

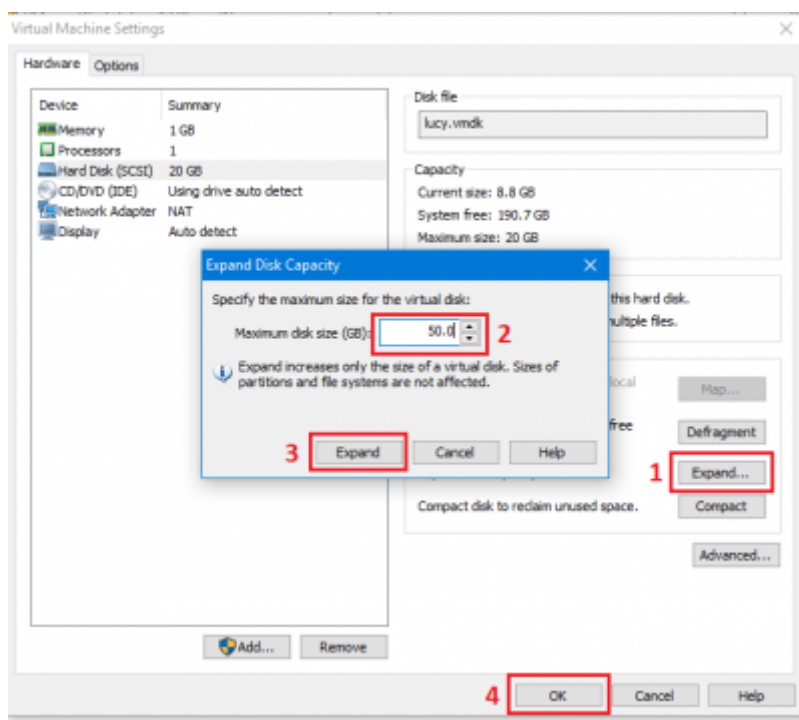
# Extending a logical volume in VMware machine

This article provides steps for extending the root partition residing in a logical volume created with Logical Volume Manager (LVM) in a virtual machine running Lucy. A more complete guide with screenshots can be found

here

**Caution: We recommend to take a complete backup of the virtual machine prior to making these changes.**

1. Power off the virtual machine.
2. Edit the virtual machine settings and extend the virtual disk size.



For more information, see [Increasing the size of a virtual disk \(1004047\)](#).

3. Power on the virtual machine.
4. Print the partition table to verify the number of partitions by running the command:  
`# fdisk -l`

By default, there are 3: sda1, sda2 and sda5.

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1	*	2048	499711	248832	83	Linux
/dev/sda2		501758	41940991	20719617	5	Extended
/dev/sda5		501760	41940991	20719616	8e	Linux LVM

5. Create a new primary partition - sda3:

- Run the command:

```
# fdisk /dev/sda
```

- Press <n> to create a new primary partition.
- Press <p> for primary.
- Press <3> for the partition number.
- Press <Enter> two times.
- Press <t> to change the system's partition ID.
- Press <3> to select the newly creation partition.
- Type 8e to change the Hex Code of the partition for Linux LVM.
- Press <w> to write the changes to the partition table.

## 6. Restart the virtual machine:

```
# shutdown -r now
```

## 7. Verify whether sda3 has successfully created, by running the command:

```
# fdisk -l
```

```
root@phishing:~# fdisk -l

Disk /dev/sda: 53.7 GB, 53687091200 bytes
255 heads, 63 sectors/track, 6527 cylinders, total 104857600 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x0008d718

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *        2048       499711       248832   83   Linux
/dev/sda2                501758      41940991      20719617    5   Extended
/dev/sda3                499712       501757         1023   8e   Linux LVM
/dev/sda5                501760      41940991      20719616   8e   Linux LVM
```

## 8. Create another primary partition sda4:

- Run the command:

```
# fdisk /dev/sda
```

- Press <n> to create a new primary partition.
- Press <p> for primary.

**Note.** The number of partition <4> was selected automatically.

- Press <Enter> two times.
- Press <t> to change the system's partition ID.
- Press <4> to select the newly creation partition.
- Type 8e to change the Hex Code of the partition for Linux LVM.
- Press <w> to write the changes to the partition table.

## 9. Restart the virtual machine once again:

```
# shutdown -r now
```

## 10. Verify whether sda4 has successfully created, by running the command:

```
# fdisk -l
```

```

root@phishing:~# fdisk -l

Disk /dev/sda: 53.7 GB, 53687091200 bytes
255 heads, 63 sectors/track, 6527 cylinders, total 104857600 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x0008d718

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *        2048       499711       248832   83   Linux
/dev/sda2                501758      41940991      20719617    5   Extended
/dev/sda3                499712       501757         1023   8e   Linux LVM
/dev/sda4            41940992     104857599      31458304   8e   Linux LVM
/dev/sda5                501760      41940991      20719616   8e   Linux LVM

```

11. Run this command to convert the new partition to a physical volume:

```
# pvcreate /dev/sda4
```

12. Run this command to extend the physical volume:

```
# vgextend phishing /dev/sda4
```

13. Run this command to verify how many physical extents are available to the Volume Group:

```
# vgsdisplay phishing | grep "Free"
```

14. Run the following command to extend the Logical Volume:

```
# lvextend -L+#G /dev/phishing/root
```

Where <#> is the number of Free space in GB available as per the previous command. Use the full number output from Step 13 including any decimals.

15. Run the following command to expand the ext3 filesystem online, inside of the Logical Volume:

```
# resize2fs /dev/phishing/root
```

16. Run the following command to verify that the / filesystem has the new space available:

```
# df -h
```

```

root@phishing:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
rootfs          49G   4.5G   42G   10% /
udev            10M     0   10M    0% /dev
tmpfs           101M   236K   101M    1% /run
/dev/mapper/phishing-root 49G   4.5G   42G   10% /
tmpfs            5.0M     0    5.0M    0% /run/lock
tmpfs           202M     0   202M    0% /run/shm
/dev/sda1       228M    17M   200M    8% /boot

```

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