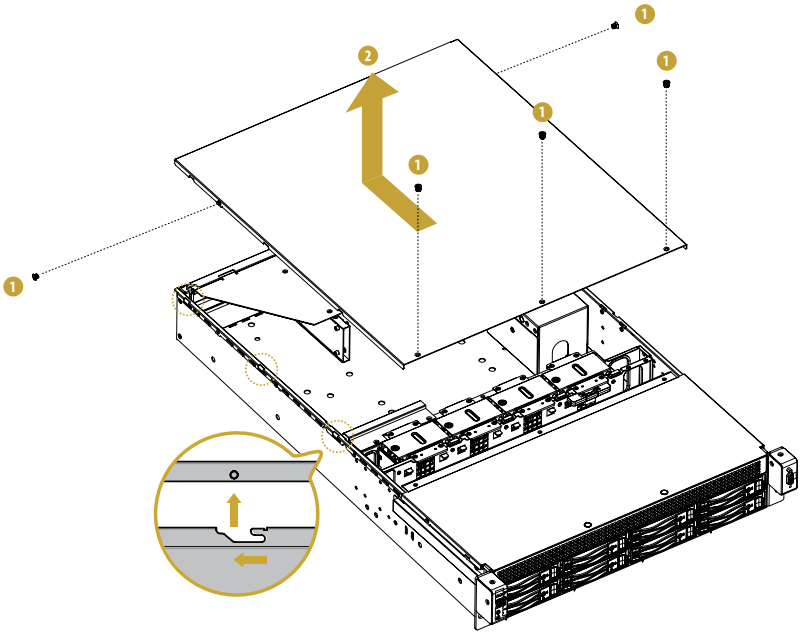
Up to four PCIE add-in cards or two GPGPU cards are optional to be installed when you have a riser board installed on your server board.

> 1. *Some components are already pre-installed. Simply properly connect the relavant 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

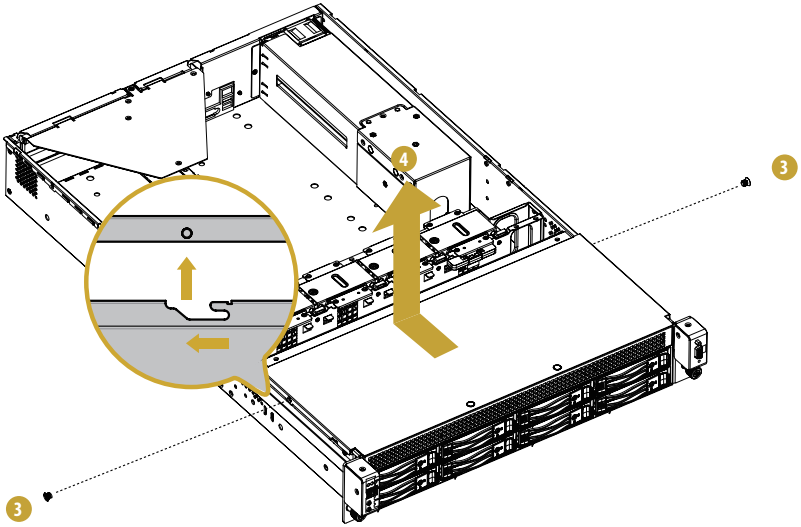
Removing the Server Top Covers

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.



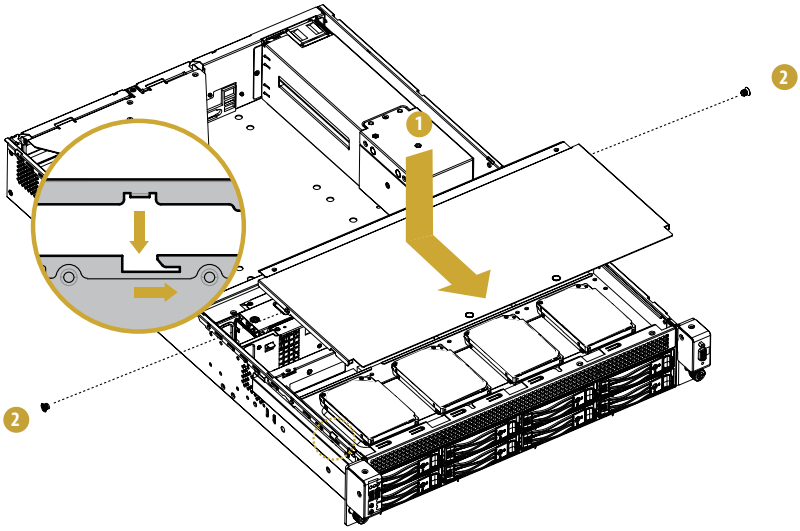
1. Remove the screws that secure the top rear cover to the chassis.
2. Push the top rear cover toward the rear of the chassis to remove the cover from the locked position. Lift up and remove the top rear cover.

3. When the top rear cover has been removed, you can also remove the top front cover. Remove the two screws on both sides that secure the front top cover to the chassis.
4. Push the front top cover toward the rear side to remove the cover from the locked position. Lift up and remove the front top cover.

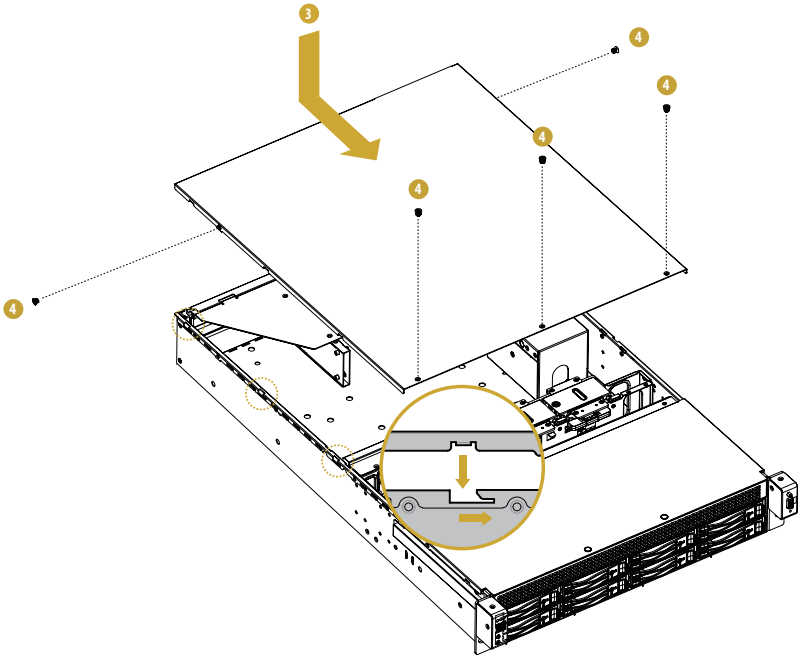


Installing the Server Top Cover

1. Lower the top front cover on the chassis, making sure the side latches align with the cutouts. Slide the top front cover toward the front.
2. Secure the front top cover with the two 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.
4. Secure the both covers with the screws.



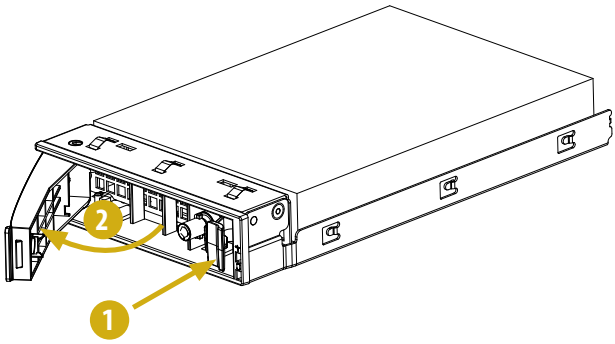
3.2 Hard Drive

3.2.1 Installing a Hard Disk Drive into 3.5" Hard Drive Tray

The system supports hot-swappable 3.5" hard drives.

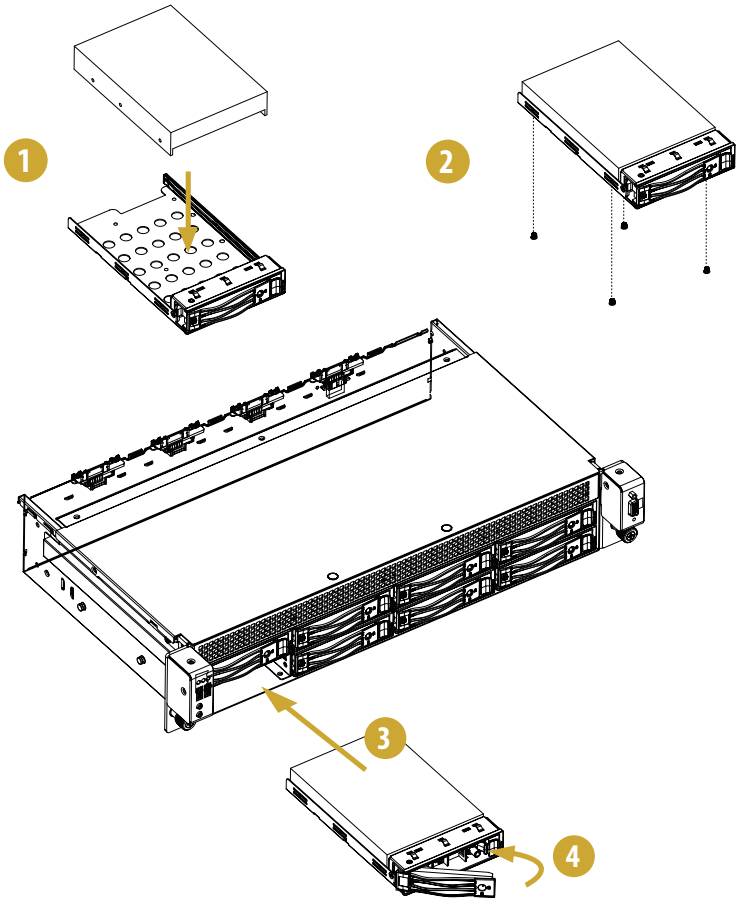
Removing 3.5” Hard Drive Trays from the Chassis

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



Installing a 3.5” Hard Drive to the Hard Drive Tray

1. Place a 3.5" HDD into the tray with the printed circuit board side facing down. Carefully align the mounting holes in the hard drive and the tray.
2. Secure the hard drive using four screws.
3. Slide the drive tray into the HDD bay until the drive is fully seated.
4. Push in the locking lever to lock the HDD tray into place.

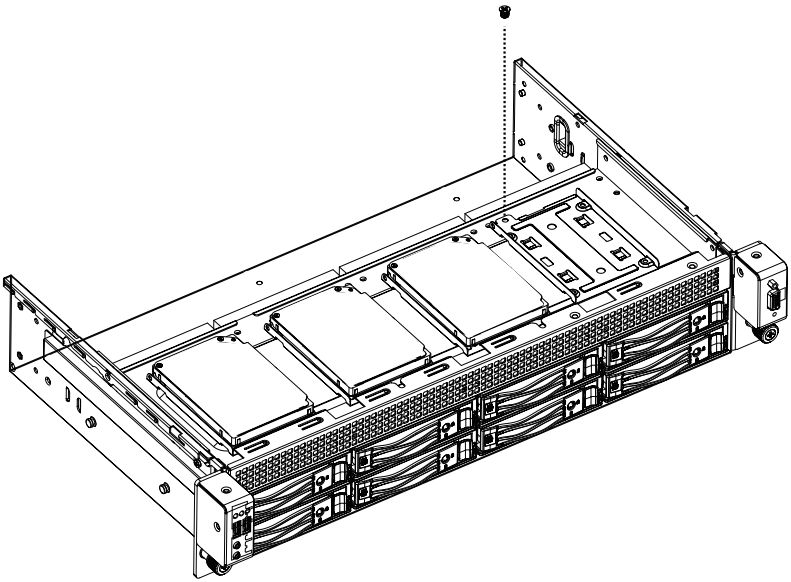


3.2.2 Installing a Hard Disk Drive into 2.5" Hard Drive Carrier

The system supports 2.5" SATA HDDs or 2.5" PCIE SSDs.

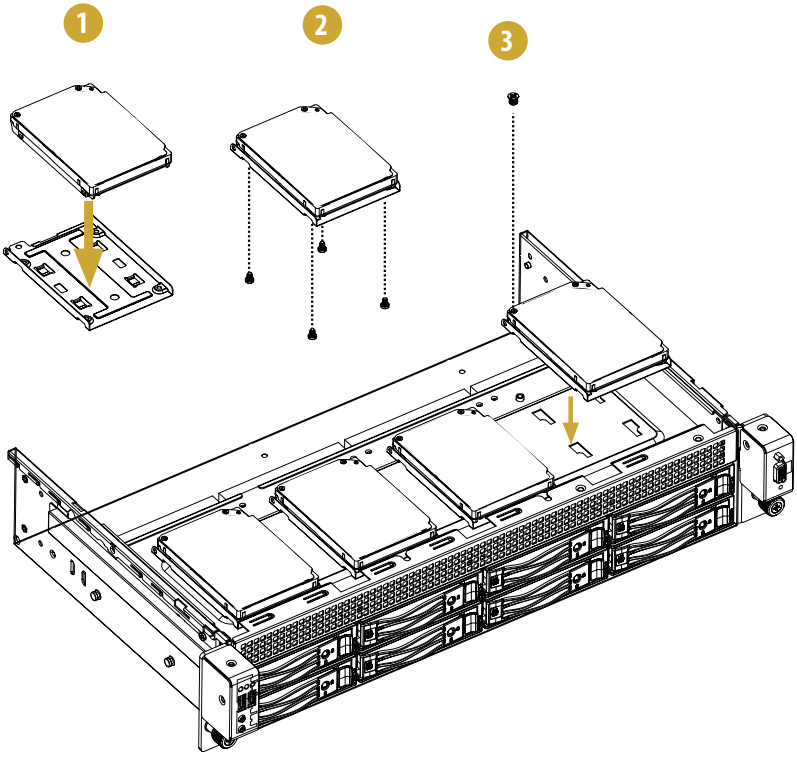
Removing 2.5” HDD Carriers from the Chassis

1. Remove the screws that secures the SSD carrier.



Installing a 2.5” HDD or SSD to the HDD Carrier

1. Place a 2.5" HDD or SSD into the carrier with its connector end toward the rear of the carrier where the mounting hole is located.
   Carefully align the mounting holes on the HDD or SSD and the carrier.
2. Secure the HDD or SSD using four screws.
3. Place the drive carrier back to the chassis with screw holes aligned.
   Secure each drive carrier with one screw.



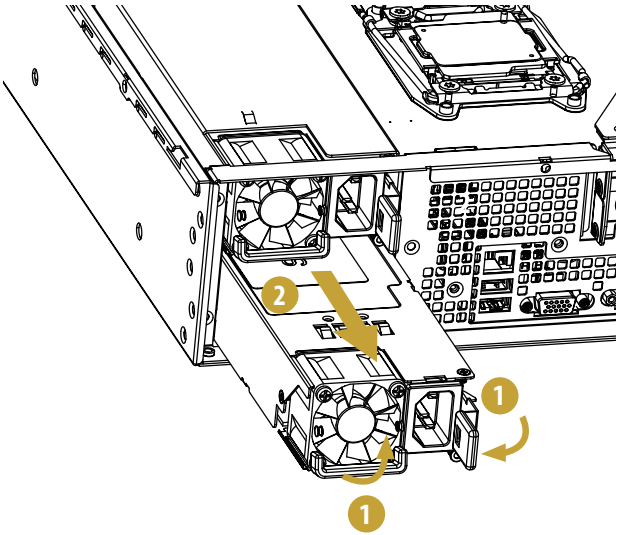
3.3 Power Supply

The system can accommodate two AC or two DC power supplies in the bay at the rear of the chassis. Each unit provides up to 1200 Watts of power. Only a single power supply is required for operation, with the second power supply purely as a redundant, load-sharing backup. It can be removed without affecting system operation.

Removing the Power Supply Unit

To remove a failed power supply, please first identify the failed power supply .

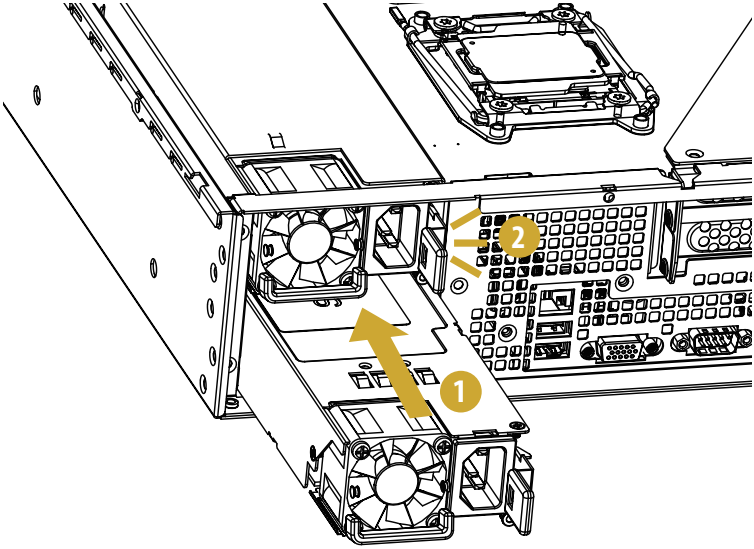
1. Hold onto the power supply handle while pressing the locking lever towards the power supply handle.
2. Pull to remove the power supply from the chassis.



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

Installing the Power Supply Unit

1. Align the power supply unit with the power supply slot. Ensure that the LED appears on the lower right corner when you are installing the power supply unit.
2. Carefully slide the PSU all the way into the power supply bay until it clicks into place.

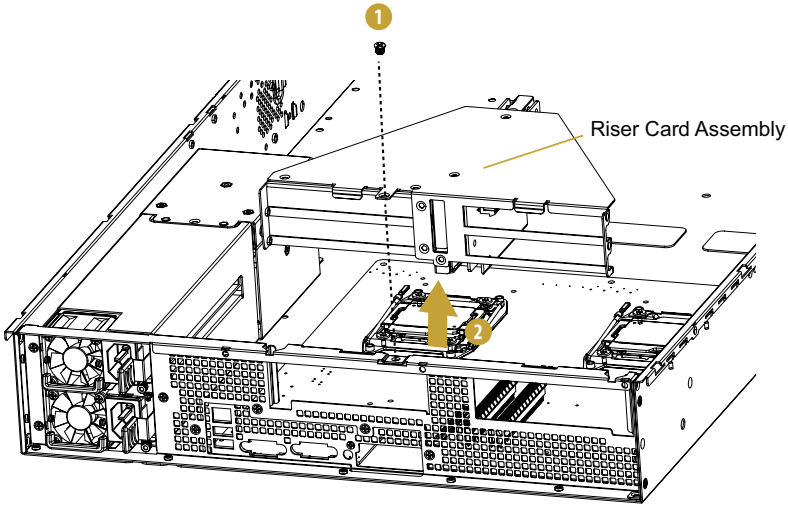


3.4 Add-In Card

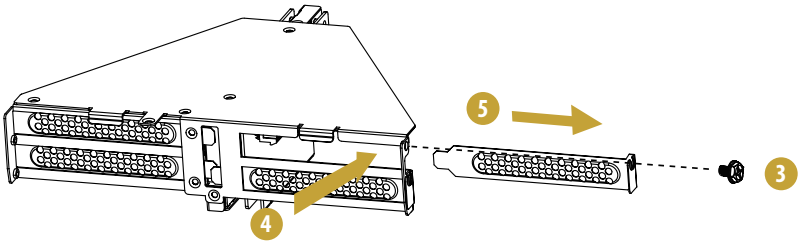
1. *You can install up to four PCIE add-in cards to the chassis when they are installed on the provided riser card assembly.*
2. *Before installing an add-in card, power off the server and unplug the power cord.*

Installing an add-in card

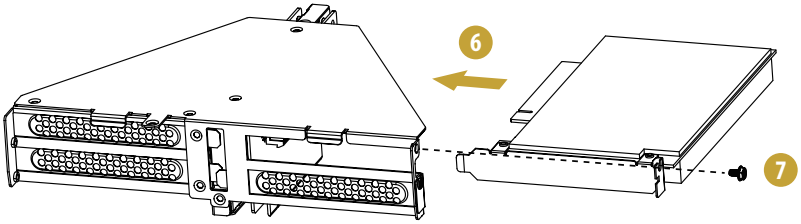
1. Remove the screw securing the riser card assembly on the chassis. Keep this screw for later use.
2. Lift up and remove the riser card assembly from the chassis.



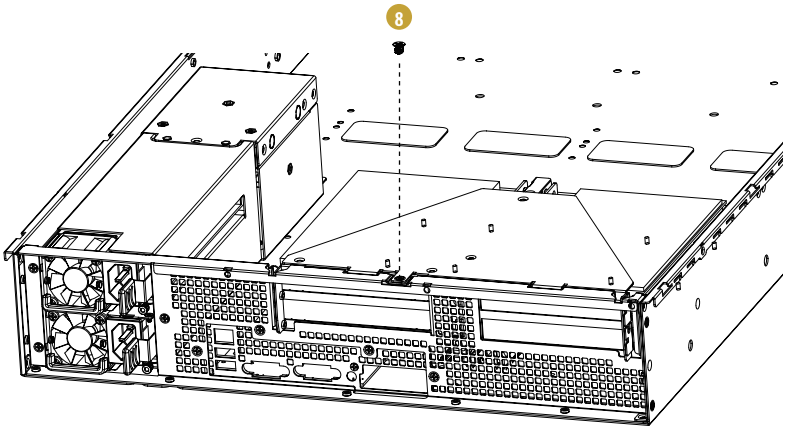
3. Remove the screw securing the filler plate.
4. Push to release the the filler plate from the assembly.
5. Slide the filler plate out sideways.



6. Install an add-in card into the retainer plate and into the connector on the riser card assembly.
7. Secure the card to the assembly with a screw.



8. Place the assembly back into the chassis and secure it with a screw.

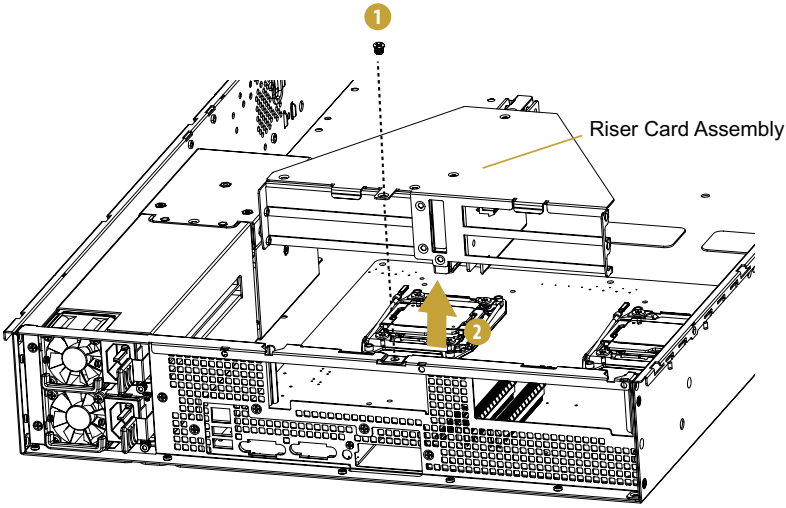


3.5 GPGPU Card

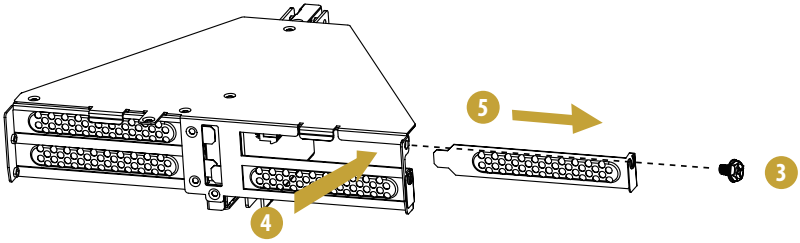
1. *You can install up to two GPGPU cards to the chassis when they are installed on the provided riser card assembly.*
2. *Before installing a GPGPU card, power off the server and unplug the power cord.*

Installing a GPGPU card

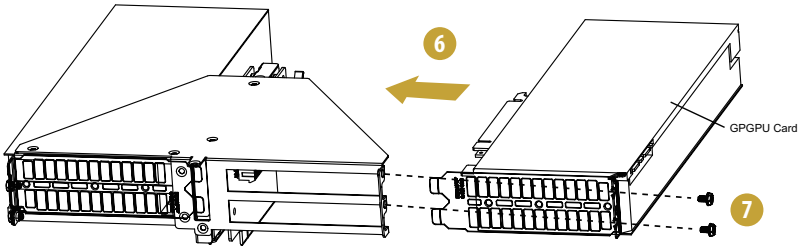
1. Remove the screw securing the riser card assembly on the chassis. Keep this screw for later use.
2. Lift up and remove the riser card assembly from the chassis.



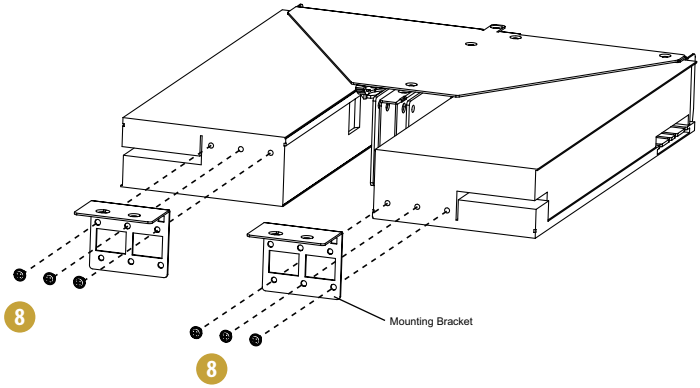
3. Remove the screws securing both filler plates of the same side.
4. Push to release the the filler plates from the assembly.
5. Slide the filler plates out sideways.



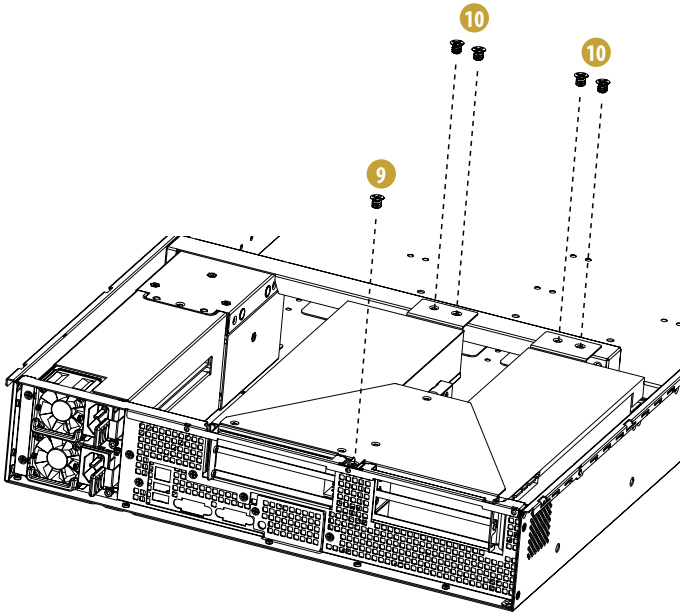
6. Install a GPGPU card into the retainer plates and into the connectors on the riser card assembly.
7. Secure the card to the assembly with two screws.



8. Attach the mounting bracket to the rear side of the GPGPU card. Secure the bracket to the card with screws.



9. Place the assembly back into the chassis and secure it with a screw.
10. Secure the assembly to the bar with four screws.

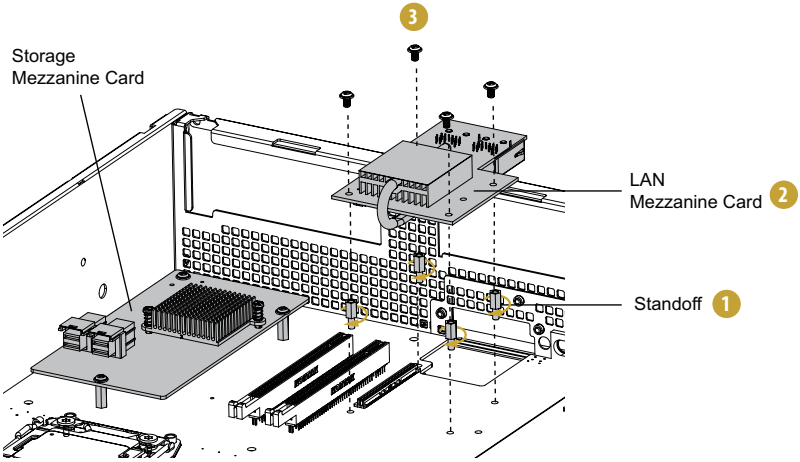


3.6 Mezzanine Card

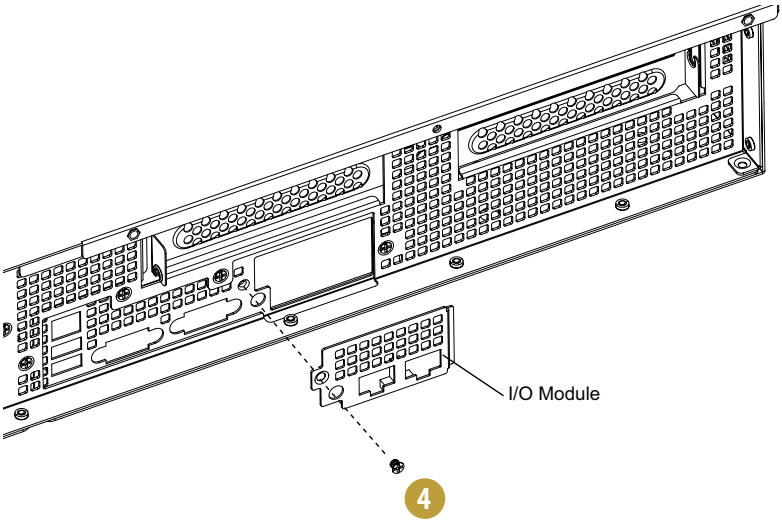
Installing a Mezzanine Card

You can use an optional Ethernet mezzanine card for additional LAN ports or an optional storage mezzanine card for additional hard drives. Please be aware that the LAN mezzanine card must be used in conjunction with a matching I/O module.

1. Install the four standoffs into the motherboard around the mezzanine card slot. Hand-tighten the standoffs.
2. Gently insert the mezzanine card into the mezzanine card slot on the motherboard.
3. Use screws to secure the mezzanine card to the motherboard standoffs.



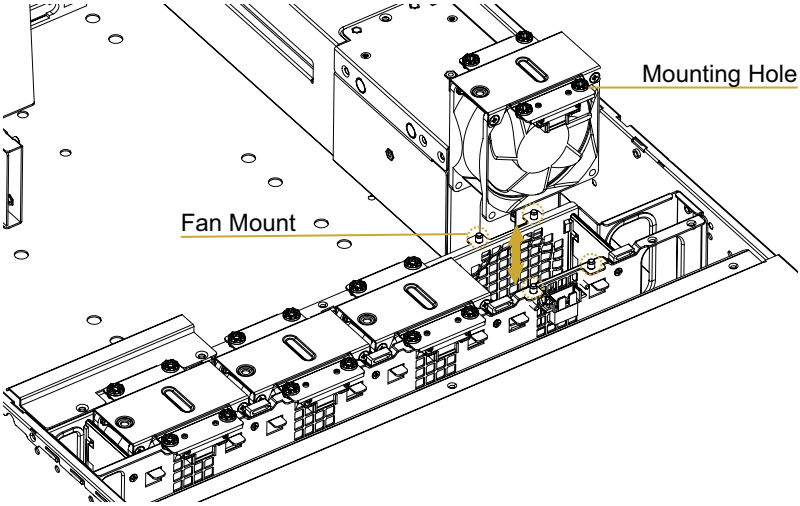
4. Tighten the screw to secure the matching I/O module to the chassis.



3.7 System Fan

Replacing the System Fan

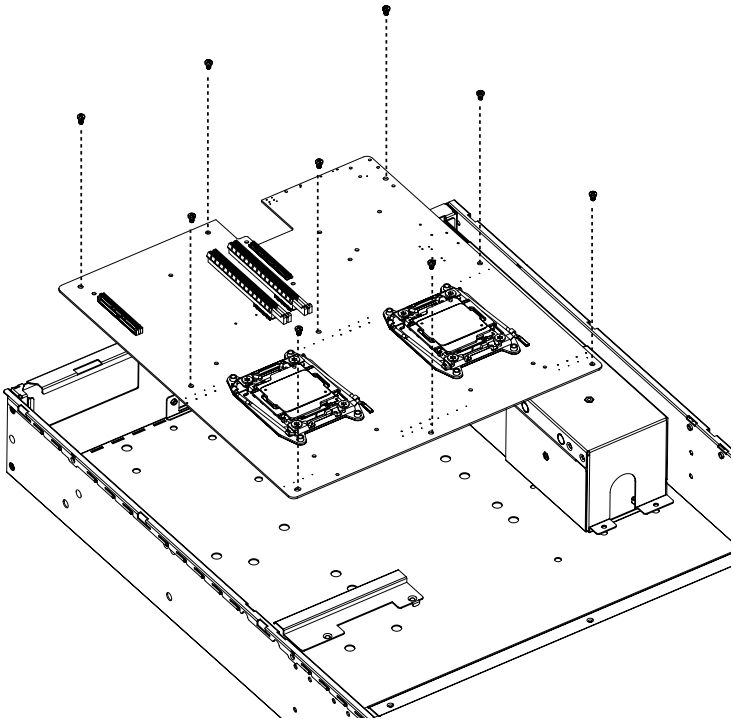
1. Unplug the fan connecter and remove the failed fan.
2. Align the fan mounts on the fan bar with the mounting holes on the replacement fan.
3. Gently place the fan on the fan bar. Make sure the fan is well seated.
4. Connect the end of the fan cable to the fan connector.



3.8 Server Board

Follow the steps below to install the server board to the chassis.

1. Hold the server board only by the edges.
2. Gently place the server board into the chassis. Sit the server board on the server board tray.
3. Position the server board in the server system. Align mounting holes of the server board to the standoff on the chassis.
4. Affix the screws clockwise into the mounting holes in all of the corners of the server board.



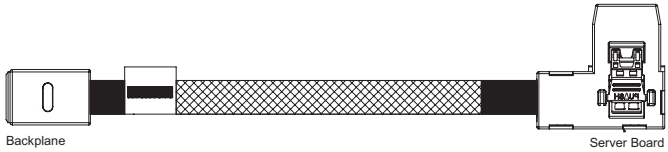
1. Do not over-tighten the screws! Doing so may damage the server board.
2. Refer to the user manual of the server board you use for instructions on how to install and remove the server board components and how to use its setup utility.

3.9 Chassis Cables

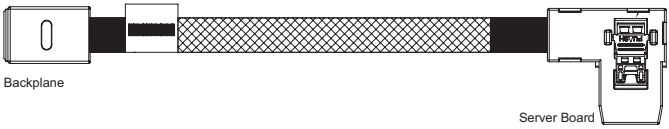
This section lists supported cables for your chassis system.

Cable type and quantity vary depending on the server board that comes with your system.

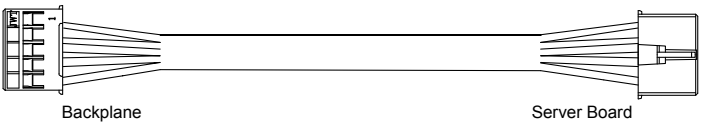
1. BPB Cable, MiniSAS HD to 8087(L/A) (650mm) (Quantity: 1)



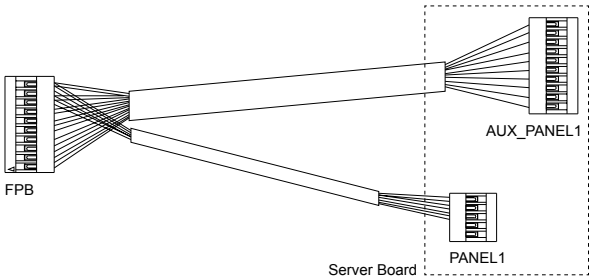
2. BPB Cable, MiniSAS HD to 8087(R/A) (650mm) (Quantity: 1)



3. SMBus Cable, 1*5Pin, PDB to MB (650mm) (Quantity: 1)

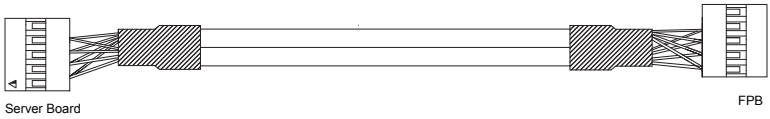


4. Front Panel Cable (840+800mm) (Quantity: 1)*

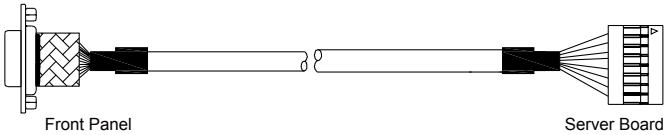


English

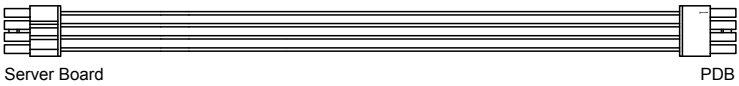
5. USB Cable (1250mm) (Quantity: 1)



6. VGA Cable (850mm) (Quantity: 1)

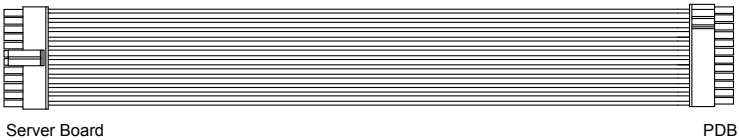


7. Power Cable, ATX 8Pin (200mm) (Quantity: 1)

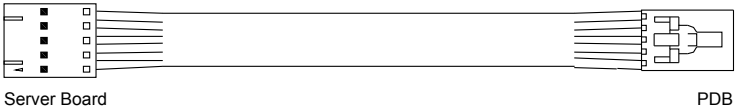


8. Power Cable, ATX 8Pin (700mm) (Quantity: 1)

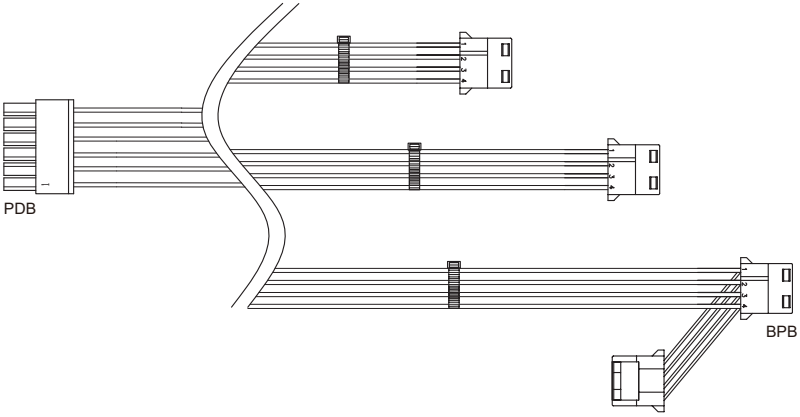
9. Power Cable, ATX 24Pin (520mm) (Quantity: 1)



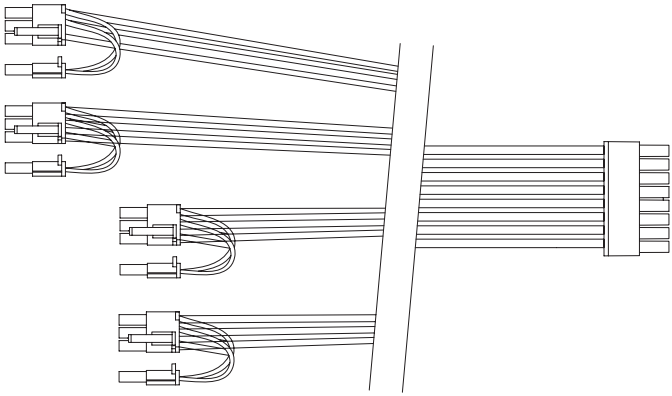
10. PMBus Cable (500mm) (Quantity: 1)



11. Power Cable, ATX 12Pin to 4*4Pin (Quantity: 1)



12. GPGPU Power Cable, 2*8Pin to 4*(4+2)Pin (Quantity: 1)

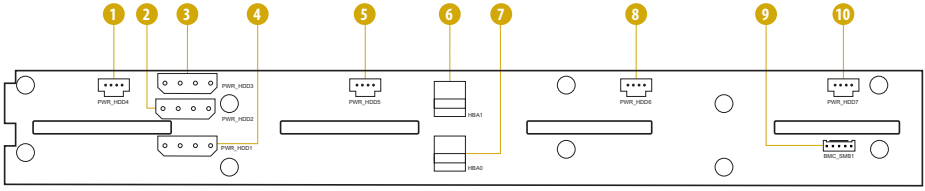


Connections and cable routing may differ depending on various server boards. Please refer to the Quick Installation Guide to know the exact headers or connectors to be connected on the server board you purchase. For more detailed information about server board components, refer to the manual that comes with your server board.

Chapter 4 Backplane Specifications

4.1 Hard Drive Backplanes (BPB)

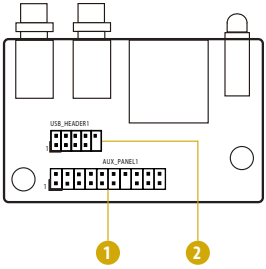
Top View



No.	Description
1	2.5" HDD/SSD Power Connector (PWR_HDD4)
2	HDD Power Connector (PWR_HDD2)
3	HDD Power Connector (PWR_HDD3)
4	HDD Power Connector (PWR_HDD1)
5	2.5" HDD/SSD Power Connector (PWR_HDD5)
6	Mini-SAS HD Connector (HBA1)
7	Mini-SAS HD Connector (HBA0)
8	2.5" HDD/SSD Power Connector (PWR_HDD6)
9	BMC SMBus Connector (BMC_SMB1)
10	2.5" HDD/SSD Power Connector (PWR_HDD7)

4.2 Front Panel Board (FPB)

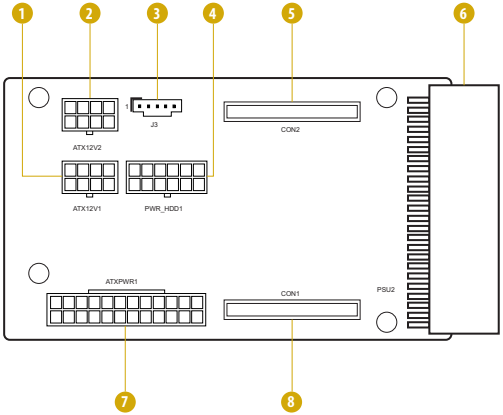
Top View



No.	Description
1	Front and Auxiliary Panel Header (AUX_PANEL1)
2	USB Header (USB_HEADER1)

4.3 Power Distribution Board (PDB-D)

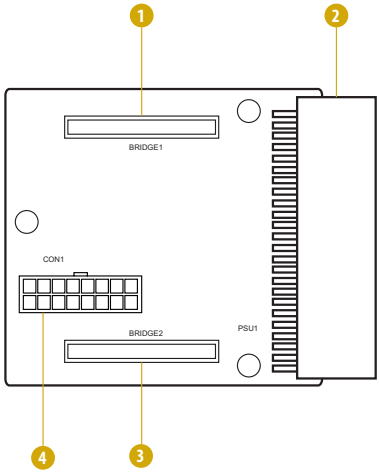
Top View



No.	Description
1	ATX 8pin Power Connector (ATX12V1)
2	ATX 8pin Power Connector (ATX12V2)
3	PMBus Connnector (J1)
4	HDD Power Connector (PWR_HDD1)
5	Connector for Power Distribution Board (PDB-B) (CON2)
6	Power Supply Connector (PSU2)
7	ATX 24pin Power Connector (ATXPWR1)
8	Connector for Power Distribution Board (PDB-B) (CON1)

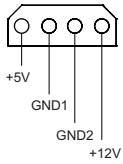
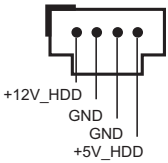
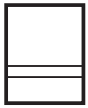
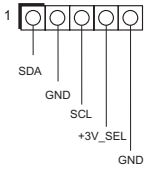
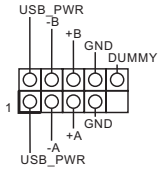
4.4 Power Distribution Board (PDB-U)

Top View

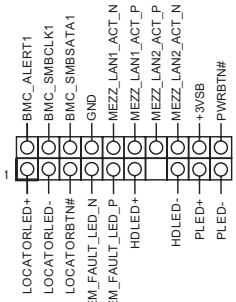


No.	Description
1	Connector for Power Distribution Board (PDB-B) (BRIDGE1)
2	Power Supply Connector (PSU1)
3	Connector for Power Distribution Board (PDB-B) (BRIDGE2)
4	GPGPU Power Cable Connector (CON1)

4.5 Pin Definitions

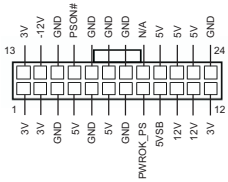
HDD Power Connectors (PWR_HDD1) (PWR_HDD2) (PWR_HDD3)		The 4-pin connectors provide power to the backplane.
SSD Power Connectors (PWR_HDD4) (PWR_HDD5) (PWR_HDD6) (PWR_HDD7)		The 4-pin connectors provide power to the SSDs.
MiniSAS HD Connectors (HBA0) (HBA1)		These connectors are used to connect a mini-SAS HD cable to the motherboard.
SMB Connector (5-pin BMC_SMB1)		The SMB (SubMiniature version B) connector provides a communication interface between the backplane and the motherboard.
USB 2.0 Header (9-pin USB_HEADER1)		The header supports two USB 2.0 ports on the front panel.

Front and Auxiliary Panel Header
(19-pin AUX_PANEL1)



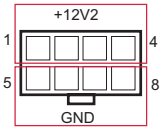
This header supports multiple functions on the front panel.

ATX Power Connector
(24-pin ATXPWR1)



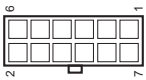
The PDB provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

ATX 12V Power Connector
(8-pin ATX12V1)
(8-pin ATX12V2)



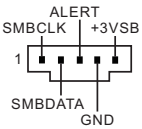
The PDB provides two 8-pin ATX 12V power connectors..

HDD Power Connector
(12-pin PWR_HDD1)



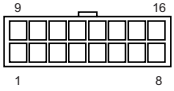
This connector is used to connect BPB and the power connector on the power distribution board.

PMBus Connector
(5-pin J1)



PSU SMBus monitors the status of the power supply.

GPGPU Power Connector
(16-pin CON1)



This connector is used to connect PDB-U and the power connectors on the GPGPU cards.