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 the installation of **Windows Server 2016**, you will see two installation options:

1. **Windows Server 2016 (Desktop Experience)**
    - Installs the full GUI (Graphical User Interface).
    - Includes tools like File Explorer, Internet Explorer, and Server Manager.
    - Suitable for administrators who prefer GUI-based management.
2. **Windows Server 2016 (Server Core Installation)**
    - A minimal installation without a GUI.
    - Reduces the attack surface and system resource consumption.
    - Recommended for environments requiring better security and remote administration (via PowerShell, command line, or Remote Server Administration Tools).

2. How to Configure a Windows Server 2016 Step by Step?

ANS: - After installation, follow these steps to configure your server:

Step 1: Log in to the Server

- After the system boots, enter administrator credentials to log in.

Step 2: Set a Static IP Address

- Open Network and Sharing Center - Change adapter settings - Select the NIC – Right-click Properties.
- Select Internet Protocol Version 4 (TCP/IPv4)-- Use the following IP address - Enter IP, Subnet Mask, Default Gateway, and DNS.

Step 3: Change the Computer Name

- Open Server Manager - Click Local Server - Click on the Computer Name.
- Change the name and restart the server.

Step 4: Configure Windows Updates

- Open Settings - Click Update & Security - Configure automatic updates.

Step 5: Install Roles and Features (e.g., Active Directory, DHCP, DNS, File Server, etc.)

- Open Server Manager - Click Manage - Add Roles and Features - Select required roles.

Step 6: Promote Server to Domain Controller (For Active Directory Setup)

- If configuring Active Directory, install Active Directory Domain Services (AD DS) and promote it as a Domain Controller.

Step 7: Configure Security Policies and User Access

- Use Group Policy Management to enforce security policies.

Step 8: Test the Configuration

- Verify networking, services, and role functionalities.

3. What are the Pre-installation tasks?

ANS: - Before installing Windows Server 2016, perform these pre-installation tasks:

1. **Check System Requirements**
    - Minimum 1.4 GHz 64-bit processor

    - 2 GB RAM (Desktop Experience) or 512 MB RAM (Server Core)
    - 32 GB disk space
2. **Backup Important Data**
    - Ensure critical files are backed up.
3. **Plan Server Roles and Features**
    - Decide if the server will function as a domain controller, DNS, DHCP, etc.
4. **Check Network Configuration**
    - Plan IP addressing and DNS settings.
5. **Create Bootable Installation Media**
    - Use **Rufus** or Windows Media Creation Tool.
6. **Verify Hardware Compatibility**
    - Use the Windows Server Compatibility Tool.

4. What are the Post-installation tasks?

ANS: - After installation, perform these tasks:

1. Activate Windows Server
2. Set a Static IP Address
3. Install Latest Updates & Drivers
4. Rename the Computer
5. Install Required Server Roles
6. Configure User Accounts & Group Policies
7. Implement Security Policies
8. Configure Backups & System Recovery Options

5. What is the Standard Upgrade Path for Windows Server?

ANS: - The upgrade path allows you to move from an older Windows Server version to a newer one.

- Windows Server 2008 R2 - Windows Server 2012 R2 - Windows Server 2016 - Windows Server 2019 - Windows Server 2022

Important Notes:

- Direct upgrades from Windows Server 2008 to 2016 are not supported.
- A fresh installation is always recommended over in-place upgrades.

6. What is the Physical Structure of Active Directory (AD)?

ANS: - The physical structure of Active Directory refers to how AD components are implemented in the real-world network infrastructure.

- **Domain Controllers (DCs)** - Servers that store the AD database.
- **Sites** - Represents physical locations in the network (used for replication).
- **Subnets** - Defines the network range in AD.
- **Replication Topology** - Defines how data is synchronized between domain controllers.

7. What are the Logical Components of Active Directory?

ANS: - The logical structure of Active Directory is how AD organizes resources and applies policies:

1. **Forest** - The highest level in AD, consisting of multiple domains.
2. **Domain** - A group of objects (users, computers, policies) sharing the same database.
3. **Organizational Units (OUs)** - Logical grouping of objects for management.
4. **Trees** - A collection of domains in a hierarchy.

8. What is the Full Form of LDAP?

ANS: - LDAP (Lightweight Directory Access Protocol) is an open protocol used for accessing and managing directory services over a network.

9. What is the Location of the AD Database?

ANS: - The Active Directory Database (NTDS.DIT) is located at:
`C:\Windows\NTDS\NTDS.DIT`

It contains all AD objects, including users, groups, and policies.

10. What is a Child DC (Child Domain Controller)?

ANS: - A **Child DC** (Child Domain Controller) is a secondary domain under a parent domain within the same Active Directory forest.

Example:

- **Parent Domain:** `example.com`
- **Child Domain:** `sales.example.com`

Advantages:

- Improved security delegation.
- Better administrative separation.
- Efficient replication and management.

11. Explain the Term "Forest" in Active Directory

ANS: - A Forest is the highest level in the Active Directory hierarchy. It consists of:

- **One or more domains** that share the same schema.
- A **Global Catalog** for cross-domain searches.
- A **trust relationship** between domains.

Example:

- `company.com` (Parent domain)
- `hr.company.com` (Child domain)
- `it.company.com` (Another child domain)

A forest allows multiple domains to operate securely while maintaining a unified administration.

12: 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

Explanation:

- **Microsoft's implementation of a directory server** - **Correct**. Active Directory (AD) is Microsoft's proprietary directory service used to manage and authenticate users, computers, and resources within a Windows domain.
- **A Windows-only implementation of a directory server** - **Correct**. AD is specifically designed for Windows Server environments, unlike other directory services that may be cross-platform.
- **An LDAP-compatible directory server** - **Correct**. AD supports **Lightweight Directory Access Protocol (LDAP)** for querying and modifying directory services. However, it is not purely an LDAP server like OpenLDAP.
- **An open-source directory server** - **Incorrect**. AD is **proprietary** software developed by Microsoft, not open-source.

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

ANS: Administrator

Explanation:

- **Administrator** -**Correct**. This is the built-in account with full control over the domain. It is created by default when setting up an Active Directory domain.
- **Superuser** - **Incorrect**. While "superuser" is a general term for privileged accounts, it's not the default AD account.
- **Root** - **Incorrect**. "Root" is the superuser account in Linux/Unix systems, not Windows.
- **Username** - **Incorrect**. "Username" is a generic term and not a default account name in AD.

14: AD domain provides which of the following advantages? (Check all that apply)

ANS: Centralized authentication
More detailed logging
Centralized management with GPOs

Explanation:

- **Centralized authentication** → Correct. Active Directory (AD) provides a single sign-on (SSO) mechanism where users authenticate once and gain access to resources across the network. Authentication is managed centrally using Kerberos or NTLM.
- **More detailed logging** → Correct. AD provides extensive logging capabilities through Event Viewer, Audit Policies, and Security Logs, allowing administrators to track authentication attempts, policy changes, and security-related events.

- **Centralized management with GPOs (Group Policy Objects)** - **Correct**. One of the biggest advantages of AD is the ability to enforce security settings, application configurations, and user permissions across all domain-joined devices using Group Policy Objects (GPOs).
- **Better performance** -Incorrect. AD domains are designed for centralized management and security, but they do not inherently improve performance. In some cases, AD might introduce slight overhead due to authentication processes, policy application, and replication.

15. Minimum Hardware Requirements for Windows Server 2016

ANS: -

- **Processor**: 1.4 GHz 64-bit processor with NX, DEP, and SLAT support
- **RAM**: 512 MB (minimum), 2 GB for GUI installation
- **Storage**: 32 GB minimum
- **Network**: Ethernet adapter (1 Gbps recommended)
- **Firmware**: UEFI 2.3.1 with Secure Boot support (for some features)

16. Windows Server 2016 Editions and Features

ANS: -

1. **Windows Server 2016 Datacenter**
    - For highly virtualized environments
    - Unlimited Virtual Machines (VMs)
    - Shielded VMs, Storage Spaces Direct, Network Controller
2. **Windows Server 2016 Standard**
    - For physical or lightly virtualized environments
    - Supports **up to 2 VMs**
3. **Windows Server 2016 Essentials**
    - For small businesses (up to 25 users, 50 devices)

    - Simplified management, lacks Hyper-V
4. **Windows Server 2016 Hyper-V**
    - Dedicated hypervisor for virtualization

17. Installing Windows Server 2016 (GUI Mode)

ANS: -

1. Boot from installation media (USB/DVD).
2. Choose Language, Time, and Keyboard layout → Click Next.
3. Click Install Now → Select Windows Server with Desktop Experience.
4. Accept the license terms → Choose Custom Installation.
5. Select the installation drive → Click Next.
6. Installation starts → The system reboots automatically.
7. Create an Administrator password → Log in to Windows Server.

18. Installing Windows Server 2016 in Server Core Mode

ANS: -

1. Boot from installation media and start the setup.
2. Select Windows Server 2016 (Server Core installation).
3. Follow the on-screen installation steps.
4. Set the Administrator password after installation.
5. Use sconfig to configure network settings and domain settings.

19. Configuring Network Settings During Installation

ANS: -

- In GUI Mode:
    1. Open Network and Sharing Center → Change Adapter Settings.
    2. Configure IPv4 settings (Static/DHCP).

- In Server Core:
    1. Use `sconfig` to set the network adapter settings.
    2. Use PowerShell (`Set-NetIPAddress`, `New-NetIPAddress`).

20. Promoting Windows Server to a Domain Controller

ANS: -

1. Install Active Directory Domain Services (AD DS) via Server Manager.
2. Run `dcpromo` or use PowerShell (`Install-ADDSForest`).
3. Configure Domain Name, NetBIOS Name, and Directory Services Restore Mode (DSRM) password.
4. Restart the server.

21. Upgrading to Windows Server 2016

ANS: -

1. Check hardware compatibility.
2. Backup the system and Active Directory.
3. Run setup.exe from Windows Server 2016 installation media.
4. Choose Upgrade and follow the wizard.
5. Restart and verify the upgrade.

22. Active Directory Domain Services (AD DS) and Key Components

ANS: -

- AD DS manages users, computers, and policies within a domain.

- Key Components:
    - Domain Controllers (DCs) – Stores and manages AD data.
    - Global Catalog (GC) – Stores objects from all domains.
    - LDAP/Kerberos – Authentication protocols.
    - FSMO Roles – Essential for AD functionality.

23. Creating a New Active Directory User Account

ANS: -

1. Open Active Directory Users and Computers (ADUC).
2. Right-click on Users → Click New > User.
3. Enter User details, set a password, and define policies.

24. Creating and Managing Group Policy Objects (GPOs)

ANS: -

1. Open Group Policy Management Console (GPMC).
2. Right-click Domain or OU - Select Create GPO.
3. Edit GPO to apply settings (e.g., security policies, software deployment).
4. Use gpupdate /force to apply policies.

25. Organizational Units (OUs) in Active Directory

ANS: -

- OUs are logical containers in AD used to organize users, computers, and groups.
- Helps apply GPOs and delegate administrative control.
- Can be managed in ADUC or using PowerShell (`New-ADOrganizationalUnit`).

26. Delegating Administrative Privileges in AD

ANS: -

1. Open ADUC, right-click an OU.
2. Click Delegate Control → Select user/group.
3. Choose permissions (e.g., Reset Passwords, Create/Delete Users).
4. Finish the wizard to apply delegation.