CSUS, College of Engineering and Computer Science

Department of Computer Science

CSC 154 – Computer System Attacks and Countermeasures

Lab 1 – Workspace Setup

Introduction

In this lab you will install VirtualBox and three virtual machines (VMs) as test environments that support future lab coursework.

Estimated Time: 3-4 hours

Deliverable: One screenshot with all three running VM's desktop screen. It is important to submit only one screenshot to ensure your system can handle three concurrent machines running.

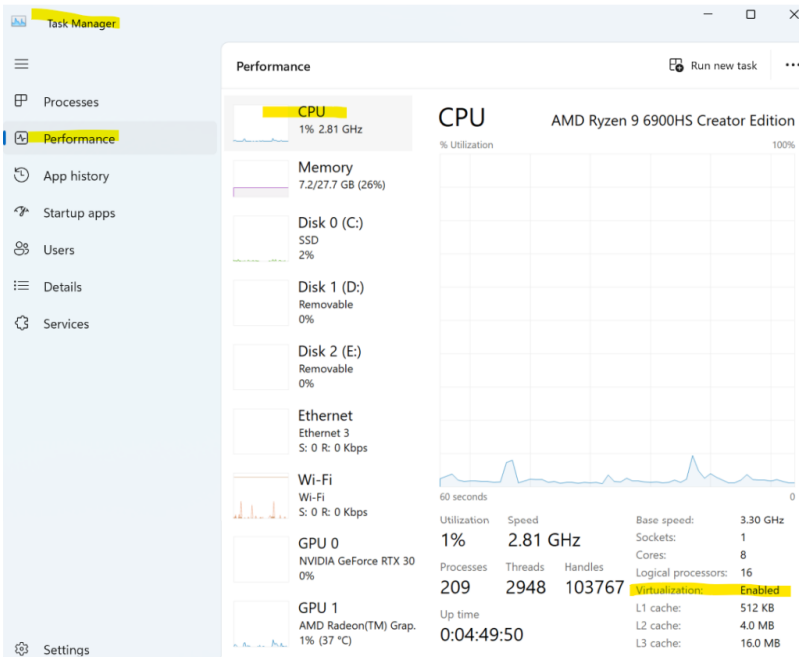
Note: The links, screenshots, and steps may not match your system or are no longer accurate due to software drift. Under such circumstances, students are expected to research and troubleshoot as necessary to achieve all stated objectives regardless of the accuracy of provided instructions.

Objectives

1. Download and Install VirtualBox
2. Download and Setup Kali VM
3. Download Ubuntu and Setup Ubuntu VM
4. Download Windows and Setup Windows VM

Download and Install VirtualBox

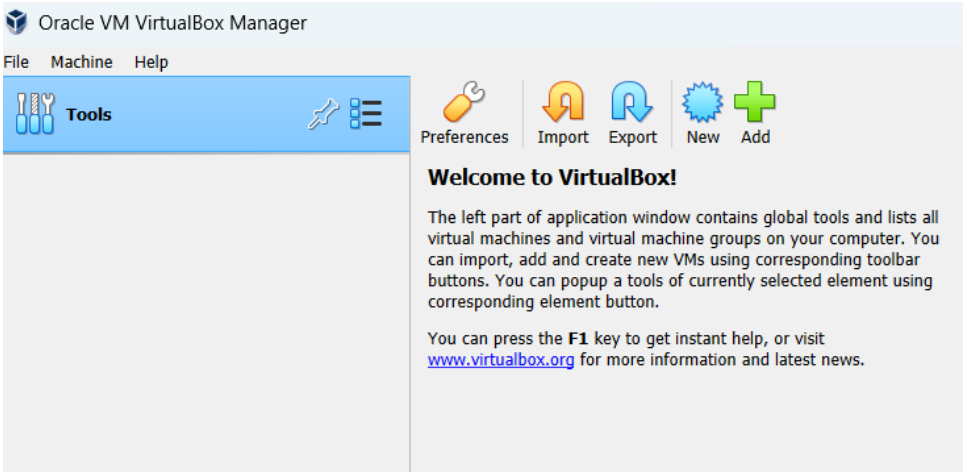
Ensure your processor supports virtualization that is enabled in the BIOS/UEFI. In Windows, this can be done using the Task Manager. You must enable virtualization. You will not be able to proceed with the course if your CPU does not support virtualization!



Navigate to https://www.oracle.com/virtualization/technologies/vm/downloads/virtualbox-downloads.html

Select Installer (Windows, Mac OS X, Linux):

Run the installer, follow the prompts, default settings should be fine. Launch VirtualBox:



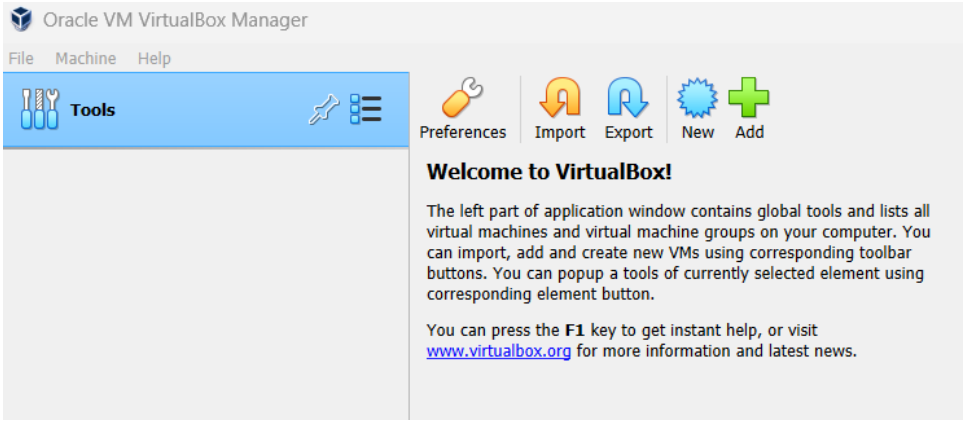
Congrats, you've installed VirtualBox!

Download and Setup Kali

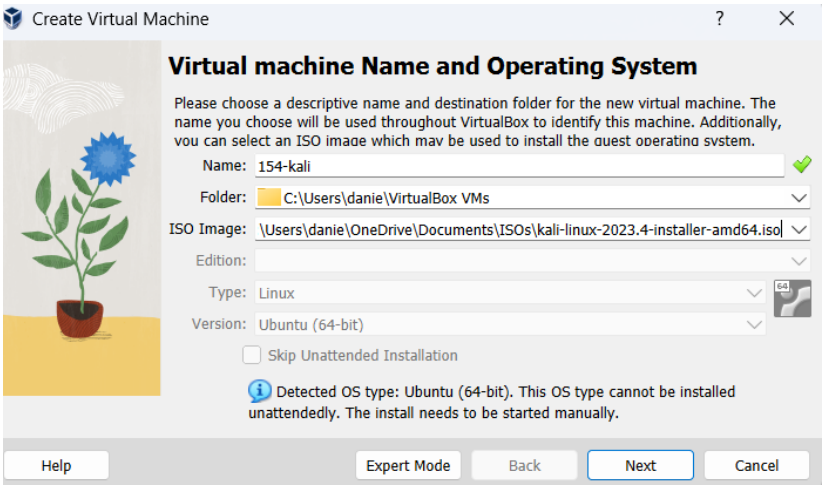
Navigate to https://www.kali.org/get-kali/#kali-installer-images

Select the download button for the 64-bit Installer image:

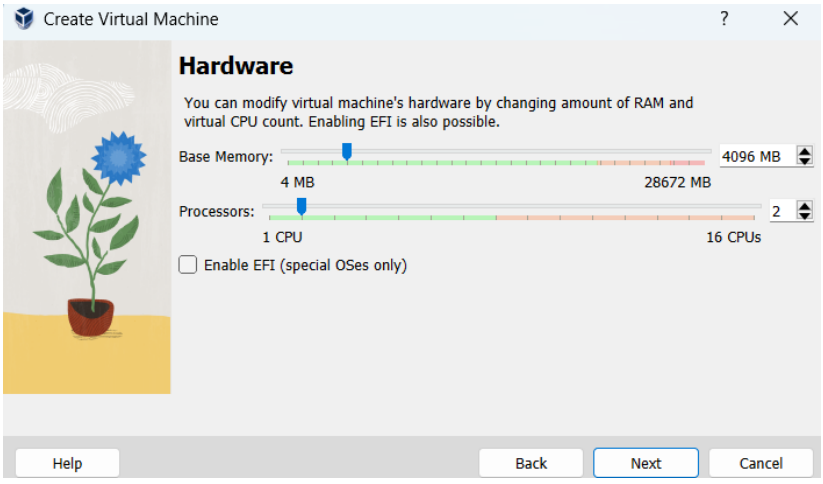
With the ISO for Kali fully downloaded (~10-20 minutes depending on internet speeds), navigate to the running VirtualBox application and select the "New" button:



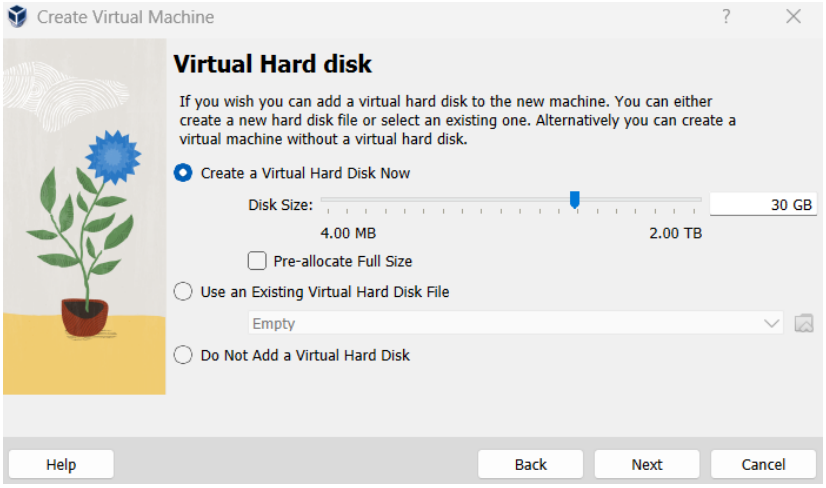
Name the VM “kali” and select the Kali ISO location downloaded in the previous steps:



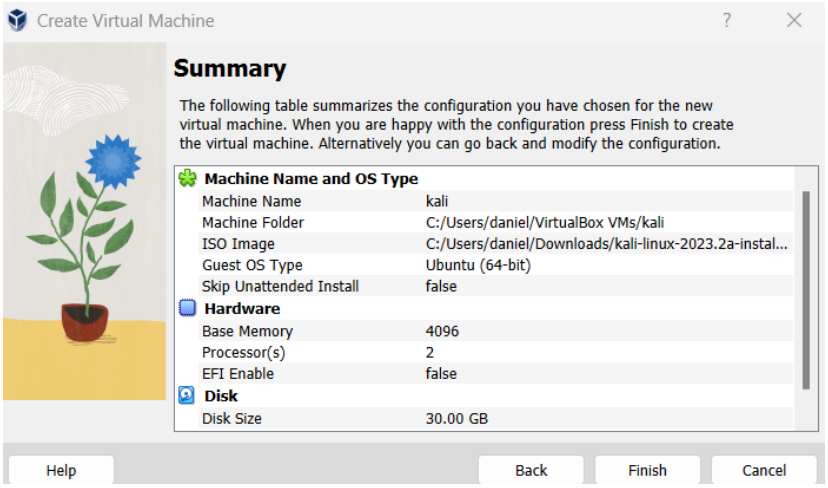
Supply the VM with 4GBs memory and 2 processors (note, these settings can be increased or decreased later if needed):



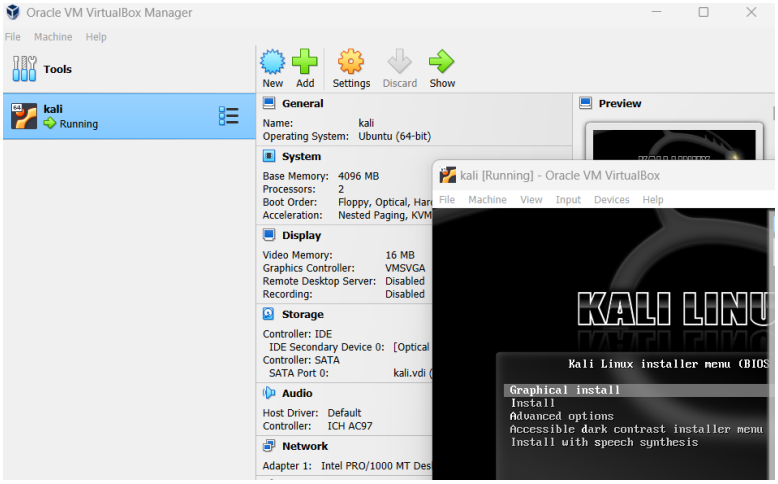
Create a Virtual Hard Disk with 30GB:



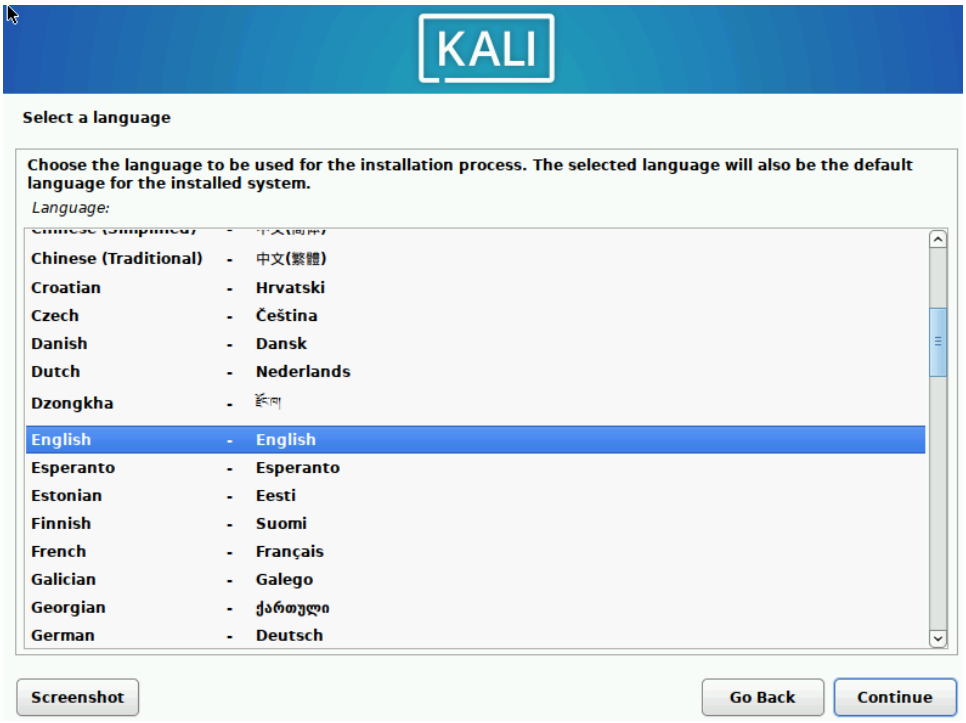
Review the settings and select “Finish”:



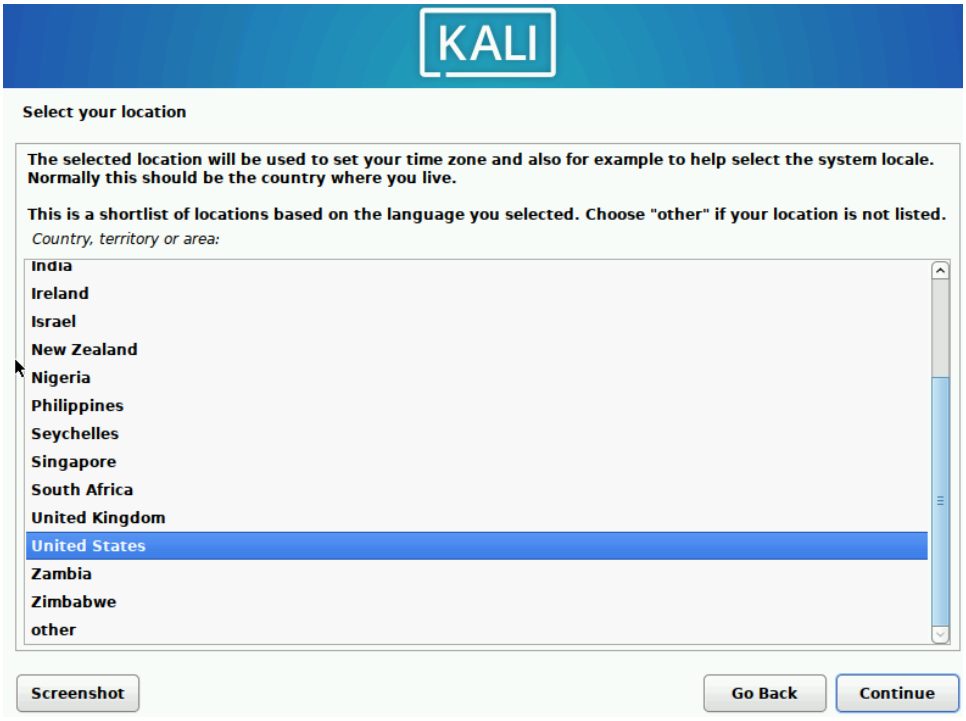
With the “kali” VM select, press the “Start” button to launch the VM in a new window:



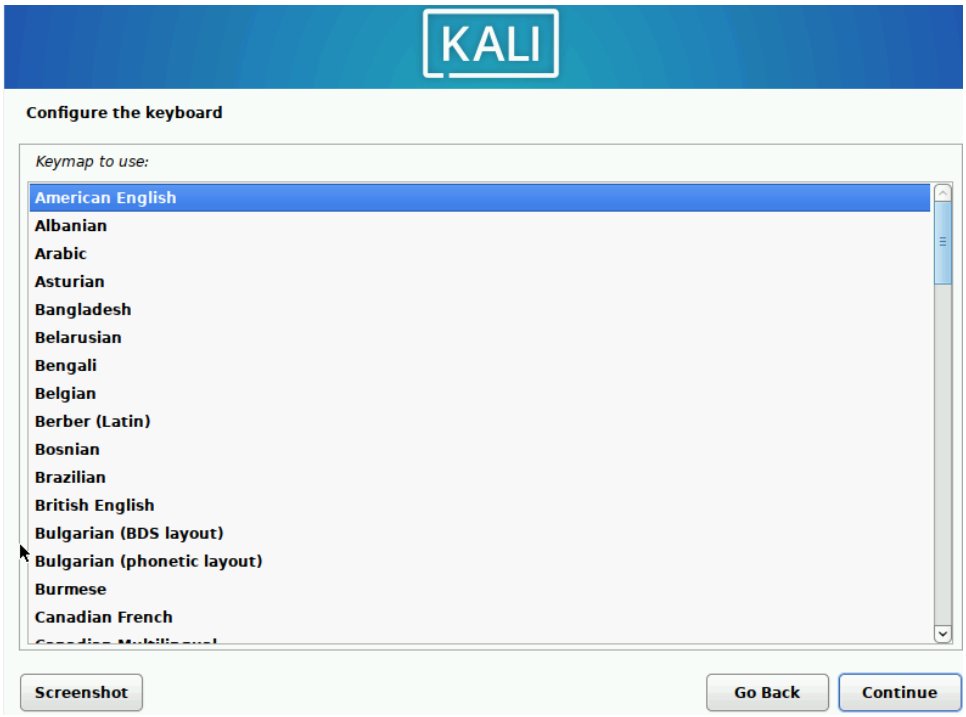
Select “Graphical Install” to install the operating system. Select language English when prompted:



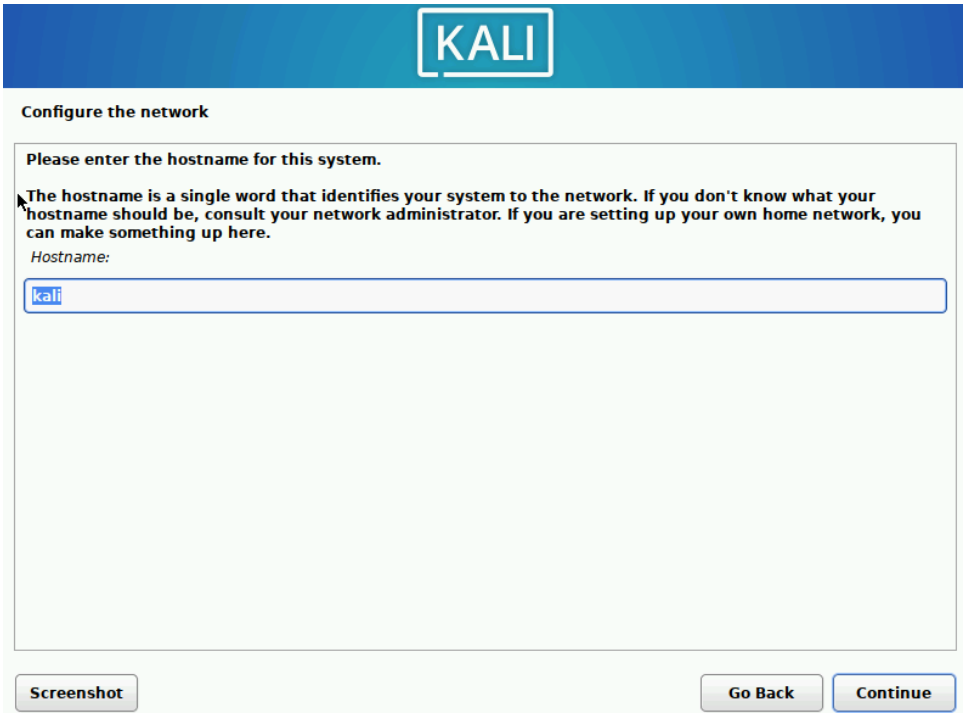
Select Location United States:



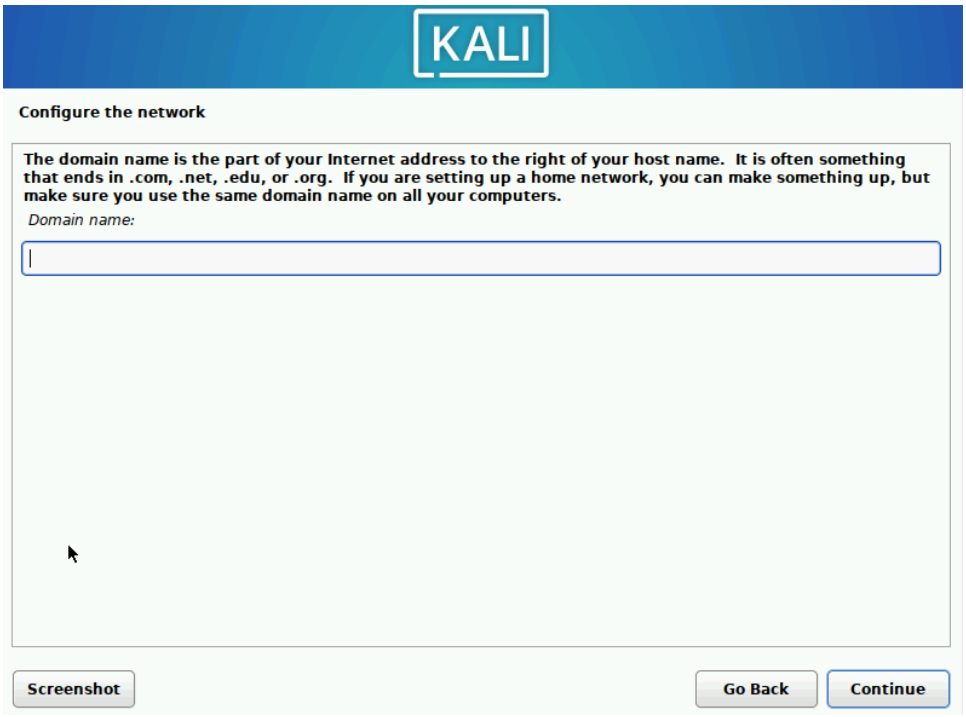
Select keyboard layout American English:



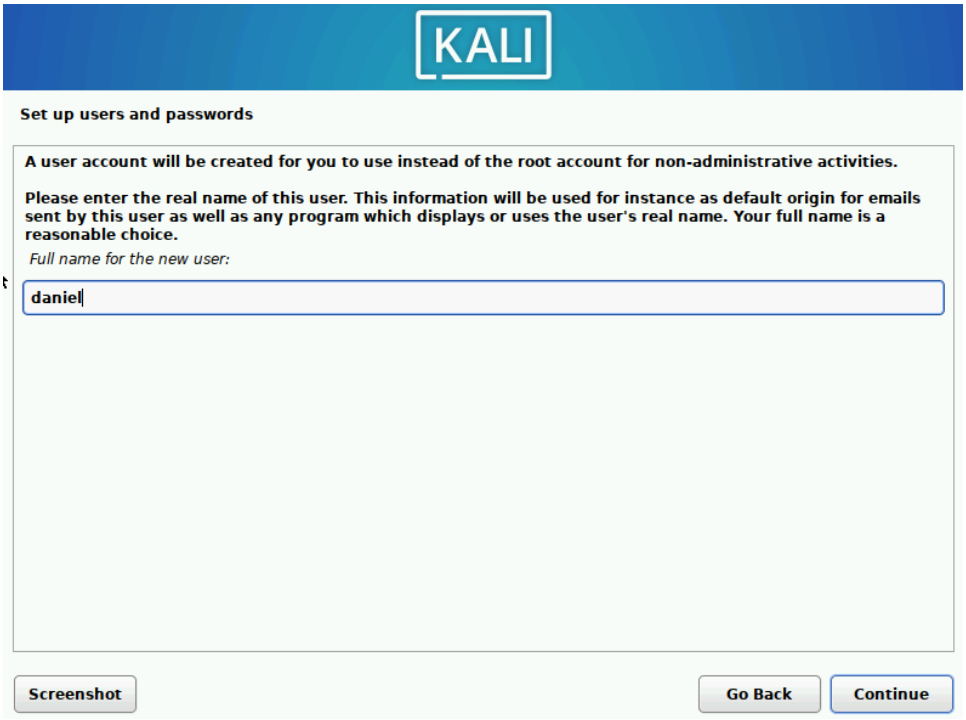
Allow the kali installer to run. Use hostname “kali” when prompted:



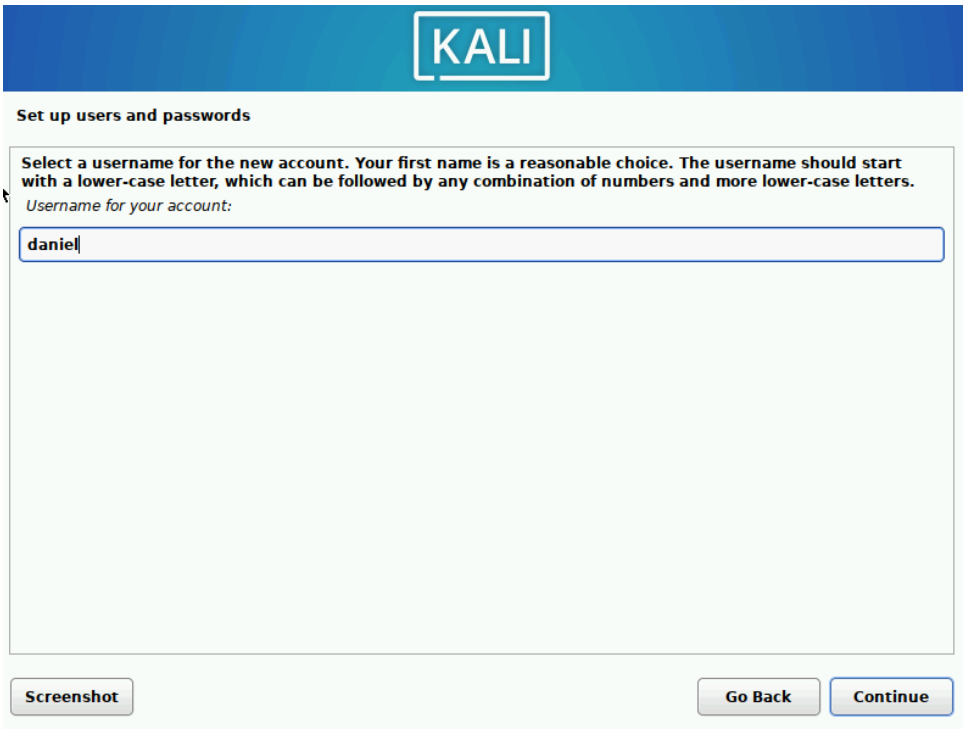
Leave domain name empty and continue:



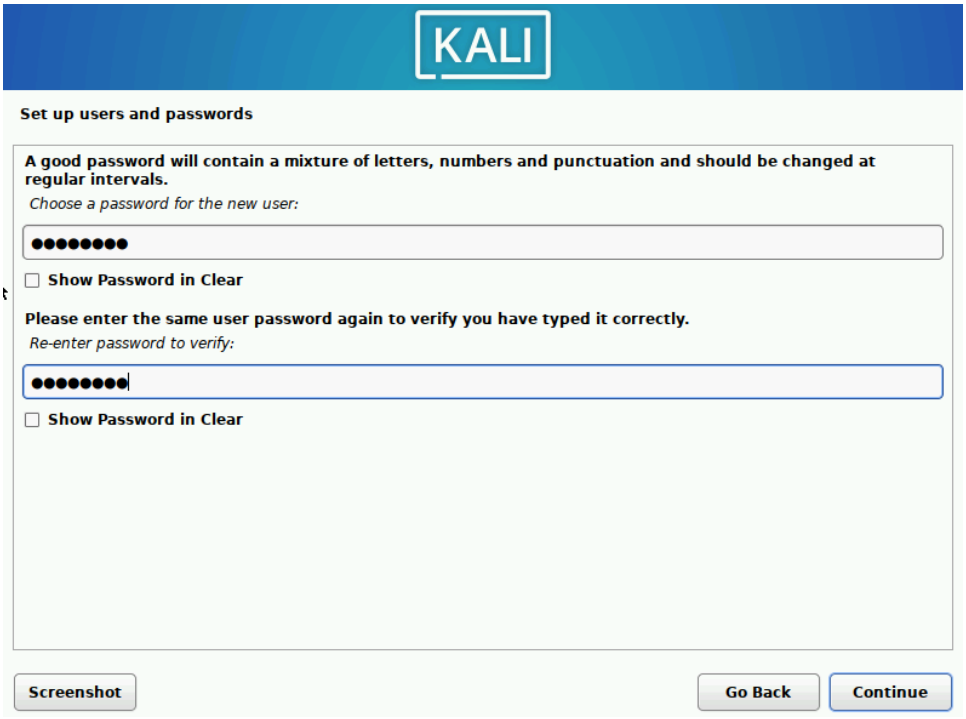
Enter your name:



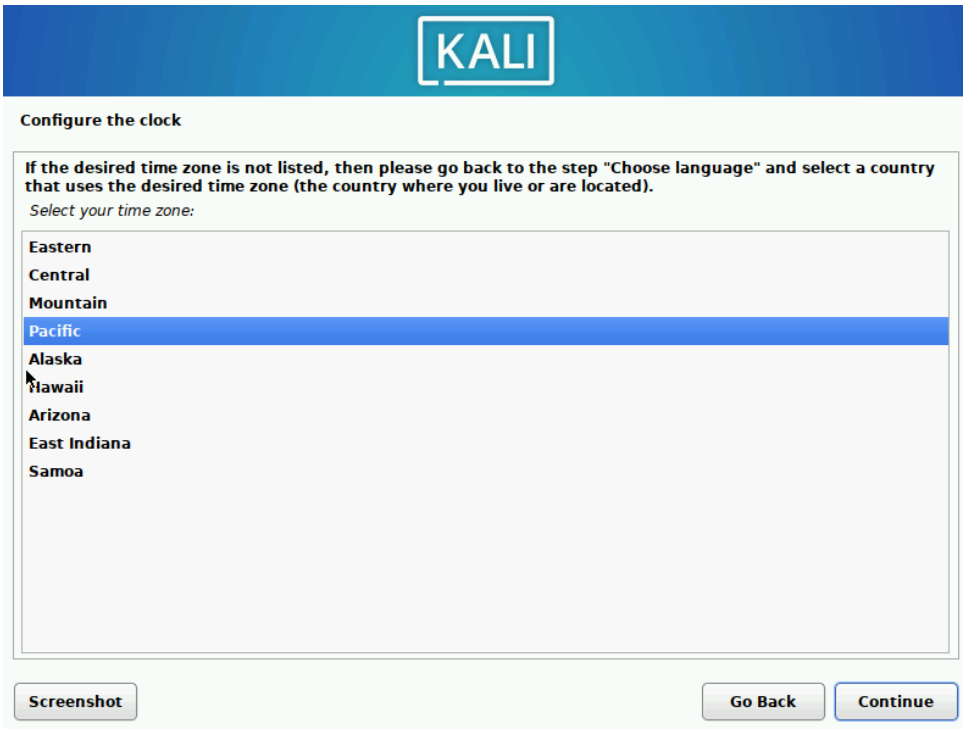
Enter any username:



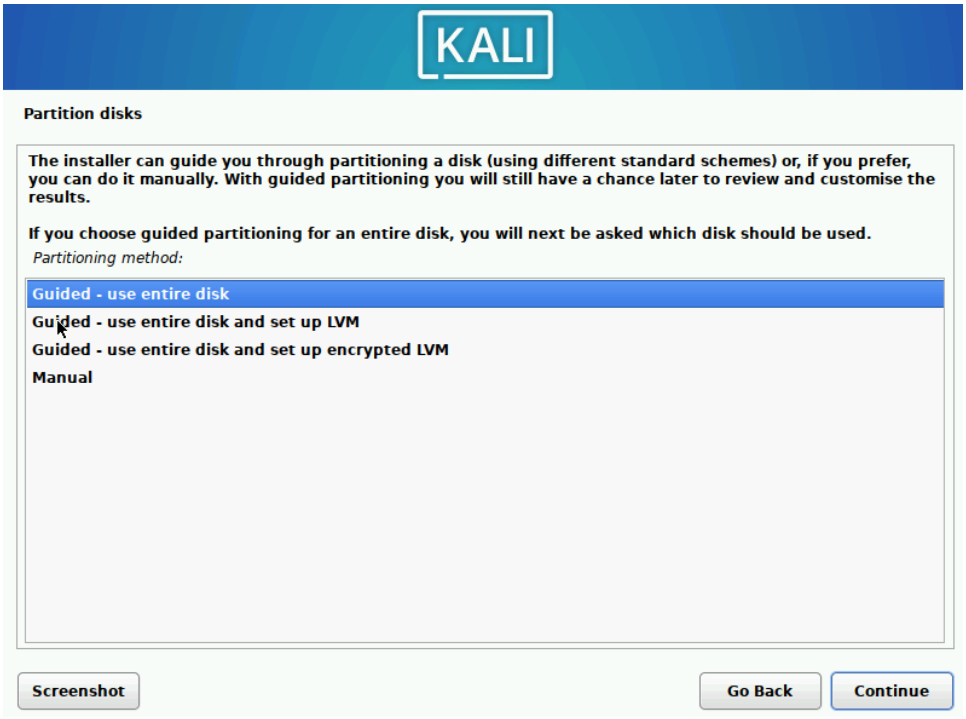
Choose a password. Make sure it is a password you won't lose:



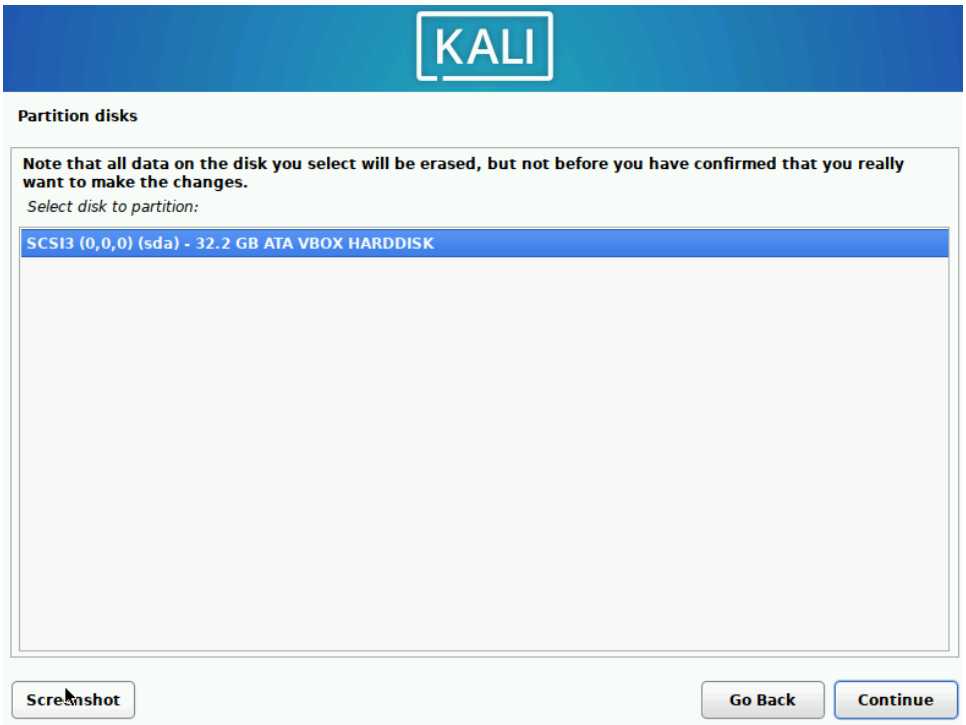
Select Pacific timezone:



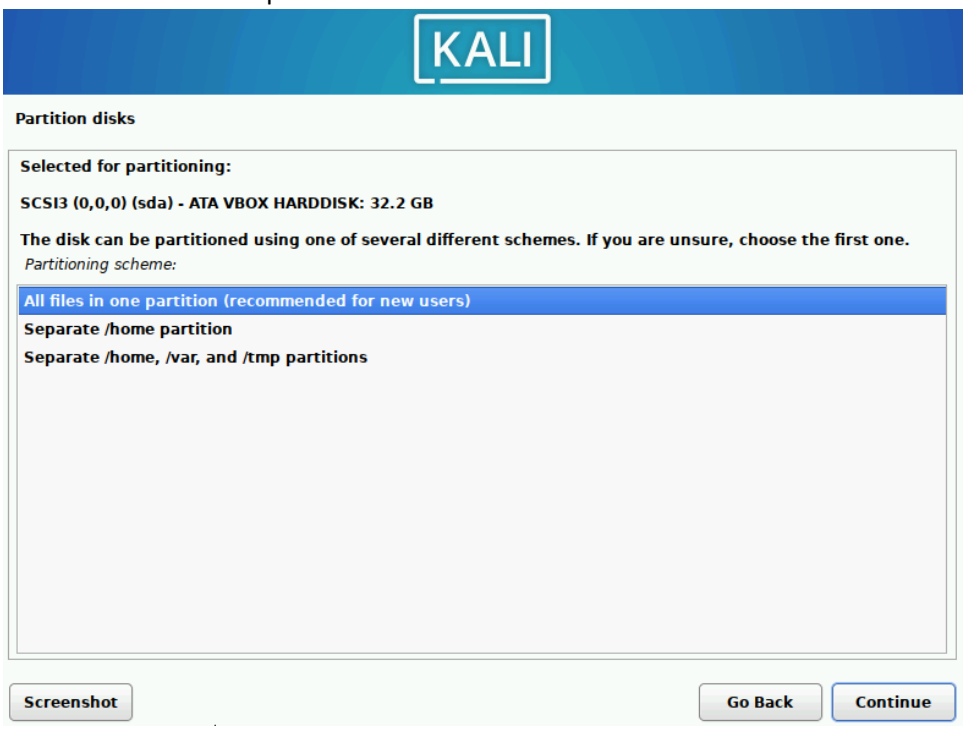
Once disks are detected, select “Guided - use entire disk”:



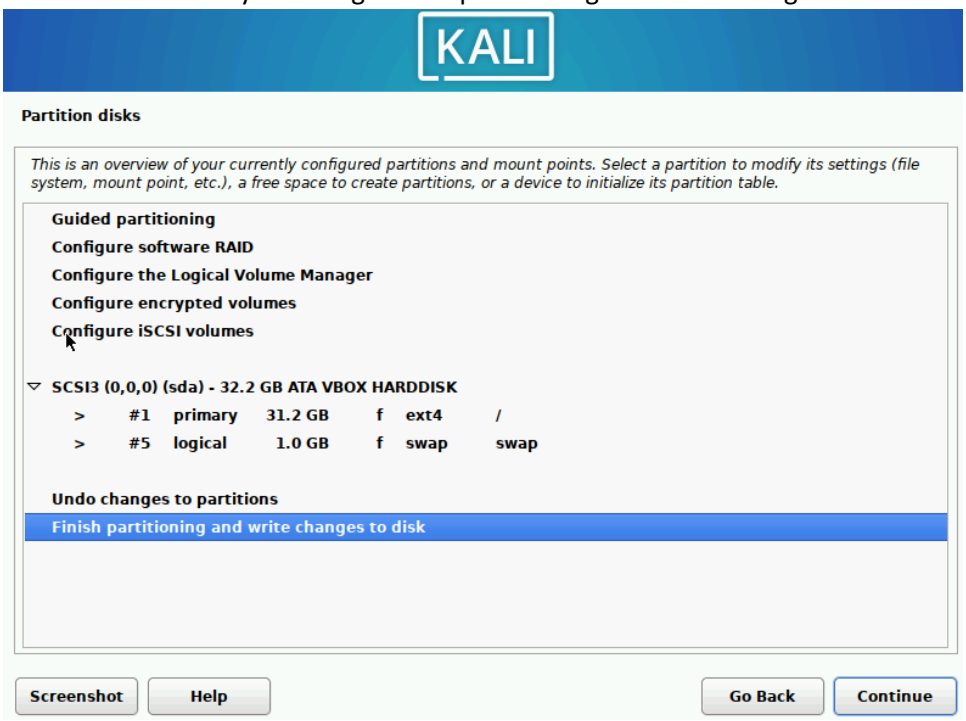
Use default partition:



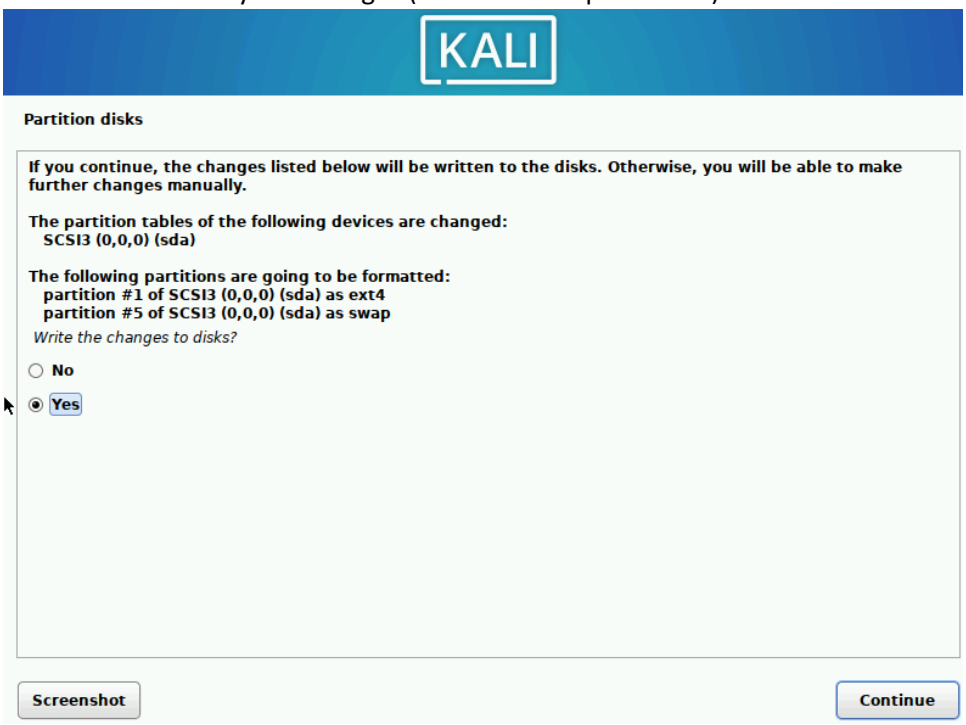
Select “All files in one partition”:



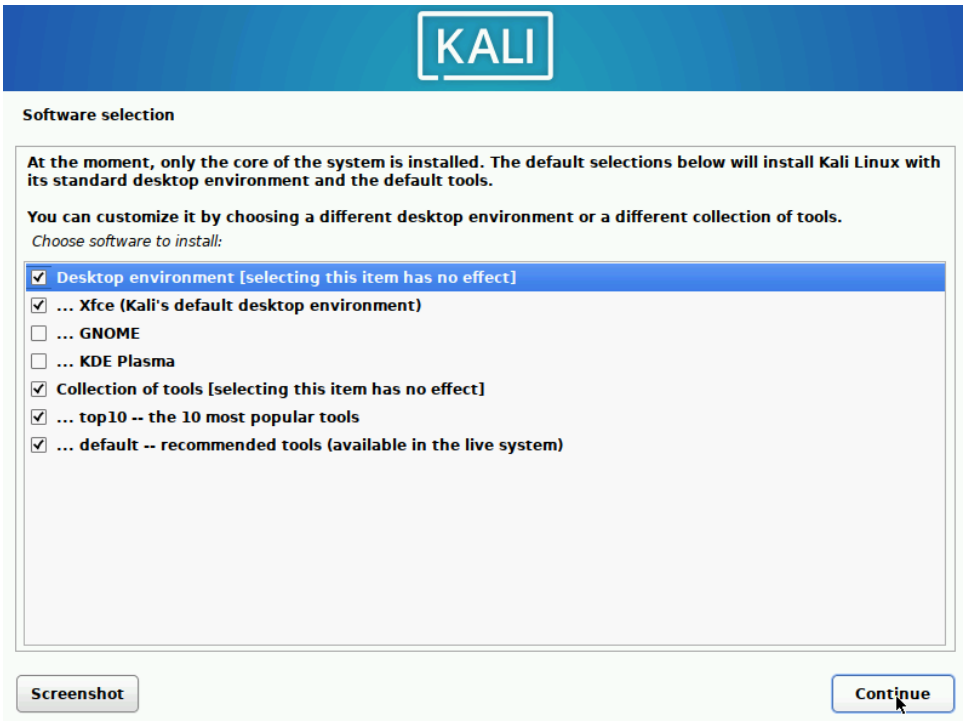
Partition the disks by selecting “Finish partitioning and write changes to disk”:



Select “Yes” to verify the changes (note default option is no):

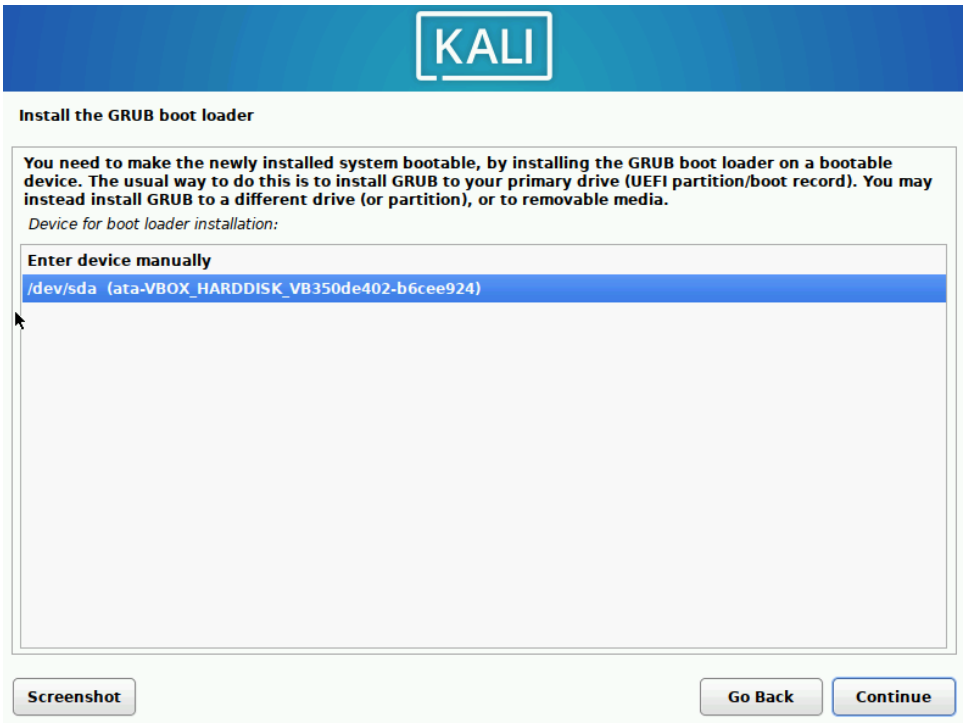


Wait for the system to install. Choose default software selection:

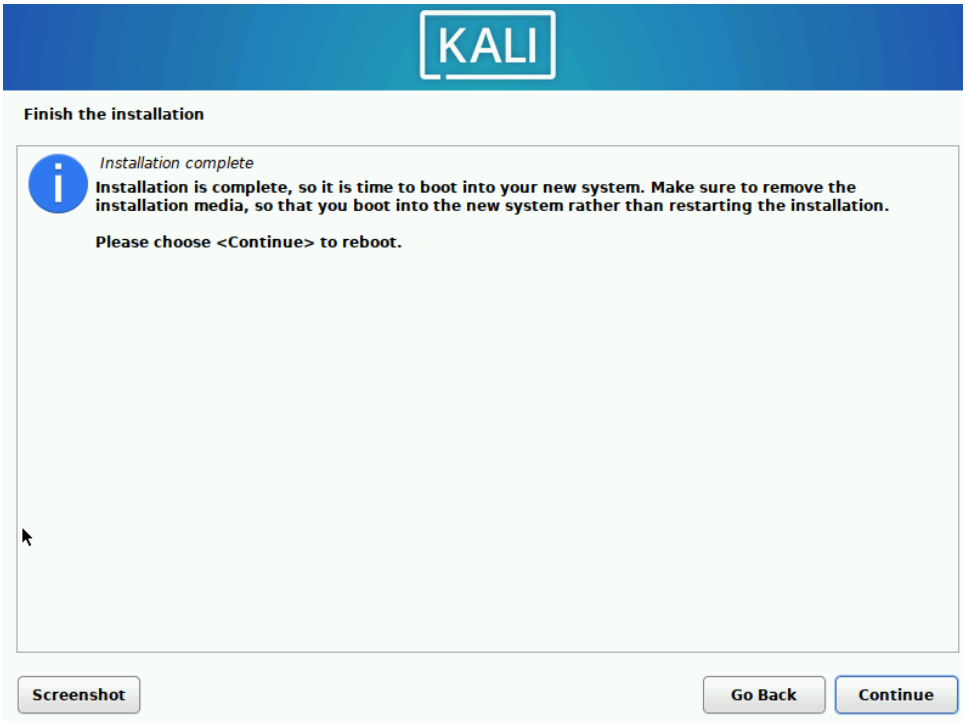


Wait for software to install (~25 minutes). Install the GRUB boot loader when prompted:

Select the available device (not “Enter device manually”) to install the boot loader:

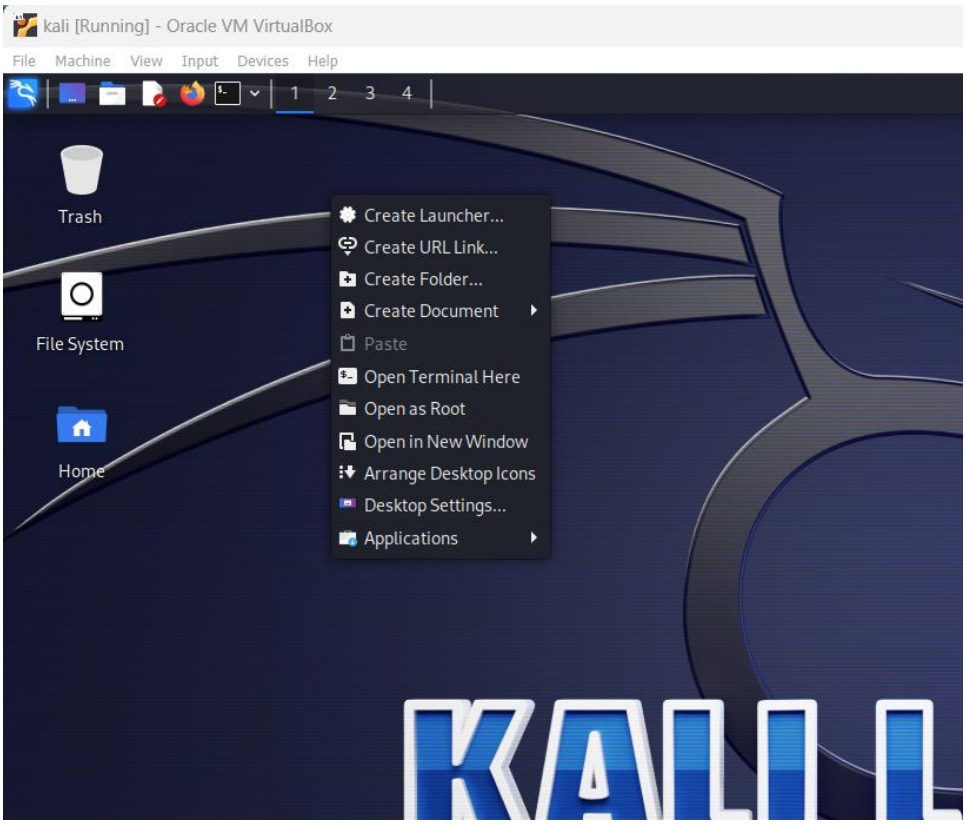


Wait for the installation to finish and choose continue:



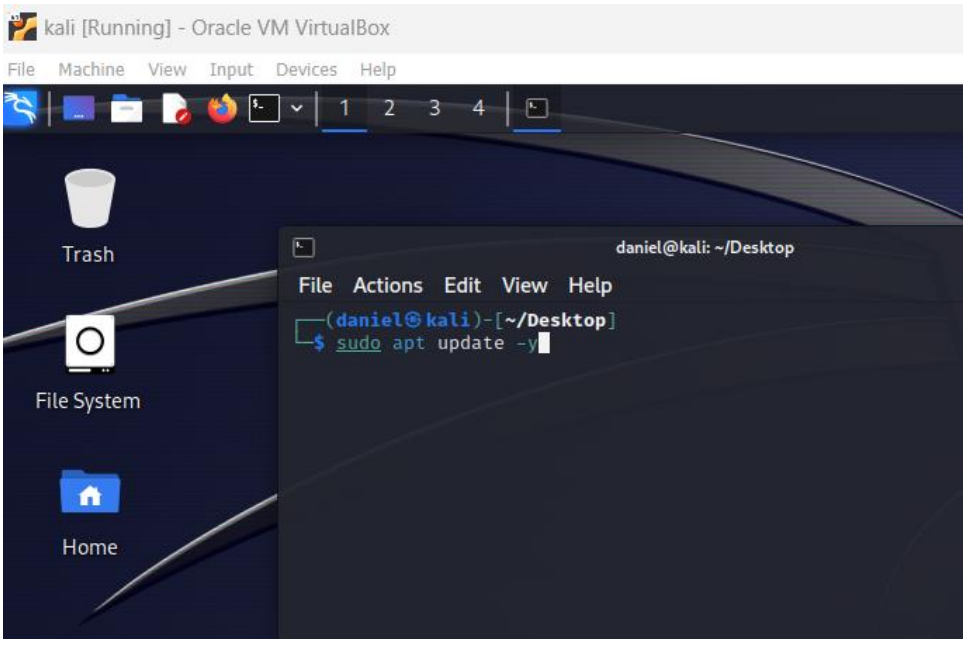
The system will reboot and launch the login menu. Enter the username and password used during installation:

The system will log in and present the Kali desktop. Right click in the desktop and select “Open Terminal Here” from the context dropdown menu:



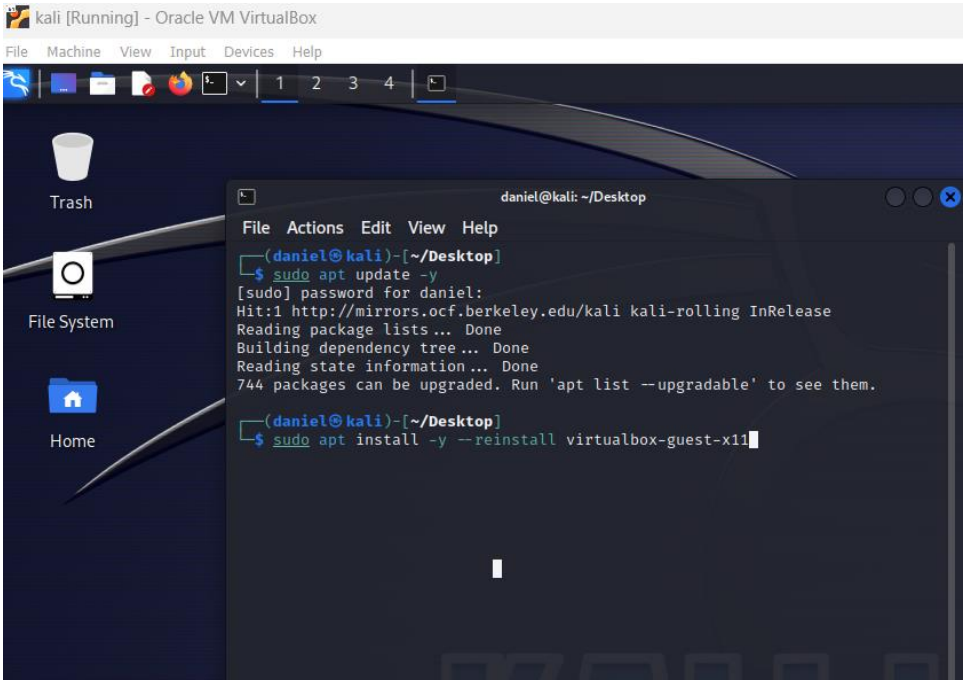
With the terminal open, run the apt update command and then enter you password to update the system:

```
sudo apt update –y
```

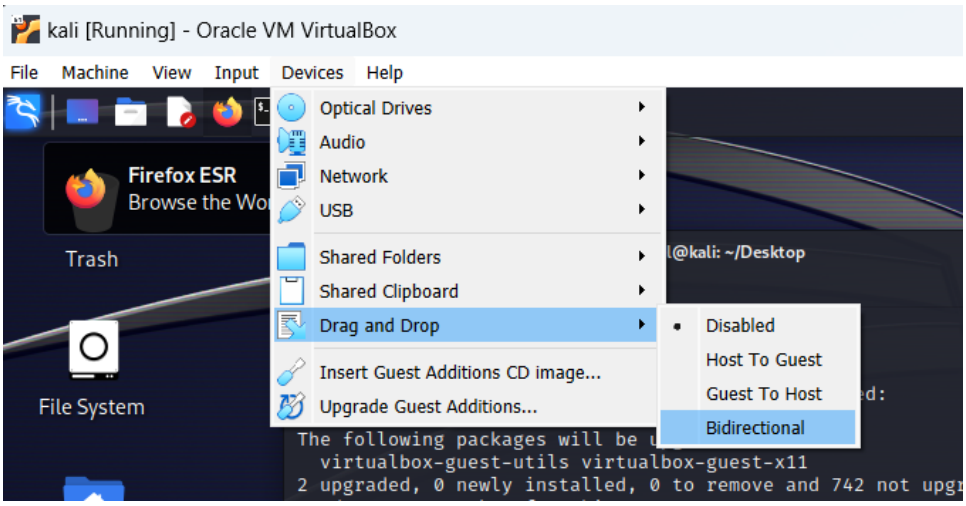


After updates have installed, install the virtualbox guest software using the following command:

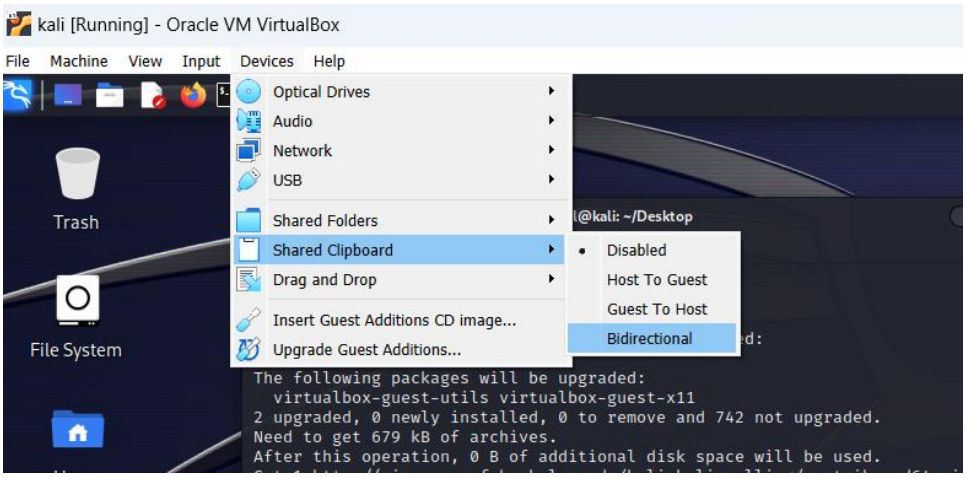
```
sudo apt install -y --reinstall virtualbox-guest-x11
```



After the guest software is installed, select the Devices menu -> Drag and Drop -> Bidirectional setting:

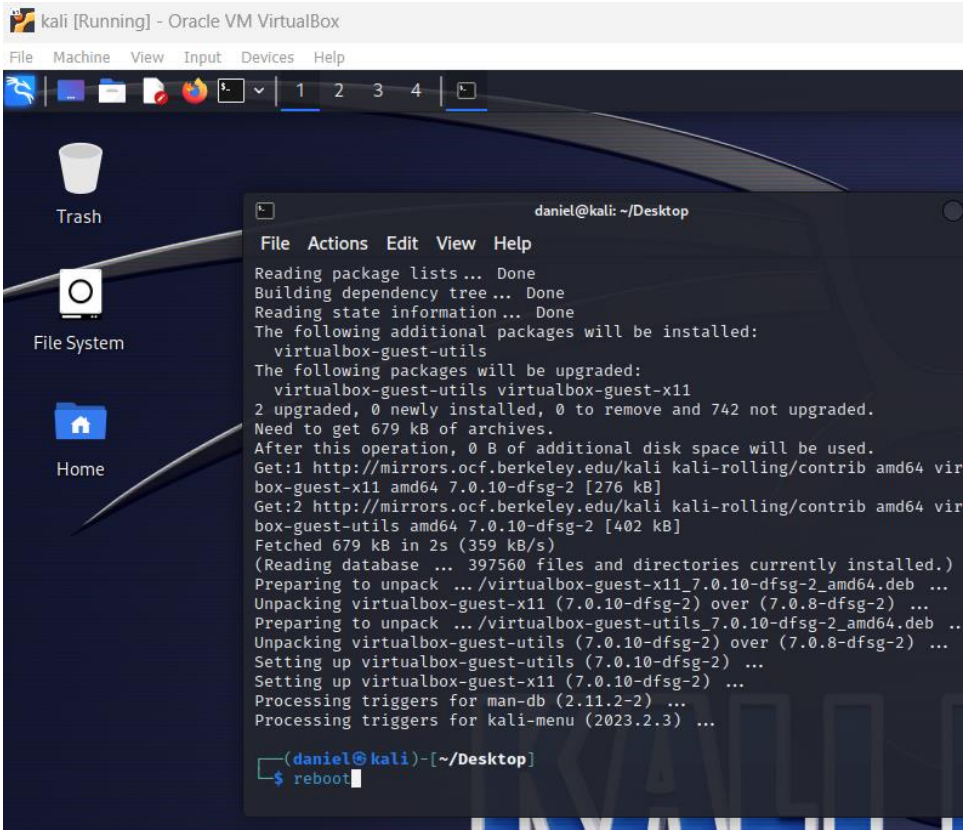


Then select the Devices menu -> Shared Clipboard -> Bidirectional setting:



Return to the kali terminal and reboot using the following command:

```
reboot
```

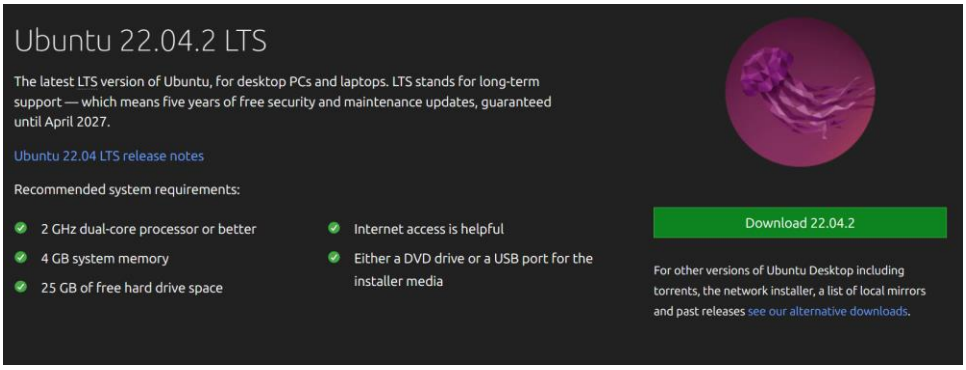


Congratulations, you've successfully setup Kali in VirtualBox! If you have adequate disk space (2x the recommended minimum) then you may consider taking a snapshot of the fresh install in case you ever want/need to start from a clean install.

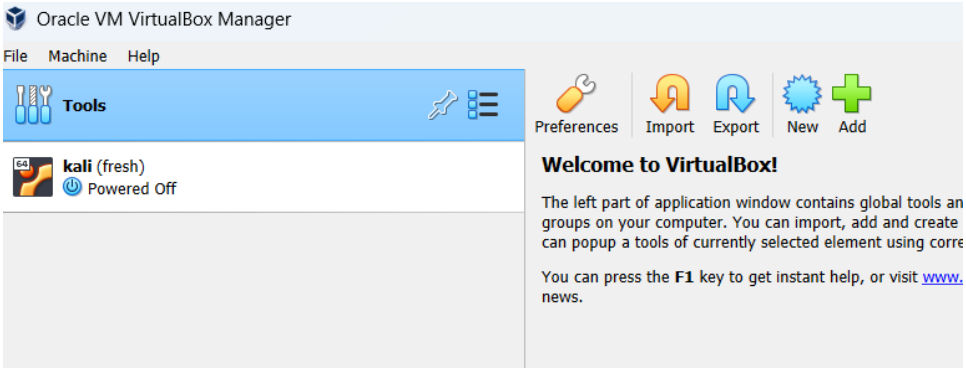
Download and Setup Ubuntu

Navigate to https://ubuntu.com/download/desktop

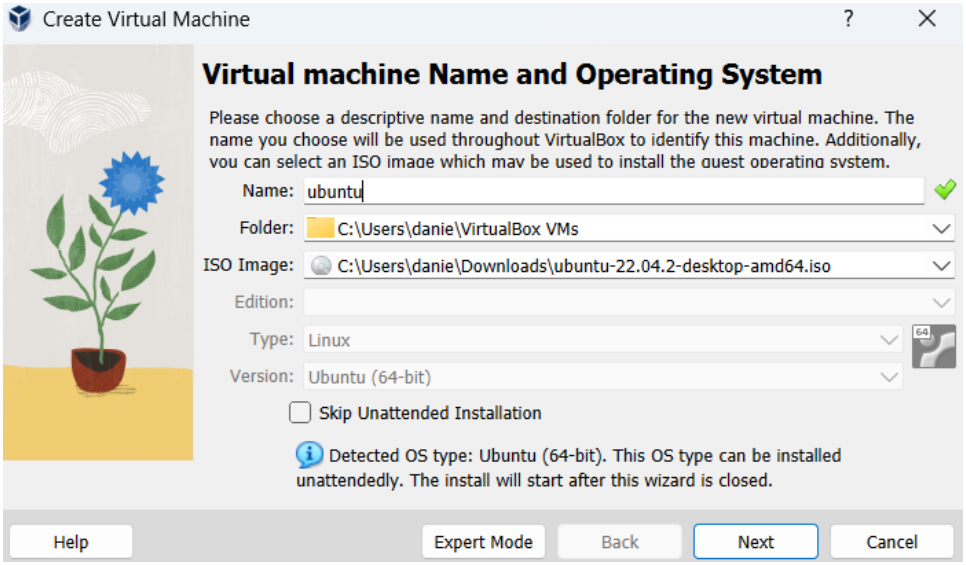
Download Ubuntu 22+ LTS image:



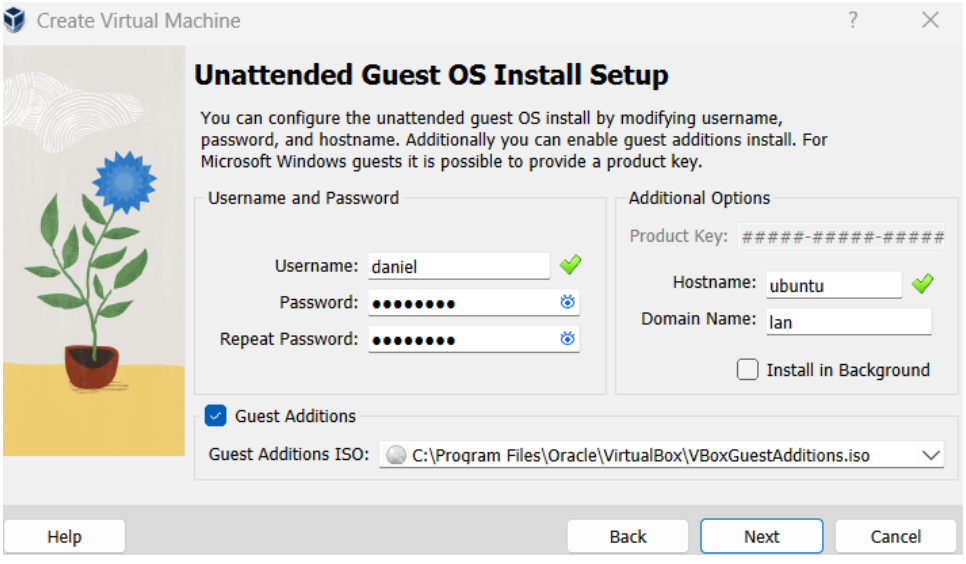
With the ISO for Ubuntu fully downloaded (~10-20 minutes depending on internet speeds), navigate to the running VirtualBox application and select the "New" button:



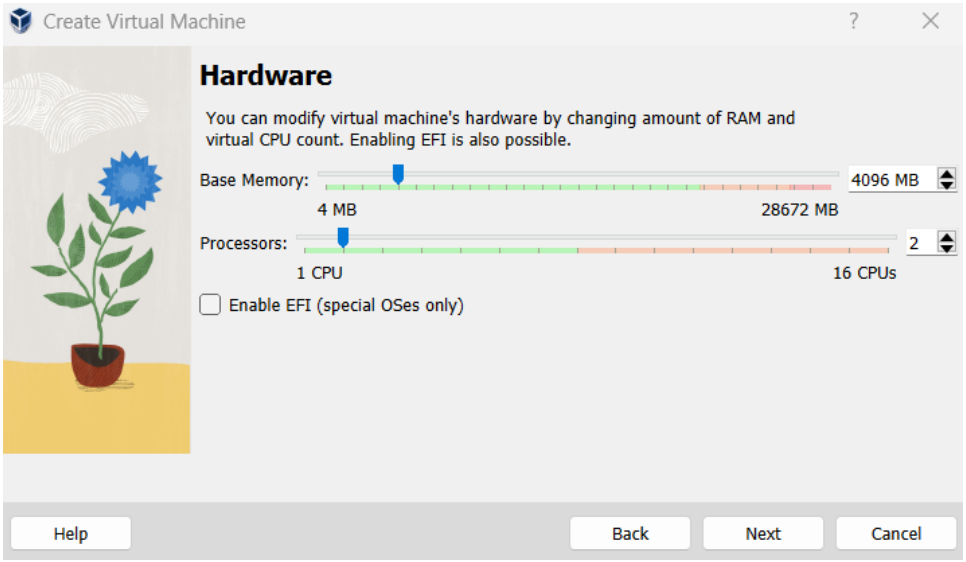
Enter ubuntu for the name and select the Ubuntu ISO image you downloaded in the previous step:



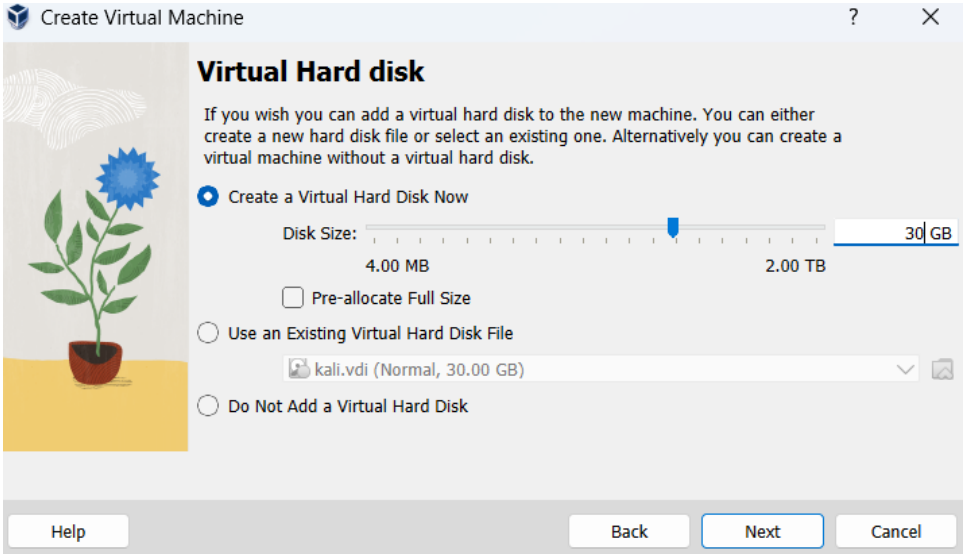
Within the unattended guest install setup, change the username and password, change the domain name to lan, and check Guest additions settings:



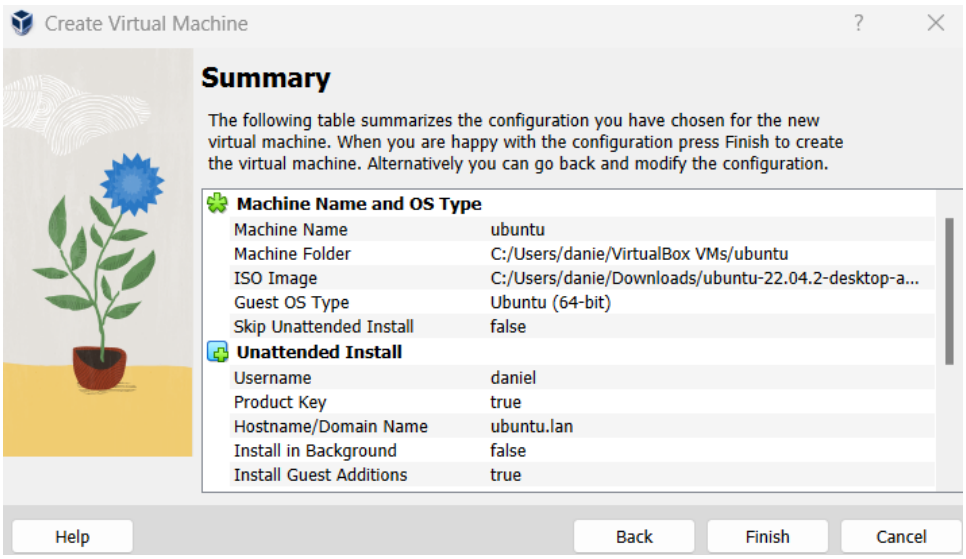
Set the hardware to have a minimum of 4GB of RAM and 2 CPUs (these settings can be adjusted later if more/less resources are needed):



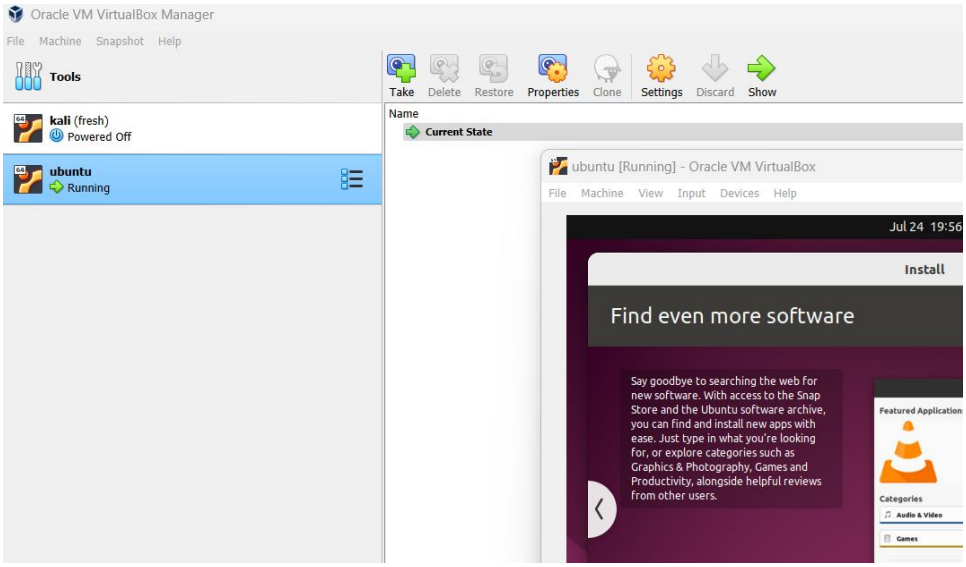
Create the virtual hard disk with 30GBs:



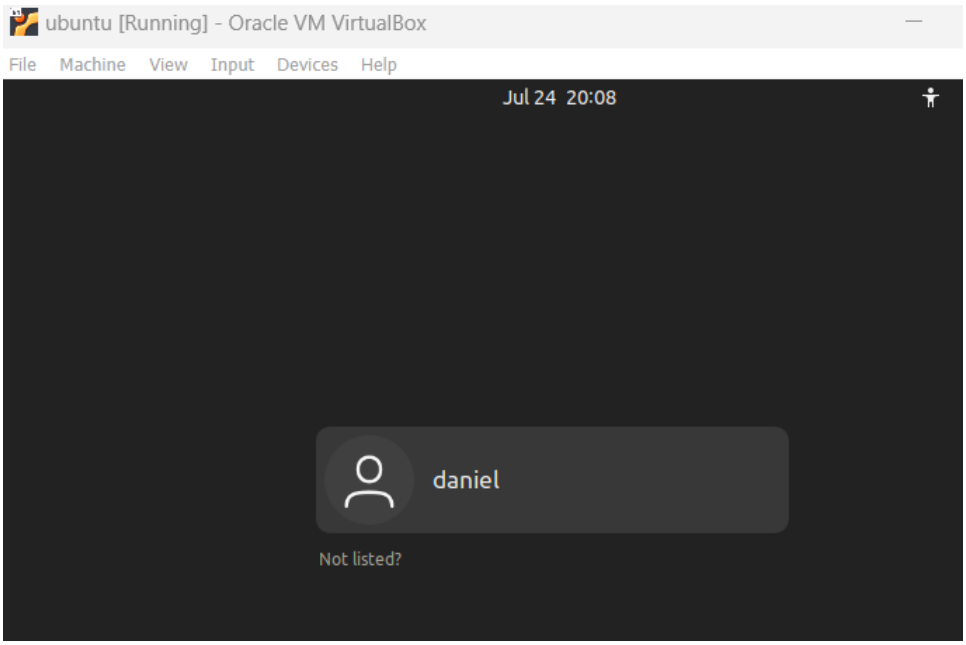
Select Finish to complete the setup:



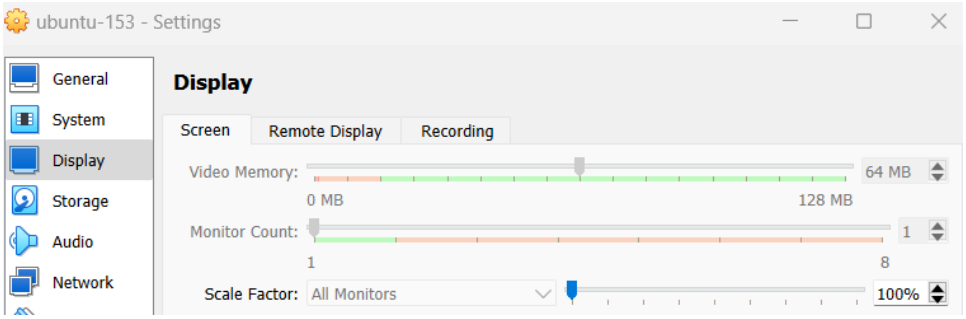
Observe the ubuntu VM has been configured and is running in the VirtualBox application. Select the ubuntu entry and then the Show button to watch the installation progress. The installation should take 20-30 minutes:



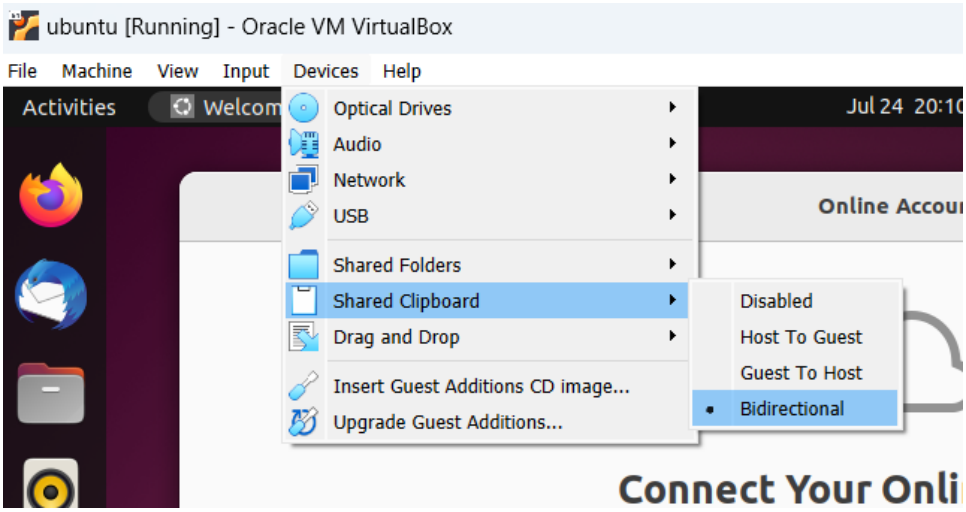
Once installation is complete the VM will reboot to the login screen. Login with the user account you setup.



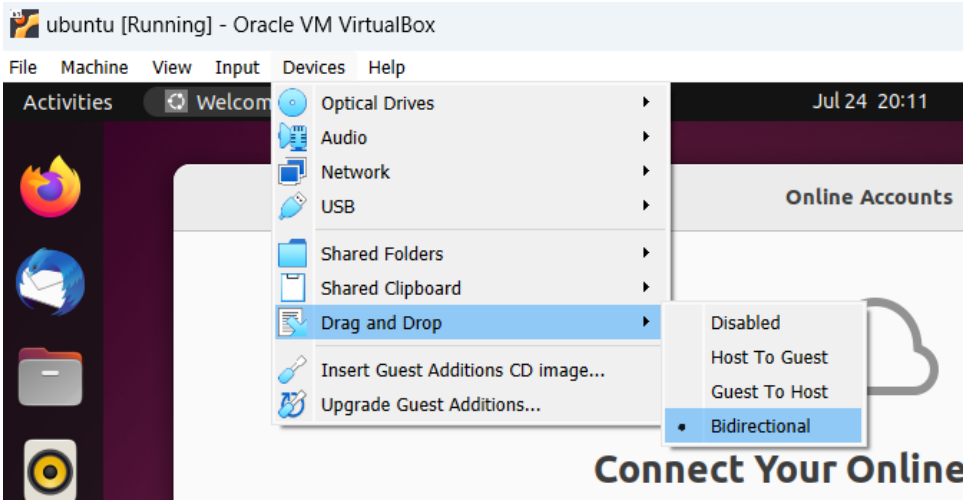
If you VM boots to a black screen, consider increasing the VM's video memory under the Display settings in Virtual Box.



Select Devices -> Shared Clipboard -> Bidirectional:



Select Devices -> Drag and Drop -> Bidirectional:

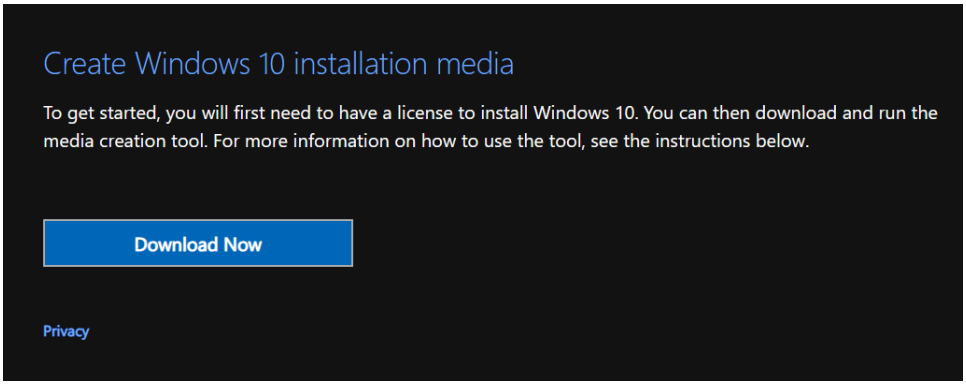


Congratulations, you have successfully installed the Ubuntu VM on VirtualBox! If you have adequate disk space (2x the recommended minimum) then you may consider taking a snapshot of the fresh install in case you ever want/need to start from a clean install.

Download and Setup Windows

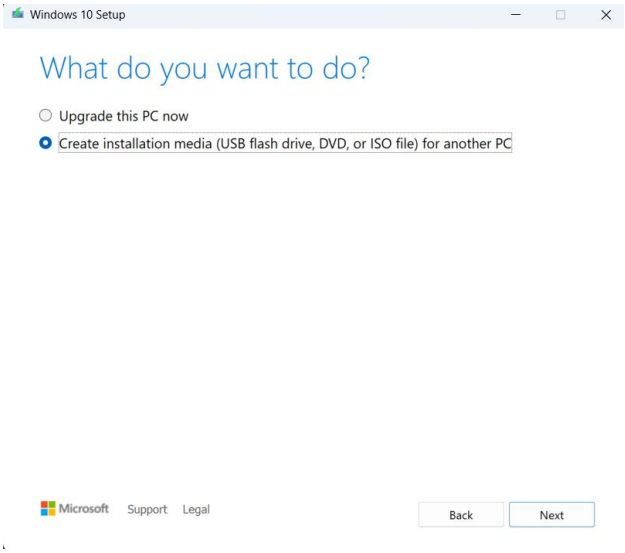
Navigate to https://www.microsoft.com/en-us/software-download/windows10

Press the “Download Now” button under “Create Windows 10 installation media” section:

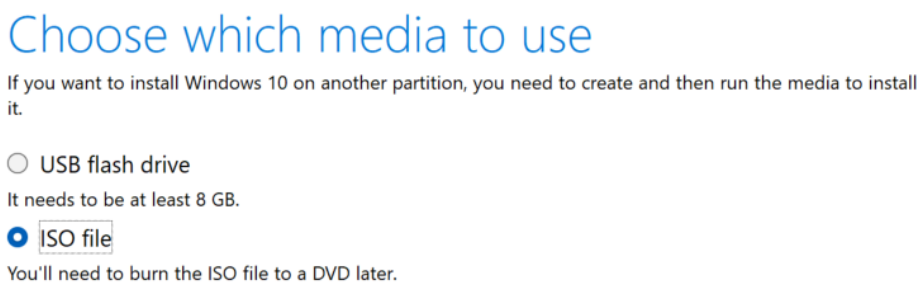


Open the Downloads folder and run the Media Creation Tool executable

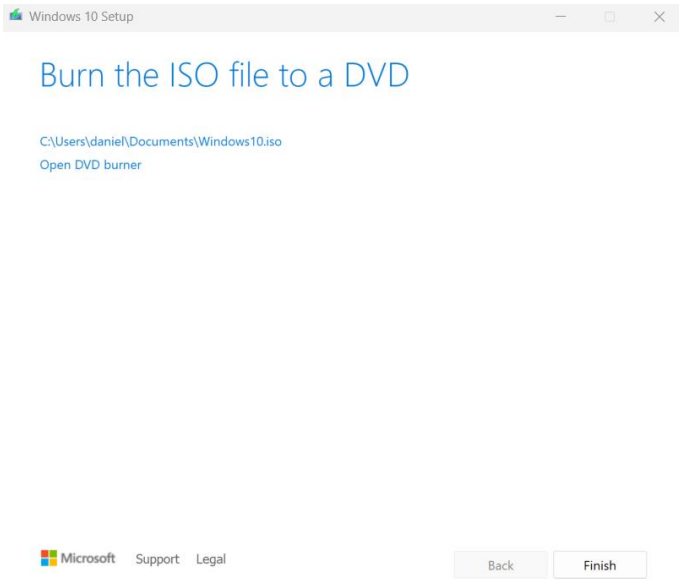
Accept licensing, and choose “Create installation media (USB flash drive, DVD, or ISO file) for another PC” option:



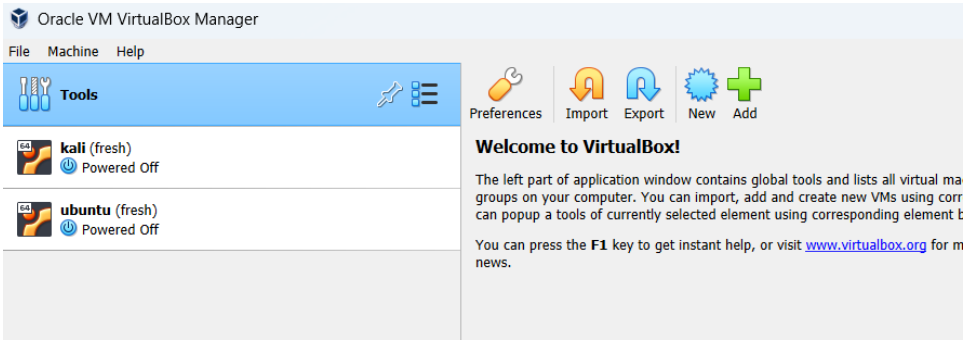
Use the recommended options and select ISO file:



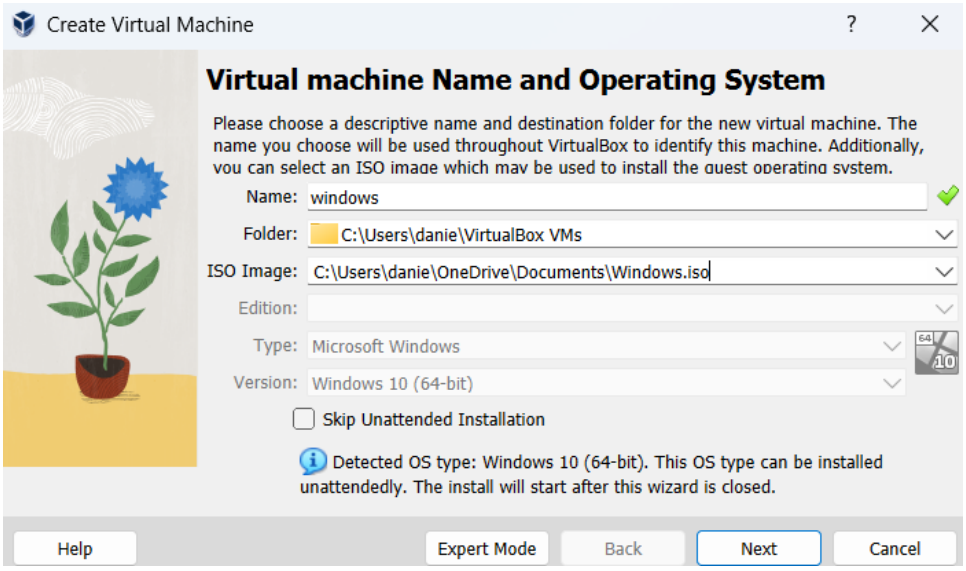
Select the location to save the ISO and the download will begin. Select Finish once complete (no need to burn to DVD):



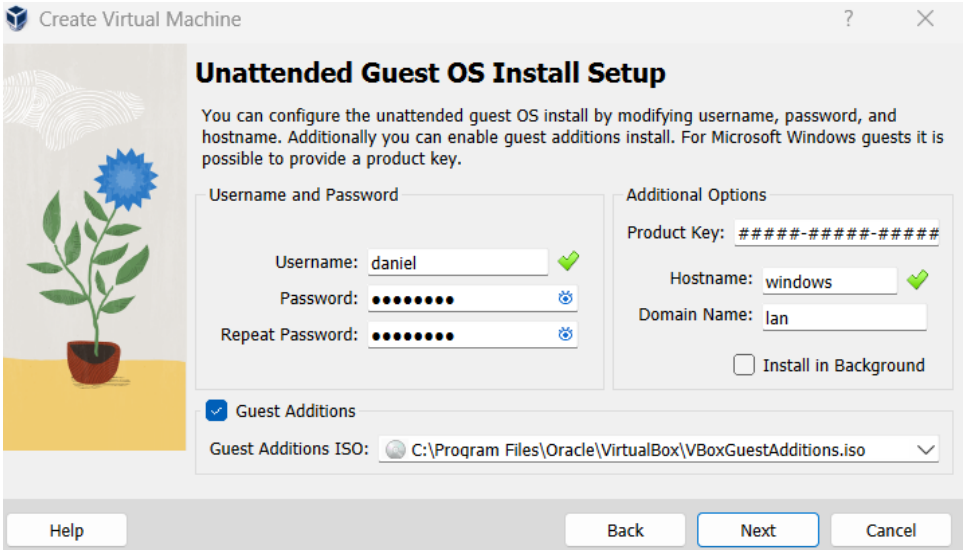
With the ISO for Windows fully downloaded (~10-20 minutes depending on internet speeds), navigate to the running VirtualBox application and select the “New” button:



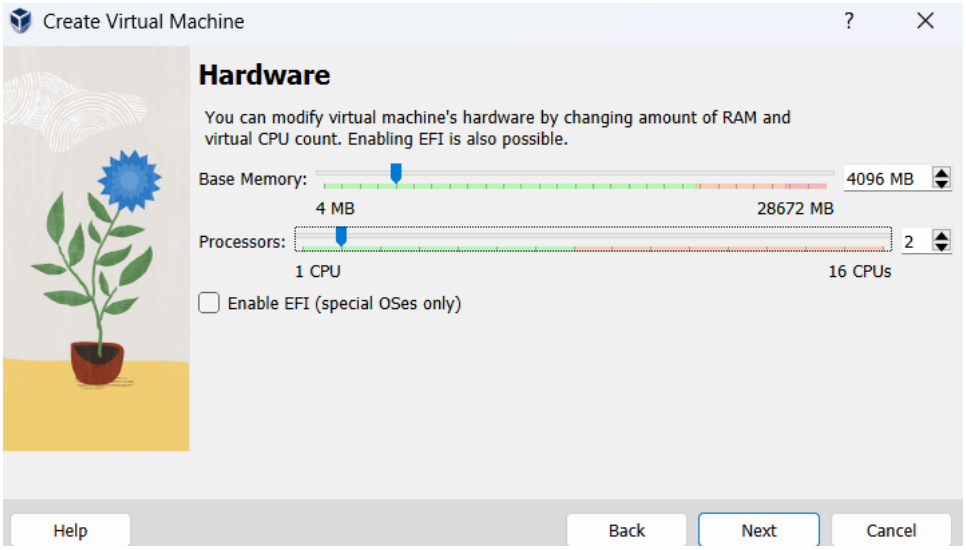
Name the VM windows and select the ISO location you’ve just downloaded:



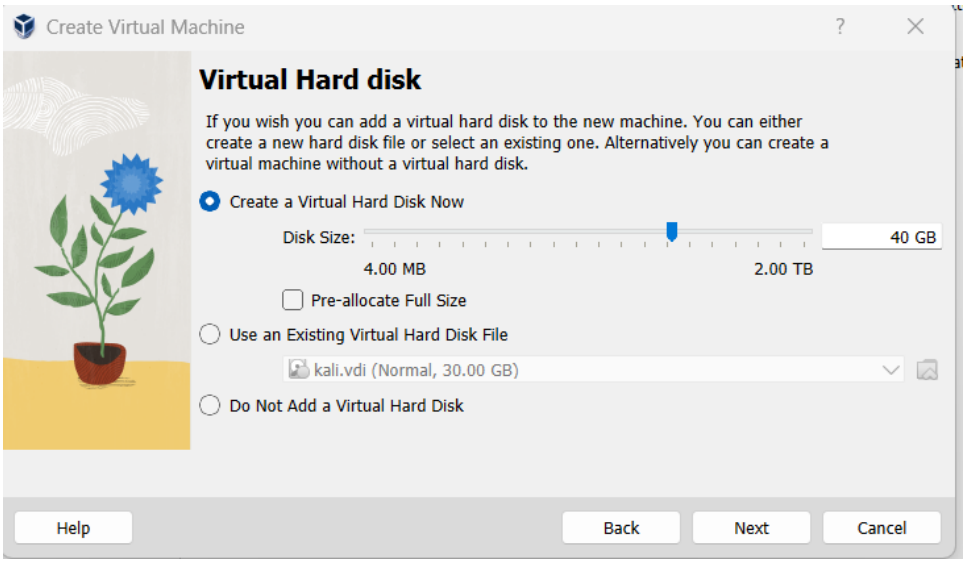
Adjust the unattended install setup with username and password of your choosing, set the Doman Name to lan, and check the Guest Additions. We won’t be licensing Windows so don’t worry about the Product Key:



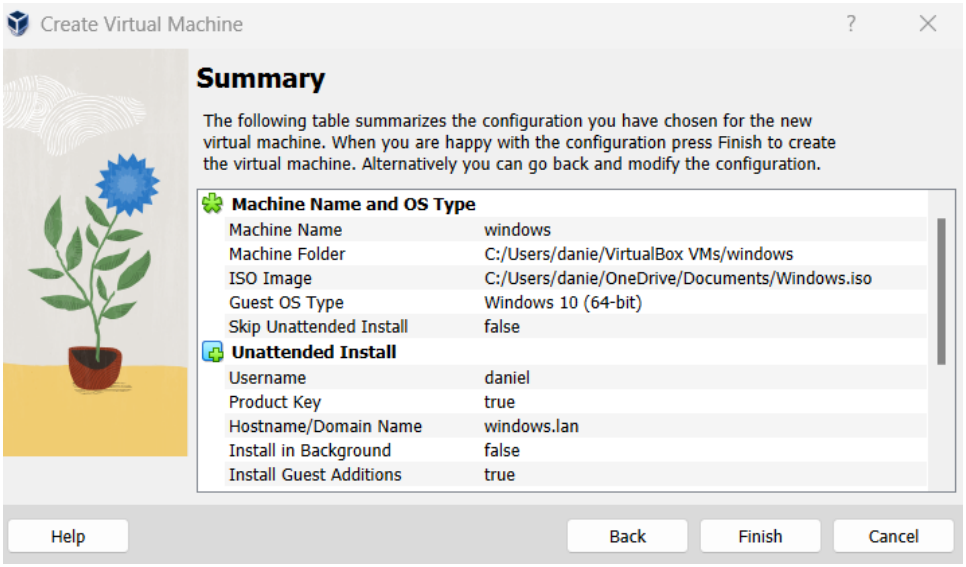
Provide the VM with a minimum of 4GBs of RAM and 2 CPUs (these can be later increased/decreased as resources permit):



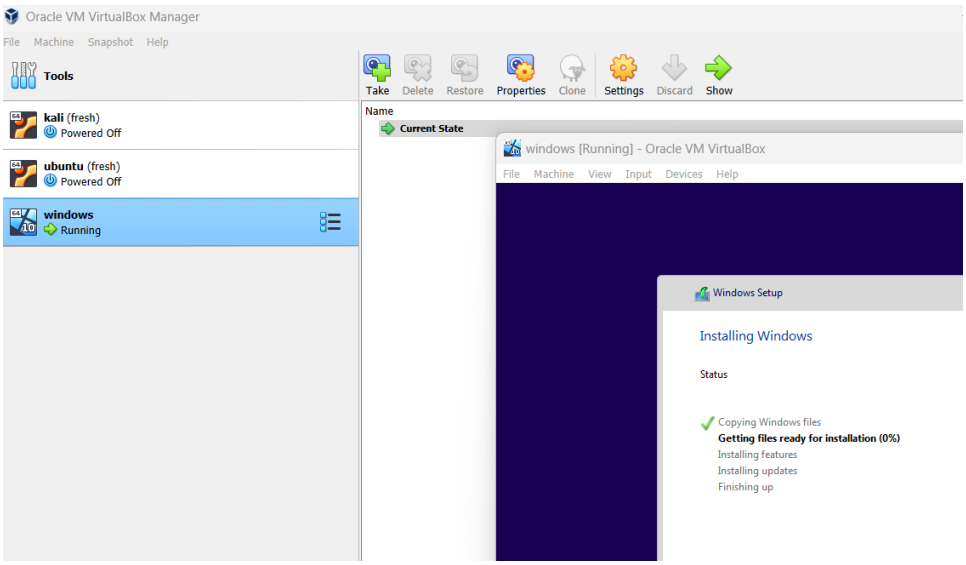
Create a virtual disk with 40GBs of space:



Select Finish to complete the configuration and launch the unattended installation:

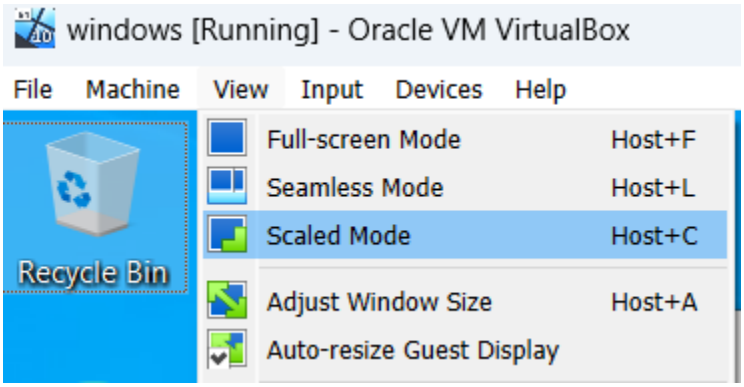


Windows should take 20-30 minutes to install and can be monitored by selecting Show in VirtualBox on the running windows VM:

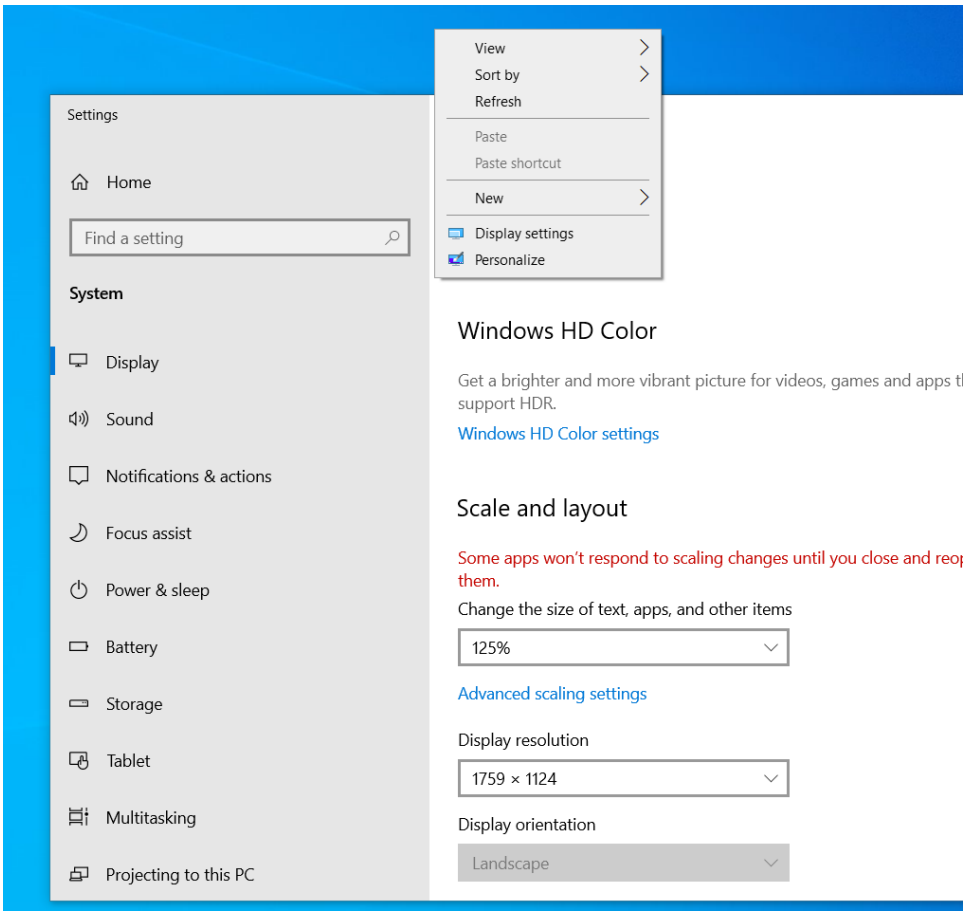


Windows will automatically load to the Windows desktop. You may have to adjust the VirtualBox View settings and/or the Windows display settings for the best experience. If your window does not show the file menu, try using VirtualBox shortcut keys to display (in Windows right CTRL + Home button).

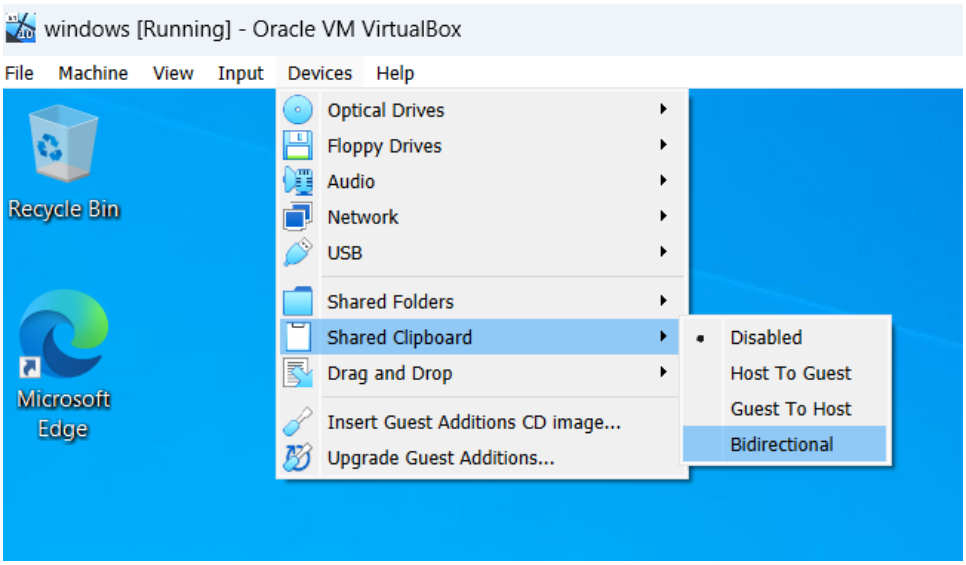
View -> Scaled Mode may be helpful:



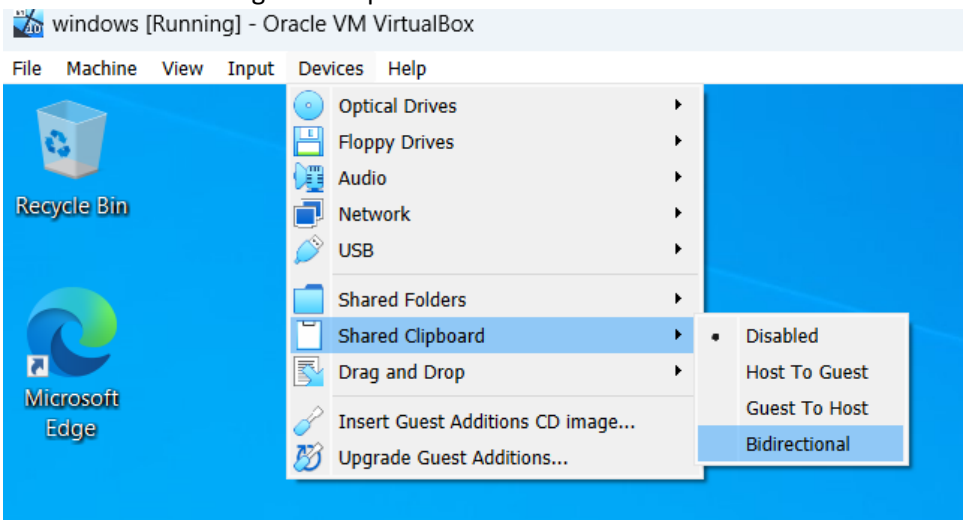
Right click in the Windows VM desktop and select “Display settings” to launch the settings window. Adjust the Display resolution and scaling as needed:



Select Devices -> Shared Clipboard -> Bidirectional:



Select Devices -> Drag and Drop -> Bidirectional:



Congratulations, you've successfully installed Windows in VirtualBox! If you have adequate disk space (2x the recommended minimum) then you may consider taking a snapshot of the fresh install in case you ever want/need to start from a clean install.