Amithlon Kernel

Starter Guide
Ubuntu 5.10
Documentation by Tom Crews (SnkBitten)

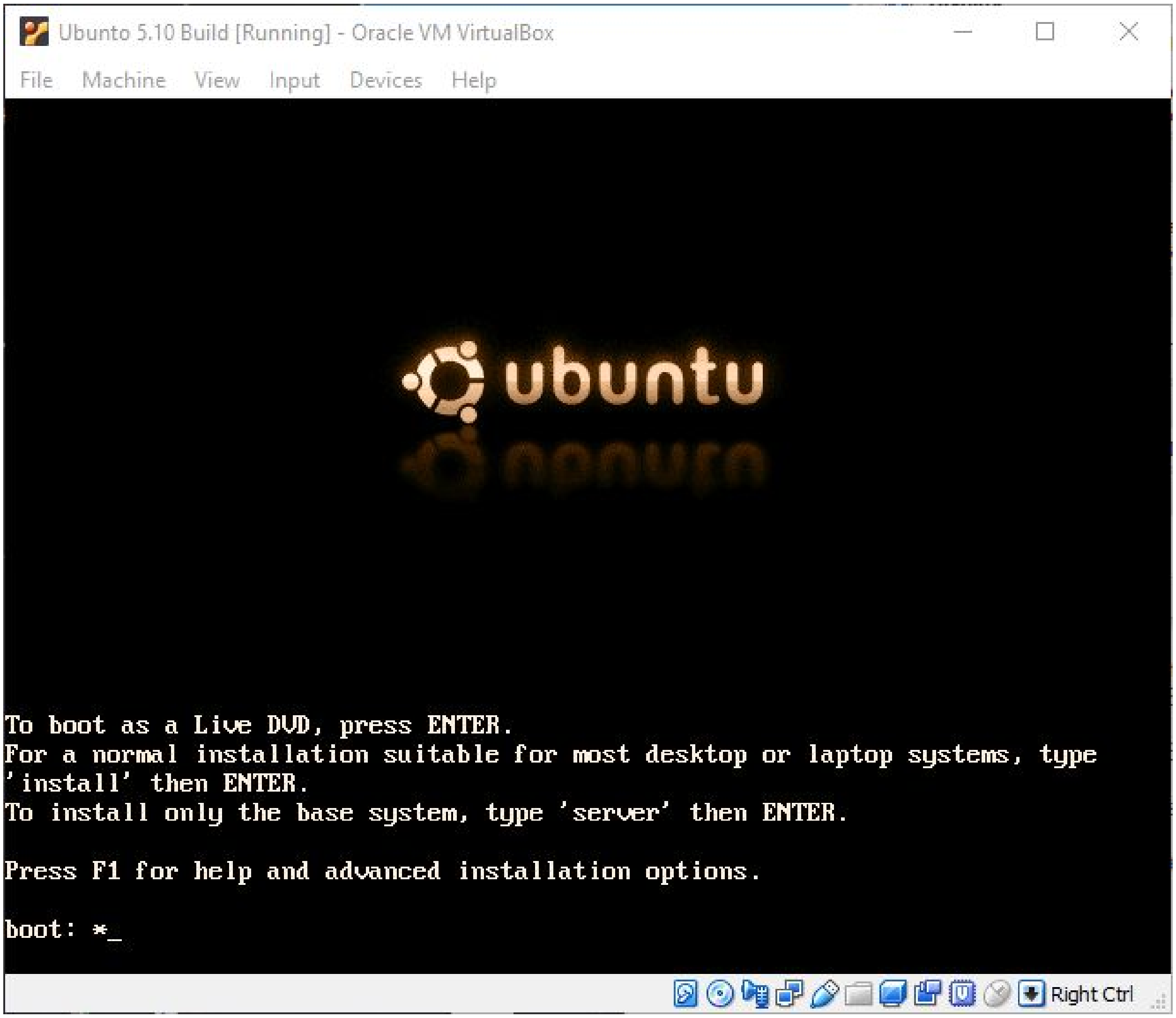
Working with a friend of mine who is much more Linux knowledgeable than myself, he configured an older version of Ubuntu (5.10) to compile the kernel. Following his setup I was able to successfully compile Milan's kernel4 tree and boot Amithlon with it to test. This linux install is much simpler to install and get configured to build the kernel so I thought it would be a good idea to write a guide for it.

Download Ubuntu 5.10 from the following link:
http://old-releases.ubuntu.com/releases/breezy/ubuntu-5.10-dvd-i386.iso

Launch Virtualbox as Administrator
Create a Virtualbox system with the following settings as a guideline:
Ubuntu (32-bit), IDE HD and CD, 4 MB of ram, for network I like "Bridged Adapter" and under Advanced I use the Intel PRO/1000 MT Desktop (8254OEM) adapter type. I like this because it puts the virtual Ubuntu system on the same network as my PC allowing me to map to my NAS storage box inside Ubuntu to copy the compiled binaries over easily. Under USB enable and check USB 2.0 (EHCI) Controller. I gave mine a 100 GB VDI that grows as needed to that size. You probably can get away with less.

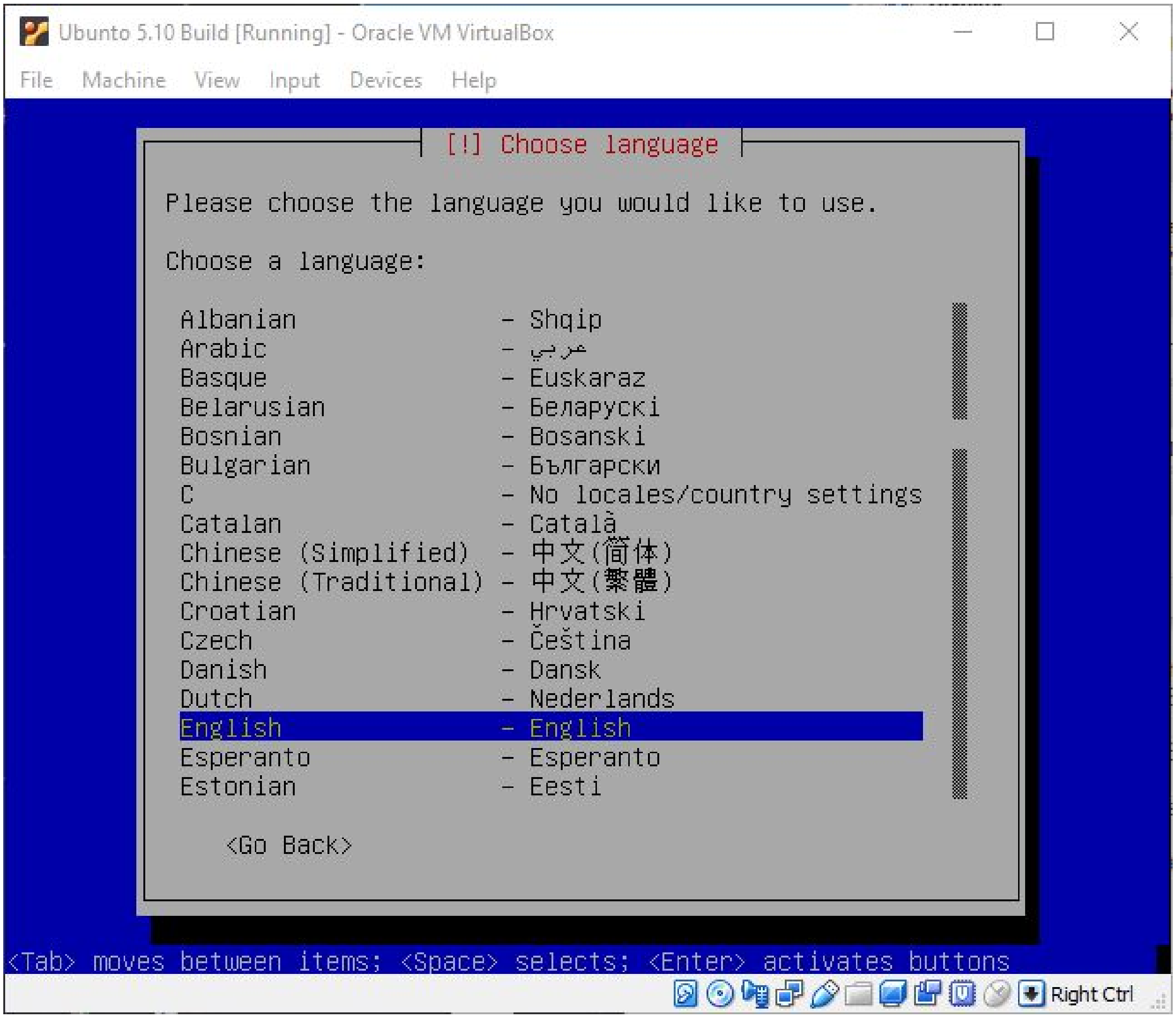
Insert the ubuntu-5.10-dee-i386.iso into the Virtual's IDE cd drive and start the virtual.

When it boots off the CD type install and press enter



```
To boot as a Live DVD, press ENTER.
For a normal installation suitable for most desktop or laptop systems, type
'install' then ENTER.
To install only the base system, type 'server' then ENTER.

Press F1 for help and advanced installation options.

boot: *_
```

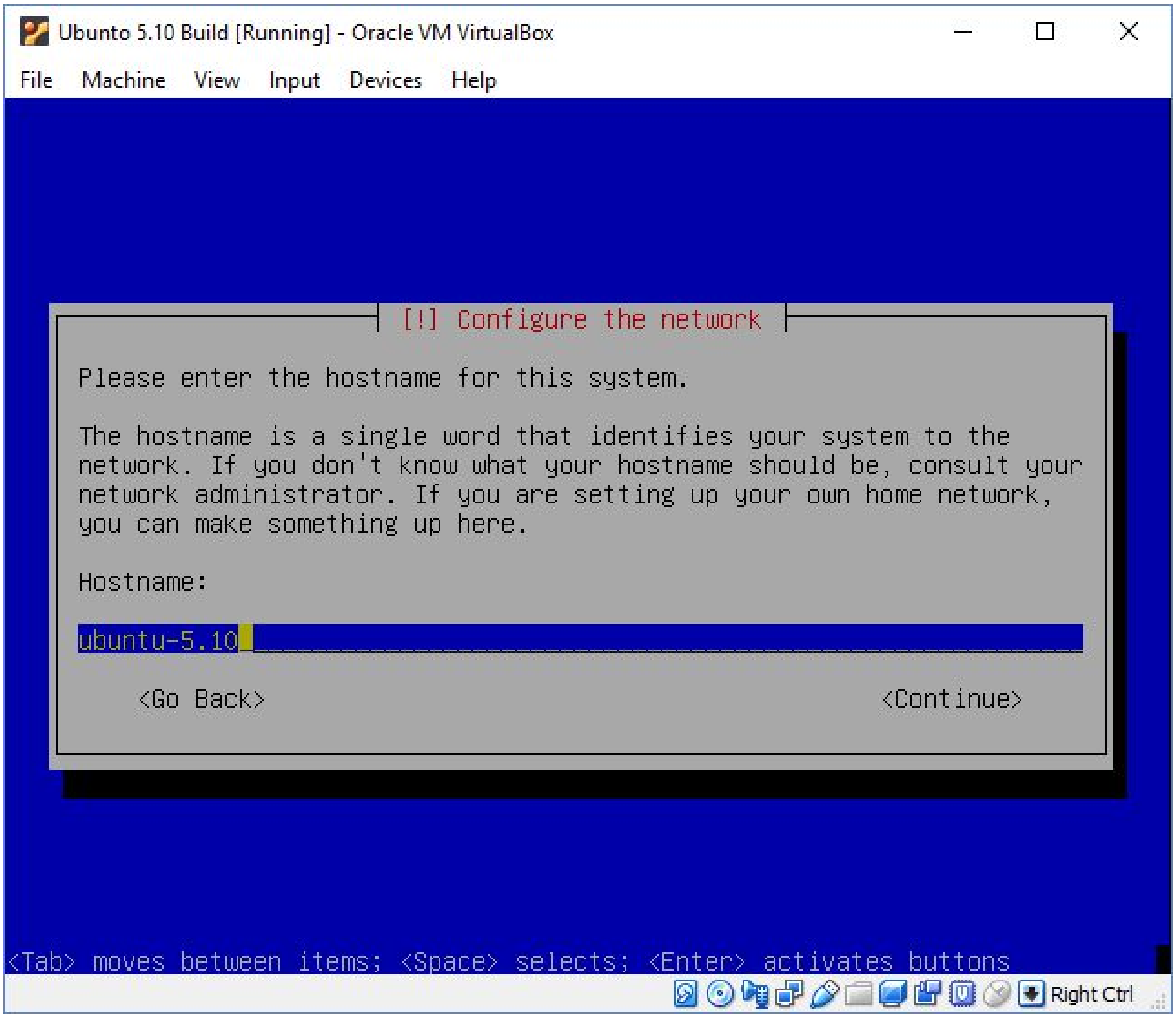
Select your language on the next screen, country and so on and it will start detecting hardware.



Ubunto 5.10 Build [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Right Ctrl

```
[!] Choose language

Please choose the language you would like to use.

Choose a language:

  Albanian               - Shqip
  Arabic                 - عربي
  Basque                 - Euskaraz
  Belarusian             - Беларускі
  Bosnian                - Bosanski
  Bulgarian              - Български
  C                      - No locales/country settings
  Catalan                - Català
  Chinese (Simplified)   - 中文(简体)
  Chinese (Traditional)  - 中文(繁體)
  Croatian               - Hrvatski
  Czech                  - Čeština
  Danish                 - Dansk
  Dutch                  - Nederlands
  English                - English
  Esperanto              - Esperanto
  Estonian               - Eesti

     <Go Back>

<Tab> moves between items; <Space> selects; <Enter> activates buttons
```

Name your system



[!] Configure the network

Please enter the hostname for this system.

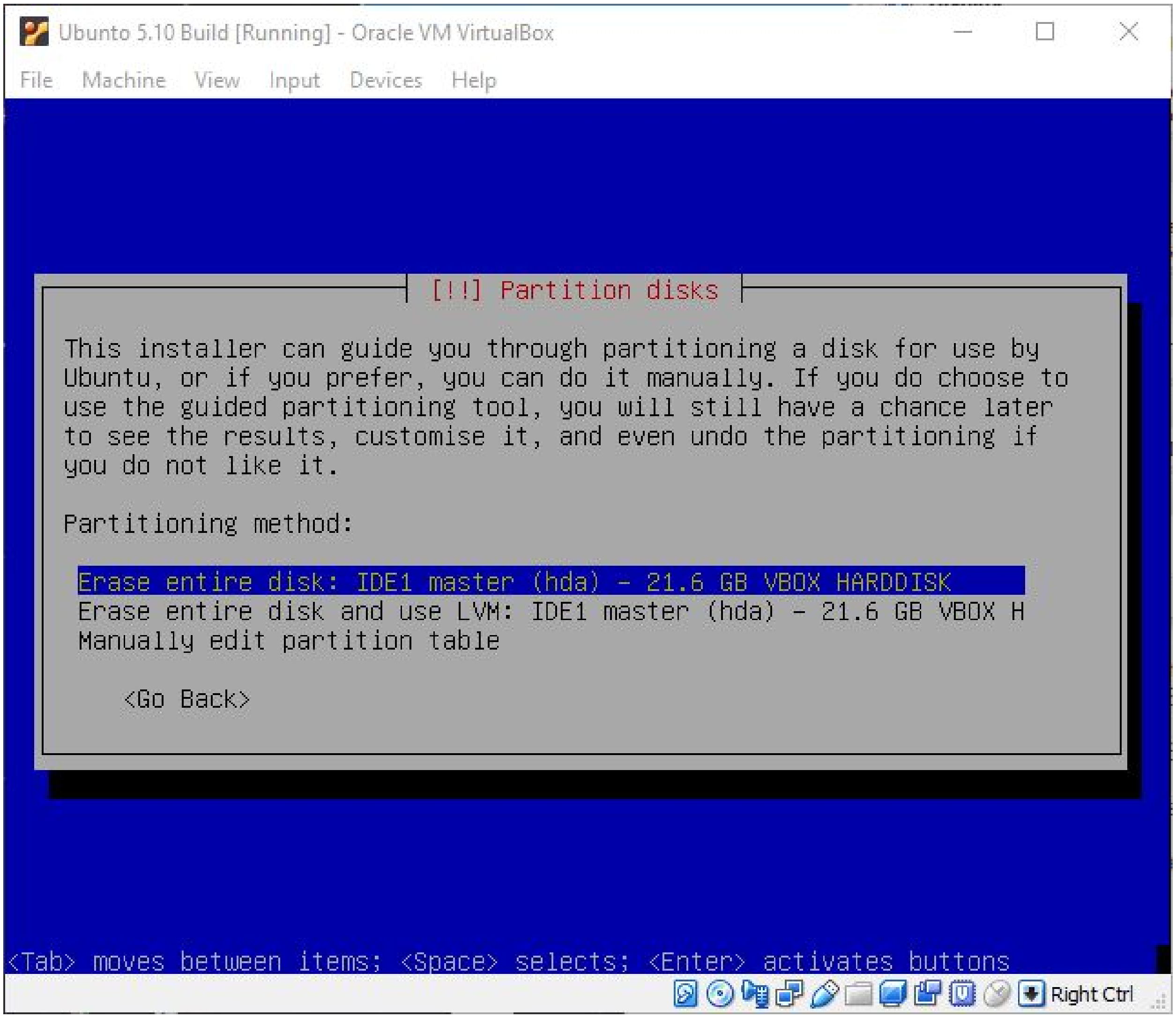
The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

Hostname:

ubuntu-5.10

<Tab> moves between items; <Space> selects; <Enter> activates buttons

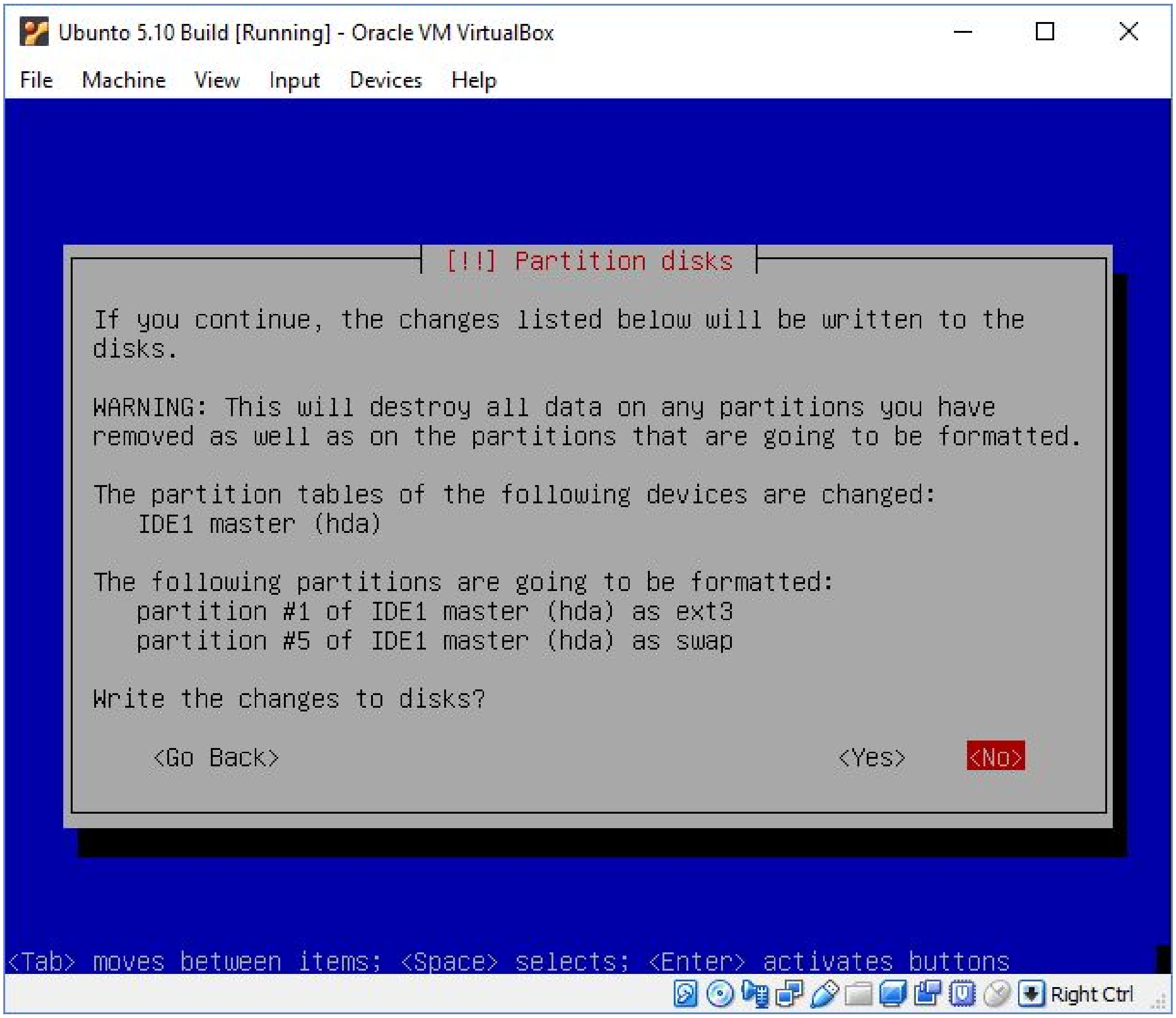
It'll run through another hardware detection and then ask to partition your drive. I just choose the first option.



Ubunto 5.10 Build [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

```
[!!] Partition disks

This installer can guide you through partitioning a disk for use by
Ubuntu, or if you prefer, you can do it manually. If you do choose to
use the guided partitioning tool, you will still have a chance later
to see the results, customise it, and even undo the partitioning if
you do not like it.

Partitioning method:

 Erase entire disk: IDE1 master (hda) - 21.6 GB VBOX HARDDISK
 Erase entire disk and use LVM: IDE1 master (hda) - 21.6 GB VBOX H
 Manually edit partition table

    <Go Back>

<Tab> moves between items; <Space> selects; <Enter> activates buttons
```

Select <Yes> to write the changes



Ubunto 5.10 Build [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

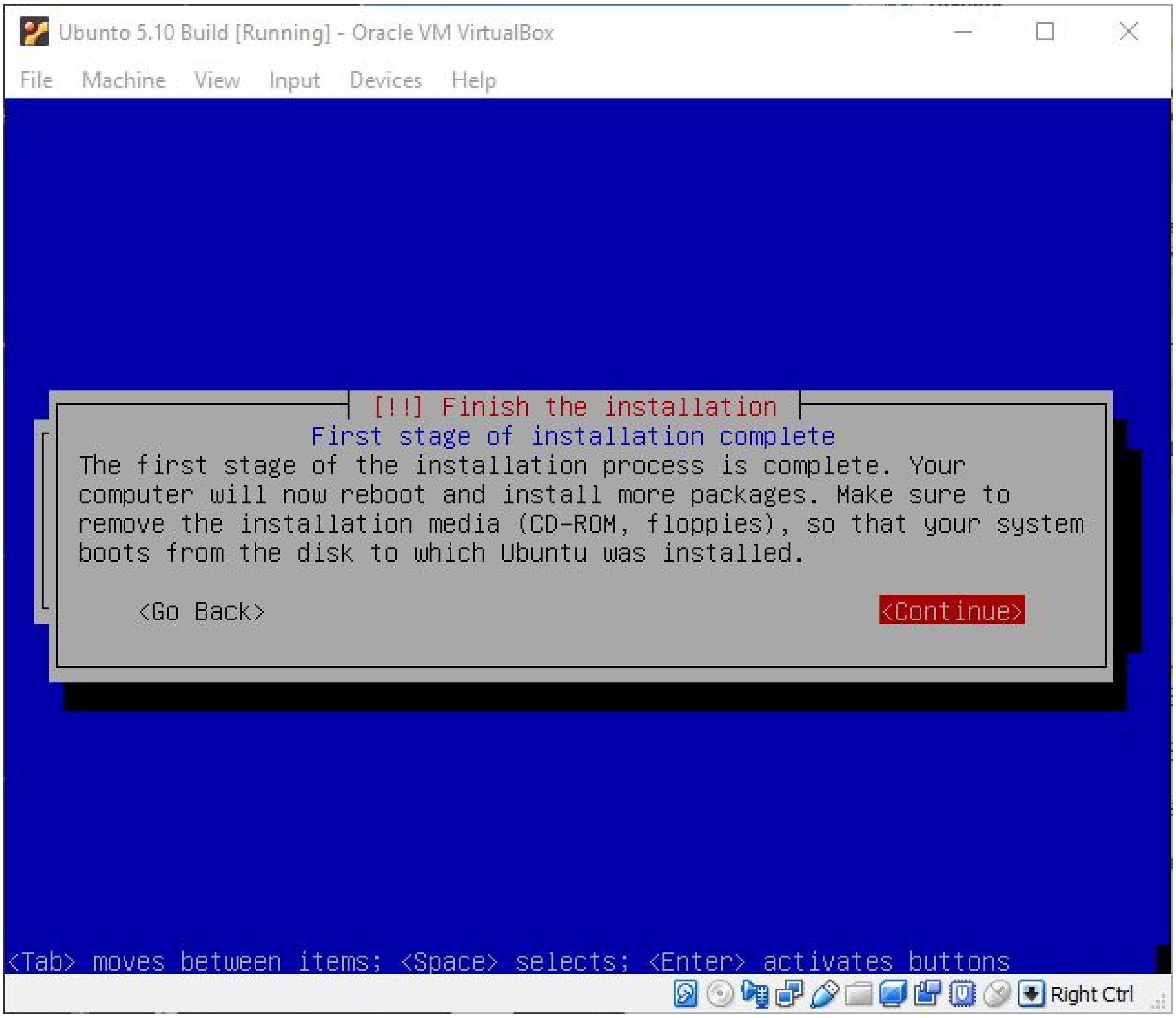
```
[!!] Partition disks

If you continue, the changes listed below will be written to the
disks.

WARNING: This will destroy all data on any partitions you have
removed as well as on the partitions that are going to be formatted.

The partition tables of the following devices are changed:
   IDE1 master (hda)

The following partitions are going to be formatted:
   partition #1 of IDE1 master (hda) as ext3
   partition #5 of IDE1 master (hda) as swap

Write the changes to disks?

    <Go Back>                                        <Yes>    <No>

<Tab> moves between items; <Space> selects; <Enter> activates buttons
```

It will begin installing Ubuntu

Select your time zone

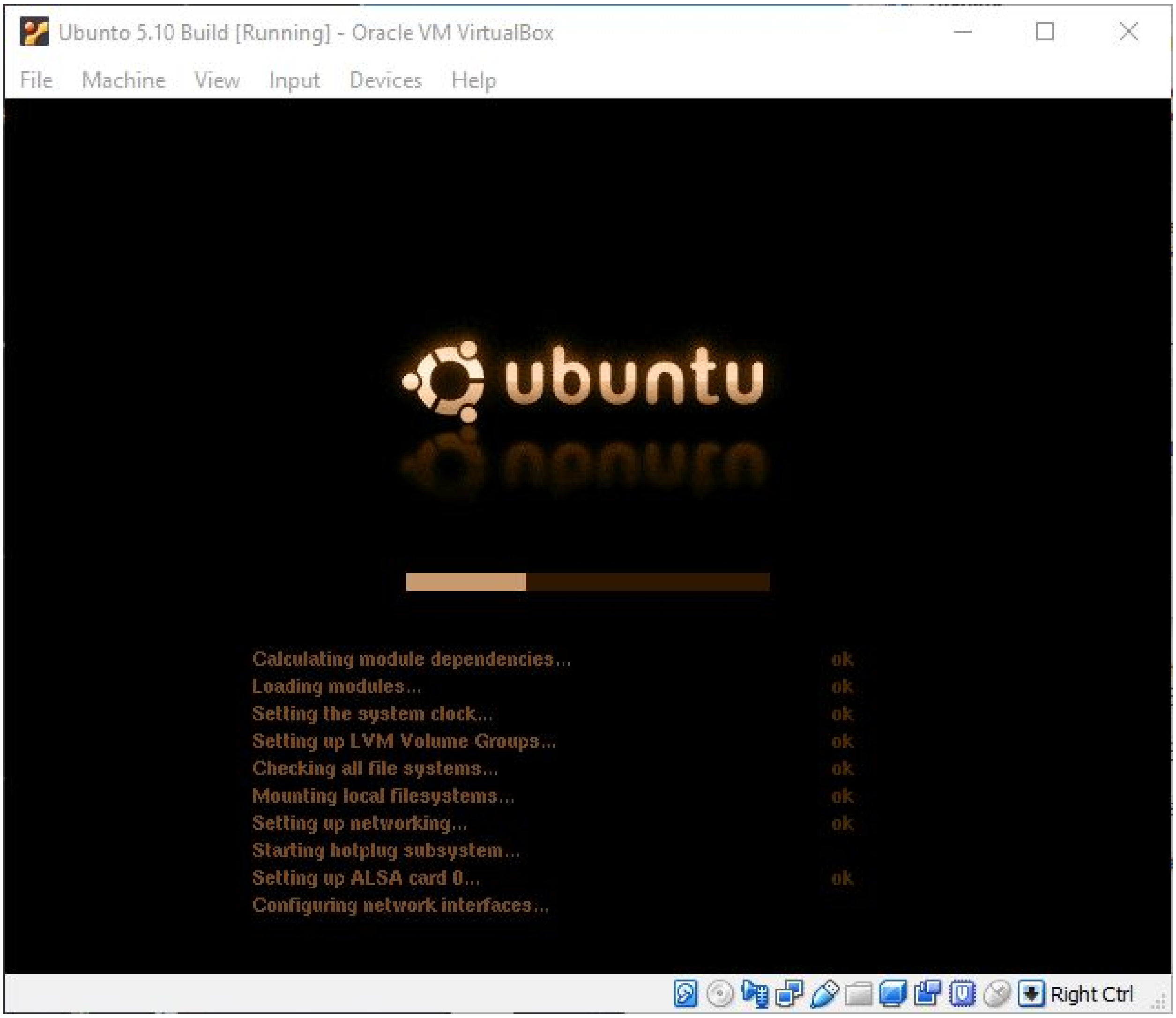
Enter your name and continue, then it’ll ask for a username.

After continuing you'll be prompted to enter a password and then confirm the password. You've now finished the initial installation.



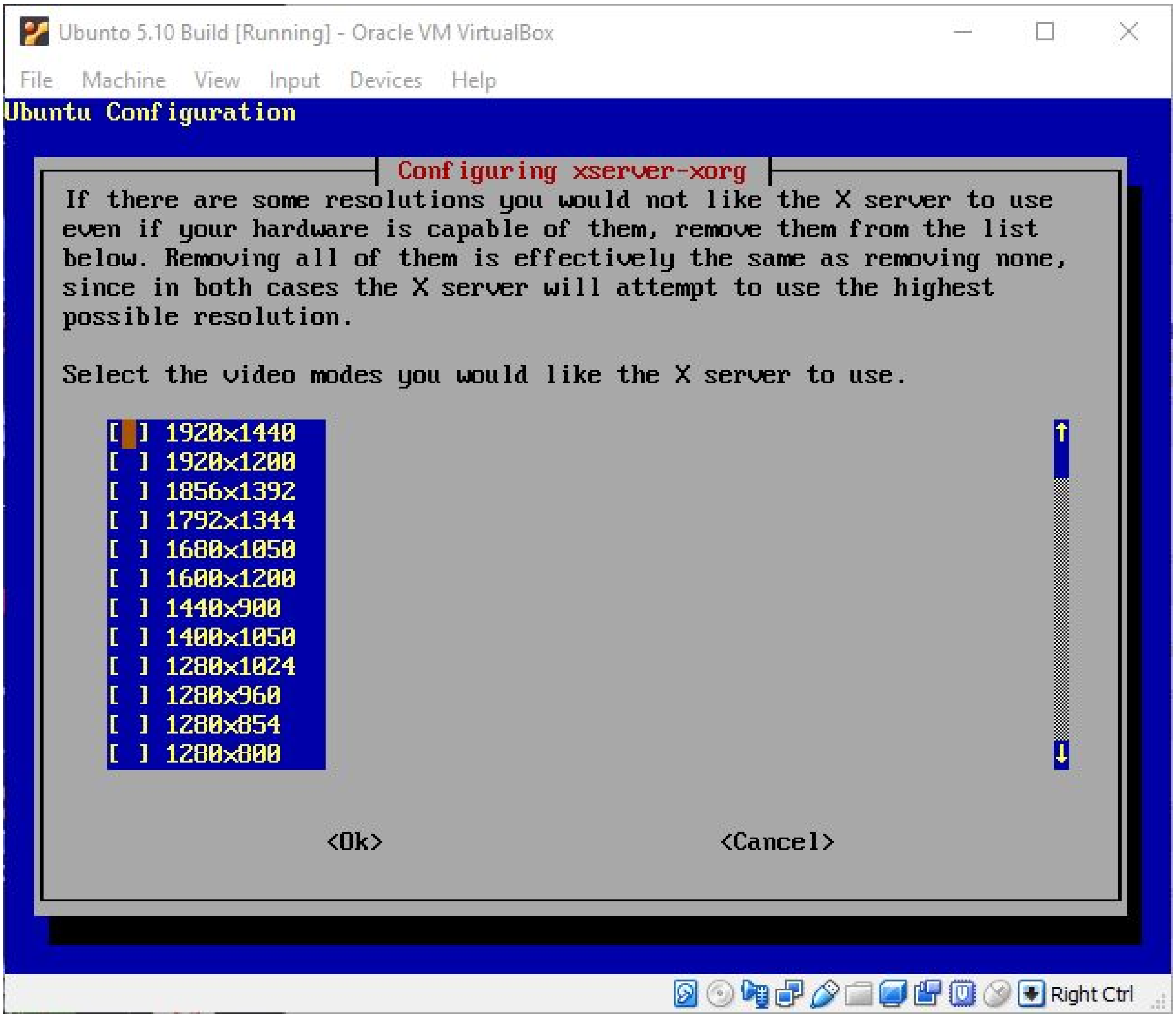
```
[!!] Finish the installation
First stage of installation complete
The first stage of the installation process is complete. Your
computer will now reboot and install more packages. Make sure to
remove the installation media (CD-ROM, floppies), so that your system
boots from the disk to which Ubuntu was installed.

    <Go Back>                                          <Continue>

<Tab> moves between items; <Space> selects; <Enter> activates buttons
```

The system will reboot and start Ubuntu.



```
Calculating module dependencies...                    ok
Loading modules...                                    ok
Setting the system clock...                           ok
Setting up LVM Volume Groups...                       ok
Checking all file systems...                          ok
Mounting local filesystems...                         ok
Setting up networking...                              ok
Starting hotplug subsystem...
Setting up ALSA card 0...                             ok
Configuring network interfaces...
```

It will go through “Installing packages” as it sets up for the first time, then ask you to select your desired desktop resolution.

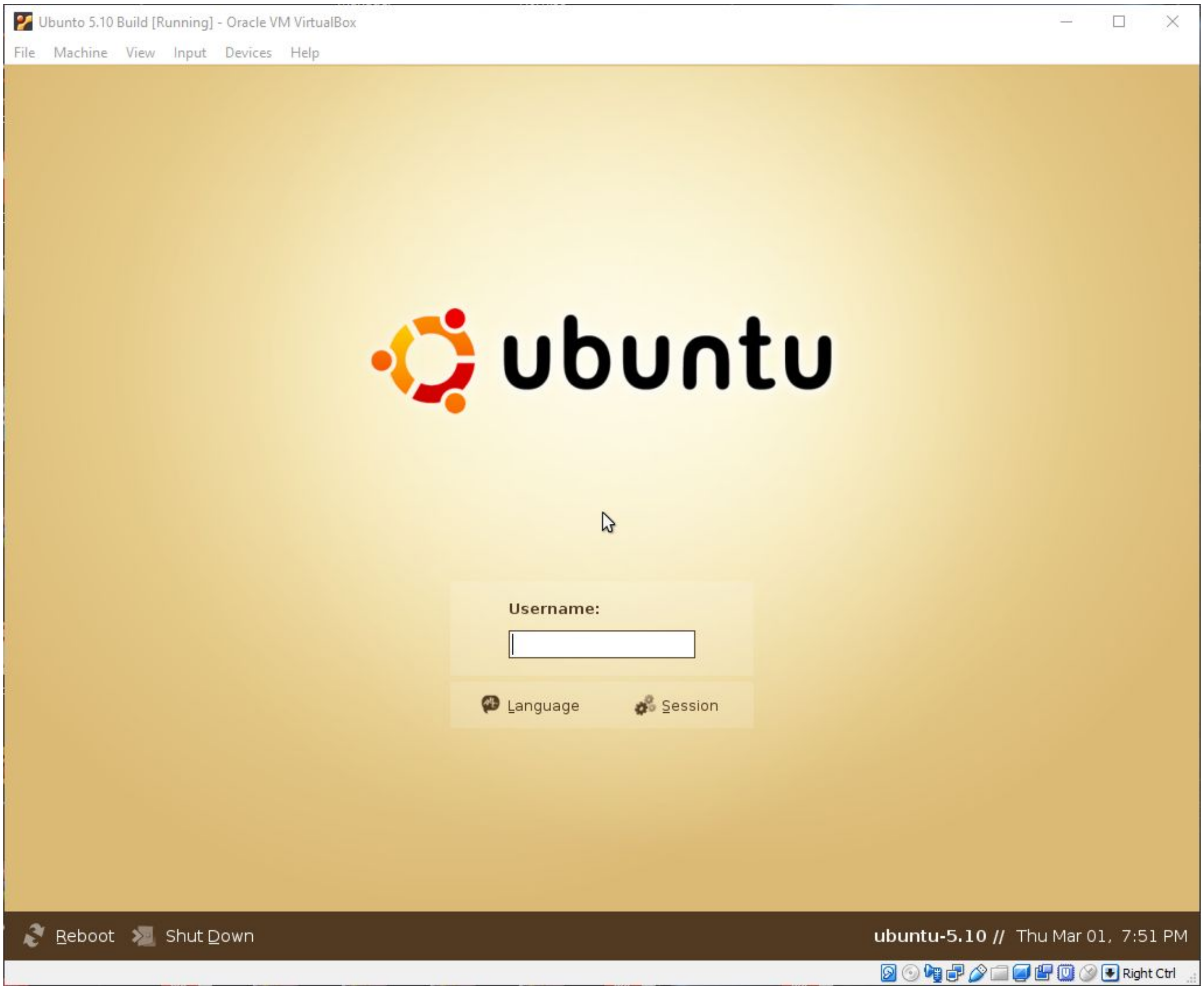


Ubunto 5.10 Build [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Right Ctrl

```
Ubuntu Configuration

                    ┤ Configuring xserver-xorg ├
 If there are some resolutions you would not like the X server to use
 even if your hardware is capable of them, remove them from the list
 below. Removing all of them is effectively the same as removing none,
 since in both cases the X server will attempt to use the highest
 possible resolution.

 Select the video modes you would like the X server to use.

     [ ] 1920x1440
     [ ] 1920x1200
     [ ] 1856x1392
     [ ] 1792x1344
     [ ] 1680x1050
     [ ] 1600x1200
     [ ] 1440x900
     [ ] 1400x1050
     [ ] 1280x1024
     [ ] 1280x960
     [ ] 1280x854
     [ ] 1280x800


              <Ok>                        <Cancel>
```

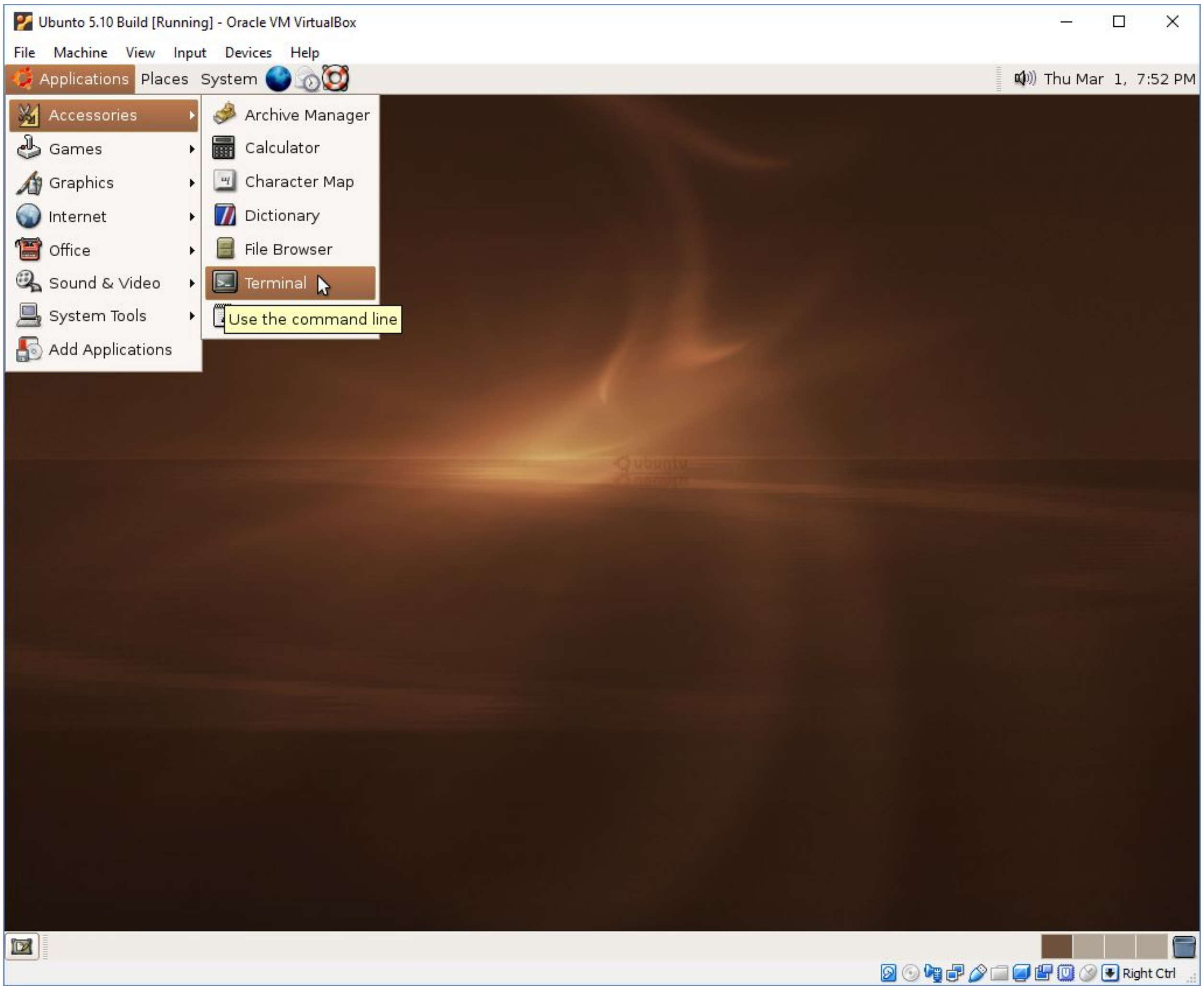
I leave the defaults and press Tab to get to the <OK> and press Enter.

After a few more minutes you'll be at the Ubuntu login screen asking for your Username:



At this point, Insert the ubuntu-5.10-dee-i386.iso into the Virtual's IDE cd drive again.

Once logged in, go to Applications at the top, Accessories, Terminal



Type the command line below

sudo apt-get install gcc-3.3 libncurses5-dev linux-headers-2.6.12-9-686 make

Enter your password when prompted

Now type

sudo ln -s /usr/bin/gcc-3.3 /usr/bin/gcc

And enter your password if prompted.

Use the web browser in Ubuntu to download the kernel source from my site
http://amithlon.snkbitten.com/ Direct link to the kernel is below:
Kernel 4 by Milan Milosavljević
http://amithlon.snkbitten.com/files/source/Kernel-4/linux-2.4.37.9-amithlon.tar.bz2

Double click on the linux-2.4.37.9-amithlon.tar.bz2 file to open and extract the files for kernel 4. In my Home folder I created a folder named Amithlon and extracted there. I now have in my home folder an amithlon folder and in that a folder named linux-2.4.37.9-amithlon.   To compile 4.0 go into the linux-2.4.37.9-amithlon folder using the terminal.

With the terminal open you will change directory to amithlon/linxux-2.4.37.9-amithlon. If you've followed with my setup you'd type

```
cd amithlon/linux-2.4.37.9-amithlon/
```

Now let's make a copy of the .config file that is there that Milan used before we make our compiling environment ready.
Type the commands below:

```
cp .config ../
```

Then type

```
make clean mrproper
```

Now we'll copy the config back so we can use it again as the above command would have removed it.

```
cp ../.config ./
```

Now we'll make it our config file.

```
make oldconfig
```

Our next step is to setup the dependencies for the kernel so type

```
make dep
```

When that completes you are ready to run a compile, type

```
make bzImage
```

The compile will take a few minutes, of course the faster your host machine the faster the compile process.

The kernel is compiled, now it's time to make the modules

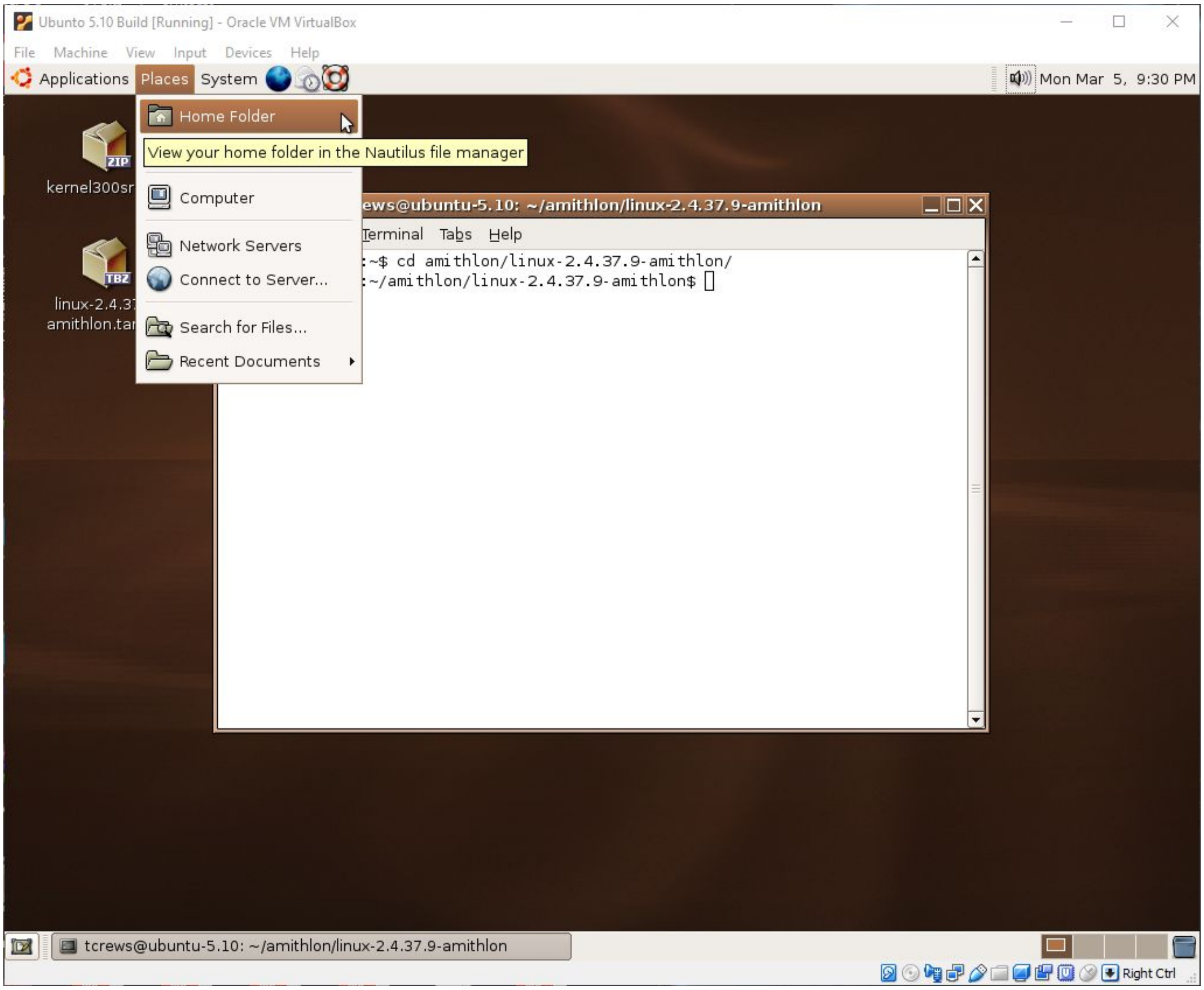
```
make modules
```

And when that completes

```
sudo make modules_install
```

This will ask for your password and compile any modules that had the [m] configured in the .config file.

The kernel will be in arch/i386/boot and of course is named bzImage.
(Places in the top menu bar)


Ubunto 5.10 Build [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Mon Mar 5, 9:30 PM
Home Folder
View your home folder in the Nautilus file manager
Computer
Network Servers
Connect to Server...
Search for Files...
Recent Documents
kernel300sr
ZIP
TBZ
linux-2.4.37
amithlon.tar
ews@ubuntu-5.10: ~/amithlon/linux-2.4.37.9-amithlon
Terminal Tabs Help
tcrews@ubuntu-5.10: ~/amithlon/linux-2.4.37.9-amithlon
Right Ctrl

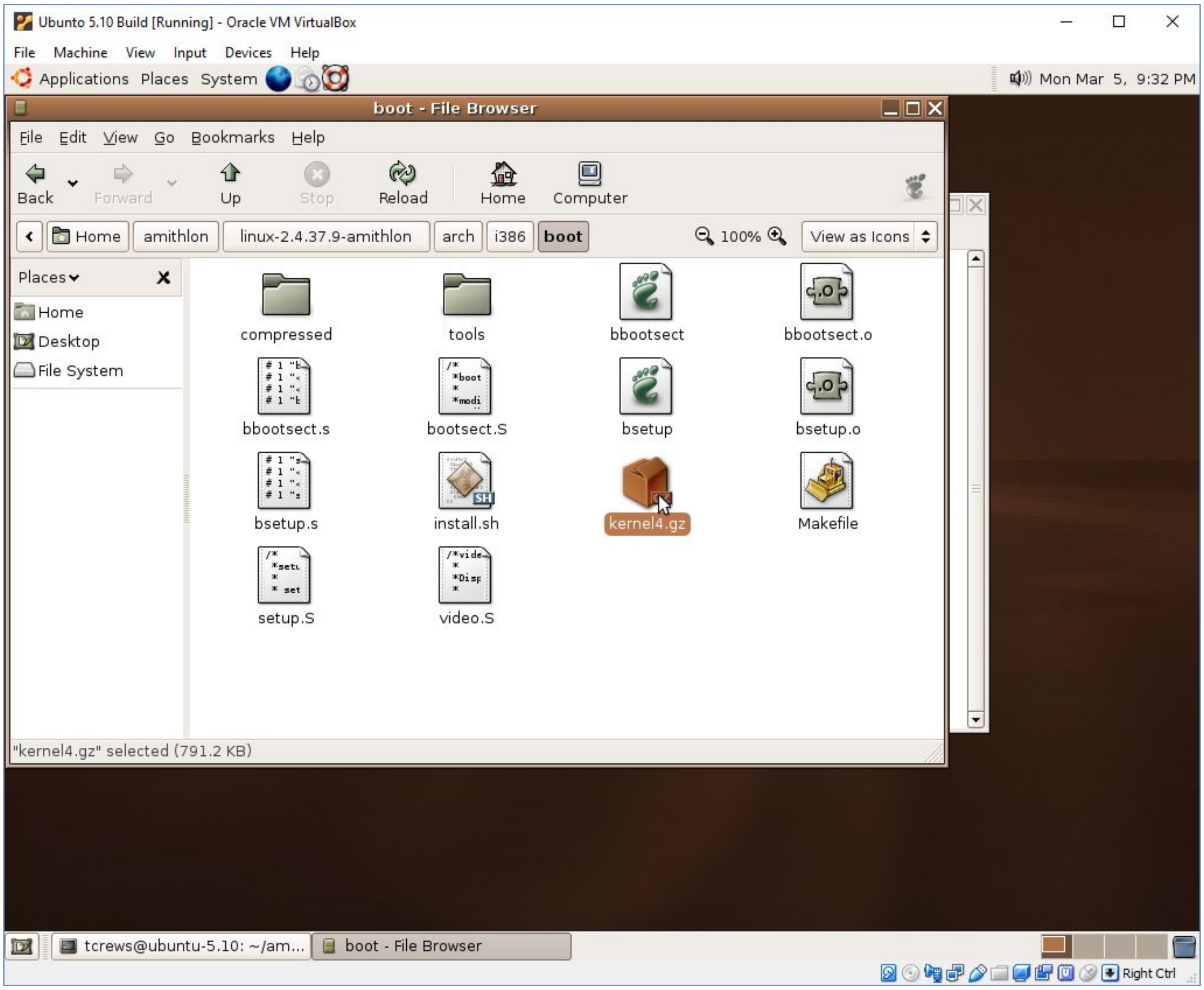
```
:~$ cd amithlon/linux-2.4.37.9-amithlon/
:~/amithlon/linux-2.4.37.9-amithlon$ 
```

I use the “Places” file explorer and browse to amithlon/linux-2.4.9.37-amithlon/arch/i386/boot, and copy it to a USB thumb drive. If you have an SMB share you could try to set that up so you could just drag the kernel over without have to USB thumb drives.

The modules will be in lib/modules/2.4.37.9/kernel/drivers. They should work with the pci_modules file from the driver4 archive that originally came with kernel4. I’ve talked with Milan and he had a tool he used to create the text file containing the module information (id and addresses) but does not remember the tool’s name. Using the text file he provided should cover the auto loading of modules with pciinsmod unless there are modules you’ve added to the .config to build that Milan didn’t. The pci_modules file is copied to Amithlon’s S: folder.

Drivers4.zip contains Milan’s compiled modules and the pci_modules text file.

(Location of compiled kernel)


Ubunto 5.10 Build [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places System
Mon Mar 5, 9:32 PM
boot - File Browser
File Edit View Go Bookmarks Help
Back Forward Up Stop Reload Home Computer
Home amithlon linux-2.4.37.9-amithlon arch i386 boot
100%
View as Icons
Places
Home
Desktop
File System
compressed
tools
bbootsect
bbootsect.o
bbootsect.s
bootsect.S
bsetup
bsetup.o
bsetup.s
install.sh
kernel4.gz
Makefile
setup.S
video.S
tcrews@ubuntu-5.10: ~/am...
boot - File Browser
Right Ctrl

"kernel4.gz" selected (791.2 KB)

Congratulations! You have compiled the Amithlon kernel 4 as configured by Milan. You can run “make menuconfig” when you want to make changes to it and <exit> and save changes. You may want to keep Milan’s .config file saved so you can copy it back and do a “make oldconfig” again if you make changes that break the kernel.

My recommendation is know your motherboard and cards. I use no modules on my system as the framebuffer (nVidia) is compiled in, my network card (intel e1000) is compiled in and I use AHI Amiga drivers for my SB Live card. If you have supported motherboard audio, figure out which modules it’s using and set those to compile in the kernel.