

# How to automatically resize virtual box disk with vagrant



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## Background

I'm using vagrant on Windows with virtual box and CentOS 7 image. The vagrant box image I didn't build it myself but get from people's image [here](#). The size of OS disk depends on its image. It's configured at the time when the image is created. I want to increase root partition from 10GB to 20GB. This guide won't fit you if you build image yourself.

```
[root@node06 ~]# lsblk
```

NAME	MAJ:MIN	RM	SIZE	RO	TYPE	MOUNTPOINT
sda	8:0	0	9.8G	0	disk	
└─sda1	8:1	0	500M	0	part	/boot
└─sda2	8:2	0	9.3G	0	part	
└─┬─centos-root	253:0	0	8.3G	0	lvm	/
└─┴─centos-swap	253:1	0	1000M	0	lvm	[SWAP]

## Test it

Let's do it manually first. Test with hand then automate later. First we

need to install the [vagrant plugin](#) that manage disk resizing by running `> vagrant plugin install vagrant-disksize`. Then set the disk size you want in Vagrant file. For example

```
Vagrant.configure(2) do |config|
  config.vm.box = "centos/7"
  config.disksize.size = '20GB'
end
```

Run `vagrant up` . You'll see the output as below. That means physical disk has been resized to 20GB.

```
==> node06: Clearing any previously set network interfaces...
==> node06: Preparing network interfaces based on configuration...
node06: Adapter 1: nat
node06: Adapter 2: hostonly
==> node06: Forwarding ports...
node06: 22 (guest) => 2205 (host) (adapter 1)
==> node06: Running 'pre-boot' VM customizations...
==> node06: Resized disk: old 10000 MB, req 20480 MB, new 20480 MB
==> node06: You may need to resize the filesystem from within the guest.
==> node06: Booting VM...
==> node06: Waiting for machine to boot. This may take a few minutes...
node06: SSH address: 127.0.0.1:2205
```

Later, you need to resize partition table and file system which the command might be different depends on your environment (OS, file system ,etc...).

The image I use, mount root partition as LVM with xfs type. Below steps are how I extend root partition with parted command. Later I'll use these steps in vagrant file to auto extend root mount point when run vagrant up.

1. Check the physical disk size. Now it's 20GB.

```
[root@node06 ~]# lsblk
NAME                                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda                                  8:0      0   20G  0 disk
├─sda1                              8:1      0   500M  0 part /boot
└─sda2                              8:2      0    9.3G  0 part
   ├─centos-root                    253:0    0    8.3G  0 lvm  /
   └─centos-swaps                    253:1    0   1000M  0 lvm  /swap1
```

2. Change partition table using parted. Require version 3.1.29 above for a resize option.

```
### Check free size
$ sudo parted /dev/sda print free
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 21.5GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:
```

Number	Start	End	Size	Type	File system	Flags
	32.3kB	1049kB	1016kB		Free Space	
1	1049kB	525MB	524MB	primary	xfs	boot
<b>2</b>	<b>525MB</b>	<b>10.5GB</b>	<b>9960MB</b>	<b>primary</b>		<b>lvm</b>
	10.5GB	21.5GB	11.0GB		Free Space	

```
### Resize to 100%
$ sudo parted /dev/sda resizepart 2 100%

### Check again
$ sudo parted /dev/sda print free
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 21.5GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:
```

Number	Start	End	Size	Type	File system	Flags
	32.3kB	1049kB	1016kB		Free Space	
1	1049kB	525MB	524MB	primary	xfs	boot
<b>2</b>	<b>525MB</b>	<b>21.5GB</b>	<b>20.9GB</b>	<b>primary</b>		<b>lvm</b>

3. Extend physical volume. You'll see volume group has free PE.

```
$ sudo pvdisplay
--- Physical volume ---
PV Name                /dev/sda2
VG Name                centos
PV Size              9.28 GiB / not usable 3.00 MiB
Allocatable            yes
PE Size                4.00 MiB
Total PE               2374
Free PE                10
Allocated PE           2364

$ sudo pvresize /dev/sda2
Physical volume "/dev/sda2" changed
```

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```
$ sudo pvdisplay
--- Physical volume ---
PV Name                /dev/sda2
VG Name                centos
PV Size              19.51 GiB / not usable 2.00 MiB
Allocatable            yes
PE Size                4.00 MiB
Total PE               4994
Free PE                2630
Allocated PE           2364

$ sudo vgdisplay
--- Volume group ---
VG Name                centos
...
...
VG Size                19.51 GiB
PE Size                4.00 MiB
Total PE               4994
Alloc PE / Size        2364 / 9.23 GiB
Free PE / Size      2630 / 10.27 GiB
```

# Medium



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#### 4. Extend logical group.

```
$ sudo lvs
  --- Logical volume ---
LV Path                /dev/centos/root
LV Name                 root

VG Name                 centos

...
LV Size                 8.26 GiB
Current LE              2114
...

$ sudo lvextend -l +100%FREE /dev/centos/root
Size of logical volume centos/root changed from 8.26 GiB (2114
extents) to 18.53 GiB (4744 extents).
Logical volume root successfully resized.
```

5. Resize root file system online. Now root mount point have the new size.

```
$ sudo xfs_growfs /dev/centos/root
$ lsblk
NAME                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
```

```

sda                8:0      0    20G    0 disk
├─sda1             8:1      0   500M    0 part  /boot
├─sda2             8:2      0  19.5G    0 part
└─┬─centos-root 253:0    0  18.5G    0 lvm   /
   └─centos-swap 253:1    0  1000M    0 lvm   [SWAP]

```

## Automate Part

Put all previous steps to Vagrant file. For me, I use the script inline method. Run vagrant up, have a cup of coffee then check the result. :)

```

Vagrant.configure(2) do |config|

  common = <<-SCRIPT
  sudo parted /dev/sda resizepart 2 100%
  sudo pvresize /dev/sda2
  sudo lvextend -l +100%FREE /dev/centos/root
  sudo xfs_growfs /dev/centos/root
  SCRIPT

  config.vm.define "node01" do |node1|
    node1.vm.hostname = "node01"
    node1.vm.network "private_network", ip: "192.168.56.121"

    config.vm.provision :shell, :inline => common
  end
end

```

Vagrant

Virtualbox

Disk

Resize

In my case, steps 3-4 did not work on AlmaLinux 9, I skipped to step 5 (and ran following as root user):

```
xfs_growfs -d /
```

