

Install in Virtual Box get your Kali 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.

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:
 <u>http://www.blackmoreops.com/2014/01/08/recommended-usb-wireless-cards-kali-linux/</u> and <u>http://www.aircrack-ng.org/doku.php?id=compatibility_drivers</u> and
 <u>http://www.wirelesshack.org/top-kali-linux-compatible-usb-adapters-dongles-2015.html</u>

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)
- Before attaching your USB external Wireless card, be sure to get Kali up and working with any guest additions and updates performed.

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.

	Pho	oenix SecureCon	re(tm) Setup Ut
Main	Advanced	Security	Power Boc
Intel (Wired Wirele Blueto High D USB Em Firewi	R) Virtualiza Network ss Network oth Receiver efinition Aud ulation re	tion Technology	[Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled]
▶ Perfor	mance Options		
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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



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 <u>https://en.wikipedia.org/wiki/BIOS</u>

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. Be sure you have the version that matches your system, 32 Bit or 64 Bit. All downloads can be found at <u>https://www.virtualbox.org/wiki/Downloads</u> Install based on your operating system.

Building your Kali Virtual Machine

Start Virtual Box (I already have Kali installed here in another VM that's why you see that icon therewe will make a new VM here)

3	Oracle VM VirtualBox Manager		- 🗆 X
File	Machine Help		
Ne	Settings Discard Start		Details On Snapshots
- 64	Kali	E General	E Preview
11		Name: Kali Operating System: Debian (64-bit)	
		I System	
•		Base Memory: 2048 MB Boot Order: Floppy, Optical, Hard Disk Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization	Kali
		Display	
		Video Memory: 12 MB Remote Desktop Server: Disabled Video Capture: Disabled	
		Storage	
		Controller: IDE IDE Secondary Master: [Optical Drive] Empty Controller: SATA Port 0: Kali.vdl (Normal, 100.00 GB)	
		🕼 Audio	
		Host Driver: Windows DirectSound Controller: ICH AC97	
		🖶 Network	
		Adapter 1: Intel PRO/1000 MT Desktop (Bridged Adapter, Intel(R) Dual Band Wireles	ss-AC 7260)
		🤌 USB	
		USB Controller: OHCI, EHCI Device Filters: 0 (0 active)	
		Shared folders	
		None	
		Description	
		None	
	•		

Click on New

This Starts the Creation of a new VM

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🦸 Oracle VM VirtualBox Manager		- 🗆 ×
File Machine Help		
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Kali	📃 General	Preview
V Powered Off	Name: Kali	
_	Operating System: Debian (64-bit)	\prec
	? ×	14-15
÷	Create Virtual Machine	Kall
	22001	
	Name and operating system	
	Please choose a descriptive name for the new virtual machine	
	and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox	
	to identify this machine.	
	Name: Kali	
	Type: Linux	
	Version: Debian (64-bit)	
-		
	Everat Made Neut Canad	
	tel(R) Dual Band	Wireless-AC 7260)
	🧭 USB	
	USB Controller: OHCI, EHCI	
	Device Filters: 0 (0 active)	
	Shared folders	
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- 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) PRESS next



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 hard disk. If you do not need to use it with other virtualization can leave this setting unchanged.	enew virtu software y	ual you
VDI (VirtualBox Disk Image)		
VMDK (Virtual Machine Disk)		
O VHD (Virtual Hard Disk)		
O HDD (Parallels Hard Disk)		
QED (QEMU enhanced disk)		
O QCOW (QEMU Copy-On-Write)		
Expert Mode Next	Can	ncel

Unless you have other plans take the default and press next

	?	\times
← Create Virtual Hard Disk		
Storage on physical hard disk		
Please choose whether the new virtual hard disk file should grow (dynamically allocated) or if it should be created at its maximum size).	w as it is u size (fixe	used d
A dynamically allocated hard disk file will only use space on hard disk as it fills up (up to a maximum fixed size), although it again automatically when space on it is freed.	your phy will not s	sical hrink
A fixed size hard disk file may take longer to create on some s often faster to use.	ystems b	ut is
Oynamically allocated		
○ Fixed size		
Next	Car	ncel

Take the default press next

		?	×
 Create Virtual Hard Disk 			
File location and size			
Please type the name of the new virtual hard disk file into on the folder icon to select a different folder to create the	the box e file in.	below	or click
Kali2			
Select the size of the virtual hard disk in megabytes. This amount of file data that a virtual machine will be able to st	size is th tore on	the limit of the hard	on the d disk.
4.00 MB 2	2.00 ТВ	32	.00 GD
	_		
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I set this to 32 gig. If have space to spare try 64 gig and click create



The new VM is cre	ated now it is time to click on settings		
🧐 Kali2 - Settings		?	×
General	System		
🛒 System	Motherboard Processor Acceleration		
Display	Paravirtualization Interface: Default 💌		
😥 Storage	Hardware Virtualization: I Enable VT-x/AMD-V		
խ Audio	Enable Nested Paging		
P Network			
Serial Ports			
🌽 USB			
Shared Folders			
User Interface			
	OK Cancel	Hel	p

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)

🥝 Ka	li2 - Settings		?	\times
	General	Network		
	System	Adapter 1 Adapter 2 Adapter 3 Adapter 4		
	Display	Enable Network Adapter		
\bigcirc	Storage	Attached to: Bridged Adapter 👻		
	Audio	Name: Intel(R) Dual Band Wireless-AC 7260		•
₽	Network	Adapter Type: Intel PRO/1000 MT Desktop (82540EM)		-
	Serial Ports	Promiscuous Mode: Allow All		•
	USB	MAC Address: 080027971730		G
	Shared Folders	Cable Connected		
:	User Interface			
		OK Cancel	He	elp

Bridge your adapter (the name of your actual adapter may be different)

Make your network setting look exactly like this, but with your adapter 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			
Kali2 [Powered Off] - Oracle	/M VirtualBox	_	\times
File Machine View Input	Devices Help		
	? ×		
	Select start-up disk		
	Please select a virtual optical disk file or a physical optical drive containing a disk to start your new virtual machine from.		
	The disk should be suitable for starting a computer from and should contain the operating system you wish to install on the virtual machine if you want to do that now. The disk will be ejected from the virtual drive automatically next time you switch the virtual machine off, but you can also do this yourself if needed using the Devices menu.		
	kali-linux-2.0-amd64.iso (3.09 GB) 🔹 🔀		
	Start Cancel		

"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

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Select your language and country. I picked American English (select the defaults on the remainder of the set up screens for your country etc)

🔞 Ka	🔞 Kali2 [Running] - Oracle VM VirtualBox							×
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					Loading additional components			
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The install should begin. This can take time. (If you did not allow enough disk space, this operation may fail)

File	Kali2 [Running] - Oracle VM VirtualBox Machine View Input Devices Help	- 🗆 ×
	[!] Configure the network	
	Please enter the hostname for this system.	
	The hostname is a single word that identifies your system to the network. know what your hostname should be, consult your network administrator. If up your own home network, you can make something up here.	If you don't you are setting
	Hostname:	
	kali	
	<go back=""></go>	<continue></continue>
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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></continue></go>	

Set your password, don't forget it. It is case sensitive, and you will need to verify it on the next screen

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

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File	Machine	View	Input	Devices	Help		
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Press enter

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File	Machine	View	Input	Devices	Help				
					[!] Partition disks				
	Selected	for	partit	ioning:					
	SCSI1 (O	,0,0)	(sda)	- ATA	VBOX HARDDISK: 34.4 GB				
	The disk can be partitioned using one of several different schemes. If you are unsure, choose the first one.								
	Partitio	ning :	scheme	:					
			<mark>Al</mark> Se Se	<mark>ll files</mark> parate parate	in one partition (recommended for new users) /home partition /home, /var, and /tmp partitions				
	<go< td=""><td>Back></td><td></td><td></td><td></td><td></td><td></td><td></td></go<>	Back>							
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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.

ic k	🖥 Kali2 [Running] - Oracle VM VirtualBox — 🗆 🛛 🕹											
File	Machine	View	Input	Devices	Help							
Г	A netw	ork m	irror _.	can be	used to supplement the software that i	s included on	the CD-	ROM.				
	IN1S M	ay ai	so mak	ke newer	versions of software available.							
	Use a	netwo	rk mir	rror?								
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When it gets close to the end, it will prompt about a network mirror select "No" for this

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The installation will continue.

	-		
g	Ø	Kali2 [Running] - Oracle VM VirtualBox — [
١	File	Machine View Input Devices Help	
		[1] Install the GRUB boot loader on a bard disk	
		It seems that this new installation is the only operating system on this computer. If it should be safe to install the GRUB boot loader to the master boot record of your fin hard drive. Warning: If the installer failed to detect another operating system that is present on your computer, modifying the master boot record will make that operating system tarmenently unbootable, though CPUP can be monually configured later to be the	so, rst
12		cemporarily unbootable, though GROB can be manually configured later to boot it.	
X	٩	Install the GRUB boot loader to the master boot record?	
		<go back=""> <</go>	
<	Tab	b> moves; <space> selects; <enter> activates but(ons</enter></space>	
L			Right Ctrl
Yc	วน	are in a VM do not panic, press "YES"	
n	Г	[!] Install the GRUB boot loader on a hard disk	
80		You need to make the newly installed system bootable, by installing the GRUB boot load on a bootable device. The usual way to do this is to install GRUB on the master boot record of your first hard drive. If you prefer, you can install GRUB elsewhere on the drive, or to another drive, or even to a floppy.	ler
а		Device for boot loader installation:	
1		Enter device manually	
		/dev/sda (ata-VBOX_HARDDISK_VBd72f4dcf-bf81942c) <go back=""></go>	

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

	īē	Kali2 [Runnir	ng] - Ora	acle VM	VirtualBox			-		×
	File	Machine	View	Input	Devices	Help				
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l										
1							Finishing the installation			
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2		Running	remov	e-live	e-packag	ges				
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	_			_		_			Right	Ctri

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#

root@

root@kali: /etc/NetworkManager

Once there type in **Is** 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	
<pre>root@kali:/etc/NetworkManage</pre>	r# 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=ture 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 <u>http://docs.kali.org/general-use/kali-linux-sources-list-repositories</u> You need all 4 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

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

Navigate to cd /etc/apt directory and do an Is 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 4 lines in the link and pasted them into the file and cleaned out the rest deb http://http.kali.org/kali sana main non-free contrib deb http://security.kali.org/kali-security sana/updates main contrib non-free deb-src http://http.kali.org/kali sana main non-free contrib

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deb-src http://http.kali.org/kali sana main non-free contrib
deb-src http://security.kali.org/kali sana main non-free contrib
deb-src http://security.kali.org/kali-security sana/updates main contrib non-free
deb-src http://security.kali.org/kali sana main non-free contrib

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

Applications ~ Pl	laces ▼ [⊅] .	Terminal 🔻				Tue	a 3:48 PM	-
	T					r	oot@kali: ~	
root@ka		# apt-get	update	&& ଟ	apt-get	upgra	ade	
Type in	apt-ge	t update && apt	-get upgrade	–y (the	e –y is answe	ring yes to	o things	
that want to i	install w	ithout promptin	g you to ansv	ver for e	each one)			
File Edit View Search Termi	inal Help		root@kali: *				0	•
Hit http:// Get:1 http:// Hit http:// Hit http:// Hit http:// Get:2 http:// Ign http:// Ign http://	# apt-g securit //http. securit securit //http. securit ces 1,3	et update && a y.kali.org sana kali.org sana y.kali.org san y.kali.org san kali.org sana/ y.kali.org san y.kali.org san 13 kB/9,090 kB	pt-get upgra a/updates In InRelease [2 a/updates/co a/updates/mo main Sources a/updates/co a/updates/co 14%] [Wait:	ade nReleas 20.3 kB ontrib on-free ain Sou 5 [9,09 ontrib ontrib ing for	se Sources Sources irces 00 kB] Translatio Translatio	n-en_US n-en [Waiting	for hea	ac

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.

Your Kali VM is ready to use, ENJOY!

Resources

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

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)