

## Lecture 13 — Domain, VMware, Active Directory & Group Policy

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### 1. What is a Domain?

#### ◆ Definition:

A **domain** is a **logical structure** that organizes and manages a group of computers, users, and network resources into a **centralized database** controlled by a **Domain Controller (DC)**.

It helps in centralizing:

- Authentication (user login)
  - Authorization (access control)
  - Policy management (security, desktop, network)
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#### ◆ How a Domain Works:

When a user logs into a system connected to a domain:

1. The **login request goes to the Domain Controller**.
  2. The Domain Controller checks user credentials in the **Active Directory database**.
  3. If valid, it grants access according to the permissions defined.
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#### ◆ Example:

If your organization's name is **codingseekho.com**,  
then computers and users in that organization belong to the  
**codingseekho.com domain**.

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◆ **Why Domains Are Used:**

- Centralized control of users and computers.
  - Common security policies across all systems.
  - Easy management of hundreds of systems from one place.
  - Simplifies resource sharing (files, printers, etc.)
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## 2. VMware — Virtualization Software

◆ **Definition:**

VMware is a **virtualization platform** that allows you to create and run **multiple virtual machines (VMs)** on a single physical computer.

Each VM can have its own:

- Operating system
  - Applications
  - Network configuration
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◆ **Why VMware is Used:**

- To create **test environments** (for Windows Server, Linux, etc.)
  - For **lab practice** without affecting the host system.
  - For **server virtualization** in enterprise infrastructure.
  - To simulate real-world **client-server setups**.
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### 3. Steps to Install VMware Workstation and Create Virtual Machine

#### Step 1: Download VMware

- Visit official site: <https://www.vmware.com>
- Download **VMware Workstation Pro / Player.**

#### Step 2: Install VMware

- Run the setup → follow on-screen instructions.
  - Choose **Typical Installation.**
  - Complete installation and restart PC if needed.
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#### Step 3: Create a Virtual Machine

1. Open VMware Workstation.
  2. Click **Create a New Virtual Machine.**
  3. Choose:
    - **Typical (recommended)**
    - Click **Next.**
  4. Select **Installer disc image file (ISO)** → browse your Windows Server ISO file.
  5. Enter OS details (Name, Version, Key if needed).
  6. Specify:
    - VM Name → e.g., “Windows Server 2022”
    - Location → where to store VM files.
  7. Set **Processor and RAM** allocation.
  8. Create a **Virtual Hard Disk (VHD)** (e.g., 60 GB).
  9. Review and click **Finish** → VM will be created.
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## **Step 4: Install Operating System on VM**

- Start the VM → installation starts using ISO file.
  - Follow normal OS installation steps.
  - Once installed, set **Admin password** and configure network.
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## **Step 5: Install VMware Tools**

- Inside VM → click **VM** → **Install VMware Tools**.
  - It helps in:
    - Smooth mouse movement
    - Full-screen display
    - File drag/drop between host & VM
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### **4. Connecting VMware to Host and Server**

#### ◆ **To connect your virtual machine with your host or other servers:**

1. Go to VM → Settings → **Network Adapter**.
  2. Choose **Bridged mode** (connects VM directly to physical network).
    - VM gets IP address from same network as your host.
  3. Or use **NAT mode** (VM shares host IP).
    - Used when you want VM to access internet via host.
  4. Test connectivity with:
  5. ping <IP address>
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## 5. Active Directory Database & Log Files

### ◆ Location of AD Database:

C:\Windows\NTDS

This folder contains:

- **ntds.dit** → Main AD database file (stores users, groups, policies)
  - **edb.log** → Log files of AD transactions
  - **res1.log / res2.log** → Reserved logs
  - **temp.edb** → Temporary working database
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## 6. Creating a New User in Active Directory (Step-by-Step)

### Step 1: Open Active Directory Users and Computers

- Press **Windows + R** → type dsa.msc → Enter.

### Step 2: Select the Organizational Unit (OU)

- For example: “HR” OU.

### Step 3: Right-click → New → User

- Enter:
  - **First Name**
  - **Last Name**
  - **User logon name (Username)**

### Step 4: Set Password

- Enter a temporary password.
- Select:
  - *User must change password at next logon* (this ensures user sets a new password during first login).
  - *User cannot change password* (optional)
  - *Password never expires* (for admins)

Click **Next** → **Finish**.

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## 7. Adding User Details (Title, Department, Manager, etc.)

**Step 1:** Right-click the created user → Properties

**Step 2:** Fill information in following tabs:

- **General Tab:** Email, phone, office.
- **Organization Tab:**
  - **Title:** Job position (e.g., HR Executive)
  - **Department:** HR
  - **Company:** CodingSeekho Pvt Ltd
  - **Manager:** Select from existing users

**Step 3:** Click **Apply** → **OK**

This helps in **reporting hierarchy and department-level management**.

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## 8. Changing PC Name

### ◆ Method 1: Using System Properties

1. Press Windows + R → type sysdm.cpl → Enter.
  2. Go to **Computer Name** tab.
  3. Click **Change** → enter new computer name.
  4. Restart the PC to apply changes.
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## 9. Group Policy Management

### ◆ Definition:

**Group Policy Management** is a tool to create and manage **Group Policy Objects (GPOs)** that define what users and computers can or cannot do.

It applies security, software, desktop, and system restrictions across all domain computers.

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### ◆ How to Open:

- Press **Windows + R** → type gpmc.msc → Enter.
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### ◆ Example Policies:

- Disable Control Panel
- Block wallpaper change
- Prevent access to Command Prompt
- Hide search bar
- Disable USB drives



### ◆ How to Apply Policy:

1. Open **Group Policy Management Console (GPMC)**.
2. Right-click your **OU (e.g., HR)** → **Create a GPO in this domain and link it here**.
3. Name it (e.g., “Desktop Restrictions”).
4. Right-click the GPO → **Edit**.
5. Configure settings:
  - **User Configuration → Administrative Templates → Control Panel / Desktop**

- For wallpaper restrictions:  
User Configuration → Administrative Templates → Desktop →  
Desktop → Prevent changing desktop background → Enable
  - For search bar disable:  
User Configuration → Start Menu and Taskbar → Remove Search  
link → Enable
6. Close editor and **update policy** on client:
7. gpupdate /force
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## 10. When Start Menu Search or Wallpaper Change Is Disabled

If users can't:

- Search in Start Menu, or
- Change wallpaper,

It's because of a **Group Policy restriction** applied from the **Domain Controller**.

To fix or edit:

1. Go to **Group Policy Management (gpmc.msc)**.
  2. Identify which GPO is applied to that OU.
  3. Edit or disable the specific restriction.
  4. Run gpupdate /force on affected system.
  5. Restart PC.
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## 11. Practical Scenario Example

**Example:**

HR department requests to create a new employee account:

- Name: *Rohit Patil*
- Department: *HR*
- Title: *HR Executive*

- Company: *CodingSeekho Pvt Ltd*

Steps:

1. Open **dsa.msc**
  2. Go to **HR OU**
  3. Create new user → Rohit Patil
  4. Set password → user must change password on next login.
  5. Add department info in **Properties → Organization tab**.
  6. Apply **Group Policy** to HR OU for system access and restrictions.
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## 12. Summary Table

| Topic                           | Purpose / Description                        |
|---------------------------------|--|
| <b>Domain</b>                   | Logical group for centralized control via AD |
| <b>VMware</b>                   | Creates virtual machines for testing/servers |
| <b>Active Directory</b>         | Stores users, computers, and policies        |
| <b>NTDS Folder</b>              | Location of AD database and log files        |
| <b>User Creation</b>            | Add new user accounts with password rules    |
| <b>OU (Organizational Unit)</b> | Group users by department                    |
| <b>Group Policy</b>             | Apply rules or restrictions to OUs           |
| <b>System.cpl</b>               | Used to change PC name                       |
| <b>GPMC.msc</b>                 | Used for managing group policies             |

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## 13. Quick Commands Reference

| <b>Command</b>  | <b>Description</b>                   |
|-----------------|--------------------------------------|
| sysdm.cpl       | Change PC name / domain              |
| dsa.msc         | Active Directory Users and Computers |
| gpmc.msc        | Group Policy Management Console      |
| gpupdate /force | Force apply Group Policy             |
| ping <IP>       | Test connectivity                    |
| hostname        | Check current system name            |



## 1. SUMMARY

### ◆ Domain

A **domain** is a centralized network environment where users, computers, and resources are managed from a single server called a **Domain Controller (DC)**. DC uses **Active Directory (AD)** to store users, computers, groups, and policies.

### ◆ VMware

VMware Workstation is a virtualization platform used to create and run multiple VMs on one physical PC.

VMs are used for labs, training, testing Windows Server, and creating domain environments.

### ◆ Installing VMware & Creating VM

Steps include downloading VMware, creating a new VM, attaching ISO, assigning RAM, processors, storage, then installing OS and VMware Tools.

### ◆ Networking in VMware

VM can connect to host or network using:

- **Bridged** – VM gets real network IP
- **NAT** – VM uses host's internet
- **Host-only** – Isolated lab network

### ◆ Active Directory Database

Stored in:



Contains:

- AD database: ntds.dit
- Log files: edb.log, res1.log, res2.log
- Temporary DB: temp.edb

### ◆ Creating Users in AD

Using **dsa.msc**, you create users, assign username & password, and configure organization details (Department, Manager, Title).

#### ◆ **Changing PC Name**

Using sysdm.cpl, rename computer before joining to domain.

#### ◆ **Group Policy Management**

GPOs are used to apply restrictions or configurations (disable control panel, block cmd, disable search bar, disable USB, etc.)

Opened using: **gpmc.msc**

#### ◆ **Troubleshooting**

If user can't change wallpaper or use search—it's because of GPO applied from DC.

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## **2. CONCLUSION**

This chapter explains the foundation of enterprise IT infrastructure. A domain allows centralized management of users and computers using Active Directory. VMware helps create virtual test environments for domain practice. Active Directory stores all authentication and authorization data, while Group Policy provides powerful administrative control to enforce security and configuration settings across all domain computers. Understanding these concepts is essential for any IT Support, System Administrator, or Network Engineer role.

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## **3. DETAILED MINDMAP (TEXT FORMAT FOR EASY UNDERSTANDING)**

### LECTURE 13 MINDMAP

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#### DOMAIN

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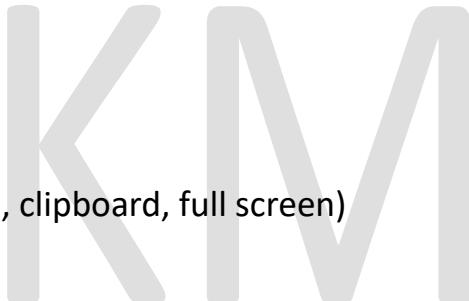
- Domain Controller (DC)
- Active Directory (AD)
- Centralized Authentication
- Centralized Authorization

- User + Computer + Group Management
  - Resource Sharing (Files, Printers)
  - OU Structure
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## VMWARE

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- Virtual Machines (Windows/Linux)
- Testing Domains
- Networking Modes:
  - Bridged
  - NAT
  - Host-only
- VMware Tools (drivers, clipboard, full screen)



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## ACTIVE DIRECTORY (AD)

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- AD Database (ntds.dit)
- Users
- Computers
- Groups
- OUs (HR, IT, Finance)
- AD Tools:
  - dsa.msc (Users & Computers)
  - gpmc.msc (Group Policy)

- sysdm.cpl (PC rename/domain join)

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## GROUP POLICY (GPO)

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- User Configurations
- Computer Configurations
- Examples:
  - Disable CMD
  - Block Control Panel
  - Disable USB
  - Restrict Wallpaper
- Apply to OU → gpupdate /force



## PRACTICAL FLOW

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1. Install VMware
  2. Create Windows Server VM
  3. Promote to Domain Controller
  4. Create Users (HR, IT, Finance)
  5. Apply GPOs to OUs
  6. Join client PCs to domain
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## 4. MOST IMPORTANT INTERVIEW QUESTIONS

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### SECTION A — DOMAIN INTERVIEW QUESTIONS

#### 1. What is a Domain?

A domain is a centralized network structure where users, computers, and resources are controlled from a server called Domain Controller using Active Directory.

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#### 2. What is a Domain Controller (DC)?

A Domain Controller is a Windows Server that stores Active Directory database and handles authentication (login) and authorization (permissions).

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#### 3. Why do companies use domains?

- Centralized management
  - Better security
  - Single sign-on
  - Easy user/computer administration
  - Apply policies to all users
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#### 4. What is Active Directory?

Active Directory is Microsoft's directory service that stores details of users, groups, computers, and policies in a domain.

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#### 5. What is OU (Organizational Unit)?

An OU is a container inside Active Directory used to organize users and computers by department (HR, IT, Finance) and apply GPOs.

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## 🔥 SECTION B — VMWARE INTERVIEW QUESTIONS

### 6. What is VMware?

VMware is a virtualization platform that allows you to run multiple virtual machines on a single computer.

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### 7. What is the use of VMware in IT support?

- Practice Windows Server
  - Create domain labs
  - Test software without affecting host
  - Simulate real networks
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### 8. Difference between Bridged and NAT?

#### Mode      Explanation

**Bridged** VM gets IP from physical network; works like a real PC

**NAT**      VM uses host PC IP to access internet

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### 9. What is VMware Tools?

A package installed inside VM to enable:

- Full screen
  - Smooth mouse
  - Drag & drop
  - Better performance
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## 🔥 SECTION C — ACTIVE DIRECTORY INTERVIEW QUESTIONS

### 10. Where is AD database stored?

In folder:

C:\Windows\NTDS

Main file → ntds.dit

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### 11. What does ntds.dit contain?

All domain data:

- Users
  - Computers
  - Groups
  - Password hashes
  - Policies
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### 12. How do you create a user in Active Directory?

Using **dsa.msc** → New User → Username → Password → Set properties (Department, Manager).

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### 13. What is the purpose of "User must change password at next logon"?

Forces new users to set a secure password on first login.

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### 14. How do you rename a computer?

Run → sysdm.cpl → Computer Name → Change.

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## 🔥 SECTION D — GROUP POLICY INTERVIEW QUESTIONS

### 15. What is Group Policy?

Group Policy is a feature in Windows domain to apply security settings and restrictions to users and computers.

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### 16. How do you open Group Policy Management Console?

Run → gpmc.msc

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### 17. Give examples of GPOs you can apply.

- Disable Control Panel
  - Disable USB
  - Block CMD
  - Disable search bar
  - Prevent wallpaper change
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### 18. How do you apply GPO to a specific department?

Create GPO → Link to OU → Edit policies → Run gpupdate /force.

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### 19. A user says they cannot change wallpaper. What is the issue?

A Group Policy restriction is applied (Desktop background change disabled).

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## 🔥 SECTION E — TROUBLESHOOTING & SCENARIOS

### 20. A client PC is not applying new GPO. What command will you use?

gpupdate /force

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## **21. What if a user cannot log into domain?**

Possible reasons:

- Wrong password
  - Account disabled
  - PC not connected to network
  - PC not joined in domain
  - Time mismatch with DC
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## **22. A VM is not getting internet. What will you check?**

- VM network mode (NAT/Bridged)
  - IP configuration
  - Host network connection
  - VMware services running
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## **23. How do you check the computer's domain name?**

Run:

hostname

or

system properties → domain