

PROJECT OVERVIEW

Hands-on lab simulating a small enterprise domain using VMware Workstation Pro and Windows Server 2022 Evaluation.

Goals: Install AD DS, promote to Domain Controller, design OU structure, manage users/groups, and apply Group Policies.

Step-by-Step Guide: Setting Up Active Directory and Organizational Units on Microsoft Windows Server

This guide covers installing AD DS, creating OUs, users, and groups on Windows Server 2022

Prerequisites

Hardware Requirements.

1. CPU Type: Intel Core i5-6300U
2. CPU Speed: 2.40GHz-2.80GHz.
3. RAM: 8GB.
4. Storage: 256GB SSD.

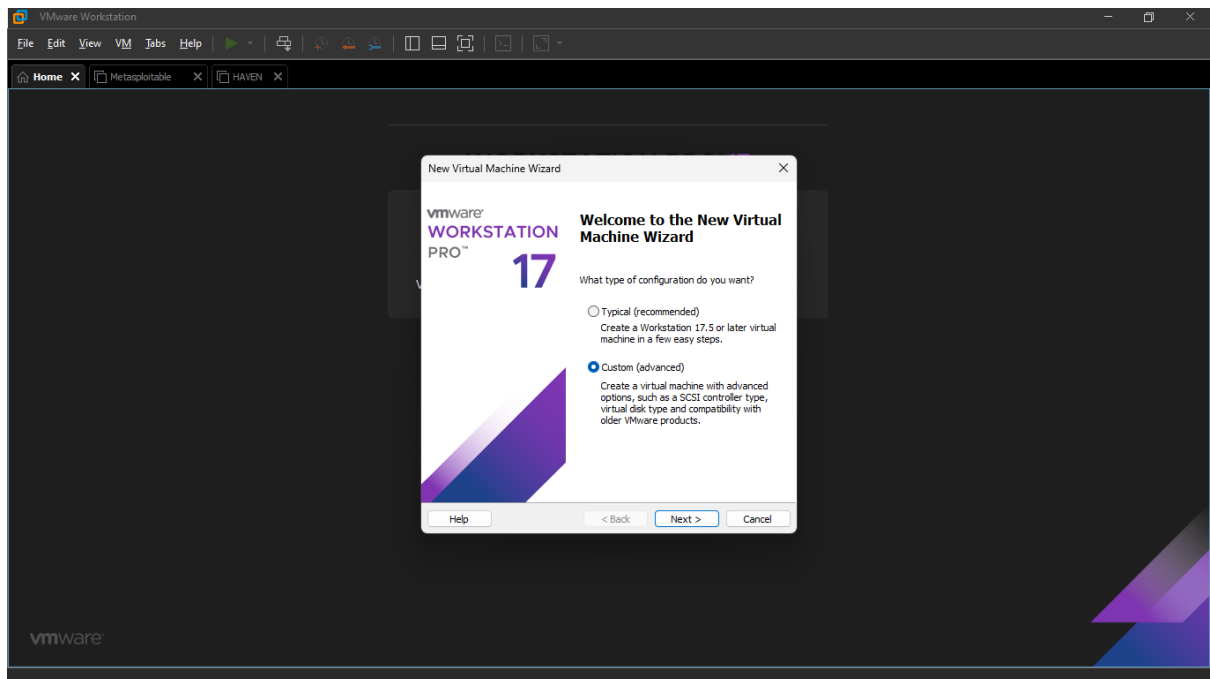
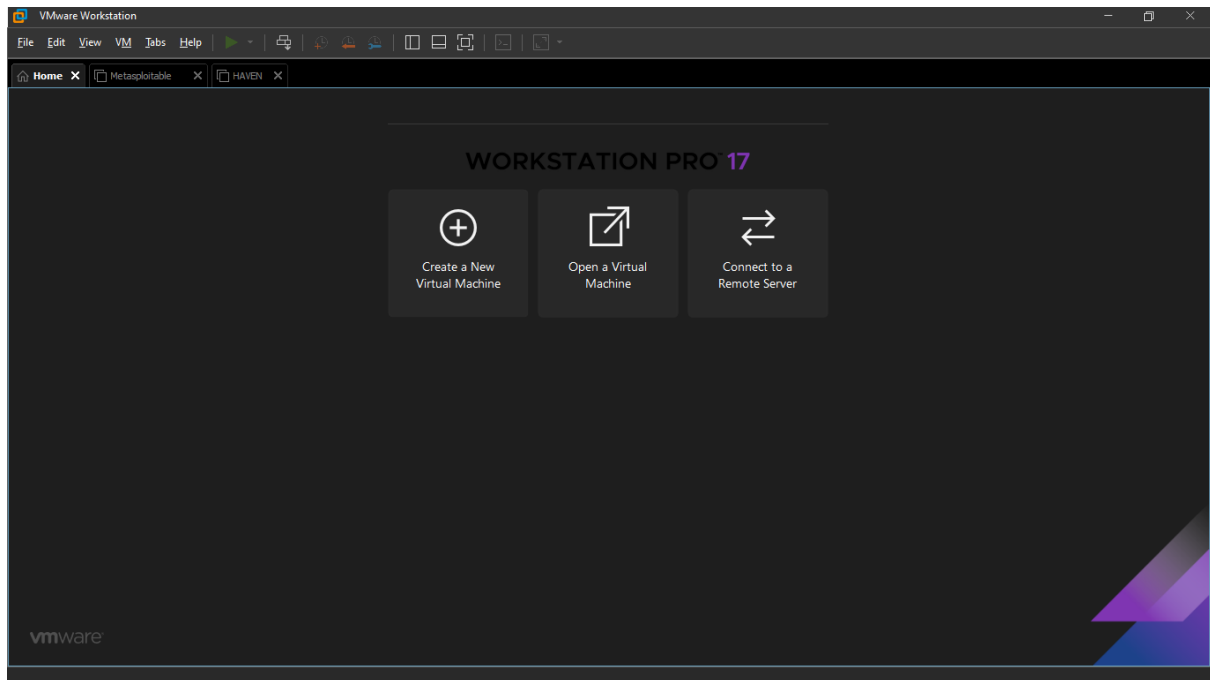
Software Requirements.

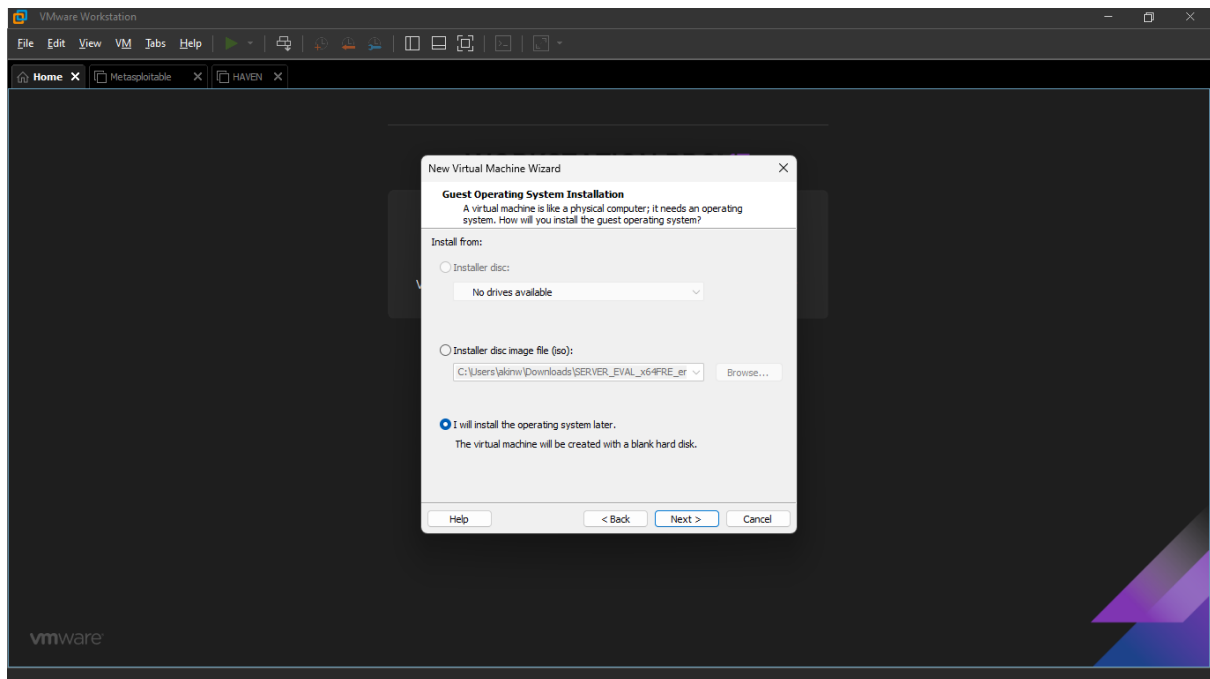
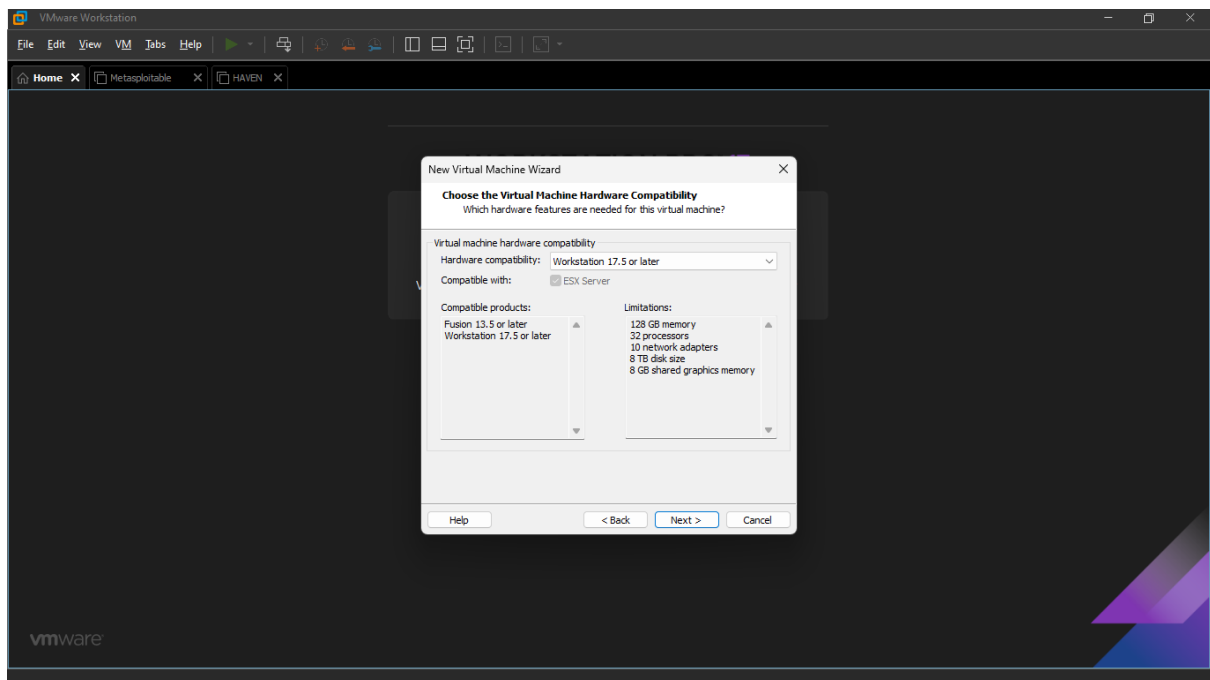
1. Windows 10 Operating system(Or equivalent Linux/Mac os).
- 2.Windows 2022 Server ISO. <https://www.microsoft.com/en-us/evalcenter/download-windows-server-2022>
3. VMWare Workstation pro (Or equivalent Hypervisor e.g VirtualBox, Microsoft Hyper-v).
<https://knowledge.broadcom.com/external/article/344595/downloading-vmware-workstation-pro.html>

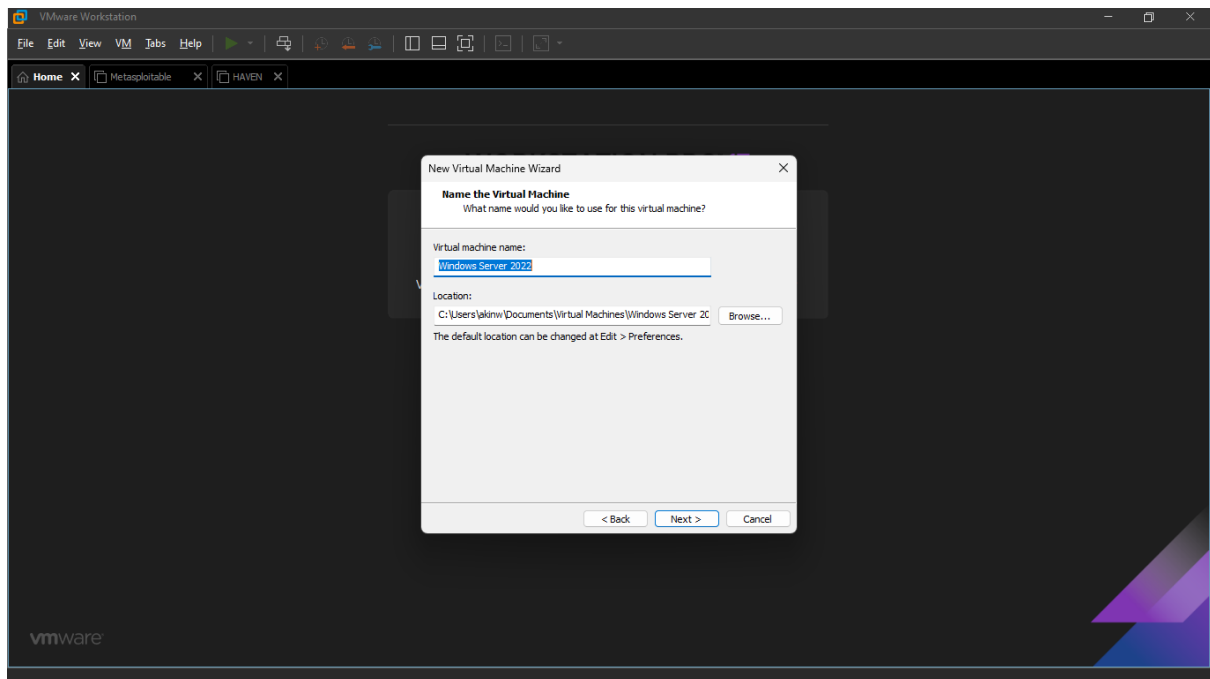
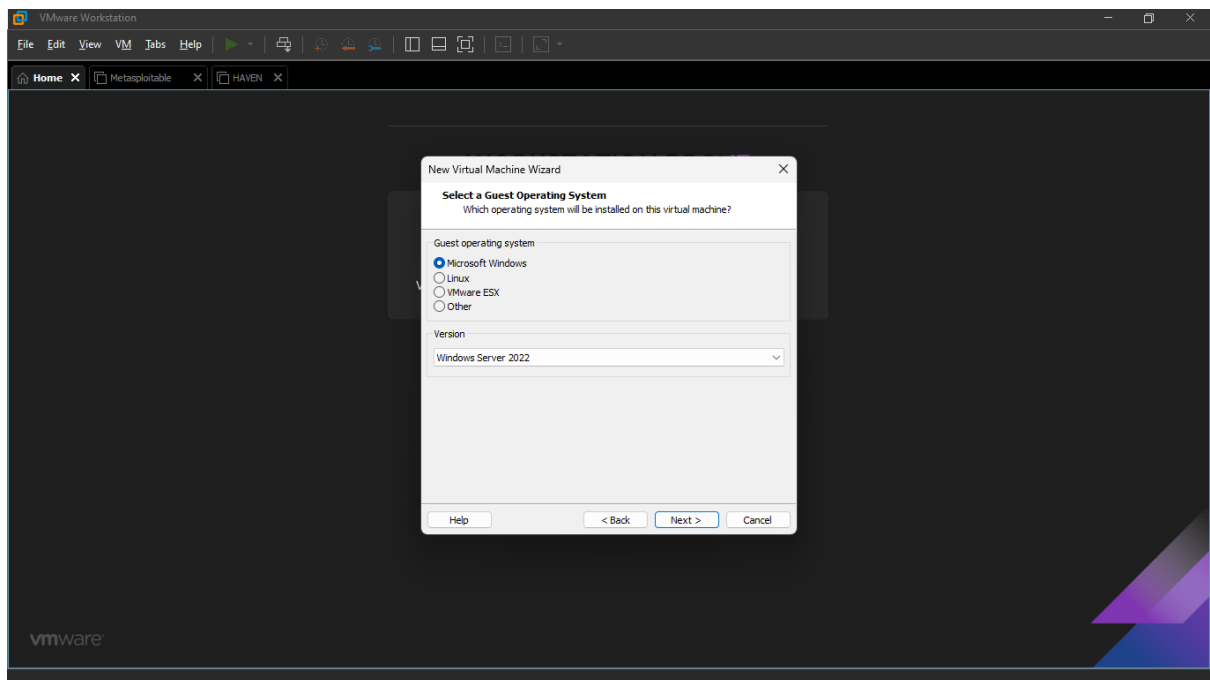
Step-by-Step Setup

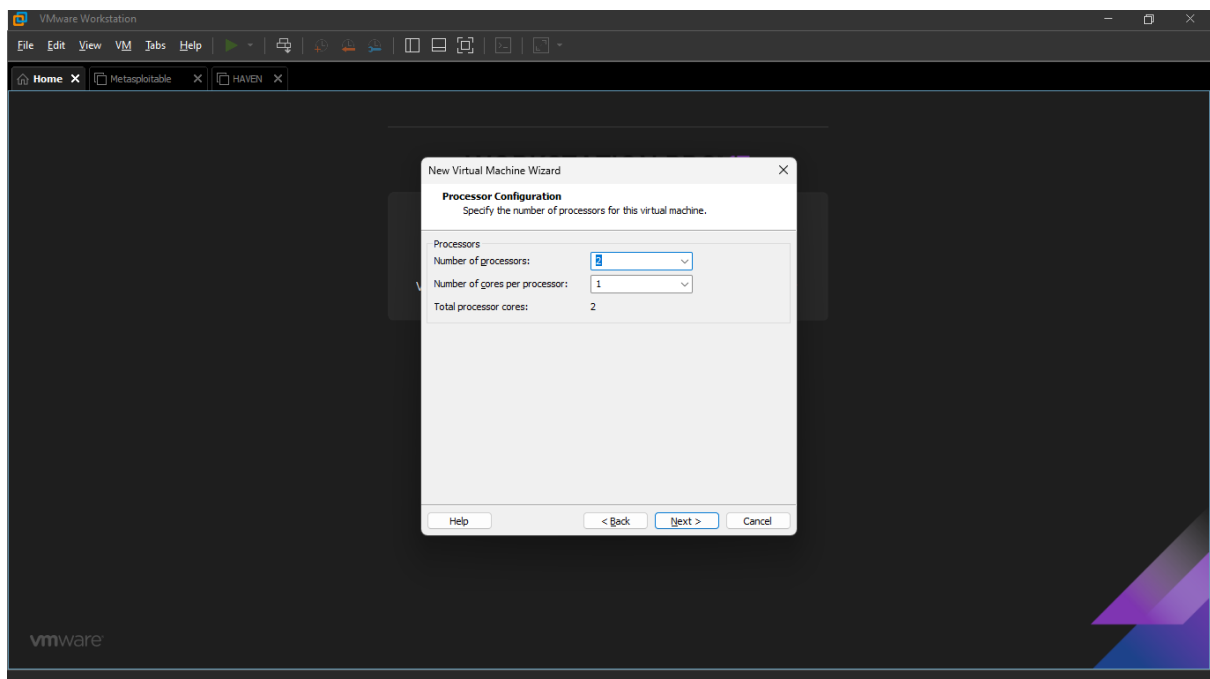
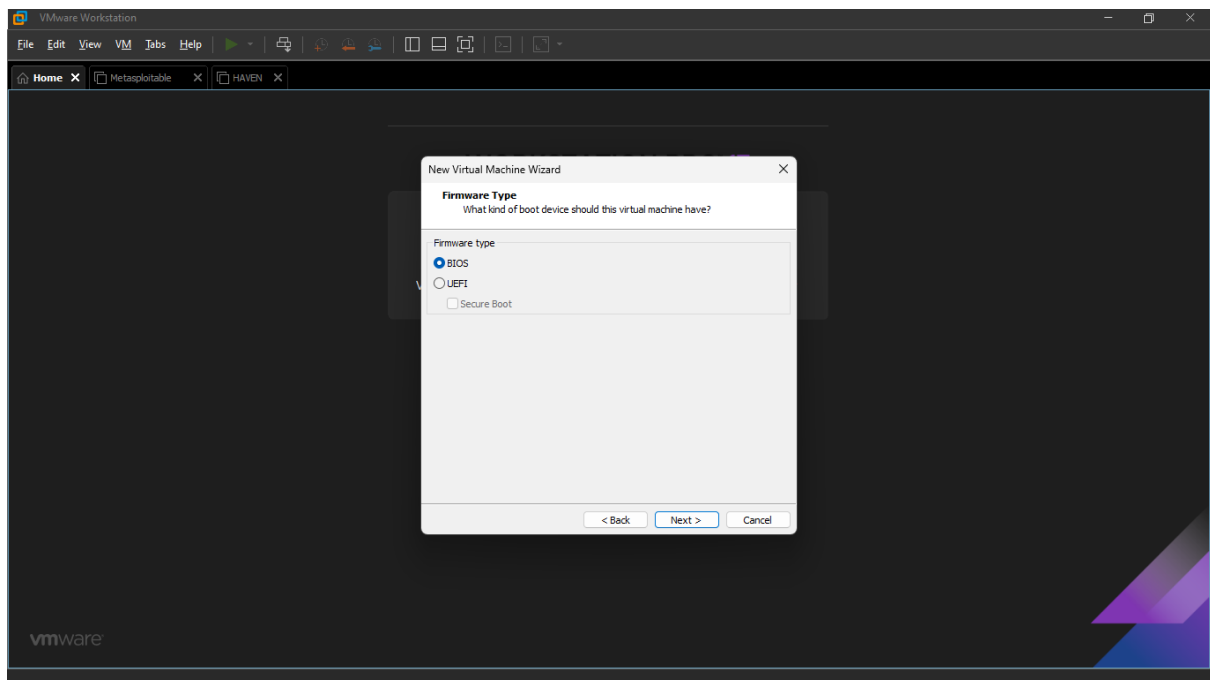
Create VM in VMware Workstation Pro.

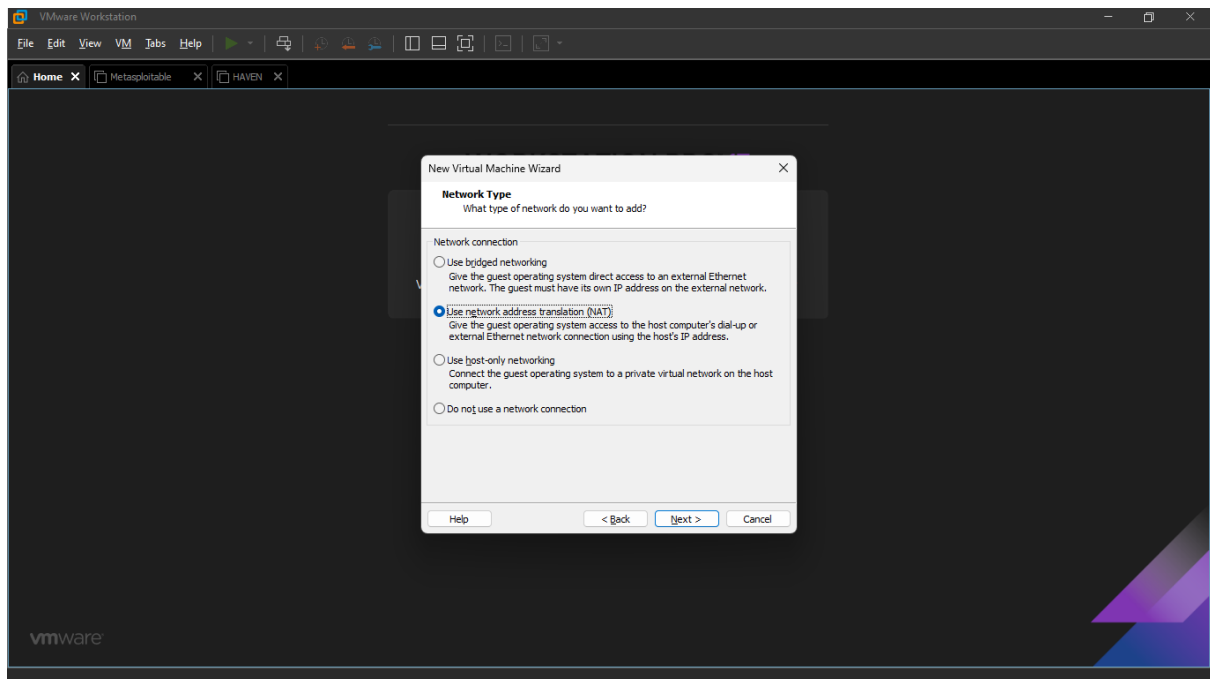
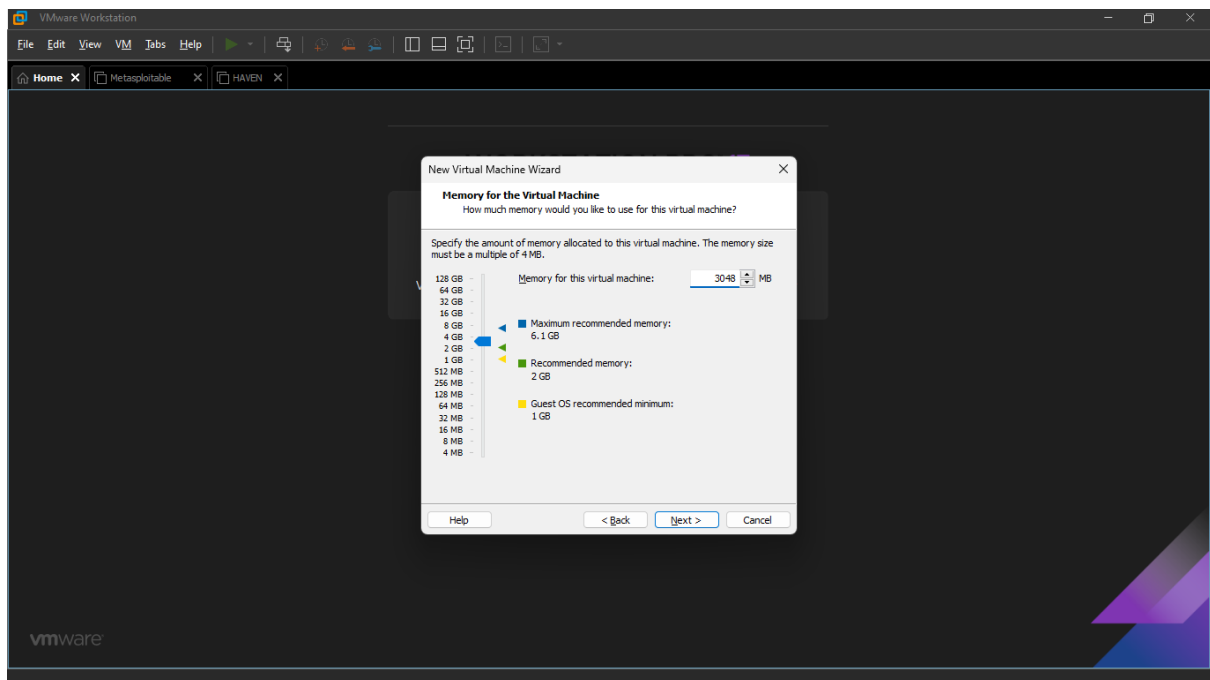
- Launch VMware Workstation.
- Click on Create a new virtual machine.
- Select Custom/Advanced.
- Select the Hardware compatibility to Workstation 17.5 or later.
- Select I will install the Operating System later
- Select OS: Microsoft Windows → Windows Server 2022, click next and choose storage location.
- Select BIOS under firmware type
- Configure hardware: 4+ GB RAM, 2+ cores, network adapter (NAT)
- Select LSI Logis SAS under /O Controller types and SCSI under Virtual disk types
- Under disk select create a new disk → Disk Size → Split Virtual disk into multiple files → Select storage location → Click finish.
- Click edit virtual machines → CD/DVD (SATA) → Click use ISO image file → Browse (Select you downloaded earlier) → Click Advanced → SCSI → Select SCSI 0:1 → OK
- Install OS normally (choose Datacentre Evaluation with Desktop Experience if desired.)

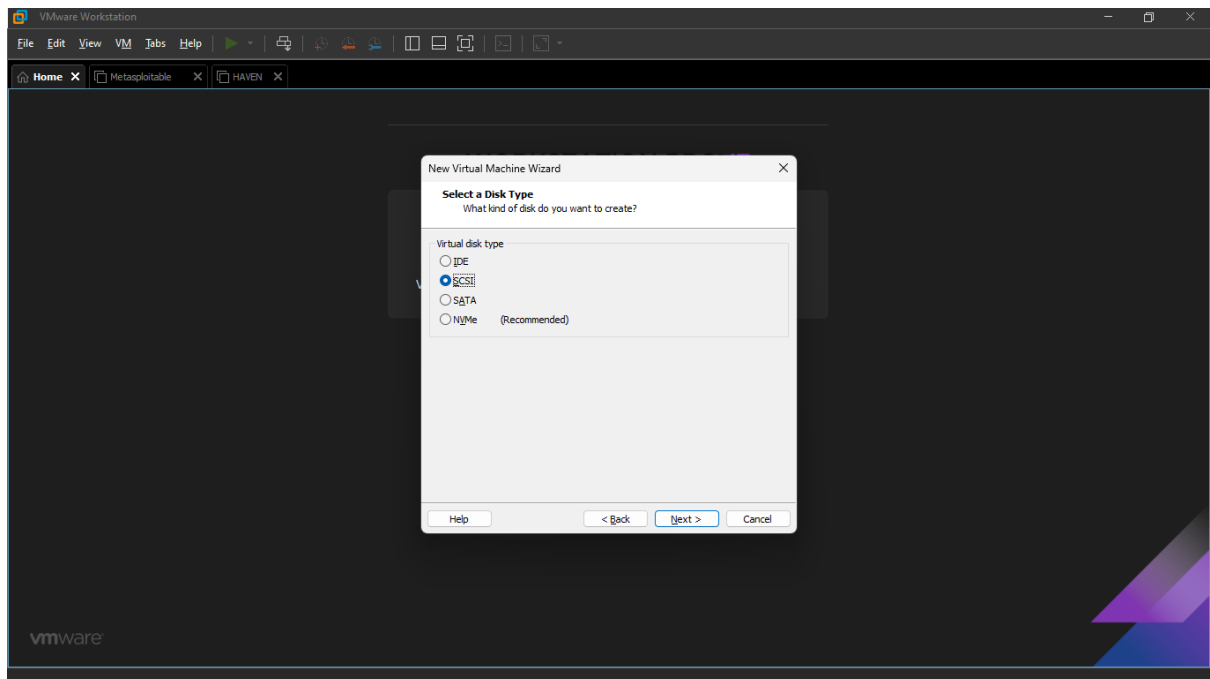
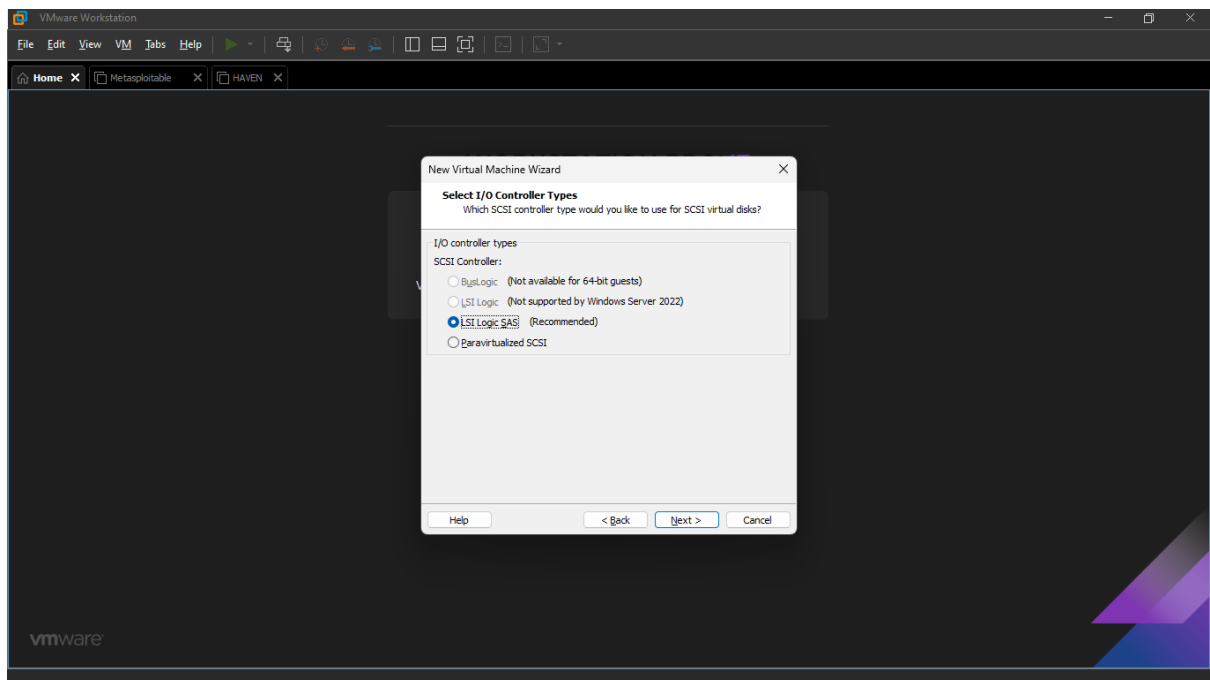


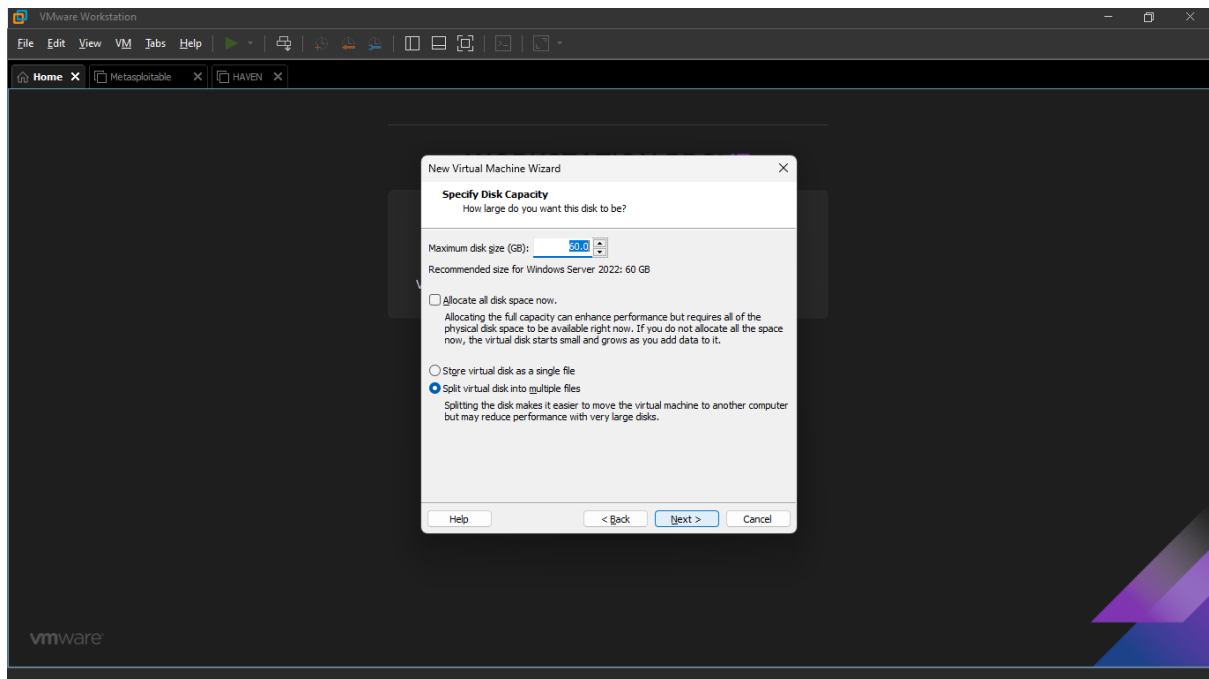
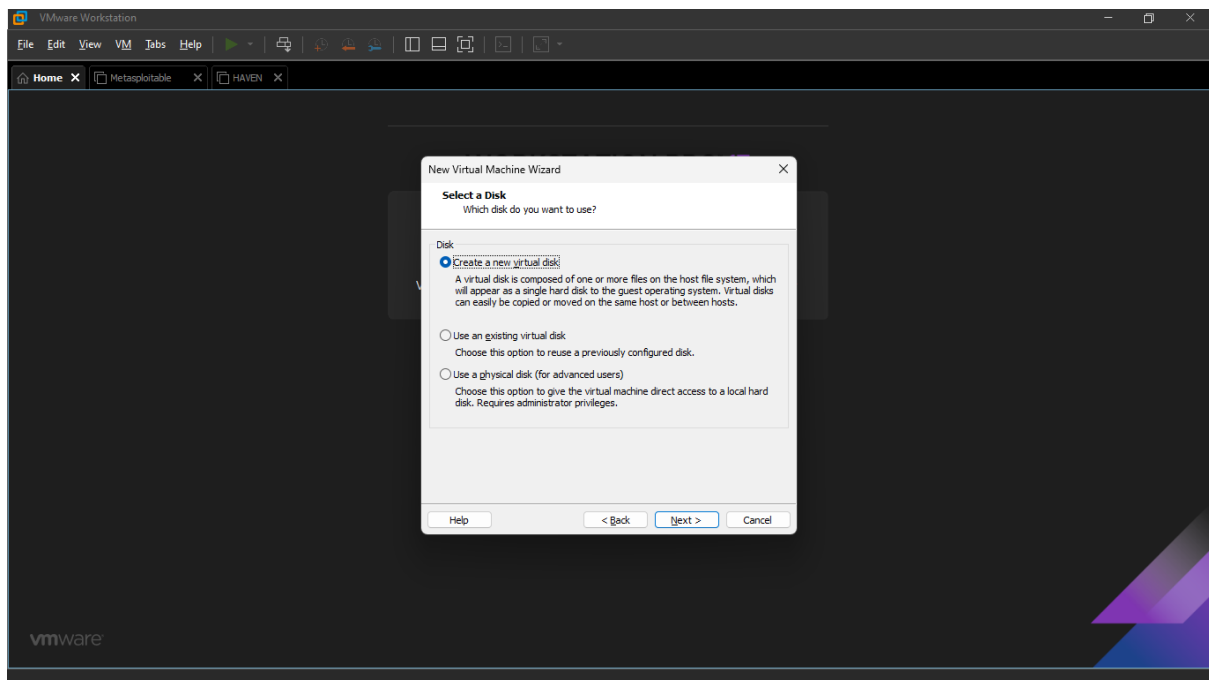


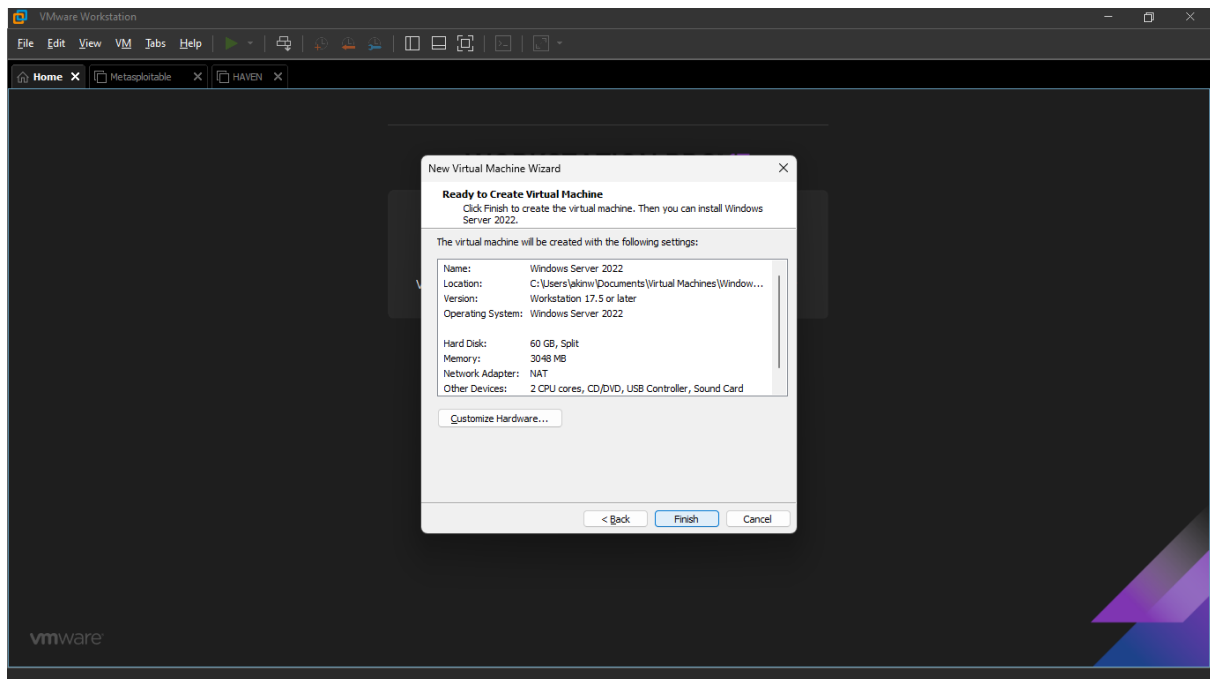
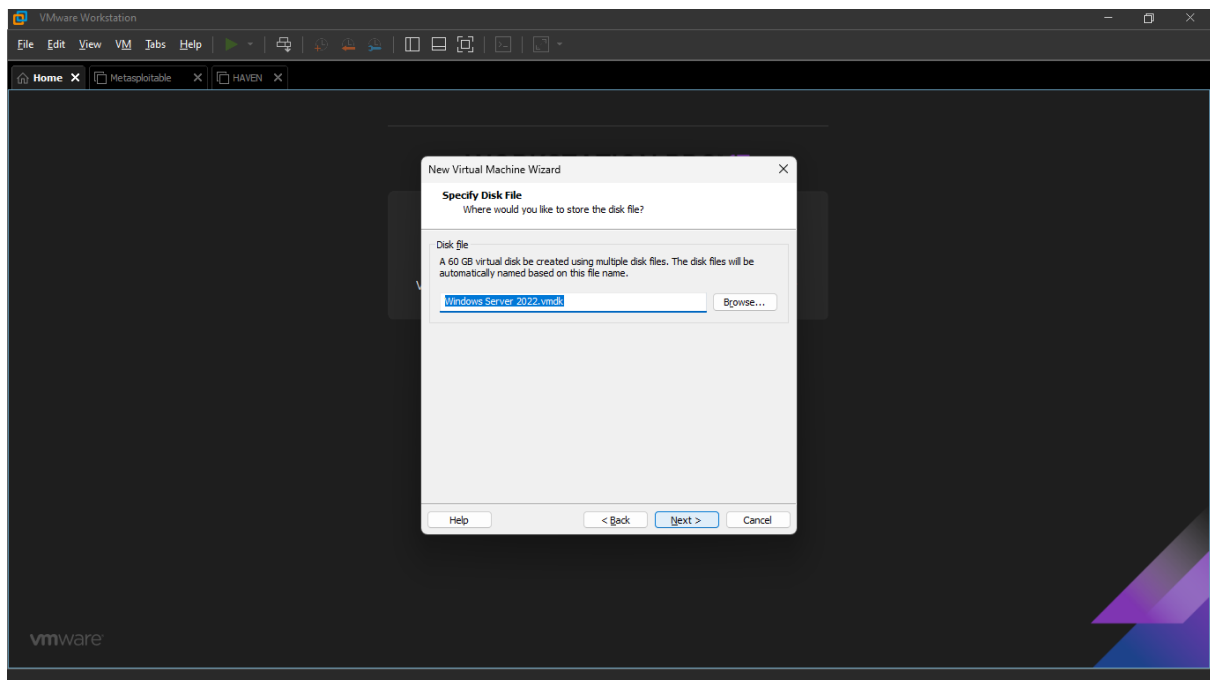


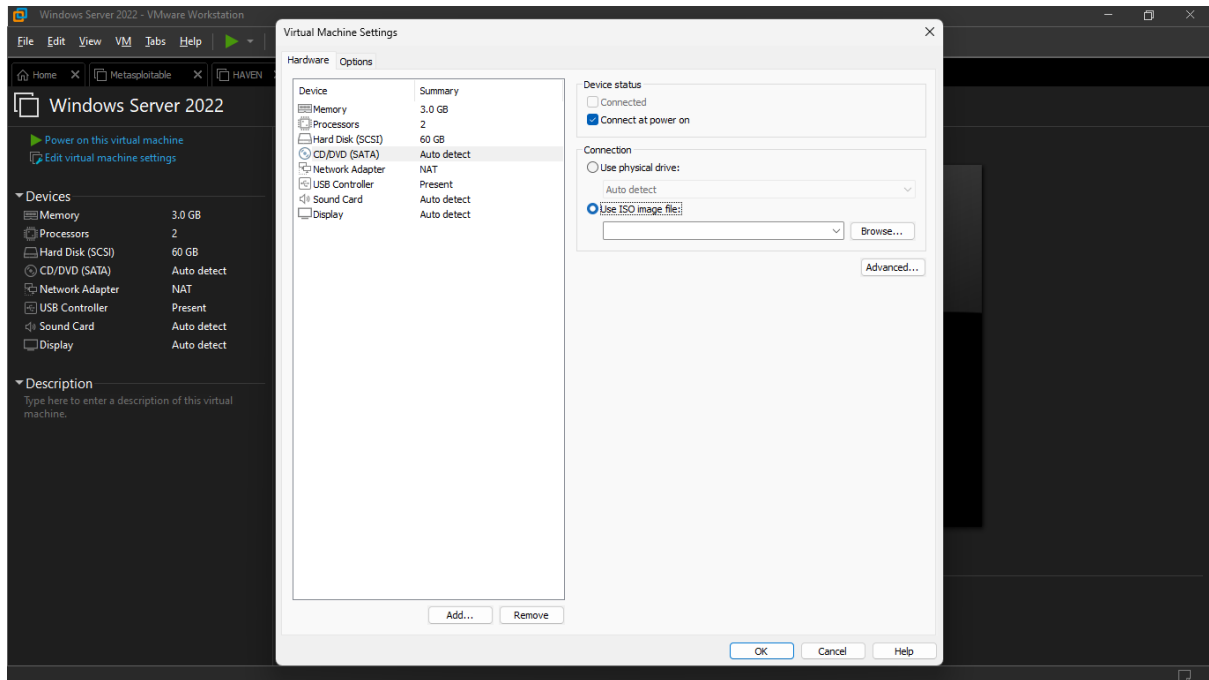
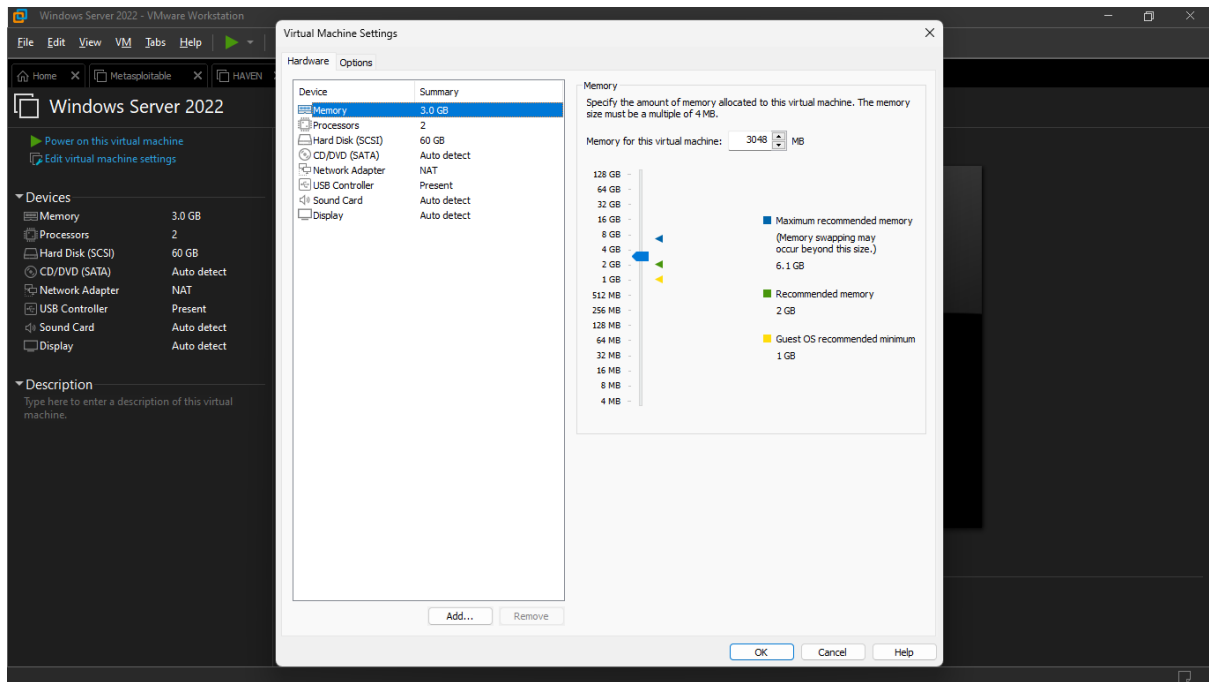


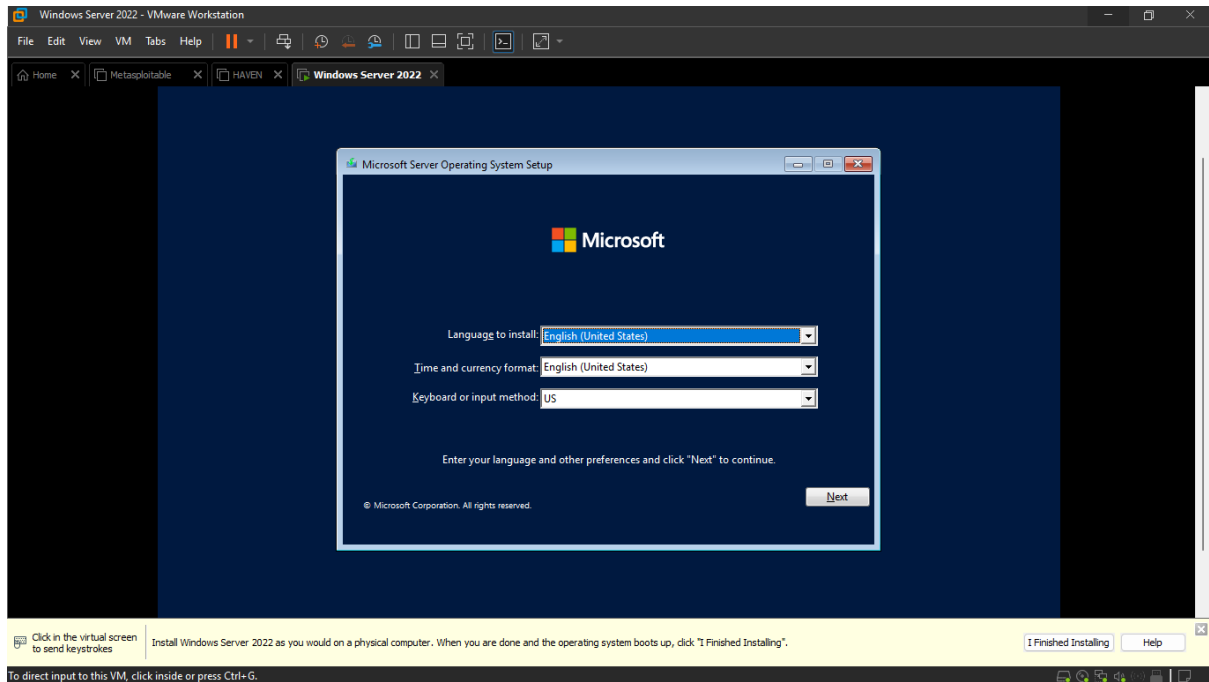
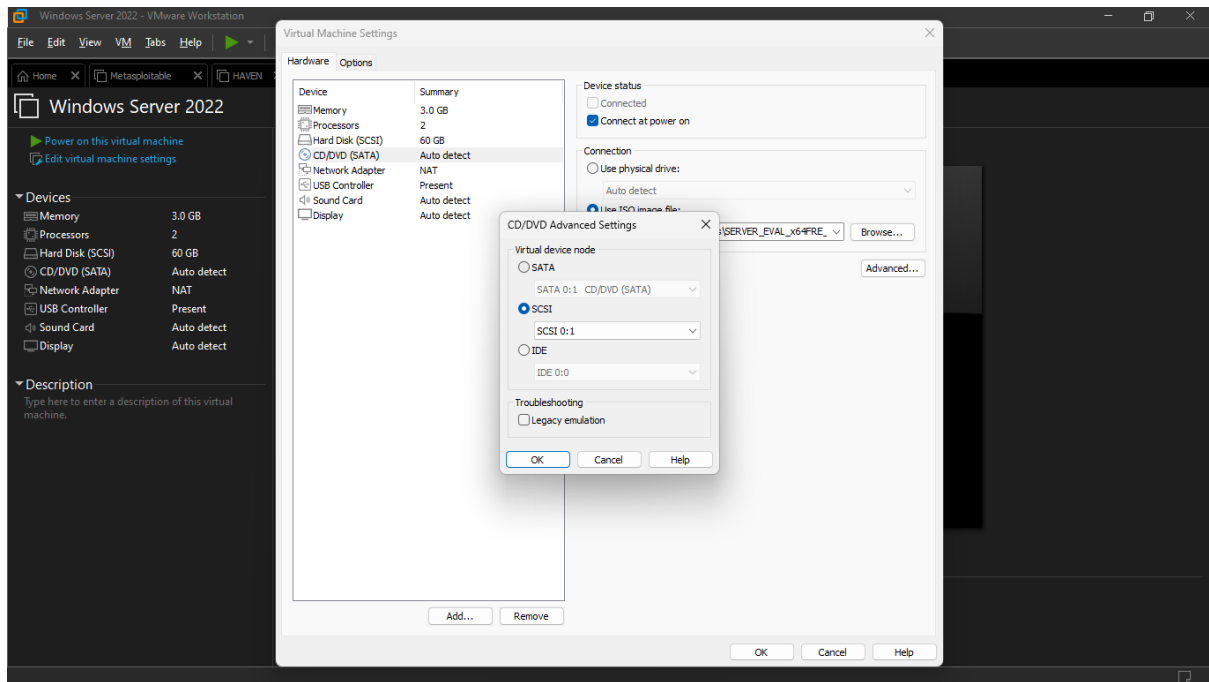


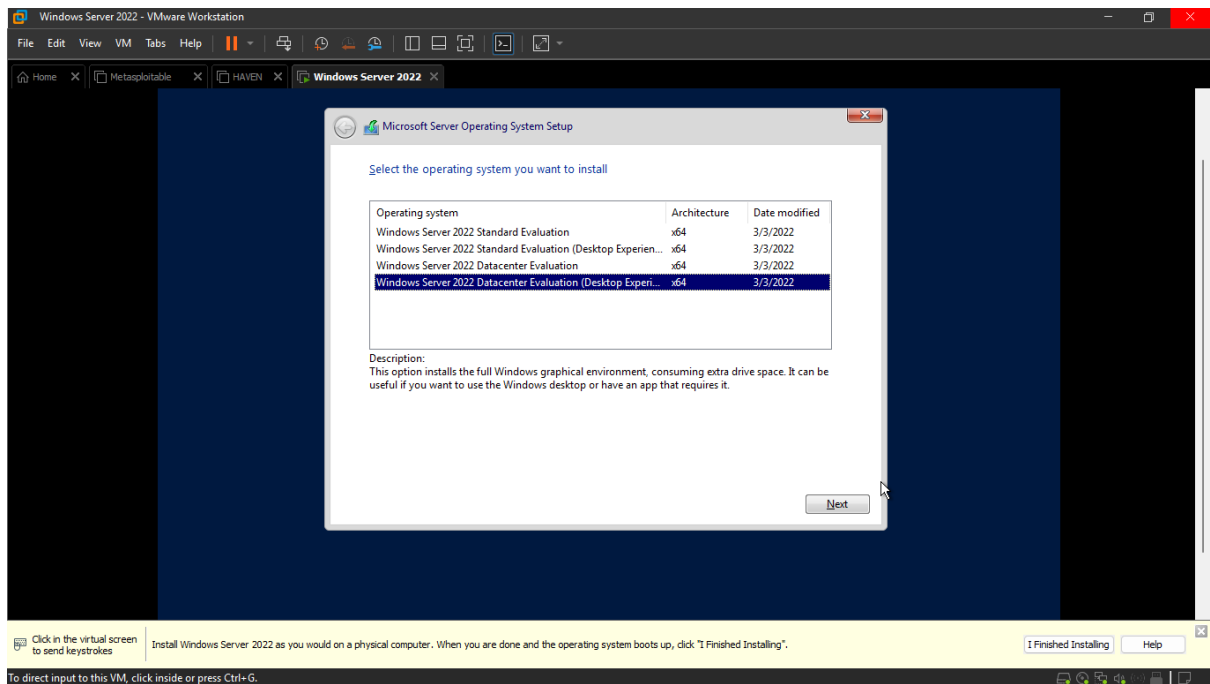
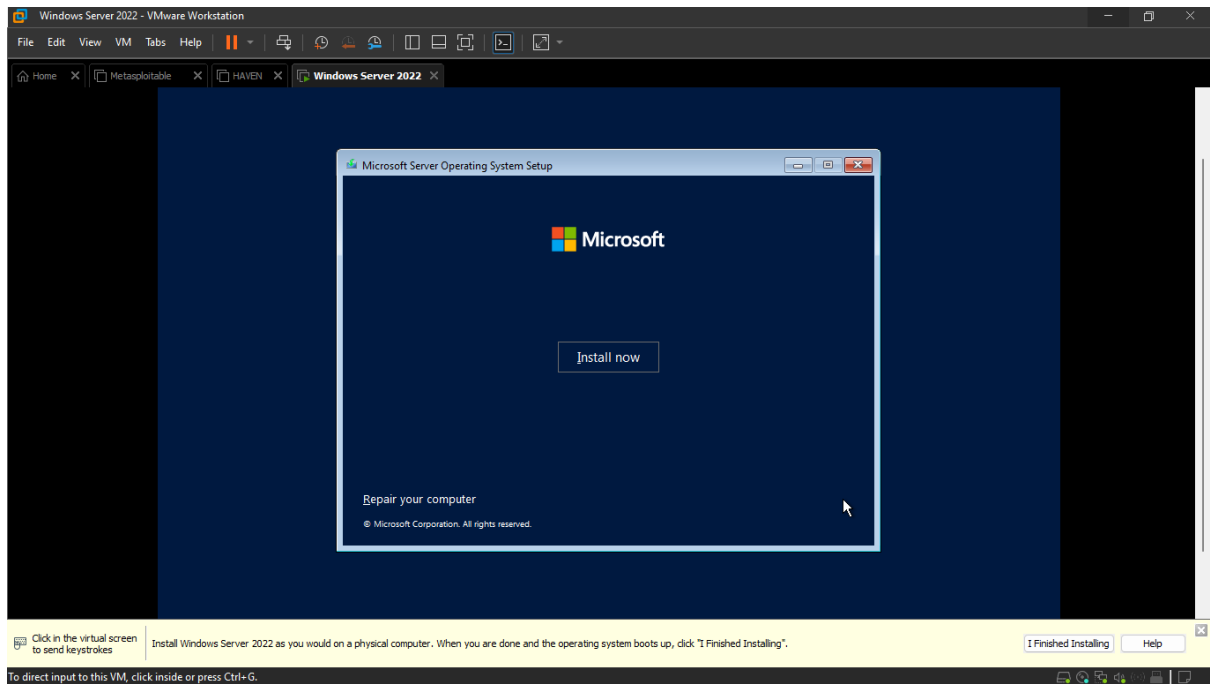


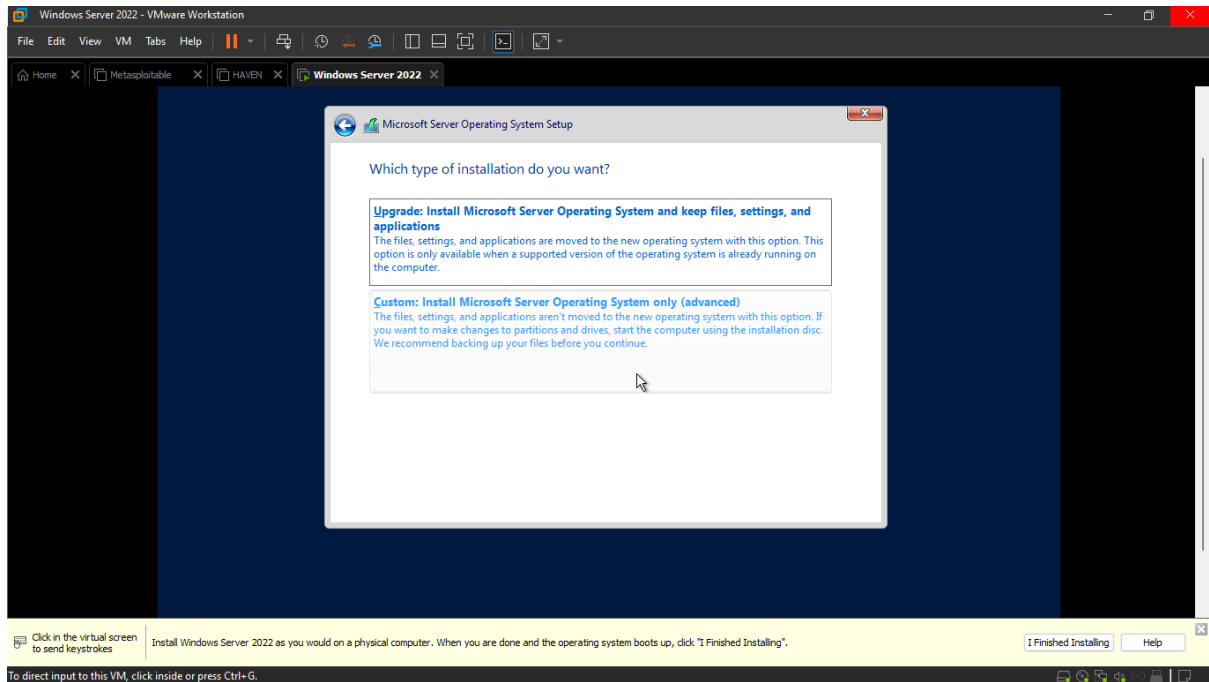
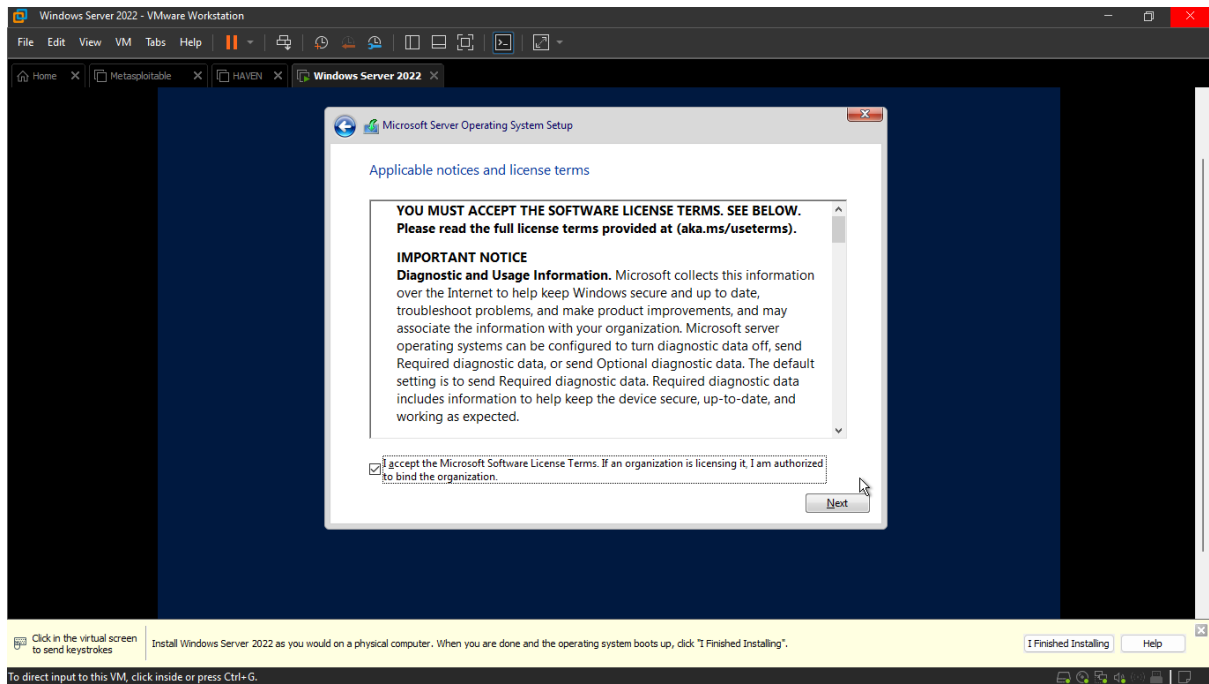


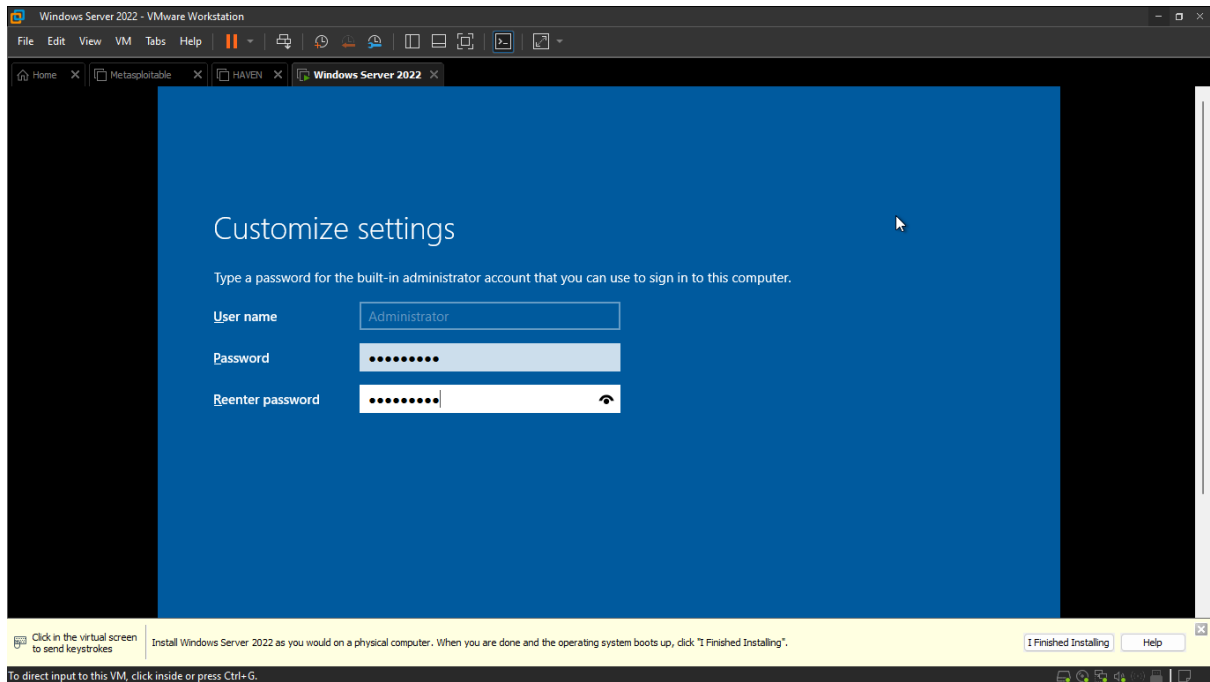
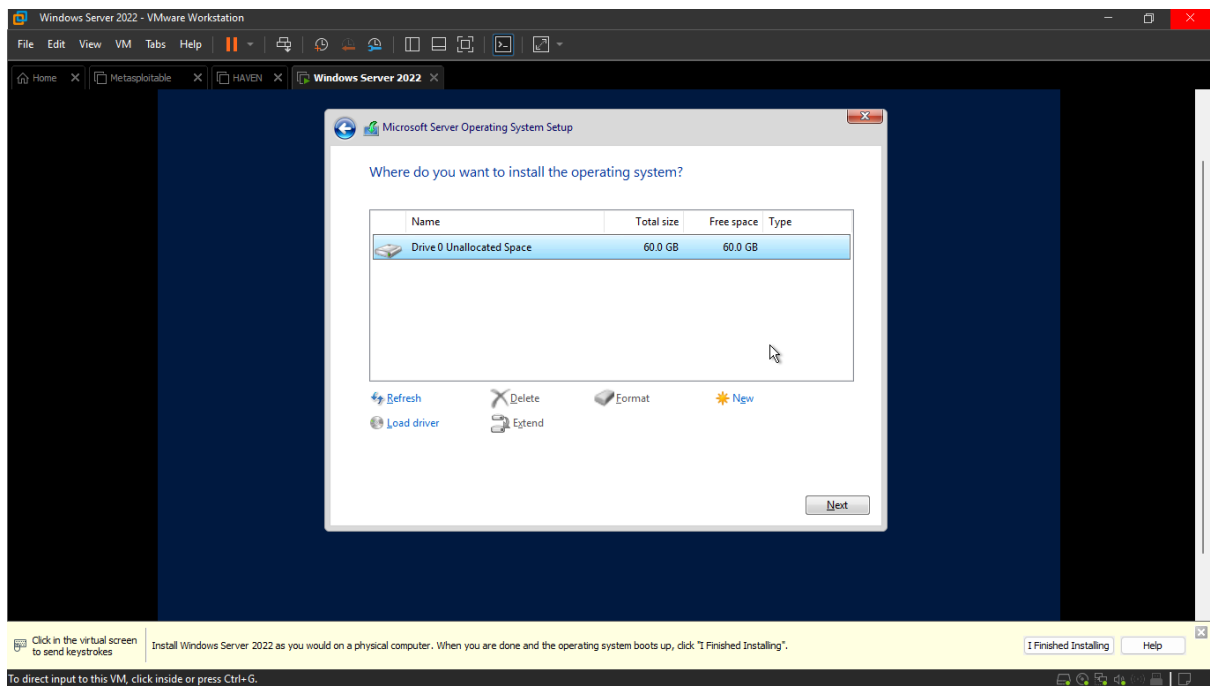


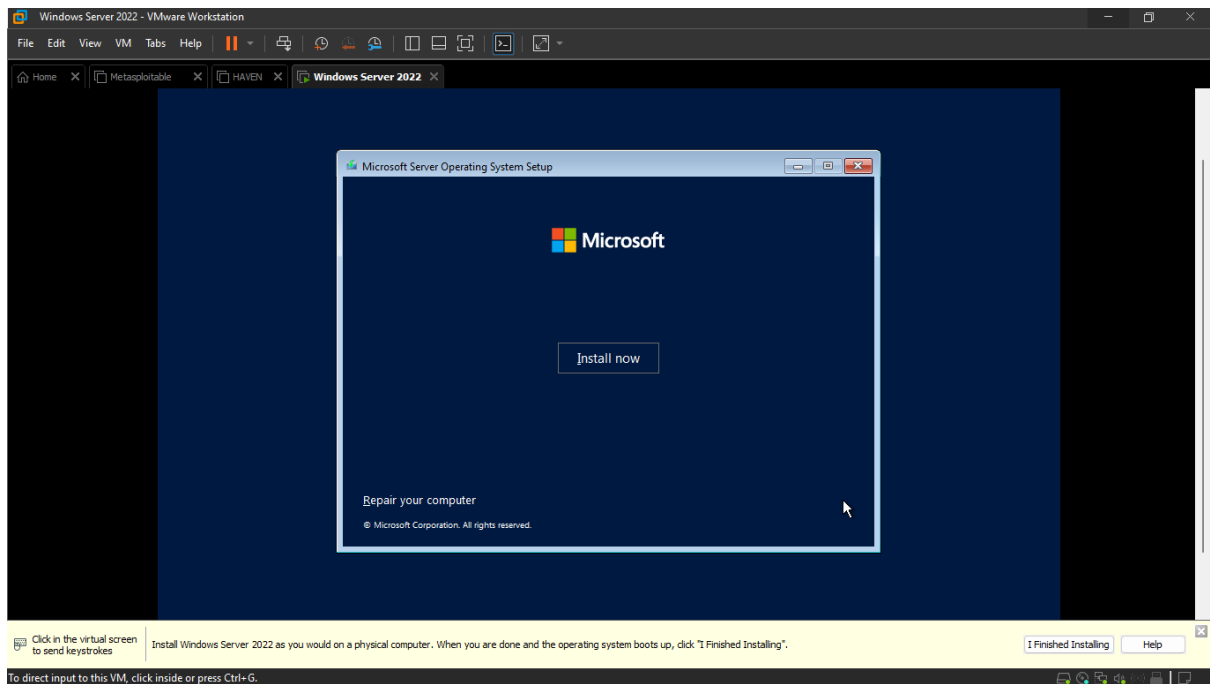
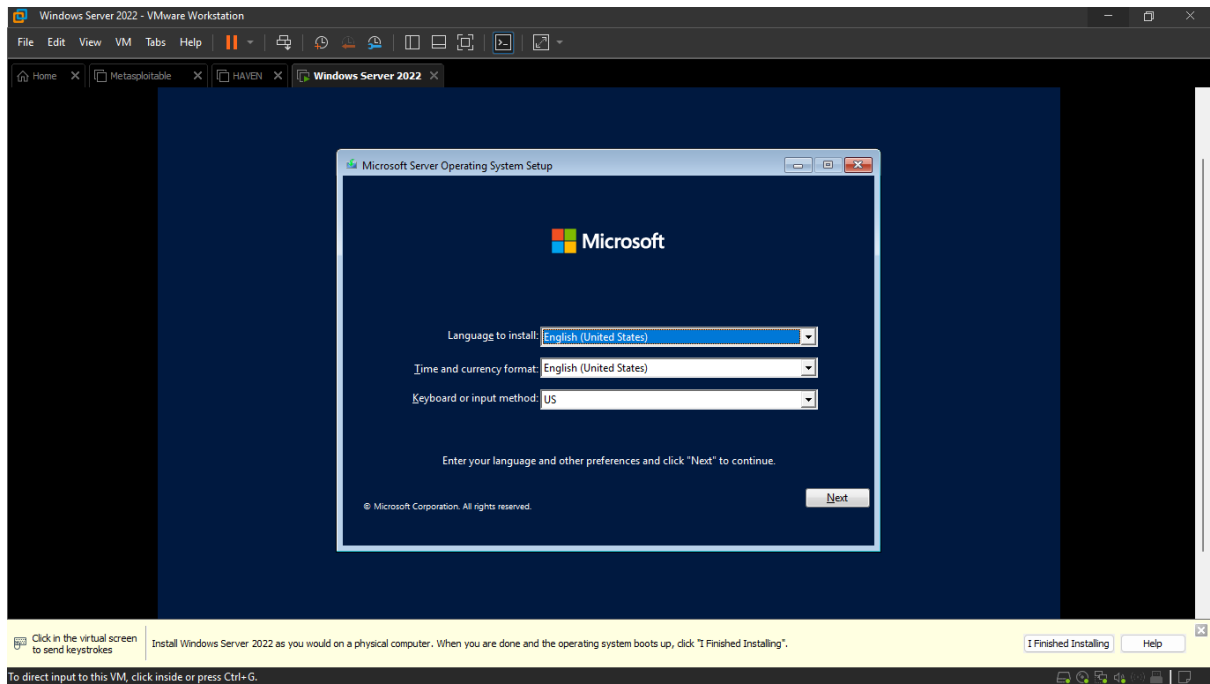


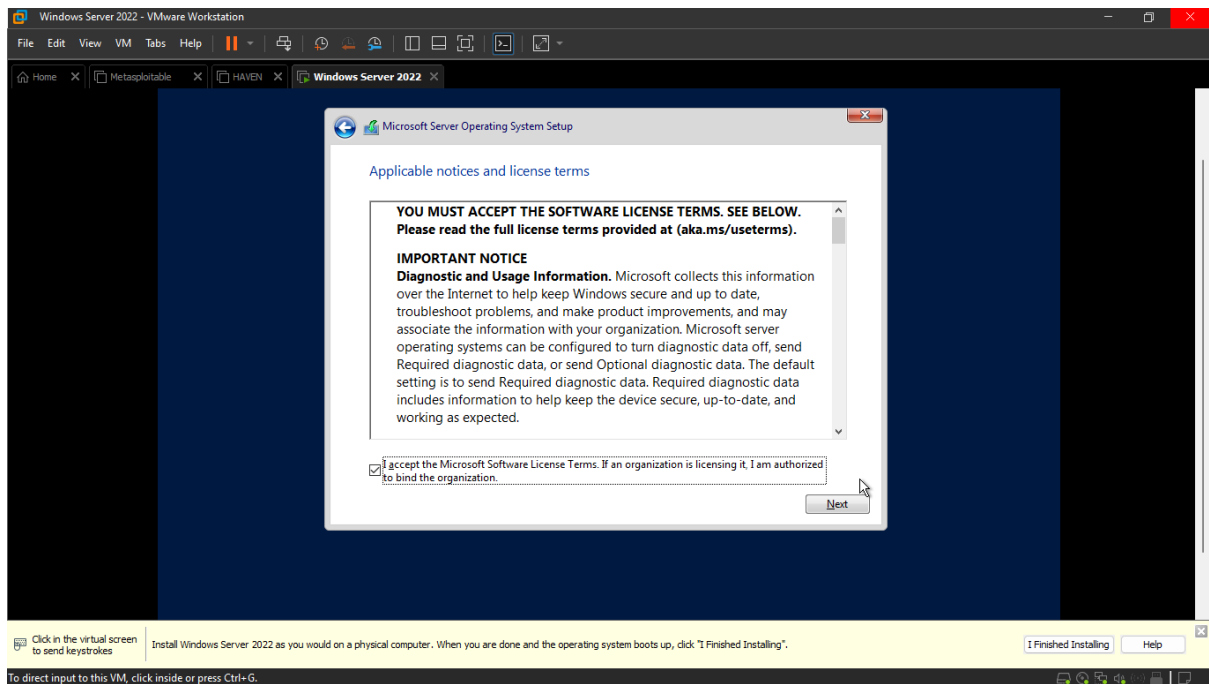
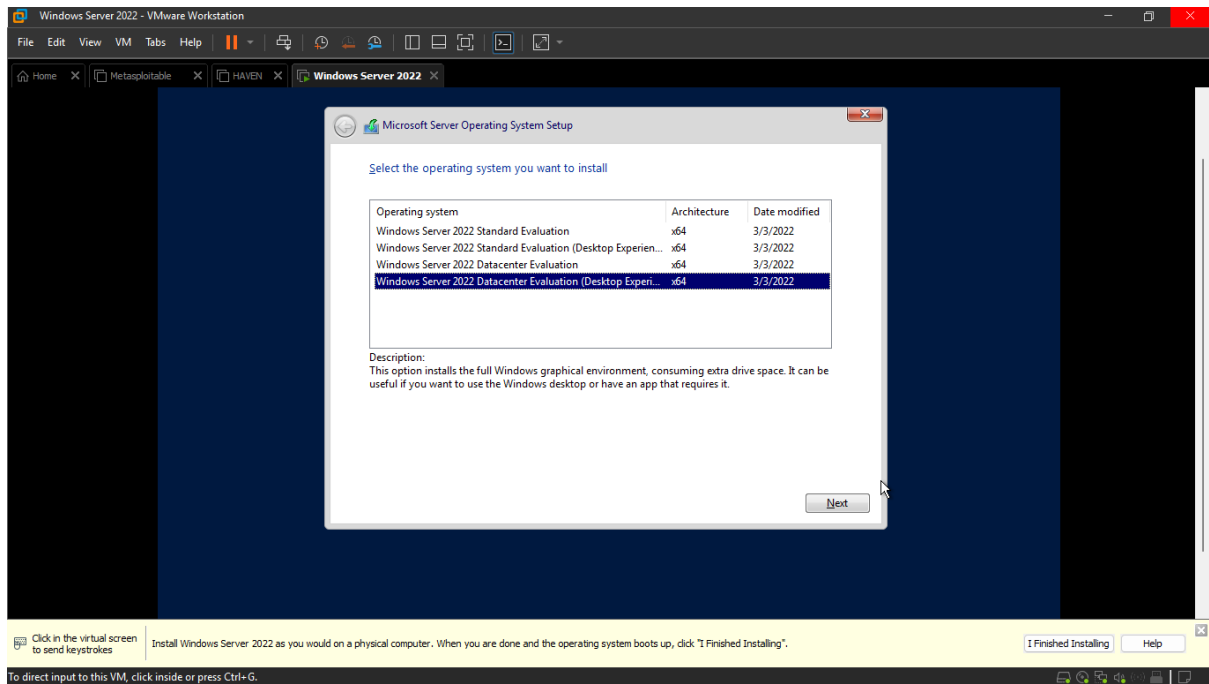


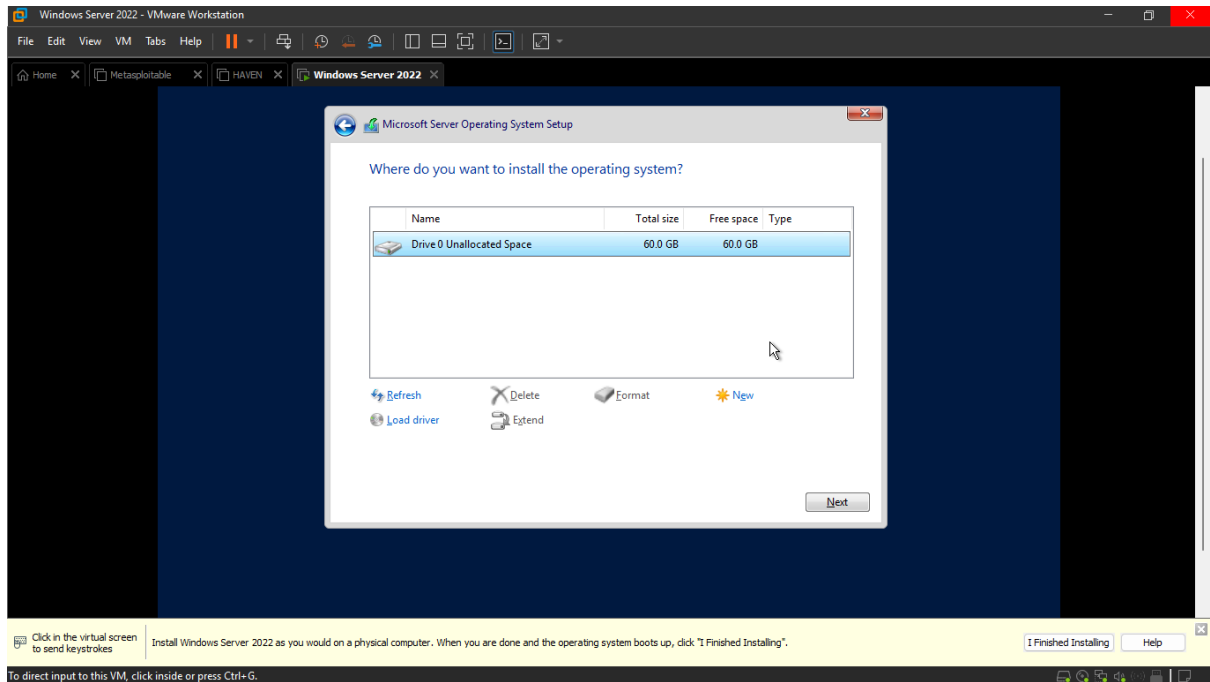
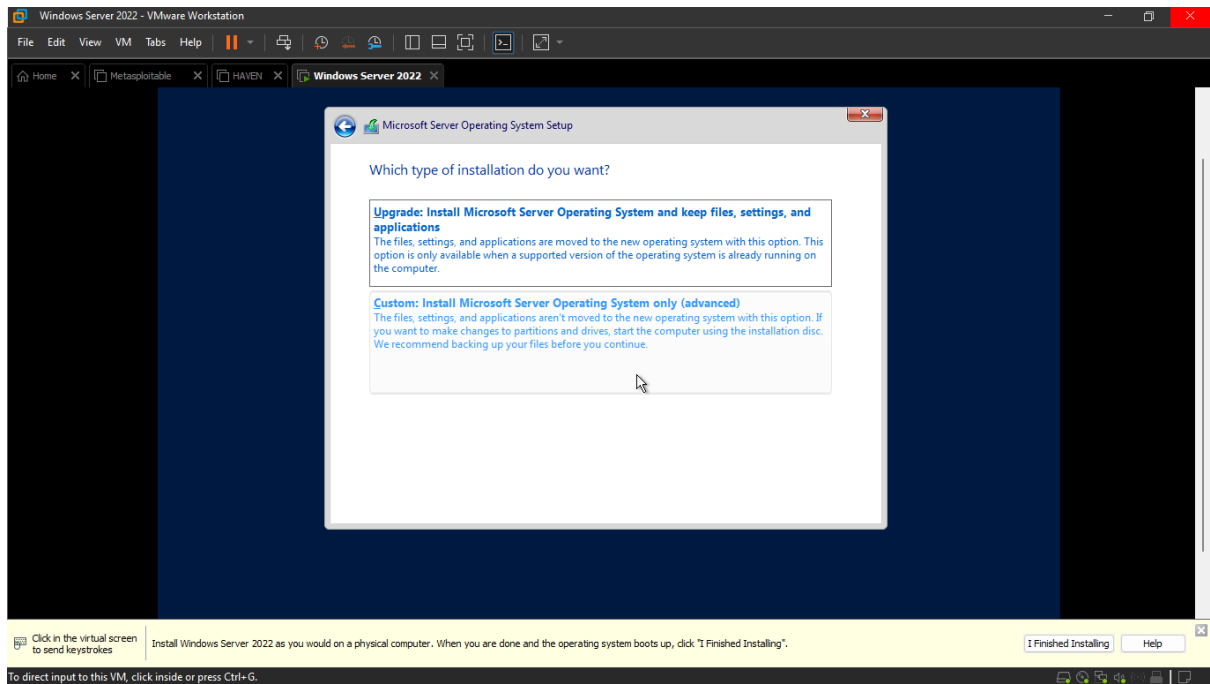


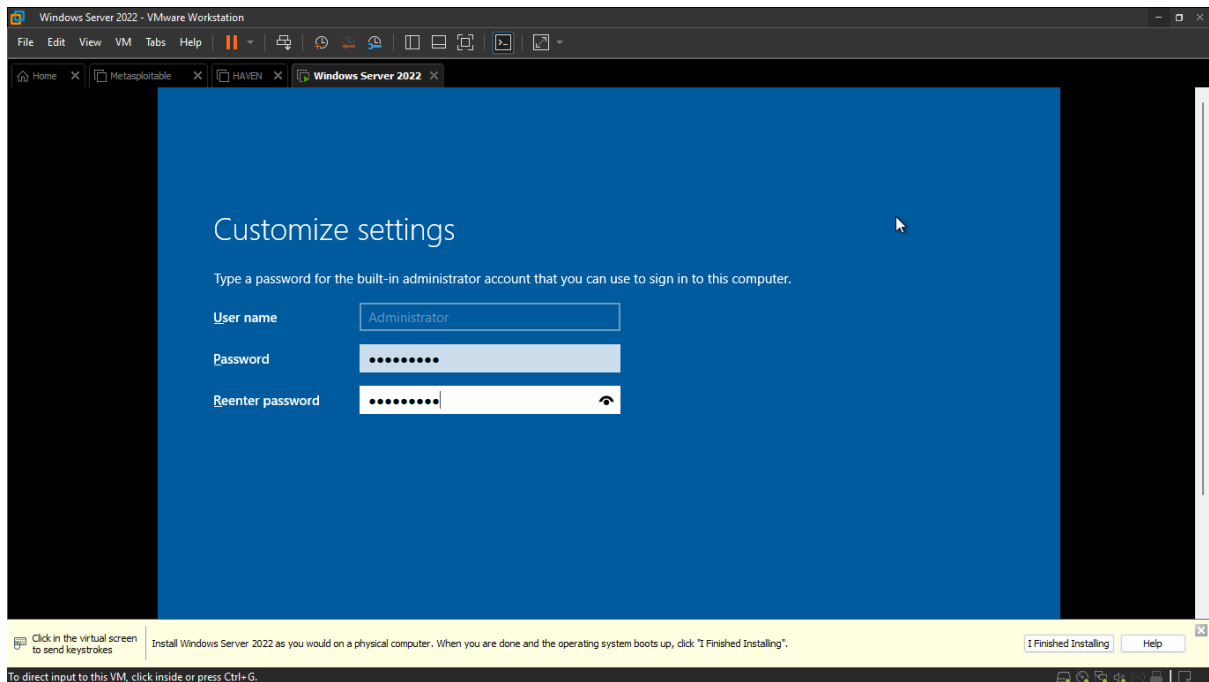












Initial Server Configuration

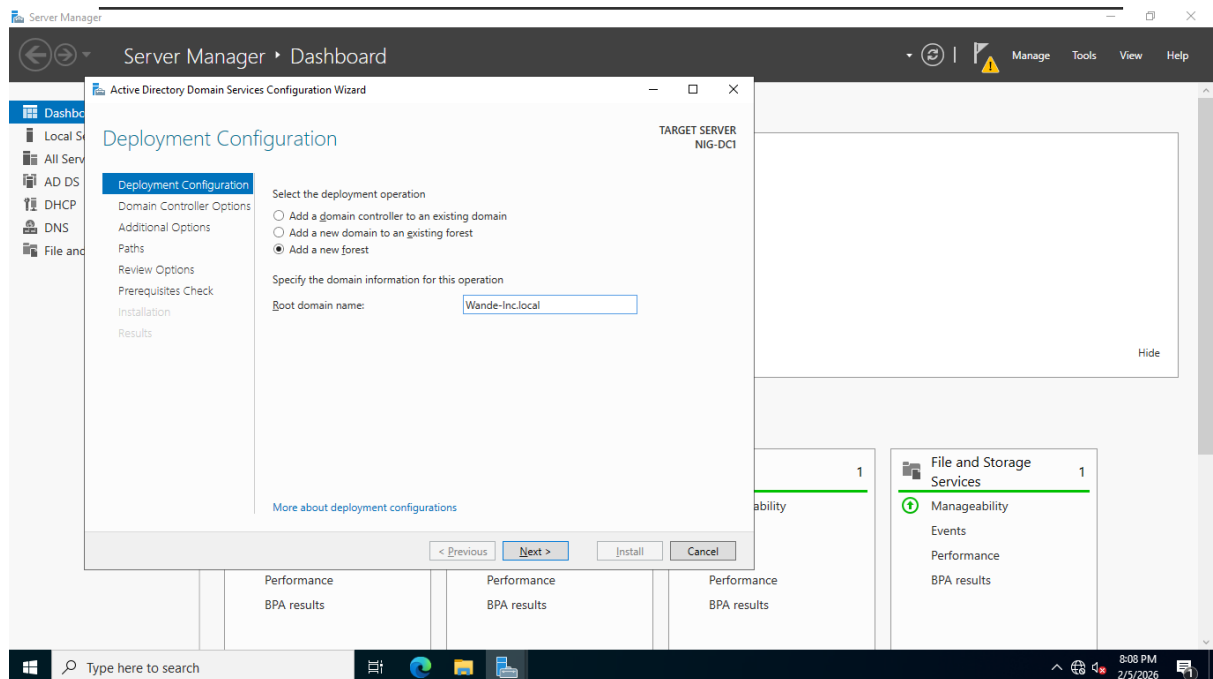
- Set static IP (e.g., 192.168.x.10/24, the gateway address can be found by running the ipconfig command on CMD).
- Rename the server (e.g., DC01) and restart.
- Update Windows if possible

Install Active Directory Domain Services.

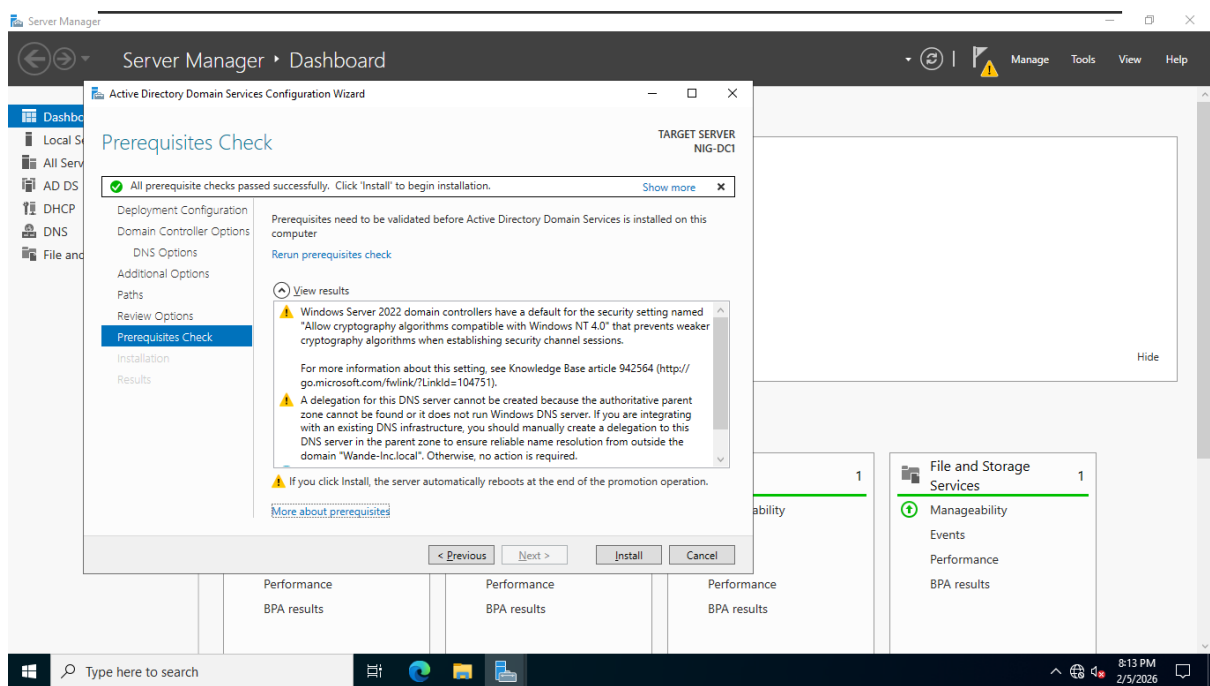
- Open Server Manager → Manage → Add Roles and Features
- Select Role based/ Feature based Installation.
- Select the server which you just renamed.
- Select "Active Directory Domain Services, DHCP & DNS" → Install (includes management tools)
- After installation, click the notification flag → Promote this server to a domain controller.

Promoting to a Domain Controller

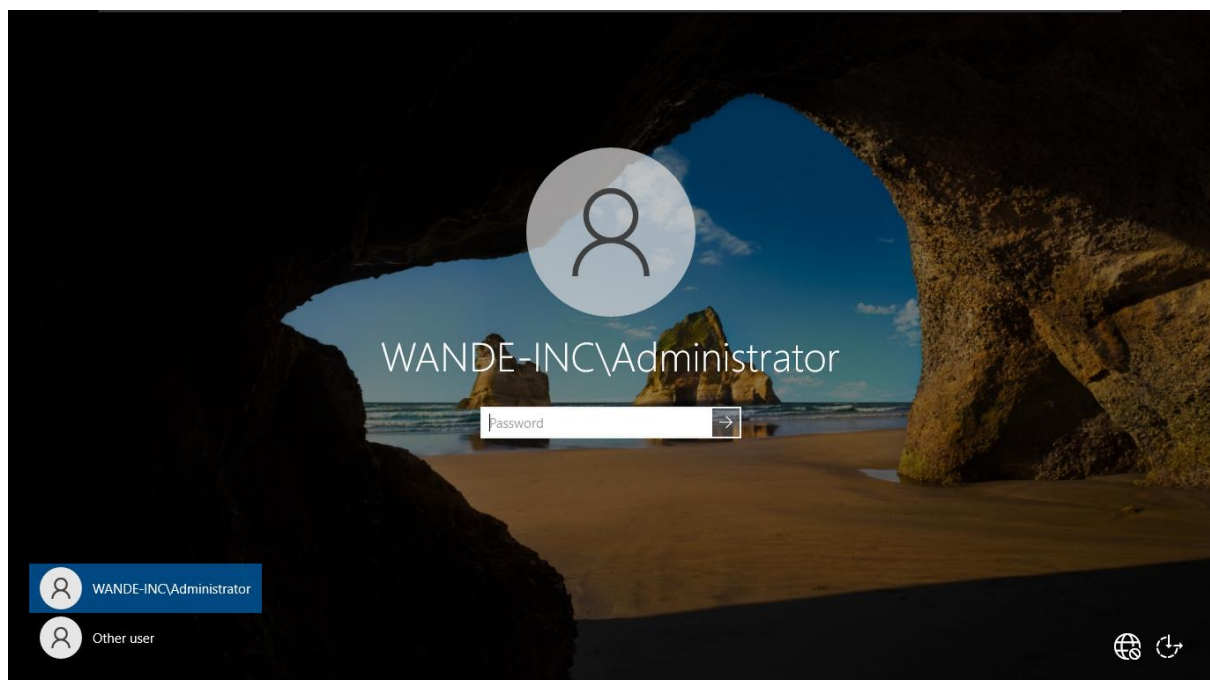
- Select Add a new forest and input a name of your desire (end the name with ".local" e.g. testlab.local) and click next.



- Enter a password of your choosing and Select Forest and domain functional level to Windows Server 2016 and click next
- Skip the "Create Dns delegation" and click next.
- Verify the NetBIOS name and click next
- Verify the Directory paths and click next.
- Review your options and click next.
- Verify the prerequisites check was passed successfully and click next.

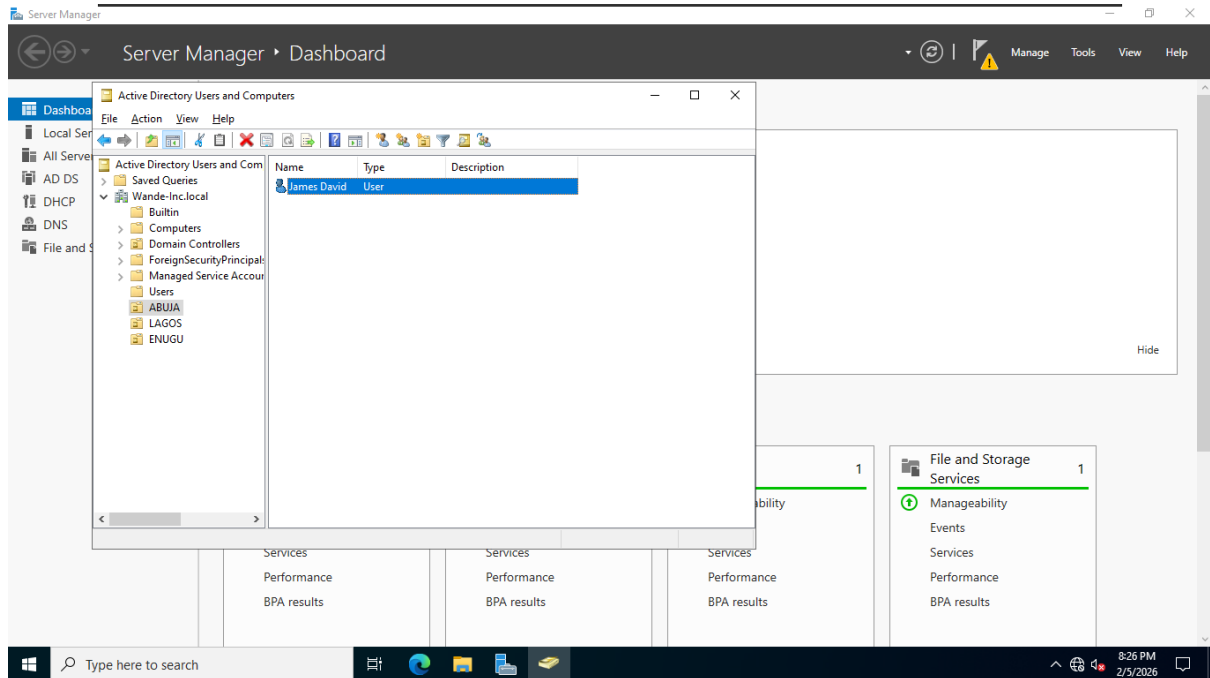


- The installation process would take about 5 minutes and automatically restart the server.



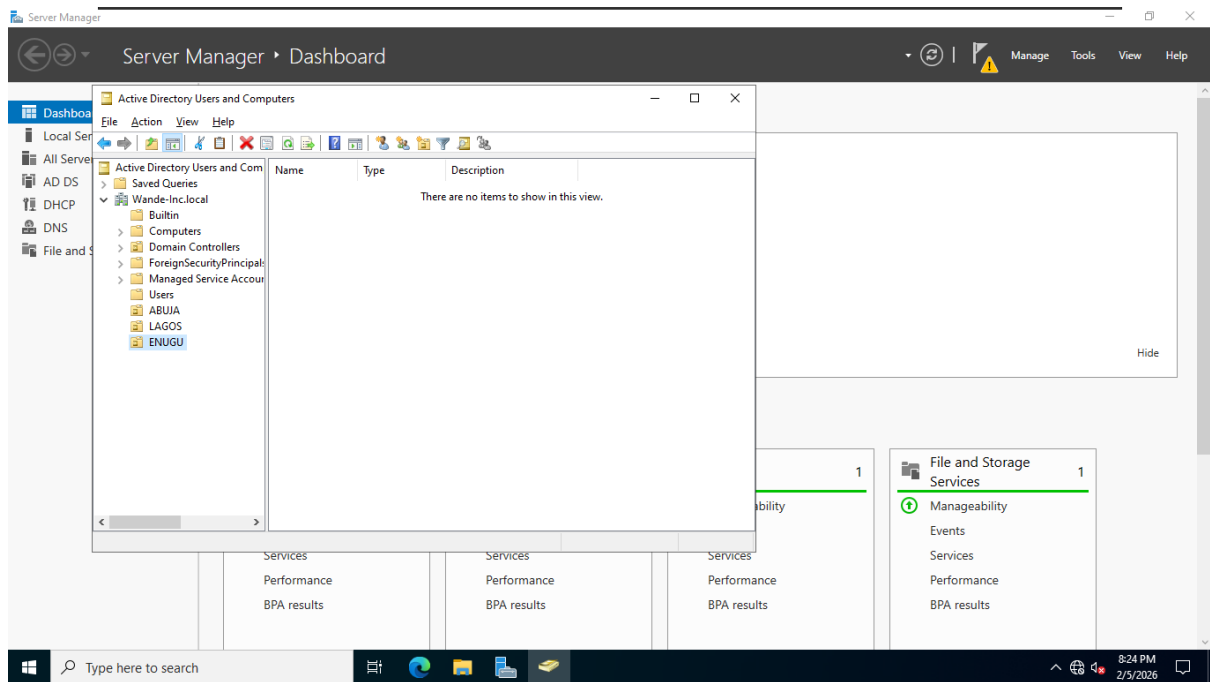
Creating Organizational Units (OUs).

- From the server manager, click on tools and select Active Directory Users and Computers.



- Right-Click on the domain name which you created earlier (testlab.local) → New → Organizational Unit and give it a name of your choosing. - Example structure:

- Company name
 - Departments
 - IT
 - HR
 - Sales
 - Users
 - Groups



To create users/groups and assign to OU's

- New → User (e.g., in IT OU)
- New → Group (e.g., IT-Admins – Global/Security)

Group Policy Basics

- Open Group Policy Management (gpmc.msc)
- Create GPO → Link to OU (e.g., password policy for IT OU)
- Edit: Computer/User Configuration → Policies → Windows Settings → Security Settings.

Conclusion.

This project successfully demonstrated the implementation of a functional Active Directory Domain Services (AD DS) environment on Windows Server 2022 within a virtualized lab using VMware Workstation Pro. The core objectives—

installing and promoting a Domain Controller, designing a hierarchical Organizational Unit (OU) structure, creating and managing users and groups, and applying basic Group Policy Objects (GPOs)—were achieved without major roadblocks, confirming the reliability of the setup process when following official Microsoft guidelines and best practices.

Key outcomes include:

- Establishment of a single-domain forest (e.g., WANDE-INC.local) with integrated services, enabling centralized authentication and resource management.
- Effective OU organization (e.g., by state: ABUJA, LAGOS, ENUGU) that supports logical grouping, delegation of administration, and targeted policy application.
- Practical validation of core AD features, including user account provisioning, group membership, and policy enforcement, which simulated real-world enterprise identity management scenarios.
- Identification of critical dependencies, such as proper network configuration in VMware (static IP addressing and DNS resolution), time synchronization, and administrative privileges, highlighting common points of failure in AD deployments.

References.

<https://docs.microsoft.com/en-us/windows-server/identity/ad-ds/deploy/install-active-directory-domain-services>

<https://knowledge.broadcom.com/external/article/344595/downloading-vmware-workstation-pro.html>

