Installing Ubuntu Linux LTS on laptops

Prof. Clement Onime

Overview

- Installing Linux
 - Windows 10 or 11 (WSL)
 - If you have Windows 10 or later on your laptop device
 - Virtualbox
 - Use this with other versions of Windows and other operating systems such as MacOS
 - Dual boot
 - Care must be taken to avoid loss of existing O.S files and data.

Windows Subsystem for Linux – Windows 10 or better **REQUIRED**

- Enabling Windows Subsystem for Linux (WSL)
 - Control Panel → Program and Features → Turn Windows Feature on or off → Windows Subsystem for Linux
 - Alternative:
 - Start Powershell as Administrator and run cmdlet:
 Enable-WindowsOptionalFeature -Online -FeatureName
 Microsoft-Windows-Subsystem-Linux
 - Reboot computer when prompted.
 - After reboot verify that it is installed from control panel
 - Warning: Enabling this option may require downloading from the INTERNET

- Install Linux distro of choice:
 - Download via **Windows store**
 - Search for Ubuntu
 - Alternative (manually)
 - Download AppX package on-line. E.g
 - https://aka.ms/wsl-ubuntu-2204
 - Other distros/versions listed at:

https://docs.microsoft.com/en-us/windows/wsl/install-manual

- (Ubuntu, Debian, Kali Linux, OpenSuse, Suse and Fedora)
- Navigate to download folder and run Powershell cmdlet:

Add-AppxPackage .\{wsl-ubuntu-2204}.appx

- ALTERNATIVE (E.g on Windows server)
 - Change file extension of downloaded file to .zip
 - Extract renamed file to a folder
 - Add folder to PATH
- Installing from the store or manual download requires INTERNET

- Starting Linux
 - Launch from **Start Menu** or Store page.
 - Alternative
 - open cmd and run ubuntu.exe
- First time use will prompt for creating a user and setting a password. *Hint: username should not have a space and should be all lowercase characters*
 - Performing software update and upgrade
 - sudo apt update
 - sudo apt upgrade -y

- On WSL 2: Accessing Linux files from the Windows CMD is possible using the path/prefix
 - \\wsl\$\Ubuntu-22.04\home\<user name>\Project
- On WSL 1 only, accessing Windows files from Linux shell is simple as the windows drives are mounted under /mnt. For example:
 - Is /mnt/c:/Users/
- Running Linux binaries from CMD window, simply prefix the Linux command with wsl
- For example:
 - wsl ls -al

- NOTES
 - Features
 - Run Linux commands directly from Windows CMD using the wsl command
 - wsl ls –al
 - Run common command-line tools such as grep, sed, awk, or other ELF-64 binaries.
 - Run Bash shell scripts and GNU/Linux command-line applications including:
 - Tools: vim, emacs, tmux
 - Languages: NodeJS, Javascript, Python, Ruby, C/C++, C# & F#, Rust, Go, etc.
 - Services: SSHD, MySQL, Apache, lighttpd, MongoDB, PostgreSQL.

- Others
 - Run windows executable directly from inside the Linux shell
 - Seems possible to create custom Linux distros??
 - Limitations
 - Not recommended for running production services
 - Documentation available @
 - <u>https://docs.microsoft.com/en-us/windows/wsl/about</u>

VirtualBox or VMWare

Some Virtualization Platforms

- Personal
 - VmWare, VirtualBox
- Servers
 - Vmware ESXi, Citrix Xen, Proxmox, Hyper-V
 - VirtualBox (headless)...
- Clouds
 - Private: Openstack (KVM/libvirt), Opennebula (KVM/libvirt),
 - Public: Amazon, Google, Azure, etc..

VirtualBox

- Download installer package from <u>https://virtualbox.org/</u>
 - Also download the "Oracle VM VirtualBox Extension Pack" from same page/location
- Install downloaded installer file
- Reboot computer into BIOS
 - For hosting 64bit guests on 64bit host CPUs: verify that processor virtualization support (VTx) is enabled.
- User-manual
 - <u>https://www.virtualbox.org/manual/UserManual.html</u>
 - http://download.virtualbox.org/virtualbox/UserManual.pdf

Virtualbox

- Starting Virtualbox
 - Launch from Start Menu
- First time use
 - Install Extension PACK
 - File → Preferences → Extensions
 - Add downloaded file and follow prompts to install
 - Familiarise youself with application interface
 - Virtual Machine list, snapshots, networking modes..



See http://download.virtualbox.org/virtualbox/UserManual.pdf

VirtualBox or VMWare Player (Using pre-installed appliances)

- Installing Linux using Appliances. See
 <u>https://www.osboxes.org/virtualbox-images/</u>
 - After download, import Appliance using
 - File \rightarrow Import Appliance
 - If necessary change settings of new VM
- NOTES:
 - No need to perform actual installation
 - May be **security concerns**...

VirtualBox (installing from ISO image)

- Installing Linux from ISO image
 - Download ISO image of Ubuntu 24.04.{x} from <u>https://ubuntu.com/download/desktop</u> or
 - <u>https://ubuntu.com/download/server</u>
 - Other distros use INTERNET . For example <u>http://linuxfreedom.com/Distros/</u>
 - Create new VM
 - Click the "Add button" or "+ icon" to start wizard, type Ubuntu and select Ubuntu type, follow prompts and set the following options: 4GB ram, 2 CPU, create new hard-disk of size 40GB
 - Click "Start" button to start virtual machine
 - Select ISO image downloaded in previous step
 - Install process should start. Go-to next slide
- Notes:
 - Never assign a VM more than ½ of total physical RAM
 - Physical hard disk space is required.

Virtualbox – Creating a VM

4 - no a VV As a dia mange-		The second second
No Stower Hes Stower Hes Her stress ander vers	We know the Webselline" The Albert of the vertex of the set of an and another and in the "set regions of our website". The documents are set in the set of the set o	

244 U N

Cance

3122 NE

Suded Hors Craste

Course of the Mestern.	
Harr + and goers ing clusters	
Sand Johns	
Tost Loss	
www.lbinkidtbit	· · · · · · · · · · · · · · · · · · ·
Henery alta	

Characteria estat bare bel

(i) Obstate Alkaliters deletes () use an examply realities described

Crocke Wicard Herr Cikil	
File location	
Ubuntu	
Fie dae	
1.00 Mz	2.00 TE
liand dist file type	Storage on physical hard disk
🛞 VDL (Vetaalites Dað bruge)	® Darginals durated
O WiD (Wrbuilliard Dirk)	C Faed of the
🔿 VHDK (Vetaal Maderc Dok)	Split into Flaris Franchise
O (100 (Parallels) (avd (109)	
() QCOW (QBPU Capy On Write)	

- Click the "Add" or "New" button" or "+ icon" to start wizard,
- write Ubuntu, it should set Type to Linux and Version to Ubuntu64
 - Follow prompts and set the following options: 4GB ram, 2 CPU, create new harddisk of size 40GB

Click the "Start" button to Launch the new VM

Virtualbox – Starting a VM

Social With Columbias Millionger	S 1	1
Martine Ang Series and Ang Series and Ang Provide Ang	Holecome for Virbaniliant Texture of the sentences and of texture of the sentences of texture of the sentences of the sentences of texture	
	Security And in address or detainmenter of (M) which. Performing suggesting for the survey by dearer (M and address near supervises) are the second to receive and the second	N N
Vount Filz Maa	- u [Pewared Off] - Cracle VM Virtualities china - Vidw - Input - Disolees - Help	- 0
	Sefect start up dok	

Please select a virtual optical disk file or a physical optical drive containing a disk to start your new virtual machine

The disk should be suitable for starting a computer from and should contain the operating system you wish to instal 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.

· 12

🕾 🎭 🧬 🍙 🥁 🎆 🕼 🖓 🐺 Right Ctrl

Cancel

from.

Empt/

Starting Linux

- Click the "Start" button
- First time: Request for BOOT ISO/DISK
 - Navigate by clicking the folder icon at end of entry box
 - Browse the Download folder for the downloaded ISO image and select it.

Virtualbox - Installing Ubuntu Linux



- Click on "Install Ubuntu"
- Select Keyboard layout
- Select "Normal install"
- Select "Default disk layout – Erase entire disk"
- Select location
- Create your user account
- Reboot when prompted.



Images and details were obtained from https://linuxhint.com/install_ubuntu_18-04_virtualbox/

Virtualbox – Starting a VM/Linux

Q	J	88
tinde Connection	Notices to What Burn Participant of the sector band out out and marked a biotechnology and a biotechnology and a biotechnology and the sector band of the sector band out of the biotechnology and the sector band out of the secto	
	Belaik Sal to does a distance of (M) and it. Perform your of gagging for the control, does of the data sea controls or other paperies (Set To to data sea controls or other paperies (Set To to data sea controls or other paperies (Set To to data sea controls or other paperies).	-
	Frequency	-

- Starting Linux
 - Click the "Start" button
 - Login and begin to enjoy Linux

Virtualbox – Accessing Windows files from Linux

- Steps:
 - Use the Shares TAB to setup folder mappings
 - From inside Linux then mount the shares
 - For more details, please see the VirtualBox user's manual.
- To access your Linux VM from Windows requires more technical work. To get started.
 - Install putty for Terminal access over SSH
 - Install winscp for file transfer over ssh

Dual boot **APPROACH 3**

Dual booting

- This is the process of installing several different O.S. on a single computer device.
 - Each O.S. is completely independent and installed to its own/dedicated partition.
 - Requires partitioning of hard-disk or several harddisks
 - Only one O.S. is active or running at a time. Switching from one O.S to another requires a reboot and a boot Manager software.
 - So each O.S. maximises its use of available hardware resources.

Dual booting

- Disk partition table (mbr vs gpt):
 - Windows drive c: should be resized (shrunk) from the Control panel → Adminstrative tools → Computer Management → Disk management
 - mbr is limited to a maximum of 4 primary partitions, so if may be necessary to delete a 4th partition if one exists.
- UEFI Firmware:
 - Secure boot:
 - Supposed to create a secure trust chain that boot-loader has not been tampered with.
 - Well supported on Ubuntu Linux (signed kernels), growing list of other distros that also support this.
 - UEFI O.S. Bootloaders
 - Windows (Press and hold down Shift key while shuting down)
 - GRUB (Linux) allows selection at boot-time

Dual booting

- Preparing
 - Resize/shrink Windows partition to free up space
 - Download ISO image of Linux distro
 - Write (burn) ISO image to USB-drive using the Rufus tool from <u>https://rufus.ie/</u>
 - OR burn to DVD
 - Reboot computer
 - Start boot of computer from USB or DVD drive.

P Rutus 3.0.1304	- n x
Drive Properties	
Device	
Ubuntu 18.04 LTS amd64 (Gr) [868]	v
Boot selection	
ubuntu-18.04-desktop-emd64.nm	V 🥝 SELECT
Partition scheme MBR v	Target system BKOS ar UEPi 🔍
Y Survey advanced drive competies	forestern of
Ubuntu 18:04 LTS errod64	
Ubuntu 18:04 LTS arod64	- Contraction
File system	Cluster size
FAT32 (Default) -	4096 bytes (Default) ~
· Show advanced format options	
Status	
- That Gar	
	DY /
ALC: 101120	
© ⊂ π	START CLOSE

READ AND FOLLOW INSTRUCTION CAREFULLY TO AVOID LOSS OF WINDOWS O.S / DATA

Dual boot - Installing Ubuntu Linux





- Select Keyboard layout
- Select "Normal install"

wed usize

 DON'T RUSH NEXT STEP to AVOID WINDOWS DATA LOSS

A 40 B



Images and details were obtained from https://linuxhint.com/install_ubuntu_18-04_virtualbox/

Dual boot - Installing Ubuntu Linux

	ANDER		Wat: H
nstallation type			
Tables an an active on a disclose services to descend interaction	er obenot beatterren.		
 Record conduct all are New provide the pair of the conducted 		-10.21 mm	
 Descriptions and an ended and the factors for an electronic science, and the set one. 			
Ether Control (Control of control of cont	and a set which and a set		
C CONSTRUCTION OF A PART OF STATE AND A PART O	eyarki erdiri dana		
-voide and the	are .	(ca:_)as)	CHE NA



- Select "Something else"
- Click + sign to add the following new partitions one after the other
 - Swap: 8GB, type swap
 - /: all free space, ext4
- Click "Install now"
- Click "Continue"



Images from https://www.linuxtechi.com/ubuntu-18-04-lts-desktop-installation-guide-screenshots/

Dual boot - Installing Ubuntu Linux

Where are you?



- Select Geographic location
- Create your user account
- Restart when prompted.

Your computer's name: John-VirtualBox The name it uses when it take to other computers. Pick a username:			20111-2016	Your name:
The name it uses when it take to other computers. Pick a username:		4	john-VirtualBox	Your computer's name:
Pick a username: 📴		o other computers.	The name it uses when it talks t	
			1000	Pick a username:
Choose a password: eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee		Fair password	*********	Choose a password:
Confirm your password: 🛑		4		Confirm your password:
Login automatically Require my password to log in		to log in	Log in automatically Require my password i	

Images and details were obtained from https://linuxhint.com/install_ubuntu_18-04_virtualbox/

Dual boot – Starting an O.S/Linux

			GNU	GRUE	ver	s ion	1,9	/"beta4	
Kubuntu Kubuntu	9.10	Kani	lic Ko	bala Dala	Fails	afe			
Ubuntu, Ubuntu, Ubuntu	, Linu , Linu 9.10	x 2.6 x 2.6 Karmi	.31- .31- .C KO	14-ge 14-ge ala 6+)	neric	(re	cover	'y mode)
Memory	test	(memt	test8	6+, s	erial	cons	sole	115200)

- Reboot the computer and select suitable option from the GRUB bootloader menu.
 - If system boots directly into Windows, then try
 - Shutdown Windows and wait for complete power off
 - Press the power button to start.
 - It may be necessary for you to enter BIOS/UEFI firmware and force boot manager/loader to Ubuntu.
 - OR disable Windows faststartup or fast-boot.

Dual boot – Accessing Windows files from Linux

- Open the Ubuntu File Manager/GUI
 - Look for the disk partitions and simply double click to access the data
- NOTE: Reverse of accessing your Linux partitions files from Windows may require advanced setup of WSL to avoid corrupting Linux (in which case it stop booting and functioning correctly).