# System Preparation: Virtualization and Linux OS Installation



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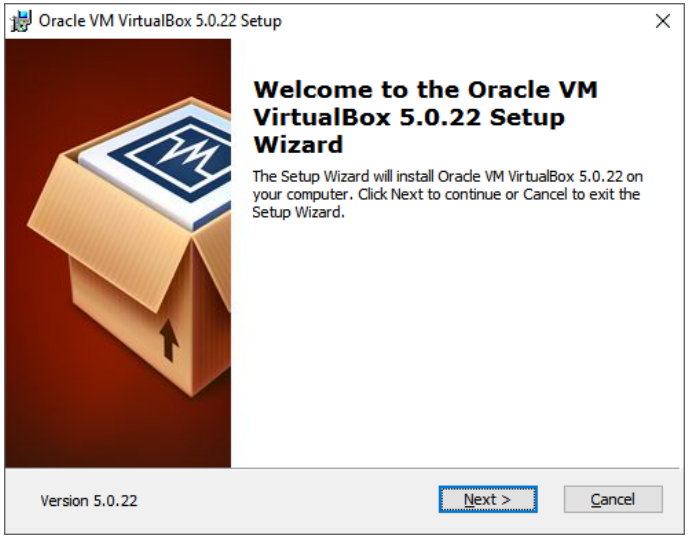
# Virtual Machines and VirtualBox

- A Virtual Machine is a computer running inside a computer
- Oracle's VirtualBox provides the ability to host almost any OS as a guest inside a host OS.
- We will install VirtualBox, then create a new virtual machine and install a Linux operating system
- Not the only virtualization software
  - HyperV, VirtualPC, VMWare, Xen, Linux Vserver, DOSBox…

# Installing VirtualBox

- Download from https://www.virtualbox.org/wiki/Downloads
  - (Or Google “virtualbox download”)
  - Select VirtualBox 5.0.2.2 for Windows hosts
- VirtualBox is open-source software
  - Free to use and modify
- ***Once downloaded, install using default paths and settings.***

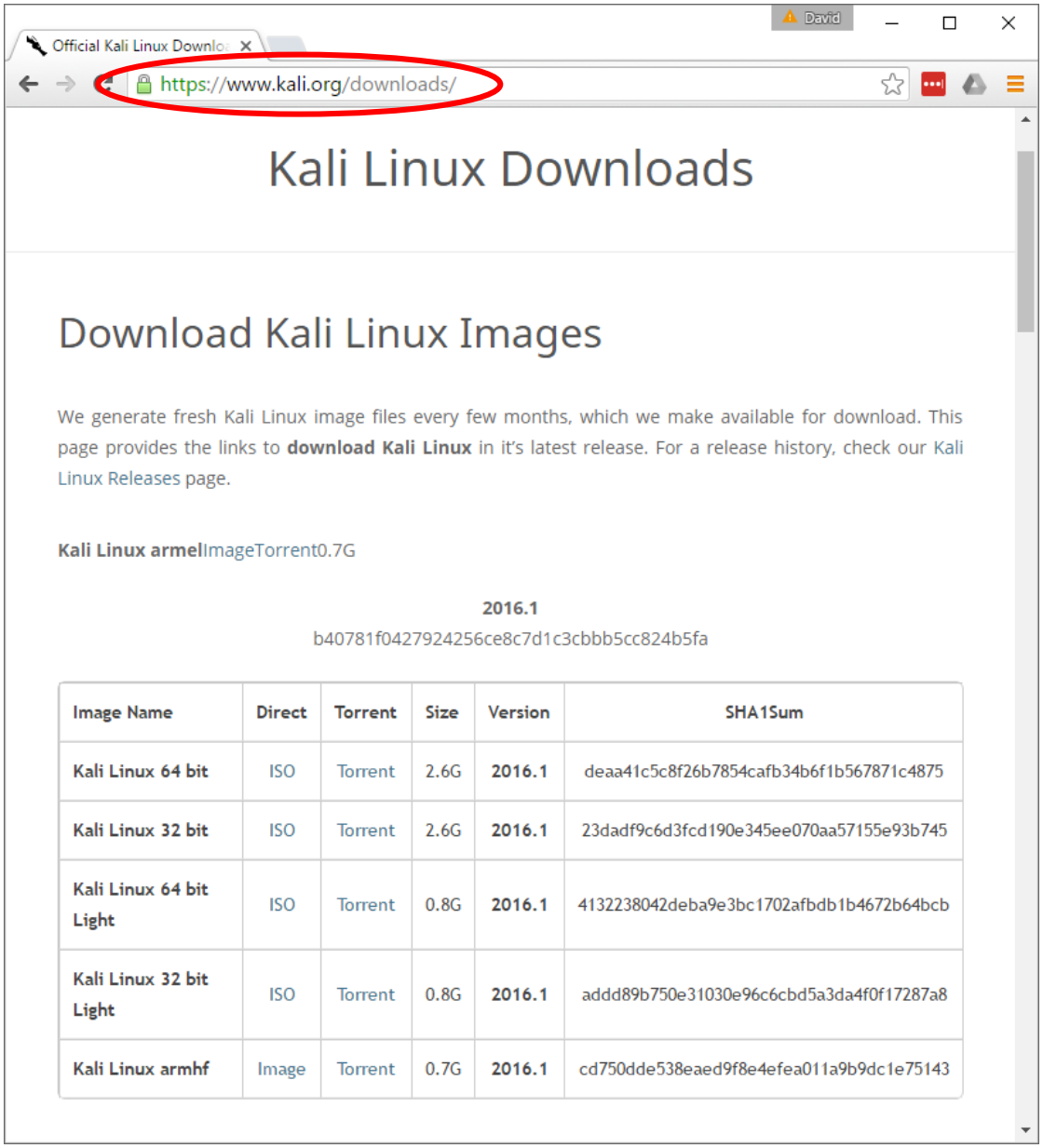



***Having trouble? Get on IRC and ask for help!***

# Building a Virtual Machine in VirtualBox

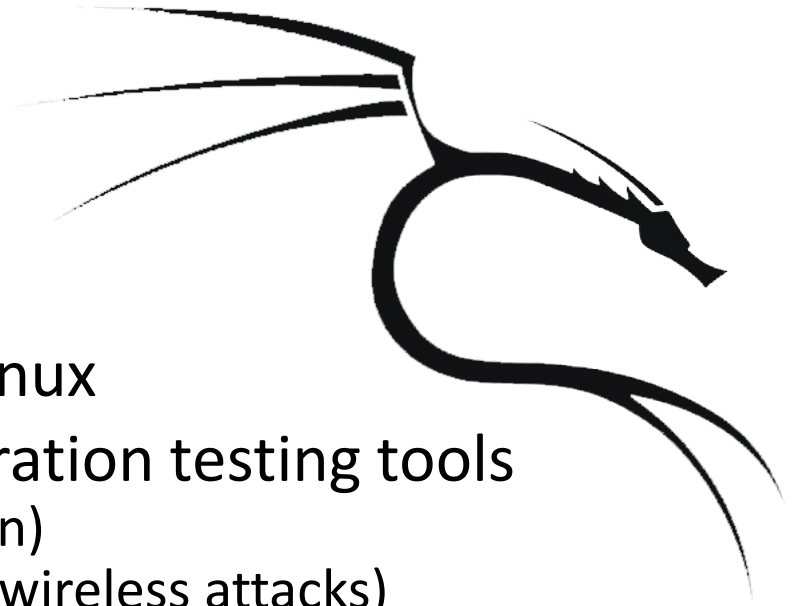
# Download Kali Linux ISO

www.kali.org/downloads




- An ***ISO image*** is an archive for an optical drive
  - Name is taken from ISO 9660, the file system used with CD-ROM media.

# Kali Linux

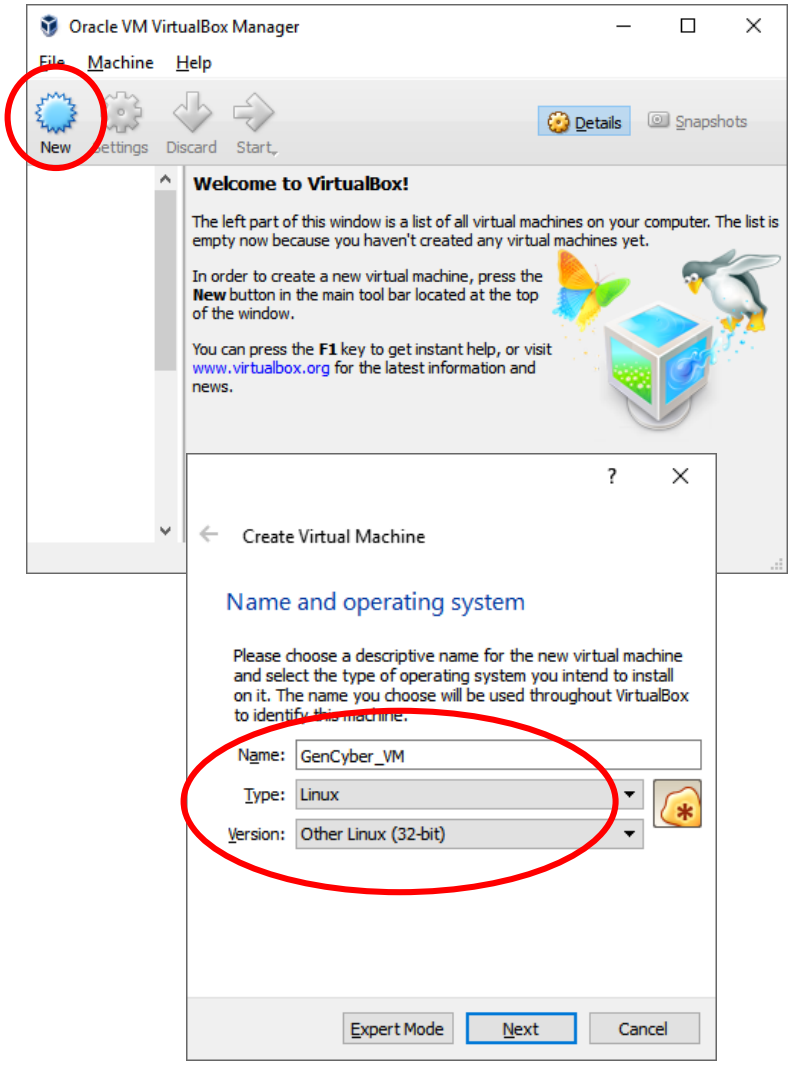


- Linux distro based on Debian Linux
- Packaged with extensive penetration testing tools
  - Metasploit/Armitage (exploitation)
  - Aircrack-ng/Kismet/Bluesnarfer (wireless attacks)
  - Burp suite/Maltego/Paros/Zaproxy (web app attacks)
  - Foremost/P0f/RegRipper/Volatility (forensics)
  - Nmap/sslstrip/Wireshark/tcpdump (recon/analysis)
  - John the Ripper/Ncrack/Rainbow crack (password cracking)
  - Edb-debugger/OllyDbg/YARA (reverse engineering)
  - And hundreds of other tools
- Root user login by default!
- Widely used by security professionals and “hackers”

See http://tools.kali.org/tools-listing

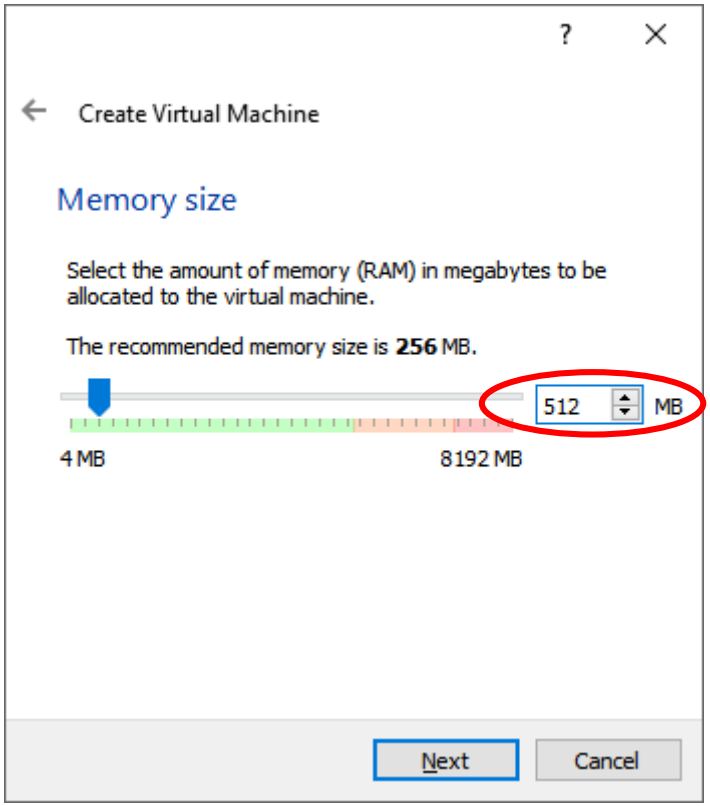
# Create New Virtual Machine

- Start VirtualBox
- In the VirtualBox window, click the New button
- In the Create Virtual Machine dialog:
  - Name: GenCyber_VM
  - Type: Linux
  - Version: Other Linux (32-bit)
- Click "Next"



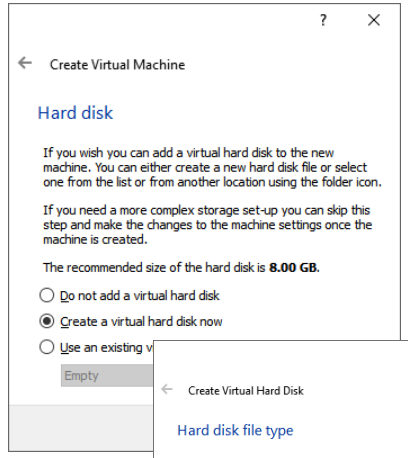
# Create New VM (cont)

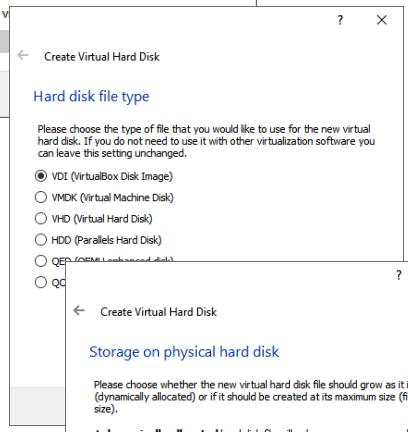
- Change Memory Size to 512 MB
- Click “Next”

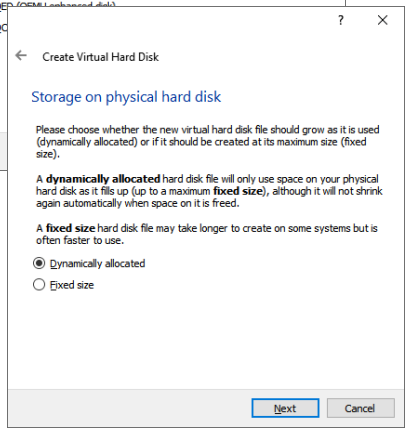


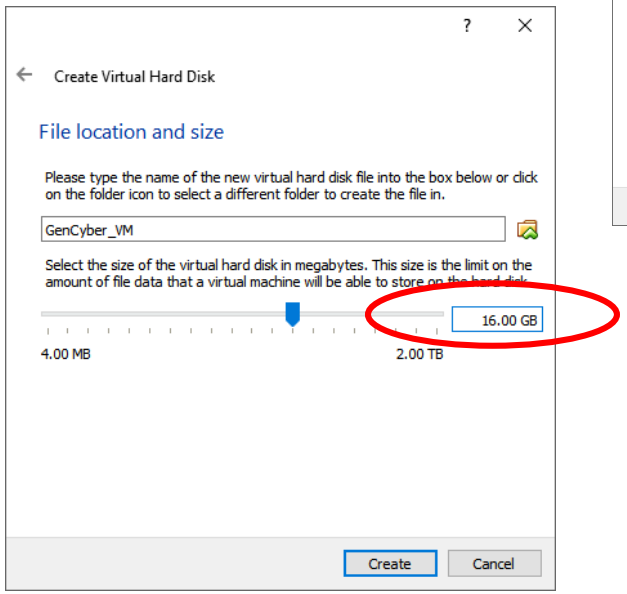
# Create VM: Hard Disk

- Select “Create a virtual hard disk now”
  - Then “Create”
- Select “VDI (VirtualBox Disk Image)”,
  - Then “Next”
- Select “Dynamically allocated”
  - Then “Next”
- Change size to “16.00 GB”
  - Then “Create”



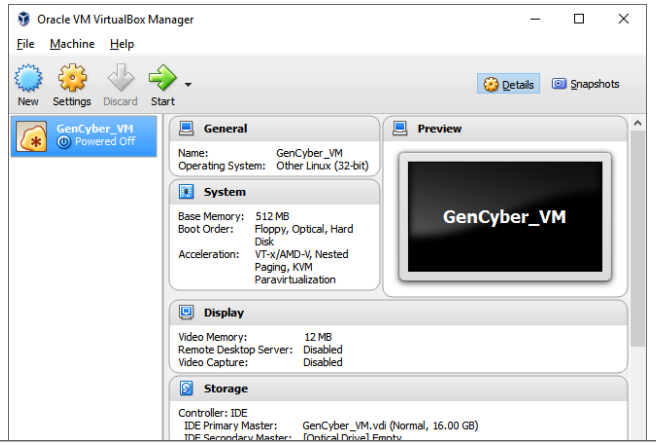



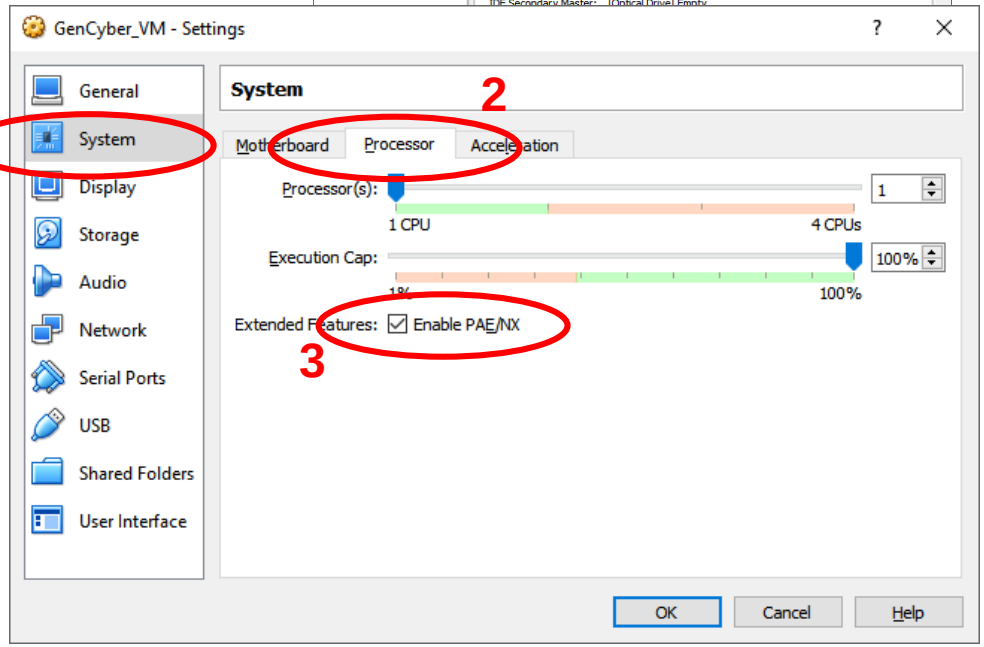



# Configure Settings (1 of 3)

- With GenCyber VM selected, click on "Settings" button

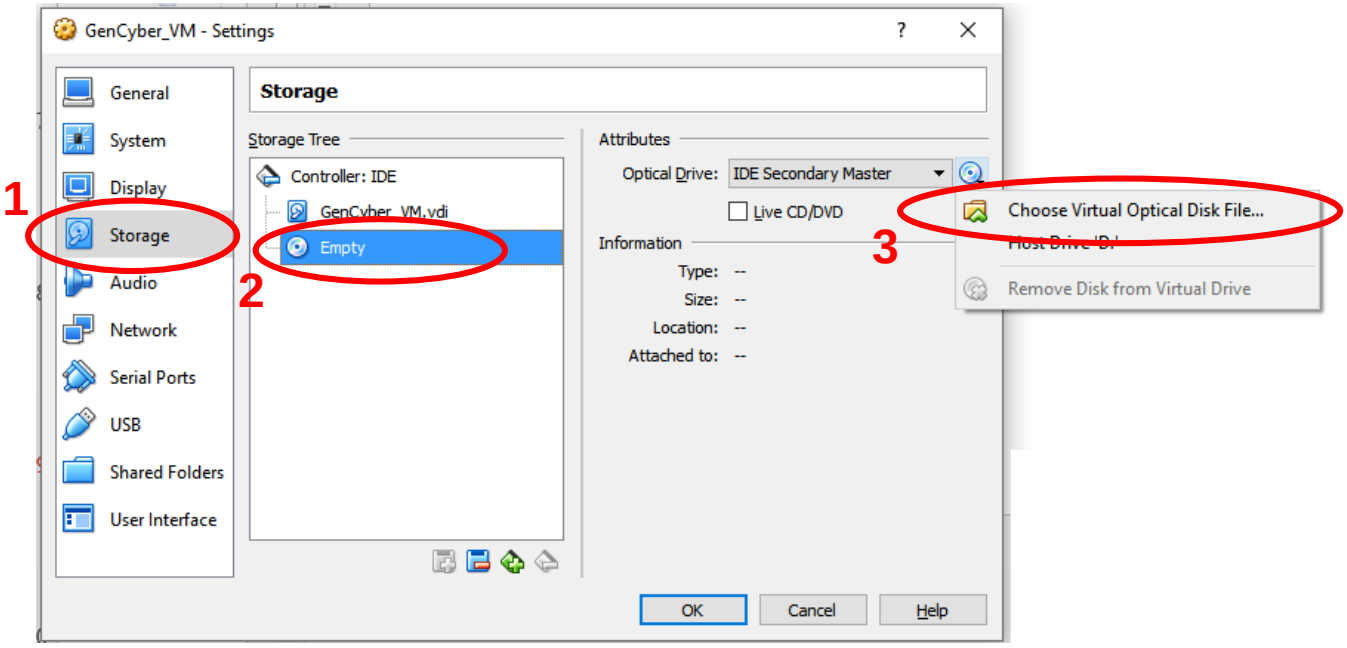



- In Settings window . . .
  - Select "System"
  - "Processor" tab
  - Click "Enable PAE/NX" checkbox



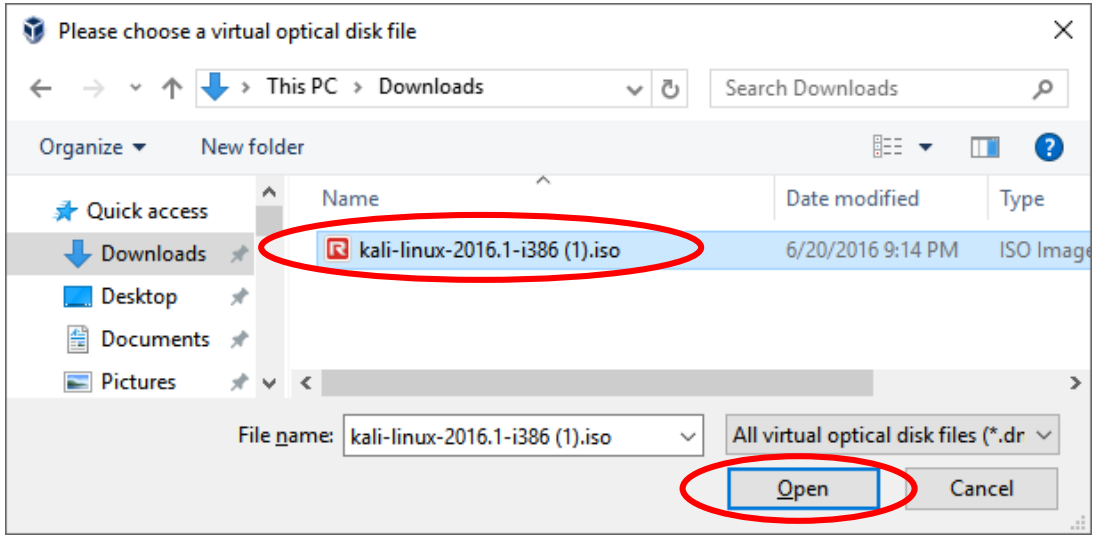
# Configure Settings (2 of 3)

- Select “Storage”
- Select the “Empty” CD tray
- Click CD icon on the far right of the Settings dialog and click “Choose Virtual Optical Disk File . . .”

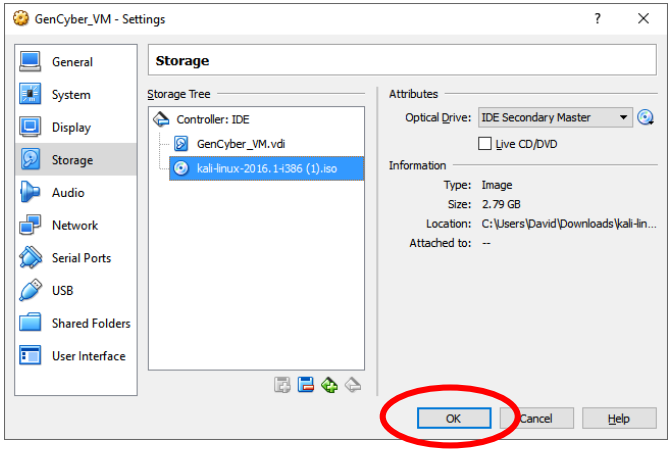


# Configure Settings (3 of 3)

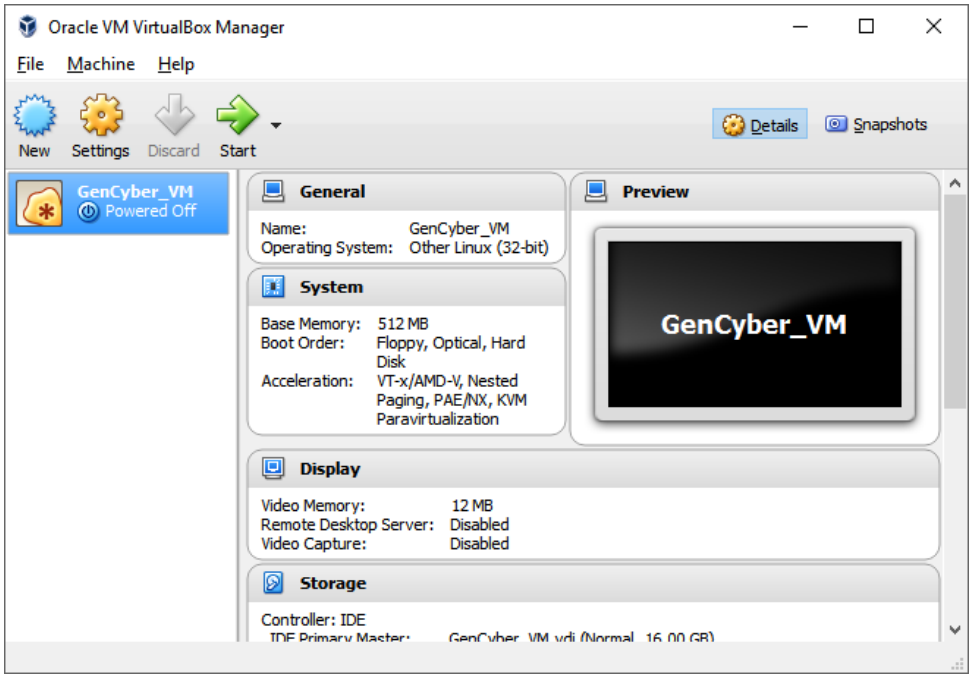
- Browse to the Kali Linux ISO you grabbed earlier and click “Open”
  - It is probably in your Downloads folder

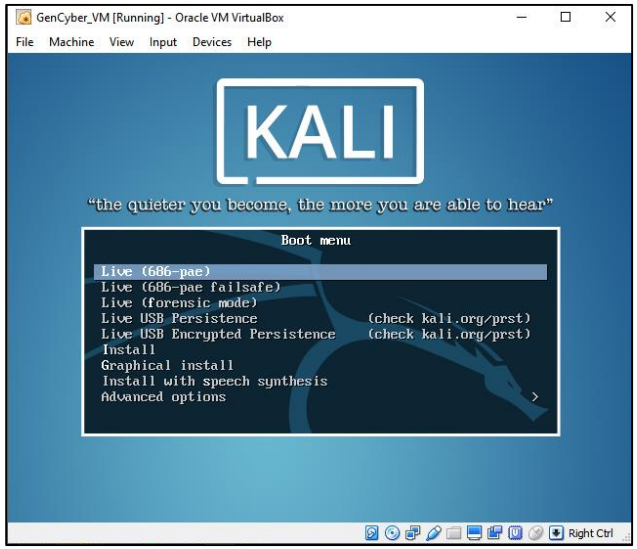



- Finally, click “OK”



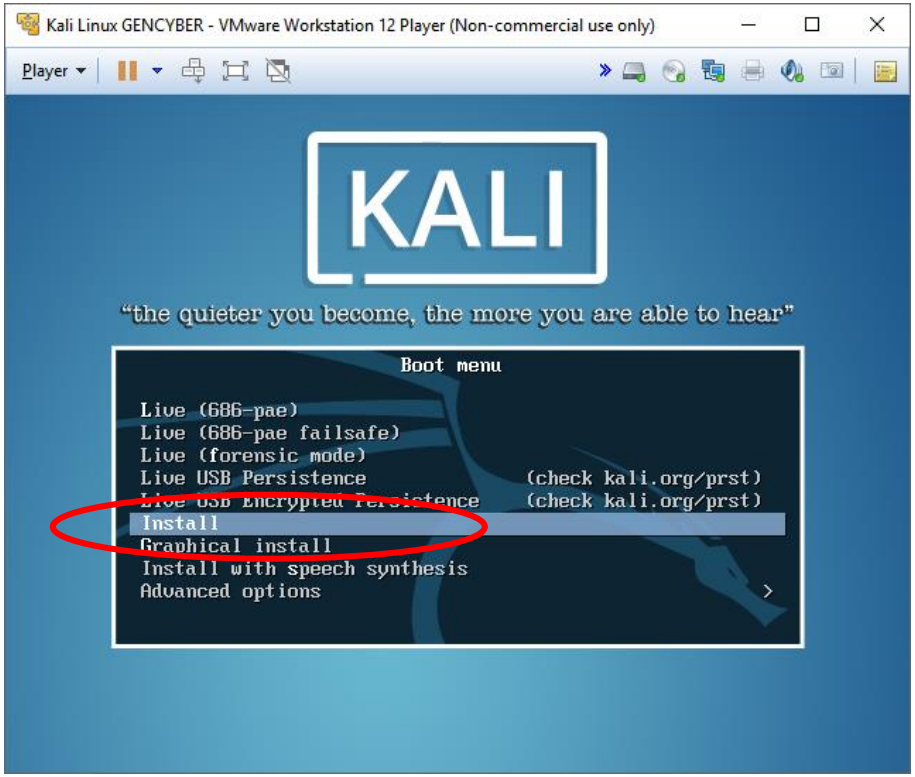
# All set up! Now Start the VM!




- If everything works, you'll end up here.

# Getting ready to install OS



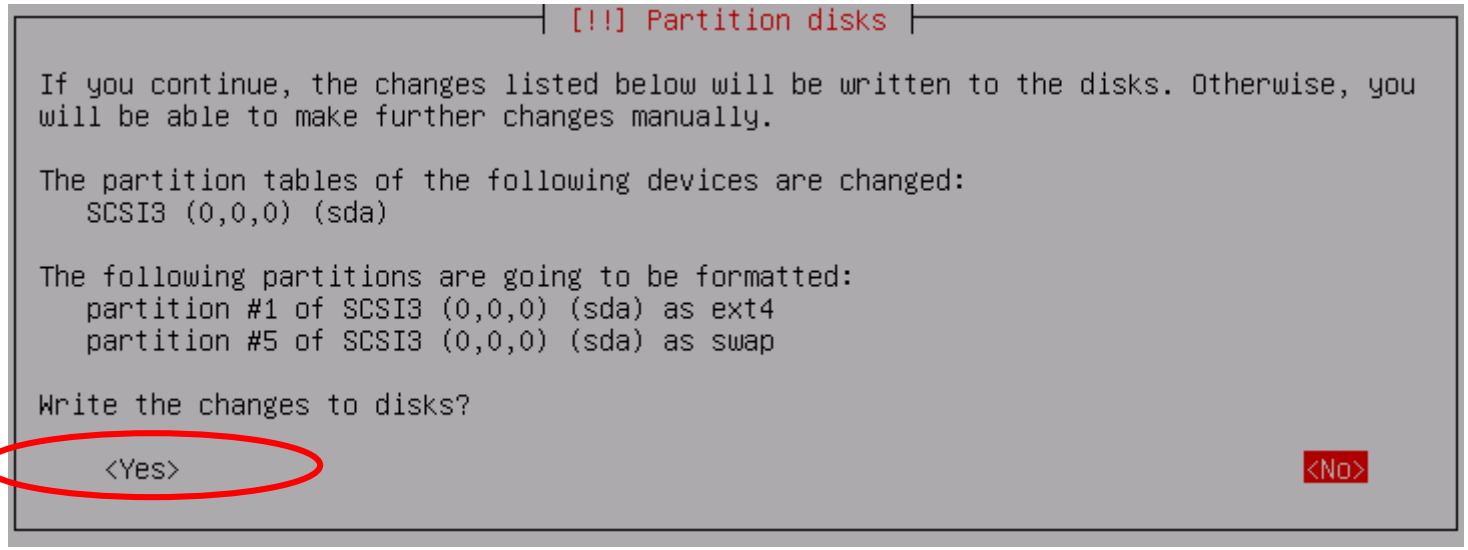

- You are now running a virtual machine – a computer within your computer!
- Click inside the VM window – you will lose your mouse because the VM isn't ready to react to mouse commands yet.
- Use down arrow key to select 'Install', then press enter

- Press the right "CTRL" key to return control back to the host machine – this will give you your mouse back.

# Install Linux OS on your virtual computer

- You can accept defaults for (almost) everything . . .
  - Language: English [Enter]
  - Location: United States
  - Keyboard: American English
    - (wait for additional components)
  - Hostname: Kali (or change it if you would like)
  - Domain name: leave blank
  - Root password: You pick, but make sure it is something you will remember! (and write it down).
  - Clock: Eastern
    - (wait for install/configuration)
  - Partition disks: Use default settings
    - Guided – use entire disk
    - SCSI3 (0, 0, 0) (sda) – 17.2 GB ATA VBOX HARDDISK`
    - All files in one partition
    - Finish partitioning and write files to disk

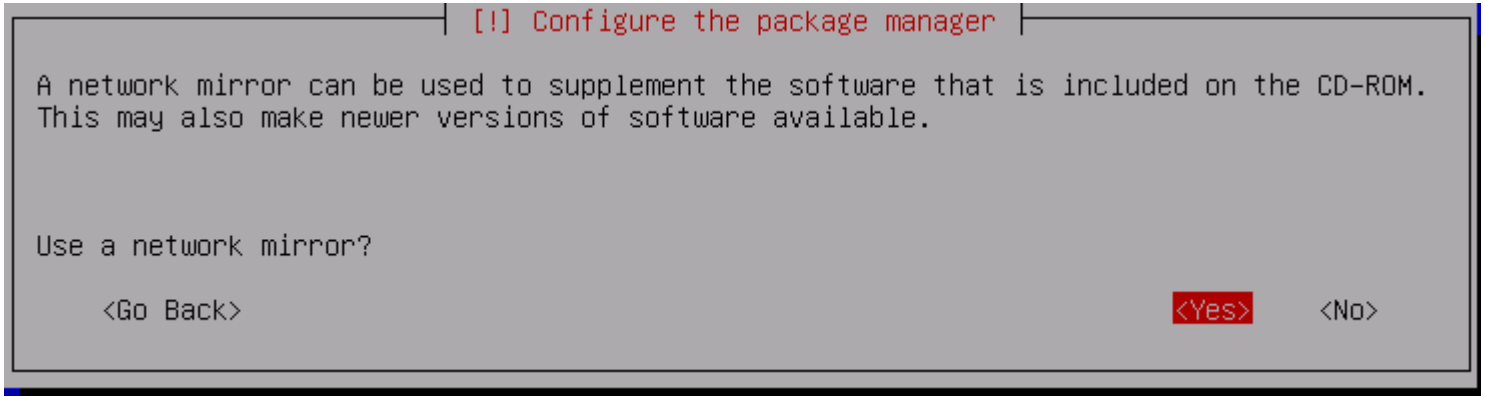
# Install OS (continued)




- This screen is here help ensure you don't accidentally overwrite a hard drive. Since this is inside your VM, it is perfectly safe.
- Use Tab key to select <Yes> and hit enter.

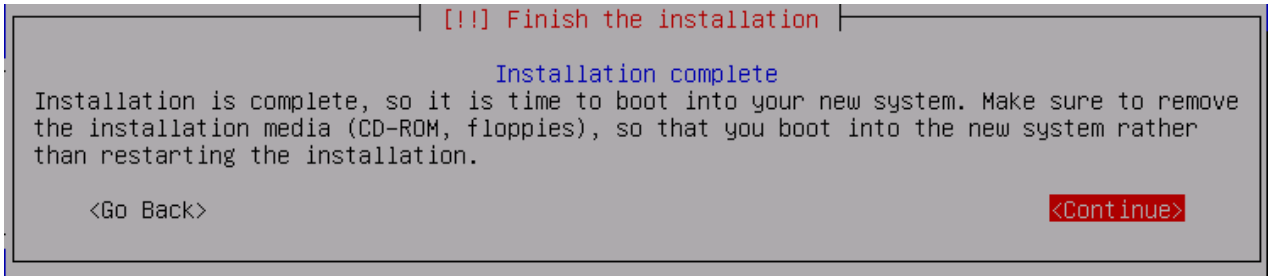
- Now sit back and wait – installation will take 15 min or so.
- Press Ctrl/Alt to escape your VM and get back to Windows.

# Install OS: Getting close(r)

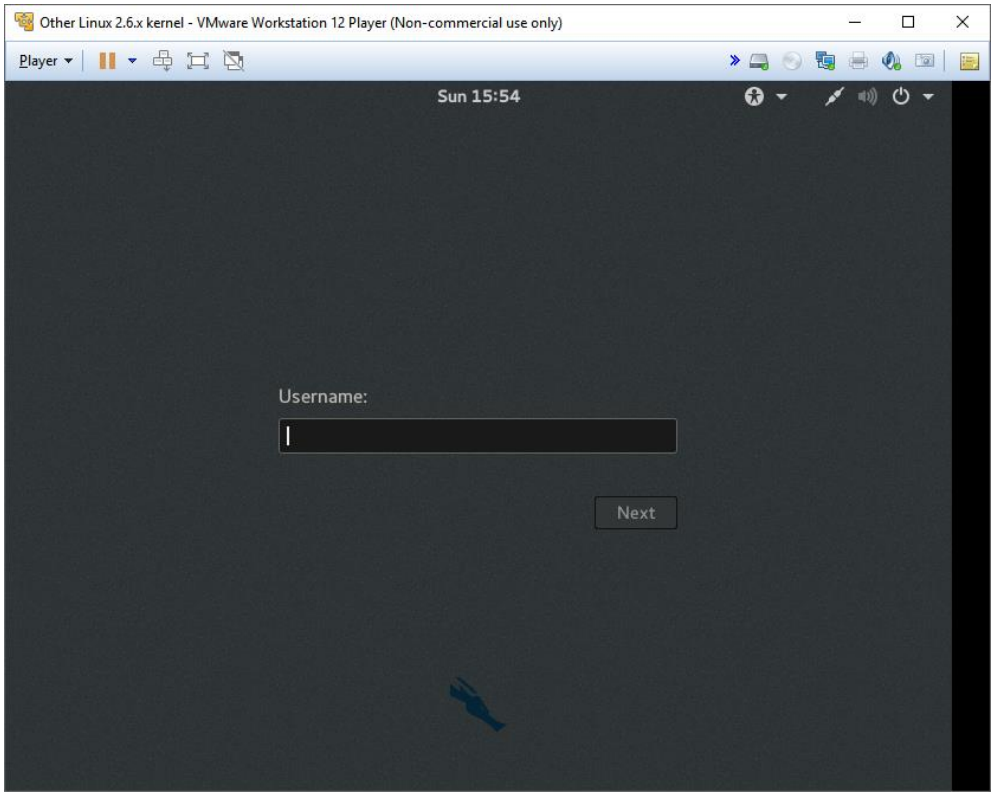



- Use a network mirror? <Yes>
- Leave the ‘proxy setting’ page blank (just press Enter)
  - Updated packages will download and install
- GRUB boot loader? <Yes>
- Device? Down arrow to ‘/dev/sda’ to install on primary partition

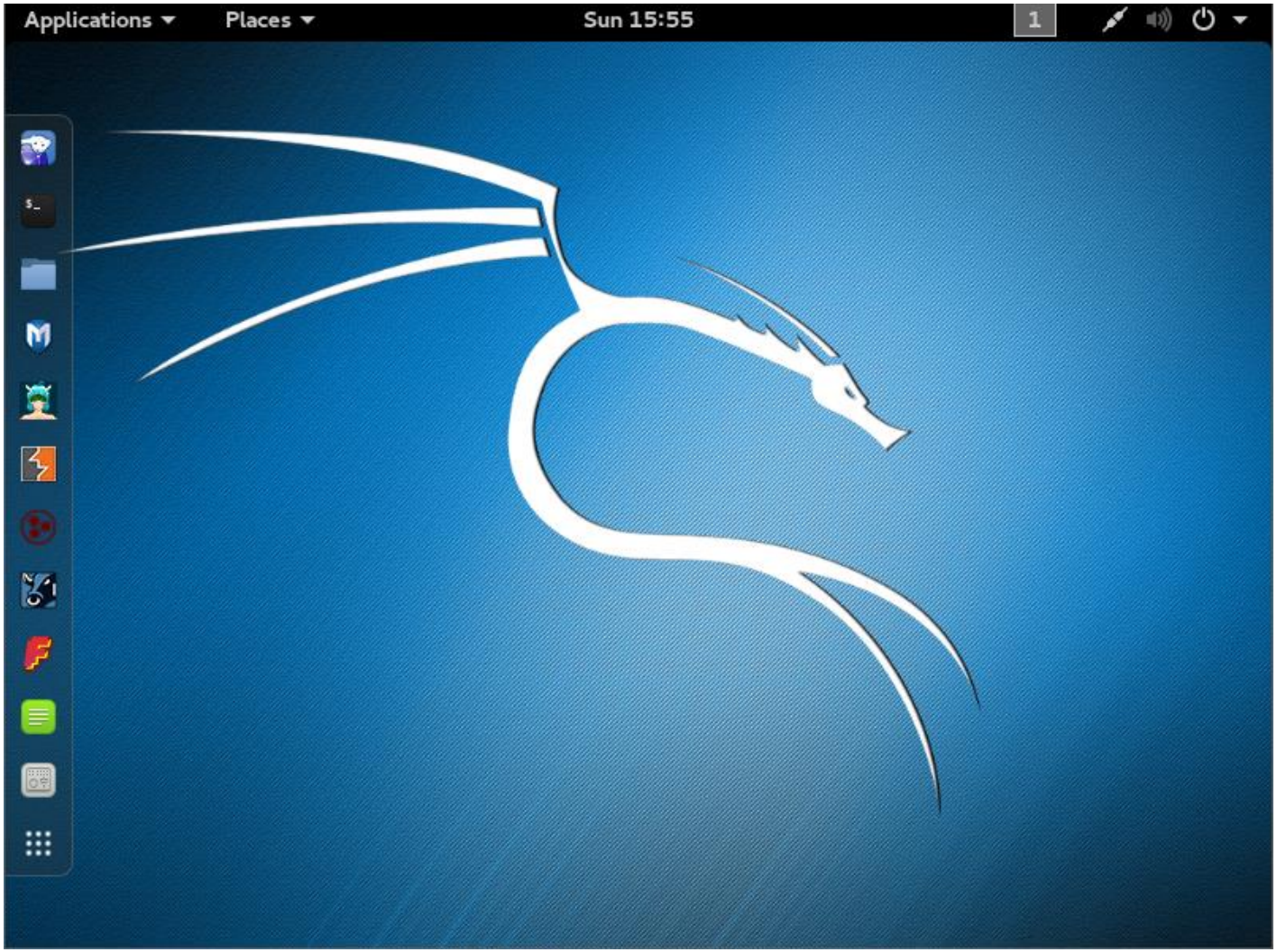
# Finished!




- Press Enter (<Continue>) to boot into your new Kali Linux computer!
  - Again, this will take a few minutes . . .
- Wait until you get to this screen
  - Username: root
  - Password: *what did you pick?*



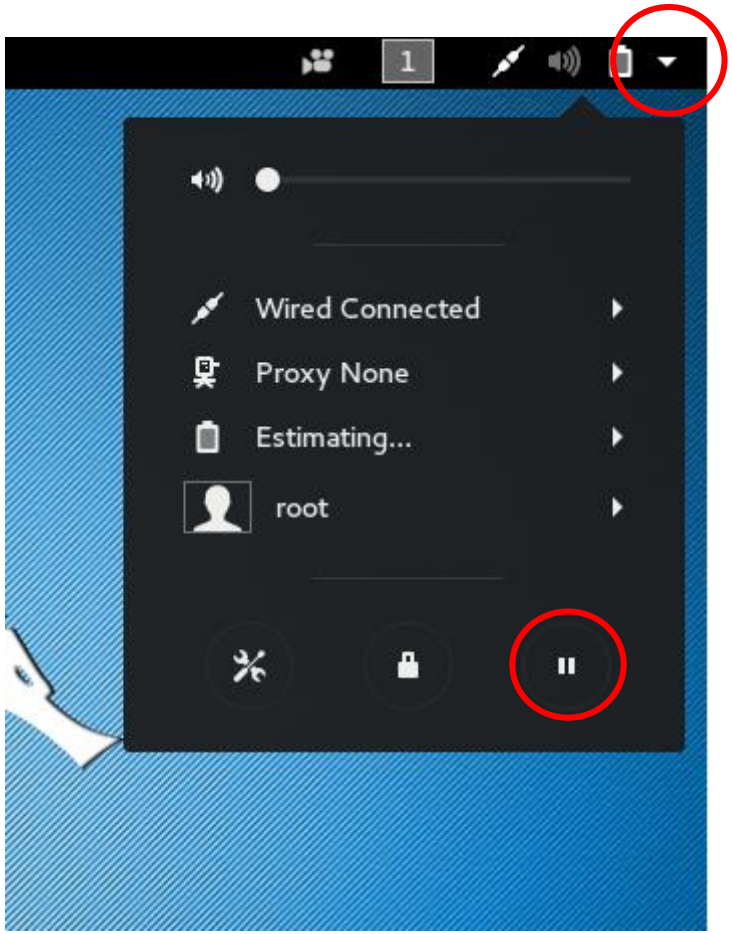
# Kali Linux!



# VM Settings and Tools

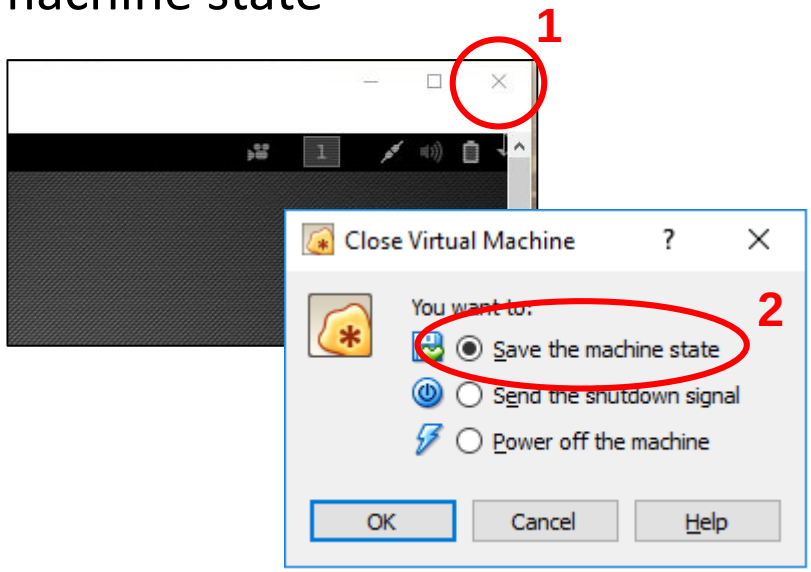
- Escape a VM: Right Ctrl key (you can change this in settings)
- Menu:
  - Machine:
    - Snapshot
    - Pause
  - View – full screen
  - Devices

# Shutting down and pausing VMs




- To shut down VM, select the down arrow at the upper-right corner of the Kali desktop, then the “pause” button . . .

- Or simply close the VirtualBox window and choose to “Save the machine state”



# Other Recommended Software

- Other tools you can install in Windows 10 (we'll discuss these throughout the week)
  - FoxIT PDF Reader
    - https://www.foxitsoftware.com/products/pdf-reader/
  - Wireshark for packet analysis
    - https://www.wireshark.org/download.html
  - Nmap for network mapping
    - https://nmap.org/download.html
  - Putty for remote system access
    - http://www.putty.org/

  - Install VirtualBox Guest Additions for Kali Linux
    - You'll need to do some Googling here!
    - *Snapshot your VM before you do this – you can break things!*