

Linux Distribution Configurations by Brennen Tse

Purpose:

Configure 2 Linux distribution to later use with PfSense to connect to the internet.

Background Information:

Ubuntu and Debian/Linux Mint are two Linux distributions. Linux Mint is based on a Debian derivative and is becoming more popularity. The main reasons are that Linux mint is very similar with Windows desktop. Ubuntu Desktop is the older of the two and both are very usable, with Ubuntu having an interface closer to MacOS.

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2. [Installing Ubuntu](#)
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Prerequisites:

Download and install [VirtualBox](#):

Download [Linux Mint](#):

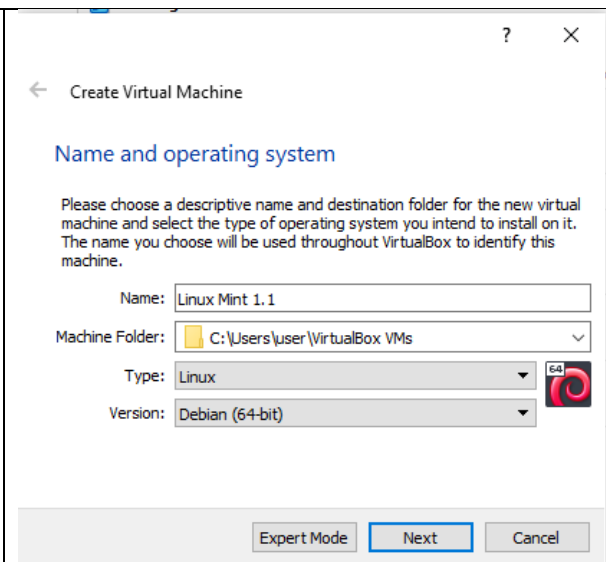
Download [Ubuntu](#):

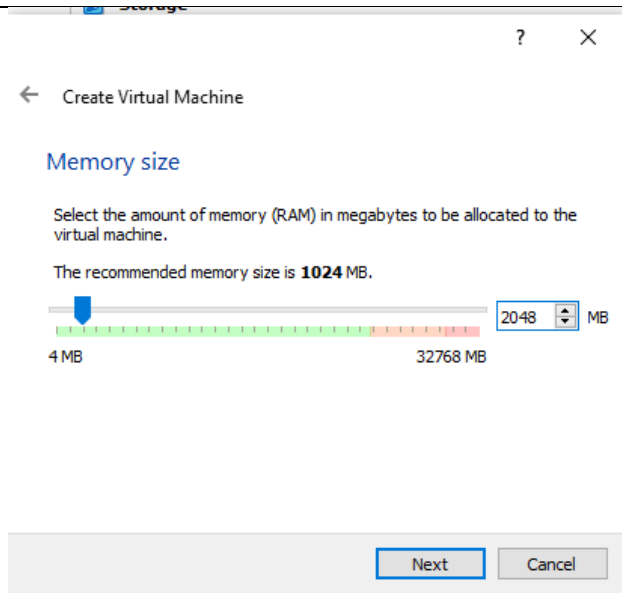
Installing Linux Mint:

Create the VM instance:

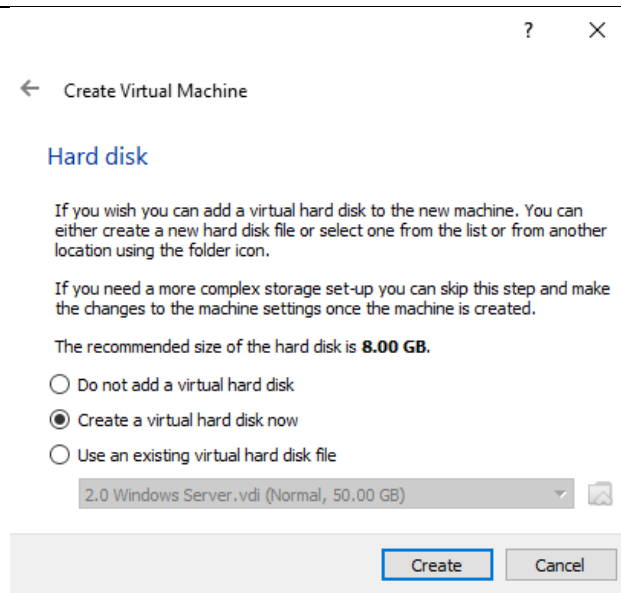
Open VirtualBox and click the New VM icon (blue circle).

Enter in the VM's name, what folder you want to store the VM files in, and the OS (Linux) and Linux version/distribution (Debian). You should select Debian because it's similar enough to Linux Mint and Virtual Box doesn't offer a Linux Mint version drop-down.

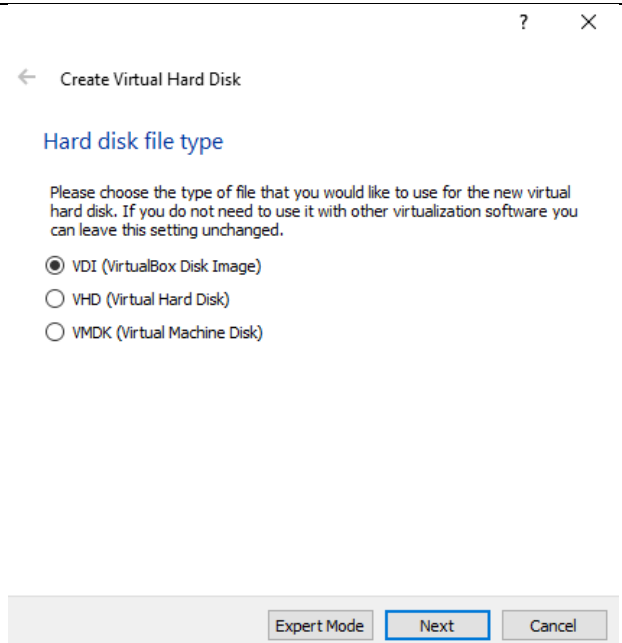




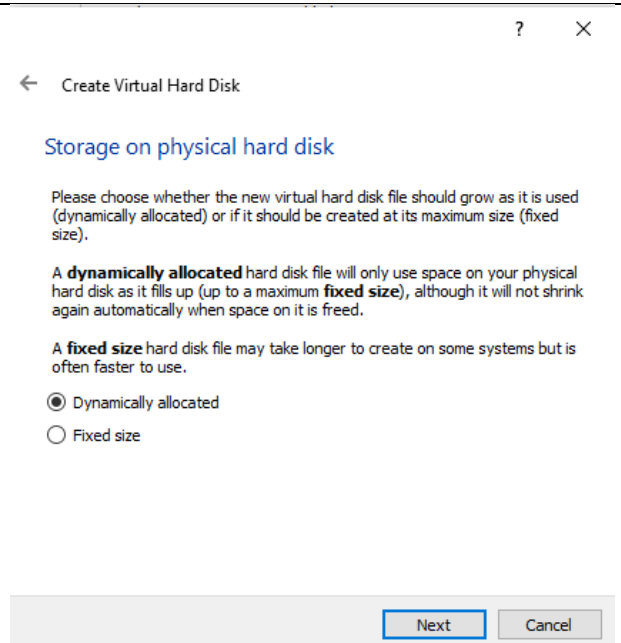
Configure the Linux Mint's memory, I allocated 2048 MB.



Setup the hard disk, I used a virtual hard disk.



I left the hard disk file type as default of VDI, but if you have any plan to move this VM to another hypervisor you should choose VMDK.



Choose dynamically allocated.

After following the above steps like selecting memory size, creating a virtual hard disk, selecting the file type and storage, outline the maximum disk space the VM can take up, I set it to a default of 20 GB, but if your PC has less it can work with less.

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← Create Virtual Hard Disk

File location and size

Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.

C:\Users\user\VirtualBox VMs\Linux Mint 1.1\Linux Mint 1.1

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.

20,00 GB

4.00 MB2.00 TB

CreateCancel

Once you click create, this should be the screen that you're brought to. Check all the settings to make sure they match what's shown. Make sure that the network adapter is set to NAT if you require internet access. Then click the green start arrow to proceed.

NewSettingsDiscardStart

General

Name: Linux Mint 1.1
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: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled

Storage

Controller: IDE
IDE Secondary Device 0: [Optical Drive] Empty
Controller: SATA
SATA Port 0: Linux Mint 1.1.vdi (Normal, 20.00 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

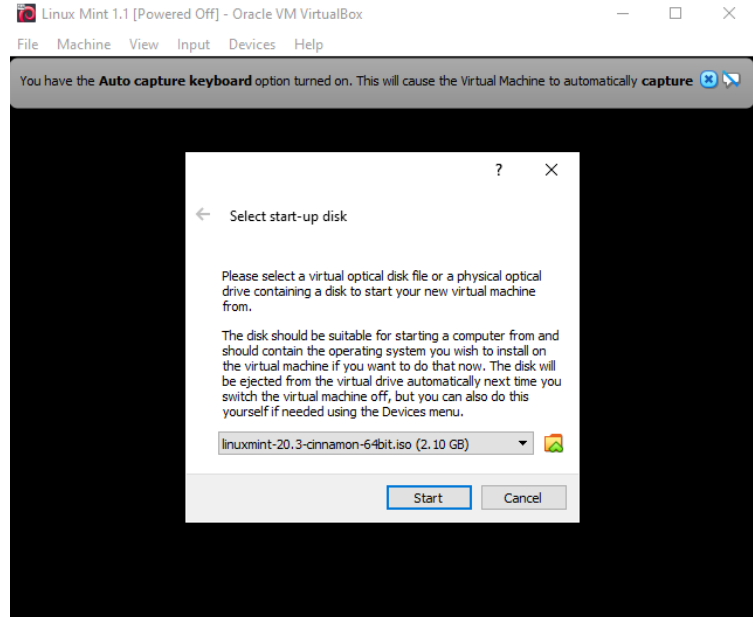
Description

None

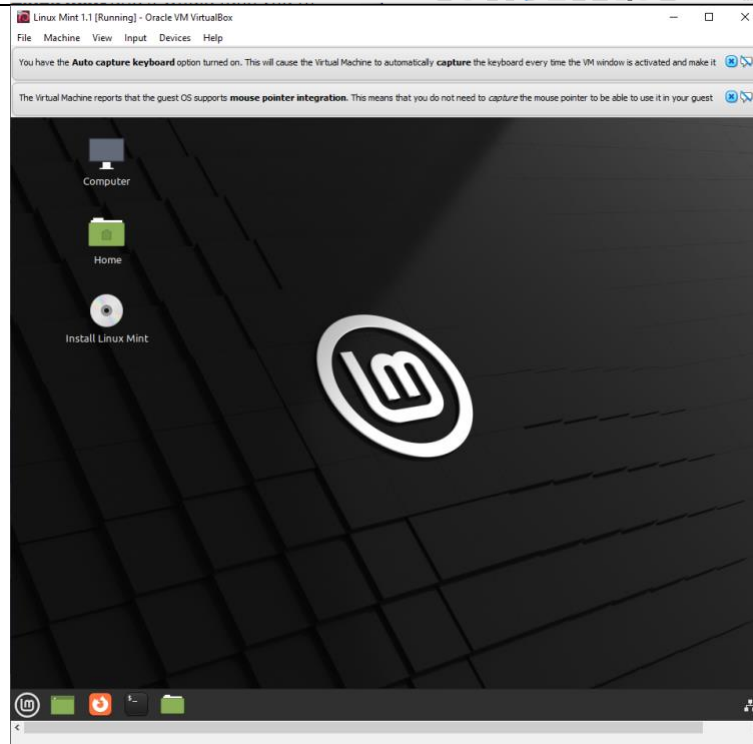
Preview

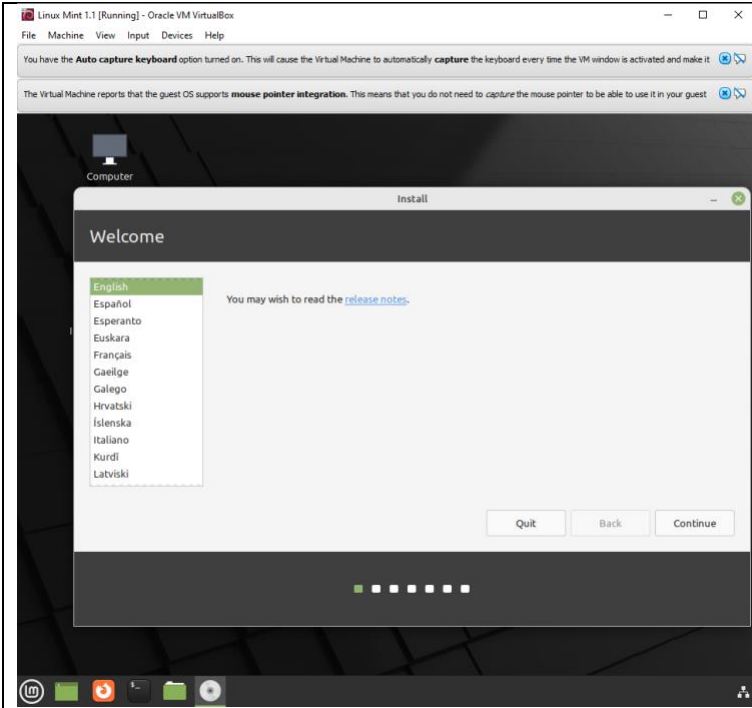
Linux Mint 1.1

After startup, VirtualBox prompts to choose the ISO image. Choose the Linux mint ISO you downloaded earlier and press start, then start Linux Mint if not prompted.



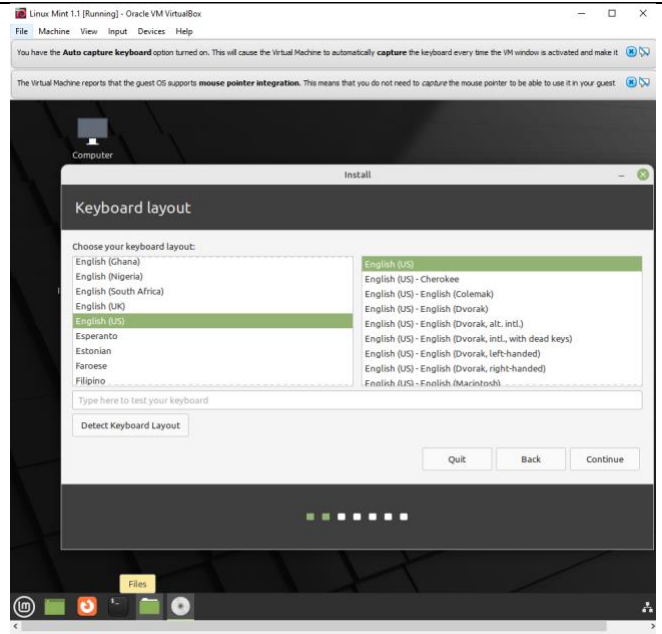
When you reach the live desktop, you should click the CD icon that says install Linux Mint, double click it to proceed.



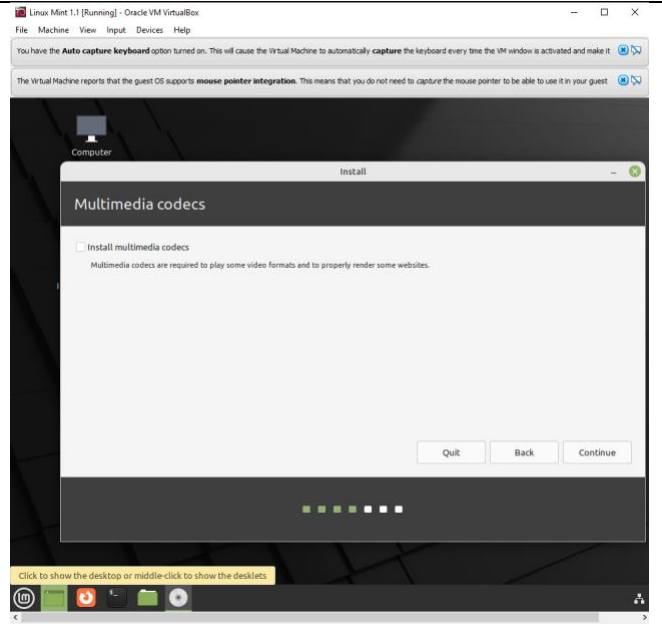


Choose a language

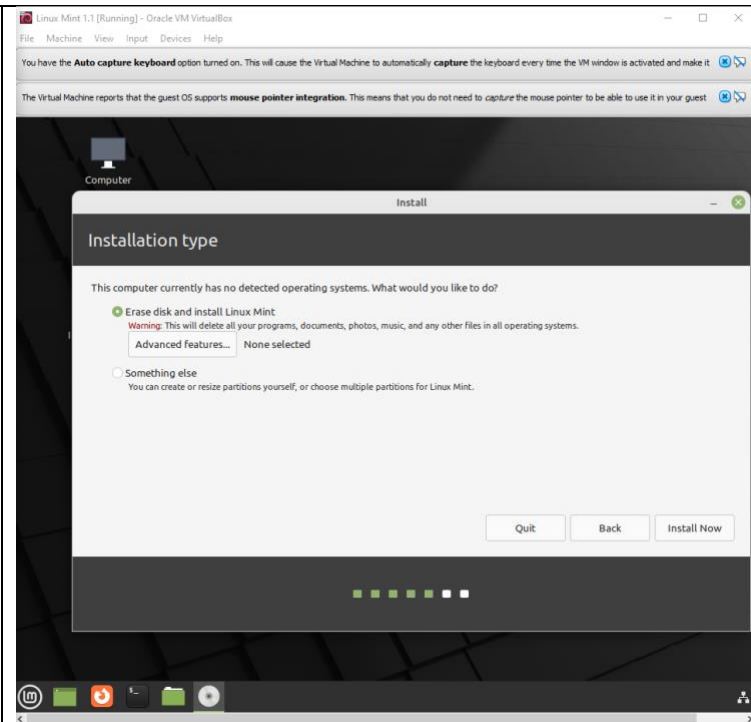
If you plan to use multimedia, click install multimedia codec, since I'm only using this VM as a client of Pfsense I leave this unchecked and continue on.



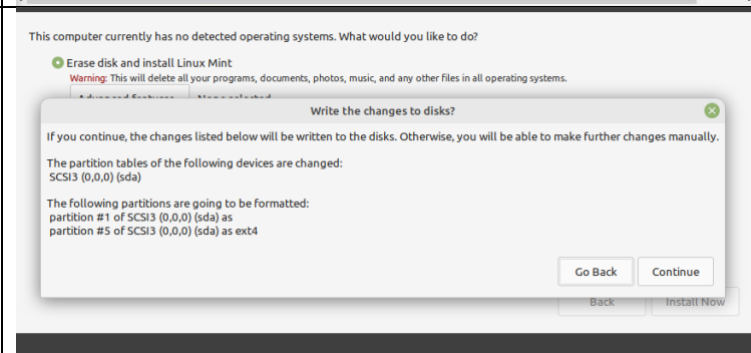
And keyboard layout



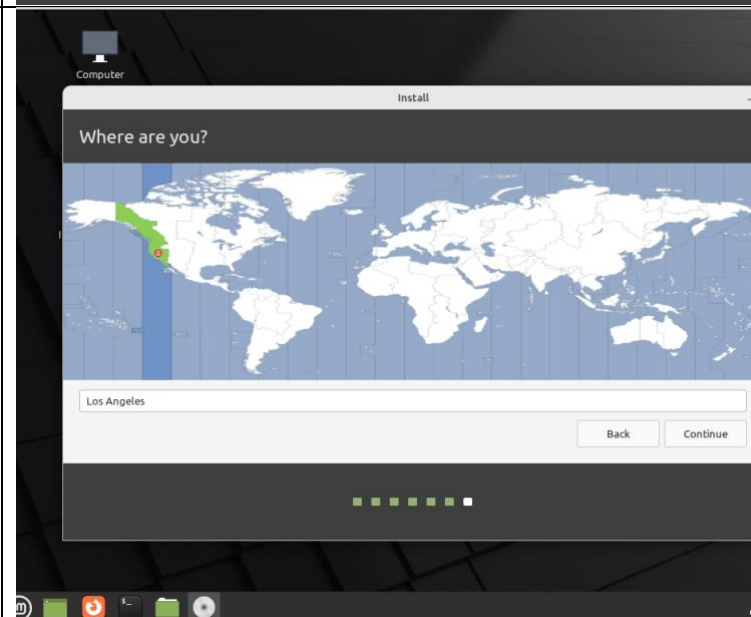
Format the virtual hard drive by clicking on the Erase disk and install Linux Mint option. Continue with Install Now



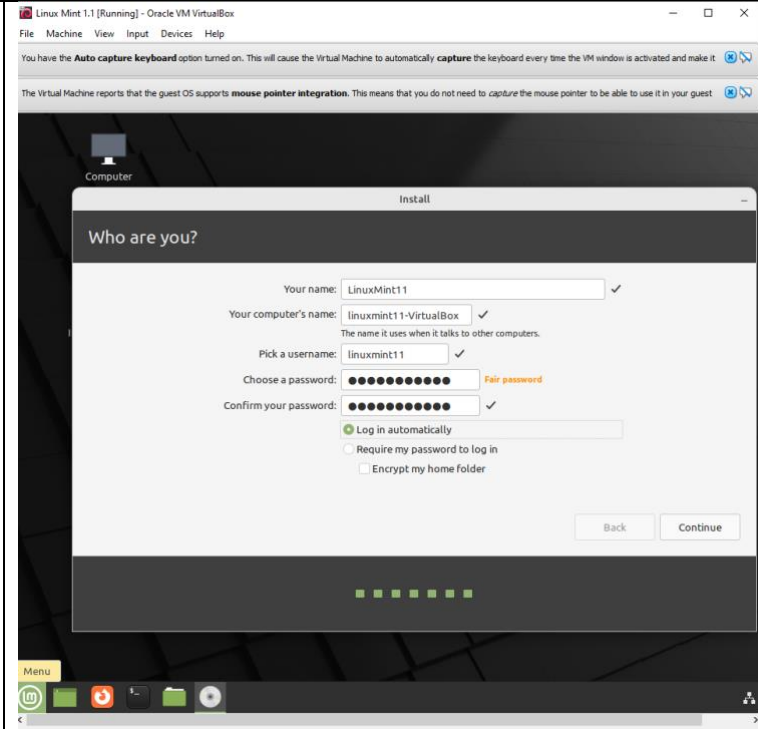
Ignore the warning and continue.



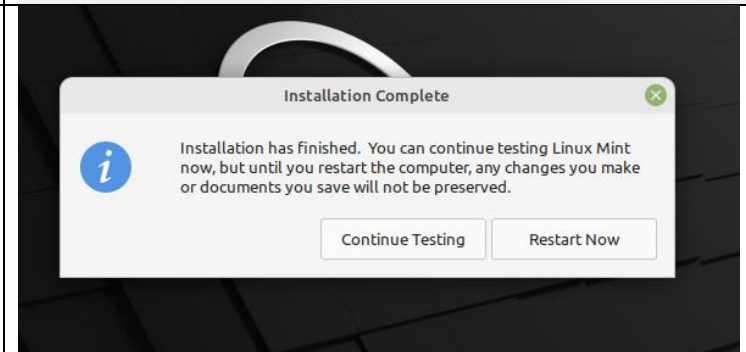
Choose a time zone then click continue.



Set the VM's username and password.



Click restart now to finish the installation.



When rebooting, you'll be prompted to remove the installation medium then press Enter. The ISO file has already been removed after Linux mint was installed so you can press enter.

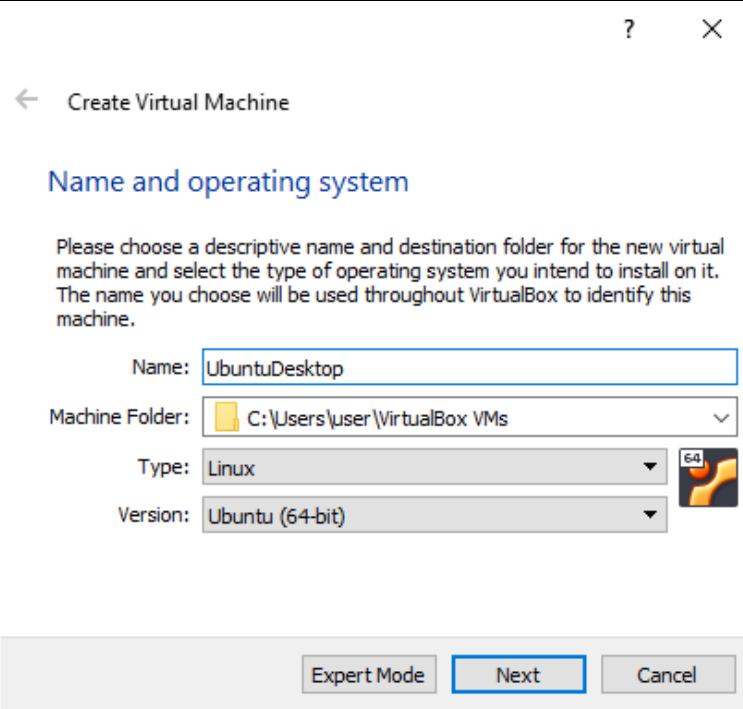
And that's it, job complete for now. Now onto the Ubuntu client

Installing Ubuntu:

Create the VM instance:

Open VirtualBox and click the New VM icon (blue circle).

Enter in the VM's name, what folder you want to store the VM files in, and the OS (Linux) and Linux version/distribution (Ubuntu).





← Create Virtual Machine

Name and operating system

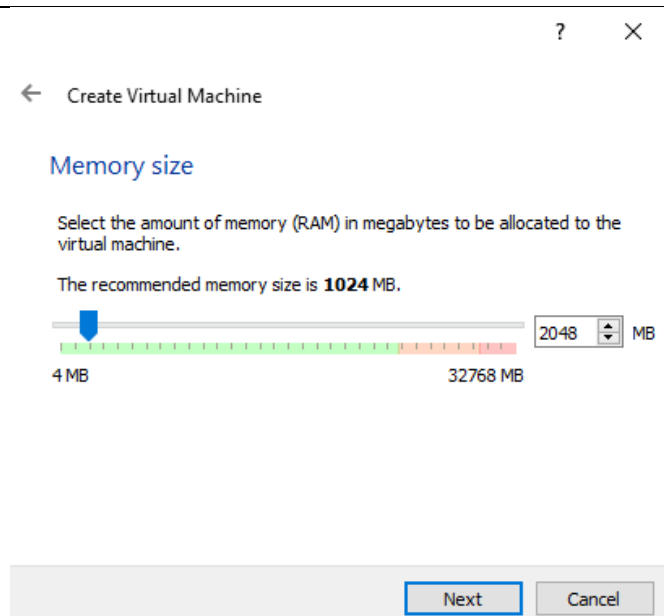
Please choose a descriptive name and destination folder for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.

Name:

Machine Folder:  C:\Users\user\VirtualBox VMs

Type: 

Version:




← Create Virtual Machine

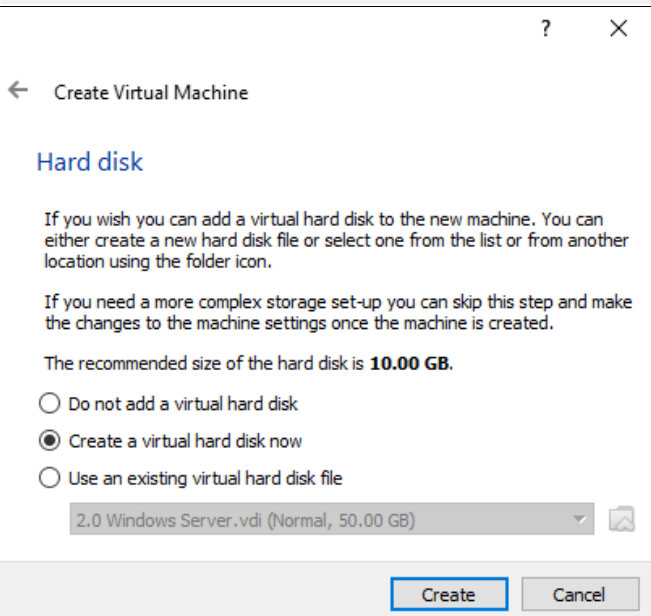
Memory size

Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.

The recommended memory size is **1024 MB**.

 2048 MB

Allocate 2048 MB of memory to the VM.



← Create Virtual Machine

Hard disk

If you wish you can add a virtual hard disk to the new machine. You can either create a new hard disk file or select one from the list or from another location using the folder icon.


If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.

The recommended size of the hard disk is **10.00 GB**.

☐ Do not add a virtual hard disk

☒ Create a virtual hard disk now

☐ Use an existing virtual hard disk file



Create a virtual hard disk.

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Create Virtual Hard Disk

Storage on physical hard disk

Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).

A **dynamically allocated** hard disk file will only use space on your physical hard disk as it fills up (up to a maximum **fixed size**), although it will not shrink again automatically when space on it is freed.

A **fixed size** hard disk file may take longer to create on some systems but is often faster to use.

☒ Dynamically allocated
 ☐ Fixed size

Next

Cancel

Use a dynamically allocated hard disk file.

Click create and this should be what you see. At this point the network adapter should be set to Intel Nat for now as we have not created the Pfense server, we will come back to this in the Pfense configuration document. Click the green start arrow.

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Create Virtual Hard Disk

File location and size

Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.

C:\Users\user\VirtualBox VMs\UbuntuDesktop\UbuntuDesktop.vdi

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.

4.00 MB

2.00 TB

20.00 GB

Create

Cancel

I set the max size to 20 GB.

New

Settings

Discard

Start

General

System

Display

Storage

Audio

Network

USB

Shared folders

Description

Preview

UbuntuDesktop

Name:

UbuntuDesktop

Operating System:

Ubuntu (64-bit)

Base Memory:

2048 MB

Boot Order:

Floppy, Optical, Hard Disk

Acceleration:

VT-x/AMD-V, Nested Paging, KVM Paravirtualization

Video Memory:

16 MB

Graphics Controller:

VMSVGA

Remote Desktop Server:

Disabled

Recording:

Disabled

Controller:

IDE

IDE Secondary Device 0:

[Optical Drive] Empty

Controller:

SATA

SATA Port 0:

UbuntuDesktop.vdi (Normal, 20.00 GB)

Host Driver:

Windows DirectSound

Controller:

ICH AC97

Adapter 1:

Intel PRO/1000 MT Desktop (Internal Network, Pfense-LAN)

USB Controller:

OHCI, EHCI

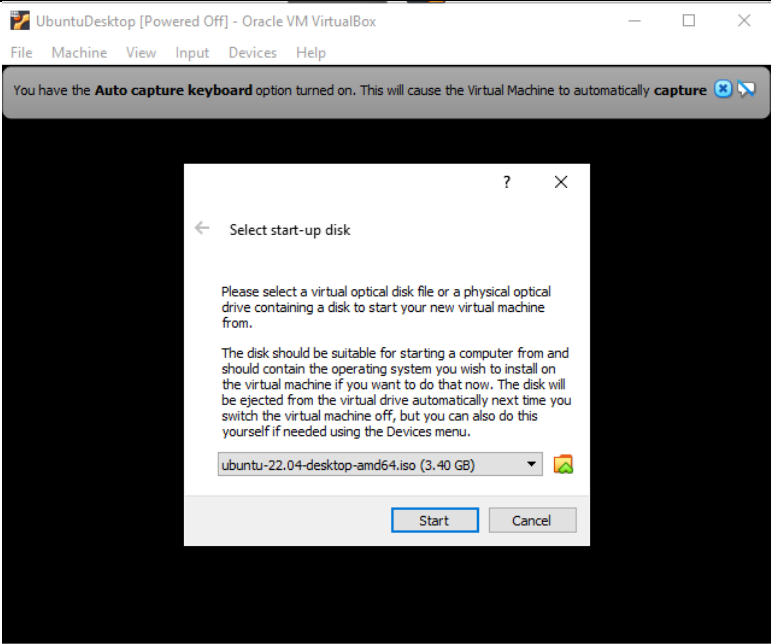
Device Filters:

0 (0 active)

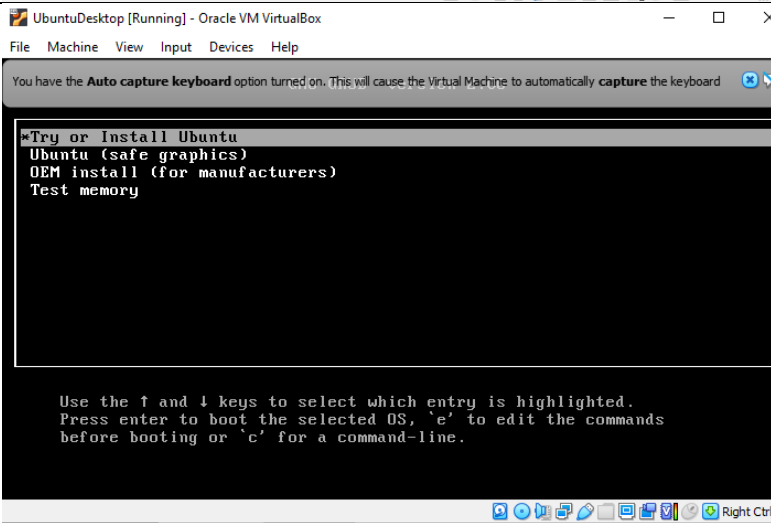
None

None

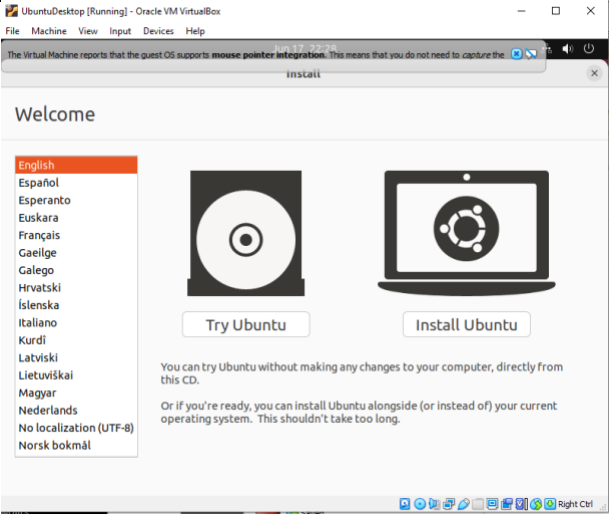
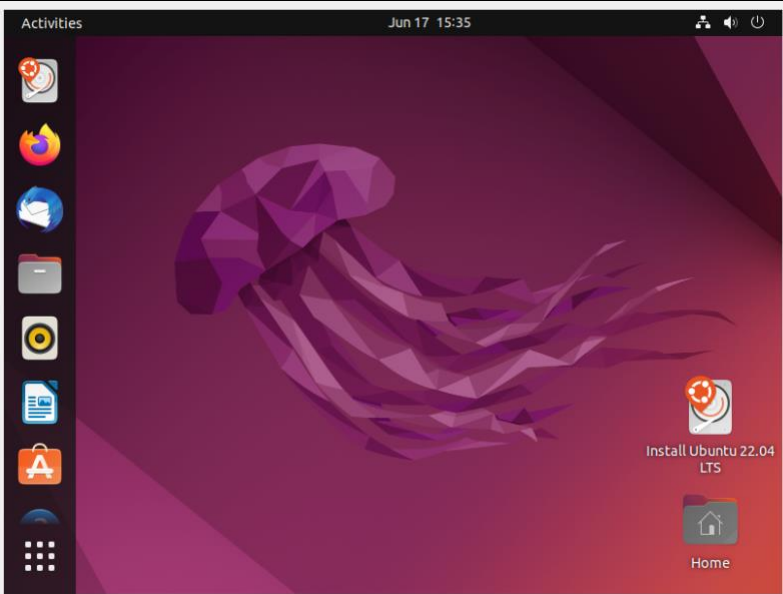
Locate the ubuntu start-up disk ISO you installed earlier and select it, then click start.



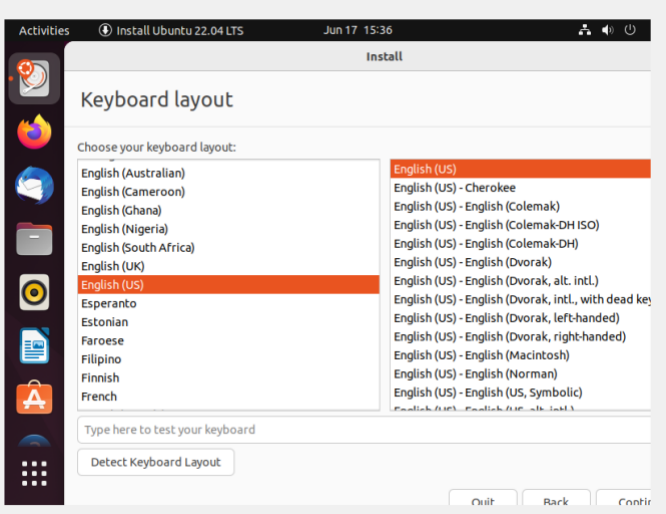
Install Ubuntu.



Once Ubuntu is at the installation screen, click the hard drive icon named Install Ubuntu 22.04 LTS.

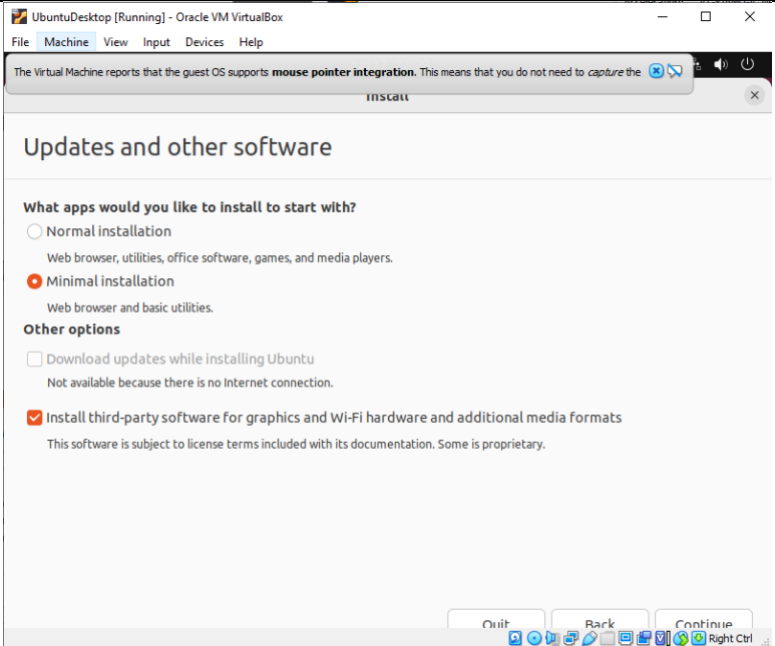


Click on Install Ubuntu

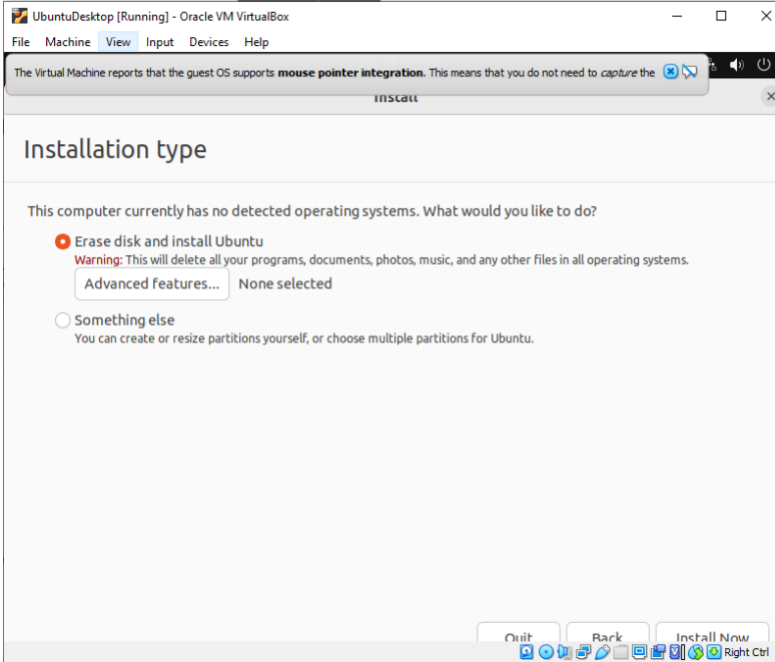


Select the keyboard layout

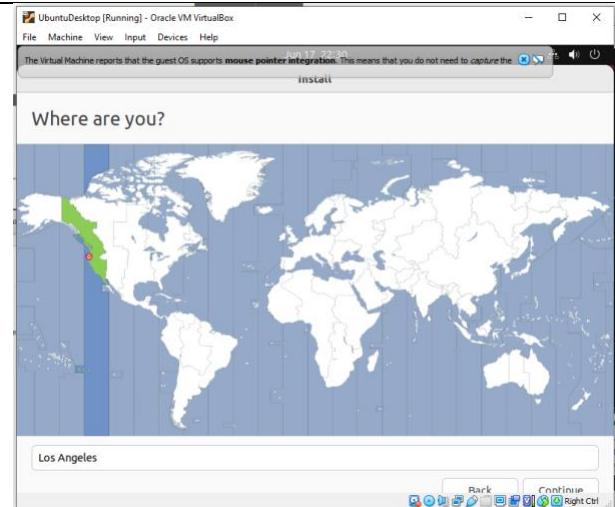
If you wanted to use this Ubuntu VM as a full-blown desktop, then you need a normal installation with all the requisite software. However since I'm only using the web browser and Ubuntu terminal for the Pfsense configuration, I just need minimal installation. Make sure downloading updates while installing Ubuntu is unchecked. You can choose whether to leave install third-party software checked or unchecked based on your needs.



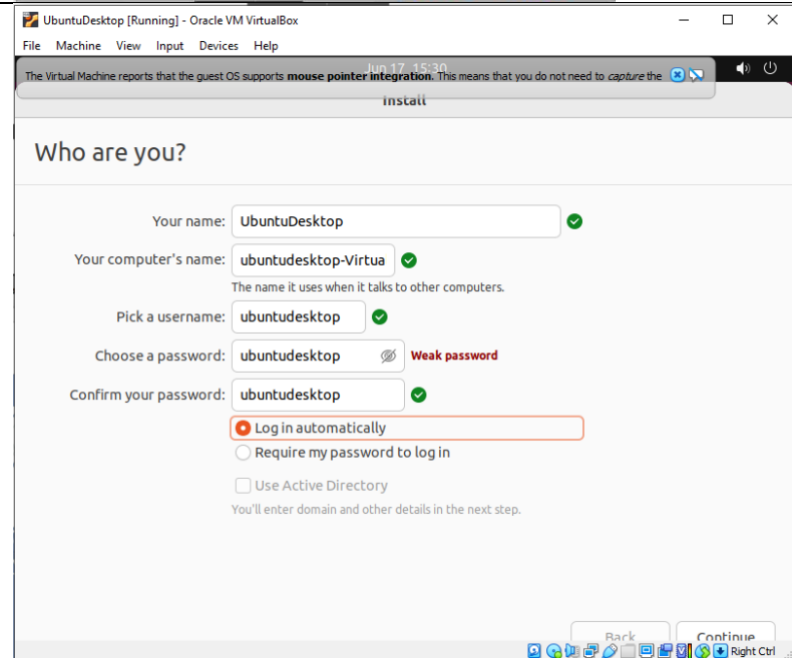
Format the virtual hard disk by clicking Erase disk and install Ubuntu. Then click Install now.



Select the time zone.



Specify login credentials for the account that you are going to use with this Ubuntu desktop. Write these down because if you forget them it's a long and annoying process of resetting them. The machine should now restart and once you login again you will be greeted by the Ubuntu desktop.



Problems:

Both Linux Mint and Ubuntu were very easy to install and straightforward to understand. The only problem I had was connectivity between the Linux Mint and Ubuntu through Pfsense in a later lab, but that was because Linux Mint wasn't receiving the DHCP addresses.

Conclusion:

Both Ubuntu and Linux Mint are capable and reliable Linux distributions. I couldn't pick one over the other even if I tried. Linux based operating systems are open source and offer you a far greater level of control and customization than typical company OS's like Windows or MacOS. In the next lab we will set-up a firewall with both of these distributions to hopefully provide more security.

