

Virtualization

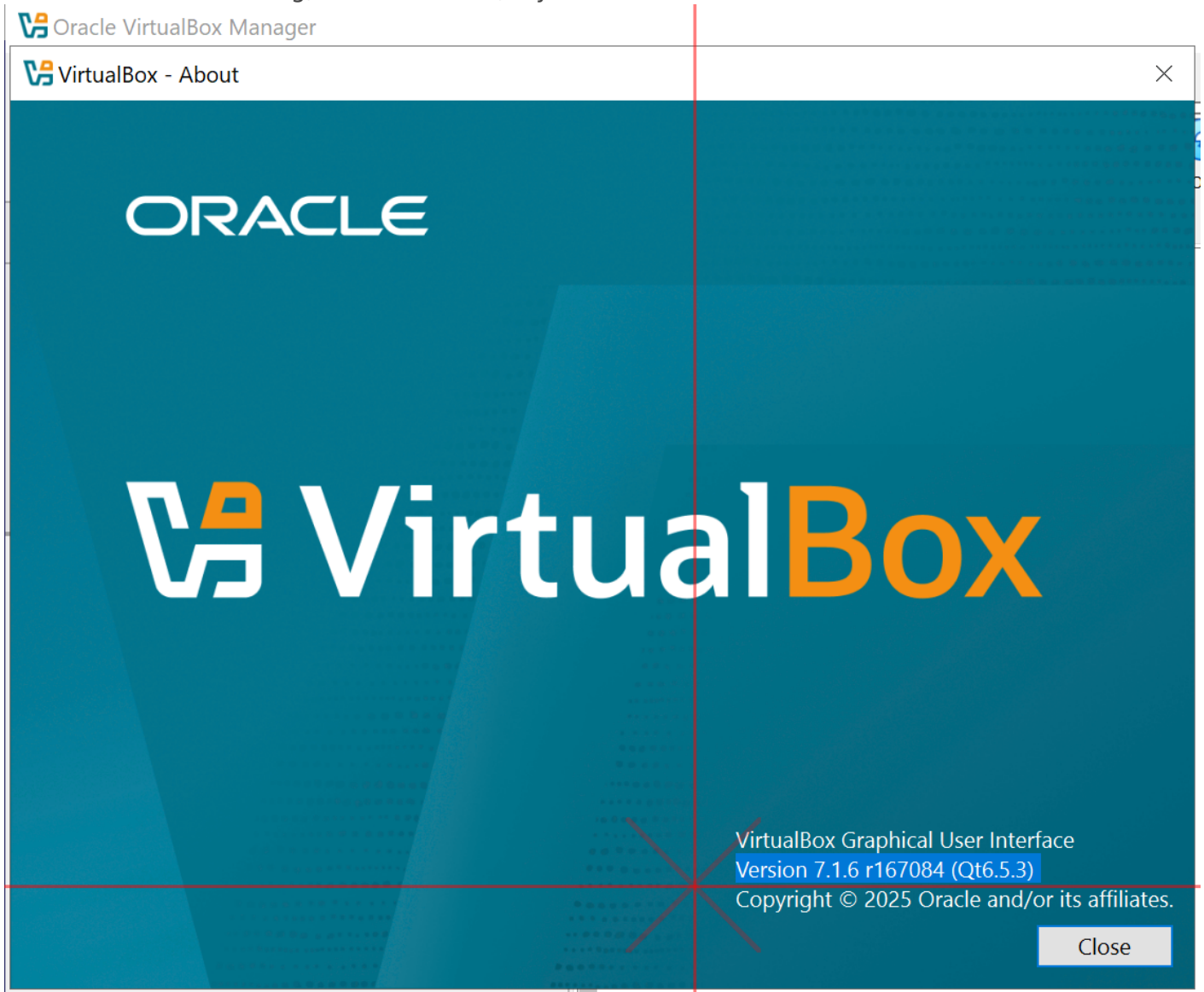
Create Virtual Machines (VMs), clone, run, test, study and use them.

- Oracle VirtualBox @Windows10Pro
 - Cloning the machines and post-install for Oracle Linux v9
 - Adding more space to virtual machine by adding new disk and expanding using LVM
- Proxmox Virtual Environment (PVE)
 - Enabling no-subscription repositories

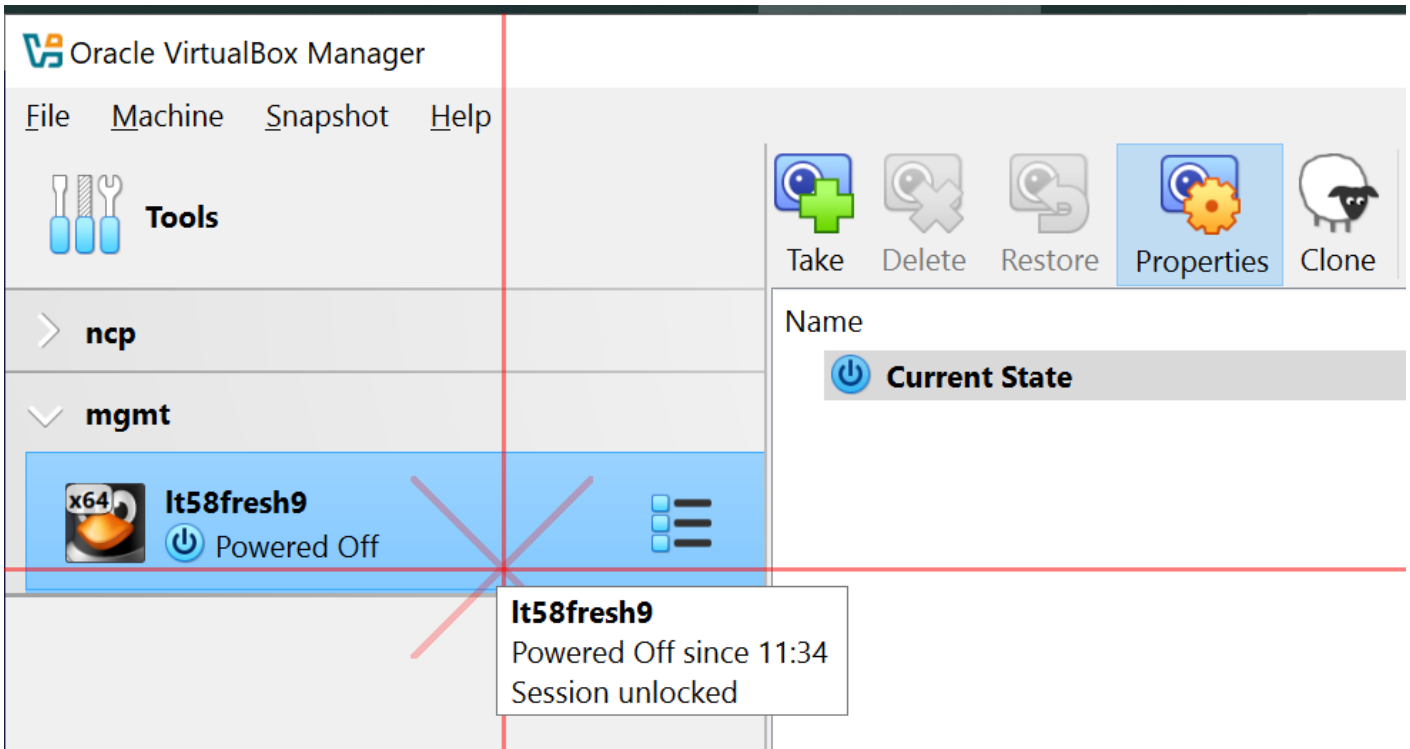
Oracle VirtualBox
@Windows10Pro

Cloning the machines and post-install for Oracle Linux v9

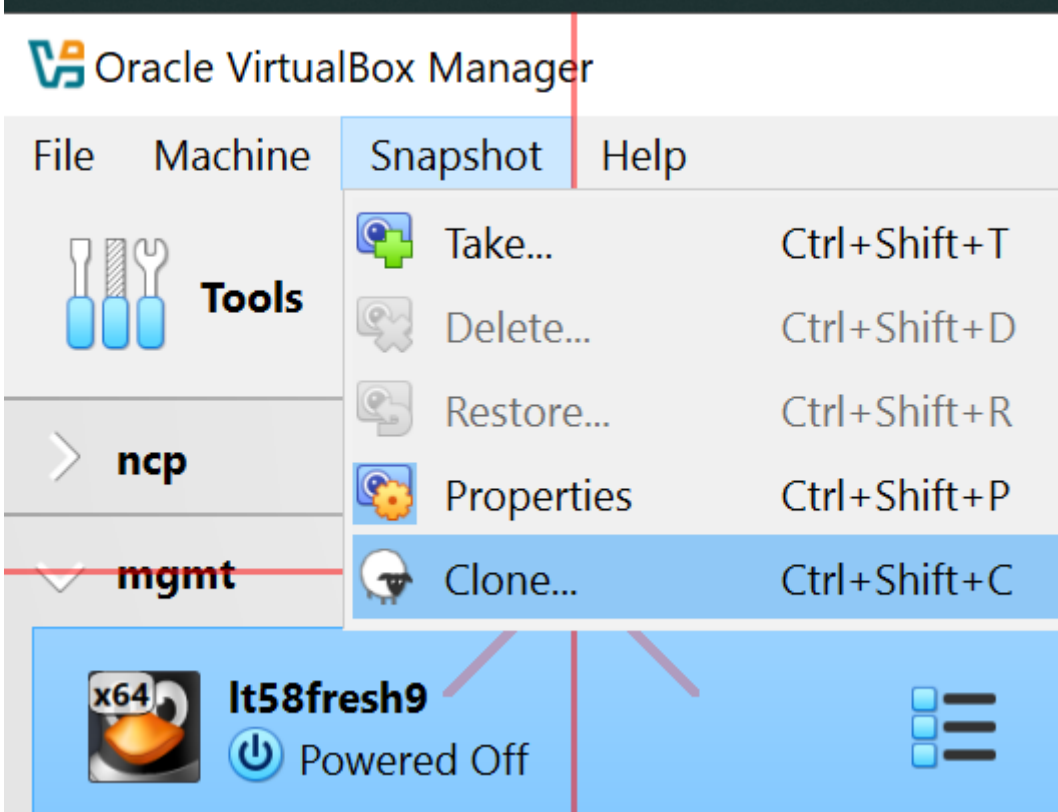
At the moment of writing, on 2025-07-18, my VirtualBox is v7.1.6.



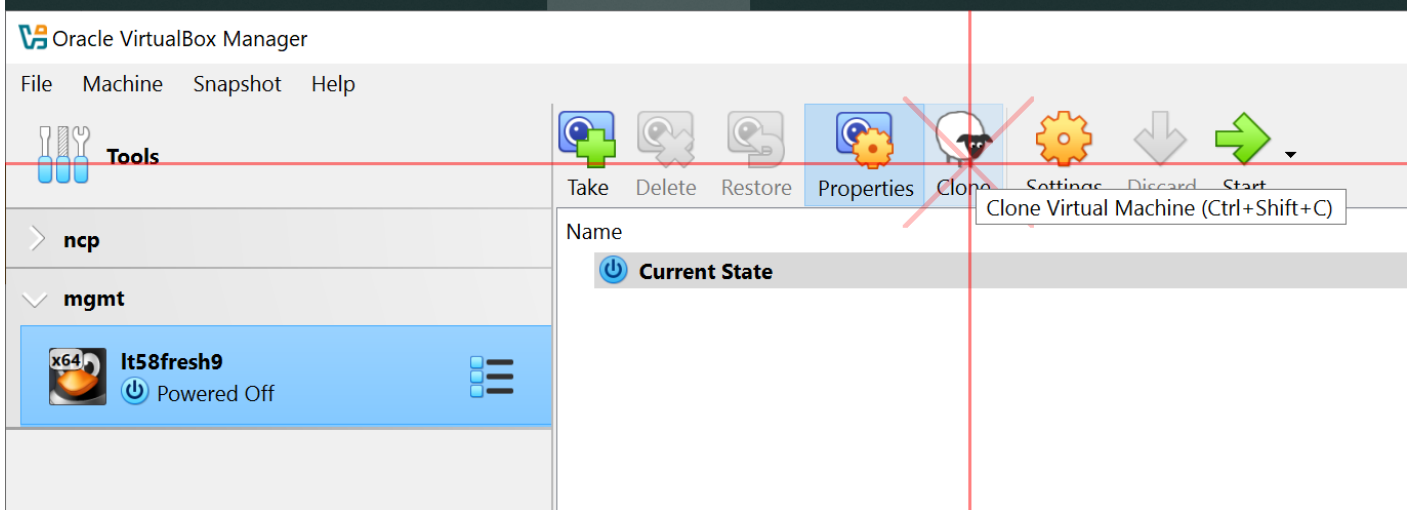
Open VirtualBox, find the source machine, click once to select



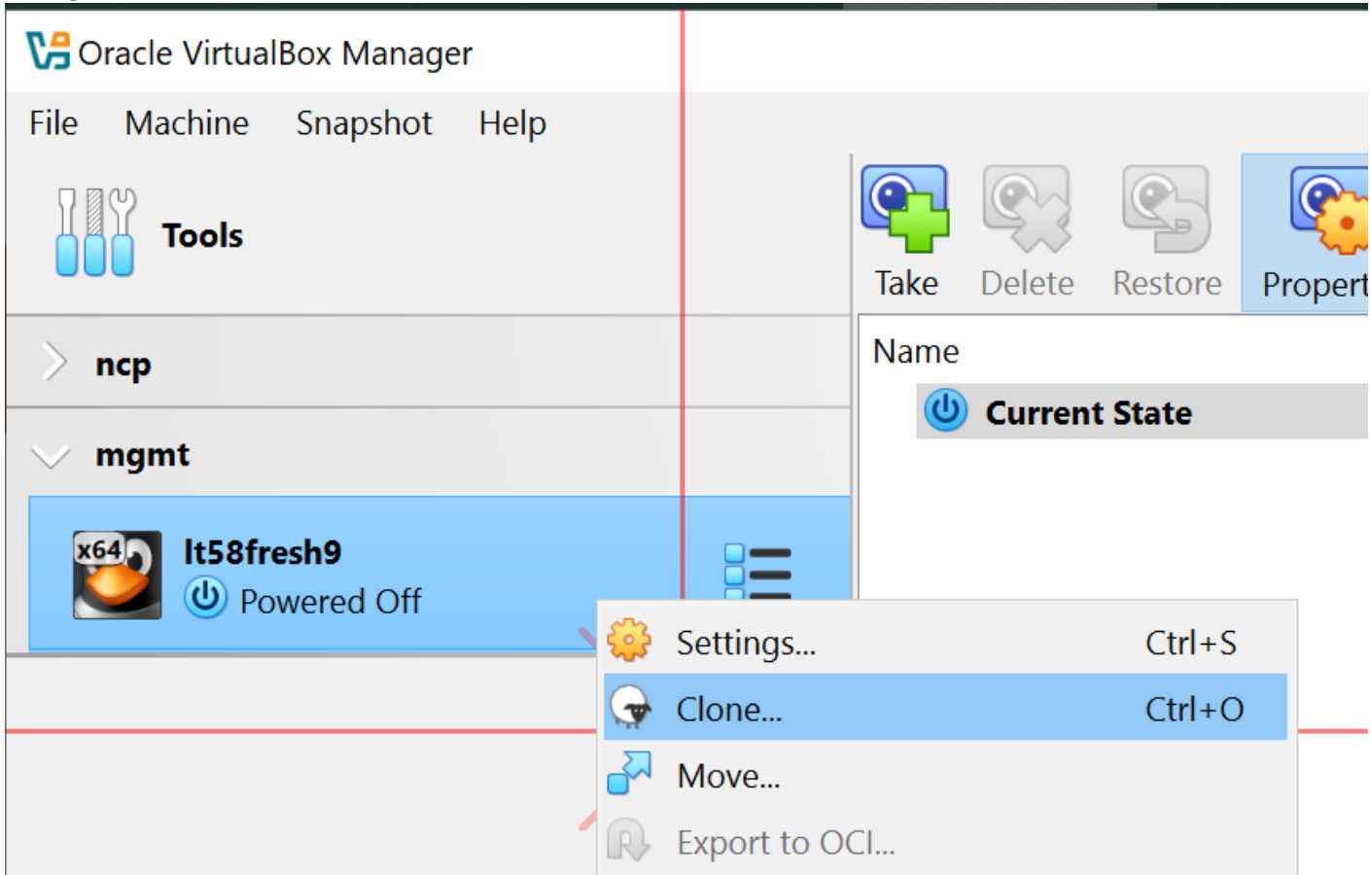
It is possible to either use menu: Snapshot> Clone



Or click on [Clone] icon with a sheep:

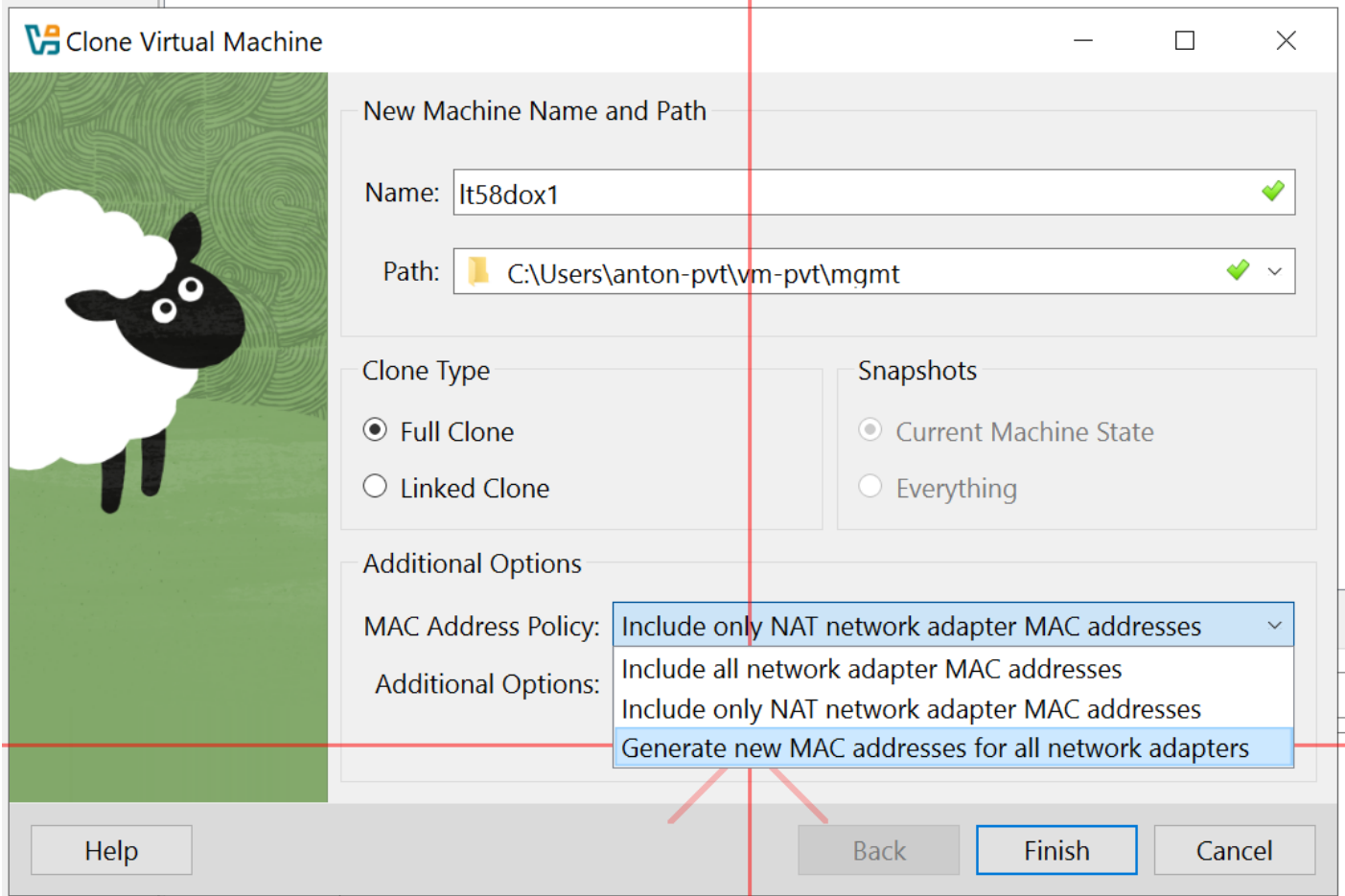


Or right-click on virtual machine itself:

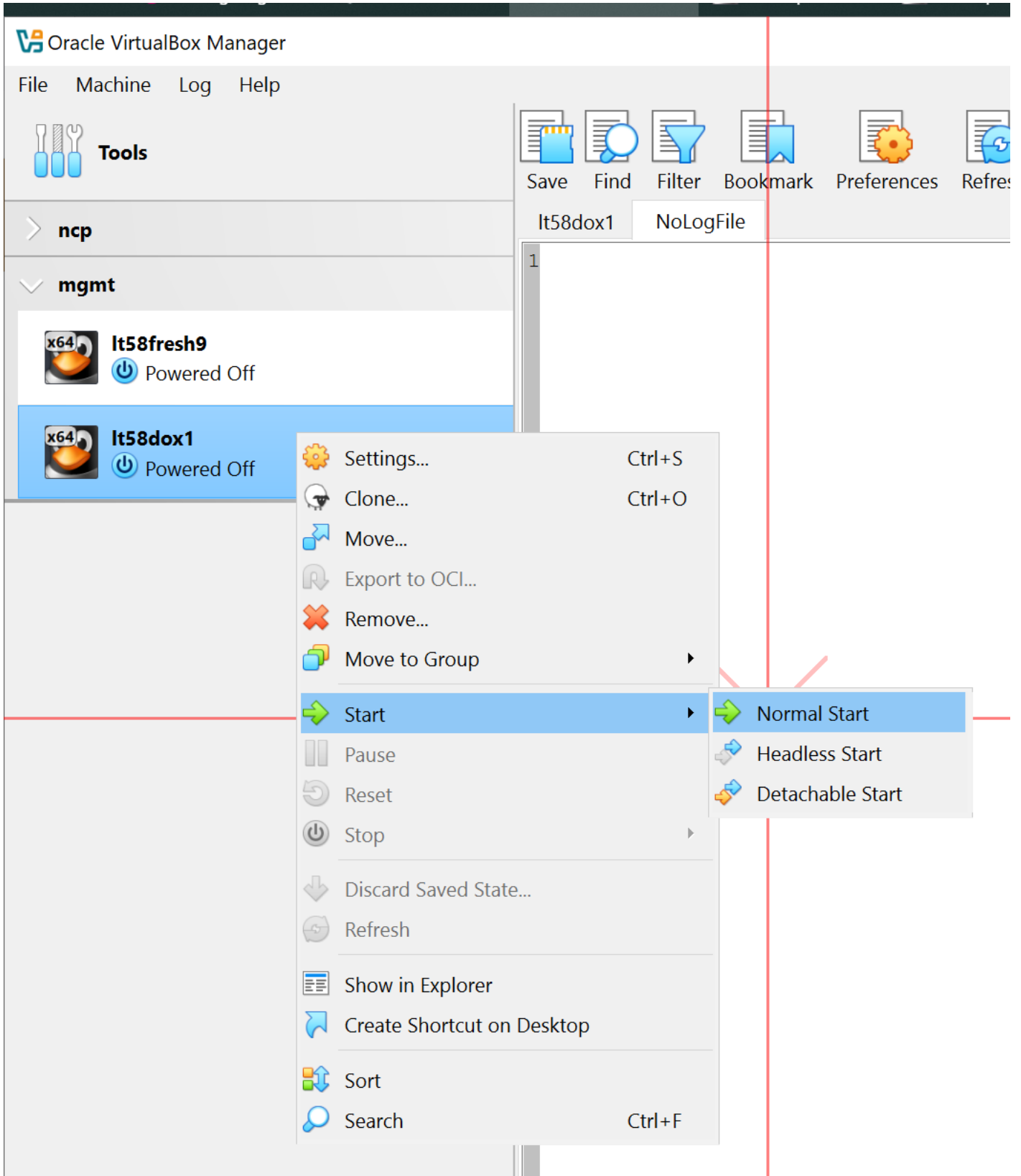


of press C-S-c (CTRL+SHIFT+c) or, from the list: C-o (CTRL+o)

Give machine a new name, check location and remember to choose "Generate new MAC for adapters". Your network infra will be happy to see healthy traffic and route it properly.



When machine is cloned, let's start it:



Post-cloning procedures

All commands executed in the elevated shell

```
sudo su
```

Change hostname

```
hostnamectl hostname lt58dox1
```

During cloning the machines, change physical ID and MAC address in the hypervisor (sometimes, it will not do it automatically in VirtualBox, proxmox and others).

When machines are cloned, 'machine ID':

```
cat /etc/machine-id  
rm -f /etc/machine-id  
systemd-machine-id-setup  
systemd-machine-id-setup --commit --print
```

SSH server's keys need to be re-generated to be seen as different machines

```
rm -rf /etc/ssh/ssh_host_*  
ssh-keygen -A  
ls -la /etc/ssh/ssh_host_*
```

And finally perform reboot

```
shutdown -r now
```

As there will be new MAC assigned, check for new IP addresses:

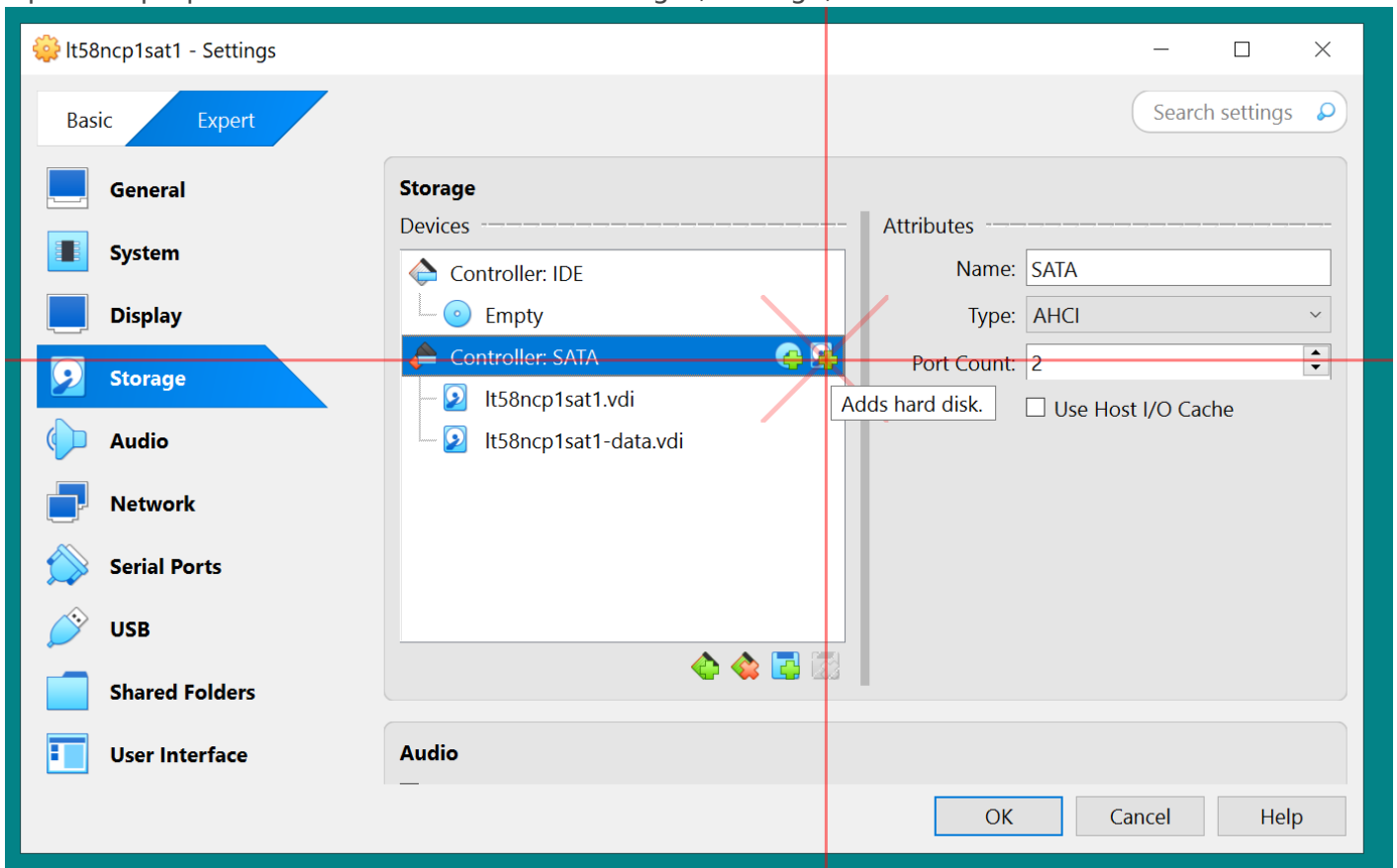
```
ip -br a
```

Adding more space to virtual machine by adding new disk and expanding using LVM

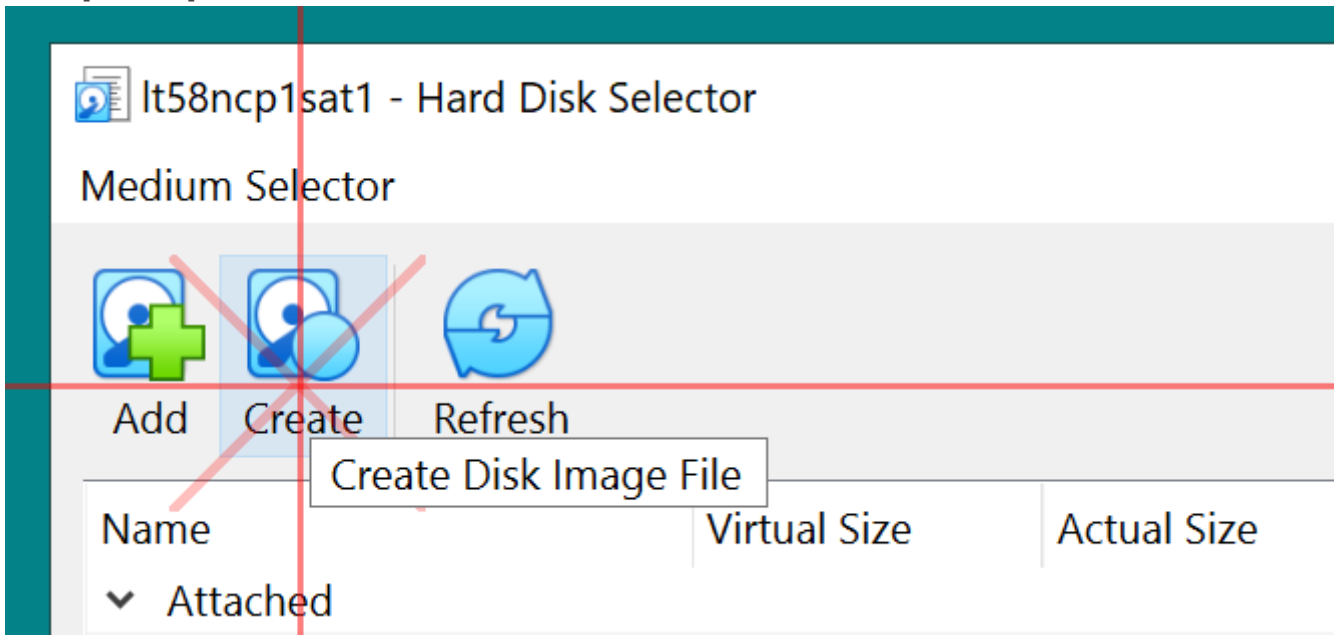
Daily task, which comes as daily routing, to extend the disk space:

Switch off the machine

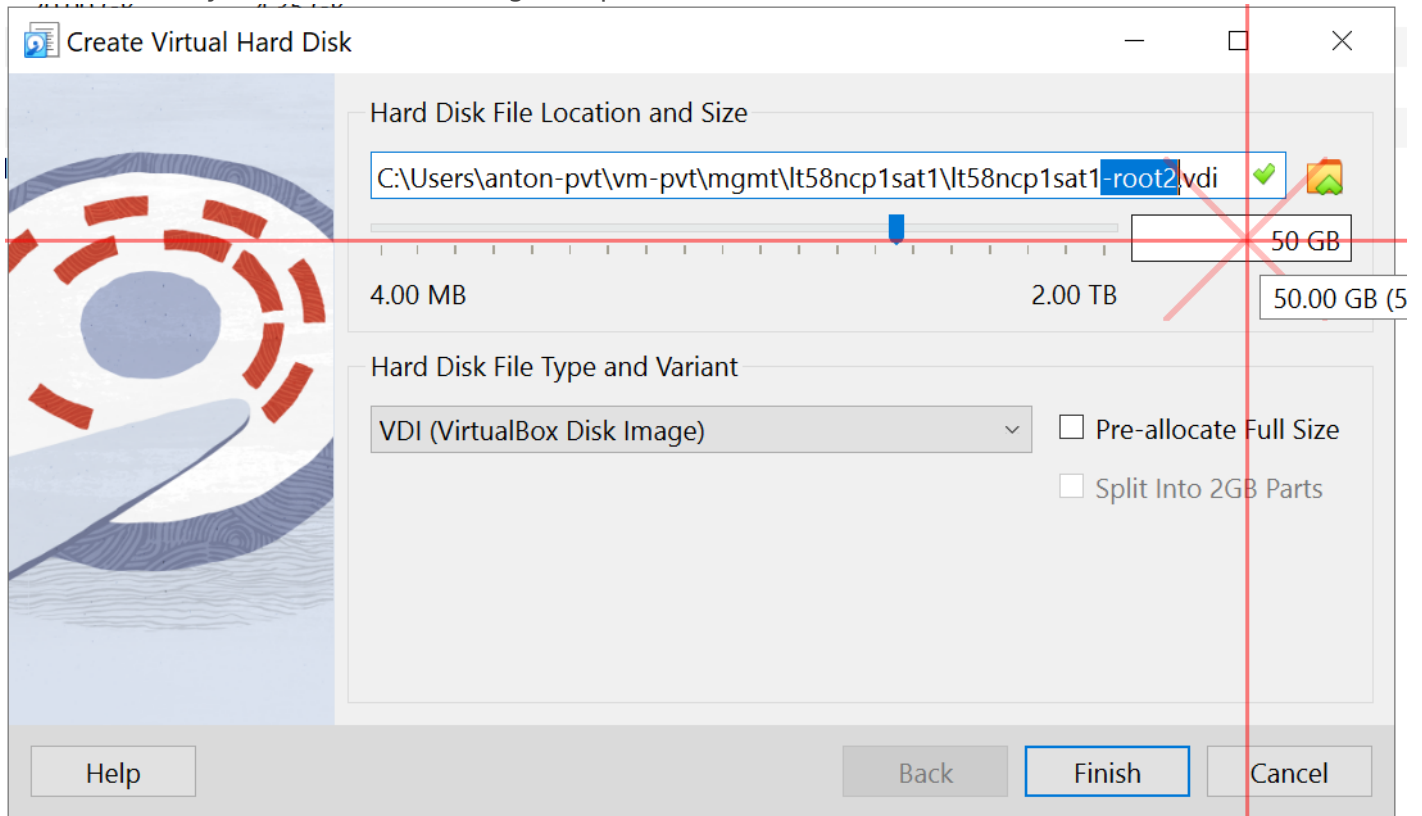
Open VM properties in Oracle VirtualBox Manager, Storage,



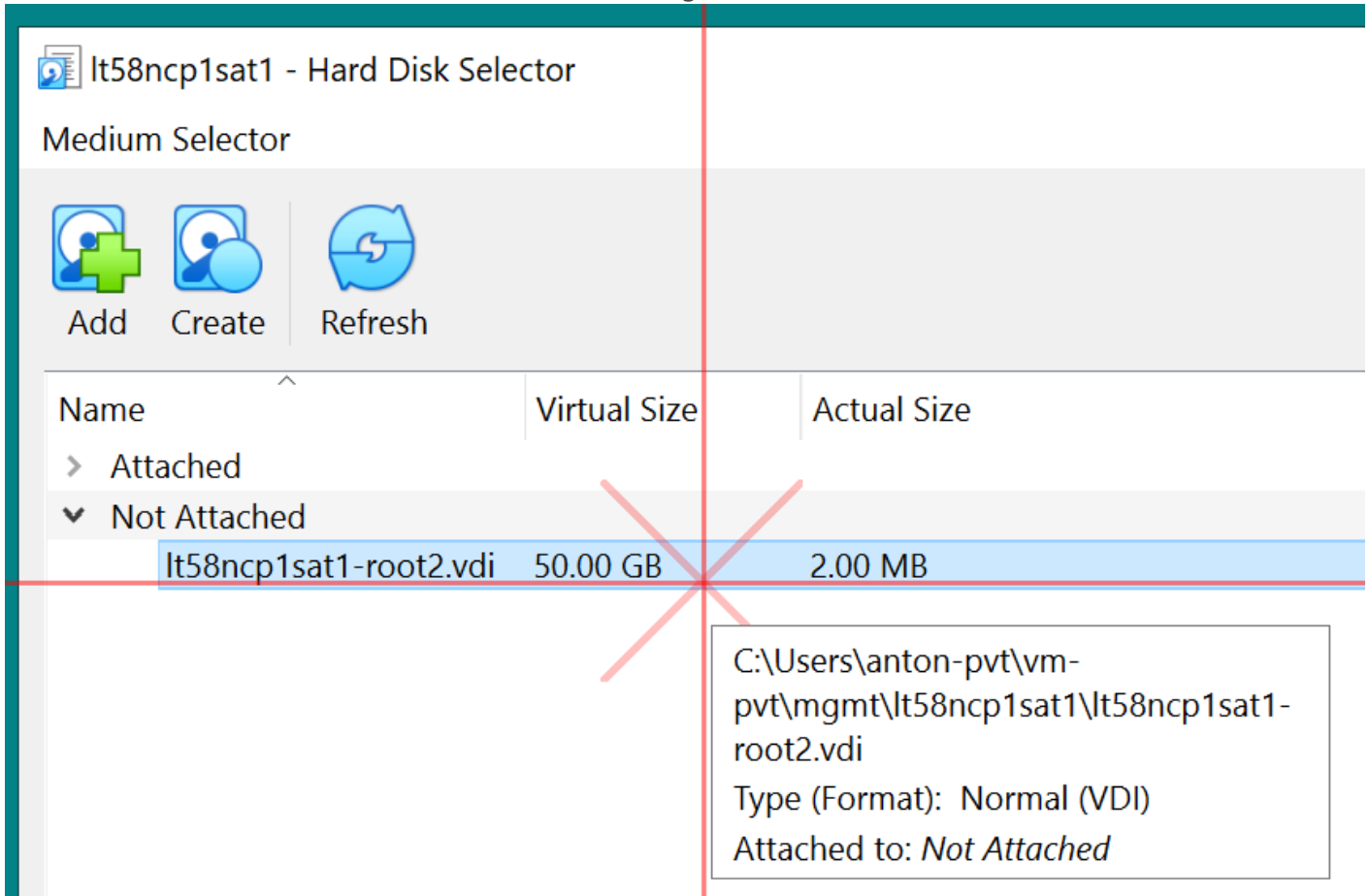
Click [Create]



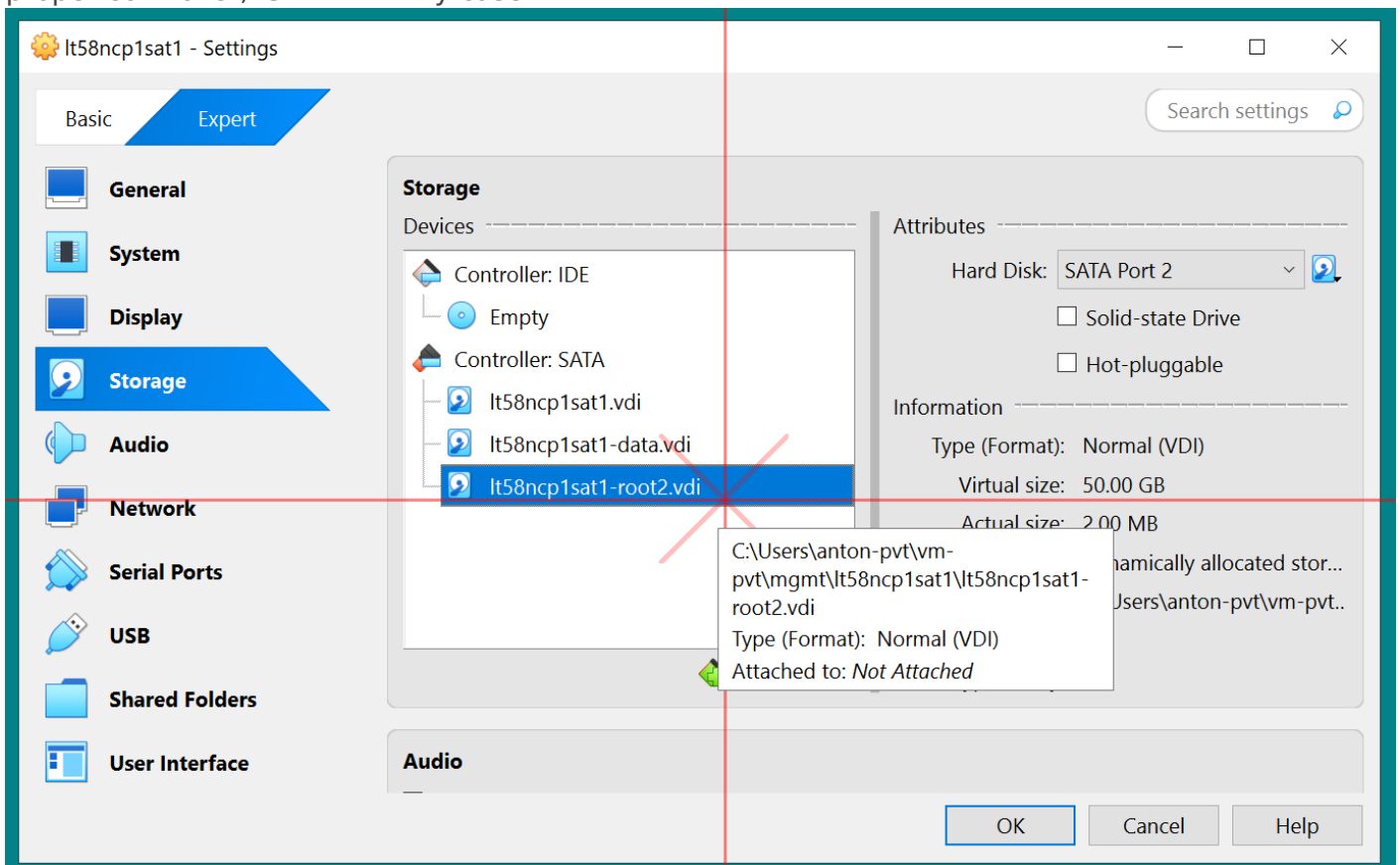
Name the disk accordingly to be consistent with other drives. Ensure that disk is saved nearby the VM itself. In my case, I am extending root partition for 50 GB.



After new disk is created, choose it double-clicking it.



Should end by seeing new disk in the virtual machine properties under 'Storage' list, attached to proper controller, 'SATA' - in my case.

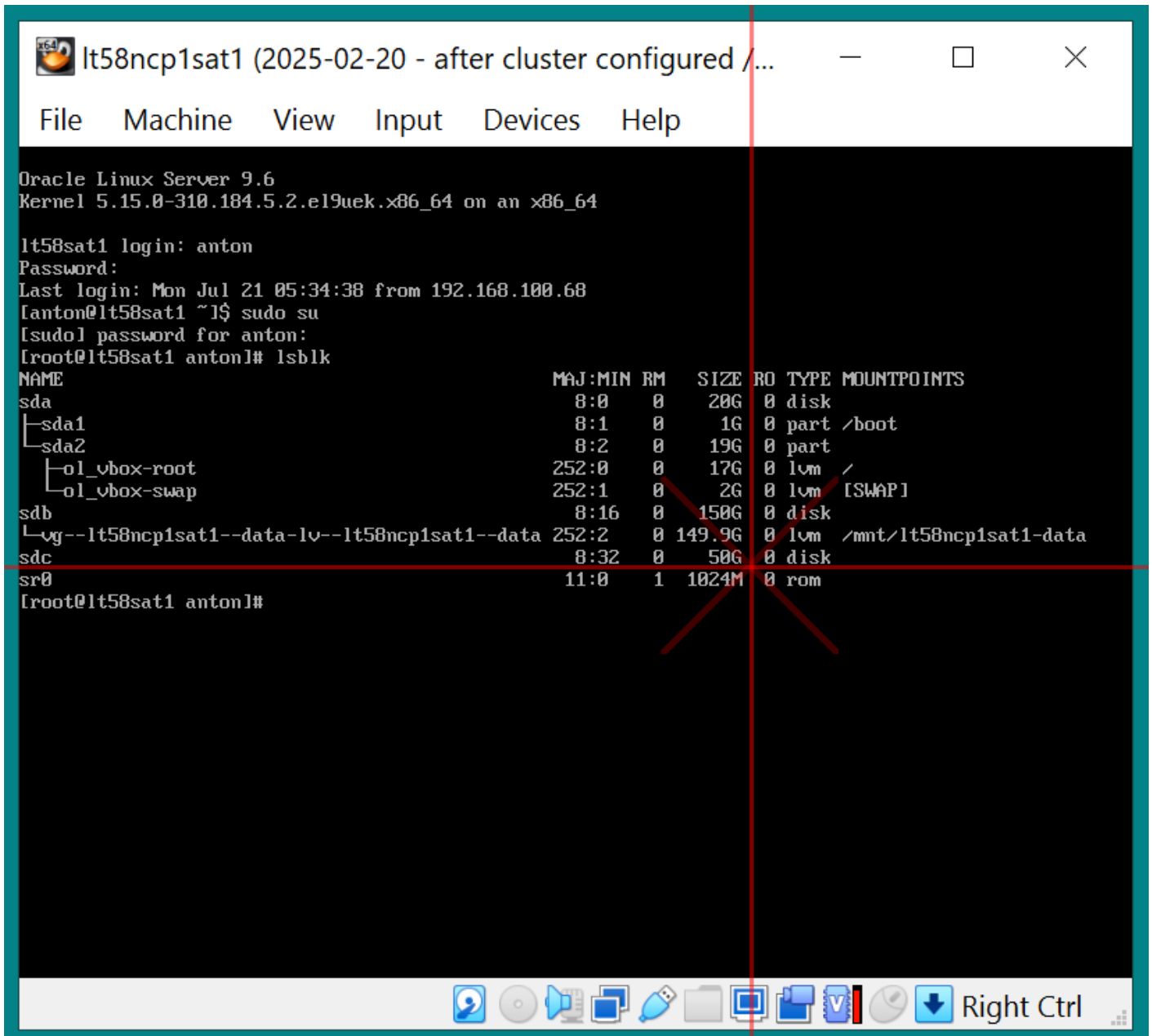


Confirm with [OK]

Power on the machine

List disks with. New disk should be visible.

```
lsblk
```



```
lt58ncp1sat1 (2025-02-20 - after cluster configured /...
File Machine View Input Devices Help

Oracle Linux Server 9.6
Kernel 5.15.0-310.184.5.2.el9uek.x86_64 on an x86_64

lt58sat1 login: anton
Password:
Last login: Mon Jul 21 05:34:38 from 192.168.100.68
[anton@lt58sat1 ~]# sudo su
[sudo] password for anton:
[root@lt58sat1 anton]# lsblk
NAME                                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda                                  8:0    0   20G  0 disk
├─sda1                               8:1    0    1G  0 part /boot
├─sda2                               8:2    0   19G  0 part
│   └─ol_vbox-root                   252:0  0   17G  0 lvm /
│   └─ol_vbox-swap                   252:1  0    2G  0 lvm [SWAP]
sdb                                  8:16   0  150G  0 disk
└─vg--lt58ncp1sat1--data-lv--lt58ncp1sat1--data 252:2  0 149.9G  0 lvm /mnt/lt58ncp1sat1-data
sdc                                  8:32   0   50G  0 disk
sr0                                  11:0   1 1024M  0 rom

[root@lt58sat1 anton]#
```

Follow [LVM Disk Extension guide](#) to finalize extension.

Proxmox Virtual Environment (PVE)

Enabling no-subscription repositories

On Debian v13 (trixie)

```
mv /etc/apt/sources.list.d/pve-enterprise.sources /root
```

Create new file

```
nano /etc/apt/sources.list.d/pve-no-subscription.list
```

repos

```
deb http://download.proxmox.com/debian/pve trixie pve-no-subscription
```

Adjust Debian repos

```
nano /etc/apt/sources.list.d/debian.sources
```

repos

```
Types: deb
URIs: http://deb.debian.org/debian
Suites: trixie trixie-updates
Components: main contrib non-free-firmware
Signed-By: /usr/share/keyrings/debian-archive-keyring.gpg
```

```
Types: deb
URIs: http://security.debian.org/debian-security
Suites: trixie-security
Components: main contrib non-free-firmware
Signed-By: /usr/share/keyrings/debian-archive-keyring.gpg
```

Verify repositories declaration

```
apt policy
```

```
root@omi5pvel:~# apt policy
Package files:
 100 /var/lib/dpkg/status
      release a=now
 500 http://download.proxmox.com/debian/pve trixie/pve-no-subscription amd64 Packages
      release o=Proxmox,a=stable,n=trixie,l=Proxmox Debian Repository,c=pve-no-subscription,b=amd64
      origin download.proxmox.com
 500 http://security.debian.org/debian-security trixie-security/non-free-firmware amd64 Packages
      release v=13,o=Debian,a=stable-security,n=trixie-security,l=Debian-Security,c=non-free-firmware,b=amd64
      origin security.debian.org
 500 http://security.debian.org/debian-security trixie-security/main amd64 Packages
      release v=13,o=Debian,a=stable-security,n=trixie-security,l=Debian-Security,c=main,b=amd64
      origin security.debian.org
 500 http://deb.debian.org/debian trixie-updates/main amd64 Packages
      release v=13-updates,o=Debian,a=stable-updates,n=trixie-updates,l=Debian,c=main,b=amd64
      origin deb.debian.org
 500 http://deb.debian.org/debian trixie/non-free-firmware amd64 Packages
      release v=13.4,o=Debian,a=stable,n=trixie,l=Debian,c=non-free-firmware,b=amd64
      origin deb.debian.org
 500 http://deb.debian.org/debian trixie/contrib amd64 Packages
      release v=13.4,o=Debian,a=stable,n=trixie,l=Debian,c=contrib,b=amd64
      origin deb.debian.org
 500 http://deb.debian.org/debian trixie/main amd64 Packages
      release v=13.4,o=Debian,a=stable,n=trixie,l=Debian,c=main,b=amd64
      origin deb.debian.org
 500 http://security.debian.org/debian-security bookworm-security/non-free-firmware amd64 Packages
      release v=12,o=Debian,a=oldstable-security,n=bookworm-security,l=Debian-Security,c=non-free-firmware,b=amd64
      origin security.debian.org
 500 http://security.debian.org/debian-security bookworm-security/contrib amd64 Packages
      release v=12,o=Debian,a=oldstable-security,n=bookworm-security,l=Debian-Security,c=contrib,b=amd64
      origin security.debian.org
 500 http://security.debian.org/debian-security bookworm-security/main amd64 Packages
      release v=12,o=Debian,a=oldstable-security,n=bookworm-security,l=Debian-Security,c=main,b=amd64
      origin security.debian.org
 500 http://deb.debian.org/debian bookworm-updates/main amd64 Packages
      release v=12-updates,o=Debian,a=oldstable-updates,n=bookworm-updates,l=Debian,c=main,b=amd64
      origin deb.debian.org
 500 http://deb.debian.org/debian bookworm/non-free-firmware amd64 Packages
      release v=12.13,o=Debian,a=oldstable,n=bookworm,l=Debian,c=non-free-firmware,b=amd64
      origin deb.debian.org
 500 http://deb.debian.org/debian bookworm/contrib amd64 Packages
      release v=12.13,o=Debian,a=oldstable,n=bookworm,l=Debian,c=contrib,b=amd64
      origin deb.debian.org
 500 http://deb.debian.org/debian bookworm/main amd64 Packages
      release v=12.13,o=Debian,a=oldstable,n=bookworm,l=Debian,c=main,b=amd64
      origin deb.debian.org
Pinned packages:
root@omi5pvel:~#
```

Do APT update

```
apt update
```

```
root@omi5pvel:~# apt update
Get:1 http://security.debian.org/debian-security bookworm-security InRelease [48.0 kB]
Hit:2 http://security.debian.org/debian-security trixie-security InRelease
Get:3 http://security.debian.org/debian-security bookworm-security/main amd64 Packages [294 kB]
Get:4 http://download.proxmox.com/debian/pve trixie InRelease [3,534 B]
Get:5 http://download.proxmox.com/debian/pve trixie/pve-no-subscription amd64 Packages [342 kB]
Get:6 http://deb.debian.org/debian bookworm InRelease [151 kB]
Get:7 http://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Hit:8 http://deb.debian.org/debian trixie InRelease
Get:9 http://deb.debian.org/debian trixie-updates InRelease [47.3 kB]
Get:10 http://deb.debian.org/debian bookworm/main amd64 Packages [8,792 kB]
Get:11 http://security.debian.org/debian-security bookworm-security/main Translation-en [179 kB]
Get:12 http://security.debian.org/debian-security bookworm-security/contrib amd64 Packages [896 B]
Get:13 http://security.debian.org/debian-security bookworm-security/contrib Translation-en [652 B]
Get:14 http://security.debian.org/debian-security bookworm-security/non-free-firmware amd64 Packages [688 B]
Get:15 http://security.debian.org/debian-security bookworm-security/non-free-firmware Translation-en [472 B]
Get:16 http://deb.debian.org/debian bookworm/main Translation-en [6,108 kB]
Get:17 http://deb.debian.org/debian bookworm/contrib amd64 Packages [53.5 kB]
Get:18 http://deb.debian.org/debian bookworm/contrib Translation-en [48.4 kB]
Get:19 http://deb.debian.org/debian bookworm/non-free-firmware amd64 Packages [6,368 B]
Get:20 http://deb.debian.org/debian bookworm/non-free-firmware Translation-en [20.9 kB]
Get:21 http://deb.debian.org/debian bookworm-updates/main amd64 Packages [6,924 B]
Get:22 http://deb.debian.org/debian bookworm-updates/main Translation-en [5,448 B]
Fetched 16.2 MB in 4s (251 kB/s)
53 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

List packages ready for update, most important that there are new packages from PVE repo.

```
apt list --upgradable
```

```
root@omi5pve1:~# apt list --upgradable
corosync/stable 3.1.10-pve2 amd64 [upgradable from: 3.1.9-pve2]
frr-pythontools/stable 10.4.1-1+pve1 all [upgradable from: 10.3.1-1+pve4]
frr/stable 10.4.1-1+pve1 amd64 [upgradable from: 10.3.1-1+pve4]
ifupdown2/stable 3.3.0-1+pmx12 all [upgradable from: 3.3.0-1+pmx11]
inetutils-telnet/stable-security 2:2.6-3+deb13u3 amd64 [upgradable from: 2:2.6-3+deb13u2]
libcfg7/stable 3.1.10-pve2 amd64 [upgradable from: 3.1.9-pve2]
libcmap4/stable 3.1.10-pve2 amd64 [upgradable from: 3.1.9-pve2]
libcorosync-common4/stable 3.1.10-pve2 amd64 [upgradable from: 3.1.9-pve2]
libcpq4/stable 3.1.10-pve2 amd64 [upgradable from: 3.1.9-pve2]
libnvpair3linux/stable 2.4.1-pve1 amd64 [upgradable from: 2.3.4-pve1]
libpng16-16t64/stable-security 1.6.48-1+deb13u4 amd64 [upgradable from: 1.6.48-1+deb13u3]
libproxmox-acme-perl/stable 1.7.1 all [upgradable from: 1.7.0]
libproxmox-acme-plugins/stable 1.7.1 all [upgradable from: 1.7.0]
libproxmox-backup-gemu0/stable 2.0.2 amd64 [upgradable from: 2.0.1]
libpve-access-control/stable 9.0.6 all [upgradable from: 9.0.4]
libpve-cluster-api-perl/stable 9.1.1 all [upgradable from: 9.0.7]
libpve-cluster-perl/stable 9.1.1 all [upgradable from: 9.0.7]
libpve-common-perl/stable 9.1.9 all [upgradable from: 9.0.15]
libpve-network-api-perl/stable 1.2.5 all [upgradable from: 1.2.3]
libpve-network-perl/stable 1.2.5 all [upgradable from: 1.2.3]
libpve-notify-perl/stable 9.1.1 all [upgradable from: 9.0.7]
libpve-rs-perl/stable 0.11.4 amd64 [upgradable from: 0.11.3]
libpve-storage-perl/stable 9.1.1 all [upgradable from: 9.0.18]
libquorum5/stable 3.1.10-pve2 amd64 [upgradable from: 3.1.9-pve2]
libssl3t64/stable-security 3.5.5-1+deb13u2 amd64 [upgradable from: 3.5.5-1+deb13u1]
libutil3linux/stable 2.4.1-pve1 amd64 [upgradable from: 2.3.4-pve1]
libvotequorum8/stable 3.1.10-pve2 amd64 [upgradable from: 3.1.9-pve2]
lxc-pve/stable 6.0.5-4 amd64 [upgradable from: 6.0.5-3]
openssh-client/stable-security 1:10.0p1-7+deb13u2 amd64 [upgradable from: 1:10.0p1-7+deb13u1]
openssh-server/stable-security 1:10.0p1-7+deb13u2 amd64 [upgradable from: 1:10.0p1-7+deb13u1]
openssh-sftp-server/stable-security 1:10.0p1-7+deb13u2 amd64 [upgradable from: 1:10.0p1-7+deb13u1]
openssl-provider-legacy/stable-security 3.5.5-1+deb13u2 amd64 [upgradable from: 3.5.5-1+deb13u1]
openssl/stable-security 3.5.5-1+deb13u2 amd64 [upgradable from: 3.5.5-1+deb13u1]
proxmox-backup-client/stable 4.1.5-1 amd64 [upgradable from: 4.0.20-1]
proxmox-backup-file-restore/stable 4.1.5-1 amd64 [upgradable from: 4.0.20-1]
proxmox-default-kernel/stable 2.0.2 all [upgradable from: 2.0.1]
proxmox-kernel-6.17/stable 6.17.13-2 all [upgradable from: 6.17.2-1]
proxmox-widget-toolkit/stable 5.1.9 all [upgradable from: 5.1.2]
pve-cluster/stable 9.1.1 amd64 [upgradable from: 9.0.7]
pve-container/stable 6.1.2 all [upgradable from: 6.0.18]
pve-docs/stable 9.1.2 all [upgradable from: 9.1.0]
pve-firmware/stable 3.18-2 all [upgradable from: 3.17-2]
pve-ha-manager/stable 5.1.3 amd64 [upgradable from: 5.0.8]
pve-i18n/stable 3.7.0 all [upgradable from: 3.6.2]
pve-manager/stable 9.1.7 all [upgradable from: 9.1.1]
pve-nvidia-vgpu-helper/stable 0.3.1 all [upgradable from: 0.2.0]
pve-gemu-kvm/stable 10.1.2-7 amd64 [upgradable from: 10.1.2-3]
pve-yew-mobile-i18n/stable 3.7.0 all [upgradable from: 3.6.2]
qemu-server/stable 9.1.6 amd64 [upgradable from: 9.0.30]
ssh/stable-security 1:10.0p1-7+deb13u2 all [upgradable from: 1:10.0p1-7+deb13u1]
zfs-initramfs/stable 2.4.1-pve1 all [upgradable from: 2.3.4-pve1]
zfs-zed/stable 2.4.1-pve1 amd64 [upgradable from: 2.3.4-pve1]
zfsutils-linux/stable 2.4.1-pve1 amd64 [upgradable from: 2.3.4-pve1]
root@omi5pve1:~#
```

Perform upgrade (when needed)

```
apt upgrade
```

```
root@omi5pve1:~# apt upgrade
Upgrading:
corosync          libnvpair3linux      libpve-network-api-perl  lxc-pve              proxmox-kernel-6.17    pve-nvidia-vgpu-helper
fr                libpng16-16t64       libpve-network-perl     openssl-client        proxmox-widget-toolkit pve-gemu-kvm
fr-pythontools   libproxmox-acme-perl  libpve-notify-perl     openssl-server        pve-cluster           pve-yew-mobile-i18n
ifupdown2        libproxmox-acme-plugins  libpve-rs-perl         openssl-sftp-server   pve-container         gemu-server
inetutils-telnet libproxmox-backup-gemu0  libpve-storage-perl    openssl               pve-docs              ssh
libcfg7          libpve-access-control  libquorum5             openssl-provider-legacy  pve-firmware
libcmmap4        libpve-cluster-api-perl  libssl3t64             proxmox-backup-client   pve-ha-manager
libcorosync-common4  libpve-cluster-perl    libuutil3linux         proxmox-backup-file-restore  pve-i18n
libcpq4          libpve-common-perl     libvotequorum4         proxmox-default-kernel   pve-manager

Installing dependencies:
proxmox-kernel-6.17.13-2-pve-signed

Not upgrading:
zfs-initramfs  zfs-zed  zfsutils-linux

Summary:
Upgrading: 50, Installing: 1, Removing: 0, Not Upgrading: 3
Download size: 426 MB
Space needed: 1,005 MB / 28.2 GB available

Continue? [Y/n] 
```