

FRU replacement highlights

The information you should know before replacing FRU

Lenovo

Service considerations

Before taking action, consider the following service factors:

- All DG systems are clustered.
 - This means that controller A and controller B communicate over a connection using two dedicated high-speed Ethernet ports.
- Before servicing the box, you need to disable the auto-failback feature on the controller or node to be serviced to prevent it from taking ownership of resources.
- You will also need to ensure that any node or controller that is being serviced is first halted to allow all resources to transfer to the good or non-degraded controller.
- You cannot place a node that owns the quorum resource into service. The resource will need to be transferred to one of the surviving nodes.
- It is not possible to halt both node A and node B at the same time.

Identifying the machine type and serial number

Before taking service action, it is suggested that you identify the machine type and serial number of the DG Series storage system that will be serviced. Issue the `run local sysconfig -a` command to identify the model name, machine type, and Lenovo system SN.

```
DM5000H::> run local sysconfig -a
Lenovo Release 9.4P1: Fri Jul 20 23:30:57 EDT 2018
System ID: 0537143011 (DM5000H-1); partner ID: 0537142993 (DM5000H-2)
System Serial Number: 721822000139 (DM5000H-1)
System Rev: 20
System Storage Configuration: Multi-Path HA
System ACP Connectivity: Inband Active
All-Flash Optimized: true
Backplane Part Number: 111-02495
Backplane Rev: A4
Backplane Serial Number: 021806001720
slot 0: System Board 1.7 GHz (System Board XXII B2)
Model Name: DM5000H
Machine Type: 7Y57-CTOWW1
Lenovo System SN: LSSN1234
Part Number: 111-02493
Revision: 20
Serial Number: 021815016159
BIOS version: 11.2.1
```

Note: You can also get this information through the ONTAP GUI. Select **Cluster** → **Overview**, and then click the **System ID** to get the machine type and serial number.

Repair actions

Hot-swap replacement

- Power supply

Non-hot-swap replacement

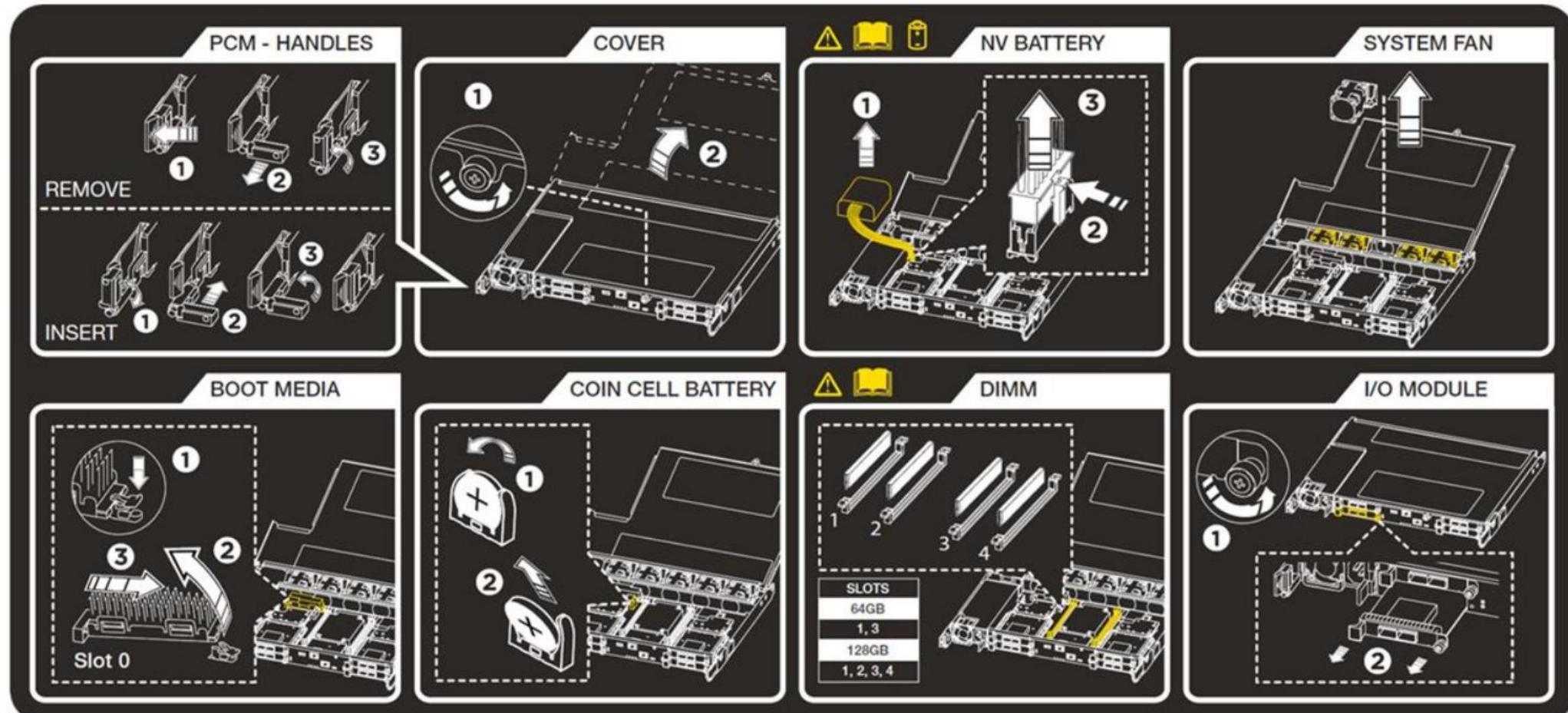
- Controller module
- Fan
- NVMEM battery
- System DIMM
- Boot media
- I/O module
- RTC battery

With non-hot-swap parts, the following service actions should be taken:

- Shut down the impacted controller
- Replace the failed part
- Run diagnostics
- Restore the controller to operation

System service labels

The labels have diagrams showing the locations of the FRU parts and the basic steps used to replace them.



Shutting down an impaired node

Work through the following procedure to shut down an impaired node before replacing a controller or its components.



Click each number in turn to see the procedure.

Step



Shutting down an impaired node

To shut down an impaired node, you must determine its status and, if necessary, take over the node so that the healthy node will continue to serve data from the impaired node's storage.

If AutoSupport is enabled, suppress automatic case creation by invoking an AutoSupport message: `system node autosupport invoke -node * -type all -message MAINT=<number_of_hours_downh>`

Example :

- The following AutoSupport message suppresses automatic case creation for two hours:
`cluster1:*> system node autosupport invoke -node * -type all -message MAINT=2h`

Step

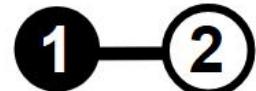


Shutting down an impaired node

- Disable automatic giveback from the console of the healthy node:
`storage failover modify -node local -auto-giveback false`
- Take the impaired node to the LOADER prompt:

If the impaired node is displaying	Then...
The LOADER prompt	Go to the next step.
Waiting for giveback...	Press Ctrl-C , and then respond with y when prompted.
System prompt or password prompt (enter system password)	<p>Take over or halt the impaired node:</p> <ul style="list-style-type: none">• For an HA pair, take over the impaired node from the healthy node<ul style="list-style-type: none">• <code>storage failover takeover -ofnode <impaired_node_name></code> <p>When the impaired node shows Waiting for giveback..., press Ctrl-C, and then respond with y.</p>

Step



Restoring a controller module to operation

1. Re-cable the system as needed.

- If you removed the media converters (QSFPs or SFPs), reinstall them if fiber optic cables are being used.

2. Use the following command to return the node to normal operation by giving back its storage:

```
storage failover giveback -ofnode <impaired_node_name>
```

3. If automatic giveback was disabled, use the following command to re-enable it:

```
storage failover modify -node local -auto-giveback true
```

Transferring a boot image with a boot media

The replacement boot media that you installed will not have an ONTAP image, so you will need to transfer an ONTAP image using a USB flash drive.

- You must have a USB flash drive formatted to FAT32 and with a capacity of at least 4 GB.
- You must have a copy of the same image version of ONTAP as the impaired controller was running. You can download the appropriate image from the [Lenovo Data Center Support Site](#).

Click each number in turn to see the procedure.

Step



Transferring a boot image with a boot media

1. Download and copy the appropriate service image from the [Lenovo Data Center Support Site](#) to the USB flash drive.
 - a. Download the service image from the Downloads link on the page to your laptop.
 - b. Unzip the service image.
 - c. Remove the USB flash drive from your laptop.

Note: If you are extracting the contents using Windows, do not use winzip to extract the netboot image. Use another extraction tool, such as 7-Zip or WinRAR.

Step



Transferring a boot image with a boot media

2. Insert the USB flash drive into the USB-A port on the impaired controller. Make sure that you install the USB flash drive in the slot labeled for USB devices, and not in the USB console port.
3. Fully seat the impaired controller in the chassis:
 - a. Firmly push on the handles until the controller meets the midplane and is fully seated. The controller will boot when fully seated in the chassis and will get its power from the partner controller.
 - b. Push the controller handles up and lock them in place with the tabs.
4. Interrupt the boot process by pressing Ctrl-C to stop at the LOADER prompt. If you miss this message, press Ctrl-C, select the option to boot to Maintenance mode, and then halt the controller to boot to LOADER.

Step



Transferring a boot image with a boot media

5. Set your network connection type at the LOADER prompt:

- If you are configuring DHCP:

```
ifconfig e0M -auto
```

Note: If you are extracting the contents using Windows, do not use winzip to extract the netboot image. Use another extraction tool, such as 7-Zip or WinRAR.

- If you are configuring manual connections:

```
ifconfig e0M -addr=filer_addr -mask=netmask -gw=gateway
```

- filer_addr is the IP address of the storage system
- netmask is the network mask of the management network that is connected to the HA partner
- gateway is the gateway for the network

6. Reconnect the power cord to the power supply on the impaired controller. When power is restored to the PSU, the status LED should be green.

Step



Transferring a boot image with a boot media

7. From the LOADER prompt, use the `boot_recovery` command to boot the recovery ONTAP image from the USB flash drive. The image will be downloaded from the USB flash drive.
8. When prompted, either enter the name of the image or accept the default image displayed inside the brackets on your screen.
9. Restore the var file system (ONTAP 9.16.1 or later):
 - a. On the impaired controller, press `Y` when prompted to restore the backup configuration.
The following message will be displayed when the restoration procedure is complete:
`syncflash_partner: Restore from partner complete.`
 - b. On the impaired controller, press `Y` when prompted to confirm if the restore backup action was successful.
 - c. On the impaired controller, press `Y` when prompted to use the restored configuration.
 - d. On the impaired controller, press `Y` when prompted to reboot the node.
 - e. On the impaired controller, press `Y` when prompted to reboot the impaired controller and press `Ctrl-c` for the Boot Menu.
 - f. If the system does not use encryption, select Option 1 Normal Boot

Step



Transferring a boot image with a boot media

10. Connect the console cable to the partner controller.
11. Give back the controller using the `storage failover giveback -fromnode local` command.
12. If you disabled automatic giveback, restore it with the `storage failover modify -node local -auto -giveback true` command.
13. If AutoSupport is enabled, restore/unsuppress automatic case creation with the `system node autosupport invoke -node * -type all -message MAINT=END` command.

Step

