VirtualBox/Ubuntu 20.04 LTS Installation

ECE 2620 - Computer Networks

Villanova University Electrical and Computer Engineering

Instructor: Dr. Sarvesh Kulkarni, sarvesh.kulkarni@villanova.edu

Installation instructions (August 20, 2020) by: Dr. Kyle Juretus, kyle.juretus@villanova.edu Instructions updated (February 5, 2021) by: Dr. Sarvesh Kulkarni, sarvesh.kulkarni@villanova.edu

1 Objective

This document is a guide for

- 1. Installation of the VirtualBox Virtual machine on the Host OS (Windows / Mac OSX), and
- 2. Installation of Ubuntu 20.04 LTS as a Guest OS in VirtualBox.

2 Download Oracle VM VirtualBox Installation File

- 1. Download VirtualBox from: https://www.virtualbox.org/wiki/Downloads
- 2. Select the download link for your operating system



3 Install Oracle VM VirtualBox

3.1 Oracle VM VirtualBox Installation on Windows

- 1. Double-click the downloaded .exe installation file
- 2. Follow the on-screen instructions to install VirtualBox
- 3. After completing the installation, the final dialog box should indicate whether the installation was successful.



3.2 Oracle VM VirtualBox Installation on Mac OSX

- 1. Open the downloaded .dmg file
- 2. Follow the on-screen instructions to double click the VirtualBox.pkg icon



3. Follow the on-screen prompts to install VirtualBox at the location of your choosing.



4. After completing the installation, the final dialog box will indicate whether the installation was successful.



4 Installation of Ubuntu 20.04 LTS in VirtualBox

- 1. Download the Ubuntu 20.04 LTS 64-bit ISO file from: https://ubuntu.com/download/desktop
- 2. Start VirtualBox, and you will see:



3. Click 'New' to begin the setup of a new virtual machine (VM).



4. Configure the dialog box with the following settings for a Linux 64-bit installation. You may choose to use a different name for the VM and the Installation Path.

	Please choose a virtual machine a install on it. The identify this mac	descriptive name and destination folder for the new ind select the type of operating system you intend to name you choose will be used throughout VirtualBox to hine.
	Name:	Ubuntu 20.04LTS
	Machine Folder:	Installation Path
7	Туре:	Linux 📀 🐓
-	Version:	Ubuntu (64-bit)

5. Select the amount of memory (RAM) that should be allotted to the VM. Ubuntu recommends that 1 GB minimum be allocated to the VM, but we prefer 4 GB minimum, 8 GB ideal. You must leave approximately 8 GB for the host OS (i.e. Windows/OSX) to operate satisfactorily.

So, for instance, if your system has 16 GB RAM, then you can allocate 8 GB for the VM, leaving 8 GB for the host OS. Note that the VM will use this allocated RAM only when it is running; therefore, when the Ubuntu VM is turned off, its entire memory allocation with be returned to your host OS.

NOTE: Your host OS must have enough memory, or the performance of both the VM and the host OS will suffer. Check your memory usage in task manager (Windows)/activity monitor (Mac) to determine the amount of RAM that can be allocated to VirtualBox. RAM-heavy applications such as Google Chrome should be closed before starting the Ubuntu VM so as to leave more free RAM for the latter. The memory allocation may be changed after configuration if you want to experiment with different values.

	Memory size					
	Select the amount of me the virtual machine.	mory (RAM) in megabytes to be allo	cated to			
	The recommended mem	ory size is 1024 MB.	6 С МВ			
5	4 MB	16384 MB				
-						
		Go Back Continue	Cancel			

6. Create a virtual 'hard disk' for the VM to utilize.

7. Configure this just-created virtual hard disk. Keep the default 'VDI (VirtualBox Disk Image)'.

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) VHD (Virtual Hard Disk) VMDK (Virtual Machine Disk)
Expert Mode Go Back Continue Cancel

8. Select the hard disk type. 'Dynamically allocated' is recommended for our class. It will expand storage space as and when needed, which will work fine in our case. 'Fixed size' offers better performance, however, the hard disk size cannot be changed easily later if you start running out of virtual hard disk space.

9. Select the size of the hard disk. Ubuntu recommends that you allocate at least 25 GB. The hard disk file will default to your installation path chosen earlier.

Installation Path /Ubuntu 20.04LTS Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk. V V	File location and size Please type the name of the new virt click on the folder icon to select a di	tual hard disk file into the box below or fferent folder to create the file in.
Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk. 25,00 GB 4.00 MB 2.00 TB	Installation Path	/Ubuntu 20.04LTS
	Select the size of the virtual hard dis on the amount of file data that a virtu hard disk. 4.00 MB	sk in megabytes. This size is the limit ual machine will be able to store on the 25,00 GB 2.00 TB

10. The initial settings for the VM are all done and you will be presented with the following screen. Click 'Settings' to make some additional configuration changes.

• • •	Oracle VM VirtualBox Manager	
Tools	New Settings	
Ubuntu 20.04LTS	E General	E Preview
Powered Off	Name: Ubuntu 20.04LTS Operating System: Ubuntu (64-bit)	
	System	
	Base Memory: 1024 MB Boot Order: Floppy, Optical, Hard Disk Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization	Ubuntu 20.04LTS
	📕 Display	
	Video Memory: 16 MB Graphics Controller: VMSVGA Remote Desktop Server: Disabled Recording: Disabled	
	Storage	
	Controller: IDE IDE Secondary Master: [Optical Drive] ubuntu-20.04-desktop- Controller: SATA SATA Port 0: Ubuntu 20.04LTS.vdi (Normal, 10.00 GE	amd64.iso (2.53 GB) 3)
	🕪 Audio	
	Host Driver: CoreAudio Controller: ICH AC97	
	Network	
	Adapter 1: Intel PRO/1000 MT Desktop (NAT)	
	A 1100	

11. NOTE: If virtualization is not enabled, VirtualBox will not run and will produce the following 'invalid settings' error. If you see this error in regard to hardware virtualization, the virtualization settings in your BIOS may need to be changed. Please contact the instructor for assistance.

😟 Ubuntu 20.04LTS - S	ettings	?	\times
General	System		
System	Motherboard Processor Acceleration		
Display	Base Memory:	1024 MB	-
Storage	4 MB 4096 MB		
🕩 Audio	Boot Order: Image: Boot Order: Image: Boot Order: Image: Optical Image: Boot Order:		
Network	Hard Disk		
Serial Ports	Chipset: PIIX3		
🌽 USB	Pointing Device: USB Tablet		
Shared Folders	Extended Features: Enable I/O APIC		
User Interface	EFI (special OSes only) Hardware Clock in UTC Time		
	System: Acceleration page:	although	itie
	not supported by the host system. It should be disabled in order to start the virtual s	ystem.	
	Invalid settings detected 🔊	Can	cel

12. Go to the 'System' tab in 'Settings'. If possible, increase the number of CPUs available to 2 or more.

NOTE: Leave at least 2 CPUs for the host OS to operate effectively or else both the host OS and VM performance will suffer.

	Ubuntu 20.04	LTS - System	
General System Display	Storage Audio Network	Ports Shared Folders	User Interface
	Motherboard Proce	essor Acceleration	
Processor(s):	1 CPU	I I	2 CPUs
Execution Cap:	1%		100% 0
Extended Features:	Enable PAE/NX	D-V	
			Cancel OK

13. Under the Display tab, ensure 3D acceleration is **not** checked and increase the amount of video memory available to 128 MB.

	Ubu	ntu 20.04LTS - Di	splay	
General System Display	Storage Audio	Network Ports	Shared Folders	User Interface
\sim	Screen	Remote Display	Recording	
Video Memory:			1 1 1 1	128 MB 🗘
	0 MB			128 MB
Monitor Count:				1 0
	1			8
Scale Factor:	All Monitors			100% 🗘
		Min		Max
Graphics Controller:	VMSVGA	0		
Acceleration:	Enable 3D Ac	celeration		
				Cancol

14. Return to the main screen. Click 'Start' to begin Ubuntu installation.

15. An ISO selection screen will pop-up, which is where you should select the Ubuntu ISO file downloaded previously. Click the folder icon to add the ISO file if the file is not listed.

	Please select a virtual optical disk file or a physical optical drive containing a disk to start your new virtual machine from.
ORACLE	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.
	ubuntu-20.04-desktop-amd64.iso (2.53 GB) ᅌ 😡
	Go Back Start Cancel

16. Click 'Install Ubuntu'

• • •	Ubuntu 20.04LTS [Running]
Welcome	
Bahasa Indonesia Bosanski Català Čeština Cymraeg Dansk Deutsch Eesti	
Enguish Español Esparanto Euskara Français Gaeilge Galego Hrvatski Íslenska	Try Ubuntu Install Ubuntu You can try Ubuntu without making any changes to your computer, directly from this CD. Or if you're ready, you can install Ubuntu alongside (or instead of) your current operating system. This shouldn't take too long. You may wish to read the release notes.
	• • • • • • • • • • • • • • • • • • •

17. Select 'Normal installation'

● ● ● Ubuntu 20.04LTS [Running]				
Jul 25 22:44	Å	(پ		•
Install				×
Updates and other software				
What apps would you like to install to start with?				
Web browser, utilities, office software, games, and media players.				h
Other options				
Develord undates while installing Ukvetu				
This cause time after installation				
Install third-party software for graphics and Wi-Fi hardware and additional media formats				
This software is subject to license terms included with its documentation. Some is proprietary.				
Quit Back	Co	ntinu	Je	
$\bullet \bullet \bullet \bullet \circ \circ \circ$				
			1 . 6	
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18. Select "Erase disk and install Ubuntu" and then click 'Install Now'. Don't worry, this step only erases the virtual disk that you created, not your main (physical) system drive.

19. Press 'Continue' to proceed with the disk partition formatting.

- 20. Follow the on-screen prompts to set the time zone, system name, and password. The Ubuntu desktop will now show up.
- 21. Install the "guest additions" from VirtualBox: Devices \rightarrow Insert Guest Additions CD image..

22. Restart the Ubuntu VM.

That's all folks!