# Adding Extra Storage to a Cloud Server: Mount a Volume or Extend the Main Disk with LVM

Cloud Servers · https://www.hyyat.com/en/knowledgebase/add-storage-volume-cloud-server-lvm/

**A complete guide to attaching extra storage to your server, either as a separate disk or merged into the main disk.**

Hyyat Host cloud servers are quick to set up and full of useful features, but each plan comes with a fixed amount of local disk. A small plan, for example, comes with 40 GB.

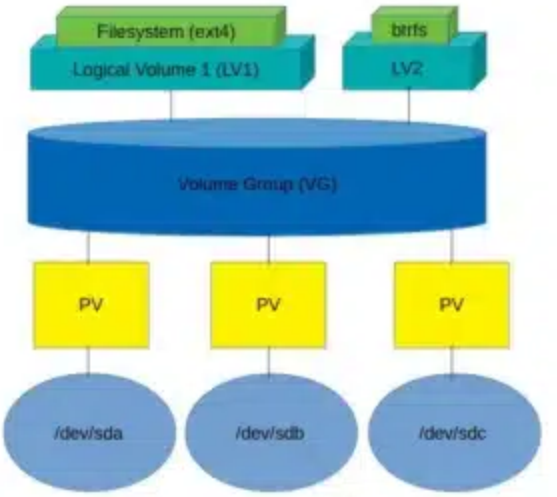
To get more disk you can upgrade to the next plan. But what if you want one vCPU and 2 GB of RAM with 100 GB of disk? One way is to add a storage volume, which you can request through a support ticket.

The catch is that Linux treats a volume as a second disk: it does not grow your main disk. You can mount it on a folder such as `/opt/movies` for your large files, and that may be all you need. But there is also a way to add it to the main disk.

To do that, the system must be installed with **LVM**. Then, while the server is running, you can extend the main disk over the new volume.

## LVM: the Logical Volume Manager

LVM has four parts: physical devices (disks, `/dev/sd(x)`), physical volumes (PV), volume groups (VG) and logical volumes (LV). A volume group can include all the space from several physical disks. Keep in mind that this setup has no RAID: if one disk fails, all data in the group is lost. You can then create logical volumes inside the group and resize them as needed.




## Set up the server with CEPH storage

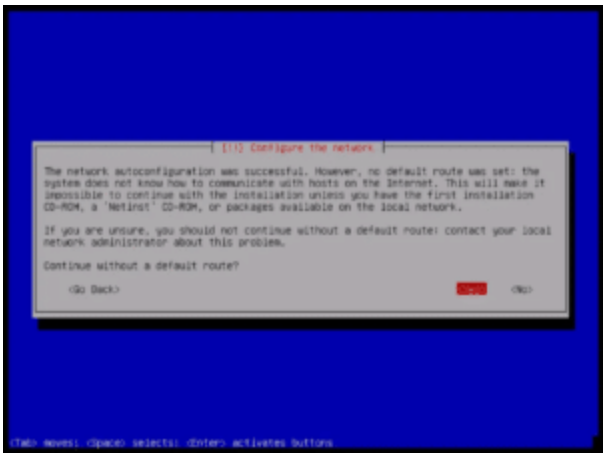
Start by creating a server that uses CEPH storage. Volumes come from a CEPH storage cluster, so in this case you do not need the speed of local NVMe disks. Create the server from one of the standard images, then mount an ISO (we use Debian here) and reboot the server. It boots from the ISO.



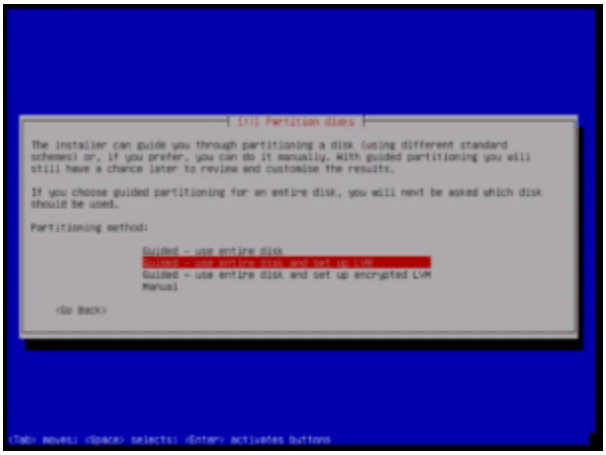
## Install Debian with LVM

These are the important steps of the Debian installer:

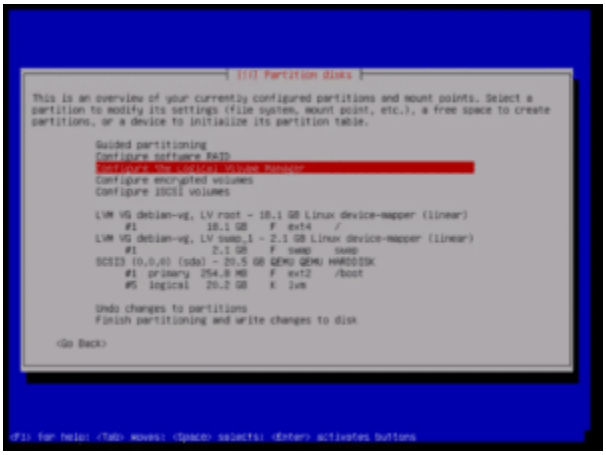
1. Choose **Install**, then set the language, location and keyboard layout.
2. At the network settings you will see an error saying there is no default route. Choose **Yes** to continue without one.



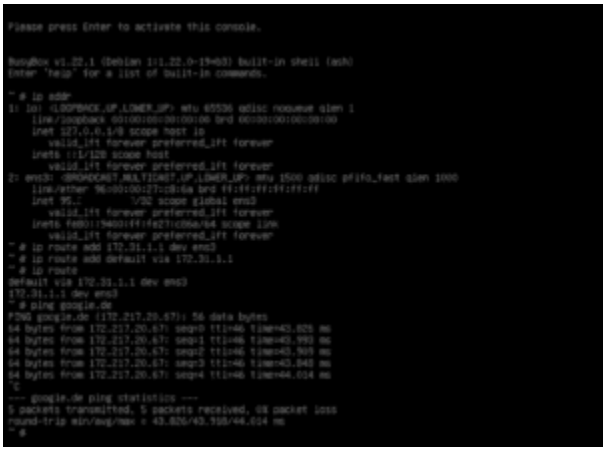

3. Set the nameserver to `213.133.100.100`, choose your own hostname and domain name, then set up the users (such as root).
4. For partitioning, choose **Guided – use entire disk and set up LVM**.




5. Select the disk **SCSI3 (0,0,0) (sda)** and choose **All files in one partition (recommended for new users)**.
6. Remove the swap volume, since servers with SSD disks do not need one here: choose **Configure the Logical Volume Manager**.



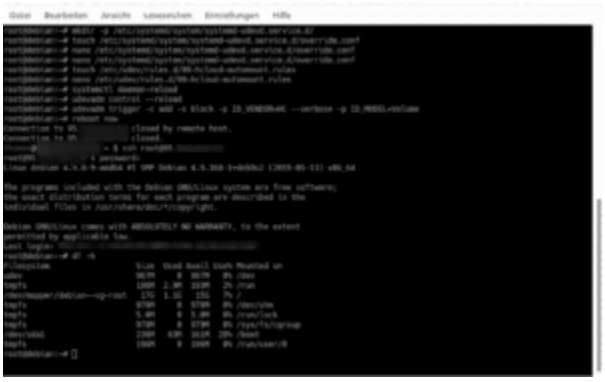
7. Choose **Delete logical volume**, select `swap_1` and finish. Then choose **Finish partitioning and write changes to disk**, and answer **No** when asked about swap space.
8. Next you set up a Debian mirror. Because there is no network route yet, you must add the host route by hand: press **Alt + right arrow** to switch to a shell, add the route, then press **Alt + left arrow** to return to the installer.



9. Install GRUB on the main disk, `/dev/sda`.

## Add the volume to the main disk

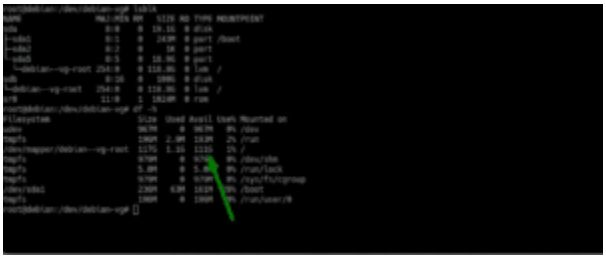
Log in to the server and attach the volume. Because the system was installed by hand, you add the volume yourself.



Here the main disk `/dev/mapper/debian--vg-root` has 17 GB. Add the volume as a physical volume, add it to the volume group, then extend the logical volume and its file system:

```
pvcreate /dev/sdb
vgextend debian-vg /dev/sdb
lvextend --resizefs -l +100%FREE /dev/debian-vg/root
```

The result: a small plan server with more than 100 GB of local disk.



**Note:** Take a backup before changing disks or partitions on a server that already holds data.

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