

SETTING UP A CYBERSECURITY HOME LAB

1.0 Overview

This project walks through how to set up a virtual cybersecurity home lab using **VirtualBox** on a single host laptop. The goal is to create a safe and isolated environment where cybersecurity tools can be explored, test configurations, and practice network defense skills without risking the main system.

The setup includes one **Windows Server** (which acts as the domain controller) and two **Windows 8 client machines** connected on an internal virtual network.

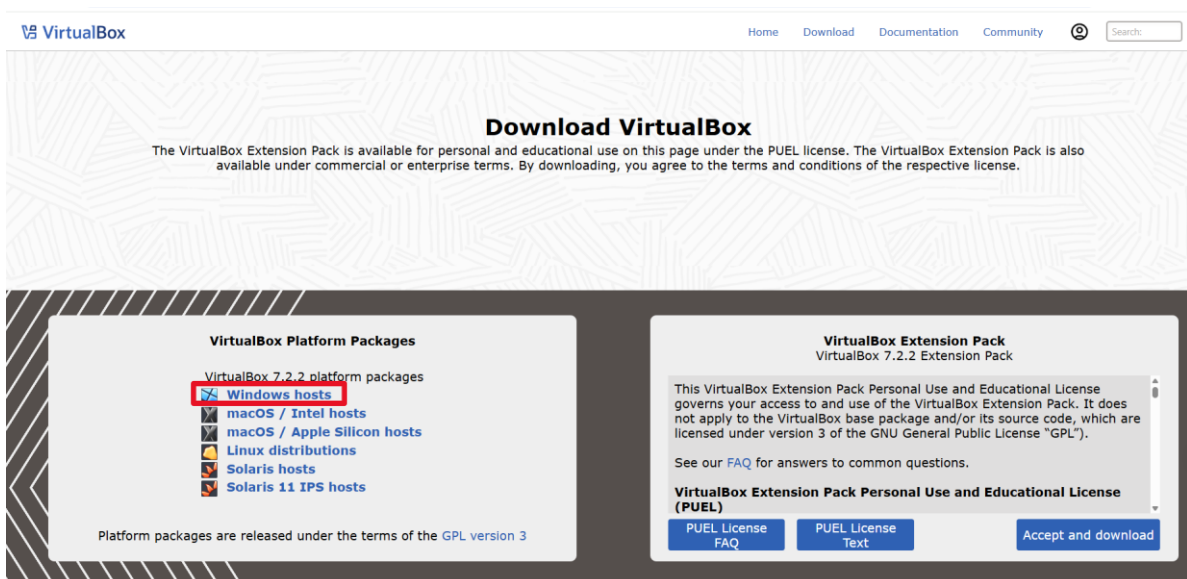
Once configured, this lab can be used to simulate real-world security scenarios like user authentication, group policies, end-point security, malware containment, or penetration testing in a controlled setting.

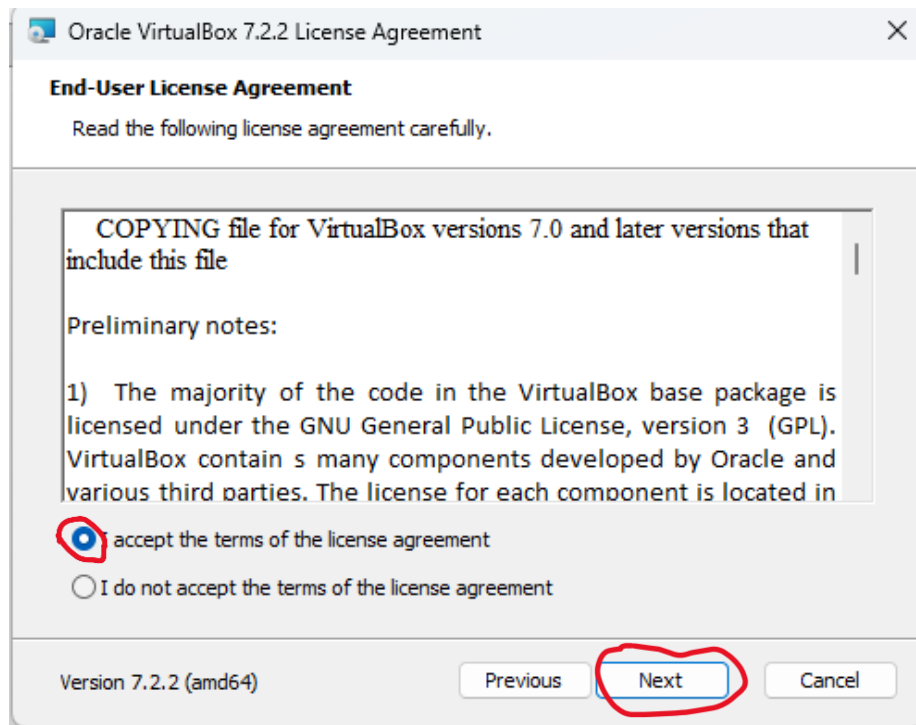
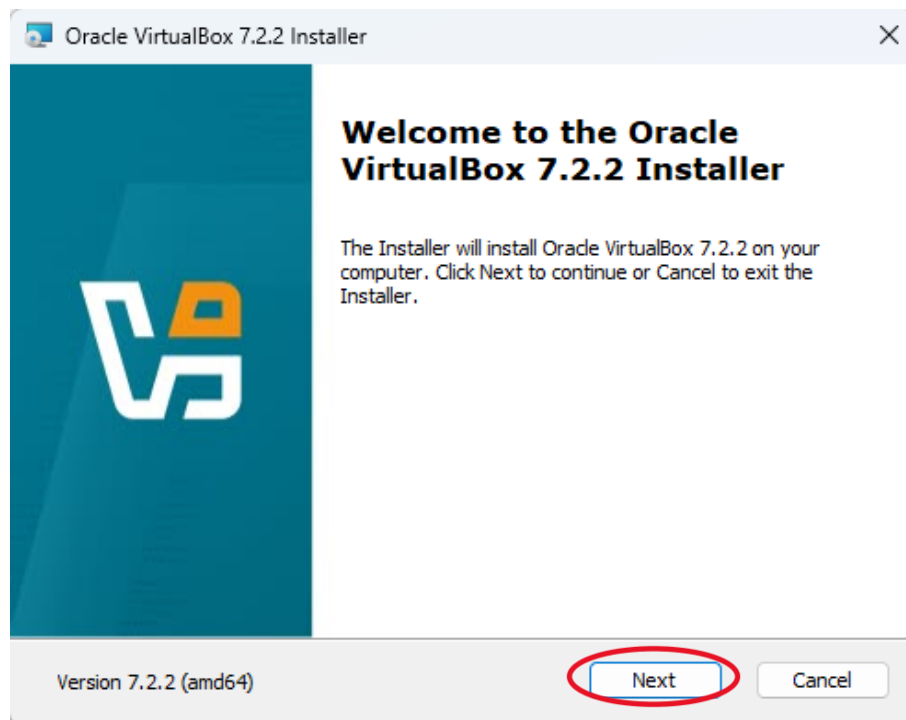
Specifications of the homelab:

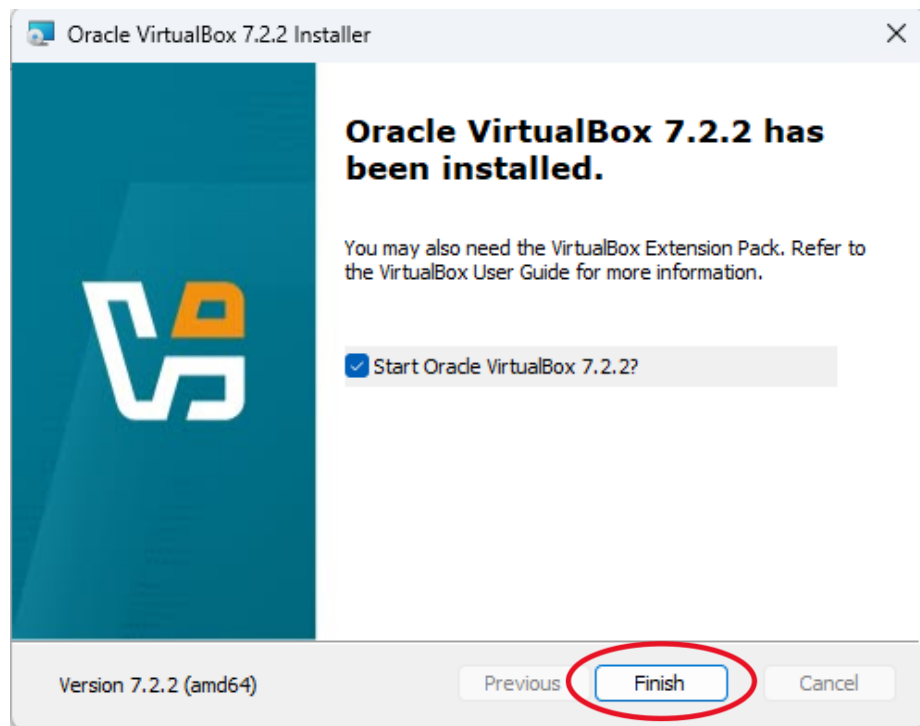
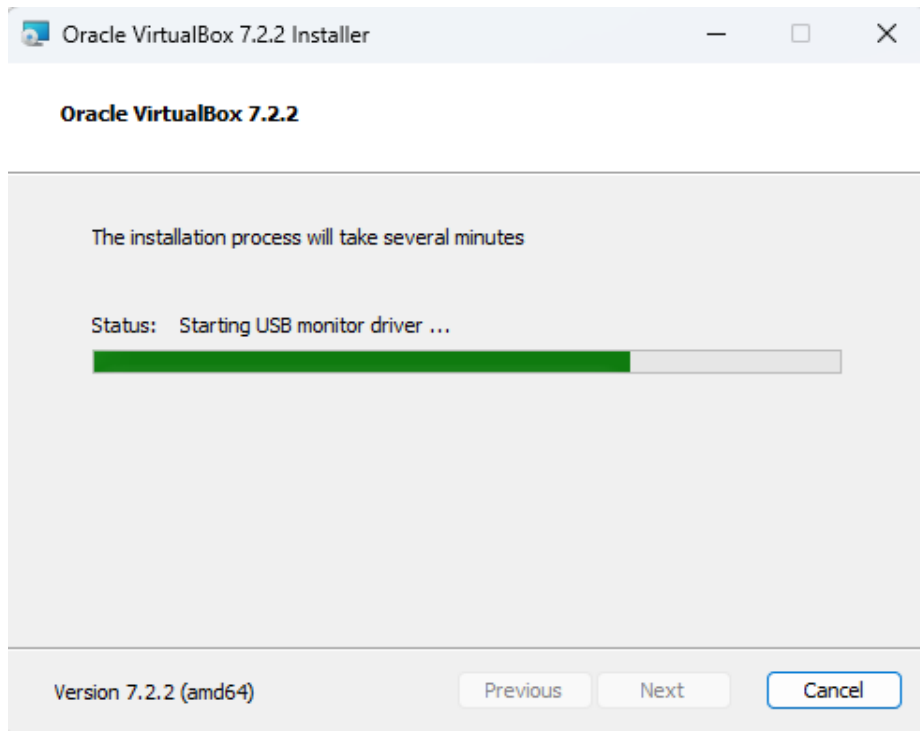
- A laptop with 64GB RAM
- VirtualBox
- ISO files for Windows Server and Windows 8
- 725GB free storage

2.0 Install VirtualBox

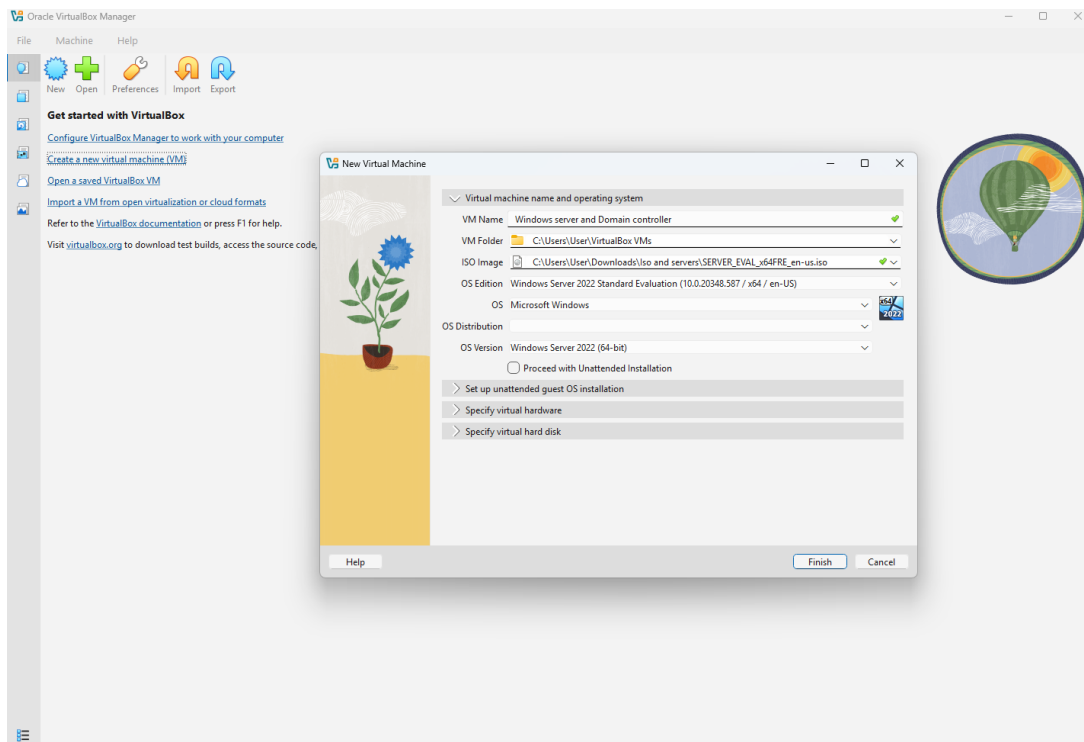
First, Download VirtualBox from <https://www.virtualbox.org/wiki/Downloads>



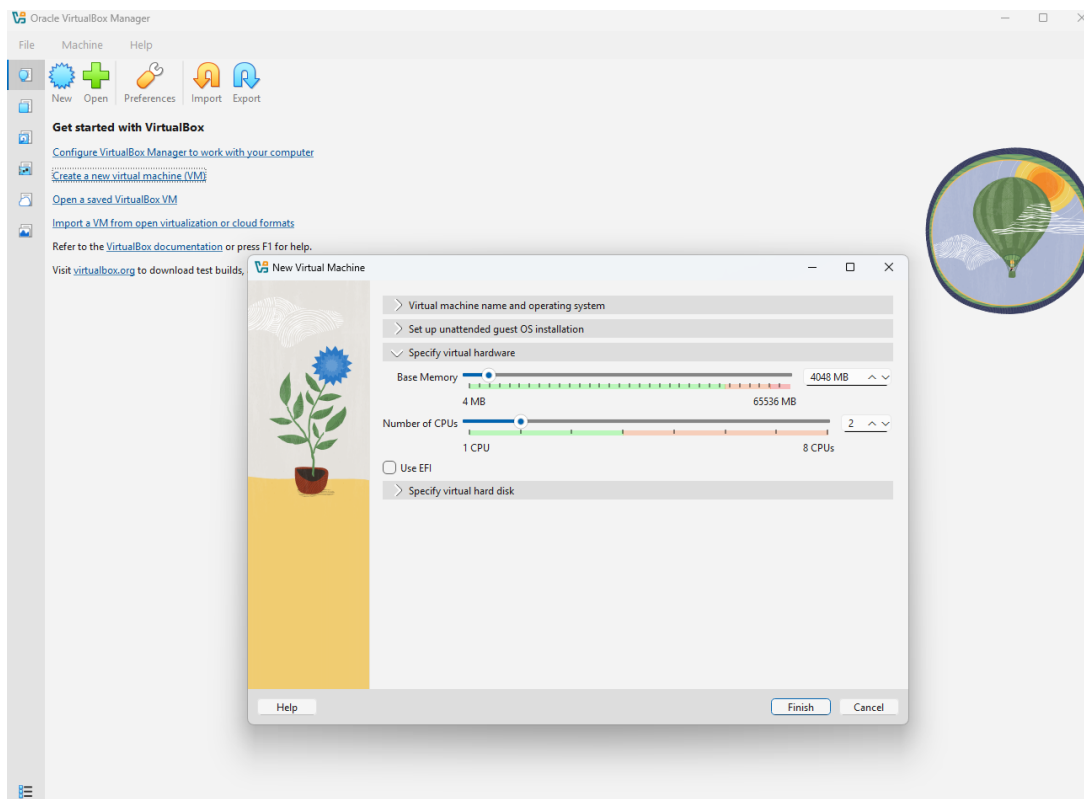




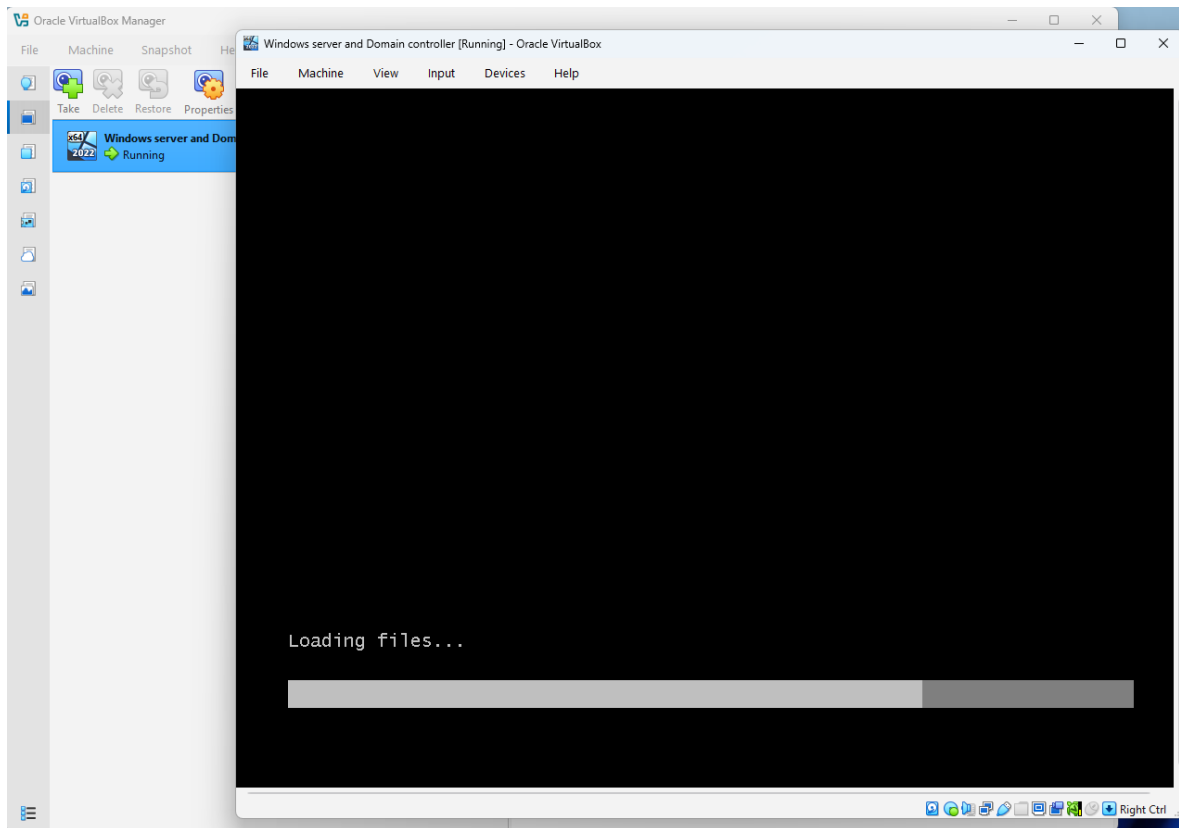
3.0 Installing Windows Server Operating System on VirtualBox



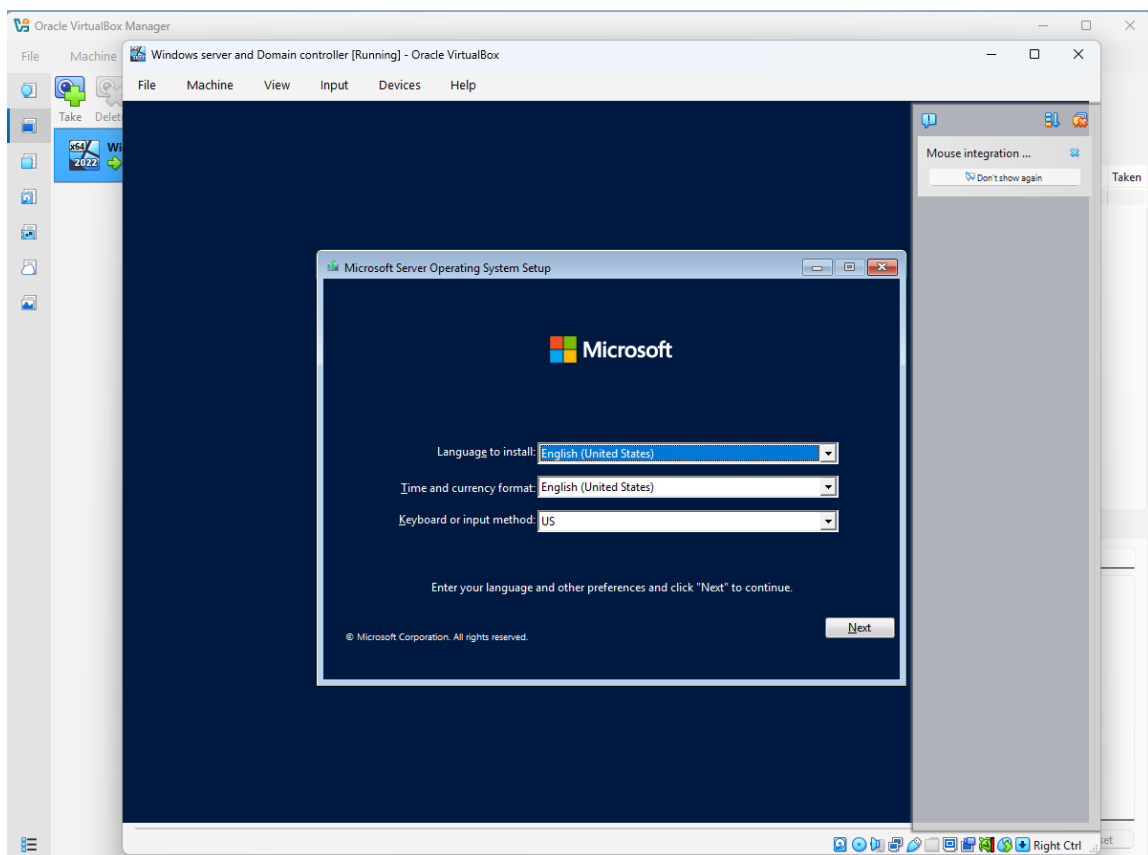
Select the image file of the windows server operating system to be installed from the downloaded folder.

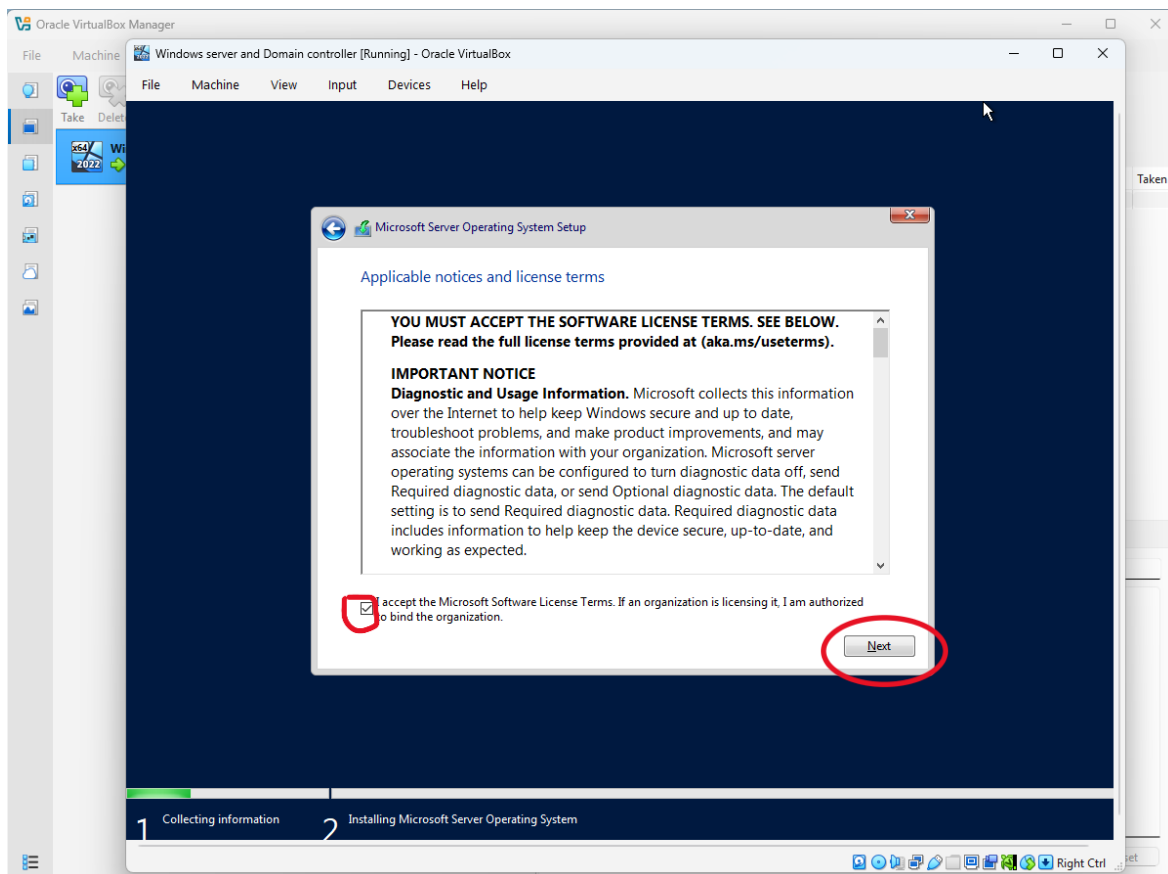
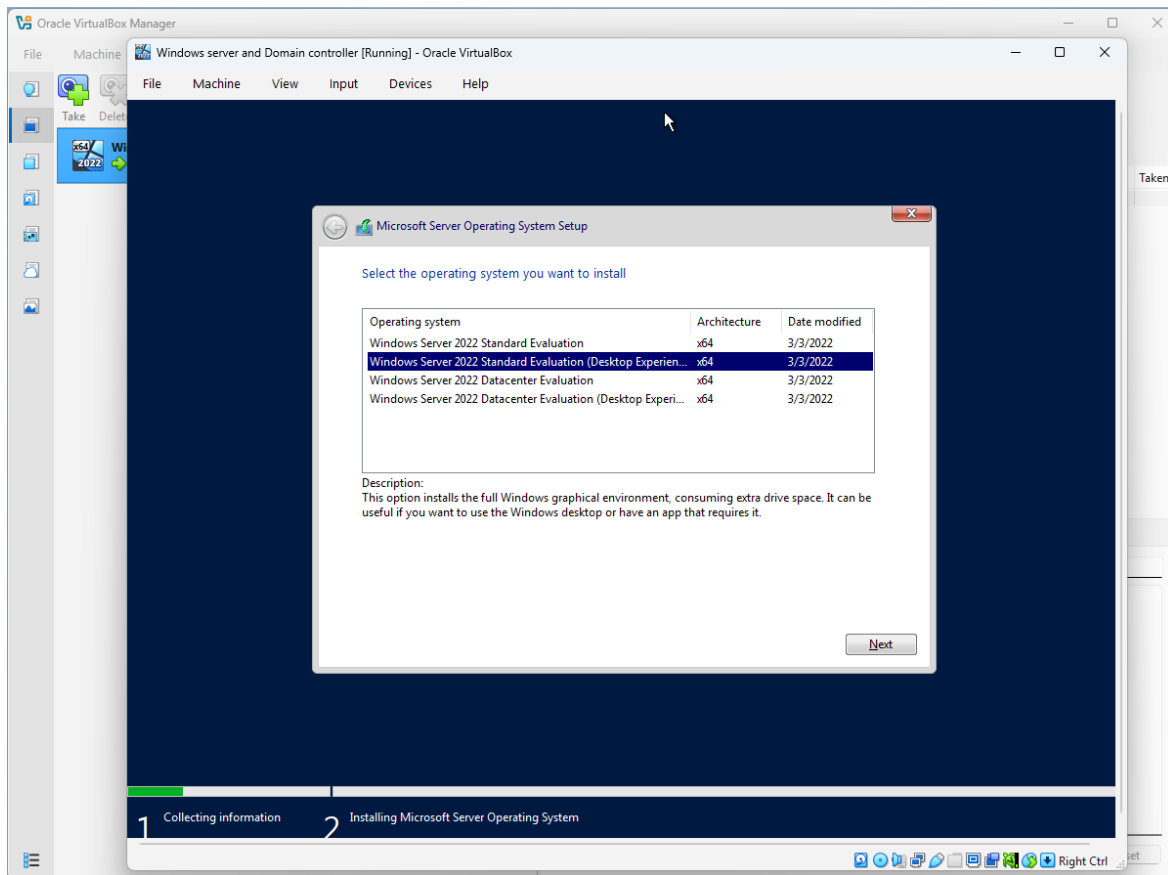


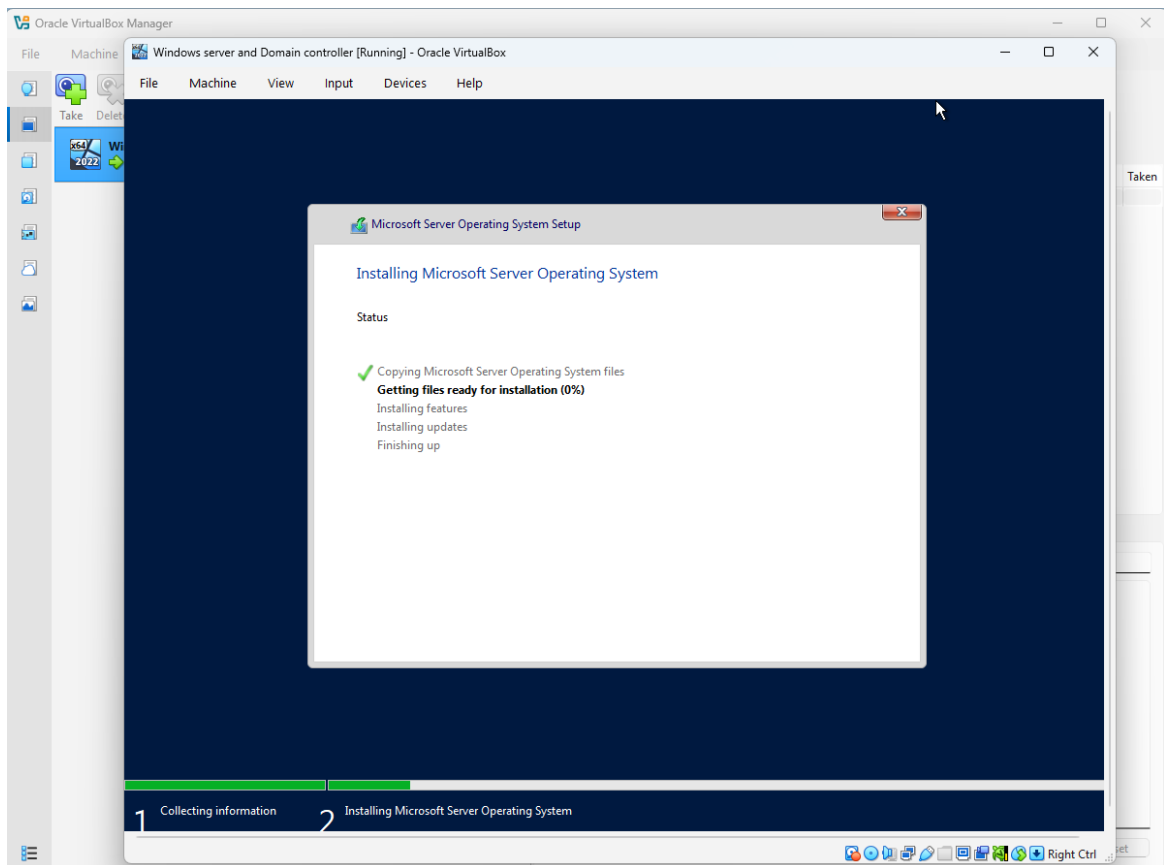
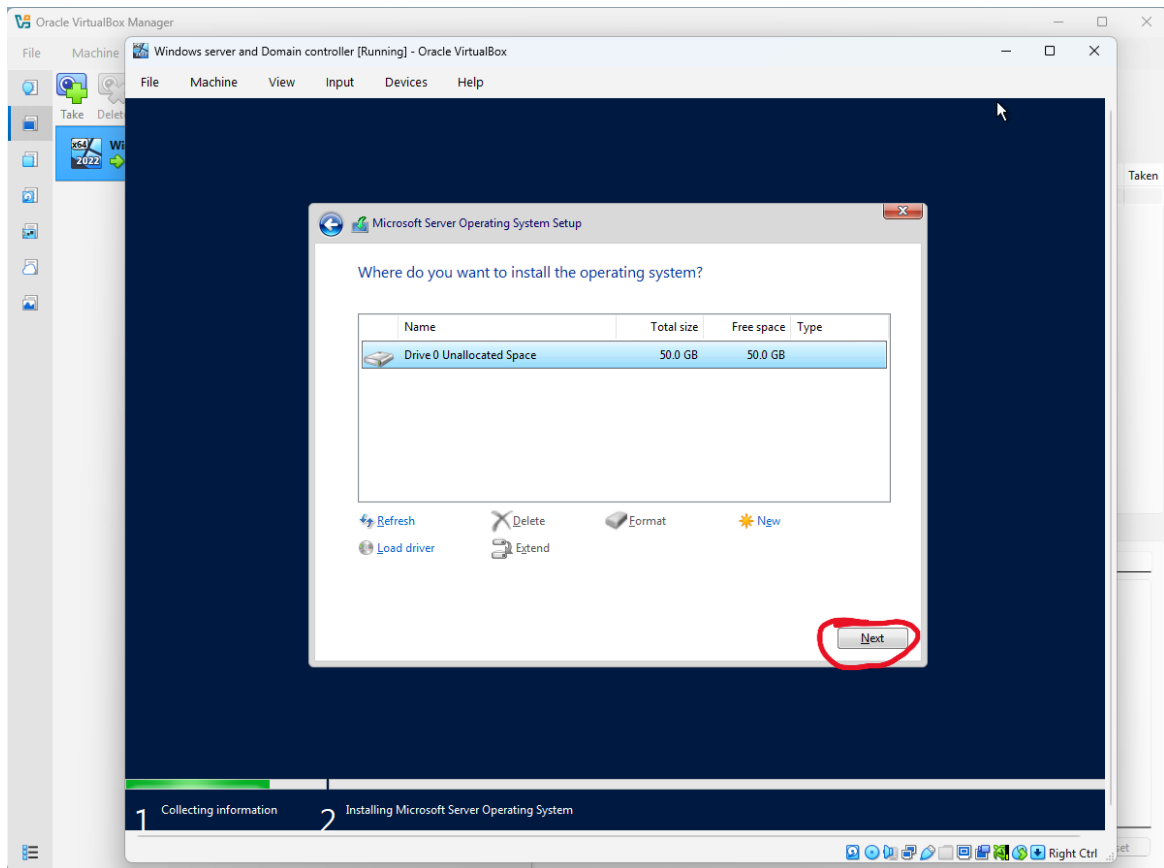
Set the specifications of the hardware

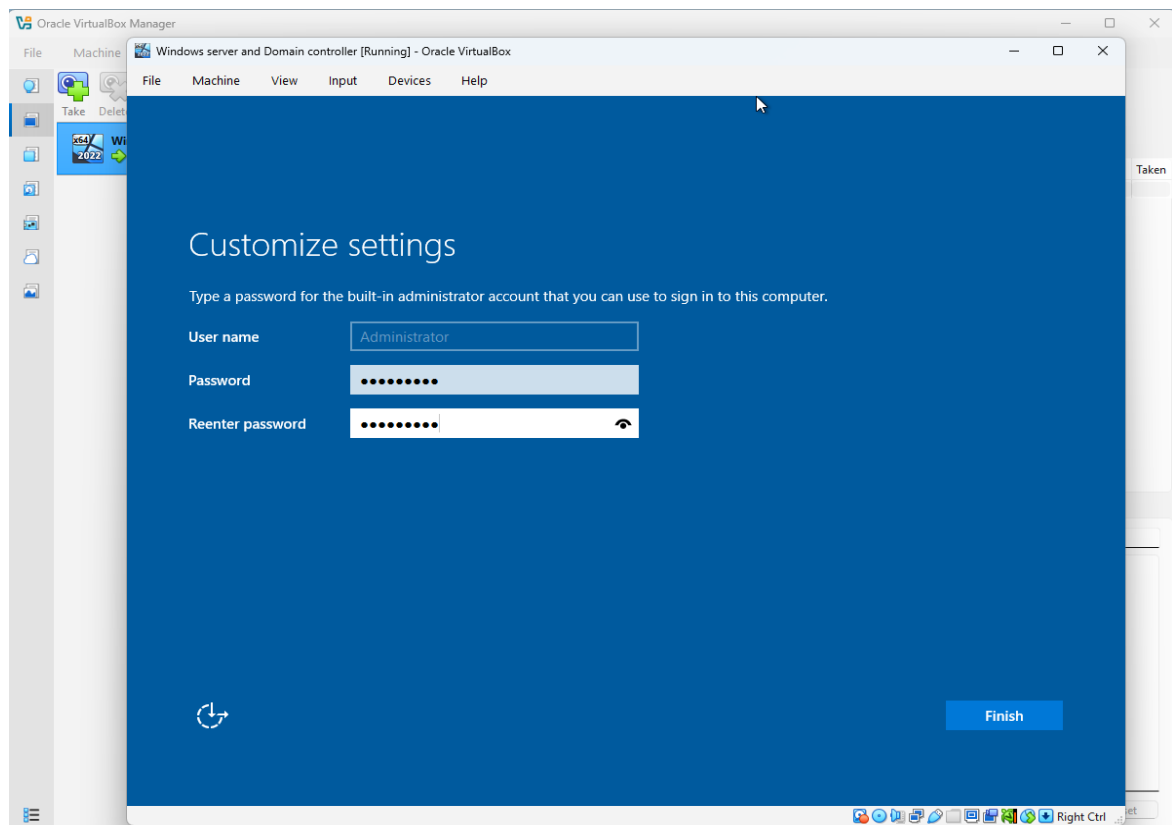
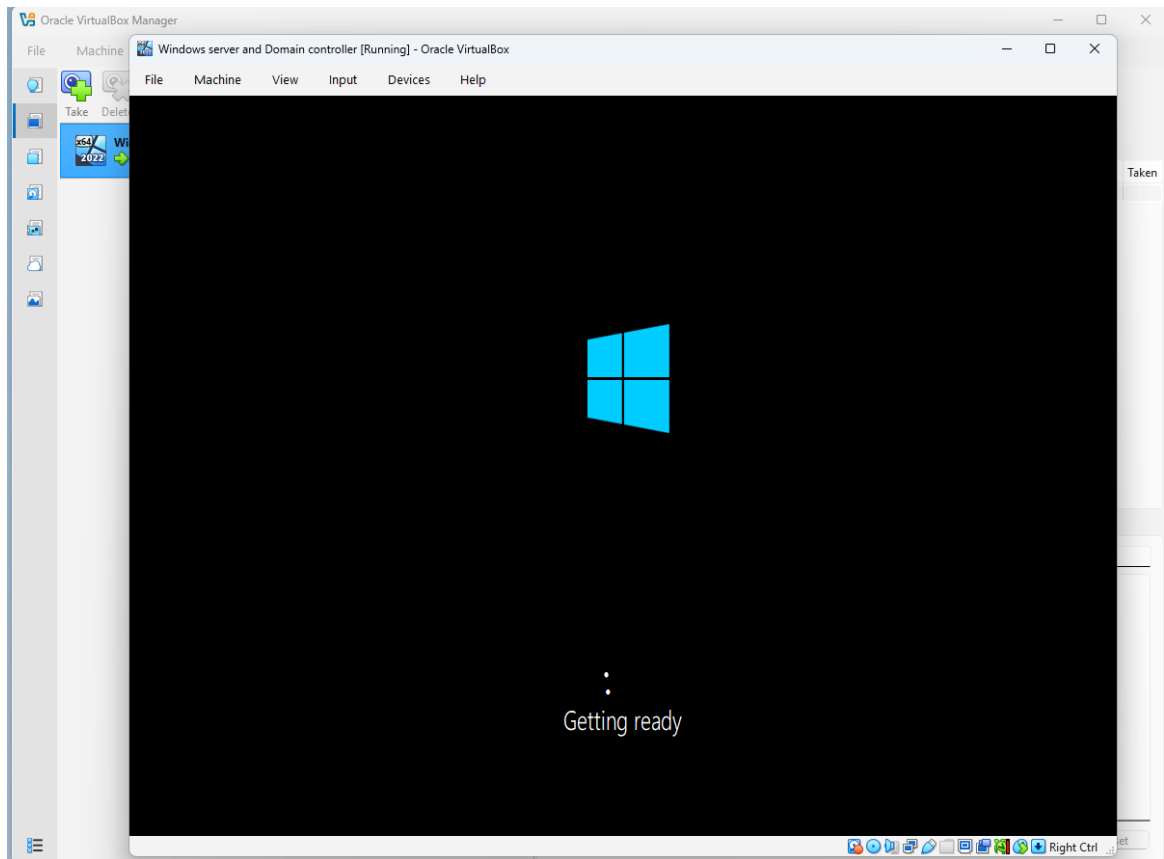


Installing windows server operating system on VirtualBox

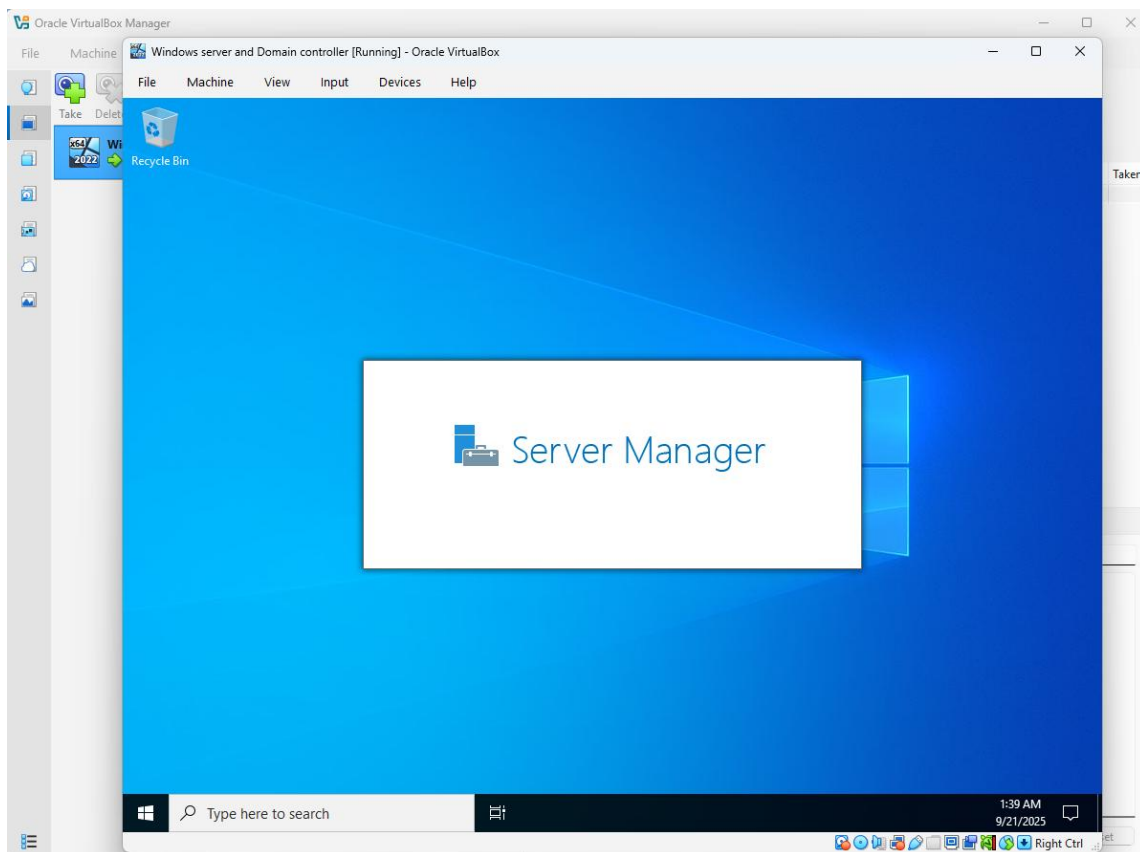
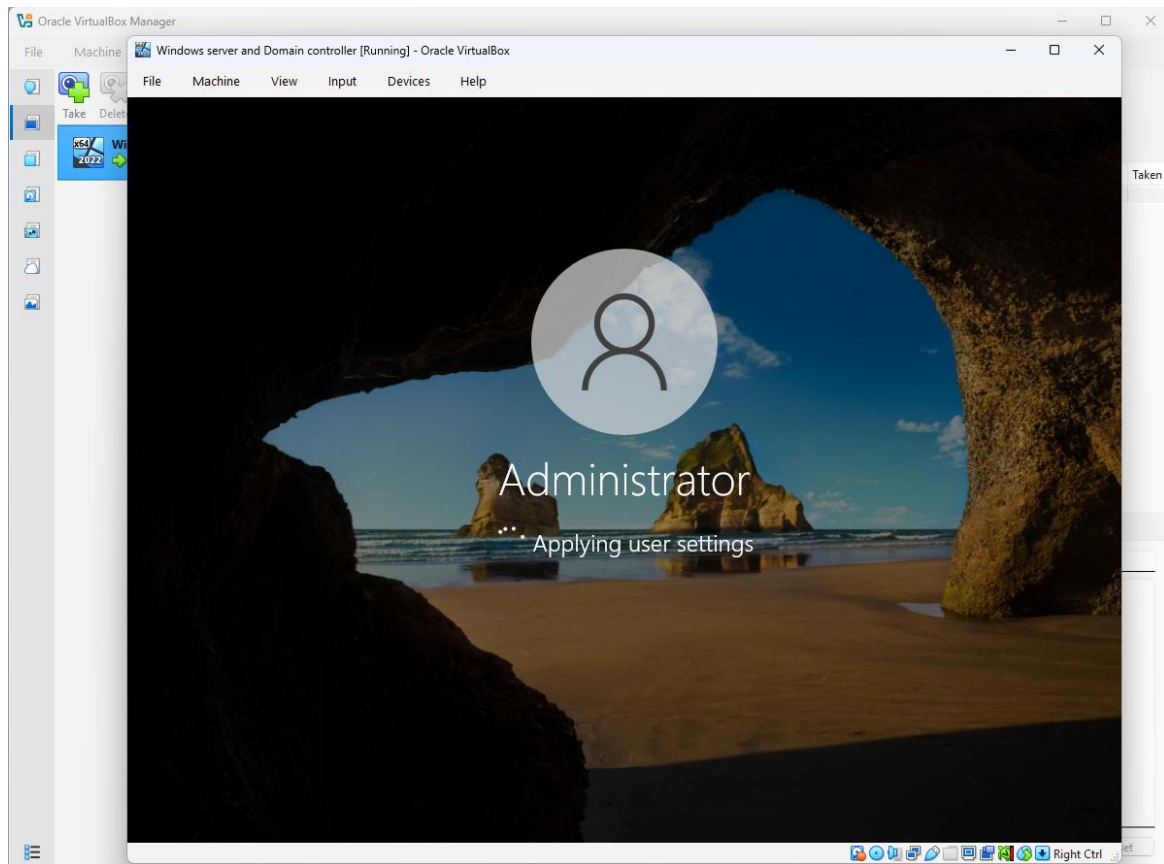




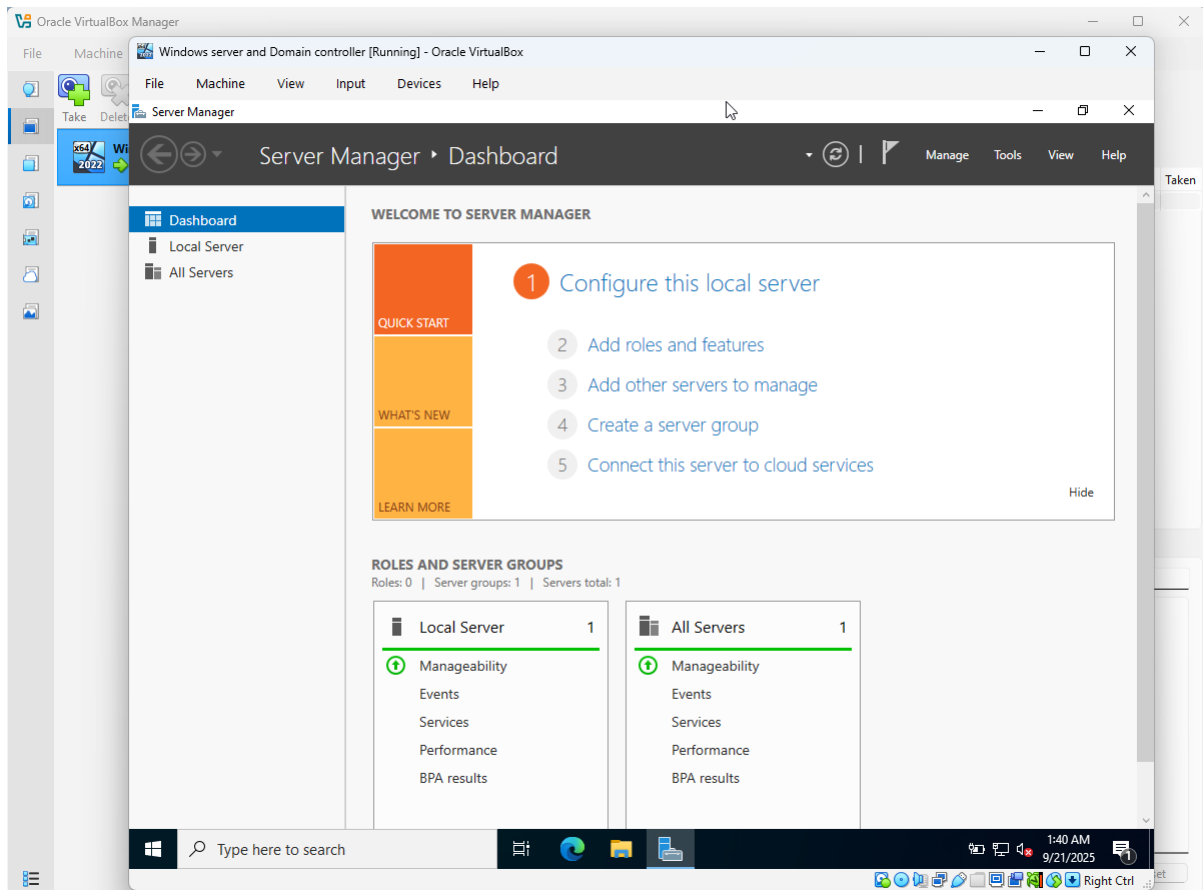




Type the password for the administrator



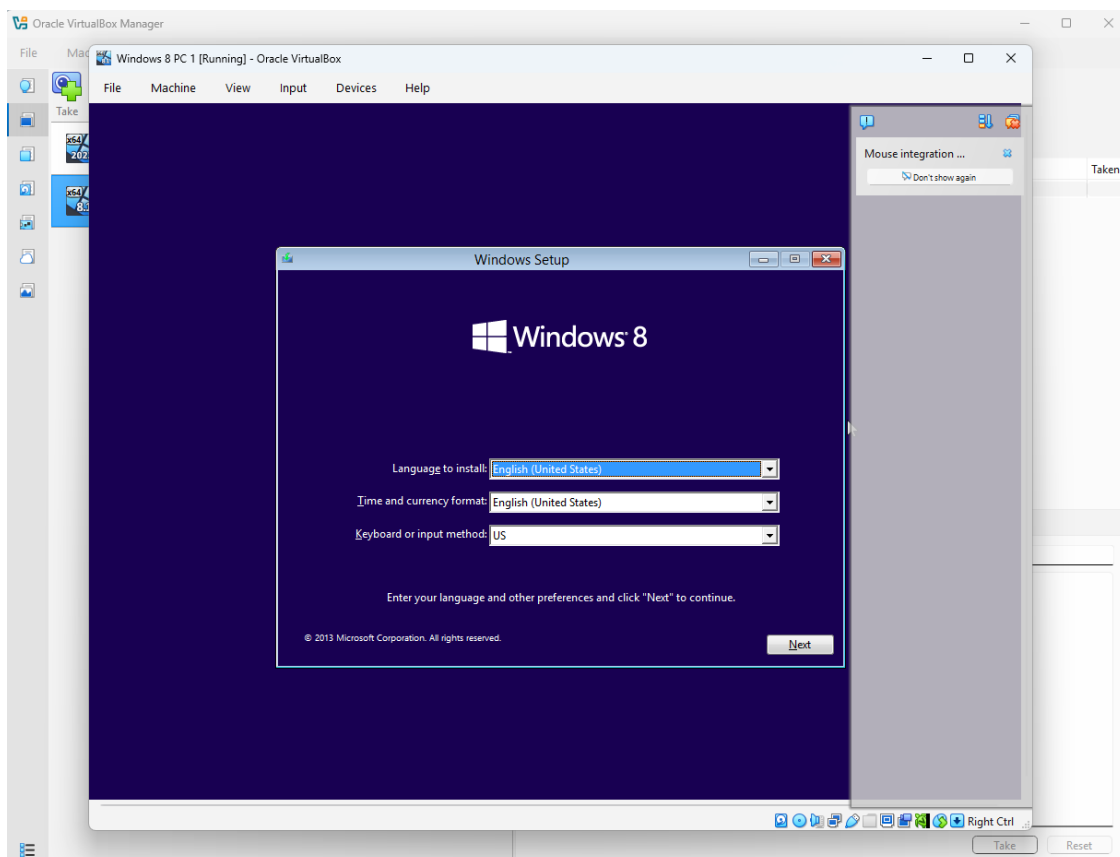
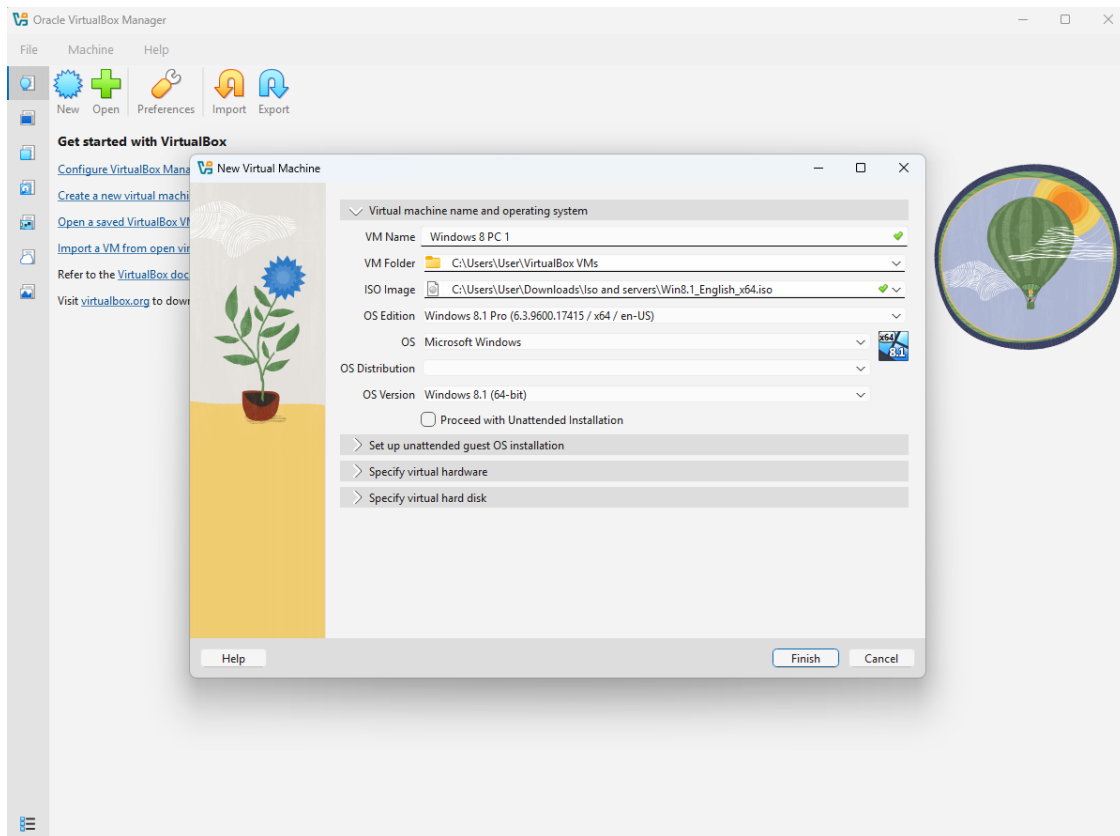
Windows server operating system installed successfully

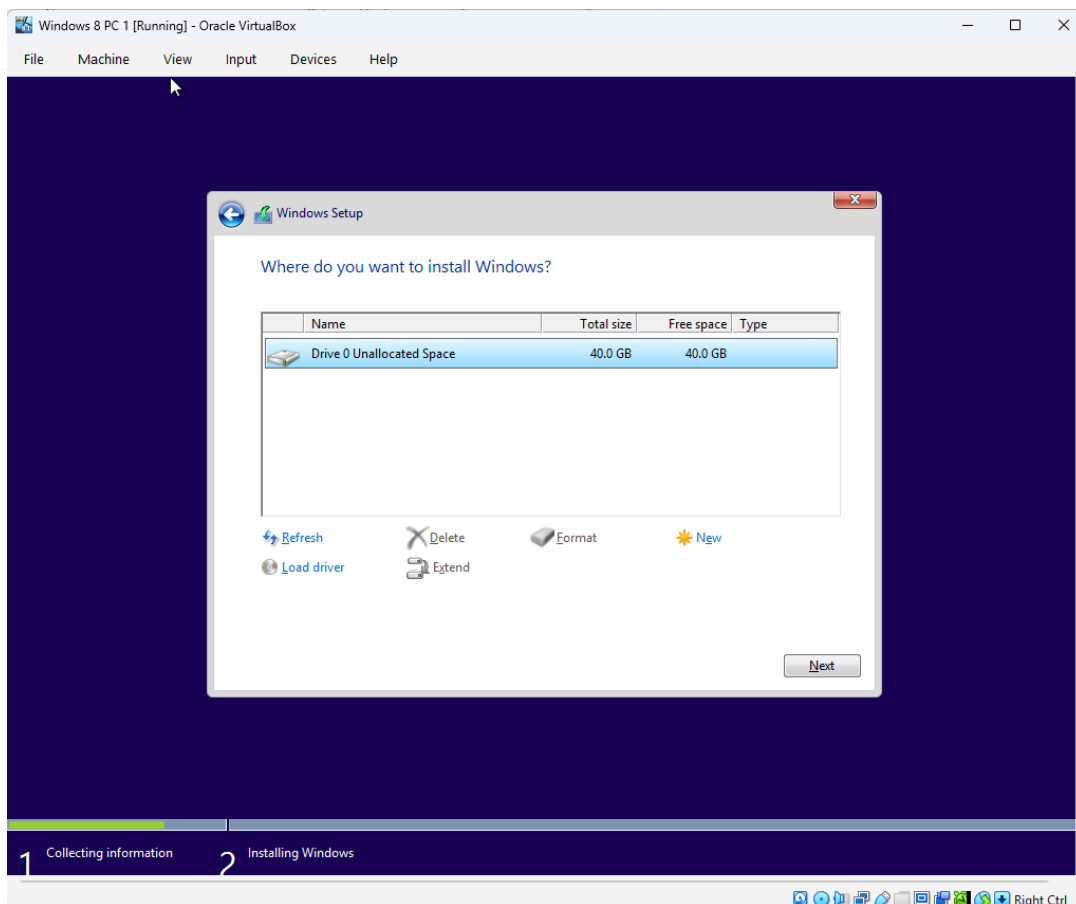
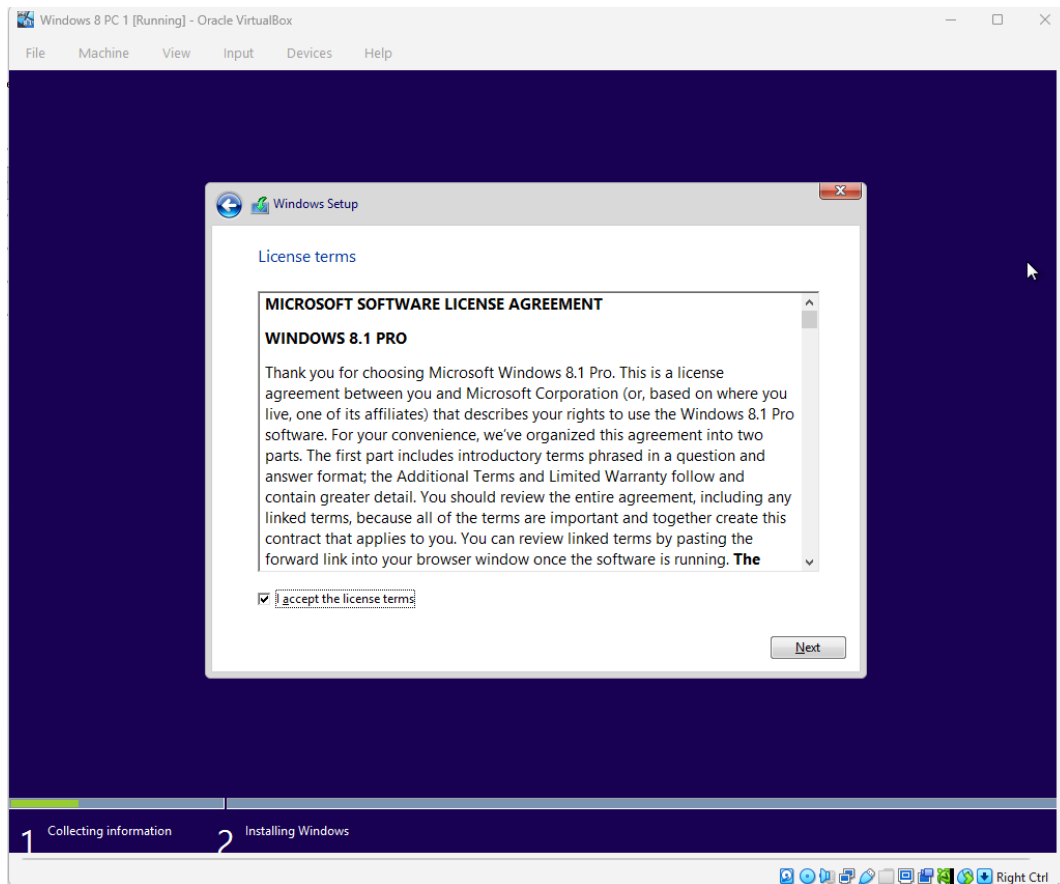


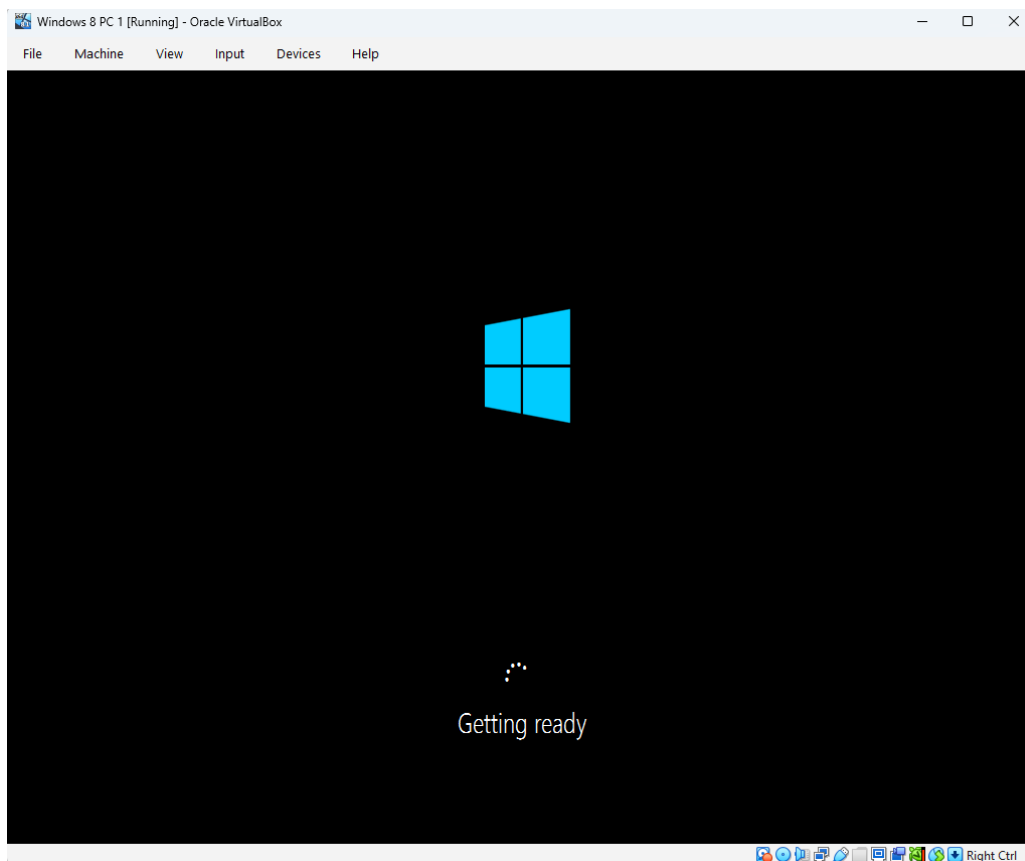
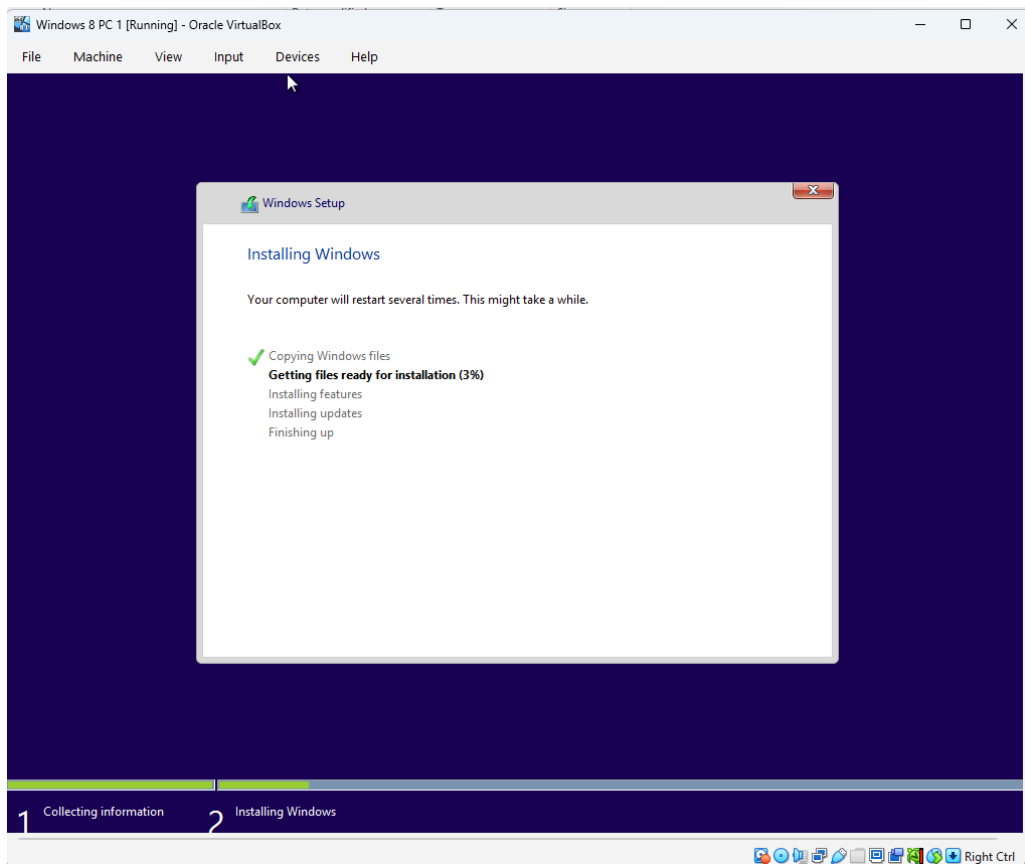
Windows server manager running

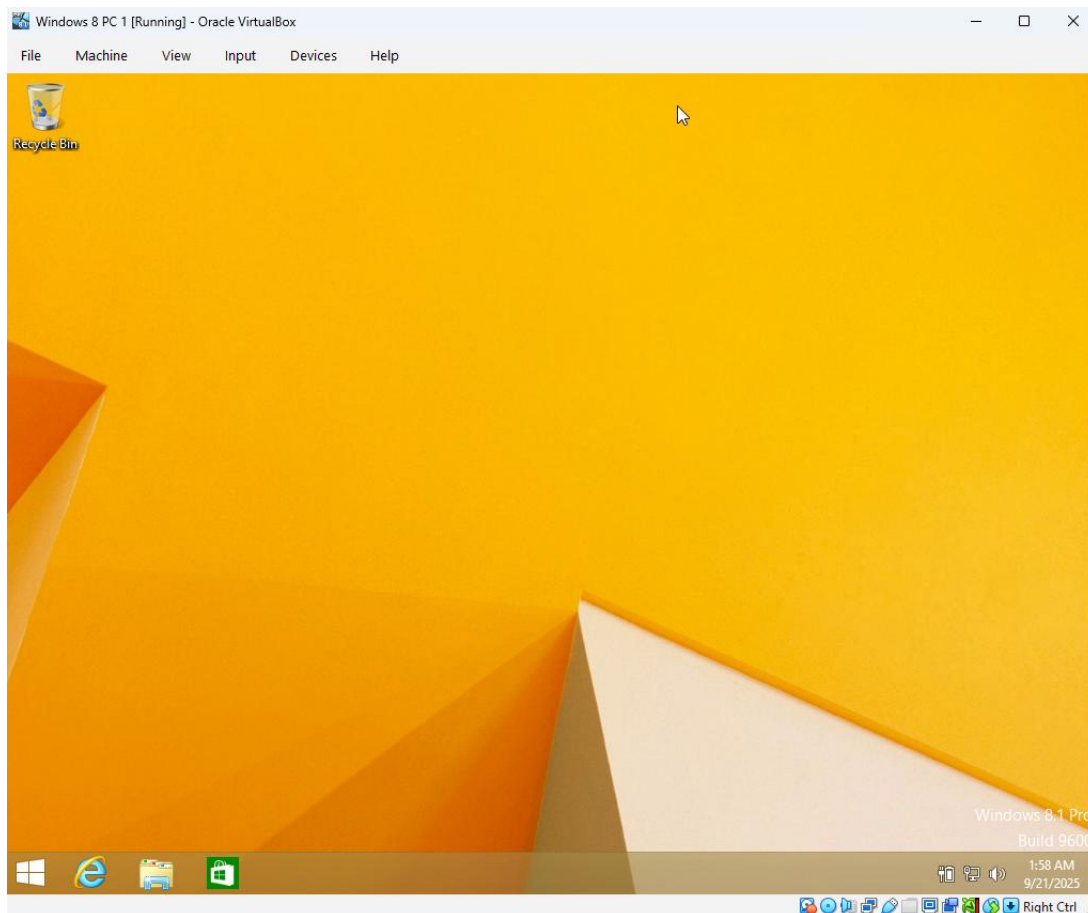
Having a server in your virtual lab gives structure and realism to the entire setup. It acts as the brain of your network: managing users, devices, and security policies through services like Active Directory, DNS, and DHCP. Instead of handling each client separately, you can control everything from one place, simulate real corporate environments, and safely practice cybersecurity tasks like privilege management, network monitoring, and attack defense. In short, the server turns a few isolated virtual machines into a functional, interconnected system much closer to what professionals work with in the real world.

4.0 Installation of Client PCs Running Windows 8 on VirtualBox









The same procedure was repeated for the second PC running on windows 8.

Now, the virtual cybersecurity lab is fully set up. A functional mini-network with a Windows Server and two Windows 8 clients communicating inside a safe, isolated environment. Experiments with domain management, user authentication, group policies, and basic security configurations can be implemented. From here, the lab can further be expanded by adding Linux machines, firewalls, or intentionally vulnerable systems for penetration testing and other simulations.