Active Directory Lab Setup

Active Directory Setup in a Virtual Home Lab

Overview

This guide outlines a step-by-step process to set up an Active Directory (AD) environment using Windows Server 2022

within a virtualized lab environment. This hands-on lab is ideal for practicing Identity and Access Management (IAM),

Domain Services configuration, Group Policy implementation, and User/Group provisioning.

Prerequisites

- Windows PC with at least 8GB RAM and 100GB free disk space

- VMware Workstation Pro (free personal-use version)

- Windows Server 2022 ISO (downloaded from Microsoft Evaluation Center)

Step-by-Step Instructions

Step 1: Virtual Environment Setup

1. **Install VMware Workstation Pro**

   - Download from: https://www.vmware.com/products/workstation-pro.html

   - Follow the installation wizard instructions.

2. **Create a New Virtual Machine**

   - Launch VMware Create a New Virtual Machine Custom (advanced)
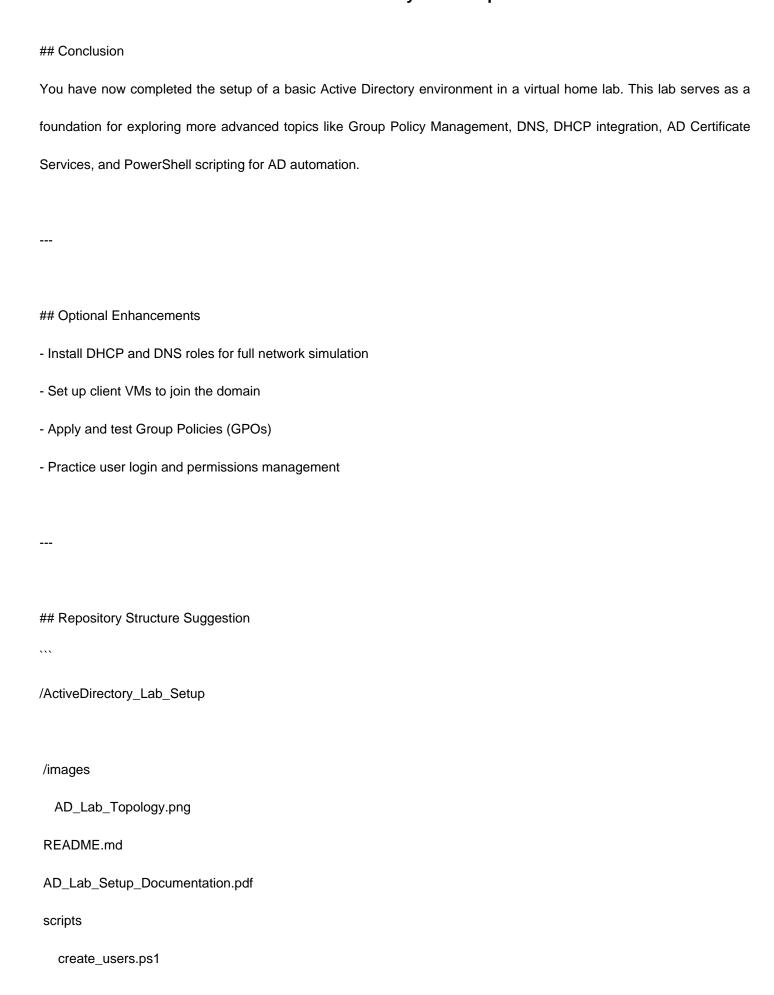
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  - Use ISO image for Windows Server 2022

  - Assign resources (minimum: 2 CPUs, 4GB RAM, 40GB disk)

3. **Install Windows Server 2022**

  - Choose "Windows Server 2022 Standard (Desktop Experience)"

  - Set a strong administrator password

4. **Configure Initial Server Settings**

  - Set static IP address

  - Rename the computer (e.g., AD-Server)

  - Enable Remote Desktop (optional)

Step 2: Install Active Directory Domain Services (AD DS)

1. **Launch Server Manager** Manage Add Roles and Features

2. **Select Role-based or feature-based installation**

3. **Select the server from the server pool**

4. **Add "Active Directory Domain Services"**

  - Also add Group Policy Management tools when prompted

5. **Complete the installation and reboot if necessary**

Step 3: Promote Server to Domain Controller

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1. After installation, open Server Manager "AD DS"

2. Click on "Promote this server to a domain controller"

3. **Create a new forest**: Domain name `eastcharmer.local`

4. Set Directory Services Restore Mode (DSRM) password

5. Review selections and install

6. Server will reboot automatically after promotion

Step 4: Configure Organizational Units (OUs)

1. Open **Active Directory Users and Computers** (ADUC)

2. Right-click the domain `eastcharmer.local` New Organizational Unit

3. Create top-level OUs:

   - USA

   - Europe

   - Asia

4. Under each region, create nested OUs:

   - Users

   - Computers

   - Servers

Step 5: Create Security and Distribution Groups

1. In ADUC, right-click appropriate OU New Group

2. Group Naming Examples:

   - `IT_Department` (Security Group)

   - `DL_IT_Admins` (Distribution Group)

3. Understand group scopes:

   - Global: Cross-domain use

   - Domain Local: Within the same domain

   - Universal: Forest-wide use (requires GC and proper configuration)

Step 6: Create User Accounts

1. Right-click the desired OU New User

2. Example user: `jdoe` in `USA > Users`

3. Set passwords and configure settings (e.g., password never expires, user must change password at next logon)

4. Add users to groups:

   - Right-click user Add to group `IT_Department`

Step 7: Understand Manual vs Automated Provisioning

- Manual user creation is ideal for learning.

- In production environments, use PowerShell scripts or CSV import methods to automate user provisioning.

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Conclusion

You have now completed the setup of a basic Active Directory environment in a virtual home lab. This lab serves as a foundation for exploring more advanced topics like Group Policy Management, DNS, DHCP integration, AD Certificate Services, and PowerShell scripting for AD automation.

Optional Enhancements

- Install DHCP and DNS roles for full network simulation

- Set up client VMs to join the domain

- Apply and test Group Policies (GPOs)

- Practice user login and permissions management

Repository Structure Suggestion
```
/ActiveDirectory_Lab_Setup

 /images

   AD_Lab_Topology.png

 README.md

 AD_Lab_Setup_Documentation.pdf

 scripts

   create_users.ps1
```

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setup_groups.ps1

```
```