**Foundational Virtual Network Lab**

**Complete Step-by-Step Implementation Guide**

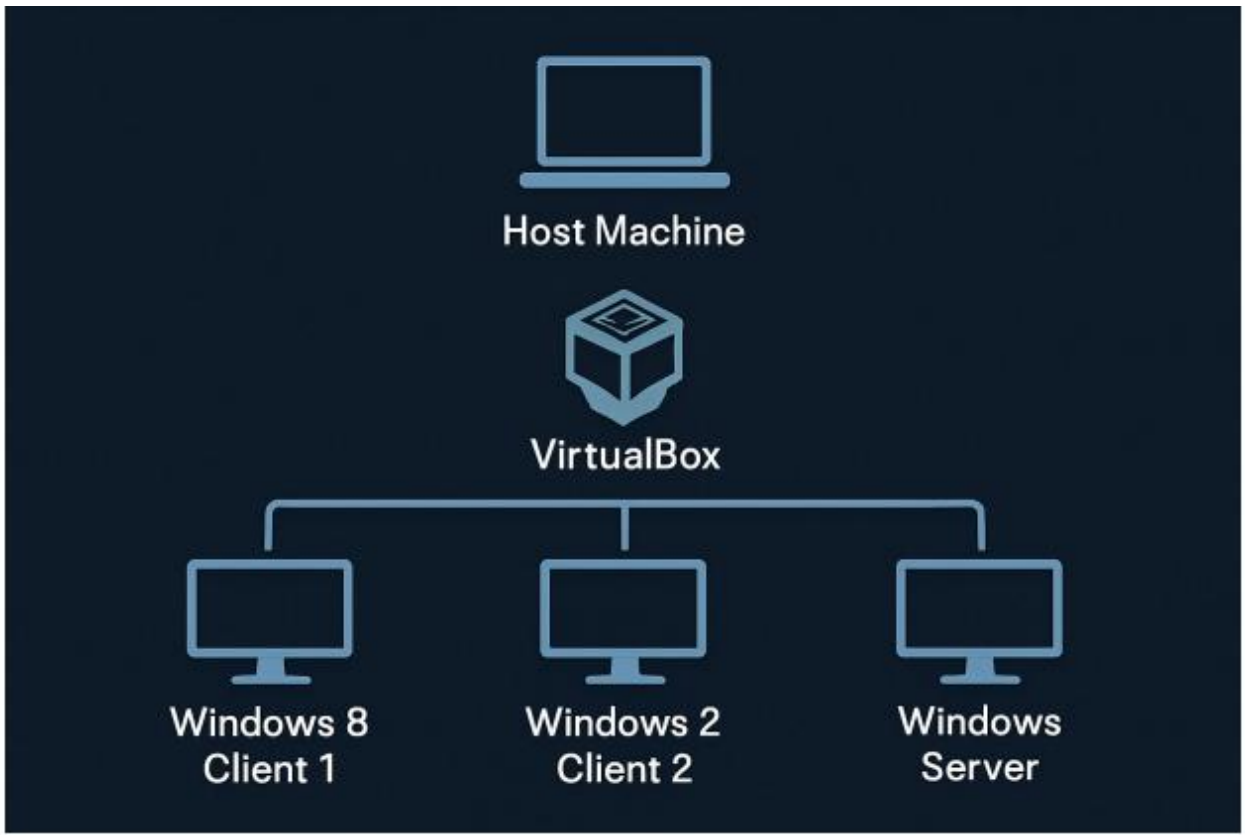
## 1. Lab Overview

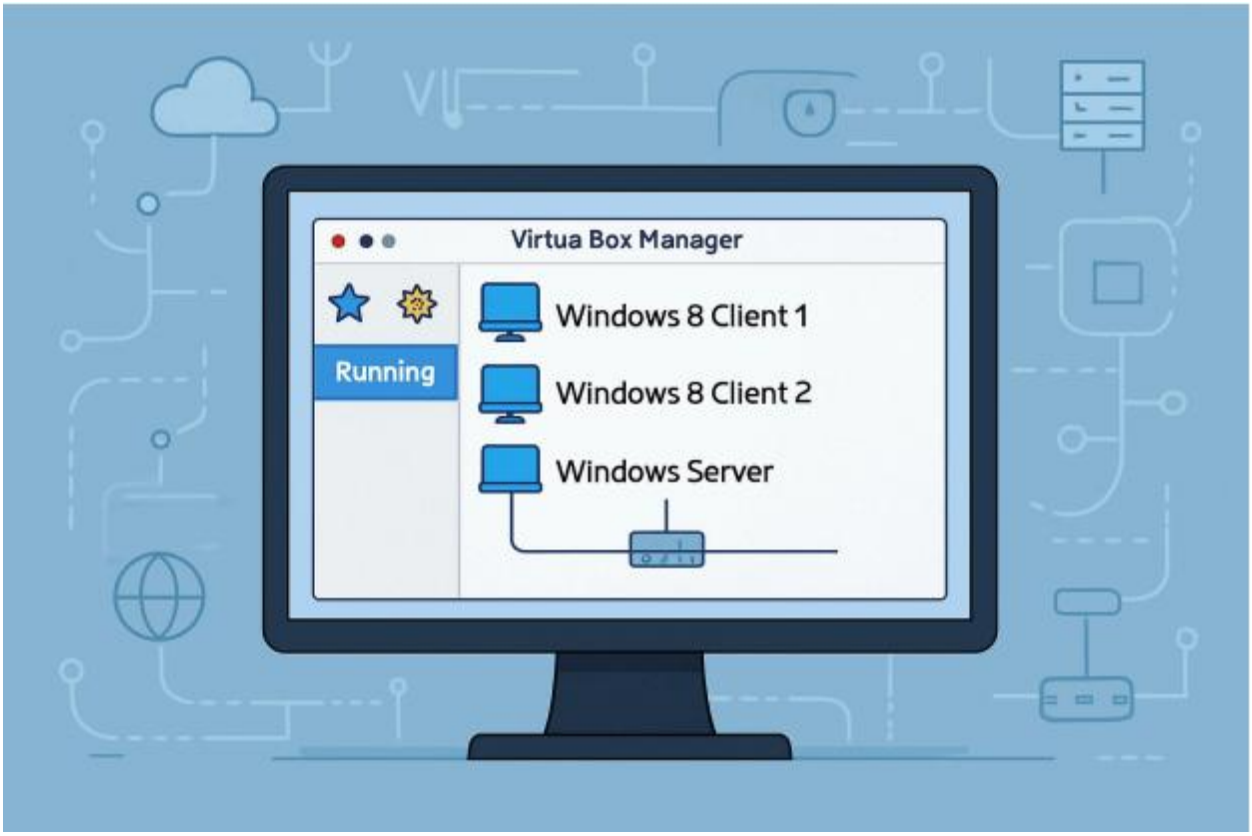
This lab establishes a foundational virtual network environment designed for hands-on cybersecurity training. The objective is to create a safe, isolated environment where system administration, monitoring, and security concepts can be practiced without affecting production systems.

The environment consists of:

- **Host Machine**
- **Oracle VirtualBox (Hypervisor)**
- **1 Windows Server 2022 VM**
- **2 Windows 8 Client VMs**

This setup simulates a basic enterprise office network where clients communicate with a centralized server.






**Phase 1: Installing Oracle VirtualBox**

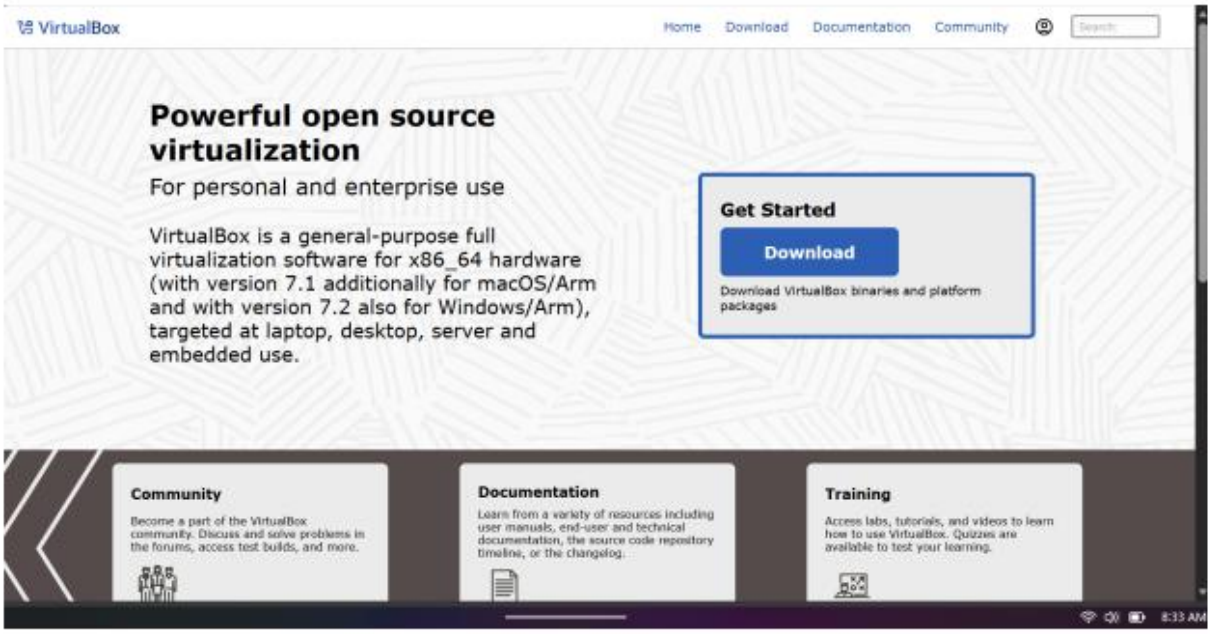
**Step 1: Download VirtualBox**

1. Navigate to the official Oracle VirtualBox website.
2. Click on **Downloads**.
3. Scroll to the **VirtualBox Platform Packages** section.
4. Select the installer that matches your host operating system.
    - In this case: **Windows Hosts**
5. Download the .exe file.

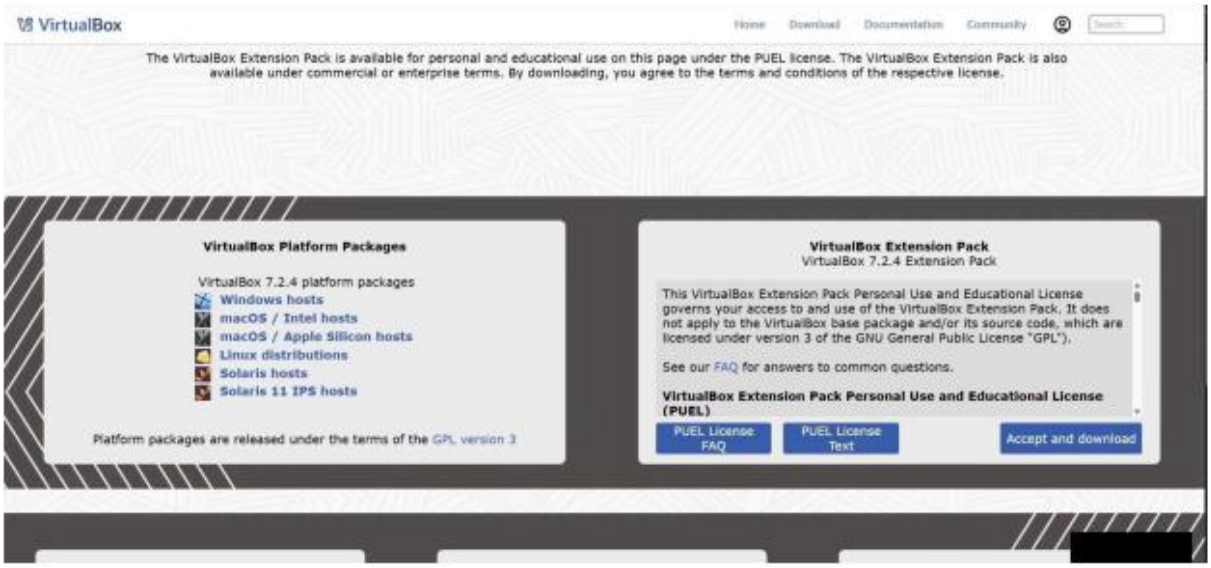
**Step 2: Install VirtualBox**

1. Locate the downloaded .exe file.
2. Double-click to launch the installer.
3. The **Oracle VM VirtualBox Setup Wizard** opens.
4. Click **Next**.
5. Accept the License Agreement.
6. Click **Next**.
7. Leave the installation directory as default (recommended).
8. Click **Next**.
9. Review any network interface warnings.
    - Approve network driver installation.
10. Click **Install**.
11. Allow Windows to install required dependencies.
12. When installation completes, click **Finish**.
13. Launch VirtualBox to confirm successful installation.

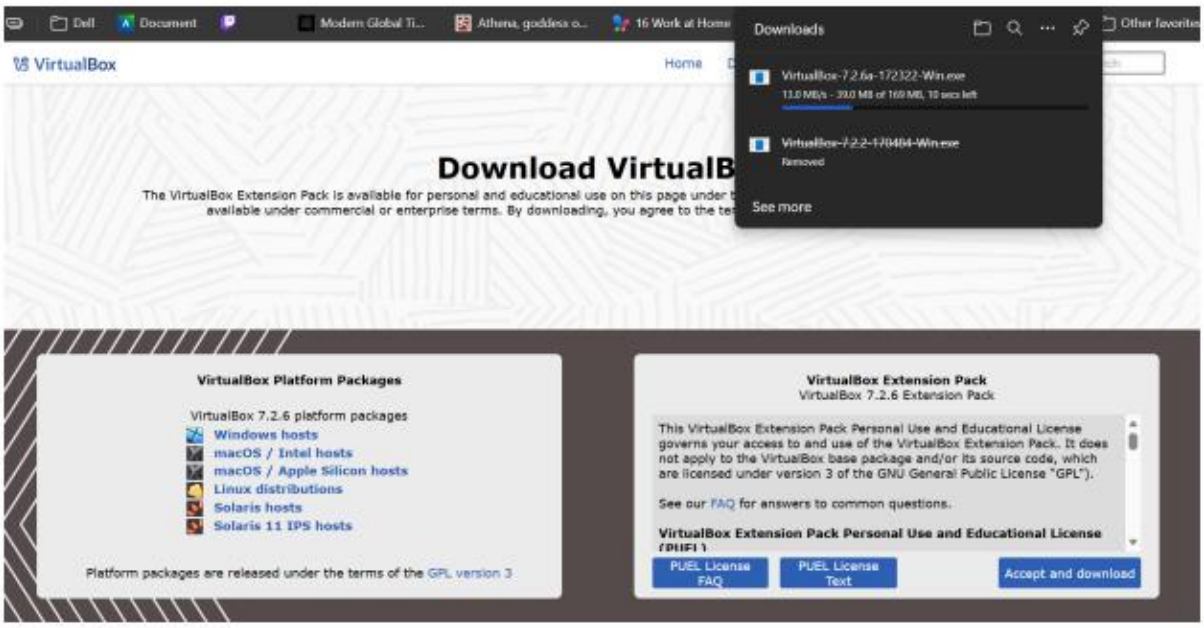
VirtualBox Manager should now display an empty VM environment ready for configuration.




And scroll down the page to select the installer that matches my primary computer.

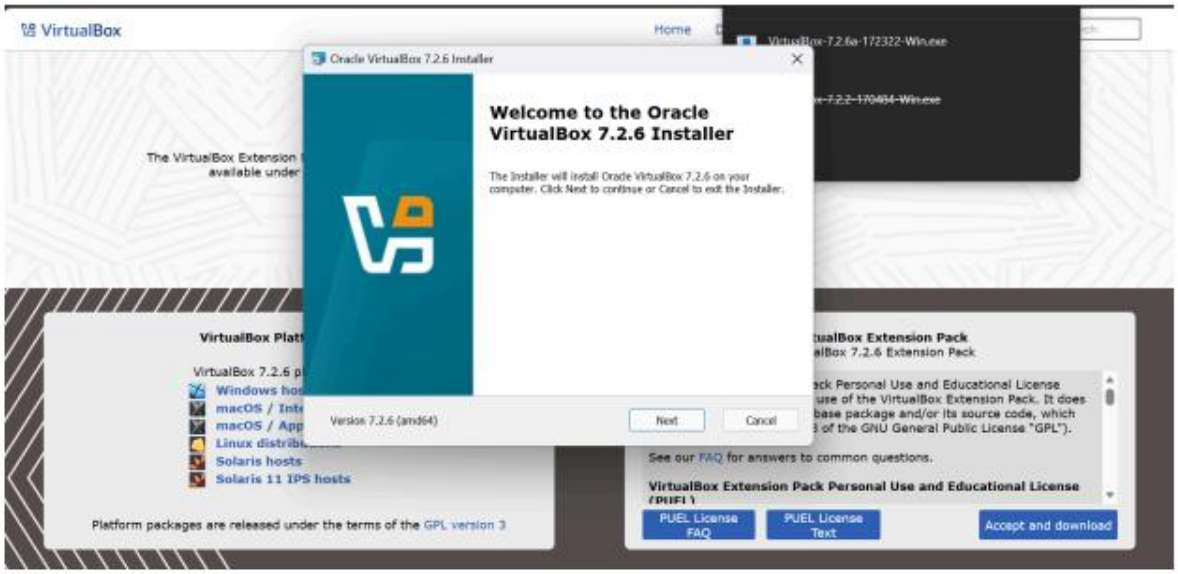



I selected the **Windows hosts** option, which initiated the download of the VirtualBox executable (.exe) file. This package serves as the core component for building my virtual lab environment.

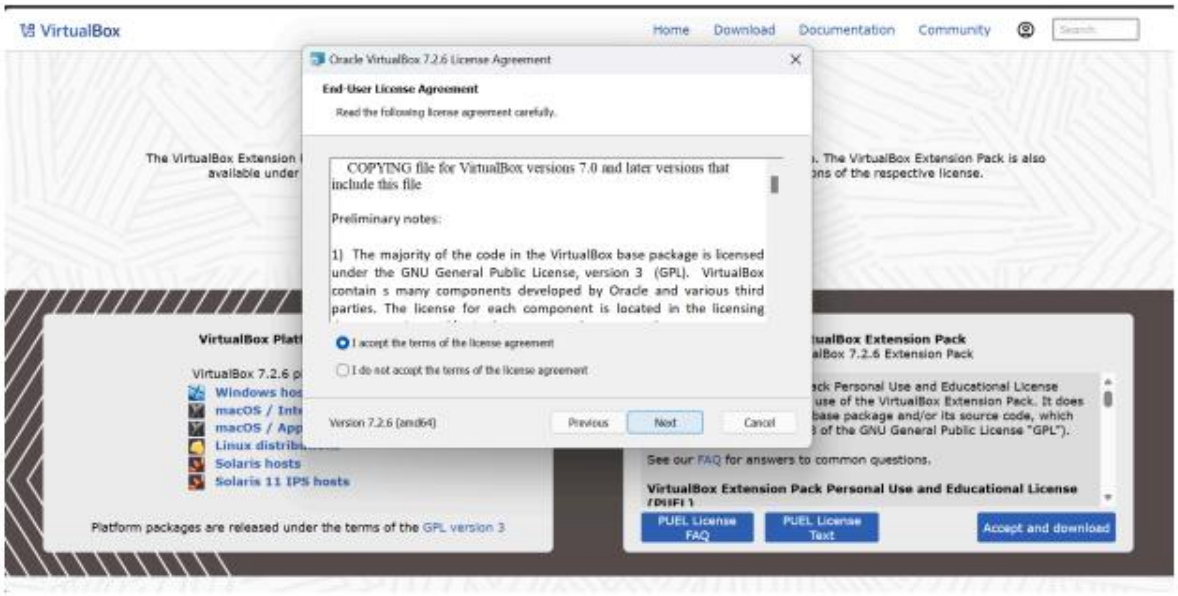



Once the download is complete,

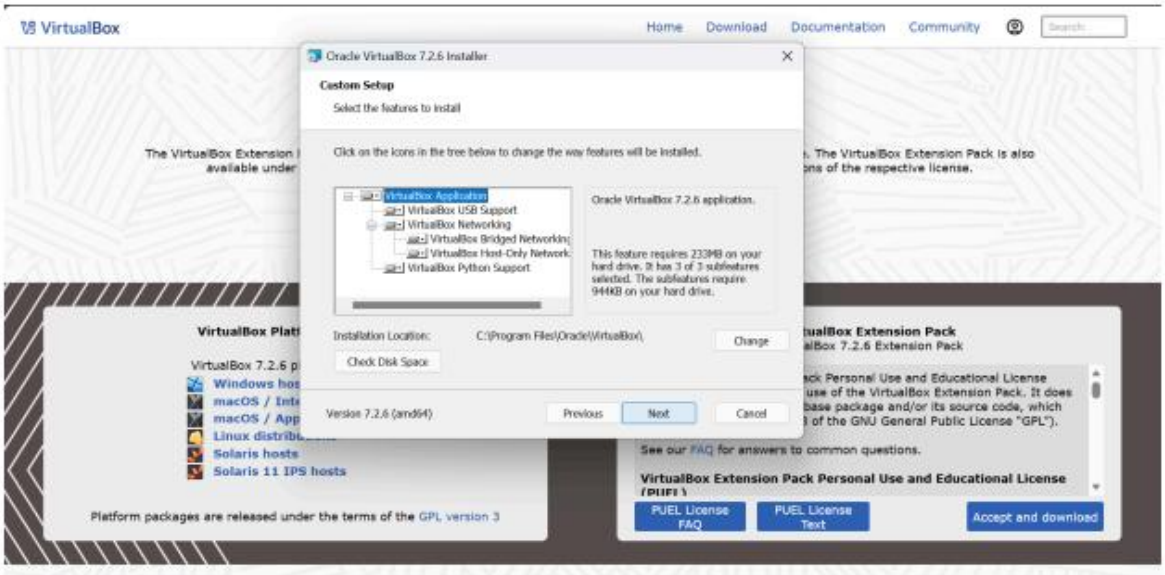

I launched the executable to begin the installation process, which opened the screen titled **"Welcome to the Oracle VM VirtualBox Setup Wizard."**



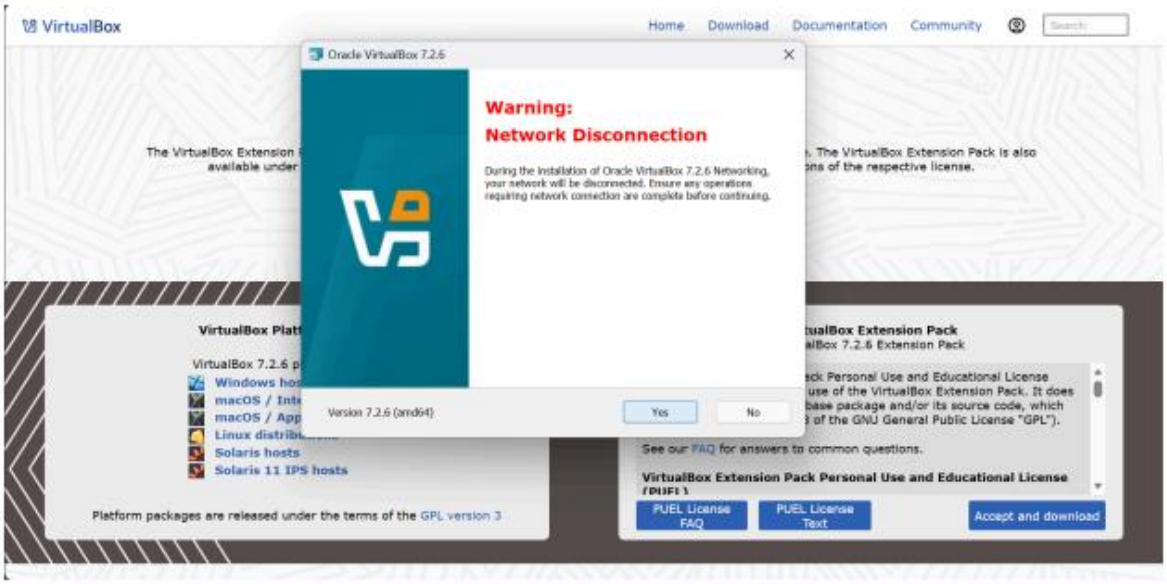

Then, I clicked next and I got the license agreement page.



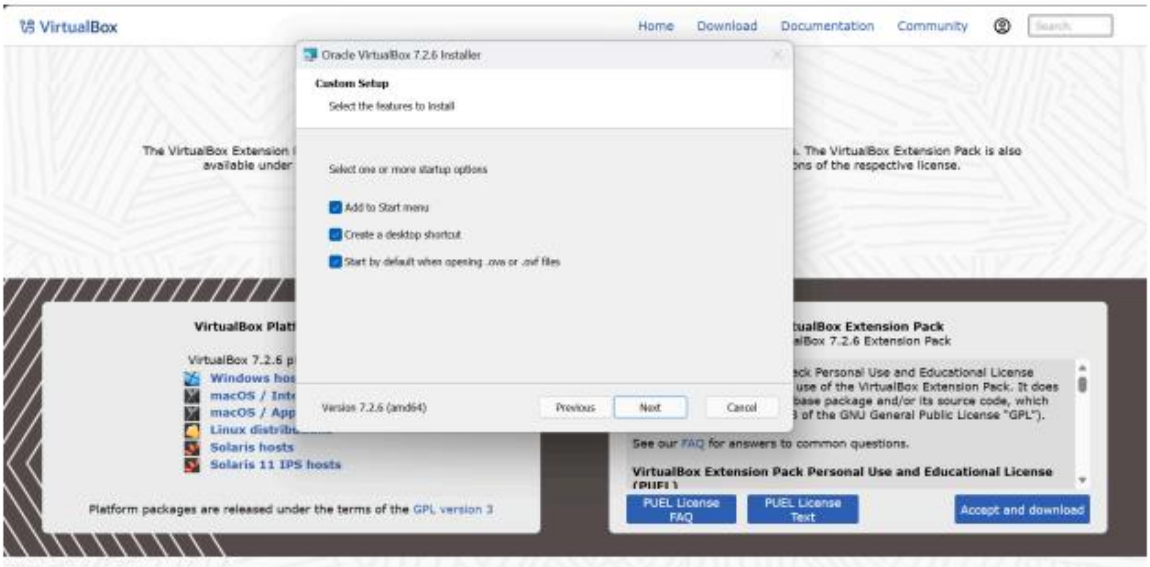

I accepted the prompt and proceeded by clicking **Next**. On the following screen, I was given the option to change the installation directory, but I kept the default location and continued by selecting **Next** again.



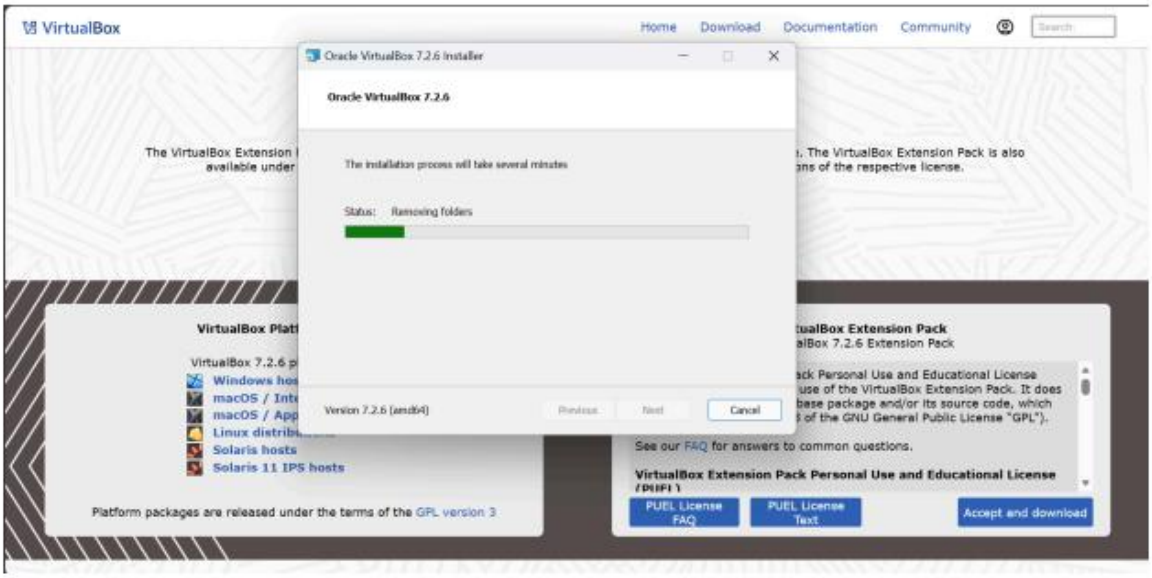

I got the warning page and after going through it, I clicked yes.




The next screen appeared, and after reviewing the information, I selected **Yes** to allow the installation of the required dependencies.

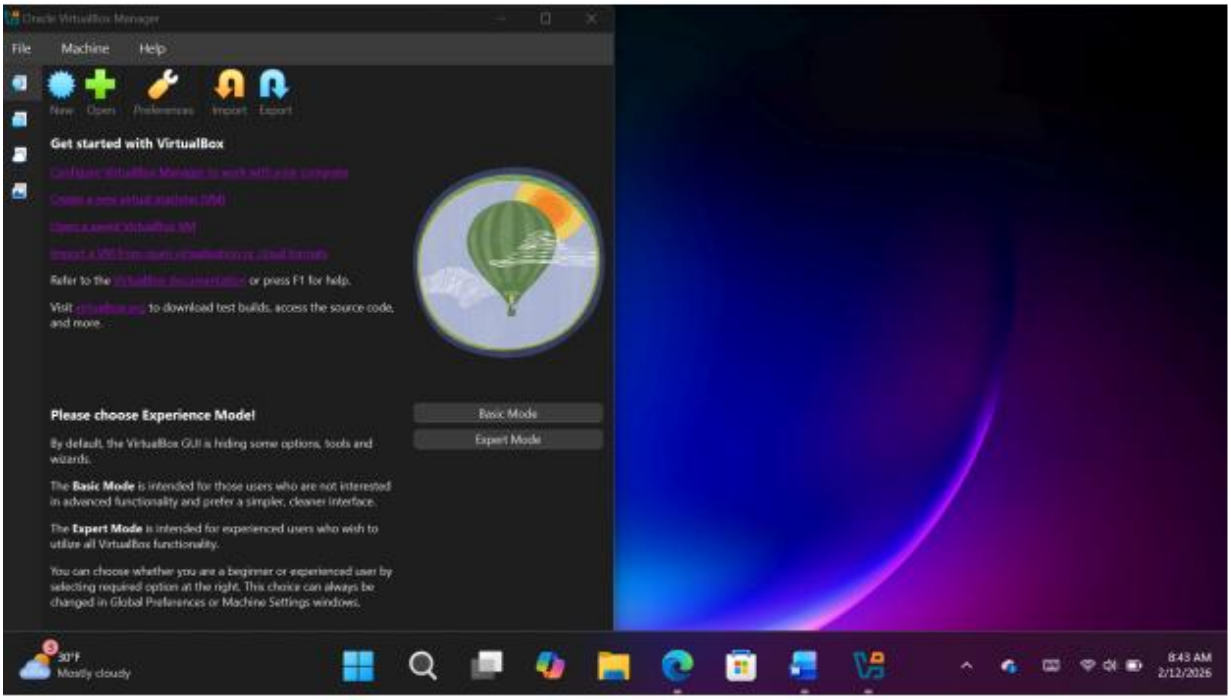



I was then taken to the final installation screen, where I clicked **Install** to begin the setup process.




I clicked next and the installation began

Then the installation of the VirtualBox was completed and I clicked finish.



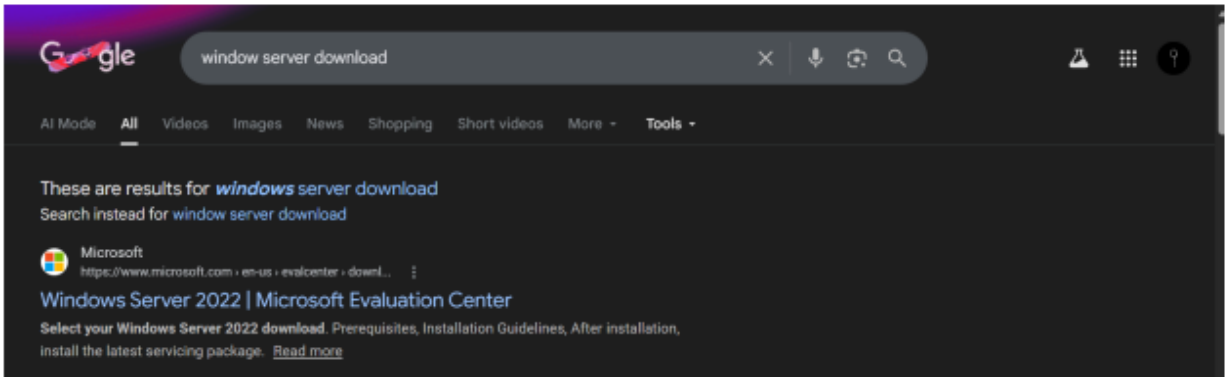

This was the preview after launching the software.

**Phase 2: Downloading and Installing Windows Server 2022**

**Stage 1: Download Windows Server ISO**

1. Open a web browser.
2. Search for **Windows Server 2022 download**.
3. Navigate to the Microsoft Evaluation Center.
4. Select:
    - **ISO download**
    - **64-bit edition**
5. Confirm language selection.
6. Download the ISO file.
7. Wait for the download to complete.

The ISO file will be used as the installation media for the virtual machine.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AI Mode
All
Videos
Images
News
Shopping
Short videos
More
Tools
These are results for windows server download
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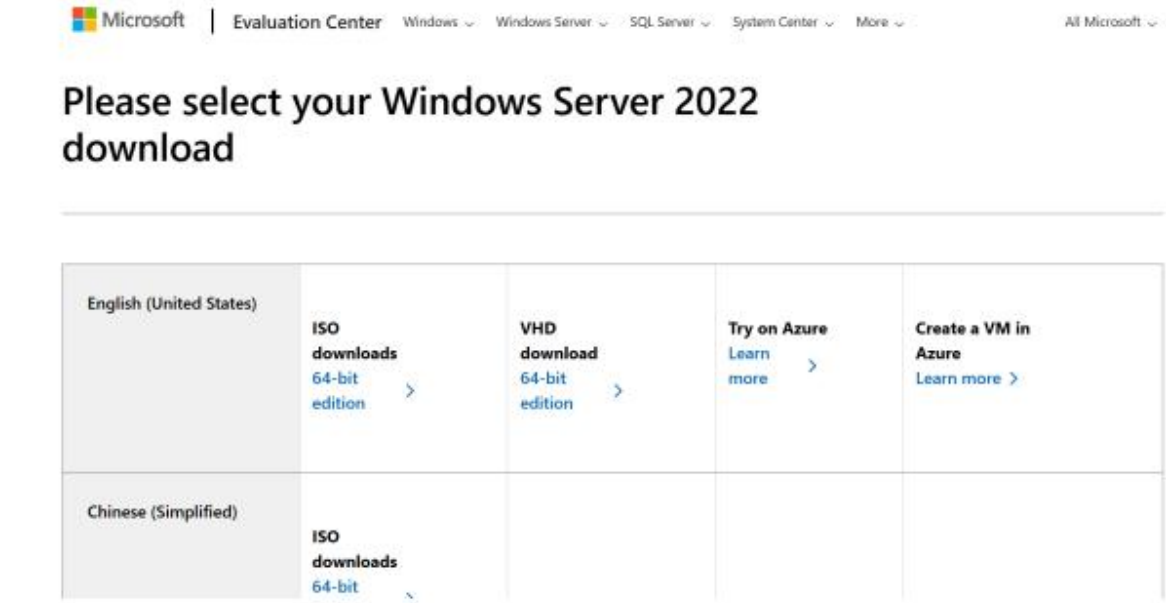
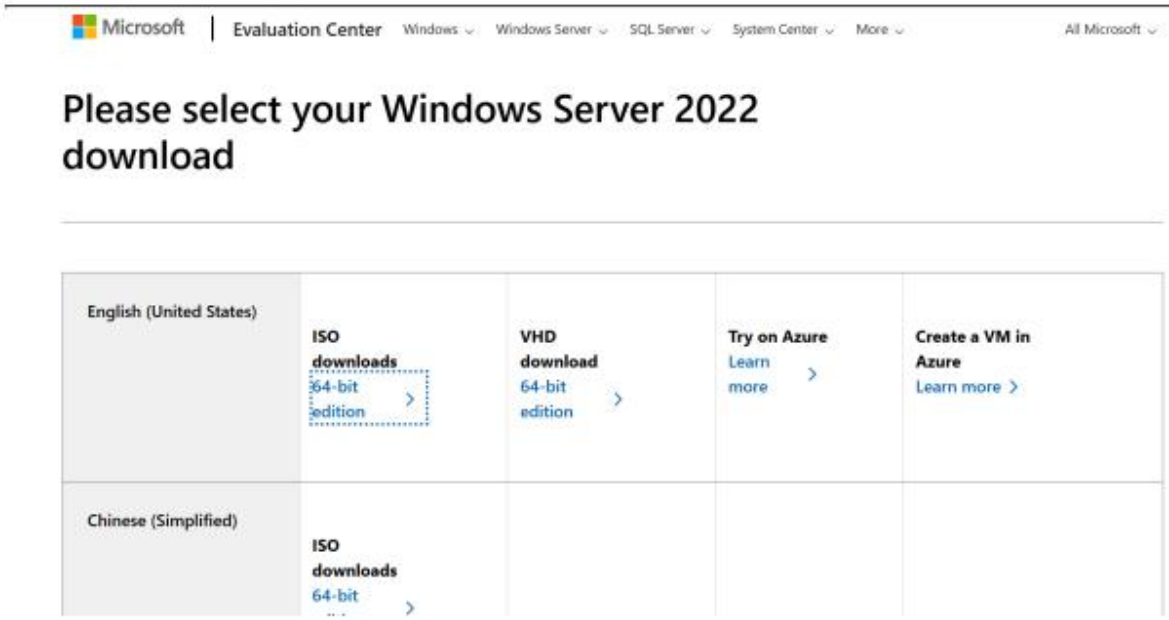
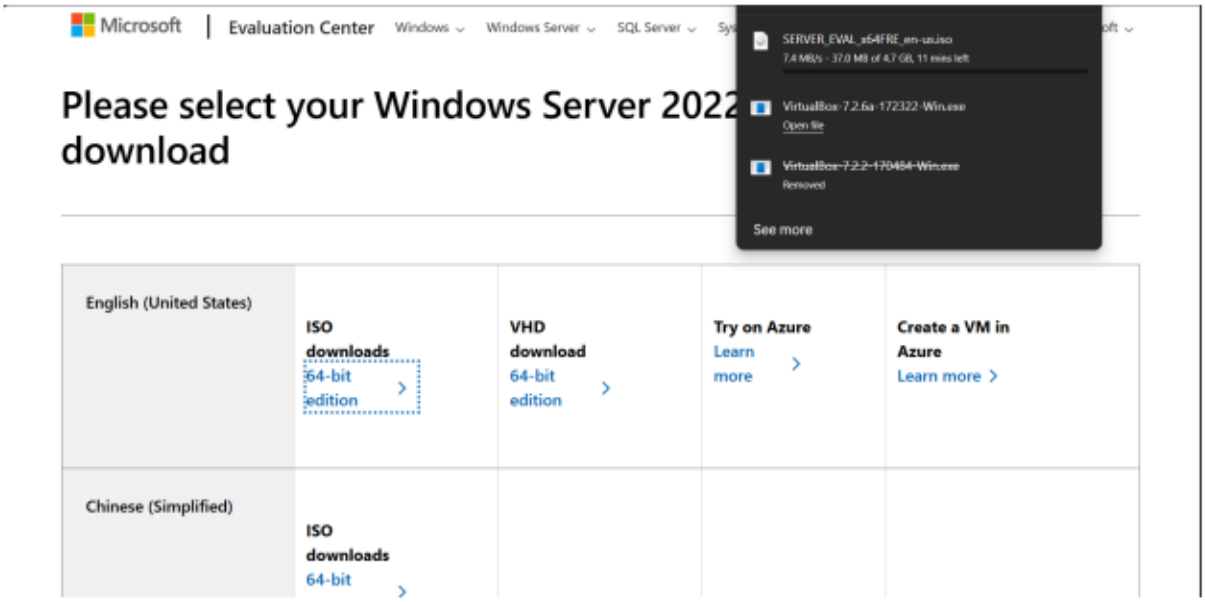
Microsoft
https://www.microsoft.com › en-us › evalcenter › downl...
Windows Server 2022 | Microsoft Evaluation Center
Select your Windows Server 2022 download. Prerequisites, Installation Guidelines, After installation, install the latest servicing package. Read more




I selected the 64-bit edition.



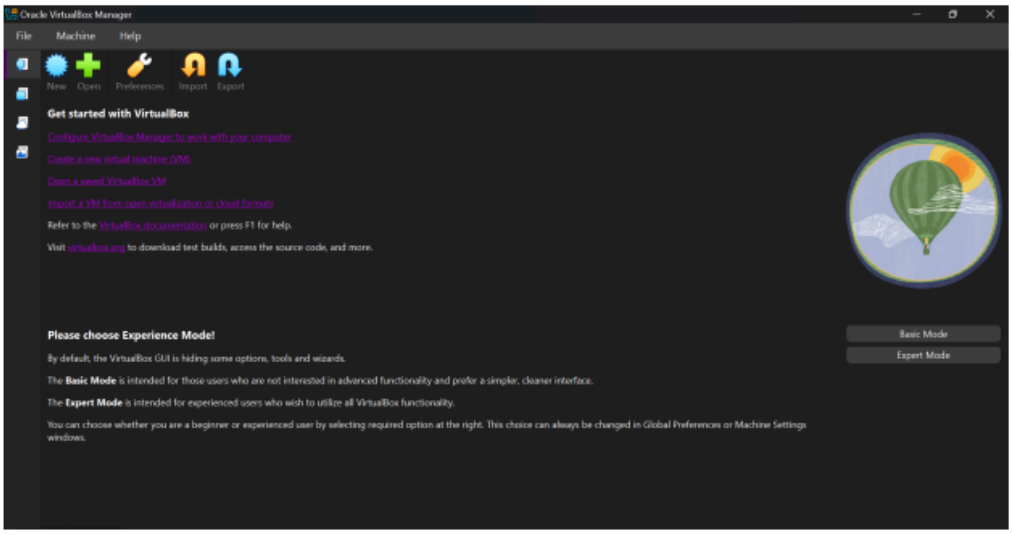

After confirming my selections, the download of the Windows Server 2022 ISO image began and completed successfully.




**Stage 2: Create and Configure Windows Server VM**

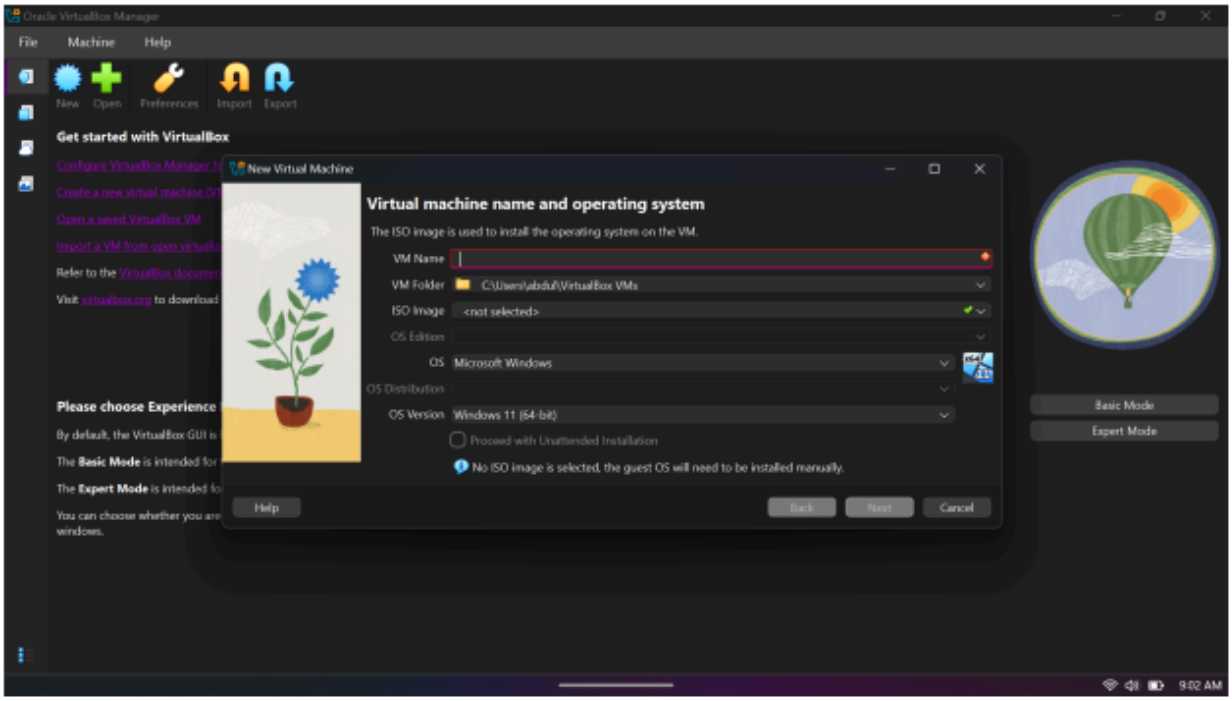
**Step 1: Create New VM**

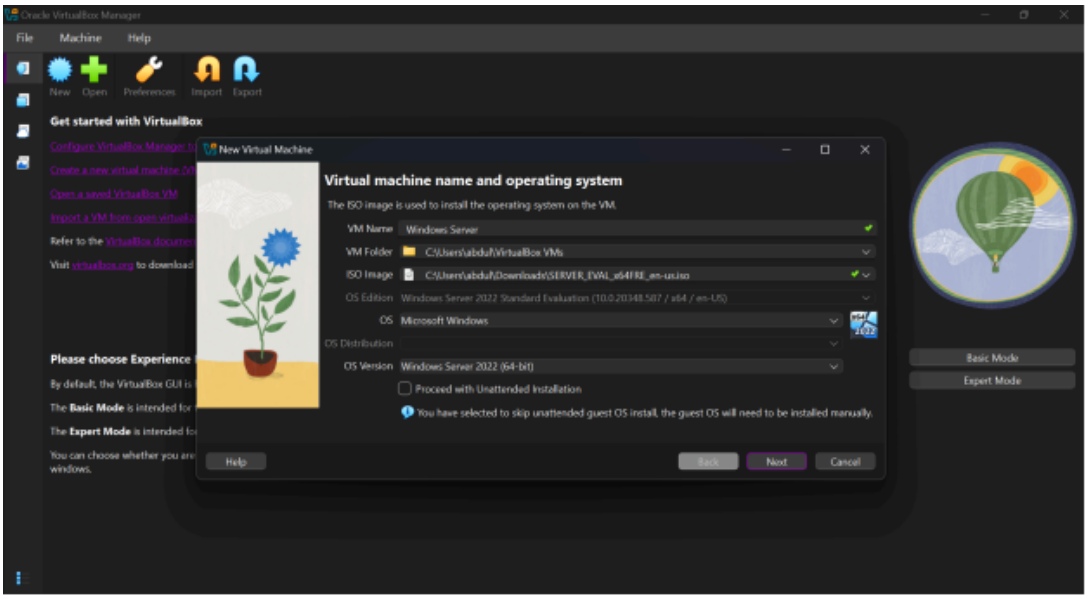
1. Open VirtualBox Manager.
2. Click **New**.
3. Enter VM Name:
    - Windows Server
4. Select:
    - Type: Microsoft Windows
    - Version: Windows Server (64-bit)
5. Click **Next**.



**Step 2: Attach ISO File**

1. Select the downloaded Windows Server ISO file.
2. Browse to the file location (Downloads folder).
3. Attach the ISO.
4. Disable **Unattended Installation** (to manually control setup).



**Step 3: Allocate Hardware Resources**

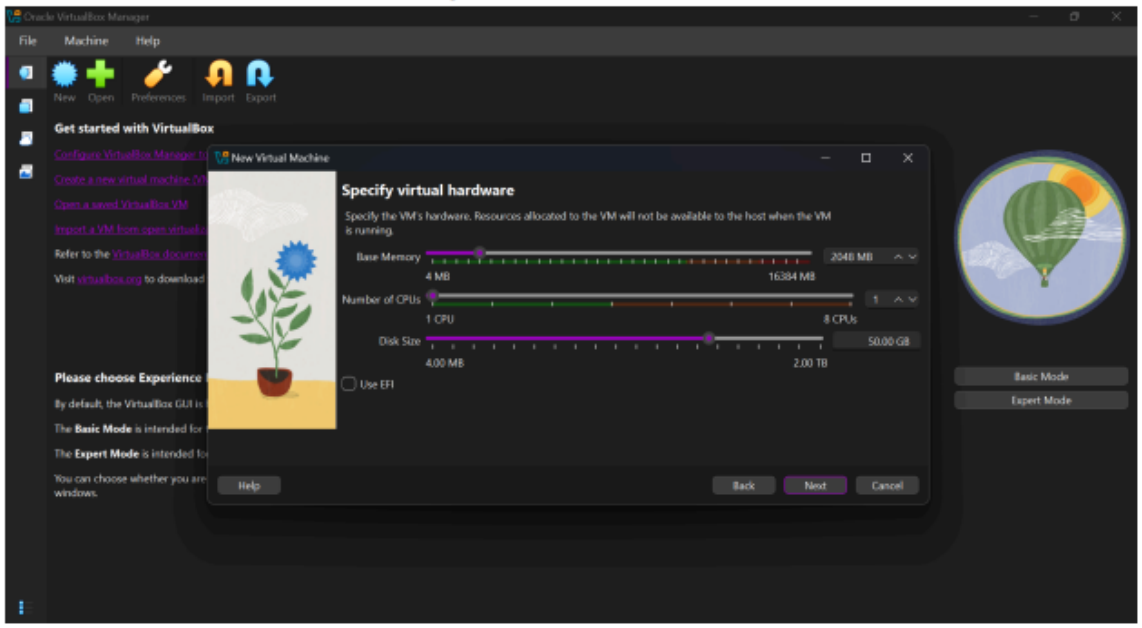
Configure the virtual hardware:

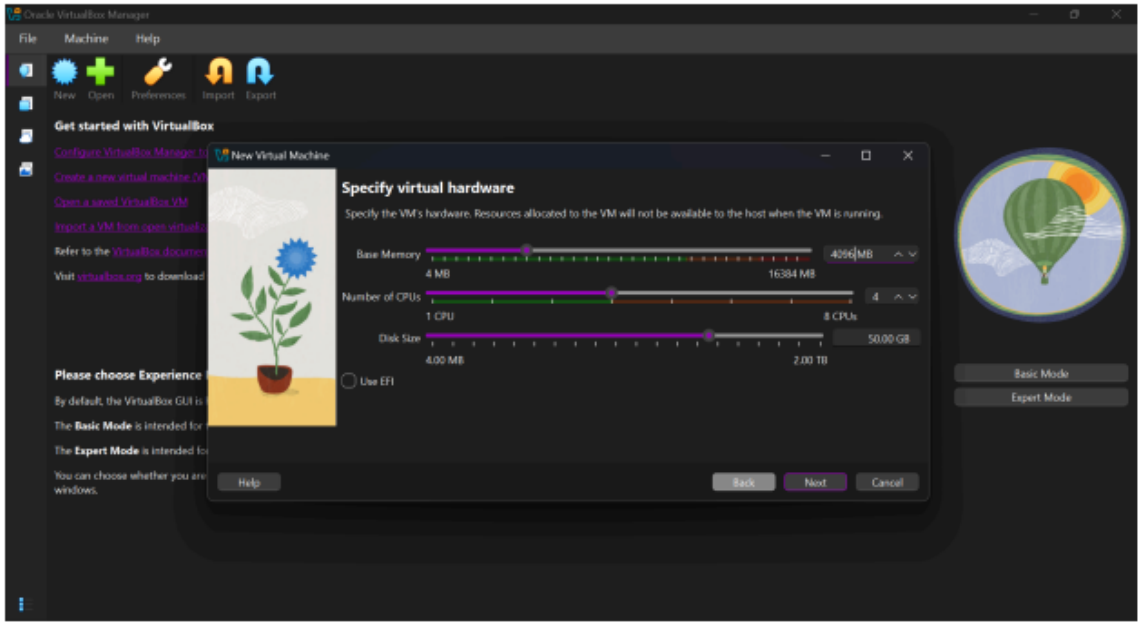
- **Memory (RAM):** 4 GB (4096 MB)
- **Processors (CPU):** 4
- **Virtual Hard Disk:** 50 GB

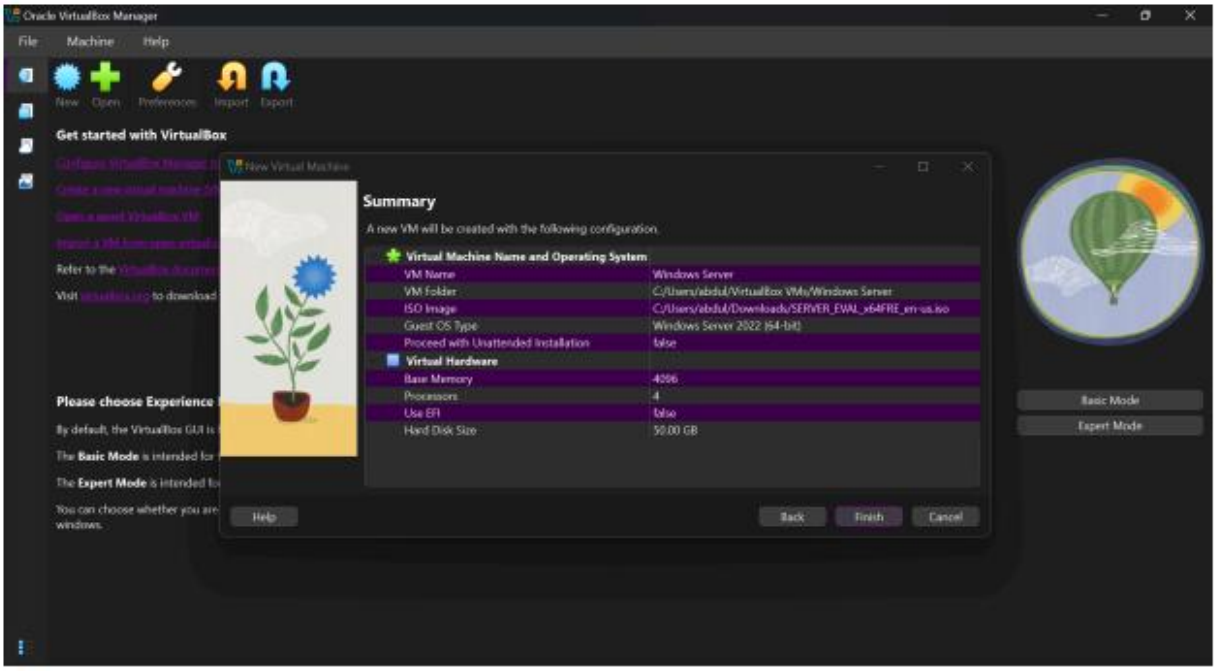
Note: 4096 GB would be incorrect — the correct allocation is 4096 MB (4 GB).

Click **Next**, then **Finish**.

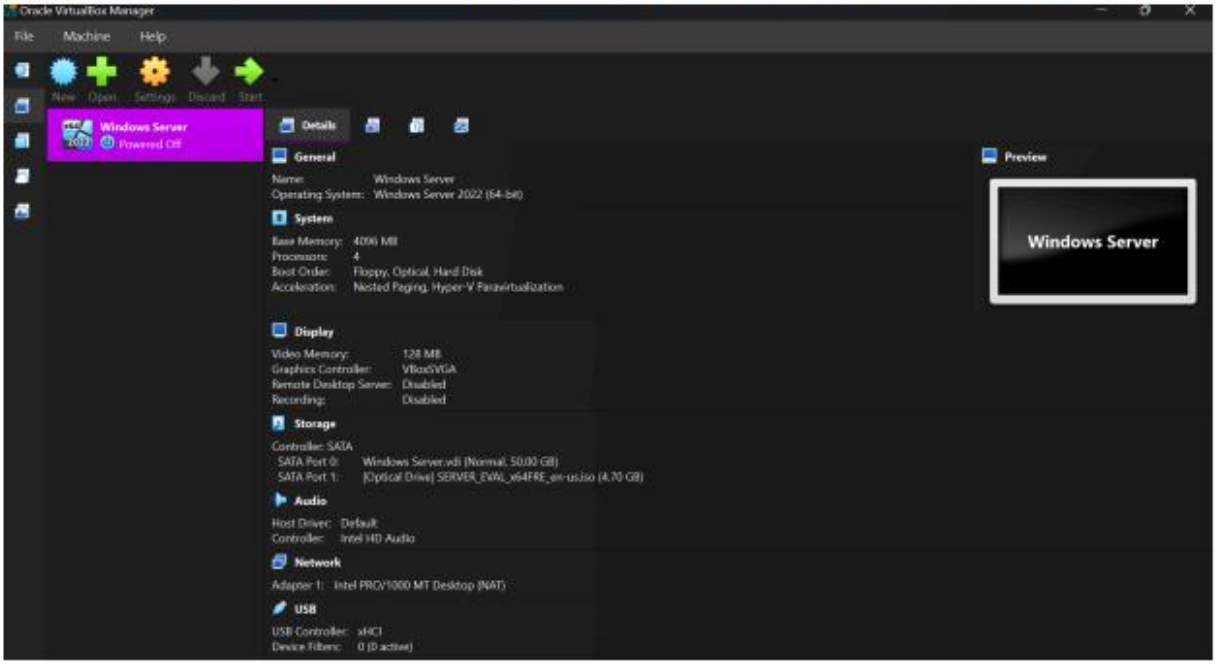
The Windows Server VM is now defined and ready to be powered on for OS installation.






After Completion: By clicking "Finish," the definition of the Windows Server VM was complete, and the machine was ready to be powered on to begin the formal operating system installation.

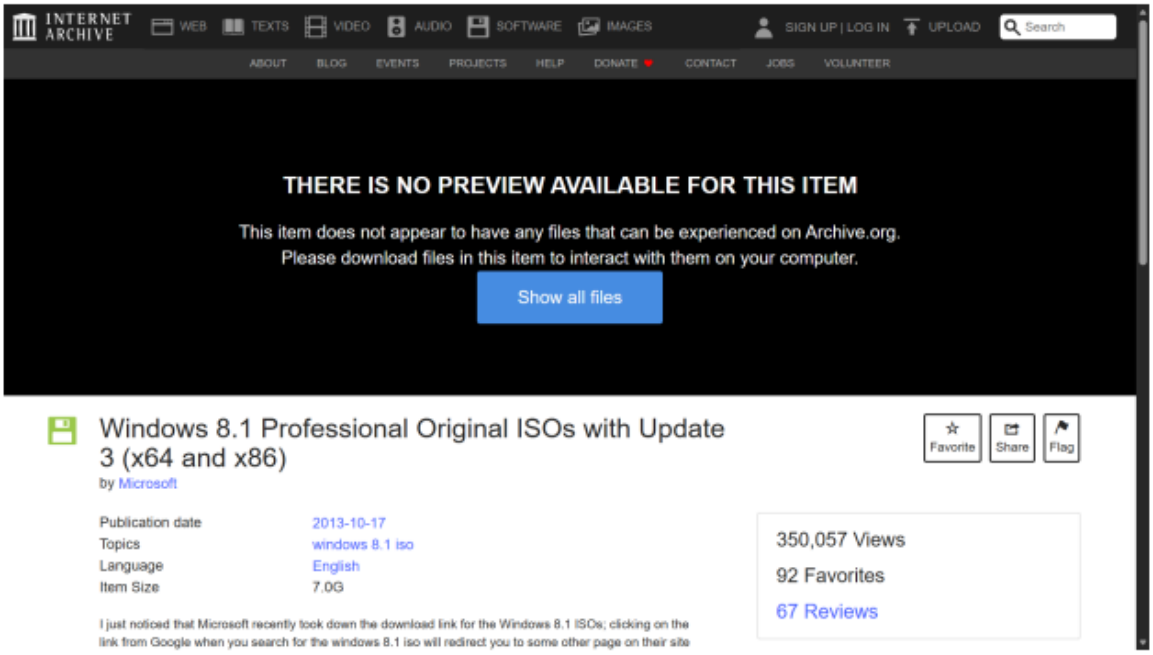



### Phase 3: Downloading and Installing Windows 8 Client Machines

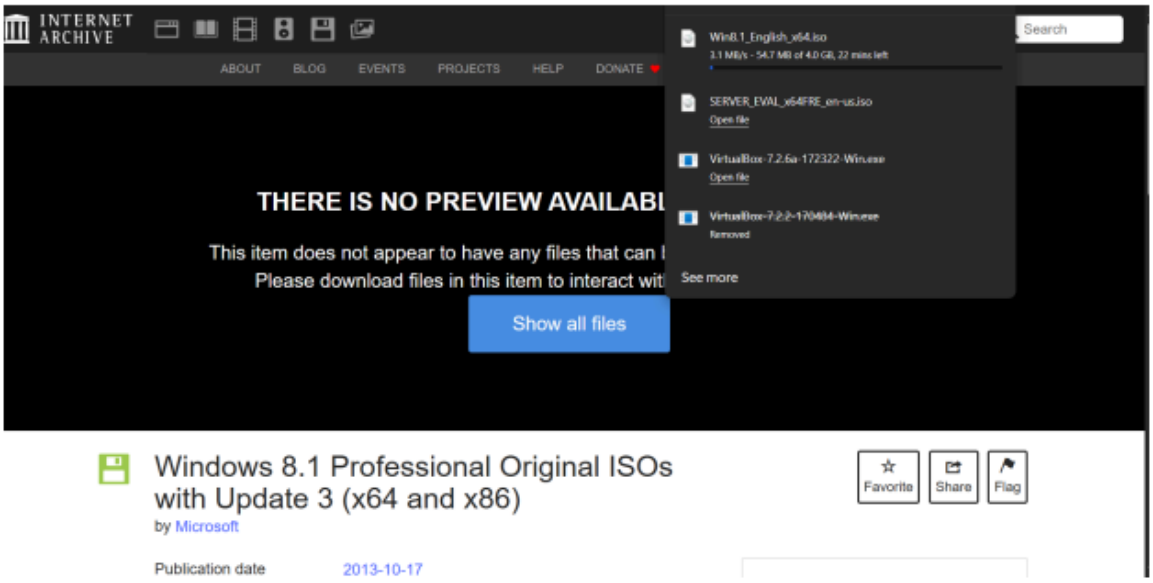
This phase provisions the client systems that will later connect to the server.

**Stage 1: Download Windows 8 ISO**

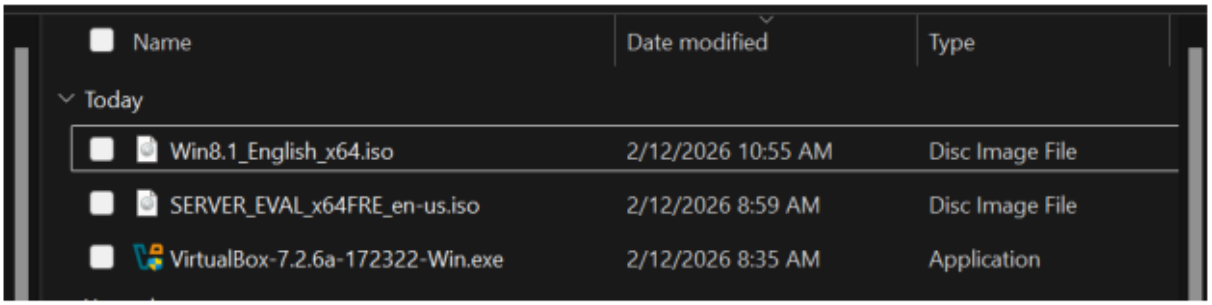
1. Search for a Windows 8 ISO file.
2. Ensure you select:
    - 64-bit version.
3. Download the ISO file.
4. Confirm the file has successfully downloaded.




Upon locating the download source, I ensured the selection was the 64-bit edition. Then I clicked download



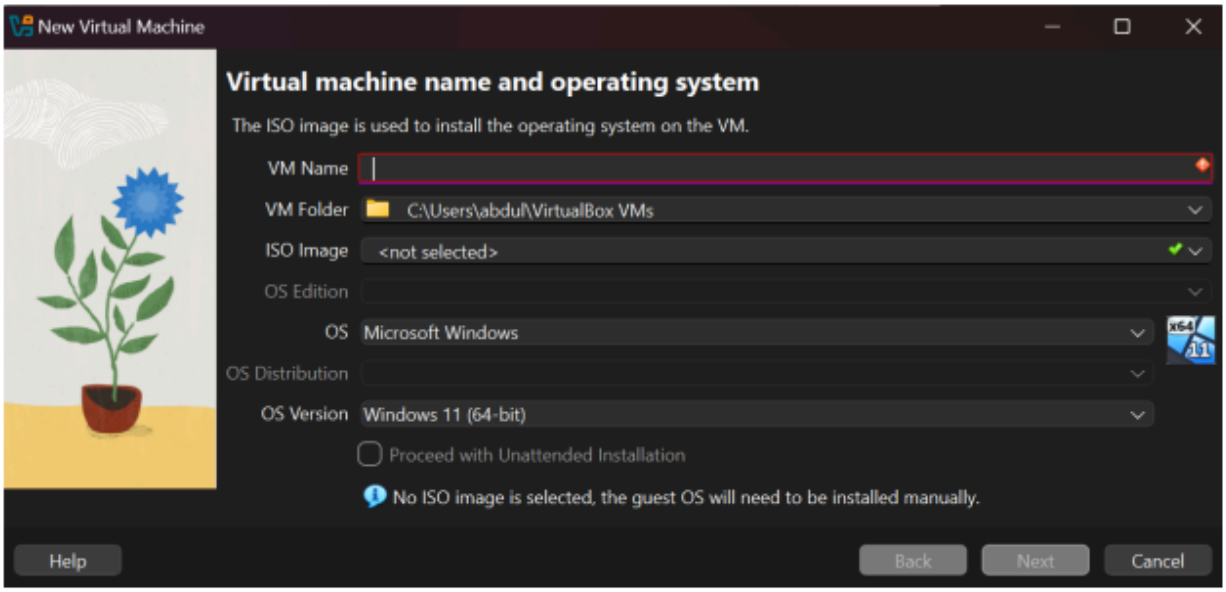
The process concluded with the successful download of the Windows 8 image file (the ISO file), making the software ready for use in VirtualBox.




**Stage 2: Create Windows 8 Client VM (Repeat for Two Clients)**

**Step 1: Create New VM**

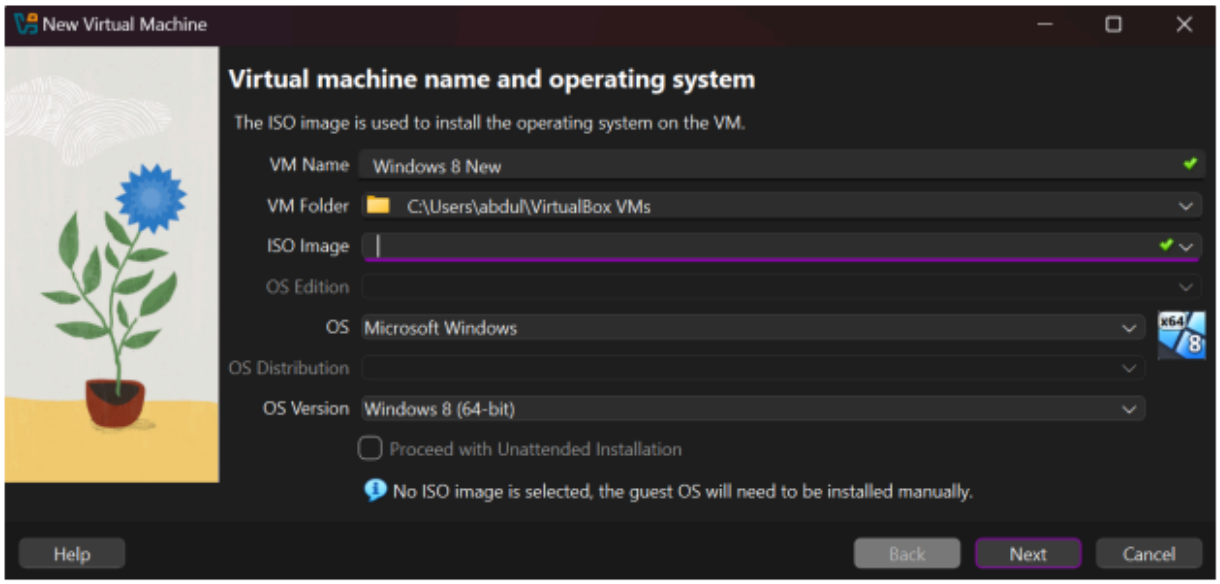
1. Open VirtualBox.
2. Click **New**.
3. Enter VM Name:
    - Windows 8 Client 1
4. Type: Microsoft Windows
5. Version: Windows 8 (64-bit)
6. Click **Next**.



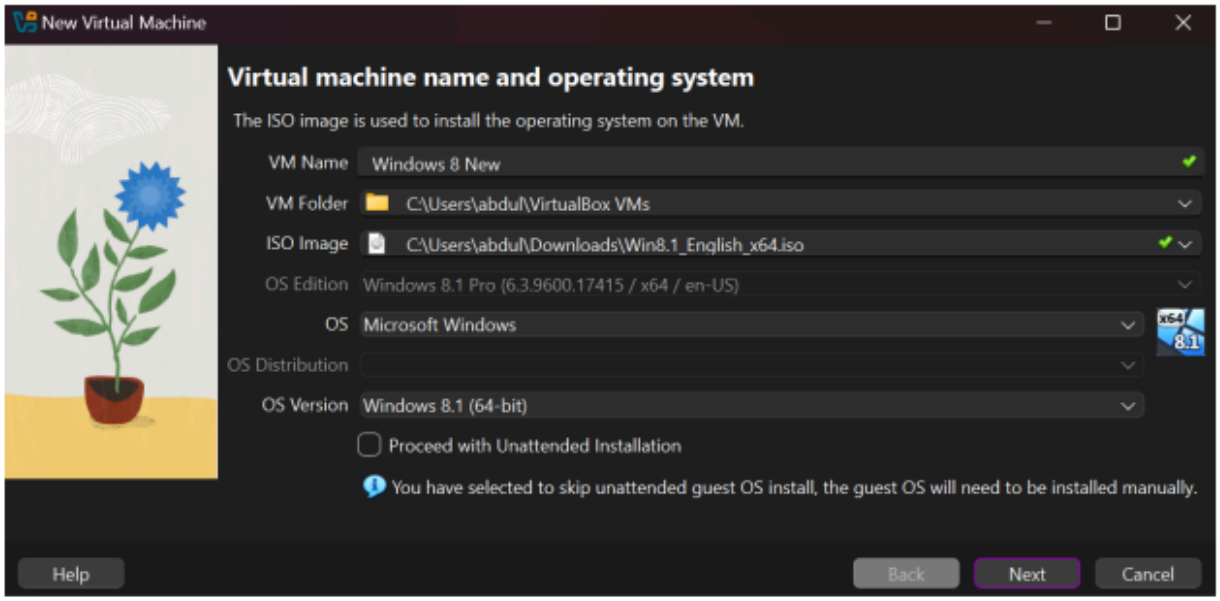

I assigned a virtual Name for the first client to be “Windows 8

**Step 2: Attach ISO**

1. Select the Windows 8 ISO file.
2. Attach it to the VM.
3. Choose **Skip Unattended Installation** to manually configure setup.




and successfully mounted (connected) the downloaded Windows 8 ISO file to the new virtual machine.




I correctly chose to Skip Unattended Installation to maintain full control over the setup.

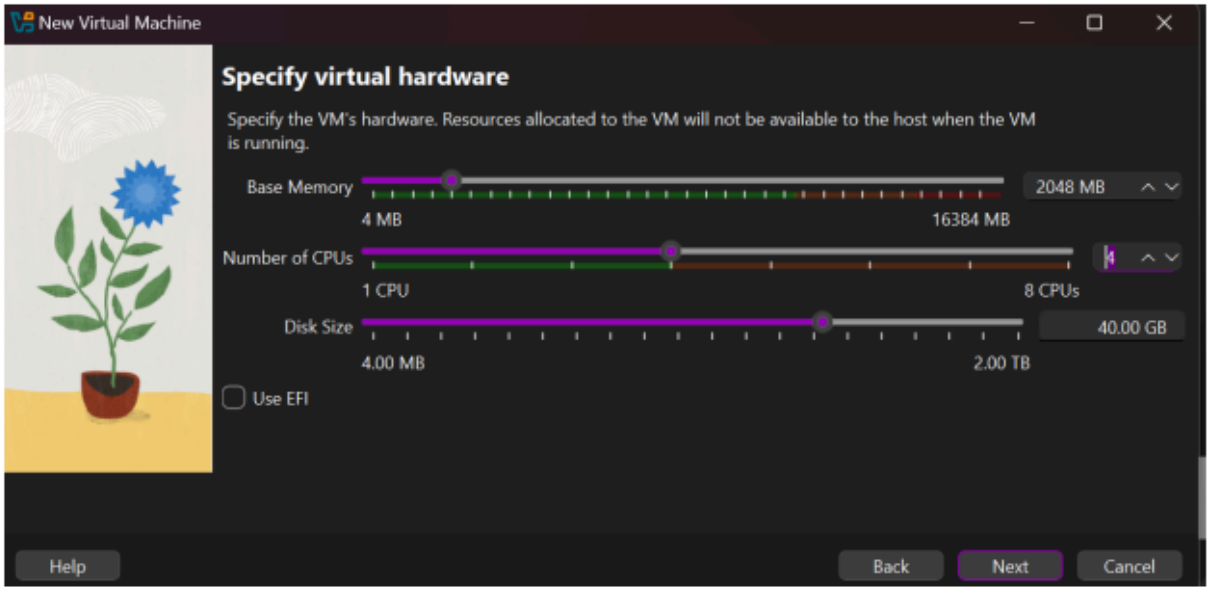
**Step 3: Configure Hardware**

Allocate resources as follows:

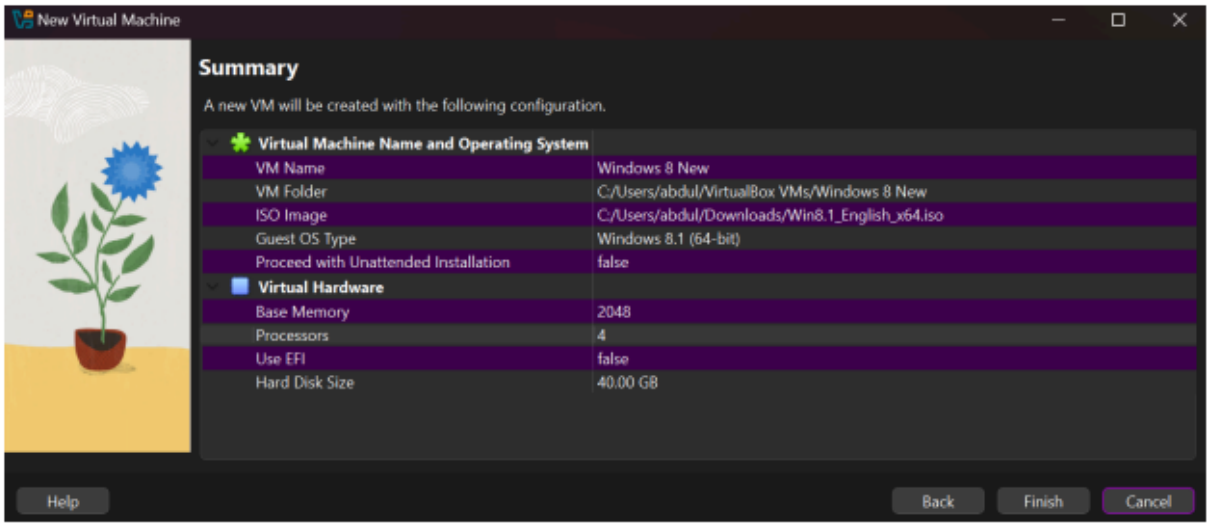
- **Memory (RAM):** 1 GB (1024 MB)
- **Processors (CPU):** 4
- **Virtual Hard Disk:** 40 GB

Click **Next** → **Finish**

virtual storage space.




By clicking “Next” and then "Finish," the configuration for the first Windows 8 VM was saved.



**Step 4: Repeat for Second Client**

Repeat the same configuration process to create:

- Windows 8 Client 2