



NVIDIA DGX VR NVL72 Service Manual

NVIDIA Corporation

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Contents

1	Introduction	3
1.1	Customer-Replaceable Units	3
1.2	Recommended Tools	3
2	Power Supply Replacement	5
2.1	Power Supply Replacement Overview	5
2.2	Identify the Failed Power Supply	5
2.3	Replace the Power Supply	7
2.4	Finalize the Replacement Procedure	7
3	Power Shelf Management Module Replacement	9
3.1	Power Shelf Management Module Replacement Overview	9
3.2	Identify the Failed Power Shelf Management Module	9
3.3	Replace the Power Shelf Management Module	10
3.4	Finalize the Replacement Procedure	12
4	E1.S Cache Drive Replacement	13
4.1	E1.S Cache Drive Replacement Overview	13
4.2	Identify the Failed Cache Drive	13
4.3	Replace the Failed Cache Drive	14
4.4	Finalize the Replacement Procedure	15
5	Compute Tray Battery Replacement	17
5.1	Compute Tray Battery Replacement Overview	17
5.2	Remove the Compute Tray	17
5.3	Remove the Tray Lid and Bay-C Module	18
5.4	Replace the Battery	18
5.5	Finalize the Replacement Procedure	19
6	NVLink Switch Tray Battery Replacement	21
6.1	NVLink Switch Tray Battery Replacement Overview	21
6.2	Remove the NVLink Switch Tray	21
6.3	Remove the Tray Lid	22
6.4	Replace the Battery	22
6.5	Finalize the Replacement Procedure	23

The *NVIDIA DGX VR NVL72 Service Manual* contains instructions for replacing customer-replaceable units (CRUs) in the NVIDIA DGX Vera Rubin NVL72 system. The manual is also available as a PDF.

Chapter 1. Introduction

This manual describes how to replace customer-replaceable units (CRUs) in the NVIDIA DGX Vera Rubin NVL72 system.

1.1. Customer-Replaceable Units

You can replace the following components:

- ▶ E1.S NVMe cache drive
- ▶ Compute tray battery
- ▶ NVLink Switch tray battery
- ▶ Power supply unit (PSU)
- ▶ Power shelf management module

An authorized NVIDIA representative must replace components that aren't on this list.

1.2. Recommended Tools

The following tools are recommended for the procedures in this manual:

- ▶ Screwdrivers, including a Torx T6 screwdriver
- ▶ Electrostatic discharge (ESD) strap, mat, or both
- ▶ Labels or a labeler for cable identification

The compute-tray and NVLink Switch tray battery procedures also use the pressure gauge from the toolkit to check the tray's cooling-loop pressure.

Chapter 2. Power Supply Replacement

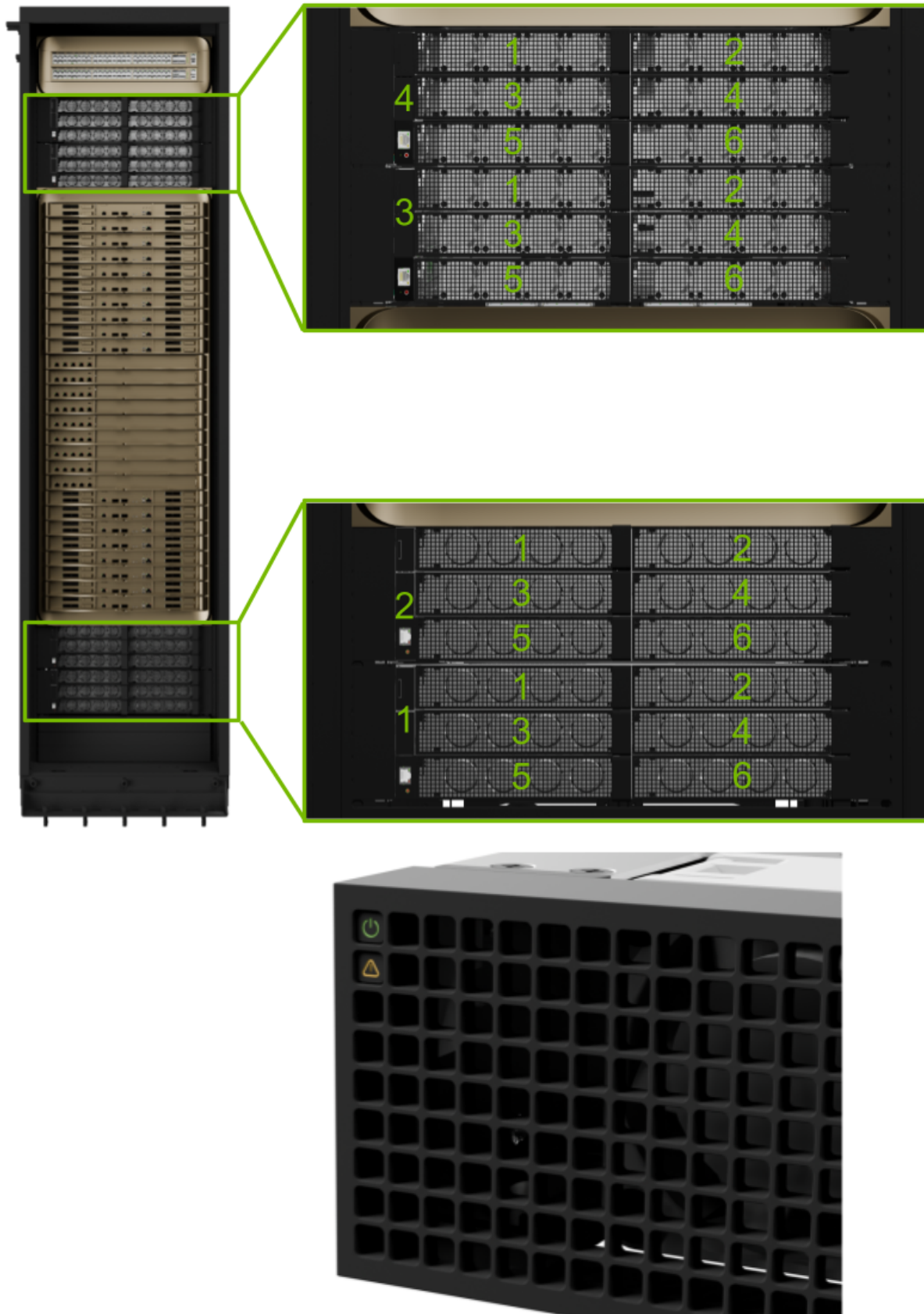
This topic describes how to replace a power supply unit (PSU) in an NVIDIA DGX VR NVL72 power shelf.

2.1. Power Supply Replacement Overview

1. Identify the failed PSU.
2. Unpack the new PSU.
3. Remove the failed PSU.
4. Insert the new PSU.
5. Update the PSU firmware, if needed.
6. Check the status of the new PSU.

2.2. Identify the Failed Power Supply

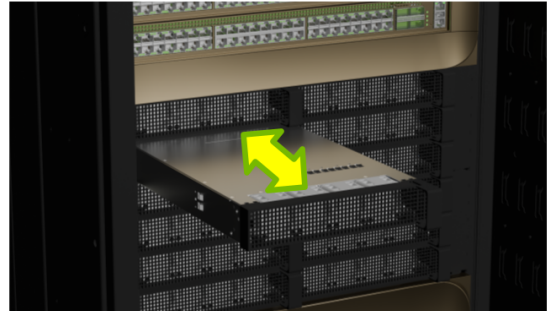
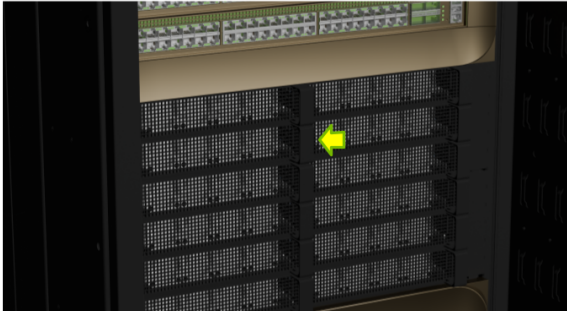
Identify the failed PSU by its amber LED.



The power supplies are N+N redundant. You can replace any one PSU as long as at least six power supplies are fully active and healthy.

2.3. Replace the Power Supply

1. **Unpack** the new PSU.
2. **Push** the failed PSU's release tab to the left and **pull** on the handle to eject it from the power shelf.



3. **Pull** the PSU all the way out.
4. **Insert** the new PSU until it locks in place. You should hear a click when it locks.

2.4. Finalize the Replacement Procedure

1. **Confirm** that the LEDs power on and **check** with the system administrator that the fault has cleared.
2. **Tell** the system administrator that the replacement is complete in case a firmware update is needed.
3. **Ship** the old PSU back to NVIDIA Enterprise Support.

Chapter 3. Power Shelf Management Module Replacement

This topic describes how to replace a power shelf management module in an NVIDIA DGX VR NVL72 system.

3.1. Power Shelf Management Module Replacement Overview

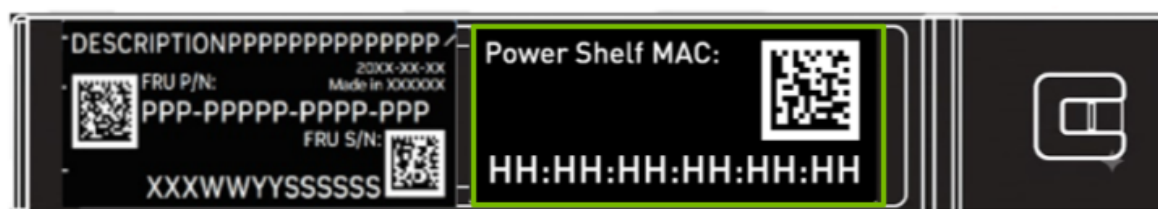
1. Identify the failed management module.
2. Unpack the new management module.
3. Remove the failed management module.
4. Insert the new management module.
5. Update the management module firmware, if needed.
6. Check the status of the new management module.

3.2. Identify the Failed Power Shelf Management Module

1. **Identify** the failed management module by its amber LED.



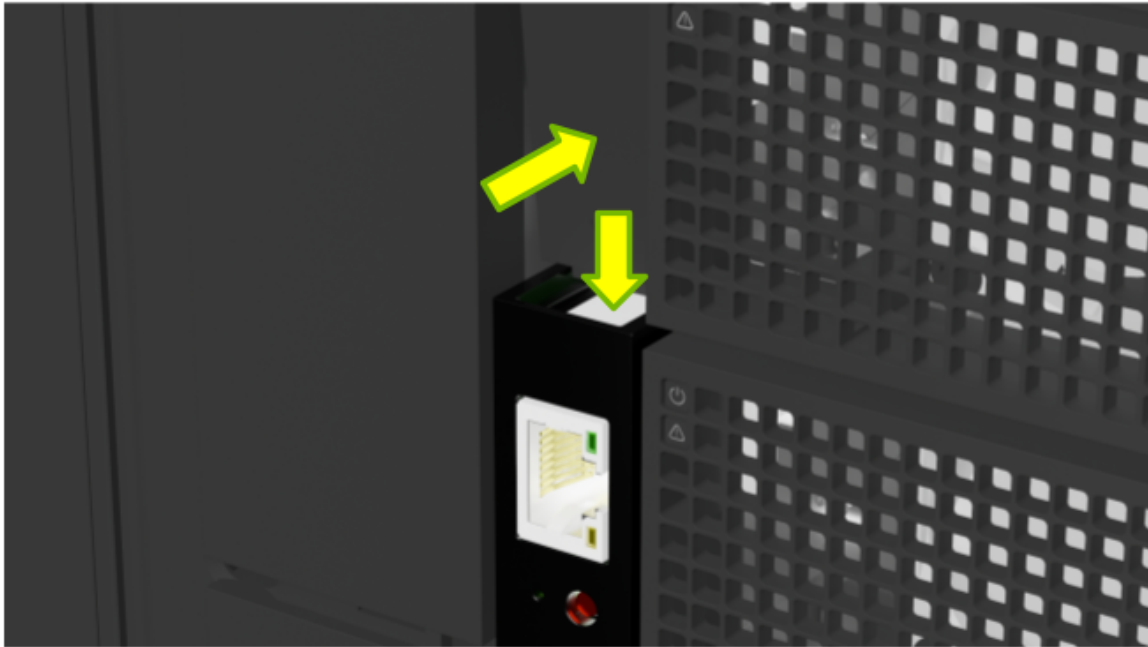
2. **Unpack** the new management module and **record** the MAC address on the power shelf pull tab. The MAC address on the pull tab must match the MAC address on the power shelf management module.



3.3. Replace the Power Shelf Management Module

The power supplies continue to operate during management module replacement.

1. **Unplug** the network management cable.
2. **Push** the panel above the module inward and **press** down on the release mechanism.



3. **Pull** the management module all the way out and **insert** the new module until it locks in place. You should hear a click when it locks.



3.4. Finalize the Replacement Procedure

1. **Update** the management module firmware, if needed.
2. **Confirm** with the system administrator that the module is up and running as expected.

Chapter 4. E1.S Cache Drive Replacement

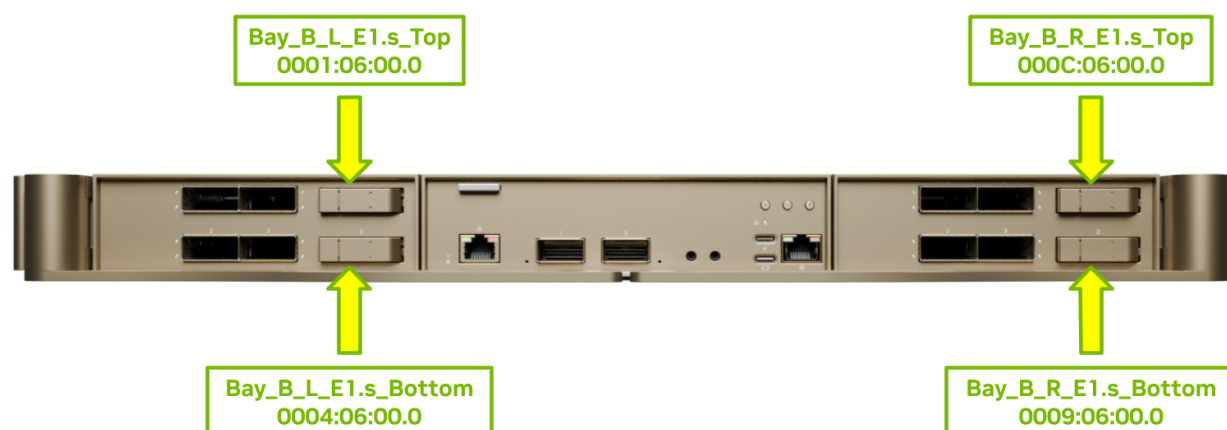
This topic describes how to replace an E1.S NVMe cache drive in the compute tray of an NVIDIA DGX VR NVL72 system.

4.1. E1.S Cache Drive Replacement Overview

1. Identify the failed cache drive.
2. Power off the compute tray being serviced.
3. Replace the drive.
4. Power on the compute tray.
5. Rebuild the system RAID volume.
6. Confirm that the volume is healthy with `nvsm show volumes`.

4.2. Identify the Failed Cache Drive

Identify each E1.S cache drive to remove and **record** its PCIe bus, device, and function (BDF) address. The following diagram labels the four cache drives in Bay B and their BDF addresses.



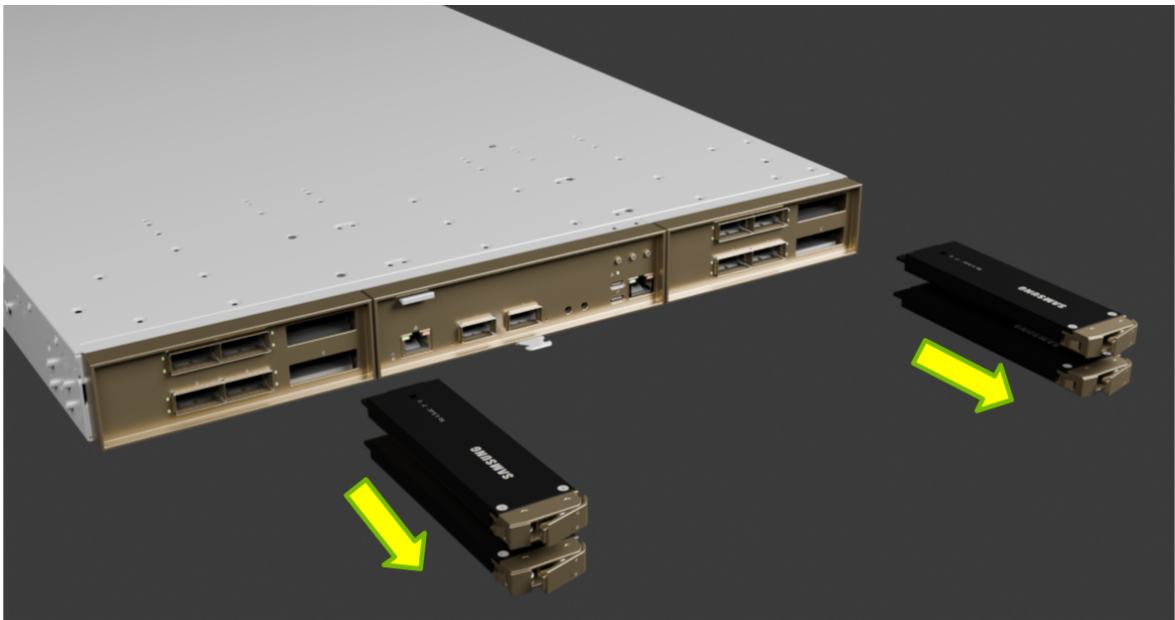
Have the system administrator **power off** the compute tray before you replace the drives.

4.3. Replace the Failed Cache Drive

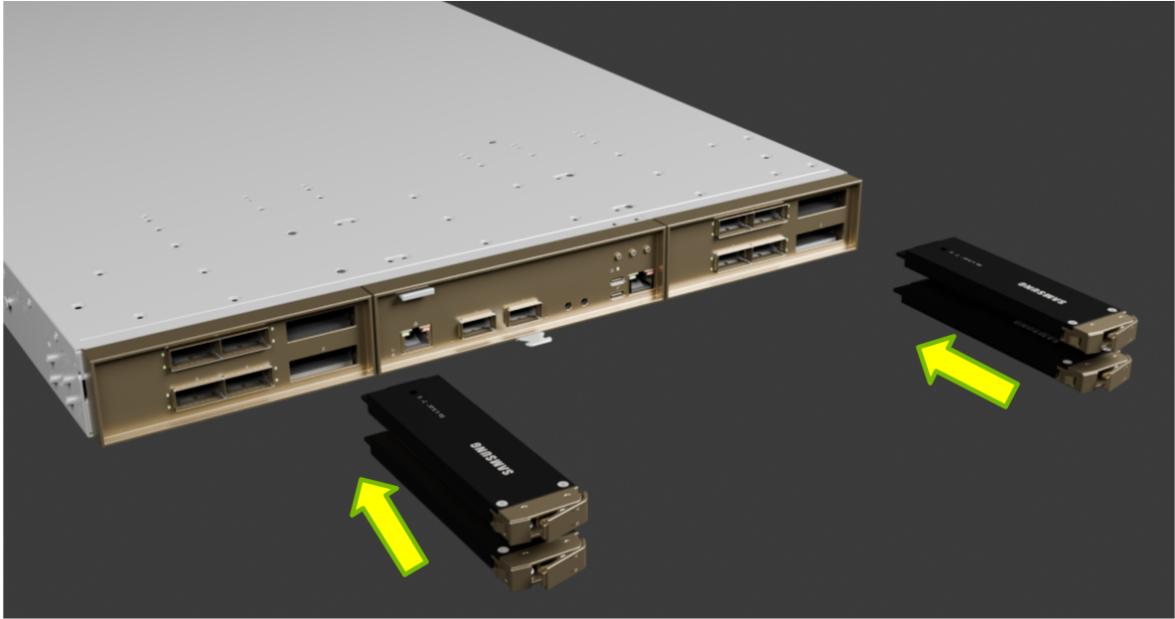
1. **Press** the smaller, leftmost tab inward toward the bezel. The larger, rightmost tab flips open, and the drive protrudes slightly.



2. **Repeat** this step for any other cache drives that you need to remove, and then **pull** the drives out of the compute tray.



3. **Insert** each new E1.S cache drive into the compute tray.



4. **Press** the larger, rightmost tab inward until it locks into the smaller, leftmost tab. **Repeat** for each new drive.



4.4. Finalize the Replacement Procedure

1. **Power on** the system and **log in**.
2. **Run** the following command to confirm that all new drives are visible:

```
sudo nvme list
```

One boot drive and four cache drives should be visible. Model names can vary.

3. If the cache volume was locked with an access key, **unlock** the drives with the following command. The disk encryption packages must be installed; refer to the *DGX OS User Guide*.

```
sudo nv-disk-encrypt disable
```

4. **Re-create** the cache volume and the /raid filesystem:

```
configure_raid_array.py -c -f
```

Enter y when prompted to confirm the rebuild.

5. If the volume needs to be locked with an access key, **follow** the instructions in the *DGX OS User Guide*.
6. **Run** the following command to confirm that the volume is healthy:

```
sudo nvsm show volumes
```

7. **Pack** the old drive in the packaging from the new drive and **ship** it back to NVIDIA Enterprise Support.

Chapter 5. Compute Tray Battery Replacement

This topic describes how to replace the battery in the Bay-C module of a compute tray in an NVIDIA DGX VR NVL72 system. The procedure identifies the steps performed by the system administrator.

5.1. Compute Tray Battery Replacement Overview

1. Power off all compute trays (system administrator).
2. Remove the compute tray from the rack with the help of another person.
3. Check the tray's cooling-loop pressure.
4. Remove the tray lid and the Bay-C module, and replace the battery.
5. Reinstall the Bay-C module, replace the lid, and install the tray with the help of another person.
6. Run the CDU for 20 minutes to eliminate bubbles in the tray's liquid cooling loop.
7. Run the power-on sequence, confirm that the tray comes up, update its firmware to match the rest of the system, and check system health (system administrator).

5.2. Remove the Compute Tray

1. Have the system administrator **power off** all compute trays and **power down** the compute tray being serviced.
2. **Allow** the compute tray to cool down for five minutes.
3. **Unlatch** the compute tray from the rack.
4. **Pull** the tray out as far as the sliding rail allows.
5. With the help of another person, **unlock** the tray from the slide rails and **remove** it from the rack.
6. **Rest** the tray on a solid, flat surface.
7. **Use** the pressure gauge from the toolkit to check the pressure in the tray's cooling loop.
 - At **1 PSI or above**, continue with the procedure.

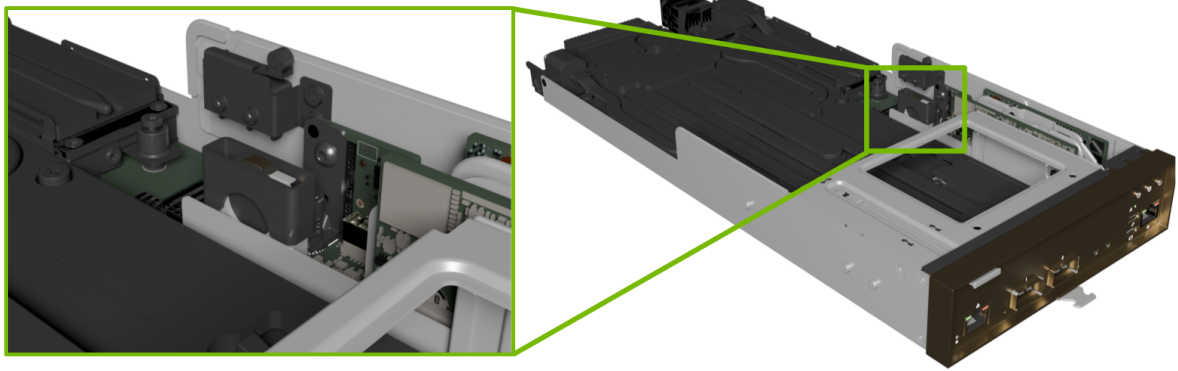
- Below **1 PSI**, contact NVIDIA Enterprise Support to confirm the next steps before you continue.

5.3. Remove the Tray Lid and Bay-C Module

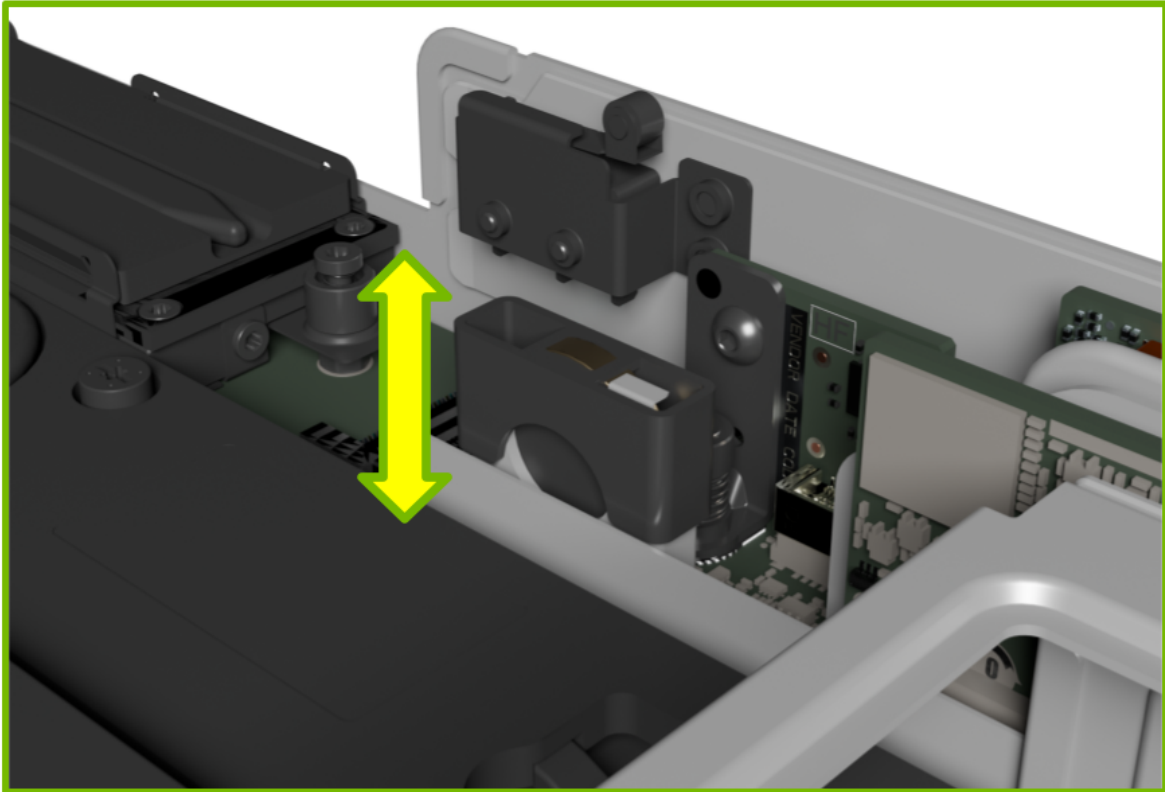
1. **Remove** the lid of the compute tray.
2. **Remove** the Bay-C module from the compute tray.

5.4. Replace the Battery

1. **Locate** the battery in the Bay-C module.



2. **Remove** the battery assembly's top cover, **remove** the old battery, and **replace** it with a new battery. **Replace** the top cover.



5.5. Finalize the Replacement Procedure

1. **Reinstall** the Bay-C module in the compute tray.
2. **Replace** the tray lid.
3. With the help of another person, **install** the compute tray in the rack.
4. **Run** the CDU for 20 minutes until any bubbles remaining in the compute tray's liquid cooling loop are eliminated.
5. Have the system administrator **run** the power-on sequence.
6. Have the system administrator **confirm** that the compute tray comes up.
7. Have the system administrator **update** the tray's firmware to match the rest of the system.
8. Have the system administrator **check** system health.

Chapter 6. NVLink Switch Tray Battery Replacement

This topic describes how to replace the battery in an NVLink Switch tray in an NVIDIA DGX VR NVL72 system. The procedure identifies the steps performed by the system administrator.

6.1. NVLink Switch Tray Battery Replacement Overview

1. Power off all compute trays and the NVLink Switch tray (system administrator).
2. Remove the NVLink Switch tray from the rack with the help of another person.
3. Check the tray's cooling-loop pressure.
4. Remove the lid and replace the battery.
5. Replace the lid and install the tray with the help of another person.
6. Run the CDU for 20 minutes to eliminate bubbles in the tray's liquid cooling loop.
7. Run the power-on sequence, confirm that the tray comes up, update its firmware to match the rest of the system, and check system health (system administrator).

6.2. Remove the NVLink Switch Tray

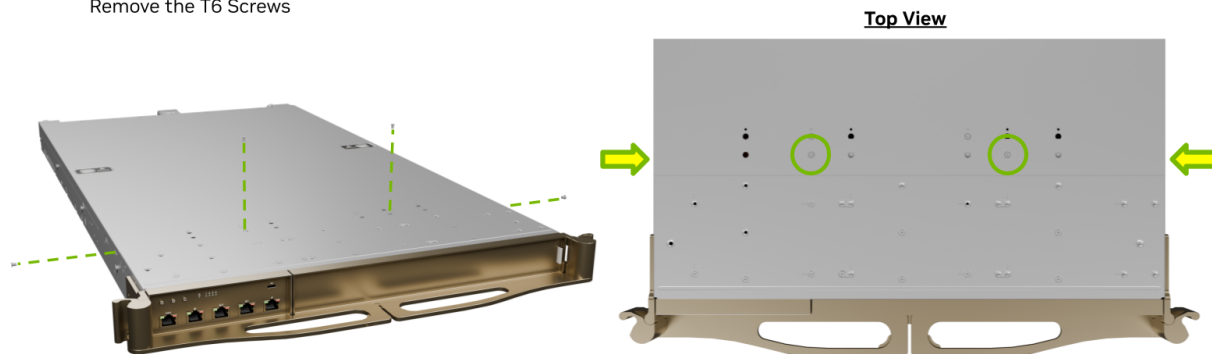
1. Have the system administrator **power off** all compute trays and then **power down** the NVLink Switch tray.
2. **Allow** the switch tray to cool down for five minutes.
3. **Unlatch** the switch tray from the rack.
4. **Pull** the tray out as far as the sliding rail allows.
5. With the help of another person, **unlock** the tray from the slide rails and **remove** it from the rack.
6. **Rest** the tray on a solid, flat surface.
7. **Use** the pressure gauge from the toolkit to check the pressure in the tray's cooling loop.
 - At **1 PSI or above**, continue with the procedure.

- Below **1 PSI**, contact NVIDIA Enterprise Support to confirm the next steps before you continue.

6.3. Remove the Tray Lid

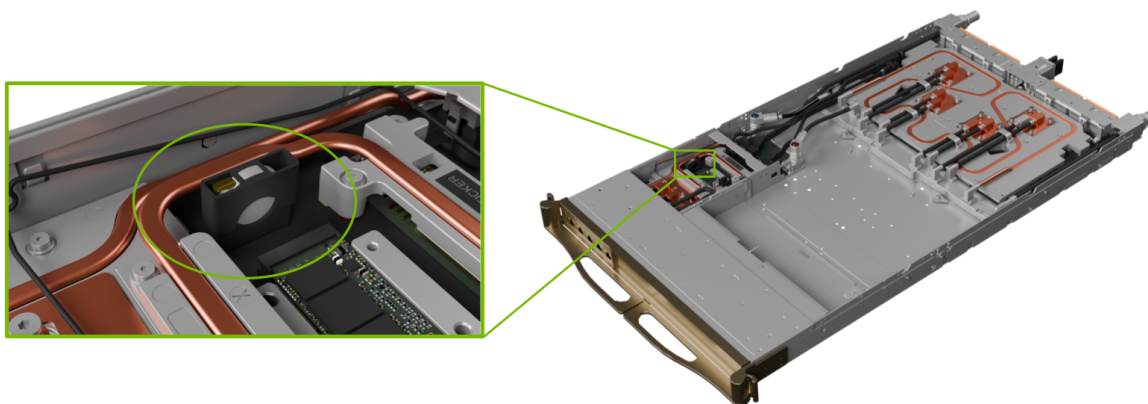
Remove the Torx T6 screws shown in the top view, and then **lift** the lid off the tray.

Remove the T6 Screws

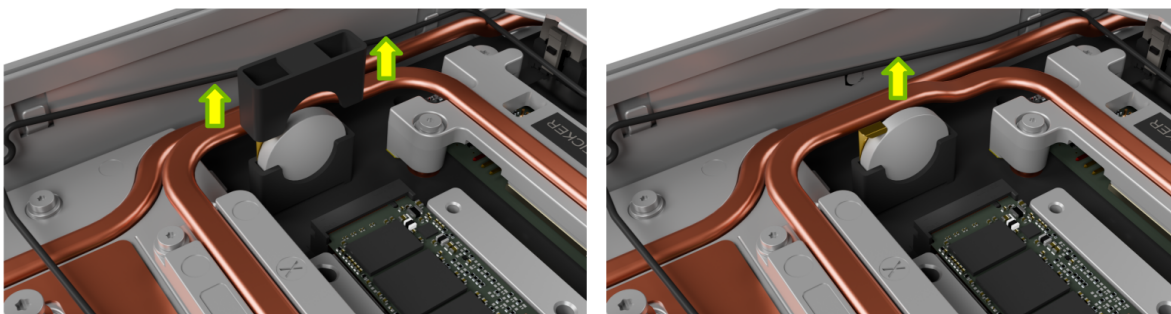


6.4. Replace the Battery

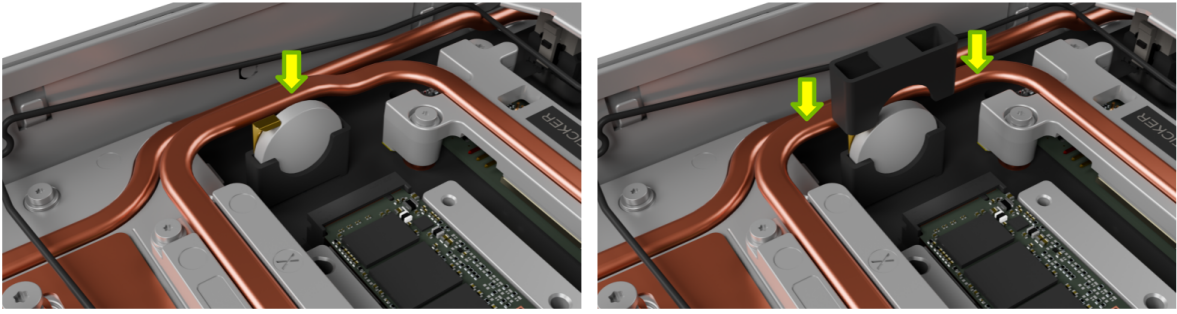
1. **Locate** the battery on the NVLink Switch tray.



2. **Remove** the battery's top cover and **slide** the battery up and out of the bottom holder.



3. **Insert** the new battery into the bracket and **replace** the top cover.



6.5. Finalize the Replacement Procedure

1. **Align** the lid with the tray and **slide** it forward until it locks in place. **Reinstall** the Torx T6 screws.
2. With the help of another person, **install** the NVLink Switch tray in the rack.
3. **Run** the CDU for 20 minutes until any bubbles remaining in the NVLink Switch tray's liquid cooling loop are eliminated.
4. Have the system administrator **run** the power-on sequence.
5. Have the system administrator **confirm** that the NVLink Switch tray comes up.
6. Have the system administrator **update** the tray's firmware to match the rest of the system.
7. Have the system administrator **check** system health.

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