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Chapter 1.
INTRODUCTION

This document contains instructions for replacing NVIDIA® DGX-2™ System components. Be sure to familiarize yourself with the NVIDIA Terms & Conditions documents before attempting to perform any modification or repair to the DGX-2 System. These Terms & Conditions for the DGX-2 System can be found through the NVIDIA DGX Systems Support page.

Contact NVIDIA Enterprise Support to obtain an RMA number for any system or component that needs to be returned for repair or replacement. When replacing a component, use only the replacement supplied to you by NVIDIA.

You can obtain the following components for replacement in your data center.

- Front Fan Modules
- Cache (U.2) NVMe Drives
- Power Supplies
- Power Supply Carrier
- Power Supply Carrier Fan
- Boot (M.2) NVMe Drives
- Boot Drives Riser Assembly
- DIMMs
- Motherboard Tray Battery
- PCIe Riser Assembly
- ConnectX-5 Network Adapter Card
- I/O Expander Tray
- Front Console Board
- EMI Shield
- Bezel

Contact NVIDIA Enterprise Support for replacement instructions and guidance for specific components if those instructions are not included in this document.

1.1. NVIDIA Enterprise Support Portal
The best way to file an incident is to log on to the NVIDIA Enterprise Support portal.

1.2. NVIDIA Enterprise Support Email

You can also send an email to enterprisesupport@nvidia.com.

1.3. NVIDIA Enterprise Support - Local Time Zone Phone Numbers

Chapter 2.
FRONT FAN MODULE REPLACEMENT

2.1. Front Fan Module Replacement Overview

This is a high-level overview of the steps needed to replace the front fan modules.

1. Identify the failed front fan module through the BMC and submit a service ticket to NVIDIA Enterprise Support.
2. Get a replacement from NVIDIA Enterprise Support.
3. Remove the failed fan module using the fan numbering diagram as a reference.
4. Insert the new fan module.
5. Confirm the new fan module is working correctly through the BMC or NVSM.
   
   `nvsm show health`

6. Return the bad fan module using the packaging from the new fan module.

2.2. Identifying the Failed Fan Module

1. Log on to the BMC.
2. Click Sensor from the left navigation menu, then review the Normal Sensors section.
There are two fans in the fan module, identified by \texttt{FAN_n_F} or \texttt{FAN_n_R}, where \texttt{n} is the module ID. If either fan fails, then the entire module must be replaced.

3. Use NVSM to confirm the fan issue.

\[ \texttt{sudo nvsm show health} \]

In the output, look for the 'unhealthy' status for the same fan.

### 2.3. Replacing and Returning the Front Fan Module

1. Remove the new fan module from its packaging and be ready to install it.
2. Locate the failed fan module on the physical system using the following diagram.
3. Remove the failed front fan module by pressing on the tab and pulling on the handle.

4. Quickly insert the new fan module, observing that the handle release mechanism is facing up and the rear connector is facing down.

**Caution** Replace the fan module within 30 seconds to prevent overheating of the system components.
5. Confirm that the fan module is working properly by verifying on the BMC and by using NVSM (`nvsm show health`) to confirm the replaced fan is healthy.

6. Use packaging to pack up the bad fan and follow the shipping instructions to return the bad fan to NVIDIA Enterprise Support.
Chapter 3.
U.2 NVME CACHE DRIVE REPLACEMENT

3.1. U.2 NVMe Cache Drive Replacement Overview

This is a high-level overview of the procedure to replace a cache drive.

Caution Hot-swapping of the NVMe drives is not supported. Be sure to turn the system off before replacing a failed drive.

1. Identify the failed Non-Volatile Memory Express (NVMe) drive.
2. Get replacement from NVIDIA Enterprise Support.
3. Power down the system and then remove the failed NVMe drive.
4. Insert the new NVMe drive.
5. Power on the DGX-2 System.
6. Rebuild the RAID volume and remount the /raid partition.

3.2. Identifying the Failed U.2 NVMe

Identifying the Failed NVMe from the Front

If physical access to the system is available, you can identify a failed drive by the blinking red LED as illustrated in the following example.
Identifying the Failed NVMe from the Console

To identify the failed NVMe drive from the DGX-2 console, enter the following and then look for a missing entry from the output.

```
sudo mdadm -D /dev/md1
```

<table>
<thead>
<tr>
<th>Number</th>
<th>Major</th>
<th>Minor</th>
<th>RaidDevice</th>
<th>State</th>
<th>Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>259</td>
<td>8</td>
<td>0</td>
<td>active</td>
<td>/dev/nvme9n1</td>
</tr>
<tr>
<td>1</td>
<td>259</td>
<td>13</td>
<td>1</td>
<td>active</td>
<td>/dev/nvme5n1</td>
</tr>
<tr>
<td>2</td>
<td>259</td>
<td>7</td>
<td>2</td>
<td>active</td>
<td>/dev/nvme6n1</td>
</tr>
<tr>
<td>3</td>
<td>259</td>
<td>10</td>
<td>3</td>
<td>active</td>
<td>/dev/nvme3n1</td>
</tr>
<tr>
<td>4</td>
<td>259</td>
<td>12</td>
<td>4</td>
<td>active</td>
<td>/dev/nvme2n1</td>
</tr>
<tr>
<td>5</td>
<td>259</td>
<td>11</td>
<td>5</td>
<td>active</td>
<td>/dev/nvme7n1</td>
</tr>
<tr>
<td>6</td>
<td>259</td>
<td>9</td>
<td>6</td>
<td>active</td>
<td>/dev/nvme8n1</td>
</tr>
<tr>
<td>7</td>
<td>259</td>
<td>6</td>
<td>7</td>
<td>active</td>
<td>/dev/nvme4n1</td>
</tr>
</tbody>
</table>

The list should include device names from `nvme2n1` through `nvme9n1` for systems with 8 NVMe drives, and from `nvme0n1` through `nvme15n1` for systems with 16 NVMe drives.

To map the device name to the physical slot ID, enter the following, where X corresponds to the missing device name.

```
ls -l /dev/disk/by-path | grep nvmeX | cut -d'|' -f3
```
The command returns the PCIe bus ID. Refer to the following figure to find the slot ID that corresponds to the PCIe bus ID for the faulty drive.

![Figure 1 NVMe Drives: PCIe to Slot Mapping](image)

**Identifying the NVMe Manufacturer and Model**

Enter the following, replacing \(X\) with the number corresponding to the Linux device name for the failed drive.

```
$ sudo nvsm show /systems/1/storage/1/drives/nvmeXn1
```

Example output:

```
/systems/1/storage/1/drives/nvme5n1
Properties:  
  Capacity = 3840755982336  
  BlockSizeBytes = 7501476528  
  SerialNumber = 174719FCF9F1  
  PartNumber = N/A  
  Model = Micron_9200_MTFDHAL3T8TCT  
  Revision = 100007H0  
  Manufacturer = Micron Technology Inc  
  Status_State = Enabled  
  Status_Health = OK  
  Name = Non-Volatile Memory Express  
  MediaType = SSD  
  IndicatorLED = N/A  
  EncryptionStatus = N/A  
  HotSpareType = N/A  
  Protocol = NVMe  
  NegotiatedSpeedsGbs = 0  
  Id = 5
```

Determine the manufacturer and model from the 'Model' entry in the output, and then request a replacement NVMe from NVIDIA Enterprise Support, specifying this information.

### 3.3. Replacing the U.2 NVMe Drive
1. Be sure you have obtained the replacement drive.
2. Back up any critical data to a network shared volume or some other means of backup.
3. Power off the system using the power button.
4. Remove the NVMe drive by squeezing the levers on the handle and pulling the drive out.
5. Replace the new NVMe drive in the same slot by fully inserting it and making sure it clicks into place.
6. Power on the system.

Perform the tasks describes in the chapter U.2 NVMe Cache Drive Post-Installation Tasks.
If you require more than 30 terabytes (useable 28 terabytes) for cache, you can increase the cache to 60 terabytes (useable 56 terabytes) by adding eight more NVMe drives to the DGX-2 System.

4.1. U.2 NVMe Cache Drive Upgrade Overview

This is a high-level overview of the steps needed to upgrade the DGX-2 System’s cache size.

1. Identify the manufacturer and model of the currently installed NVMe drives.
2. Place an order for additional eight NVME drives.
3. Power off the system.
4. Install the NVMe drives in the DGX-2 System.
5. Power on the system.
6. Re-initialize the \texttt{/raid} filesystem to recognize all 16 drives.

4.2. Identifying the NVMe Drive Manufacturer

1. Identify the drives in the RAID volume.
   
   \$ \texttt{sudo nvsm show /systems/1/storage/1/volumes/md1}

   Properties
   ...

   Drives = [ nvme2n1, nvme3n1, nvme4n1, nvme5n1, nvme6n1, nvme7n1, nvme8n1, nvme9n1 ]

   ...

   2. Select one of the drives listed in the \texttt{Drives=} entry from the previous command, and then enter the following command, where X corresponds to the drive that you selected.
sudo nvsm show /systems/1/storage/1/drives/nvmeXn1

Example showing an excerpt of the output for `nvme5n1`.

```
/systems/1/storage/1/drives/nvme5n1
Properties:
  Capacity = 3840755982336
  BlockSizeBytes = 7501476528
  SerialNumber = 174719FCF9F1
  PartNumber = N/A
  Model = Micron_9200_MTFDAL3T8TCT
  Revision = 100007H0
  Manufacturer = Micron Technology Inc
  Status_State = Enabled
  Status_Health = OK
  Name = Non-Volatile Memory Express
  MediaType = SSD
  IndicatorLED = N/A
  EncryptionStatus = N/A
  HotSpareType = N/A
  Protocol = NVMe
  NegotiatedSpeedsGbs = 0
  Id = 5
```

3. Determine the manufacturer (Samsung or Micron) and model from the `Model=` entry in the output, and then order the additional drives from NVIDIA Enterprise Support, specifying the manufacturer and model.

### 4.3. Installing the Optional NVMe Drives

1. Be sure you have obtained the additional drives.
2. Back up any critical data to a network shared volume or some other means of backup.
3. Power off the system using the power button.
4. Remove the blank filler disks from slots 2, 3, 6, 7, 10, 11, 14, and 15.

Squeeze the levers on the handle and pull the blank filler disks out.

5. Install the additional eight NVMe drives in slots 2, 3, 6, 7, 10, 11, 14, and 15.
6. Power on the system.
Perform the tasks described in the chapter U.2 NVMe Cache Drive Post-Installation Tasks.
This chapter describes the tasks that are typically needed after replacing a U.2 NVME drive or upgrading from 8 to 16 drives.

5.1. Recreating the Cache RAID 0 Volume

1. Stop cachefilesd.

$ sudo systemctl stop cachefilesd

2. Umount /raid and stop raid-0.

$ sudo umount -f /raid

$ sudo mdadm --stop /dev/md1

3. Run the script to rebuild the RAID volume.

$ sudo /usr/bin/configure_raid_array.py -c -f

Press Y at any questions.

4. When completed, confirm that the /raid volume is mounted.

$ df -hl /raid

The /dev/md1 filesystem should be mounted on /raid with size 28 TB or 56 TB, depending on whether 8 or 16 drives are installed.

5.2. Confirming the Volume is Ready

1. Confirm the storage devices and volumes in the system are healthy using the following command.
U.2 NVMe Cache Drive Post-Installation Tasks

2. Verify Status Health=OK and that the numbers of drives listed in Drives = is as expected.
3. Confirm that the drives are now available.

If the drive manufacturer is Micron, perform the steps in Enabling the Temperature Sensor.

5.3. Enabling the Temperature Sensor

The steps in this section need to be followed only for Micron NVMe drives.

1. Verify the need to enable temperature reading for the installed NVMe drives by running `ipmitool`.

```
$ sudo ipmitool sdr|grep -i -e "nvme.*temp"
```

2. If any of the NVMe drives do not show a temperature reading, enter the following script.

```
for drives in `nvme list|grep Micron | cut -d' ' -f1 |sed 's/..$//'`
do /opt/MicronTechnology/MicronMSECLI/msecli -M -k 1 -n $drives done
```

3. Confirm that temperature reading for the replaced drive is enabled by running `ipmitool`.

```
$ sudo ipmitool sdr|grep -i -e "nvme.*temp"
```

5.4. Returning NVMe Drives

Use the packaging from the new drive and follow the instructions that came with the package to ship the old drive back to NVIDIA Enterprise Support.

If your organization has purchased a media retention policy, you may be able to keep failed drives for destruction. Check with NVIDIA Enterprise Support on the status of the policy for specifics.
Chapter 6.
M.2 NVME BOOT DRIVE REPLACEMENT

6.1. M.2 NVMe Boot Drive Replacement Overview

This is a high-level overview of the procedure to replace a boot drive.

1. With the help of NVIDIA Enterprise Support, determine which M.2 drive needs to be replaced.
2. Get replacement from NVIDIA Enterprise Support.
3. Power down the system.
4. Label all cables and unplug them from the motherboard tray.
5. Remove the motherboard tray and place on a solid flat surface.
6. Remove the motherboard tray lid.
7. Pull out the M.2 riser card with both M.2 disks attached.
8. Replace the failed M.2 device on the riser card.
9. Install the M.2 riser card with both M.2 disks.
10. Close the lid on the motherboard tray.
11. Insert the motherboard tray into the system.
12. Plug in all cables using the labels as a reference.
13. Power on the system.
14. Confirm the RAID 1 array is being rebuilt.

6.2. Identifying the Failed M.2 NVMe

The DGX-2 System automatically sets the failed M.2 drive offline when it detects the failure.

1. From the console, run the following command to identify the failed drive.

```bash
$ sudo mdadm -D /dev/md0
```
Normally, the output would show both drives (nvme0 and nvme1) in an active sync state. The following example output shows only nvme1 in active sync, indicating that nvme0 is the failed drive.

<table>
<thead>
<tr>
<th>Number</th>
<th>Major</th>
<th>Minor</th>
<th>RaidDevice</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>259</td>
<td>2</td>
<td>0</td>
<td>active sync /dev/nvme1n1p2</td>
</tr>
<tr>
<td>-</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>removed</td>
</tr>
</tbody>
</table>

2. Make a note of the device name for the failed drive (nvme0 or nvme1) and the device name for the good drive (nvme0 or nvme1).
You will need this information when rebuilding the RAID 1 array after replacing the drive.

3. Run the following command to determine the location of the failed boot drive, replacing X with the number corresponding to the device name of the failed drive.

```bash
$ ls -l /dev/disk/by-path |grep nvmeX |cut -d':' -f3
```

The output will be either '01' or '05'. Be sure to note this number as you will need it when performing the replacement.

4. Identify the manufacturer and model for the M.2 drive by running the following command on the healthy drive, where X corresponds to the healthy drive, and inspecting the `Manufacturer` = and `Model` = line.

```bash
$ sudo nvsm show /systems/1/storage/drives/nvmeXn1
```

5. Provide the vendor name for the drive when ordering the replacement and then obtain the replacement from NVIDIA Enterprise Support.

### 6.3. Replacing the M.2 NVMe Drive

Before attempting to replace one of the M.2 NVMe drives, be sure to have performed the following:

- Determined the location ID of the faulty M.2 NVMe drive.
- Obtained the replacement DIMM and have saved the packaging for use when returning the faulty DIMM.

**CAUTION: Static Sensitive Devices**: Be sure to observe best practices for electrostatic discharge (ESD) protection. This includes making sure personnel and equipment are connected to a common ground, such as by wearing a wrist strap connected to the chassis ground, and placing components on static-free work surfaces.

1. Back up any critical data to a network shared volume or some other means of backup.
2. Power down the system.
3. Label all cables connected to the motherboard tray for easy identification when reconnecting.
4. Remove the motherboard tray.
Refer to the instructions in the section Removing the Motherboard Tray.

5. Remove the M.2 modules and the riser card from the motherboard tray by pushing on the clip to release the riser.

6. Identify the failed M.2 module and remove it from the riser card by loosening the screw with a Philips #2 screwdriver.

Use the label on the motherboard tray lid to help identify the M.2_0 module and the M.2_1 module.
7. Insert the new M.2 module and secure it with the screw to the riser card.

8. Install the assembled module on the motherboard by inserting the the riser card in its slot.

9. Install the motherboard tray lid and then install the motherboard tray.

   Refer to the instructions in the section Installing the Motherboard Tray.

10. Connect all the cables to the motherboard tray.

Rebuild the RAID 1 array according to the instruction in the section Rebuilding the Boot Drive RAID 1 Volume.

6.4. Rebuilding the Boot Drive RAID 1 Volume
After replacing a faulty M.2 OS drive, you must rebuild the RAID 1 array.

1. Turn the DGX-2 System on.
   The rebuilding process should begin automatically upon system boot.

2. Log in and then confirm that the RAID 1 array is being rebuilt.

   ```
   $ sudo mdadm -D /dev/md0
   ```
   - If the RAID 1 array is still in the process of being rebuilt, the output will include the following line.
     
     Rebuilt Status : XX% complete
   - If the RAID 1 array rebuilding process is completed, the output will show both drives in 'active sync' state and you can skip the remaining steps.

3. If the rebuilding process did not start automatically, then rebuild the array manually.
   In the following steps, replace X with the number that corresponds to the replaced drive, and Y with the number that corresponds to the drive that was not replaced (the surviving drive). If you did not note this information when identifying the failed drive, then follow the instructions in the first step of Identifying the Failed M.2 Drive.

   a) Start an NVSM CLI interactive session and switch to the storage target.

   ```
   $ sudo nvsm
   ```
   ```
   nvsm-> cd /systems/localhost/storage
   ```

   b) Start the rebuilding process and be ready to enter the device name of the replaced drive.

   ```
   nvsm(/systems/localhost/storage)-> start volumes/md0/rebuild
   ```
   PROMPT: In order to rebuild this volume, a spare drive is required. Please specify the spare drive to use to rebuild md0.
   Name of spare drive for md0 rebuild (CTRL-C to cancel): nvmeXn1
   WARNING: Once the volume rebuild process is started, the process cannot be stopped.
   Start RAID-1 rebuild on md0? [y/n] y

   After entering y at the prompt to start the RAID 1 rebuild, the "Initiating rebuild ..." message appears.

   ```
   /systems/localhost/storage/volumes/md0/rebuild started at 2018-10-12 15:27:26.525187
   Initiating RAID-1 rebuild on volume md0...
   0.0% [\                           ]
   ```

   After about 30 seconds, the "Rebuilding RAID-1 ..." message should appear.

   ```
   /systems/localhost/storage/volumes/md0/rebuild started at 2018-10-12 15:27:26.525187
   Rebuilding RAID-1 rebuild on volume md0...
   31.0% [=================/>]
   ```

   If this message remains at "Initiating RAID-1 rebuild" for more than 30 seconds, then there is a problem with the rebuild process. In this case, make sure the name of the replacement drive is correct and try again.

   The RAID 1 rebuild process should take about 1 hour to complete.
6.5. Returning NVMe Drives

Use the packaging from the new drive and follow the instructions that came with the package to ship the old drive back to NVIDIA Enterprise Support.

If your organization has purchased a media retention policy, you may be able to keep failed drives for destruction. Check with NVIDIA Enterprise Support on the status of the policy for specifics.
Chapter 7.
POWER SUPPLY REPLACEMENT

This chapter describes how to replace one of the DGX-2 System power supplies (PSUs).

7.1. Power Supply Replacement Overview

This is a high-level overview of the steps needed to replace a power supply.

1. Identify failed power supply through the BMC and submit a service ticket.
2. Get replacement power supply from NVIDIA Enterprise Support.
3. Identify the power supply using the diagram as a reference and the indicator LEDs.
4. Remove the power cord from the power supply that will be replaced.
5. Remove the failed power supply.
6. Insert new power supply.
7. Insert the power cord and make sure both LEDs light up green (IN/OUT).
8. Use the BMC to confirm that the power supply is working correctly.

7.2. Identifying the Failed Power Supply

Identifying the Failed Power Supply from the Back

If physical access to the system is available, you can identify a failed PSU by the inspecting the LEDs on the power supply.
Both LEDs should be solid green. If either of the LEDs are not green or if they are blinking, contact NVIDIA Enterprise Support to troubleshoot the issue.

### Identifying the Failed Power Supply from the Console

There are a couple of ways to identify the failed PSU from the DGX-2 console.

- Use the NVSM CLI as follows.

  ```bash
  $ sudo nvsm show psus
  ```

  The output shows information for each PSU. Look for any that do not report `Status_Health=OK`.

- You can also log into the BMC, then click **Sensor** from the left side menu and inspect the PSU information from the **Normal Sensors** section.

Both NVSM and the BMC identify each power supply as **PSUx**, where x is from 0 to 5. The following diagram shows the physical location of each PSU.

### Identifying the Power Supply Manufacturer

Enter the following NVSM CLI command to see the manufacturer of the PSUs in the system.

```bash
$ sudo nvsm show psus | grep Manufacturer
```

Request a replacement PSU from NVIDIA Enterprise Support, specifying this information.
7.3. Replacing the Power Supply

1. Be sure you have obtained the replacement PSU and that you have saved the packaging to use when sending back the failed PSU.

2. Determine whether you need to shut down the system.
   - If the five remaining PSUs are working and energized, then you do not need to shut down power to the DGX-2 System.
   - If fewer than five PSUs are working and energized, then you do need to shut down power to the DGX-2 System.

3. Unplug the power cable from the PSU to be replaced.
   You may need to dislodge the power cord from the retaining clip.

4. Remove the PSU.
   a) Push on the blue tab to release the lock.

   ![Image of blue tab releasing lock](image1.jpg)

   b) Pull on the handle to remove the PSU from the chassis.

   ![Image of handle removing PSU](image2.jpg)

5. Install the new power supply.
a) Insert the new power supply into the chassis and push it all the way in, making sure that the blue locking mechanism engages.
b) Plug in the power cord and attach the retaining clip.
c) If needed, power on the system.

6. Confirm the installation by
   
   ▶ Viewing the PSU status from the BMC dashboard->Sensors page.
   ▶ Running `nvsm show health` to confirm the health of the system.

Pack the old power supply and ship it back to NVIDIA Enterprise Support.
Chapter 8.
DIMM REPLACEMENT

8.1. DIMM Replacement Overview

This is a high-level overview of the procedure to replace a dual inline memory module (DIMMs) on the DGX-2 System.

1. Use the `nvsm show` commands to identify the failed DIMM
2. Get a replacement DIMM from NVIDIA Enterprise Support.
3. Shut down the system.
4. Label all motherboard tray cables and unplug them.
5. Remove the motherboard tray and place on a solid flat surface.
6. Remove the motherboard tray lid.
7. Use the reference diagram on the lid of the motherboard tray to identify the failed DIMM.
8. Replace the bad DIMM with the new one.
9. Close the lid on the motherboard tray.
10. Insert the motherboard tray into the system.
11. Plug in all cables using the labels as a reference.
12. Power on the system.
13. Verify that all DIMMs are now healthy with nvsm.

8.2. Identifying the Failed DIMM

1. From the console, run the following `nvsm` command to identify memory alerts.

```bash
$ sudo nvsm show /systems/1/memory/alerts
```

Alerts will appear under the Target section. For example.
2. Get specific information about the memory alert.
   The following example obtains information for alert0.

   ```
   $ sudo nvsm show /systems/1/memory/alerts/alert0
   ```

   Inspect the `component_id` line to determine the DIMM ID. The following example shows a DIMM ID of A1.

   ```
   Properties:
   system_name = ....
   component_id = CPU1_DIMM_A1
   ...
   ```

   The output provides other information about the alert that can be provided to NVIDIA Enterprise Support.

3. Determine the DIMM manufacturer.

   ```
   $ sudo dmidecode -t memory|grep Manufacturer |tail -1
   ```

4. Request the replacement DIMM from NVIDIA Enterprise Support, specifying the manufacturer.

### 8.3. Replacing the DIMM

Before attempting to replace any of the dual inline memory modules (DIMMs), be sure to have performed the following:

- Determined the location ID of the faulty DIMM needing replacement as explained in Identifying the Failed DIMM. The location ID is an alpha-numeric designator, such as A0, A1, B0, B1, etc.
- Obtained the replacement DIMM and have saved the packaging for use when returning the faulty DIMM.

**CAUTION: Static Sensitive Devices:** Be sure to observe best practices for electrostatic discharge (ESD) protection. This includes making sure personnel and equipment are connected to a common ground, such as by wearing a wrist strap connected to the chassis ground, and placing components on static-free work surfaces.

1. Power down the system.
2. Label all cables connected to the motherboard tray for easy identification when reconnecting.
3. Remove the motherboard tray.
   - Refer to the instructions in the section Removing the Motherboard Tray.
4. Using the following diagram as a guide, locate the faulty DIMM to be replaced.
5. Remove the DIMM.
   a) Press down on the side latches at both ends of the DIMM socket to push them away from the DIMM. This should unseat the DIMM from the socket.
   b) Pull the DIMM straight up to remove it from the socket.

6. Carefully insert the replacement DIMM.
   a) Make sure the socket latches are open.
   b) Position the DIMM over the socket, making sure that the notch on the DIMM lines up with the key in the slot, then press the DIMM down into the socket until the side latches click in place.
   c) Make sure that the latches are up and locked in place.
7. Install the motherboard tray lid and then install the motherboard tray. Refer to the instructions in the section Installing the Motherboard Tray.

8. Connect all the cables to the motherboard tray.

9. Power on the system and log in.

10. Confirm that the system is healthy.

```
    $ sudo nvsm show /systems/1/memory/alerts
```

There should be no new alerts listed.
Chapter 9.
MOTHERBOARD TRAY REMOVAL AND INSTALLATION

You will need to remove the motherboard tray in order to service the following components.

- M.2 NVMe drives
- M.2 module riser card
- Motherboard tray battery
- Dual port CX5 PCI network adapter card
- DIMMs

9.1. Removing the Motherboard Tray

1. Loosen the two motherboard screws with a Philips #2 screwdriver and pull out and down on the levers to release the tray.
2. Pull motherboard tray out of the system and place on a work surface.

Caution The motherboard tray is heavy. At least two people are required to move the motherboard tray.

3. Press on both clips at the sides of the tray and then push the lid back.

4. Lift the lid off of the motherboard tray.
9.2. Installing the Motherboard Tray

1. Align the guiding pins on the lid to the grooves on the motherboard tray chassis while lowering the tray lid to the chassis.

2. Push the lid towards the PCI cards to lock the lid in place.
Make sure you hear the click from the clips to indicate that the lid is locked in place.

3. Push the motherboard tray into its slot on the DGX-2 System

4. Once the tray is pushed in all the way, push up on the levers to complete the engagement with the chassis and finalize the insertion, then secure by tightening the thumbscrews.
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