Amazon.com Datacenter Server Specifications

Rattlesnake16

1.0.1
April 29, 2019

Version:1.0.1

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Server

Rack Installation System

Conventions

Several different typographic conventions are used throughout this manual. Refer to the following examples for common usage.

Bold type face denotes menu items, buttons and application names.

Italic type face denotes references to other sections, and the names of the folders, menus, programs, and files.

<Enter> type face denotes keyboard keys.

WARNING!

Warning information appears before the text it references and should not be ignored as the content may prevent damage to the device.

CAUTION!

CAUTIONS APPEAR BEFORE THE TEXT IT REFERENCES, SIMILAR TO NOTES AND WARNINGS. CAUTIONS, HOWEVER, APPEAR IN CAPITAL LETTERS AND CONTAIN VITAL HEALTH AND SAFETY INFORMATION.

Safety Information

Important Safety Instructions

Read all caution and safety statements in this document before performing any of the instructions.

Warnings

Heed safety instructions: Before working with the server, whether using this manual or any other resource as a reference, pay close attention to the safety instructions.

Adhere to the assembly instructions in this manual to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this manual. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in non-compliance with product regulations in the region(s) in which the product is sold.

System power on/off: The power button DOES NOT turn off the system AC power. To remove power from system, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before opening the chassis, adding, or removing any components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground any unpainted metal surface on the server when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to electrostatic discharge (ESD). Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that can be gripped with fingertips or with a pair of fine needle nosed pliers. If the jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool used to remove a jumper, or the pins on the board may bend or break.

This equipment is intended to be supplied by a certified DC power source (power shelf) which interconnects rack bus bar, if need further assistance, please contact service person for further information.

Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

Peut être installé dans des salles de matériel de traitement de l'information

Equipment is intended for installation in Restricted Access Location

Cet équipement ne convient pas à une utilisation dans des lieux pouvant accueillir des enfants

CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

ATTENTION: Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions.

Chapter 1

Server

1.1 Introduction

Overview

This document provides an overview of the hardware features of the chassis and instructions on how to add and replace components for the server.

These guidelines are intended for trained service technicians.

System Features

The following is a list of the server features:

Table 1-1: Server System Features

Component	Description
Main Processor	• Type: Intel Cascade Lake P-8259CL, 24C, 2.5 GHz, 210W • Count: 2
Mainboard	Cannonball16
System Memory	• Capacity & Speed: 384GB DDR4-2666 • DIMM Type: 32GB RDIMM DDR4-2666 • DIMM Count: 12 • Population per CPU Memory Channels: 1 DIMM per channel
GPU	• Type: Nvidia T4 low profile 70W PCIe Gen3, x16 mechanical, x8 electrical • Count: 8
SSD	• Type: SATA SSD • Quantity: 1
NVMe Drive (2.5” SFF-8639)	• Type: 960GB, 1TB • Quantity: 2
Add-on Cards	• Annapurna K2T-QB*1PCS • Annapurna K2C-AB*1PCS • Annapurna K2X-N*1PCS
System Fans	6 x fan modules
Power	Busbar
Chassis	2U

1.2 Tour of the System

Component View

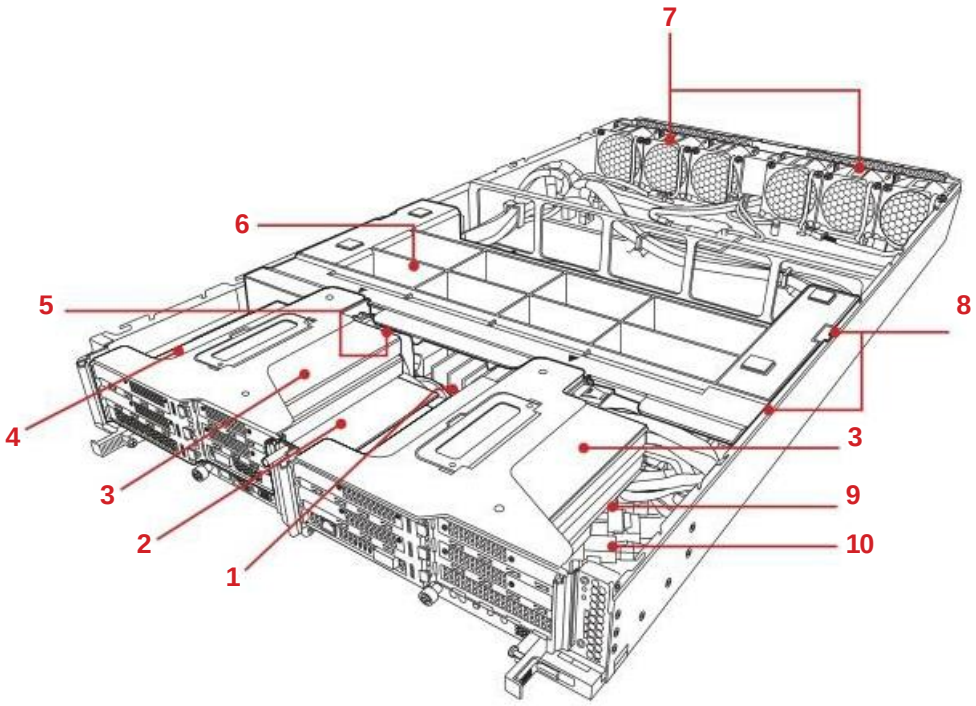

Figure 1-1: Component View

Table 1-2: Component View

No.	Item	Description
1	Add-on card	Annapurna K2T-QB card
2	Add-on card	Annapurna K2X-N card
3	GPU card	8 x Tesla T4 cards
4	Storage	2.5” SATA SSD
5	Heat sink	2 x heat sink modules
6	Air duct	2U duct conveys air from cold side over the heat sinks
7	System fan	6 x fan modules
8	Storage	2 x NVMe SSDs
9	Add-on card	Annapurna K2C-AB card
10	Mainboard	Cannonball16 motherboard

Front and Rear Views

This section provides a reference for the components, ports, and sockets on the front and rear of the server.

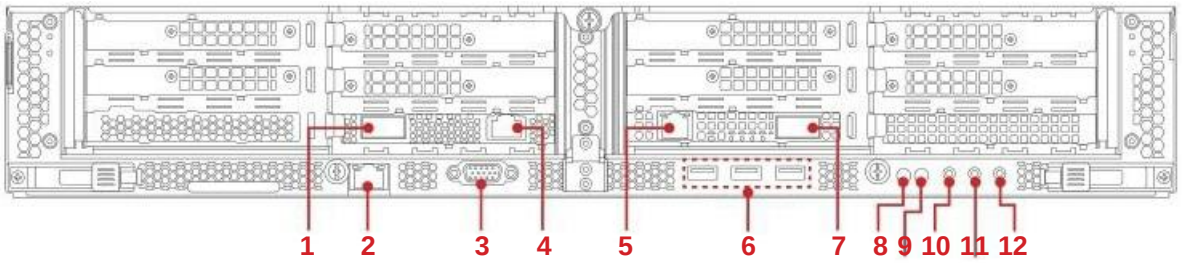

Figure 1-2: Front View

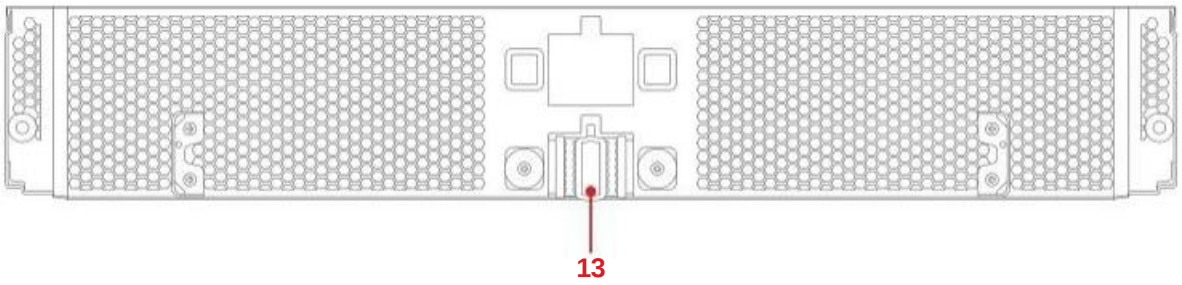

Figure 1-3: Rear View

Table 1-3: Front and Rear Views

No.	Item	Description
1	QSFP port	1 x QSFP from K2X-N card.
2	Management port	Connect a RJ-45 jack to this port to link to a 10/100/1000 IPMI management LAN.
3	VGA port	Connect a monitor to this port.
4	K2X LAN Port	Single RJ45 (1Gb) connectors for K2X-N.
5	K2T LAN Port	Single RJ45 (1Gb) connectors for K2T-QB.
6	USB ports	Connect USB device to these ports.
7	QSFP port	1 x QSFP from K2T-QB card.
8	Power LED	Indicate the power status.
9	ID LED	Indicate the unit identification after an ID event is triggered.
10	Power button	Press to power on/off the system.
11	NMI button	Interrupt CPU operations.
12	Reset button	Soft power down system procedure.
13	Power clip (Busbar)	Connect to a power supply.

LED Behavior

The following section introduces the LED definition and behavior for LEDs found in the chassis.

Table 1-4: LED Behavior

Location	Name	Description
PWRLED1	System Power	• On: All power rails in sled are valid. • Blinking: System VRs are in transition of powering on or powering off.
IDLED1	ID Status	Used during service event.

1.3 Installing Hardware

Safety Measures

WARNING!

Always ask for assistance to move or lift the system.

WARNING!

Only perform troubleshooting as authorized by the product documentation, or as directed by a service and support team. Repairs not authorized by warranty may void the warranty and damage the system.

WARNING!

Always make sure to disconnect the system from the AC electrical source. Powering down the system DOES NOT ensure there is no electrical activity in the system.

WARNING!

- Server components and circuit boards are easily damaged by discharges of static electricity. Working on servers that are connected to a power supply can be extremely dangerous. Follow the simple guidelines below to avoid damage to the server or personal injury.
- Always disconnect the server from the power outlet whenever you are working inside the server case.
- Wear a grounded wrist strap. If none are available, discharge any personal static electricity by touching the bare metal chassis of the server case, or the bare metal body of any other grounded device.
- Humid environments tend to have less static electricity than dry environments.
- A grounding strap is warranted whenever danger of static electricity exists.
- Do not touch the components on the chassis unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all replacement components inside their static-proof packaging until you are ready to use them.

Top Cover

Opening the Top Cover

1. Turn off the system and any attached peripherals.
2. Unplug the busbar power cable and disconnect all peripherals, and LAN cabling.
3. Loosen the captive screw securing the top cover. Then slide the top cover towards the front side.
4. Lift the top cover off the chassis.

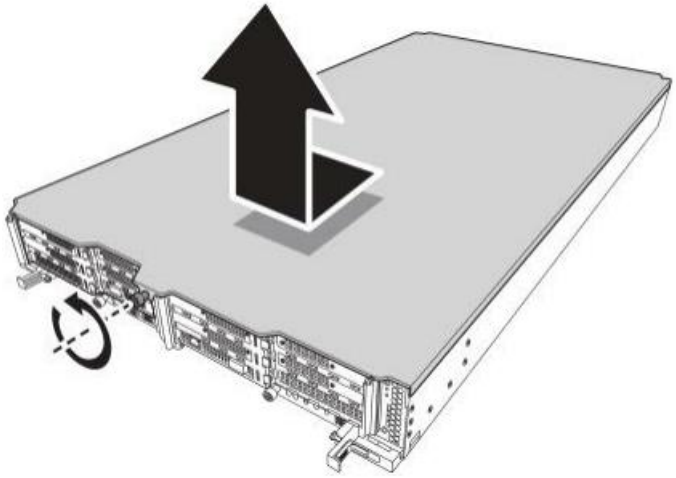

Figure 1-4: Opening the Top Cover

Closing the Top Cover

1. Align the top cover with the chassis. Make sure there is no cabling caught between the cover and chassis.
2. Place the top cover on the chassis.
3. Slide the top cover towards the rear of the system. Make sure the top cover is flush with the chassis. If it is not, remove the top cover and reposition the top cover over the chassis again.
4. Secure the top cover to the chassis with captive screw.

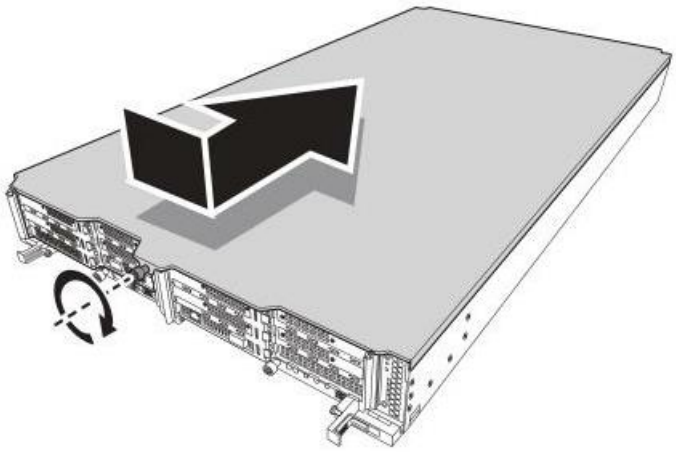

Figure 1-5: Closing the Top Cover

Air Duct

Removing the Air Duct

Prerequisite:

♦ Remove the top cover. See *Opening the Top Cover* on page 1-6.

1. Locate the air duct on the chassis.
2. Remove the air duct from the chassis.

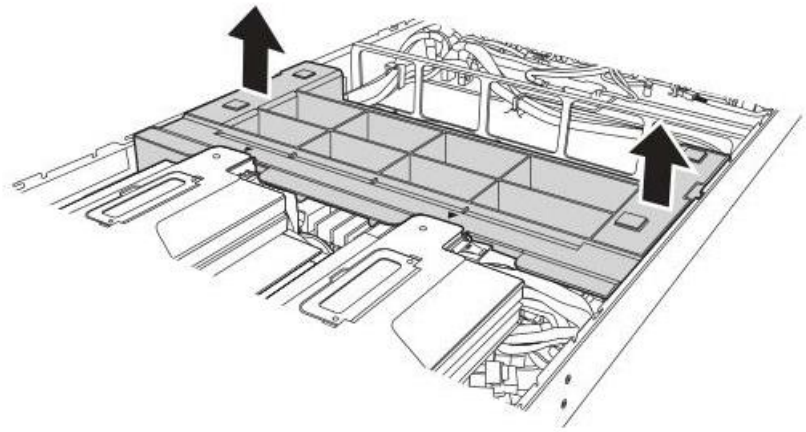

Figure 1-6: Removing the Air Duct

Installing the Air Duct

Prerequisite:

♦ Remove the top cover. See *Opening the Top Cover* on page 1-6.

1. Position the air duct onto its slot in the chassis.
   When positioning the air duct, make sure to align it with the indents on the riser assemblies.
2. Carefully lower the air duct in the chassis.
   The air duct locks in place if it is seated properly.

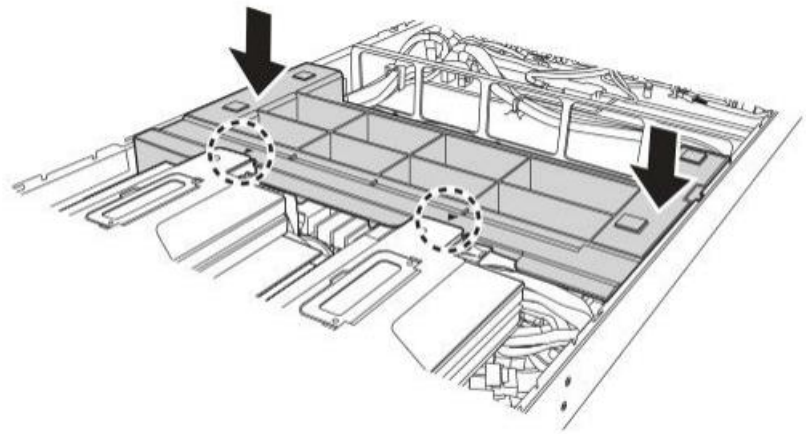

Figure 1-7: Installing the Air Duct

Fan Modules

CAUTION!

DISCONNECT THE POWER SUPPLY UNIT FROM THE POWER SOURCE BEFORE REMOVING FAN MODULES. FAILURE TO DO SO COULD RESULT IN DAMAGE TO THE EQUIPMENT OR PERSONAL INJURY.

Removing a Fan Module

It is not necessary to replace all fan modules at once. The following procedure displays the removal of all fan modules for demonstration purposes.

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.

1. Locate the target fan module and disconnect the fan cable from its respective connector on the mainboard. Then unroute and carefully pull the fan cable upwards out of the clip.

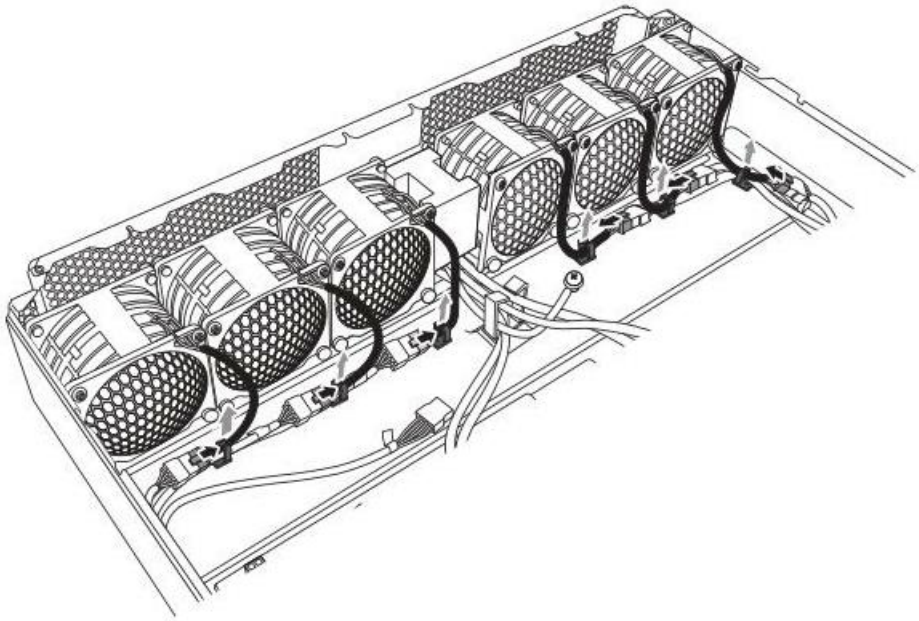

Figure 1-8: Disconnecting the Fan Cables

2. Remove the fan module assembly from its slot on the chassis. Make sure the cable of the respective fan module is completely disconnected from the connector.

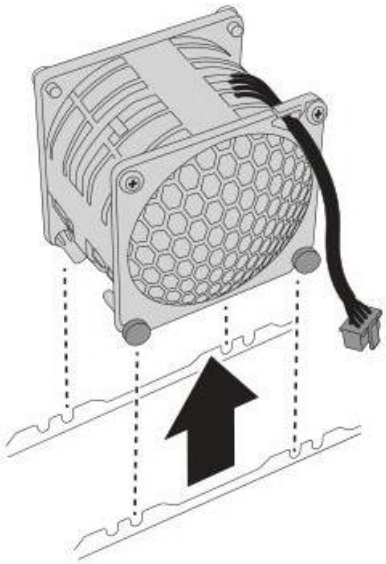

Figure 1-9: Removing the Fan Module Assembly

3. Remove the self-retaining rubber rivets and screws securing the fan cages to the fan module. Then remove the fan cages.

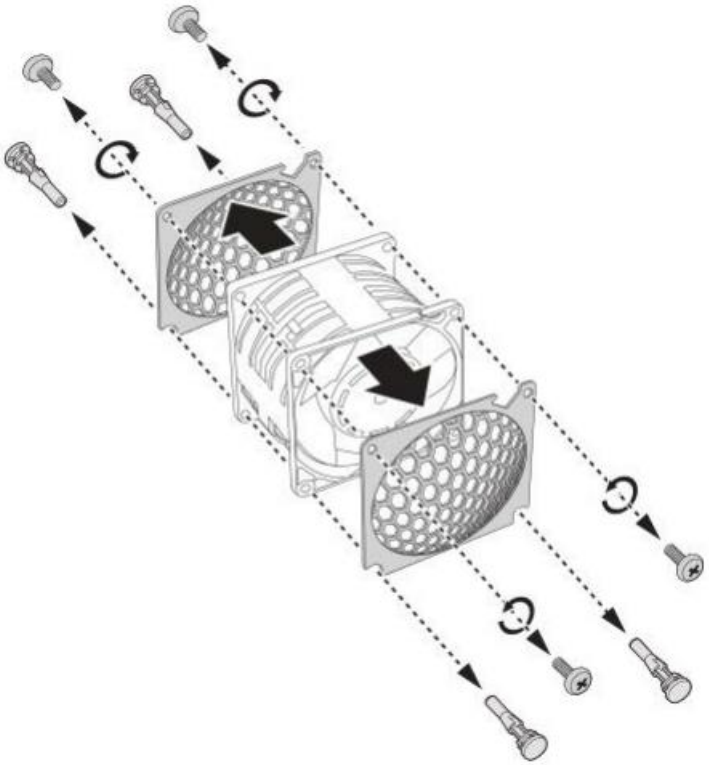

Figure 1-10: Removing the Fan Cages

4. To remove the remaining fan modules, repeat the previous steps.

Installing a Fan Module

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.

1. Align and install the fan cages onto the fan module. Then secure both cages with the self-retaining rubber rivets and screws.

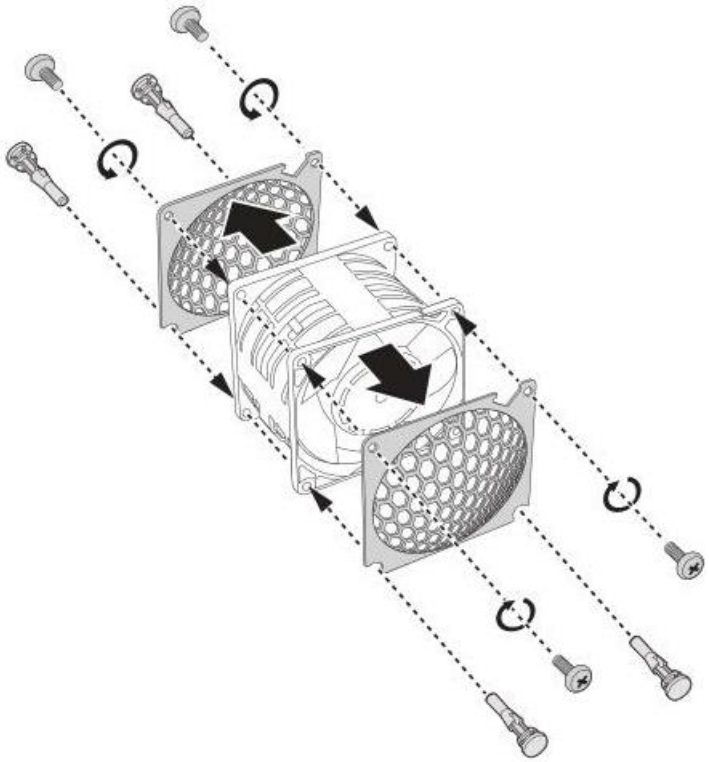

Figure 1-11: Installing the Fan Cages

2. Install the fan module assembly onto its slot on the chassis. The head of the rubber rivets fits outside the cage. Make sure the air flow indicator is positioned correctly to maintain proper air flow.

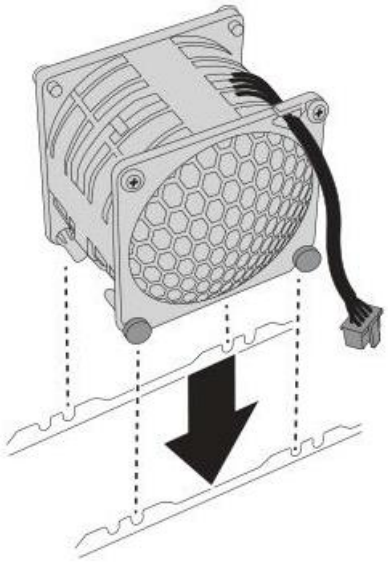

Figure 1-12: Installing the Fan Module Assembly

3. Route and push the fan cable downward to the clip until it snaps into place. Then connect the fan cable to its respective connector on the mainboard.

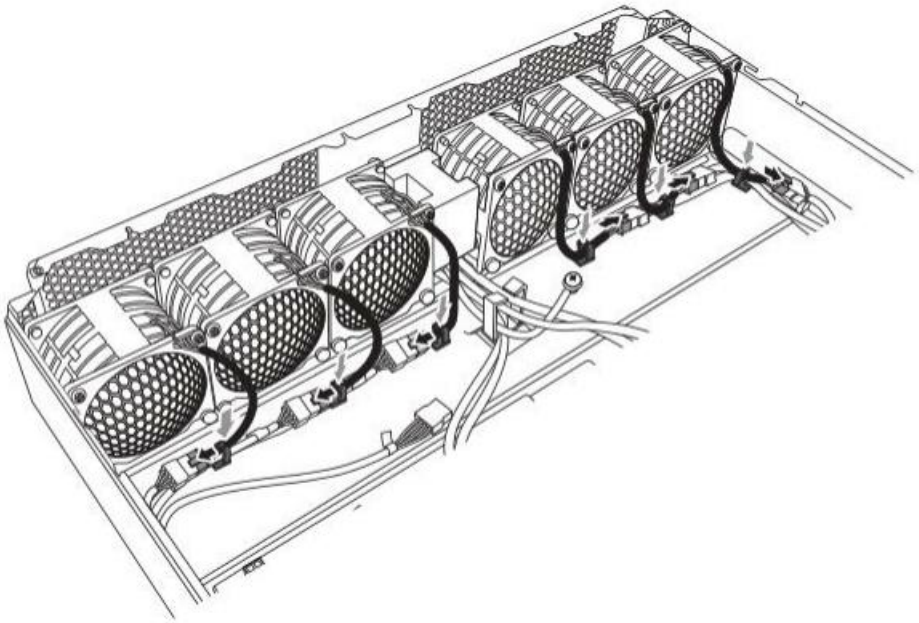

Figure 1-13: Connecting the Fan Cables

4. To install the remaining fan modules, repeat the previous steps.

PDB Board

CAUTION!

DISCONNECT THE POWER SUPPLY UNIT FROM THE POWER SOURCE BEFORE REMOVING PDB BOARD. FAILURE TO DO SO COULD RESULT IN DAMAGE TO THE EQUIPMENT OR PERSONAL INJURY.

Removing the PDB Board

Prerequisite:

♦ Remove the top cover. See *Opening the Top Cover* on page 1-6.

1. Disconnect the power, fan, PMBus, and Oculink cables.
2. Remove the rubber pad from the center slot (in between the third and the forth fan cages).
3. Remove the third and the forth fan modules. See *Removing a Fan Module* on page 1-8.

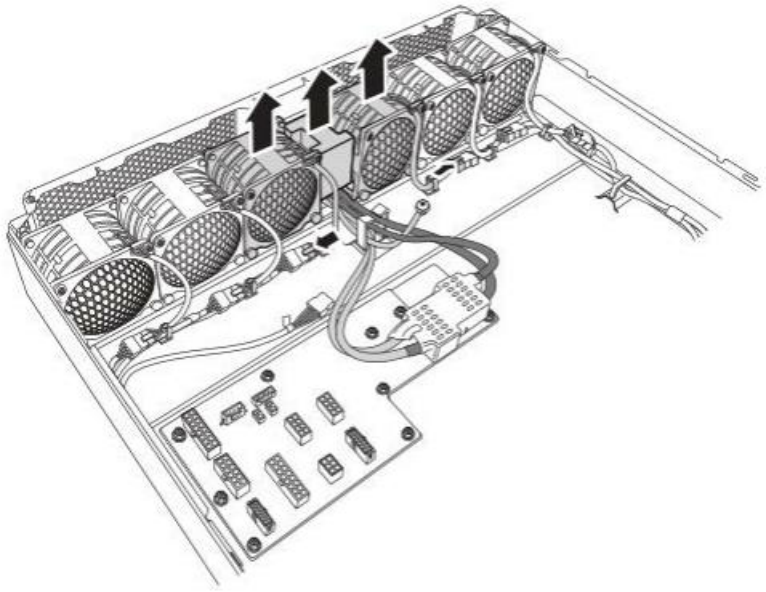

Figure 1-14: Removing the Fan Modules and Rubber Pad

4. Remove the cable protective cap from the PDB board.

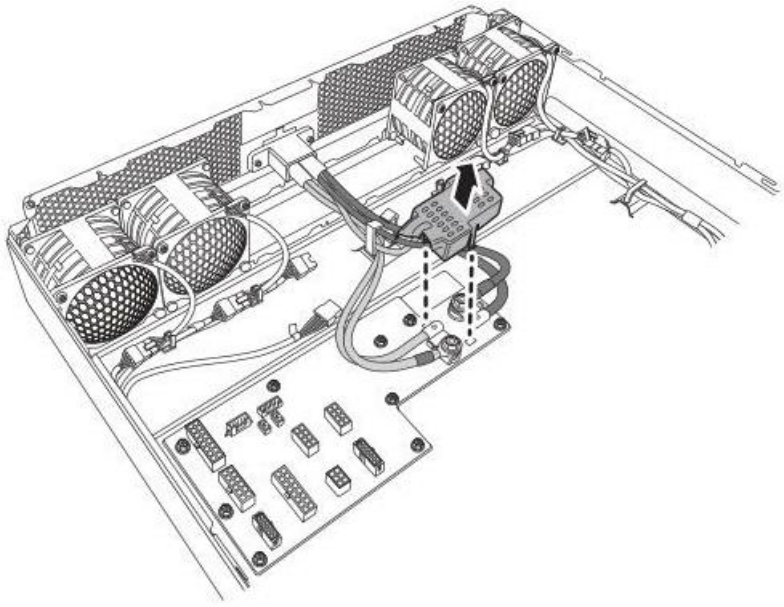

Figure 1-15: Removing the Cable Protective Cap

5. Remove the screws securing the busbar power clip to the chassis. Then remove the washers.

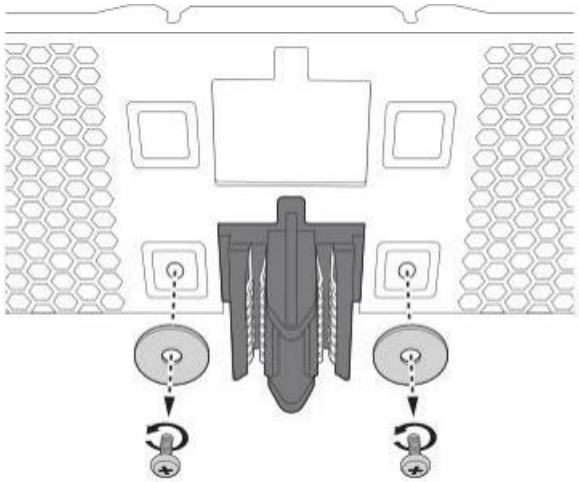

Figure 1-16: Removing the Screws and Washers

6. Remove the the busbar power clip from its compartment on the chassis.

7. Remove the Hex nuts and screw securing the busbar power cable lugs to its respective power terminal stud on the PDB board. Then remove the busbar power cables and release the busbar power cables from the cable clip.

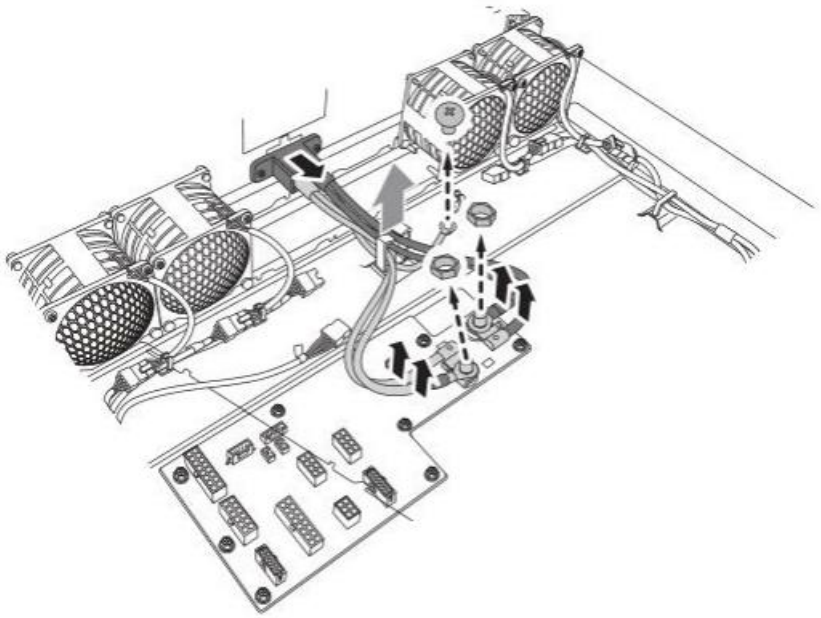

Figure 1-17: Removing the Busbar Power Cables

8. Remove the screws securing the PDB board to the chassis. Then remove the PDB board.

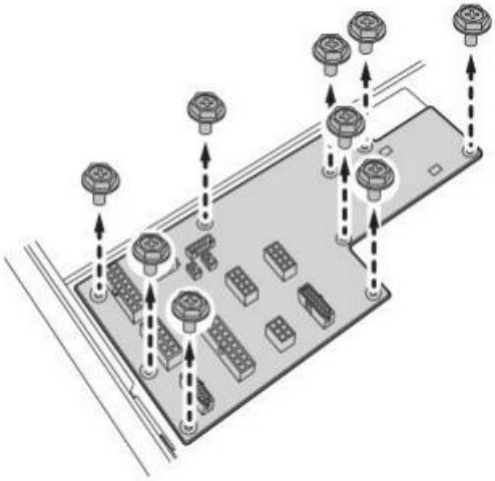

Figure 1-18: Removing the PDB Board

Installing the PDB Board

Prerequisite:

♦ Remove the top cover. See *Opening the Top Cover* on page 1-6.

1. Align and install the PDB board on the chassis. Then secure the PDB board to the the chassis with screws.

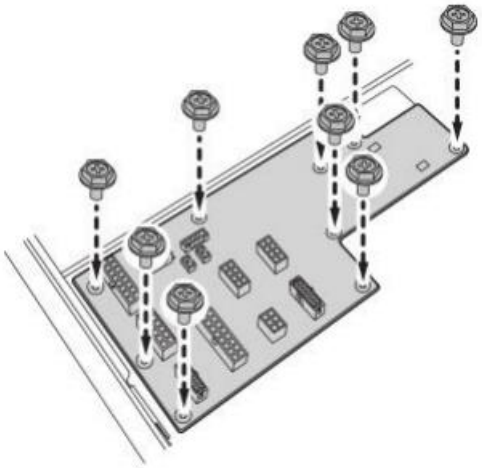

Figure 1-19: Installing the PDB Board

2. Install the the busbar power clip into its compartment on the chassis.
3. Align and install the busbar power cable lugs with its respective power terminal stud on the PDB board. Secure the busbar power cables with Hex nuts and screw, and then route and push the cables downwards to the clip until they secure into place.

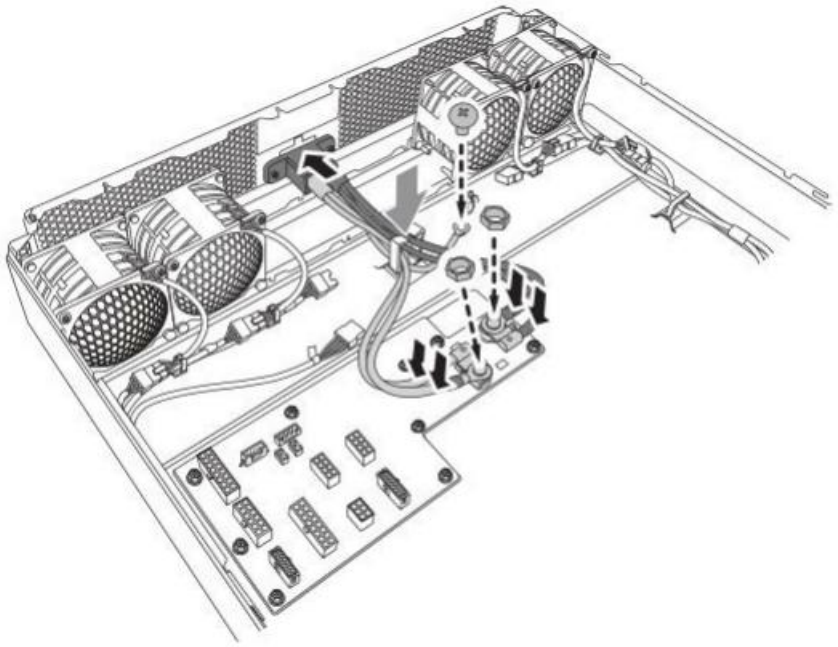

Figure 1-20: Installing the Busbar Power Cables

4. Align the washers with the screw holes on the chassis. Then secure the washers and the busbar power clip to the the chassis with screws.

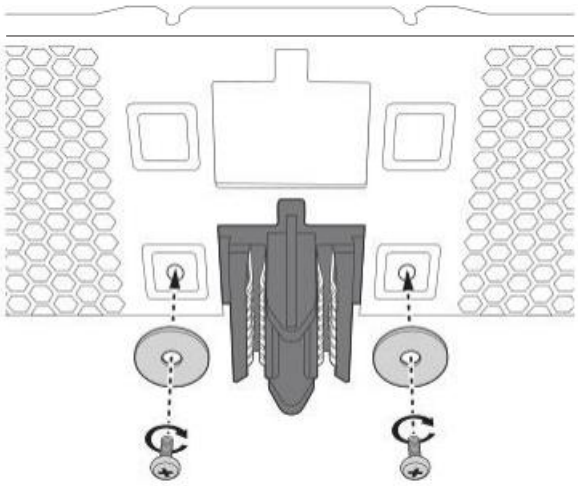

Figure 1-21: Installing the the Screws and Washers

5. Install the cable protective cap.

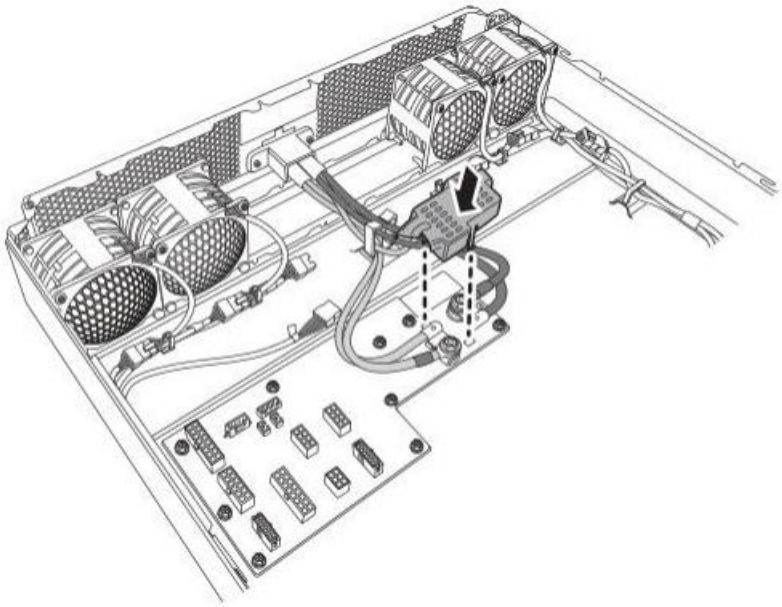

Figure 1-22: Installing the Cable Protective Cap

6. Install the third and the forth fan modules. See *Installing a Fan Module* on page 1-10.
7. Install the rubber pad to the center slot (in between the third and the forth fan cages).

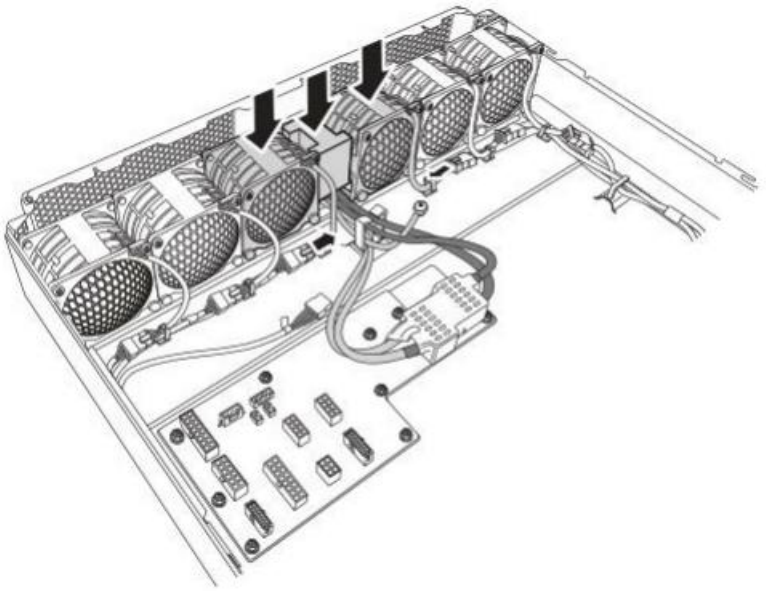

Figure 1-23: Installing the Fan Modules and Rubber Pad

8. Connect the power, fan, PMBus, and Oculink cables.

NVMe Solid State Disks

Removing a NVMe Solid State Disk

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.

1. Loosen the captive screws securing the SSD tray to the chassis.

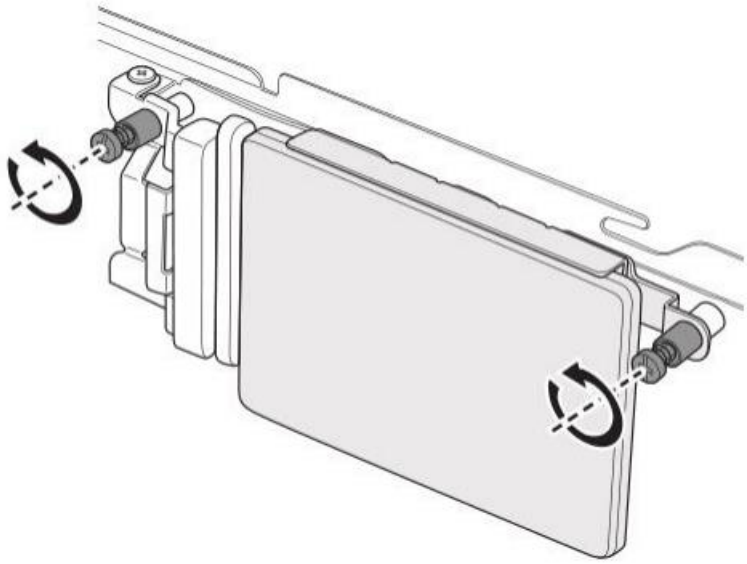

Figure 1-24: Loosening the Screws

2. Release the retainer and slide the SSD assembly backwards to disengage it from the latch. Then remove the SSD tray from the chassis.

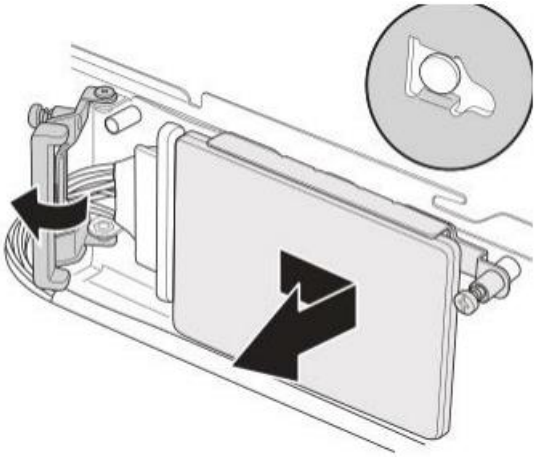

Figure 1-25: Removing the NVMe SSD Assembly

3. Disconnect the Oculink cable from the SSD connector.

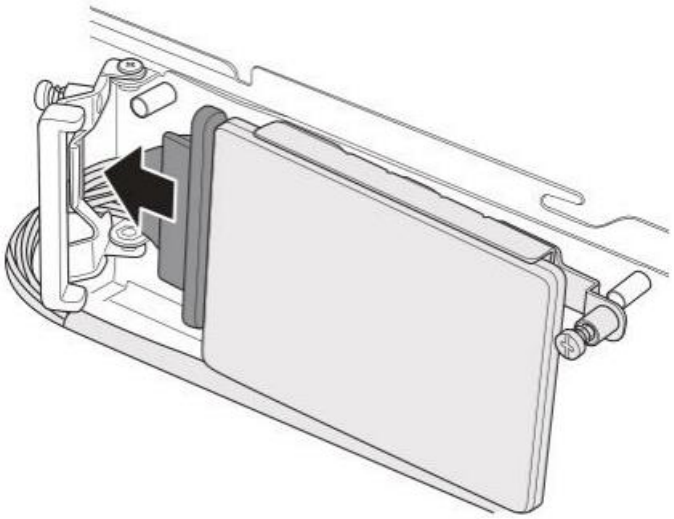

Figure 1-26: Disconnecting the Oculink Cable

4. Extend the tool-less lock on the SSD tray to release the SSD. Then remove the SSD from the SSD tray.

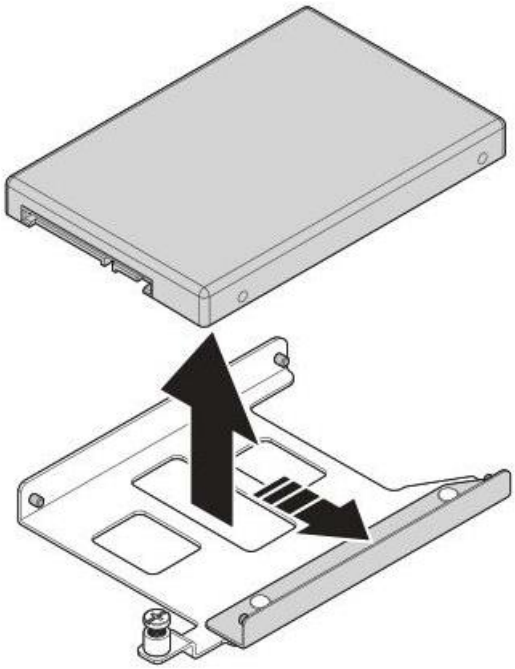

Figure 1-27: Removing the NVMe SSD

5. To remove another NVMe SSD, repeat the previous steps.

Installing a NVMe Solid State Disk

Prerequisite:

- ♦ Remove the top cover. See *Opening the Top Cover* on page 1-6.
- ♦ Remove the air duct. See *Removing the Air Duct* on page 1-7.

1. Extend the tool-less lock on the SSD tray to allow for installation of the SSD.
2. Align the screw holes on the SSD to the pins on the SSD tray. (A)
3. Install the SSD to its SSD tray. (B)
4. Slide in the tool-less lock to secure the SSD. (C)

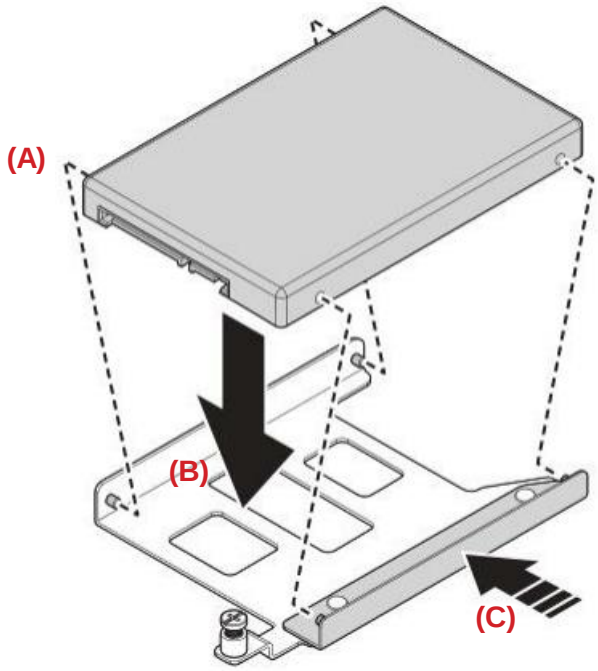

Figure 1-28: Installing the NVMe SSD

5. Connect the Oculink cable to the SSD connector.

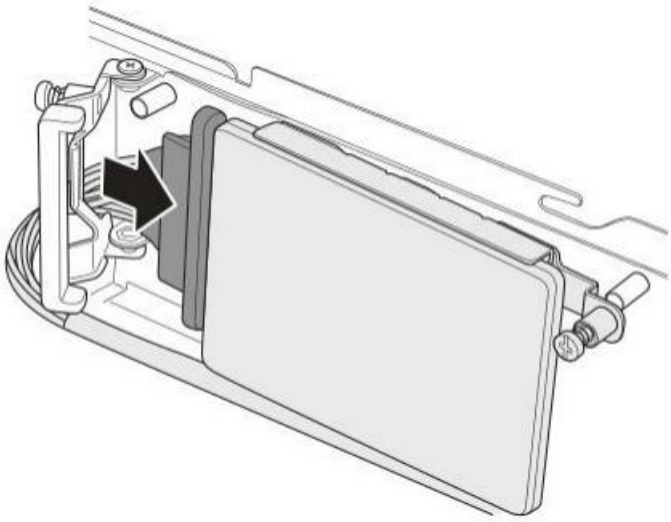

Figure 1-29: Connecting the Oculink Cable

6. Slide the SSD assembly forward until it is firmly seated. Then close the retainer back into place.

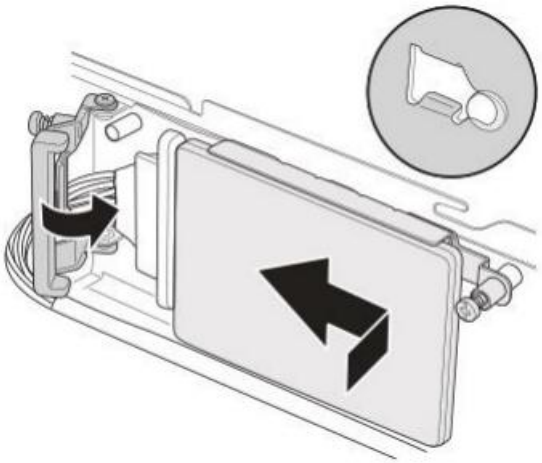

Figure 1-30: Installing the NVMe SSD Assembly

7. Tighten the captive screws to secure the SSD tray to the chassis.

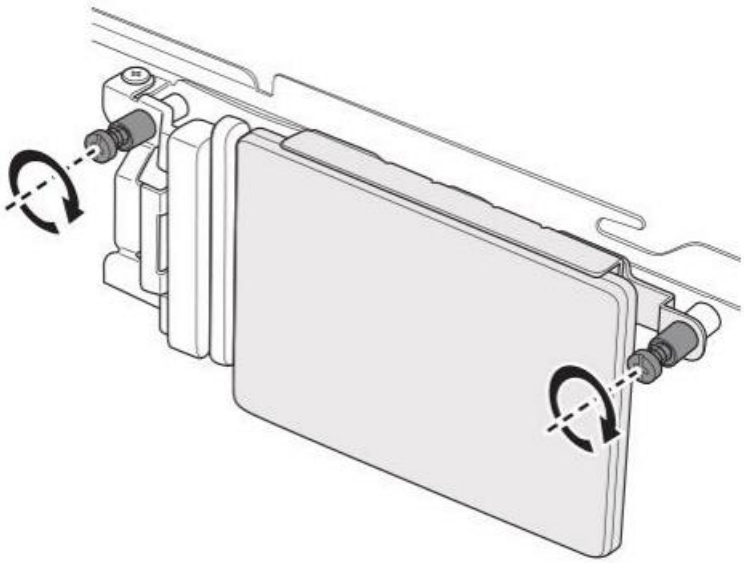

Figure 1-31: Tightening the Screws

8. To install another NVMe SSD, repeat the previous steps.

Riser 1 Assembly

Removing the Riser 1 Assembly

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.

1. Loosen the captive screw securing the riser 1 assembly to the chassis.
2. Hold the riser assembly holder and lift it to remove the riser 1 assembly from the chassis.

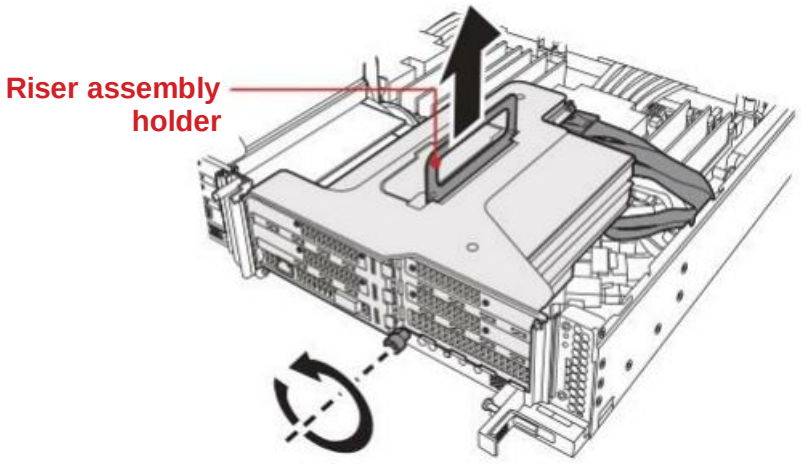

Figure 1-32: Removing the Riser 1 Assembly

3. Disconnect the power and Mini SAS HD cables from the riser 1 board connectors. Then disconnect the SATA and UART cables from the K2C-AB card connectors.

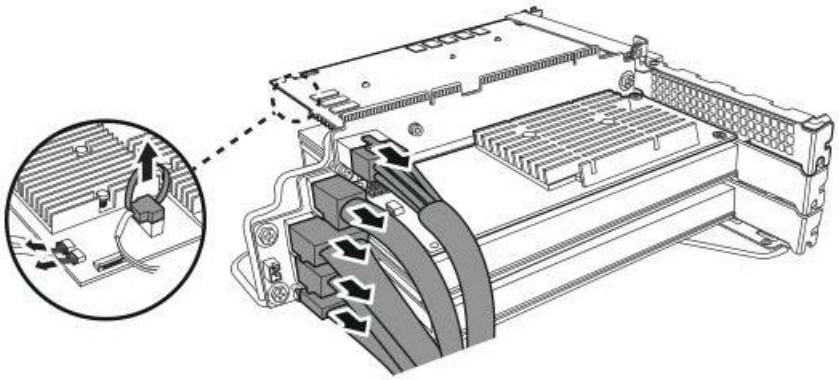

Figure 1-33: Disconnecting the Cables

4. Disconnect the K2T-QB card from the riser 1 board connector. Then remove the K2T-QB card from the riser 1 bracket. Repeat the same steps to remove the K2C-AB card.

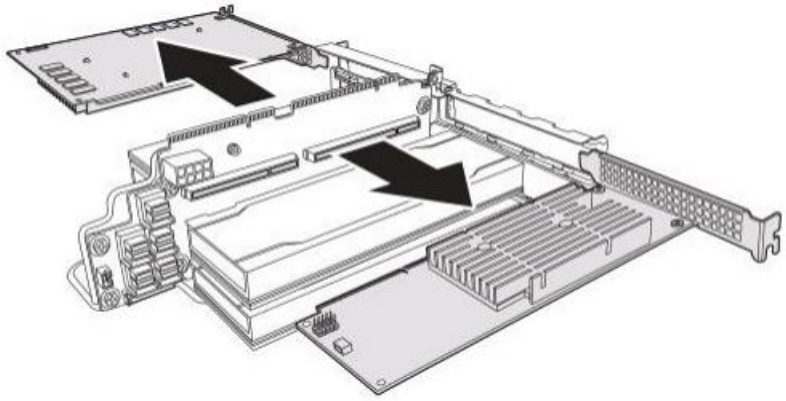

Figure 1-34: Removing the K2T-QB and K2C-AB Cards

5. Disconnect the Tesla T4 card from the riser 1 board connector. Then remove the Tesla T4 card from the riser 1 bracket. Repeat the same steps to remove the remaining Tesla T4 cards.

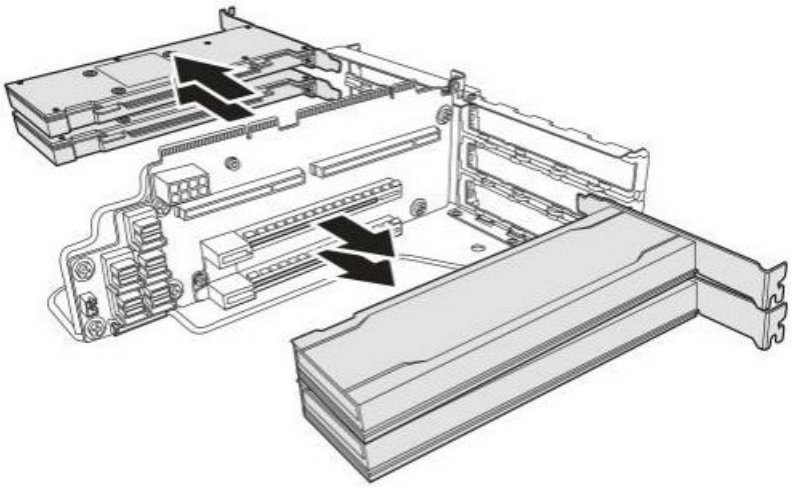

Figure 1-35: Removing the Tesla T4 Cards

Installing the Riser 1 Assembly

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Install the riser 1 boards. See *Installing a Riser 2 Board* on page 1-33.

1. Align the Tesla T4 card with the riser 1 board connector and slide in place. The bracket on the Tesla T4 card is flush with the riser 1 bracket if the Tesla T4 card is seated correctly. Repeat the same steps to install the remaining Tesla T4 cards.

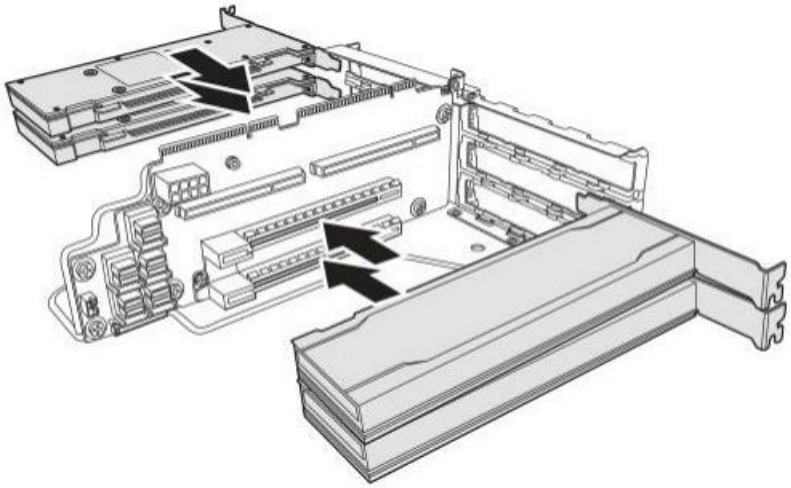

Figure 1-36: Installing the Tesla T4 Cards

2. Align the K2T-QB card with the riser 1 board connector and slide in place. The bracket on the K2T-QB card is flush with the riser 1 bracket if the K2T-QB card is seated correctly. Repeat the same steps to install the K2C-AB card.

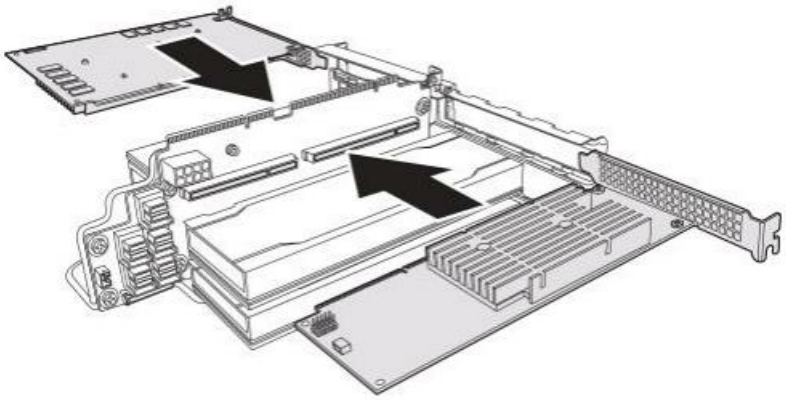

Figure 1-37: Installing the K2T-QB and K2C-AB Cards

3. Connect the power and Mini SAS HD cables to the riser 1 board connectors. Then connect the SATA and UART cables to the K2C-AB card connectors.

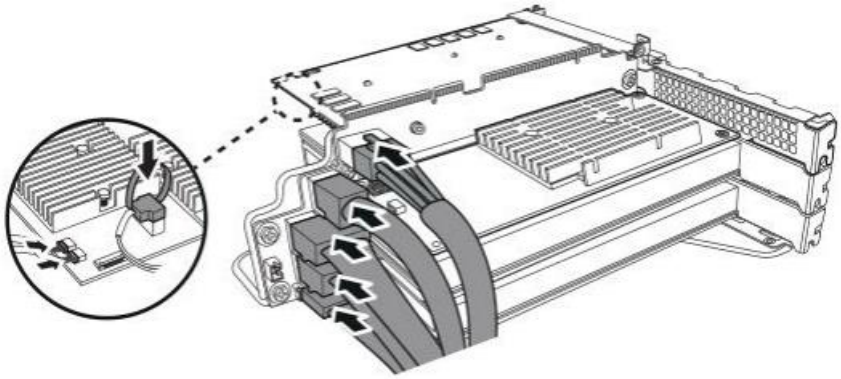

Figure 1-38: Connecting the Cables

4. Align the riser 1 assembly with its slot on the chassis. Then push firmly the assembly downwards to connect the riser 1 assembly to the mainboard connector.
5. Close the riser 1 assembly holder. Then secure the riser 1 assembly to the chassis with captive screw.

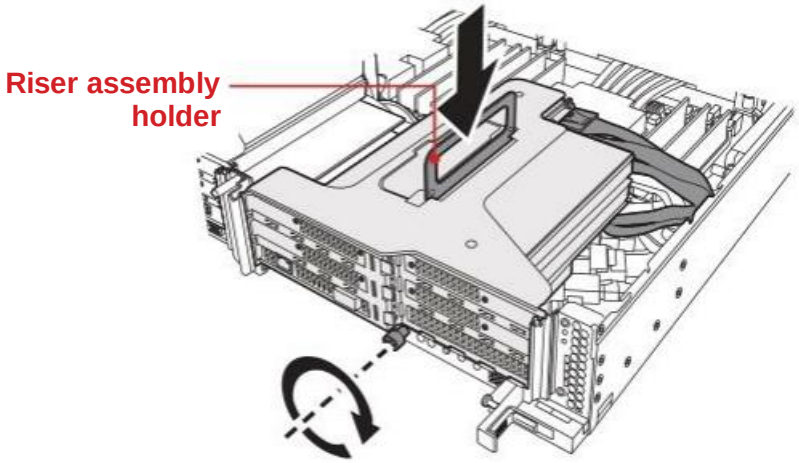

Figure 1-39: Installing the Riser 1 Assembly

Riser 1 Boards

Removing a Riser 1 Board

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Remove the riser 1 assembly. See *Removing the Riser 1 Assembly* on page 1-22.

1. Remove the screws securing the riser 1 board.
2. Remove the riser 1 board from the riser bracket.

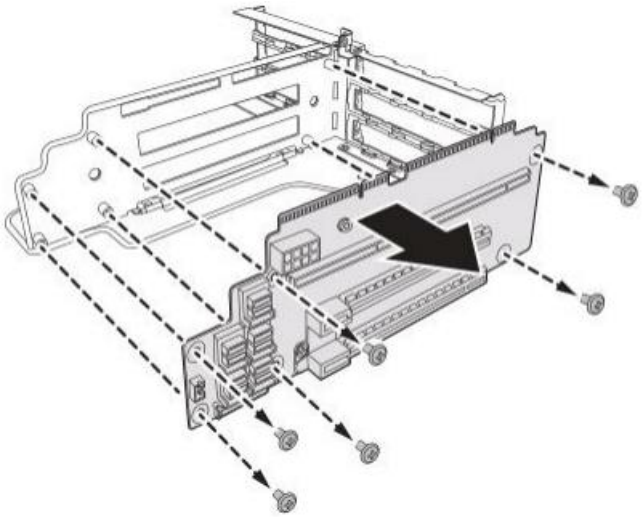

Figure 1-40: Removing the Riser 1 Board

3. To remove another riser 1 board, repeat the previous steps.

Installing a Riser 1 Board

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Remove the riser 1 assembly. See *Removing the Riser 1 Assembly* on page 1-22.

1. Align and install the riser 1 board on the riser bracket.
2. Secure the riser 1 board with screws.

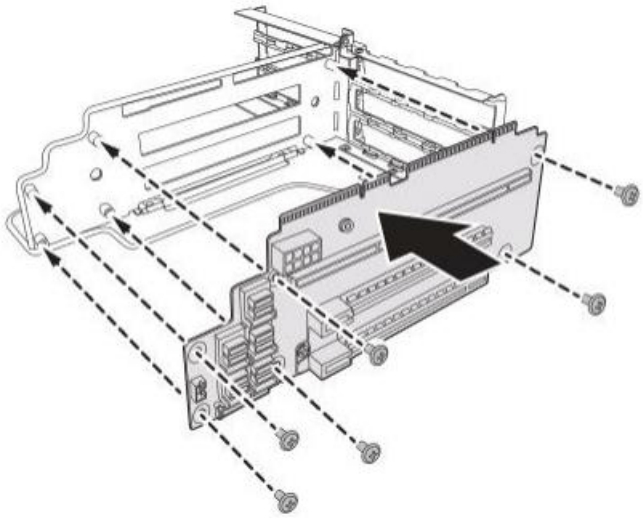

Figure 1-41: Installing the Riser 1 Board

3. To install another riser 1 board, repeat the previous steps.

Riser 2 Assembly

Removing the Riser 2 Assembly

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.

1. Loosen the captive screw securing the riser 2 assembly to the chassis.
2. Hold the riser 2 assembly holder and lift it to remove the riser 2 assembly from the chassis.

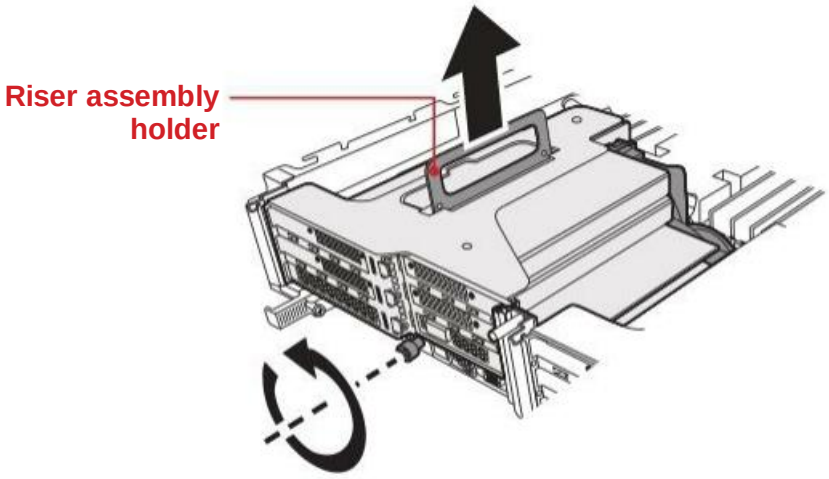

Figure 1-42: Removing the Riser 2 Assembly

3. Disconnect the power and Mini SAS HD cables from the riser 2 board connectors. Then disconnect the power and UART cables from the K2X-N card connectors.
4. Disconnect the SATA and power cables from the SSD connectors.

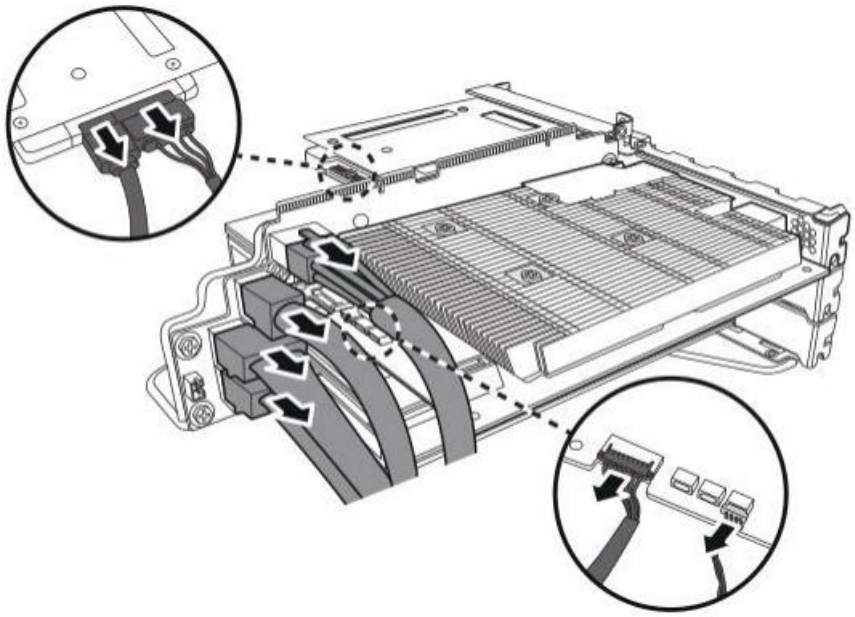

Figure 1-43: Disconnecting the Cables

5. Disconnect the K2X-N card from the riser 2 board connector. Then remove the K2X-N card from the riser 2 bracket.

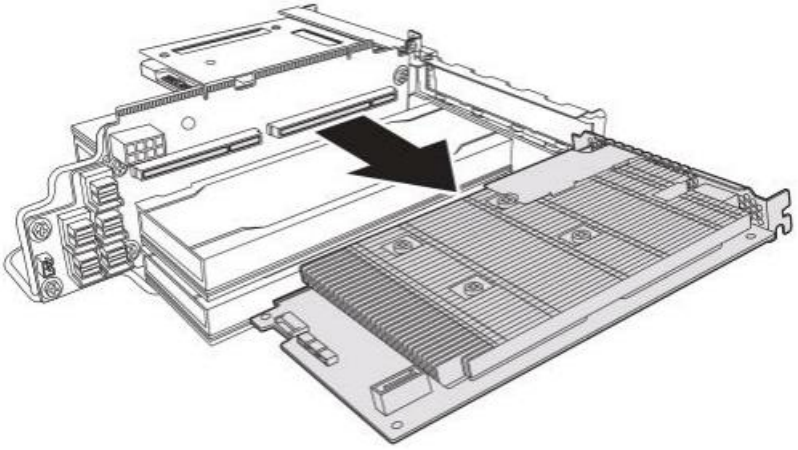

Figure 1-44: Removing the K2X-N Card

6. Disconnect the Tesla T4 card from the riser 2 board connector. Then remove the Tesla T4 card from the riser 2 bracket. Repeat the same steps to remove the remaining Tesla T4 cards.

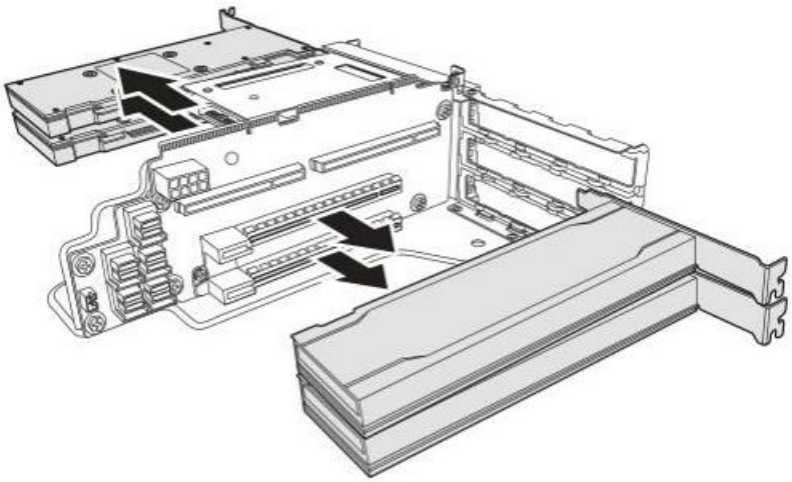

Figure 1-45: Removing the Tesla T4 Cards

Installing the Riser 2 Assembly

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Install the riser 2 boards. See *Installing a Riser 2 Board* on page 1-33.

1. Align the Tesla T4 card with the riser 2 board connector and slide in place. The bracket on the Tesla T4 card is flush with the riser 2 bracket if the Tesla T4 card is seated correctly. Repeat the same steps to install the remaining Tesla T4 cards.

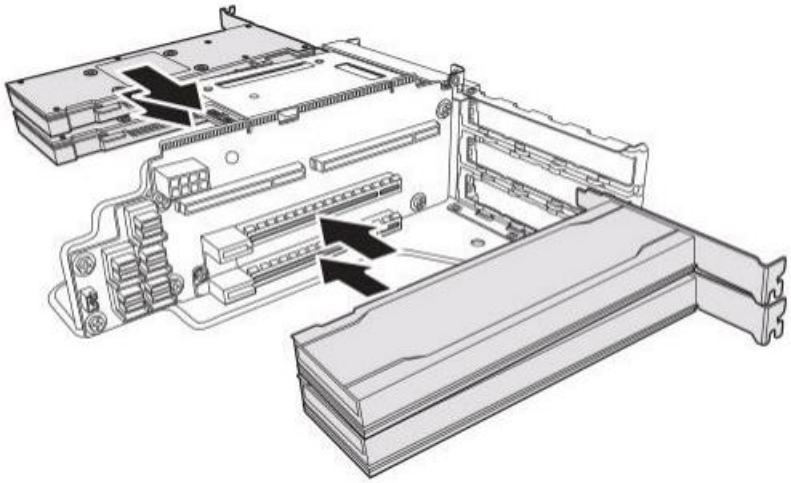

Figure 1-46: Installing the Tesla T4 Cards

2. Align the K2X-N with the riser 2 board connector and slide in place. The bracket on the K2X-N card is flush with the riser 2 bracket if the K2X-N card is seated correctly.

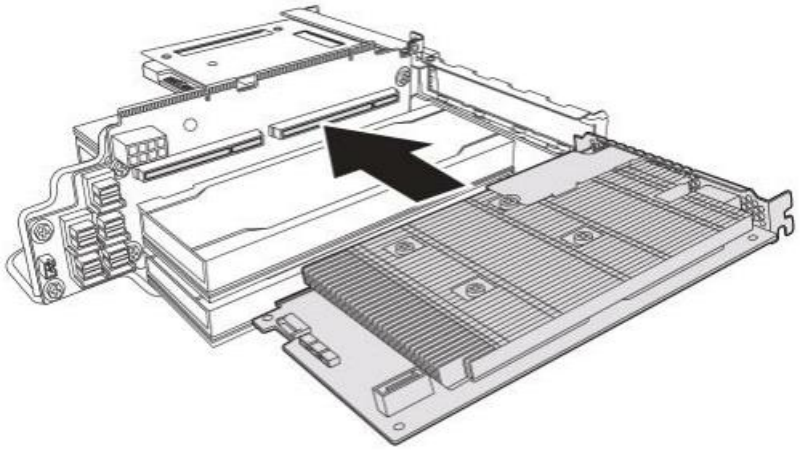

Figure 1-47: Installing the K2X-NCard

3. Connect the power and Mini SAS HD cables to the riser 2 board connectors. Then connect the power and UART cables to the K2X-N card connectors.
4. Connect the SATA and power cables to the SSD connectors.

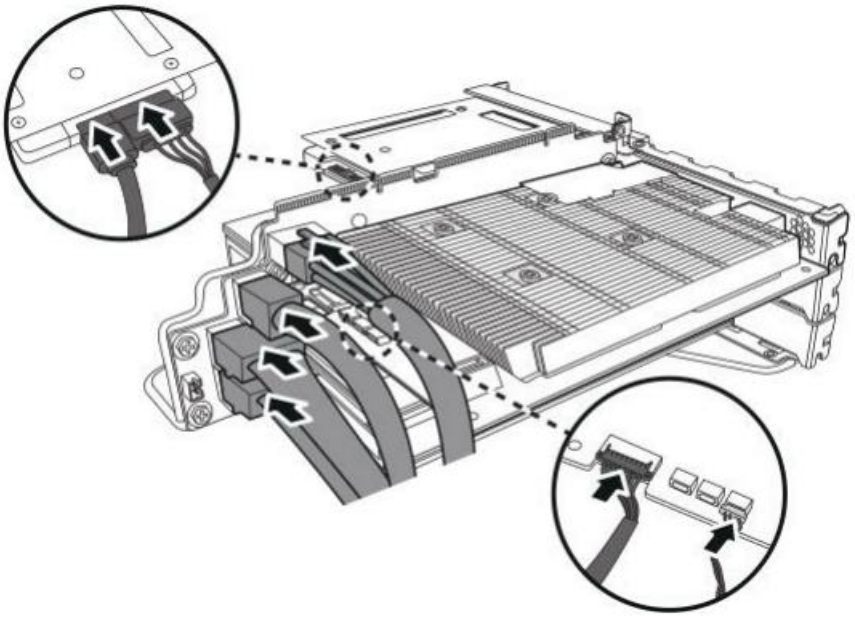

Figure 1-48: Connecting the Cables

5. Align the riser 2 assembly with its slot on the chassis. Then push firmly the assembly downwards to connect the riser 2 assembly to the mainboard connector.
6. Close the riser 2 assembly holder. Then secure the riser 2 assembly to the chassis with captive screw.

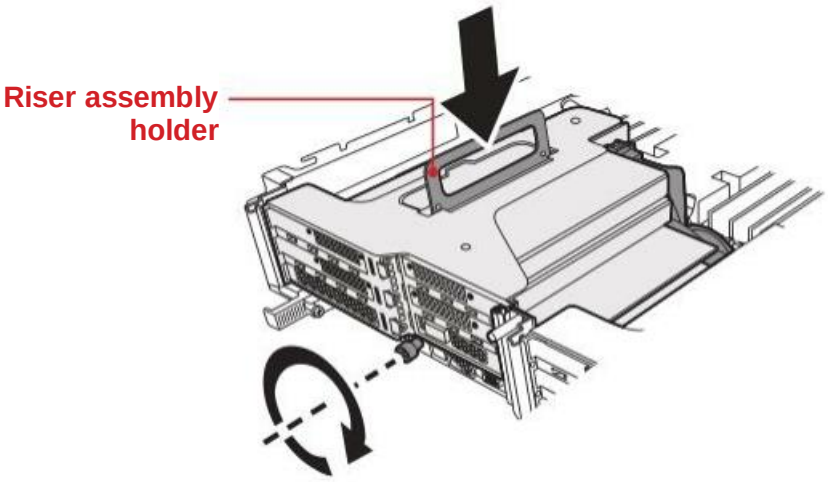

Figure 1-49: Installing the Riser 2 Assembly

Riser 2 Boards

Removing a Riser 2 Board

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Remove the riser 2 assembly. See *Removing the Riser 2 Assembly* on page 1-28.

1. Remove the screws securing the riser 2 board.
2. Remove the riser 2 board from the riser bracket.

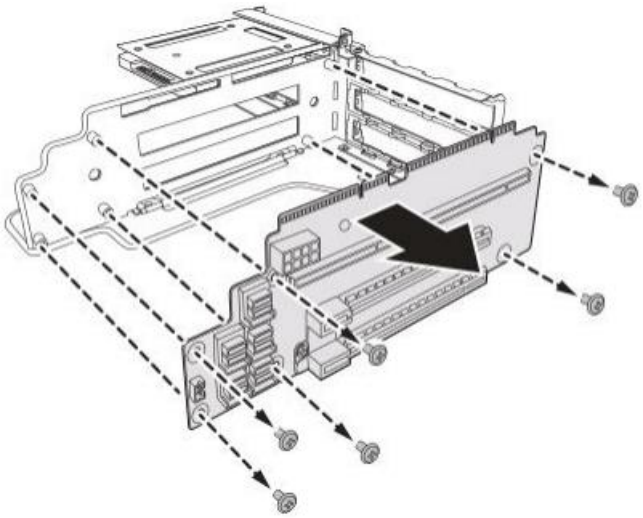

Figure 1-50: Removing the Riser 2 Board

3. To remove another riser 2 board, repeat the previous steps.

Installing a Riser 2 Board

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Remove the riser 2 assembly. See *Removing the Riser 2 Assembly* on page 1-28.

1. Align and install the riser 2 board on the riser bracket.
2. Secure the riser 2 board with screws.

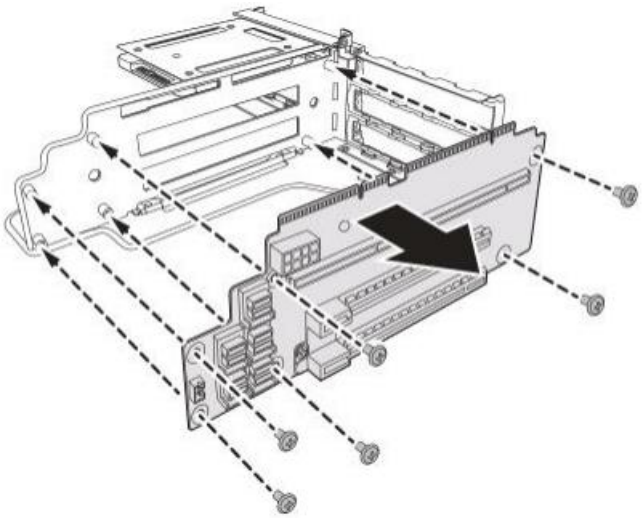

Figure 1-51: Installing the Riser 2 Board

3. To install another riser 2 board, repeat the previous steps.

SATA Solid State Disk

Removing the SATA Solid State Disk

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Remove the riser 2 assembly. See *Removing the Riser 2 Assembly* on page 1-28.
- Remove the riser 2 boards. See *Removing a Riser 2 Board* on page 1-32.

1. Remove the screws securing the SATA SSD to the SSD tray.
2. Remove the SATA SSD from the SSD tray.

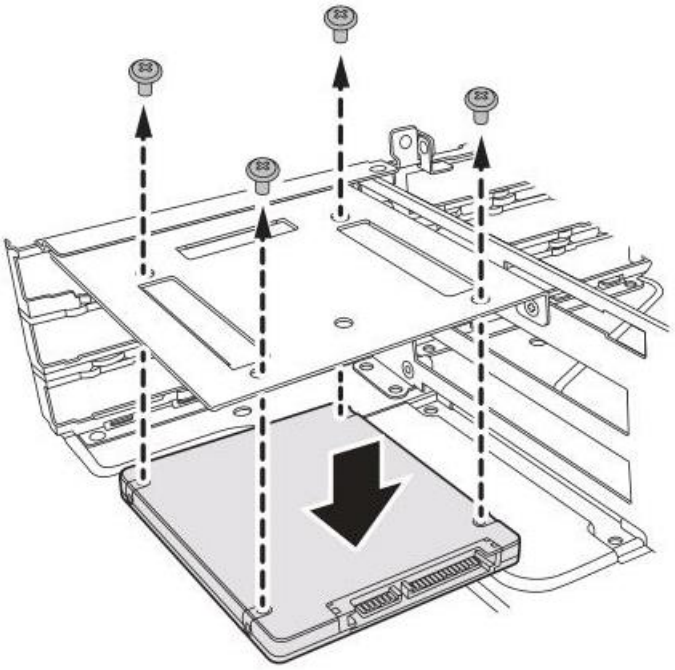

Figure 1-52: Removing the SATA SSD

3. Remove the screw securing the SSD tray to the riser bracket.
4. Remove the SSD tray.

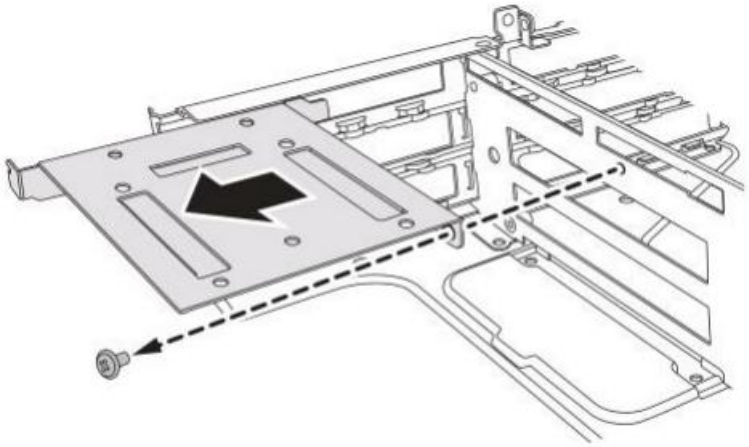

Figure 1-53: Removing the SSD Tray

Installing the SATA Solid State Disk

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Remove the riser 2 assembly. See *Removing the Riser 2 Assembly* on page 1-28.
- Remove the riser 2 boards. See *Removing a Riser 2 Board* on page 1-32.

1. Align and install the SSD tray on the riser bracket.
2. Secure the SATA SSD tray with screws.

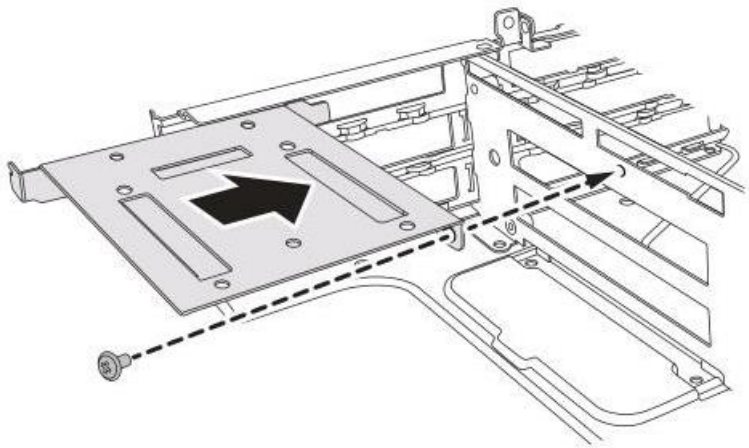

Figure 1-54: Installing the SSD Tray

3. Align and install the SATA SSD onto the SSD tray.
4. Secure the SATA SSD with screws.

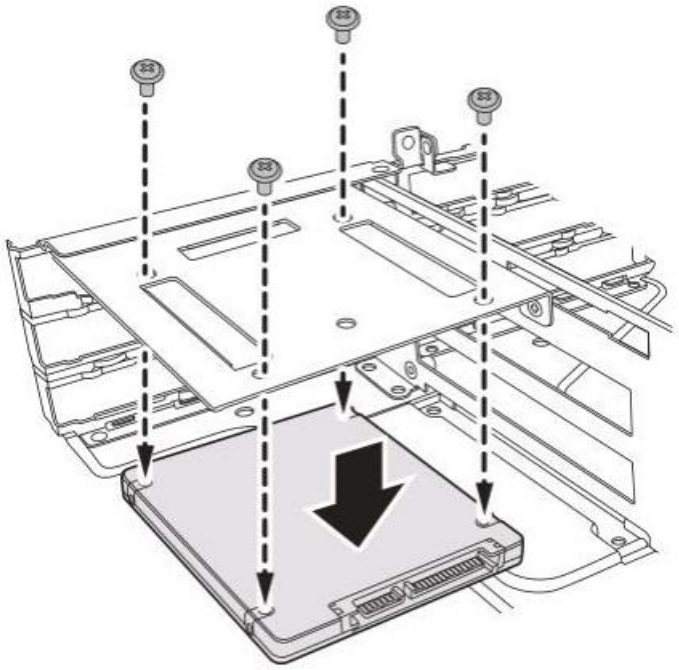

Figure 1-55: Installing the SATA SSD

Processor Heat Sinks

Removing a Heat Sink

WARNING!

The heatsink remains hot after the system has been powered down. Allow sufficient time to cool before handling system components.

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.

1. Loosen the captive screws in a sequential order.
2. Remove the heat sink.

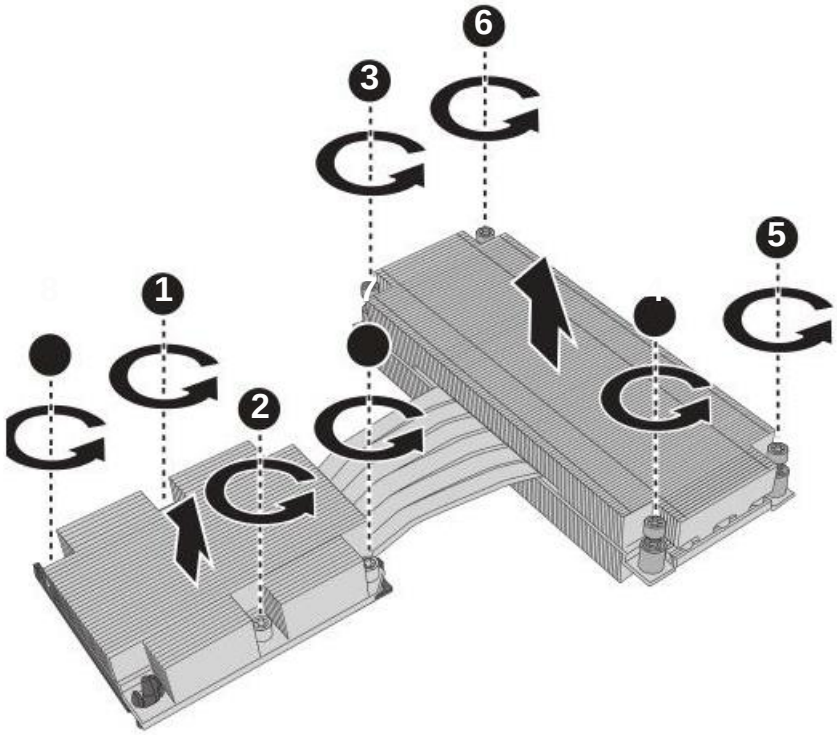

Figure 1-56: Removing the Heat Sink

3. To remove another heat sink, repeat the previous steps.

Installing a Heat Sink

CAUTION!
TO PREVENT DAMAGE DO NOT OVERTIGHTEN THE HEAT SINK SCREWS.

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Install the processor. See *Installing a Processor* on page 1-40.

1. Align the heat sink over the socket. The airflow marker indicates the flow of air from the system's cold side to its hot side. Make sure the airflow indicator is aligned properly.
2. Place the heat sink on top of the socket.
3. Tighten the captive screws in a sequential order. Do not overtighten to prevent damage to the heat sink or socket.

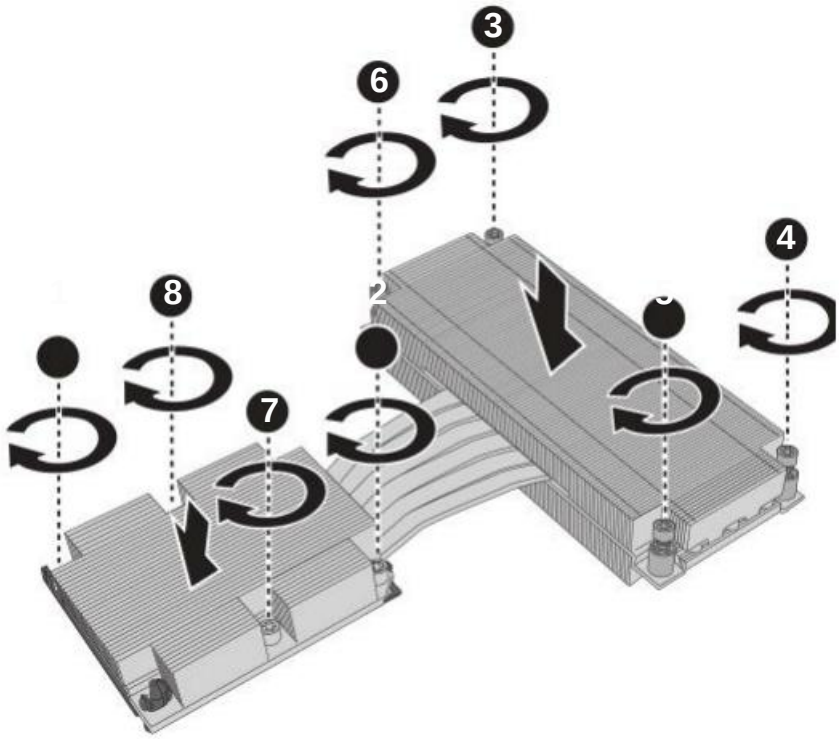

Figure 1-57: Installing the Heat Sink

4. To install another heat sink, repeat the previous steps.

Processors

Removing a Processor

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Remove the heat sink. See *Removing a Heat Sink* on page 1-37.

1. Remove the processor bracket from the heatsink. Then remove the processor from its bracket.

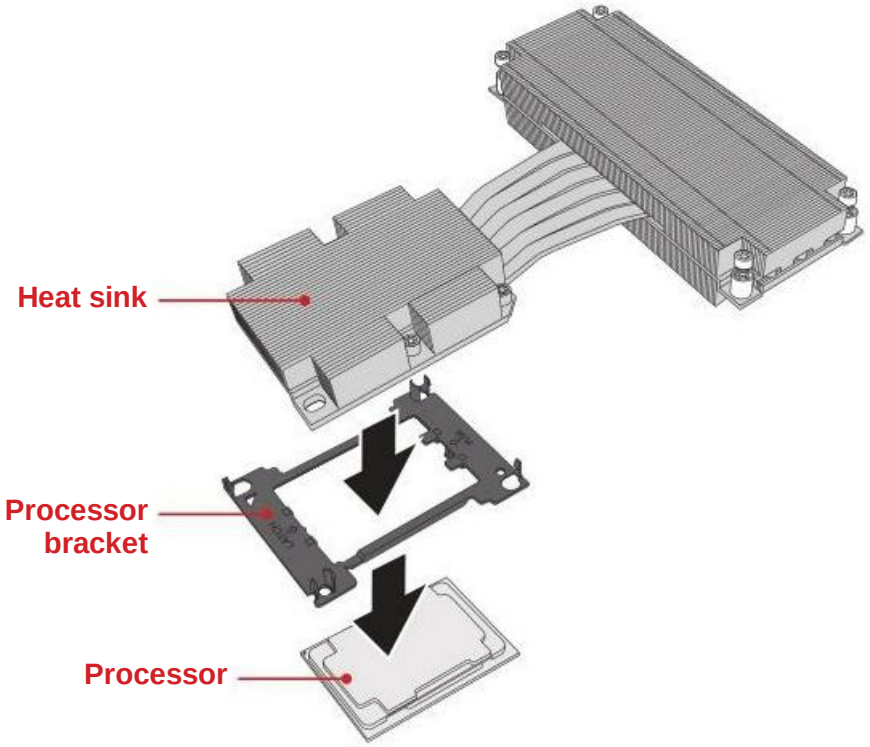

Figure 1-58: Removing the Processor

2. To remove another processor, repeat the previous steps.

CAUTION!

AVOID ! CONTACT WITH ANY THERMAL GREASE ON THE PROCESSOR.

Installing a Processor

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.
- Remove the heat sink. See *Removing a Heat Sink* on page 1-37.

1. Remove the new processor from its packaging. Make sure to hold the processor by the sides. Do NOT touch the underside of the processor.
2. Install the processor onto its bracket. Then place and install the bracket underneath the heat sink.

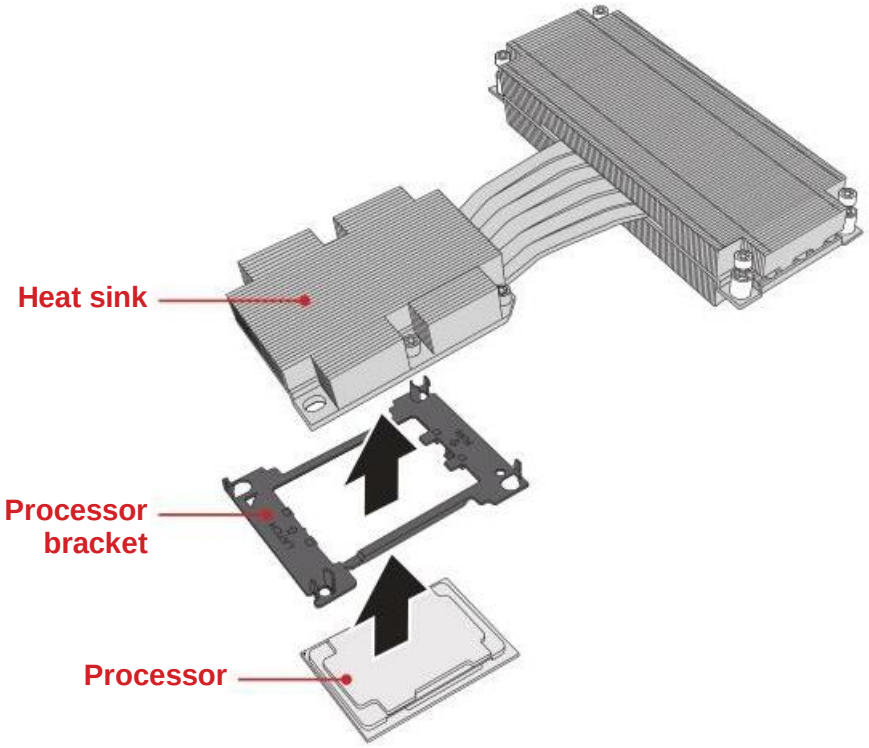

Figure 1-59: Installing the Processor

3. Install the processor assembly onto the socket. Make sure the triangle mark on top of the processor is properly aligned with the triangle mark on the socket.
4. To install another processor, repeat the previous steps.

Memory Modules

General Guidelines

All multi-node servers have specific rules for the population of memory on the individual mainboard for optimal performance.

Refer to the following individual server rules for information on how to populate the particular server required.

Removing a Memory Module

WARNING!

Memory modules remain hot after the system is powered down. Allow sufficient time for the memory modules to cool before handling system components.

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.

1. Pull the locking latches of the DIMM slot outwards.
2. Remove the memory module from the DIMM slot.

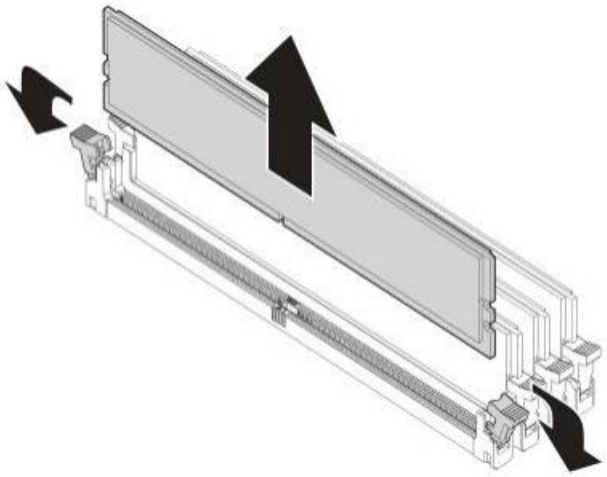

Figure 1-60: Removing the Memory Module

3. To remove the remaining memory modules, repeat the previous steps.

Installing a Memory Module

Prerequisite:

- Remove the top cover. See *Opening the Top Cover* on page 1-6.
- Remove the air duct. See *Removing the Air Duct* on page 1-7.

1. Pull the locking latches of the DIMM slot outwards.
2. Align the notch and obstruction as seen in the following illustration.
3. Install the memory module and press the ends of the module down until the locking latches spring over the memory modules.

   The locking latches lock in place when the memory modules are seated correctly.

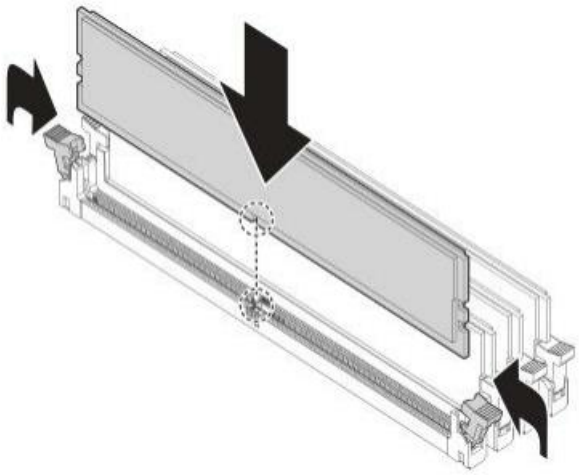

Figure 1-61: Installing the Memory Module

4. To install the remaining memory modules, repeat the previous steps.

Memory Population Rules

Table 1-5: DDR4 Memory Supported

Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)			Speed (MT/S); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC)		
					1 Slot Per Channel	2 Slot Per Channel	
		DRAM Density			1DPC	1DPC	2DPC
		4GB	8GB	8GB	1.2V	1.2V	1.2V
RDIMM	SRx8	4GB	8GB	16GB	2933	2933	2666
RDIMM	SRx4	8GB	16GB	32G			
RDIMM	DRx8	8GB	16GB	32GB			
RDIMM	DRx4	16GB	32GB	64GB			
RDIMM 3DS	QRx4	N/A	2H-64GB	2H-128GB			
	8Rx4	N/A	4H-128GB	4H-256GB			
LRDIMM	QRx4	32GB	64GB	128GB			
LRDIMM 3DS	QRx4	N/A	2H-64GB	2H-128GB			
	8Rx4	N/A	4H-128GB	4H-256GB			

Chapter 2

Rack Installation System

2.1 Rail Kit Assembly

Make sure you have a stable, clean working environment. Dust and dirt can get into computer components and cause a malfunction. Many of the screws on the server are different sizes; use containers to keep screws and small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging internal components. Most of the following procedures require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A set of jeweler's screwdrivers
- A grounding strap
- An anti-static pad

CAUTION!

TO INSTALL TWO SYSTEMS, INSTALL THE FIRST SYSTEM IN THE LOWEST AVAILABLE POSITION.

CAUTION!

DUE TO WEIGHT AND HEIGHT CONSIDERATIONS, MORE THAN ONE PERSON IS RECOMMENDED TO INSTALL A SYSTEM IN THE RACK.

CAUTION!

ONLY PULL ONE COMPONENT OUT OF THE RACK AT A TIME TO PREVENT THE RACK FROM TIPPING OVER.

Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Assembling the rail kit involves the following procedures:

- Rack Installation Overview
- Installing the Rails

Rack Installation Overview

Review thoroughly the documentation that is included with the rack cabinet for safety and cabling instructions. Before installing the rails in the rack cabinet, review the following guidelines:

- Plan the rail installation starting at the bottom of the rack cabinet.
- Remove the rack doors and side panels to provide easier access during installation.
- Always adhere to safe practices when lifting or moving components.
- Inspect all equipment before installing on the rack cabinet. Replace any defective equipment.

Installing the Rails

Review thoroughly the documentation that is included with the rack cabinet for safety and cabling instructions. Before installing the rails in the rack cabinet, review the following guidelines:

CAUTION!

IF YOU ARE INSTALLING MORE THAN ONE SERVER, INSTALL THE FIRST SYSTEM IN THE LOWEST AVAILABLE POSITION IN THE RACK CABINET.

1. Locate the position to install the left rail. Then install the 6 mounting pins onto the designated holes on the rack.
2. Align the left rail with the installed 6 mounting pins. Then slide the rail backwards until it locks into place.
3. Secure the front side of the left rail with screw.

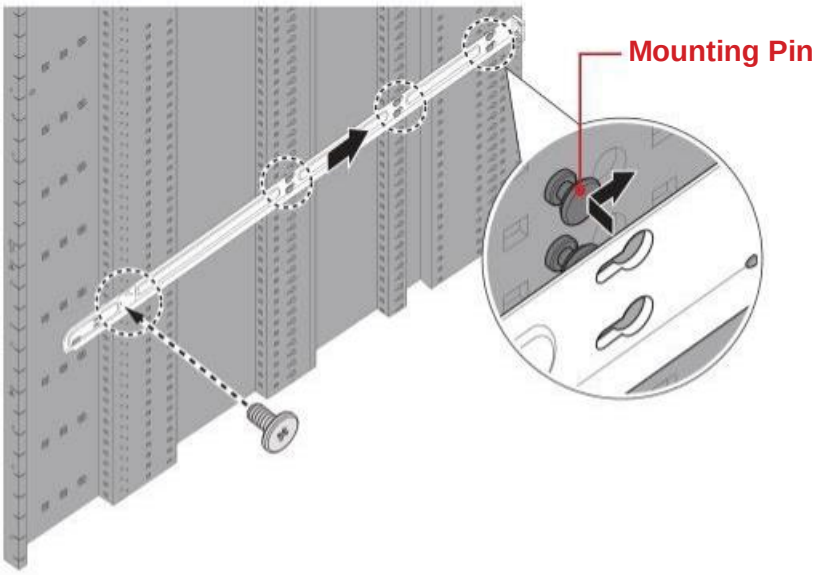

Figure 2-1: Installing the Left Rail

4. Locate the position to install the right rail. Then install the 6 mounting pins onto the designated holes on the rack.

   Note:

   Make sure both left and right rails are parallel.

5. Align the right rail with the installed 6 mounting pins. Then slide the rail backwards until it locks into place.

6. Secure the front side of the right rail with screw.

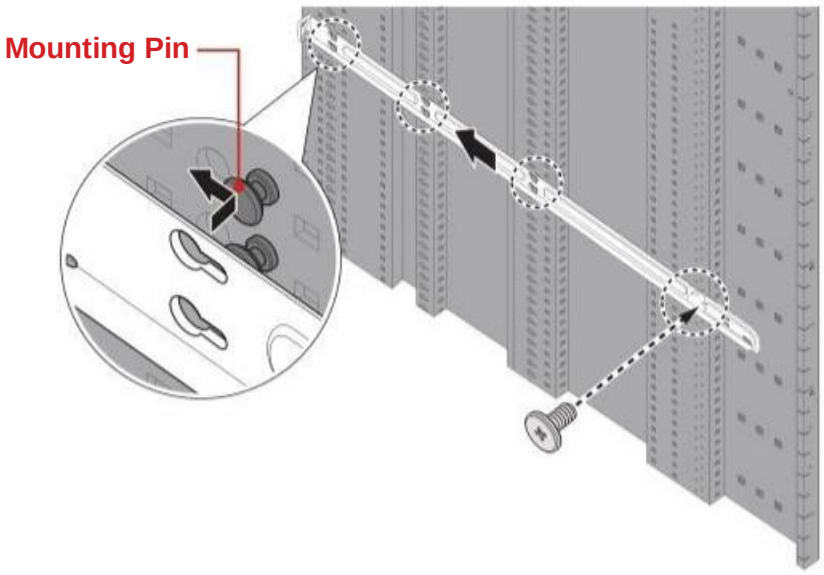

Figure 2-2: Installing the Right Rail

7. Once the rails are installed properly, push and hold both retainers inwards, and then slide the server all the way into the rack cabinet until it is fully seated and locks into place.

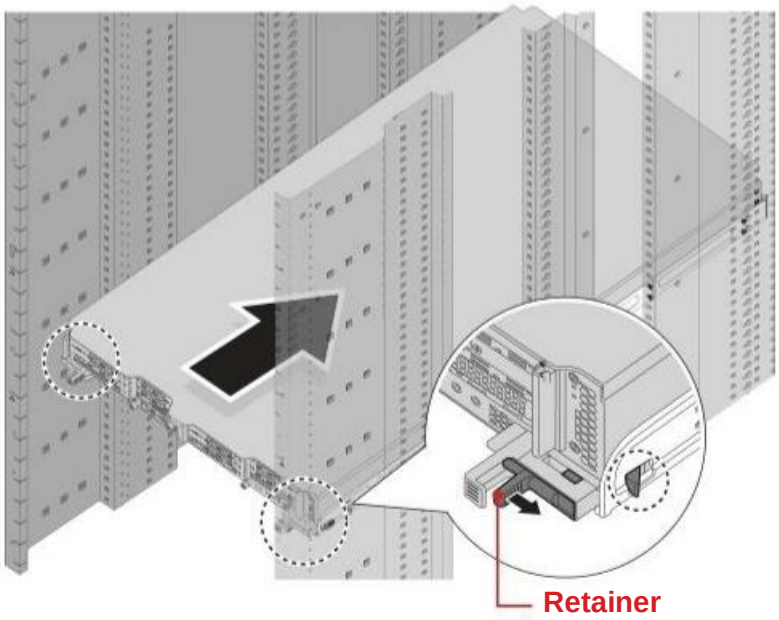

Figure 2-3: Installing the Server in the Rack

Removing the Rails

Review thoroughly the documentation that is included with the rack cabinet for safety and cabling instructions. Before installing the rails in the rack cabinet, review the following guidelines:

CAUTION!

THE SERVER MUST NOT BE REMOVED FROM ITS SETUP IN THE RACK FOR MORE THAN TEN MINUTES TO MAINTAIN PROPER SYSTEM COOLING.

Prerequisite:

- Power down the server.
- Disconnect all cables and peripherals from the server.

1. Push and hold both retainers outwards to disengage the latches. Then pull the server out of the rack cabinet.

   Note:

   Adhere to safe lifting practices when moving the server in and out of the cabinet.

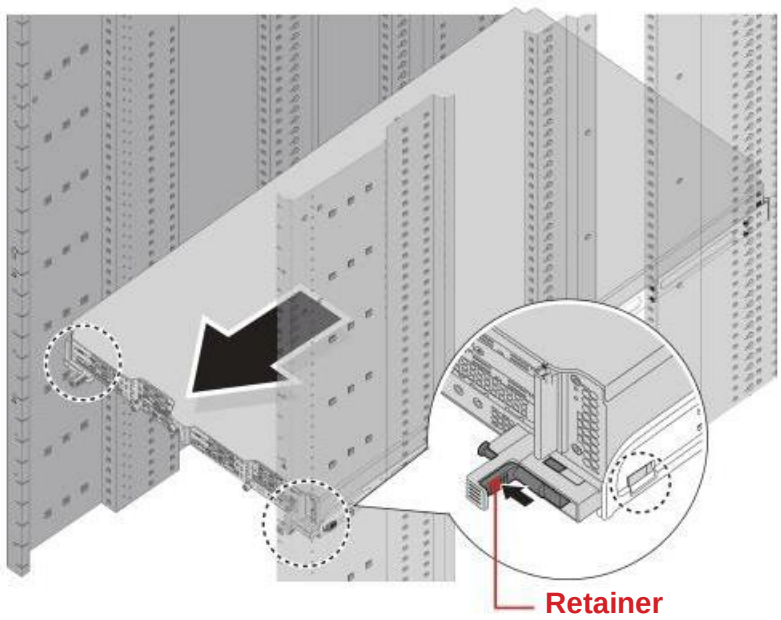

Figure 2-4: Removing the Server

2. Remove the screw securing the front side of the right rail. Then slide the rail forward to disengage the latches.
3. Remove the 6 mounting pins from the designated holes on the rack.

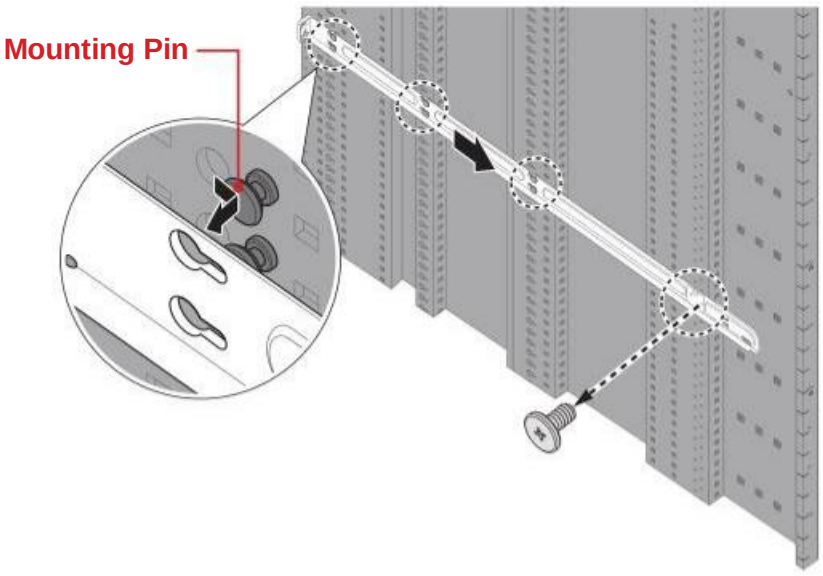

Figure 2-5: Removing the Right Rail

4. Remove the screw securing the front side of the left rail. Then slide the rail forward to disengage the latches.
5. Remove the 6 mounting pins from the designated holes on the rack.

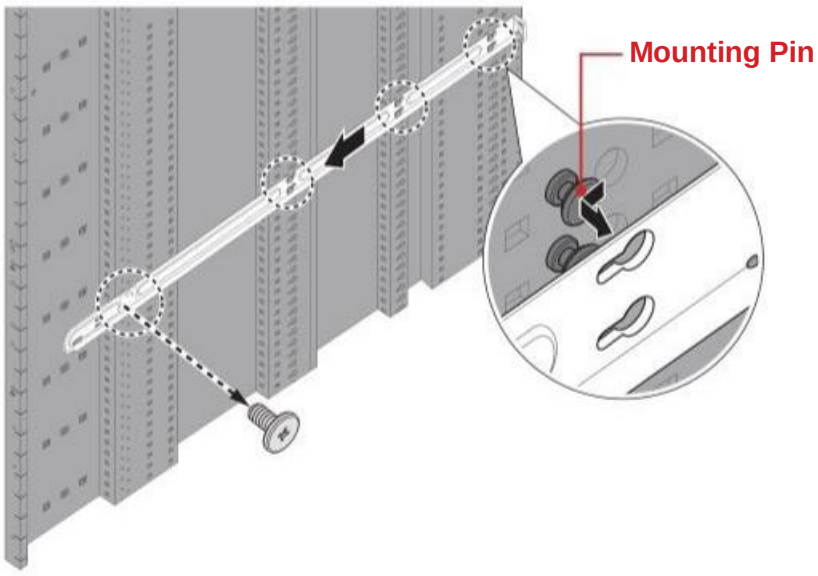

Figure 2-6: Removing the Left Rail

Federal Communications Commission

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.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution:

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.