**Module 12 : Installation, Storage, and Compute with Windows server**

1. **What two options are provided in the type of installation window during Windows Server 2016 installation?**

**Ans.** During Windows Server 2016 installation, the "Type of Installation" window offers two primary options: "Server Core" and "Server with Desktop Experience".

1. **Write the step How to configure server step by step?**

**Ans. 1. Install Windows Server OS**

* Boot the system from the installation media (USB/DVD/ISO).
* Follow the wizard to install Windows Server (choose Desktop Experience if you want a GUI).
* Set a strong Administrator password during installation.

**2. Initial Setup After Installation**

* Log in with the Administrator account.
* Set correct date, time, and time zone.
* Rename the server:
  + Go to Server Manager → Local Server → Computer Name → Change
* Reboot after renaming.

**3. Set a Static IP Address**

* Go to Control Panel → Network and Sharing Center → Change adapter settings
* Right-click your network adapter → Properties → IPv4
* Set:
  + Static IP
  + Subnet mask
  + Default gateway
  + Preferred DNS (e.g., 8.8.8.8)

**4. Enable Remote Desktop (RDP)**

* In Server Manager → Local Server, click on Remote Desktop: Disabled
* Enable Remote Desktop and allow it through the firewall.
* You can now connect using mstsc.exe from another PC.

**5. Install Windows Updates**

* Go to Settings → Update & Security → Check for Updates
* Install all updates and restart if required**.**

**6. Configure Roles and Features**

* Open Server Manager
* Click on Add roles and features
* Use the wizard to install:
  + Active Directory Domain Services (AD DS) if you want a domain controller
  + DHCP, DNS, File Services, Web Server (IIS), etc., depending on your use case

**7. Promote to Domain Controller (if required)**

* After installing AD DS, open Server Manager
* Click the flag icon and choose Promote this server to a domain controller
* Follow the wizard to:
  + Add a new forest
  + Set domain name (e.g., mydomain.local)
  + Configure DSRM password
* Restart after promotion

**8. Create Users and Groups (if AD is installed)**

* Open Active Directory Users and Computers
* Create Organizational Units (OUs), Users, and Groups

**9. Configure Firewall and Security**

* Open Windows Defender Firewall
* Create inbound/outbound rules for specific ports/services
* Install antivirus/endpoint protection

**10. Setup Backup**

* Use Windows Server Backup (install via Roles and Features)
* Schedule regular backups to another disk or network location

**11. Monitor & Maintain**

* Use Event Viewer and Task Manager for logs and performance
* Configure Performance Monitor for advanced tracking
* Set up alerts or scripts for health checks

1. **What are the Pre installation tasks?**

**Ans. Define Server Purpose –** Know what role the server will play (e.g., web, file, domain).

**Check System Requirements –** Verify hardware compatibility (CPU, RAM, storage).

**Backup Existing Data –** Save important data if repurposing a system.

**Choose OS Version –** Select the right edition and version (e.g., Windows Server 2022 Standard).

**Prepare Installation Media –** Create a bootable USB or DVD with the server OS.

**Plan Network Settings –** Decide static IP, subnet, gateway, and DNS.

**Gather Drivers –** Have storage/network drivers ready if needed.

**Configure BIOS/UEFI –** Set boot order, enable virtualization, and choose UEFI/Legacy mode**.**

**Plan Disk Partitions –** DecideOS and data partition layout.

**Ensure Power & Network Stability –** Use a UPS and stable internet.

**Plan Security –** Prepare secure admin credentials and firewall/remote access settings.

1. **What are the Post installation tasks?**

**Ans. Post-Installation Tasks :**

1. Set Server Name and Domain/Workgroup
2. Assign Static IP Address
3. Enable Remote Access (RDP or SSH)
4. Install System Updates and Security Patches
5. Add Server Roles and Features
6. Configure Firewall Rules
7. Install Antivirus/Antimalware Software
8. Set Time Zone and NTP Sync
9. Create User Accounts and Set Permissions
10. Set Up Backup and Recovery Plans
11. Enable Monitoring and Logging
12. Document All Configurations
13. **What is the standard upgrade path for Windows Server?**

**Ans.**

| **Current Version** | **Can Upgrade To** |
| --- | --- |
| **Windows Server 2012 R2** | Windows Server 2016 or 2019 |
| **Windows Server 2016** | WindowsServer2019or2022 |
| **Windows Server 2019** | Windows Server 2022 |
| **Windows Server 2022** | Latest versions (future upgrades) |

1. **What is the Physical structure of AD?**

**Ans. Domain Controllers (DCs):**Servers that store AD data and handle authentication and replication.

**Sites:**Represent physical locations (e.g., offices), defined to optimize replication and authentication.

**Subnets:**IP ranges assigned to sites, used to direct clients to the nearest domain controller.

**Site Links:**Define replication paths between sites, controlling when and how data replicates.

1. **What is the Logical components of Active Directory?**

**Ans. Logical Components of AD :**

**Forest –** Top-level structure; contains all domains; shares a common schema.

**Tree –** A group of related domains in a hierarchical structure.

**Domain –** Core unit containing users, computers, and resources; has its own security policies.

**Organizational Unit (OU) –** Used to organize objects within a domain and apply group policies.

**Objects –** Individual items in AD like users, groups, computers, etc.

**Global Catalog –** Index of all AD objects for fast searching across domains.

1. **What is the Full form Of LDAP?**

**Ans.** Lightweight Directory Access Protocol

1. **What is the location of the AD database?**

**Ans**. By default, the Active Directory database is located in the %systemroot%\NTDS folder (C:\Windows\NTDS) of a domain controller.

1. **What is child DC?**

**Ans.** A Child DC refers to a Domain Controller that belongs to a Child Domain within an Active Directory domain tree.

1. **Explain the term forest in AD.**

**Ans. A Forest is the top-most container in Active Directory.**

* **It contains one or more domains that share:**
* A common schema
* A global catalog
* A configuration set
* **Domains in the same forest automatically trust each other.**
* **A forest acts as a security and trust boundary.**
* **It enables centralized management of users, computers, and policies across domains.**

1. **What is Active Directory? (Check all that apply)**

**Ans.**

* Microsoft's implementation of a directory server
* A Windows-only implementation of a directory server
* An LDAP-compatible directory server

1. **When you create an Active Directory domain, what's the name of the default user account?**

**Ans.**  Administrator

1. **AD domain provides which of the following advantages? (Check all that apply)**

**Ans.**

* Centralized authentication
* More detailed logging
* Centralized management with GPOs (Group Policy Objects)

1. **What are the minimum hardware requirements for installing Windows Server 2016?**

**Ans.**

| **Component** | Requirement |
| --- | --- |
| **Processor (CPU)** | 1.4 GHz 64-bit processor (x64) |
| **RAM** | 512 MB (2 GB for Server with Desktop Experience) |
| **Disk Space** | 32 GB minimum (more recommended for GUI) |
| **Network Adapter** | Ethernet adapter capable of at least 1 Gbps |
| **Display** | Super VGA (1024x768) or higher |
| **Other** | UEFI 2.3.1 firmware with Secure Boot (optional but recommended) |

1. **Explain the different editions of Windows Server 2016 and their features.**

**Ans.**

1. **Essentials**

* For small businesses (up to 25 users / 50 devices)
* No virtualization rights
* Basic features, no Server Core

1. **Standard**

* For lightly virtualized environments
* Includes 2 Virtual Machines
* Supports most server roles and limited advanced features

1. **Datacenter**

* For highly virtualized or cloud environments
* Unlimited VMs, full feature set
* Includes advanced features like Shielded VMs and Storage Spaces Direct

1. **Walk through the steps of installing Windows Server 2016 using GUI mode.**

**Ans.**

* **Boot from Installation Media**– Insert DVD/USB and boot from it.
* **Select Language & Preferences**– Choose language, time, and keyboard settings.
* **Click "Install Now"**
* **Choose Edition**– Select Standard or Datacenter (Desktop Experience).
* **Accept License Terms**
* **Choose Installation Type**– Select Custom: Install Windows only (advanced).
* **Select Disk Partition  
  – Choose where to install the OS.**
* **Wait for Installation**– System installs and reboots.
* **Set Administrator Password**
* **Login to GUI**– Use Ctrl + Alt + Del, enter password, and access the full desktop interface.

1. **Explain the process of promoting a Windows Server to a domain controller.**

**Ans.**

**1. Install the AD DS Role**

* Open Server Manager
* Go to “Manage” → “Add Roles and Features”
* Use the Role-Based or Feature-Based Installation option
* Select the local server
* In the Server Roles section, check Active Directory Domain Services
* Click Next and complete the installation

**2. Promote Server to a Domain Controller**

* After installation, in Server Manager, a notification flag appears.
* Click “Promote this server to a domain controller”

**3. Choose Deployment Type**

* **You have 3 options:**
  + Add a domain controller to an existing domain
  + Add a new domain to an existing forest
  + Add a new forest
* **For a new domain/forest, choose “Add a new forest” and specify the Root domain name (e.g., mydomain.local)**

**4. Specify Domain Controller Options**

* **Choose:**
  + Domain Functional Level (e.g., Windows Server 2016)
  + Forest Functional Level
  + DNS Server (optional, but usually selected)
  + Global Catalog (default: checked)
  + Set the Directory Services Restore Mode (DSRM) password

**5. Additional Options**

* Configure DNS delegation if needed
* Verify NetBIOS domain name
* Specify location for AD database, log files, and SYSVOL (default is fine for most)

**6. Review & Install**

* Review all selections
* The system performs a prerequisite check
* If all checks pass, click Install
* The server will automatically reboot after installation

**7. Post-Installation**

* Once rebooted, the server is now a Domain Controller
* You can now use Active Directory Users and Computers (ADUC) to manage users, groups, and policies

1. **Discuss the steps involved in upgrading from a previous version of Windows Server to Windows Server 2016.**

**Ans.**

**1. Review System Requirements**

**Before starting the upgrade, ensure the existing hardware meets the minimum system requirements for Windows Server 2016:**

* Processor: 1.4 GHz 64-bit
* RAM: 512 MB minimum (2 GB recommended)
* Disk Space: 32 GB minimum
* Firmware: UEFI (for Secure Boot), BIOS is also supported
* Others: Network adapter, internet access (for updates), etc.

**2. Check Upgrade Paths**

**Verify if an in-place upgrade is supported. Windows Server 2016 supports upgrades from:**

* **Windows Server 2012**
* **Windows Server 2012 R2**

Upgrades from Windows Server 2008 or earlier are not supported directly and require a clean installation or an intermediate upgrade.

**3. Backup Existing System**

**Before upgrading:**

* Take a full backup of the server (system state, data, applications).
* Test the backup to ensure it works properly.
* Consider creating a system image.

**4. Verify Application and Driver Compatibility**

* Check that existing applications and drivers are compatible with Windows Server 2016.
* Update or replace unsupported applications.

**5. Install Updates**

* Ensure the current server OS is fully updated via Windows Update.
* Check for and apply firmware or BIOS updates from the hardware manufacturer.

**6. Run the Windows Server 2016 Setup**

* Insert the installation media (ISO/DVD/USB).
* Run setup.exe from the media.
* Choose the "Upgrade" option (not Custom).
* Follow the on-screen prompts**.**

**7. Choose Edition to Match Existing Server**

* Select the correct edition that matches the currently installed edition (e.g., Standard to Standard, Datacenter to Datacenter).
* Ensure the architecture (x64) matches**.**

**8. Complete Installation**

* The setup will perform compatibility checks and upgrade the system.
* This process may involve multiple reboots.
* Monitor for errors or prompts.

1. **What is Active Directory Domain Services (AD DS), and what are its key components?**

**Ans.** Active Directory Domain Services (AD DS) is a directory service developed by Microsoft for Windows Server. It is used to store, organize, and manage information about network resources (like users, computers, printers) and provides authentication and authorization services within a Windows domain.

1. **Domain**
   * A logical group of objects (users, groups, devices) sharing a common directory database and security policies.
2. **Organizational Units (OUs)**
   * Containers used to organize users and resources into manageable units within a domain.
3. **Forest**
   * The top-level structure that contains one or more domains. It represents the entire Active Directory environment.
4. **Tree**
   * A collection of one or more domains connected in a **hierarchical structure** within a forest.
5. **Domain Controllers (DCs)**
   * Servers that host the AD DS database and handle **authentication requests**, replication, and directory lookups.
6. **Global Catalog**
   * A searchable index that contains a partial replica of all objects in the forest, allowing fast queries across domains.
7. **Schema**
   * Defines the structure of data in AD, including object types (like users or computers) and their attributes.
8. **Sites and Replication**
   * Used to control how and when AD data is replicated across physical locations.
9. **How do you create a new Active Directory user account in Windows Server ?**

**Ans. Step 1 :** First we have to go to server manager and then go to active directory domain users and computers.

**Step 2 :** Now we have to click on our forest and then open user tab.

**Step 3 :** then on the top panel we have to click on person icon and also we can access user creation tab by right click in user folder then new and then select user.

**Step 4 :** in the user panel we have to fill user details like first name, last name and logon name.

**Step 5 :** now in next step we need to set a strong password for user and then choose password option ( eg. User cannot change password and user password never expire).

**Step 6 :** click next, then finish to create the new user.

1. **Explain the process of creating and managing Group Policy Objects (GPOs) in Windows Server 2016 or 2019.**

**Ans. Open Group Policy Management Console (GPMC):**

* Go to server manager then tools the group policy management.
* **Navigate to Your Domain or OU:**
* In the left pane, expand Forest → Domains → Your Domain.
* **Right-click the OU or Domain where you want to apply the GPO.**
* Select "Create a GPO in this domain, and Link it here…"
* **Name the GPO:**
* Enter a meaningful name (e.g., "Disable USB Access").
* **Edit the GPO:**
* Right-click the GPO → Edit
* This opens the Group Policy Management Editor.

1. **What are Organizational Units (OUs) in Active Directory, and how do you use them?**

**Ans.** Organizational Units (OUs) in Active Directory (AD) are containers used to organize and manage a group of related objects, such as users, groups, computers, and other OUs, within a domain.

**How to Use OUs:**

1. **Create OUs** to represent your organization’s structure (e.g., HR, IT, Sales, New York Office).
2. **Place user and computer accounts** into the appropriate OU.
3. **Apply Group Policies** to OUs to enforce security settings, software installations, login scripts, etc.
4. **Delegate control** of an OU to local IT staff so they can manage their department’s users or computers without accessing other parts of the domain.
5. **Describe the process of delegating administrative privileges in Active Directory.**

**Ans.** Delegating administrative privileges in Active Directory allows you to assign specific permissions to users or groups to manage objects (like users, groups, or computers) within a specific Organizational Unit (OU) — without giving them full administrative rights over the domain.

**Steps to Delegate Administrative Privileges:**

1. **Open Active Directory Users and Computers (ADUC):**
   * In tools go to Active directory Users and computers.
2. **Locate the OU:**
   * In the left pane, navigate to and right-click the OU where you want to delegate control.
3. **Choose “Delegate Control”:**
   * This opens the Delegation of Control Wizard.
4. **Add the User or Group:**
   * Click Add, select the user or group to whom you want to delegate permissions, and click Next.
5. **Choose Tasks to Delegate:**
   * Select from common tasks (like creating/deleting user accounts, resetting passwords) or choose custom tasks for more granular control.
6. **Finish the Wizard:**
   * Review your choices and click Finish. The selected user/group now has delegated control over that OU as specified.