

? Expanding Root Filesystem on Ubuntu with LVM (Virtual Machine)

☐ Use Case

When a virtual machine runs out of space on the root (/) partition, and the underlying disk has already been expanded via the hypervisor or cloud platform.

This guide applies to systems using:

- Ubuntu Server (e.g., 22.04 LTS)
- LVM-managed disks
- A single-root disk layout (e.g., `/dev/mapper/ubuntu--vg-ubuntu--lv`)

☐ Prerequisites

- A snapshot or backup of the VM (highly recommended)
- Root/sudo access
- Disk already expanded in the hypervisor (e.g., from 72GB to 250GB)

☐ Step-by-Step Instructions

1. Check Current Disk Usage

```
bash
df -h /
```

2. List Disks and Partitions

```
bash
lsblk
```

Look for:

- The disk (e.g., `xvda`)
- The root LVM volume (e.g., `/dev/mapper/ubuntu--vg-ubuntu--lv`)
- Confirm that a partition (e.g., `xvda3`) is larger than the mounted root volume

3. Extend the Logical Volume

```
bash
sudo lvextend -l +100%FREE /dev/ubuntu-vg/ubuntu-lv
```

4. Resize the Filesystem

Assuming you're using `ext4`:

```
bash
sudo resize2fs /dev/ubuntu-vg/ubuntu-lv
```

“
? To confirm the filesystem type:

```
bash
df -T /
```

5. Verify Expansion

```
bash
df -h /
```

You should now see the full size available (e.g., ~146GB instead of 72GB).

☐ Optional: Clean Up Old Snapshots & Logs

Free up even more space:

```
bash
sudo journalctl --vacuum-time=10d
sudo apt autoremove
sudo apt clean
```

☐ Outcome

The root filesystem is now successfully extended. The server will run normally with more disk space, avoiding future outages caused by full disks.

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