

# ? 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`)
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## ? 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)
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## ? Step-by-Step Instructions

### 1. Check Current Disk Usage

```
bash
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df -h /
```

### 2. List Disks and Partitions

```
bash
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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

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

### 4. Resize the Filesystem

Assuming you're using `ext4`:

bash

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

“ ” To confirm the filesystem type:

bash

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```
df -T /
```

### 5. Verify Expansion

bash

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```
df -h /
```

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

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## ? Optional: Clean Up Old Snapshots & Logs

Free up even more space:

bash

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

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## ? 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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