Building a Free Virtual Cybersecurity Lab with Open-Source Tools

My journey into cybersecurity has been a continuous one, and part of that growth has been making sure I document every step of my learning. To do that effectively, I realized I needed my own lab environment. In the past, building an IT lab often required expensive hardware or repurposing old computers—a process that was valuable but not always practical. Today, with virtualization and open-source tools, it's possible to create a full lab right from a personal computer. I built mine completely free, and it has been fast, flexible, and perfect for developing hands-on IT and cybersecurity skills.

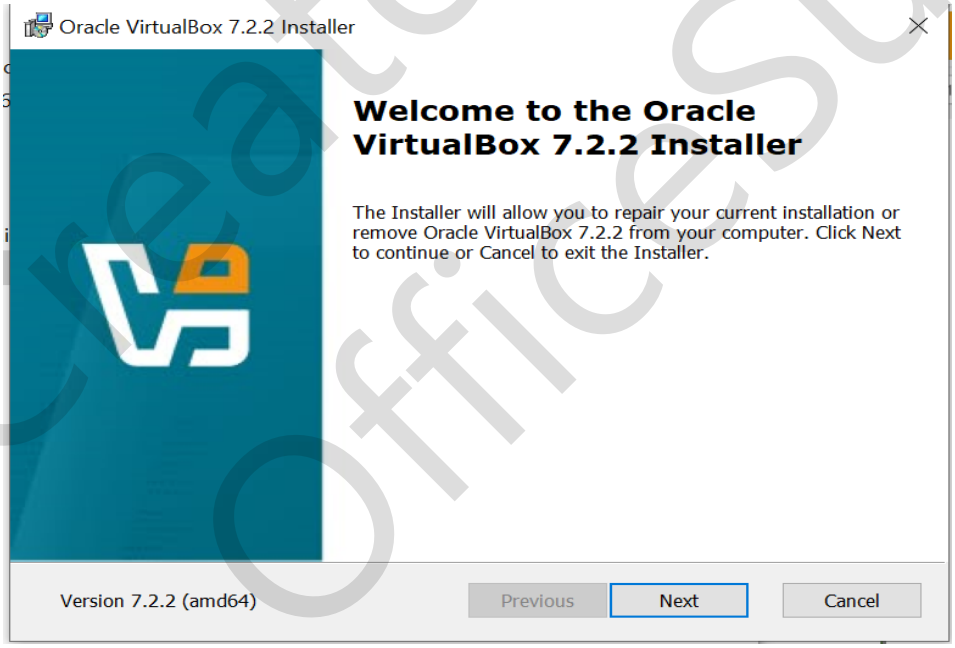
Required Tools

1. Virtual Machine (using virtual box)
2. Microsoft Server
3. Microsoft Windows 8.1

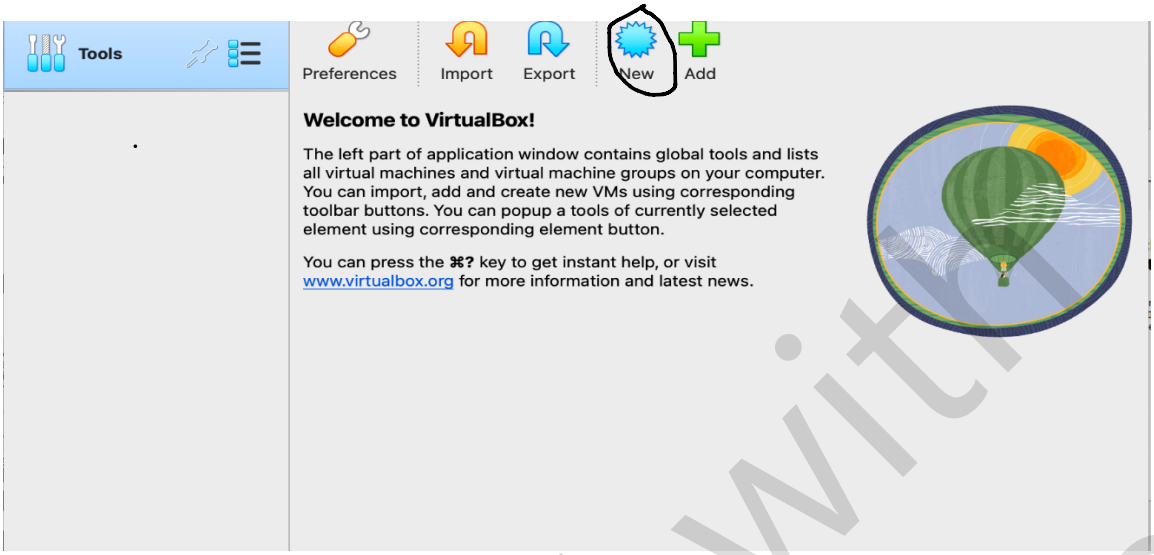
All tools are sourced online, downloaded directly

Steps

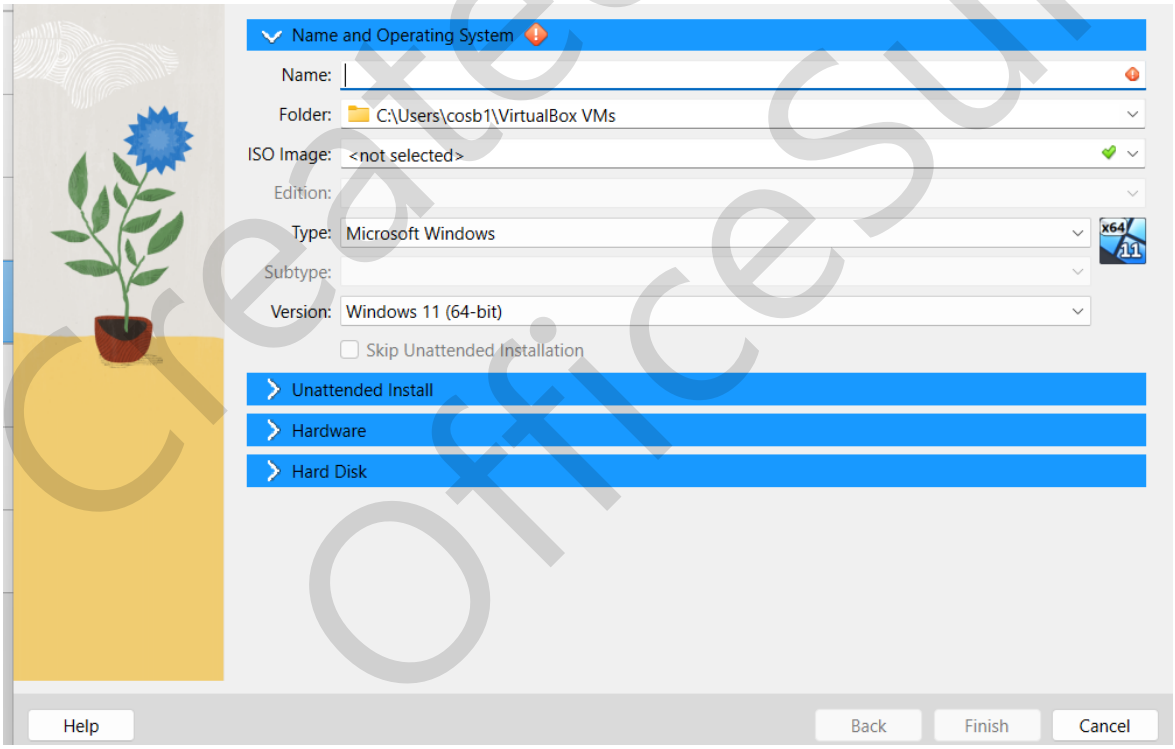
1. Downloaded Oracle VM VirtualBox online. Once the download was completed, I launched the virtualbox

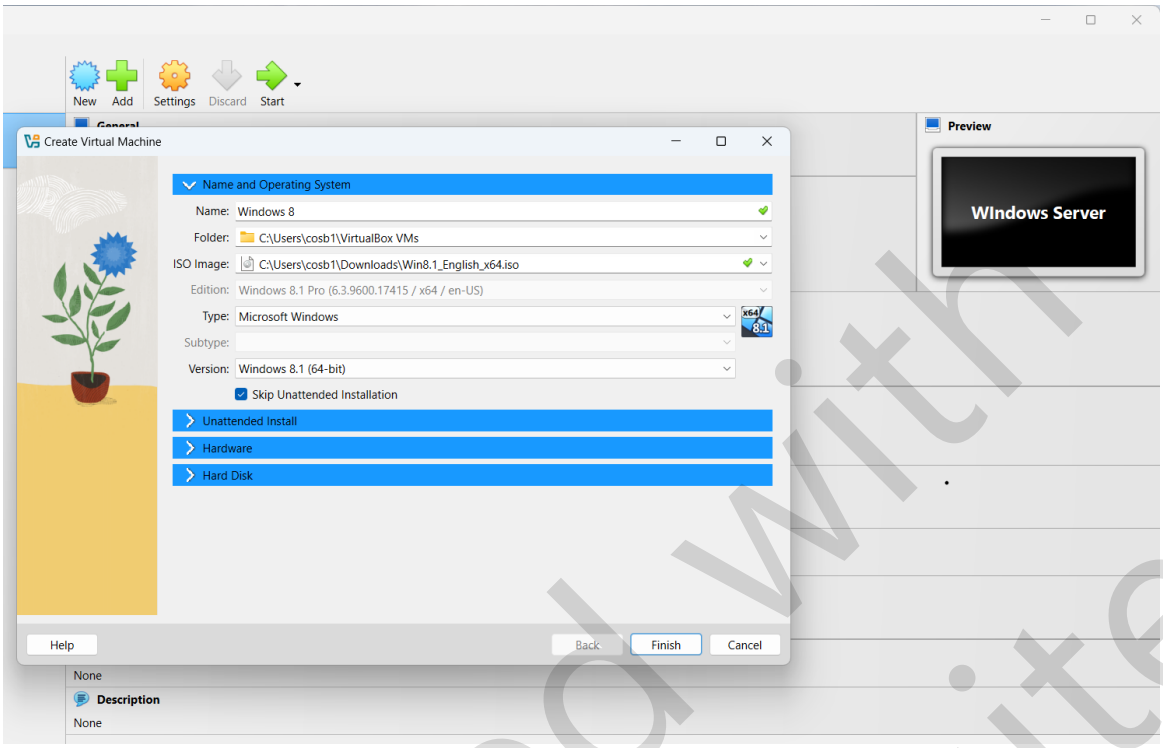


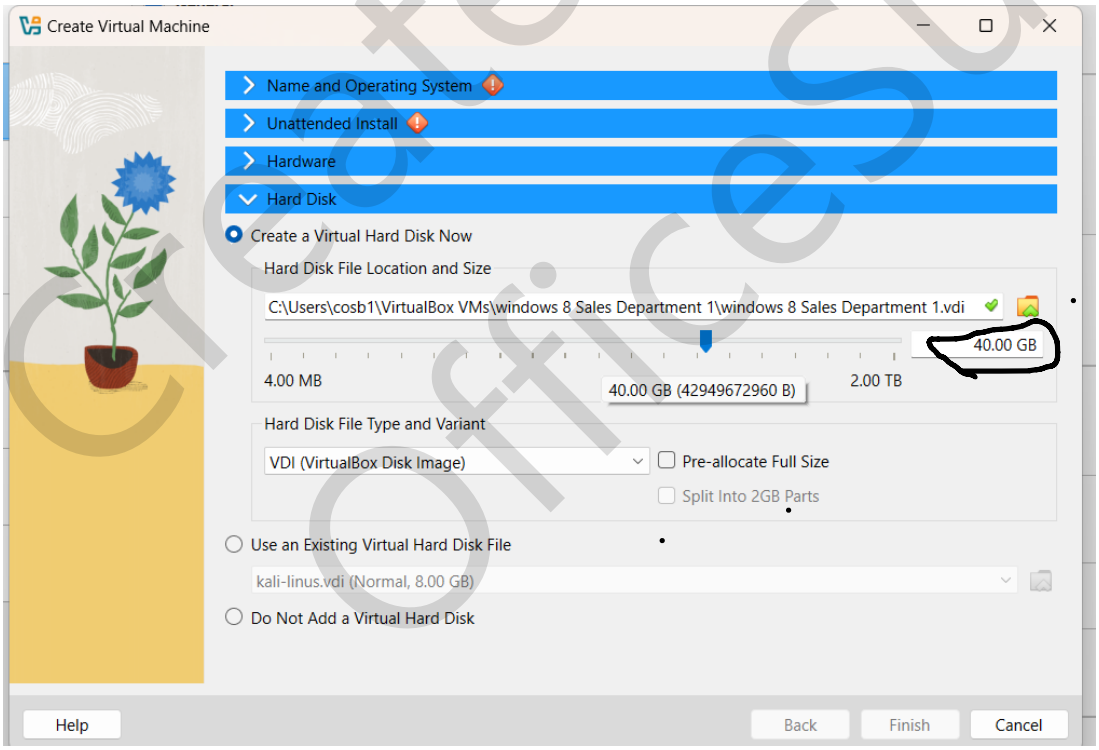
2. Installed using default options and selecting Yes to the Yes/No questions
3. Click finish and launch
4. Create the virtual machine by clicking on the new button in the virtual box. Tjis will launch a new window



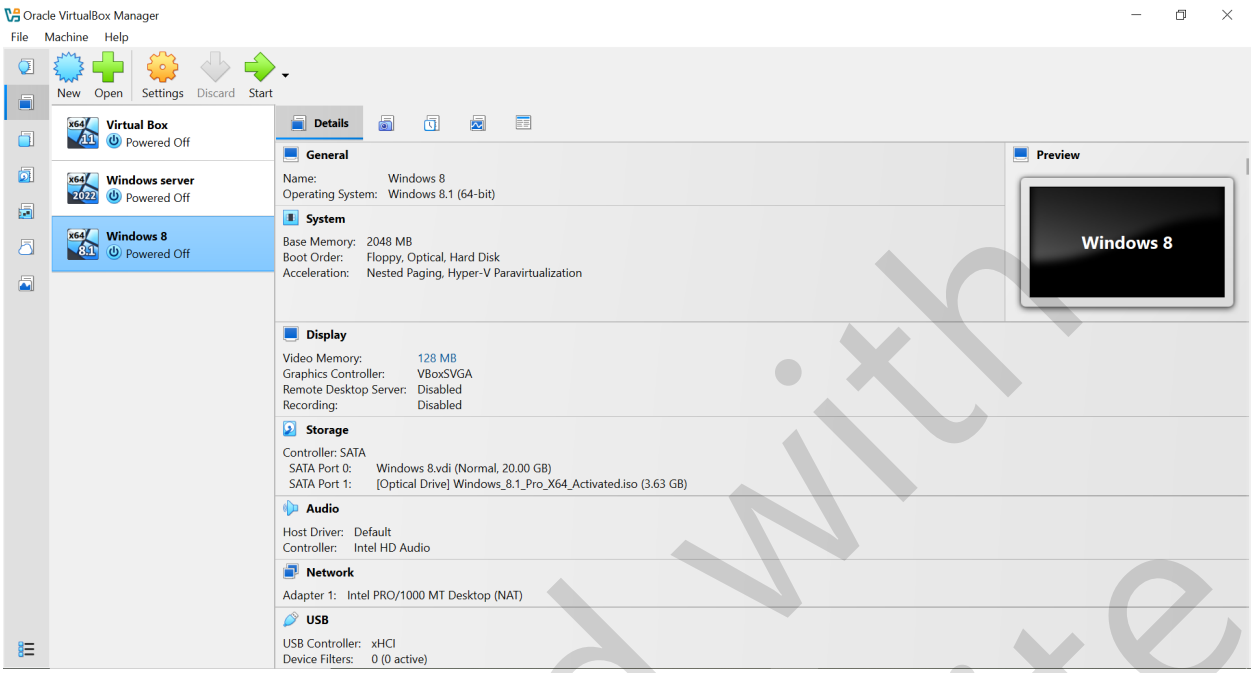
5. Specify the name, select the folder the file has been saved and choose the size of RAM. In this case using 2048gb, 40gb HDD and all other options are maintained at default and click finish.







6. Now you should see the file name created.



Important tips: Storing the VM's virtual hard disk on a **solid-state drive (SSD)** can further improve performance, especially when running disk-intensive tasks. Increasing the number of CPU cores can significantly enhance your virtual machine's (VM) performance. If possible, set the number of CPUs to **2**.