

LVM:

Migrate data from faulty disk to new disk

Here's a polished, **step-by-step** guide to safely **migrate data from a faulty LVM disk to a new one**:

Preconditions

- Backup all critical data before proceeding.

WORKFLOW:

Scenario:

- Faulty disk: `/dev/sdc` (3 GB, part of VG appvg)
- New disk: `/dev/sde` (3 GB, connected but not yet part of VG)

The `/dev/sdc` disk is experiencing hardware issues, as indicated by error logs in `/var/log/dmesg`. To maintain system stability and data integrity, the disk must be replaced without data loss or downtime.

Step 1: Provision a New Disk

- Request the **VMware** or **Azure Cloud** team to attach a new disk of **equal size (3 GB)** to the virtual machine.
- Confirm that the new disk appears as `/dev/sde`.

root@localhost:~

```
[root@localhost ~]# lsblk | grep -E 'sdc|sde'
sdc      8:32    0    3G  0 disk
sde      8:64    0    3G  0 disk
[root@localhost ~]#
```

Step 2: Initialize the New Disk as a Physical Volume

root@localhost:~

```
[root@localhost ~]#
[root@localhost ~]# pvcreate /dev/sde
Physical volume "/dev/sde" successfully created.
[root@localhost ~]#
```

Explanation:

- This command initializes `/dev/sde` so it can be managed by LVM as a physical volume (PV).

Step 3: Extend the Volume Group

```
[root@localhost ~]# vgextend appvg /dev/sde
Volume group "appvg" successfully extended
[root@localhost ~]#
[root@localhost ~]# vgs
VG      #PV #LV #SN Attr   VSize  VFree
appvg   3    1   0 wz--n- <7.99g <5.99g
rhel    1    2   0 wz--n- 18.41g    0
vg2     1    1   0 wz--n- <3.00g 996.00m
[root@localhost ~]#
```

root@localhost:~

```
[root@localhost ~]# pvs | grep appvg
/dev/sdb    appvg lvm2 a-- <2.00g  <2.00g
/dev/sdc    appvg lvm2 a-- <3.00g  1020.00m
/dev/sde    appvg lvm2 a-- <3.00g  <3.00g
[root@localhost ~]# pvdisplay | grep -B 1 appvg
PV Name                /dev/sdc
VG Name                 appvg
--
PV Name                /dev/sdb
VG Name                 appvg
--
PV Name                /dev/sde
VG Name                 appvg
[root@localhost ~]#
```

Explanation:

The new physical volume **/dev/sde** is now added to the existing volume group **appvg**, where the faulty disk **/dev/sdc** also resides.

- Current disk location of **/dev/sdc**: **appvg**
- New disk **/dev/sde** added to: **appvg**

This allows data migration *within the same VG*.

Step 4: Migrate Data from Faulty Disk to New Disk

root@localhost:~

```
[root@localhost ~]#  
[root@localhost ~]#  
[root@localhost ~]# pvmove /dev/sdc /dev/sde  
  /dev/sdc: Moved: 13.87%  
  /dev/sdc: Moved: 100.00%  
[root@localhost ~]#
```

Explanation:

This is the **core step** that safely transfers all logical volume data from the failing disk **/dev/sdc** to the healthy disk **/dev/sde**.

- **No downtime or unmounting required** — this is an *online* operation.

Step 5: Remove the Faulty Disk from Volume Group

root@localhost:~

```
[root@localhost ~]#  
[root@localhost ~]# vgreduce appvg /dev/sdc  
  Removed "/dev/sdc" from volume group "appvg"  
[root@localhost ~]#  
[root@localhost ~]# pvremove /dev/sdc  
  Labels on physical volume "/dev/sdc" successfully wiped.  
[root@localhost ~]#
```

Explanation

Once data migration completes:

- **vgreduce** removes **/dev/sdc** from the volume group.
- **pvremove** clears LVM metadata from the disk, fully detaching it from LVM control.

Step 6: Disable and Delete the Faulty Disk at OS Level

root@localhost:~

```
[root@localhost ~]# echo offline > /sys/block/sdc/device/state
[root@localhost ~]# echo 1 > /sys/block/sdc/device/delete
[root@localhost ~]# lsblk
```

NAME	MAJ:MIN	RM	SIZE	RO	TYPE	MOUNTPOINTS
sda	8:0	0	20G	0	disk	
└─sda1	8:1	0	600M	0	part	/boot/efi
└─sda2	8:2	0	1G	0	part	/boot
└─sda3	8:3	0	18.4G	0	part	
└─rhel-root	253:0	0	16.4G	0	lvm	/
└─rhel-swap	253:1	0	2G	0	lvm	[SWAP]
sdb	8:16	0	2G	0	disk	
sdd	8:48	0	3G	0	disk	
└─vg2-lv02	253:2	0	2G	0	lvm	/data2
sde	8:64	0	3G	0	disk	
└─appvg-lv01	253:3	0	2G	0	lvm	/data1
sr0	11:0	1	11G	0	rom	

```
[root@localhost ~]#
```

```
[root@localhost ~]# pvs | grep appvg
/dev/sdb    appvg lvm2 a-- <2.00g    <2.00g
/dev/sde    appvg lvm2 a-- <3.00g 1020.00m
[root@localhost ~]# pvdisplay | grep -B 1 appvg
PV Name                /dev/sdb
VG Name                 appvg
--
PV Name                /dev/sde
VG Name                 appvg
[root@localhost ~]#
```

Explanation

- The first command marks the disk as offline.
- The second command safely instructs the Linux kernel to forget the device.

This step completes the **removal of /dev/sdc** from both LVM and the OS-level device list.

Final Result

The faulty disk `/dev/sdc` has been:

- Replaced by `/dev/sde`
- Fully removed from the volume group and system
- Done **safely, online, and without data loss or service interruption**

Notes

- Always ensure backups are available before performing disk operations.
- Monitor `pvmove` with tools like `lvs`, `pvs`, and `vgs`.
- Use `dmesg` and `journalctl -xe` for real-time error checking.