

# TinyNet

Creating Virtual Machines

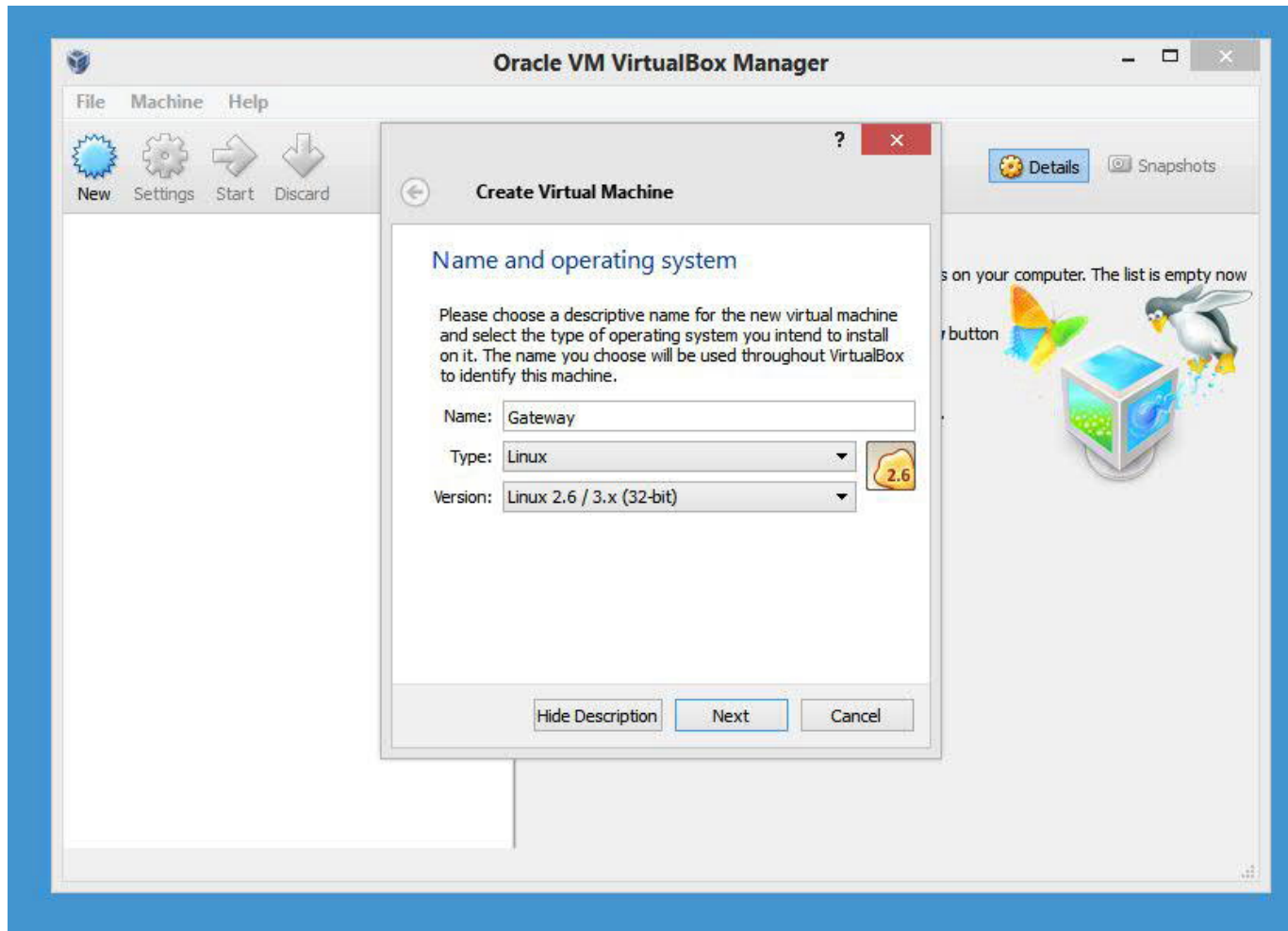
VirtualBox is a little funny about its configuration files, so we need a separate utility to run VirtualBox using non-standard locations for our virtual machines (VMs)

You can get RunVBox from [www.my-tiny.net](http://www.my-tiny.net) in the Windows Utilities section  
While you are there get the My-IP utility as well, and unzip them someplace convenient.

Since we are making our own VMs, the next thing to do is decide where to store them.  
A USB drive is probably best – make a folder and call it something like **TinyNet**  
VirtualBox will create a folder under this one for every machine you create.

Now you need to copy **VirtualBox-NoDHCP.xml** to the folder you just created.  
This is the main configuration file for VirtualBox, You downloaded it with the RunVBox utility.  
Rename it **VirtualBox.xml**

Now you can use **RunVBox** to navigate to the folder you just created and start VirtualBox.  
Create a shortcut and put RunVBox on your desktop!

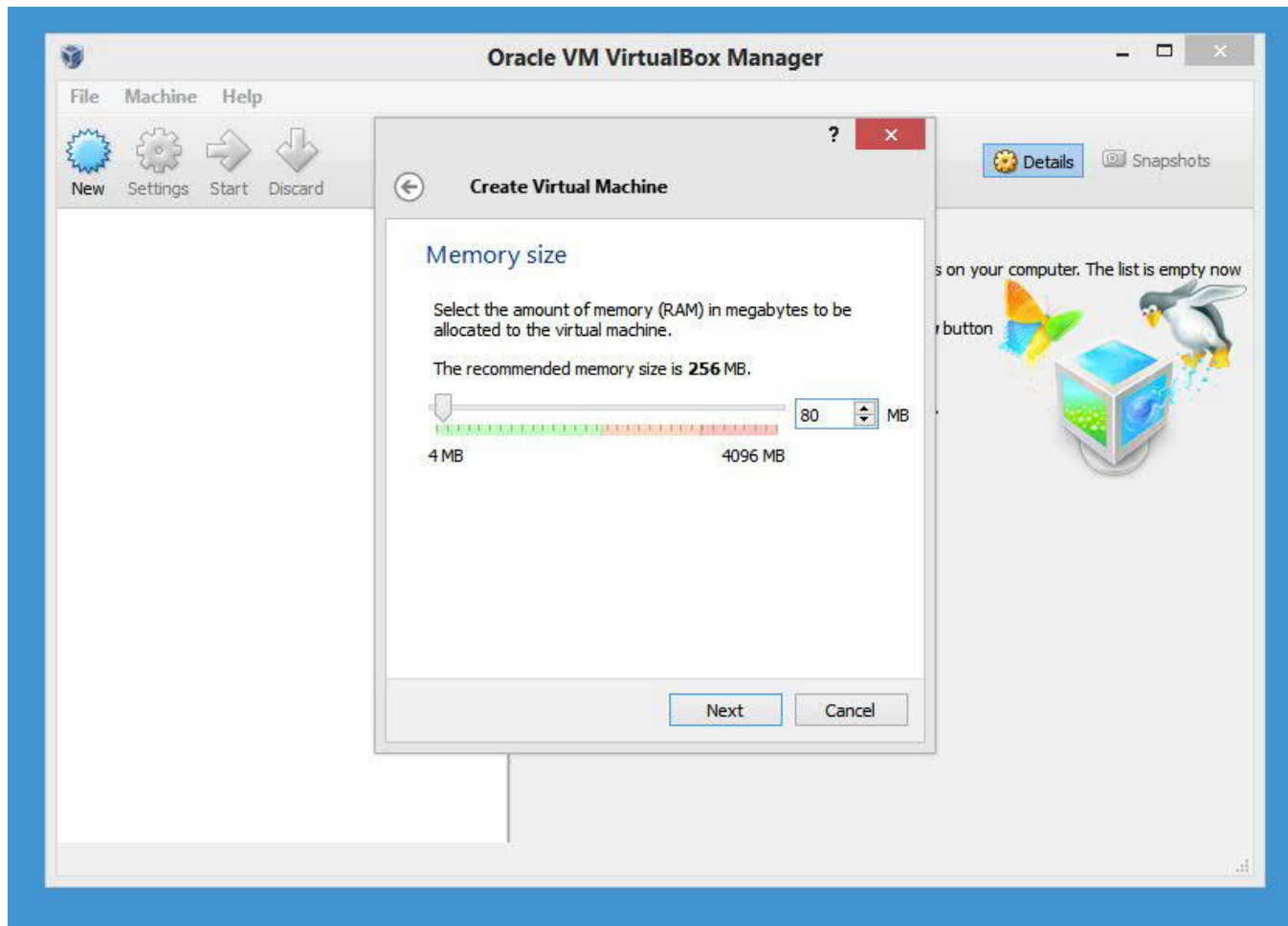


Use the RunVBox icon on the desktop to start VirtualBox

Click the New Icon, and go past the Welcome screen

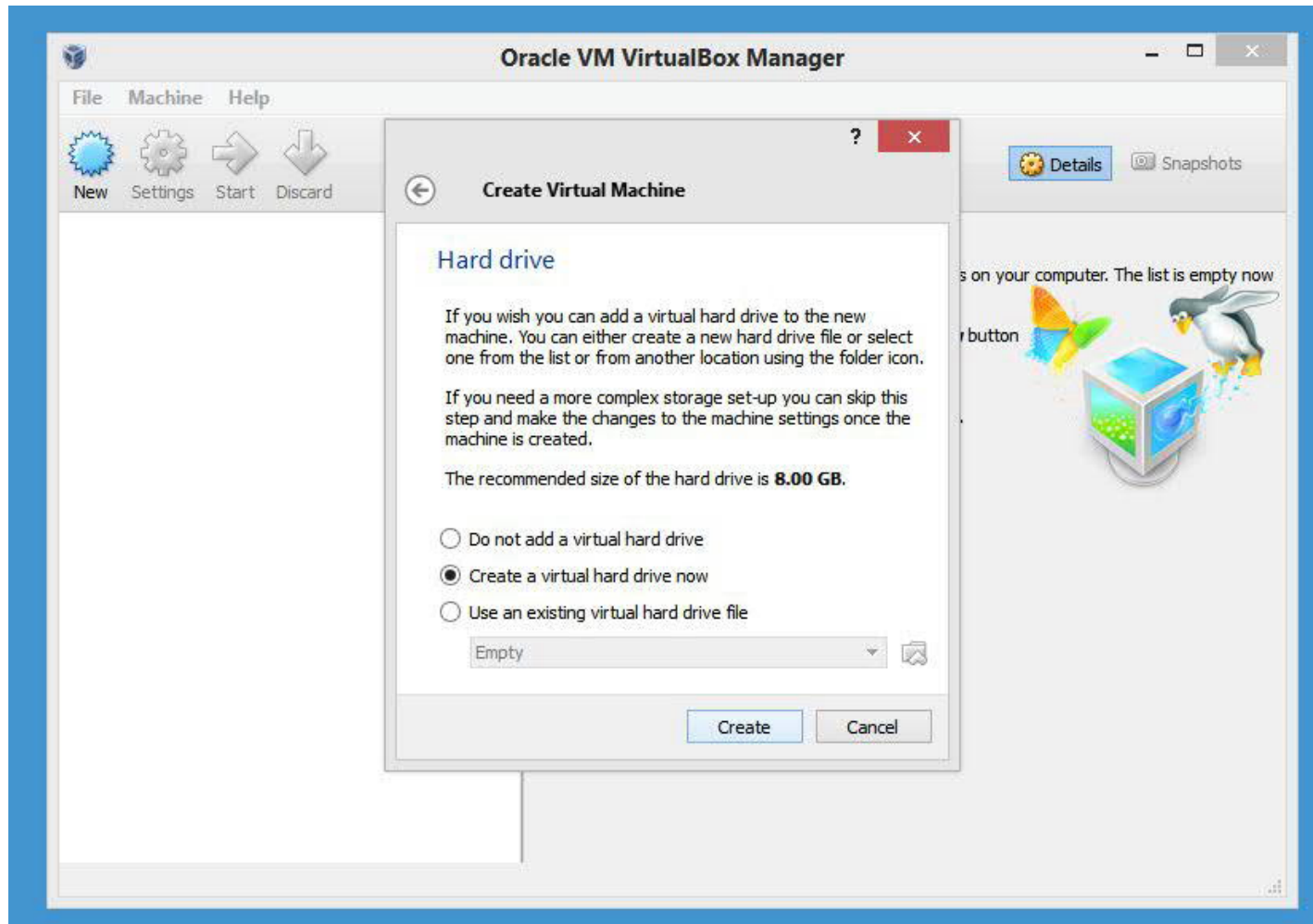
Give the machine a meaningful name (Gateway, WebServer, MailHost, or LDAPhost)

Specify **Linux 2.6** (32 bit) as the operating system

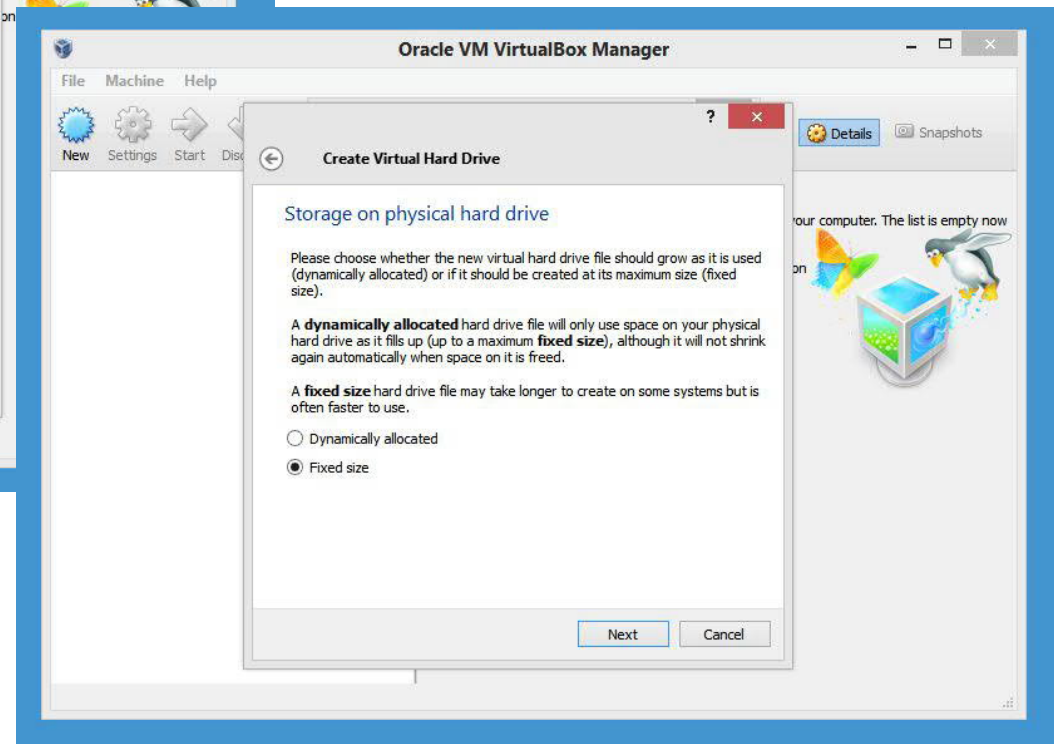
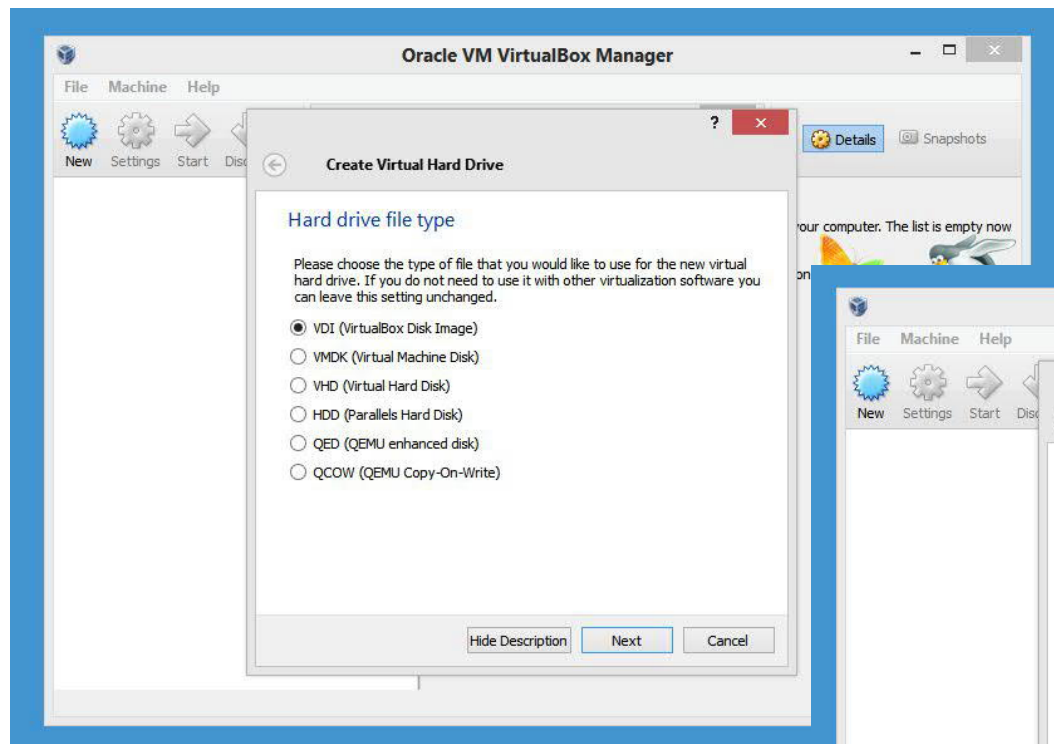


Our memory requirements are very low – 80mb is fine, but **96mb** is better

This can be changed anytime from the Settings menu

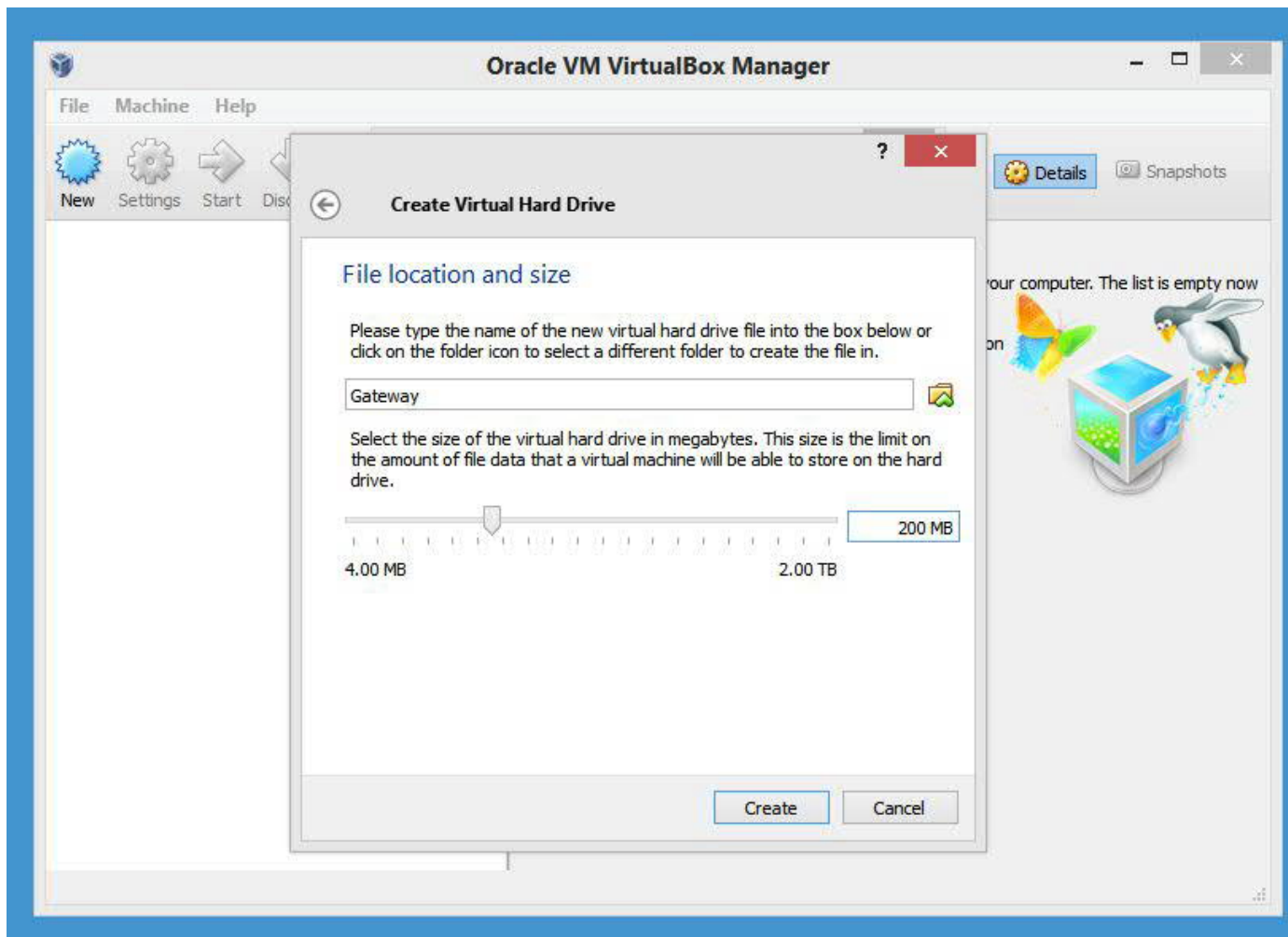


Our storage requirements are very low – we will create a new boot hard disk  
The disk settings we specify cannot be changed, so be careful.



Select type **vdi** and **fixed-size** storage

We want a bunch of small machines rather than a few big ones

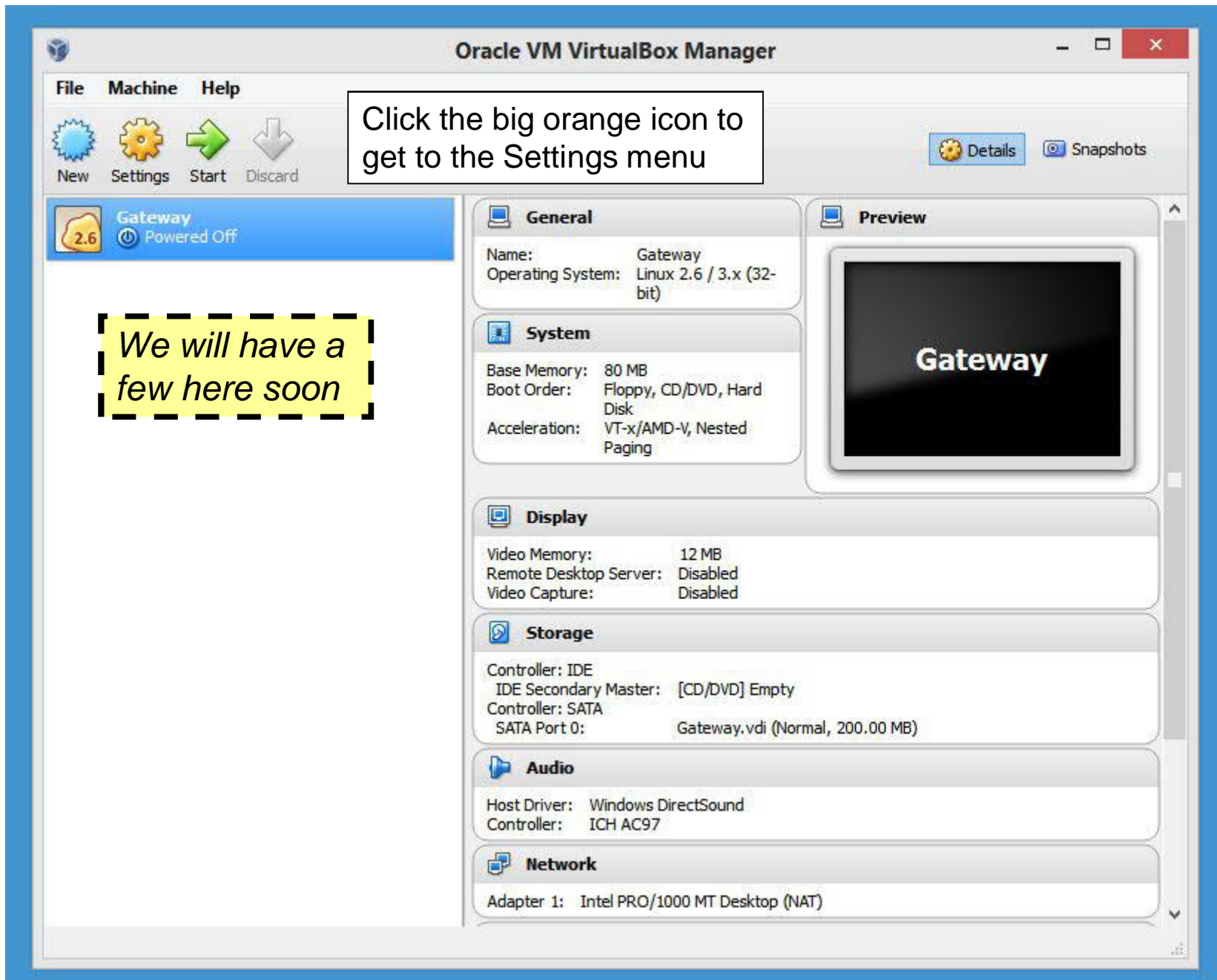


Our base operating system image is about 46 mb

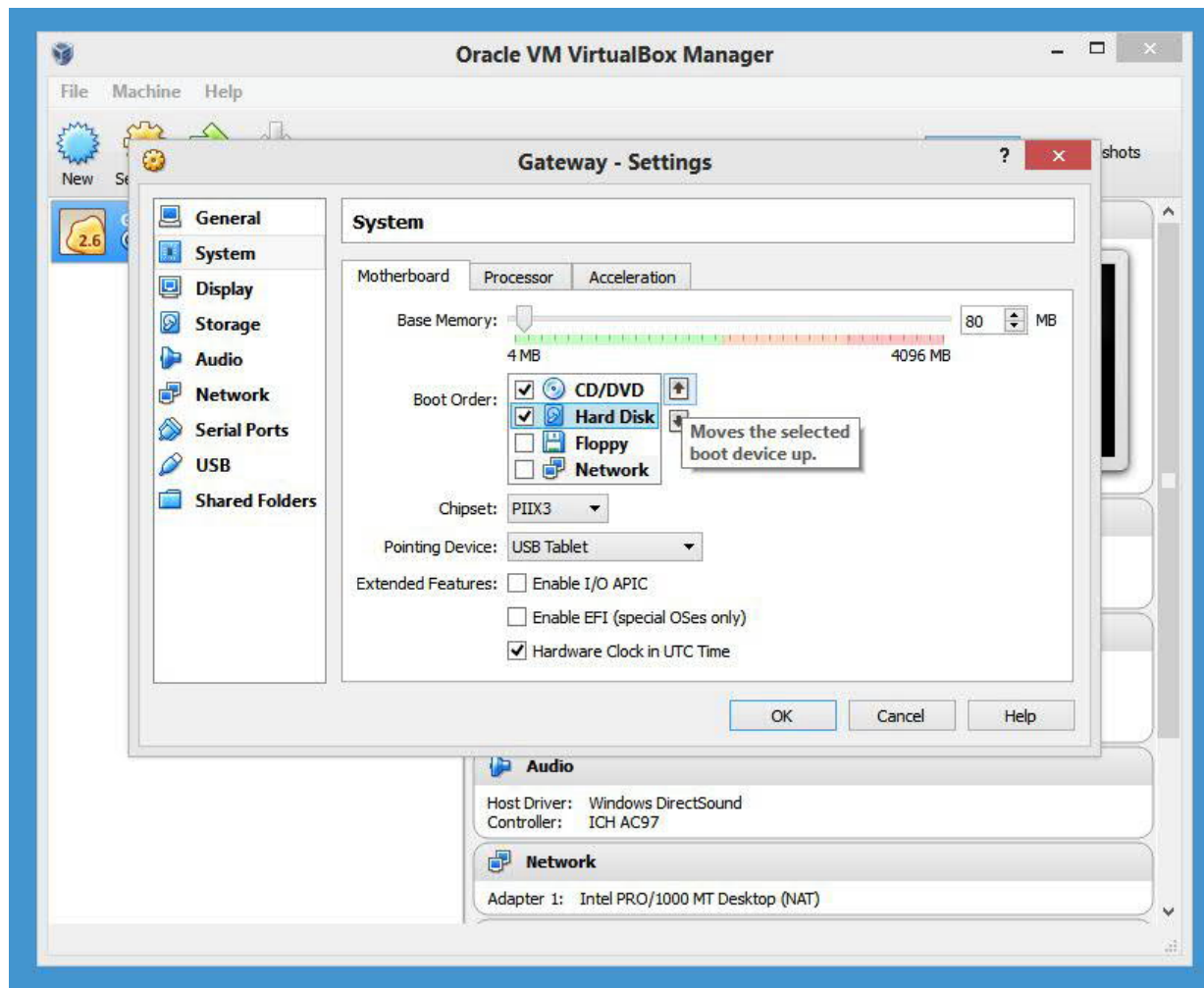
Additional applications will be up to 14 mb, so that's 60mb

Let's allocate 20 mb for swap – it does not get used, but it needs to be there

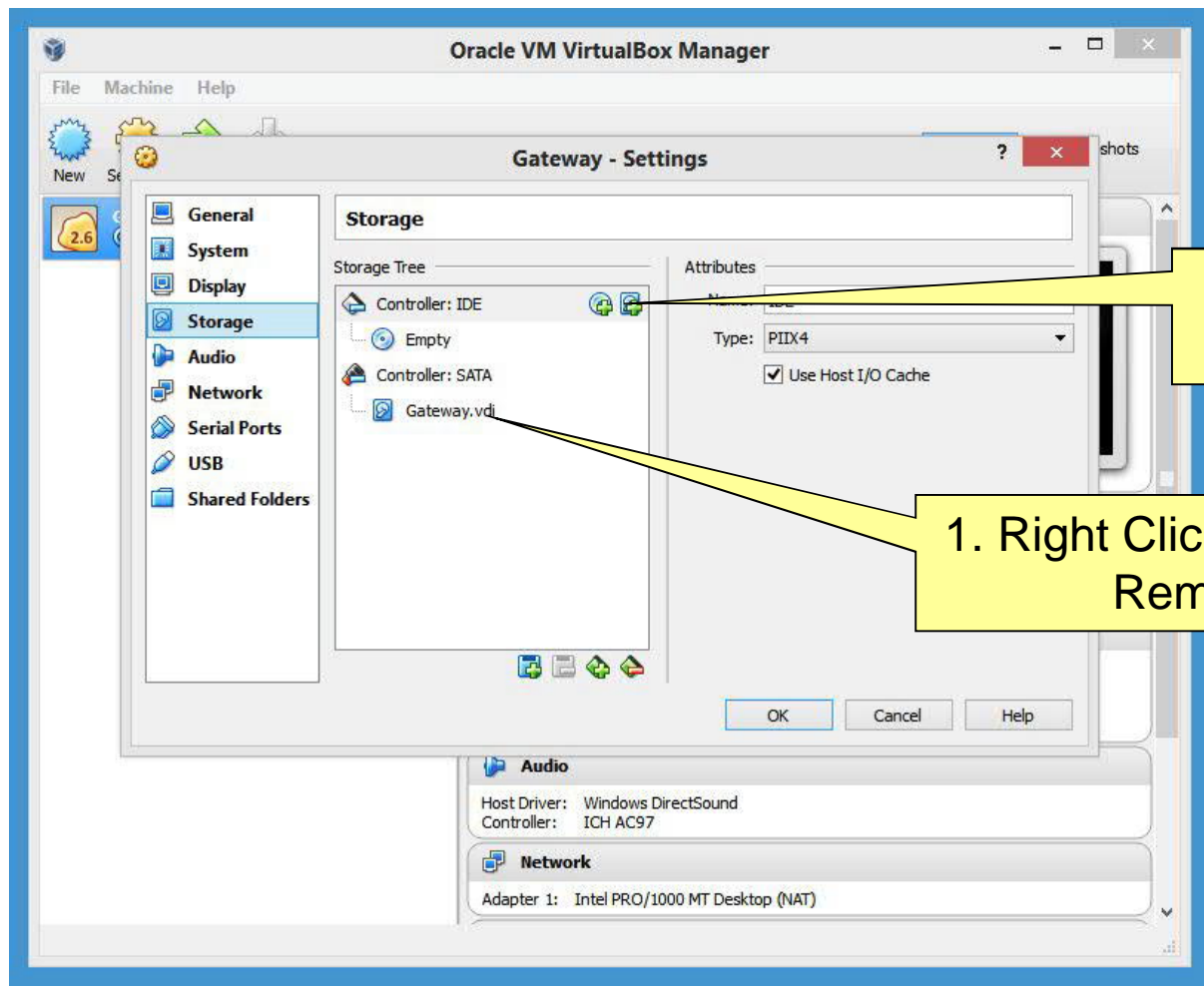
and 120 mb for logfiles, coredumps, webpages. email, and everything else += 200 mb





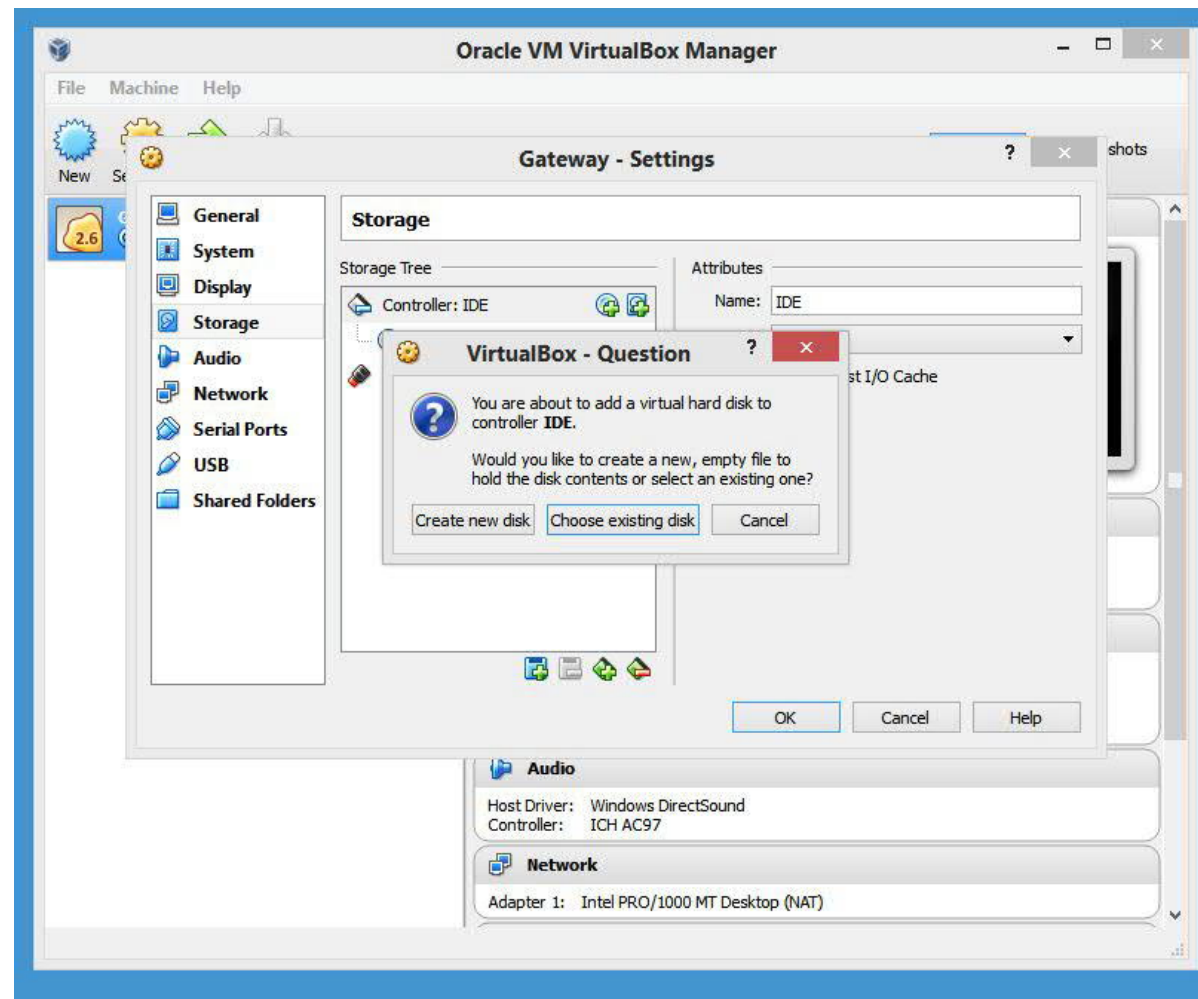


Let's get the boot order right first, so we only boot from the CDROM when we cannot boot from the hard disk

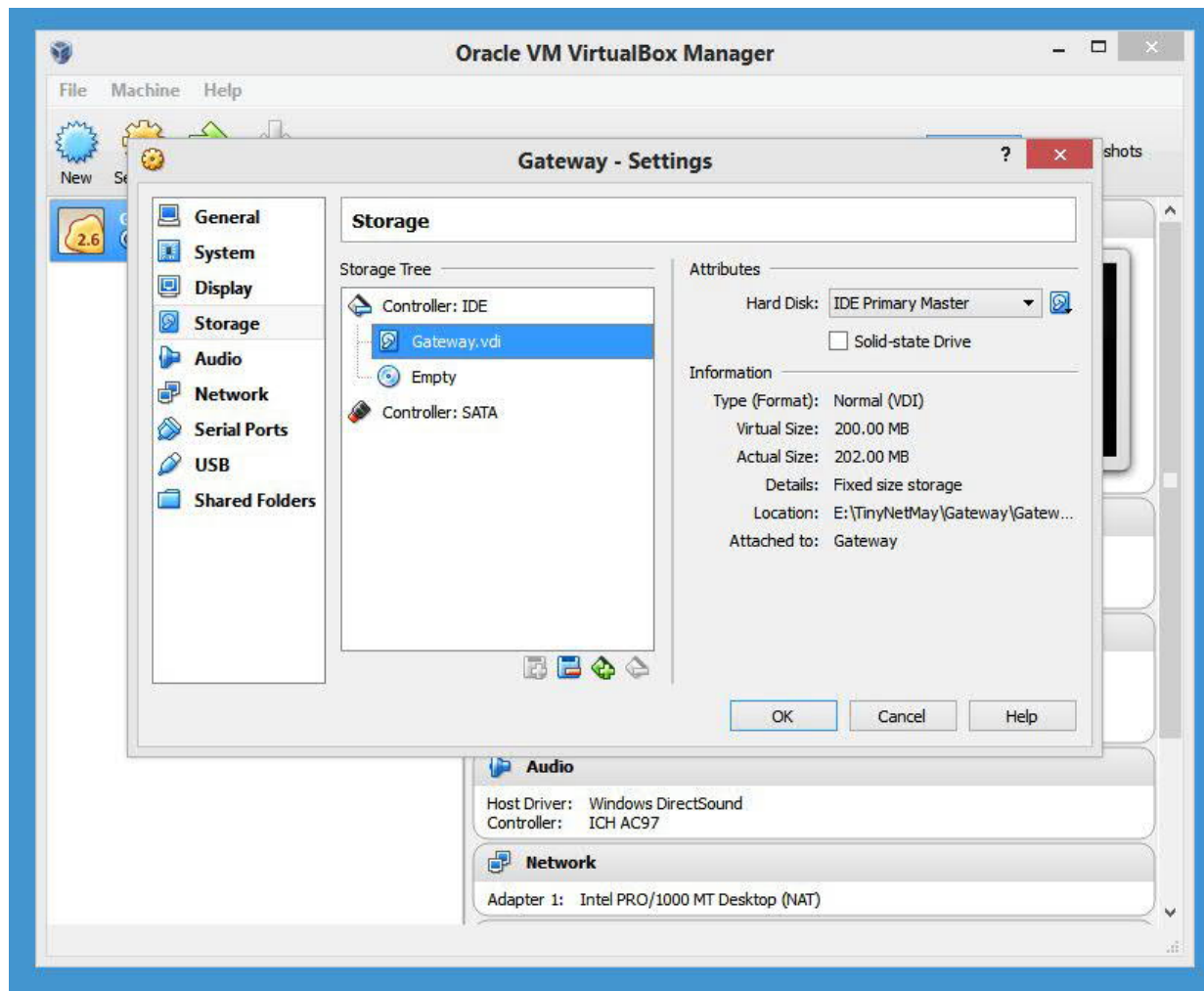


Now let's re-arrange the cables inside our "box" – let's take the hard disk off the SCSI controller and attach it to the IDE controller

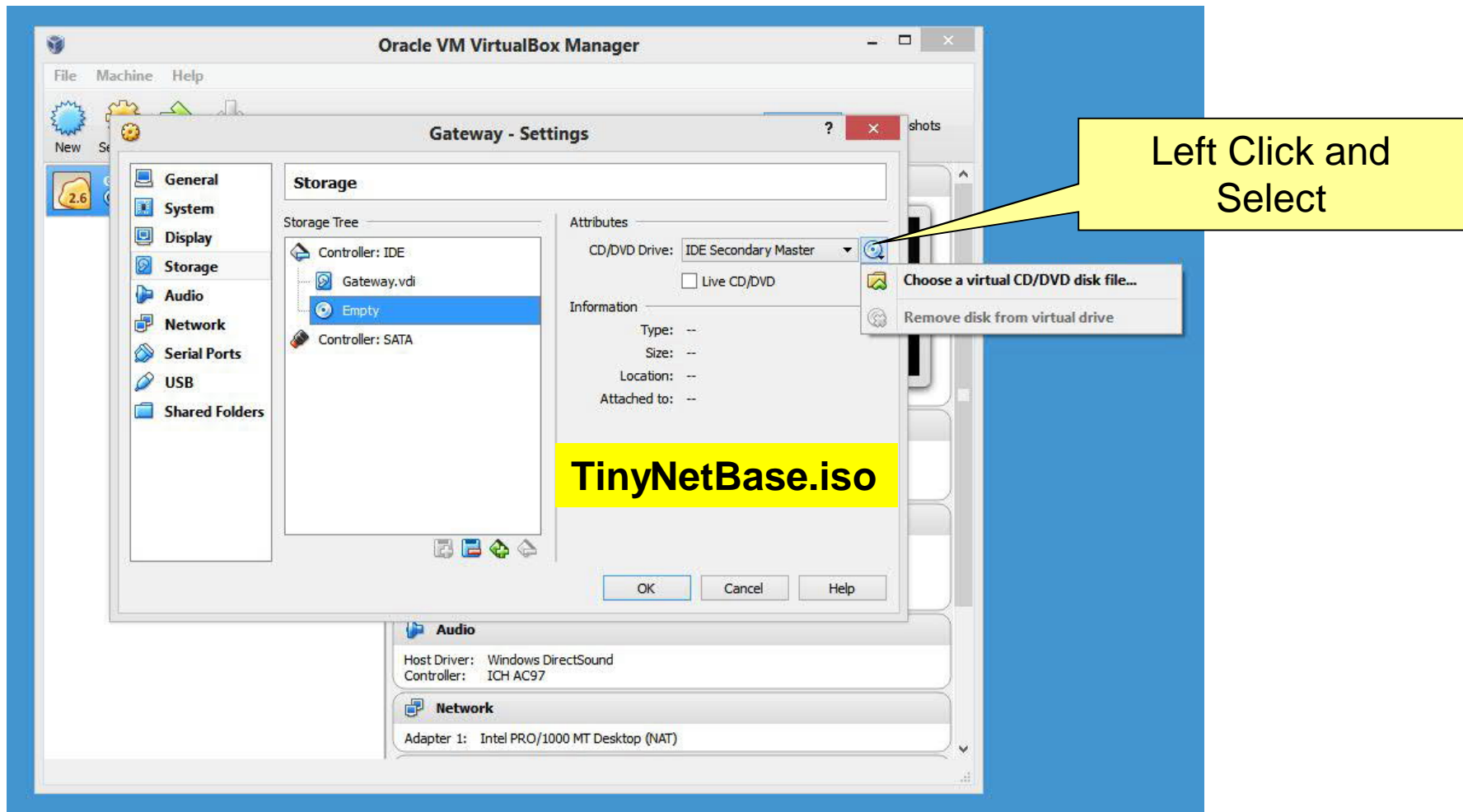
This is important because of our TinyNet configuration files



In reality, a virtual hard disk is just a file that is read by VirtualBox –  
Look for a folder with the same name as the machine you are creating



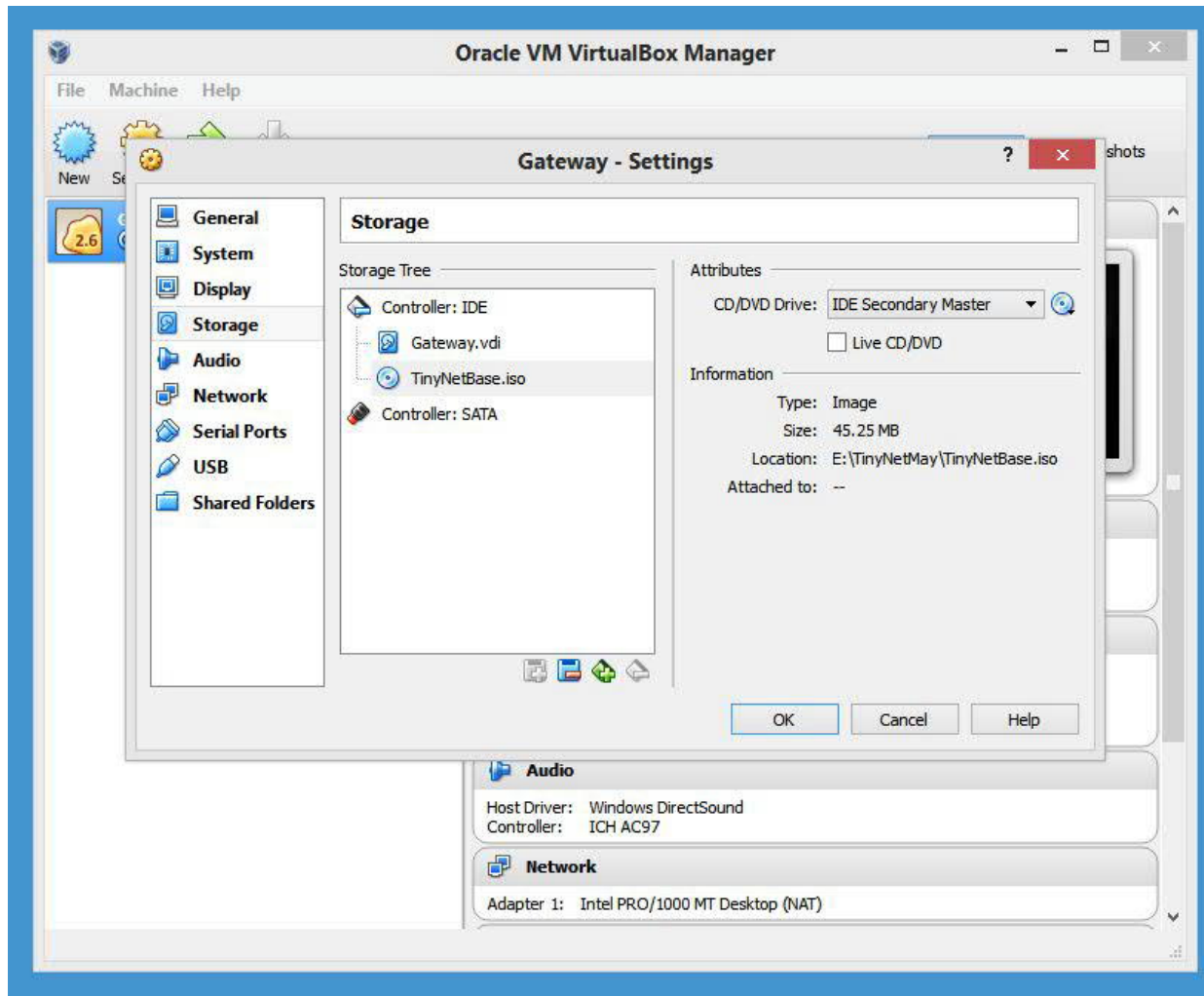
That's where it belongs!



Now let's put a CD in the drive

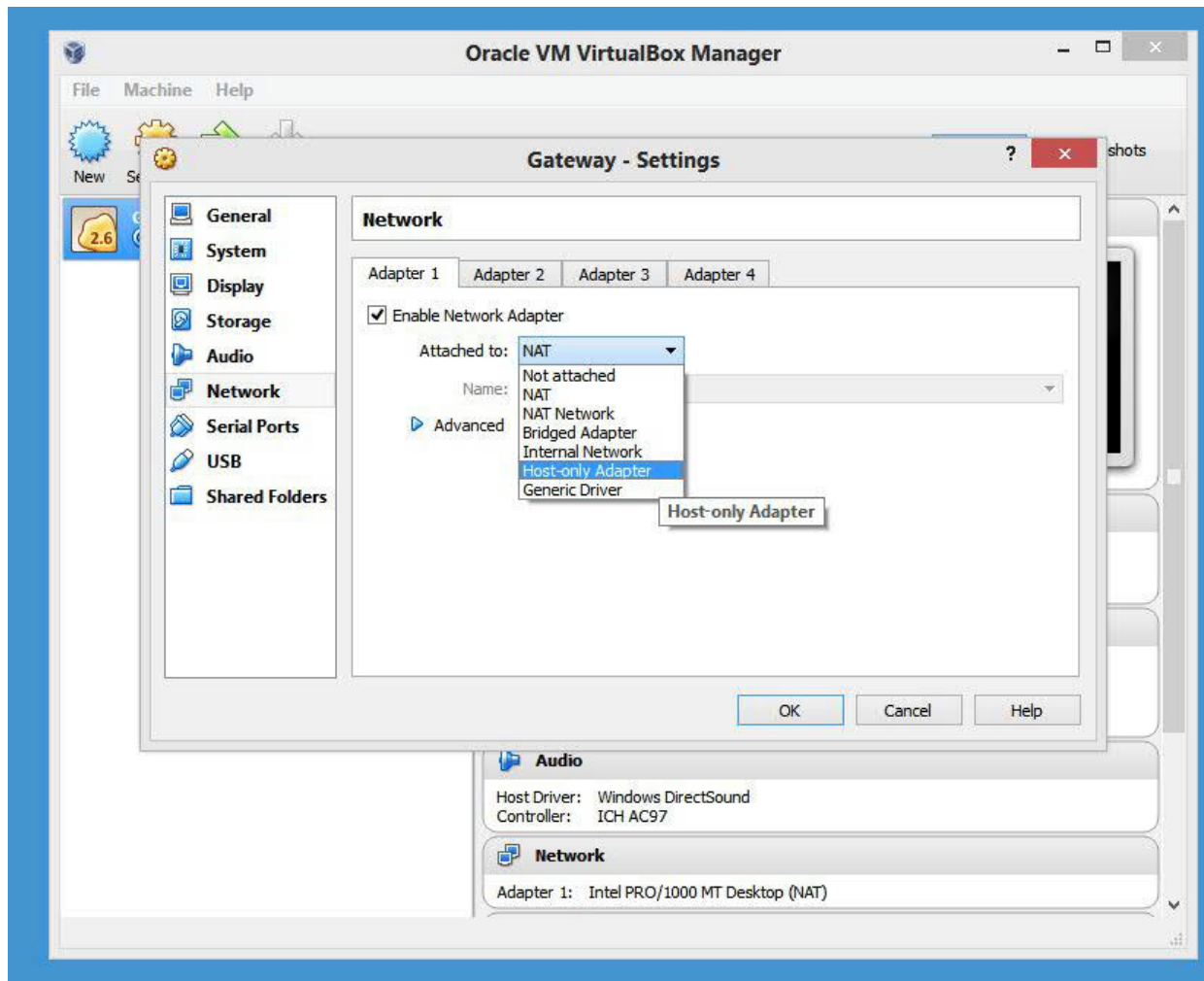
Guess what: it's really a file, not a CD

You can get it from [www.my-tiny.net](http://www.my-tiny.net)

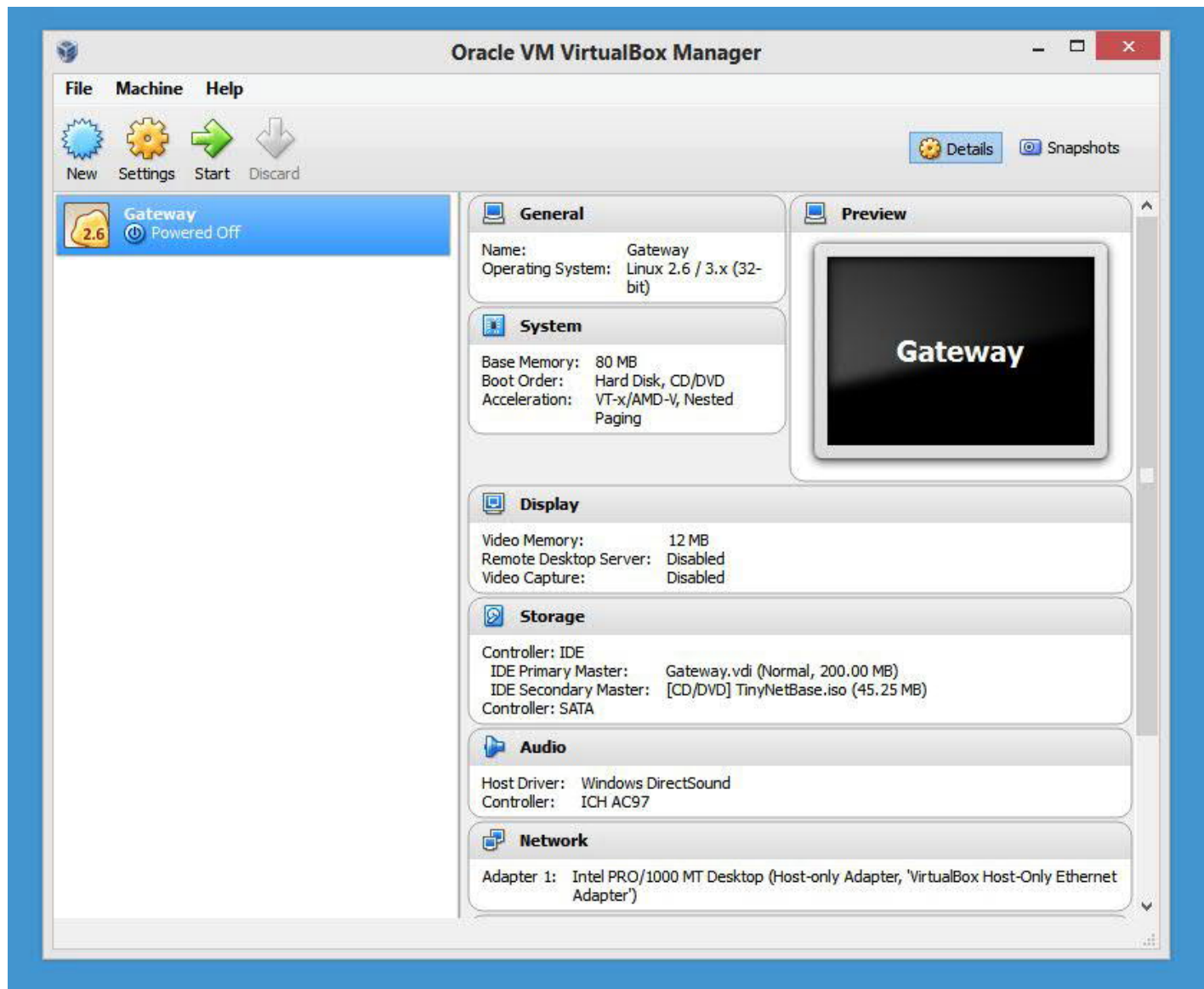


Almost ready to roll

Just one more thing to do



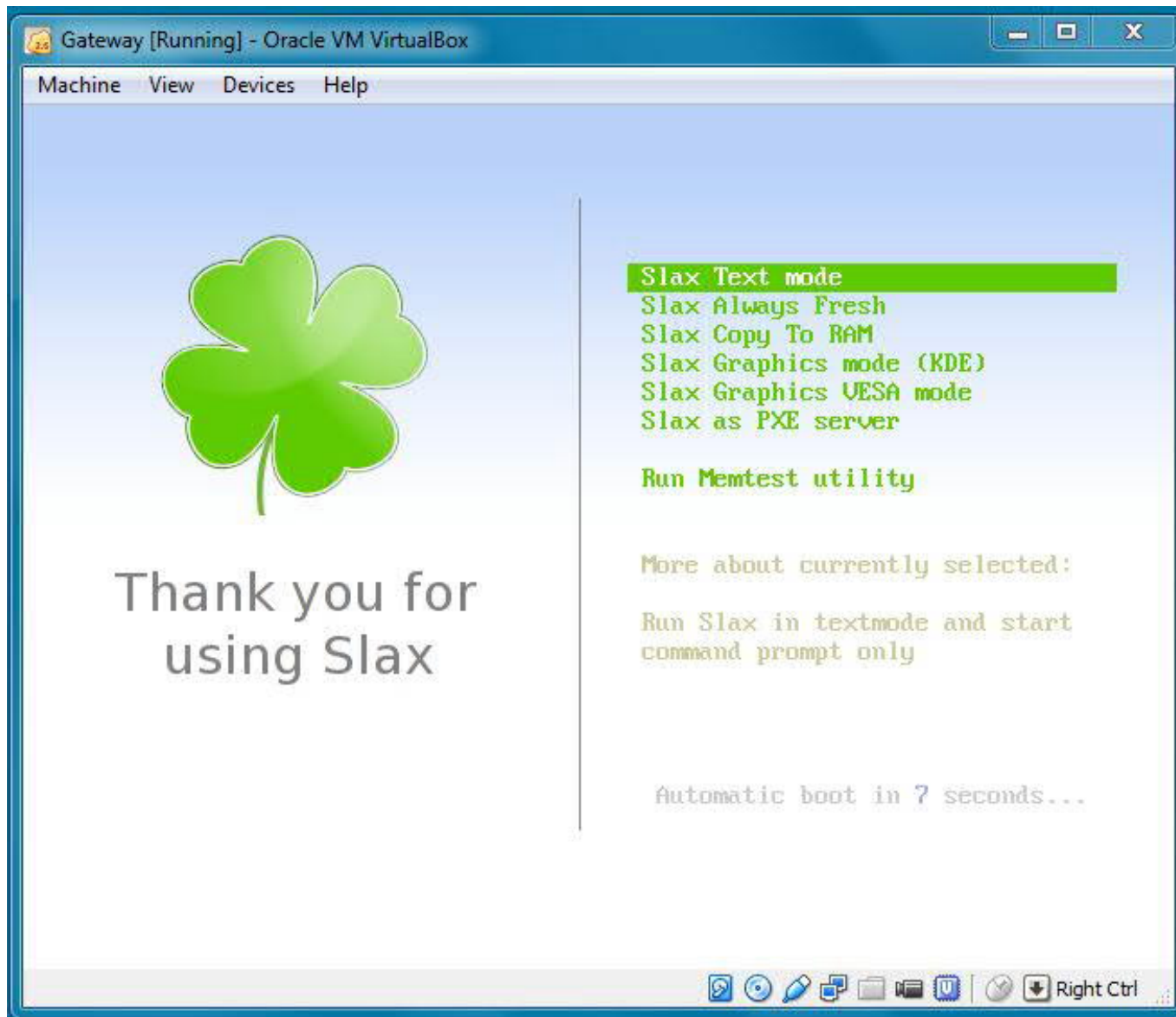
Setup a “Host-Only” network adapter so our VM can communicate with our host  
We only need one at this point, leave the others disabled  
This can be changed whenever you want – except when the machine is running



Final check: Drives and network adapter

Let's Start it up!





Leave this on “**Slax Text-Mode**” or the machine will hang – just touch Enter or wait a few seconds

```
Gateway [Running] - Oracle VM VirtualBox
Machine View Devices Help
=====
The system is up and running now :)

To get started, login as root with password toor, both lowercase
Use [Alt] F1 to [Alt] F6 to open a new login screen

Some very useful commands:

mc          .... to view - edit - copy - move - delete files
htop        .... to check process and memory use
df -h       .... to check free disk space
links       .... browser (press [esc] for the menu)
my-ip       .... to see the name and IP address of this machine
poweroff    for system shutdown    or    reboot for system restart

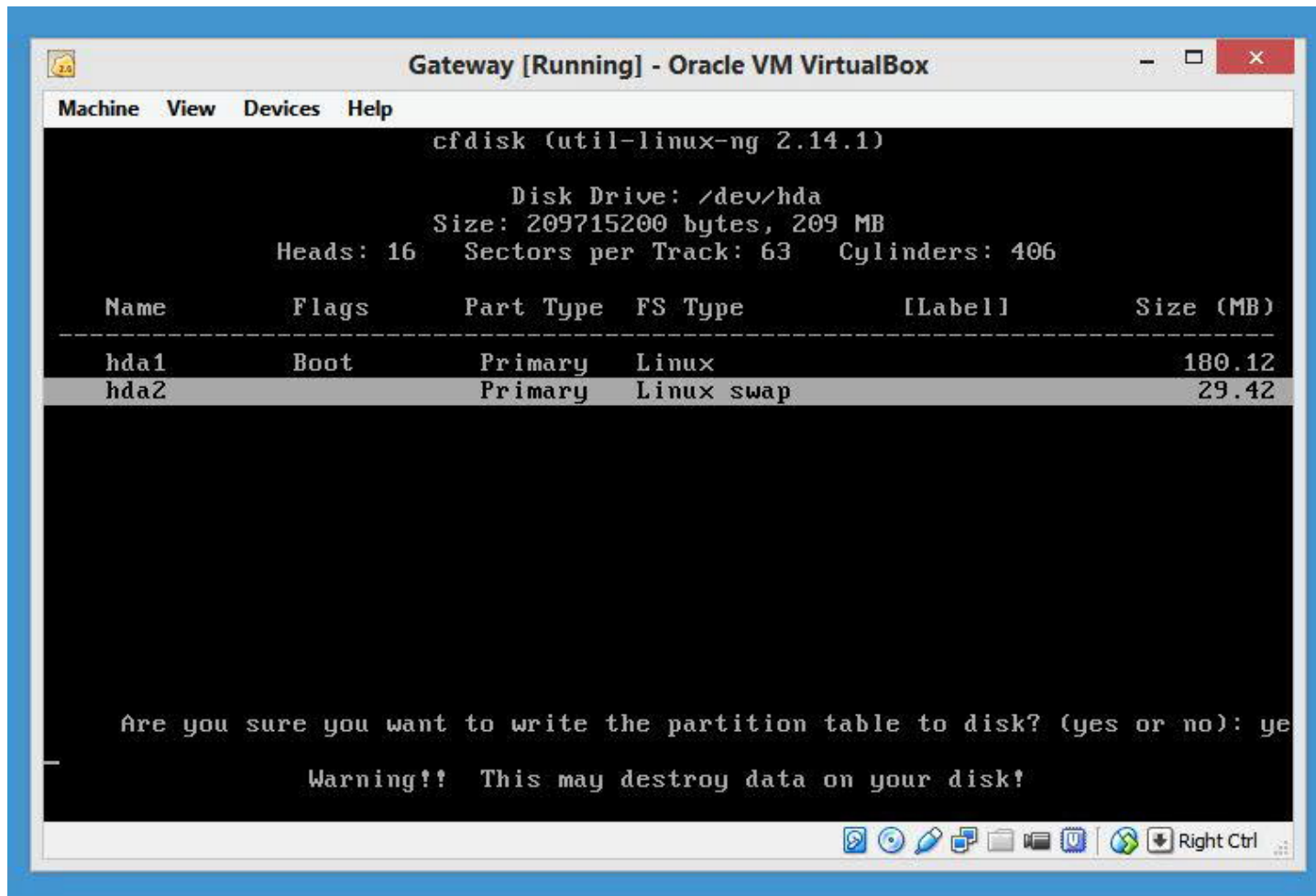
On normal systems the root password is a carefully guarded secret!
Edit /etc/issue to stop advertising it
=====

slaxvm login: root
Password: ****

root@slaxvm:~# cfdisk_
```

Here is the login screen  
UserName = **root** and  
Password = **toor** (clever!)

First thing to do is partition the disk – we have a nice tool called  
cfdisk



New – Primary – Beginning – Size= 180 Bootable

New – Primary – Size= [enter] Type= 82 (just hit enter twice – it is the default)

You have to type **yes** (not just y) to write the partition table; don't worry about the warnings, they are for people with "non-virtual" hard disks.

```
Machine View Devices Help
root@slax:~# mkswap /dev/hda2
Setting up swapspace version 1, size = 28724 KiB
no label, UUID=b9acd082-840a-483c-a37d-9aa835020fe2
root@slax:~# mke2fs /dev/hda1
mke2fs 1.41.3 (12-Oct-2008)
Filesystem label=
OS type: Linux
Block size=1024 (log=0)
Fragment size=1024 (log=0)
44000 inodes, 175864 blocks
8793 blocks (5.00%) reserved for the super user
First data block=1
Maximum filesystem blocks=67371008
22 block groups
8192 blocks per group, 8192 fragments per group
2000 inodes per group
Superblock backups stored on blocks:
    8193, 24577, 40961, 57345, 73729

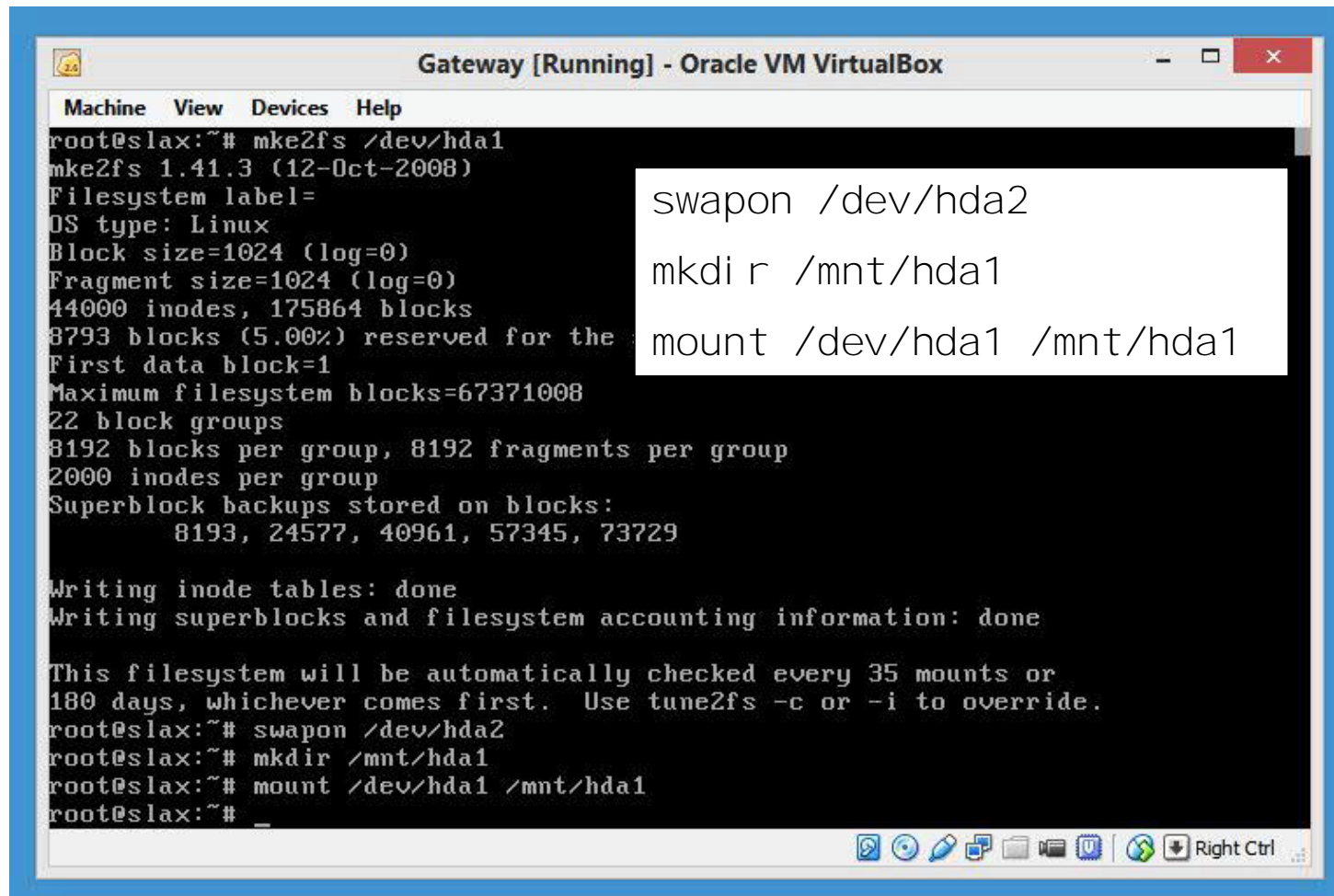
Writing inode tables: done
Writing superblocks and filesystem accounting information: done

This filesystem will be automatically checked every 35 mounts or
180 days, whichever comes first. Use tune2fs -c or -i to override.
root@slax:~# _
```

Create a filesystem on each partition:

The swap filesystem just shows it's registration number

The real (e2fs) filesystem shows lots of parameters (that we are not concerned about)



```
Gateway [Running] - Oracle VM VirtualBox
Machine View Devices Help
root@slax:~# mke2fs /dev/hda1
mke2fs 1.41.3 (12-Oct-2008)
Filesystem label=
OS type: Linux
Block size=1024 (log=0)
Fragment size=1024 (log=0)
44000 inodes, 175864 blocks
8793 blocks (5.00%) reserved for the
First data block=1
Maximum filesystem blocks=67371008
22 block groups
8192 blocks per group, 8192 fragments per group
2000 inodes per group
Superblock backups stored on blocks:
    8193, 24577, 40961, 57345, 73729

Writing inode tables: done
Writing superblocks and filesystem accounting information: done

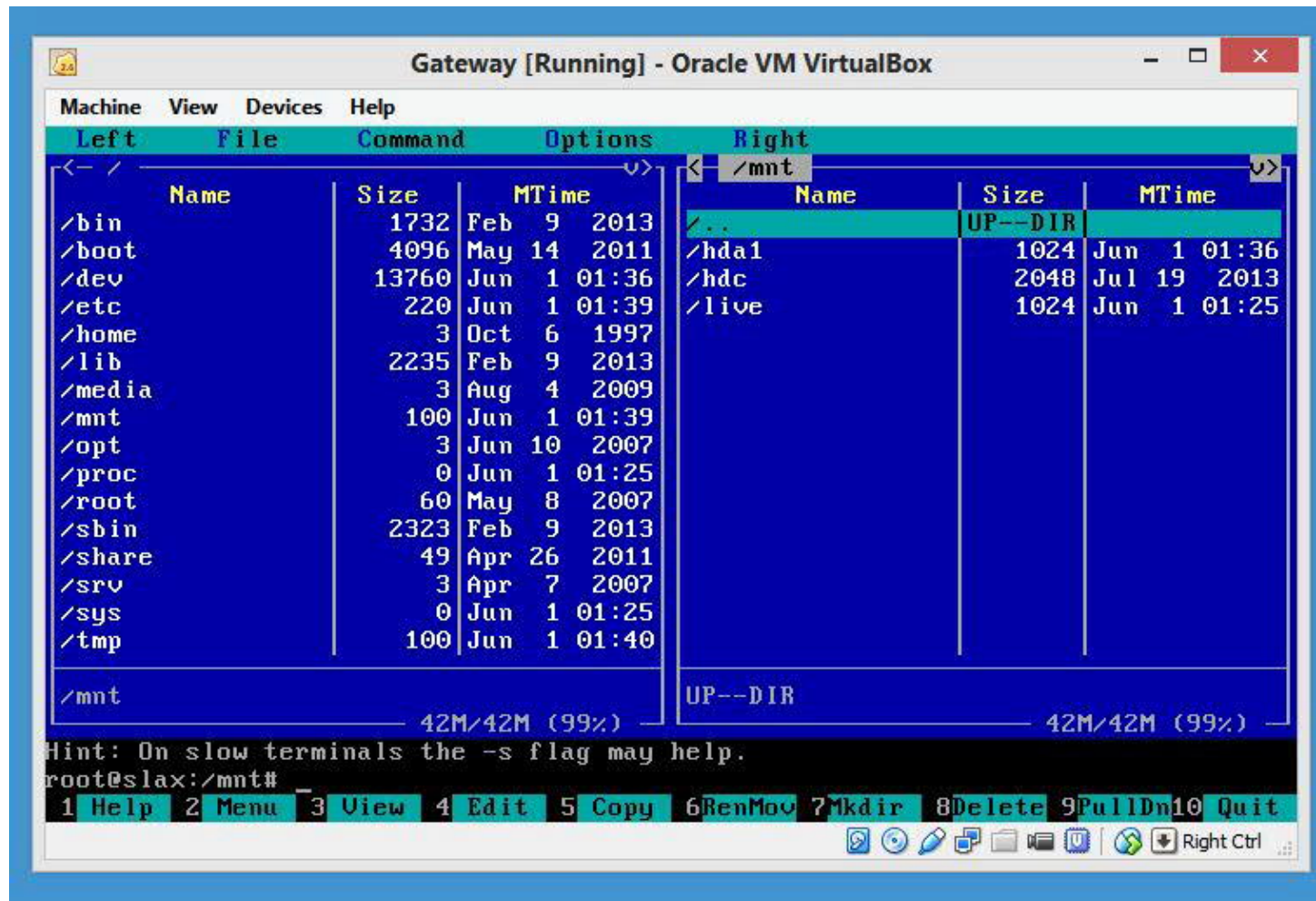
This filesystem will be automatically checked every 35 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
root@slax:~# swapon /dev/hda2
root@slax:~# mkdir /mnt/hda1
root@slax:~# mount /dev/hda1 /mnt/hda1
root@slax:~# _
```

Activate the filesystems:

Swap is basically invisible

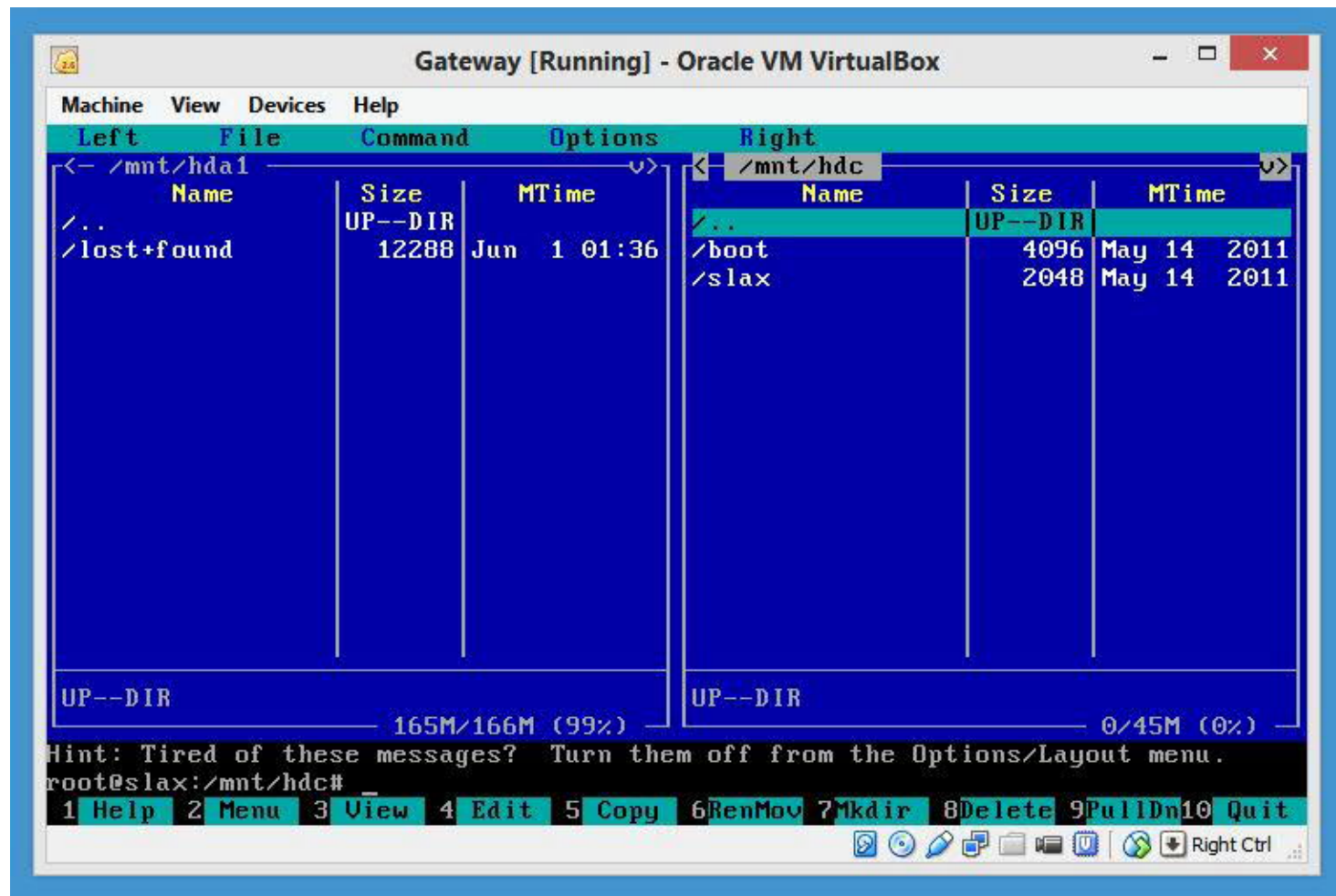
The device `hda1` will be accessible through the directory `/mnt/hda1`  
(no drive letters like Windows – just a directory)





Here's what it looks like using the file manager `mc` (one of the greatest linux utilities ever!)

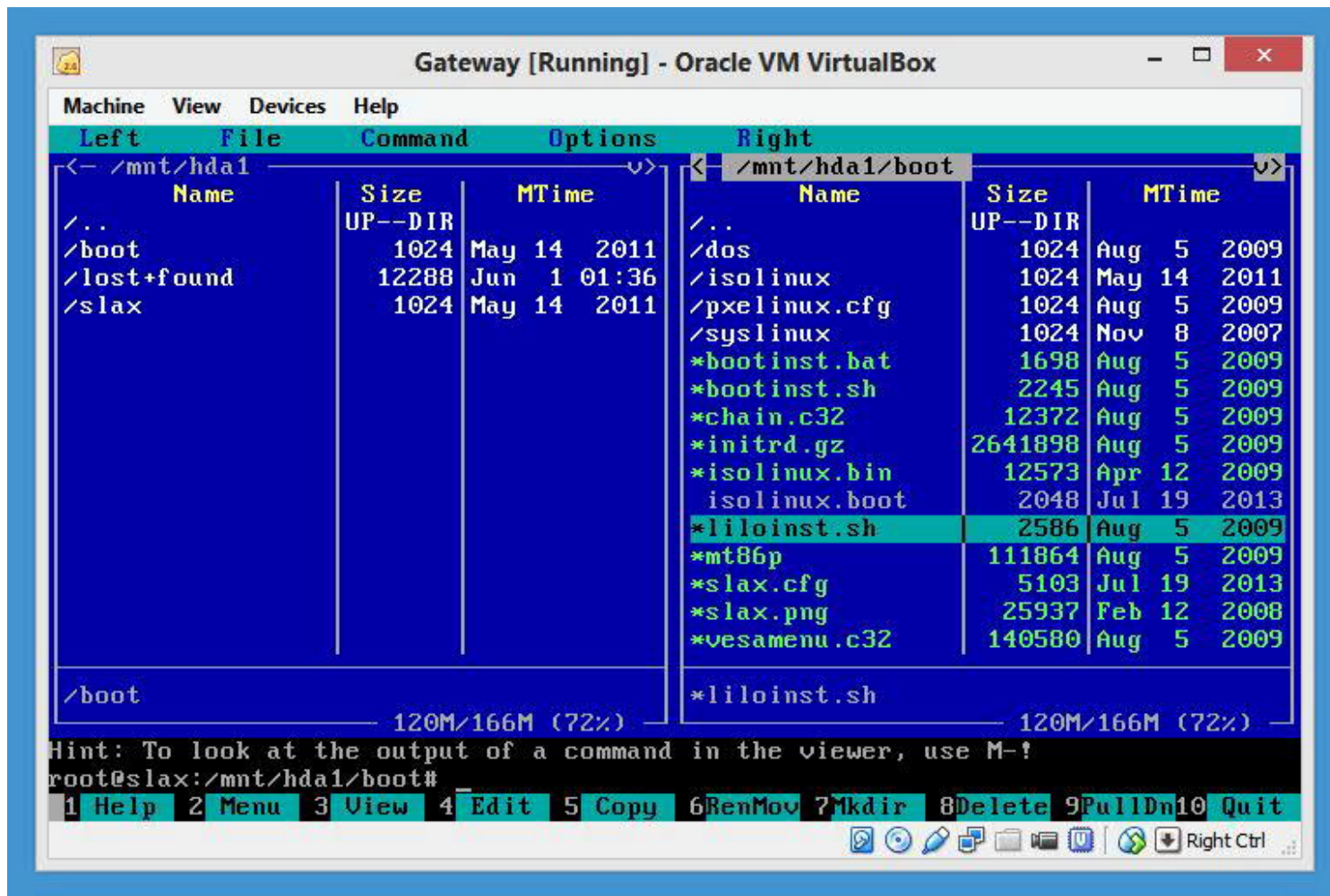
Just type `mc` at the shell prompt; use `[tab]` to switch between windows, and the `[F]` keys listed at the bottom to manage your files.



hda1 is the main partition on the hard disk – hdc is the base-image CD

Copy the boot and slax directories from the CD to the hard disk –  
just highlight and press [F5]

Painless Install!



Finally, install the boot loader

Move to /boot on the /mnt/hda1, highlight `liloinst.sh` and press [enter]

Ignore all of the warnings, they are for people with non-virtual hard disks.



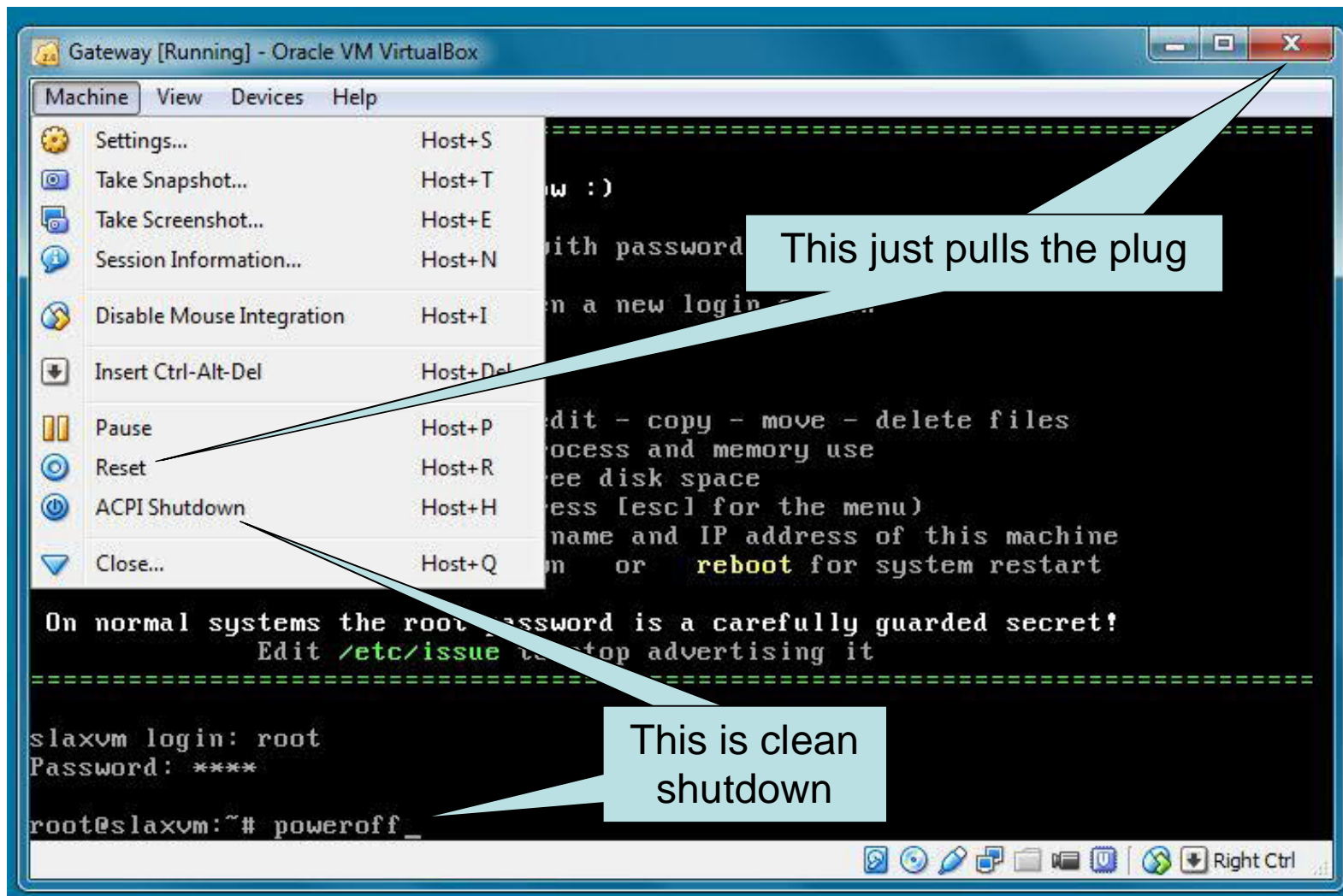
Press [F10] to exit mc

Type `reboot` at the shell prompt (do not turn off the machine) and let it restart.

And then create another VM ...

We will want four, named Gateway, WebServer, MailHost, and LDAPhost

We will configure them for these roles in Lab 3 – for now they will all be the same



Final Note – Clean Shutdown is important

Use `poweroff` at the shell prompt or “ACPI Shutdown” from the VirtualBox Machine menu

Reset or closing the window is like a power blackout, and can corrupt files on the disk