SD6200 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

SD6200 Installation Guide

This reference document provides important legal disclaimers and notices for SD6200 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 SD6200 dense storage platform.

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.

Safety Precautions

Read this section before beginning any procedure. For your safety and the proper maintenance and operation of the SD6200, 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 SD6200 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

Product Overview

This section provides general information regarding the dimensions, requirements, and capacities of the SD6200 dense storage platform.

The SD6200 dense storage platform is a 4U, high availability, high density enterprise-class JBOD storage enclosure for up to 90 drives. The chassis supports both 3.5 inch and 2.5 inch, 12Gbps SAS 3.0 and SATA 3.0 disk drives that fit within a 1100 mm rack, including space for the cable management assembly (CMA).

- Enclosure
  - 4U rack-mounted storage enclosure with slide rail and cable management assembly
  - Dimensions (with CMA): 175.3mm (H) × 446mm (W) × 1080mm (D)
  - Fits in an 1100 mm rack (not including door space) with CMA added
  - Weight: 4U Assembly with full configuration: 118 Kg
- Disk Drives
  - 90 top loading drives
  - System supports SAS 2.0/3.0 and SATA 2.0/3.0 drives
  - Up to 13W per drive slot
- ESM Canister
  - 4× Mini-SAS HD I/O ports
  - Hot-pluggable from rear of chassis
  - Supports single or dual ESM Canisters
  - Redundant ESM canisters provide dual port access for all 90 drives
  - Based on Broadcom SAS4x48 24G SAS Expander
- Power Supply
  - 2+2 (200-240V) or 3+1 (100-240V) Redundant 1300W PSU
  - System input: 90-264VAC, 47Hz-63Hz via an IEC 320 C-14 power inlet
  - High efficiency (Supports Titanium and Platinum PSUs)
  - 108A @ 12V and 3.0A @ 12VSB (200-240V)
  - Hot-pluggable service from rear of chassis, AC power cord(s) on the rear of the chassis
  - 73.5mm(W) x 40 mm (H) x 185 mm (L)
- Fan module
  - Five (5) hot-pluggable, top loading fan modules in chassis
  - Each fan module contains two 80mm fans (dual-rotor)

- Supports single fan failure

System Specifications

Product Specifications

Type	SD6200
Depth	1070 mm
Height	175.3 mm
Width	448 mm
Weight	118 Kg
Power Input (VAC)	200 ~ 240 VAC (2+2redundant) 100 ~ 127 VAC (3+1 redundant
Power Consumption (W)	1300W
Operating Temperature (airflow front to back)	5º - 35º C
Operating Temperature (airflow back to front)	5º - 35º C
Operating Relative Humidity	8% - 85%
Storage Temperature	-40º - 60º C
Storage Relative Humidity	8% - 95%
Regulatory - EMC:	EN 55032 Class A, EN55024, EN 61000-3-2, EN 61000-3-3, FCC part 15 Class A, VCCI Class A, ICES-003 Class A, GB/T9254 Class A
Regulatory - Safety:	IEC/EN/UL/CSA 62368-1, GB4943
Regulatory - Environment	RoHS, REACH, WEEE, ERP Lot9

Hardware Overview

This section describes key hardware components of the SD6200 dense storage platform.

> ⓘ NOTE:
> The ESM, PSU, Fan modules, HDD and DC-DC module are all hot-pluggable.

> ⚠ WARNING: Users should replace FRU drives one by one. Do not remove multiple FRU drives at the same time. A replacement drive or empty drive carrier must be installed prior to removing another drive.

> ⚠ WARNING: Replacing components is time-sensitive to avoid overheating the system. For the maximum time to replace a hardware component (remove and install) please refer to the following:
>
> 1. Canister replacement maximum time is 10 minutes.
> 2. PSU replacement maximum time is 10 minutes.
> 3. System fan module replacement maximum time is 10 minutes.
> 4. DC-DC module replacement maximum time is 10 minutes.
> 5. Drive replacement maximum time is 10 minutes.

Expander Storage Module (ESM) Canister

Overview

The canister module provides external SAS connectivity for the four (4) Mini-SAS HDs from the rear of the canister and provides four external, four-lane Mini-SAS HD(SFF-8644) connectors, a RS-232 serial port (audio jack), and eleven status LEDs.

ESM Canister LEDs and Button

Refer to the image below for the ESM canister front view. There are eleven LEDs and one button on the canister face.

Figure 1. ESM Canister Front View

Below is the description for each LED and the button:

- No.1: Power LED (Green)
  - On – ESM Power LED
  - Off – ESM Power is off
- No.2: Fault LED (Amber)
  - On – Fault conditions exist in ESM
  - Off – Normal operation
- No.3: Identify LED-UID (Blue)
  - On – ESM identify LED
  - Off – Normal operation
- No.4/No.6/No.9/No.11: ESM Mini-SAS HD link status LED (Green)
  - Steady On – Linked
  - Blink – data transfer
  - Off – No Link
- No.5/No.7/No.8/No.10: ESM Mini-SAS HD link fault LED (Amber)
  - On – Link fault
  - Off – Normal
- No.12: Power button of each ESM to control power on/off
  - ESM status is on, press power button >=4s to turn off
  - ESM status is off, press power button <1s to turn on

Mini-SAS HD Port

There are eight Mini-SAS HD ports on the XD4090-S4 system, each canister has four ports.

- Four Mini-SAS HD ports for JBOD upstream/downstream connection

- 12G SAS 4X wide port
- Support passive cable

Debug Port

There is a console port on each canister for software debug with 3.3V TTL serial port with 3.5mm audio jack connector.

ESM Debug Commands

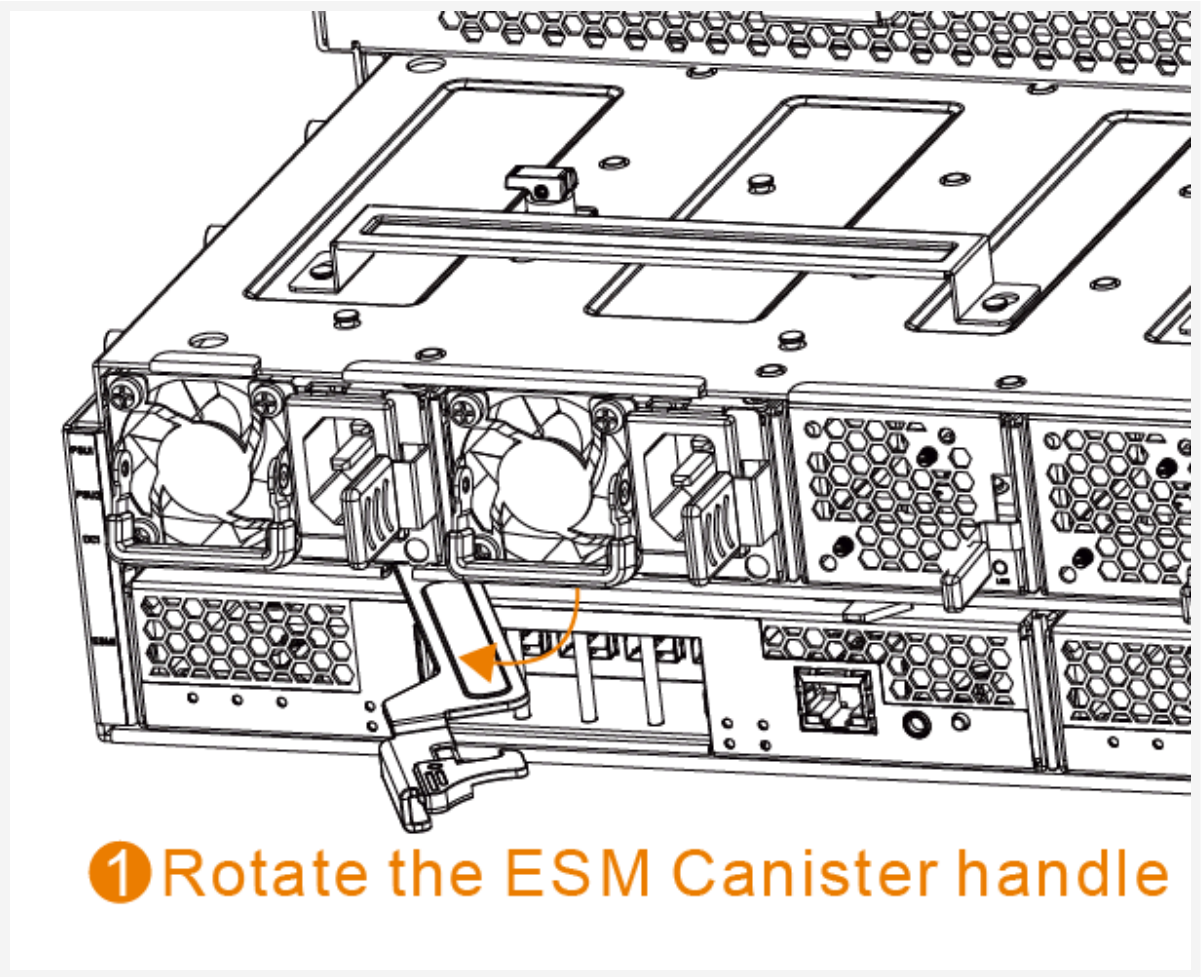
Command	Description
about	Display firmware version and copyright information
drv	Show array device slot elements status
esm	Show enclosure service control electronics element status
fan	Show/Set working mode and speed of cooling fans
help	Show the command list
mode	Display/Config ESM state
fru	Display/Change system inventory information of FRUs and enclosure
log	Display/Clear system event and operation log
port	SAS Expander port status display
power	Display/Change power status of FRU/Drives
threshold	Display or set threshold values for various sensors
temp	Display temperature sensors reading
checklist	Show/configure SBB compatibility checklist

reset	Reset local/peer Canister
config	Display/Reset user configuration
debug	Toggle system debug information
errlog	Display/Clear firmware application error log
led	Show/Set status of various LED indicators
vpd	Display/Program various VPD
spin	Drive spin up control
phy	PHY enable/disable/reset
flash	Toggle the boot selection

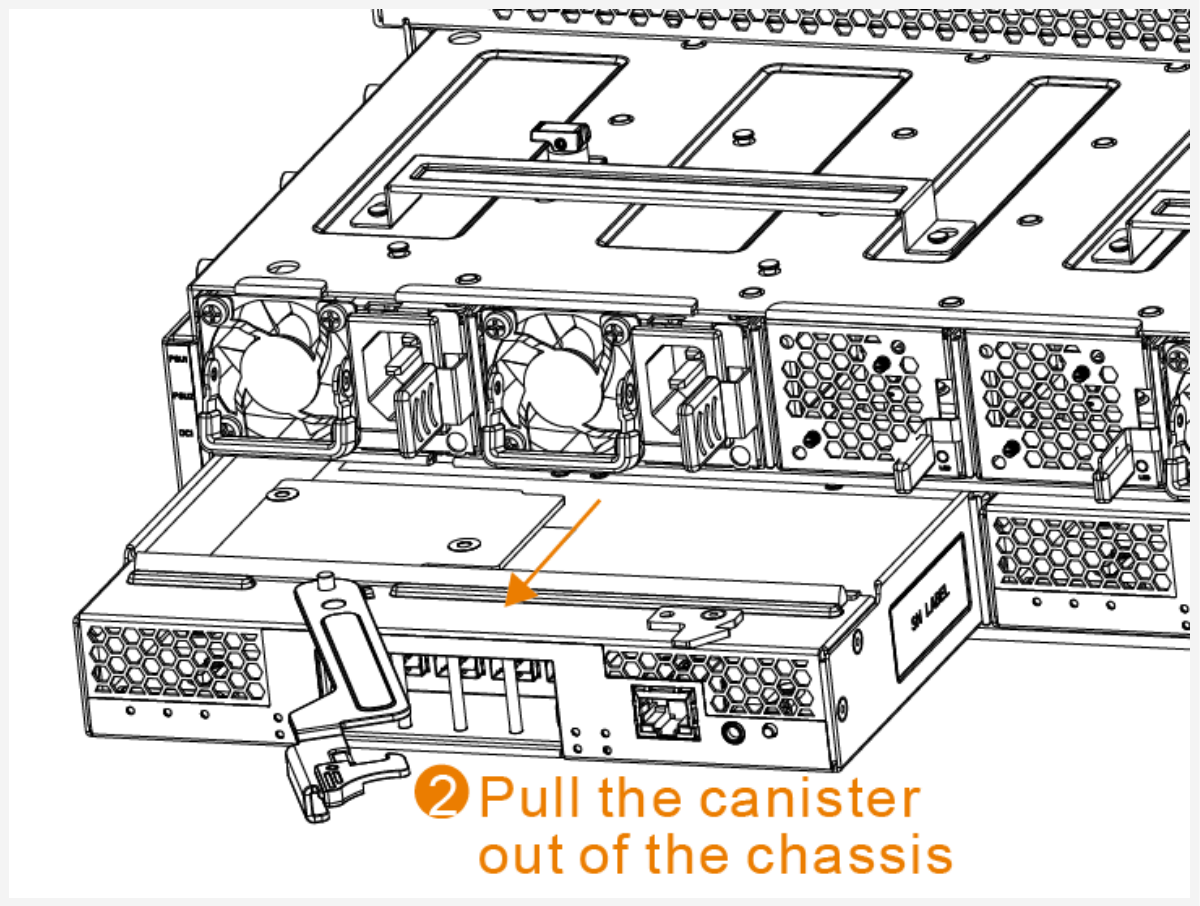
ESM Canister Removal

Procedure

1. Press the latch and rotate the ESM canister handle to a 45° angle as shown.



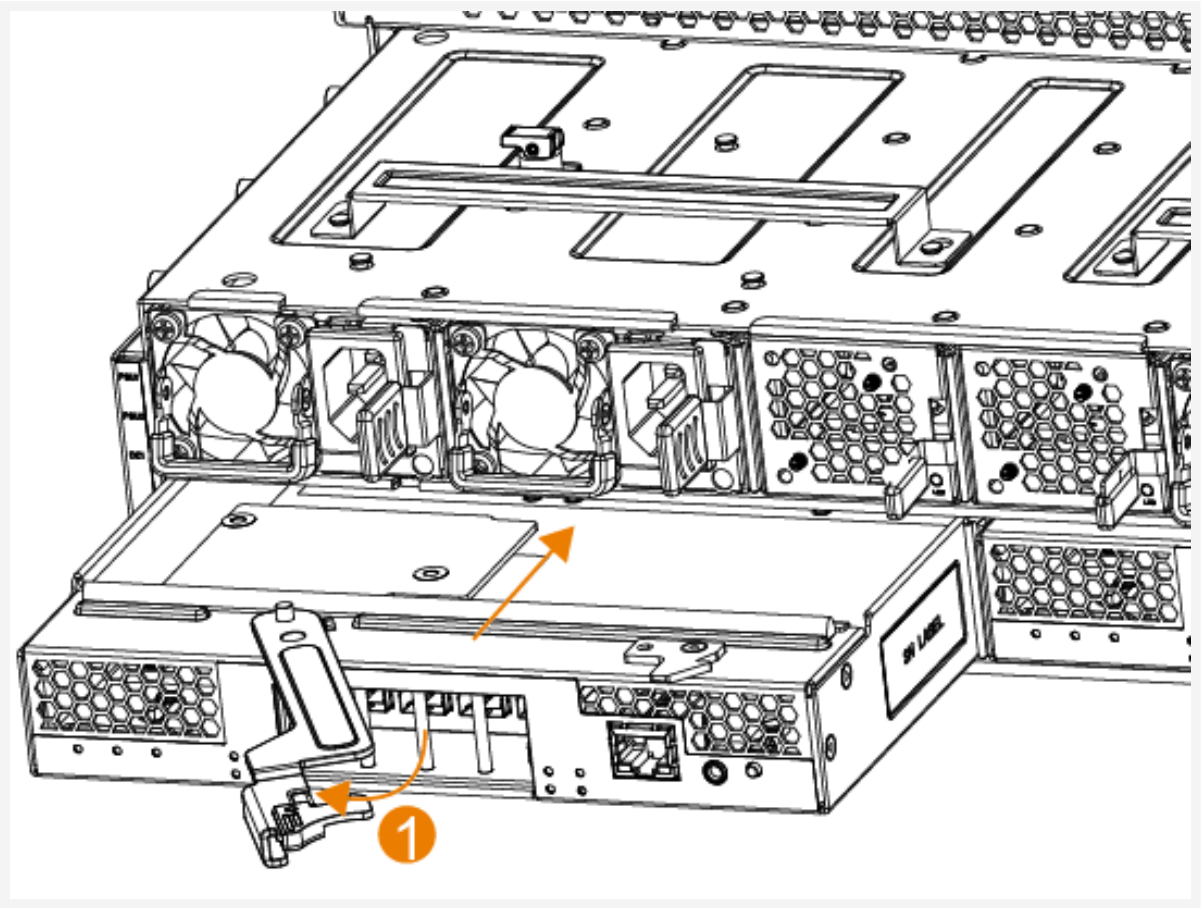
2 Pull the ESM canister out of chassis.



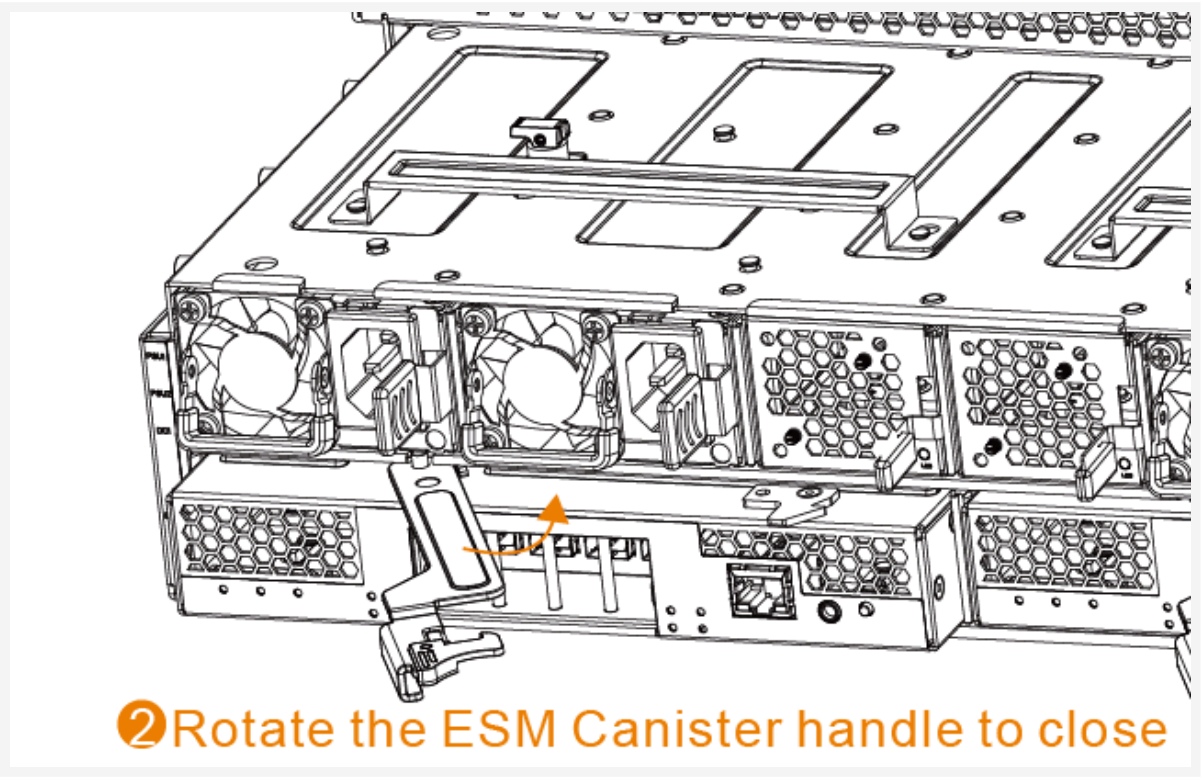
ESM Canister Installation

Procedure

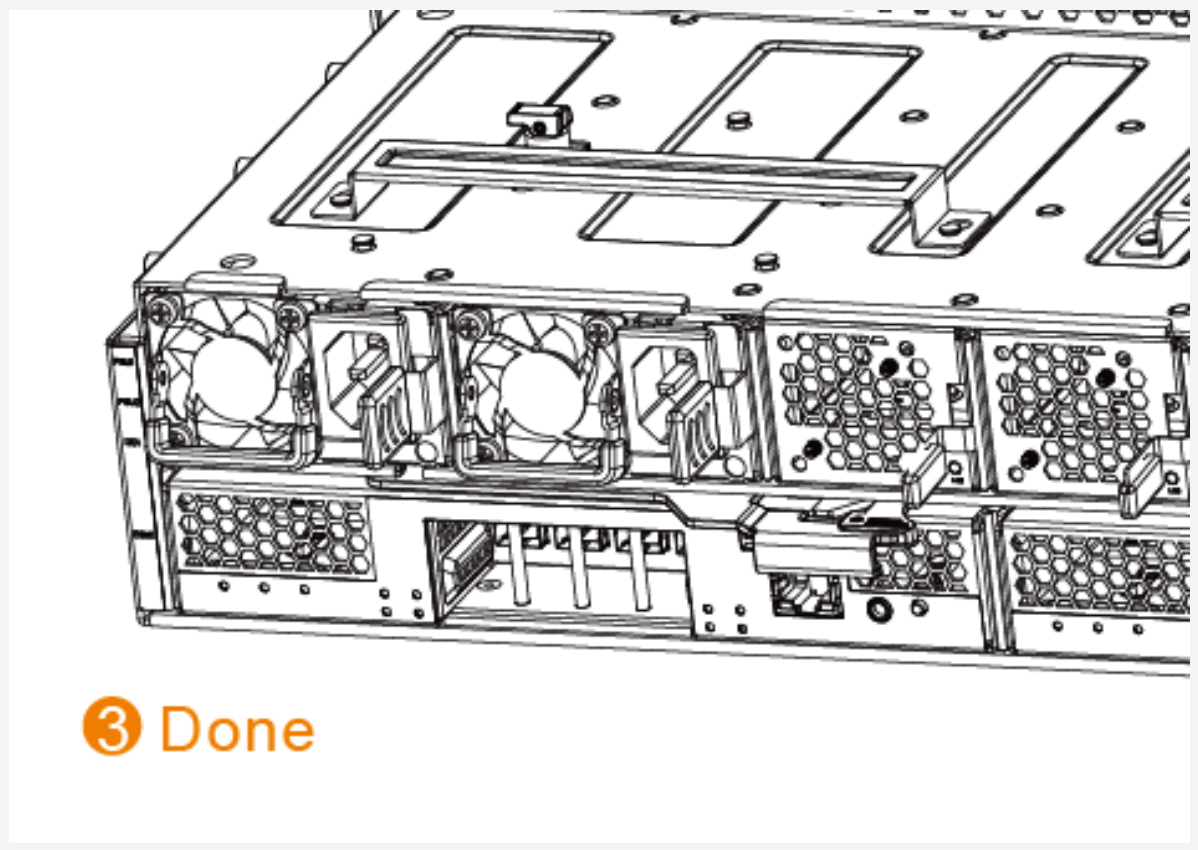
1. Slide ESM canister into the chassis. Press the latch and rotate the ESM canister handle to a 45° angle, then hold the handle to push the ESM canister into the chassis as shown below.



2 Rotate the ESM canister handle to close.



3 Installation completed.



Power Supply Unit (PSU)

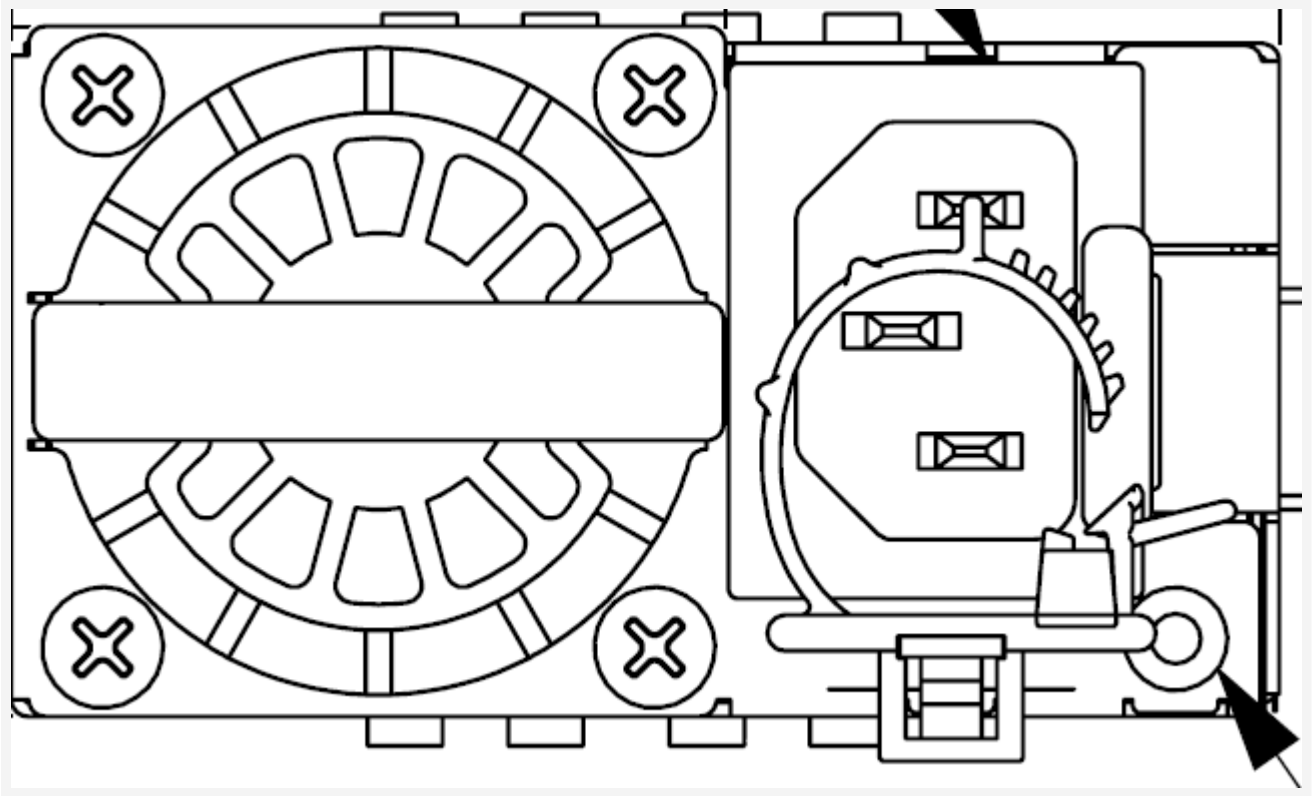
Overview

The SD6200 storage enclosure is powered by four (2+2 or 3+1 redundancy) 1300W redundant power supply units (PSUs) with the following features.

- Four 1300W
- 12 VDC +/- 5%
- Temperature sensor and VPD

Figure 2. PSU View

ⓘ NOTE: The PSU model displayed in this document may vary from the actual product. This includes possible differences in efficiency, power output, connection type, LED(s) and location(s), and other specifications.



Power Supply Condition	LED State
Output on, normal operation	Green
No AC power to all power supplies	Off
AC present / Only VSB on (PSU off)	1 Hz Blink Green
AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power	Amber
Power supply warning events where the power supply continues to operate; high temp, high power, high current, slow fan, under voltage	1 Hz Blink Amber

Power supply critical event causing a shutdown; failure, over current protection (OCP), over voltage protection (OVP), fan failure	Amber
Power supply firmware updating	2 Hz Blink Green

AC Power Cord

The AC power sockets are located on the rear of the chassis. Contact Celestica if you want to use other types of power cords.

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

⚠ 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: This product is designed to work with power systems having a grounded neutral (grounded return for DC-powered products). To reduce the risk of electric shock, do not plug products 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.

☆ IMPORTANT:

This product supports the use of Titanium-rated PSUs and Platinum-rated PSUs, but does not support mixed use.

Only use PSUs with identical part numbers. Two Titanium-rated PSUs with different part numbers is not supported.

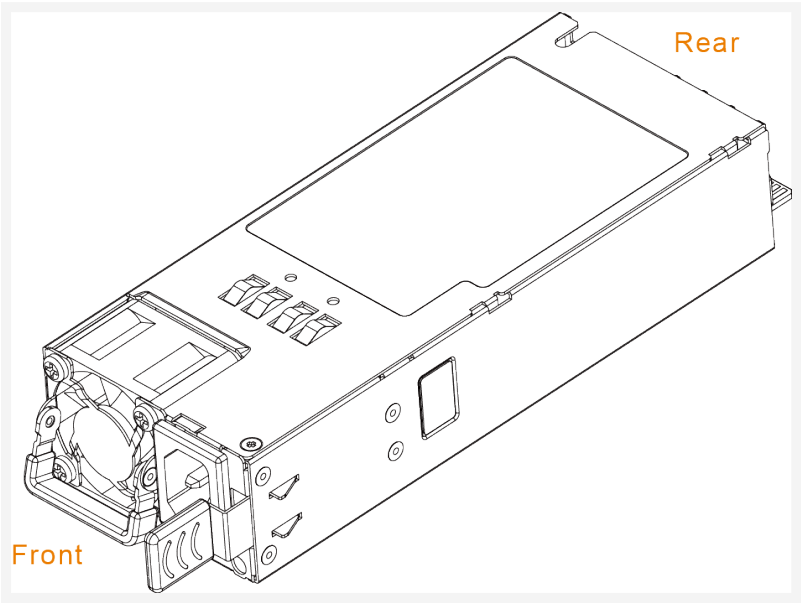
Case 1: For a whole system initial power up, if the system is powered up with non-matching PSUs, the system will not function (allow data I/O) until a valid configuration is installed.

Case 2: If a PSU is replaced with a non-matching PSU while the system is functioning, the system will power off the newly inserted PSU and trigger an alarm mix log and the enclosure fault LED.

Case 3: All PSUs are of the same certified rating (Titanium or Platinum) but the part numbers do not match.

PSU Assembly

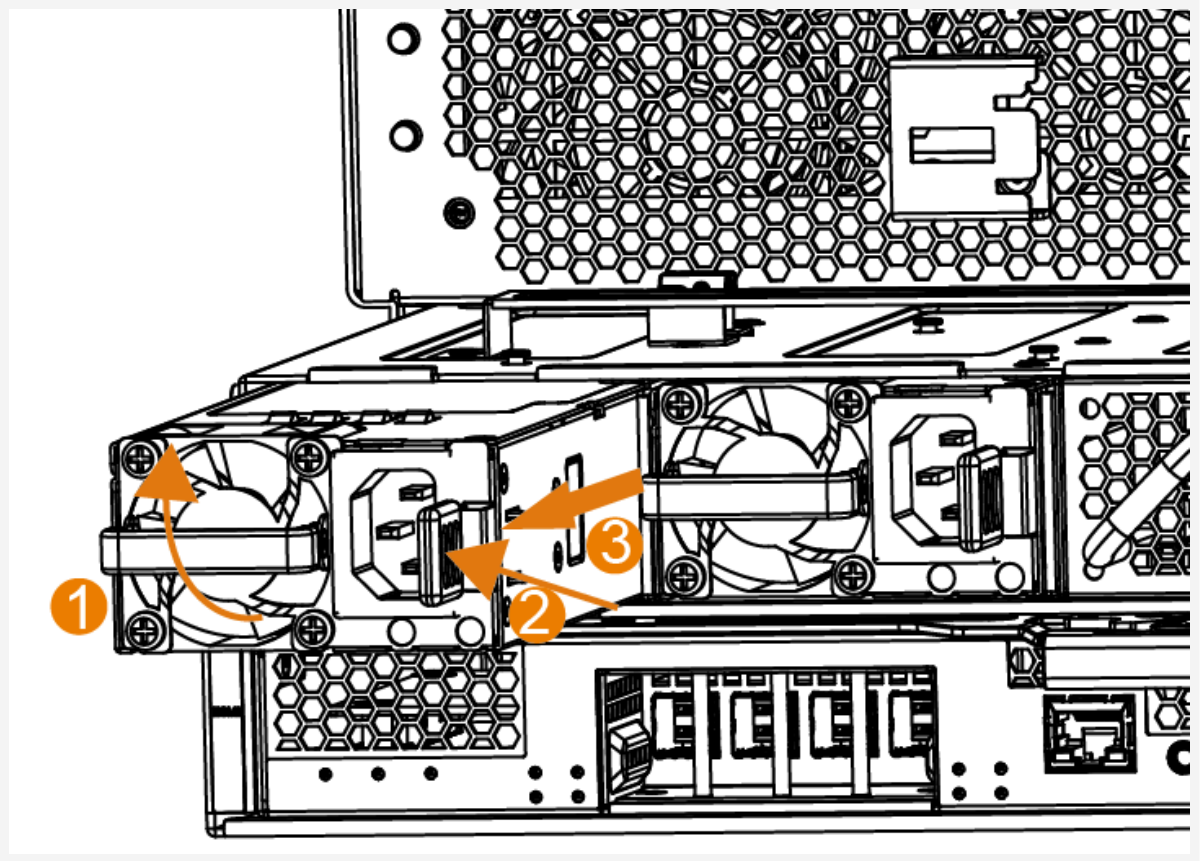
Figure 3. PSU Overview



PSU Removal

Procedure

1. Rotate handle 90 degrees as shown.

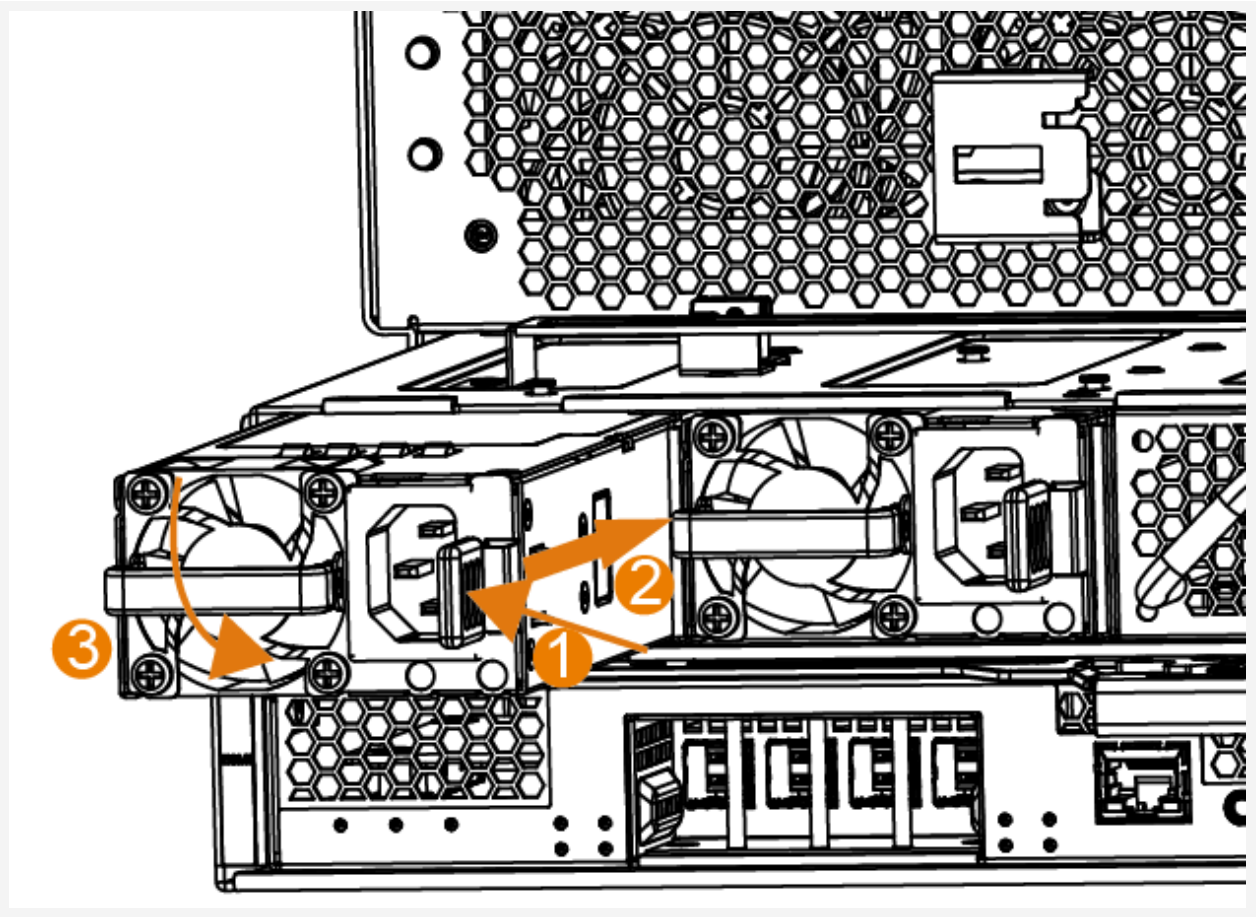


2. Press latch.
3. While pressing latch, use handle to pull PSU from chassis.

PSU-Installation

Procedure

1. Rotate handle to a 90 degree angle as shown.



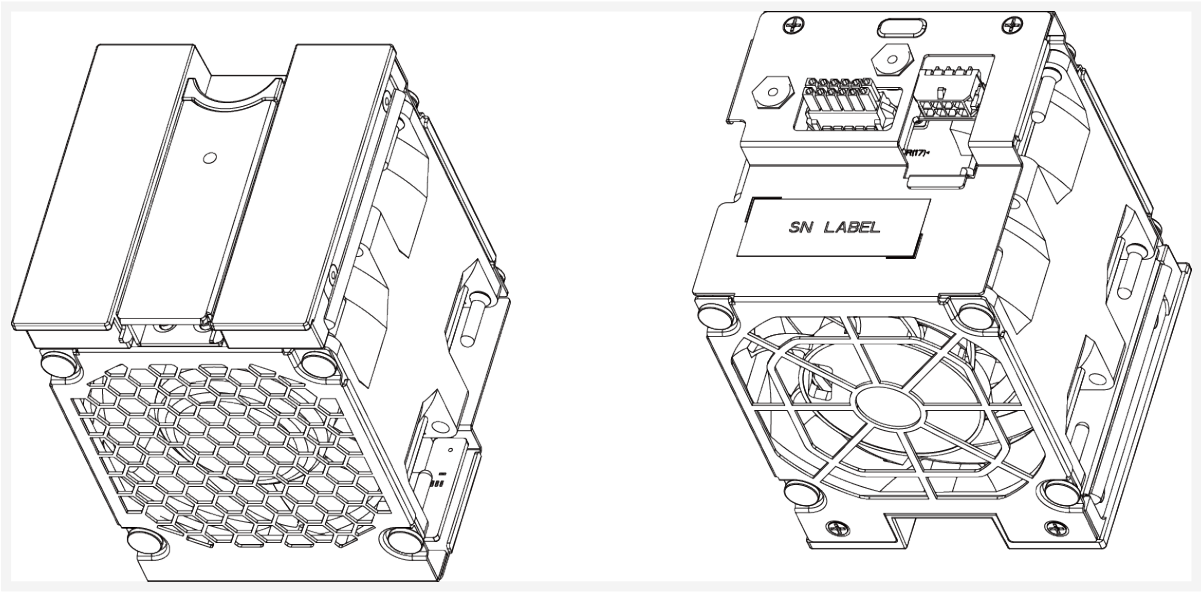
2. Press latch and handle to slide PSU into chassis.
3. Rotate handled 90 degrees to close.

Fan Module

Fan Overview

The SD6200 enclosure houses five (5) fan modules in the back of the chassis for drive cooling.

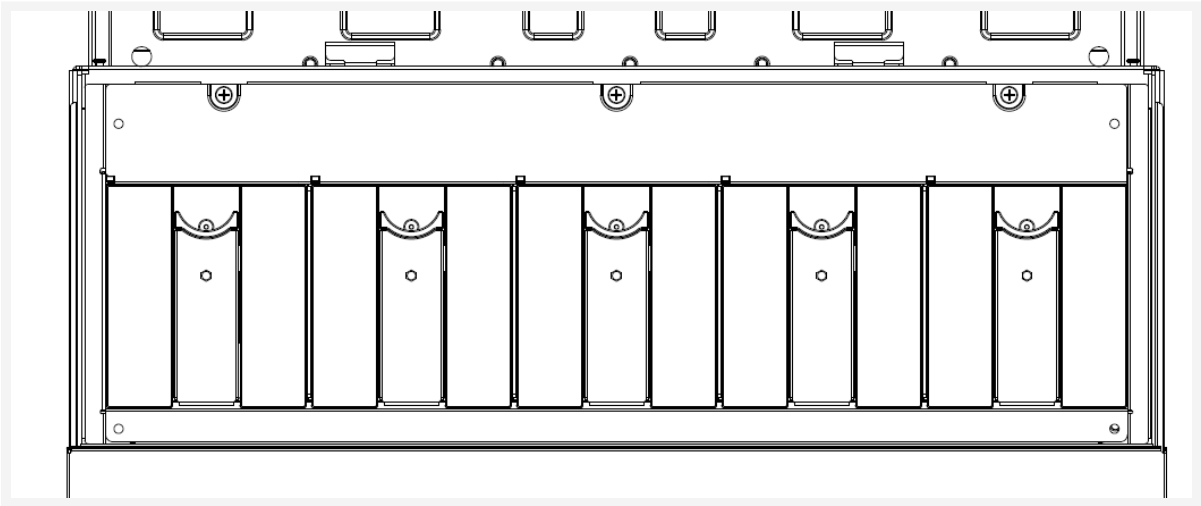
Figure 4. Fan Module - Front and Rear View



Fan Module LED

Each fan module includes one status LED.

Figure 5. Fan Module Assembly Top View



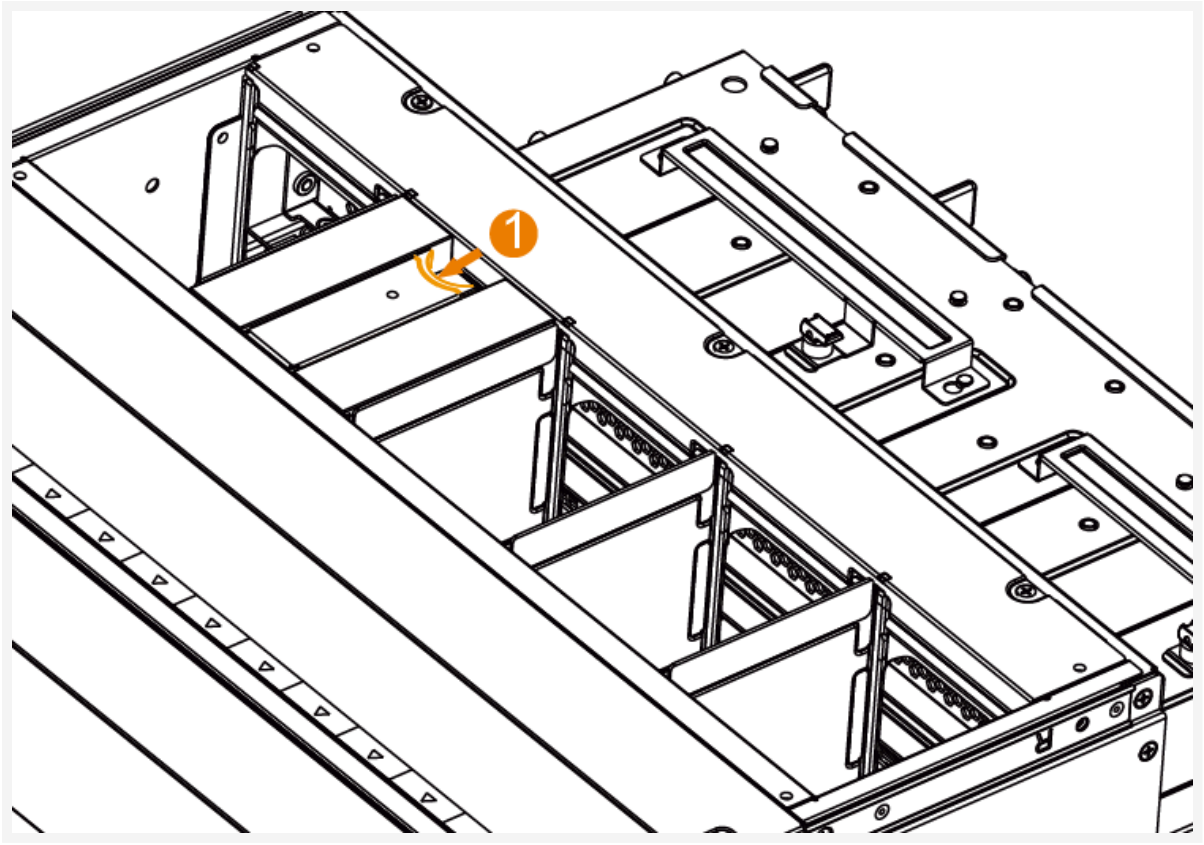
Fan Fault LED (Amber)

- ON -Fan fault
- OFF -Normal operation (or no power)

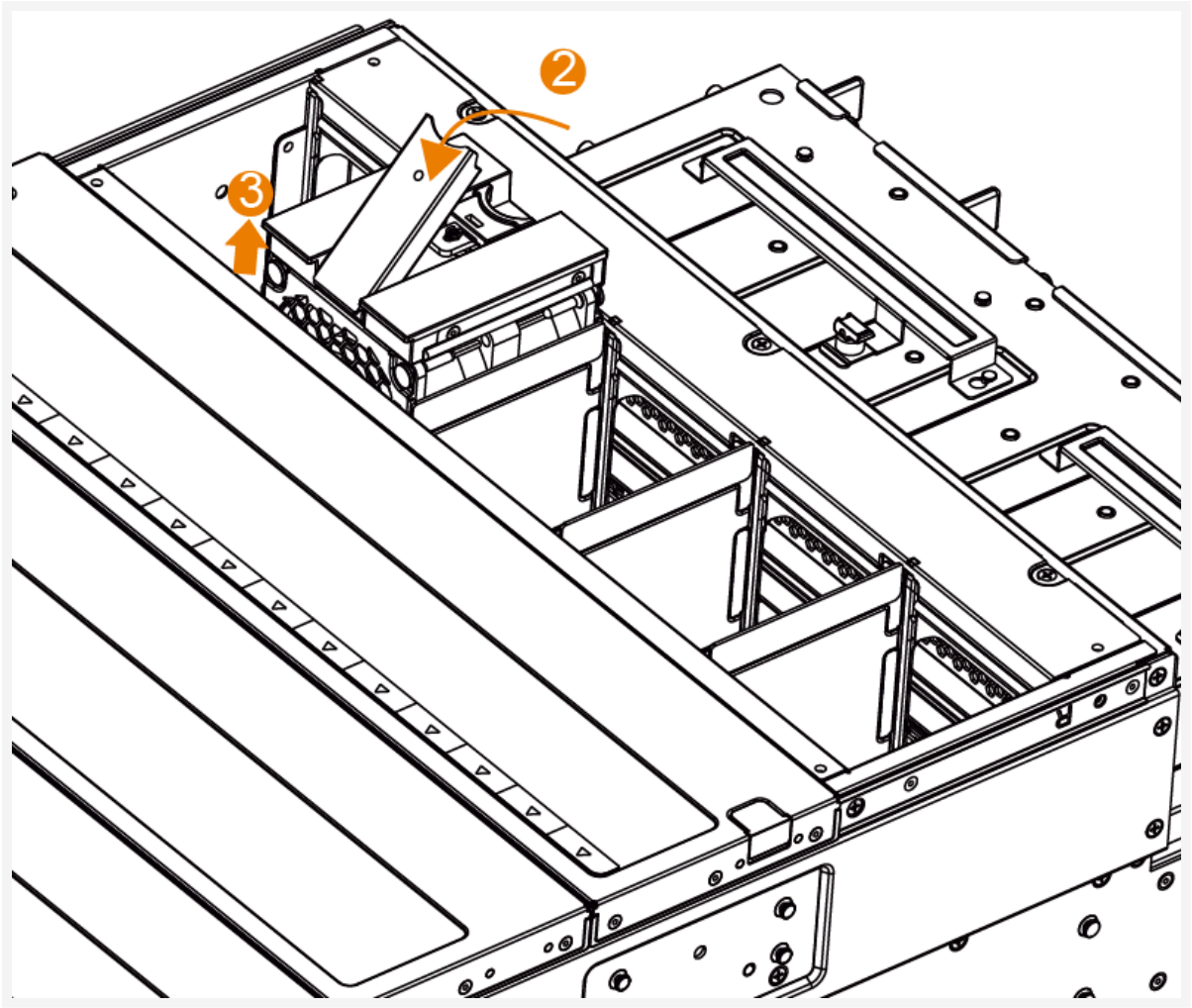
Fan Removal

Procedure

1. Press the latch to release the handle.



2 Rotate handle to disengage locking mechanism.

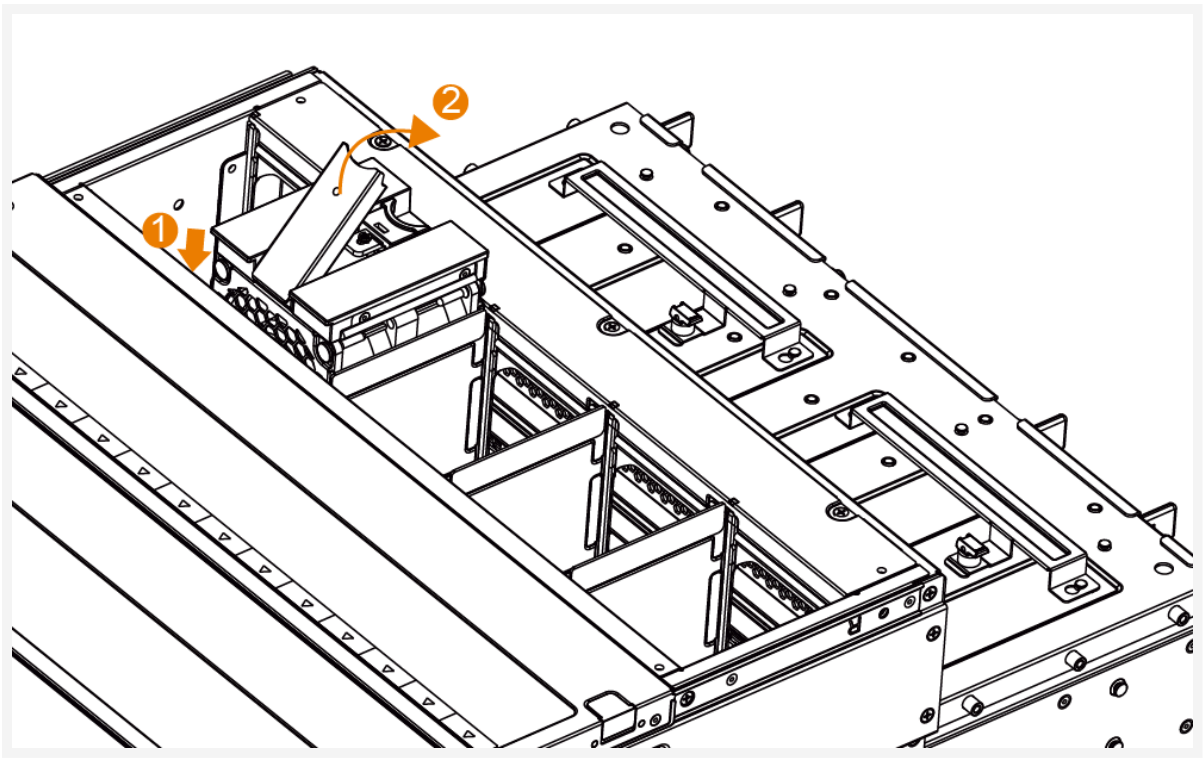


3 Use handle to pull fan module from chassis.

Fan Installation

Procedure

1 Ensure fan module is aligned with the chassis fan slot and slide into place.



2 Rotate handle into position. A 'click' may be audible when latch engages.

DC to DC Converter

The 5V DC-DC Board connects directly to the PIB supplying 5V power to the drives. The key components include the following:

- Power connector to PIB
- 12V and 5V hot-swap controllers
- 5V regulators, +5V Max. continuous current of up to 120A
- Two DC-DC modules to share current and provide redundancy
- Temperature sensor and VPD

Figure 6. DC to DC Converter Module

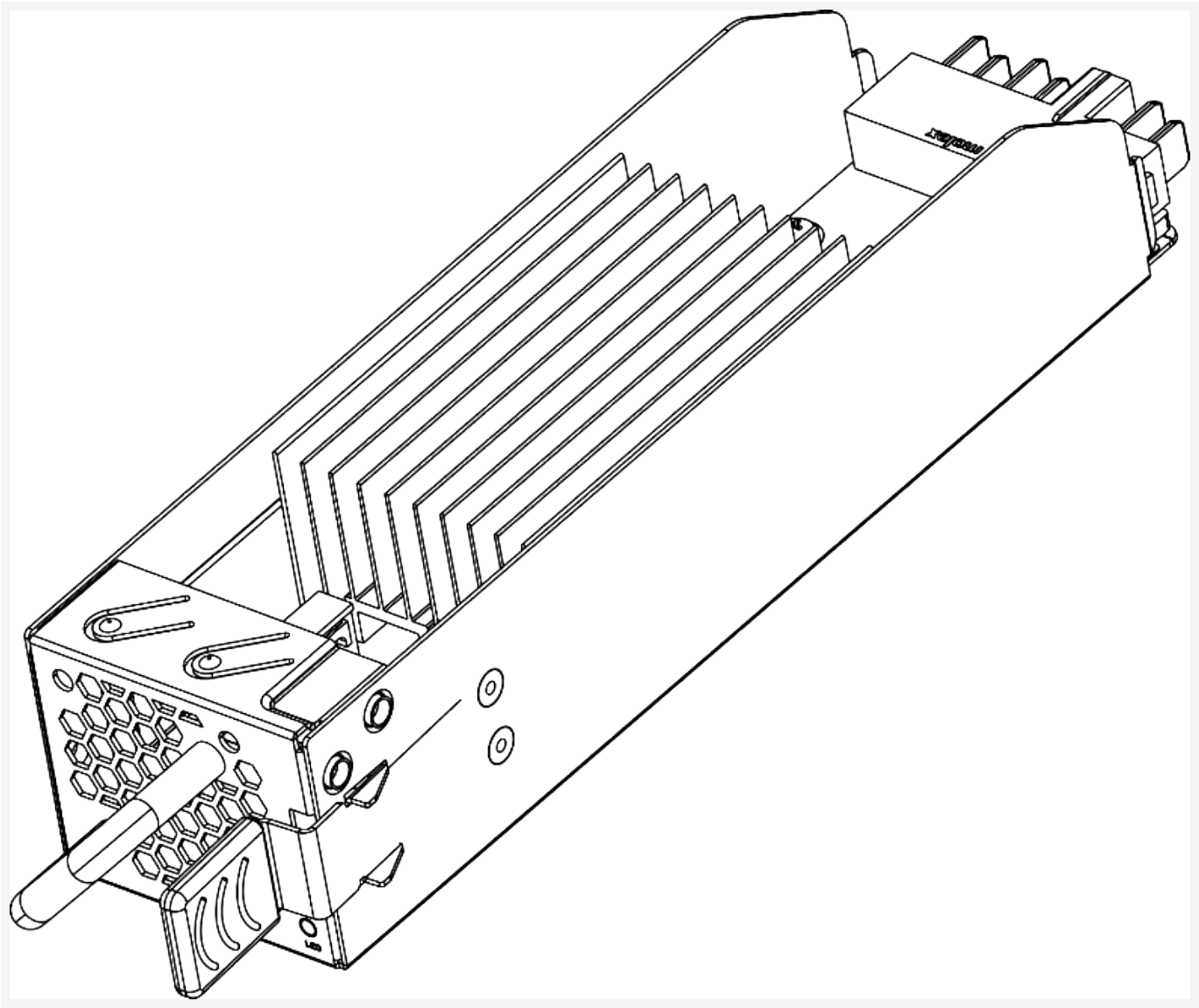
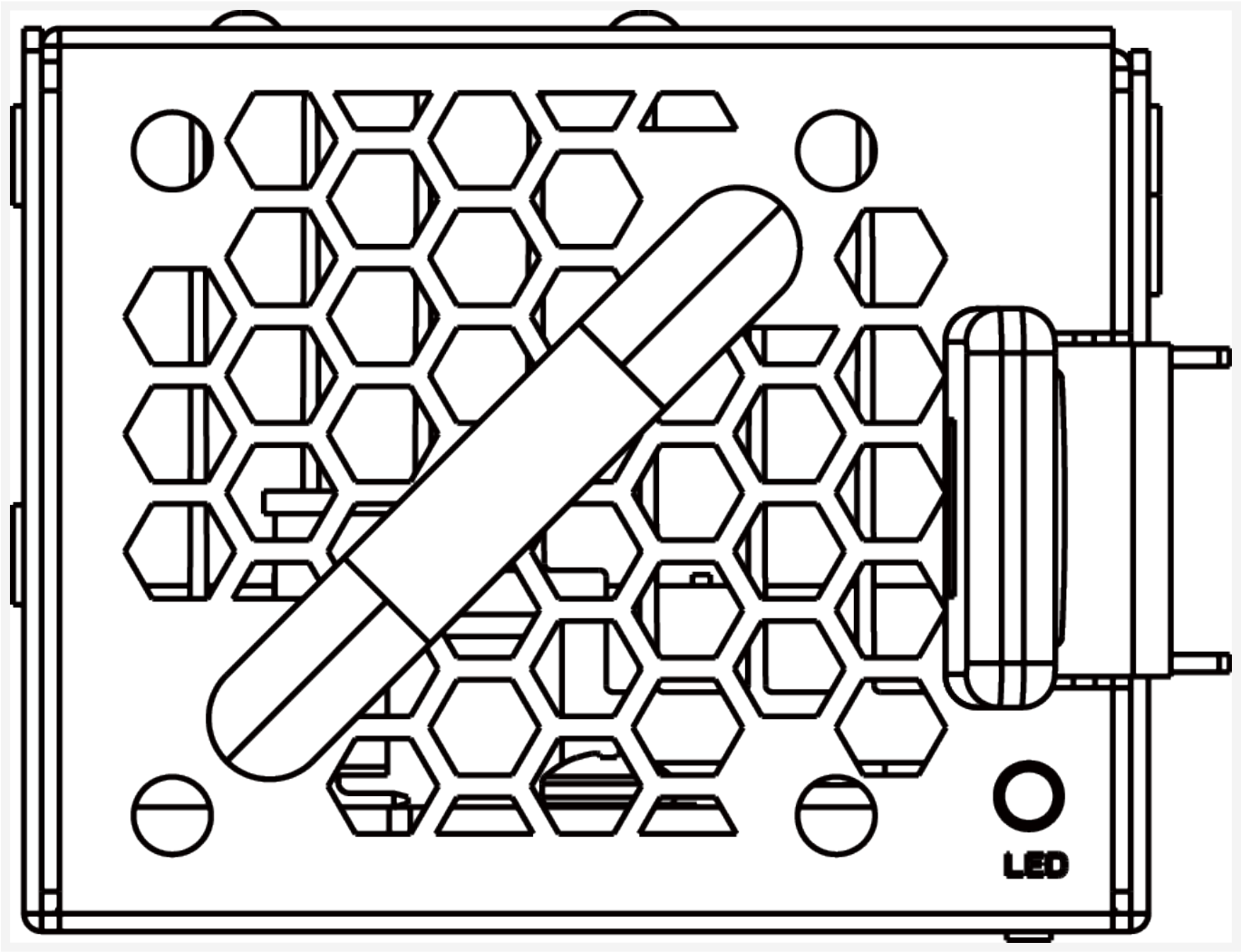


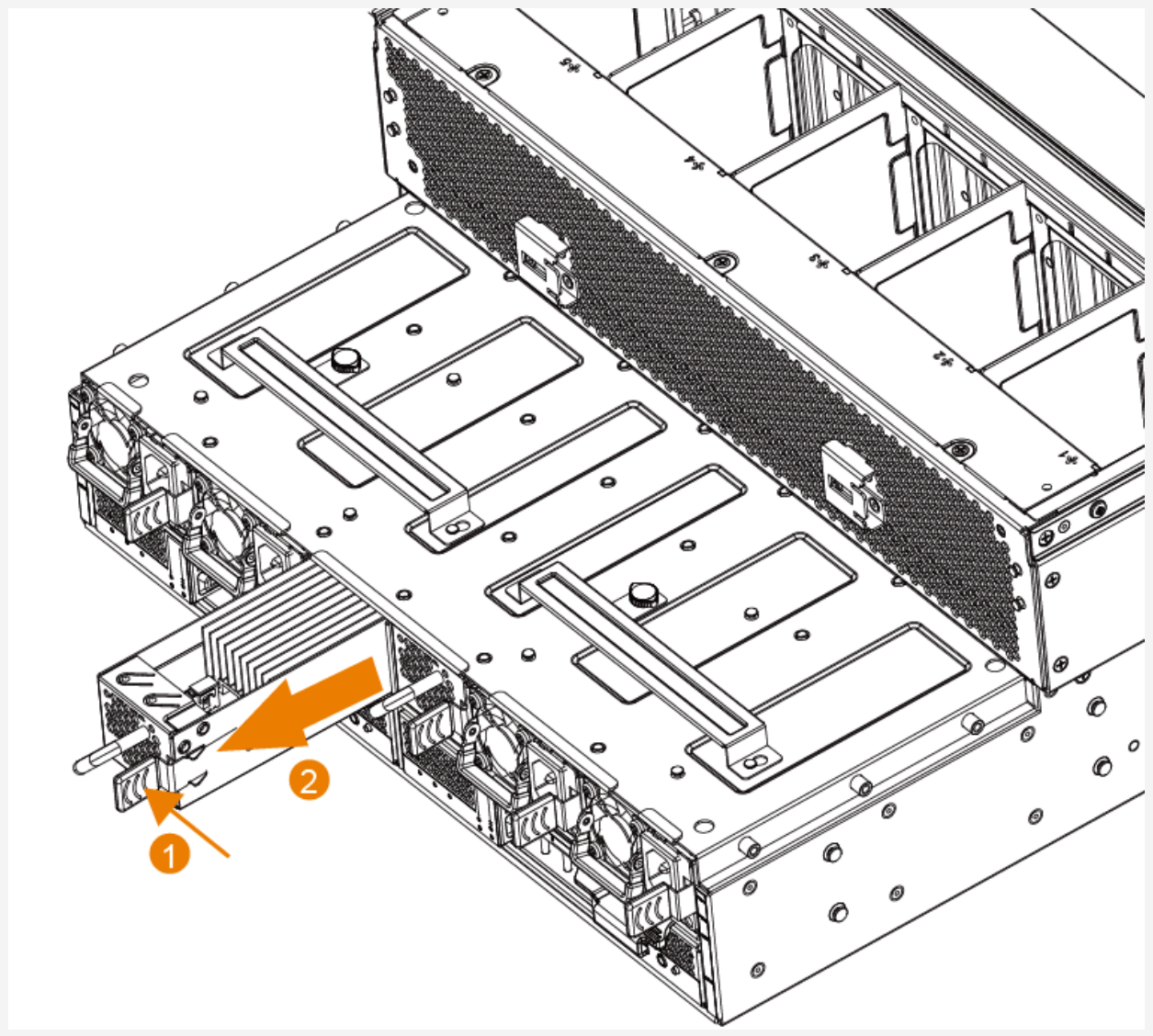
Figure 7. DC to DC Converter Module - Front View



DC to DC Converter Removal

Procedure

1. Push latch release towards center of converter.

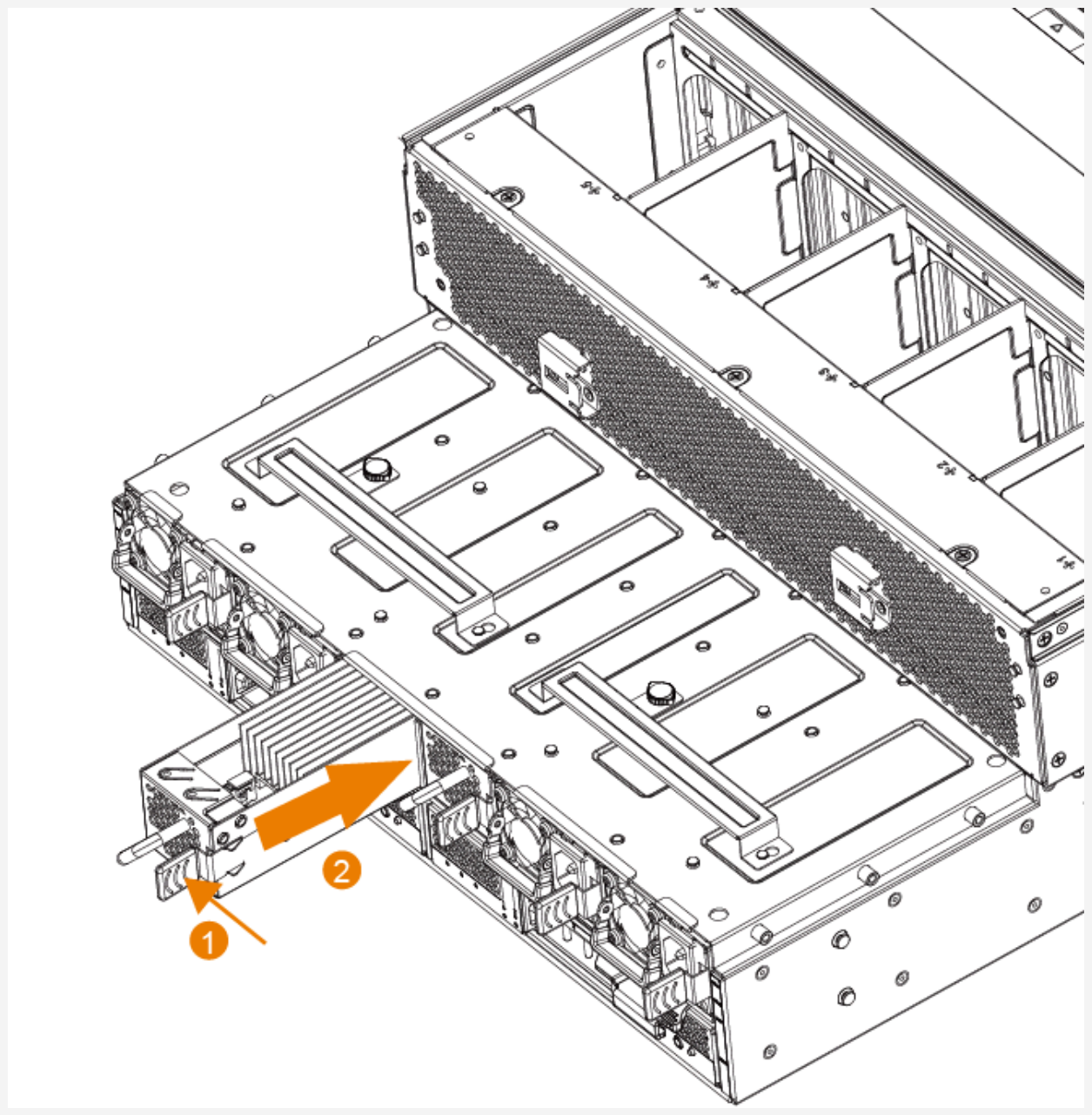


2 Pull latch release to remove converter from chassis.

DC to DC Converter Installation

Procedure

1 Push latch release towards center of converter.



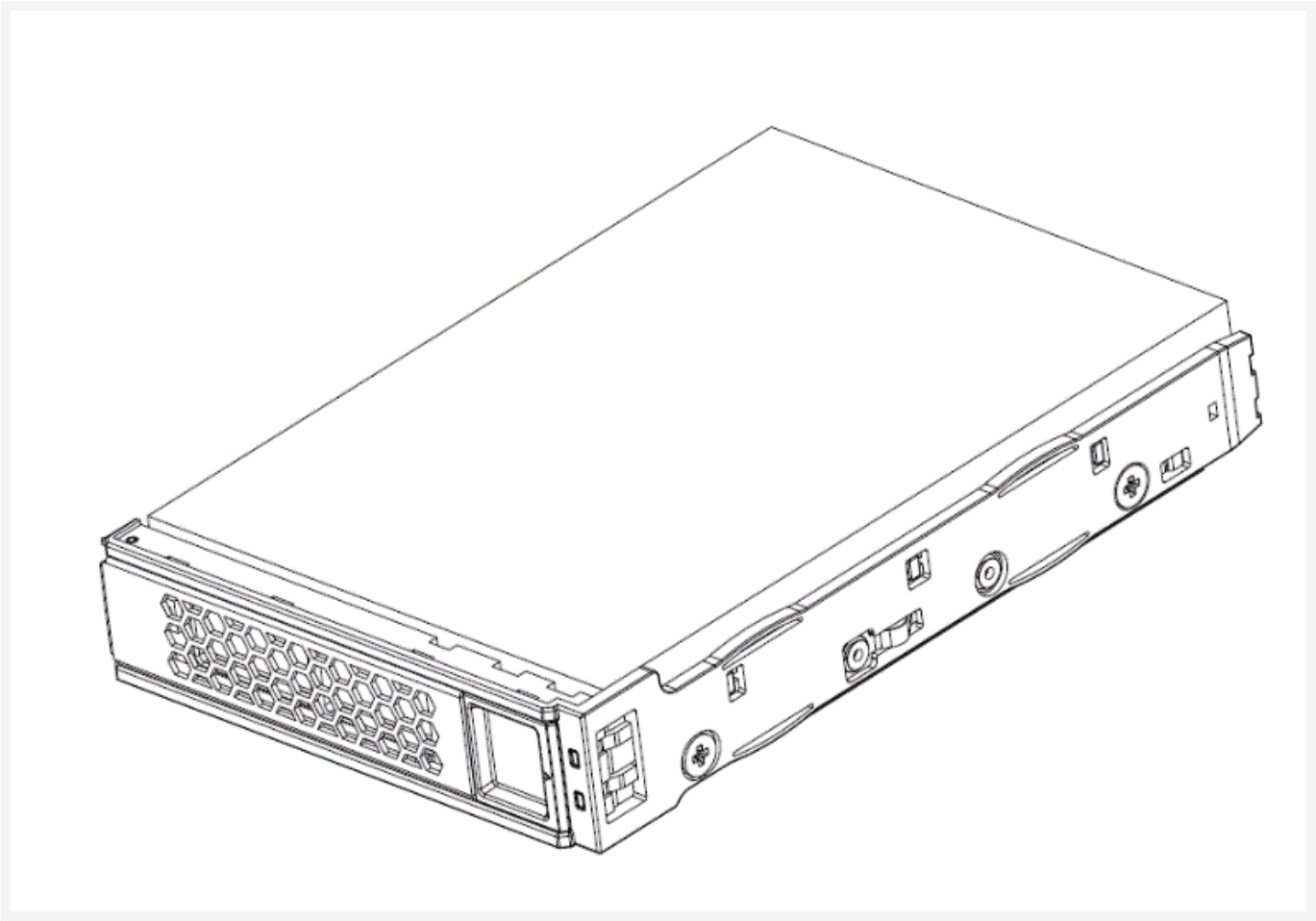
2 Slide converter into chassis and release latch handle.

Drive Carrier

Overview

The drive carrier is designed to support both 2.5 inch and 3.5 inch drives.

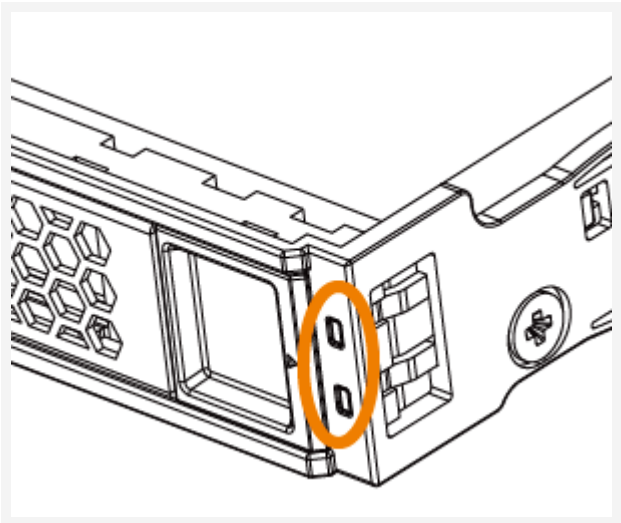
Figure 8. Drive Carrier Side View



Drive Carrier LEDs

There are two indicators on the front face. One shows drive link/active status. The other one is the drive fault LED.

Figure 9. Drive Carrier LED Location



- Top LED: Drive Active/Ready (Green). Controlled directly by each drive.
- Bottom LED: Drive Fault/Status (Amber).
  - Solid On – Drive fault
  - Blink @ 4Hz – Locate 1st priority
  - On – Drive fault 2nd priority
  - Blink @ 1Hz – Rebuild 3rd priority
  - Off – Normal operation

Cabling and Electricity Access

After the SD6200 dense storage platform is securely mounted into its rack, begin connecting the appropriate power and data cables in this order:

1. Connect power cables
2. Connect data cables

Connecting Power Cable(s)

Figure 10. Power Cable Sockets

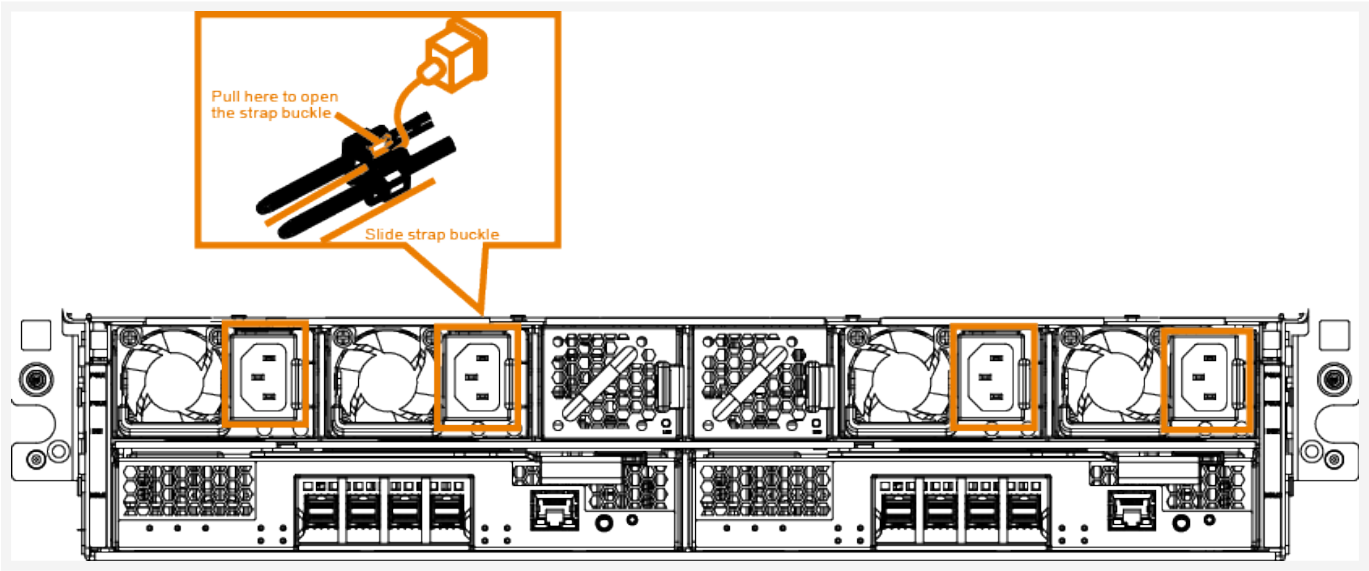
> ⓘ NOTE: After powering on the chassis check that all LEDs are lighting normally. If not, check the cable connections or go to Troubleshooting Enclosure Startup Failure.

Connecting the Power Cable(s)

As shown in the illustration, power cables can be secured to the SD6200 by attaching the cable strap.

> ⓘ NOTE: The image displayed may be used as an example and not match this specific product.

Figure 11. Securing the Power Cables



SAS Cabling to Host System

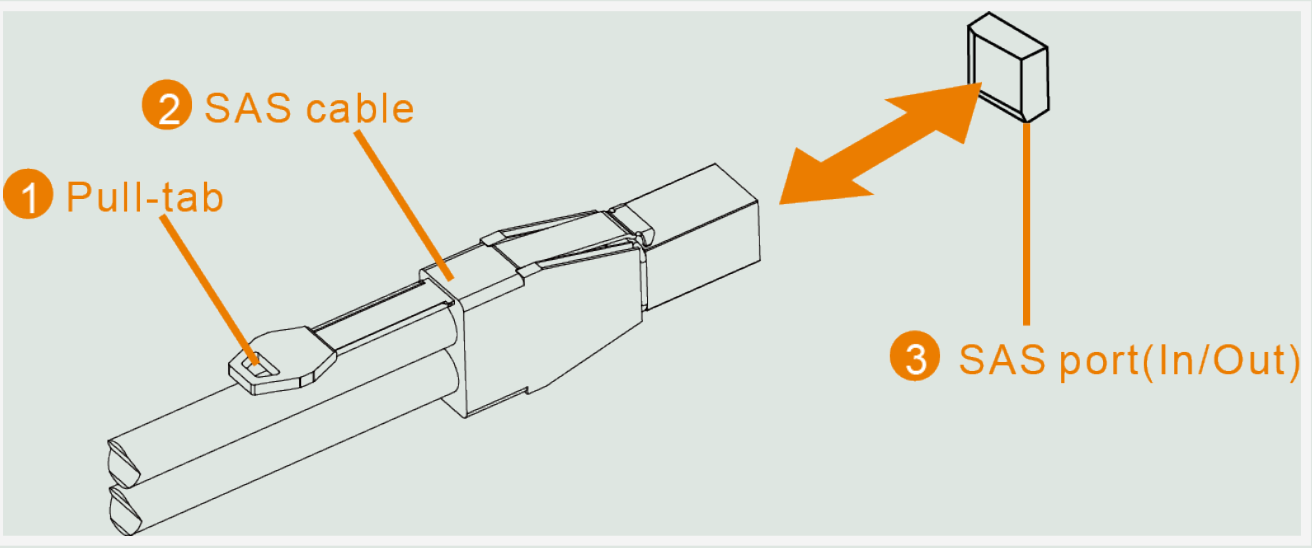
Context

The SD6200 dense storage platform is designed to connect to a host system.

Connect the SAS cable to the ESM Mini-SAS HD connector on the storage enclosure and to the RAID controller or HBA on the host system.

> ⓘ NOTE: Connectors on both ends of the SAS cable are universally keyed. You can connect either end of the cable to the ESM or the RAID controller.

> ⓘ TIP: To remove the SAS cable, pull the pull-tab to release the cable from the connector on the ESM and the host system. To connect the SAS cable, push straight into the ESM or host system and listen for a click.



Procedure

1. Connect the SAS cable to the ESM Mini-SAS HD connector on the storage enclosure and to the RAID controller or HBA on the host system. Push the cable into the connector until it clicks into place.
2. Check the LED indicators on the front panel of the enclosure.

Connecting to Additional Enclosures

Support Cabling

You can cable the storage enclosure to host systems and to more storage enclosures in two different configurations:

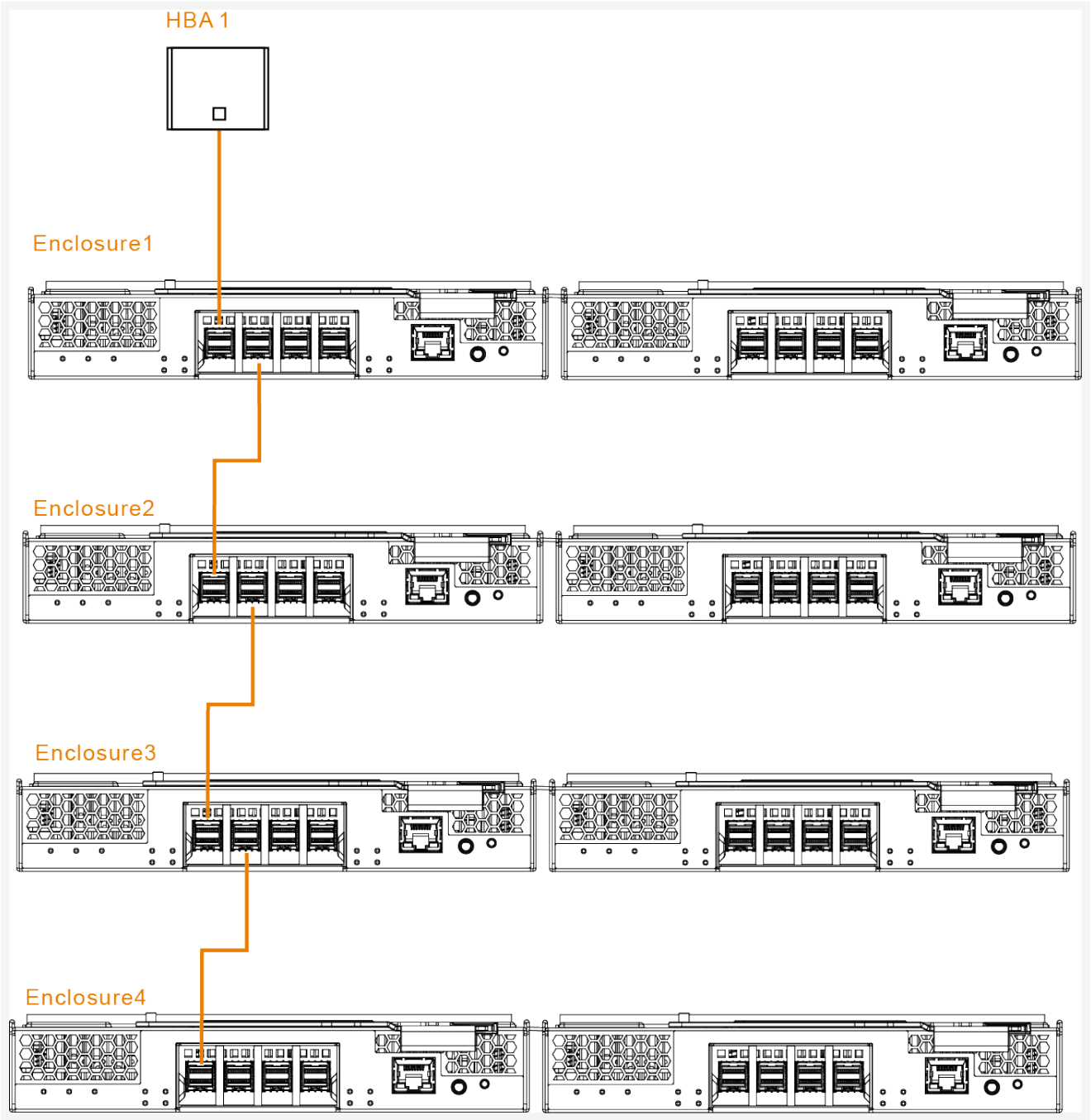
- Single port configuration

- Redundant configuration

Single Port Configuration

Single Port configuration the enclosures are daisy-chained with one of the ESMs connected to a single port on the controller card.

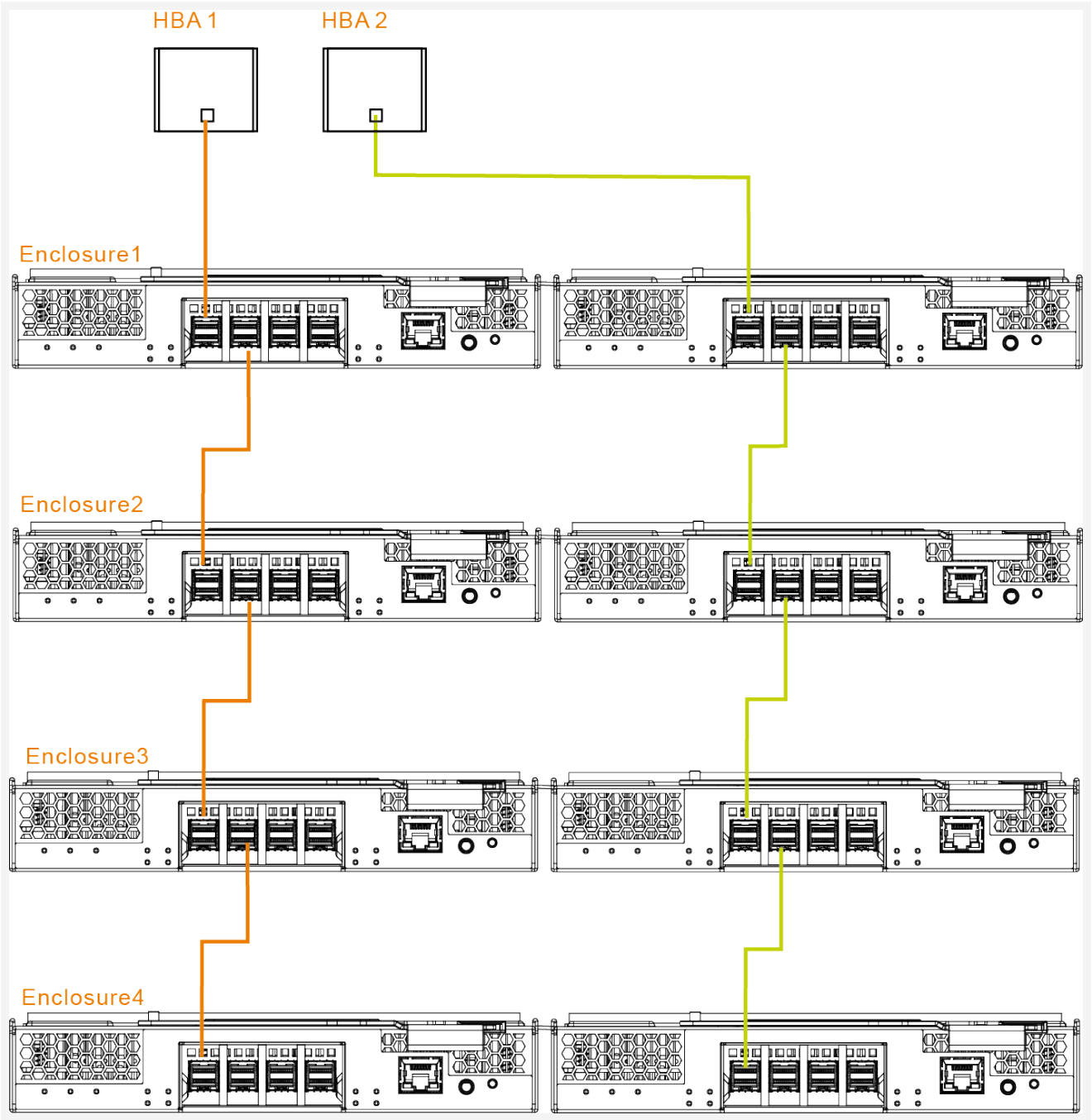
Figure 12. Enclosure 1 is connected to a host system's HBA and additional enclosures.



Redundant Configuration

In Redundant configuration, the enclosures are daisy-chained with both of the ESMs connected to both the ports on the controller card.

Figure 13. Enclosure 1 is connected to a host system via two HBAs plus additional enclosures. (Connecting to multiple host systems is possible.)



System Self Checks

After completing the cabling process and powering on the system, it is recommended to perform a few system self checks.

Figure 14. Device Name

Launch Terminal in Linux Host Server, input command `sg_scan -i` to scan enclosure, and get device name(E.g: /dev/sg1 /dev/sg4).

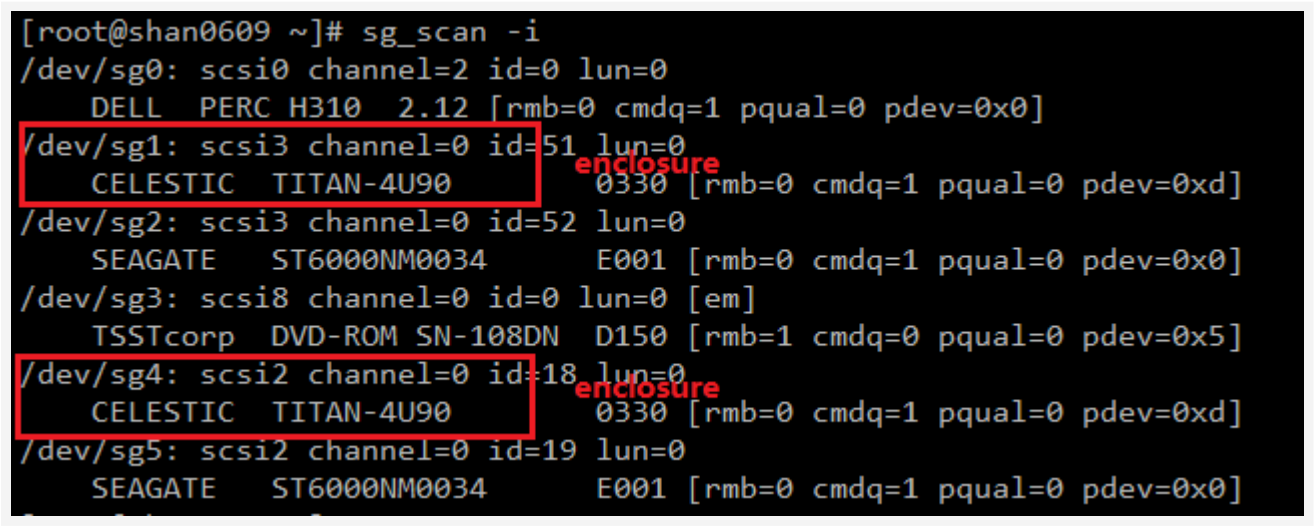


Figure 15. Supported Diagnostic Page

Use the following command to view the current firmware's diagnostic page:

`sg_ses -p 0 /dev/sg*`

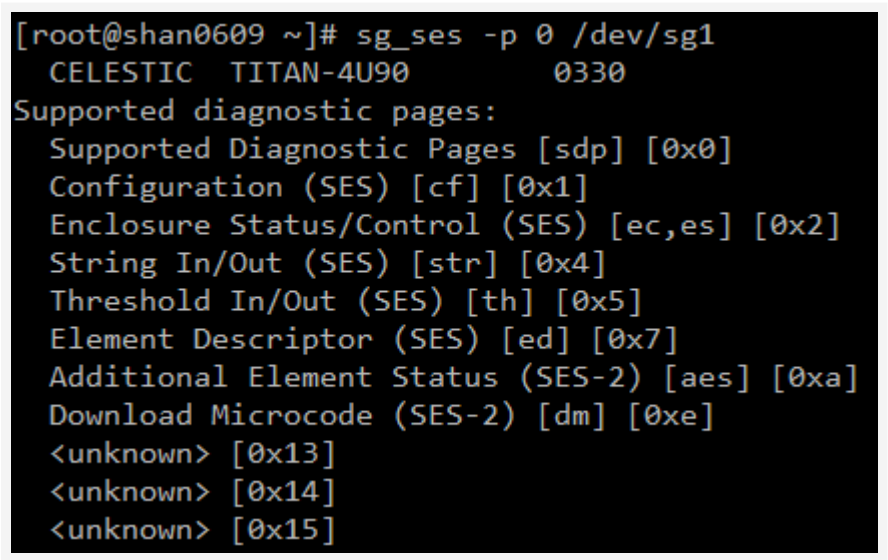


Figure 16. System Configuration

Get system configuration in enclosure with command `sg_ses -p 1 /dev/sg*`

```
[root@shan0609 ~]# sg_ses -p 1 /dev/sg1
  CELESTIC  TITAN-4U90        0330
Configuration diagnostic page:
  number of secondary subenclosures: 0
  generation code: 0x0
  enclosure descriptor list
    Subenclosure identifier: 0 [primary]
      relative ES process id: 2, number of ES processes: 2
      number of type descriptor headers: 11
      enclosure logical identifier (hex): 500e0eca0663dc00
      enclosure vendor: CELESTIC  product: TITAN-4U90        rev: 0330
      vendor-specific data:
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
        00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  type descriptor header/text list
    Element type: Array device slot, subenclosure id: 0
      number of possible elements: 90
      text: Array Device Slot
    Element type: SAS connector, subenclosure id: 0
      number of possible elements: 8
      text: SAS Connector
    Element type: SAS expander, subenclosure id: 0
      number of possible elements: 6
      text: SAS Expander
    Element type: Power supply, subenclosure id: 0
      number of possible elements: 6
      text: Power Supply
    Element type: Cooling, subenclosure id: 0
      number of possible elements: 5
      text: Cooling
    Element type: Temperature sensor, subenclosure id: 0
      number of possible elements: 18
      text: Temperature Sensor
    Element type: Enclosure, subenclosure id: 0
      number of possible elements: 1
      text: Enclosure
    Element type: Enclosure services controller electronics, subenclosure id: 0
      number of possible elements: 2
      text: ESCE
    Element type: Voltage sensor, subenclosure id: 0
      number of possible elements: 16
      text: Voltage Sensor
    Element type: Current sensor, subenclosure id: 0
```

Figure 17. Element Details

Input command `sg_ses -p 2 /dev/sg*` to get more details information for elements in the enclosure, including array device, power supply, temperature sensor, ESCE, voltage sensor and others.

```
[root@shan0609 ~]# sg_ses -p 2 /dev/sg1
  CELESTIC  TITAN-4U90        0330
  Primary enclosure logical identifier (hex): 500e0eca0663dc00
Enclosure Status diagnostic page:
  INVOP=0, INFO=1, NON-CRIT=0, CRIT=0, UNRECOV=0
  generation code: 0x0
  status descriptor list
    Element type: Array device slot, subenclosure id: 0 [ti=0]
      Overall descriptor:
        Predicted failure=0, Disabled=0, Swap=0, status: Not installed
        OK=0, Reserved device=0, Hot spare=0, Cons check=0
        In crit array=0, In failed array=0, Rebuild/remap=0, R/R abort=0
        App client bypass A=0, Do not remove=0, Enc bypass A=0, Enc bypass B=0
        Ready to insert=0, RMV=0, Ident=0, Report=0
        App client bypass B=0, Fault sensed=0, Fault reqstd=0, Device off=0
        Bypassed A=0, Bypassed B=0, Dev bypassed A=0, Dev bypassed B=0
      Element 0 descriptor:
        Predicted failure=0, Disabled=0, Swap=0, status: Not installed
        OK=0, Reserved device=0, Hot spare=0, Cons check=0
        In crit array=0, In failed array=0, Rebuild/remap=0, R/R abort=0
        App client bypass A=0, Do not remove=0, Enc bypass A=0, Enc bypass B=0
        Ready to insert=0, RMV=0, Ident=0, Report=0
        App client bypass B=0, Fault sensed=0, Fault reqstd=0, Device off=0
        Bypassed A=0, Bypassed B=0, Dev bypassed A=0, Dev bypassed B=0
      Element 1 descriptor:
        Predicted failure=0, Disabled=0, Swap=0, status: Not installed
        OK=0, Reserved device=0, Hot spare=0, Cons check=0
        In crit array=0, In failed array=0, Rebuild/remap=0, R/R abort=0
        App client bypass A=0, Do not remove=0, Enc bypass A=0, Enc bypass B=0
        Ready to insert=0, RMV=0, Ident=0, Report=0
        App client bypass B=0, Fault sensed=0, Fault reqstd=0, Device off=0
        Bypassed A=0, Bypassed B=0, Dev bypassed A=0, Dev bypassed B=0
      Element 2 descriptor:
        Predicted failure=0, Disabled=0, Swap=0, status: Not installed
        OK=0, Reserved device=0, Hot spare=0, Cons check=0
        In crit array=0, In failed array=0, Rebuild/remap=0, R/R abort=0
        App client bypass A=0, Do not remove=0, Enc bypass A=0, Enc bypass B=0
        Ready to insert=0, RMV=0, Ident=0, Report=0
        App client bypass B=0, Fault sensed=0, Fault reqstd=0, Device off=0
        Bypassed A=0, Bypassed B=0, Dev bypassed A=0, Dev bypassed B=0
      Element 3 descriptor:
```

Regulatory Compliance

EMC Compliance

- EN 55032 (2015) , CISPR-32 (2015) Class A
- EN 61000-3-2 (2014)
- EN 61000-3-3 (2013)
- EN 55024:2010+A1:2015/EN55035:2017
- FCC 47 CFR Part 15 Class A
- VCCI V-3 2016Class A
- ICES-003, Issue7: 2020 Class A

Safety Compliance

- UL 60950-1, 2nd Edition, 2014-10-14
- CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10
- UL 62368-1, 2nd Ed, 2014-12-01
- CAN/CSA C22.2 No. 62368-1-14, 2nd Ed, Issued: 2014-12-01
- IEC 60950-1 2012 A2-2013
- EN 60950-1/A12:2011 A2:2013
- IEC 62368-1:2014
- EN 62368-1:2014/A11:2017
- IEC 62368-1:2018/EN
- EN 62368-1:2020+A11:2020

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)

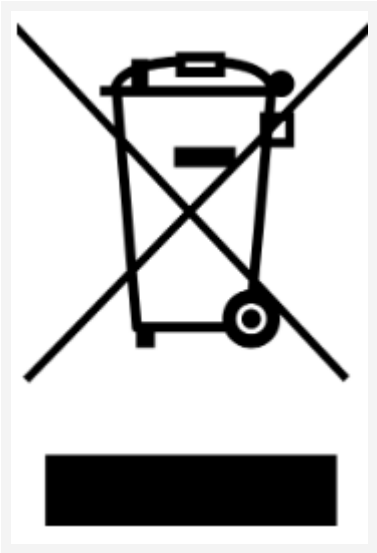
This product conforms to the following European Directive(s) and Standard(s): Application of Council Directive: 2014/35/EU, 2014/30/EU, 2011/65/EU.

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 SD6200 dense storage platform, contact your provider and request access to read and run the SD6200 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 SD6200 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.

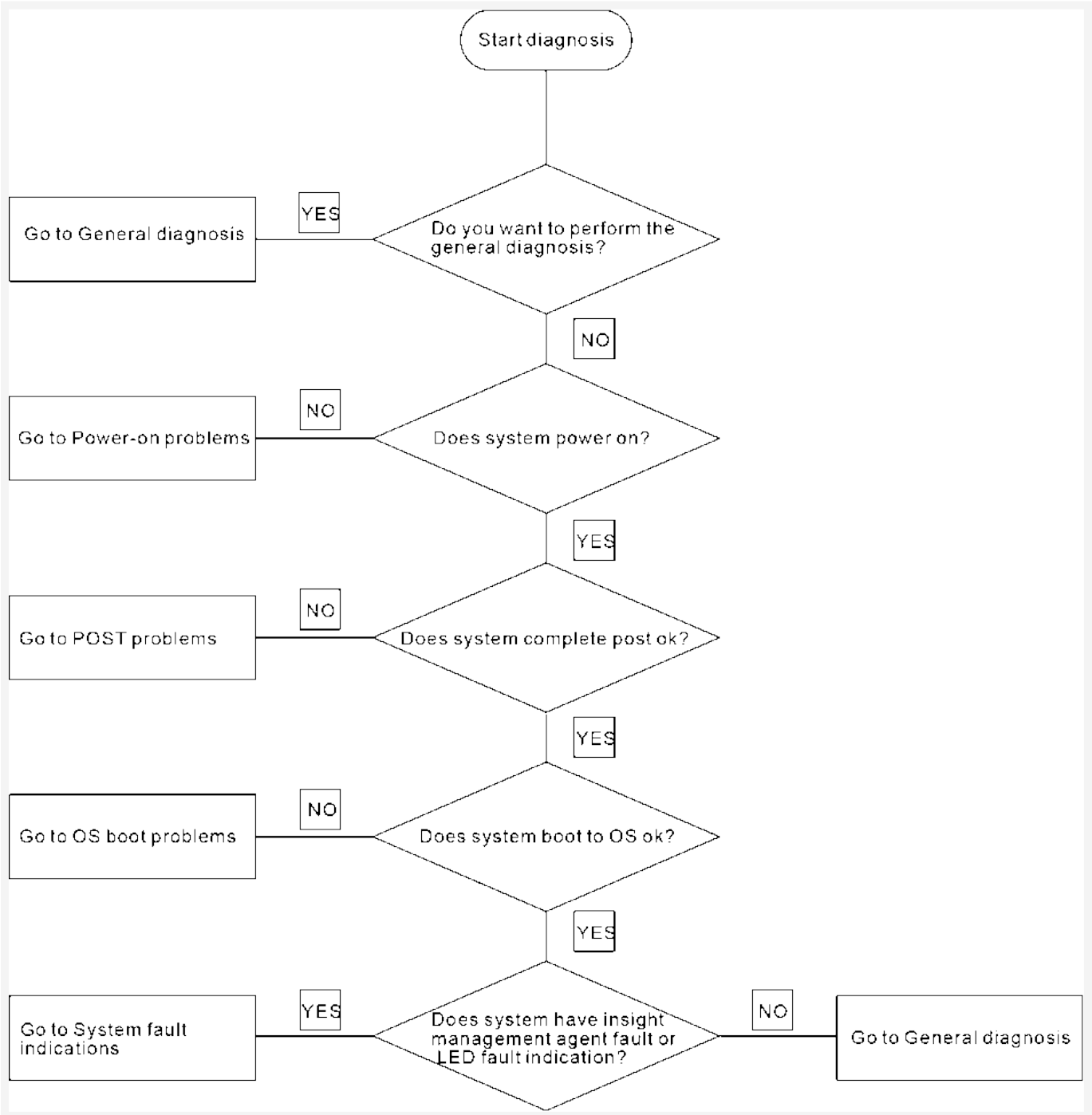
The available flow charts include:

- 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.

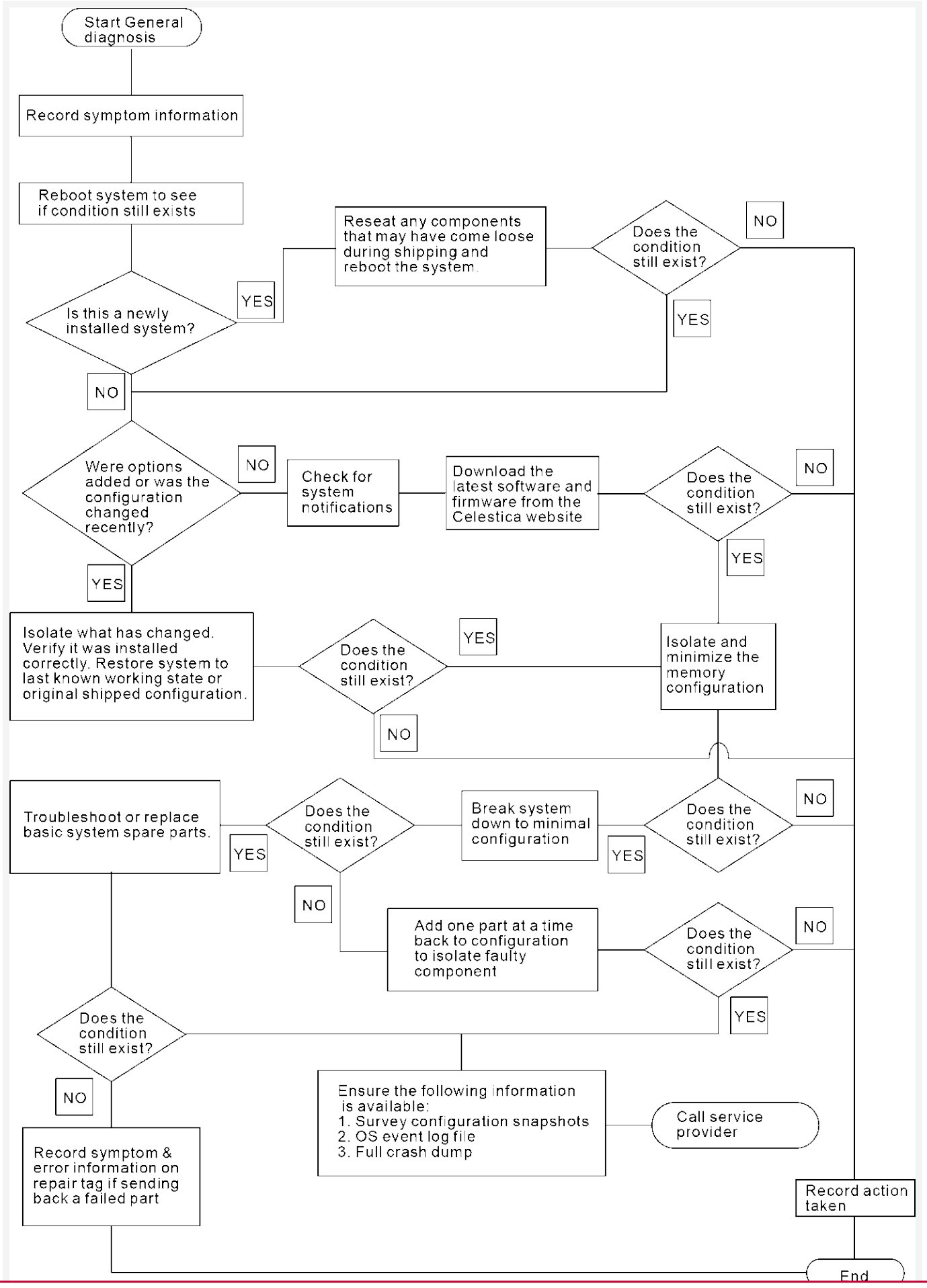
Figure 18. Start Diagnosis Flow Chart



General Diagnosis Flow Chart

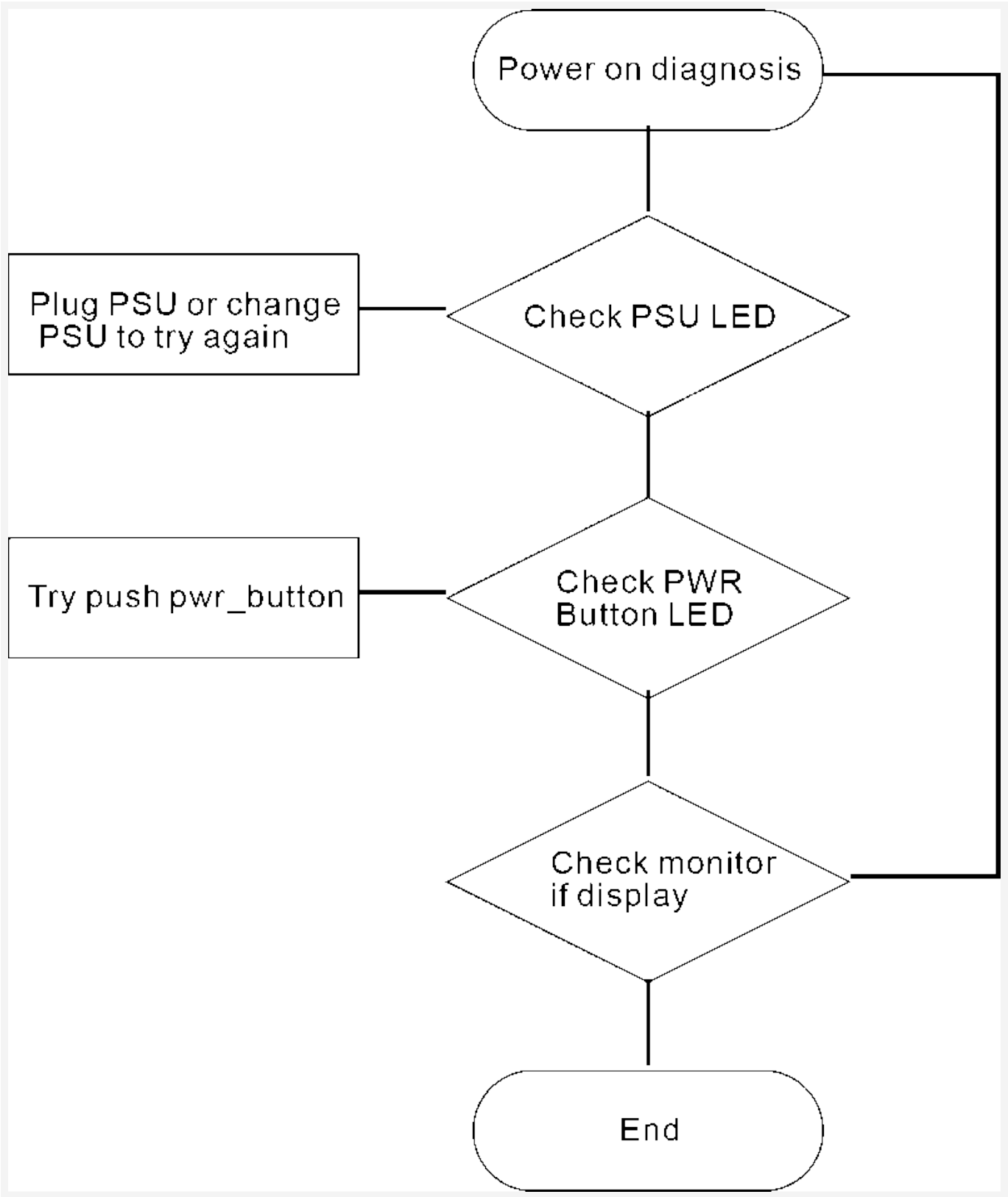
The General diagnosis flow chart provides a generic approach to troubleshooting. If you are unsure of the problem, or if the other flow charts do not fix the problem, use the following flow chart.

Figure 19. 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
NO
Isolate and minimize the memory configuration
Troubleshoot or replace basic system spare parts.
YES
Does the condition still exist?
Break system down to minimal configuration
YES
Does the condition still exist?
NO
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

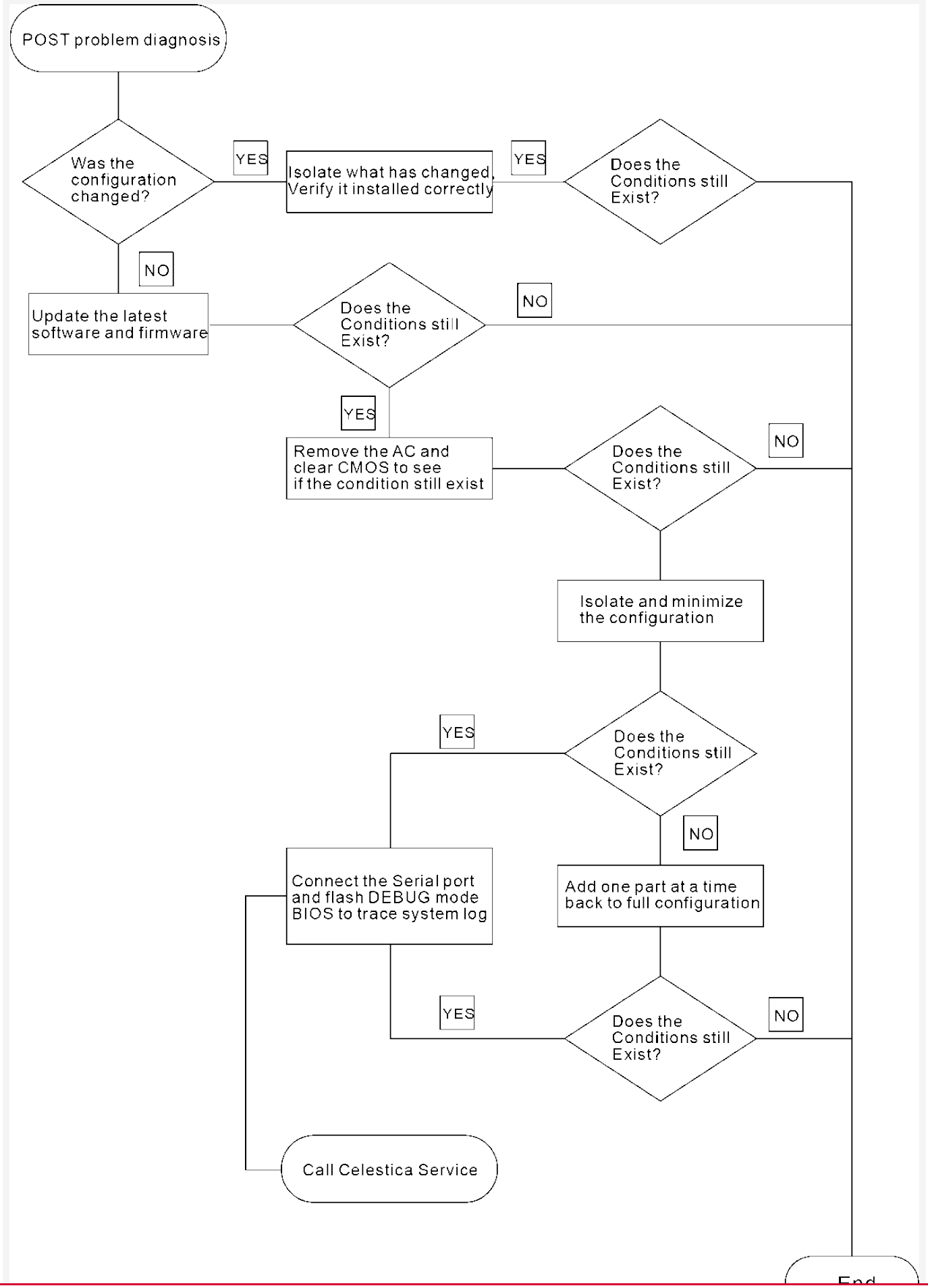
Power-on Problems Flow Chart

Figure 20. Power-on Problems Flow Chart



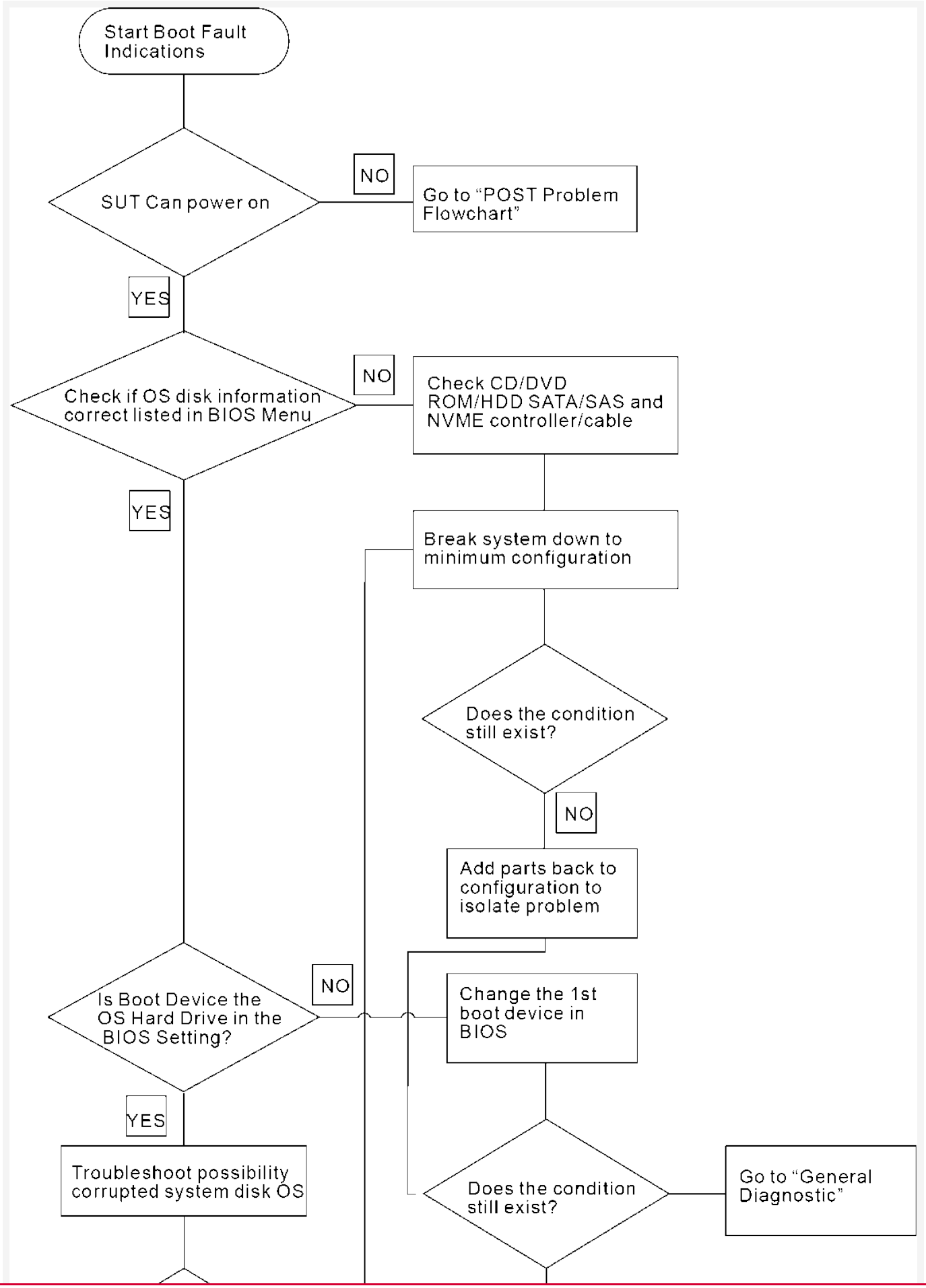
POST Problems Flow Chart

Figure 21. 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
End

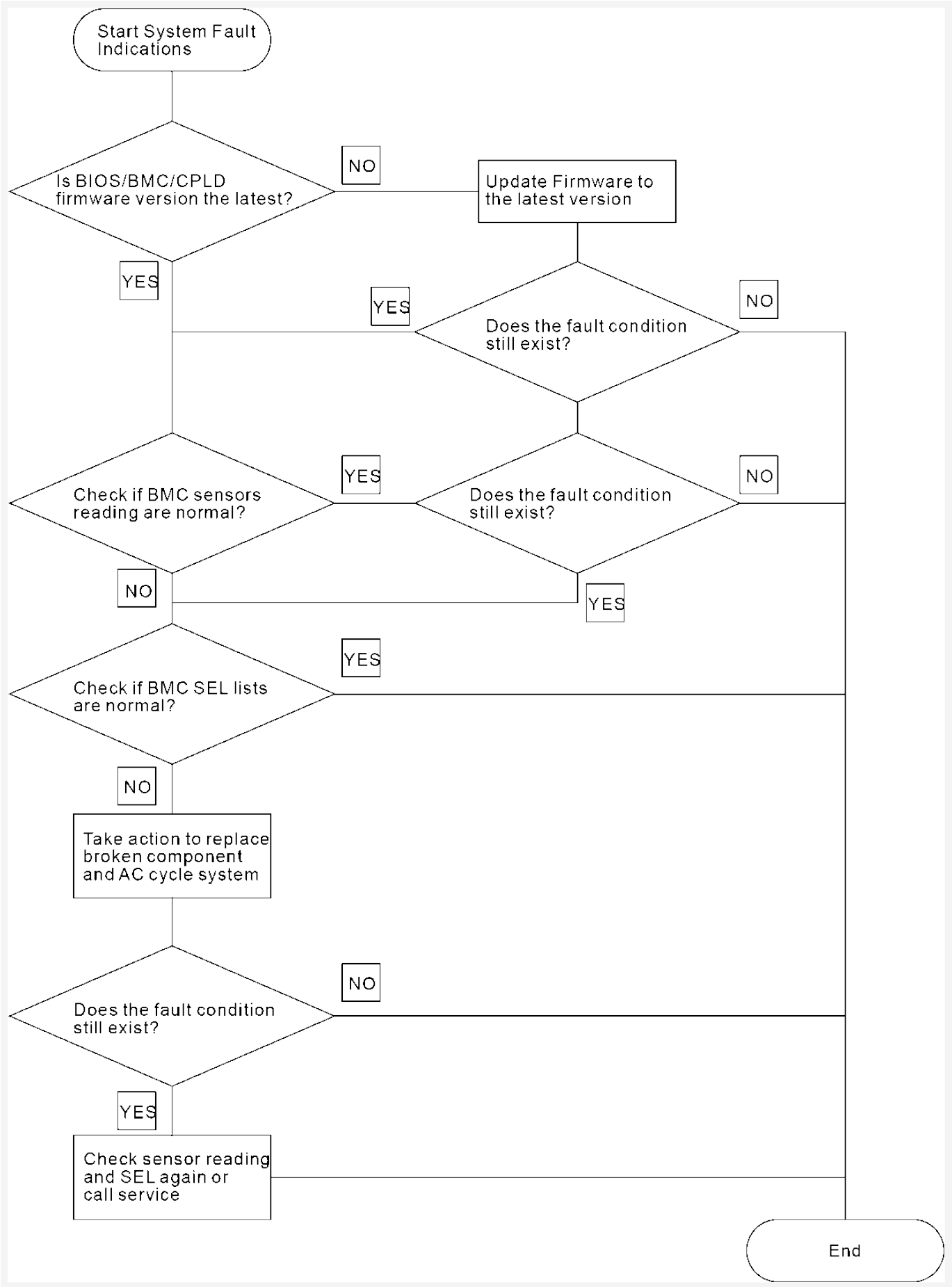
OS Boot Problems Flow Chart

Figure 22. 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 23. 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

Authorized Repairs

> ⚠ CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Celestica is not covered by your warranty. Read and follow the safety instructions that came with the product.

Communication - Loss of

For information about troubleshooting loss of communication see: ESM-Troubleshooting

Cooling - Enclosure

Ensure that none of the following conditions exist:

- Cover or hard disk drive blank is removed.
- Ambient temperature is too high.
- External airflow is obstructed.
- The power supply unit or cooling fan module is removed or has failed. See: Cooling - Fan Module and Power Supply Unit

Cooling - Fan Module

Verify all fan modules in both the fan trays and controllers are installed correctly.

Enclosure - Connections

1. Ensure all cables are correctly attached.
2. Verify that the ESM port link status LED and the ESM status LED are solid green for each port that is connected to a cable. If the LEDs are not solid green see: Expander Service

Module

Enclosure - Damaged

1. Ensure that the following components are properly installed:
   - Hard disk drives/SSD
   - Enclosure Management Modules (EMMs)
   - Power supply unit
   - Cooling fan modules
   - DC-DC module
2. Verify that all cables, including power and IO cables such as Mini-SAS HDD, are correctly connected based on the ESM types specified for customers, and ensure there are no damaged pins within the connectors.

Expander Storage Module

> ⓘ NOTE: The ESM can be replaced without powering off. Leave the enclosure powered on.

Troubleshooting ESM - LEDs Solid On

Context

> ⓘ NOTE: The ESM can be replaced without powering off. Leave the enclosure powered on.

Procedure

1. Use CLI CMD `poa` to check if the ESM is in Lock Down mode.
2. If the ESM is in Lock Down mode, try the following:

a. Reset the ESM.
b. Upgrade ESM firmware to same version as peer's ESM.
c. If resetting and upgrading do not work, remove the ESM and verify that the pins on the backplane and ESM are not bent. See: ESM Canister Removal. Replace ESM with another one if any physical damage is found, which should have the same FW version with the peer ESM. For installation, see: ESM Canister Installation

3. If no lock down mode is found, use CLI CMDs `temp get`, `fan get`, and `power get` to check for component faults.
4. If any faults are found, replace related faulted devices and keep watching the system for a period of time to check whether this fault can be recovered.
5. If the fault still exists, remove the ESM and verify that the pins on the backplane and ESM are not bent. See: ESM Canister Removal to remove the canister. For canister installation, see: ESM Canister Installation

Troubleshooting ESM - LEDs Not Green

Context

If the ESM link status LEDs are not green:

Procedure

1. Check the cable if properly connected between this ESM and the server. Reseat the cable if necessary.
2. If not OK, reinstall the ESM and wait until ESM is fully booted.
3. Check the link status LED. If the link status LED is not green, contact your Field Application Engineer (FAE). Contact Information

Hard Disk Drive - Not Working

> ⓘ NOTE: Drives can be replaced without powering off. Leave the enclosure powered on.

> ⓘ NOTE: Check the drive LEDs for activity before removing it from the enclosure. Failure to do so may result in data loss.

1. Check whether the hard disk or SSD is installed.
2. Remove the drive assembly from the enclosure.
3. Check that the connectors are not damaged on the hard disk / SSD and the backplane.
4. Reinstall the hard disk drive.
5. Verify that the ESM port link status LED and the ESM status LED are solid green for each port that is connected to a cable. If the LEDs are not solid green see: ESM-Troubleshooting.
6. Ensure that all the cables are attached correctly.
7. If the problem persists see: Communication - Loss of.

Power Supply Unit

⚠ CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Celestica is not covered by your warranty. Read and follow the safety instructions that came with the product.

⚠ WARNING: Always comply with all electrostatic and thermal guidelines to prevent bodily injury and ensure a properly functioning system when performing hot-plug operations.

ⓘ NOTE: Some power supply units are hot-swappable. A single power supply unit can be removed from a powered-on enclosure for a maximum period of 10 minutes. Beyond that time, the enclosure may automatically shut down to prevent damage.

1. Locate the faulty PSU and check the status of LEDs.
    - If the AC power LED is not on, check the power cord and power source to which the power supply is connected.
        - Connect another device to the power source to verify if it is working.
        - Replace the power cord.
        - Connect the cable to a different power source.
        - If the DC power LED is not lit, verify that the PSU is inserted properly. If the PSU is inserted properly, see step 2.
2. Re-seat the power supply by removing and reinstalling it. See: PSU Removal and PSU-Installation

> ⓘ NOTE: After installing a PSU, allow several seconds for the enclosure to recognize it and to determine if the PSU is working properly.

Startup Failure

If your system stops functioning during startup, check if:

- The enclosure fault LEDs are lit, please check all the LEDs.
- A message is displayed on the screen. Refer to the <XD4090-S4 SES Firmware Management Interface Specification> documentation.

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.