

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.



Ubuntu

UBUNTU-16.04_64 | 16.04
 price: free

UBUNTU-18.04_64 | 18.04
 price: free

UBUNTU-20.04_64 | 20.04
 price: free

UBUNTU-22.04_64 | 22.04
 price: free


Self Installed OS
 Bring Your Own OS

NEXT

FEATURES CPU-\$20 per core | MEMORY-\$10 per GB | STORAGE-\$0.2 per GB
 hide

8-Cores 16-GB 300-GB

SMALL SERVER	MEDIUM SERVER	SERVER LARGE
2 (CORE) - CPU 4 (GB) - MEMORY 20 (GB) - STORAGE	4 (CORE) - CPU 8 (GB) - MEMORY 60 (GB) - STORAGE	8 (CORE) - CPU 24 (GB) - MEMORY 200 (GB) - STORAGE
4 (CORE) - CPU 4 (GB) - MEMORY 60 (GB) - STORAGE	6 (CORE) - CPU 16 (GB) - MEMORY 60 (GB) - STORAGE	12 (CORE) - CPU 24 (GB) - MEMORY 500 (GB) - STORAGE
	6 (CORE) - CPU 16 (GB) - MEMORY 100 (GB) - STORAGE	16 (CORE) - CPU 32 (GB) - MEMORY 1000 (GB) - STORAGE

SELECT YOUR RESOURCES

cpu

memory (GB)

storage (GB)

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

```
admin@resizetest: ~  
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       291G  1.5G  290G   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:~$
```

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 BEGINING 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)

#46833:resize_test-CONTROL

SUMMARY CONTROL STORAGE NETWORK VIRTUAL CONSOLE BACKUPS MEDIA INSTALL DISK STATS CPU STATS MEM STATS TRAFFIC STATS MONITORING FIREWALL HIGH AVAILABILITY

POWER SWITCH

ON

SERVER RUNNING *

ON

NETWORK PORT

ON

* Status changes may be delayed by up to 1 minute

SERVER CONTROL

START SERVER >

SAFE SHUTDOWN >

IMMEDIATE SHUTDOWN >

FORCE SHUTDOWN >

IMMEDIATE RESTART >

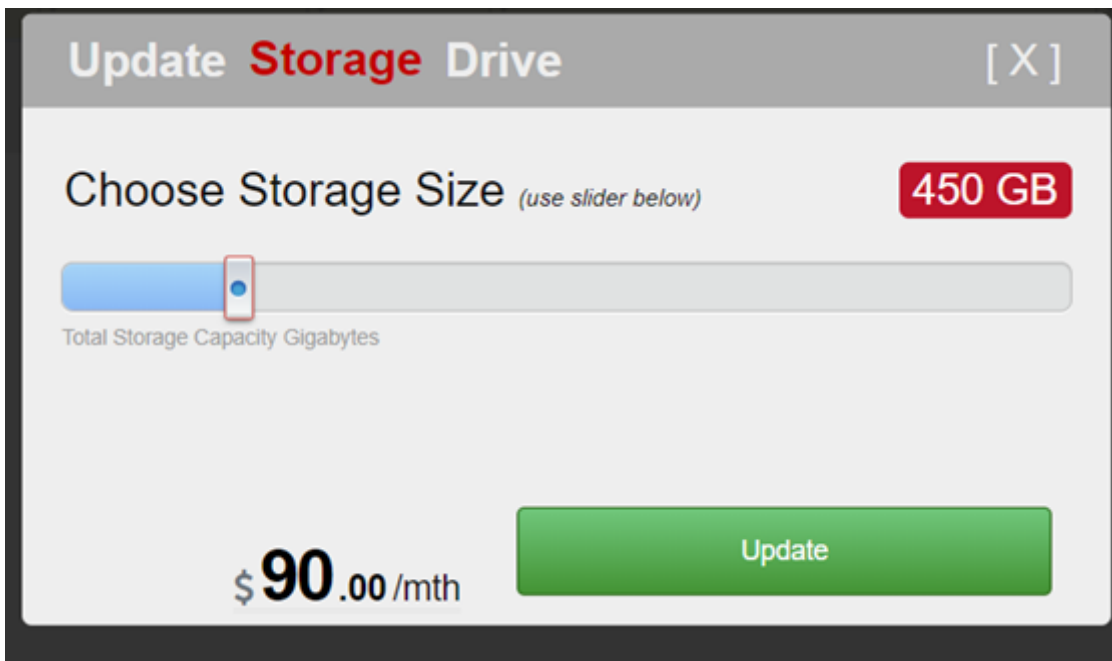
OTHER CONTROLS

RESIZE the disk to the desired size , ie 450GB

#46833:resize_test-STORAGE

SUMMARY CONTROL STORAGE NETWORK VIRTUAL CONSOLE BACKUPS MEDIA INSTALL DISK STATS CPU STATS MEM STATS TRAFFIC STATS MONITORING FIREWALL HIGH AVAILABILITY

ID	NAME	DRIVE TYPE	SIZE	DATE CREATED	PRIMARY STATUS	REPLICATION	ORDER	MOUNT	RESIZE	DELETE
45237	man	REGULAR	450.00 GB	06/05/2024 13:39:39	MOUNTED	N/A	10	Unmount	Resize...	Delete



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.

```
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 943718366  
Partitions will be aligned on 2048-sector boundaries  
Total free space is 314574814 sectors (150.0 GiB)  
  
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): del  
Partition number (1-15): 1  
  
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 943718366  
Partitions will be aligned on 2048-sector boundaries  
Total free space is 943493053 sectors (449.9 GiB)  
  
Number  Start (sector)    End (sector)  Size      Code  Name  
   14          2048          10239     4.0 MiB    EF02  
   15         10240         227327     106.0 MiB    EF00  
  
Command (? for help): █
```

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
Main partition table begins at sector 2 and ends at sector 33
First usable sector is 34, last usable sector is 943718366
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         943718366   449.9 GiB   8300   Linux filesystem
   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.

```
Number  Start (sector)    End (sector)  Size      Code  Name
   1         227328       943718366   449.9 GiB   8300   Linux filesystem
  14           2048         10239     4.0 MiB   EF02
  15        10240       227327    106.0 MiB   EF00

Command (? for help): w

Final checks complete. About to write GPT data. THIS WILL OVERWRITE EXISTING
PARTITIONS!!

Do you want to proceed? (Y/N): y
OK; writing new GUID partition table (GPT) to /dev/vda.
Warning: The kernel is still using the old partition table.
The new table will be used at the next reboot or after you
run partprobe(8) or kpartx(8)
The operation has completed successfully.
admin@resizetest:~$
```

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
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 943718366
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         943718366   449.9 GiB   8300   Linux filesystem
   14              2048           10239     4.0 MiB    EF02
   15            10240         227327     106.0 MiB    EF00

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:~$ █

```

Revision #3

Created 9 May 2024 01:05:41 by RackCorp

Updated 10 May 2024 01:46:54 by RackCorp