IBM Cloud Object Storage System
Version 3.14.6

A10/C10/M10 Appliance Manual

4957-A10/4958-A10, 4957-C10/4958-C10,
4957-M10/4958-M10

Note

Before using this information and the product it supports, read the following information:

- The general information in *Notices*
- The information in *Safety and environmental notices*
- The information in the *IBM Environmental Notices and User Guide* (provided on a DVD)

This edition applies to IBM Cloud Object Storage System Accesser A10/C10/M10 and is valid until replaced by new editions.

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Intended purpose and audience

This manual contains the instructions for installing and maintaining this appliance. The audience for this guide consists of those individuals responsible for installing IBM Cloud Object Storage System™ appliances.

Note:

- The equipment and device described for installation herein are sophisticated and relatively complex to install. The party or parties installing the equipment must be familiar with installations of computer hardware and disk drives prior to attempting this installation. Only personnel proficient in working with computer hardware and disk drives should attempt to install this appliance.
- After all appliances have been installed in the rack, refer to the *Appliance Configuration Guide* to configure the appliance settings required prior to setting up the system.
- After these appliances are configured, refer to the *System Manager Administration Guide* for information about how to configure, operate, and maintain your system.
- Both the *Appliance Configuration Guide* and the *System Manager Administration Guide* assume that all necessary appliances for the system are installed in the rack.

Safety and environmental notices

Review the safety notices, environmental notices, and electronic emission notices for IBM® Cloud Object Storage System before you install and use the product.

Suitability for telecommunication environment - This product is not intended to connect directly or indirectly by any means whatsoever to interfaces of public telecommunications networks.

Examples of a caution and a danger notice. Numbers in parentheses refer to message numbers in the *IBM Safety Notices* publication G229-9054, which is included with your product.

CAUTION:
A caution notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. (C001)

DANGER

A danger notice indicates the presence of a hazard that has the potential of causing death or serious personal injury. (D002)

Safety notices

Safety notices for this product.

Familiarize yourself with the *IBM Safety Notices* publication G229-9054, which is included with your product.

DANGER: An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

DANGER: When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- If IBM supplied the power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
  - For AC power, disconnect all power cords from their AC power source.
  - For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.
- When connecting power to the product ensure all power cables are properly connected.
  - For racks with AC power, connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.

  - For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.
- Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements.
- Do not continue with the inspection if any unsafe conditions are present.
- Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

  To disconnect:

  1. Turn off everything (unless instructed otherwise).
  2. For AC power, remove the power cords from the outlets.
  3. For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source.
  4. Remove the signal cables from the connectors.
  5. Remove all cables from the devices.

  To connect:

  1. Turn off everything (unless instructed otherwise).
  2. Attach all cables to the devices.
  3. Attach the signal cables to the connectors.
  4. For AC power, attach the power cords to the outlets.
  5. For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP.
  6. Turn on the devices.

Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

CAUTION: The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

Do Not:

- Throw or immerse into water
- Heat to more than 100 degrees C (212 degrees F)
- Repair or disassemble

Exchange only with the approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)

DANGER: Observe the following precautions when working on or around your IT rack system:

- Heavy equipment-personal injury or equipment damage might result if mishandled.

- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet unless the earthquake option is to be installed.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack mounted devices and do not use them to stabilize your body position (for example, when working from a ladder).

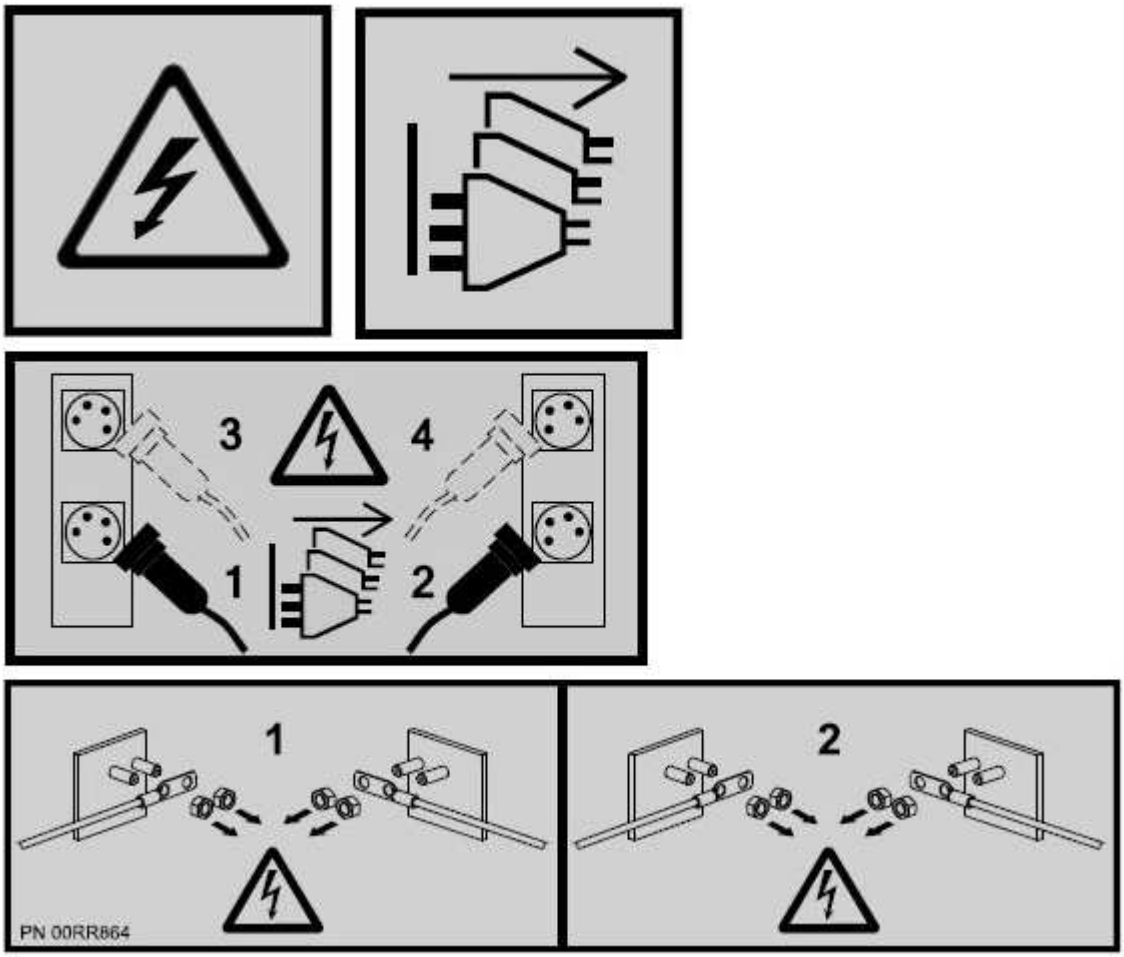
- Each rack cabinet might have more than one power cord.
  - For AC powered racks, be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
  - For racks with a DC power distribution panel (PDP), turn off the circuit breaker that controls the power to the system unit(s), or disconnect the customer's DC power source, when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (R00l part 1 of 2)

CAUTION:

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- (For sliding drawers.) Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack or if the rack is not bolted to the floor. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

- (For fixed drawers.) This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack. (R001 part 2 of 2)

CAUTION: This part or unit is heavy but has a weight smaller than 18 kg (39.7 lb). Use care when lifting, removing, or installing this part or unit. (C008)



Environmental notices

This information contains all of the environmental notices for IBM Systems products in English and other languages.

The IBM Systems Environmental Notices information includes statements on limitations, product information, product recycling and disposal, battery information, flat panel display, refrigeration and water-cooling systems, external power supplies, and safety data sheets.

Electromagnetic Compatibility Notices

Class A Notices

The following Class A statements apply to IBM products and their features unless designated as electromagnetic compatibility (EMC) Class B in the feature information.

When attaching a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices supplied with the monitor.

Canada Notice

CAN ICES-3 (A)/NMB-3(A)

European Community and Morocco Notice

This product is in conformity with the protection requirements of Directive 2014/30/EU of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

Germany Notice

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaatenund hält die Grenzwerte der EN 55032 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

EN 55032 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:
"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem “Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)“. Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC Richtlinie 2014/30/EU) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Relations Europe, Abteilung M456
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 (0) 800 225 5426
email: HalloIBM@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55032 Klasse A.

Japan Electronics and Information Technology Industries Association (JEITA) Notice

（一社）電子情報技術産業協会　高調波電流抑制対策実施
要領に基づく定格入力電力値：　Knowledge Center の各製品の
仕様ページ参照

This statement applies to products less than or equal to 20 A per phase.
高調波電流規格　JIS C 61000-3-2 適合品

This statement applies to products greater than 20 A, single phase.
高調波電流規格　JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。

- 回路分類　：６（単相、ＰＦＣ回路付）
- 換算係数　：０

This statement applies to products greater than 20 A per phase, three-phase.
高調波電流規格　JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。

- 回路分類　：５（３相、ＰＦＣ回路付）
- 換算係数　：０

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В жилых помещениях оно может создавать
радиопомехи, для снижения которых необходимы
дополнительные меры

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種情況下，使用者會被要
求採取某些適當的對策。

IBM Taiwan Contact Information:
台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

United States Federal Communications Commission (FCC) Notice

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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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.

Responsible Party:
International Business Machines Corporation
New Orchard Road
Armonk, NY 10504
Contact for FCC compliance information only: fccinfo@us.ibm.com

Declared noise emissions

Declared noise emissions in accordance with ISO 9296[1-5]

Table 1. Declared noise emissions in accordance with ISO 9296[1-5]

Product description Models: A10, C10, M10, J10, J11 & J12	Declared A-weighted sound power level, $L_{WA,m}$ (B)		Declared A-Weighted Sound Pressure Level, $L_{pA,m}$ (dB)		Statistical adder for verification K_v (B)	
	Operating	Idling	Operating	Idling	Operating	Idling
Typical Configuration: 23 ± 2 degrees C, 500m	7.1[6]	7.1[6]	60	60	0.3	0.3
Maximum configuration: 27 degrees C, 500m	7.3[6]	7.3[6]	60	60	0.3	0.3
Maximum configuration: Worst-case ambient Fan failure	8.7[6]	8.7[6]	74	74	0.3	0.3

Notes:

1. Declared level $L_{WA,m}$ is the upper-limit A-weighted sound power level; Declared level $L_{pA,m}$ is the mean A-weighted sound pressure level measured at the 1-meter bystander positions.
2. The statistical adder for verification, K_v, is a quantity to be added to the declared mean A-weighted sound power level, $L_{WA,m}$ such that there will be a 95% probability of acceptance, when using the verification procedures of ISO 9296, if no more than 6.5% of the batch of new equipment has A-weighted sound power levels greater than (LWA,m + Kv).
3. The quantity L_{WAc} (formerly called L_{WAd}), can be computed from the sum of $L_{WA,m}$ and K_v.
4. All measurements made in conformance with ISO 7779 and declared in conformance with ISO 9296.
5. B, dB, abbreviations for bels and decibels, respectively. 1 B = 10 dB.
6. **Note:** Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your server installation. The actual sound pressure levels in your installation depend upon a variety of factors, including the number of racks in the installation; the size, materials, and configuration of the room where you designate the racks to be installed; the noise levels from other equipment; the room ambient temperature, and employees' location in relation to the equipment. Further, compliance with such government regulations also depends upon a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. IBM recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.

Support information

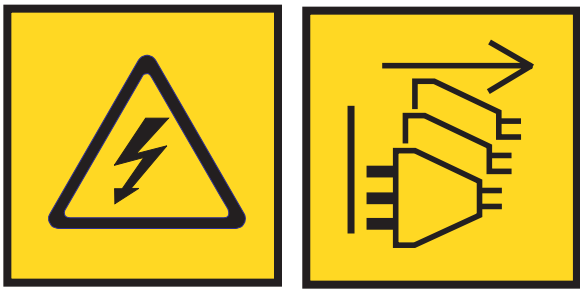
Technical support contacts.

For more information on the product or help with troubleshooting, contact IBM Support at IBMCloudStorageSupport@us.ibm.com or visit the Directory of worldwide contacts.

Chapter 1. Appliance safety precautions

Observe physical, electrical, and electronic component safety precautions.

DANGER: An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)



DANGER: Multiple power cords. The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. (L003)

Physical

Ensure that your equipment rack is placed in a dust-free, well-ventilated area close to an uninterruptible power supply (UPS). Leave enough room behind and around the rack for services and sufficient airflow.

- Keep the area around the appliance clean and free of clutter.
- Place the appliance top cover and any appliance components that were removed away from the appliance or on a table so that they do not accidentally get damaged.
- While you are working on the appliance, do not wear loose clothing such as neckties and unbuttoned shirt sleeves. They can retain a charge even if you are wearing a wrist strap, or could be pulled into a fan.
- After you access the inside of the appliance, close the appliance and secure it to the rack unit with the retention screws after you ensure that all connections are made.
- Close the rack's front door and all panels and components on the appliances when not servicing to maintain proper cooling.

Electrical

Basic electrical safety precautions must be followed to protect yourself and the appliance:

- Do not work alone with high-voltage components.
- Be aware of the locations of the power switch on the appliance and the room's emergency power-off switch, disconnection switch, or electrical outlet. If an electrical accident occurs, quickly remove power from the system.

DANGER

A danger of explosion exists if the Onboard battery is installed upside down, which reverses its polarities. This battery must be replaced only with the same or an equivalent type that is recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

Electronic components

Electrostatic discharge (ESD) is generated by two objects with different electrical charges when they come into contact with each other. An ESD neutralizes this difference, which can damage electronic components and printed circuit boards (PCBs). In general, the following measures are sufficient to neutralize this difference before contact is made to protect equipment from ESD:

- Use a grounded wrist strap that is designed to prevent ESDs.
- Keep all components in their antistatic containers until ready for installation.
- Touch a grounded metal object before you remove any board from its antistatic container.
- Remove any jewelry or metal objects from your body. They are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

Chapter 2. Specifications and requirements

Appliance specifications

Table 2. General specifications

Chassis Measurement	1U 17.2″ W x 1.71 H x 30″ L
Weight	Up to 38 Ib. barebone system
CPU	M10/C10: FC AJ20 A10: FC AJ21
Memory	Up to 24x DDR4 DIMM slots Up to 2666MHz L/RDIMM
PCIe	• 2x PCIe x16 add-on card (1x FHHL/1x HHHL) • 1x OCP Network Mezz (x16) • 1x OCP Mezz for Storage (x8)
Network Controllers	On Board Dual port 10GbE, SFP+,
BMC	IPMI 2.0 with virtual media over LAN, and KVM-over-LAN support
Front IO	USB 2.0 (1x)
Rear IO	USB 3.0 (2x), VGA (1x), 10GbE (2x), IPMI (1x)
Cooling	6 + 1 redundant, hot-swappable fans
Power	800W 1+1 Redundant, Hot-Swap PSUs
LEDs	UID (front and rear), Power, System health, Network activity, Disk activity
Operating Temperature Non-operating Temperature	10°C to 35°C - 40°C to 65°C
Storage Operating Temperature	5°C to 45°C
Operating Altitude	0 to 10,000 ft. operating or 0 to 40,000 ft. non-operating

Table 3. Component specifications

Component	Model	Feature Code	Description
CPU	A10	AJ21	Intel Xeon Gold 6126 12 Core/24 Thread - 2.60 GHz
	C10	AJ20	Intel Silver 4116 12 Core/24 Thread - 2.10 GHz
	M10	AJ20	Intel Silver 4116 12 Core/24 Thread - 2.10 GHz

Table 3. Component specifications (continued)

Memory	A10	AJ22	6x16GB DDR4 2666Mhz DIMMs
	C10	AJ22	6x16GB DDR4 2666Mhz DIMMs
	M10	AJ22	6x16GB DDR4 2666Mhz DIMMs
OS Drive	A10	AJ5R	480GB SATA SSD
	C10	AJ5R	480GB SATA SSD
	M10	AJ5S	960GB SATA SSD
RAID Controller	M10	AJ5U	Internal RAID card
Data Disk Controller	C10	AJ5V	External SAS HBA card

Requirements

Cabling

Table 4. Cabling requirements for the appliance

Cable	**Type and Usage**
Power Cords	Use only the power cords that are supplied with the appliance. Do not use another type of cord. Do not use extension cords. If extra power cords are needed, contact IBM Support.

Chapter 3. Appliance physical interface

This section provides an overview of the components and summary of appliance features.

External features

The front panel of the system is shown below in the figure. Each drive is mounted on a drive carrier assembly with a push-down lever for quick installation and removal. Each populated disk drive carrier has an LED display that indicates the status of the disk drive (see Table 2):

Table 5. Disk drive LED status

Status	**Color**
No drive present	Off
Activity	Flashing Green
Idle – no activity	Off
Fault	Amber

CAUTION:
To maintain proper airflow and cooling inside the chassis, all drive slots must have a disk driver carrier or tray. The system should never be operated with empty drive slots.

Note: See the figure showing Right Front Panel Detail – SFF ODP for more details about the Power/LED display features.

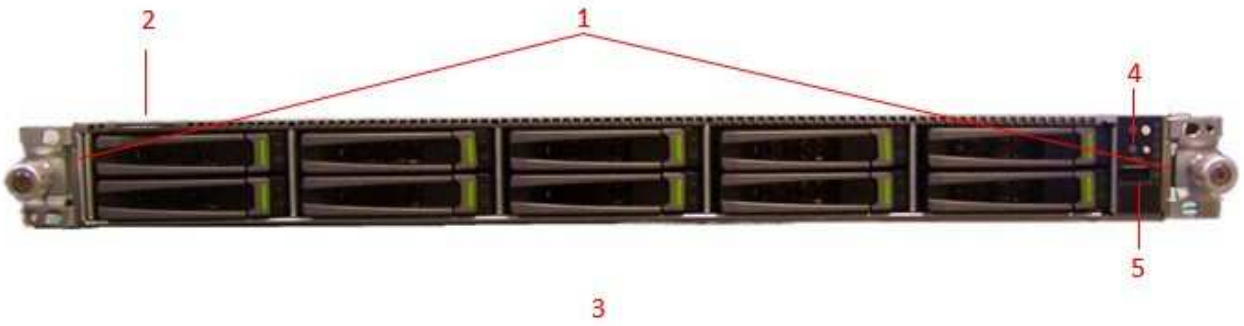


Figure 1. Front Panel Features for 2.5" SFF Drives

Table 6. Front Panel Features for 2.5" SFF Drives

Item	**Description**
1	Left/Right Handle
2	Pull Tag
3	SAS/SATA Drives Bays
4	Operational Display Panel (ODP)
5	USB 2.0 port

Figure 2. Right Front Panel Detail – SFF ODP

Table 7. Front Panel Features for 2.5" SFF Drives

Item	Description
1	Power On/Off
2	UID
3	USB 2.0 (1x) port
4	System Power LED • Off: There is no AC power to the appliance • Green: AC power is on and power is supplied to all components.
5	UID
6	Network Activity
7	Power Fault
8	System Health

Figure 3. Rear Panel Features

Table 8. Front Panel Features for 2.5" SFF Drives

Item	Description
1	PSU 2
2	PSU 1
3	UID
4	10GbE LAN Port (2x)
5	USB 3.0 ports (2x)
6	Management Ethernet (IPMI) port
7	VGA port

System Components

The following figure identifies the components of the system and displays the locations of the components which you can replace (CRU).

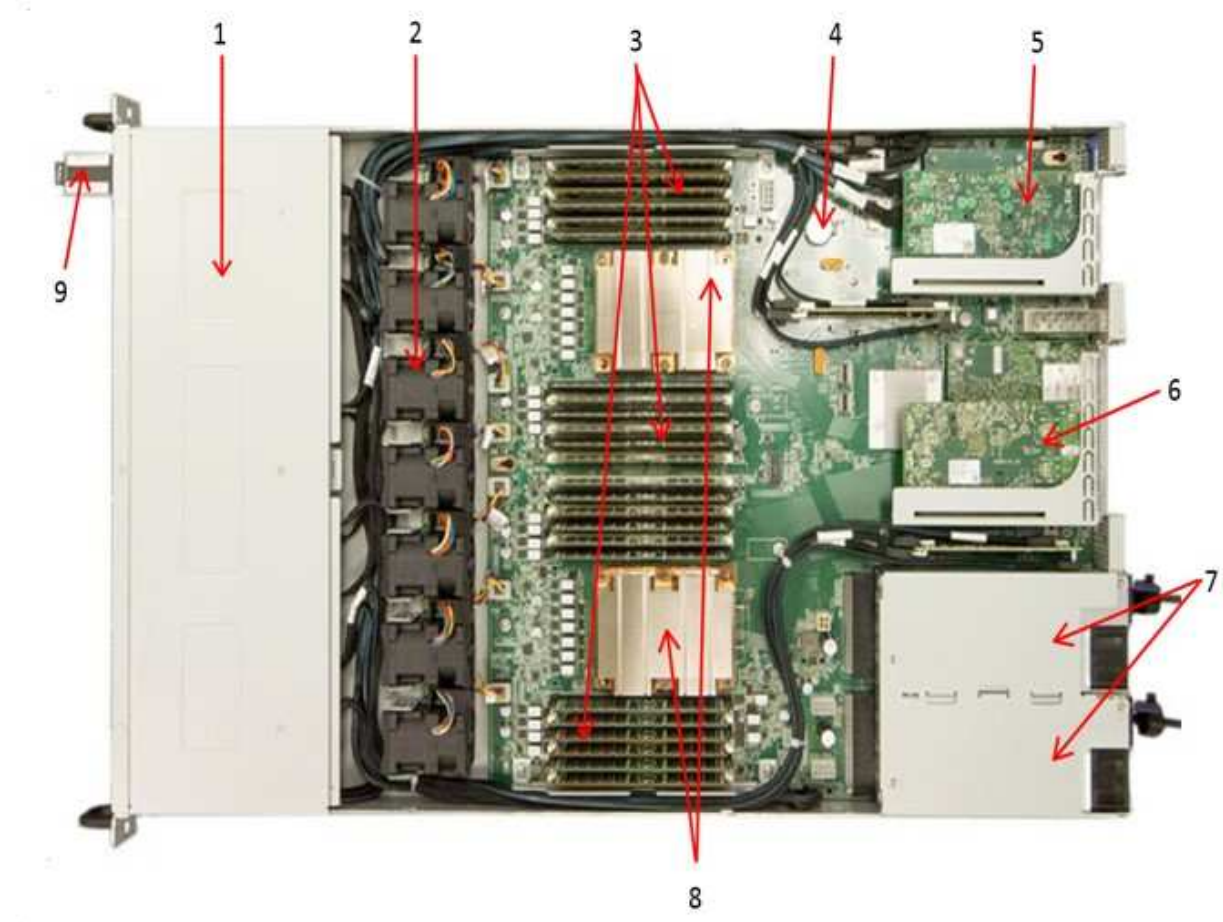


Figure 4. System Components

Table 9. System Components

Item	Description
1	OS drives
2	System Fans (7x)

Table 9. System Components (continued)

3	DIMM Slots[1]
4	CMOS battery
5	PCIe Slot for (C10) External Disk Controller (M10 Raid Card
6	Not used
7	PSU (2x)
8	CPU Heat Sink and CPU[1]
9	Asset Tag

[1] Field Replaceable Unit (FRU) only

Chapter 4. Install the appliance into a rack

Many racks are on the market, which means that the assembly procedure might differ slightly. This rail fits a rack between 24" and 37" deep.

Prepare for installation

Choose a setup location

Decide on a suitable location for the rack unit that holds your appliance.

Table 10. Appliance location considerations

Factor	Comments
Restricted access location	Install this appliance in a physically secure, limited access location only, such as a service closet or data center.
Clean environment	Situate the appliance in a clean, well-ventilated, dust-free area.
Ambient operating temperature	If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment might be greater than the ambient temperature of the room. Install the equipment in an environment compatible with the maximum rated ambient temperature (TMRA) for the appliance.
Sufficient airflow	Mount the equipment into a rack so that the amount of airflow that is needed for safe operation is not compromised. Leave enough clearance in front of the rack to open the front door completely (36 inches). Leave about 36 inches of clearance behind the rack for sufficient airflow and ease in servicing.
Mechanical loading	Mount the equipment into a rack so that a hazardous condition does not arise due to uneven mechanical loading. Install heavier items into the bottom of the equipment rack to keep the rack stable. Mount equipment in a rack evenly to prevent a later hazard.
Circuit overloading	Give consideration to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern. **Note:** The maximum current draw is printed on a label on the appliance power supplies. The system can draw more than 15 Amps at startup (inrush current).
Reliable ground	A reliable ground must be maintained always. To ensure grounding, the rack itself should be grounded. Give particular attention to power supply connections other than the direct connections to the branch circuit, such as the use of power strips.
Power supply	Use a regulating uninterruptible power supply (UPS) to protect the appliance from power surges and voltage spikes, and to keep your system operating in a power failure.
Heat, electricity, and EMI	Avoid areas where heat, electrical noise, and electromagnetic fields are generated.

Prepare the rack

1. Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
   - In single rack installations, attach stabilizers to the rack.
   - In multiple rack installations, couple the racks together.
2. Check that the rack is stable before extending an appliance from the rack.
3. Extend only one appliance at a time. Extending two or more simultaneously can destabilize the rack.

4. Determine the placement of each appliance in the rack before you install the rails.
5. Install the heaviest appliances (usually the Slicestor® appliances) on the bottom of the rack first, and then work upward.

Unpack and inspect the box and its contents

1. Inspect outside of box for damage.
2. Note if the box was damaged in any way.
3. Open the top of the box and inspect for damage.
4. Remove all of the components from the packaging and inspect for damage.
5. Arrange for assistance when lifting or installing the appliance in a rack. Use a forklift or lift table to prevent possible injury.

   CAUTION:
   To prevent personal injury and equipment damage, have someone assist you during the equipment installation. If necessary, reduce the weight of the enclosure by removing the hard disk drives and power supply units during installation.

   When using the lifting straps, keep them even and at the same level always. Otherwise, the system can slide to one side, and possibly out of the straps completely. Make sure that the rubberized sides of the lifting straps are against the chassis metal.
6. If the appliance itself shows damage, file a damage claim with the carrier who delivered it.

In addition to the appliance, the box includes:

- Rail kits
- Cables
- Manual
- A documentation package
- All feature order component

Install the appliance

Attention: Allow the enclosure assembly to acclimate to room temperature before installation. Store disk drives at room temperature for at least 2 hours before use.

Identify the sections of the rack rails

The following is a list of rack mounting hardware that is included with your system for setup and installation:

- Two rail assemblies (one for each side of the appliance chassis)
- Two attached front appliance handles
- Two attached thumbscrews for fastening the appliance to the rack

CAUTION: Be aware that appliance handles are not to be used for lifting the system, they are only to be used to slide the system into the rack.

The rack mounting kit contains two tool-less slide rail assemblies that are marked as left/right specific. The slide rail attaches to the rack posts and the appliance drops into the rack.

Note: This rail kit supports 9.2*9.2mm, 9.5*9.5mm square hole racks, 07.1mm round hole racks, or #10-32 thread hole racks. For the purposes of this documentation, the examples in this section illustrate mounting/unmounting the rail kit with square hole racks.

Mounting the slide rail rack assembly

1. Select where you want to place the appliance into the rack.
2. Each slide rail is marked with FRONT to indicate the front of the rail and either a R (front right) or a L (front left) to indicate the which side of the rack it should be attached.
3. Starting with either the left or right side of the rack, align the slide rail pins on the rear of the slide rail with the holes in the selected U on the rear of the rack, as shown in the following figure.

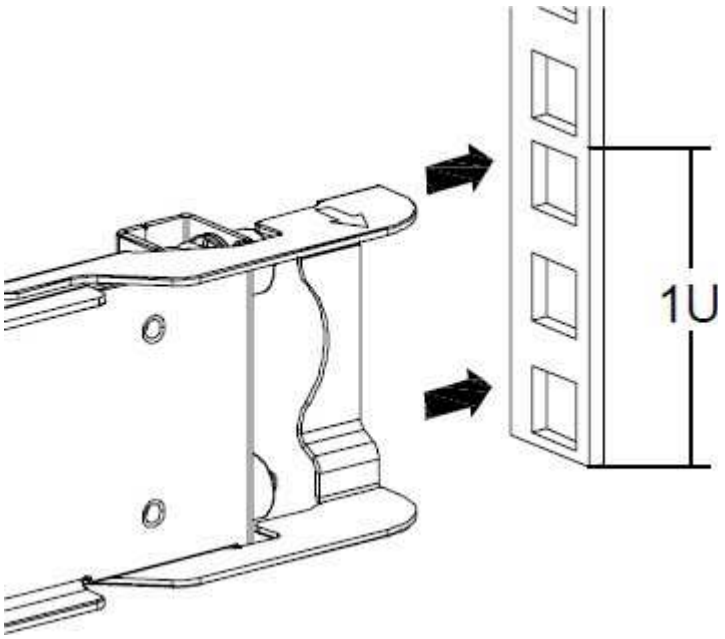


Figure 5. Mounting slide rail into rear of rack

4. Push the rail against the rack, then push the rail into the rack holes until it latches into place, as shown in the following figure.

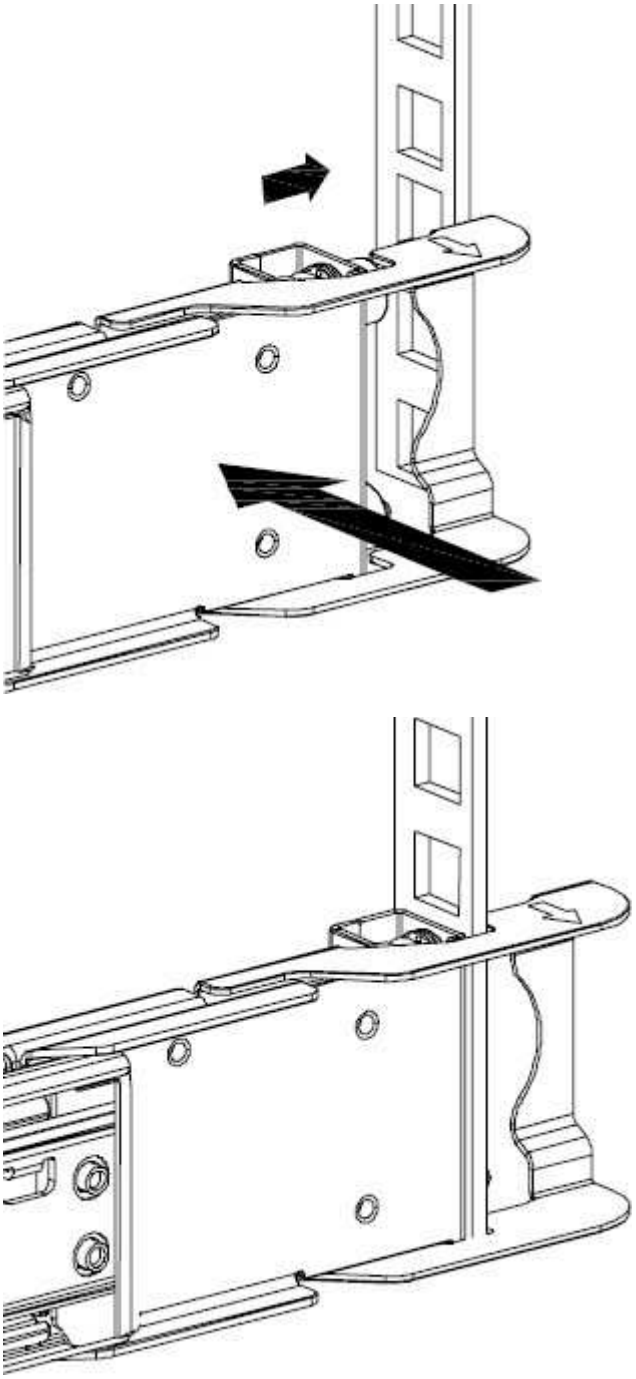


Figure 6. Attaching rail to rear of rack

5. Pull out the Front locking bracket and align the slide rail pins with the holes in the selected U on the front of the rack and insert into the front of the rack, as shown in the following figure.

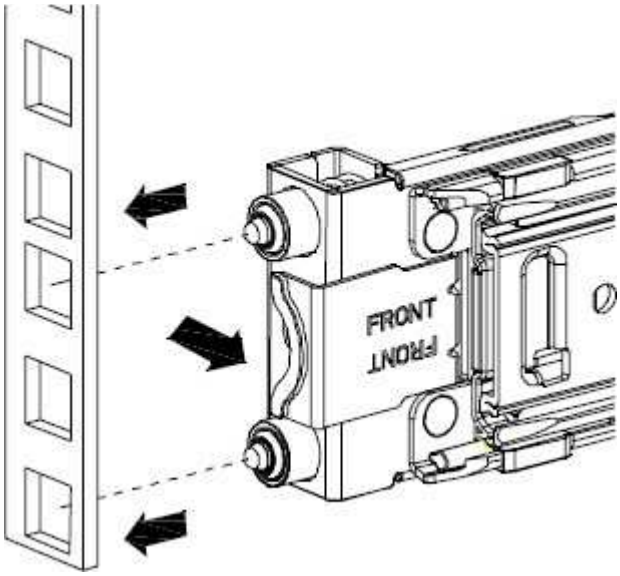


Figure 7. Mounting slide rail into front of rack

6. Push the Front locking bracket over the rail until it latches into place, as shown in the following figure.

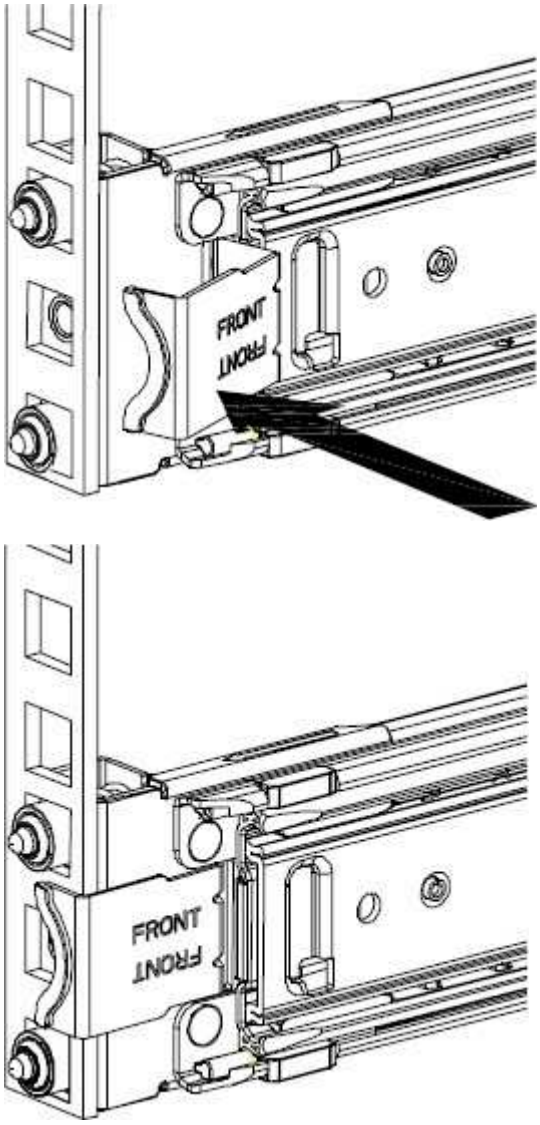


Figure 8. Attaching rail to front of rack

7. Repeat steps 3-6 to install the other rail into the rack. Make sure that each front latch is fully seated.
8. Verify that the slide rails are mounted at the same height.

Unmount the slide rail rack Assembly

1. Release the front of the slide rail from the rack first, by pushing out the Front locking bracket, as shown in the following figure.

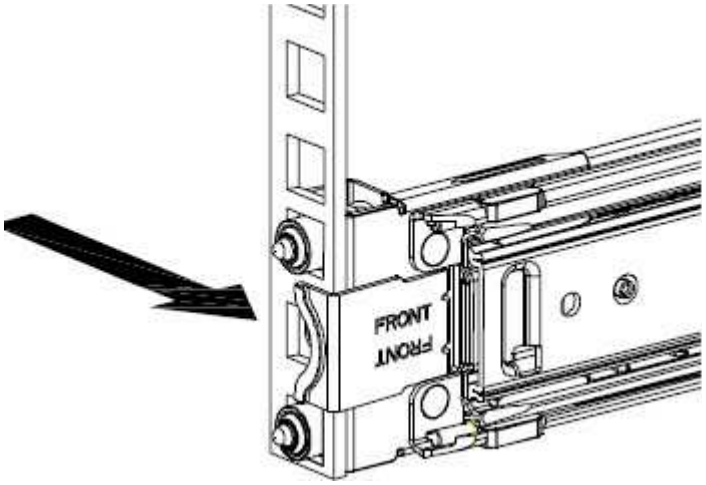


Figure 9. Unmount front of rack

2. Detach the front of the slide rail from the rack as shown in the following figure.

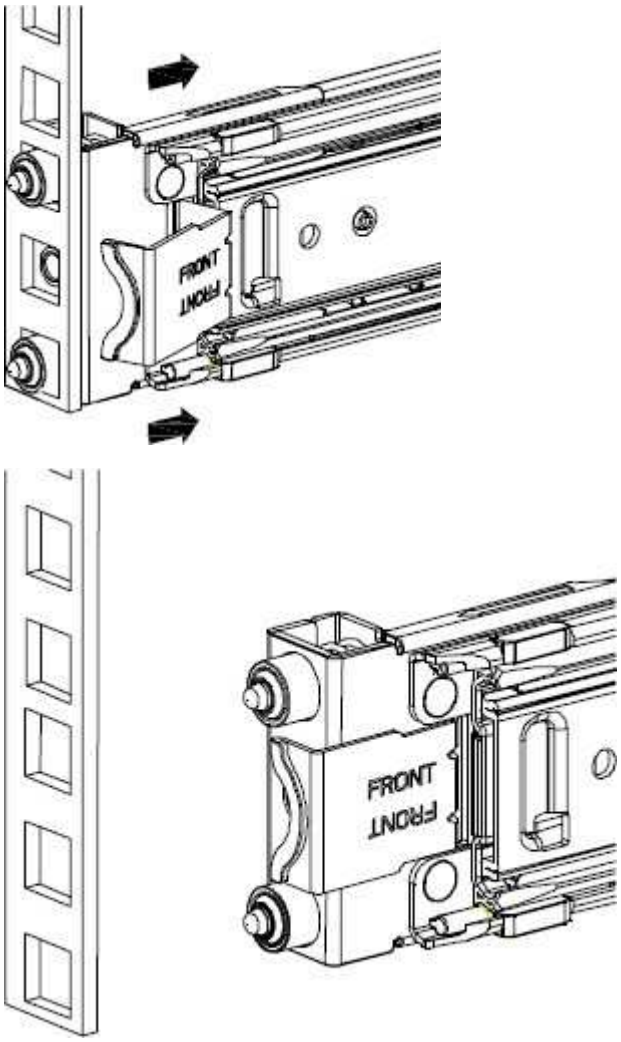


Figure 10. Detaching rail from front of rack

3. Unmount the rear of the slide rail next by pushing out the slide rail from the rack, as shown in the following figure.

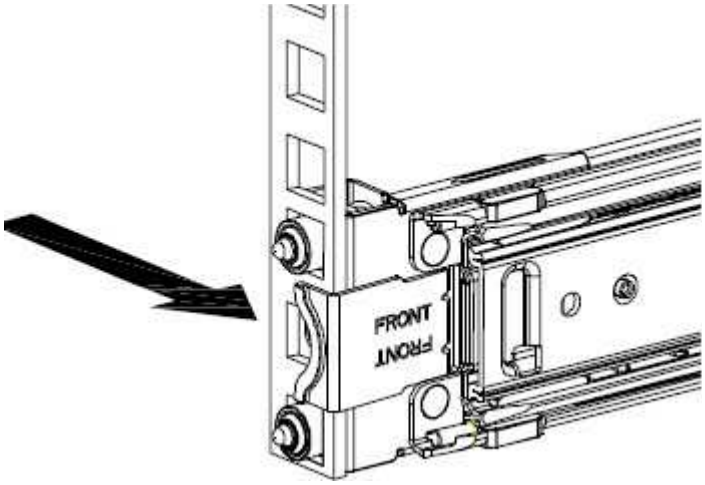


Figure 11. Unmount rear of rack

4. Pull slide rail away from the rack to detach as shown in the following figure.

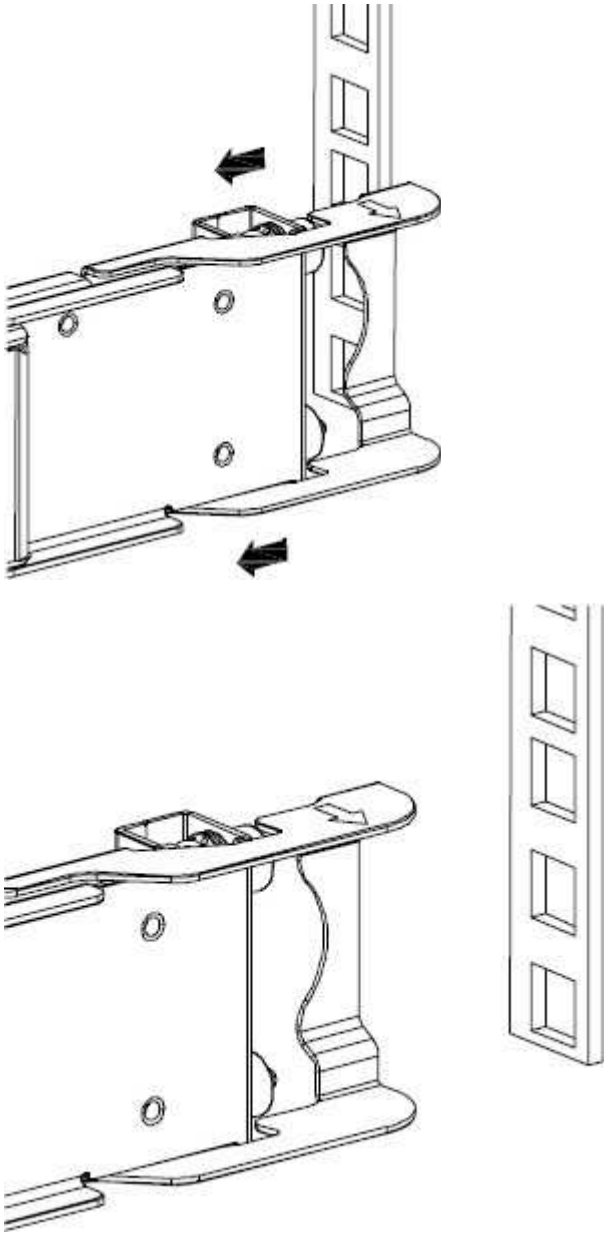


Figure 12. Detaching rail from rear of rack

Installing the appliance into the rack

1. Pull the slide rails forward until they click into place as shown in the following figure.

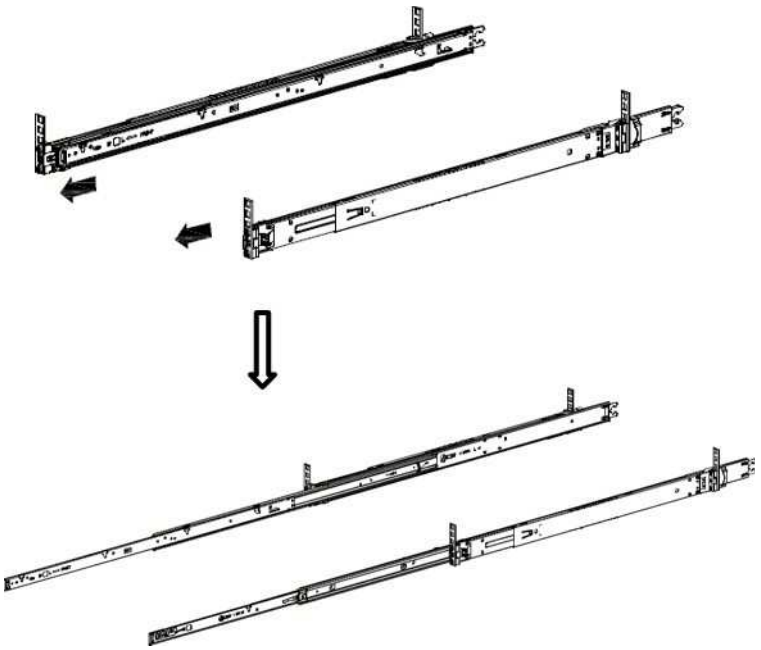


Figure 13. Pulling out slide rails

2. Carefully lift the appliance and tilt it into position over the slide rails so that the rear nail heads on the appliance line up with the rear slots on the slide rails, as shown in the following figure.

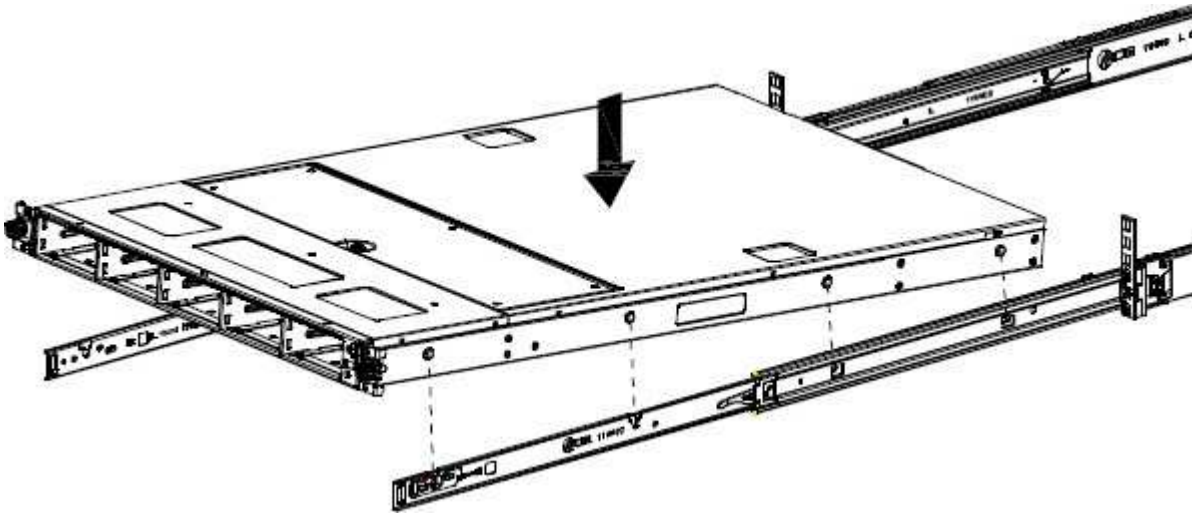


Figure 14. Inserting appliance into slide rails

3. Slide the appliance down until the rear nail heads slip into the two rear slots, and then slowly lower the front of the appliance until the other nail heads slip into the other slots on the slide rails, as shown in the following figure.

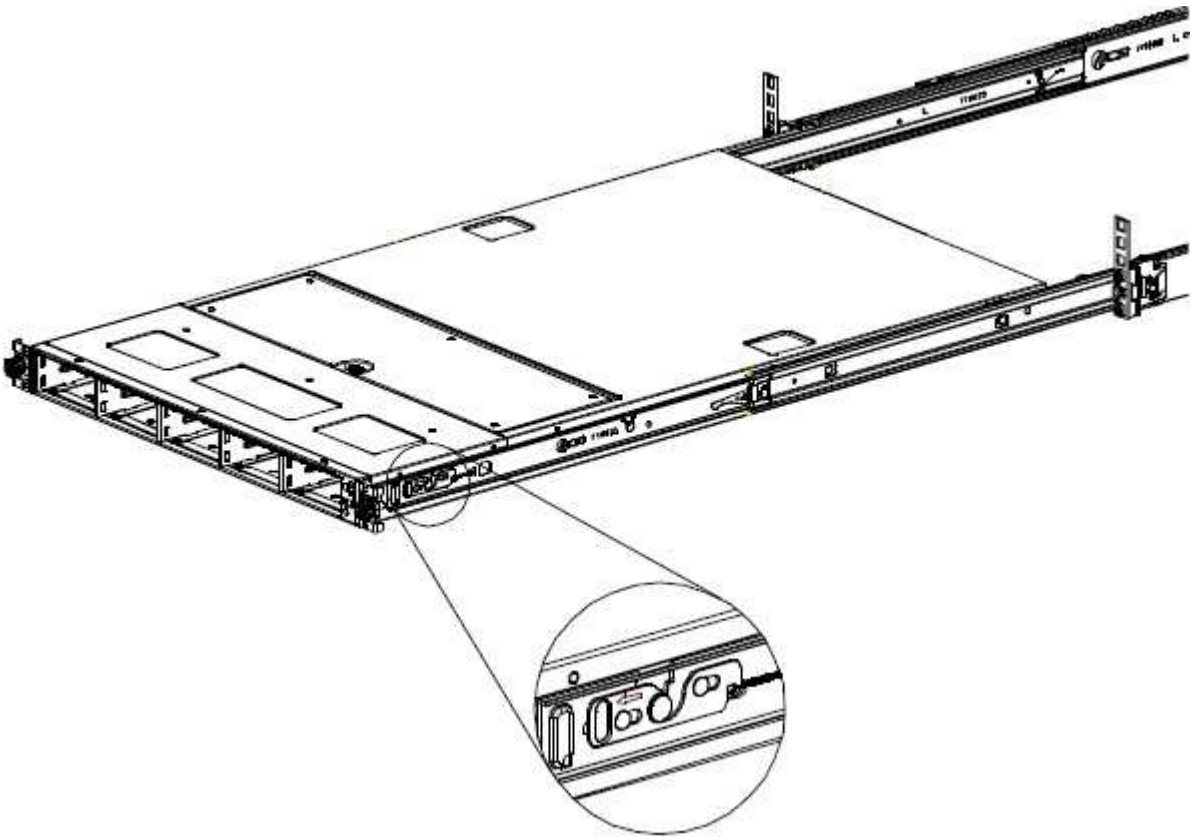


Figure 15. Securing appliance in slide rails

4. Push up the side lock to push the appliance all the way into the rack until it clicks into place, as shown in the following figure.

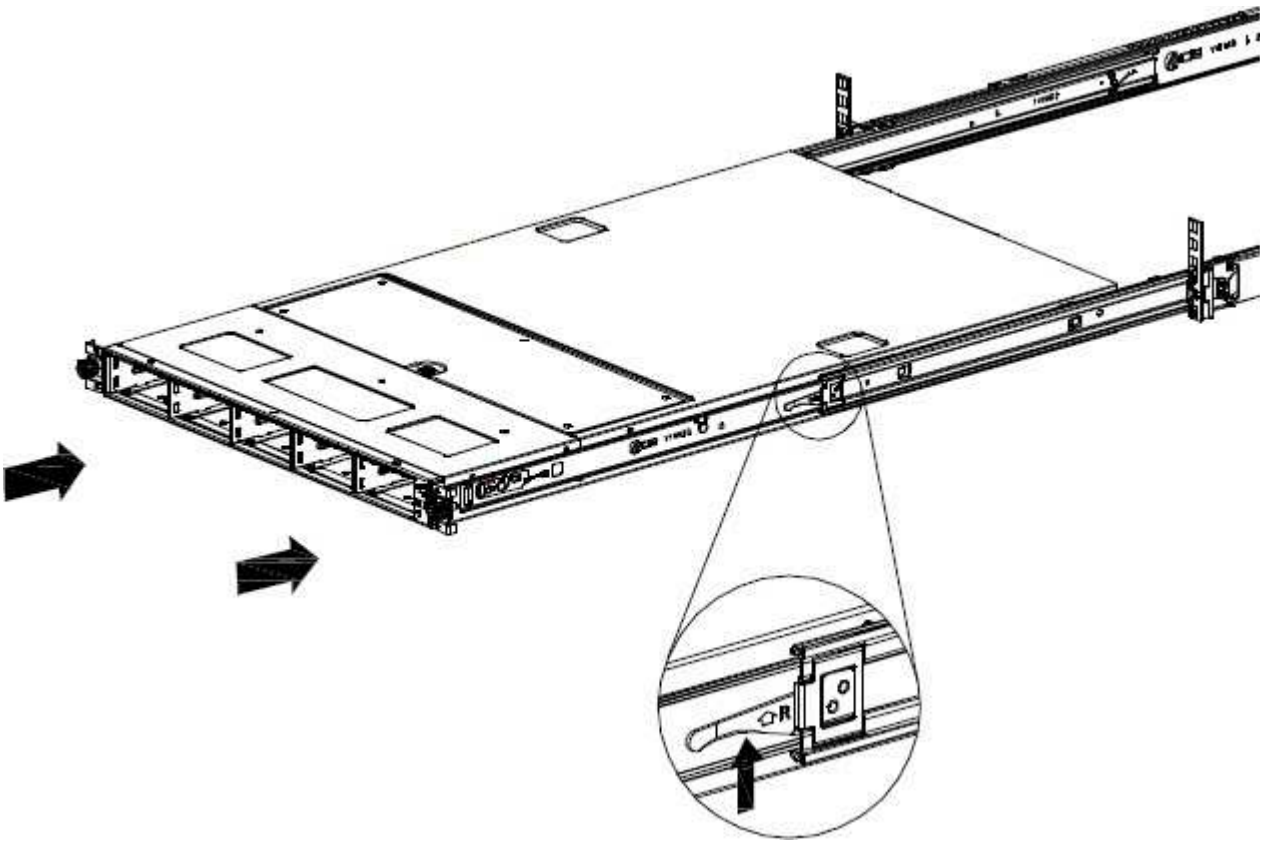


Figure 16. Unlock Inner membrane of Rail

5. Once the appliance is all the way into the rack, use two thumbscrews on each front appliance handle to secure it into the rack, as shown in the following figure.

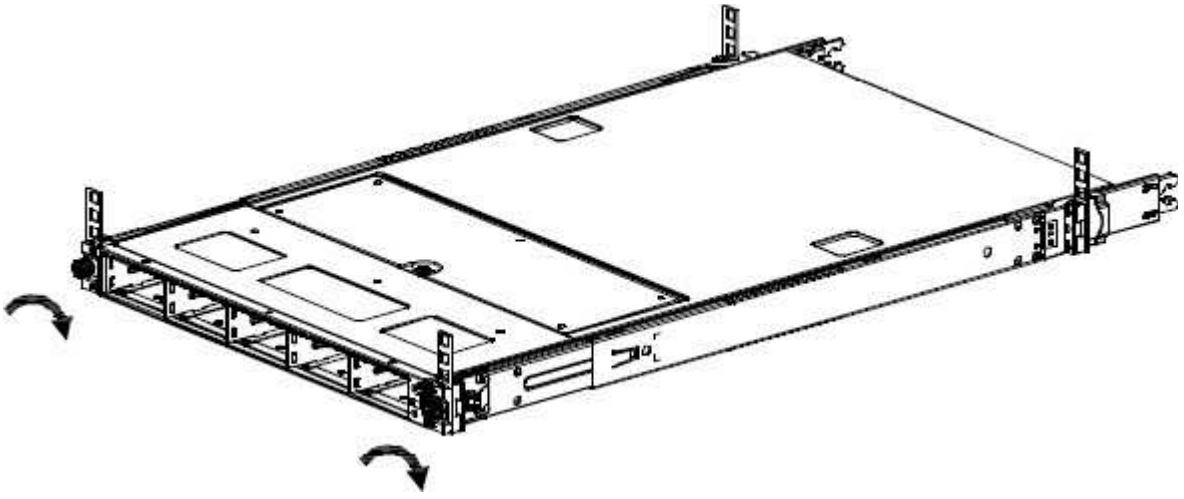


Figure 17. Attaching thumbscrews to front of the appliance

Removing the appliance from the rack

1. Unscrew the thumbscrews on each side of the rack to unsecure the appliance, as shown in the following figure.

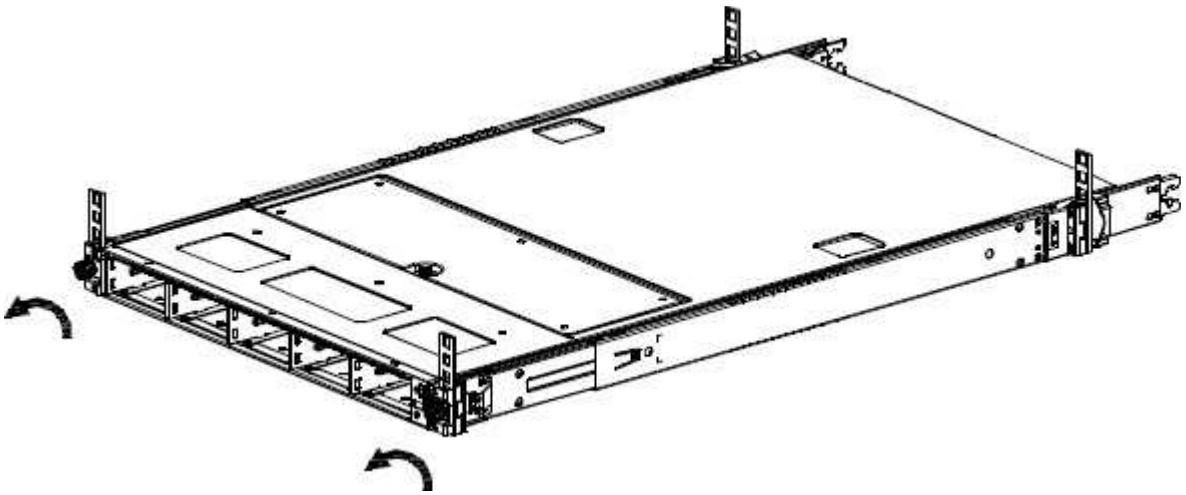


Figure 18. Detaching thumbscrews from front of appliance

2. Grasp the front handles of the appliance and pull the unit out all the way until the rail clicks into place, as shown in the following figure.

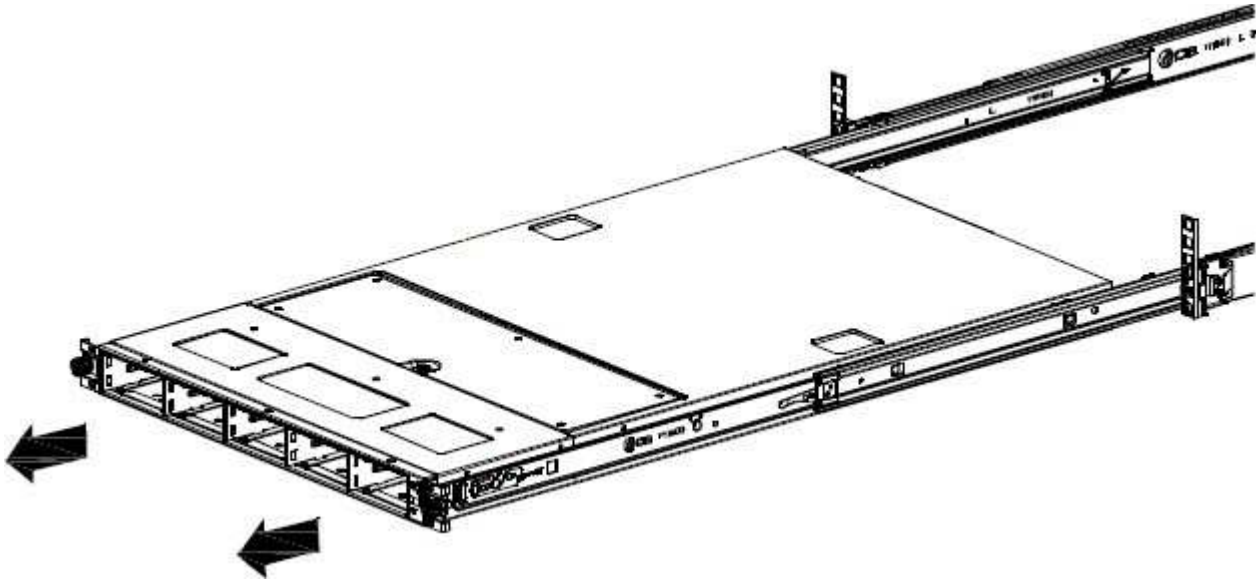


Figure 19. Pulling appliance out from rack

3. Release the appliance lock to unlock the rail as shown in the following figure.

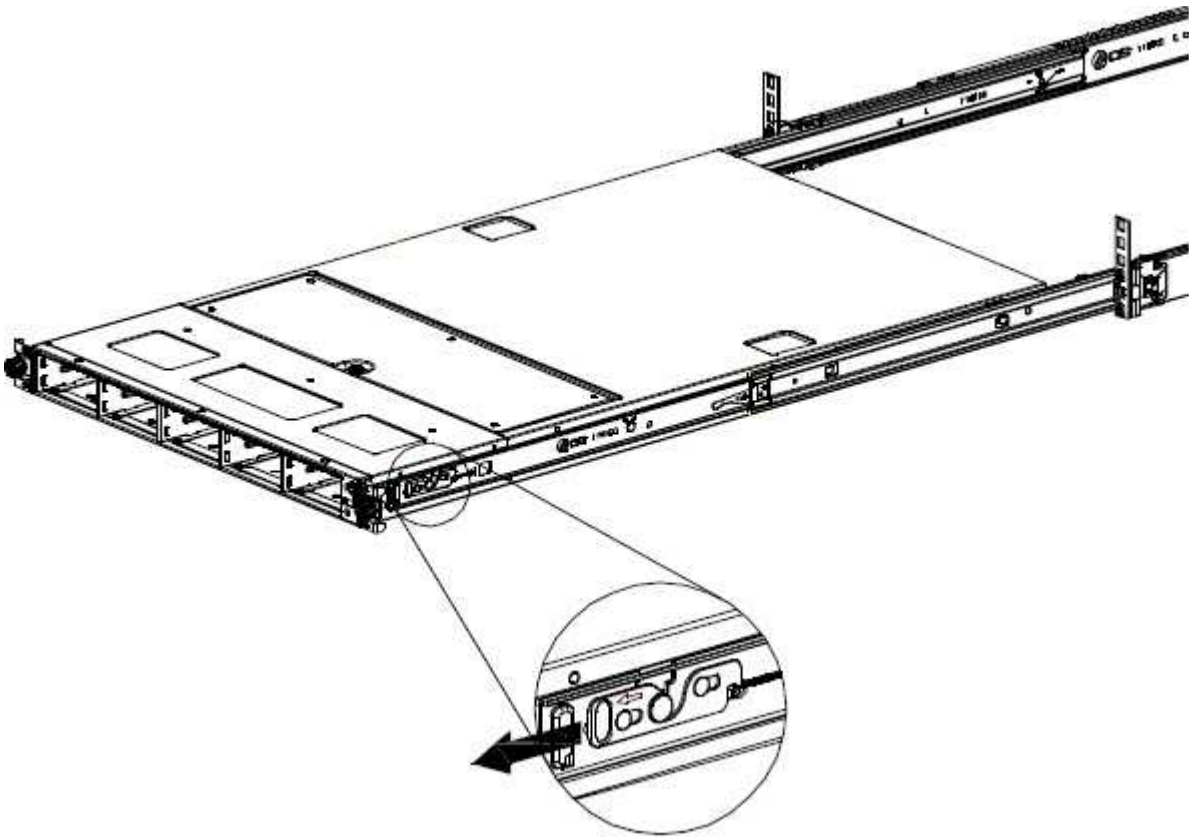


Figure 20. Releasing appliance from rail

4. Place your hands underneath the appliance and carefully push it up and lift it off the rails, as shown in the following figure.

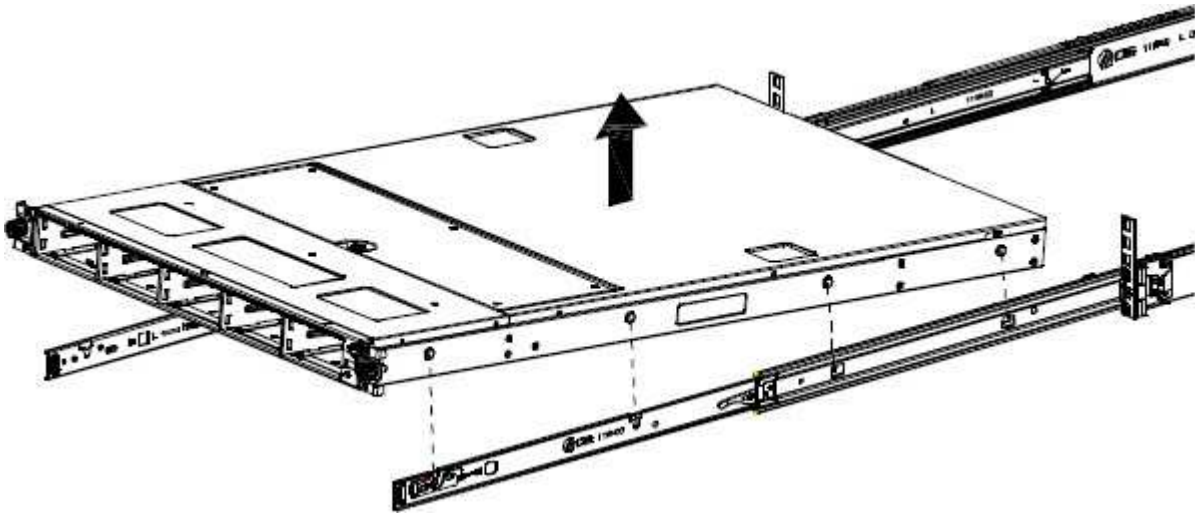


Figure 21. Removing appliance from slide rails

5. After you remove the appliance, release the side lock and push the inner member into the rail and the rail back into the rack until it clicks into place, as shown in the following figure.

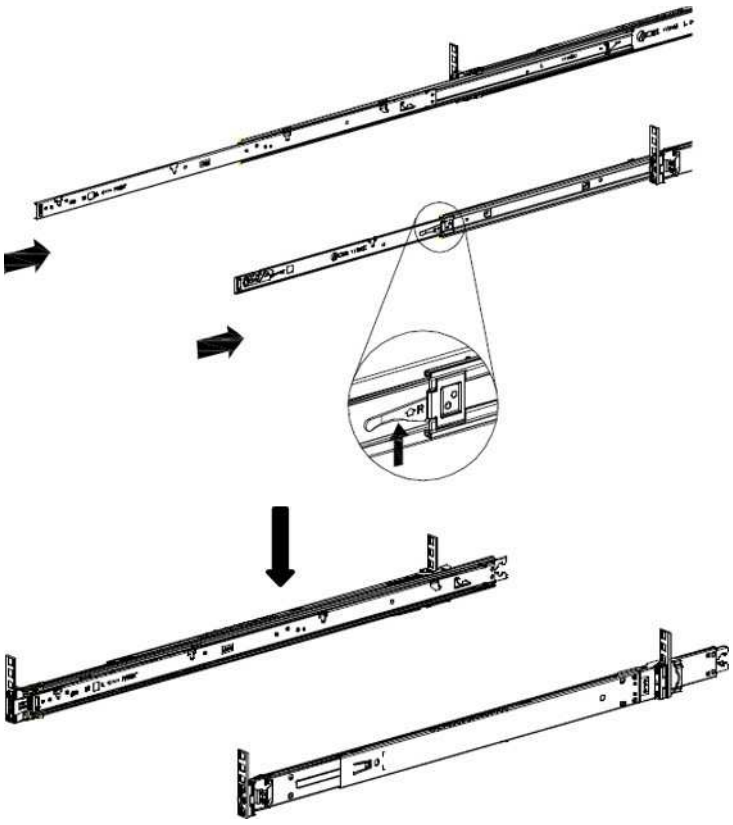


Figure 22. Sliding rail back into rack

Chapter 5. Supply power to the appliance

Power up or power down the appliance

Power up the appliance

1. Attach a supplied power cord to the socket of each PSU in your appliance, as shown below in the figure.
2. Attach the power cord to a grounded PDU on the rack.
3. Turn on your system by pressing the Power On button located on the right front panel, (see Figure 1, External Features in Section 3.1).
4. You can verify power status by checking the Power Status LED located on the PSU. A solid green LED light indicates that the appliance is in main power mode and power is supplied to all the appliance components.

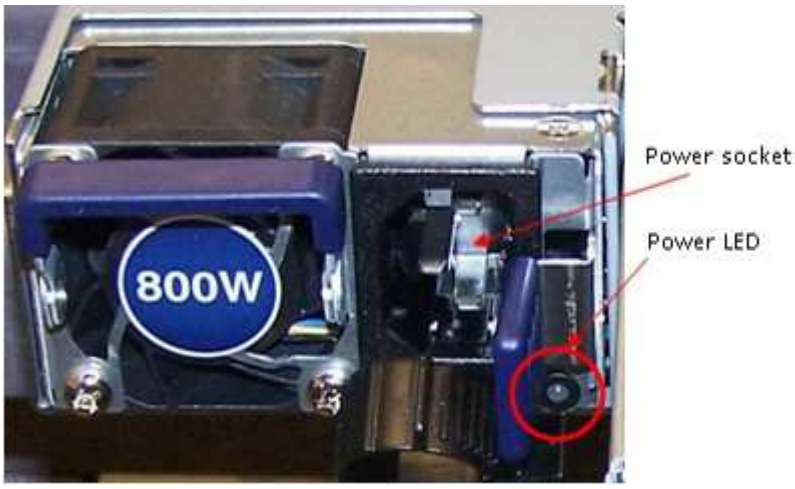


Figure 23. Connecting PSU to Power Source

CAUTION: Do not attempt to modify or use the AC power cord if it is not the exact type required to fit into the grounded power outlet.

Power down the appliance

1. Check the color of the Power Status LED.
   a. Green means that the appliance is in main power mode and must be shut down before it can be safely powered off. In this mode, power is supplied to all appliance components and any operating system that your drives can run.
   b. Amber means that the appliance is already in standby mode and can be safely powered off. In this mode, power is supplied only to the processor and the cooling fans and it is safe to power off the appliance from this mode.

   .
2. Invoke a graceful shutdown by doing the following.
   a. Log in to the device as localadmin..
   b. At the command prompt, type poweroff.
3. Disconnect the power cords from the PSUs to completely power off the appliance.

CAUTION:
To avoid data loss or damage to your operating system, you should always invoke a graceful shutdown of the operating system.

Chapter 6. Maintain the appliance

This section provides information on how to install or replace hardware components for the appliance and covers the following information:

- Required Equipment
- Removing the Appliance Top Cover and Air Baffle
- Installing or Replacing Server Components

Prepare for installation

The following equipment is used to perform the procedures in this section:

Assemble tools

- A #2 Phillips screwdriver and a cage nut tool are needed to install and secure the rails to the appliance.
- Wear a set of leather work gloves when racking the appliance. They help to get a grip on the appliance and avoid injury from any metal edges.
- Electrostatic discharge (ESD) strap or other grounding equipment such as a grounded mat.

CAUTION:
Do not use of any sort of hammer to secure the rails on the appliance. A hammer might damage the drives within the chassis and possibly void the warranty.

When handling appliance components, wear an ESD strap to avoid damage.

Replace the appliance cover and air baffle

This section covers removing or replacing the top cover of the appliance and the air baffle before replacing any of the components.

CAUTION:
Make sure that the power is shut down and the appliance is unplugged and removed from the rack. You must follow this procedure before opening the top cover.

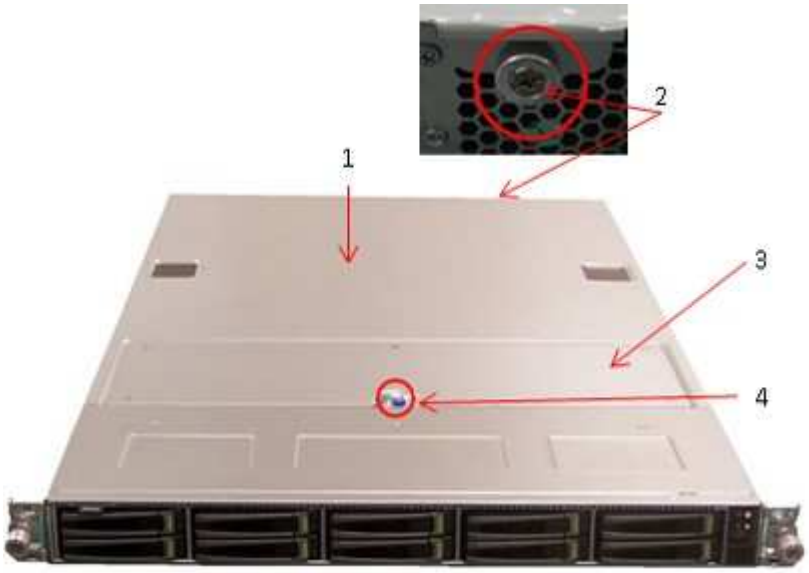


Figure 24. Removing the Appliance and Fan Cover

Table 11. Appliance and Fan Cover Legend

Item	Description
1	Appliance cover
2	Cover thumbscrew
3	Appliance fan cover
4	Appliance fan cover thumbscrew

1. Once power is off and all power cords and necessary external cables are disconnected, open the appliance cover, as shown in the above figure.
   a. Loosen the thumbscrew at the rear of the chassis.
   b. Grasp the thumb indentations on the top cover and push the cover toward the rear of the appliance until it stops.
   c. Lift the top cover straight up from the appliance and set it aside.
   d. To remove the fan cover only, see the section on "Remove or Replace the Fan Cover."
   e. To install or replace the appliance cover follow this process:
      1) Align the appliance cover with the chassis then slide the cover toward the front of the chassis until it is secured.
      2) Tighten the thumbscrew at the rear of the chassis to lock the appliance cover in place.
      3) To replace the just the fan cover, see the section on "Remove or Replace the Fan Cover."
2. Remove the air baffles, as shown in the following figure.
   a. Remove the air baffle or baffles by placing your fingers under the top of the air baffle, then lift it carefully out of the appliance.
   b. Set the air baffle safely aside.

      CAUTION:
      For proper cooling and airflow, make sure you the replace the air baffles and appliance cover before you power on the appliance. Operating the appliance without the air baffles and appliance cover may severely damage the appliance components.

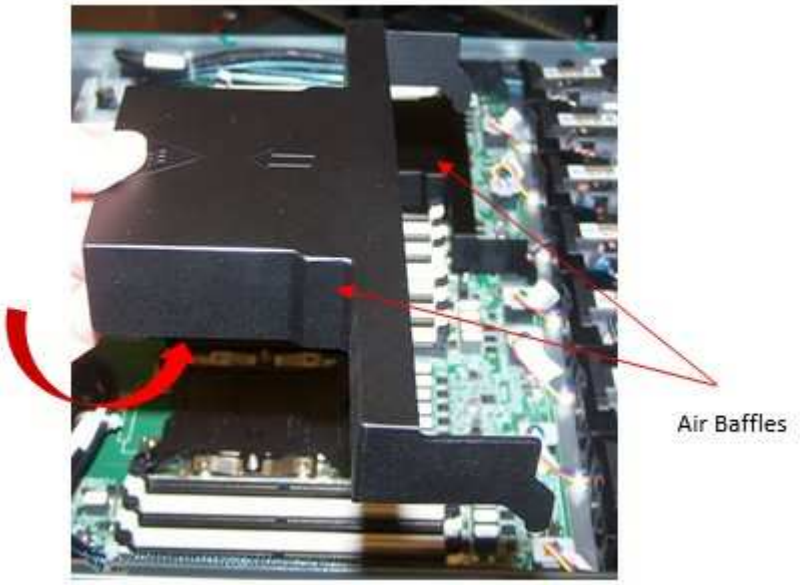


Figure 25. Removing Air Baffles

c. To replace the air baffles: follow this process:
   1) Lay the air baffles on top of the CPUs until they are properly seated, as shown in the following figure.
   2) When replacing either of the air baffles, make sure that they are free of fan cables or any small components to prevent any damage.

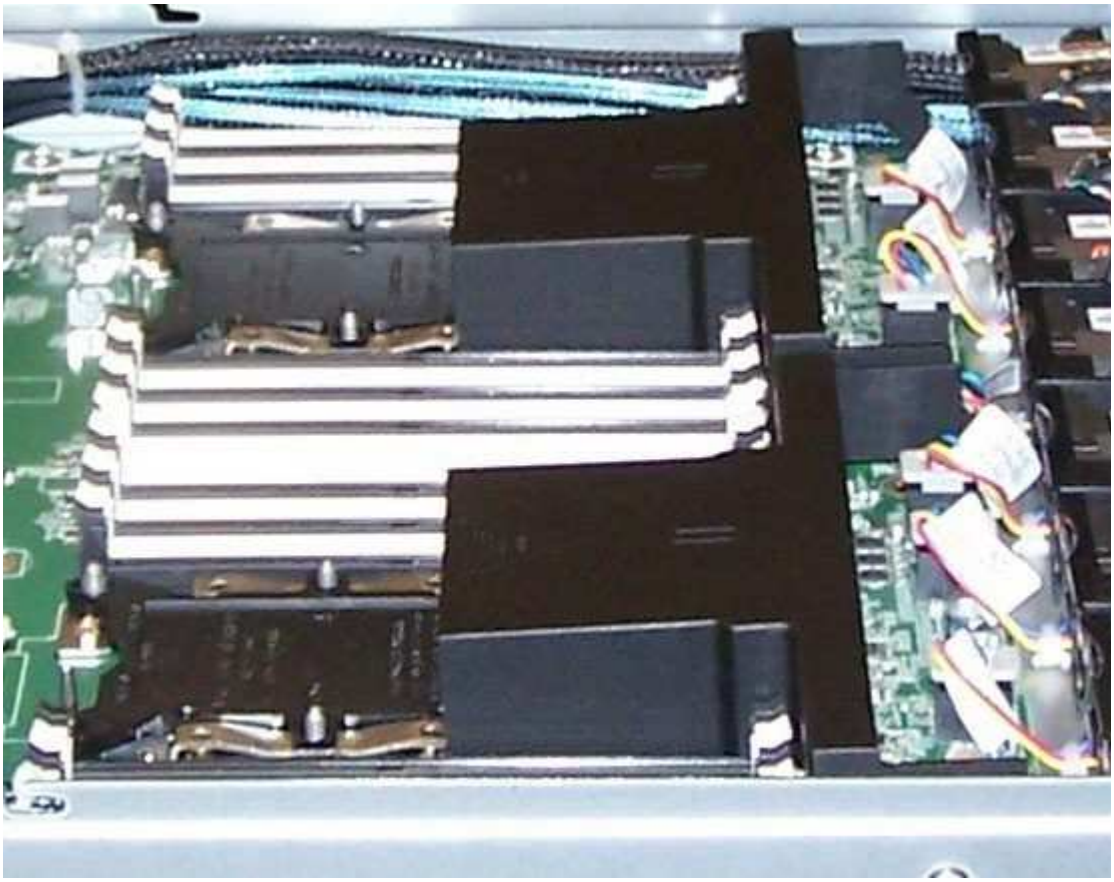


Figure 26. Replacing Air Baffles

CAUTION:
Do not let the air baffles press on the fan cables or any components as they might damage them.

Remove or Replace the Fan Cover

This section covers how to access the fans, and remove the fan cover.

Note: Because the fans are hot-swappable, you do not have to power off the appliance before removing the fan cover.

1. To remove the fan cover:, loosen the thumbscrew as shown in the following figure.

Figure 27. Loosen fan cover thumbscrew

2. Pull up on thumbscrew and slide the fan cover forward to disengage fan cover pins from cover slots. Then, lift the cover out and set it aside, as shown in the following figure.

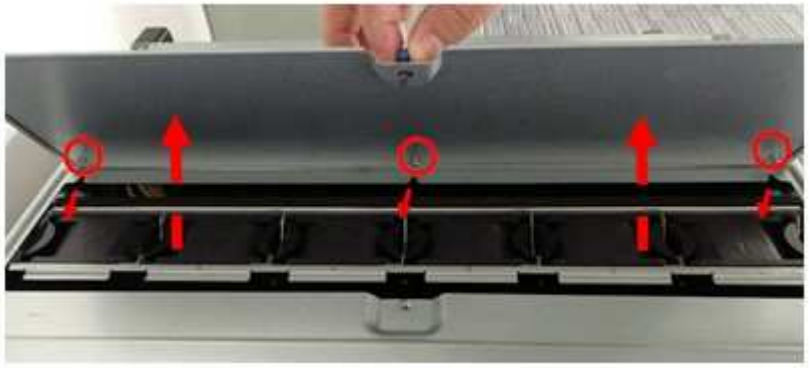


Figure 28. Remove fan cover

a. To install or replace the fan cover:
   1) Align the fan cover pins to the cover slots. Slide the cover back, then down until it fits securely, as shown in the following figure.

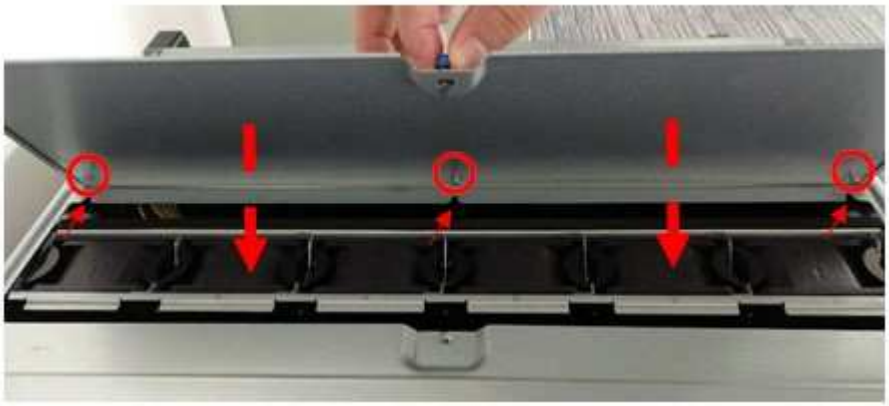


Figure 29. Install fan cover

   2) Tighten the thumbscrew to secure the fan cover to the appliance cover as shown in the following figure.

Figure 30. Secure fan cover

Replace appliance components

This section describes the procedures for replacing appliance components.

Replacing the power supply unit (PSU)

This appliance has two main redundant, hot-pluggable Power Supply Units (PSU) to support the entire system. The following steps cover how to replace a PSU.

1. Unplug the power cord from the PDU and then from the PSU.
2. Pull down the PSU handle and squeeze the thumb latch towards the handle.
3. Holding both handle and thumb latch, pull unit towards you until it is free of the PSU slot, as shown in the following figure.
4. To replace a PSU, insert unit into a free PSU slot.
5. Push unit into slot as far as it will go. You will hear a click when the PSU is locked in place.
6. Attach power cord to the PSU and then to the PDU.

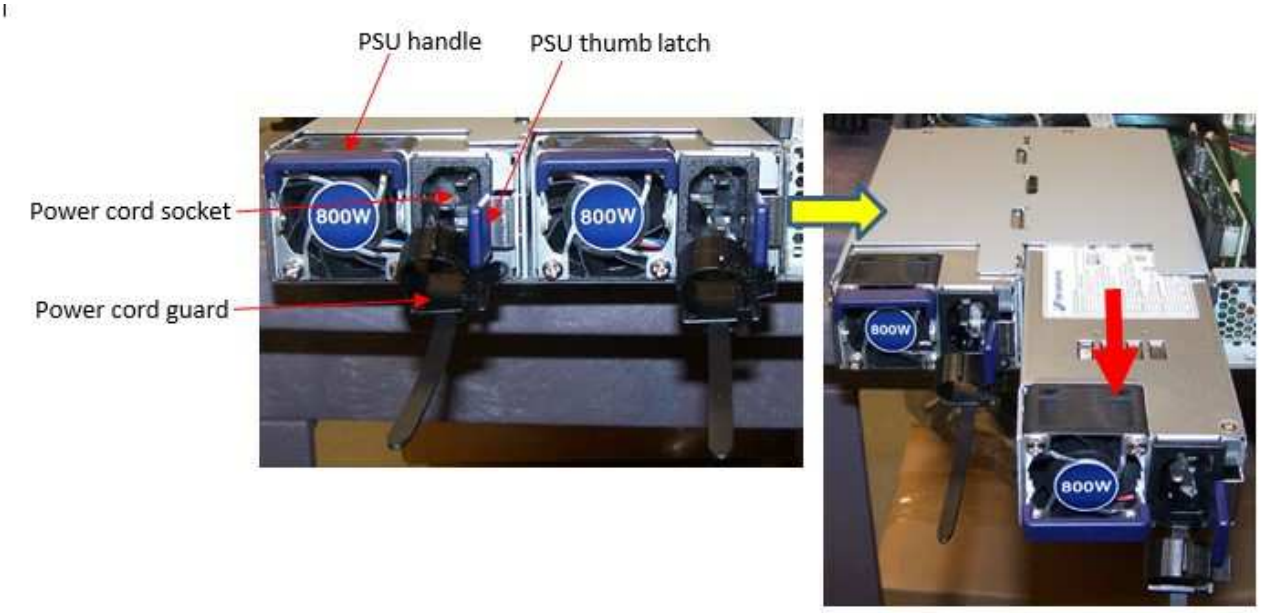


Figure 31. Replacing PSU

Remove and install a drive

Each hot-pluggable 2.5″ drive is mounted on a drive carrier assembly with an ejection lever for quick installation and removal.

Note: Because your drives are hot-pluggable, it is unnecessary to power off your system in order to replace them.

Note: Note: Make sure you take note of the orientation of the drive carrier before pulling it out. The carrier will not fit properly into the bay if not inserted correctly.

The following steps cover replacing and installing ClevOS drives:

1. To remove the drive you are replacing or remove a blank carrier from the drive bay:
   a. Push the colored ejector lever button. The lever will automatically unlatch. Pull the drive carrier out of the drive bay, as shown in the following figure.

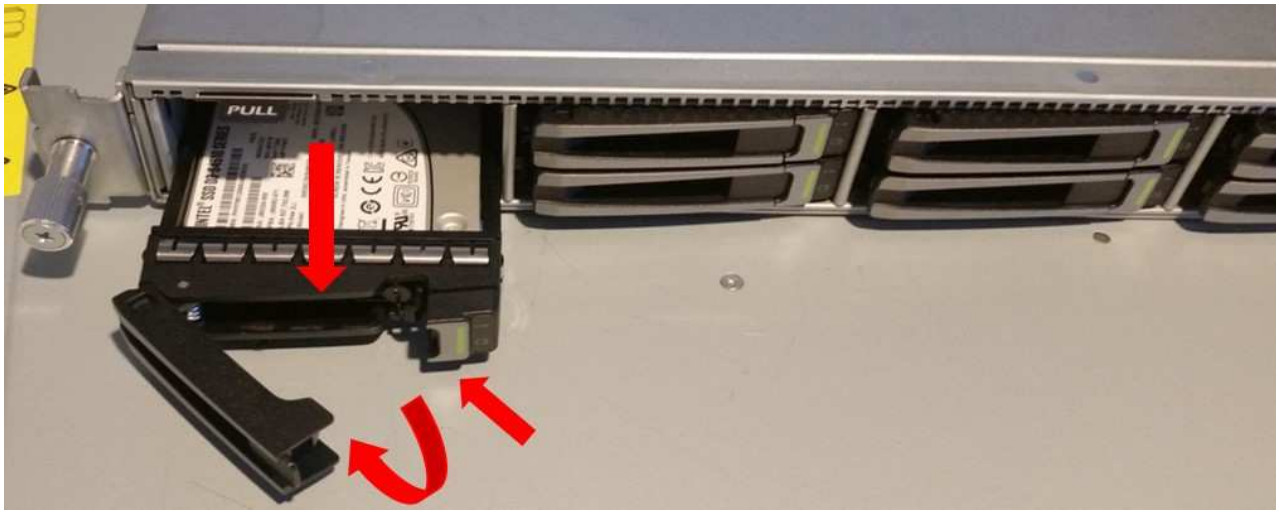


Figure 32. Replacing a drive

b. Grasp the drive carrier firmly and slide it out of the drive bay.

2. To install a drive follow this process:
   a. With the ejector lever on the drive carrier open, insert the assembled drive carrier into the empty drive bay in front of the chassis, as shown in the following figure.

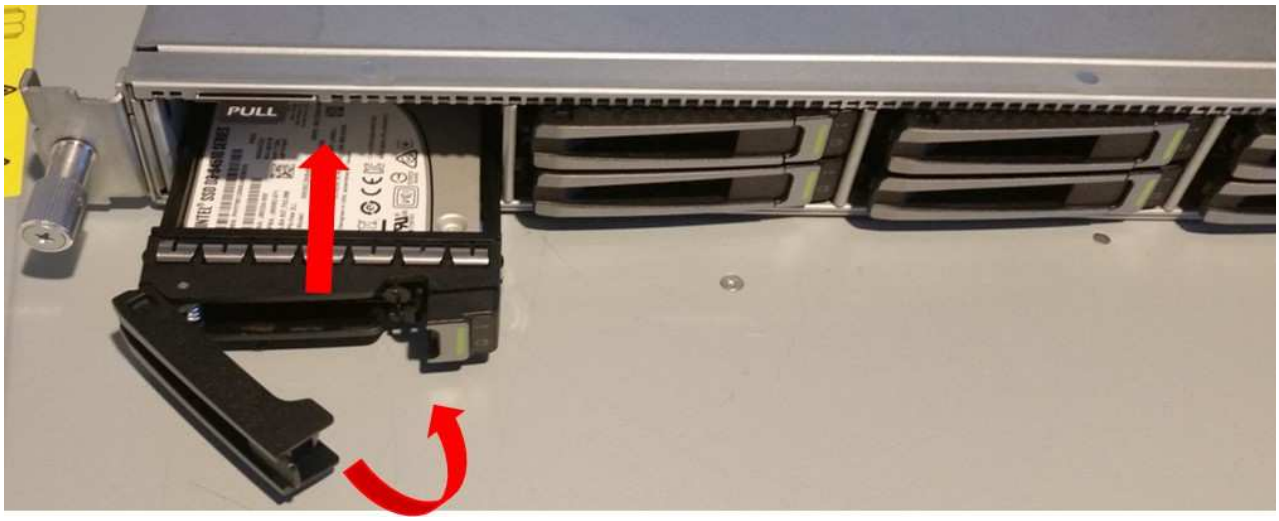


Figure 33. Installing a drive in the front panel

   b. Push the carrier all the way into the slot then close the drive lever to lock it in place.
   c. Repeat the previous steps to assemble and install all other drives into the empty front drive slots.

Remove and install a fan

This section describes the process for removing and installing fans.

Note: Because the fans are hot-swappable, you do not have to power off the server before removing the fan cover.

The following steps cover how to remove a fan:

1. Open fan cover (see the section on Removing or Replacing the Fan Cover).

2. Remove the fan unit by grasping it by the finger hold tabs, as shown in the following figure.
3. Pull the unit straight up until it disengages from its slot.

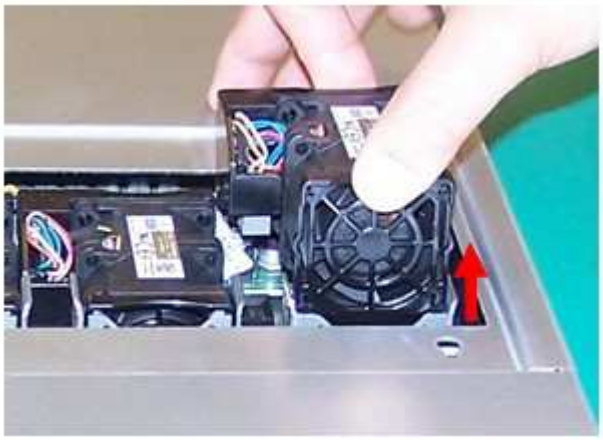


Figure 34. Removing a fan

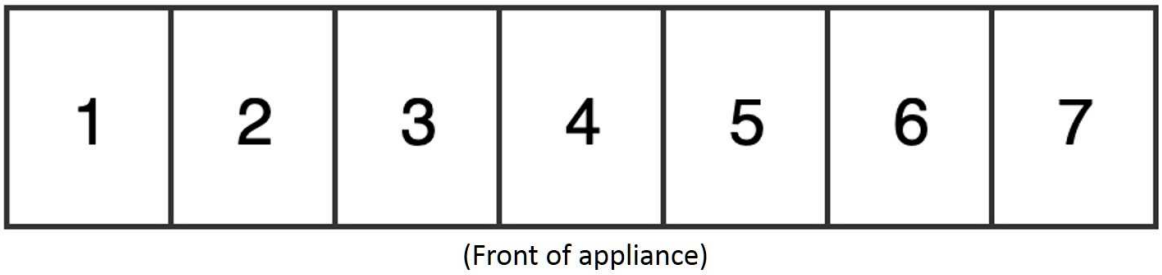


Figure 35. 1U fan enumeration

4. To install a fan, follow these steps:
   a. Grasp the fan unit by the finger holds and place it straight down in its slot, as shown in the following figure.
   b. Make sure the fan connector is seated properly in the connection socket on the slot to secure it.
   c. Replace the fan cover (see the section on Removing or Replacing the Fan Cover).

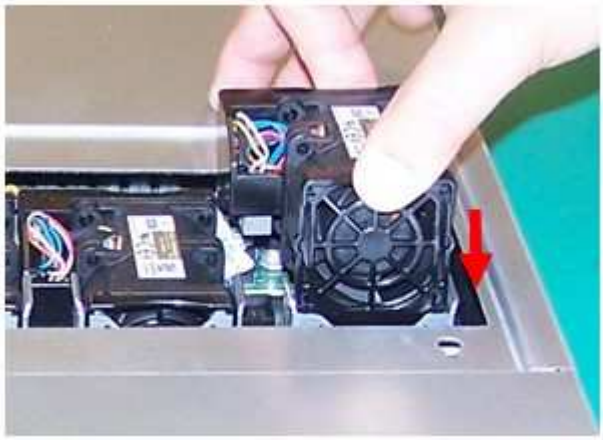


Figure 36. Install a fan

Remove and install PCIe riser cards

This section describes the process replacing and installing PCIe riser cards.

To remove a card, follow these steps as shown in the following figure.

1. Power off and unplug AC cords.
2. Remove any cables that may be attached to the ports of the card.
3. Grasp the riser and pull it straight up and out of the chassis.

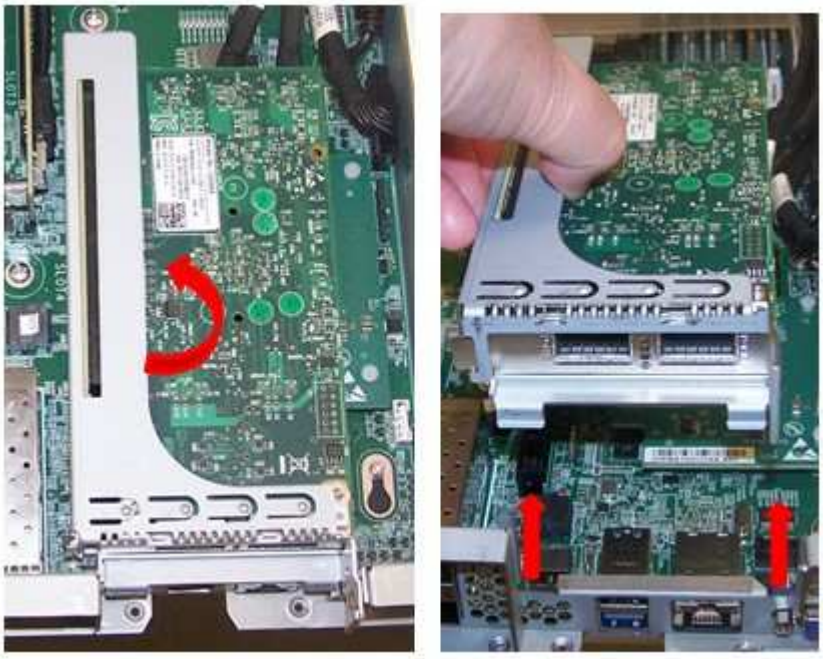


Figure 37. Removing a riser card

4. From the edges of the card, carefully pull it straight out of the PCIe slot and free the connector ports from the riser assembly, as shown in the following figure.

Figure 38. Replacing a riser card

5. To install PCIe riser cards, follow these steps as shown in the following figure.
   a. Power off the system and disconnect all external cables and power cords. 2.
   b. Install the card into the riser by inserting the connector ports through the riser faceplate (1) and aligning the key slot and gold fingers of the card to the PCIe slot.

Figure 39. Installing a riser card

   c. Press the card all the way into the slot. Make sure that the gold fingers are fully engaged.
   d. Align the riser bracket with the rear chassis and press it down until it is secured to the chassis as shown in the following figure.

Figure 40. Installing a riser card to the chassis

e. 5. Re-connect necessary cables to the ports of the card.

Replacing the CMOS Battery

If the server no longer automatically displays the correct date and time, you many need to replace the battery that provides power to the real-time clock.

CAUTION:
The battery contains lithium. To avoid possible explosion, do not burn or charge the battery. A risk of fire exists if the battery is not properly handled or discarded properly.

To reduce the risk of personal injury: do not expose the battery to temperatures higher than 60°C (140°F) and do not dissemble, crush, puncture, short external contacts, or dispose of in fire or water.

Replace only with the proper replacement designated for this product.

Recycle or discard the battery as instructed by local regulations.

The following steps cover how to remove the CMOS battery.

1. Power off the system and disconnect all power cords and necessary external cables.
2. Push the retainer clip towards the back of the battery socket. The battery will pop out slightly from the socket, as shown in the following figure.

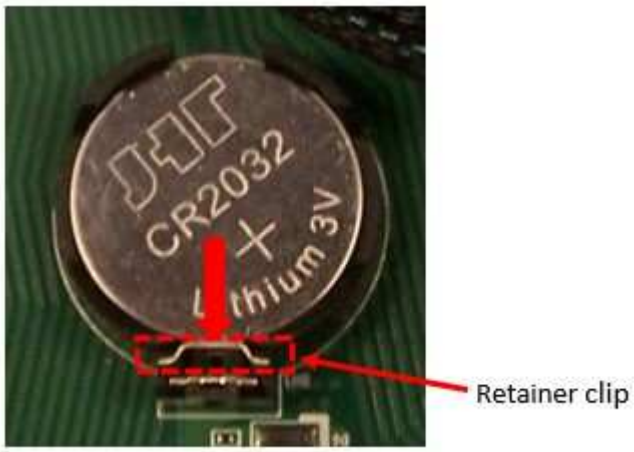


Figure 41. Releasing CMOS battery from motherboard

3. Grasp the battery and remove it from the socket as shown in the following figure.

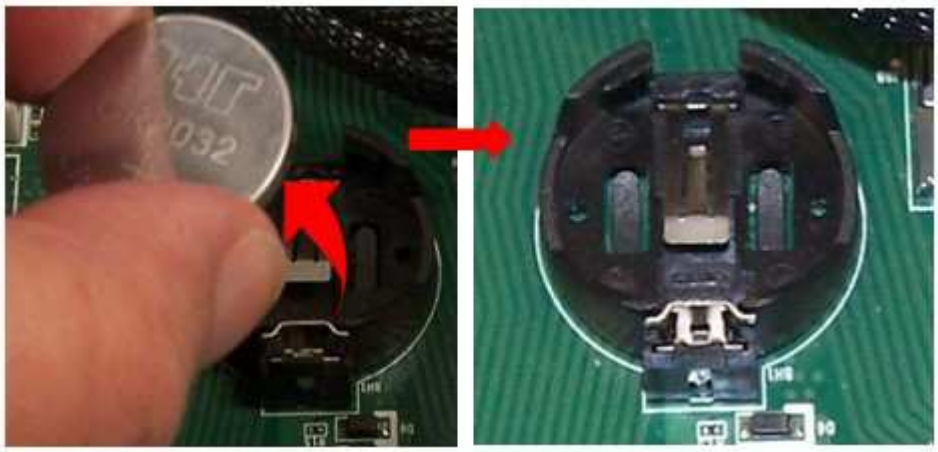


Figure 42. Removing the battery

4. To replace the CMOS battery, follow these steps:
   a. Push the retainer clip towards the back of the battery socket.
   b. Gently insert battery into the socket and inside the retaining clip and push it into the socket until fully seated, as shown in the following figure.

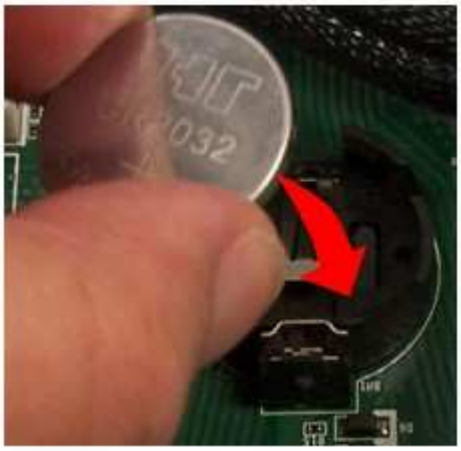


Figure 43. Replacing CMOS battery

c. Reattach all power cords and necessary external cables, then power on the system.

Note: Make sure you note the orientation of the polarity of the battery before you remove it so that you can insert it with the same orientation, as shown in the following figure.

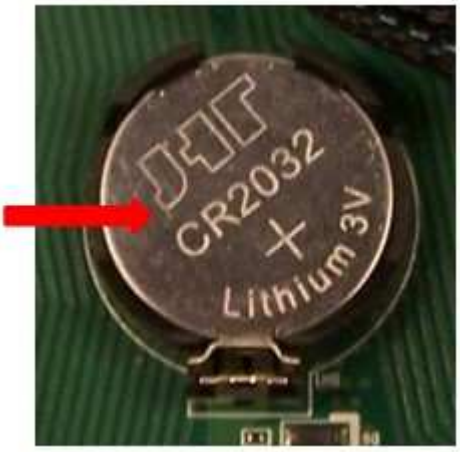


Figure 44. Checking CMOS battery orientation

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