

Go to www.virtualbox.org and select [Downloads](#).

Download the current release* of VirtualBox for the OS on which you will install VirtualBox. In these notes, that's Windows 7.

Note:

- the OS on which you will install VirtualBox is called the *host OS*.
- the OS you will install on VirtualBox (later) is called the *guest OS*.

In these notes, I have a Windows 7 host and a CentOS guest.

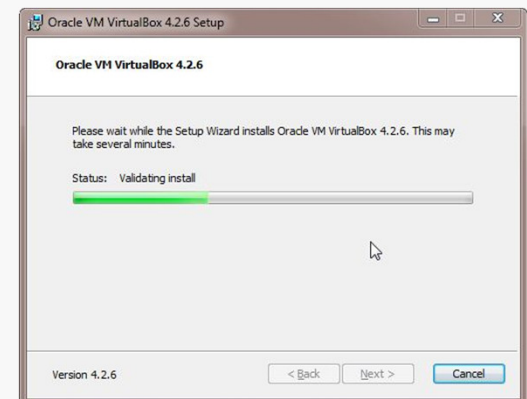
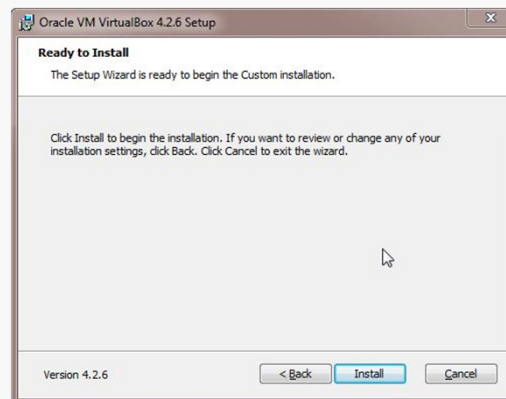
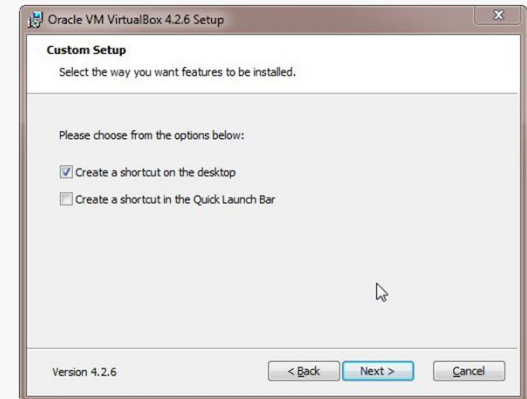
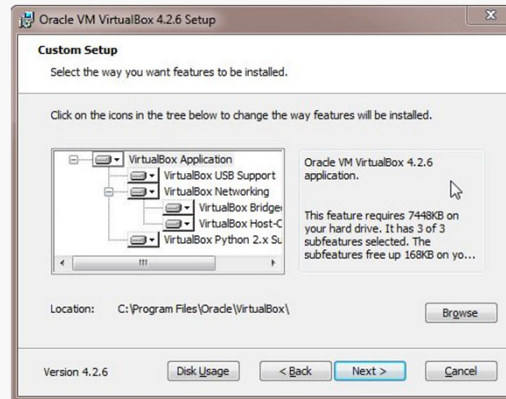
Download the VirtualBox Extension Pack.

*** As of 8/26/2014, there seem to be "issues" with the latest release... I recommend using VirtualBox 4.3.10 for the present.**

Begin the VirtualBox Installation

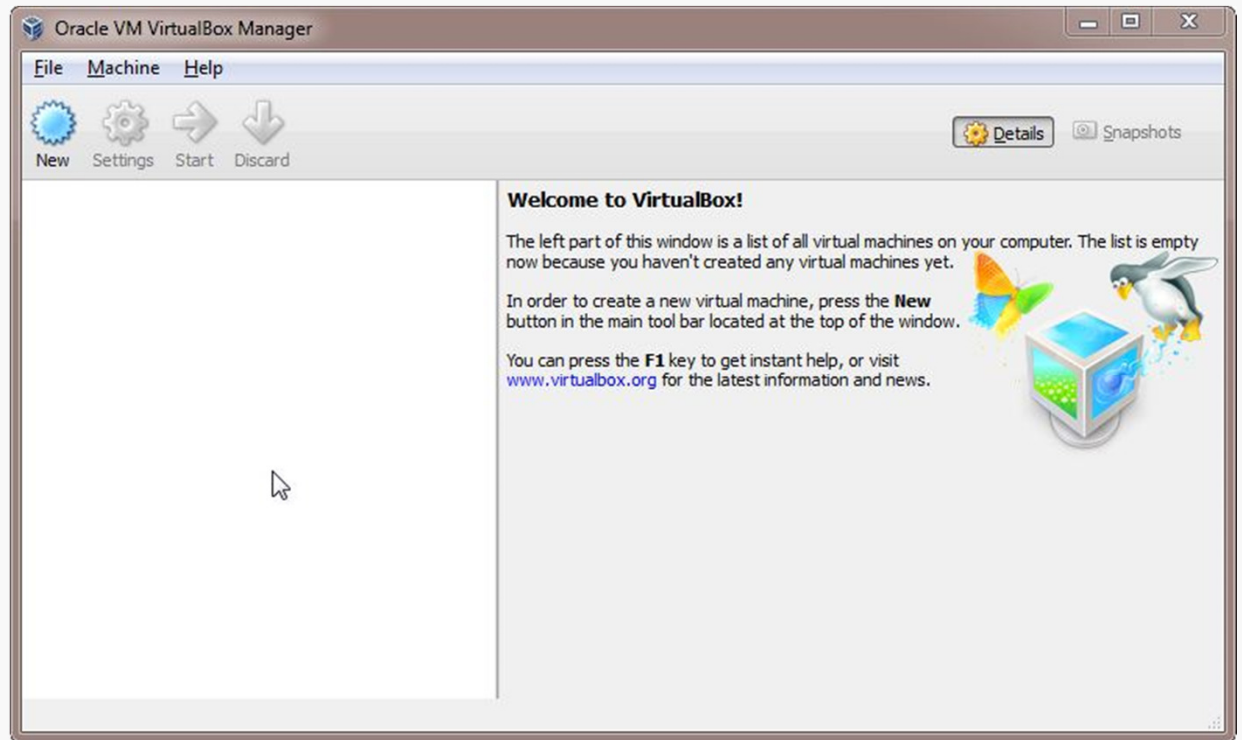
VirtualBox/CentOS Setup 2

Run the VirtualBox installer. The first few screens are typical and probably do not require you to make any changes to the default options:



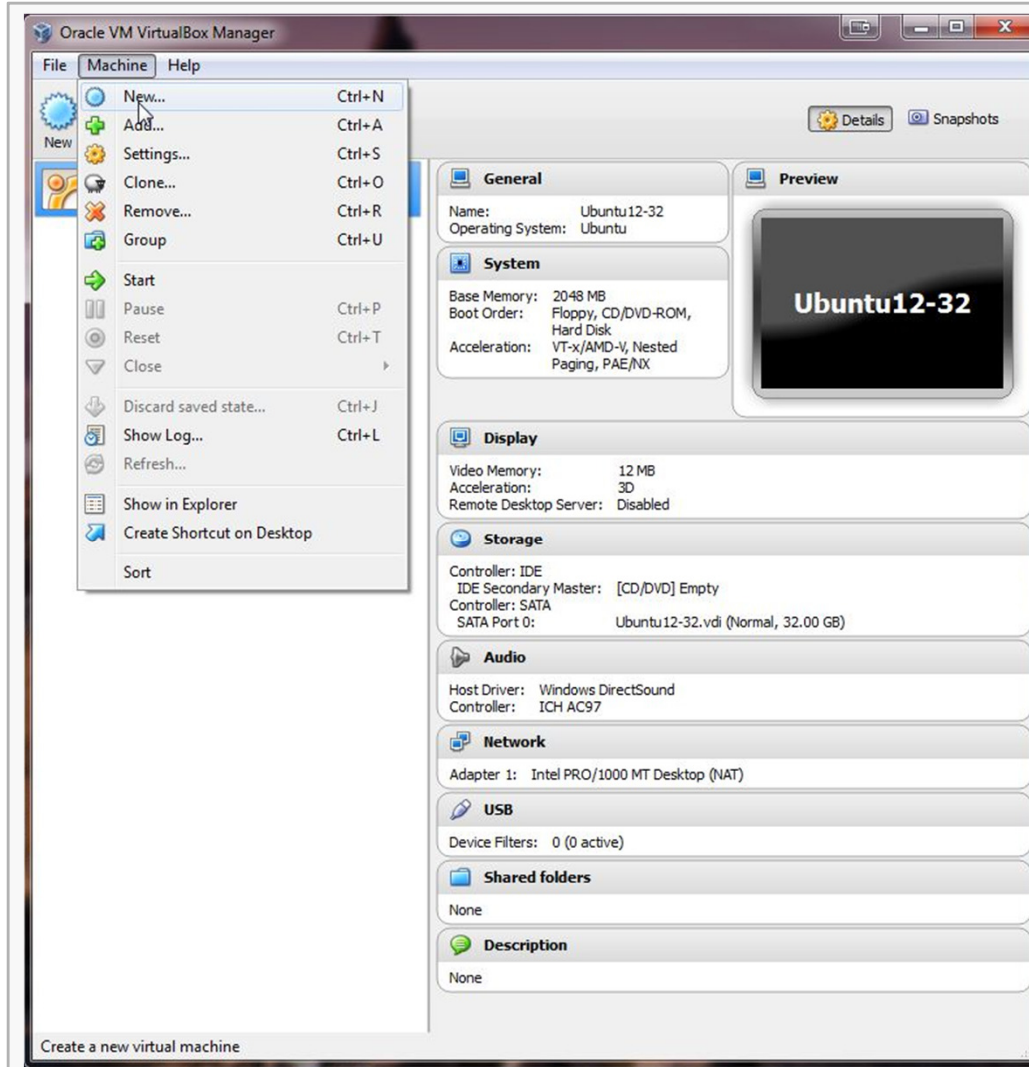
Starting VirtualBox

When the installation completes, you can run VirtualBox for the first time:



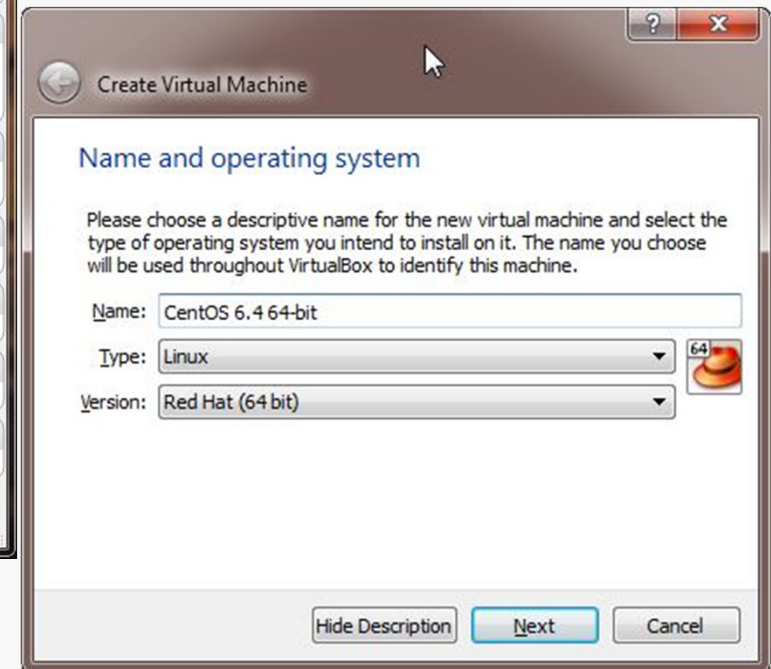
Creating a Virtual Machine

VirtualBox/CentOS Setup 4



Give the new VM a descriptive name.

If you use a descriptive name for the VM, VirtualBox should auto-detect the proper OS type and version:

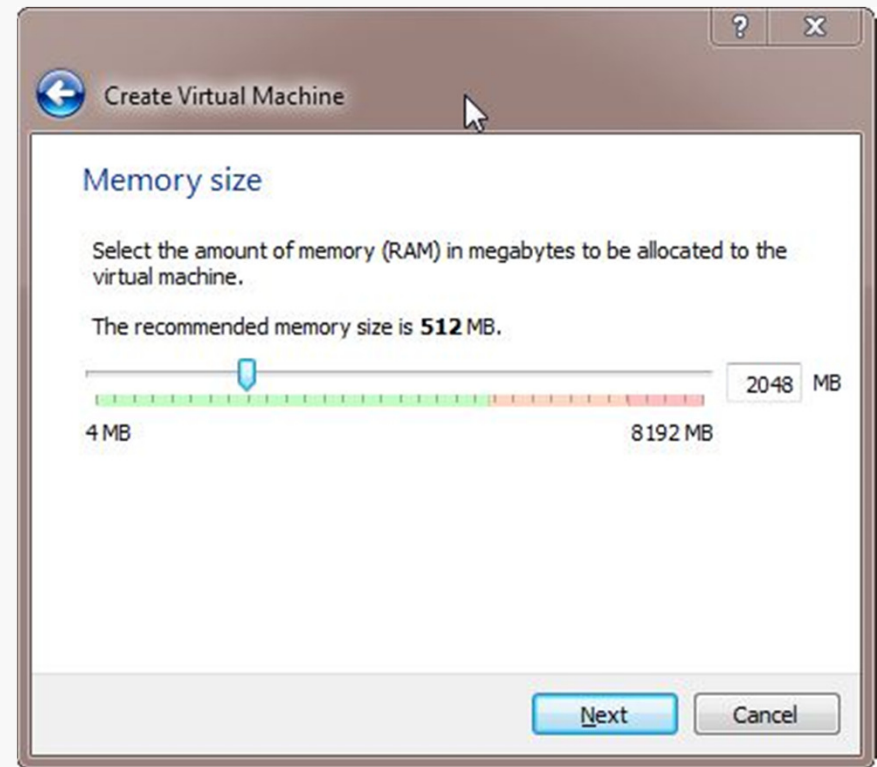


Configuring Memory for the VM

Specify the amount of memory you'll give the VM.

In this example, I'm installing on a host machine with 8GB of RAM; with less, I'd probably given the VM 1GB.

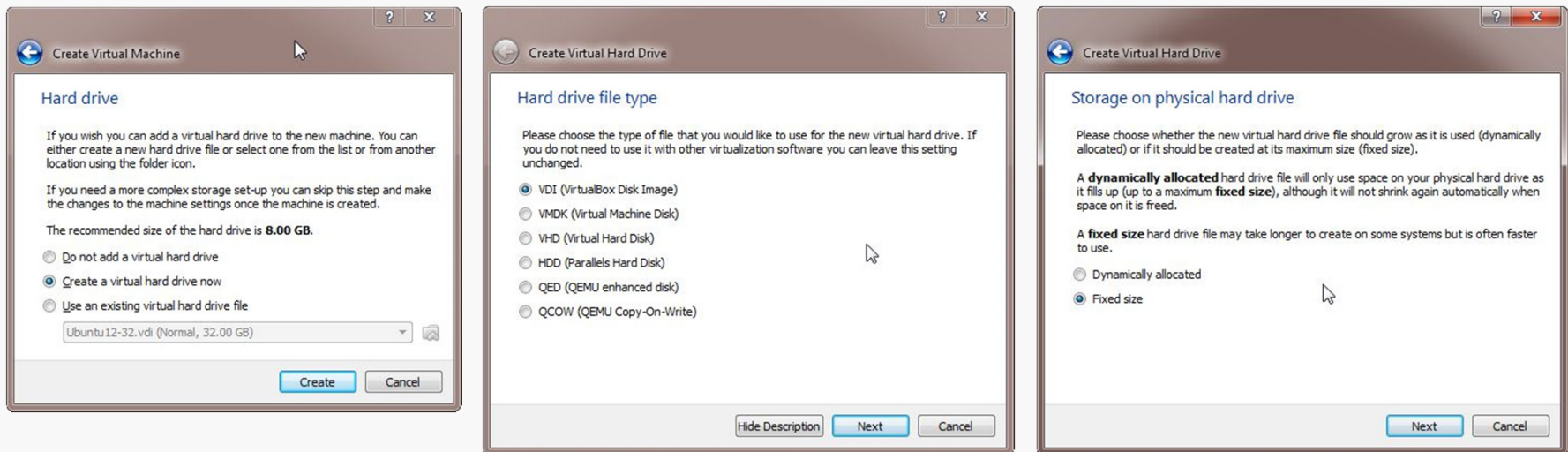
On my current working laptop, I have 10GB of RAM and gave my VM 4GB.



Configuring a Virtual Hard Disk

In the next dialog, select the option to create a new virtual hard drive now.

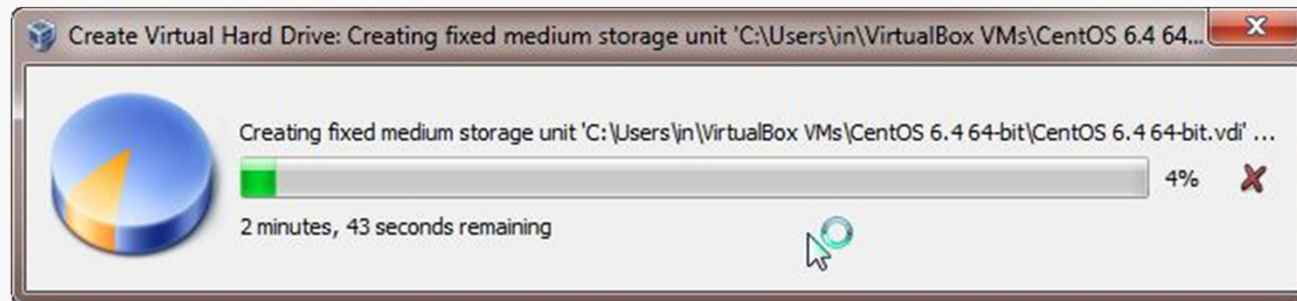
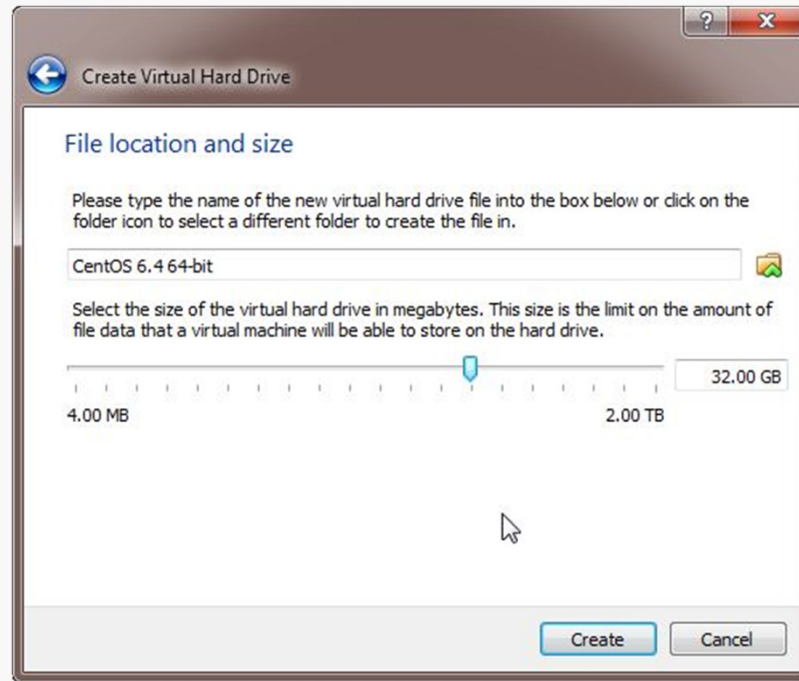
Take the default hard drive file type in the next dialog unless you're concerned about being compatible with some other virtualization tool like VMWare.



Next, I recommend choosing a fixed-size hard disk.

Configuring a Virtual Hard Disk

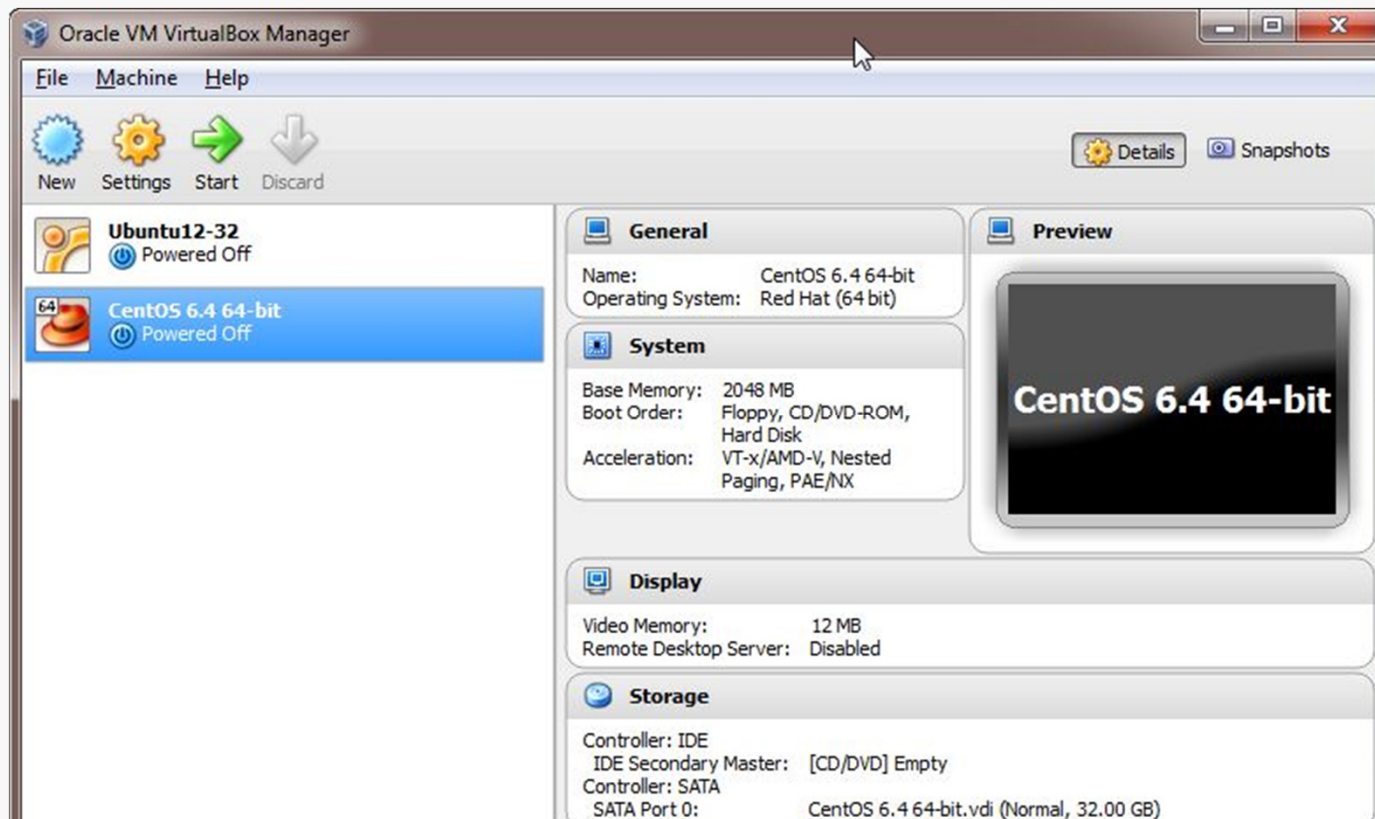
I generally make this 32GB, but make it smaller if you're short on space.



An Empty VM

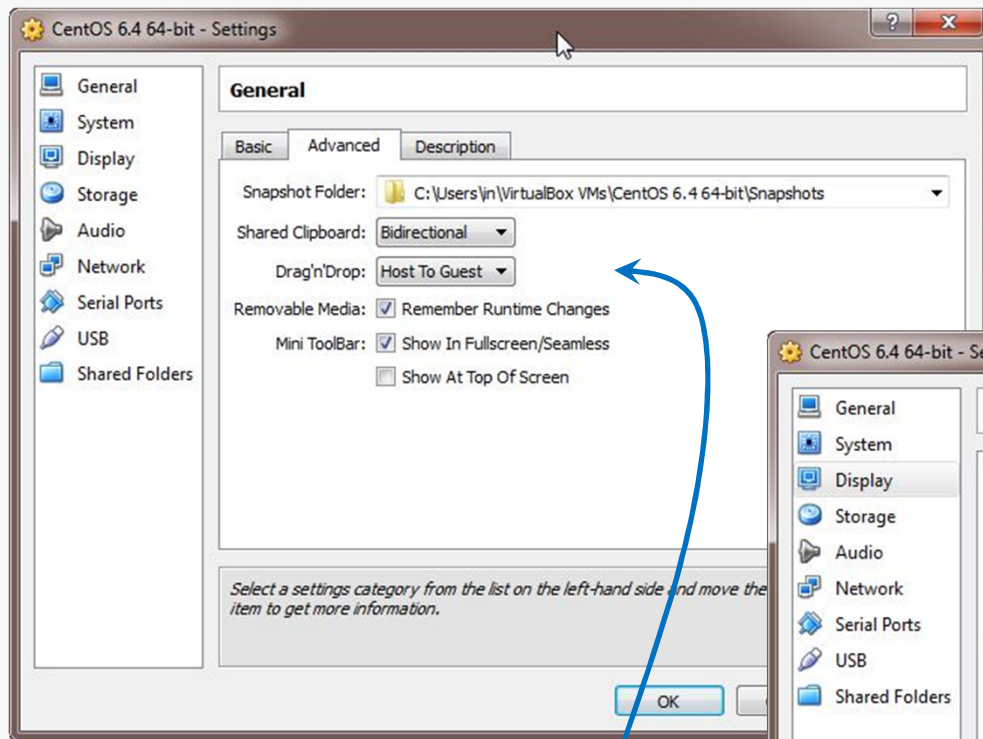
Now, you have an empty virtual machine (I already had another VM fully set up).

That is, a formatted (virtual) hard disk and no OS.

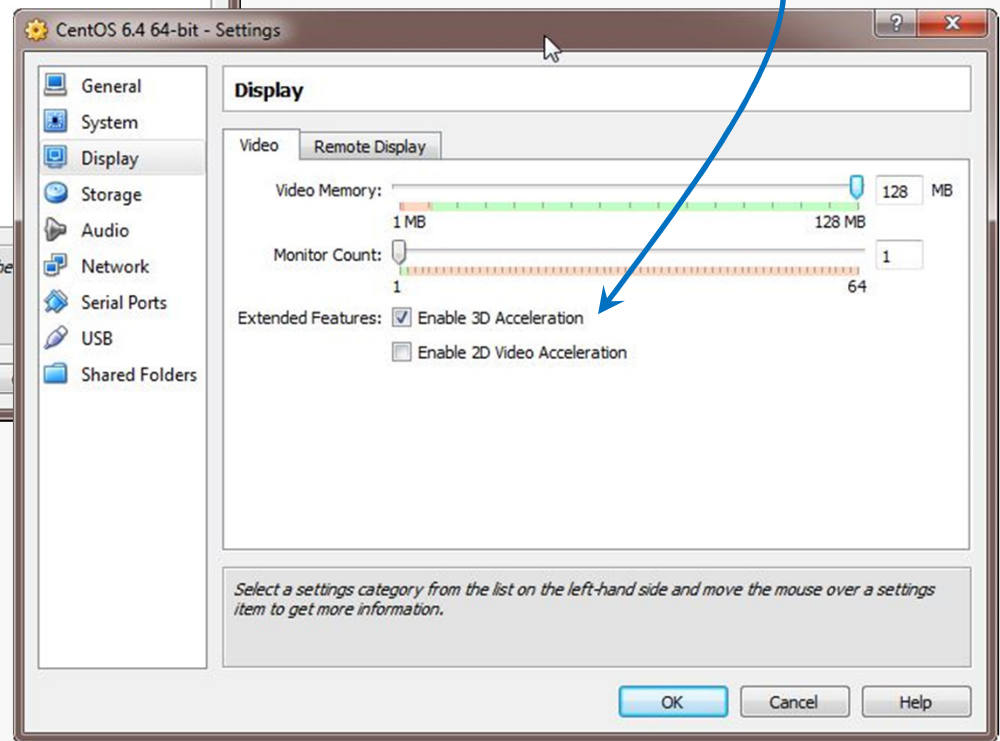


VM Settings

There are a couple of crucial VM settings; right-click on your VM and bring up the Settings dialog:



Under Display, enable 3D Acceleration.



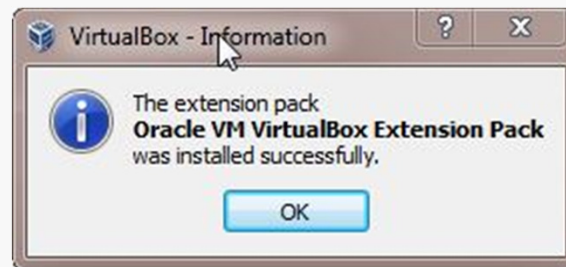
Under General/Advanced, make the shared clipboard Bidirectional, and enable Drag'n/Drop.

Install the VirtualBox Extensions

Find the file for the VirtualBox Extensions you downloaded earlier.

It should be associated with VirtualBox now.

Double-click on it and the Extensions should be installed.



CentOS matches the department's servers, including the rlogin cluster, so that is what you should install.

You'll have to select a 32-bit or a 64-bit version.

A 64-bit version gives you a few more options, but either will be sufficient for most of the assignments in CS 2505.

If you install a 32-bit version, you won't be able to run any 64-bit code on it.

If you install a 64-bit version, you won't be able to build any 32-bit executables on it unless you install some additional packages.

Whatever you choose, download an ISO file (CD or DVD). You don't need to burn a physical disk.

Disclaimer: the following notes illustrate one session installing a particular distribution of Linux on VirtualBox 4.2.6, running on Windows 7 Enterprise, on a particular underlying hardware system. YMMV. Mine certainly has...

Preparation

Go to centos.org, use the Get CentOS link at the top of the page, and then scroll down and select the link for older versions.

Download CentOS ISO images



NOTE: CentOS is available free of charge. We do accept (non-financial) donations for improving, hosting and promoting CentOS. If CentOS is important to you, please support the long-term viability of the CentOS project.



Please use one of our [many mirrors](#) to download CentOS.

Version	Minor release	CD and DVD ISO Images	Packages	Release Email	Release Notes	End-Of-Life
CentOS-7	7.0.1406	x86_64	RPMs	CentOS	CentOS RHEL	30 June 2024
CentOS-6	6.5	i386 x86_64	RPMs	CentOS	CentOS RHEL	30 Nov 2020

32-bit

64-bit

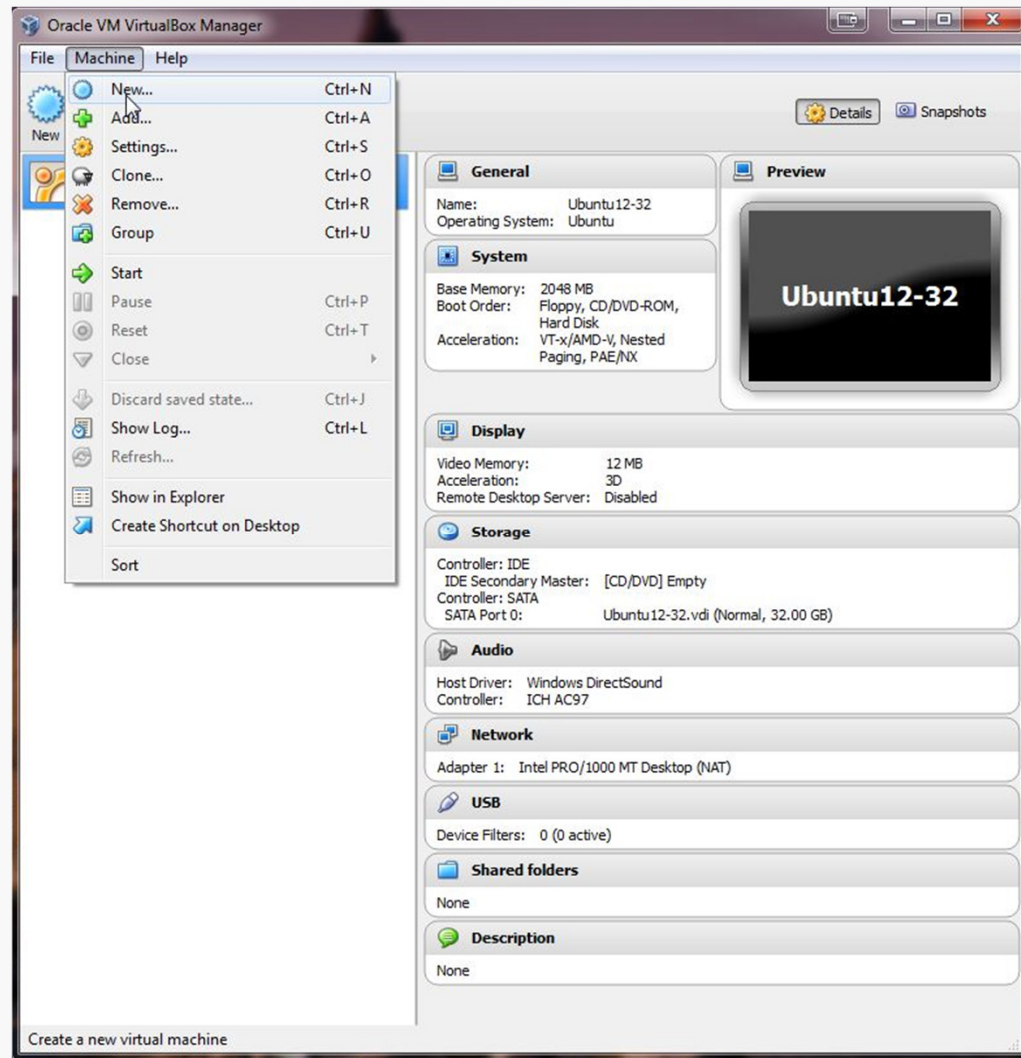
Go to the list of download mirrors and select one to begin your download.

The list will change from time to time; here's an example for the US as of August 2014:

US	FL	Mojohost	http://mirror.mojohost.com/centos/	ftp://mirror.mojohost.com/centos/
US	TX	Geeks at Work Solutions	http://mirrors.gawsolutions.us/centos	
US	UT	Fast Speed Test	http://fastspeedtest.net/mirrors/centos/	

Beginning the Installation

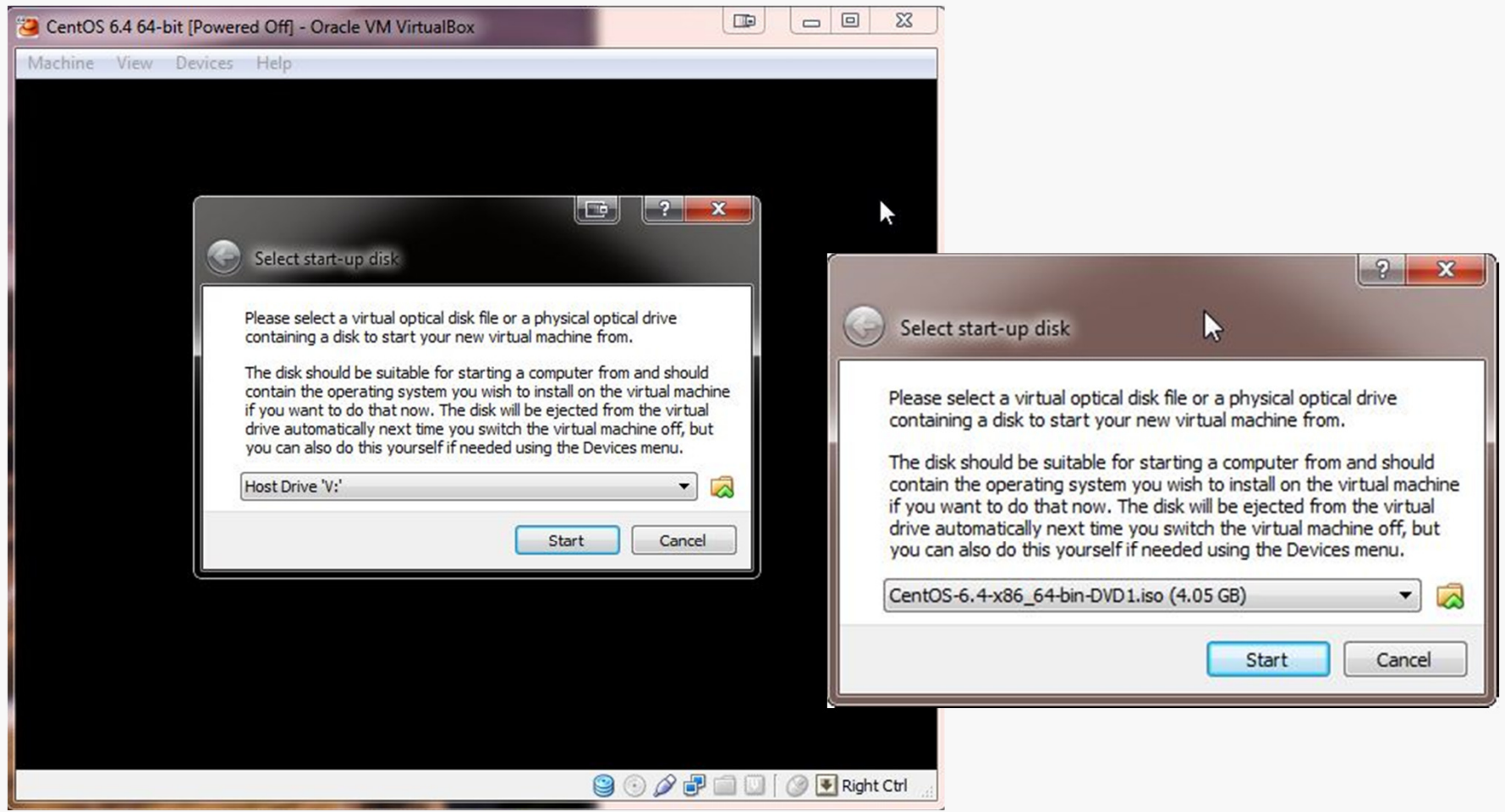
Select the VM and click Start:



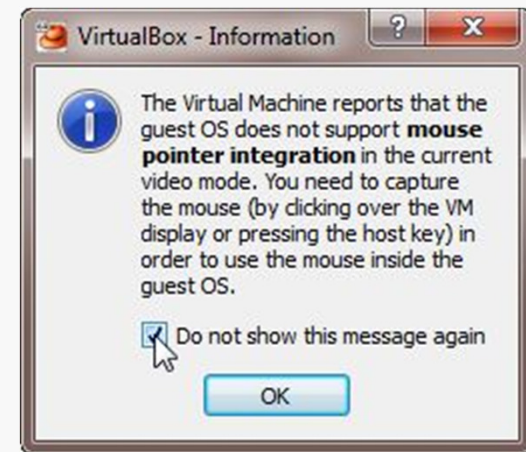
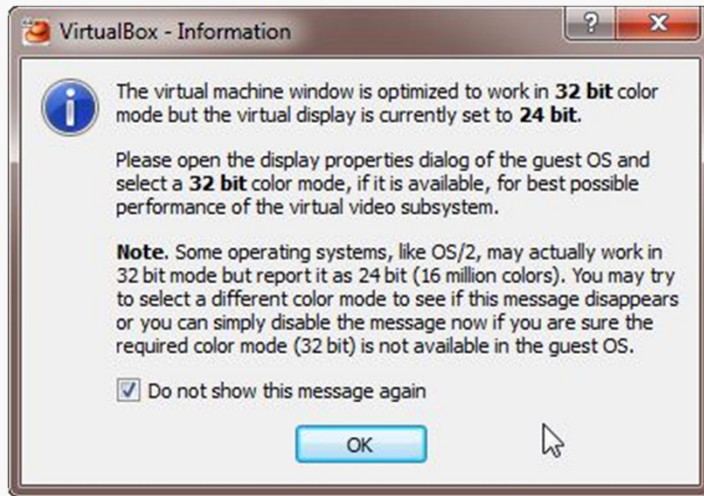
Selecting Installation Media

VirtualBox will recognize the empty system and prompt you to select an installation disk.

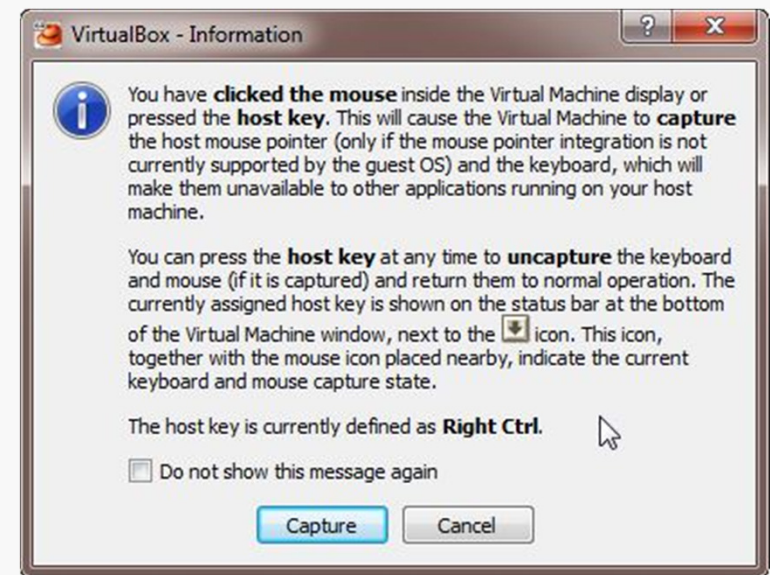
Click the folder icon and select your CentOS ISO file.



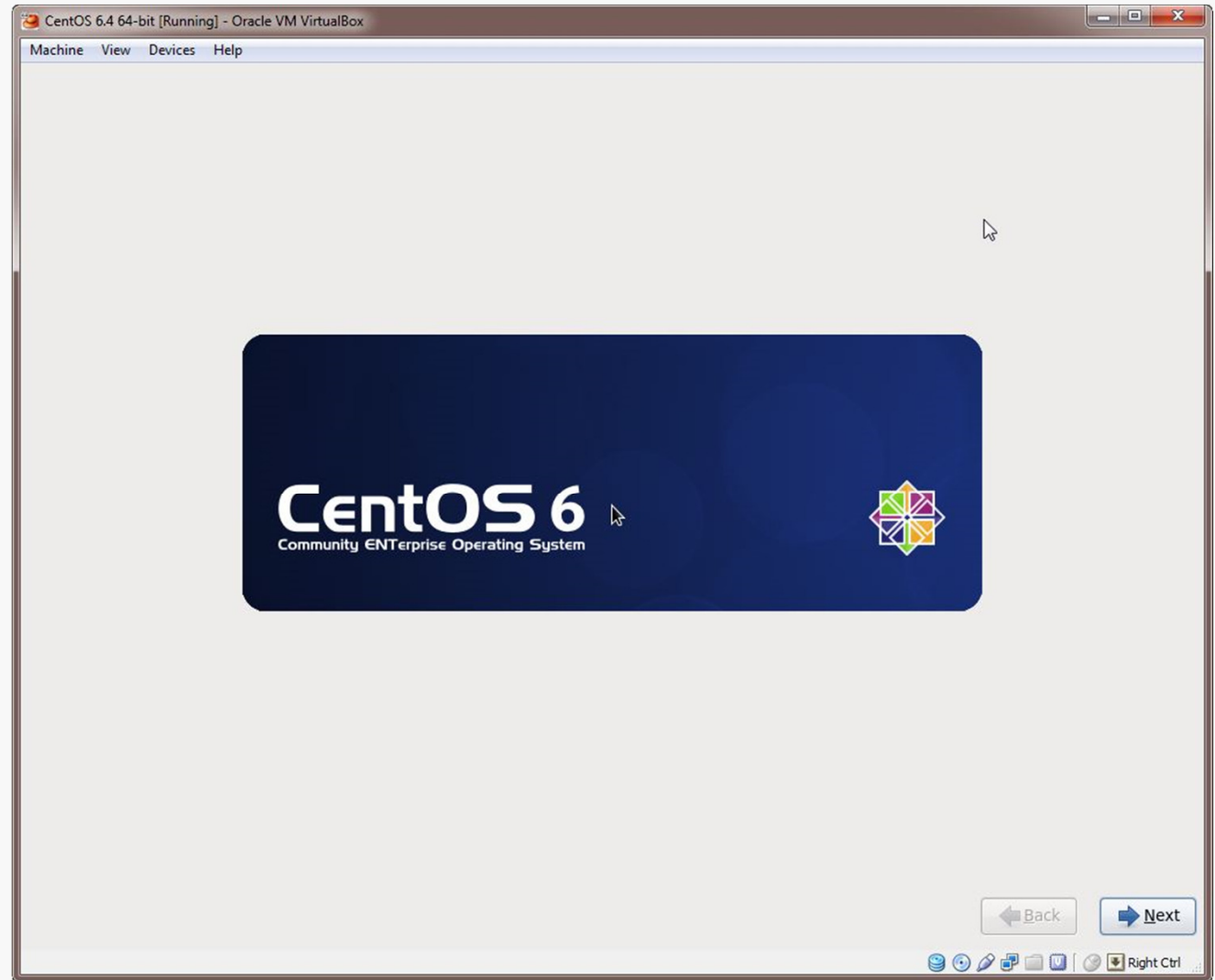
The remaining screen shots will vary considerably depending on which distro you chose to install, but the general procedure will be similar.



I got these three dialogs when installing CentOS... eventually I'll sort out the color depth and the mouse pointer integration.

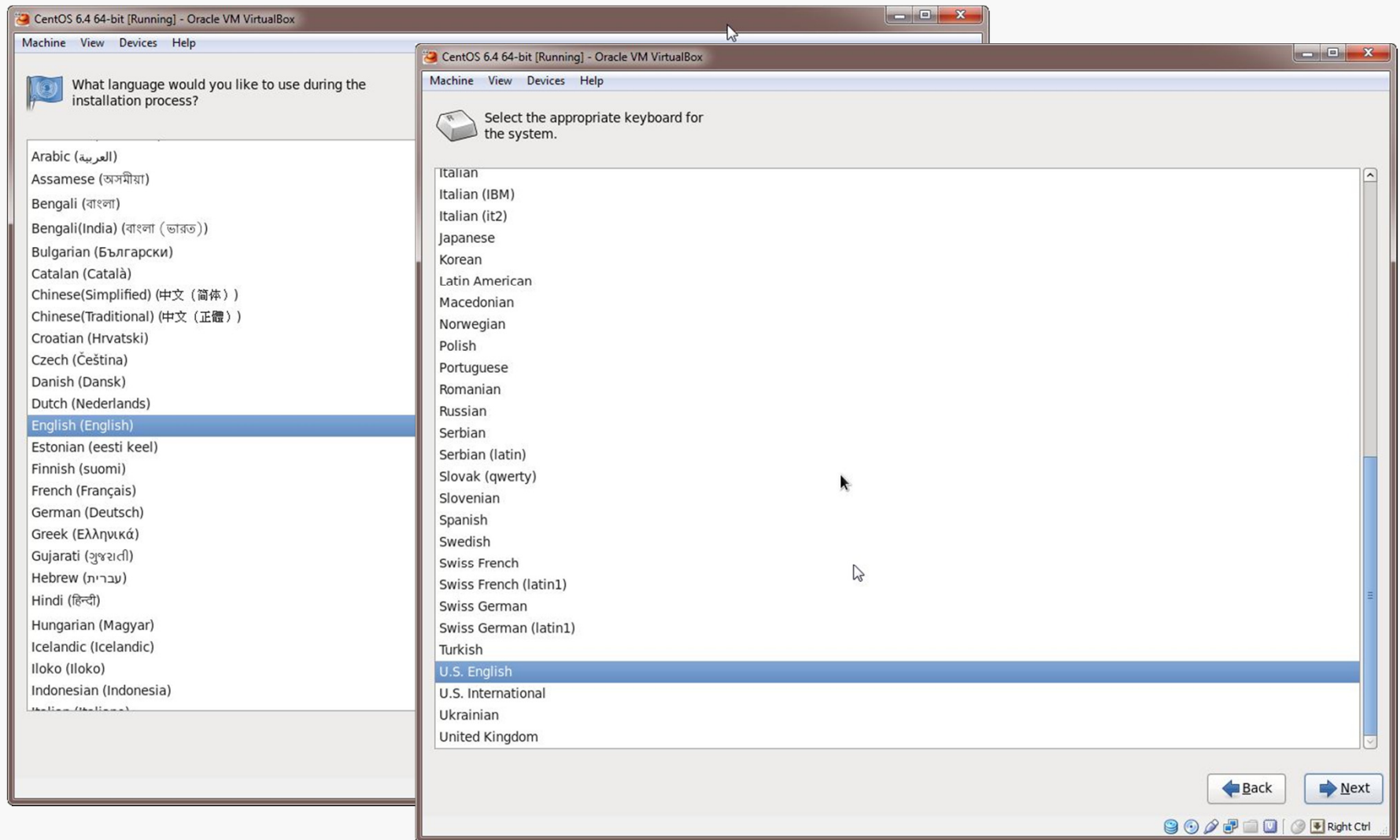


Here is the CentOS start screen:

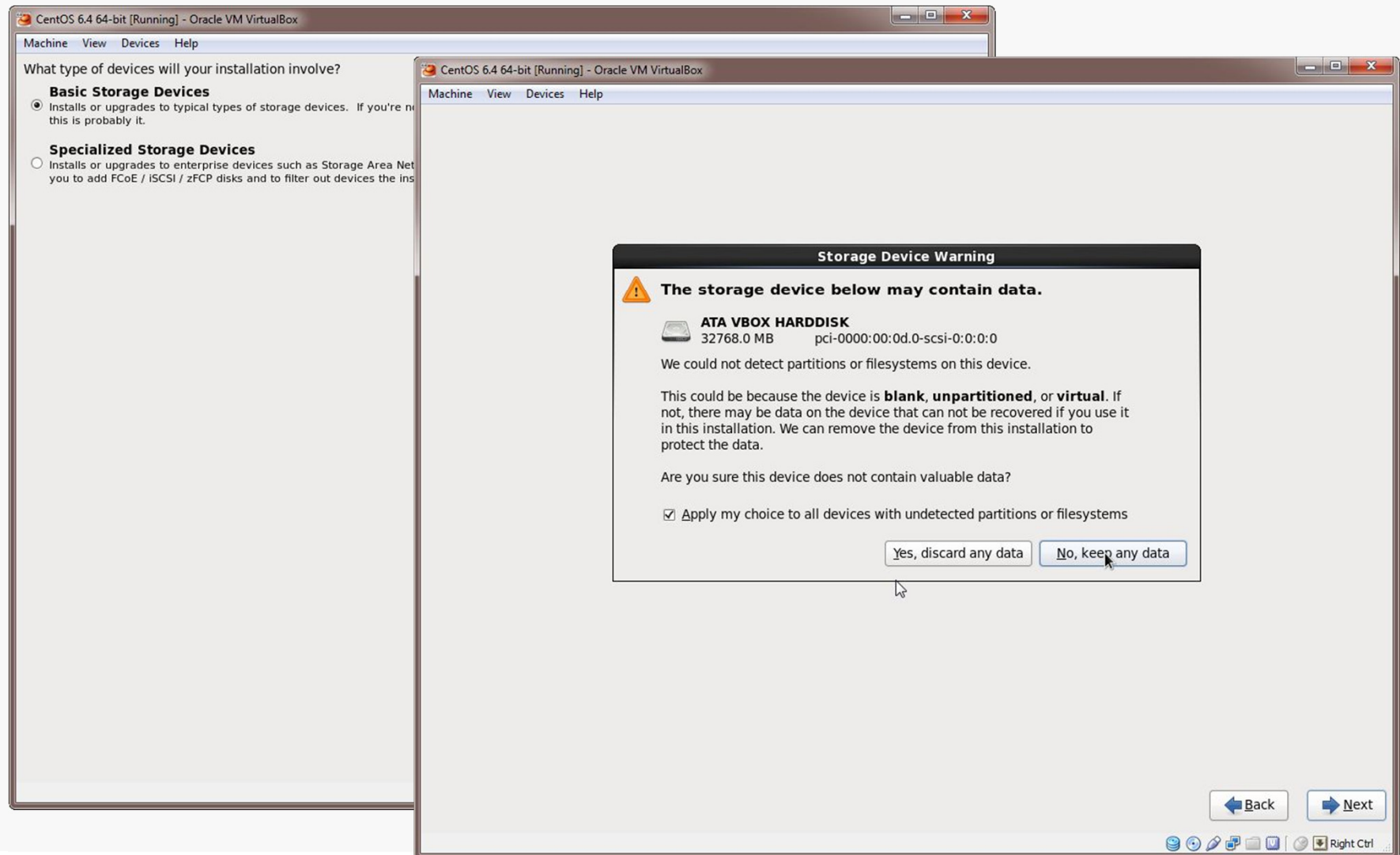


Initial Options

CentOS starts with some basic language and keyboard configuration:

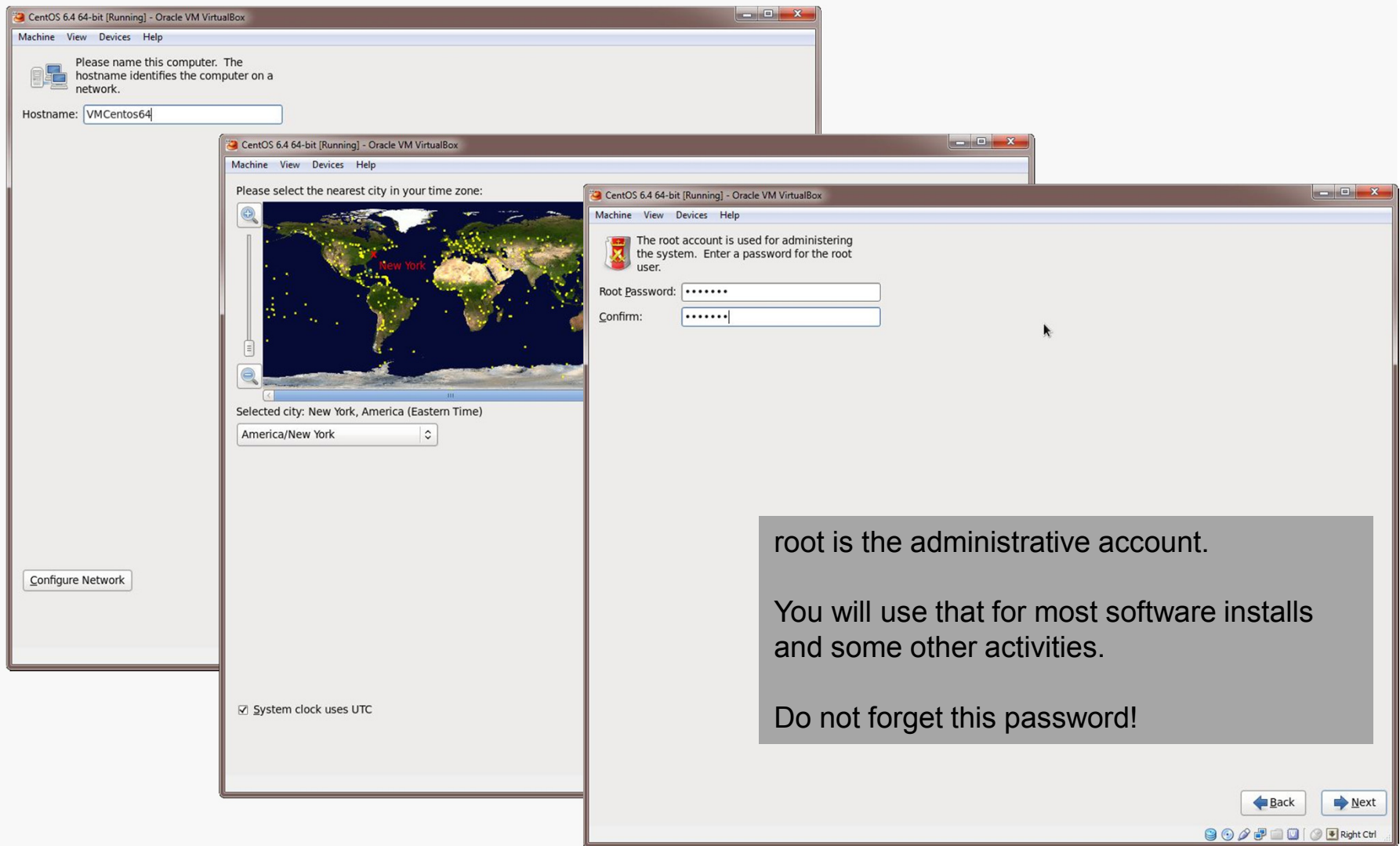


You're installing on the virtual drive, not your actual hard drive, so don't be alarmed by the second dialog.



Basic Settings

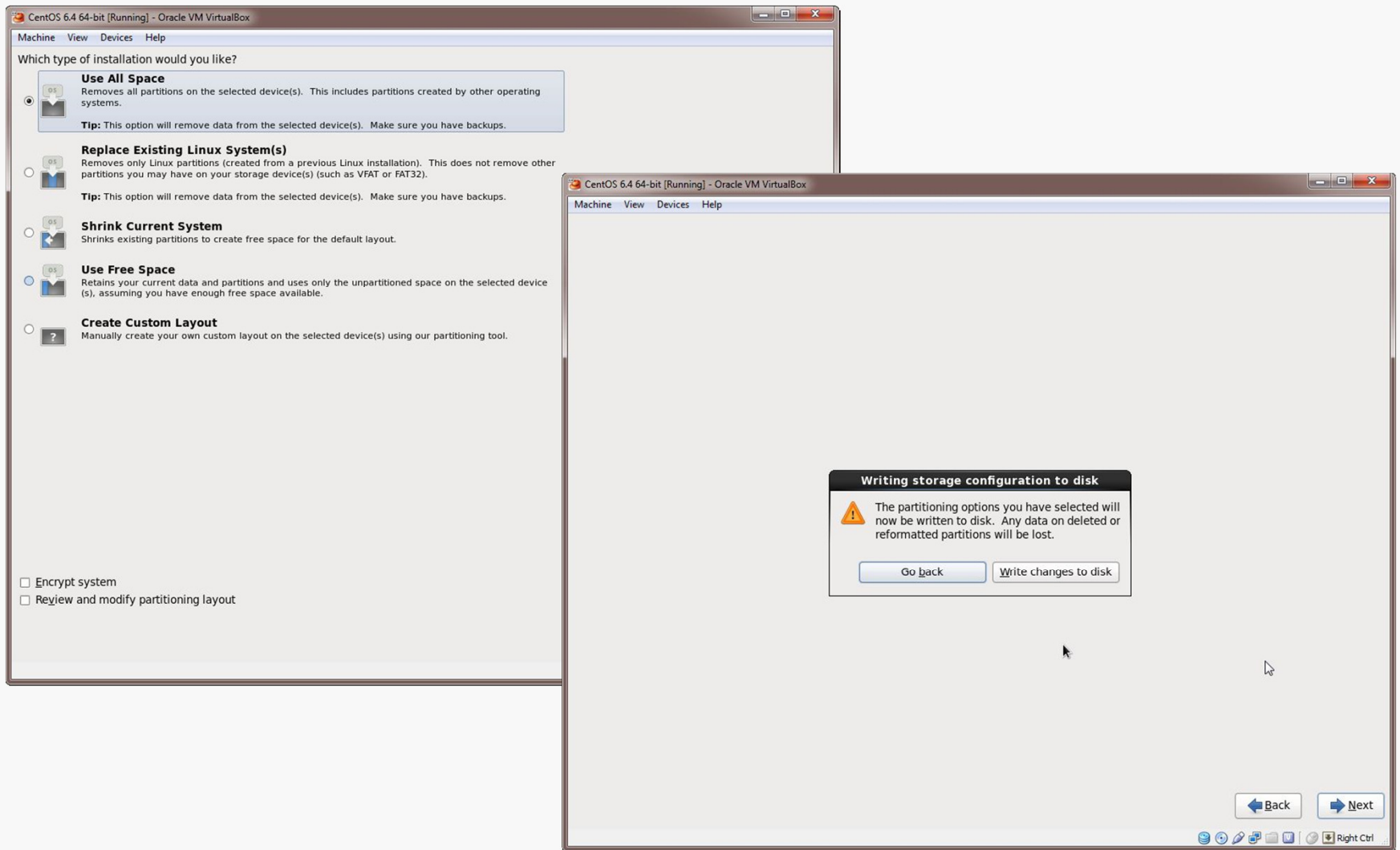
Name your install, select your time zone and set the password for root:



root is the administrative account.
You will use that for most software installs and some other activities.
Do not forget this password!

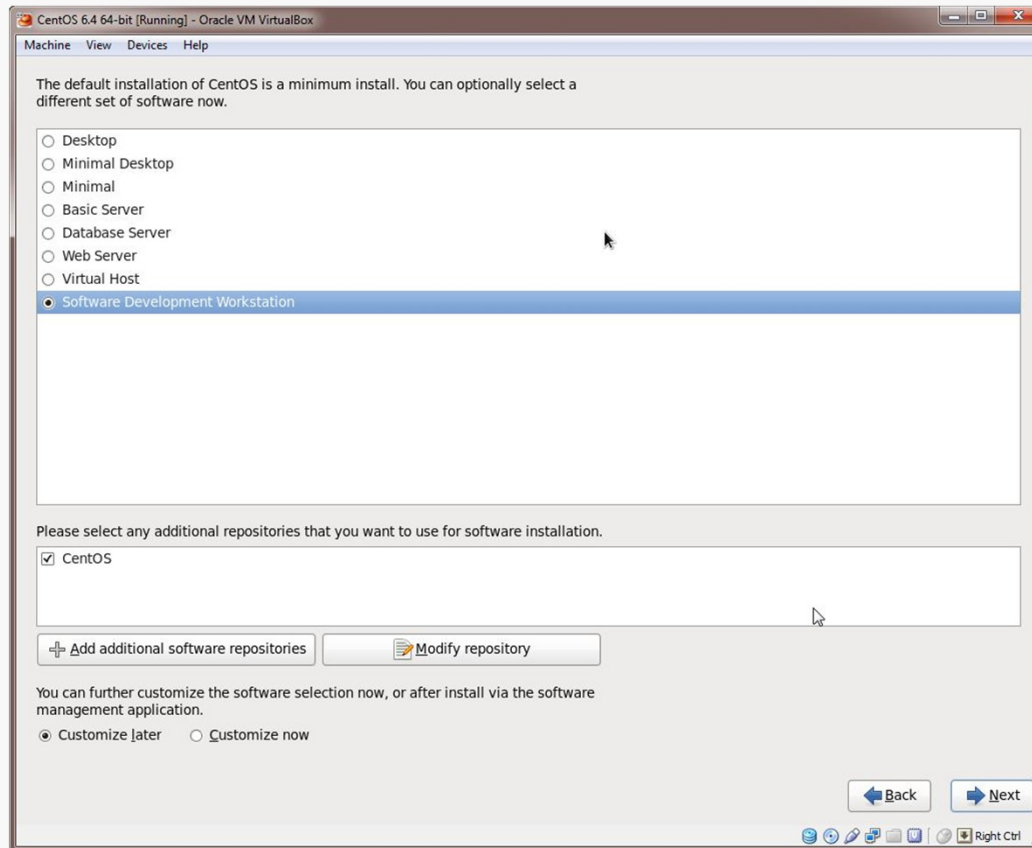
Storage Configuration

Now begin the actual installation to disk:

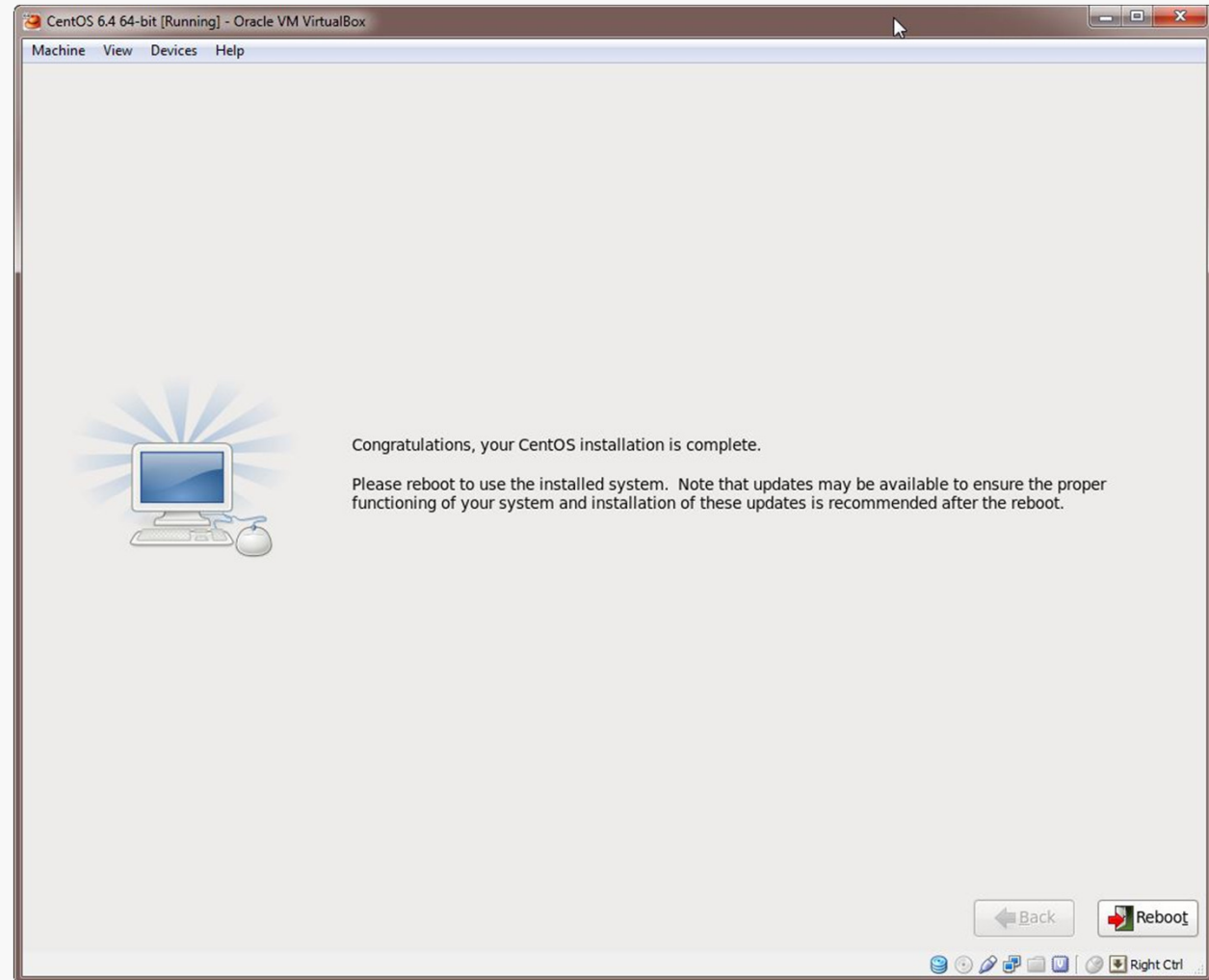


Select the general type of system you want... probably Software Development.

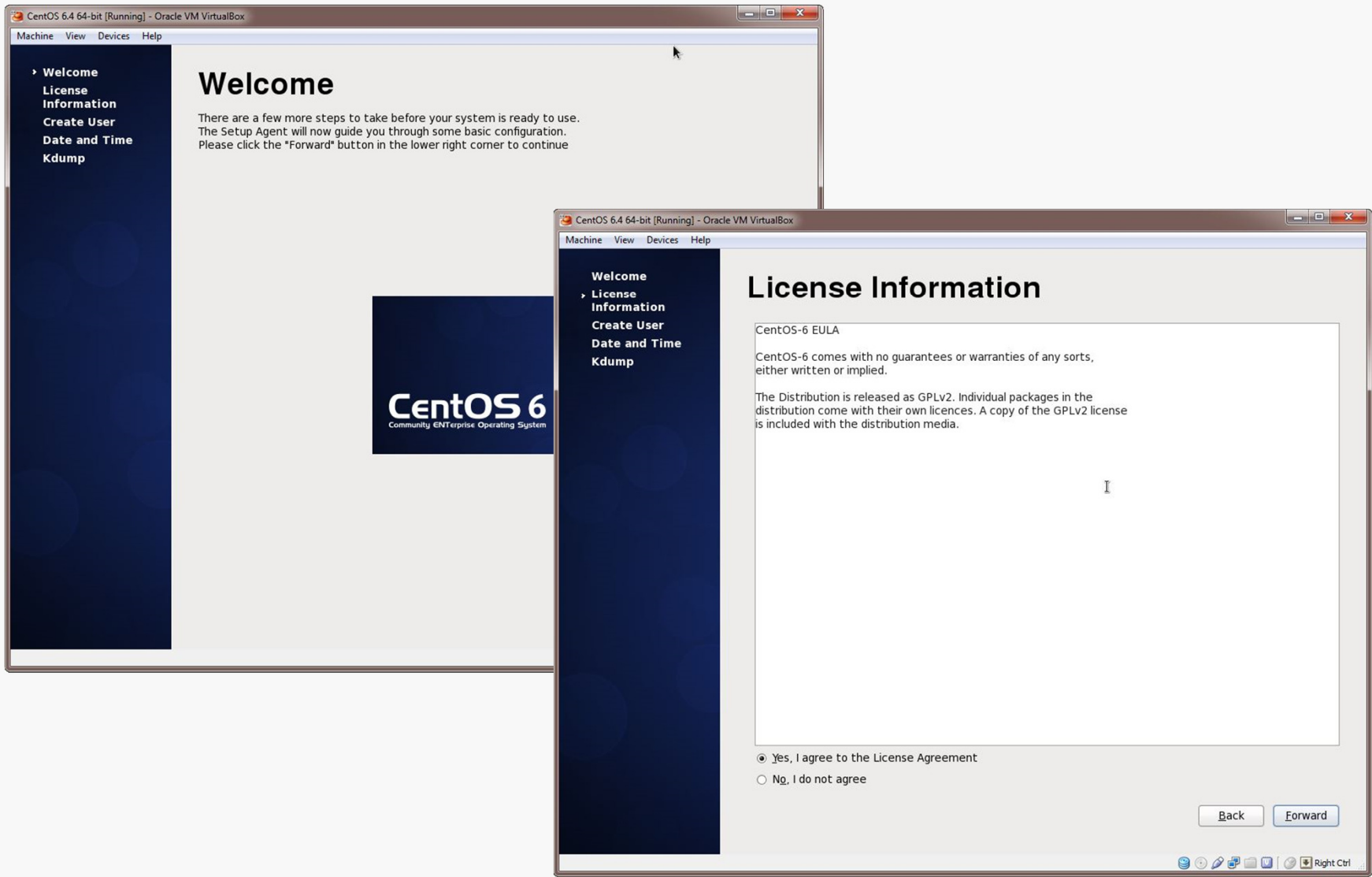
You can add additional packages later.



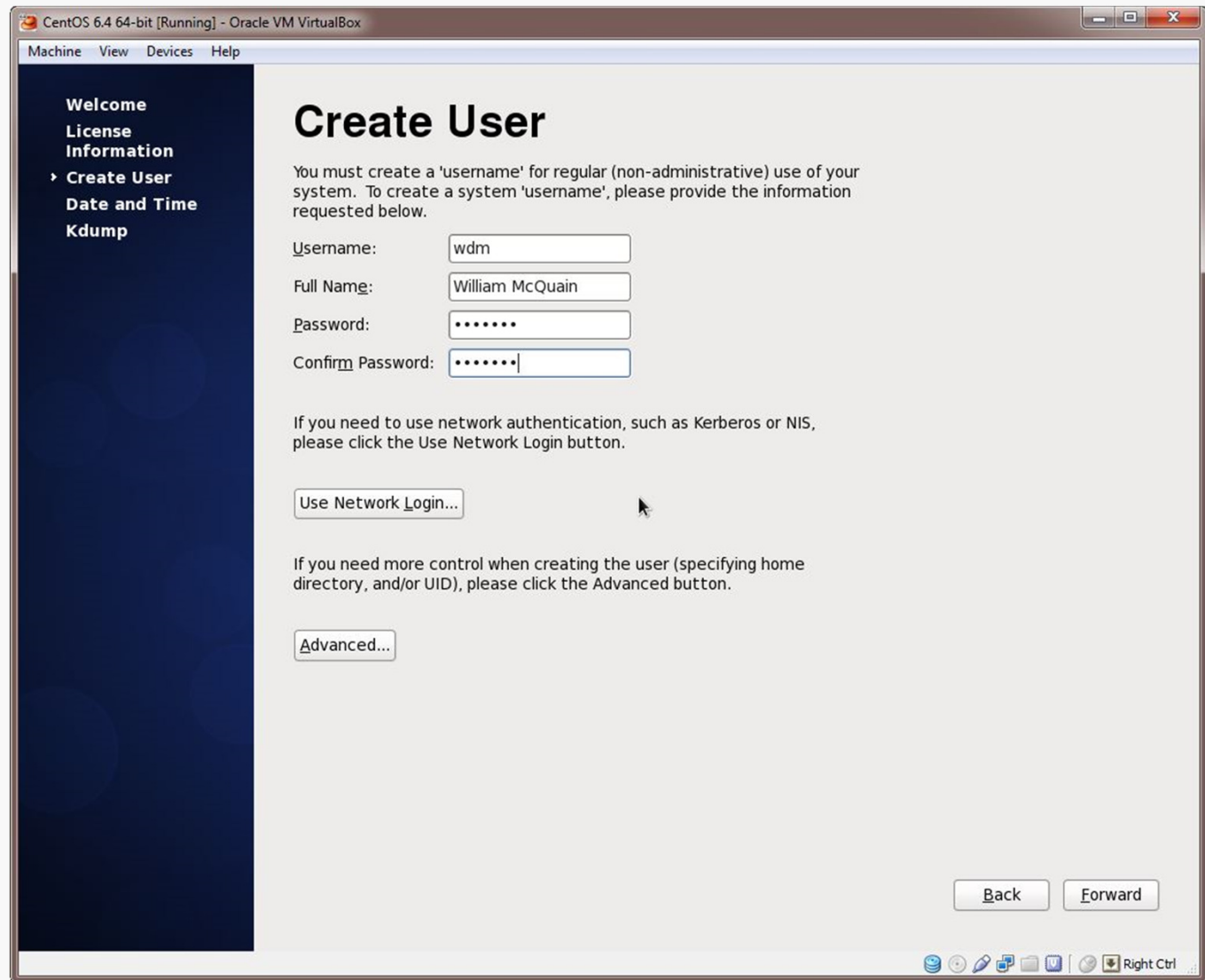
Things should proceed automatically until a restart is needed:



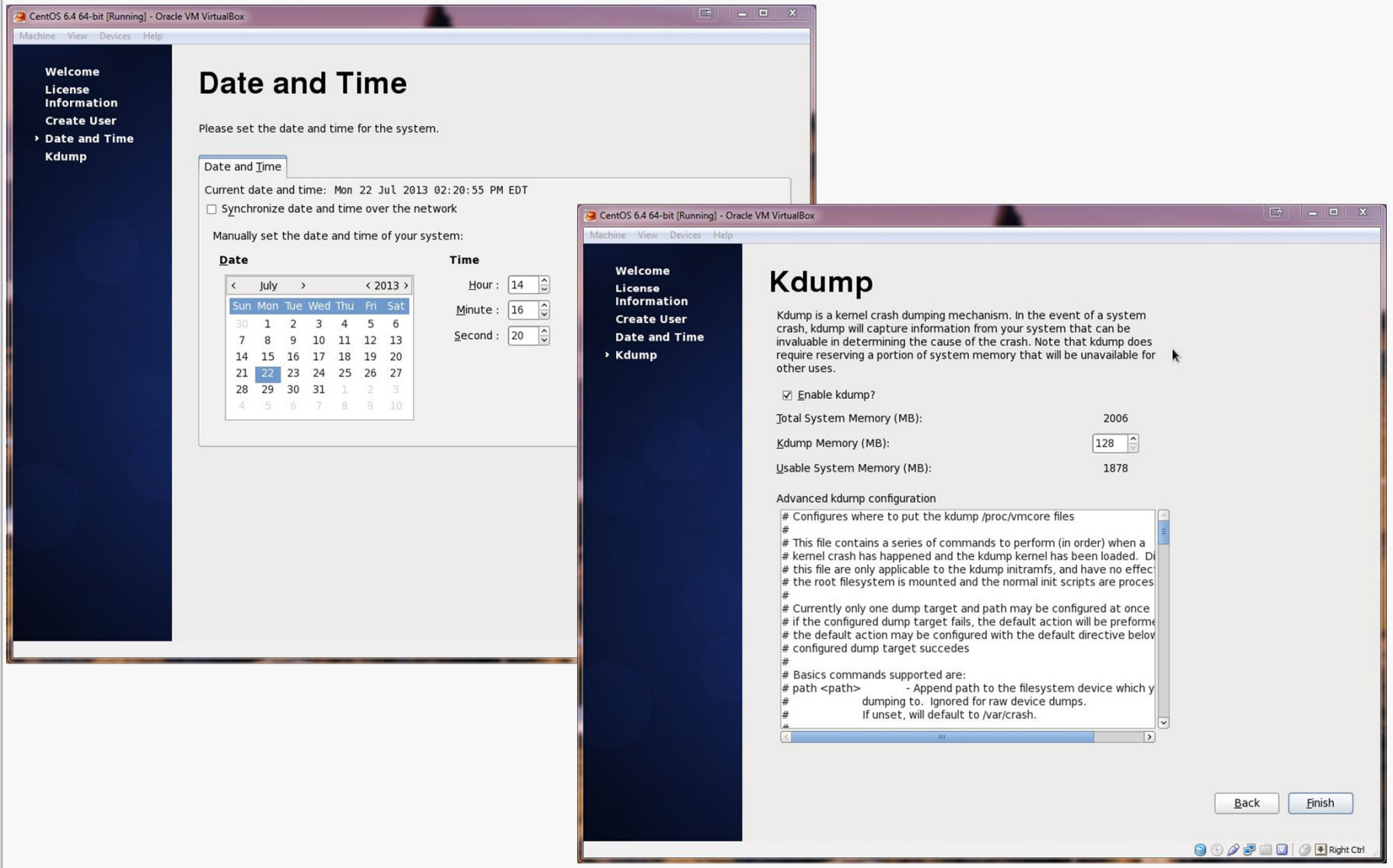
Now you'll specify account settings and so forth...



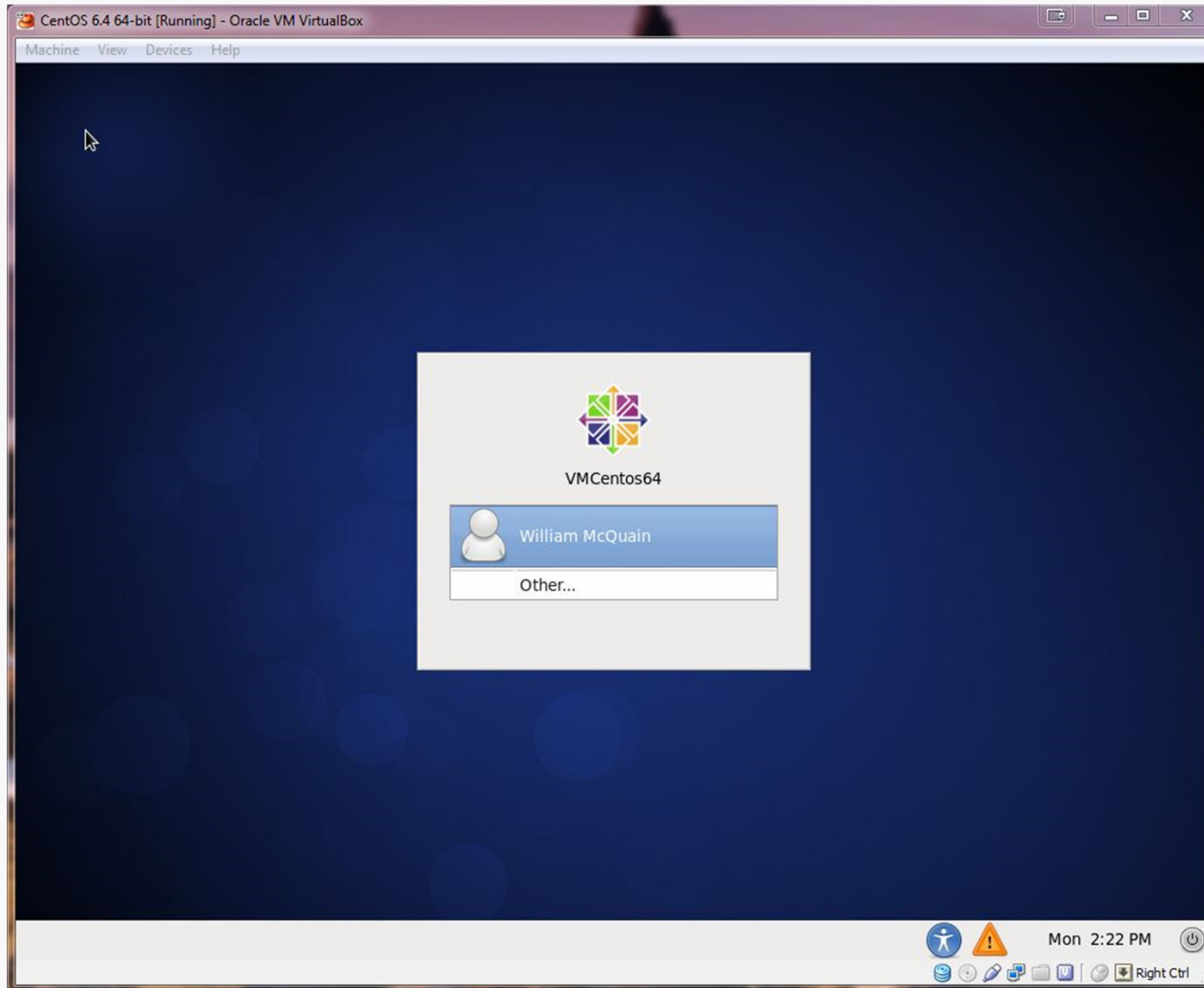
Choose settings for your user account.



Set data/time information; I'd take the default Kdump settings:

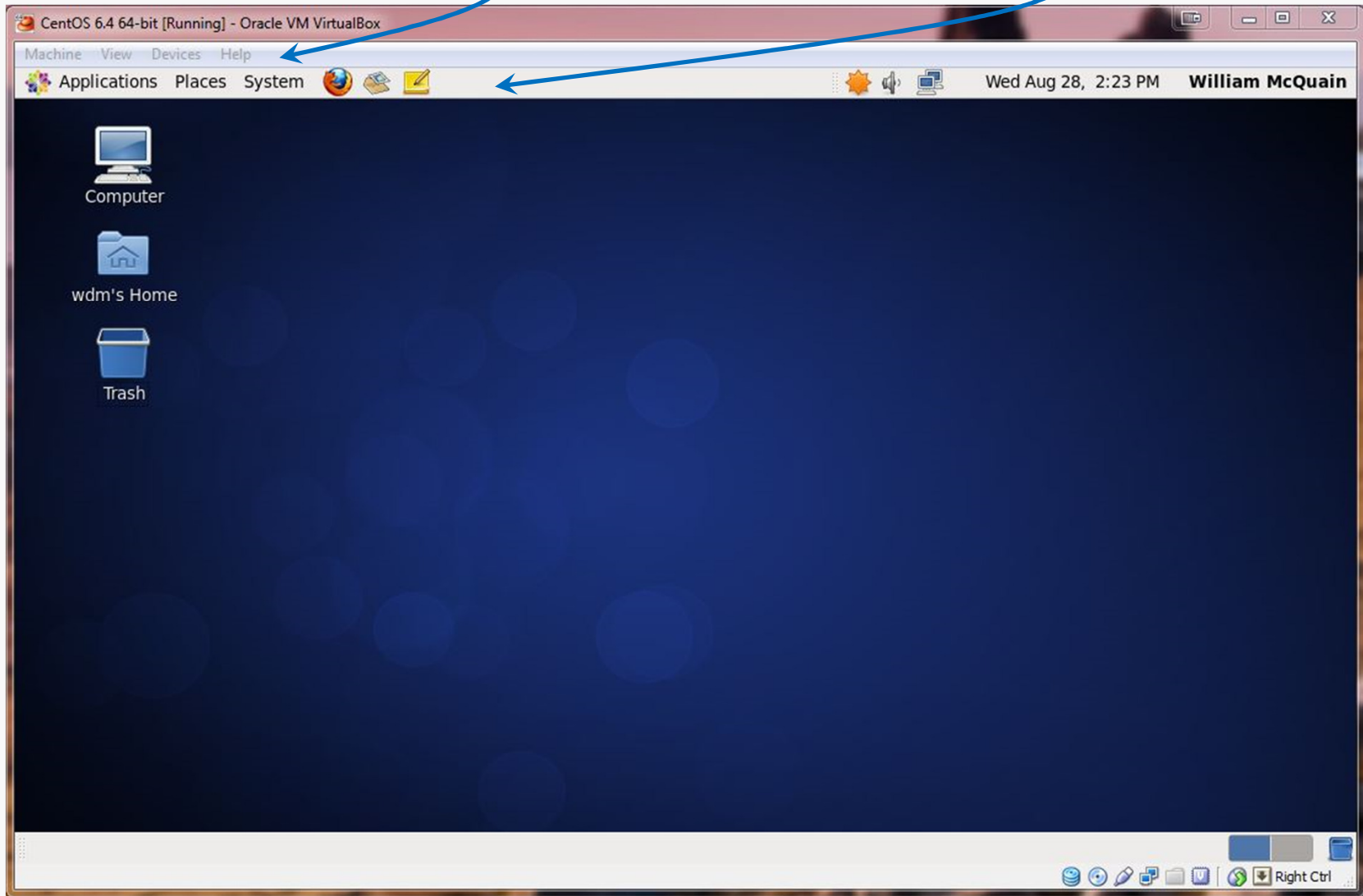


Booting up the VM



CentOS VM Desktop

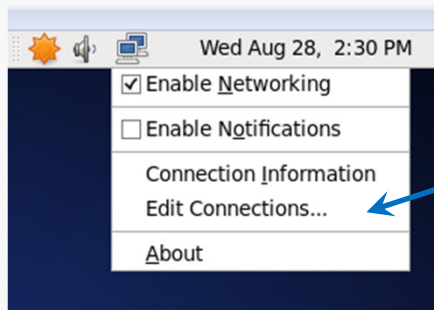
Note that there is a VirtualBox menu bar as well as a CentOS menu bar.



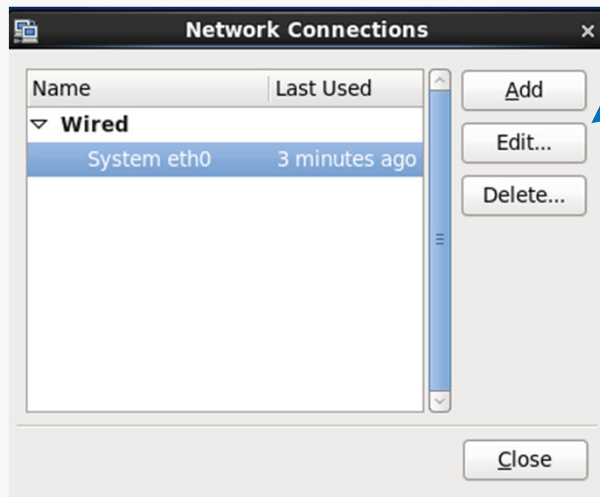
Enable CentOS Network

If you install CentOS from a DVD or ISO (as we did), networking is not enabled by default.

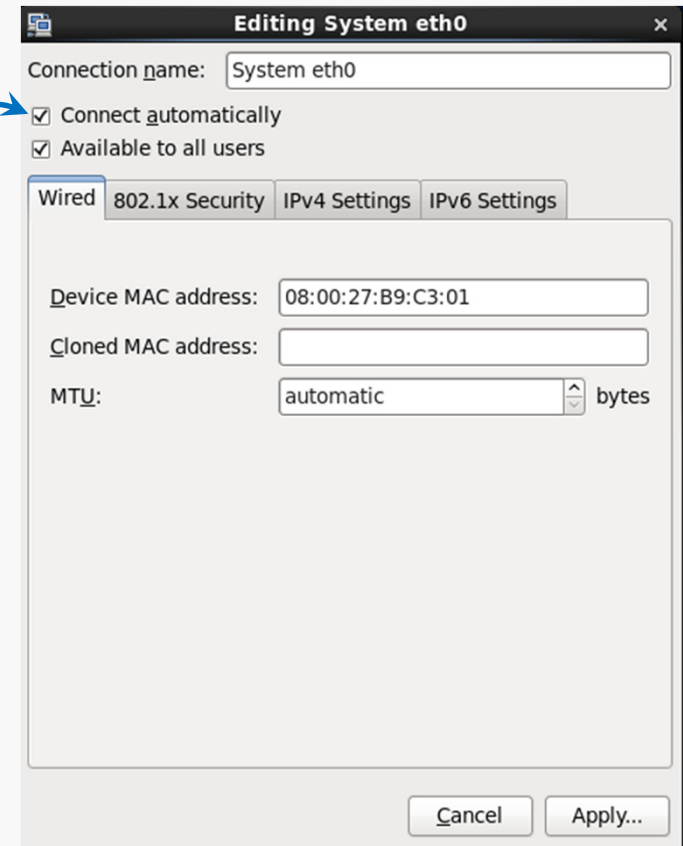
Right-click on the networking icon and select Edit Connections:



Select eth0 and Edit...



Check the box to Connect automatically

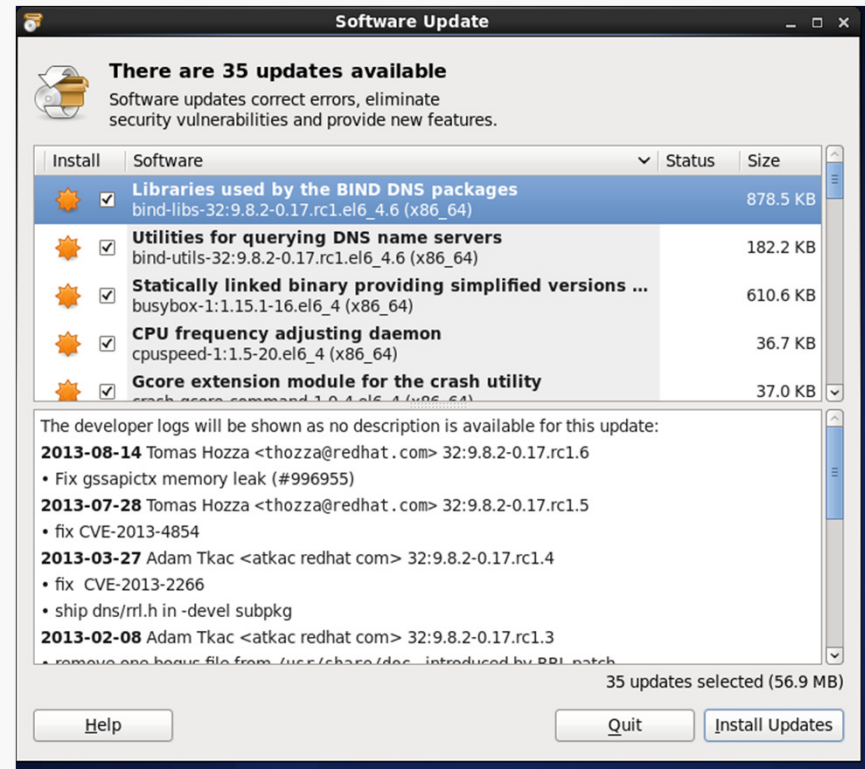


I recommend running any OS updates next.

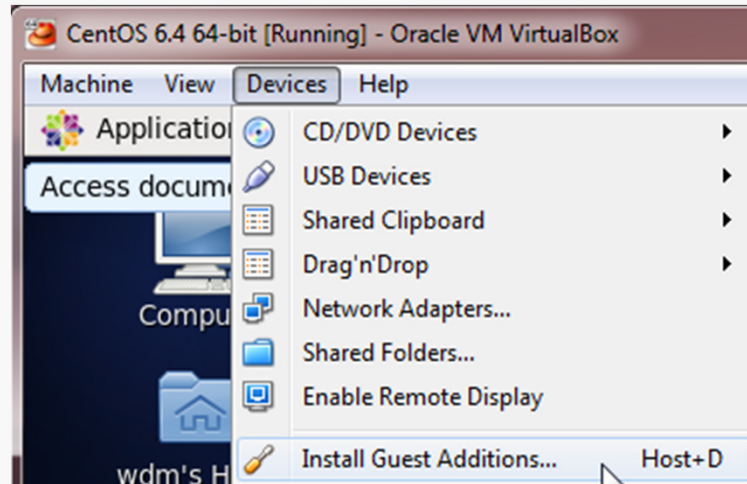
You can select the update tool from the CentOS menu bar:



It is likely that a lot of updates will be offered. It's probably OK to just accept all of them.



The VirtualBox Guest Additions provide additional functionality for your VM.

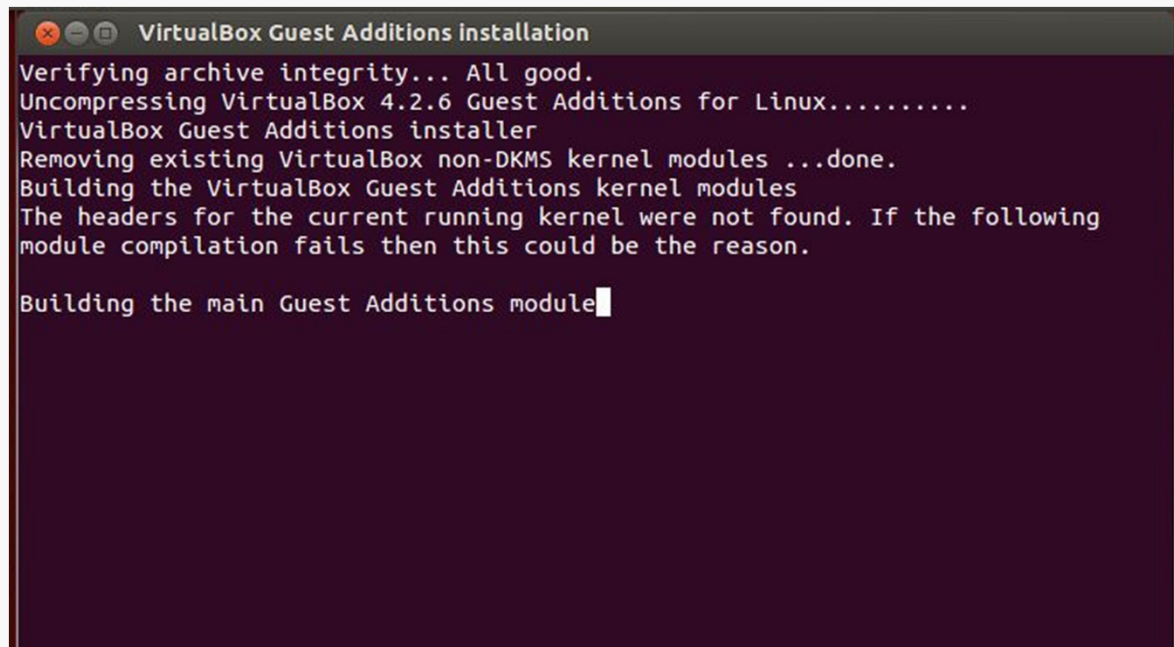


One note: until you install the VirtualBox Extension Pack (slide 10) and the Guest Additions, some things like mouse capture and scaled displays may not work.

Another note: if you run the system updater or install other software on your VM, you may have to reinstall the Guest Additions.

Pay attention to the console window during the installation.

If there are error messages, the Guest Addition may not have been installed.



```
VirtualBox Guest Additions installation
Verifying archive integrity... All good.
Uncompressing VirtualBox 4.2.6 Guest Additions for Linux.....
VirtualBox Guest Additions installer
Removing existing VirtualBox non-DKMS kernel modules ...done.
Building the VirtualBox Guest Additions kernel modules
The headers for the current running kernel were not found. If the following
module compilation fails then this could be the reason.

Building the main Guest Additions module
```

As you use your CentOS system, you'll probably discover new tools you'd like that are not included by default.

In most cases, if you know the name of the software package you'd like to install, you can do so by running the `yum` tool. `yum` has many options and you should skim its man page.

For instance, we can use `yum` to determine what version of a package is installed:

```
wdm@Centos65 ~]$ yum list installed gcc
Loaded plugins: fastestmirror, refresh-packagekit, security
Determining fastest mirrors
 * base: mirror.trouble-free.net
 * extras: mirrors.einstein.yu.edu
 * updates: mirrors.advancedhosters.com
base | 3.7 kB | 00:00
extras | 3.4 kB | 00:00
updates | 3.4 kB | 00:00
Installed Packages
gcc.x86_64 4.4.7-4.el6 @anaconda-CentOS-201311272149.x86_64/6.5
[wdm@Centos65 ~]$
```

We can use `yum` to install or update a package:

```
[wdm@Centos65 ~]$ yum install tree
. . .
You need to be root to perform this command.
[wdm@Centos65 ~]$ su
Password:

[root@Centos65 wdm]# yum install tree
. . .
Setting up Install Process
Resolving Dependencies
--> Running transaction check
---> Package tree.x86_64 0:1.5.3-2.el6 will be installed
--> Finished Dependency Resolution
. . .
Transaction Summary
=====
Install      1 Package(s)

Total download size: 36 k
Installed size: 65 k
Is this ok [y/N]: y
. . .
```

You need to be root to install or update a package:

Now I am root ... bwa ha ha!

yum has determined what needs to be installed, shown me that info, and now wants confirmation...

We can use `yum` to install or update a package:

```
. . .
Downloading Packages:
tree-1.5.3-2.el6.x86_64.rpm
| 36 kB      00:00
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
  Installing : tree-1.5.3-2.el6.x86_64
1/1
  Verifying  : tree-1.5.3-2.el6.x86_64
1/1

Installed:
  tree.x86_64 0:1.5.3-2.el6

Complete!
[root@Centos65 wdm]# exit
exit
[wdm@Centos65 ~]$
```

`yum` triggers the installation..

Now I will cease to be `root` ...
that much privilege can be
dangerous.

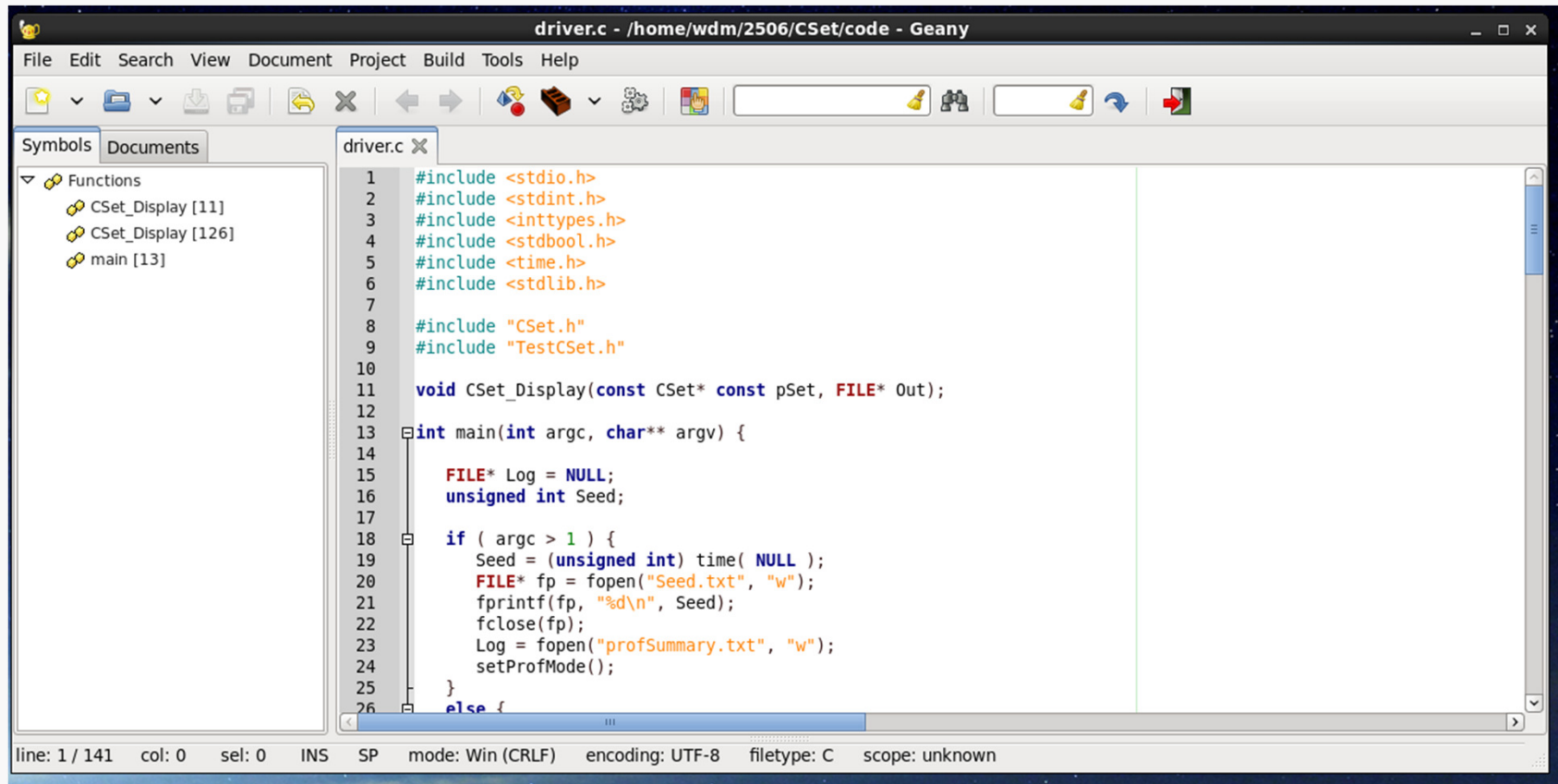
Sometimes `yum` cannot find a package:

```
[root@Centos65 wdm]# yum install geany
Loaded plugins: fastestmirror, refresh-packagekit, security
. . .
No package geany available.
Error: Nothing to do
[root@VMCentOS64 wdm]#
```

`yum` queries a collection of online repositories... in this case it doesn't find the package I wanted.

It's possible to direct `yum` to search additional repositories. See a good Linux reference or the man pages for more information.

geany is a programmer-oriented editor:

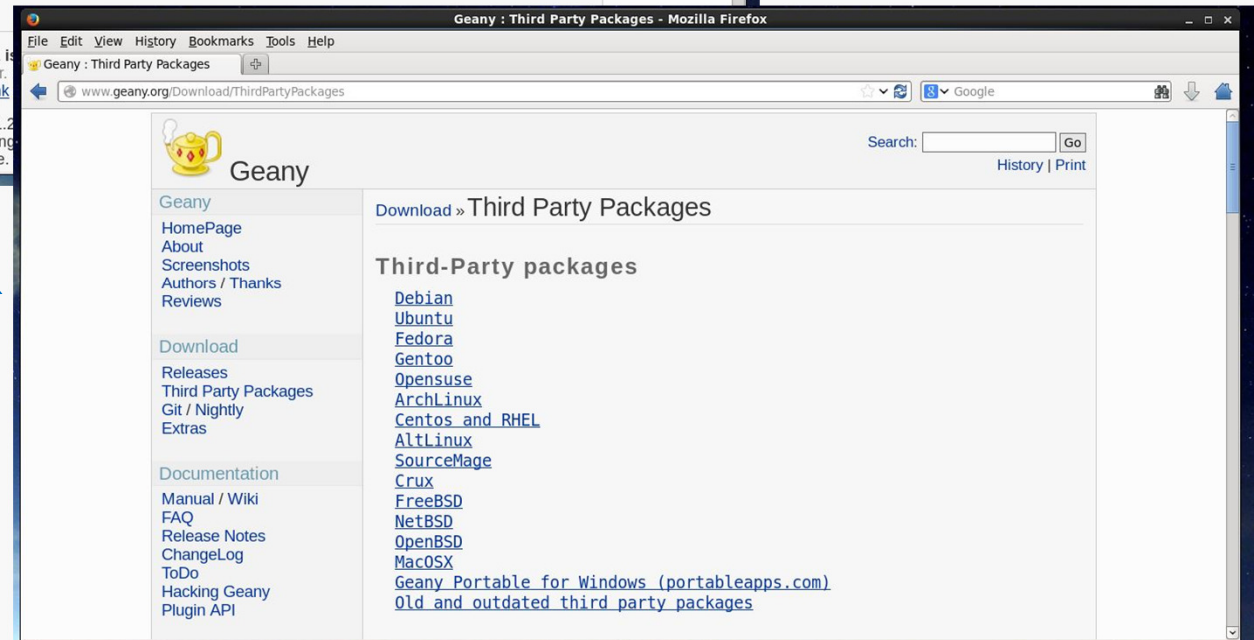
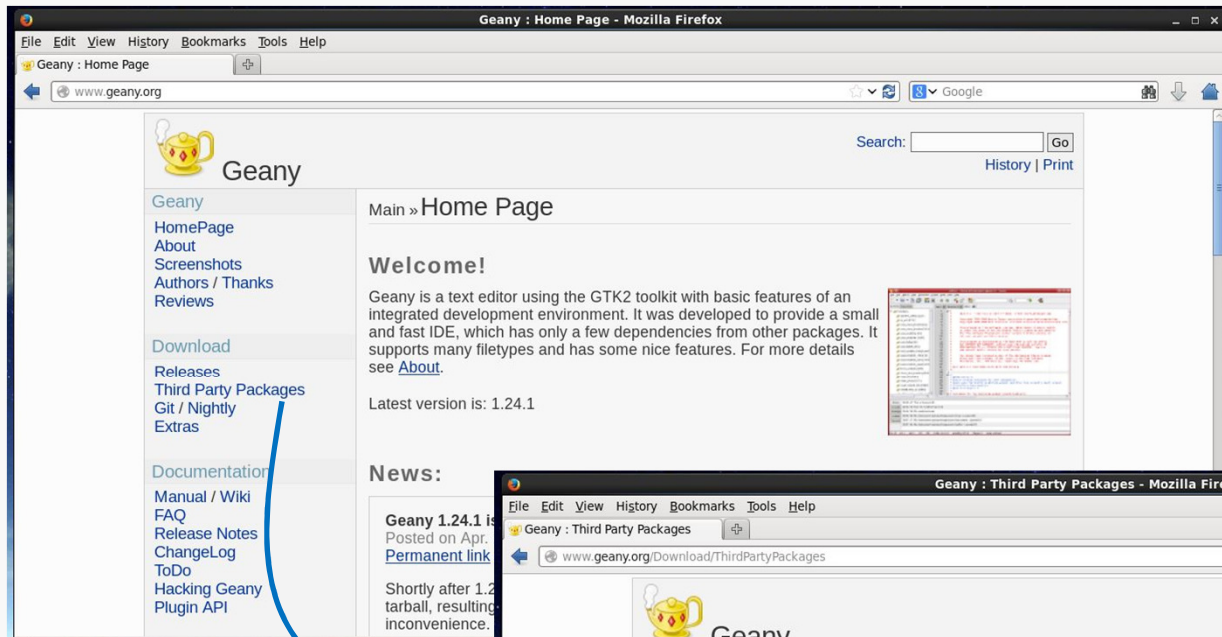


```
1 #include <stdio.h>
2 #include <stdint.h>
3 #include <inttypes.h>
4 #include <stdbool.h>
5 #include <time.h>
6 #include <stdlib.h>
7
8 #include "CSet.h"
9 #include "TestCSet.h"
10
11 void CSet_Display(const CSet* const pSet, FILE* Out);
12
13 int main(int argc, char** argv) {
14
15     FILE* Log = NULL;
16     unsigned int Seed;
17
18     if ( argc > 1 ) {
19         Seed = (unsigned int) time( NULL );
20         FILE* fp = fopen("Seed.txt", "w");
21         fprintf(fp, "%d\n", Seed);
22         fclose(fp);
23         Log = fopen("profSummary.txt", "w");
24         setProfMode();
25     }
26     else {
```

It's my (current) favorite text editor for programming on Linux.

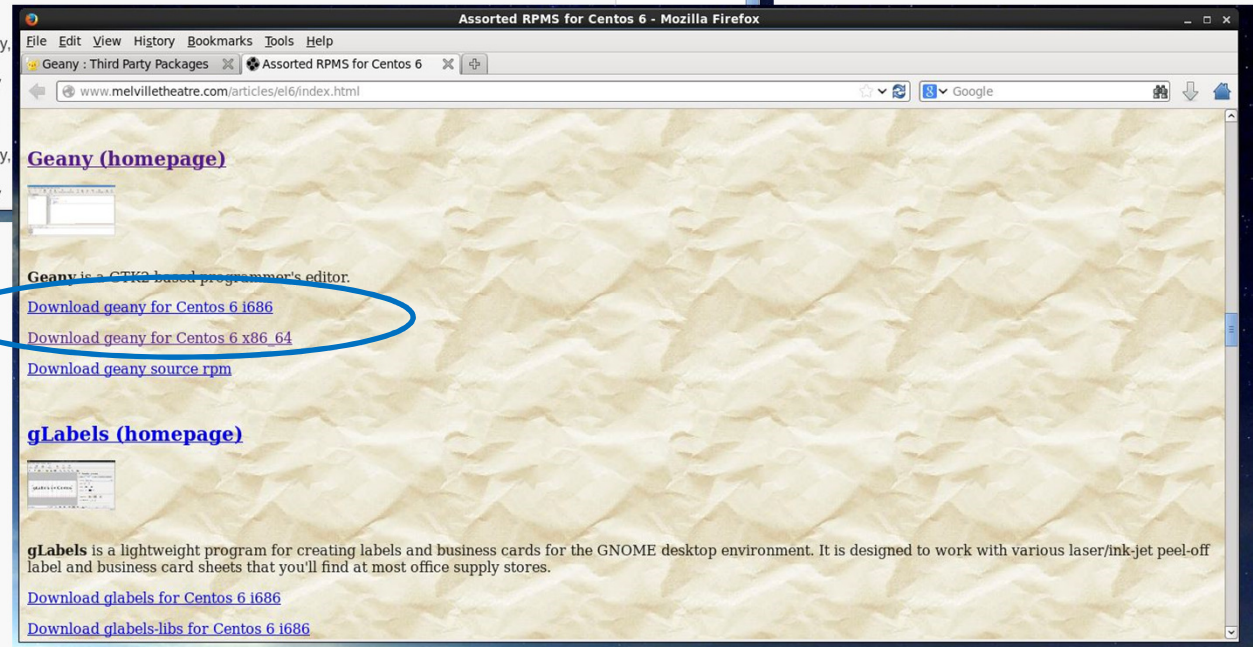
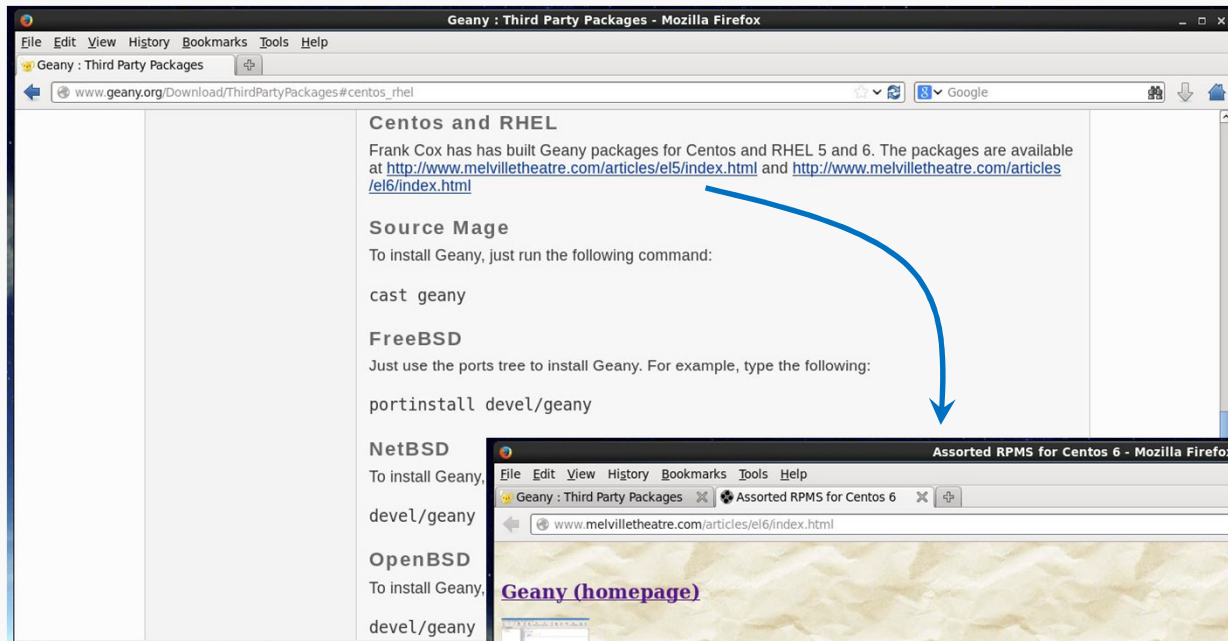
It's also available for Windows.

geany can be installed by downloading the correct package from geany.org:



Additional Stuff: Geany

Choose the correct version, 32-bit (i686) or 64-bit (x86-64) for your system:



Firefox triggers the package installer for you:

