KALI Linux 2016

Install in Virtual Box get your Kali 2016 Linux up and running in a Virtual Machine

Overview:

   This guide is to help you get going with the "The Complete Hacking Course" for beginners without buying any specialized equipment for penetration testing. As an introduction to Pen Testing this will be all you need for this course. As you advance you will probably not be using a Virtual Machine (VM) for your testing purposes.

   It does not matter what the OS of your host machine is, if you can get a Virtual Box up and running the steps are the same.

   The reason we suggest a Virtual Machine for beginners is that if something goes awry you won't lose your entire system.

   This document was done independently with no connections to anyone. The intent is to speed up the Kali installation process in a Virtual Machine.

Before you Begin

- ♦ Working with what you already have is fine for the course, however not for real world pen testing
- ♦ Most things will work, and by the way some things just DO NOT.
- ♦ Does internal wireless meet the chip requirements? **STOP Warning:** A VM will show up in Kali as an Ethernet adapter eth0. You can't do the wireless lectures without an external USB wireless card when using a Virtual Machine.
- ♦ To be redundant I did not say use the internal wireless card in a Virtual Machine.
- ♦ To be able to do the wireless lectures in a VM, do a search for USB wireless adapters for Kali Linux. Here are a couple of sites that talk about what to use:
  http://www.blackmoreops.com/2014/01/08/recommended-usb-wireless-cards-kali-linux/ and http://www.aircrack-ng.org/doku.php?id=compatibility_drivers and http://www.wirelesshack.org/top-kali-linux-compatible-usb-adapters-dongles-2015.html

## Installation Steps

Pre-Flight check List

- ◆ Check for any updates to your BIOS, then Enable Virtualization in your BIOS.
- ◆ Check your disk space on your current OS. You need 15% free for your system and then you need additional space for Virtual Box and Kali. *This is important to CHECK before you begin.*
- ◆ Hyper-V cannot be used for this course. VMware can, but you should know how to use it.
- ◆ **Note:** If you have enabled Hyper-V, you will have issues when trying to install Kali in Virtual Box and will not be able to see the 64Bit versions of Linux for Virtual Machines you can disable Hyper-V in Windows Features just uncheck anything Hyper-V and reboot
- ◆ Check your version of your OS. Is it 64 Bit or 32 Bit? All your downloads should match your system. *(64 bit program is not going work on a 32 bit machines)*
- ◆ Download Virtual Box & Virtual Box extension and install both before creating your Kali Virtual Machine
  https://www.virtualbox.org/wiki/Downloads
- ◆ Download the Kali 2106 iso from https://www.kali.org/downloads/ be sure you have a complete download (some security suites will block this)
- ◆ Before attaching your USB external Wireless card, be sure to get Kali up and working with Virtual Box extensions, guest additions and updates installed.

BIOS Enable Virtualization

Enable Virtualization in the BIOS (if you do not you will not be able to see 64bit editions and the install may fail). Enter the BIOS during startup of your physical system. Each system is different so **the key to press may be different for your system.** I used a Dell laptop so I had to hit F2 on boot up to get into my BIOS.
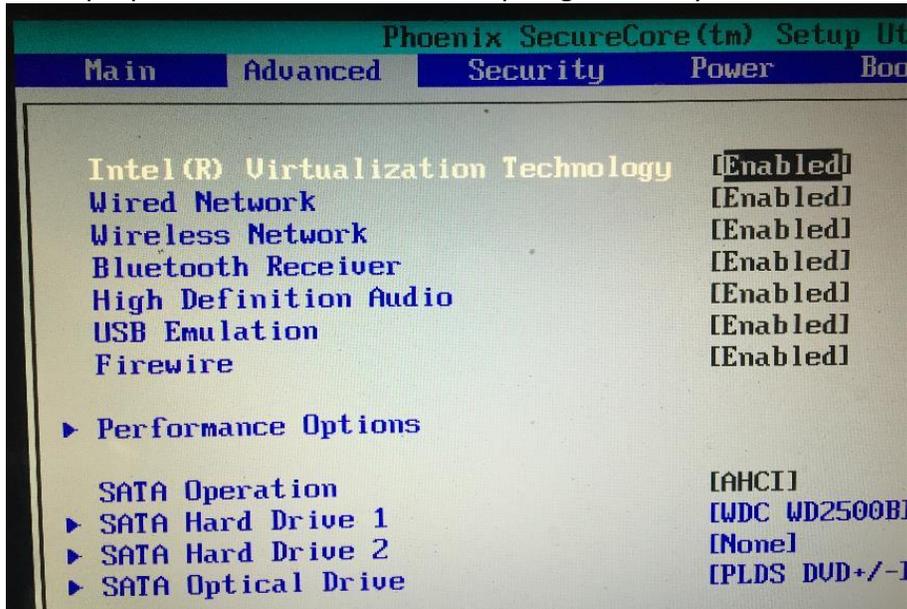
In this case Virtualization was under the Advanced Tab, you want to make sure that it is enabled **(MOST of the trouble with setting up a VM have been caused by skipping doing this part)** Once you have enabled Virtualization you want to save your changes and exit the BIOS. In some systems it may not say Virtualization but AMD-V or VT-x
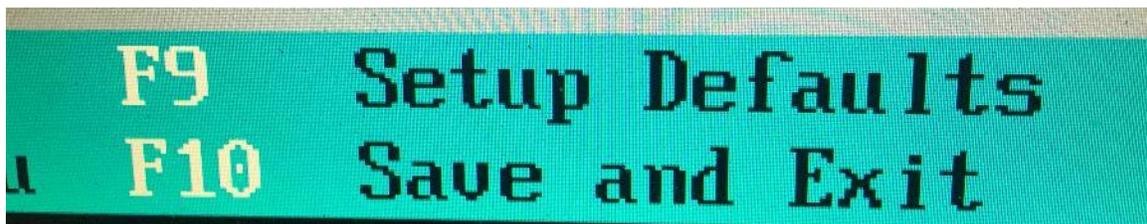
Some systems may need to be powered down completely then restarted for this to take effect. You can check with your system manufacturer or google how to get into your BIOS. You can read about what the BIOS is at https://en.wikipedia.org/wiki/BIOS

Virtual Box + Extensions

Install the Virtual Box and then install the Virtual Box Extensions. These are basic Windows programs just take the defaults for both Virtual Box & Virtual Box Extensions.

If your host system is OS X or Linux you need to do the same installs but with the Virtual Box editions that match your system. The steps for creating a Virtual Machine are the same.

To avoid any problems when in Windows choose right click & **Run as Administrator** option (even if you have administrative rights). Be sure you have the version that matches your system OS if you are not in Windows. All downloads can be found at https://www.virtualbox.org/wiki/Downloads

You also need to download **Kali Linux 2016** iso file from https://www.kali.org/downloads/ pick the version that matches your system. Install based on your operating system. If you have a 64 bit system then download the 64 bit versions & 32 bit just use the 32 bit options. If you do not have virtualization available only use the 32 bit downloads for your install.
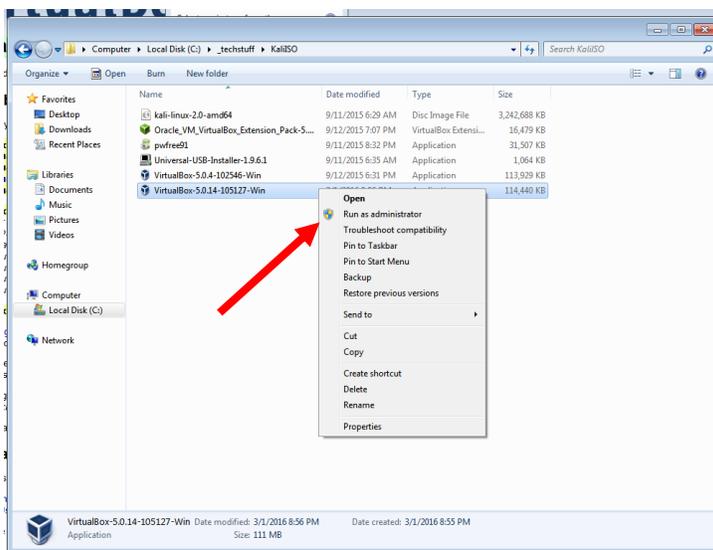
In Windows Run as administrator when finished close and install VBox xtensions
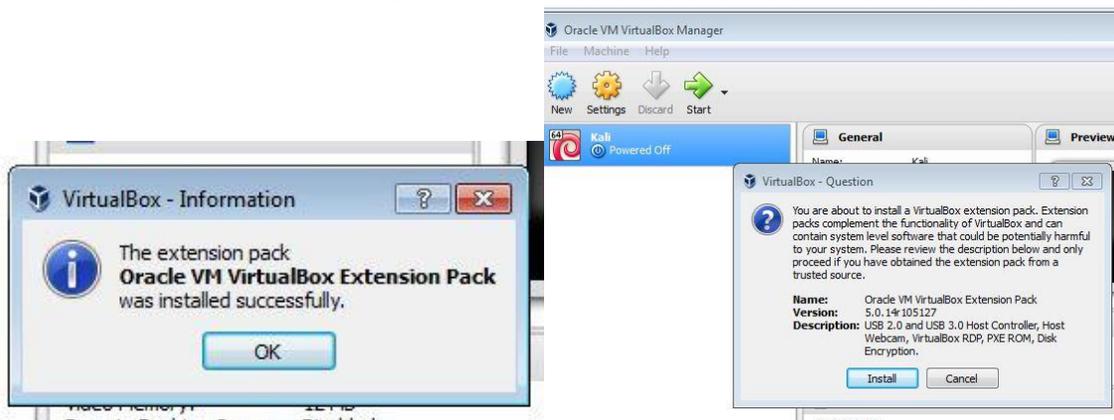
Building your Kali Virtual Machine

Start Virtual Box (I already have Kali installed here in another VM that's why you see that icon there ….we will make a new VM here)
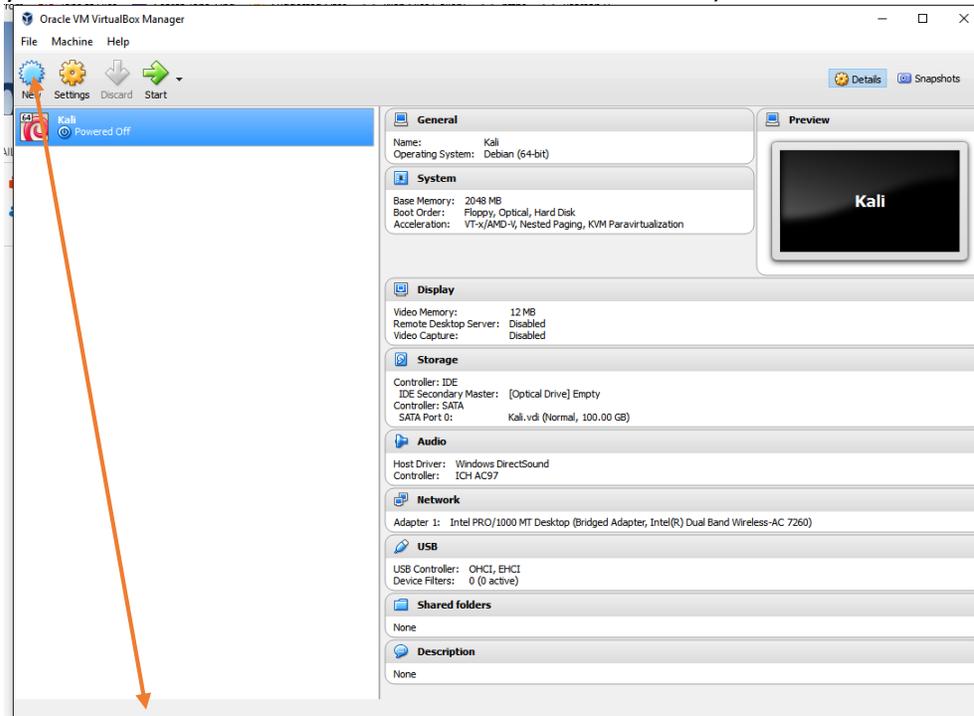
Click on New

This Starts the Creation of a new VM
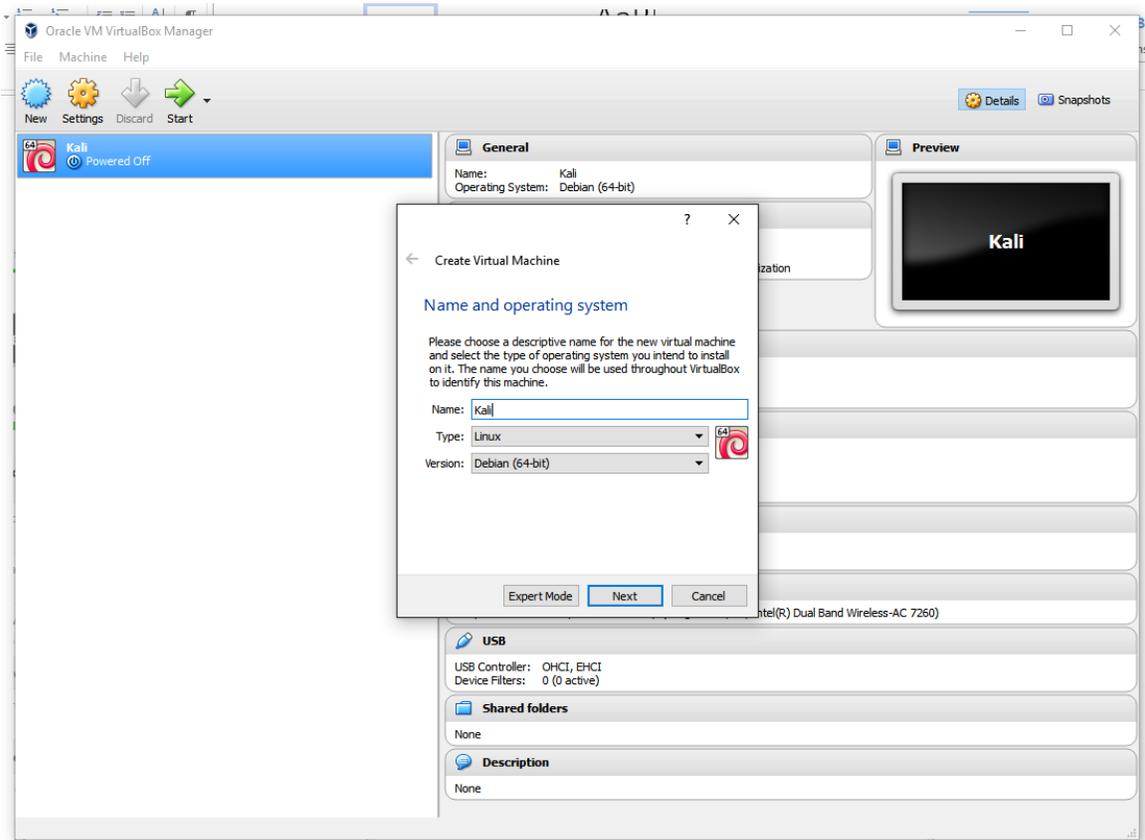
- ◆ Give it a name like "Kali" or whatever you want it to be.
- ◆ Then click the drop down menu by "type" and choose "Linux"

♦ Then choose the "Debian 64bit"(if you have a 64 bit system, and virtualization is on in the BIOS (if you have 32bit system then Debian 32bit option) PRESS next
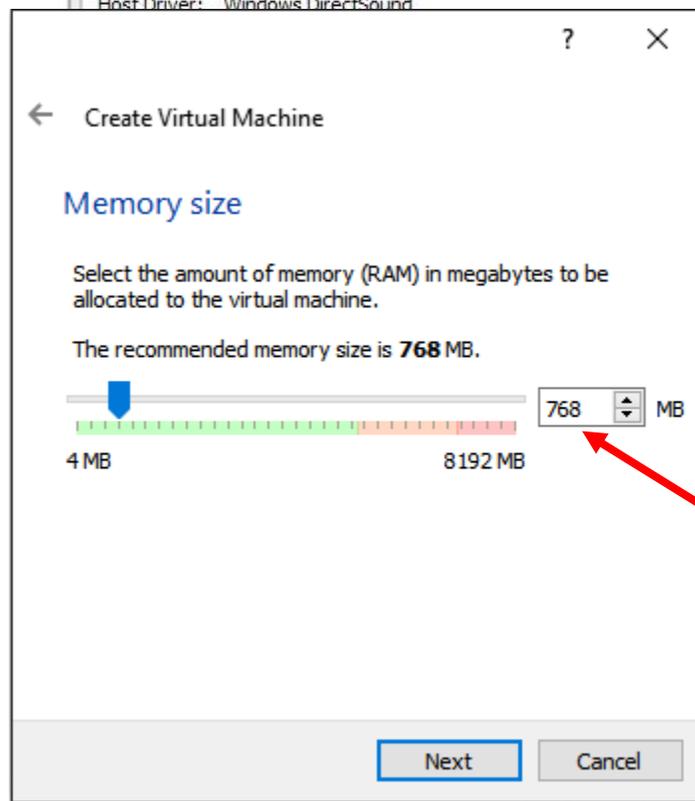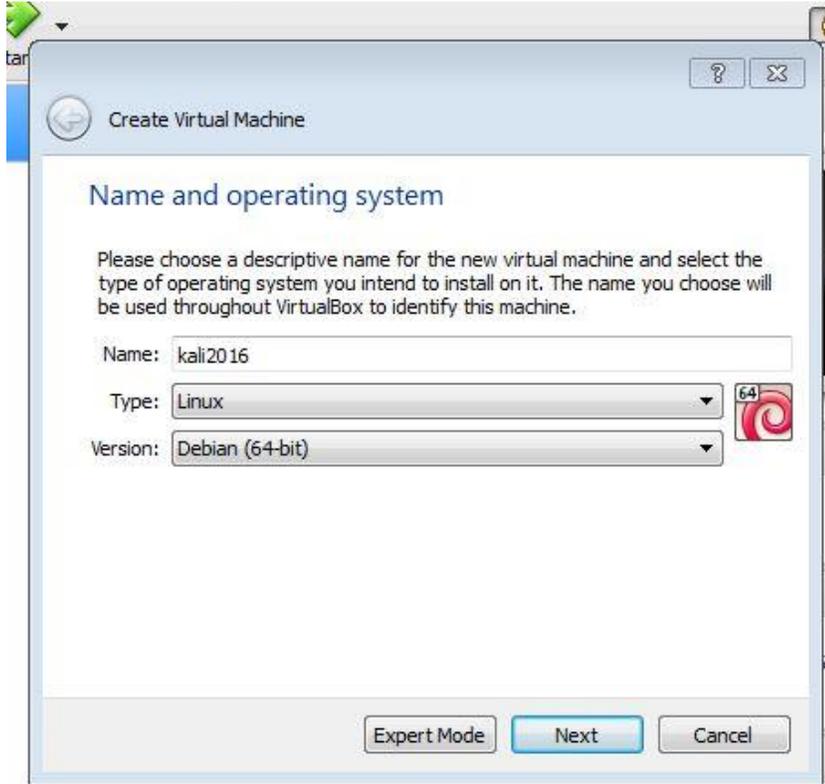
Do Not use default settings at least 1024 if you have more 2048 depends on your Host

Set your memory size, my machine has **8gig** available so I am giving the **VM 2 gig**. You can type in how much you want to give the VM. I chose 2048. This can be changed later if needed. (Don't give it to little or it will be slow and too much your host system will be slow)
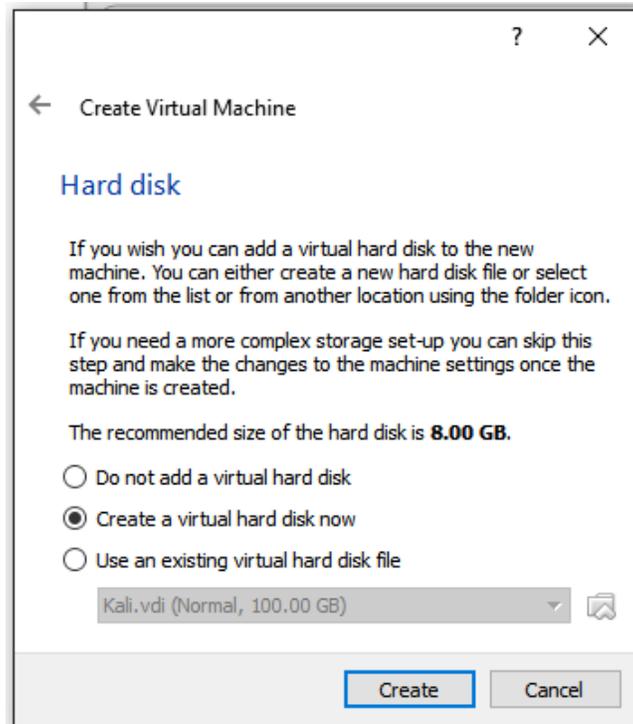
Next we will Create a virtual hard disk for Kali. I used 32gig for this example. You can give it more space if you have it. (again check the free space on your actual hard drive)

? ✕

← Create Virtual Hard Disk

Hard disk file type

Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.

- ● VDI (VirtualBox Disk Image)
- ○ VMDK (Virtual Machine Disk)
- ○ VHD (Virtual Hard Disk)
- ○ HDD (Parallels Hard Disk)
- ○ QED (QEMU enhanced disk)
- ○ QCOW (QEMU Copy-On-Write)

Expert Mode   Next   Cancel

Unless you have other plans take the default and press next
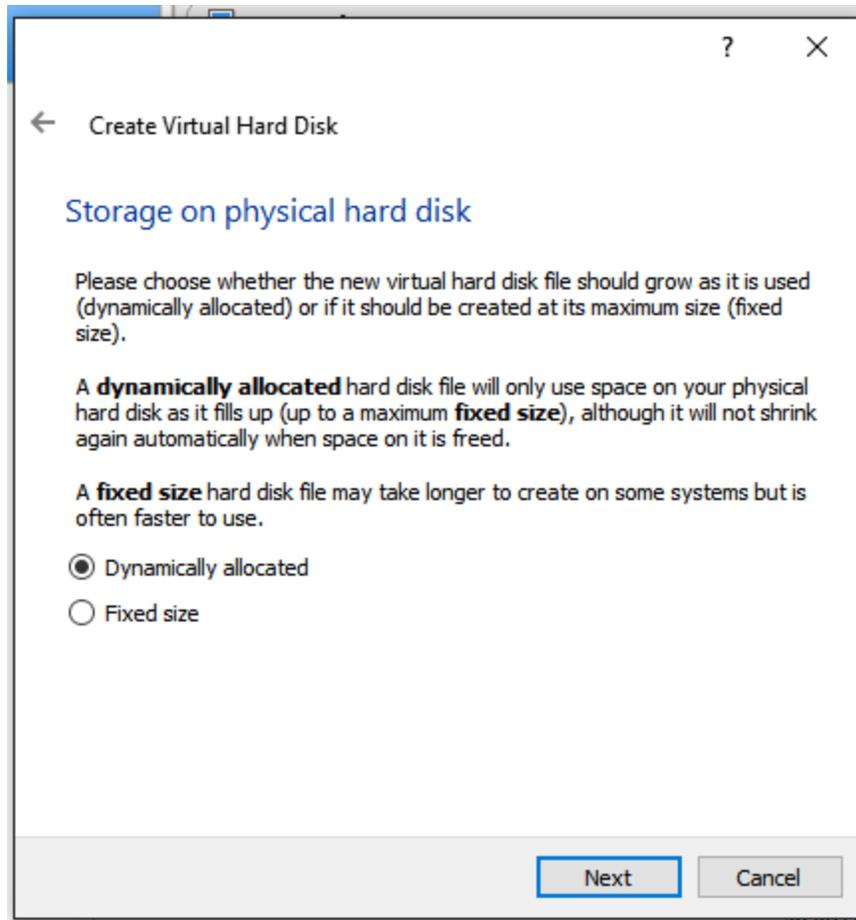
Take the default press next
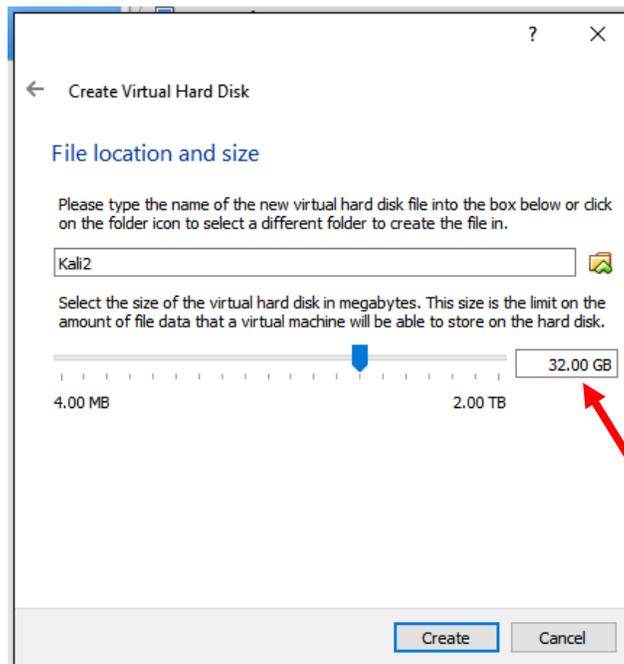
I set this to **32 gig. If have space to spare try 64 gig** and click create (Do Not take default of 8 Gig change it)

Operating System: Debian (64-bit)

System

Base Memory: 2048 MB
Boot Order: Floppy, Optical, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization

Display

Video Memory: 12 MB
Remote Desktop Server: Disabled
Video Capture: Disabled

Storage

Controller: IDE
    IDE Secondary Master: [Optical Drive] Empty
Controller: SATA
    SATA Port 0:   Kali2.vdi (Normal, 32.00 GB)

Audio

Host Driver: Windows DirectSound
Controller: ICH AC97

Network

Adapter 1:   Intel PRO/1000 MT Desktop (NAT)

USB

USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)

Shared folders

None

Description

None

Kali2
Powered Off

The new VM is created now it is time to click on settings

Kali2 - Settings   ?   ✕

General

System

System

Motherboard   Processor   Acceleration

Display

Paravirtualization Interface: Default ▼

Storage   Hardware Virtualization: ☑ Enable VT-x/AMD-V

Audio   ☑ Enable Nested Paging

Network

Serial Ports

USB

Shared Folders

User Interface

OK   Cancel   Help
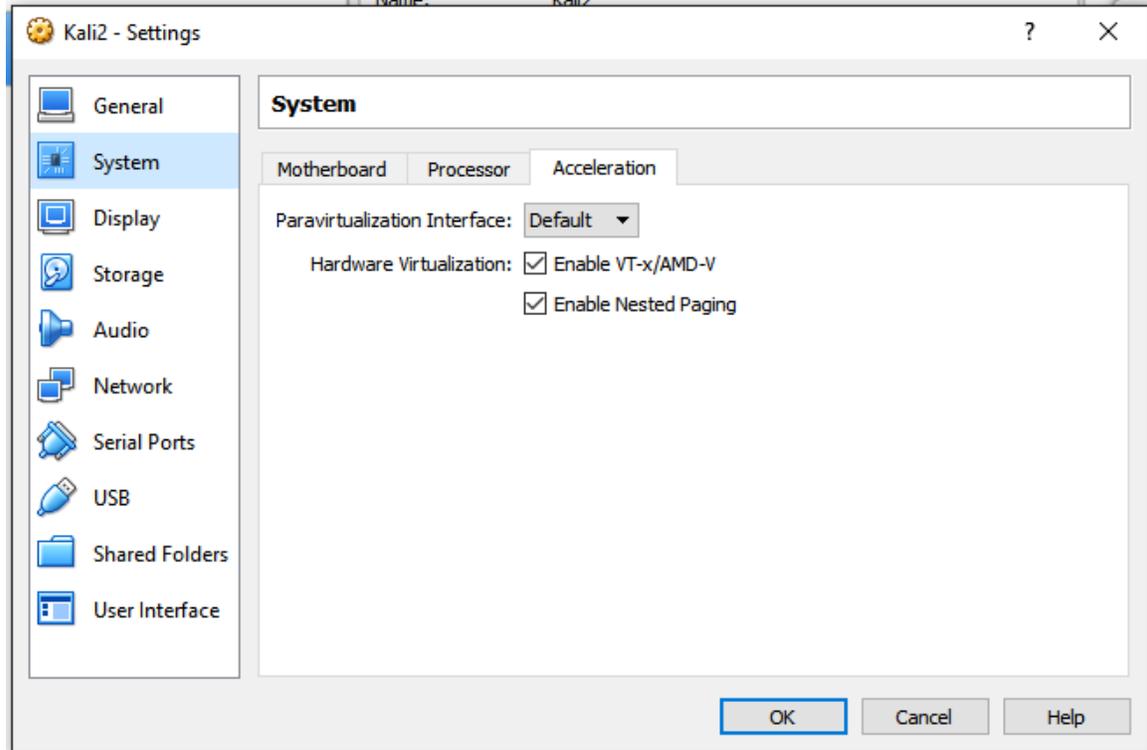
Under System, under the Acceleration tab, all of the options should be checked
(These might be grayed out if you did not turn on virtualization on in your BIOS)

Bridge your adapter (the name of your actual adapter may be different) You want the adapter that your host system is currently getting an ip address and connecting to the internet
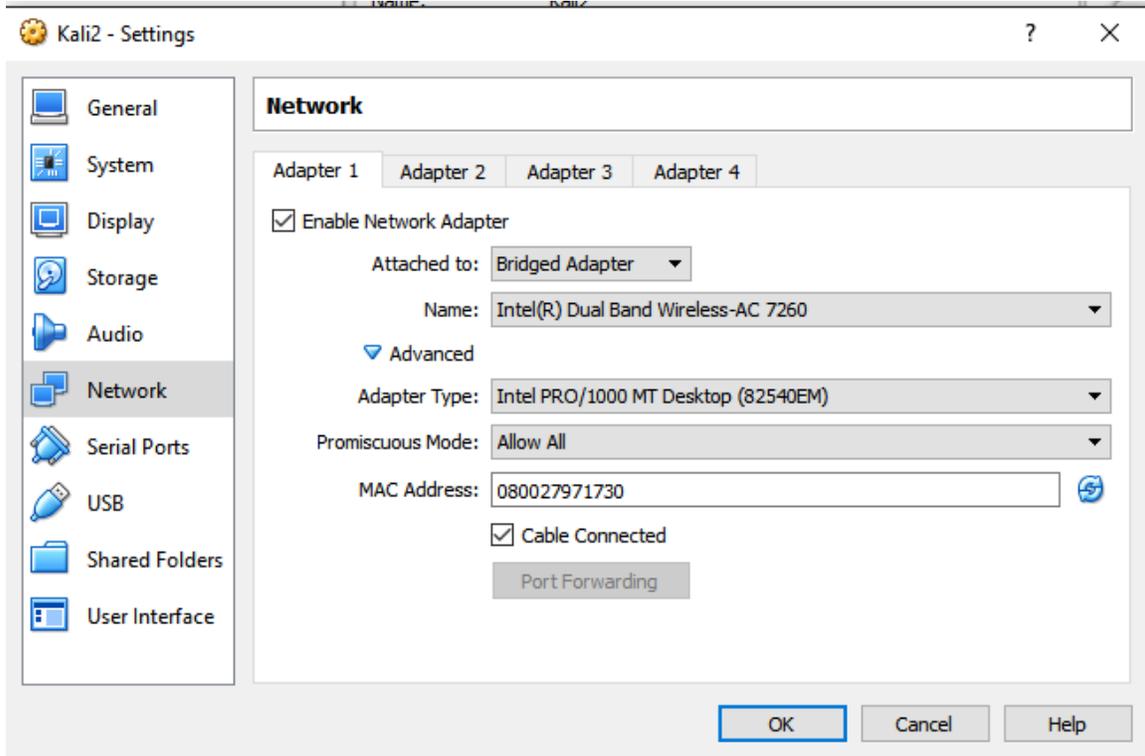
Make your network setting look exactly like this, but with the adapter you have and **allow all** in the advanced section. Your VM is now prepped, press OK, go to the top of VBox and press START
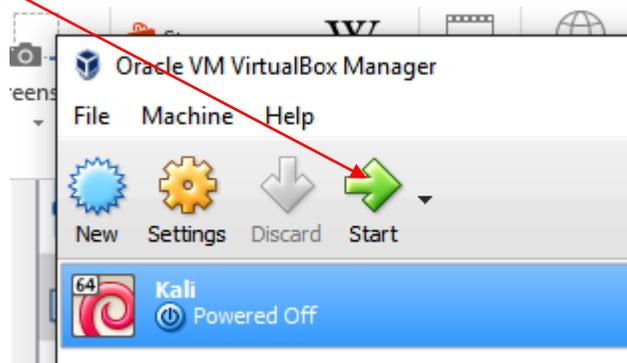
Install Kali ISO image
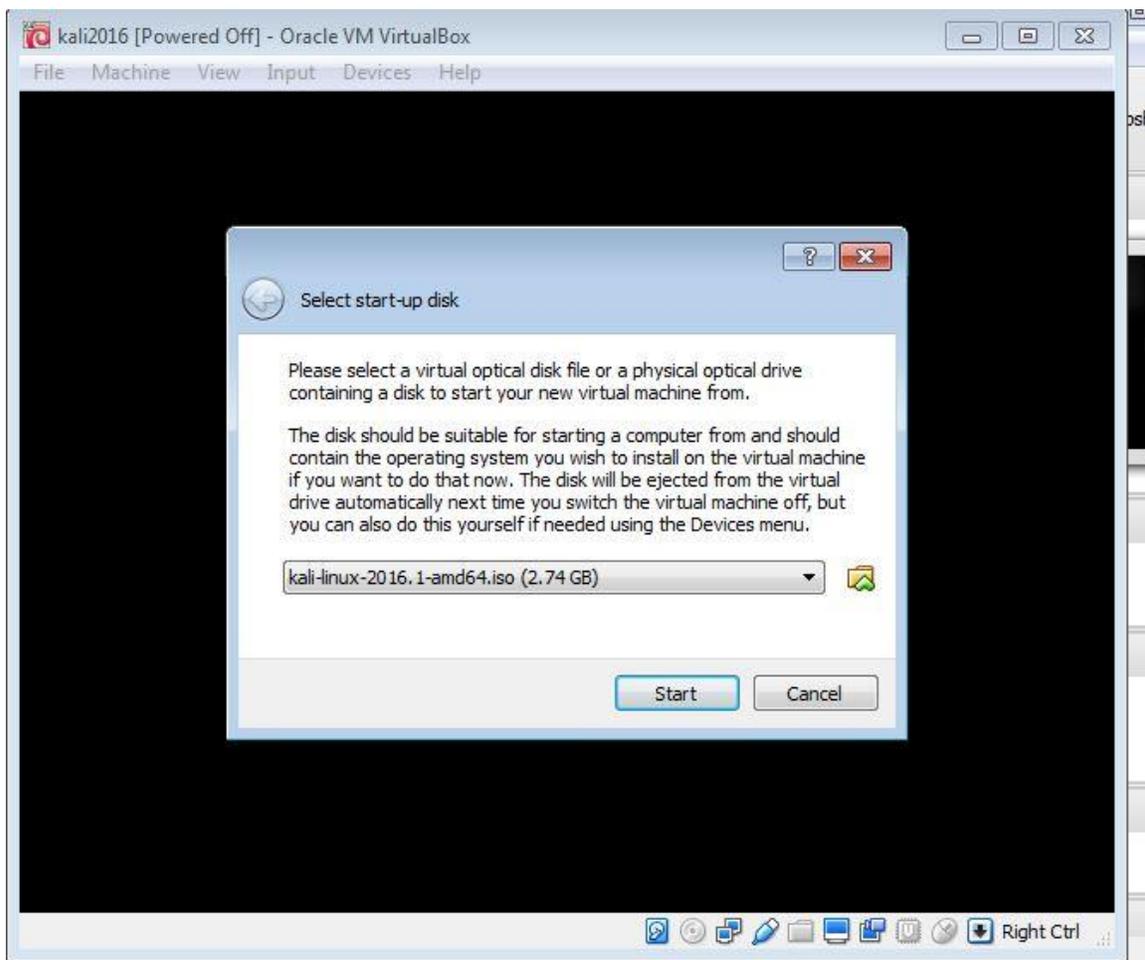
kali-linux-2016.1-amd64 Browse to the 2016 iso

"Select start-up disk" will pop up, browse to the Kali ISO image you downloaded. Use the folder icon to browse to it if you do not see it (hopefully you remember where you put it) press **Start**
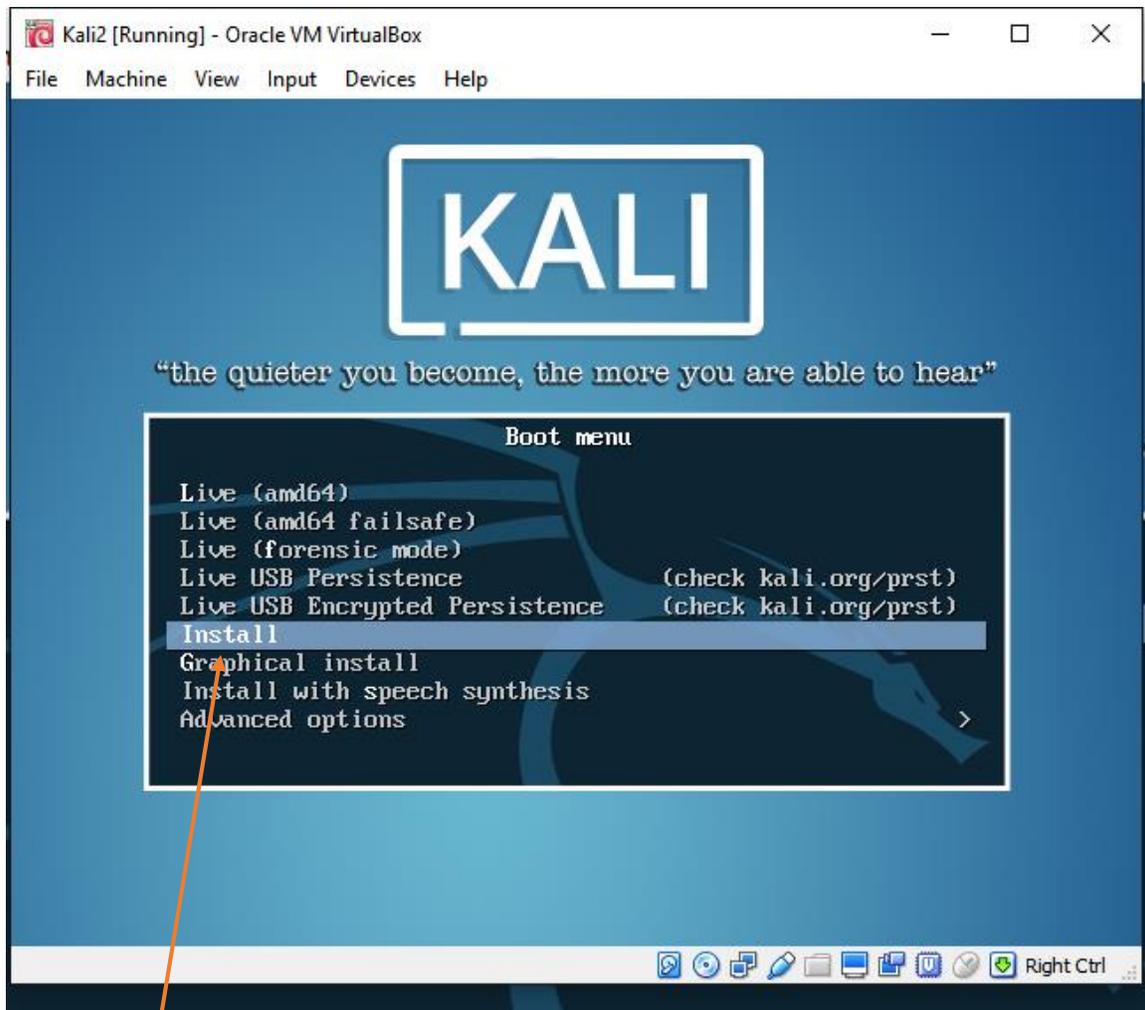
Use the Install option and you are on your way

```
Kali2 [Running] - Oracle VM VirtualBox                                  —    □    ×

File   Machine   View   Input   Devices   Help

┌──────────────────────┤ [!!] Select a language ├──────────────────────┐

  Choose the language to be used for the installation process. The selected language will
  also be the default language for the installed system.

  Language:

                    C                      -   No localization        ↑
                    Albanian               -   Shqip
                    Arabic                 -   عربي
                    Asturian               -   Asturianu
                    Basque                 -   Euskara
                    Belarusian             -   Беларуская
                    Bosnian                -   Bosanski             ▮
                    Bulgarian              -   Български
                    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
                    Finnish                -   Suomi
                    French                 -   Français
                    Galician               -   Galego
                    German                 -   Deutsch
                    Greek                  -   Ελληνικά              ↓

        <Go Back>


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

Select your language and country. I picked American English *(select the defaults on the remainder of the set up screens for your country etc) (incorrect keyboard and you may not be able to log in after)*
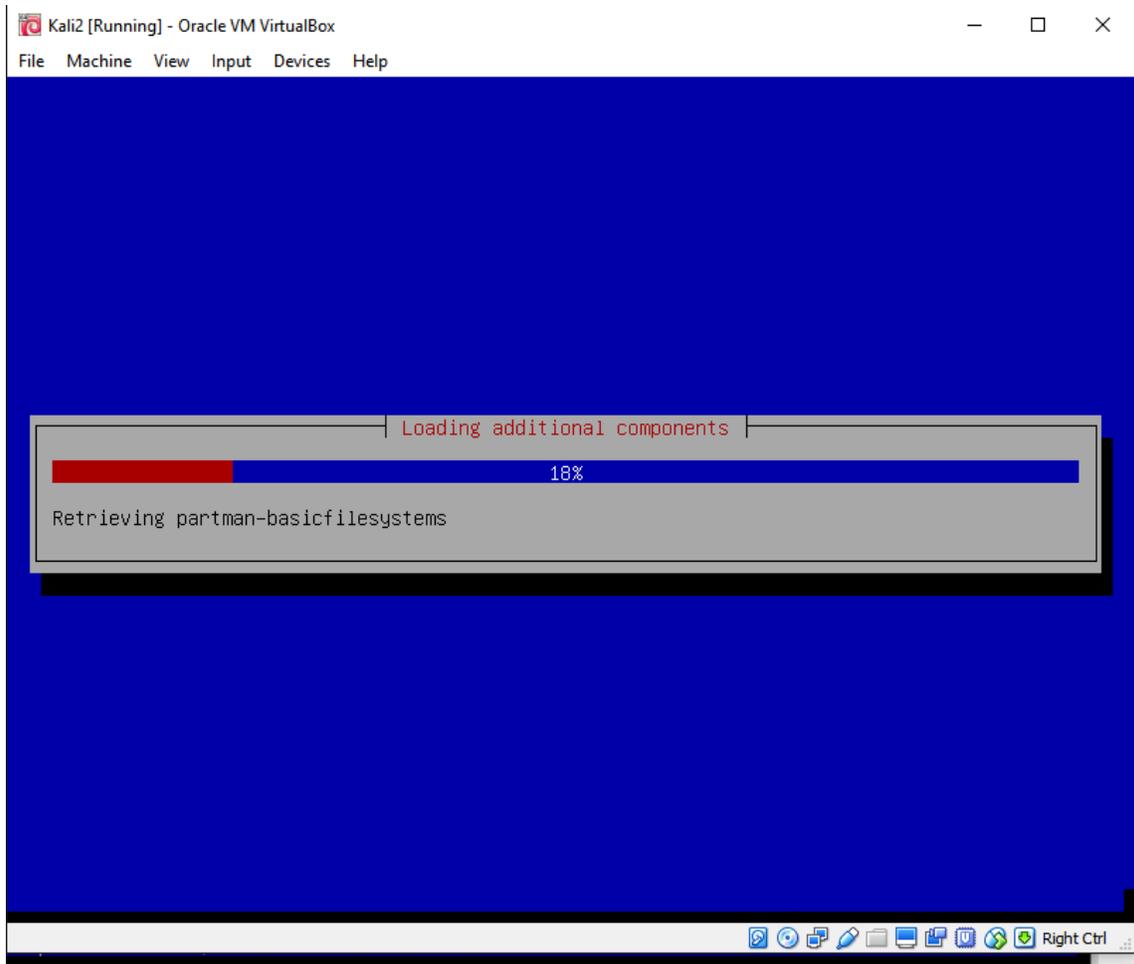
The install should begin. This can take time. *(If you did not allow enough disk space, this operation may fail)*
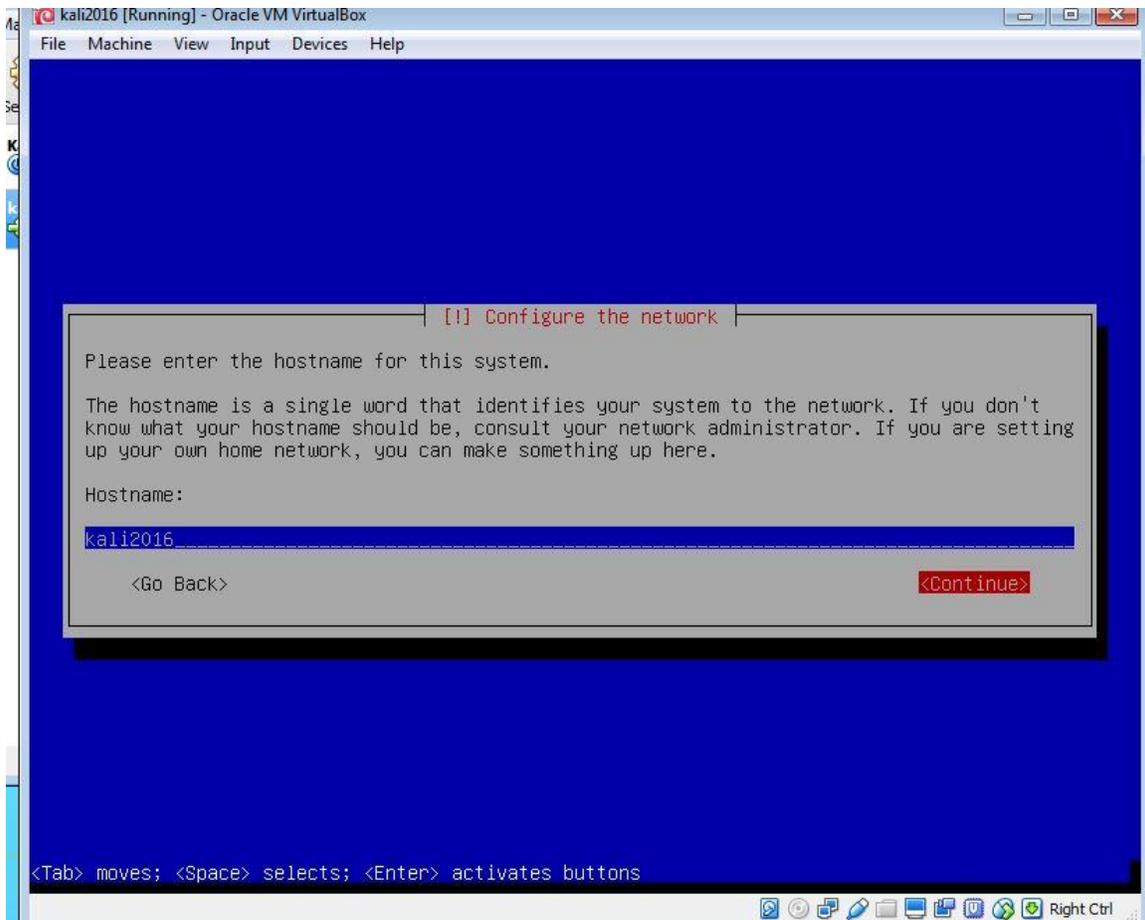
Here you can call it what you want but for Most of the screens, you can take the default and just press continue *(enter key)*
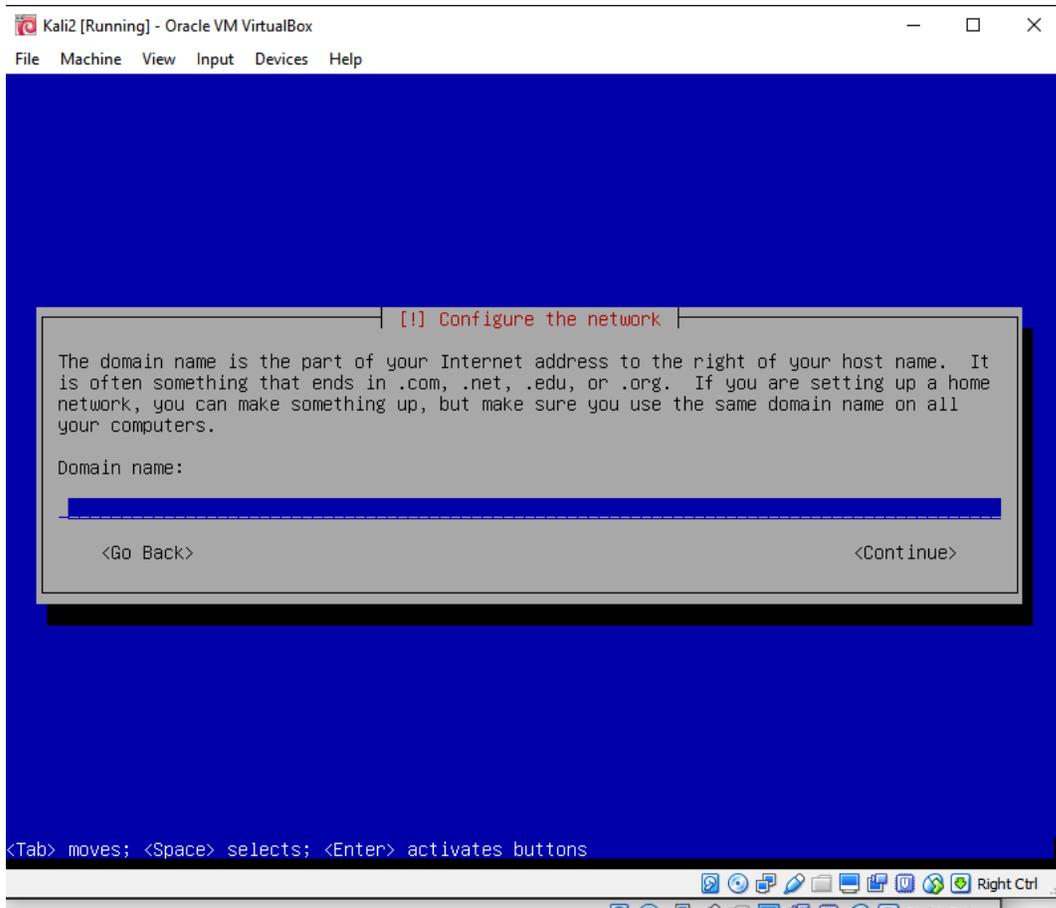
A domain name is not required, just press continue.

```
                    ┤ [!!] Set up users and passwords ├

You need to set a password for 'root', the system administrative account. A malicious or
unqualified user with root access can have disastrous results, so you should take care to
choose a root password that is not easy to guess. It should not be a word found in
dictionaries, or a word that could be easily associated with you.

A good password will contain a mixture of letters, numbers and punctuation and should be
changed at regular intervals.

The root user should not have an empty password. If you leave this empty, the root
account will be disabled and the system's initial user account will be given the power to
become root using the "sudo" command.

Note that you will not be able to see the password as you type it.

Root password:

_____

    <Go Back>                                                    <Continue>
```

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

Set your password, don't forget it. It is case sensitive, and you will need to verify it on the next screen (important you have the right language already set or you may get in later) Set your time zone (when you boot into Kali make sure your time zone and time are correct), this can prevent some programs from loading correctly like the Tor browser


```
                        ┤ [!] Configure the clock ├

If the desired time zone is not listed, then please go back to the step "Choose language"
and select a country that uses the desired time zone (the country where you live or are
located).

Select your time zone:

                              Eastern
                              Central
                              Mountain
                              Pacific
                              Alaska
                              Hawaii
                              Arizona
                              East Indiana
                              Samoa

        <Go Back>
```

```
<Tab> moves; <Space> selects; <Enter> activates buttons
```
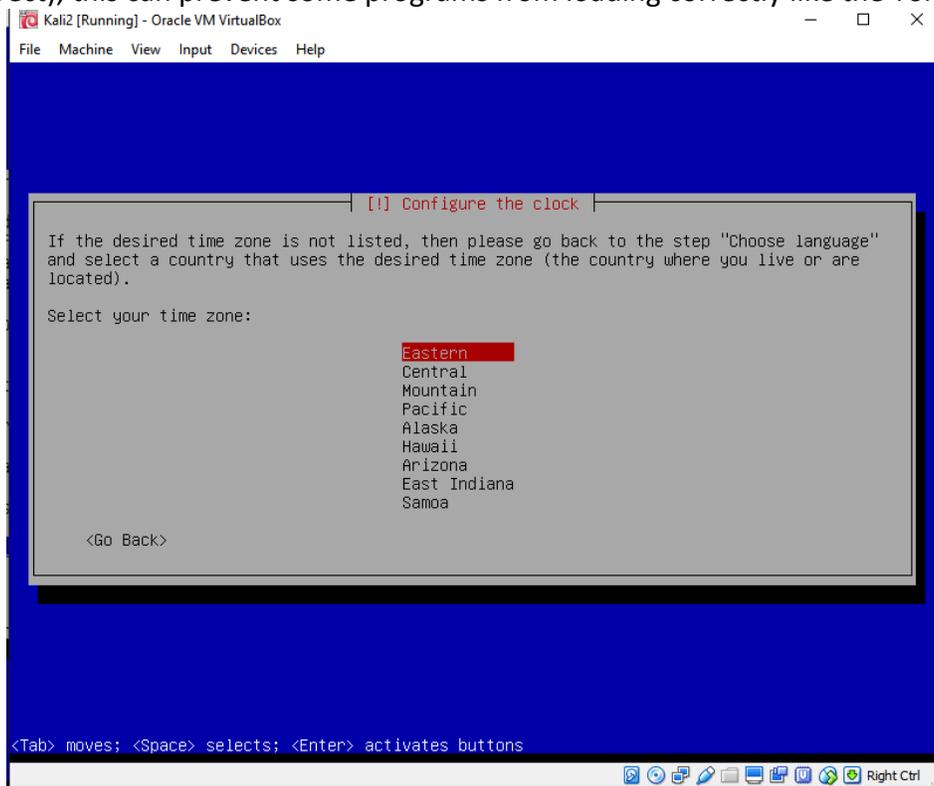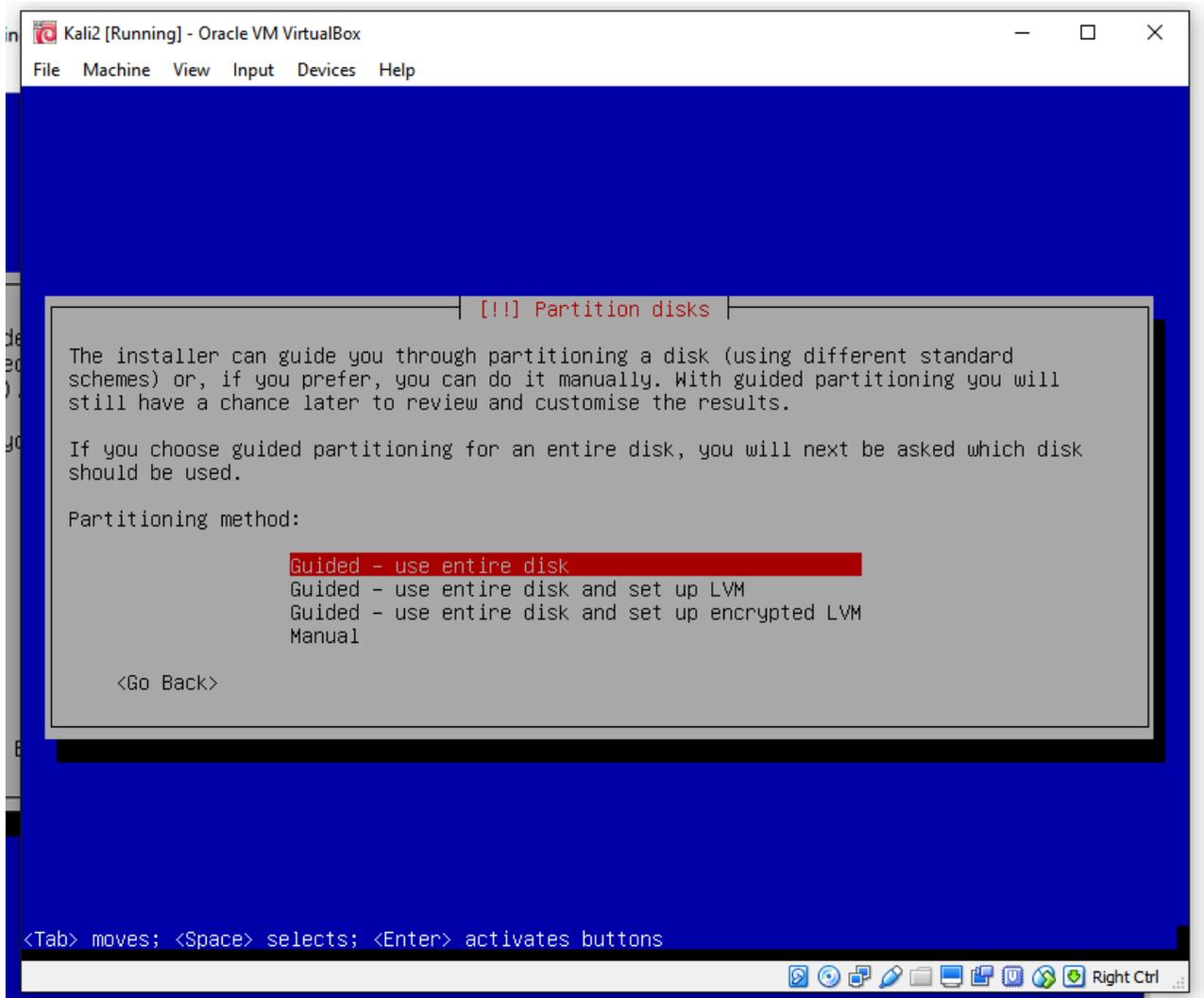
Select the default for this

File   Machine   View   Input   Devices   Help

┤ [!!] Partition disks ├

Note that all data on the disk you select will be erased, but not before you have
confirmed that you really want to make the changes.

Select disk to partition:

SCSI1 (0,0,0) (sda) - 34.4 GB ATA VBOX HARDDISK

<Go Back>

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

Right Ctrl
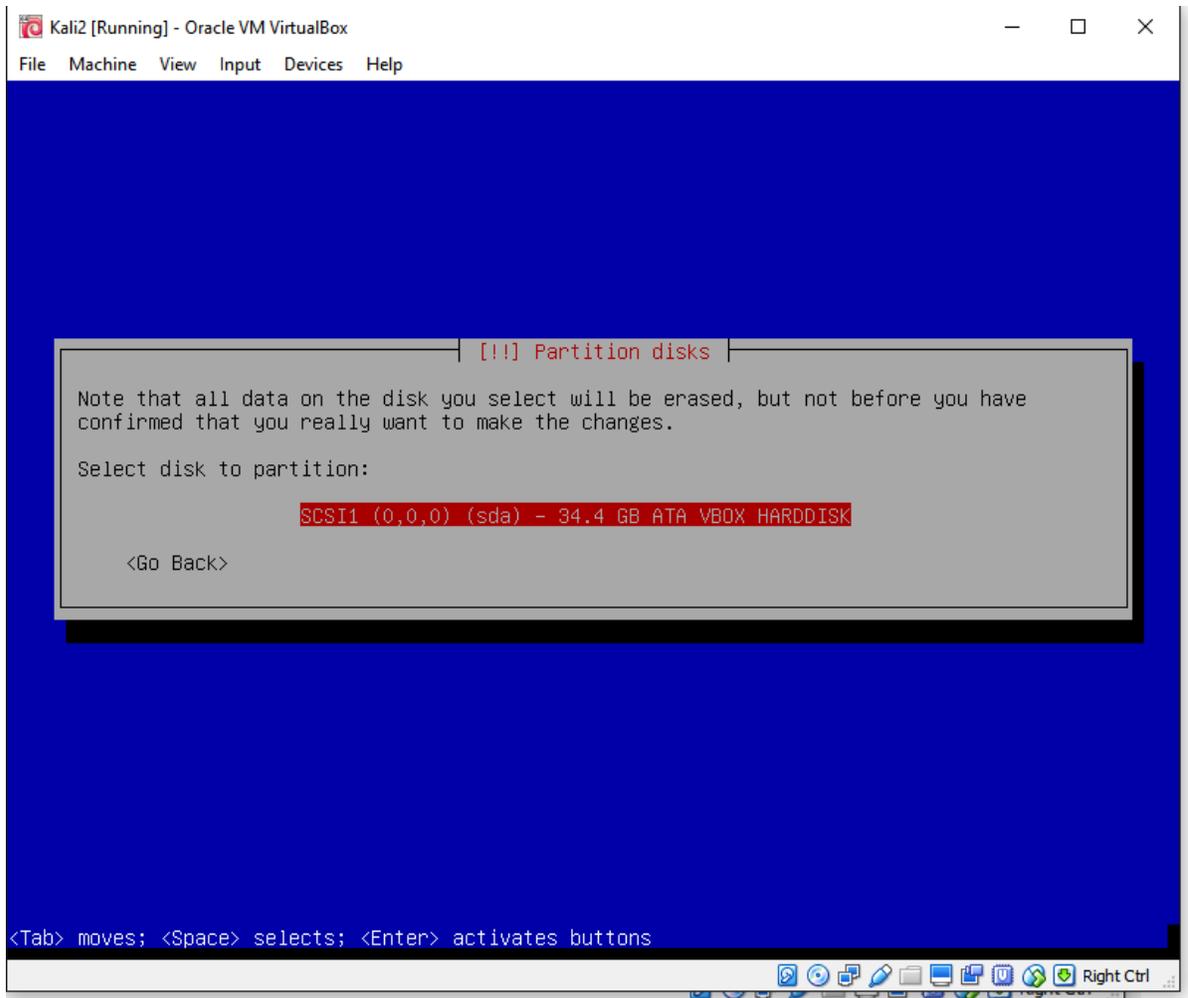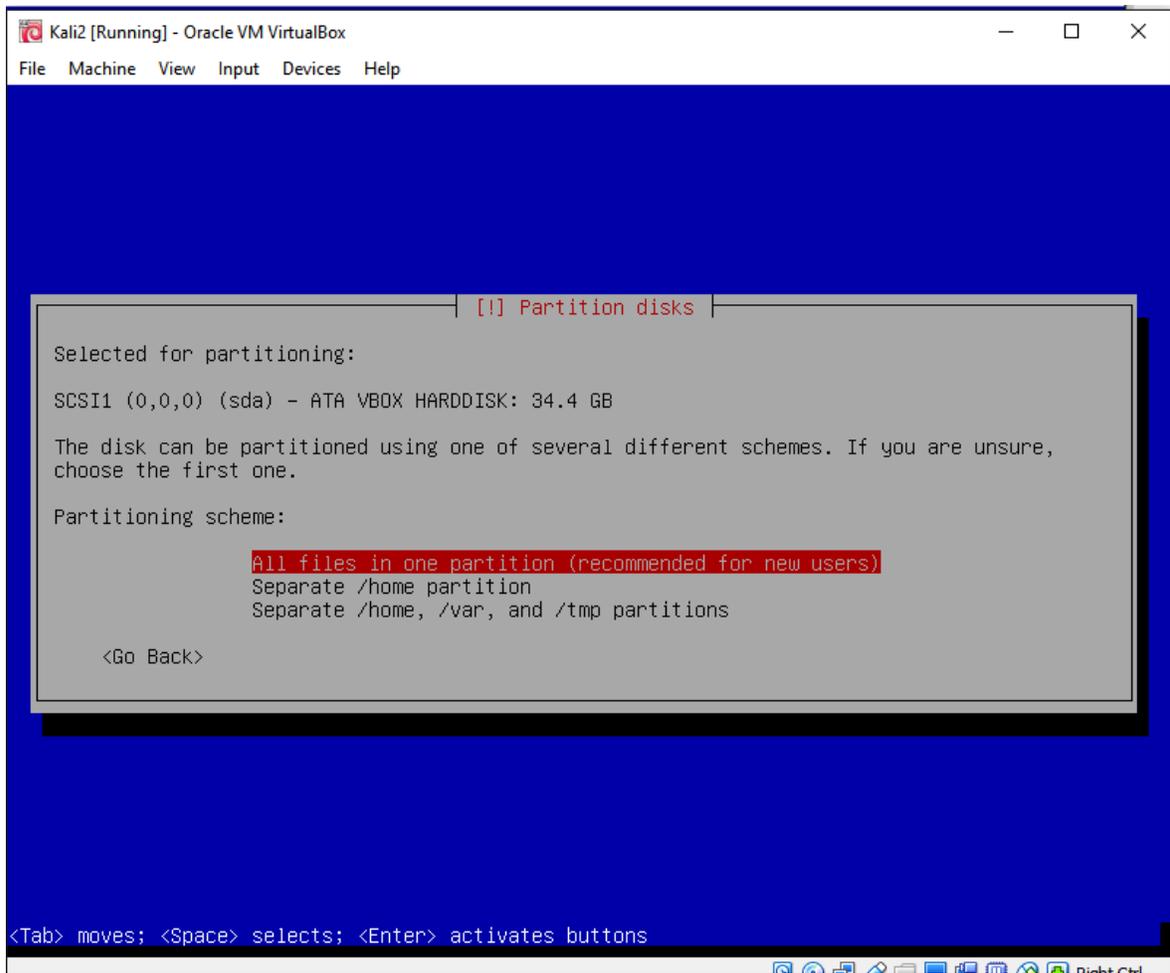
Press enter

Keep selecting the defaults until you get to "Network Mirror"
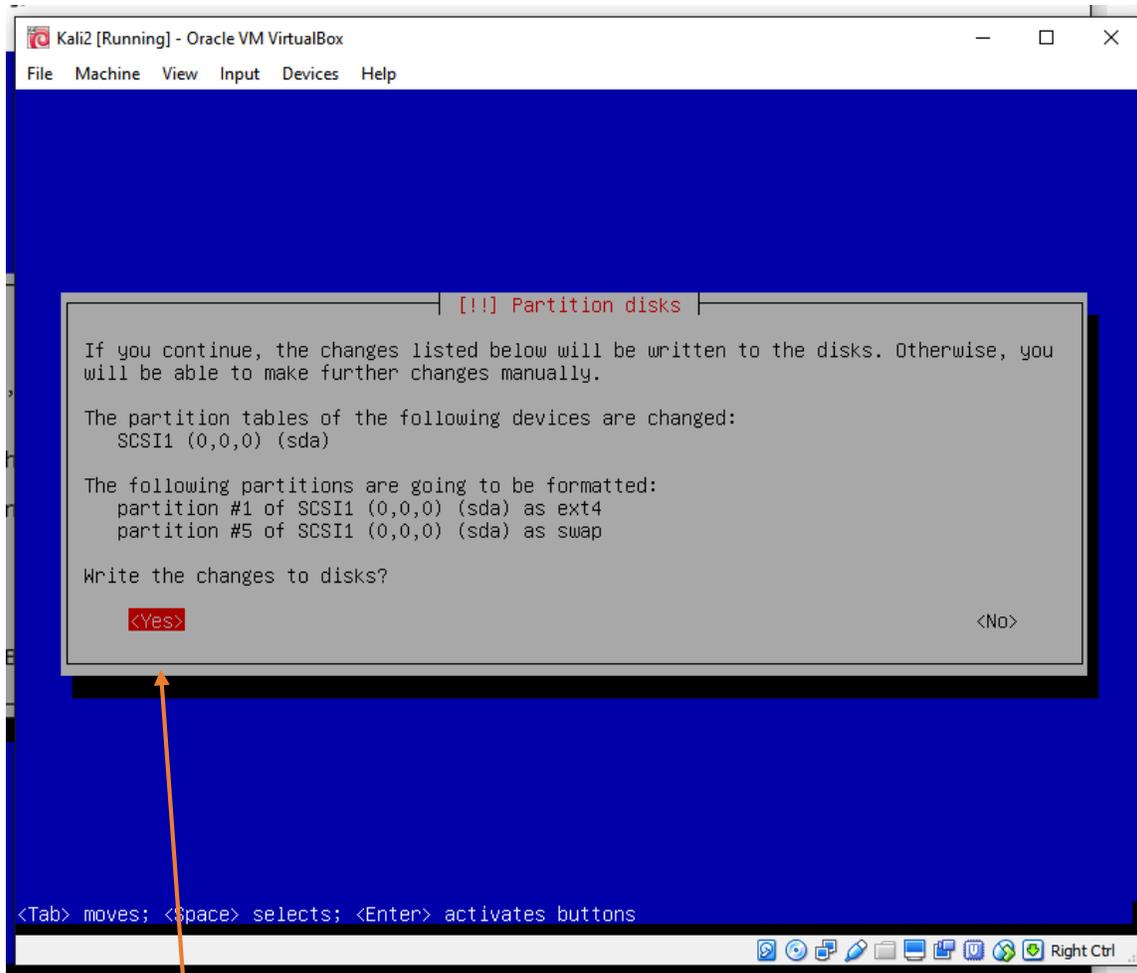
Tab over to "Yes" Press enter

The install will begin and will take a while, be patient.
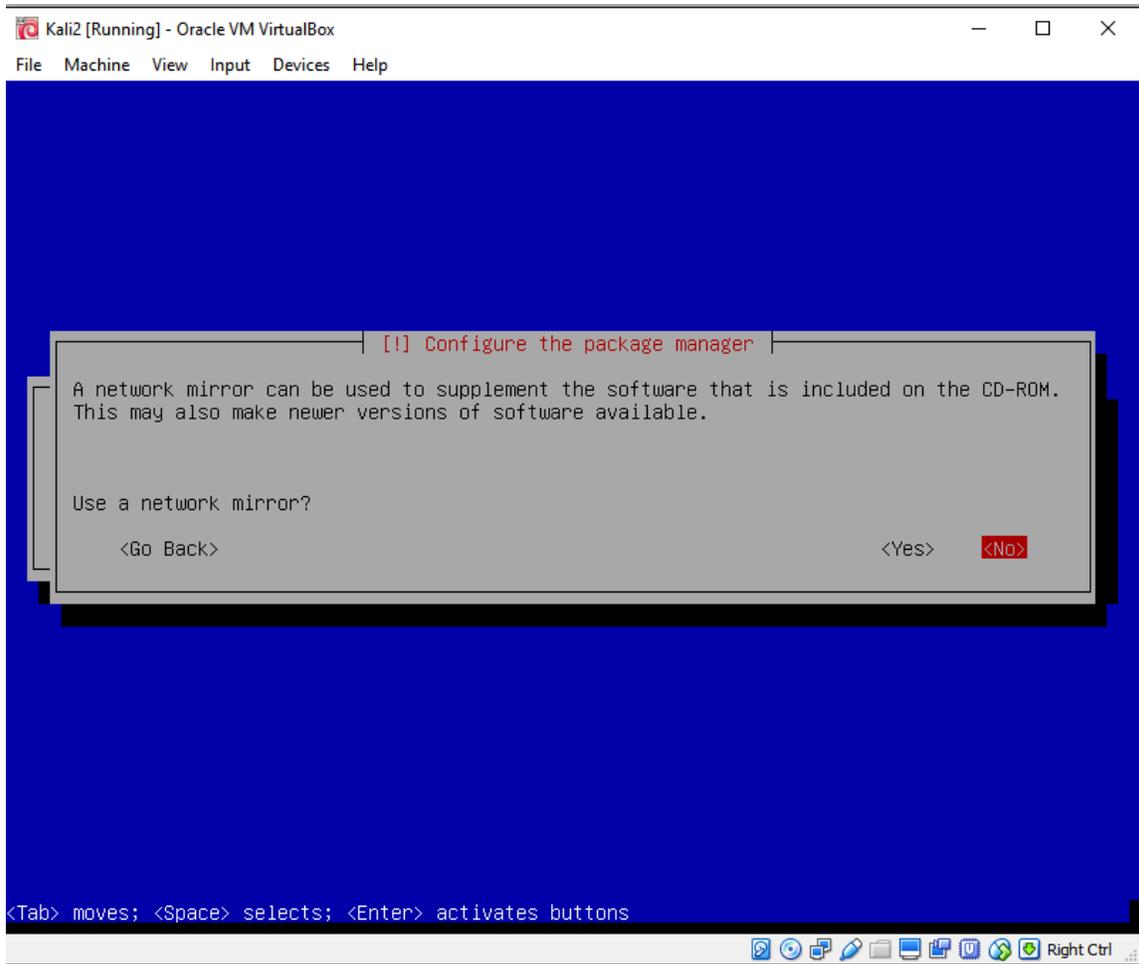
When it gets close to the end, it will prompt about a network mirror select "No" for this
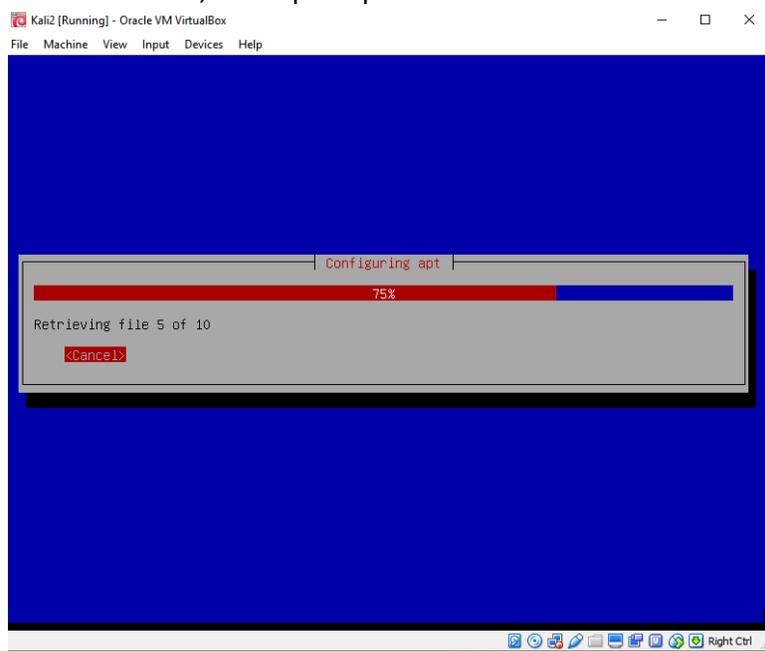
The installation will continue.
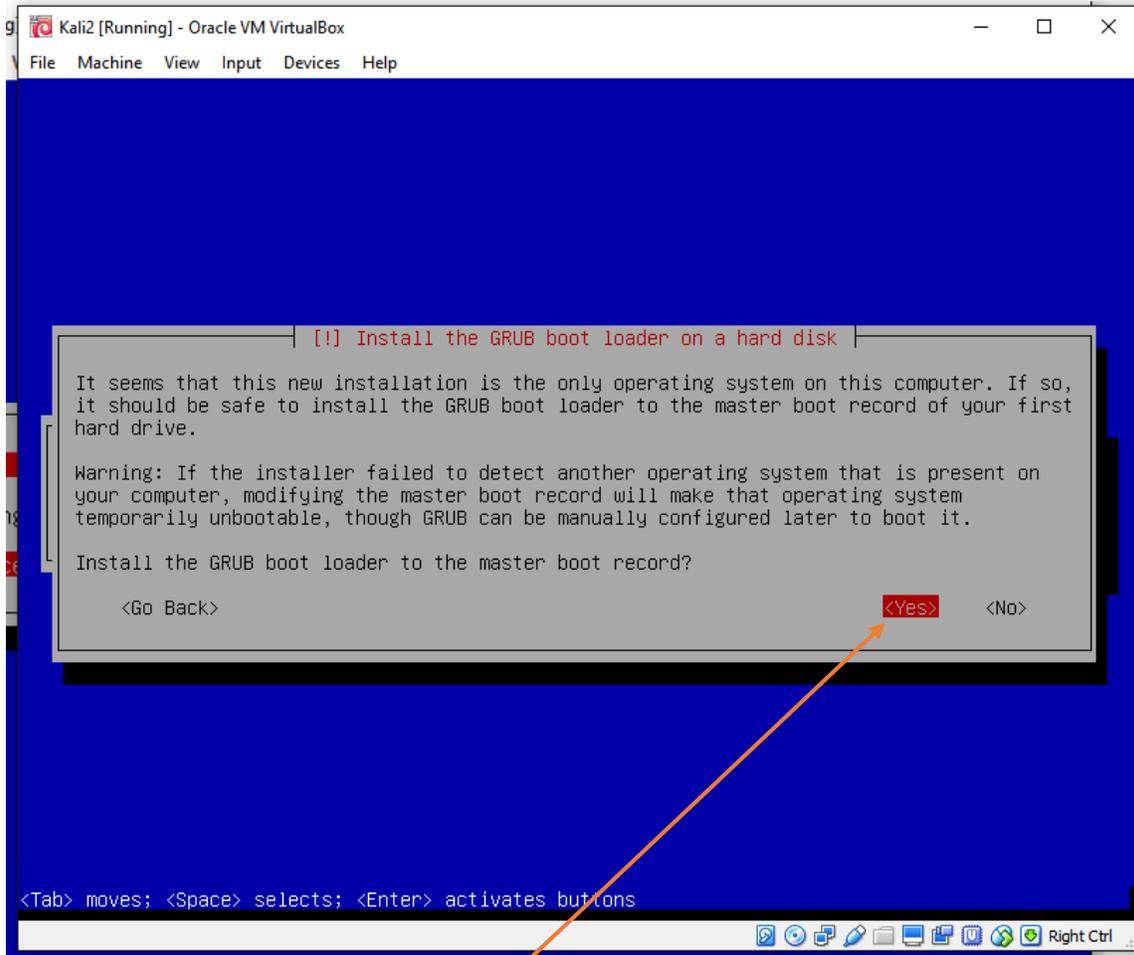
You are in a VM do not panic, press "YES"
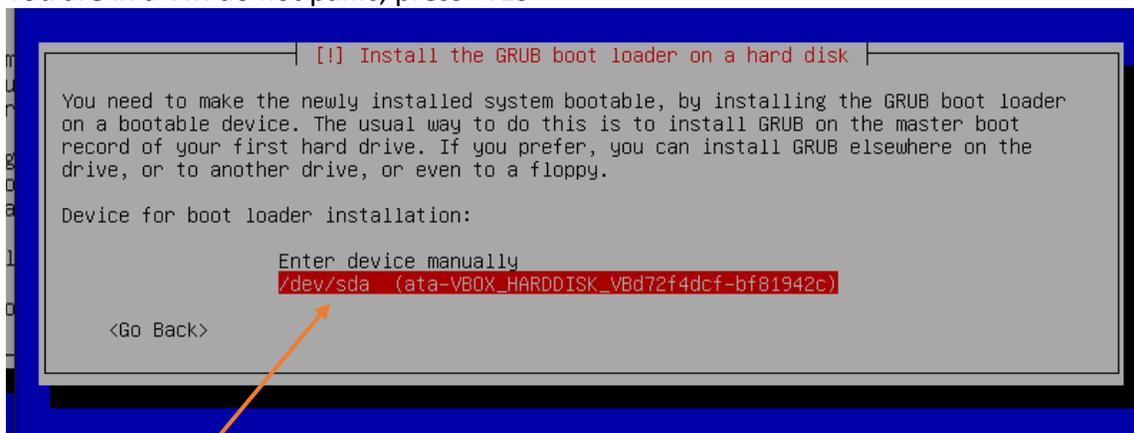
It is a VM select the second option, and the install will continue. This does not touch your physical hard drive it is going to go on the virtual hard drive you created
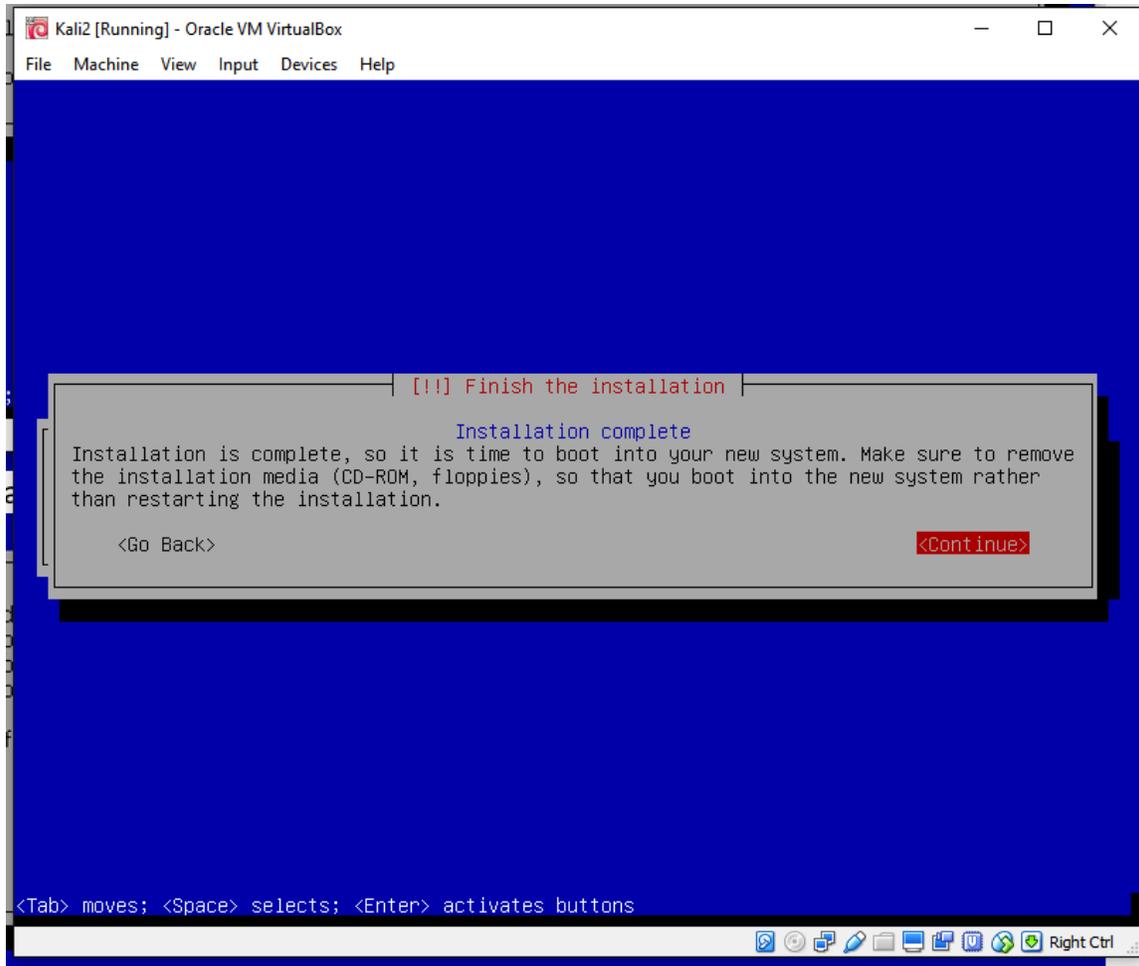
You are almost there
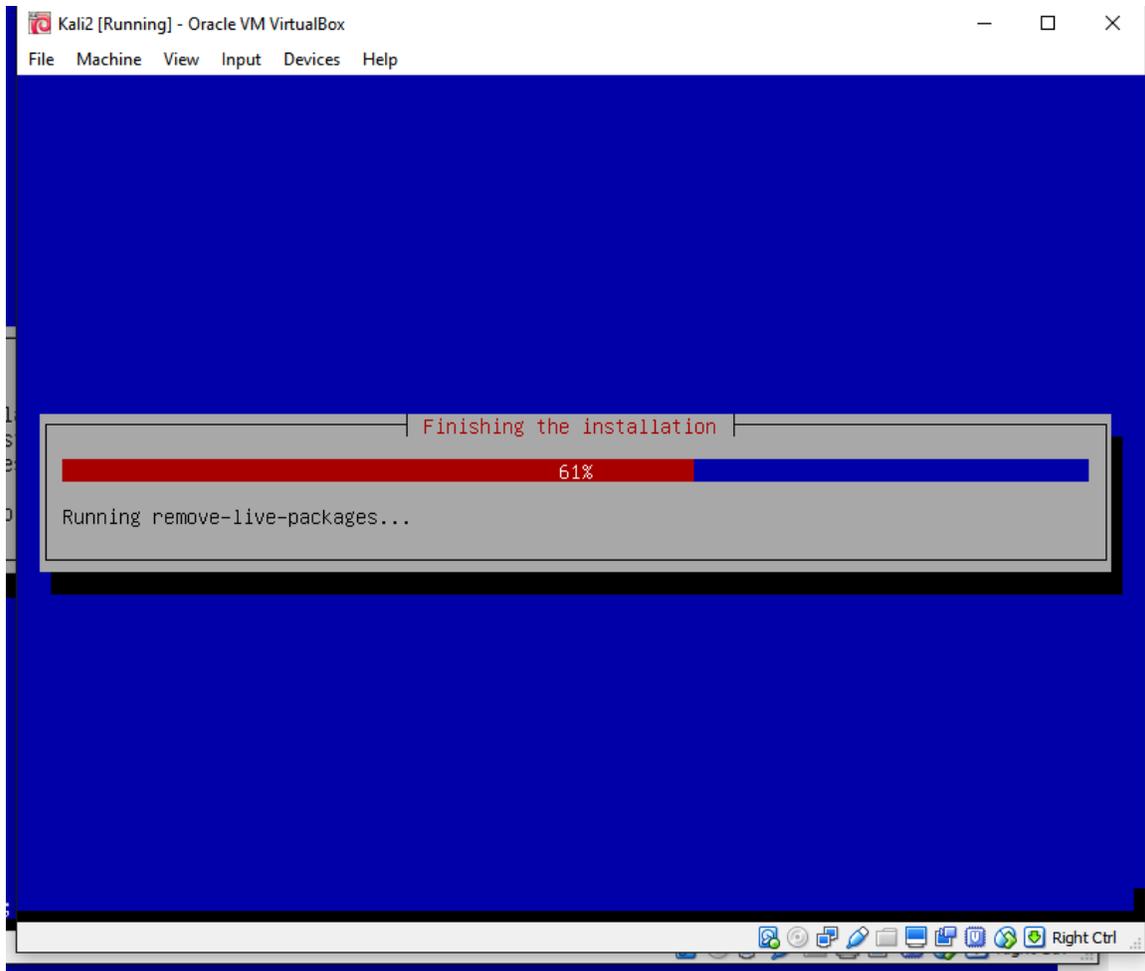
Almost done.
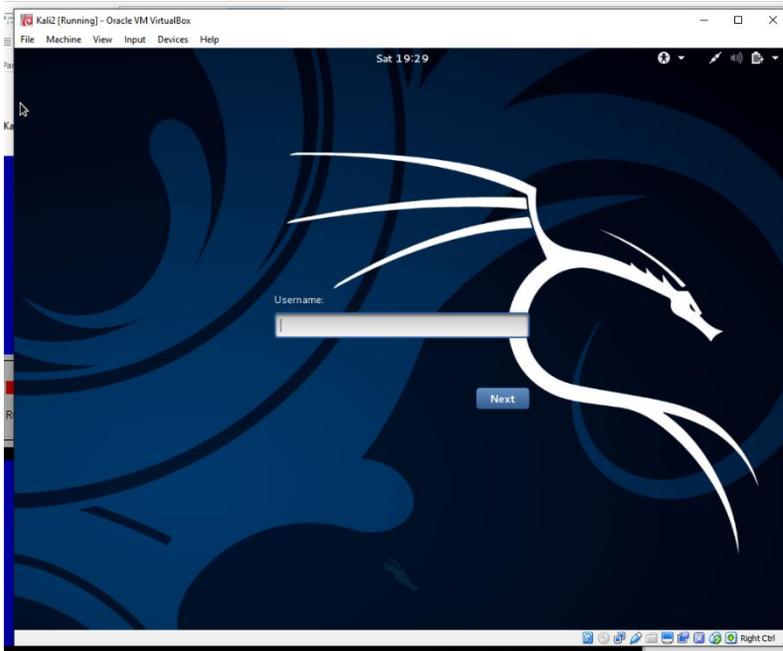
Welcome to KALI in a VM, login as root and use the password you have previously created
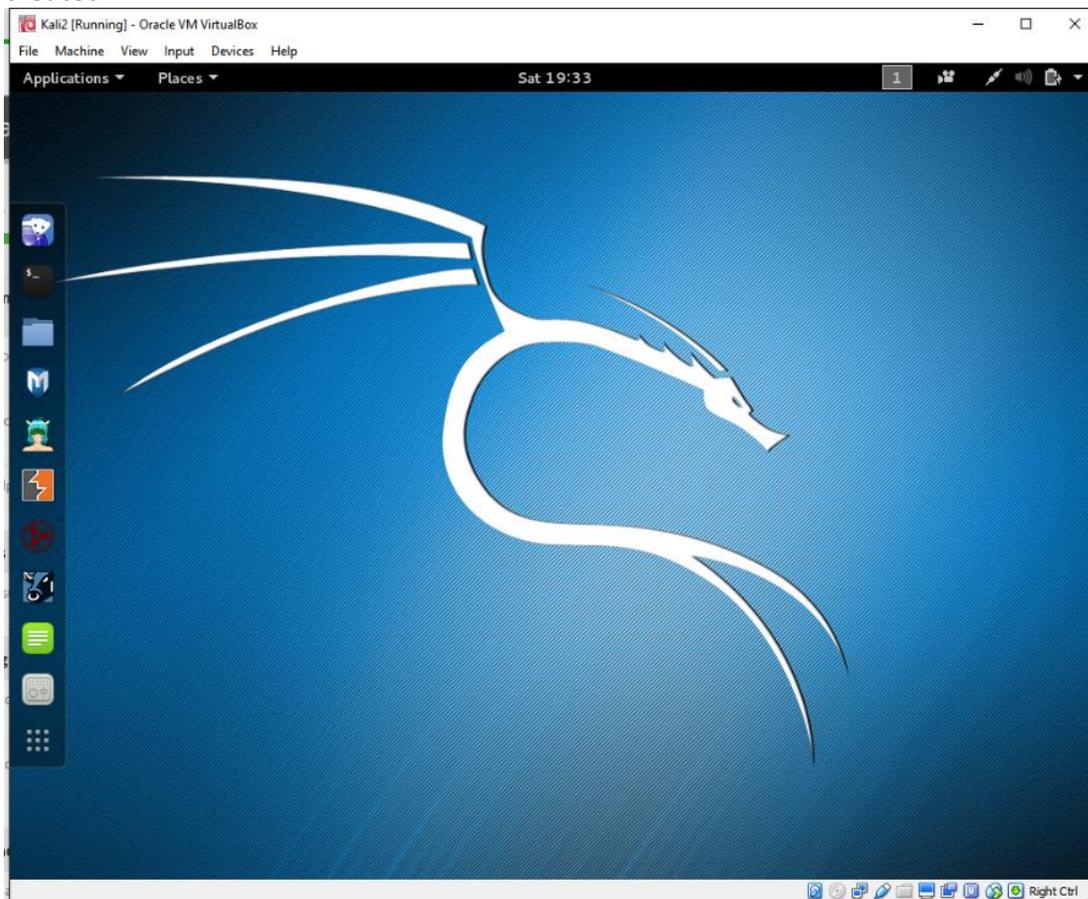
Let the games begin. You have gotten this far, next we will tweak the installation and get ready for updates and other internet functionality

Tweak your Kali VM

There are a few final steps and your Kali VM will be ready to go. Let's go to the "Terminal" and verify and change some settings.
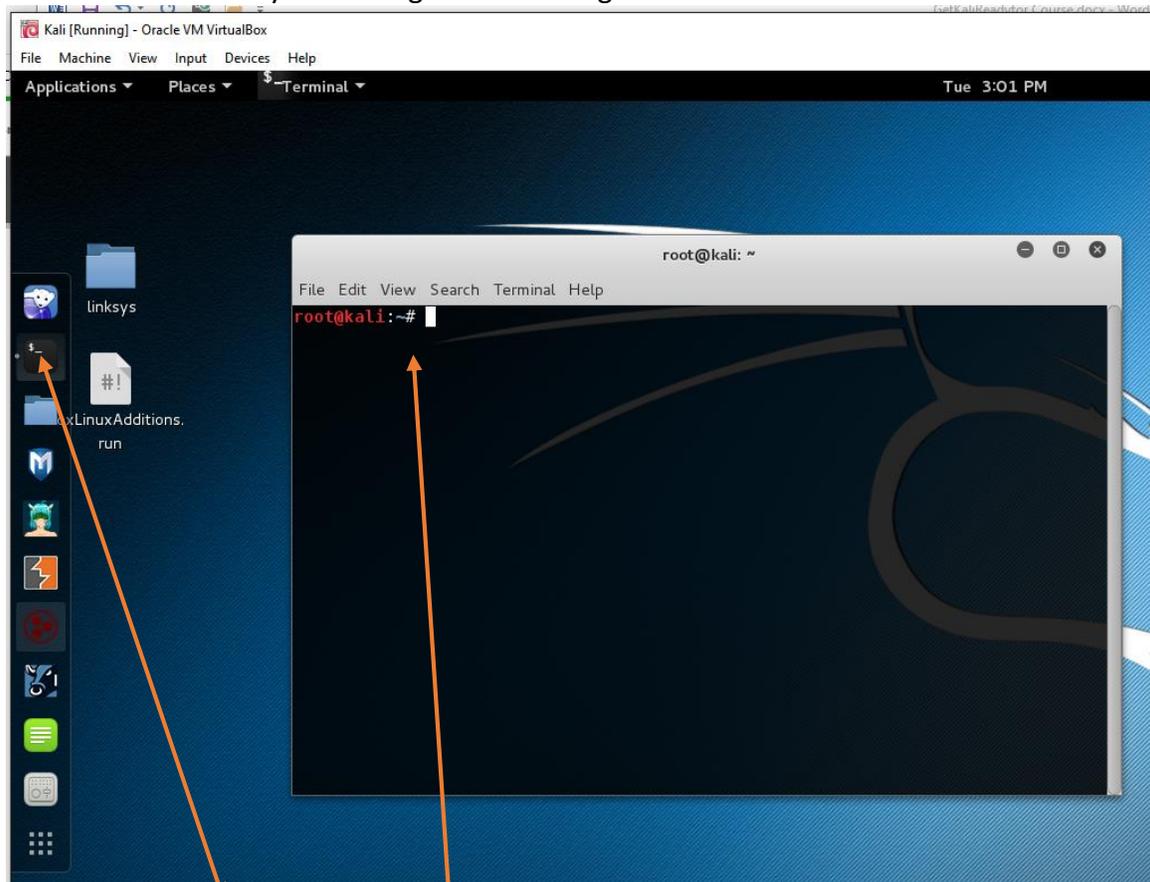
To launch the terminal: press the icon under iceweasel, it looks like a command prompt, and when it opens you see this screen. This is where we are going to verify some settings.

Change the NetworkManager.conf file settings from "false" to "true"
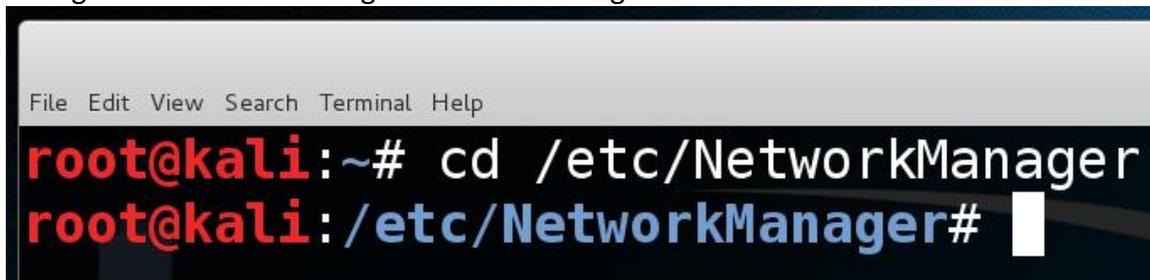
We want to get to the directory that contains the NetworkManager.conf file. From the prompt, change your directory with cd /etc/NetworkManager (case sensitive) your prompt should change to that directory

File Edit View Search Terminal Help

```
root@kali:/etc/NetworkManager# ls
conf.d  dispatcher.d  NetworkManager.conf
root@kali:/etc/NetworkManager#
```

Once there type in **ls** and confirm. You will see the "NetworkManager.conf file"
(Seen here in white).
We then want to edit this file. We are going to use nano (a text editor for this)
In the same directory type in nano NetworkManager.conf and press enter (case
sensitive)

File Edit View Search Terminal Help

```
root@kali:/etc/NetworkManager# nano NetworkManager.conf
```

```
  GNU nano 2.2.6

[main]
plugins=ifupdown,keyfile

[ifupdown]
managed=false
```

```
  GNU nano 2.2.6

[main]
plugins=ifupdown,keyfile

[ifupdown]
managed=true
```

Where it says "managed=false" change to managed=true
Then hit Ctrl+O and hit enter to save then Ctrl+X to exit the editor and return to the
terminal and see if u can ping google.com

Check your source file for the correct repositories for Kali updates and upgrades the
current files can be found here http://docs.kali.org/general-use/kali-linux-sources-list-
repositories You need all lines of this to match in your source file to avoid duplicates. I
just cleaned mine out and pasted the ones in that link in. Let's check or clean out the file

```
root@kali:~# cd /etc/apt
root@kali:/etc/apt# ls
apt.conf.d          preferences.d  sources.list~
listchanges.conf  sources.list    sources.list.d
root@kali:/etc/apt#
```

Navigate to cd /etc/apt directory and do an ls to check for the sources.list file again we
are going to use nano to check out this file by typing   nano sources.list

In this case I took the lines in the link and pasted them into the file and cleaned out the rest **NOTE they do change it now and then** so you need to check Kali docs at docs.kali.org

If they match you are good to go, if not cut and paste into your nano session again

Ctrl+O and press enter to save and Ctrl+X to exit

Time to get updates and/or upgrades. Once we have connectivity and repositories in the source file it's time to check for updates
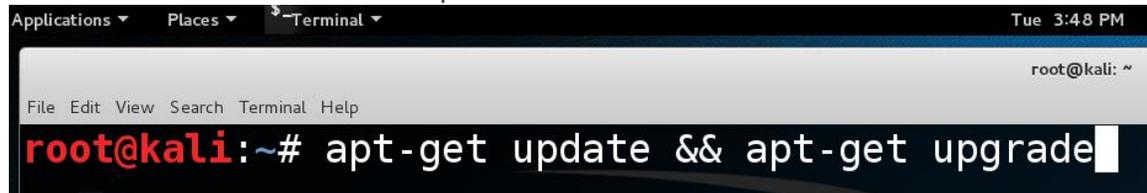
Type in   apt-get update && apt-get upgrade –y (the –y is answering yes to things that want to install without prompting you to answer for each one)
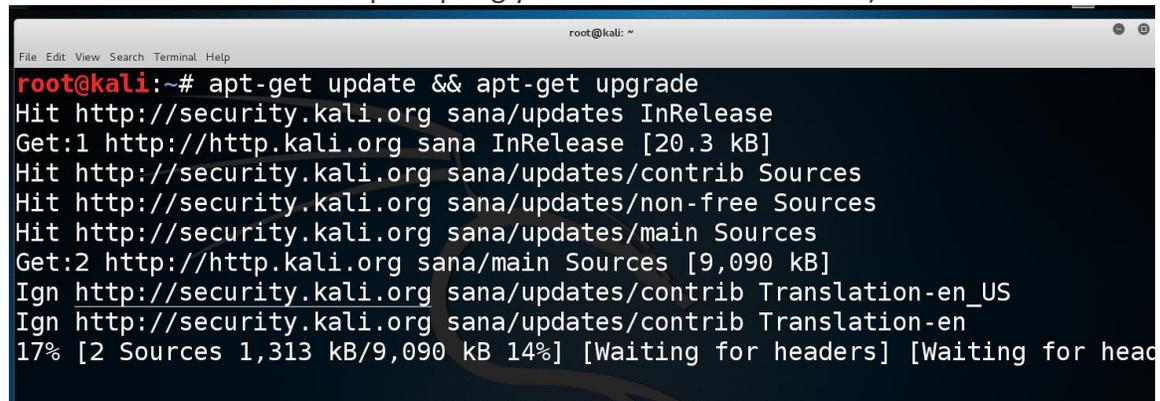
Once the updates start, be patient big files sometimes look like your system is locked and the first time you do this it can take a while. (You should consider doing this fairly often as there are often updates) When completed, you may see notices, the ones that begin with "W" are only warnings and not a problem. However, if you start seeing ones that begin with "E" and text, read them /check connectivity/check the source file again. With the new rolling updates you will also want to run **apt-get dist-upgrade** and this can take a while. Reboot Kali and do the **apt-get update && apt-get upgrade –y** again to be sure you have everything.

Install Guest additions in Kali

So your VM can use USB devices and other system tools you need to install VBox Guest additions into the Kali VM (Make sure you have updated like above before starting this) There are no optional steps so make sure you can do them successfully before moving on.

To check for linux headers you are looking for the current linux-headers that end in –kali-all-amd64 the version will change over time
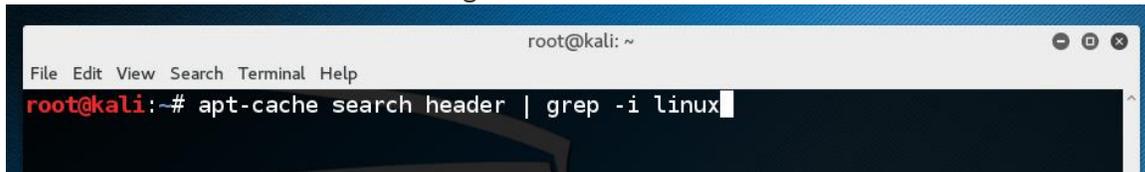
This will generate a list (if u updated correctly) when you type in apt-cache search header | grep -i linux look for the one ending in –kali-all-amd64
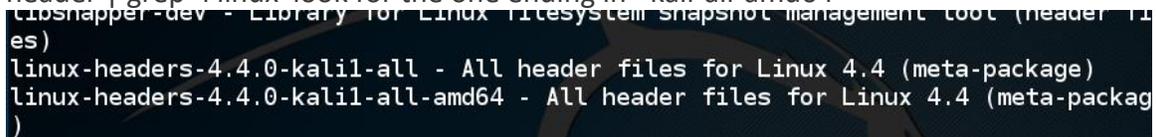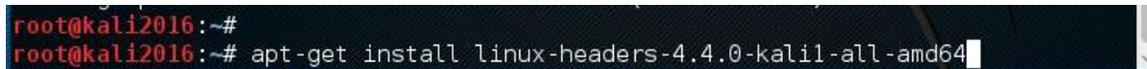
Install Linux headers at the time of writing it went to 4.5 this does change so type in the version you see when you do the apt-cache search header | grep –I linux and install with **apt-get install linux-headers-4.5.0-kali1-all-amd64**

When that finishes (just in case) run **apt-get update && apt-get upgrade –**y (their might be nothing to update but it is good to check) then in the terminal type **reboot**

Log back into kali click devices click Insert Guest Additions CD image
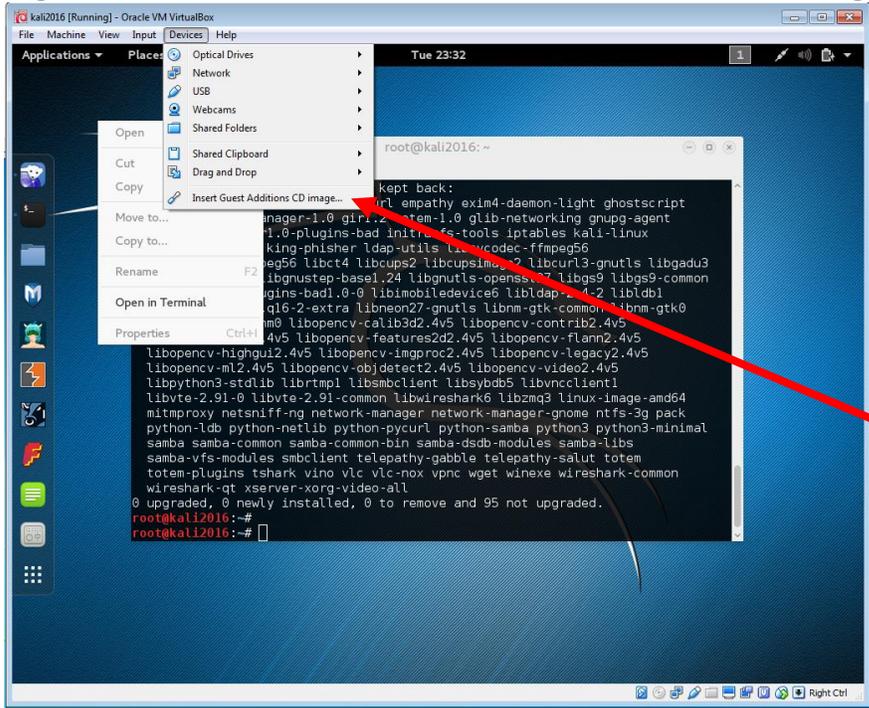
To Mount Guest Additions

Your should see a graphic of a cd and an option to run and when u click run it will fail


"VBOXADDITIONS_5.0.14_105127" contains software intended to be automatically started. Would you like to run it?

If you don't trust this location or aren't sure, press Cancel.

Cancel   Run

Oops! There was a problem running this software.

Unable to locate the program
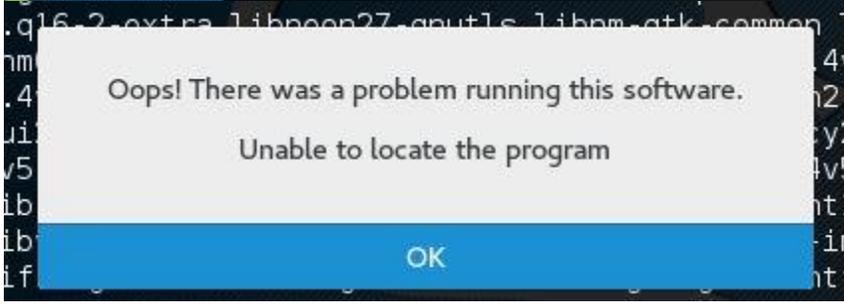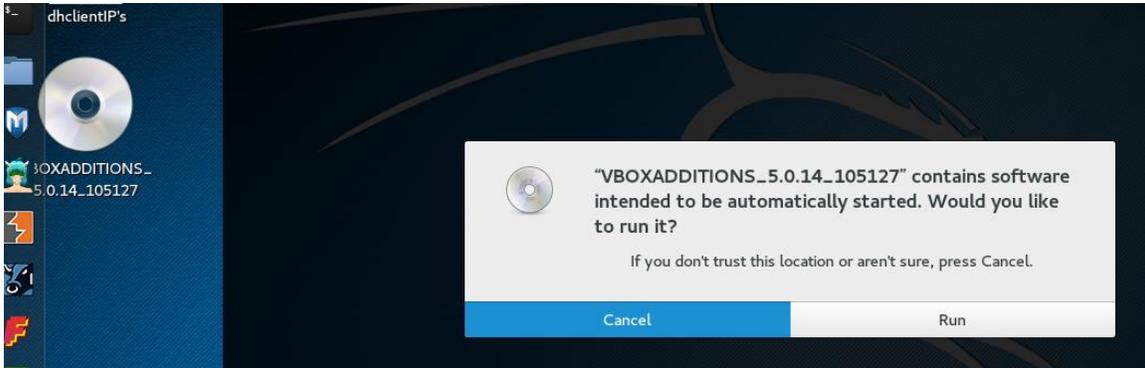
OK   Just click OK

Then go back to your terminal navigate to the media you just mounted type in cd /media/cdrom0 then type ls so you can verify the file VBoxLinuxAdditions.run

You want to copy this file to your desktop in order to get it to run type in cp VBoxLinuxAdditions.run /root/Desktop (you must remember this is case sensitive)
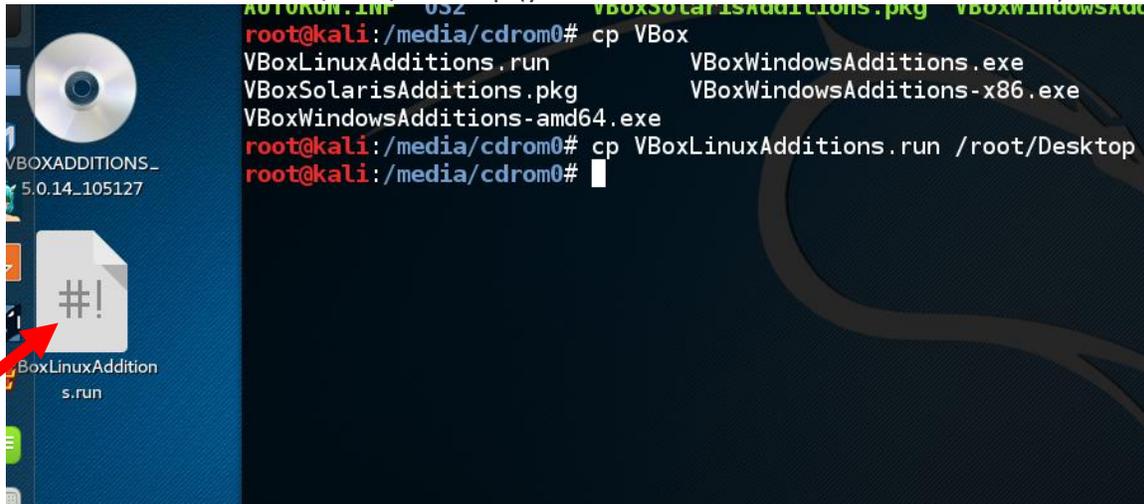
Shows up on Desktop

Navigate back to root and type in cd Desktop (remember the caps) then ls to verify you see it

Now run the file by typing   ./VBoxLinuxAdditions.run (you can copy & paste)

Your Kali VM is ready to use, ENJOY!

Resources

- ◆ VBOX & Guest Additions https://www.virtualbox.org/wiki/Downloads
- ◆ Kali ISO https://www.kali.org/downloads/
- ◆ TOR Browser https://www.torproject.org/
- ◆ Kali Repository for your source file http://docs.kali.org/general-use/kali-linux-sources-list-repositories
- ◆ Kali Docs http://docs.kali.org/
- ◆ What is the BIOS https://en.wikipedia.org/wiki/BIOS

Good To Have:
    Home router or a neighbor's permission for you to study them ☺
    Old windows pc to attack or VM with Windows (unpatched to see the ugly)