How to Increase HDD Capacity on a VM in GCP?

written by sysadmin | 30 April 2025

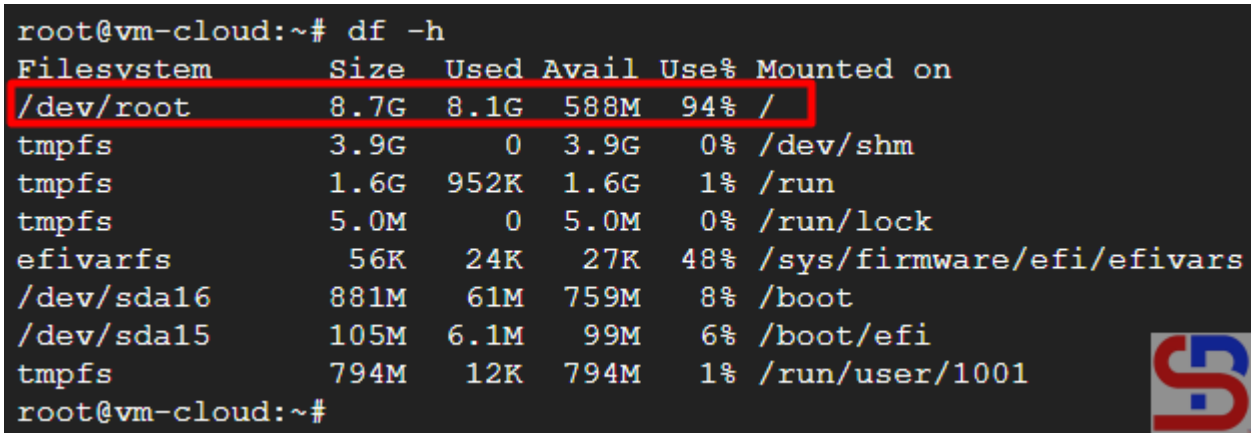
If you have a virtual machine at GCP, by default, the Linux system will only make one partition / only. If the partition is smaller, then you have to increase the hard disk server size

Problem

How to increase HDD capacity on a VM in GCP?

Solution

Currently, I have a VM Ubuntu Server 24.04 in GCP with an HDD capacity of 10 GB as in the image below:



The hard disk condition of my server

You can see from the image above that my partition / is very small, and here is the block device in my VM:

```
root@vm-cloud:~# lsblk
NAME    MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
loop0     7:0    0  63.7M  1 loop /snap/core20/2496
loop1     7:1    0 409.1M  1 loop /snap/google-cloud-cli/315
loop2     7:2    0  44.4M  1 loop /snap/snapd/23771
sda       8:0    0    10G  0 disk
├─sda1    8:1    0     9G  0 part /
├─sda14   8:14   0     4M  0 part
├─sda15   8:15   0   106M  0 part /boot/efi
└─sda16 259:0    0   913M  0 part /boot
root@vm-cloud:~#
```

The block devices in my VM

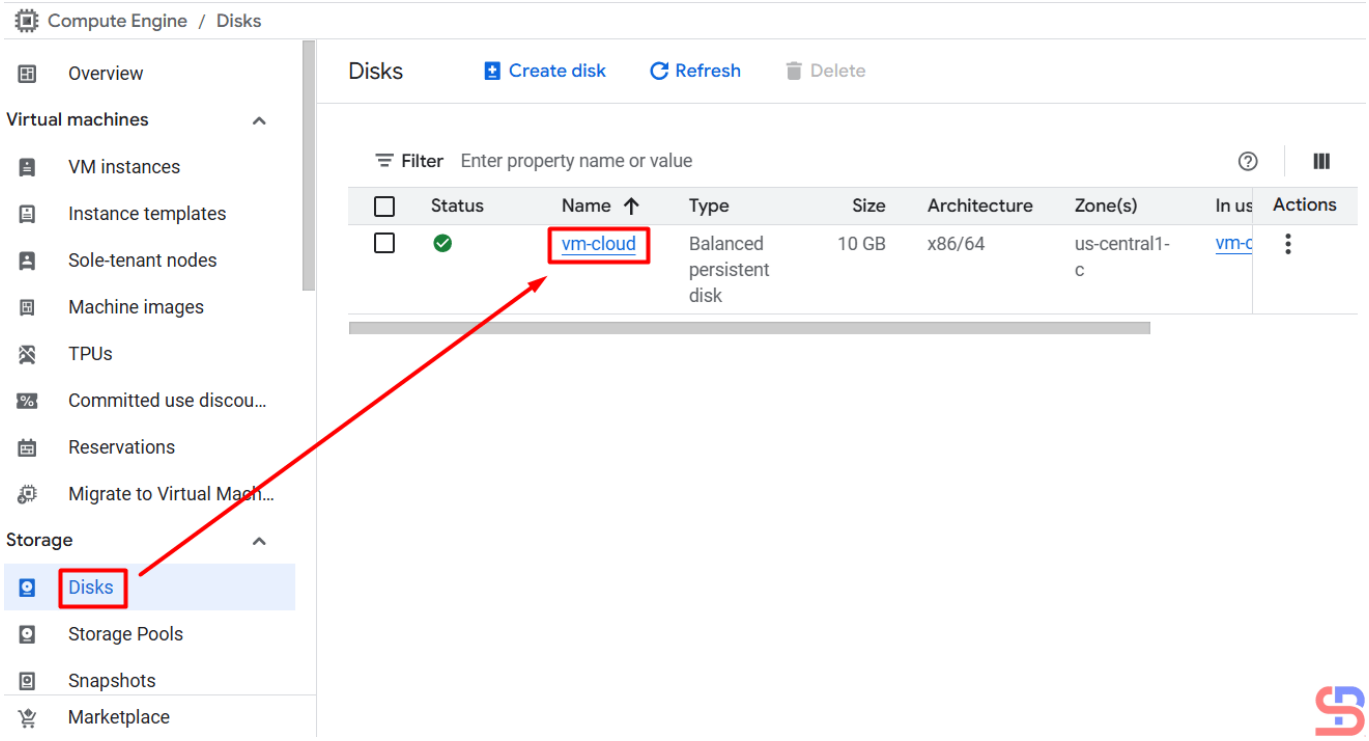
I want to increase the HDD capacity to 20 GB without rebooting the server. These are the steps below (recommended as a root user to do the steps below):

1. Edit in the Disks section

You can use the command below to increase the VM's hard disk to 20 GB in the cloud shell or from your laptop if you have already installed gcloud (change the VM name, size, and zone from the command below):

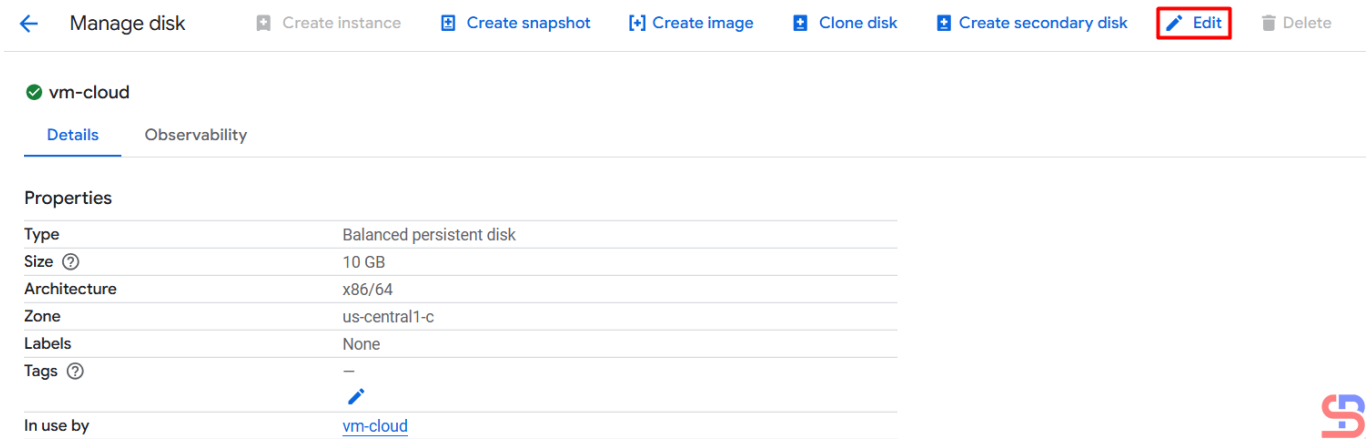
```
gcloud compute disks resize vm-cloud --size 20 --zone=us-central1-c
```

You can also increase the hard disk in GCP by entering GCP, selecting **Compute Engine – Disks**, and then selecting VM.



Go to Disks

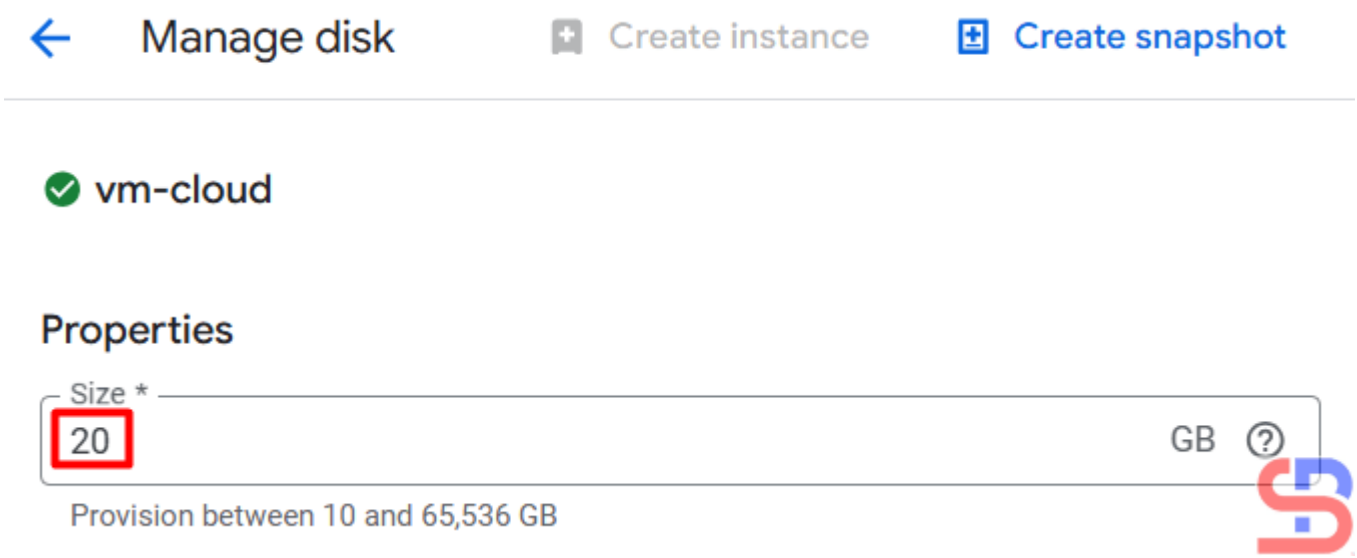
After that, click **Edit** as below:



Click the Edit

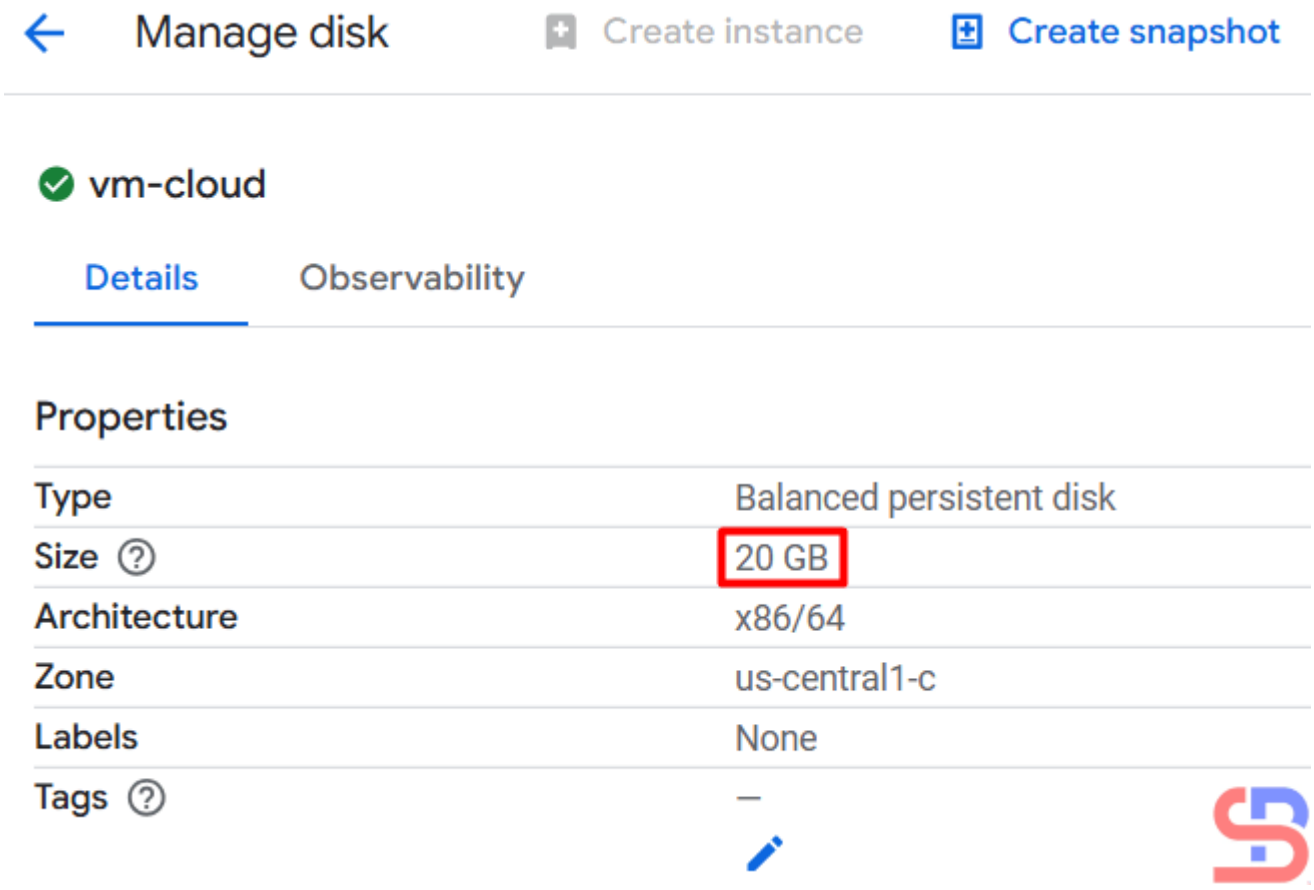
2. Increase HDD capacity

After that, increase the HDD capacity in the section as shown in the image below:



Change the HDD to 20 GB

Change it to 20 GB, and after that, press the **Save** button so there will be a display like below:



Server's HDD changed to 20 GB

WARNING

You cannot reduce the HDD capacity on a VM in GCP, for example, from 10 GB to

5 GB, but you can only increase the HDD capacity.

3. Check the block devices

Enter the VM, then we check the block devices using the command:

```
lsblk
```

```
root@vm-cloud:~# lsblk
NAME    MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
loop0     7:0    0  63.7M  1 loop /snap/core20/2496
loop1     7:1    0 409.1M  1 loop /snap/google-cloud-cli/315
loop2     7:2    0  44.4M  1 loop /snap/snapd/23771
sda       8:0    0    20G  0 disk
├─sda1    8:1    0     9G  0 part /
├─sda14   8:14   0     4M  0 part
├─sda15   8:15   0   106M  0 part /boot/efi
└─sda16 259:0    0   913M  0 part /boot
root@vm-cloud:~#
```

The block device after increasing the hard disk

You can see in the picture above that the HDD capacity is 20 GB.

4. Check the partition tables

Then check the partition tables using the command:

```
parted -l
```

```
root@vm-cloud:~# parted -l
Warning: Not all of the space available to /dev/sda appears to be used, you can
fix the GPT to use all of the space (an extra 20971520 blocks) or continue with
the current setting?
Fix/Ignore? F
Model: Google PersistentDisk (scsi)
Disk /dev/sda: 21.5GB
Sector size (logical/physical): 512B/4096B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system  Name  Flags
14      1049kB  5243kB  4194kB                     bios_grub
15      5243kB  116MB   111MB   fat32              boot, esp
16      116MB   1074MB  957MB   ext4               bls_boot
1       1075MB  10.7GB  9663MB  ext4


root@vm-cloud:~#
```

Check the partition table

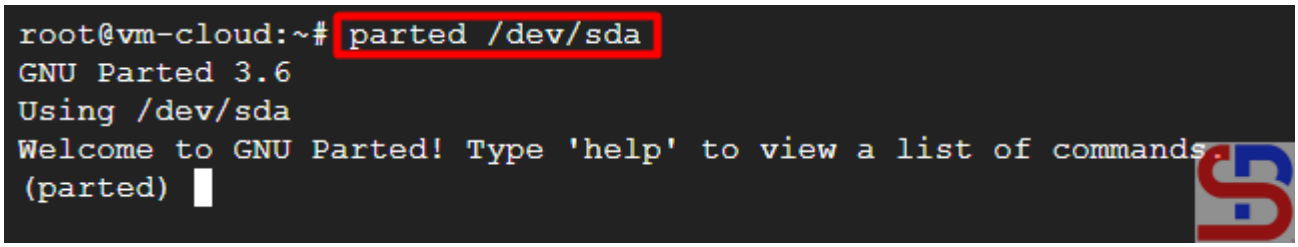
If you have a warning like in the image above, you can choose Fix or Ignore, but I chose Fix. From the picture above, you can see that the HDD in this VM has number **1** in the **/dev/sda** partition using the **ext4** extension.

WARNING
You have to be careful with the Number and Filesystem in this section because each Linux has a different Number and Filesystem.

5. Resize the partition

Use the command below to resize the partition:

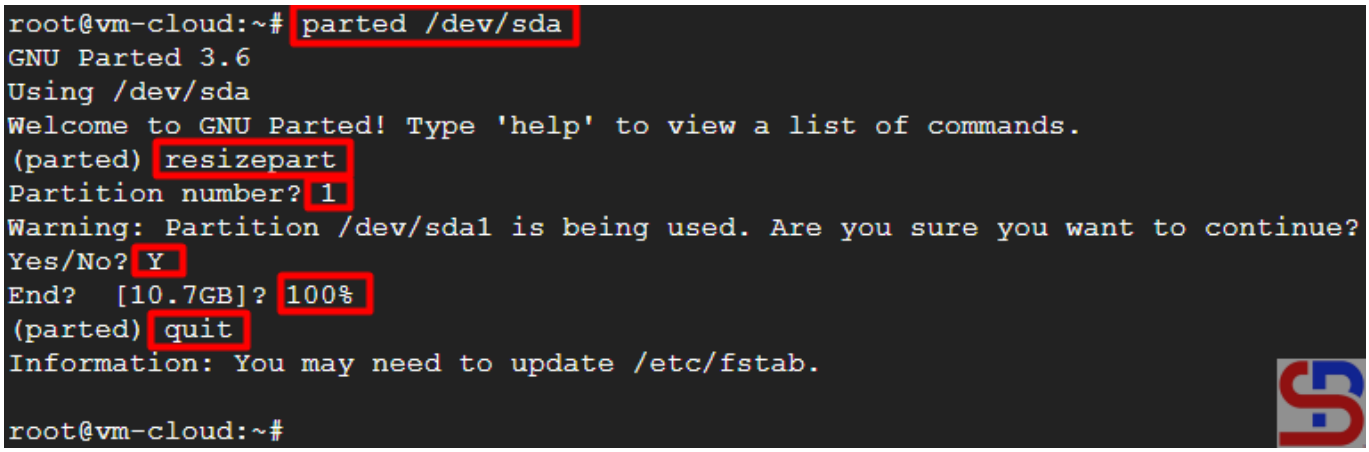
```
parted /dev/sda
```



Resize the partition /

Then type the command:

```
resizepart
```



Process to resize the partition /

Enter number **1** (check your partition number in step 5), type

Y, and type **100%**. After that, type **quit** to exit the prompt.

6. Read the new partition table

Use the command below to read the new partition table:

```
partprobe /dev/sda
```

7. Extend the file system

Use the command below to see the types of filesystems used in your VM:

```
df -T
```

To extend the file system, use the command below if you are using ext4 (and I am using this filesystem):

```
sudo resize2fs /dev/sda1
```

If you use the xfs filesystem, use the command:

```
sudo xfs_growfs -d /
```

But if you use btrfs, then use the command:

```
sudo btrfs filesystem resize max /
```

8. Check HDD capacity

Use **the df -h** command to check the hard disk capacity, and it should match the additional HDD in the GCP (in my case, the HDD capacity is 20 GB):

```
root@vm-cloud:~# partprobe /dev/sda
root@vm-cloud:~#
root@vm-cloud:~# df -Th
Filesystem     Type      Size  Used Avail Use% Mounted on
/dev/root      ext4      8.7G  8.1G  588M  94% /
tmpfs          tmpfs     3.9G     0  3.9G   0% /dev/shm
tmpfs          tmpfs     1.6G  952K  1.6G   1% /run
tmpfs          tmpfs     5.0M     0  5.0M   0% /run/lock
efivarfs       efivarfs   56K   24K   27K  48% /sys/firmware/efi/efivars
/dev/sda16     ext4      881M   61M  759M   8% /boot
/dev/sda15     vfat      105M  6.1M   99M   6% /boot/efi
tmpfs          tmpfs     794M   12K  794M   1% /run/user/1001
root@vm-cloud:~#
root@vm-cloud:~# resize2fs /dev/sda1
resize2fs 1.47.0 (5-Feb-2023)
Filesystem at /dev/sda1 is mounted on /; on-line resizing required
old_desc_blocks = 2, new_desc_blocks = 3
The filesystem on /dev/sda1 is now 4980475 (4k) blocks long.

root@vm-cloud:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        19G  8.1G   11G  44% /
tmpfs           3.9G     0  3.9G   0% /dev/shm
tmpfs           1.6G  952K  1.6G   1% /run
tmpfs           5.0M     0  5.0M   0% /run/lock
efivarfs         56K   24K   27K  48% /sys/firmware/efi/efivars
/dev/sda16      881M   61M  759M   8% /boot
/dev/sda15      105M  6.1M   99M   6% /boot/efi
tmpfs           794M   12K  794M   1% /run/user/1001
root@vm-cloud:~#
```

Check the hard disk size

Note

You should back up the important data on the VM first before following the steps above. However, you can increase the HDD capacity in a VM without doing the steps above by rebooting the VM after changing the HDD capacity in the GCP console (step 2).

References

cloud.google.com
[man7.org](man7.org)
medium.com
gist.github.com
youtube.com