

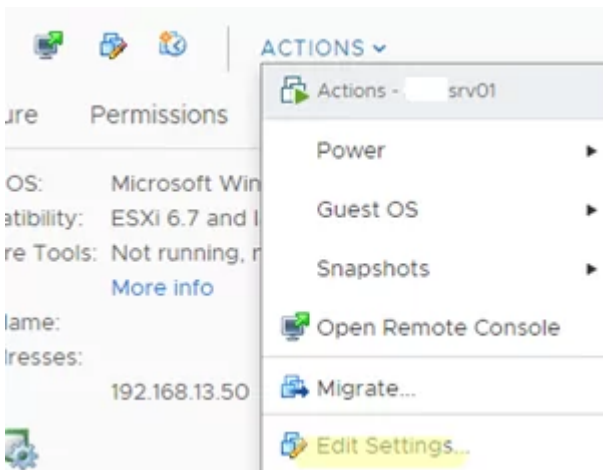
# How to Increase Virtual Machine Disk Size in VMware

Original Article: <https://woshub.com/increase-virtual-disk-vmware/>

## Increase the Size of VM Disk (VMDK) in VMware

For example, you have a virtual machine with a single virtual hard disk file (vmdk) of 40GB, and you plan to increase this virtual disk size to 50GB.

1. Connect to your vCenter server or a standalone ESXi host using the vSphere Web Client;



1. Find the virtual machine and open its settings (**Actions** -> **Edit Settings**);
2. Find the virtual disk you want to extend. In this example, the VM has only one **Hard Disk 1** with a size of 40 GB. Specify the new disk size in this field and save the settings. Note that the maximum disk size available for this type of datastore (VMFS, NFS, vSAN) is specified in the *Maximum size* field;

## Edit Settings

srv01

Virtual Hardware

VM Options

|                   |                   |      |
|-------------------|-------------------|------|
| > CPU             | 2                 | ▼    |
| > Memory          | 2.046875          | GB ▼ |
| ▼ Hard disk 1     | 40                | GB ▼ |
| Maximum Size      | 89.5 GB           |      |
| VM storage policy | Datastore Default |      |

Make sure that your VMFS datastore has enough free space. If required, you can [increase the size of the VMFS datastore](#) in VMWare ESXi/vCenter.

You can also use the VMware PowerCLI module cmdlets to increase the size of the virtual machine VMDK disk. Install the PowerCLI module on your Windows or Linux computer:

```
Install-Module -Name VMware.PowerCLI
```

Connect to your vCenter server or ESXi host:

```
Connect-VIServer hostname
```

Run the following command to expand the virtual disk:

```
Get-HardDisk VMTest1 | where {$_.Name -eq "hard disk 1"} | Set-HardDisk -CapacityGB 50 -ResizeGuestPartition -Confirm:$false
```

```
C:\> Get-VM vm01 | Get-HardDisk -Name 'Hard disk 1'
CapacityGB Persistence
-----
200.000    Persistent [data]
```

Then you can use the **Invoke-VMScript** cmdlet to extend a partition in the guest operating system:

```
Invoke-VMScript -VM VMTest1 -ScriptText "echo select vol c > c:\diskpart.txt && echo extend >> c:\diskpart.txt && diskpart.exe /s c:\diskpart.txt" -GuestUser $guestUser -GuestPassword $guestPass -ScriptType BAT
```

Earlier, we showed an example of how to use the Invoke-VMScript to automatically install Windows updates in VMware VM templates.

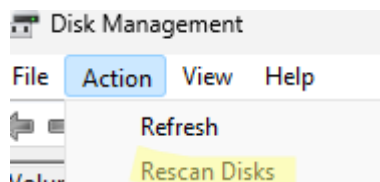
Don't forget to terminate the PowerShell management session once you're done:

```
Disconnect-VIServer -Confirm:$false
```

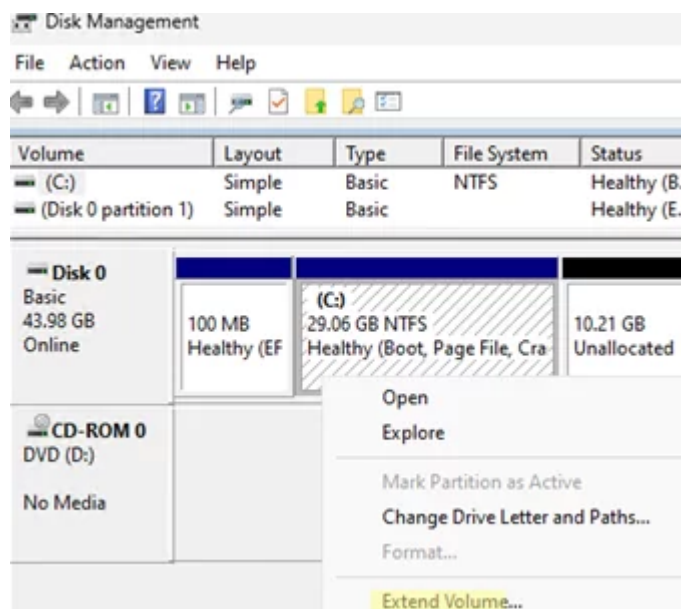
Now that you have increased the virtual disk size in the VMware console, you need to extend the partition in the guest OS

# Extend a Partition in a Windows Virtual Machine

You must start the Disk Management console (**Computer Management-> Storage-> Disk Management**) and run the **Rescan Disk** command for the guest Windows OS to see the additional space.



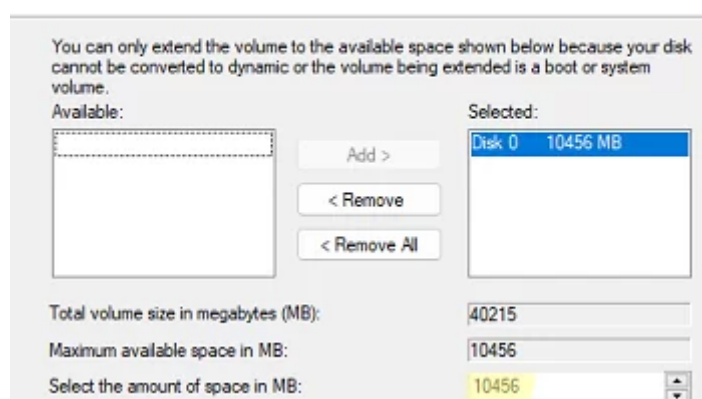
Next, select the partition you want to extend and click **Extend Volume**.



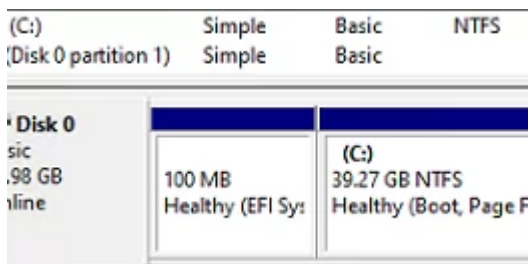
Specify how many MB of unallocated space you want to add to the selected Windows partition (in the field **Select the amount of space in MB**).

## Select Disks

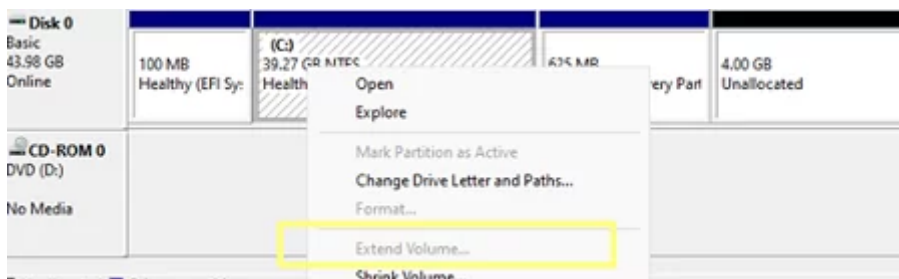
You can use space on one or more disks to extend the volume.



Now click Next -> Finish and check if your C drive has been successfully extended.



When extending a system partition (C:\ drive), you may find that it is followed by a [Windows Recovery Environment partition](#) instead of unallocated space. In this case, the Extend Volume option will not be available in the Disk Manager (greyed out).



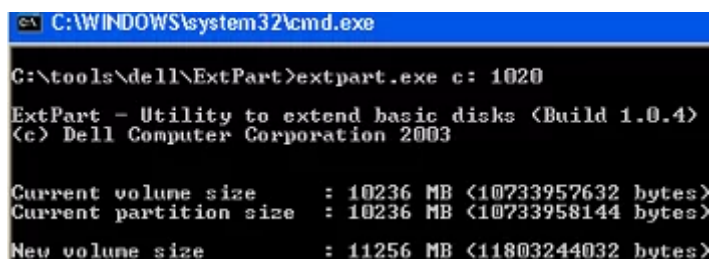
In that case, you won't be able to extend your C: drive unless you delete or move the Recovery partition to the end of the drive. We have described this procedure in the article [Extend Volume option is grayed out in Windows](#).

Windows XP and Windows Server 2003 don't support the online extension of the system C: volume. You can use Dell's **ExtPart** tool to expand the system partition without rebooting.

To extend the system partition in Windows 2003/XP, copy the tool to the guest operating system and run it with the following parameters:

```
extpart.exe c: 1020
```

, where **c:** is the name of the volume you want to extend, and **1020** is the size (in MB) you want to extend the disk by.



You can also extend the offline VM disc partition in other ways:

- Boot your virtual machine from any LiveCD (for example, GParted), and increase the partition;
- Connect a virtual VMDK file to another VM and extend the partition on that machine;
- Use the VMware vCenter Converter tool to reconfigure the volume size.

# How to Extend Partition in Linux Virtual Machine?

Now let's look at how to expand the disk partition if you have a Linux family guest operating system installed in your virtual machine.

The first thing to do is to make sure that Linux sees the new disk size. To start a rescan, run the command:

```
$ echo 1>/sys/class/block/sdd/device/rescan
```

Use the cfdisk tool to show the available virtual hard disk space:

```
$ sudo cfdisk
```

This example shows that the /dev/sda drive has 2 GB of free space. Select the partition you want to extend (which is /dev/sda3 in this example) and chose **Resize** from the bottom menu.

| Disk: /dev/sda   |          |          |          |                      |
|--|----------|----------|----------|----------------------|
| Size: 22 GiB, 23622320128 bytes, 46137344 sectors                          |          |          |          |                      |
| Label: gpt, identifier: 0EF6DDE1-4033-49CE-A2CD-EBD1D4E96A38               |          |          |          |                      |
| Device   | Start    | End      | Sectors  | Size Type            |
| /dev/sda1  | 2048     | 4095     | 2048     | 1M BIOS boot         |
| /dev/sda2  | 4096     | 2101247  | 2097152  | 1G Linux filesystem  |
| /dev/sda3  | 2101248  | 41940991 | 39839744 | 19G Linux filesystem |
| Free space   | 41940992 | 46137310 | 4196319  | 2G                   |
| Partition UUID: F3222E08-4335-4506-BA45-AEB3E28F25E2                       |          |          |          |                      |
| Partition type: Linux filesystem (0FC63DAF-8483-4772-8E79-3D69D8477DE4)    |          |          |          |                      |
| Filesystem UUID: PcHhgz-jYsC-01NU-RZcT-AxCI-HILM-32QI0q                    |          |          |          |                      |
| Filesystem: LVM2_member  |          |          |          |                      |
| [ Delete ] [ <b>Resize</b> ] [ Quit ] [ Type ] [ Help ] [ Write ] [ Dump ] |          |          |          |                      |

Then click **Write** to apply the changes to the partition.

```

Disk: /dev/sda
Size: 22 GiB, 23622320128 bytes, 46137344 sectors
Label: gpt, identifier: 0EF6DDE1-4033-49CE-A2CD-EBD1D4E96A38

Device      Start      End      Sectors    Size Type
/dev/sda1    2048       4095      2048        1M BIOS boot
/dev/sda2    4096      2101247   2097152     1G Linux filesystem
> /dev/sda3   2101248    46137310  44036063    21G Linux filesystem

Partition UUID: F3222E08-4335-4506-BA45-AEB3E28F25E2
Partition type: Linux filesystem (0FC63DAF-8483-4772-8E79-3D69D8477DE4)
Filesystem UUID: PcHhQz-jYsC-O1NU-RZcT-AxCI-HILM-32QI0q
Filesystem: LVM2_member

[ Delete ] [ Resize ] [ Quit ] [ Type ] [ Help ] [ Write ]

```

In my case, I need to extend the partition in an Ubuntu 22.04 LTS virtual machine. By default, this version of Ubuntu is installed on LVM volume:

```
$ sudo lsblk
```

```

root@srv-ubuntu1:/home/sysops# lsblk
NAME            MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
loop0            7:0      0 63.2M  1 loop /snap/core20/17
loop1            7:1      0 67.8M  1 loop /snap/lxd/22753
loop2            7:2      0 91.9M  1 loop /snap/lxd/24061
loop3            7:3      0 55.6M  1 loop /snap/core18/26
loop4            7:4      0 55.5M  1 loop /snap/core18/24
loop5            7:5      0 49.6M  1 loop /snap/snapd/178
loop7            7:7      0 49.8M  1 loop /snap/snapd/179
loop8            7:8      0 63.3M  1 loop /snap/core20/17
sda              8:0      0   22G  0 disk
├─sda1            8:1      0    1M  0 part
├─sda2            8:2      0    1G  0 part /boot
└─sda3            8:3      0   21G  0 part
   └─ubuntu--vg-ubuntu--lv 253:0    0   19G  0 lvm /

```

Before you can extend an LVM volume, you need to increase the physical volume (PV):

```
$ sudo pvresize /dev/sda3
```

Once that's done, you can extend the logical volume (we'll use all the free space available):

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

```

root@srv-ubuntu1:/home/sysops# sudo lvextend -l +100%FREE /dev/mapper/ubuntu--vg-ubuntu--lv
Size of logical volume ubuntu-vg/ubuntu-lv changed from <19.00 GiB (4863 extents) to <21.00 GiB
Logical volume ubuntu-vg/ubuntu-lv successfully resized.

```

The next step is extending the file system:

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

Check free disk space in Linux:

```
$ df -h
```

```

root@srv-ubuntu1:/home/sysops# df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            1.9G   0    1.9G   0% /dev
tmpfs           391M   6.4M  385M   2% /run
/dev/mapper/ubuntu--vg-ubuntu--lv 21G   18G   1.7G  92% /
tmpfs           2.0G   0    2.0G   0% /dev/shm

```

If you do not have LVM volumes, you can use the [parted](#) tool to extend partitions in Linux:

```
$ sudo parted
```

Let's check how much unallocated space you have on the disk:

```
print free
```

As you can see, *Free Space* = 2149MB

```
sysops@srv-ubun01:~$ sudo parted
GNU Parted 3.3
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view
(parted) print free
Model: VMware, VMware Virtual S (scsi)
Disk /dev/sda: 23.6GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system
  1      17.4kB  1049kB  1031kB  Free Space
  2      1049kB  2097kB  1049kB
  3      2097kB  1076MB  1074MB  ext4
        1076MB  21.5GB  20.4GB
        21.5GB  23.6GB  2149MB  Free Space
```

To extend the */dev/sda3* partition, run:

```
resizepart 3
```

Specify a new partition size (in this example, we need to specify the **End** size from **the Free Space** block):

End? [21.5GB]?

```
(parted) resizepart 3
End? [21.5GB]? 23.6G
(parted) p
Model: VMware, VMware Virtual S (scsi)
Disk /dev/sda: 23.6GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File syst
  1      1049kB  2097kB  1049kB
  2      2097kB  1076MB  1074MB  ext4
  3      1076MB  23.6GB  22.5GB
```

Then exit the parted:

```
quit
```

All that remains is to grow an ext4/3/2 file system.

```
$ sudo resize2fs /dev/sda3
```

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