Increasing and Resizing Linux Virtual Machine Disk space

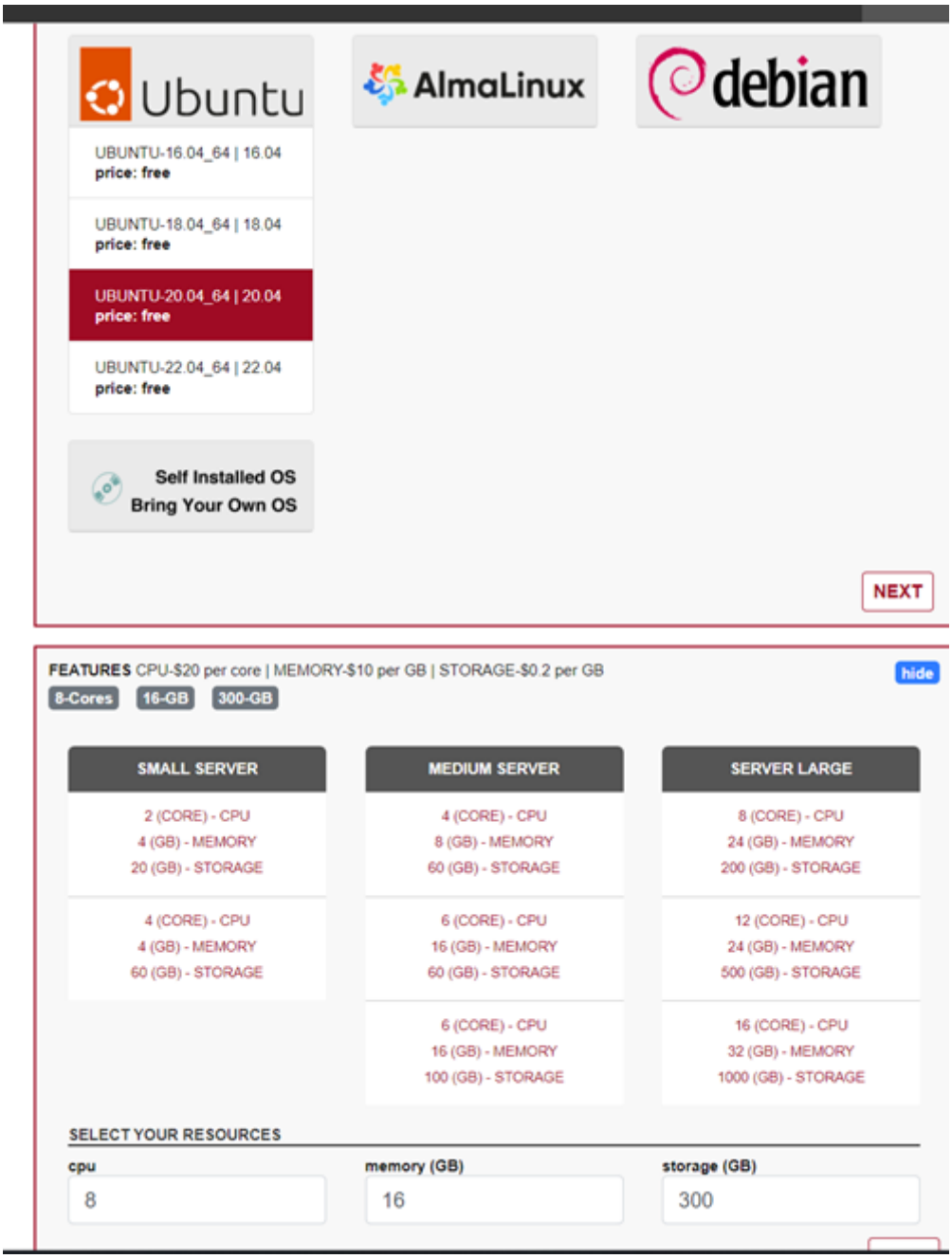
> For RackCorp Cloud VM installer version of Ubuntu 20.04 Only

> This guide DOES NOT apply to self installed OS. DATA LOSS MAY OCCUR

> Use our ‘add a server’ tool in the RackCorp Portal to add a new server as described below

For this example, deploy a server with 8 core, 16GB RAM and 300GB DISK as shown.

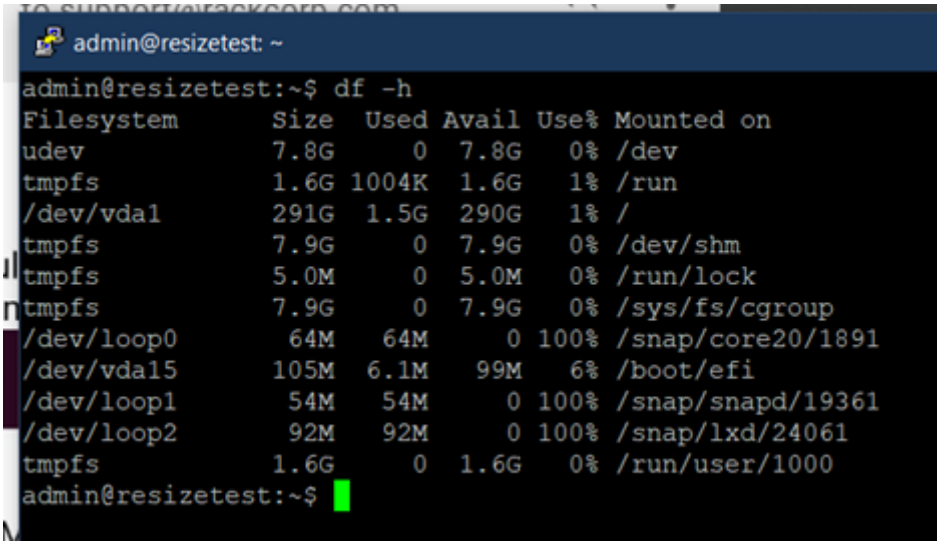
Critically for disk expansion to succeed, we are assuming and relying on that the chosen OS is RackCorp’s cloud image of Ubuntu 2004.



The OS will take a minute or two to deploy. Once it is ready boot it and run

```
Df -h
```

It should display 300G for the Linux partition



POST-RESIZE IN PORTAL

Resize to 450GB. Shutdown VM in Portal. Restart VM.

Follow the steps to resize the 300G Linux Partition to 450G.

We can view the partition table using:

```
sudo gdisk
```

Where partition #1 is the main OS partition and partition 14,15 at the BEGINGING of the disk are Boot and System Partitions

```
admin@resizetest:~$ sudo gdisk /dev/vda
GPT fdisk (gdisk) version 1.0.5

Partition table scan:
  MBR: protective
  BSD: not present
  APM: not present
  GPT: present

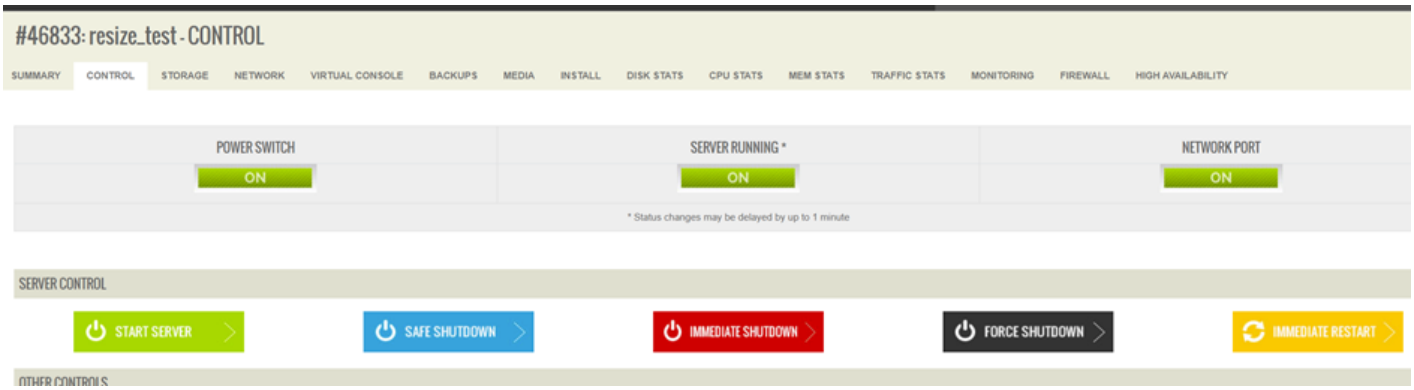
Found valid GPT with protective MBR; using GPT.

Command (? for help): p
Disk /dev/vda: 943718400 sectors, 450.0 GiB
Sector size (logical/physical): 512/512 bytes
Disk identifier (GUID): 5819CF0A-965B-4774-9F0E-4D4179462778
Partition table holds up to 128 entries
Main partition table begins at sector 2 and ends at sector 33
First usable sector is 34, last usable sector is 629145566
Partitions will be aligned on 2048-sector boundaries
Total free space is 2014 sectors (1007.0 KiB)

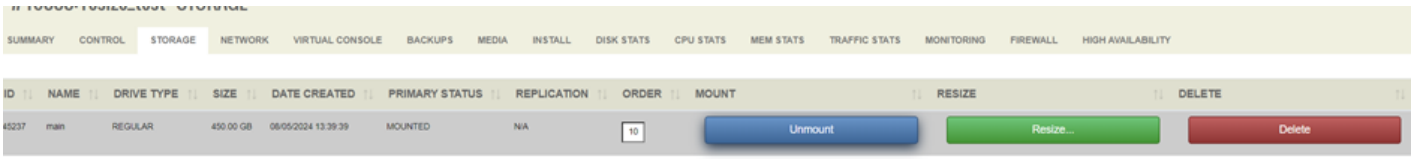
Number  Start (sector)    End (sector)  Size       Code  Name
   1          227328       629145566   299.9 GiB   8300
  14            2048           10239   4.0 MiB     EF02
  15           10240          227327   106.0 MiB   EF00

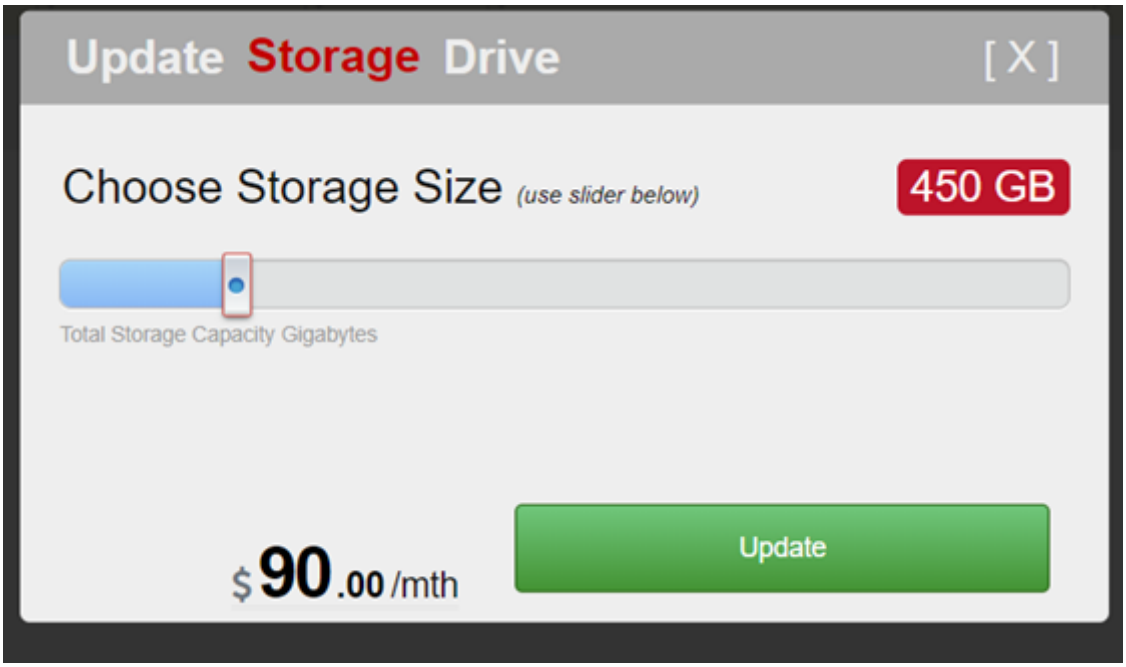
Command (? for help):
```

Safe shutdown the OS (via the OS or the SAFE SHUTDOWN button in the RackCorp portal)



RESIZE the disk to the desired size , ie 450GB





Boot the OS and run

```
Sudo gdisk /dev/vda
```

then

```
p
```

to print the parttable

It will display the old disk size as we have not resized the disk yet

```
Number  Start (sector)    End (sector)  Size       Code  Name
   1          227328       629145566   299.9 GiB   8300
  14            2048           10239   4.0 MiB     EF02
  15           10240          227327   106.0 MiB   EF00

Command (? for help): w
Warning! Secondary header is placed too early on the disk! Do you want to
correct this problem? (Y/N):
```

Press the w key to write changes.

We will receive a sector location error press Y to correct. This is expected. Again run:

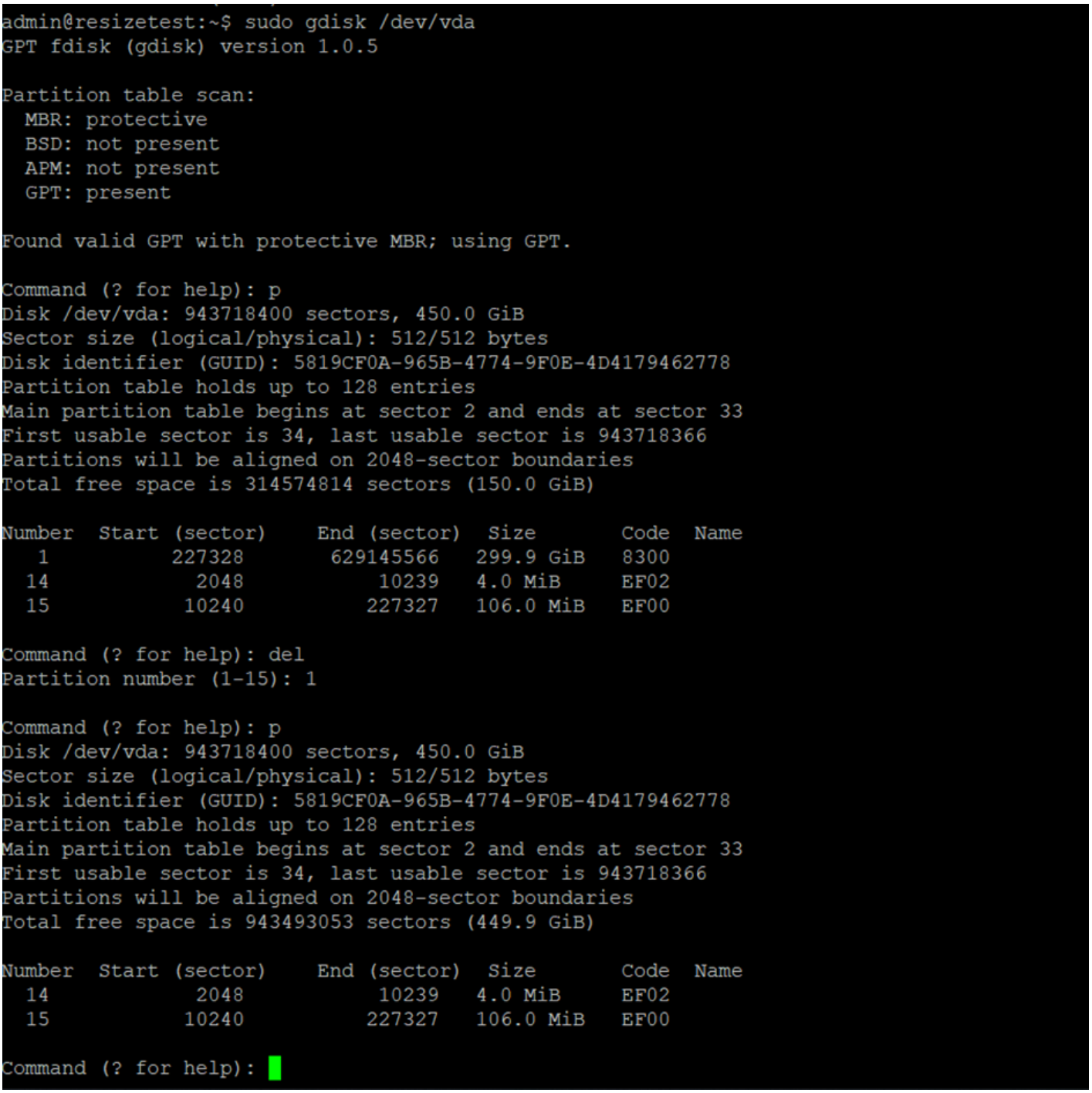
```
sudo gdisk /dev/vda
p
```

to examine the existing parttable before we change it.

then run the following to delete the partition from the partition table.

```
del
1
```

> note, this just edits the partition table, not the actual data within those tables. If you do not do final confirm and write of your changes the changes revert back to their existing settings.



Next we will recreate partition #1 to the desired new size, again since we editing the partition table and not the data we do not risk losing data, however care must be taken to observe the right settings.

First, the new partition must be in the right order in the table (it usually is, but there is a sort command if needed.)
The sectors must be in the logical order an the file system should be correct.

Next we will recreate partition #1 to the desired new size, again since we editing the partition table and not the data we do not risk losing data, however care must be taken to observe the right settings.

First, the new partition must be in the right order in the table (it usually is, but there is a sort command if needed.)
The sectors must be in the logical order an the file system should be correct.

```
Choose n to create new partition


1 for Partition 1


Press enter for First Sector and last sector


Enter 8300 for partition type


Enter P to display the changes.
```

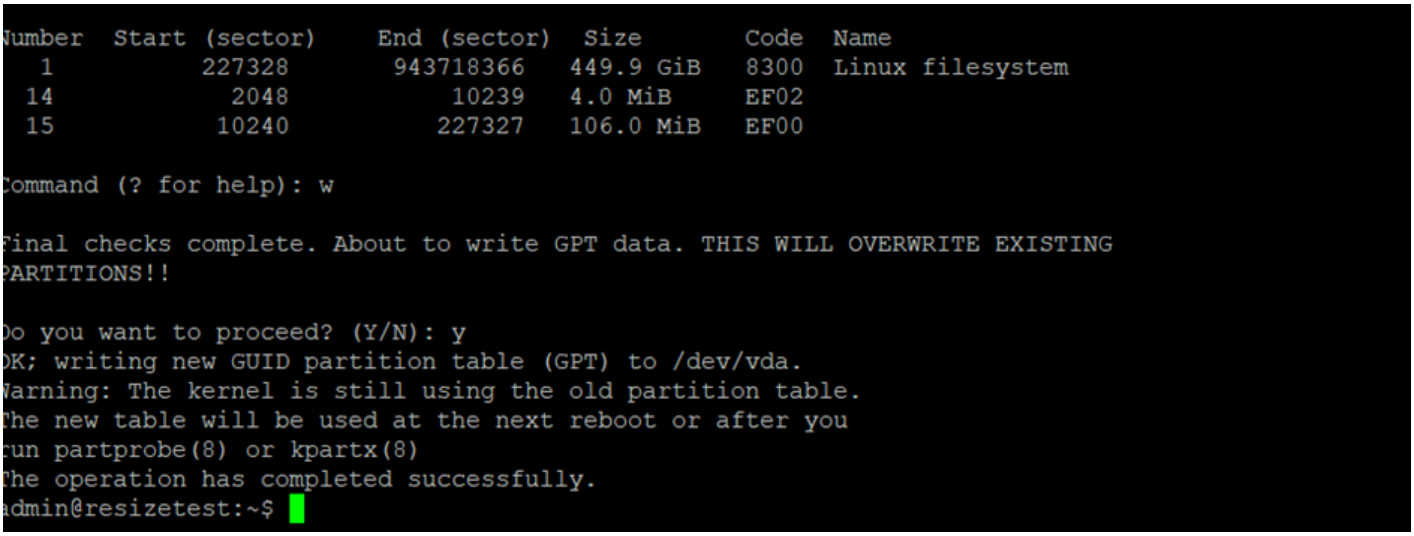
```
Command (? for help): n
Partition number (1-128, default 1):
First sector (34-943718366, default = 227328) or {+-}size{KMGTP}:
Last sector (227328-943718366, default = 943718366) or {+-}size{KMGTP}:
Current type is 8300 (Linux filesystem)
Hex code or GUID (L to show codes, Enter = 8300):
Changed type of partition to 'Linux filesystem'

Command (? for help): p
Disk /dev/vda: 943718400 sectors, 450.0 GiB
Sector size (logical/physical): 512/512 bytes
Disk identifier (GUID): 5819CF0A-965B-4774-9F0E-4D4179462778
Partition table holds up to 128 entries
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Number  Start (sector)    End (sector)  Size       Code  Name
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  14            2048           10239   4.0 MiB     EF02
  15           10240          227327   106.0 MiB   EF00

Command (? for help):
```

> If you are satisfied,**press W to write the changes**. If you made a mistake DO NOT write the changes. Try again and once correct THEN W for changes.



Note the message above. We have now successfully written the new partition table.

Next step is to actually resize our file system to fill the partition Run

```
Sudo partx -u /dev/vda


Sudo resize2fs /dev/vda1
```

Your result should match the below

Run sudo gdisk and print to view the new result, it should reflect 450GB

```
admin@resizetest:~$ sudo partx -u /dev/vda
admin@resizetest:~$ sudo resize2fs /dev/vda1
resize2fs 1.45.5 (07-Jan-2020)
Filesystem at /dev/vda1 is mounted on /; on-line resizing required
old_desc_blocks = 38, new_desc_blocks = 57
The filesystem on /dev/vda1 is now 117936379 (4k) blocks long.

admin@resizetest:~$ sudo gdisk
GPT fdisk (gdisk) version 1.0.5

Type device filename, or press <Enter> to exit: /dev/vda
Partition table scan:
  MBR: protective
  BSD: not present
  APM: not present
  GPT: present

Found valid GPT with protective MBR; using GPT.

Command (? for help): p
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Command (? for help):
```

Lets reboot for good measure to make sure everything is working. We are now done.

```
admin@resizetest:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            7.8G     0  7.8G   0% /dev
tmpfs           1.6G 1004K  1.6G   1% /run
/dev/vda1       436G  1.5G  435G   1% /
tmpfs           7.9G     0  7.9G   0% /dev/shm
tmpfs           5.0M     0  5.0M   0% /run/lock
tmpfs           7.9G     0  7.9G   0% /sys/fs/cgroup
/dev/loop0       64M   64M     0 100% /snap/core20/1891
/dev/vda15      105M  6.1M   99M   6% /boot/efi
/dev/loop1       54M   54M     0 100% /snap/snapd/19361
/dev/loop2       92M   92M     0 100% /snap/lxd/24061
tmpfs           1.6G     0  1.6G   0% /run/user/1000
admin@resizetest:~$
```

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