# 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: server core installation : minimal interface recommended for production

* Server with desktop experience: full GUI similar to a regular windows interface.

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

ANS: 1. Install windows server : boot from installation media select insatallation type and complete installation

2. configure network settings : assing a static ip address subnet mask gateway and DNS.

3. rename the server : change the default computer name to match your naming convention.

4. set administrator password : during first login set up a strong password.

5. Set up storage : configure RAID partitions or additional drives if required.

6. Enable remote desktop : allow remote administration if needed.

1. What are the Pre installation tasks?

ANS : Backup: Backup any existing data and configurations, especially if you are upgrading or making major changes.

DNS Configuration: Ensure a proper DNS setup, as AD heavily relies on DNS for its operations.

Network Configuration: Set a static IP address for the server.

Domain Name Selection: If setting up AD, decide on the domain name.

Hardware Requirements: Ensure the hardware meets the minimum requirements for the version of Windows Server being installed.

1. What are the Post installation tasks?

ANS : After the installation of Windows Server and Active Directory, the following tasks should be performed:

Activate Windows: Activate the operating system and apply any additional updates.

Configure Active Directory: Set up the domain, organizational units (OUs), and groups.

Group Policy Configuration: Configure Group Policy Objects (GPOs) to enforce organizational security and settings.

1. What is the standard upgrade path for Windows Server?

ANS: In-place upgrade: Upgrading directly from one version of Windows Server to the next (e.g., from Windows Server 2016 to Windows Server 2019).

> Ensure a backup is taken before upgrading.

> Run a compatibility check to ensure your hardware and software are compatible with the new version.

2. Domain Controller Upgrade:

> Upgrade the operating system on the Domain Controller without requiring the removal of Active Directory.

> Upgrade the server in phases, starting with the forest and domain functional levels after the OS upgrade.

1. What is the Physical structure of AD?

ANS : The physical structure of Active Directory refers to the actual hardware and network setup of the Active Directory infrastructure. This includes:

> Domain Controllers (DCs): Servers that store the AD database and respond to authentication requests and other AD queries.

> Sites: Geographic or logical groupings of domain controllers that optimize replication and authentication traffic within the network

1. What is the Logical components of Active Directory?

ANS : The logical structure of Active Directory refers to the conceptual setup and how objects within AD are organized. The main components are :

> Forest: The topmost container in AD, consisting of one or more domains. It provides the security boundary.

> Domains: Logical groupings of computers, users, and other resources that share a common directory database.

> Organizational Units (OUs): Sub-divisions within a domain, used to organize objects for easier management and application of policies.

> Trees: A collection of one or more domains that share a common schema.

1. What is the Full form Of LDAP?

ANS : LDAP stands for Lightweight Directory Access Protocol. It is a protocol used to access and manage directory information, such as that in Active Directory. It allows for querying and modifying directory services over a network.

1. What is the location of the AD database?

ANS : C:\Windows\NTDS\NTDS.dit This database file holds the directory data, including information about users, groups, and other objects in Active Directory.

1. What is child DC?

ANS : A Child Domain Controller (DC) refers to a domain controller that is part of a **child domain** in an Active Directory forest. A child domain is a domain that is subordinate to another domain (the parent domain) in the AD hierarchy.

* The child domain shares a common schema and global catalog with the parent domain but has its own unique namespace.

1. Explain the term forest in AD

ANS : In Active Directory, a forest is the top-level container within the AD infrastructure. It consists of one or more domains that share a common schema.

> A forest represents the security boundary of the AD deployment, meaning that objects (users, groups, etc.) in one forest cannot be directly accessed by another forest unless trust relationships are established.

> Forests can be made up of multiple trees, which are collections of one or more domains that share a contiguous namespace. Each forest is unique and has its own configuration settings and trust relationships.

12. What is Active Directory? Check all that apply.

ANS :● An open-source directory server

> No, Active Directory is not open-source. It is a proprietary technology from Microsoft.

● A Windows-only implementation of a directory server

> Yes, Active Directory is specifically designed to run on Windows Server operating systems.

● Microsoft's implementation of a directory server

> Yes, Active Directory is Microsoft's proprietary implementation of a directory service.

● An LDAP-compatible directory server

> Yes, Active Directory is compatible with the LDAP (Lightweight Directory Access Protocol), which it uses for querying and managing directory information.

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

● Superuser

> Yes, Active Directory is compatible with the LDAP (Lightweight Directory Access Protocol), which it uses for querying and managing directory information.

● Root

> No, "Root" is the highest-level administrative account in Unix/Linux systems, not in Active Directory.

● Username

> No, there is no default user account called "Username."

● AdministratorOPT

> Yes, the default user account created when you set up an Active Directory domain is called Administrator. This account has full control over the domain.

14. AD domain provides which of the following advantages? Check all that apply.

● Centralized authentication

> Yes, AD provides centralized authentication, allowing users to log in from any computer in the domain using the same credentials. This simplifies user management and enhances security.

● More detailed logging

> Yes, AD provides more detailed logging, especially in terms of user activity, login attempts, and changes to the directory. This helps in auditing and troubleshooting.

● Centralized management with GPOs

> Yes, AD allows centralized management of user and computer configurations through Group Policy Objects (GPOs), which help enforce security settings, software deployment, and other configurations across the network.

● Better performance

> No, AD itself doesn't necessarily improve performance directly. Performance is influenced by various factors like hardware, network setup, and the number of users. While AD helps streamline administration, it doesn't inherently enhance the performance of individual machines or applications.

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

ANS : The minimum hardware requirements for installing Windows Server 2016 are as follows:

1. Processor (CPU):

* 1.4 GHz 64-bit processor

2. RAM (Memory):

* Minimum: 512 MB of RAM
* Recommended: 2 GB or more, especially for better performance or if you plan to run additional services.

3. Hard Disk Space:

* Minimum: 32 GB of available disk space
* (Note: More disk space may be required depending on the features you choose to install and the number of roles you plan to use.)

4. Network Adapter:

* Gigabit (10/100/1000baseT) network adapter
* (If using a virtualized environment, a virtual network adapter is also supported.)

5. Graphics:

* A monitor with at least 1024 x 768 resolution (for basic installation, though higher resolutions are preferable for more efficient management).

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

ANS : 1. Windows Server 2016 Standard Edition :

Target Audience: Small to medium-sized businesses, general-purpose server environments.

Key Features:

Two Virtual Machines (VMs): The Standard edition allows up to two virtual machines and one Hyper-V host per license.

Core Features: Includes core features such as Active Directory, DNS, DHCP, and file services.

Storage Spaces: Supports basic storage spaces without the advanced features available in the Datacenter edition.

2**.** Windows Server 2016 Essentials Edition :

Target Audience: Small businesses (up to 25 users and 50 devices).

Key Features:

Simplified Management: Easier setup and management with a streamlined interface.

Basic Features: Includes Active Directory, file sharing, and remote access for small environments.

Remote Web Access: Users can access files remotely through a web interface.

No Virtualization Rights**:** Limited to running the operating system on a physical server only (no virtualization rights).

3. Windows Server 2016 Hyper-V Edition (Limited Availability) :

Target Audience: Virtualization-focused businesses or service providers.

Key Features:

Minimal Installation: Hyper-V Edition is a stripped-down version designed to run only Hyper-V as a role, with no other server functions (such as file services, web services, etc.).

Virtualization-Only: It is optimized for running virtual machines and is typically used in data centers and private clouds where the sole requirement is a hypervisor.

**4.** Windows Server 2016 Datacenter Edition :

Target Audience: Large enterprises, data centers, and cloud environments.

Key Features:

Unlimited Virtualization: You can run an unlimited number of virtual machines (VMs) on a licensed server.

Storage Spaces Direct**:** This feature allows the creation of highly available storage systems using local storage.

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

ANS : 1. Boot from Installation Media :

Turn on the server or computer and enter the BIOS/UEFI settings (usually by pressing a key like F2, F12, DEL, or ESC during startup).

Change the boot order to prioritize the USB drive or DVD (depending on your installation media).

Save changes and restart the server. The system will now boot from the installation media.

2. Enter Product Key (Optional) :

If prompted, enter the product key for Windows Server 2016. If you don’t have the key at this moment, you can choose to enter it later by clicking I don’t have a product key.

Select the appropriate edition (Standard, Datacenter, etc.) and click Next.

3. Select the Disk Partition :

On the next screen, you will see a list of available disks and partitions. Choose the partition where you want to install Windows Server 2016.

If there is no partition or if you want to delete all previous partitions, select the unallocated space or the disk and click Delete to remove existing partitions.

You can then create a new partition by selecting the unallocated space and clicking New.

4. Configure the Administrator Password :

After the system restarts, you will be prompted to set a password for the Administrator account.

Enter a strong password and confirm it. Make sure you remember this password because you’ll need it to log in to the server.

Click Finish.

5. Configure Network Settings :

Go to the Server Manager, click on the Local Server tab, and select the Ethernet link under NIC Teaming.

Configure your IP address (either static or DHCP), DNS settings, and domain/workgroup settings.

16. Describe the steps for installing Windows Server 2016 in Server Core mode.

ANS : 1. Prepare Installation Media :

Create a bootable USB drive or DVD with Windows Server 2016 installation files using tools like the Windows Media Creation Tool or Rufus.

Connect the bootable media to the server or computer.

2. Boot from Installation Media :

Power on the system and enter the BIOS/UEFI settings (usually by pressing F2, DEL, ESC, or F12 during startup).

In BIOS, set the boot order to prioritize the USB or DVD (whichever contains the installation media).

Save changes and reboot the system. It will now boot from the installation media.

3. Select the Disk Partition :

Select the disk or partition where you want to install Windows Server 2016.

If you need to remove existing partitions or create a new one, use the options in this window.

After selecting the partition or unallocated space, click Next to continue the installation.

4 .Enter Product Key (Optional) :

If prompted, enter the product key for Windows Server 2016. If you don’t have the product key at this moment, you can click I don’t have a product key to continue the installation and enter it later.

Select the edition of Windows Server 2016 that you want to install (e.g., Standard or Datacentre).

Click Next.

5. Log in to Server Core Mode

Once the system restarts, you will be at the Server Core login screen (this is a command-line interface without the GUI).

* Log in with the Administrator account using the password you set earlier.

17. How do you configure network settings during Windows Server 2016 installation?

ANS : Configuring Network Settings During Installation (GUI Mode)

1. Boot from Installation Media:
   * Start the server and boot from your Windows Server 2016 installation media (USB or DVD).
   * Follow the prompts until you reach the Windows Setup screen.
2. Select Language, Time, and Keyboard Settings:
   * Choose the appropriate settings for language, time zone, and keyboard or input method.
   * Click Next.
3. Click Install Now:
   * After selecting the language, click Install now to begin the installation process.
4. Choose Edition:
   * Select the appropriate edition of Windows Server 2016 (Standard or Datacenter, depending on your needs).
   * Click Next.
5. Accept License Terms:
   * Read and accept the license terms and click Next.
6. Select Installation Type:
   * Select Custom: Install Windows only (advanced) to perform a fresh installation.

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

ANS : 1. Promote the Server to a Domain Controller :

After the AD DS role is installed, you'll need to promote the server to a Domain Controller. Here’s how to do it:

Using Server Manager:

Once the AD DS role is installed, Server Manager will display a notification that the server needs to be promoted to a Domain Controller. Click the Promote this server to a domain controller link.

4. Configure Domain Controller Options :

Here, you’ll configure the following options for your Domain Controller:

Forest Functional Level: Select the appropriate functional level. You can choose Windows Server 2016 (recommended) or an earlier level depending on your environment.

DNS Server: Ensure that DNS server is selected. This is needed to support Active Directory domain name resolution.

Read-Only Domain Controller (RODC): Leave this unchecked unless you specifically want to configure an RODC.

5.Configure DNS Settings

If this is the first Domain Controller for the domain, the DNS server role will automatically be installed. You’ll see a message saying that the server will configure DNS for the domain. Click Next to continue.

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

ANS : 1. Check System Requirements:

>Verify that your server hardware meets the minimum system requirements for Windows Server 2016.

>Ensure that there is enough free disk space for the upgrade (typically 32 GB of free space).

2. Check Compatibility:

>Review the list of deprecated and removed features in Windows Server 2016.

>Check application and driver compatibility.

3. Backup Your Data:

>Before starting the upgrade, perform a full backup of the server, including system files, applications, and data.

4. Review Active Directory Requirements (if upgrading a Domain Controller):

>Ensure that your current Active Directory environment is ready for the upgrade.

>Upgrade the Domain Functional Level and Forest Functional Level if needed.

5. Install Latest Updates:

>Ensure that the source server has all the latest updates and patches installed.

6 Perform the Upgrade:

>Insert the Windows Server 2016 installation media and launch the setup wizard.

>Select Upgrade during the installation process to retain your current settings and applications.

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

ANS :  1. Domain Controllers (DCs): Servers that hold the AD database, authenticate users, and handle access requests.

2. Active Directory Database (NTDS.dit): A file that stores all AD objects and related data (e.g., users, groups, and organizational units).

3. Organizational Units (OUs): Containers used to organize objects within a domain for easier management.

4. Replication: The process of syncing data between Domain Controllers to ensure consistency.

5.DNS Integration: AD DS uses DNS for locating DCs and enabling communication across different locations.

21. How do you create a new Active Directory user account in Windows Server ?

1. ANS : Open Active Directory Users and Computers (ADUC):

Open Server Manager, click on Tools, and select Active Directory Users and Computers.

1. Navigate to the Desired Organizational Unit (OU):

In the left pane, navigate to the domain and the specific Organizational Unit (OU) where you want to create the new user account.

1. Create a New User:

Right-click on the OU and select New > User.

Enter the First Name, Last Name, and User Logon Name (this is the username).

Click Next.

1. Set the User Password:

Enter a strong password for the new user account and confirm it.

Choose appropriate options:

User must change password at next logon

User cannot change password

Password never expires

Account is disabled

Click Next.

1. Finish the User Creation:

Review the settings and click Finish to create the new user account.

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

ANS : Group Policy Objects (GPOs) are used to enforce security settings, configurations, and management policies across computers and users in a Windows domain.

1.Open Group Policy Management:

>Open Server Manager, go to Tools, and select Group Policy Management.

2. Create a New GPO:

>In the Group Policy Management Console (GPMC), right-click on the Group Policy Objects node and select New.

>Enter a name for the new GPO and click OK.

3. Edit the GPO:

>Right-click the new GPO and select Edit to open the Group Policy Management Editor.

>Configure the policy settings under Computer Configuration or User Configuration based on the type of policy.

>Computer Configuration: Policies that affect computers (e.g., security settings).

>User Configuration: Policies that affect users (e.g., desktop settings).

4. Link the GPO:

>After editing the GPO, you need to link it to an Organizational Unit (OU), domain, or site.

>Right-click on the OU or domain where you want the GPO to apply and select Link an Existing GPO.

>Select the GPO you created and click OK.

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

1. ANS : Create Organizational Units:

>In Active Directory Users and Computers, right-click on the domain or parent OU and select New > Organizational Unit.

>Enter the name for the OU and click OK.

1. Delegate Administration:

>Right-click on the OU, select Delegate Control, and follow the wizard to assign administrative permissions to users or groups.

1. Apply GPOs:

>You can apply Group Policy Objects (GPOs) at the OU level. This is useful for configuring settings that only apply to specific users or computers within that OU.

1. Move Objects into OUs:

>To keep AD organized, you can move objects (users, computers, etc.) into appropriate OUs by dragging and dropping them in Active Directory Users and Computers.

24. Describe the process of delegating administrative privileges in Active Directory.

ANS : 1. Open Active Directory Users and Computers:

>Open Server Manager, go to Tools, and select Active Directory Users and Computers.

2. Select the Organizational Unit (OU):

>In Active Directory Users and Computers, navigate to the OU where you want to delegate control.

 3. Delegate Control:

>Right-click the OU and select Delegate Control.

>The Delegation of Control Wizard will appear. Click Next.

4.Select the User or Group:

>Add the user or group that you want to delegate control to.

5.Choose Permissions:

>Select the specific tasks or permissions you want to delegate (e.g., create, delete, and manage user accounts).

>You can also choose Custom Task to Delegate if you want to delegate specific tasks.