SC4200 Installation Guide

Table of Contents

Revision History

This section lists the summary of changes corresponding to each release.

Release	Date	Change Summary
1.0.0	2/2024	New document
1.1.0	12/2024	Added Revision History

SC4200 Installation Guide

This reference document provides important legal disclaimers and notices for SC4200 products.

Disclaimer

Celestica may update product specifications or information without prior notice to enhance reliability, functionality, or design. Although the provided information is believed to be accurate, no responsibility is assumed for its use, or for any infringements of patents or third-party rights.

Preface

Document Scope

This installation guide details the design features of, and provides instructions for the SC4200 storage controller.

Intended Audiences

- System architects
- Firmware engineers
- System application engineers

Document Conventions

The following table describes various types of notes used within this installation guide.

Type	Generalized Definition
ⓘ NOTE:	Provides supplemental information.
⚠ CAUTION:	Indicates a situation that if not avoided, may result in equipment damage or minor to moderate injury.
ⓟ TIP:	Indicates information that helps you make better use of your system.
⚠ WARNING:	Indicates a hazardous situation that if not avoided, could result in data loss or serious injury.
ⓘ DANGER:	Indicates a hazardous situation that if not avoided, will result in death or serious injury.

System Overview

This document describes the installation process of the SC4200 storage controller

The SC4200 storage controller is Celestica's next-generation 2U rack mount NVMe platform. Supporting up to 24 PCIe NVMe dual-port solid state drives (SSDs) with two redundant computing nodes based on Intel® Xeon® Scalable processors. SC4200's high performance, low-latency design has the flexibility to work for converged or more malleable composable applications.

Optimized for:

- External Controller-based Storage Array
- Enterprise SDS
- HPC and Machine Learning Platforms
- Date Warehousing and Data Lake
- SaaS Infrastructure and Content Delivery Networks (CDN)

Features

- 2U chassis, fits 19" rack
- 2x hot-swap computing nodes
- 24x PCIe Gen4 NVMe SSDs
- Dual redundant (1+1) power supplies
- 4x PCIe (x16) low profile slots per node
- Optional on-board BBUs available for node power in the event of AC power loss

Node Features

- Dual third generation Intel Xeon Scalable processors, socket LGA4189
- 16x DDR4 DIMMs support RDIMM/LRDIMM with 2x Barlow Pass Optane® Persistent Memory
- Support BMC (ASPEED AST2500)
- 4x PCIe Gen4 x16 slots
- 2x 10GbE LAN (RJ45)

Key Components

Figure 1. SC4200 **Front Panel**

Figure 2. SC4200 **Rear Panel**

Canister

There are five LEDs on the rear of each canister to indicate the status. From left to right:

- Canister Power LED (Green)
  - On – Canister power is on
  - Off – Canister power is off
- Canister Status LED (Green for customization)
  - Off – The controller power is off
  - Slow Blink @ 1Hz – The controller is currently dumping Data in FHD
  - Fast Blink @ 4Hz – The controller is currently dumping Data in FHD
  - Solid – The controller is active and joined a cluster
- Canister Fault LED (Amber)
  - On – Fault conditions exists in local Canister
  - Off – Normal operation
- Canister BBU Status LED (Green)
  - Off – BBU charge function is not enabled or BBU is not in discharging status
  - Blink @ 1Hz – The BBU is in charging mode

    - Solid – The BBU is in full charge status and not discharging
- Canister BBU Fault LED (Amber)
    - Off – No faults detected by the controller with the BBU
    - Blink @ 1Hz – The BBU is in discharging status
    - Solid – Fault condition exists in BBU, It is driven by MCU. System also can make this LED solid on through the I2C bus.

System Specifications

Product Specifications

Type	SC4200
Depth	825mm
Height	87.6mm
Width	446.4mm
Power Input (VAC)	200 ~ 240 VAC (47-63Hz)
Power Consumption (W)	>2400W
Operating Temperature (airflow front to back)	5º - 35º C
Operating Temperature (airflow back to front)	5º - 35º C
Operating Relative Humidity	8% - 80%
Storage Temperature	-40º - 60º C
Storage Relative Humidity	8% - 95%

Acoustic Noise

A single enclosure shall not exceed 8.5 Bels LwAd (A-Weighted sound power level) at 23+/-2 degree C with typical system loading (70% of CPU design power).

Acoustic Noise Emissions, Declared Sound Power Level measured in accordance with ISO 7779 and results reported per ISO 9296

.

Cooling

12 pcs 40 x 56mm fans provide system cooling airflow. Cold air enters from the front bezel of the chassis and travels through the SSD area.

The following lists the SC4200 storage controller's cooling solutions:

- The thermal solution is to ensure that all the key components are within their thermal specification limits throughout operating temperature range up to 35°C @3000ft elevation.
- The system supports N+1 cooling redundancy. When any one system fan motor fails, the remaining fans should still maintain all the key components within their thermal specification limits. Fan fail case is represented as any one fan motor failing.
- Over-temperature protection (OTP) mechanism is enabled to protect the system under fan failure condition or datacenter thermal run-away condition. If any one of the High warning threshold value or High critical threshold value is violated, a fault condition alert is raised, and system fans will go up in full speed.
- Maximum supported CPU is Intel® Xeon® Ice lake Scalable processor 2S 165W.
- There is no service time limit for canister, PSU and single SSD replacement.

Thermal

The following data shows that the cooling solution can maintain all components below their maximum operating temperatures when using an Intel CPU SKU at 165W or less. (Some CPUs are not supported, for details, refer to the table below)

Number	Description	TDP	Core Count	Die	Supported (Yes/No)
1	Intel Xeon Gold 5318Y CPU	165	24	HCC	Yes
2	Intel Xeon Silver 4314 CPU	135	16	HCC	Yes
3	Intel Xeon Silver 4310 CPU	120	12	HCC	Yes

Hardware Overview

This Hardware Overview section provides basic information on the use and/or maintenance of specific components within the product. The product may be referred to as chassis or enclosure, with both words intended to have same meaning.

CPU

SC4200 uses the latest Generation of Intel® Xeon® Ice Lake scalable processor. SC4200 will support selected SKUs with a TDP power of 85W -> 165W.

Intel® Xeon® Ice lake Scalable processor features:

- Socket P
- Intel Hyper-Threading technology (2 threads/core)
- Intel Turbo-Boost Technology
- 8x DDR4 memory channels with support for RDIMM, LRDIMM & BPS, up to 2 DIMMs per channel, 2133, 2400, 2666, 2933, 3200 MT/s speeds
- Up to 3x UPI channels, up to 9.6,10.4 or 11.2 GT/s depending on SKU
- PCI Express PCIe Gen-4 64 Lanes, supporting Bifurcation of x16, x8 and x4
- PCI Express SRIS Support (Separate Reference Clock with Independent Spread Spectrum Clocking)
- 14nm Process Technology

> ⓘ NOTE: There is a cover on the CPU socket to protect the CPU socket pins. The cover must be removed just prior to CPU installation.

> ⚠ CAUTION: Sharp corners and edges may be present. Take care to avoid physical injury.

CPU Removal

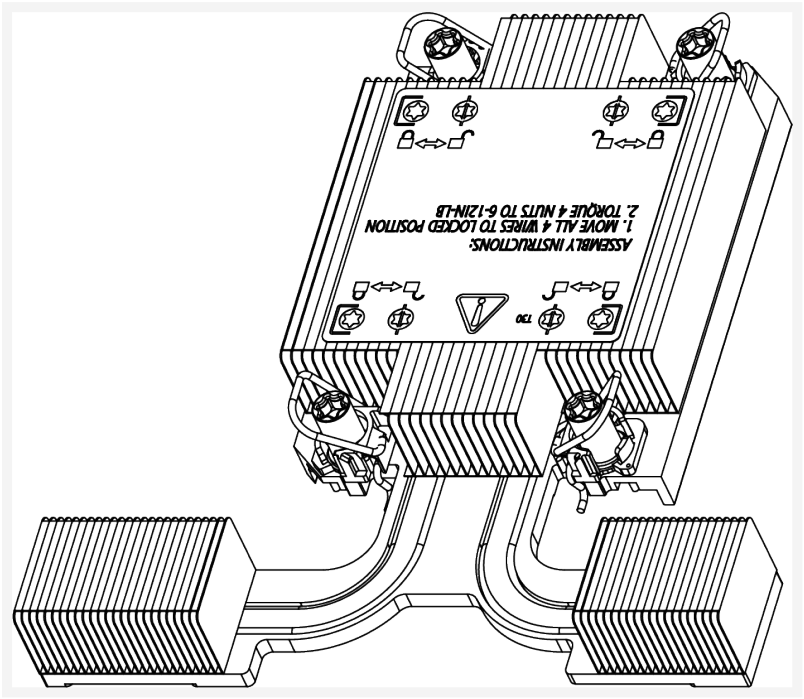
Context

To access the CPU, the heatsink must first be removed. The steps are as follows.

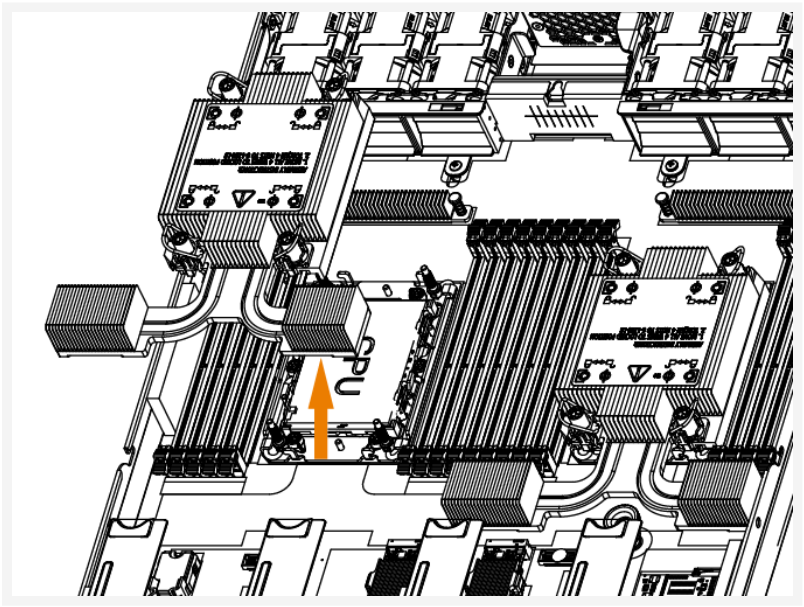
Procedure

1. Use a T30 screwdriver and carefully unscrew the heatsink. Screw torque is 13 KgF.CM.

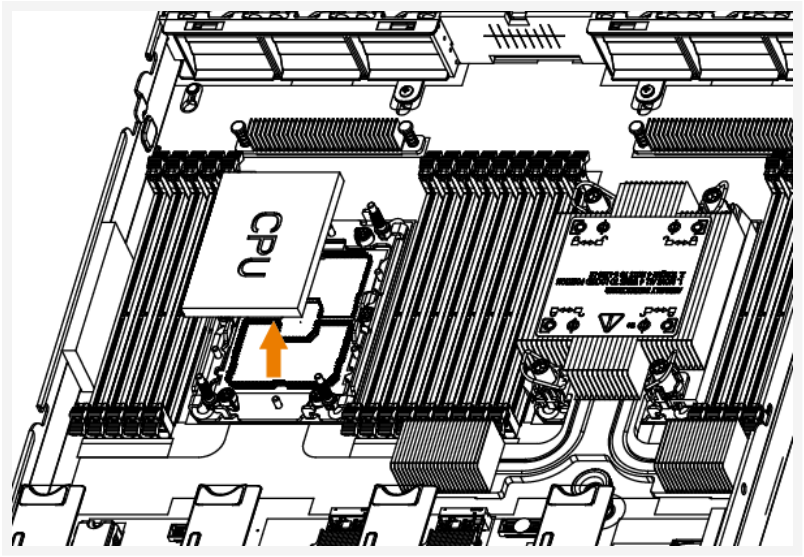
2 Move all four wires to the unlocked position.



3 Remove the heatsink from the socket by lifting it straight up.



4 Remove the CPU.



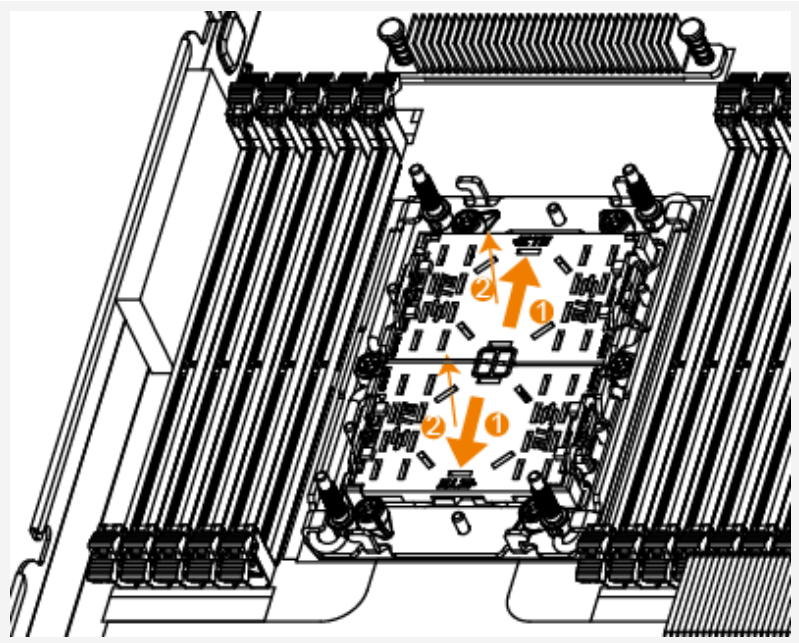
CPU Installation

Context

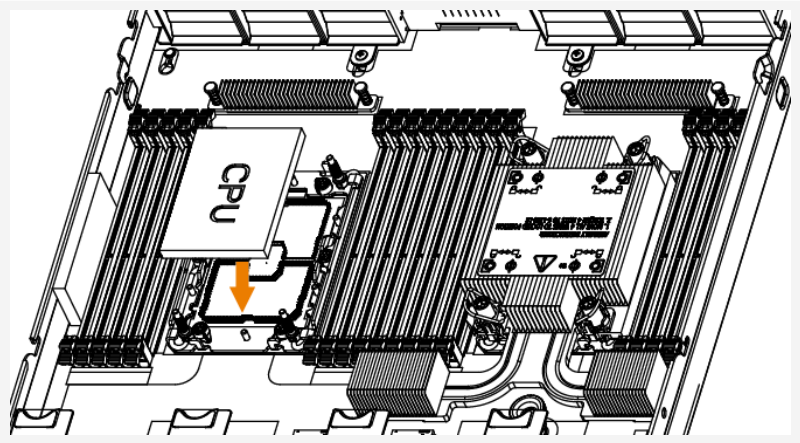
ⓘ NOTE: There is a cover on the CPU socket to protect the CPU socket pin. This must be removed when the CPU is assembled.

Procedure

1. Remove the socket covers. See the figure below.
   a. Move the two socket covers to both sides.
   b. Remove socket covers

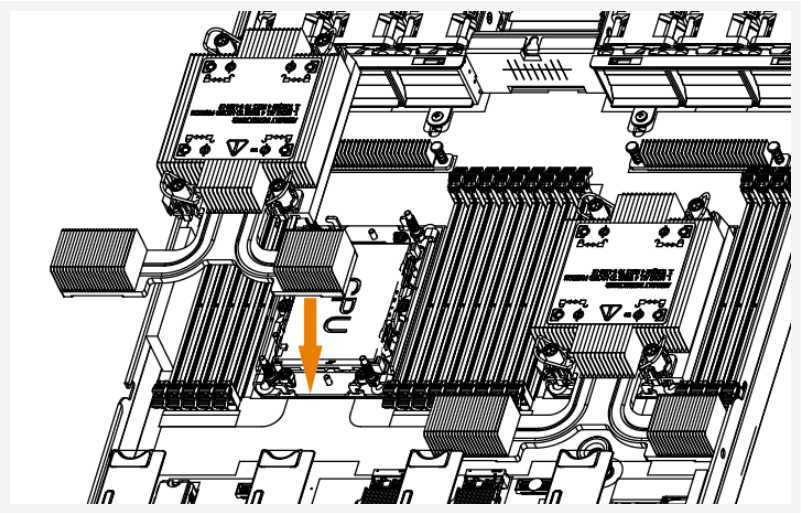


2 Install the CPU.



3 Install the Heatsink.

a Put the heatsink on the socket. Attention should be paid to the slot on the assembly of the hole in the heatsink.



b Use a T30 screwdriver. The screw torque should be 13 KGF.CM

c Move all four wires to locked position, see the label on the heatsink below.

DIMM

The SC4200 CPU board supports 18x DDR4 DIMMS total, with 8x RDIMMS and 1x BPS per CPU socket.

It is recommended to use identical DIMM modules on each DIMM socket for balance. The following table lists the preferred DIMM population rules.

Figure 3. Single Socket DIMM configuration, CPU0 DIMM only

	iMC2		iMC3			iMC1		iMC0		
Channel	F0/R0	E0/S0	H0/P0	G0/Q0		C0/L0	D0/M0	A1/J1	A0/J0	B0/K0
1									DDR4	
2		DDR4							DDR4	
				DDR4					DDR4	
4		DDR4		DDR4		DDR4			DDR4	
		DDR4	DDR4				DDR4		DDR4	
6	DDR4	DDR4		DDR4		DDR4			DDR4	DDR4
		DDR4	DDR4	DDR4		DDR4	DDR4		DDR4	
8	DDR4	DDR4	DDR4	DDR4		DDR4	DDR4		DDR4	DDR4

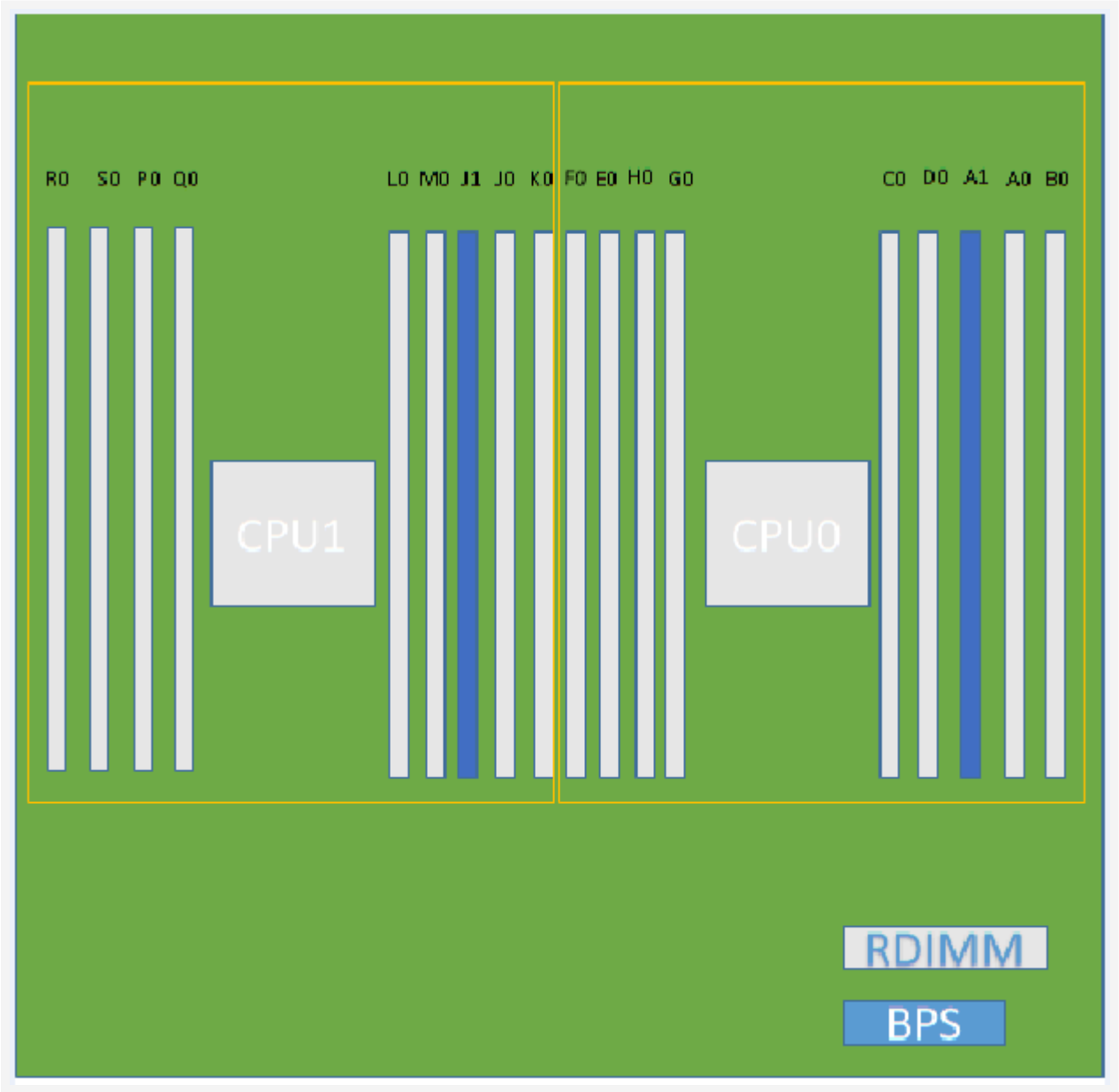
CPU

BPS

For dual CPU Socket products, refer to the DIMM configuration of a single CPU to arrange and combine.

SC4200 supports up to 2 BPSs -one per CPU. To support BPS DIMM(A1/J1), make sure the RDIMM is installed (A0/J0).

Figure 4. DIMM Locations



Solid State Drive (SSD)

The drive carrier was designed for optimized airflow in a compact form factor.

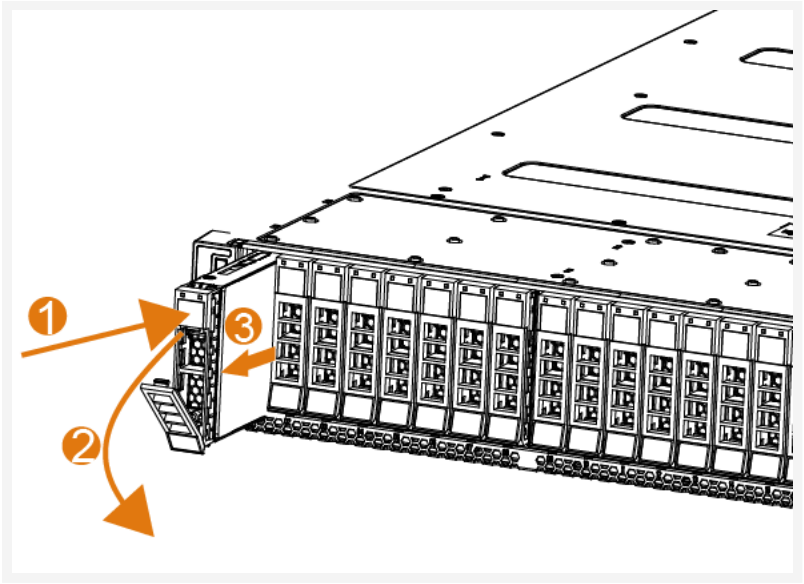
> ⚠ CAUTION: All drive bays not populated with drives must have blanks installed to ensure proper airflow.

☆ IMPORTANT: Ensure a minimum of a five (5) second delay between removal of a drive and installation of another.

SSD Removal

Procedure

1. Press the release button. The handle will open automatically.
2. Lower handle.

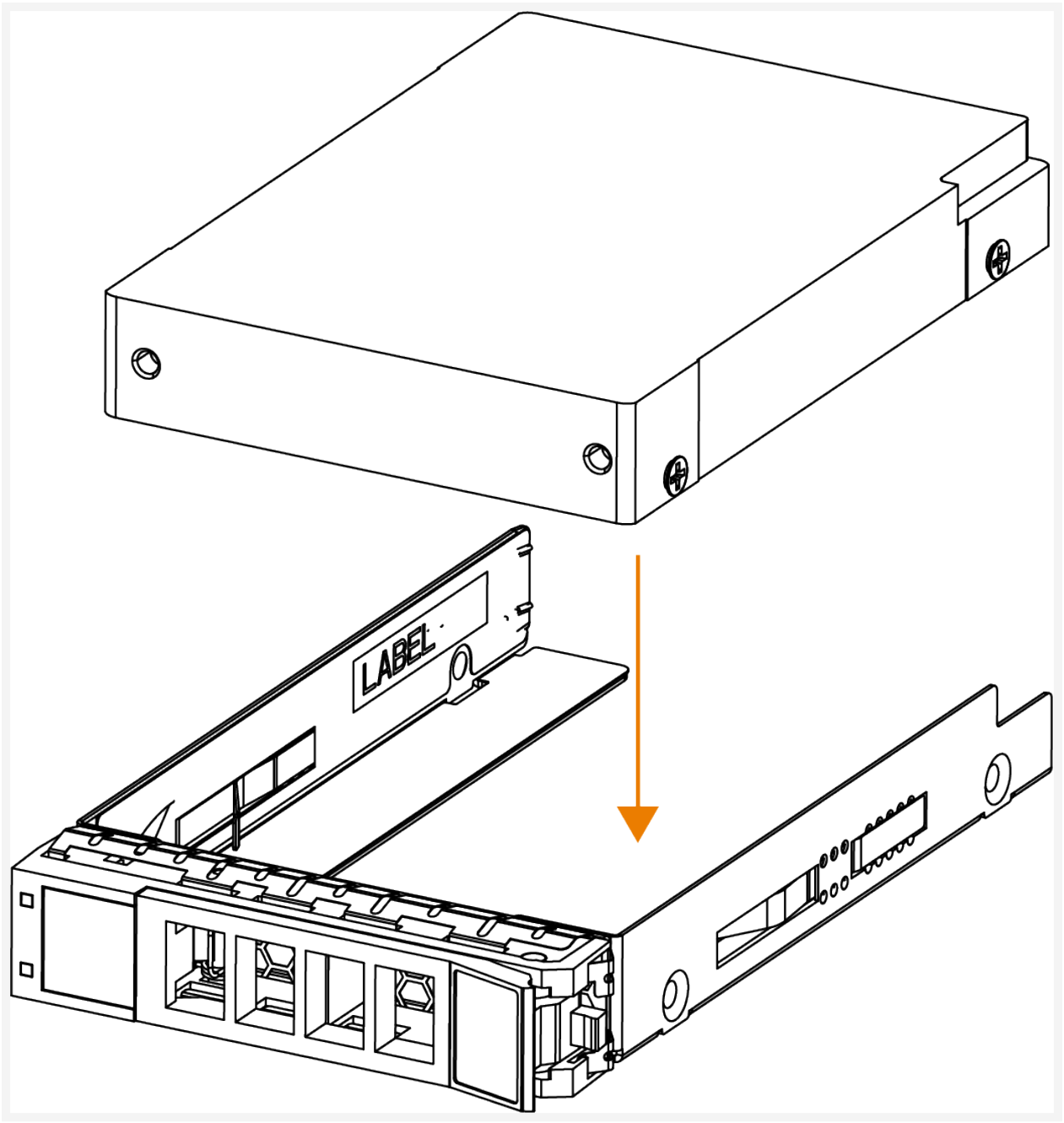


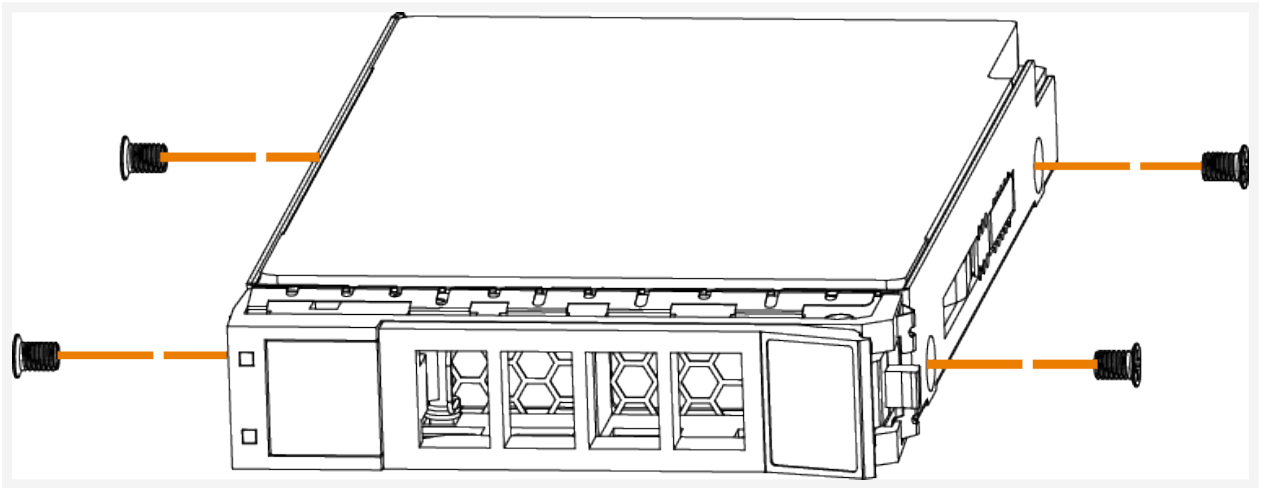
3. Pull drive carrier straight out from chassis.

SSD Installation

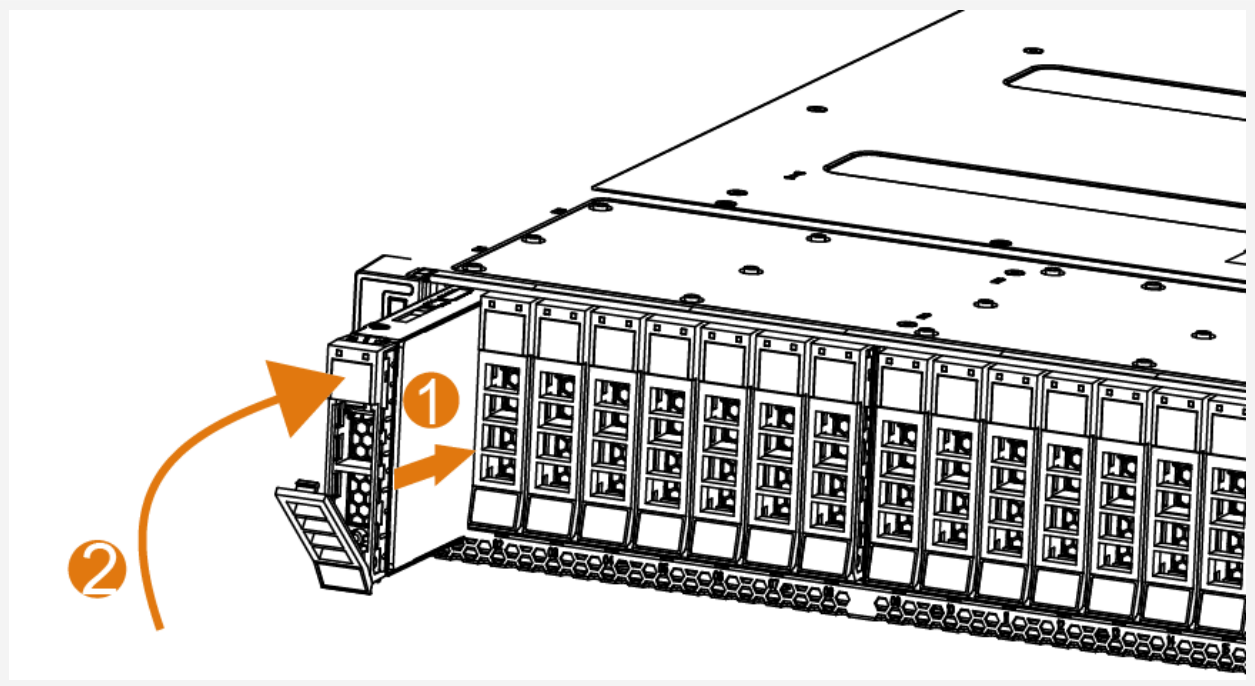
Procedure

1. Put the drive into the carrier. Fasten the screws (Pan Head screw M3 x L4.5. Torque 4 ± 0.5 KGF.CM).


LABEL



2 Gently guide the drive into the drive slot on the front panel of the enclosure assembly, then rotate the handle to secure the drive carrier in place.



Power Supply Unit (PSU)

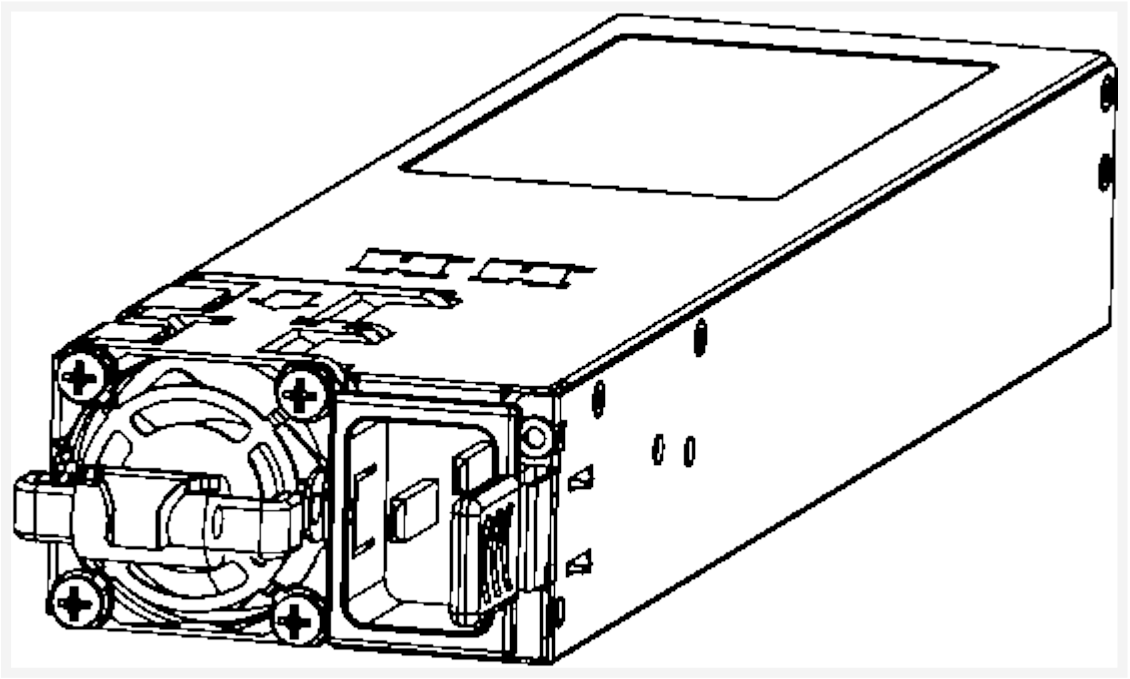
SC4200 supports two (1+1 redundant, hot-swappable) PSUs.

⚠ CAUTION: In the event of a PSU failure, do not remove it until ready to install an identical replacement.

⚠ CAUTION: Not all power cords have the same current ratings. Do not use the power cord provided with your equipment for any other products or use. Do not use household extension cords with your product.

⚠ CAUTION: For products with multiple power cords, all power cords must be disconnected to completely remove power from the system.

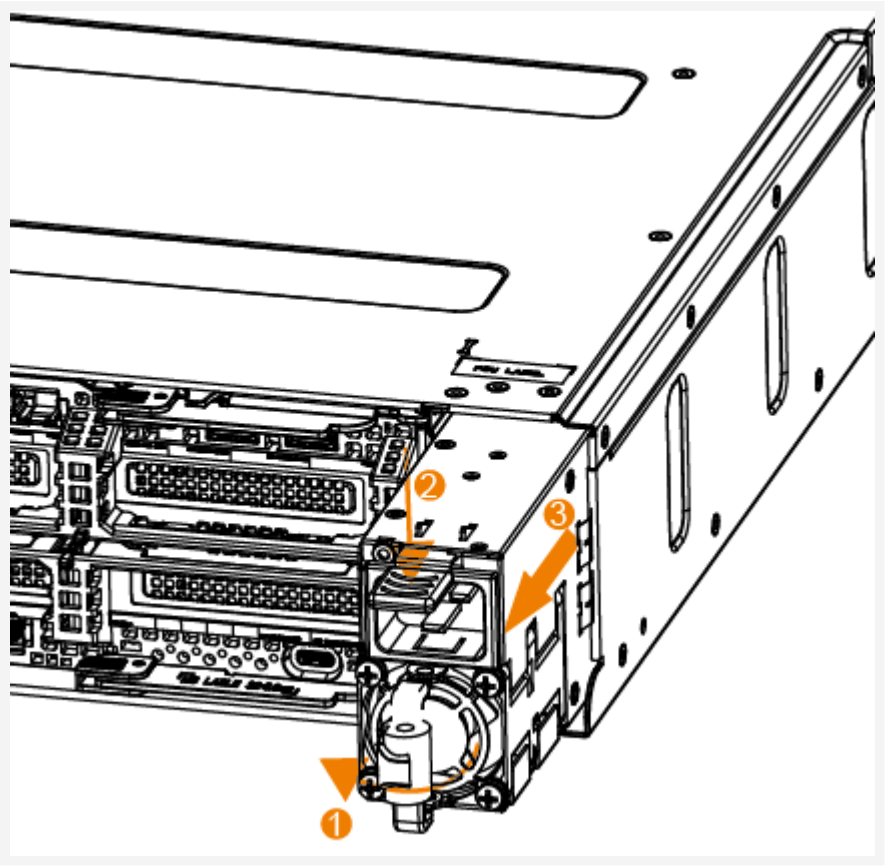
Figure 5. PSU canister



PSU Removal

Procedure

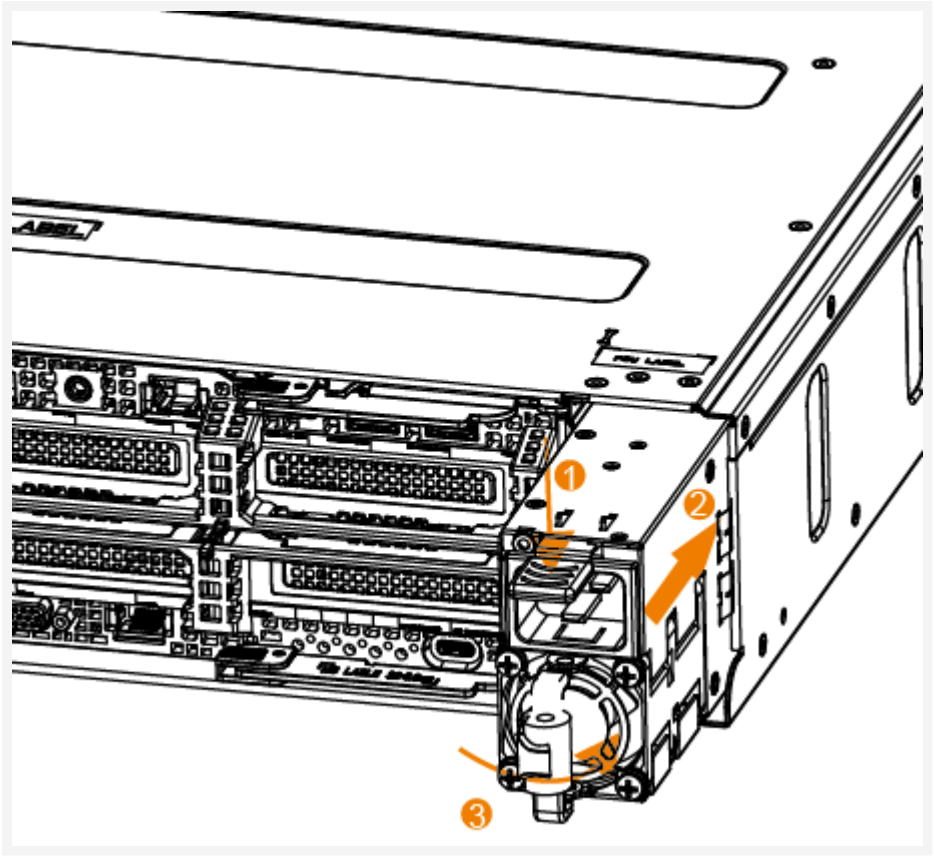
1. Rotate the handle to a 90° angle as shown below.
2. Keep pressing the latch and holding the handle.
3. Pull the PSU out of the chassis.



PSU Installation

Procedure

1. Rotate the handle to a 90° angle as shown below.
2. Keep pressing the latch ① and holding the handle to push the PSU into the chassis.
3. Rotate the handle to close.



Controller Canister

ⓘ NOTE: This system should only be serviced by a trained technician.

ⓘ NOTE: Make sure all the LEDs on the rear panel are off before opening the cover. Wait 5 minutes for the save cycle to complete.

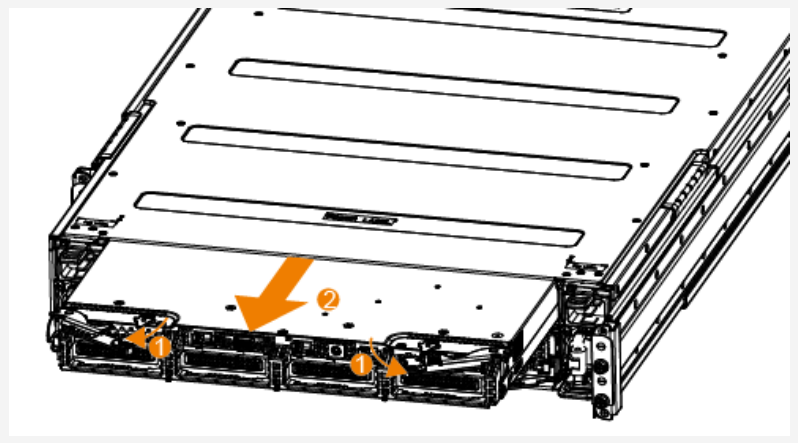
Controller Canister Removal

Context

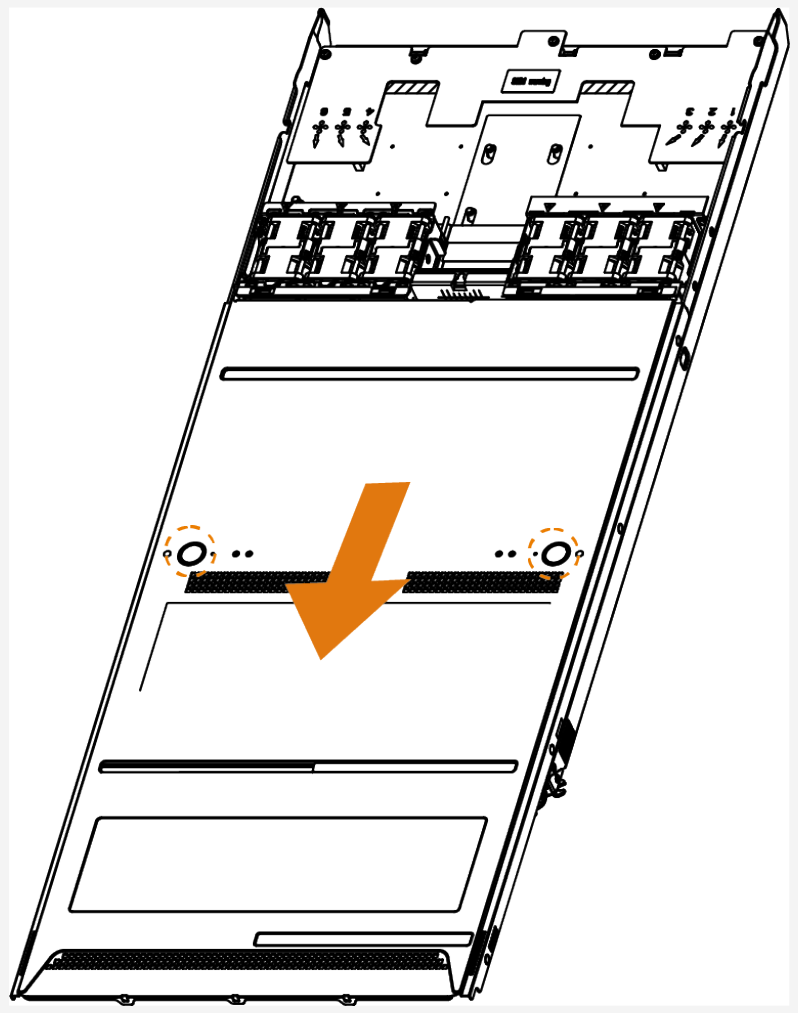
⚠ CAUTION: Do not immediately remove the canister after power-off. The BBU (backup battery unit) may still be providing power so machine can save current data. Wait a few minutes after power-off to avoid potential data loss.

Procedure

1. Rotate handle to release canister.
2. Pull handle to remove canister from chassis.



3. Remove the controller canister cover by pressing the two locks as shown.

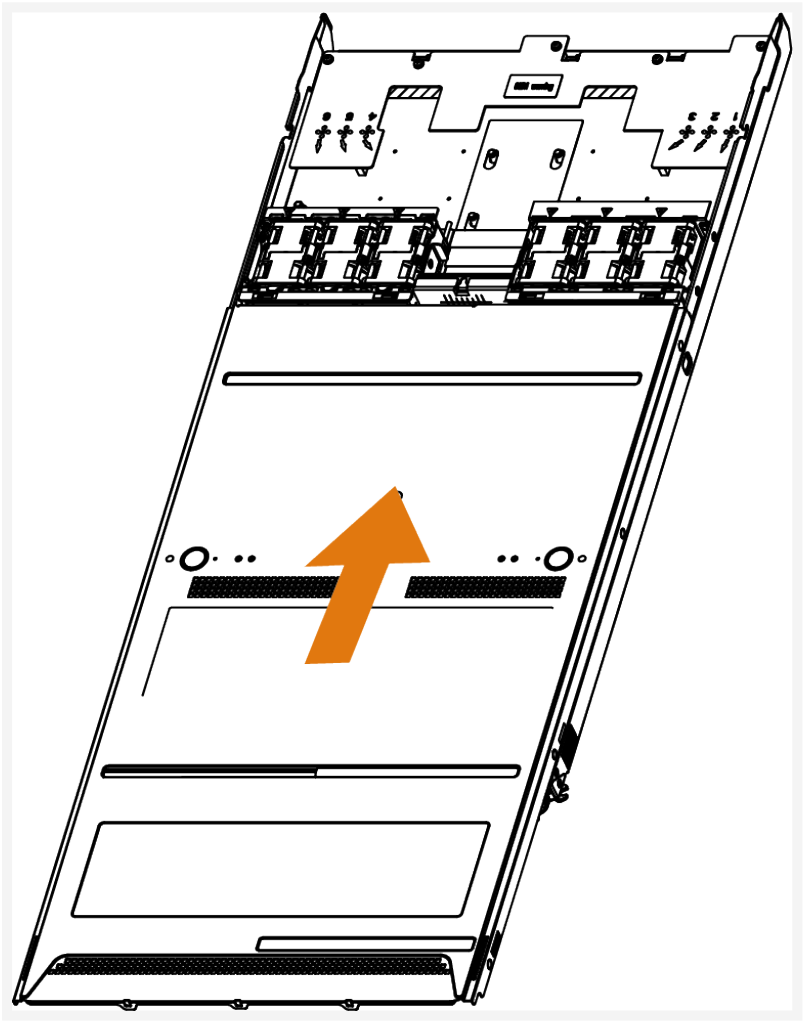


4. Slide the controller canister cover out in the direction as shown.

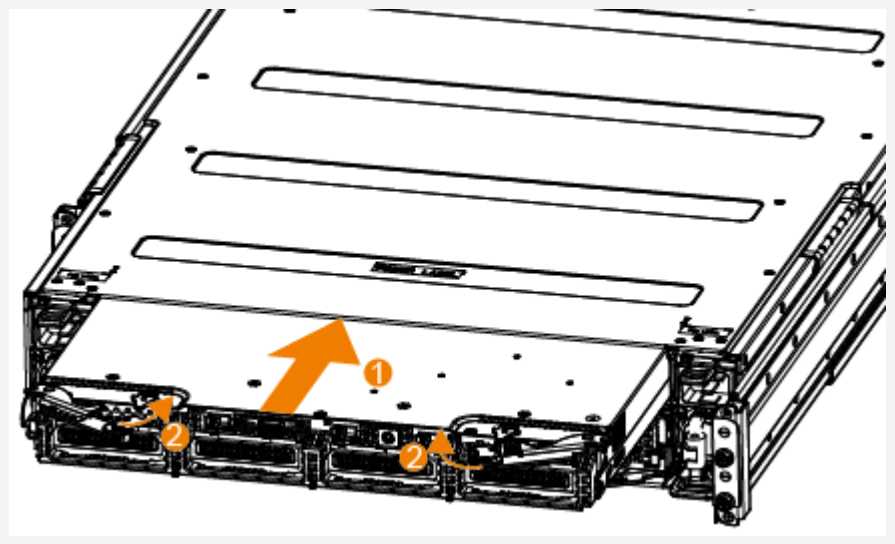
Controller Canister Installation

Procedure

1. Place the controller canister cover so it overlaps the rear of the canister.



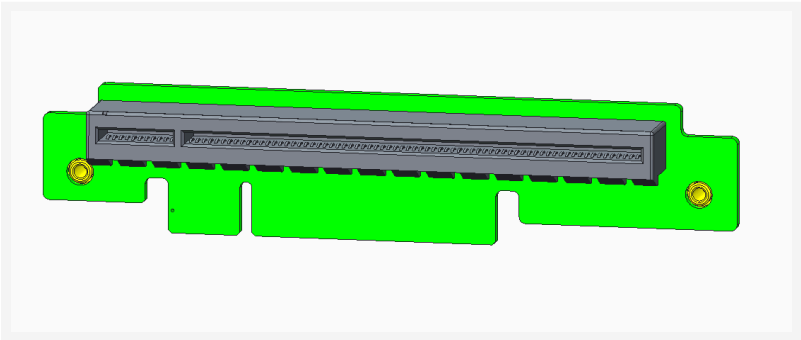
2. Then slide forward to the final location, until it clicks.
3. Rotate the controller canister handle to an approximately 45° angle and push it into the chassis.
4. Then rotate the Controller Canister handle to close.



PCIe Module

The four PCIe cards in each of the canisters are parallel to the canister card. Each is connected to the system by the use of a "Riser Card", an example is shown below.

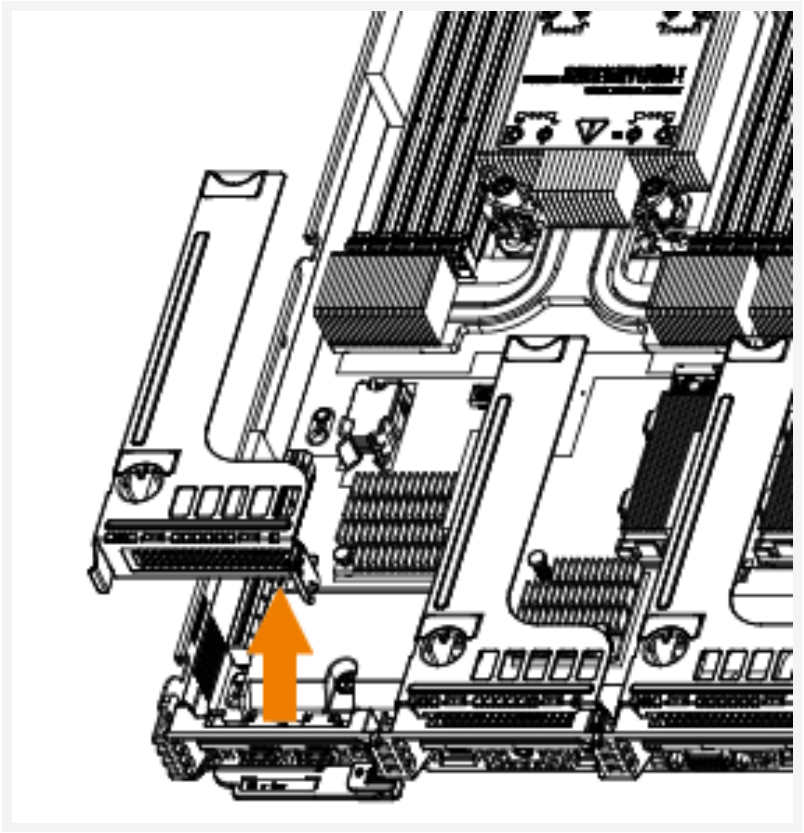
Figure 6. PCIe x16 Riser Card



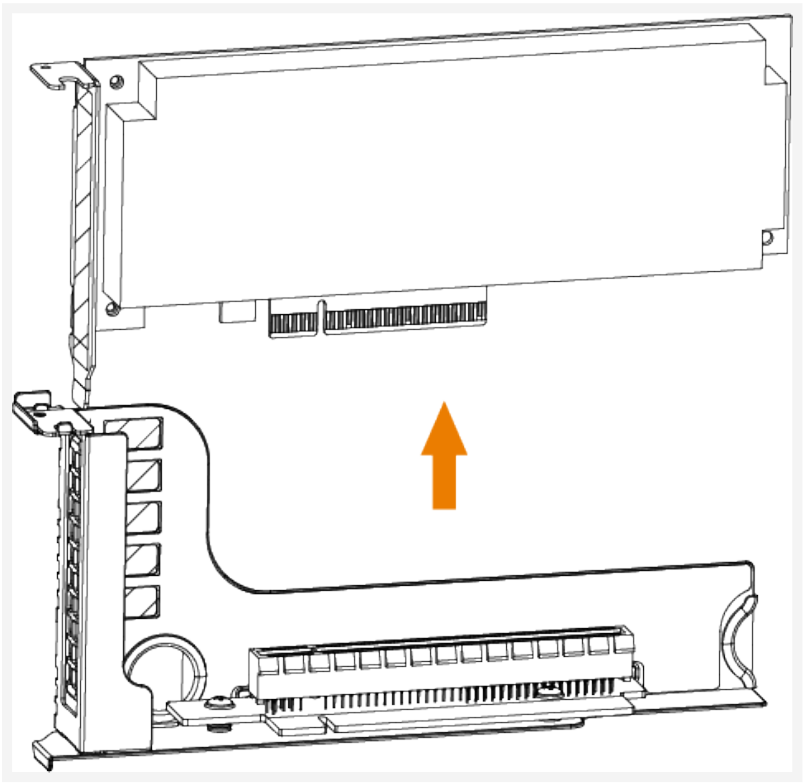
PCIe Removal

Procedure

1. Remove the controller canister cover. See: Controller Canister Removal.
2. Remove the PCIe module from the slot by pulling it straight up.



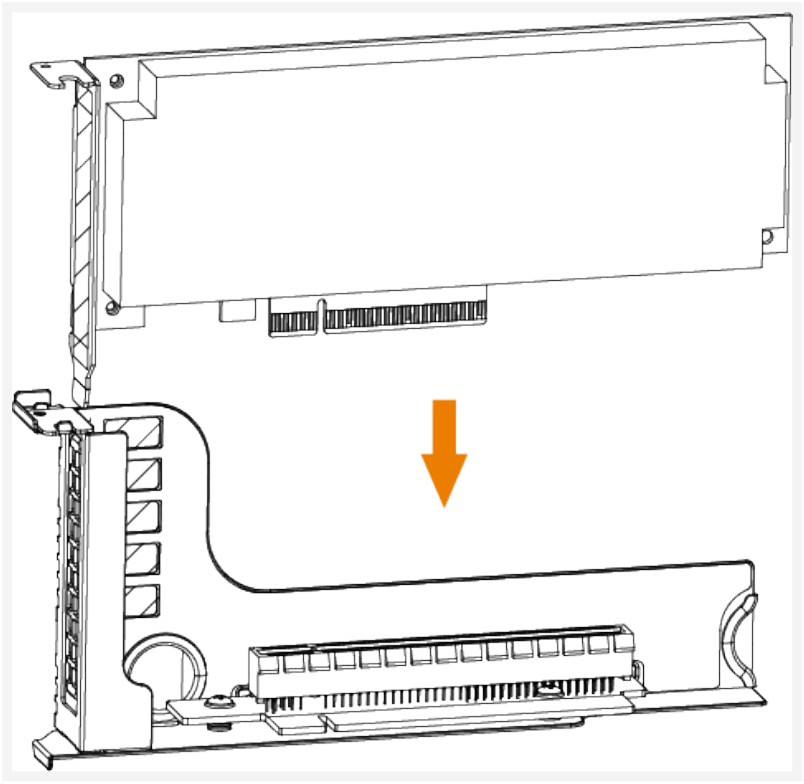
3 Remove the PCIe card from the PCIe module by pulling straight out.



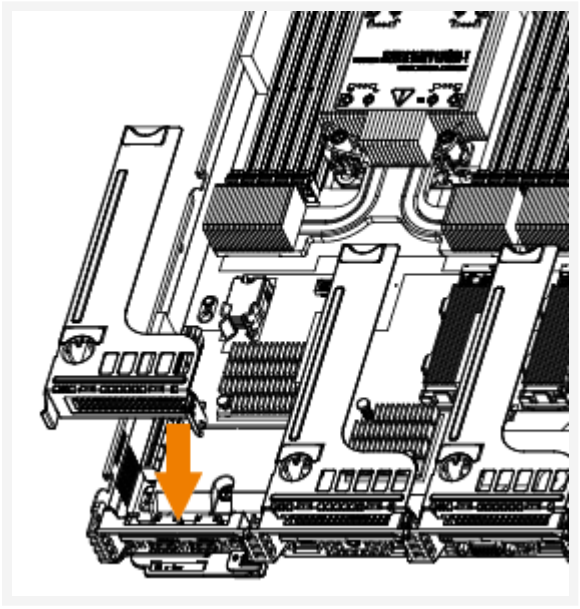
PCIe Installation

Procedure

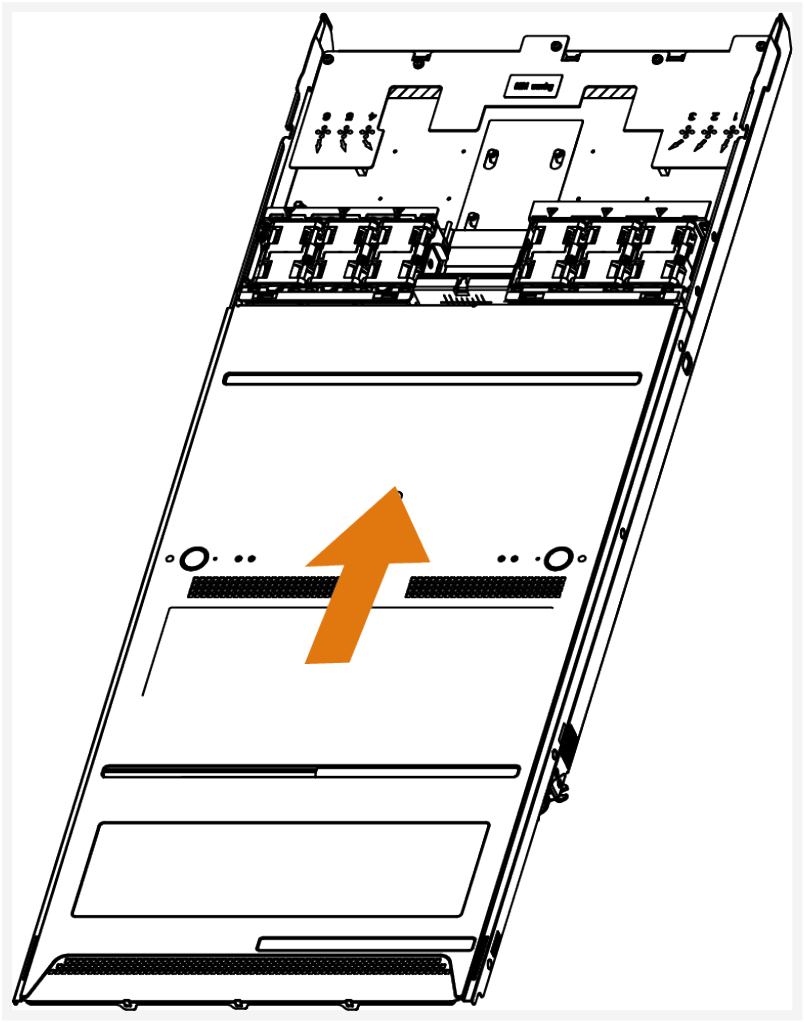
1. Pushing straight down, insert the PCIe card into the cage slot in PCIe riser card.



2. Put the PCIe module into the canister, along with the rail on the rear window. Be careful to align the golden tab on the PCIe module with the slot on the motherboard and make sure they are connected well, and then press down on the PCIe cage until it firmly seats and the top is flush with the top of the system.

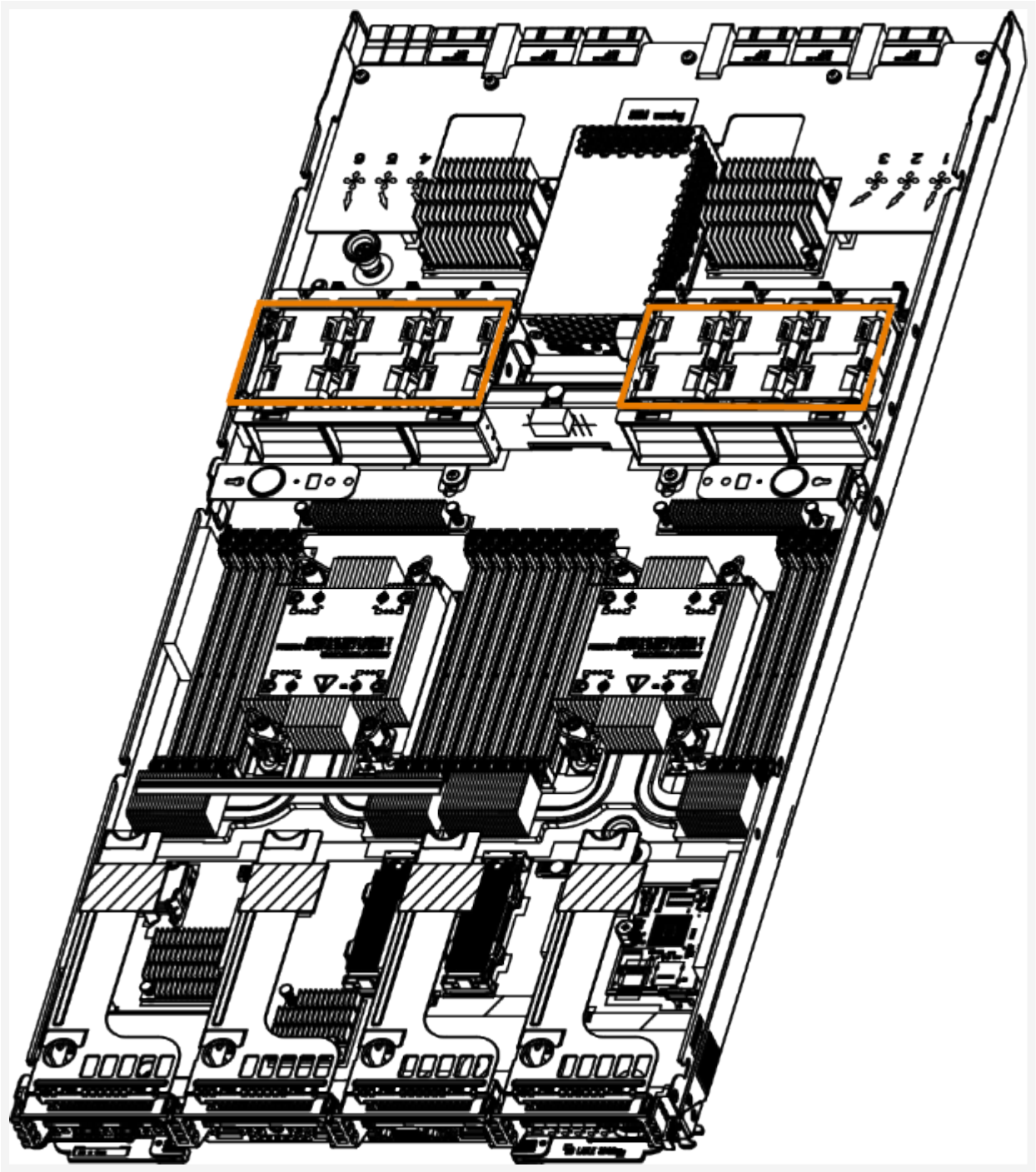


3 Install the controller canister cover.



Fan Module

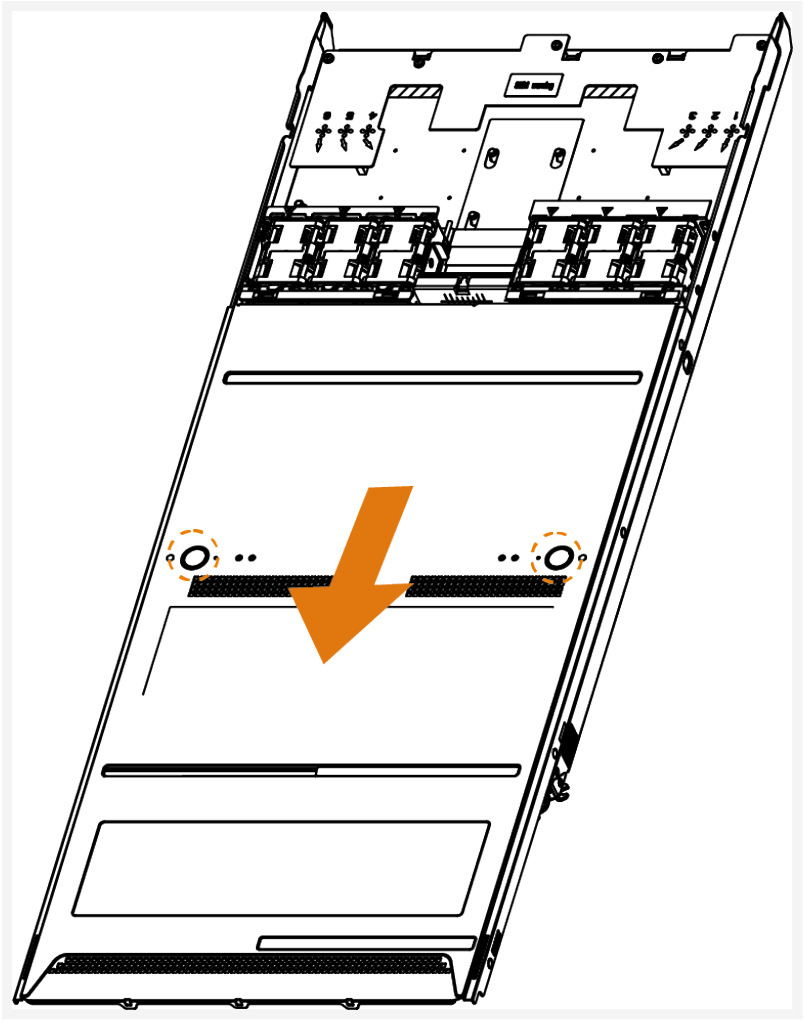
SC4200 uses six 40x56mm fans for system cooling.



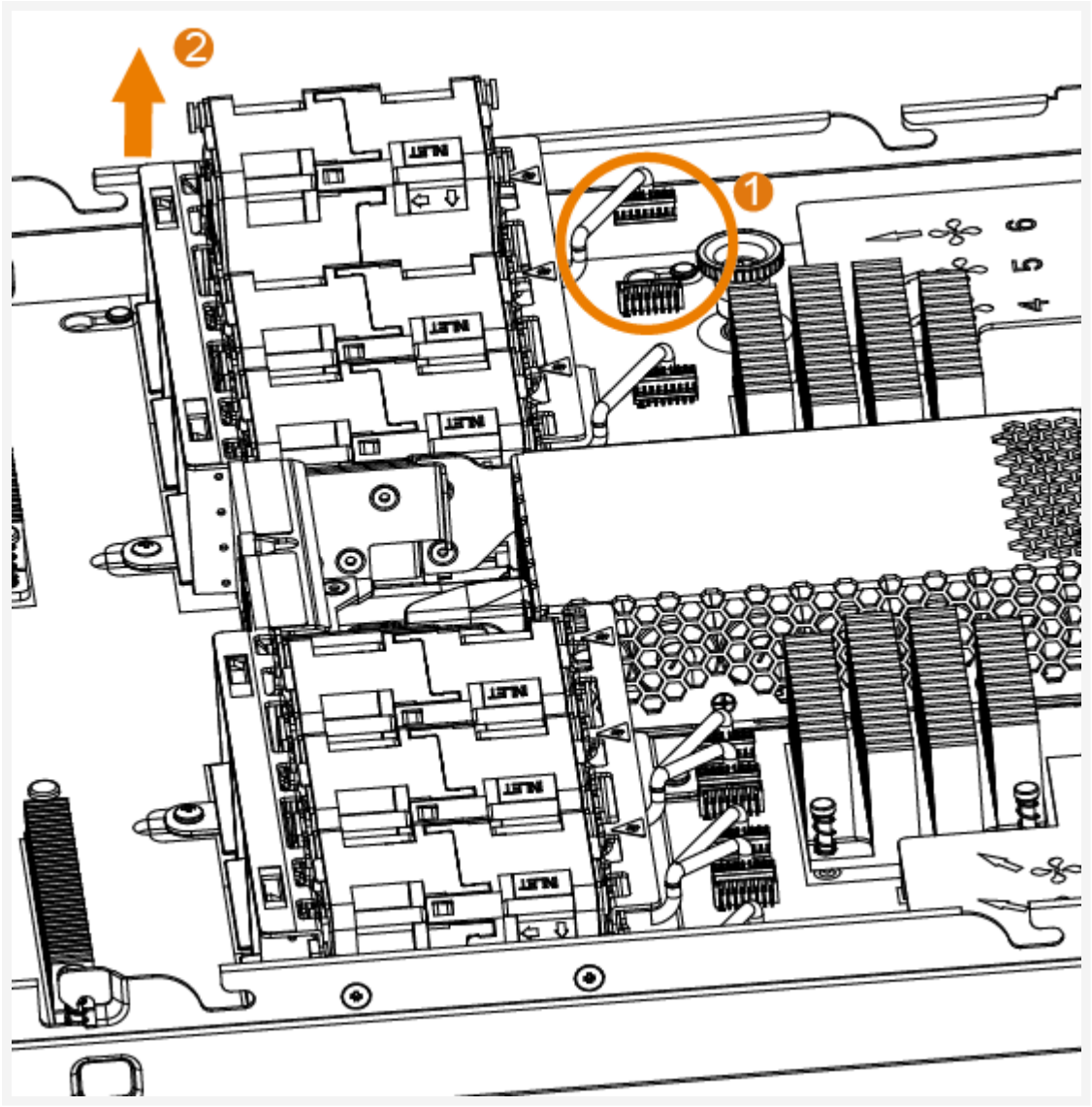
Fan Removal

Procedure

1. Remove the controller canister cover by pressing the two locks as shown.



2 Unplug the connector (1).



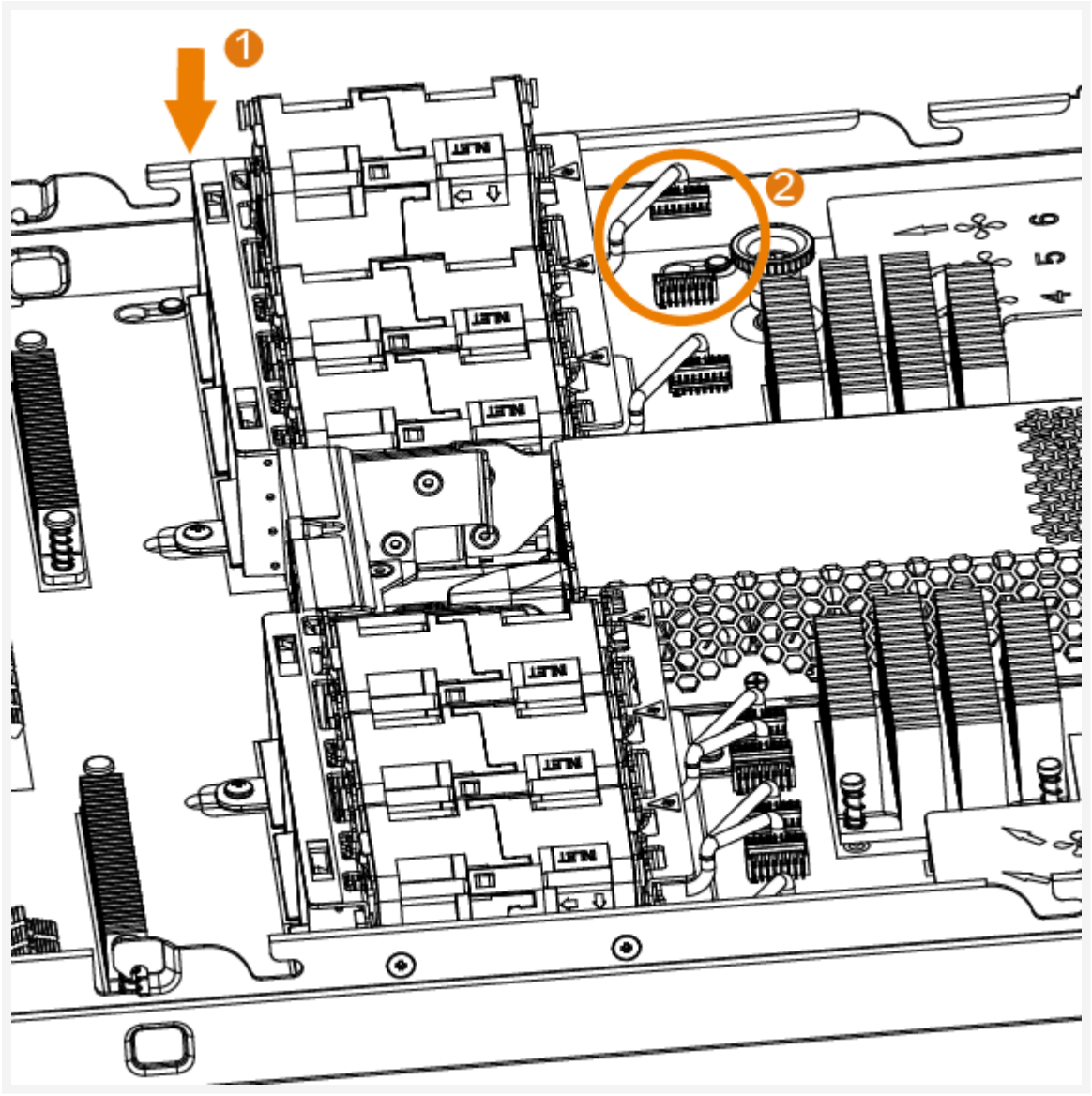
3 Lift up to remove fan (2).

4

Fan Installation

Procedure

1 Lower fan module into chassis (1).



2 Plug connector into chassis (2).

M.2 Card

SC4200 supports up to two 2280 M.2 boot devices, these can have either a SATA or PCIe interface. The system will automatically detect and use the interface of the inserted M.2 card.

M.2 Card Removal

Procedure

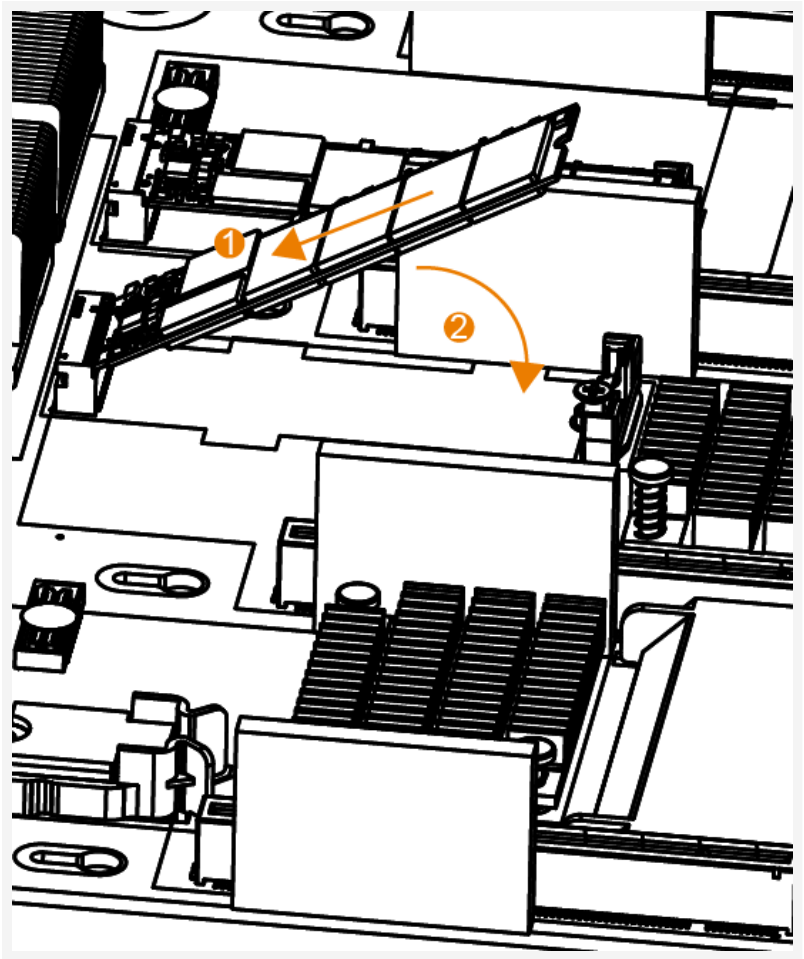
1 Pull the M.2 card plastic holder outward (1).

2. The card will rise automatically (2).
3. Pull card from slot (3).

M.2 Card-Installation

Procedure

1. Insert the M.2 card into slot (1).



2 Press the M.2 card downward until it latches with the plastic holder (2).

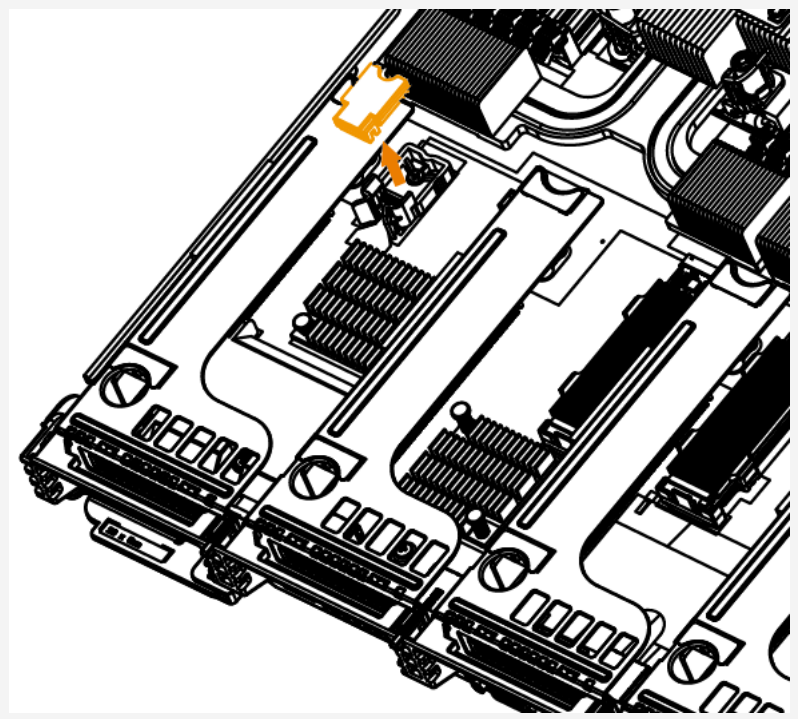
Trusted Platform Module (TPM)

Context

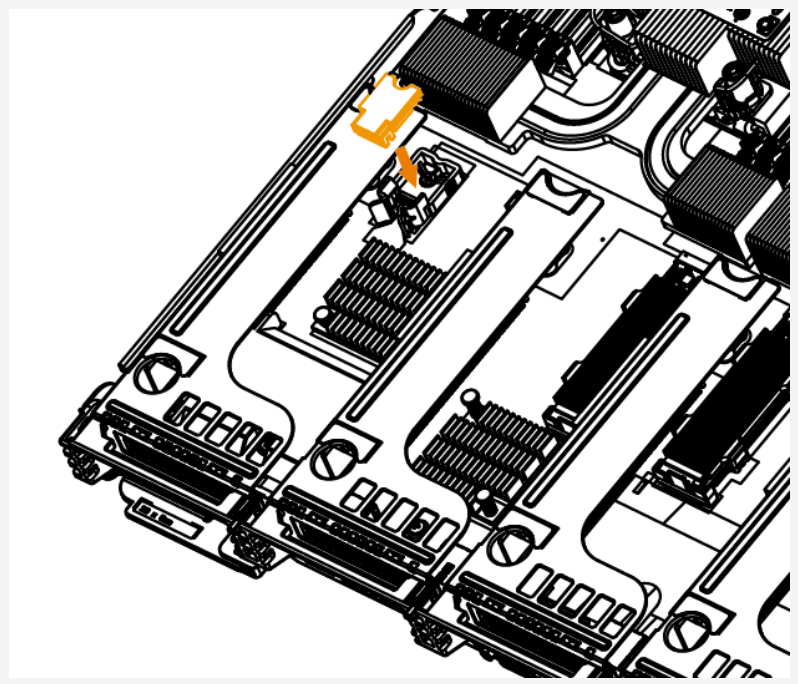
Trusted Platform Module (PN: R3040-G0006-02) is an optional card on SC4200. All SC4200 SKUs can support this optional card. Celestica's TPM optional module supports TPM 2.0 spec.

Procedure

1 To remove, pull TPM card out of the plastic holder.



2 To install, ensure correct orientation and place TPM card in plastic holder. Push down until the card is secured with the clip.



Battery Backup Unit (BBU)

BBU Overview

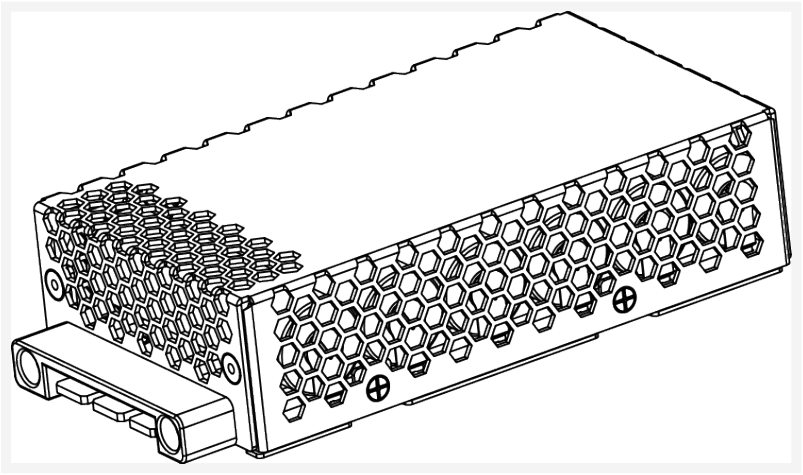
Each canister contains a Battery Backup Unit (BBU) that is used to power just that canister when the AC power fails.

⚠ WARNING: The BBU contains enough power and current to exceed 240VA.

⚠ WARNING: Do not expose the BBU to high temperatures.

ⓘ NOTE: To prevent electrical shock, the BBU is designed to ensure its pins are turned off when it is disconnected from the system.

Figure 7. Battery Backup Unit



⚠ WARNING: The BBU contains enough power and current to exceed 240VA.

BBU Operation

The goal of the BBU is: during an AC power loss, the BBU can power the system long enough to complete a data dump.

- Power the canister for five seconds of ride-through (meaning the OS and application SW continues to run on the canister even though the drives have dropped offline) and can quickly recover/continue should power return.
- Power the canister for an additional one second transition time where the application SW realizes that the power is not coming back. The application SW needs to terminate any activities on the PCIe buses and then signal back to the CPLD that it is now safe to power down all the PCIe devices and IO cards. The CPUs should also be forced into a lower power state by decreasing the operation frequency.
- CPLD will then remove power from unnecessary PCIe devices and PCIe cards to reduce

power load on the BBU.

- Application SW should then start an operation to save any critical data from the DIMM memory into one or both of the M.2 SSDs located on the canister. BBU power is expected to last about 300 seconds in this mode. After that time, the application SW should signal to the CPLD that it has completed, which allows the CPLD to power down the canister completely until AC power returns. BBU will continue to discharge if the system has not been powered down even when the dump is completed.

Assuming a write speed of ~1000MB/s of a PCIe based M.2 card, we estimate that the 180 second data save time should allow for backup saving of ~180GB of data if one of the M.2 SSDs is used, and twice that ~360GB of data if both M.2 SSDs are used in parallel. If faster M.2 modules are used, then more data can be saved.

Testing will be needed on specific configurations as both the behavior of the M.2 SSDs and the Intel® C620 Series Chipset can affect the transfer speeds and total backup time.

BBU Design

The BBU consists of 6 Sony VTC5 (2600ma-hr) cells 18650 format arranged in a 2-Parallel/ 3-Series (2P3S) arrangement.

It is designed to deliver ~410W for 6 seconds, followed by 205W for 180 seconds.

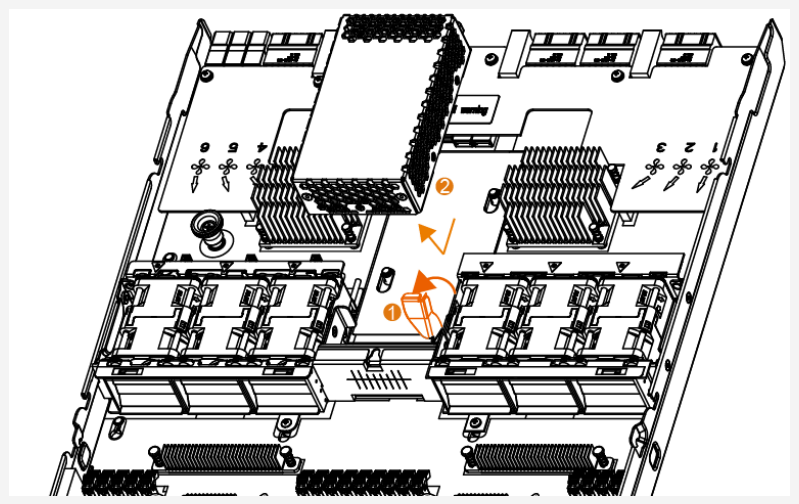
Nominal Output Voltage: 10.8V, Cutoff Voltage: 7.5V, the output voltage we decrease with charge level.

When new, the battery pack has ~58.3W-hr of energy, which is below the 100W-hr limit to ship the packs by air.

BBU Removal

Procedure

1. Rotate the BBU handle (1).

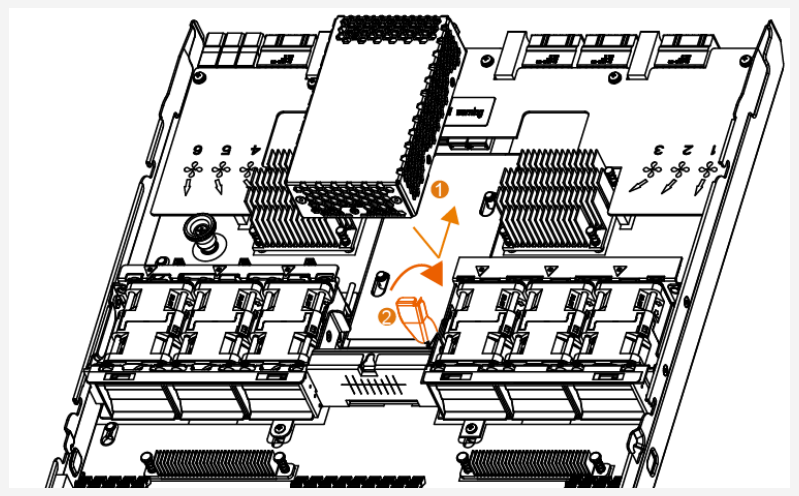


2 Pull the BBU out of the canister (2).

BBU Installation

Procedure

1 Insert the BBU into the canister (1).



2 Rotate the BBU handle to secure it in the chassis (2).

Accessory Rail Kit Installation

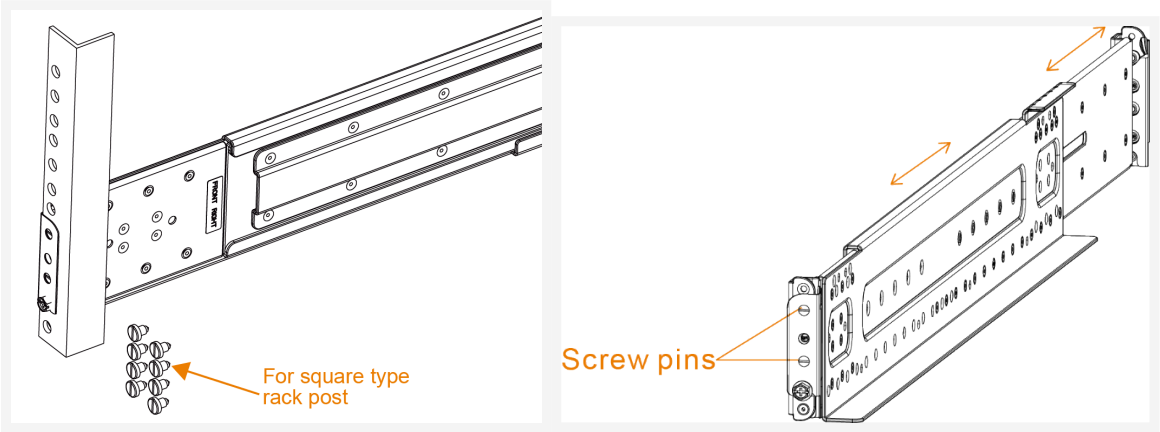
The Accessory Rail Kit Installation guide provides step-by-step instructions for mounting the chassis into a rack using the rail kit, including adjustments for different rack post types and securing the chassis in place.

Rail kit

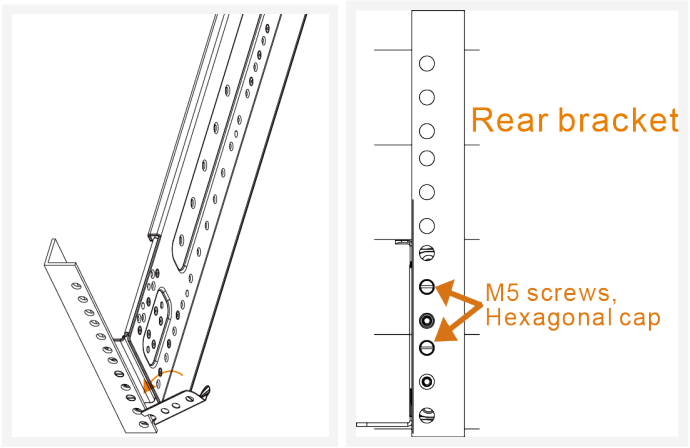
This section covers the installation of the chassis into a rack using the rail kit.

> ⓘ **NOTE:** The rail kit comes with screw pins for round rack posts. For square rack posts, use the provided Pan M5 X10 screws (D=9.2mm, 8 pcs).

The rail kit (length: 670mm) can be extended (length: 870mm) to suit the length of rack posts.

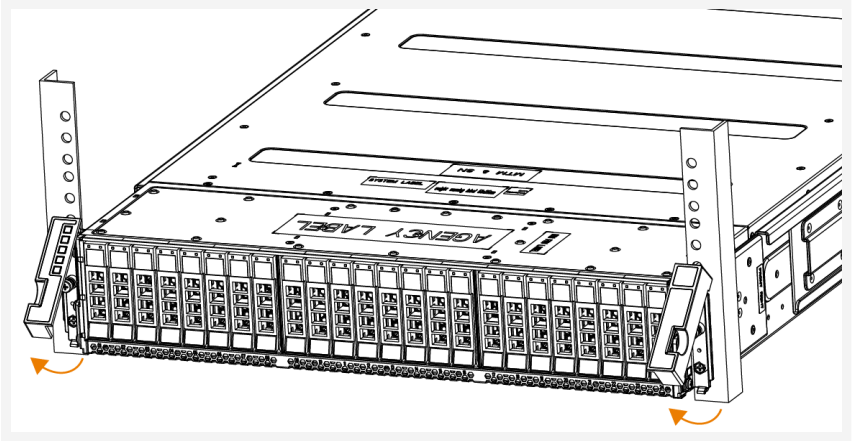


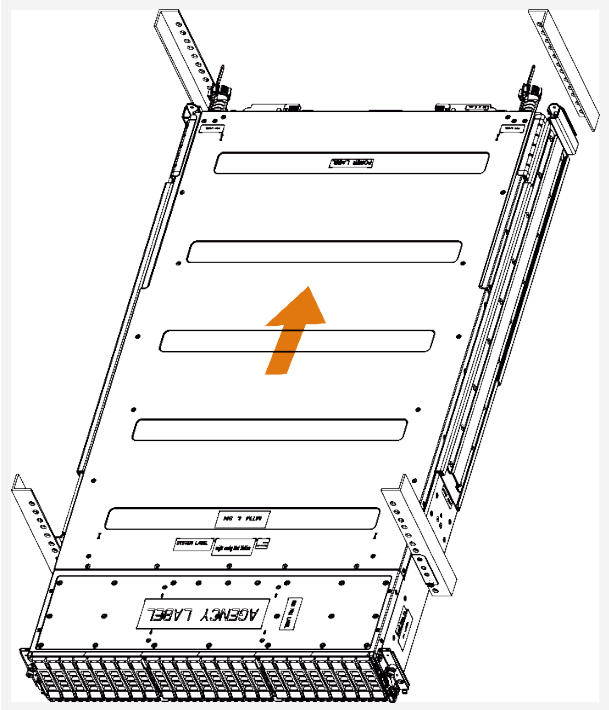
1. Rotate 2 springs to open,
2. Install the rail on the rack,
3. Rotate 2 springs back to the original position.



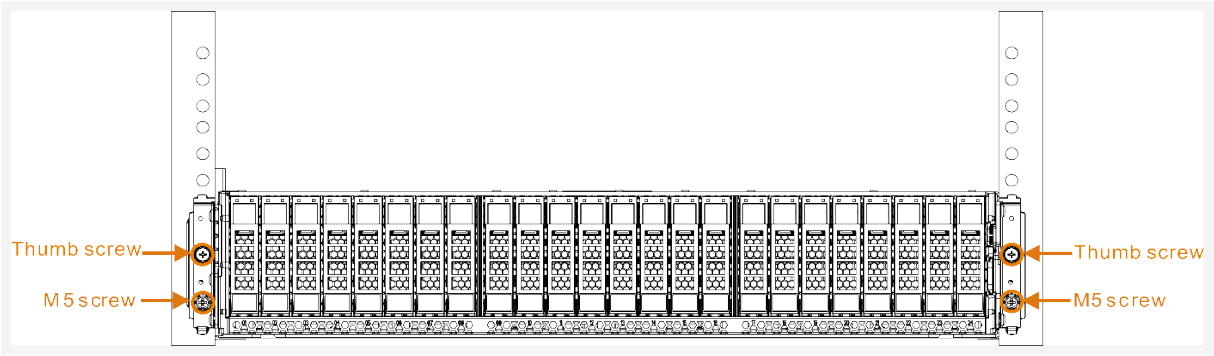
> ⓘ NOTE: Repeat the above steps for both sides.

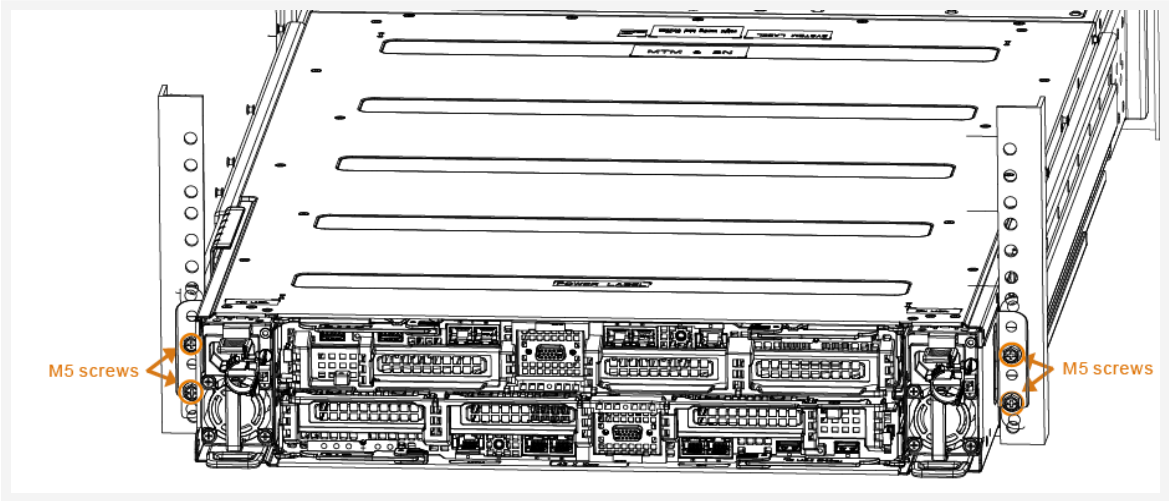
Step 2: Before installing the chassis into the rack, remove the left and right ear bezels. Place the chassis on the rail and slide it into position.



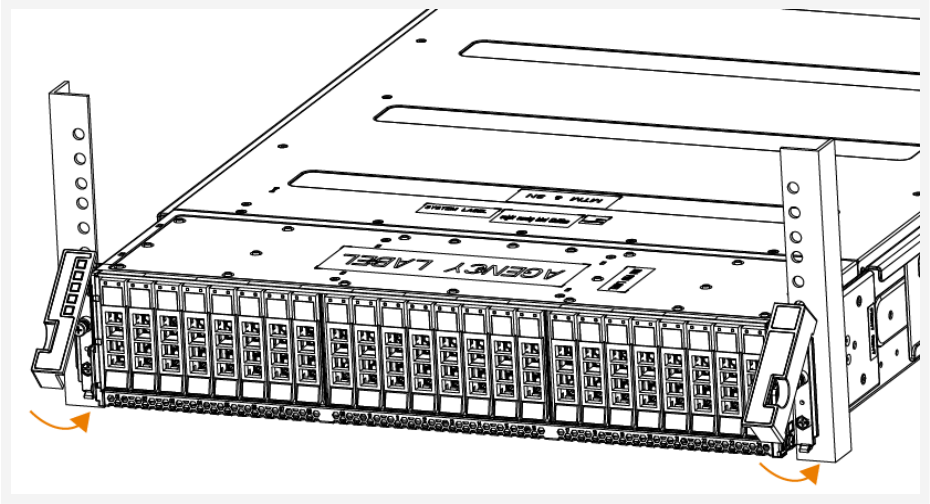


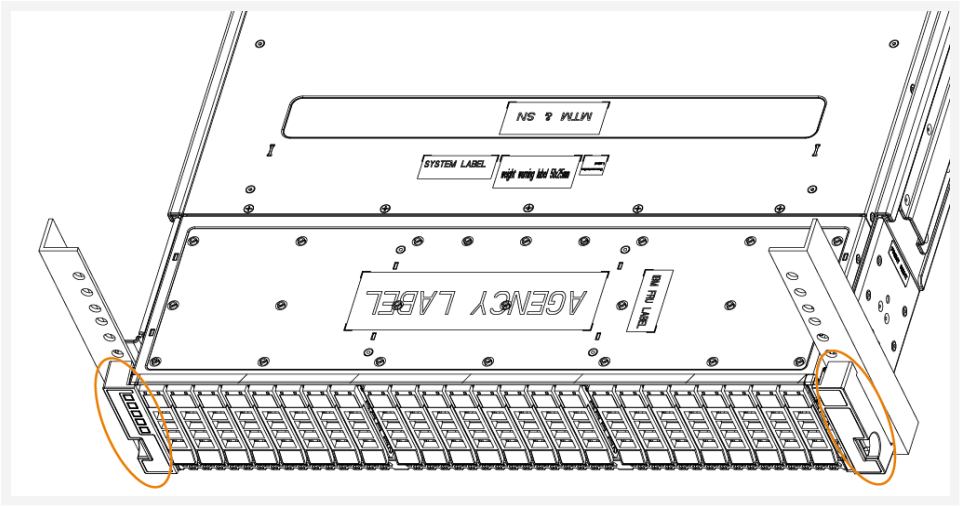
Step 3: Secure the chassis to the front rack by tightening the thumbscrews and one M5 black screw from the accessory bag. Fasten the rear rail to the rack using two M5 black screws from the accessory bag.





Step 4: Reattach the ear bezels to the chassis.




SYSTEM LABEL
AGENCY LABEL

Safety Precautions

Read this section before beginning any procedure. For your safety and the proper maintenance and operation of the SC4200, please follow these precautions when setting up this device.

- Follow all cautions and instructions marked on the equipment.
- Ensure the voltage and frequency of your power source match the voltage and frequency noted on the system's electrical rating label.
- Never insert any objects through openings in the chassis. Dangerous voltages, and/or moving parts may be present. Conductive external objects could produce a short circuit that could damage the system or cause electric shock, resulting in serious personal injury.
- In order to not exceed operational temperature guidelines, do not block or cover the openings of your system. Never place a product near a radiator or heat register. Failure to follow these guidelines may cause overheating and affect the reliability of the device.
- Do not drop the product or subject it to physical shock.
- Keep liquids away from the system.
- When shipping the product, pack it inside the original or equivalent packaging and ship on a pallet.
- Celestica does not assume any responsibility for problems caused by unauthorized repairs or replacement.
- Keep flammable items away from the product.
- Inspect and maintain the site and the system regularly. Failure to do so may reduce the lifespan of this system and possibly void the warranty.

⚠ CAUTION:

The Celestica SC4200 does not produce or have any laser-related functions. If you connect and install a device that supports laser functions such as an optical transceiver, we recommend that you choose a product certified to the relevant standards as shown below.

- EN 60825-1, 1st Edition
- EN 60825-1 Safety of Laser Products — Part 1: Equipment Classification Requirements and Users' Guide
- EN 60825-2 Safety of Laser Products — Part 2: Safety of Optical Fiber Communication Systems
- FDA Regulation 21CFR 1040.10 and 1040.11

Power

Depending on the type of power system your device has, the following symbols may be used.

On - Connects power to the system. This can be AC or DC power depending on product and model.

Off - Disconnects power to the system.

Standby - The power switch is in standby mode (low power).

> ⚠ CAUTION: Please check the input to ensure proper grounding of the power supply unit (PSU) before powering on the system.

> ⚠ CAUTION: Improper power supply system grounding, extreme fluctuation of the input source, and transients (spikes) can result in data errors, or even hardware damage.

> ⚠ CAUTION: The product may be equipped with multiple power supplies. To remove all hazardous voltages, disconnect all power cords.

> ⚠ CAUTION: This device is designed to work with power systems having a grounded neutral or a grounded return for direct current (DC) powered products. To reduce the risk of electric shock, do not plug the chassis into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

> ⚠ CAUTION: The system may have more than one power supply cable. To reduce the risk of electrical shock, a trained service technician must disconnect all power supply cables before servicing the system.

ⓘ NOTE:

This symbol  is used when multiple power supplies are installed in a system. This warning label is typically found on the back of the device near the PSU.

Power Connection

Installation of this equipment must comply with local and regional electrical regulations governing the installation of information technology equipment by licensed electricians. For electrical power ratings on options, refer to the power rating label or the user documentation supplied with that option.

⚠ CAUTION: Do not use the power cord provided with your equipment with any other products. Only use the power cord(s) provided with the product to power it. Do not use household extension cords with your product.

ⓘ NOTE: To disconnect power, remove all power cords from unit.

ATTENTION: DÉBRANCHER LES TOUT CORDONS D'ALIMENTATION

POUR DÉCONNECTER L'UNITÉ DU SECTEUR.

WARNUNG: Wenn Sie das Gerät zwecks Wartungsarbeiten vom Netz trennen müssen, müssen Sie beide Netzteile abnehmen.

当心：如要切断电源，请将全部电源线都从机器上拔掉。

當心：如要切斷電源，請將全部電源線都從機器上拔掉

Regulatory Information

FCC (US)

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 it is not installed and used in accordance with the instruction manual, it 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/her own expense.

> ⓘ NOTE: Any modifications made to this device that are not approved by Celestica may void the authority granted to the user by the FCC to operate this equipment.

ICES-003 (Canada)

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CE (European Community)

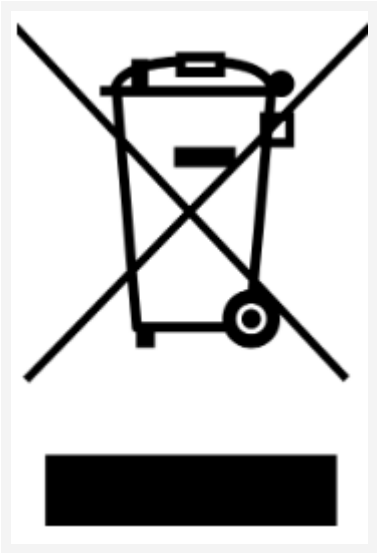
This product conforms to the following European Directive(s) and Standard(s): Application of Council Directive: 2014/35/EU, 2014/30/EU, 2011/65/EU.

Standards to which Conformity is declared: EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN60950-1.

This is a Class A product.

In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Waste Electrical and Electronic Equipment (WEEE)



In accordance with European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE), the presence of the above symbol on the product or on its packaging indicates that this item must not be disposed of in the normal unsorted municipal waste stream. Instead, it is the user's responsibility to dispose of this product by returning it to a collection point designated for the recycling of electrical and electronic equipment waste. Separate collection of this waste helps to optimize the recovery and recycling of any reclaimable materials and also reduces the impact on human health and the environment.

For more information concerning the correct disposal of this product, please contact your local authority or the retailer where this product was purchased.

VCCI (Japan)

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI).

If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

Troubleshooting Your Chassis

This section outlines straightforward procedures for addressing common issues, including detailed steps for fault isolation, interpreting error messages, resolving problems, and managing software updates.

Loose Connections

- Be sure all power cords are securely connected.
- Be sure all cables are properly aligned and securely connected for all external and internal components.
- Remove and check all data and power cables for damage. Be sure no cables have bent pins or damaged connectors.
- Ensure that cords and cables connected to the system are properly organized through the fixed cable tray, if available.
- Be sure each device is properly seated.
- If a device has latches, be sure they are completely closed and locked.
- Check any interlock or interconnect LEDs that may indicate a component is not connected properly.
- If problems continue to occur, remove and reinstall each device, check the connectors and sockets for bent pins or other damage. If the test fails, contact us or your sales provider. Contact Information.

Symptom information

Before troubleshooting a system problem, collect the following information:

- What events preceded the failure? After which step(s) does the problem occur?
- What has changed since the time the system was working?
- Did you recently add or remove hardware or software? If so, did you remember to change the appropriate settings in the system setup utility, if necessary?
- How long has the system exhibited problem symptoms?
- If the problem occurs randomly, what is the duration or frequency?

To answer these questions, the following information may be useful:

- If connecting to a SC4200 storage controller, contact your provider and request access to read and run the SC4200 Insight Diagnostics. Use the survey page to view the current configuration or to compare it to previous configurations.

- Refer to your hardware and software records for information.
- Refer to system LEDs and their statuses.

Prepare for System Diagnosis

Be sure the system is in the proper operating environment with adequate power, air conditioning, and humidity control. Refer to the system documentation for required environmental conditions.

1. Record any error messages displayed by the system.
2. Power down the system.
3. Disconnect any peripheral devices not required for testing (any devices not necessary to power up the system).
4. Collect all tools and utilities necessary to troubleshoot the problem.

> ⓘ **NOTE:** To verify the system configuration, connect to the System Management homepage and select Version Control Agent. The VCA gives you a list of names and versions of all installed SC4200 drivers, Management Agents, and utilities, and whether they are up to date.

Troubleshooting flow chart

To effectively troubleshoot an issue, Celestica recommends that you start with the first flow chart in this section, the "Start Diagnosis Flow Chart," and follow the appropriate diagnostic path. If the other flow charts do not provide a troubleshooting solution, follow the diagnostic steps in "General Diagnosis Flow Chart." The General Diagnosis Flow Chart is a generic troubleshooting process for use when the issue is not system-specific or is not easily categorized into the other flow charts.

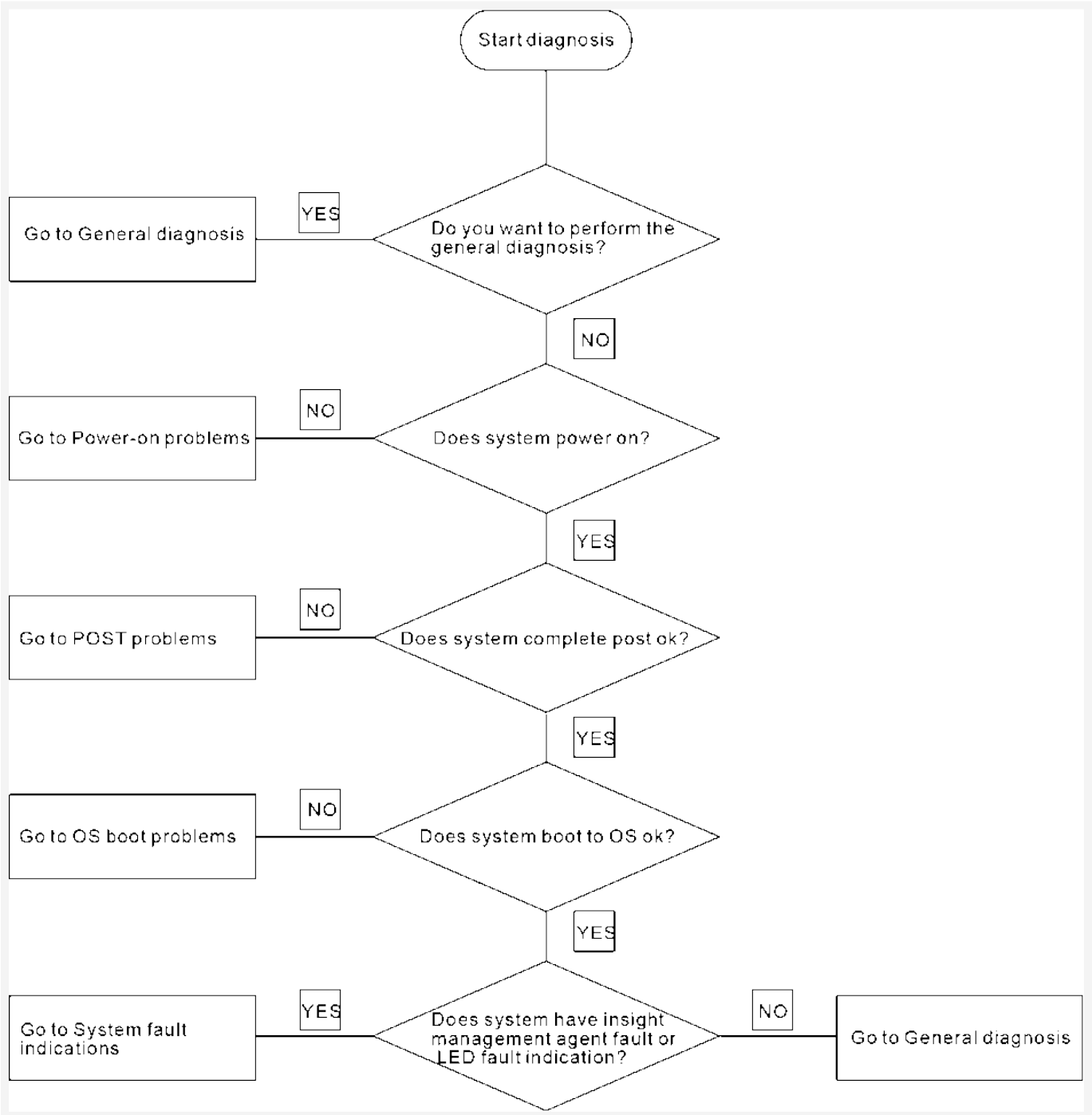
The available flow charts include:

- Start Diagnosis Flow Chart
- General Diagnosis Flow Chart
- Power-on Problems Flow Chart
- POST Problems Flow Chart
- OS Boot Problems Flow Chart
- System Fault Indications Flow Chart

Start Diagnosis Flow Chart

Use the following flow chart to start the diagnostic process.

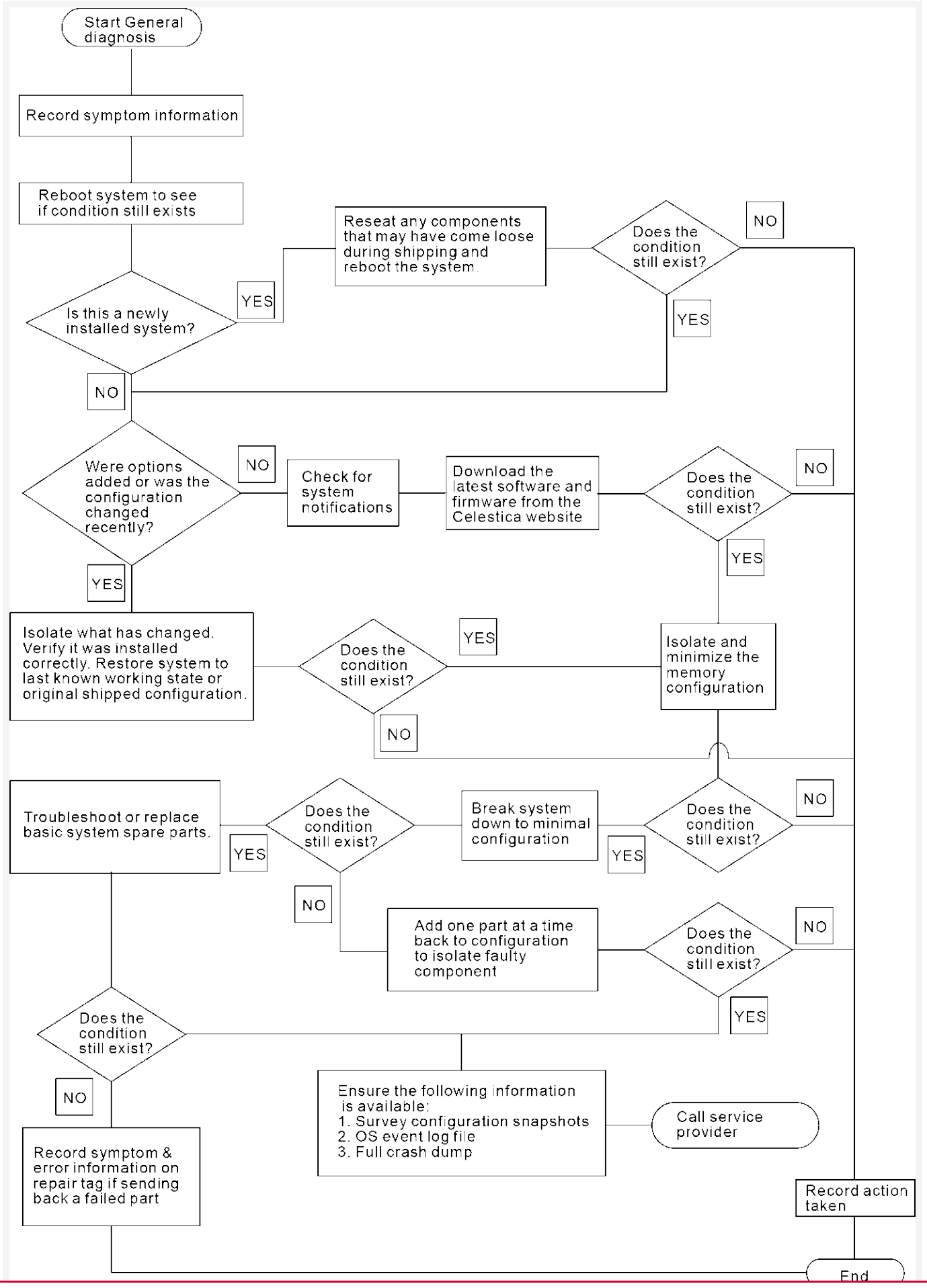
Figure 8. Start Diagnosis Flow Chart



General Diagnosis Flow Chart

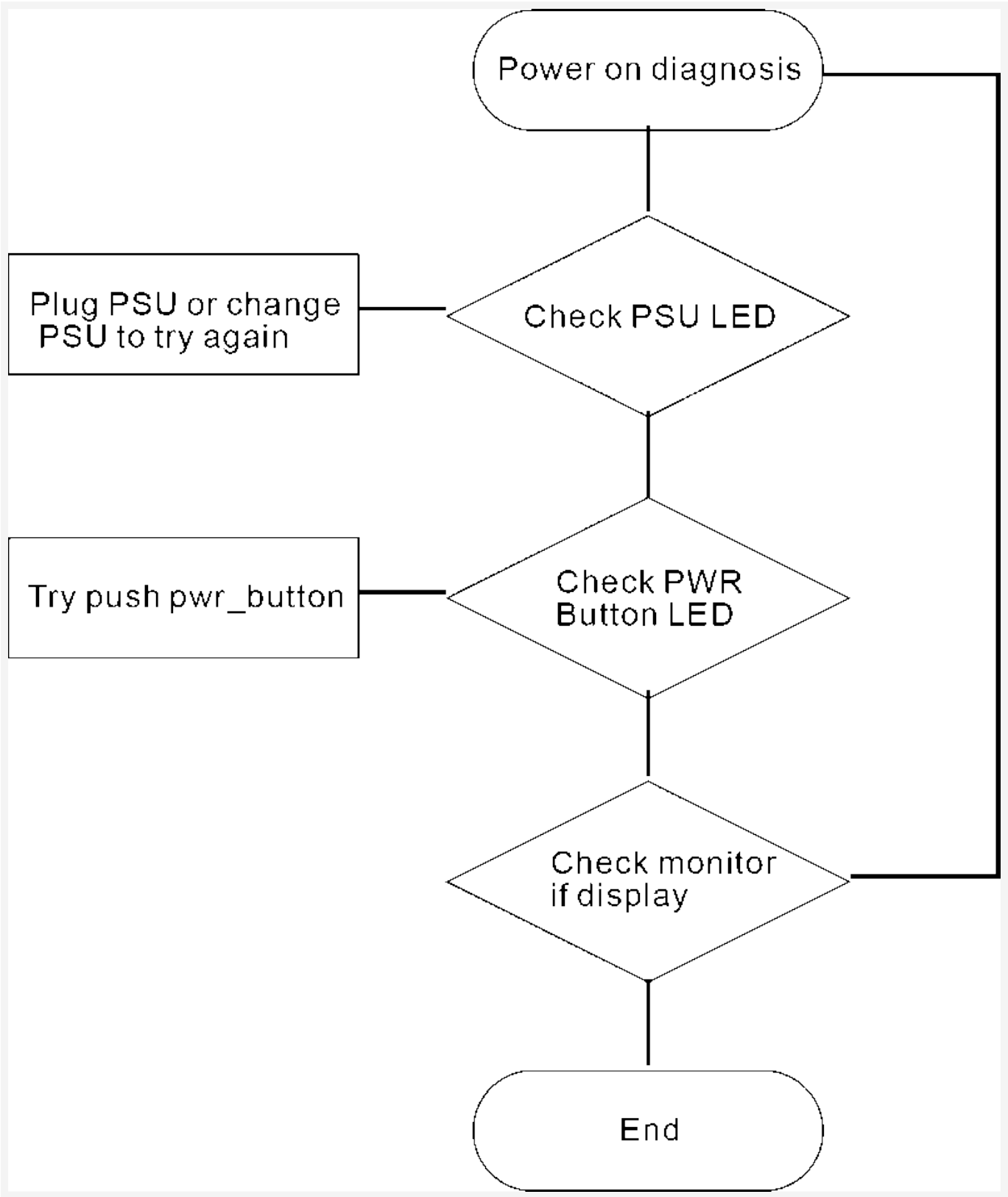
The General diagnosis flow chart provides a generic approach to troubleshooting. If you are unsure of the problem, or if the other flow charts do not fix the problem, use the following flow chart.

Figure 9. General Diagnosis Flow Chart


Start General diagnosis
Record symptom information
Reboot system to see if condition still exists
Is this a newly installed system?
YES
Reseat any components that may have come loose during shipping and reboot the system.
Does the condition still exist?
NO
YES
NO
Were options added or was the configuration changed recently?
NO
Check for system notifications
Download the latest software and firmware from the Celestica website
Does the condition still exist?
NO
YES
YES
Isolate what has changed. Verify it was installed correctly. Restore system to last known working state or original shipped configuration.
Does the condition still exist?
YES
Isolate and minimize the memory configuration
NO
Troubleshoot or replace basic system spare parts.
Does the condition still exist?
YES
Break system down to minimal configuration
Does the condition still exist?
NO
YES
NO
Add one part at a time back to configuration to isolate faulty component
Does the condition still exist?
NO
YES
Does the condition still exist?
NO
Ensure the following information is available:
1. Survey configuration snapshots
2. OS event log file
3. Full crash dump
Call service provider
Record symptom & error information on repair tag if sending back a failed part
Record action taken
End

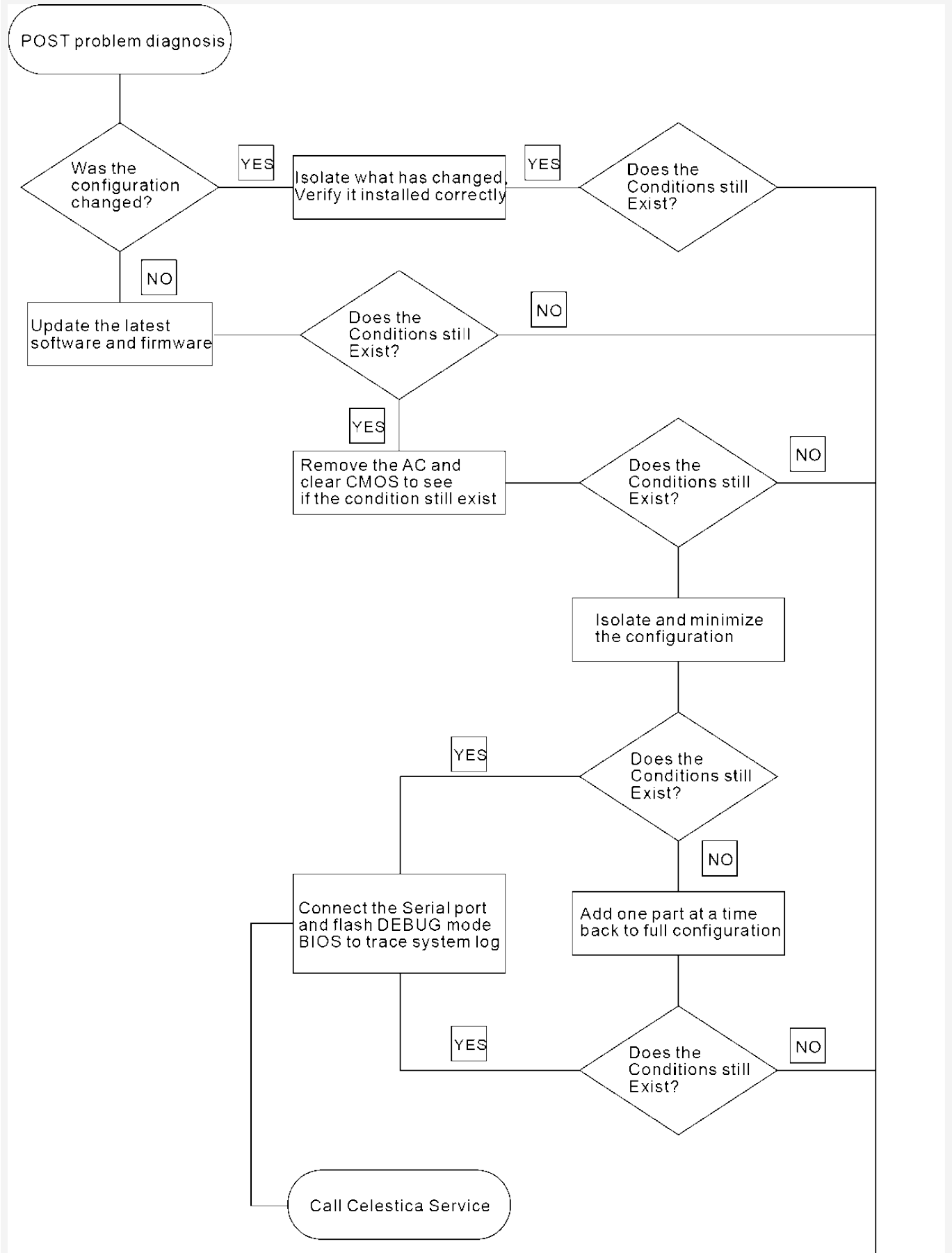
Power-on Problems Flow Chart

Figure 10. Power-on Problems Flow Chart



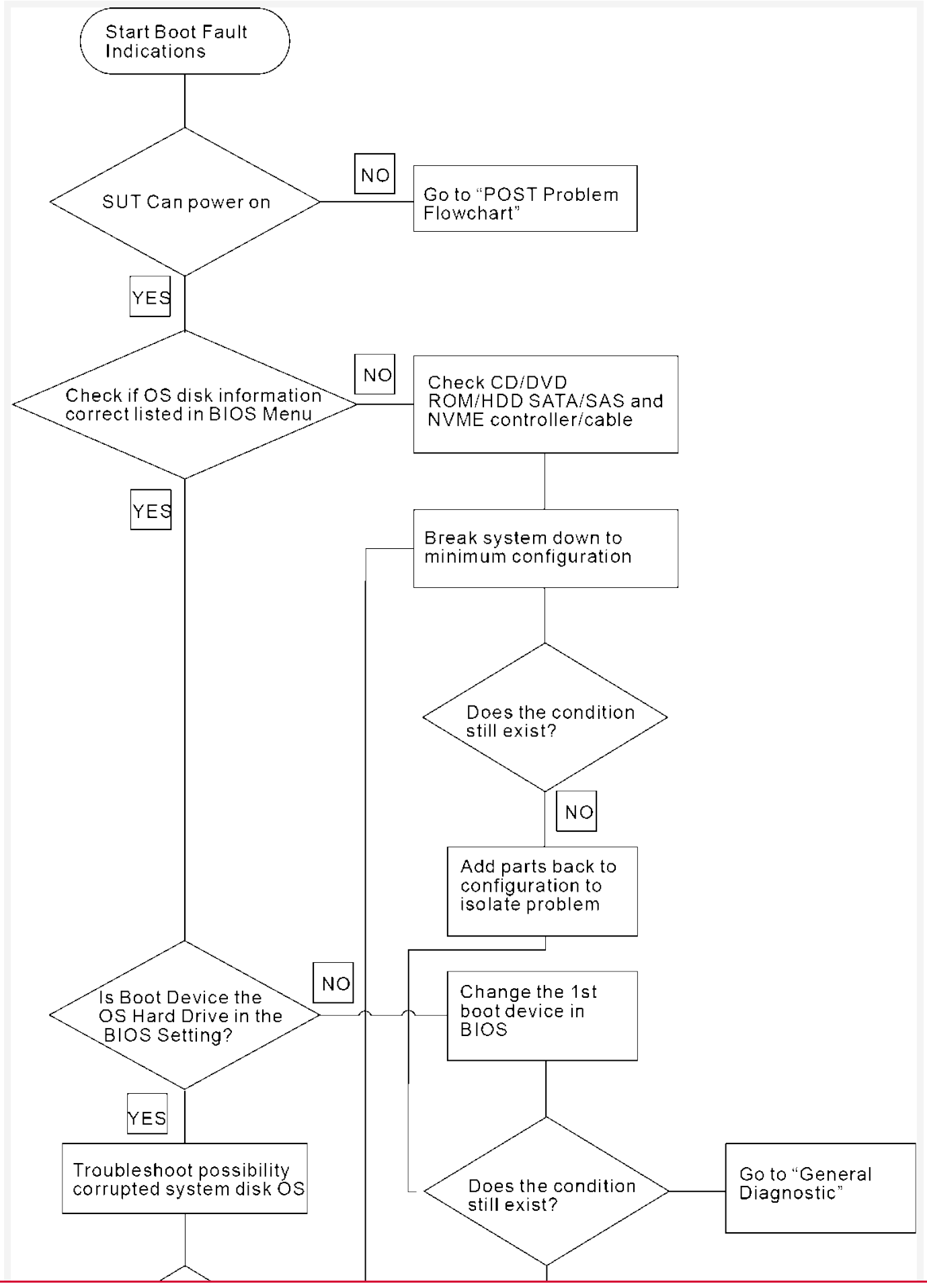
POST Problems Flow Chart

Figure 11. POST Problems Flow Chart


POST problem diagnosis
Was the configuration changed?
YES
Isolate what has changed, Verify it installed correctly
YES
Does the Conditions still Exist?
NO
Update the latest software and firmware
Does the Conditions still Exist?
NO
YES
Remove the AC and clear CMOS to see if the condition still exist
Does the Conditions still Exist?
NO
Isolate and minimize the configuration
YES
Does the Conditions still Exist?
NO
Connect the Serial port and flash DEBUG mode BIOS to trace system log
Add one part at a time back to full configuration
YES
Does the Conditions still Exist?
NO
Call Celestica Service

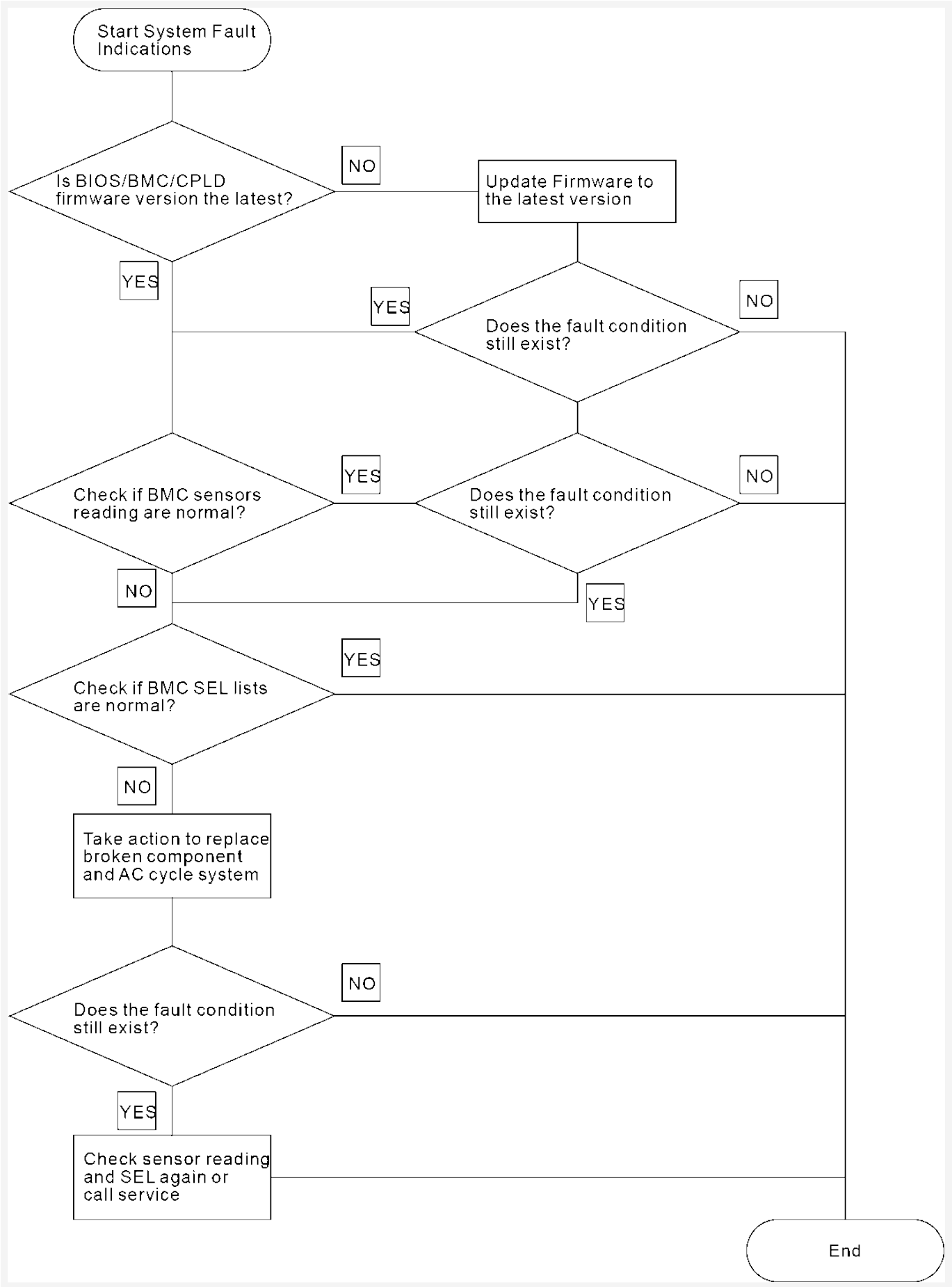
OS Boot Problems Flow Chart

Figure 12. OS Boot Problems Flow Chart


Start Boot Fault Indications
SUT Can power on
NO
Go to "POST Problem Flowchart"
YES
Check if OS disk information correct listed in BIOS Menu
NO
Check CD/DVD ROM/HDD SATA/SAS and NVME controller/cable
YES
Break system down to minimum configuration
Does the condition still exist?
NO
Add parts back to configuration to isolate problem
Is Boot Device the OS Hard Drive in the BIOS Setting?
NO
Change the 1st boot device in BIOS
YES
Troubleshoot possibility corrupted system disk OS
Does the condition still exist?
Go to "General Diagnostic"

System Fault Indications Flow Chart

Figure 13. System Fault Indications Flow Chart


Start System Fault Indications
Is BIOS/BMC/CPLD firmware version the latest?
NO
Update Firmware to the latest version
YES
YES
Does the fault condition still exist?
NO
Check if BMC sensors reading are normal?
YES
Does the fault condition still exist?
NO
NO
YES
YES
Check if BMC SEL lists are normal?
NO
Take action to replace broken component and AC cycle system
Does the fault condition still exist?
NO
YES
Check sensor reading and SEL again or call service
End

Contact Information

Celestica operates a customer service portal.

- Self-support resources (knowledge base, FAQ, common fixes, new firmware) are available.
- Our support teams are connected to the support portal and can receive notifications for requests.
- The portal also tracks and collects customer inputs for further improvements to our products and services.

Customers can register and request support (as well as search information in the knowledge base) at: https://customersupport.celestica.com/csm
In case there are any questions or issues using the customer portal visit: https://www.celestica.com/contact-us. For immediate questions, please feel free to call your responsible account manager.