Linux Logical Volume Manager (LVM) Deep Dive Tutorial

learnlinux.tv/linux-logical-volume-manager-lvm-deep-dive-tutorial/

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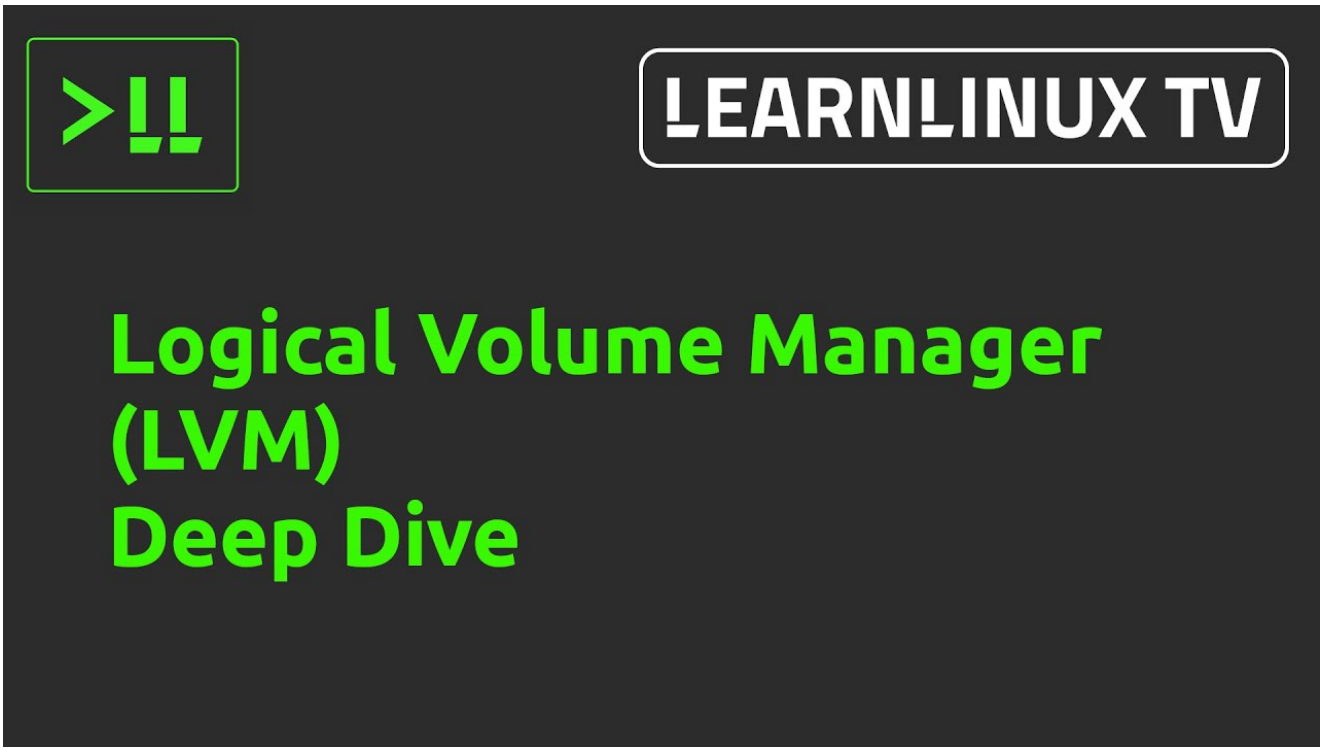
LVM, short for Logical Volume Manager, is awesome – and it doesn't seem to get the attention it deserves. In this one-shot tutorial, I'll show you why you should care about LVM, how to get started, some of the commands you can use to manage it, and more. You'll even learn how to use it to take snapshots of your system!



Commands Used

Resizing a logical volume

First, get a tiny bit of space back for tmp files (this command clears apt caches and etc):

```
sudo apt clean
```

Extend the logical volume

```
lvextend --resizefs -l +100%FREE /dev/mapper/vg_ubuntu-lv_root
```

Adding a disk to LVM

After adding a physical or virtual disk to the server, run the following commands.

Convert the new disk to an LVM physical volume

Note: Make sure you change “sdb” to the identifier of your drive):

```
pvcreate /dev/sdb
```

Add the new physical volume to the volume group

```
vgextend vg_ubuntu /dev/sdb
```

Check the status

```
vgdisplay
```

Extend the physical volume by 10GB (or however many “GB” you want)

```
lvextend -L +10G /dev/mapper/vg_ubuntu-lv_root
```

Grow the logical volume with ALL of the available space, without specifying a particular size

```
lvextend --resizefs -l +100%FREE /dev/mapper/vg_ubuntu-lv_root
```

Grow the filesystem to match the newly available space

```
resize2fs /dev/mapper/vg_ubuntu-lv_root
```

Check current available space

```
 df -h
```

Creating a brand-new LVM setup

Add a new virtual or physical disk to the server.

Note: For all of the below commands, change “sdc” to match your disk’s identifier

Convert the new disk to be an LVM physical volume

```
pvcreate /dev/sdc
```

Create the volume group

```
vgcreate vg_extra /dev/sdc
```

Check the volume group

```
vgdisplay
```

Create a logical volume (named lv_logs in this example)

```
lvcreate vg_extra -L 5G -n lv_logs
```

Format the logical volume

```
mkfs.ext4 /dev/mapper/vg_extra-lv_logs
```

Create a directory to mount the new logical volume

```
mkdir /mnt/extra/logs
```

Mount the logical volume

```
mount /dev/mapper/vg_extra-lv_logs /mnt/extra/logs
```

Find the “block id” of the new logical volume

```
blkid /dev/mapper/vg_extra-lv_logs
```

Back up your fstab file to be safe

```
cp /etc/fstab /etc/fstab.bak
```

Edit the fstab file

```
nano /etc/fstab
```

Add a line to the fstab to mount the volume, similar to this

```
UUID=<BLOCK ID FOR LOGICAL VOLUME> /mnt/extra/logs ext4 defaults 0 2
```

Test the new mount, first making sure it’s not mounted

```
umount /mnt/extra/logs
```

Then test your fstab file (BEFORE rebooting)

```
mount -a
```

If no errors, then you’re all set.

Snapshots

Create a new snapshot

```
lvcreate /dev/mapper/<SOURCE VOLUMEGROUP NAME> -L 1G -s -n snapshot_name
```

View used space of snapshots

```
lvs
```

Mount a snapshot

```
mount /dev/mapper/vg_extra-web_snapshot_20200421 /mnt/extra/snapshot
```

Restore a snapshot

Umount the original volume:

```
umount /path/to/mounted/logical-volume
```

Restore the snapshot:

```
lvconvert --merge /dev/mapper/snapshot_name
```

Deactivate/reactivate to fresh it:

```
lvchange -an /dev/mapper/vg_extra-lv_web
lvchange -ay /dev/mapper/vg_extra-lv_web
```