Module 13: Networking with Windows Server

25. Role of Windows Firewall in Windows Server and Its Configuration

Role of Windows Firewall

Windows Firewall is a security feature in Windows Server that controls incoming and outgoing network traffic based on predefined rules. It helps protect the server from unauthorized access, malware, and network-based attacks.

How to Configure Windows Firewall

Open Windows Firewall: Go to Control Panel → Windows Defender Firewall.

Enable or Disable Firewall: Click Turn Windows Defender Firewall on or off.

Create Inbound/Outbound Rules:

Open Advanced Settings.

Click Inbound Rules or Outbound Rules.

Select New Rule → Choose Port or Program → Define rule settings.

Allow or Block Applications: In Allow an app through Windows Defender Firewall, select applications to allow/block.

Use Group Policy (GPO): Configure firewall settings via Group Policy Management.

26. Network Address Translation (NAT) in Windows Server and Its Configuration

What is NAT?

NAT (Network Address Translation) allows multiple devices in a private network to share a single public IP address for internet access. It translates private IPs to public IPs, improving security and conserving IP addresses.

How to Configure NAT in Windows Server

Install Remote Access Role:

Open Server Manager → Click Add Roles and Features.

Select Remote Access → Install Routing and NAT.

Enable NAT:

Open Routing and Remote Access Manager → Right-click the server → Select Configure and Enable Routing and Remote Access.

Choose NAT → Select the external network interface.

Configure NAT Interfaces:

Go to IPv4 → NAT → Right-click → Select New Interface.

Set the external interface as Public and enable NAT.

Apply and Restart Services: Save settings and restart the Routing and Remote Access service.

27. Dynamic Host Configuration Protocol (DHCP) and Its Configuration in Windows Server 2016

What is DHCP?

DHCP (Dynamic Host Configuration Protocol) automatically assigns IP addresses to devices in a network, reducing manual configuration and avoiding IP conflicts.

How to Configure DHCP

Install DHCP Role:

Open Server Manager → Add Roles and Features.

Select DHCP Server and install it.

Authorize DHCP Server:

Open DHCP Management Console.

Right-click the server and select Authorize.

Create a New Scope:

Right-click IPv4 → New Scope.

Define the IP range, subnet mask, lease duration, and exclusions.

Configure DHCP Options:

Set the default gateway, DNS server, and other options.

Activate the Scope:

Right-click the scope → Activate.

Restart DHCP Service: Ensure the DHCP service is running for proper client connectivity.

28. Configuring DNS (Domain Name System) in Windows Server

What is DNS?

DNS (Domain Name System) translates domain names (e.g., google.com) into IP addresses, allowing users to access websites and network resources easily.

How to Configure DNS

Install DNS Role:

Open Server Manager → Add Roles and Features.

Select DNS Server and install it.

Configure Forward Lookup Zone:

Open DNS Manager → Right-click the server → New Zone.

Choose Primary Zone and configure the domain name.

Add Host (A) Records:

Right-click the zone → New Host (A or AAAA) → Enter hostname and IP address.

Configure Reverse Lookup Zone:

Create a new zone for reverse name resolution (IP to hostname).

Configure Forwarders:

Set external DNS servers (like Google’s 8.8.8.8) for queries not resolved internally.

Test DNS Resolution: Use nslookup to verify name resolution.

29. Server Manager and Its Role in Managing Windows Server

What is Server Manager?

Server Manager is a centralized tool in Windows Server used for managing multiple servers, monitoring system performance, and configuring roles and features.

How to Use Server Manager

Launch Server Manager: Open Start → Server Manager.

Add and Manage Servers:

Click Manage → Add Servers.

Enter the server name or IP to manage remotely.

Monitor Server Health:

Check system events, performance, and alerts.

Install and Configure Roles:

Click Manage → Add Roles and Features.

Select required services (e.g., DNS, DHCP).

Use Remote Management:

Enable Remote Server Administration Tools (RSAT) for managing roles from a single interface.

30. Remote Desktop Services (RDS) in Windows Server 2016/2019 and Its Configuration

Role of RDS

Remote Desktop Services (RDS) allows users to access applications, desktops, and files on a remote server. It improves remote work flexibility and enhances security.

How to Configure RDS

Install RDS Role:

Open Server Manager → Add Roles and Features.

Select Remote Desktop Services and install.

Configure RD Session Host:

Go to Remote Desktop Session Host Configuration.

Set session limits and user permissions.

Enable Remote Access:

Open System Properties → Remote Settings.

Enable Allow remote connections to this computer.

Configure Licensing:

Open Remote Desktop Licensing Manager.

Install and activate the required CALs (Client Access Licenses).

Test Remote Connection:

Use Remote Desktop Connection (RDP) to access the server from a client machine.