**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?**

The two options in the type of installation window during Windows Server 2016 installation are:

1. Windows Server 2016 Standard/Datacenter with Desktop Experience (GUI-based).
2. Windows Server 2016 Standard/Datacenter (Server Core, command-line based).

2] **Write the step How to configure server step by step?**

* **Install Windows Server**: Complete the installation process and log in.
* **Set Static IP Address**: Open Network Settings and configure a static IP.
* **Rename Server**: Go to System Properties and rename the server.
* **Update Server**: Install the latest updates via Windows Update.
* **Install Roles and Features**: Use Server Manager to add roles like Active Directory, DNS, etc.
* **Promote to Domain Controller** : Configure Active Directory via AD DS.
* **Configure Firewall and Security**: Set up security policies and firewalls.
* **Set Up User Accounts**: Add users and groups in Active Directory.
* **Test and Verify**: Ensure all services are running correctly.
* **Backup Configuration**: Set up a backup plan for recovery.

3] What are the Pre installation tasks?

* **Hardware Compatibility**: Verify the hardware meets system requirements.
* **Backup Data**: Save important data to avoid loss.
* **Plan Server Roles**: Decide roles like AD, DNS, or File Server.
* **Select Server Edition**: Choose the appropriate Windows Server version.
* **Check Network Settings**: Ensure proper IP configuration.
* **Create Bootable Media**: Prepare installation media (USB/DVD).
* **Ensure Power and Connectivity**: Use a reliable power source and stable network.
* **Gather Credentials**: Have admin credentials and license keys ready.
* **Document Configuration**: Plan and note the desired configuration.

4] What are the Post installation tasks?

* **Install Updates**: Update the server using Windows Update.
* **Set a Static IP Address**: Configure a fixed IP for stability.
* **Rename the Server**: Assign a meaningful name for identification.
* **Join a Domain** (if applicable): Add the server to an existing domain.
* **Configure Server Roles and Features**: Use Server Manager to set up roles like AD, DNS, or IIS.
* **Set Administrator Password Policies**: Strengthen security with password policies.
* **Configure Firewall Settings**: Enable and adjust firewall rules.
* **Verify Services**: Ensure essential services are running correctly.
* **Create Backup Plan**: Set up and test backup and recovery strategies.
* **Document Configuration**: Keep a record of configurations for future reference

5] What is the standard upgrade path for Windows Server?

* **Windows Server 2012 → Windows Server 2016 → Windows Server 2019 → Windows Server 2022**.
* Upgrades must follow the same edition (e.g., Standard to Standard or Datacenter to Datacenter).
* In-place upgrades are supported only between consecutive versions.
* Ensure all pre-upgrade requirements are met, including backups and compatibility checks.

6] What is the Physical structure of AD?

**Physical Structure of Active Directory (AD):**

1. **Domain Controllers**: Servers that host and manage the AD database.
2. **Sites**: Represent physical locations in a network, optimized for replication.
3. **Subnets**: Define IP address ranges associated with sites for efficient routing.
4. **Replication**: Controls the synchronization of data between domain controllers within and across sites.

7] . What is the Logical components of Active Directory?

**Logical Components of Active Directory:**

1. **Forest**: The top-level container that holds one or more domain trees.
2. **Domain**: A logical group of objects (users, computers, etc.) sharing a common AD database.
3. **Organizational Units (OUs)**: Subdivisions within a domain for organizing objects and applying policies.
4. **Trees**: A collection of domains in a hierarchical structure with a shared namespace.
5. **Global Catalog**: A distributed database that provides universal access to objects in the AD forest.
6. **Groups and Objects**: Logical representations of users, computers, and resources.

8] What is the Full form Of LDAP?

The full form of **LDAP** is **Lightweight Directory Access Protocol**

9] What is the location of the AD database?

The Active Directory (AD) database is located at:

**C:\Windows\NTDS\ntds.dit**

This file stores the directory data, including user accounts, groups, and other directory objects.

10] What is child DC?

A **Child Domain Controller (Child DC)** is a domain controller for a **child domain** within an Active Directory (AD) hierarchy.

1. **Hierarchy**: A child domain is a subdomain of a parent domain (e.g., sales.example.com is a child of example.com).
2. **Autonomy**: Child domains can manage their own policies and resources while still being part of the forest.
3. **Trust**: Automatic trust relationships exist between parent and child domains.
4. **Purpose**: Often used to organize resources by geographical location, departments, or business units.

11] What is Active Directory? Check all that apply.

● An open-source directory server

● A Windows-only implementation of a directory server

● Microsoft's implementation of a directory server

● An LDAP-compatible directory server

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

● Superuser

● Root

● Username

● Administrator

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

● Centralized authentication

● More detailed logging

● Centralized management with GPOs

● Better performance

14] What are the minimum hardware requirements for installing Windows Server 2016?

The minimum hardware requirements for installing **Windows Server 2016** are:

1. **Processor**: 1.4 GHz 64-bit processor (compatible with x64 architecture).
2. **RAM**: 512 MB (minimum), 2 GB (recommended for better performance).
3. **Disk Space**: 32 GB of free disk space (minimum).
4. **Network Adapter**: Ethernet adapter with gigabit (10/100/1000) connectivity.
5. **Other Requirements**: UEFI firmware for secure boot, DVD drive or USB port for installation media.

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

**Windows Server 2016 Datacenter**:

* Designed for highly virtualized environments.
* Unlimited virtual machine (VM) licenses.
* Features like Storage Spaces Direct, Shielded VMs, and software-defined networking.
* Best for large-scale data centers.

**Windows Server 2016 Standard**:

* For physical or minimally virtualized environments.
* Supports up to 2 virtual machines (VMs).
* Includes essential features like Active Directory, DNS, and Group Policy.
* Suitable for small to medium-sized businesses.

**Windows Server 2016 Essentials**:

* + Targeted for small businesses (up to 25 users and 50 devices).
  + Simplified management and fewer features compared to Standard and Datacenter.
  + Includes built-in backup, file sharing, and remote access features.

**Windows Server 2016 Web**:

* + Optimized for web hosting environments.
  + Provides support for web applications, including IIS (Internet Information Services).
  + Lacks some of the more advanced features like Hyper-V and clustering.

16] How do you configure network settings during Windows Server 2016 installation?

1. **Start Installation**: Boot from the installation media and begin the setup process.

2. **Select Language & Region**: Choose language, time, and currency formats, and keyboard layout.

3. **Choose Installation Type**: Select the edition and installation type (Server Core or Desktop Experience).

4. **Configure Network Adapter**:

* Once installation starts, press Shift + F10 to open Command Prompt.
* Type ncpa.cpl to open Network Connections.
* Right-click the network adapter, select Properties, and then configure the IP settings under Internet Protocol Version 4 (TCP/IPv4).
* Choose either **Obtain an IP address automatically** (DHCP) or **Use the following IP address** (static IP).

1. **Complete Installation**: Continue the installation process and finish setup.

17] Explain the process of promoting a Windows Server to a domain controller

1. **Install Active Directory Domain Services (AD DS)**:
   * Open **Server Manager**, click on **Add roles and features**.
   * Select **Active Directory Domain Services** and follow the prompts to install.
2. **Promote the Server**:
   * After installation, in **Server Manager**, click on the **Notification** flag and select **Promote this server to a domain controller**.
3. **Select Deployment Configuration**:
   * Choose **Add a new forest** if it's the first domain controller, or **Add a domain controller to an existing domain** for an additional DC.
4. **Specify Domain Information**:
   * Enter the **Root domain name** (e.g., example.com).
5. **Set Directory Services Restore Mode (DSRM) Password**:
   * Set a strong password for DSRM (used for recovery).
6. **Select Additional Options**:
   * Configure the **DNS server** and **Global Catalog** options.
7. **Review and Install**:
   * Review your settings and click **Next** to install.
   * The server will automatically reboot and be promoted to a domain controller.

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

**Active Directory Domain Services (AD DS)** is a Microsoft service that manages and organizes network resources, including users, computers, and services, in a centralized directory. It is the core service for managing Active Directory in a Windows environment.

**Key Components of AD DS:**

1. **Domain Controllers (DCs)**: Servers that store and manage the AD database, authenticate users, and enforce policies.
2. **Domains**: Logical groups of objects (users, computers) with a shared AD database.
3. **Organizational Units (OUs)**: Containers within a domain to organize objects and apply Group Policy.
4. **Global Catalog**: A read-only database that provides quick access to information about all objects in the forest.
5. **Group Policy Objects (GPOs)**: Centralized management of security settings and configurations applied to AD objects.
6. **Active Directory Schema**: Defines the structure of data stored in AD, including object types and attributes.
7. **Replication**: Synchronization of data between domain controllers across the network.

19 ] How do you create a new Active Directory user account in Windows Server ?

**Steps to Create a New Active Directory User Account in Windows Server:**

1. **Open Active Directory Users and Computers**:
   * From **Server Manager**, go to **Tools** and select **Active Directory Users and Computers**.
2. **Select the Organizational Unit (OU)**:
   * In the AD console, navigate to the domain or the **Organizational Unit (OU)** where you want to create the user.
3. **Create a New User**:
   * Right-click the chosen OU, select **New** and then **User**.
4. **Enter User Information**:
   * In the **New Object - User** window, fill in the required fields such as:
     + **First Name**
     + **Last Name**
     + **User logon name** (username)
5. **Set User Password**:
   * Enter and confirm the password.
   * Choose whether to require the user to change the password at the next logon, or to set it to never expire.
6. **Complete the Creation**:
   * Click **Next**, review the details, and then click **Finish**.

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

**Process of Creating and Managing Group Policy Objects (GPOs) in Windows Server 2016/2019:**

1. **Open Group Policy Management**:
   * Go to **Server Manager**, click **Tools**, and select **Group Policy Management**.
2. **Create a New GPO**:
   * In the **Group Policy Management Console**, right-click the **Group Policy Objects** container, and select **New**.
   * Name the new GPO (e.g., "Security Policy") and click **OK**.
3. **Edit the GPO**:
   * Right-click the newly created GPO and select **Edit**.
   * This opens the **Group Policy Management Editor**, where you can configure settings under:
     + **Computer Configuration** (applies to computers)
     + **User Configuration** (applies to users)
   * Example: Set security settings, desktop restrictions, or software deployment.
4. **Link the GPO to an OU or Domain**:
   * In the **Group Policy Management Console**, right-click the domain or OU where you want to apply the GPO, and select **Link an Existing GPO**.
   * Choose the GPO you created and click **OK**.
5. **Force Update or Wait for Automatic Replication**:
   * To apply the GPO immediately, run gpupdate /force on target computers or wait for the next policy refresh cycle (every 90 minutes by default).
6. **Manage or Modify GPO**:
   * To make changes, right-click the GPO in **Group Policy Management** and select **Edit** again.
   * You can also delete or unlink GPOs when no longer needed.

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

An **Organizational Unit (OU)** is a container within Active Directory (AD) that is used to organize and manage objects (users, computers, groups, etc.) in a hierarchical structure. OUs allow administrators to delegate administrative control and apply Group Policy settings to specific groups of objects.

**How to Use OUs in Active Directory:**

1. **Create an OU**:
   * Open **Active Directory Users and Computers**.
   * Right-click the domain or an existing OU, select **New**, then choose **Organizational Unit**.
   * Name the OU and click **OK**.
2. **Organize Objects**:
   * Move users, computers, groups, and other objects into the OU for better organization.
   * Right-click the object, select **Move**, and choose the target OU.
3. **Delegate Administrative Control**:
   * Right-click the OU, select **Delegate Control**.
   * Use the wizard to assign specific administrative rights to users or groups within the OU, allowing for granular management.
4. **Apply Group Policies**:
   * Link a **Group Policy Object (GPO)** to the OU to apply specific settings to the objects within that OU.
   * This ensures consistent policy enforcement, such as password policies or security settings.
5. **Manage Permissions**:
   * Use OUs to control access and permissions at a more granular level within the organization, making it easier to manage security and administration.

22 ] Describe the process of delegating administrative privileges in Active Directory.

**Process of Delegating Administrative Privileges in Active Directory:**

1. **Open Active Directory Users and Computers**:
   * Go to **Server Manager**, click **Tools**, and select **Active Directory Users and Computers**.
2. **Select the OU or Object**:
   * Right-click the **Organizational Unit (OU)** or object (user, group, etc.) you want to delegate control over.
3. **Choose Delegate Control**:
   * Select **Delegate Control** from the context menu to open the **Delegation of Control Wizard**.
4. **Add a User or Group**:
   * Click **Add** to select the user or group you want to delegate administrative rights to.
5. **Choose Permissions**:
   * Select the specific tasks/permissions to delegate, such as:
     + Create, delete, or manage user accounts
     + Modify group membership
     + Reset passwords
     + Manage group policies
6. **Review and Finish**:
   * Review the permissions and click **Next** and **Finish** to apply the delegation.