



Windows Server Administration

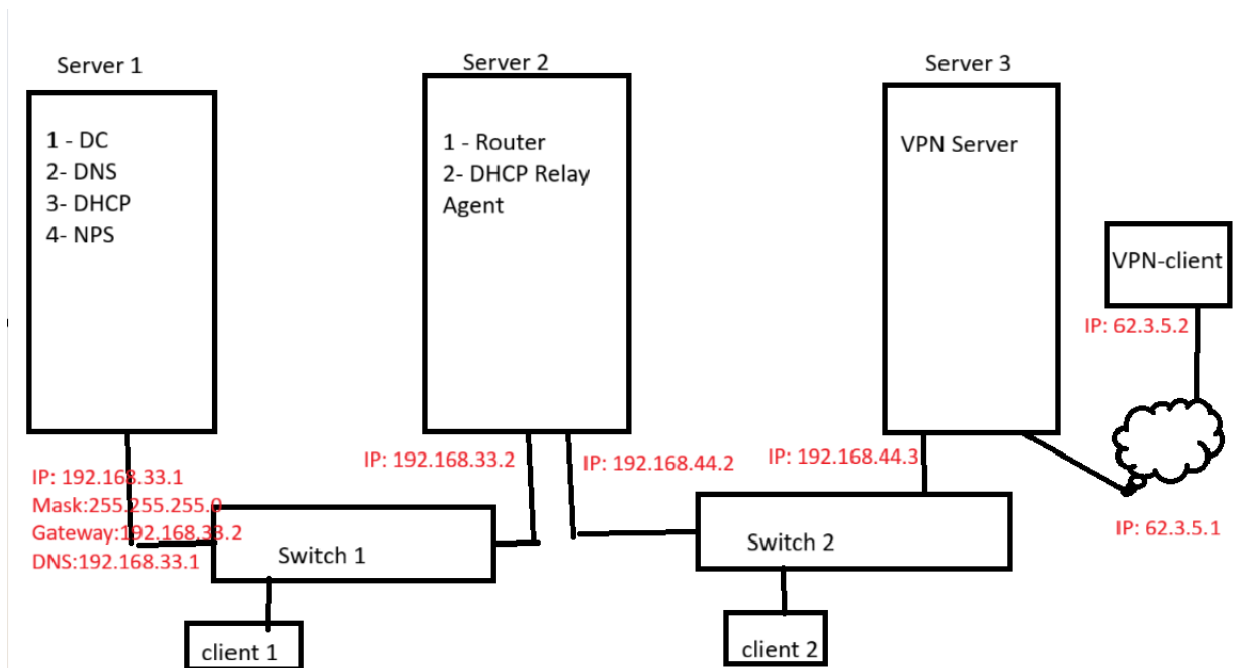
- 1- DHCP Server
- 2- Router and Routing Protocol
- 3- DHCP Relay Agent
- 4- Domain Environment and AD Installation
- 5- Domain Name Server (DNS)
- 6- AD Object and the Domain Administration
- 7- Group Policy Management (GPM)
- 8- Virtual Private Network (VPN)
- 9- Network Policy Service (NPS) → (RADIUS Server)



Lab Topology



Lab Network Diagram



Lab Components

• Server 1

- Domain Controller (DC)
- DNS Server
- DHCP Server
- NPS (RADIUS) Server
- IP: 192.168.33.1
- Gateway: 192.168.33.2
- DNS: 192.168.33.1

• Server 2

- Router (RRAS)
- DHCP Relay Agent
- IP1: 192.168.33.2
- IP2: 192.168.44.2

• Server 3

- VPN Server
- IP: 192.168.44.3
- **Clients**
 - Client 1 (LAN1 via Switch 1)
 - Client 2 (LAN2 via Switch 2)
 - VPN Client (Public IP 62.3.5.2 → connects to VPN Server 62.3.5.1)

1: DHCP Server

Objective

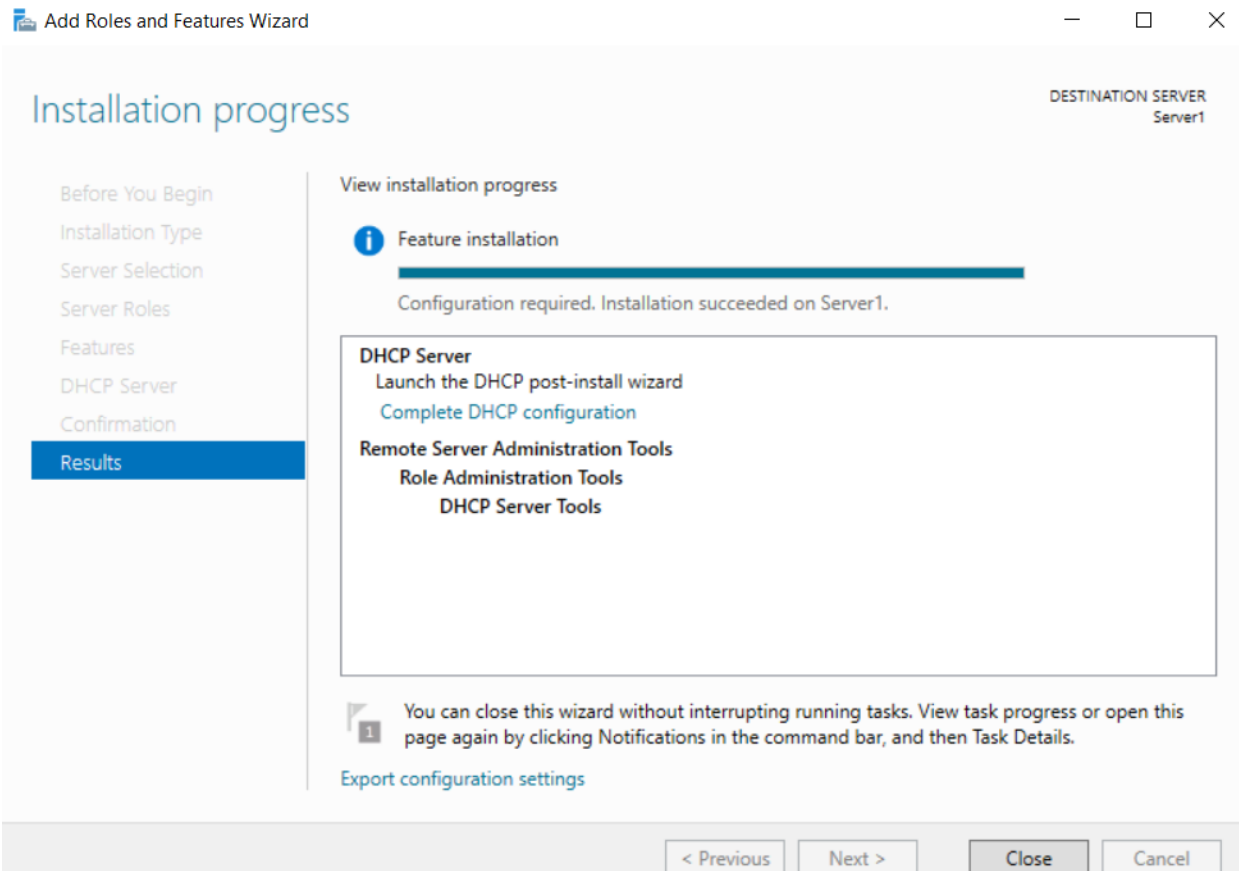
Set up a **DHCP Server** to automatically assign IP addresses to clients.

Steps

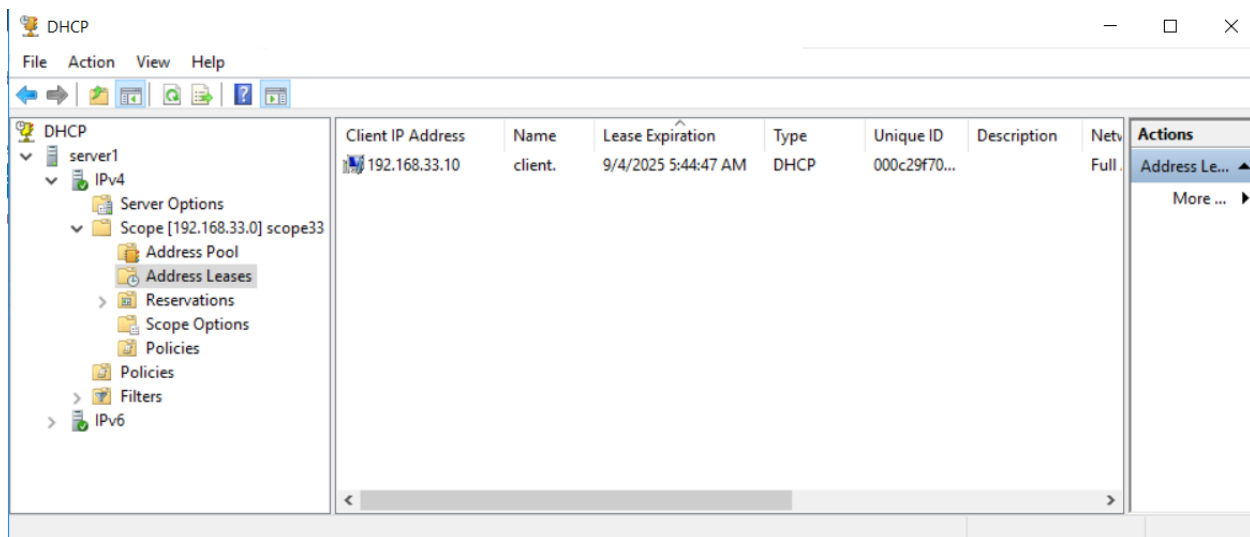
1. Open **Server Manager** → **Add Roles and Features**.
2. Select **DHCP Server** role and install it.
3. Open **DHCP Management Console**.
4. Create a **New Scope** → Define IP range, subnet mask, and lease duration.
5. Configure **Scope Options** (default gateway, DNS server).
6. Authorize the DHCP server in Active Directory.
7. On the client, set IP configuration to **Obtain automatically**.
8. Test lease by running `ipconfig /renew` on client.

Screenshots

- Installation of DHCP Role



- Client IP Lease Verification



✓ Outcome

- DHCP successfully assigned IPs to clients.

- Network devices automatically received valid IP configuration.
-

2: Router & Routing Protocol

Objective

Enable **routing between different subnets** using Routing and Remote Access (RRAS).



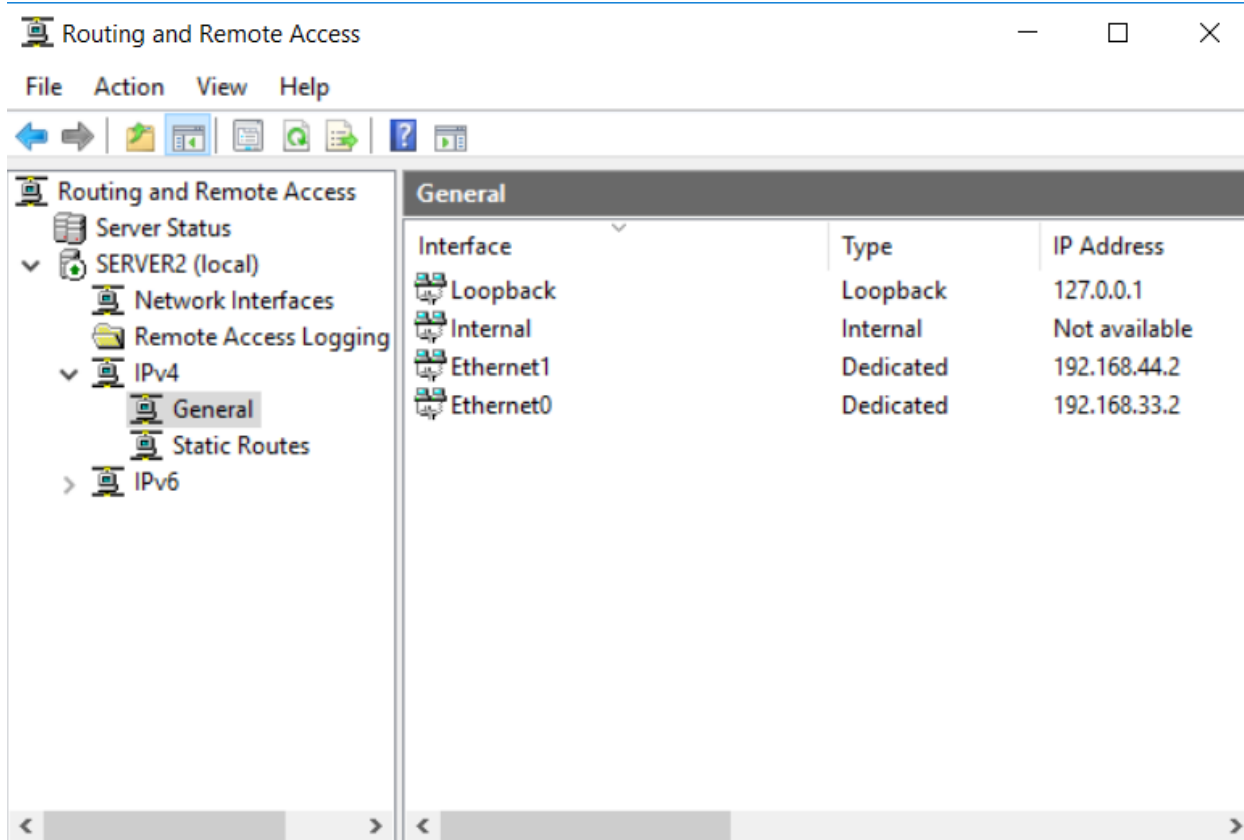
Steps

1. Install **Remote Access** role from Server Manager.
2. Open **RRAS Console** → **Configure and Enable Routing and Remote Access**.
3. Select **LAN Routing**.
4. Add **two NICs** (each connected to different networks).
5. Test connectivity using **ping** between clients on different subnets.

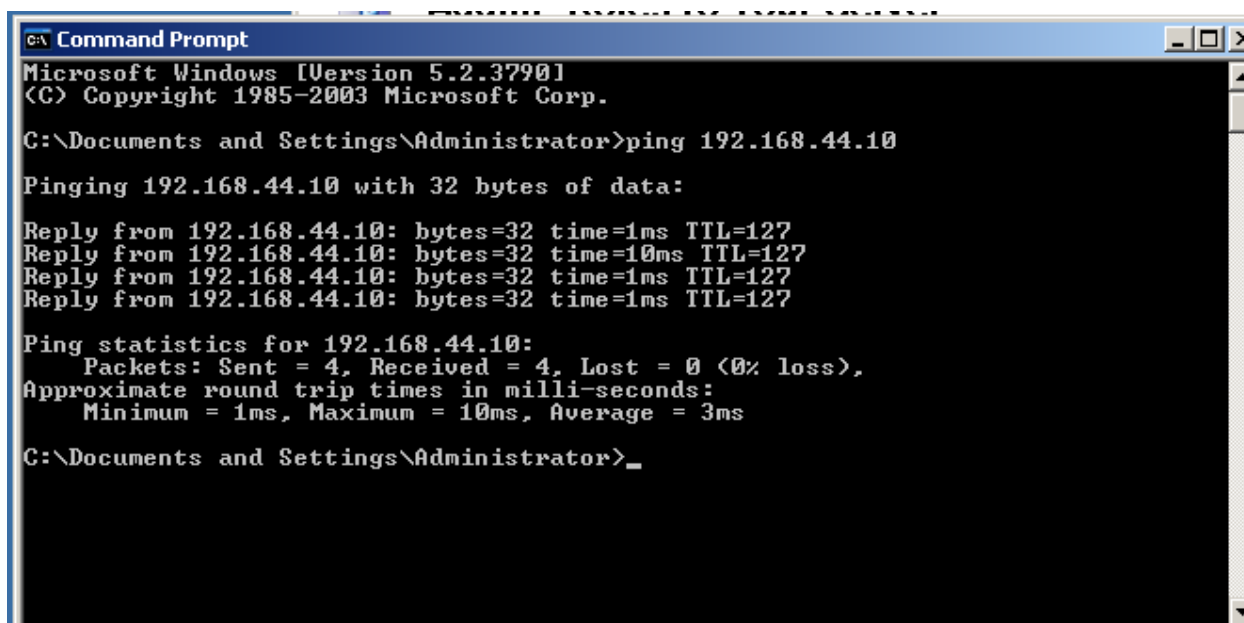


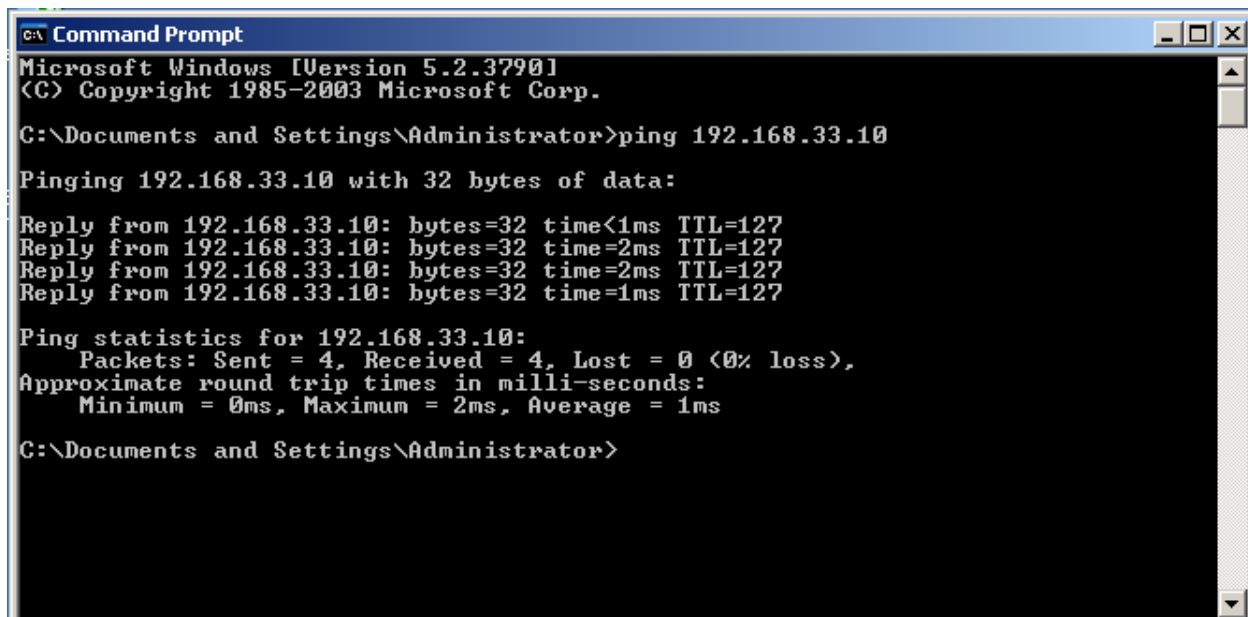
Screenshots

- RRAS Setup



- Ping Test Between Subnets





```
C:\> Command Prompt
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Documents and Settings\Administrator>ping 192.168.33.10

Pinging 192.168.33.10 with 32 bytes of data:

Reply from 192.168.33.10: bytes=32 time<1ms TTL=127
Reply from 192.168.33.10: bytes=32 time=2ms TTL=127
Reply from 192.168.33.10: bytes=32 time=2ms TTL=127
Reply from 192.168.33.10: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.33.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\Documents and Settings\Administrator>
```

✓ Outcome

- Successfully enabled communication between two networks.

▶ 3: DHCP Relay Agent

🎯 Objective

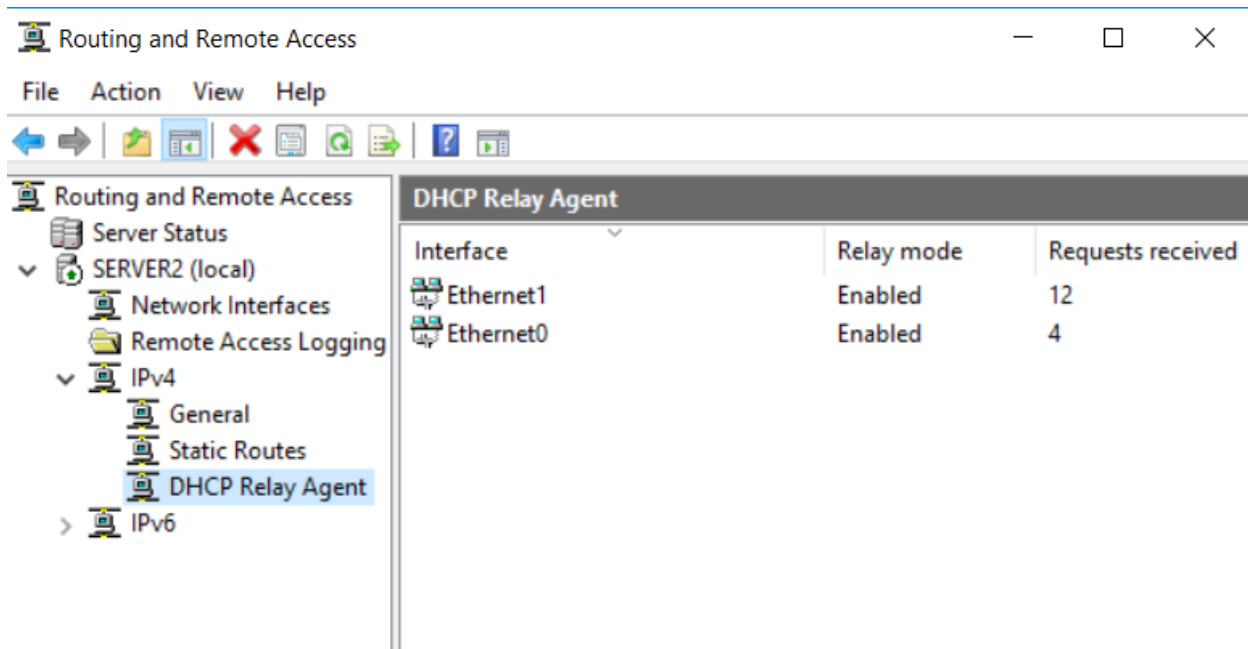
Forward DHCP requests across **different networks** using a Relay Agent.

✍ Steps

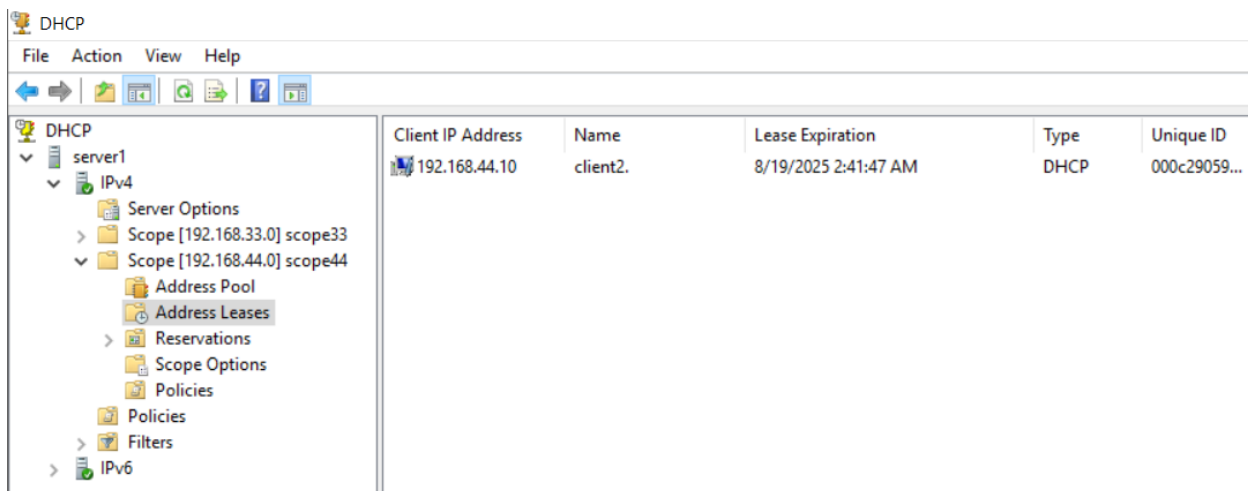
1. Install **Remote Access** role (if not already).
2. Open **RRAS Console** → **IPv4** → **General** → **New Routing Protocol**.
3. Select **DHCP Relay Agent**.
4. Add the **DHCP Server IP**.
5. Configure interfaces to forward DHCP broadcasts.
6. Test by requesting an IP from a client on a different subnet.

📸 Screenshots

- Adding DHCP Relay Agent



- Client Lease From Remote DHCP



✓ Outcome

- Clients on different networks successfully received IPs from central DHCP.

▶ 4: Domain Environment & AD Installation

🎯 Objective

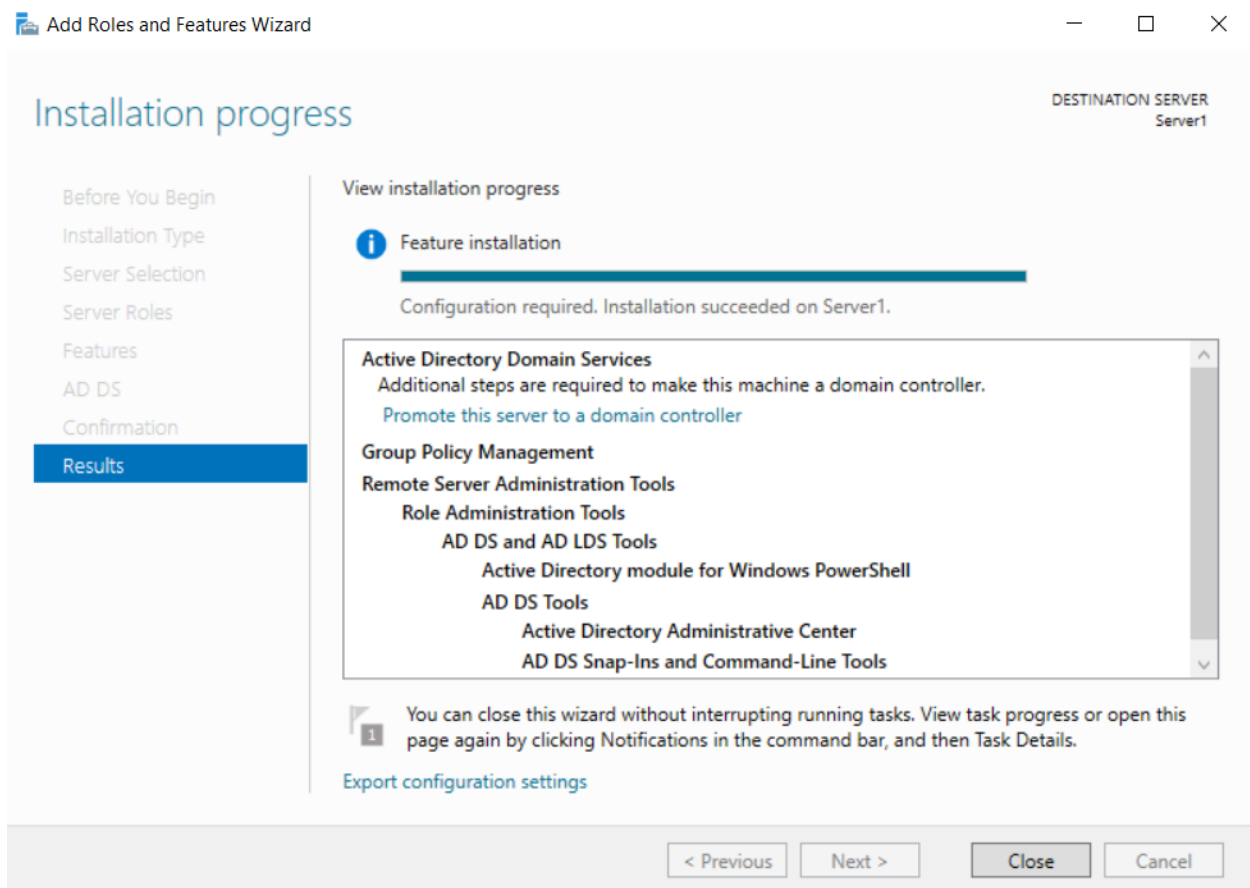
Install and configure **Active Directory Domain Services (AD DS)** to create a domain environment.

Steps

1. Install **AD DS** role from Server Manager.
2. Run **AD DS Configuration Wizard**.
3. Promote server to **Domain Controller**.
4. Create a new forest (COMPANY.ORG).
5. Restart the server.
6. Join Windows client machines to the new domain.

Screenshots

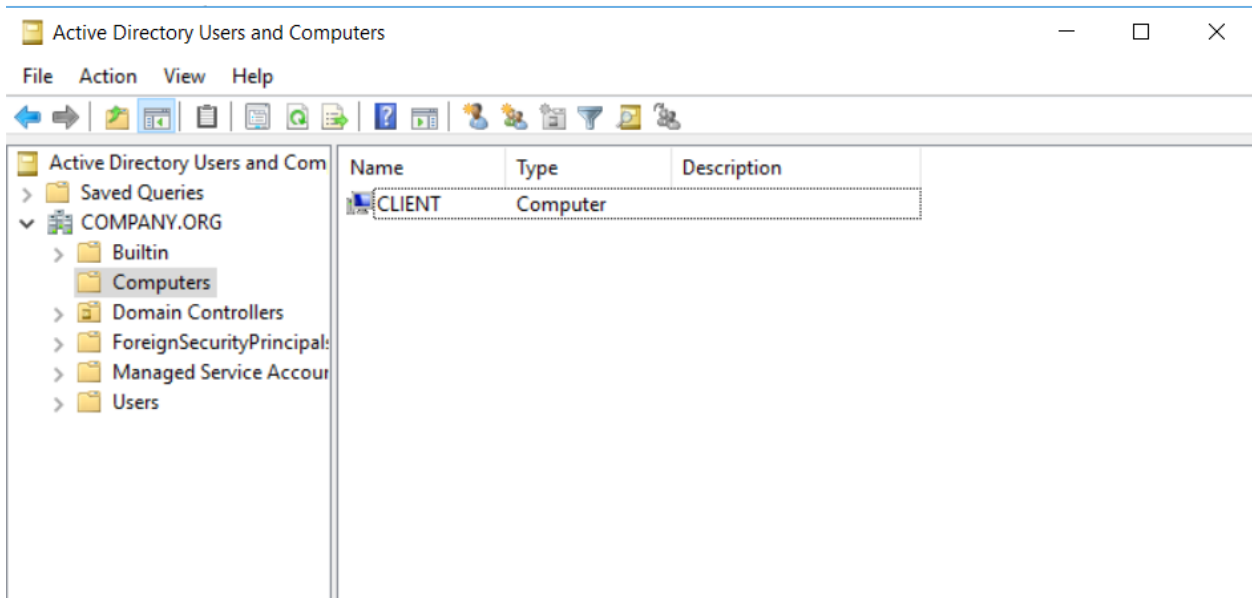
- AD DS Installation



- Domain Controller Promotion



- Client Domain Join



✓ Outcome

- Domain successfully created.
- Clients joined and authenticated via the domain.

5: DNS Server

Objective

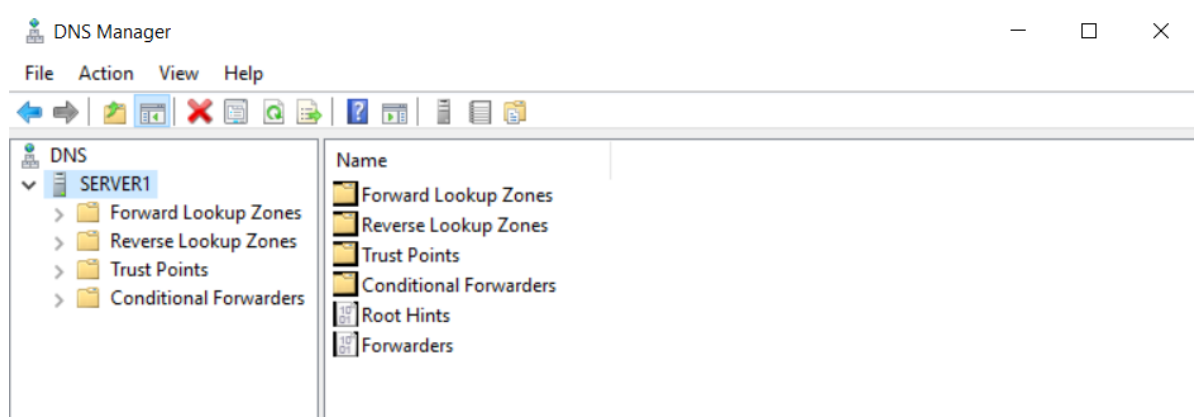
Provide **name resolution** for domain and network clients.

Steps

1. Install **DNS Server** role.
2. Open **DNS Manager**.
3. Configure a **Forward Lookup Zone** for COMPANY.ORG.
4. Add **Host (A) Records** for important servers.
5. Configure **Reverse Lookup Zone**.
6. Test with `nslookup` from client.

Screenshots

- Zone Creation



- nslookup Test

```

C:\> Command Prompt - nslookup
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Documents and Settings\Administrator>nslookup
Default Server:  server1.company.org
Address:  192.168.33.1
>

```

✓ Outcome

- DNS resolved names to IPs correctly.

▶ 6: AD Objects & Domain Administration

🎯 Objective

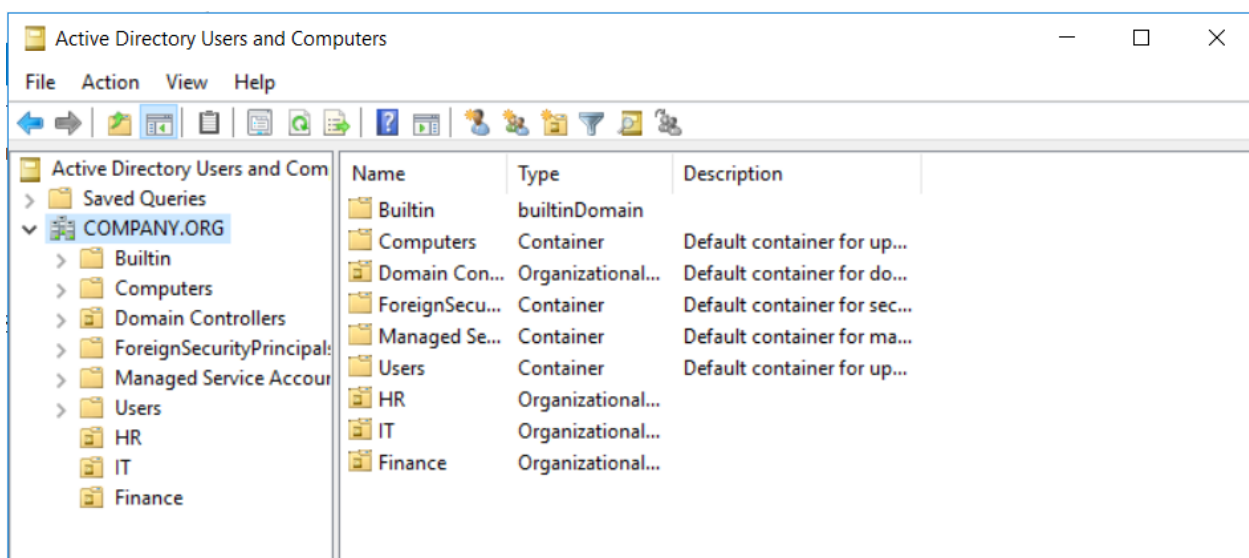
Create and manage **Users, Groups, and OUs** for centralized administration.

📝 Steps

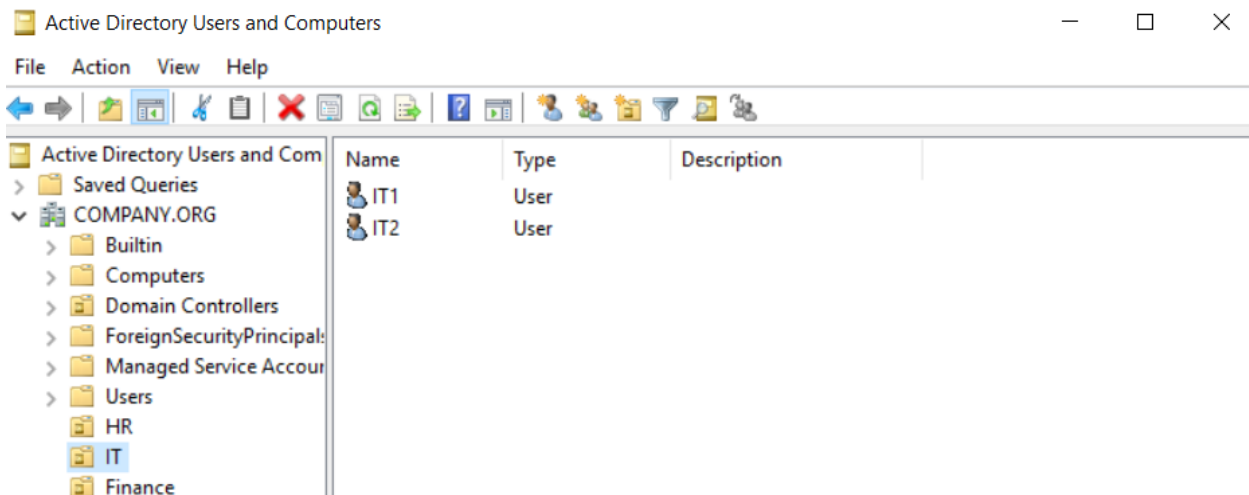
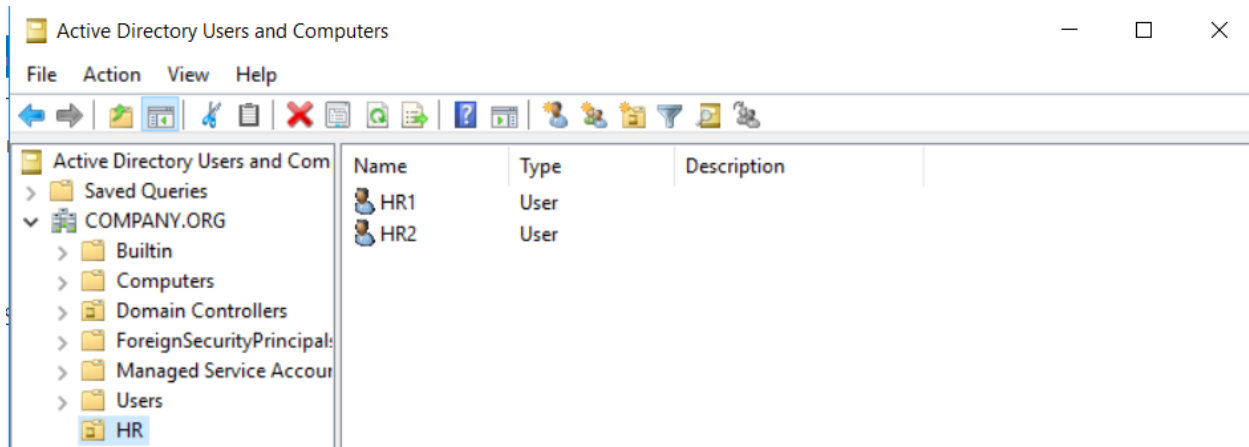
1. Open **Active Directory Users and Computers (ADUC)**.
2. Create **OU Structure** (HR, IT, Finance).
3. Add **Users** under OUs.

📸 Screenshots

- OU Creation



- User Creation



✓ Outcome

- Domain objects created and managed effectively.

▶ 7: Group Policy Management (GPM)

🎯 Objective

Apply **Group Policies** for centralized control of users and computers.

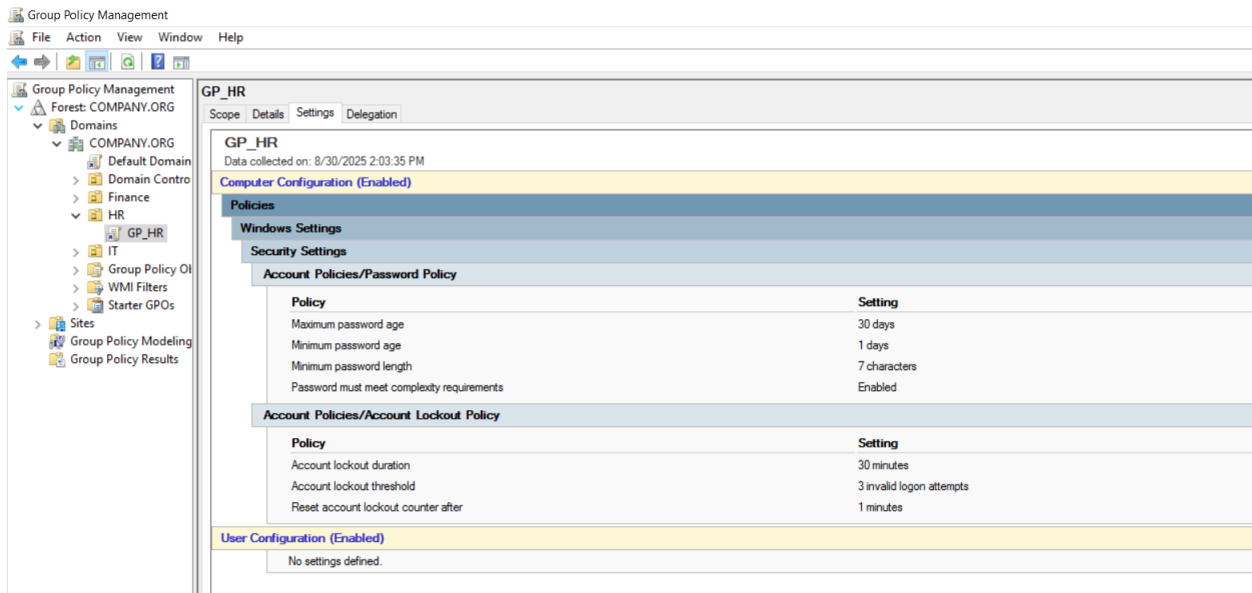
📝 Steps

1. Open **Group Policy Management Console (GPMC)**.

2. Create new GPO → name it **GP_HR**
3. Link GPO to **HR OU**.
4. Configure policies:
 - Password Policy
 - Hide *Run from start menu*
 - Remove desktop items
 - Remove *Search from start menu*
 - Disable *Help from start menu*
5. Run `gpupdate /force`.
6. Verify with `gpresult /r`.

Screenshots

- Linked to OU and its Report



The screenshot shows the Group Policy Management console for the Forest: COMPANY.ORG. The left-hand tree view shows the hierarchy: Domains > COMPANY.ORG > HR > GP_HR. The main pane displays the configuration for the GP_HR GPO, which is linked to the HR OU. The GPO is titled 'GP_HR' and has data collected on 8/30/2025 2:03:35 PM. The 'Computer Configuration (Enabled)' section is expanded, showing the following policies:

- Windows Settings**
- Security Settings**
 - Account Policies/Password Policy**

Policy	Setting
Maximum password age	30 days
Minimum password age	1 days
Minimum password length	7 characters
Password must meet complexity requirements	Enabled
 - Account Policies/Account Lockout Policy**

Policy	Setting
Account lockout duration	30 minutes
Account lockout threshold	3 invalid logon attempts
Reset account lockout counter after	1 minutes
- User Configuration (Enabled)**
 - No settings defined.

GP_HR

ScopeDetailsSettingsDelegation

Administrative Templates

Policy definitions (ADMX files) retrieved from the local computer.

Control Panel

Policy	Setting	Comment
Prohibit access to Control Panel and PC settings	Enabled	

Desktop

Policy	Setting	Comment
Hide and disable all items on the desktop	Enabled	

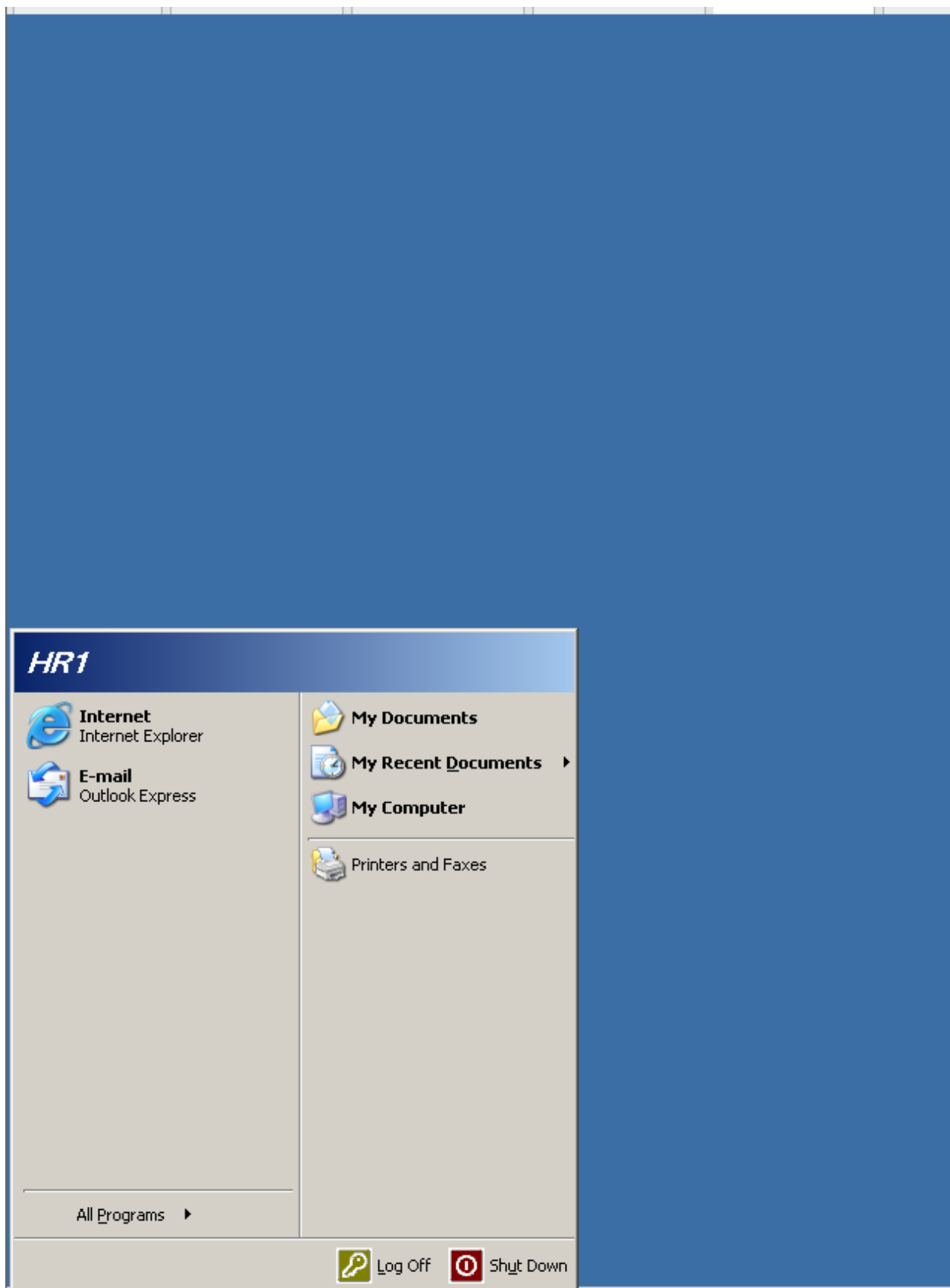
Desktop/ Desktop

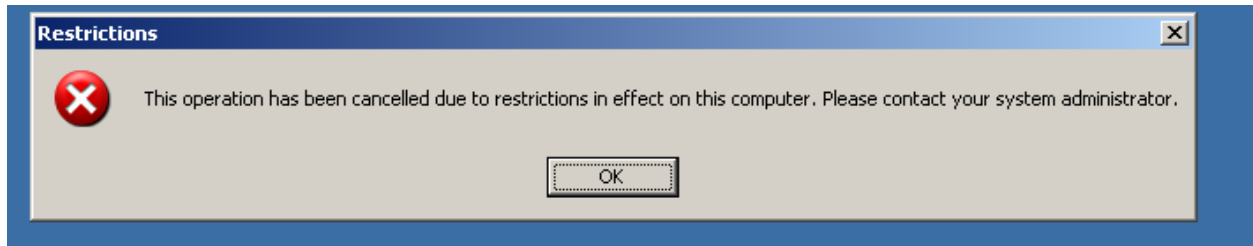
Policy	Setting	Comment
Desktop Wallpaper	Enabled	
Wallpaper Name:		HELLO
Example: Using a local path: C:\windows\web\wallpaper\home.jpg		
Example: Using a UNC path: \\Server\Share\Corp.jpg		
Wallpaper Style:		Center

Start Menu and Taskbar

Policy	Setting	Comment
Remove Help menu from Start Menu	Enabled	
Remove Run menu from Start Menu	Enabled	
Remove Search link from Start Menu	Enabled	

- Client Policy Applied





✓ Outcome

- Policies successfully applied to target users and computers.

▶ 8: Virtual Private Network (VPN)

🎯 Objective

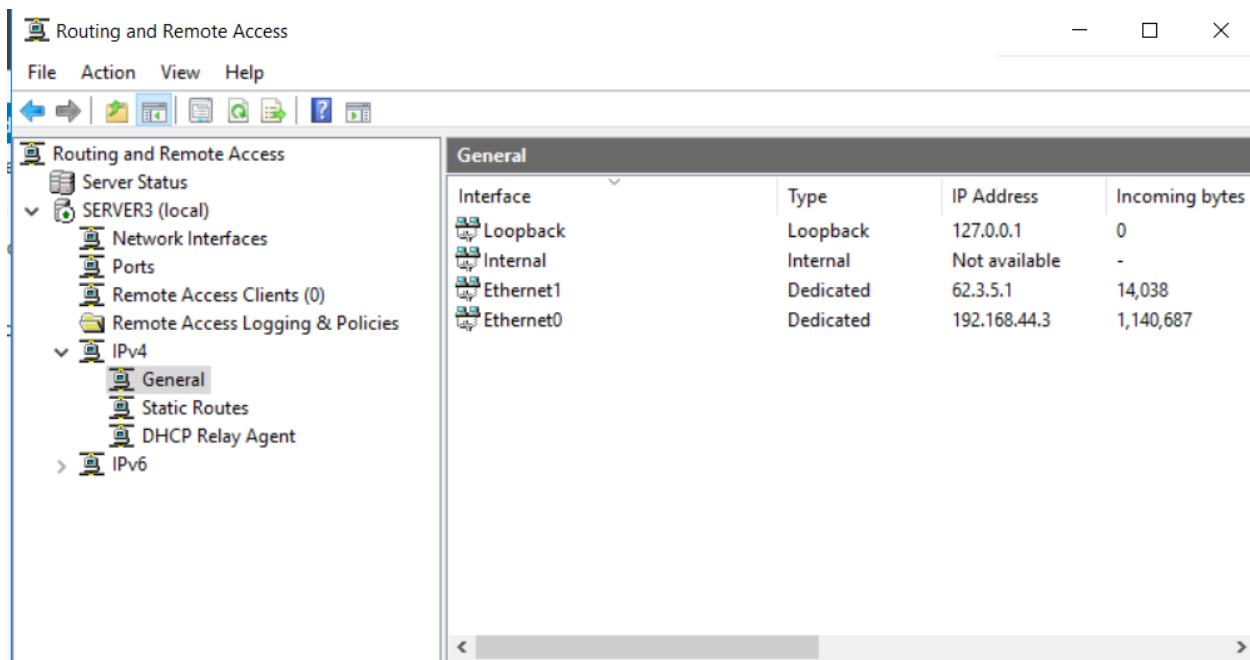
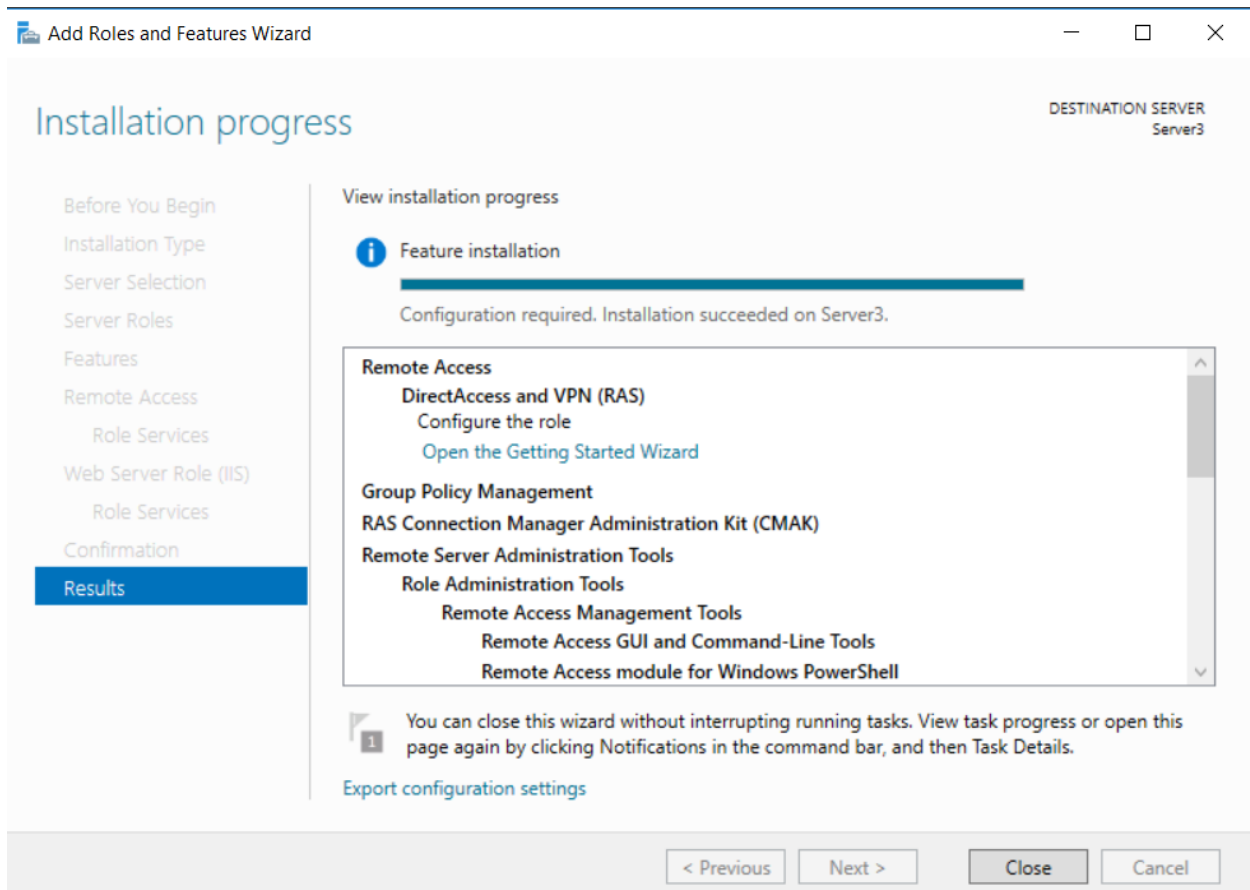
Set up a **VPN** for secure remote access.

✎ Steps

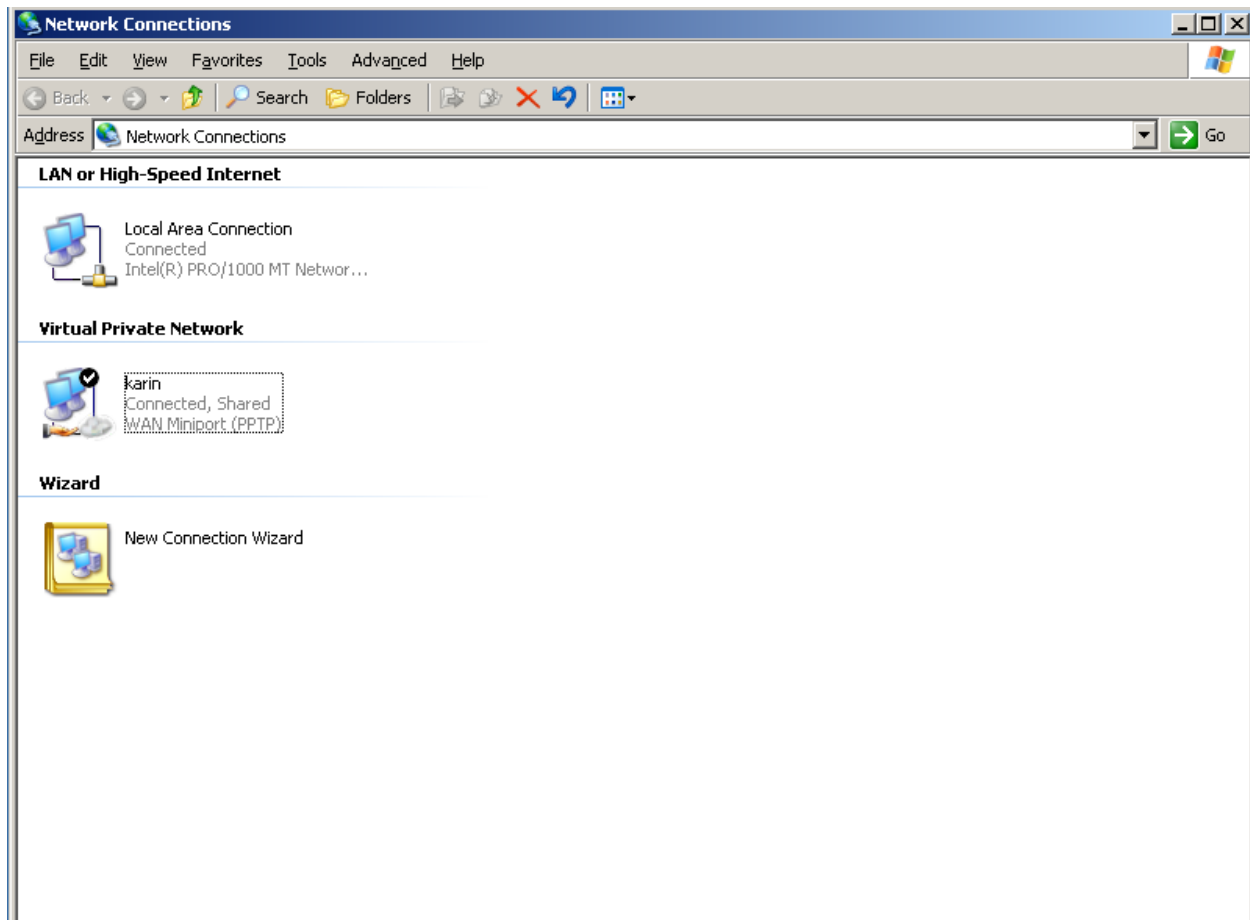
1. Install **Remote Access** → **VPN** role.
2. Configure **RRAS for VPN Access**.
3. Set authentication method (username/password).
4. Create a VPN connection on the client.
5. Connect and test access to internal resources.

🖥️ Screenshots

- RRAS VPN Setup



- Client VPN Connection



✓ Outcome

- VPN successfully established and client accessed domain resources.

▶ 9: Network Policy Service (NPS / RADIUS)

🎯 Objective

Configure **NPS (RADIUS)** for centralized authentication of VPN and network devices.

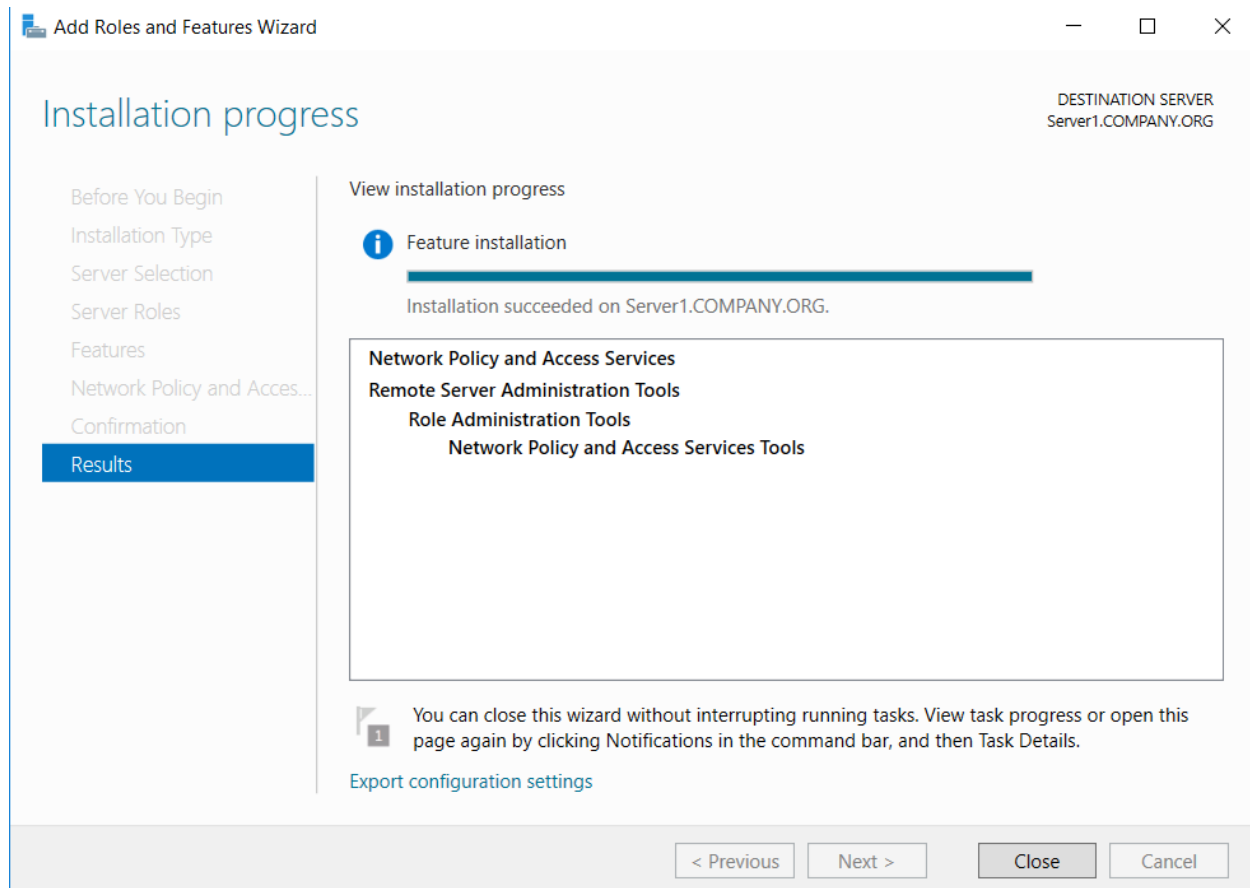
📝 Steps

1. Install **Network Policy and Access Services** role.
2. Open **NPS Console**.
3. Configure **RADIUS Clients** (e.g., VPN server).

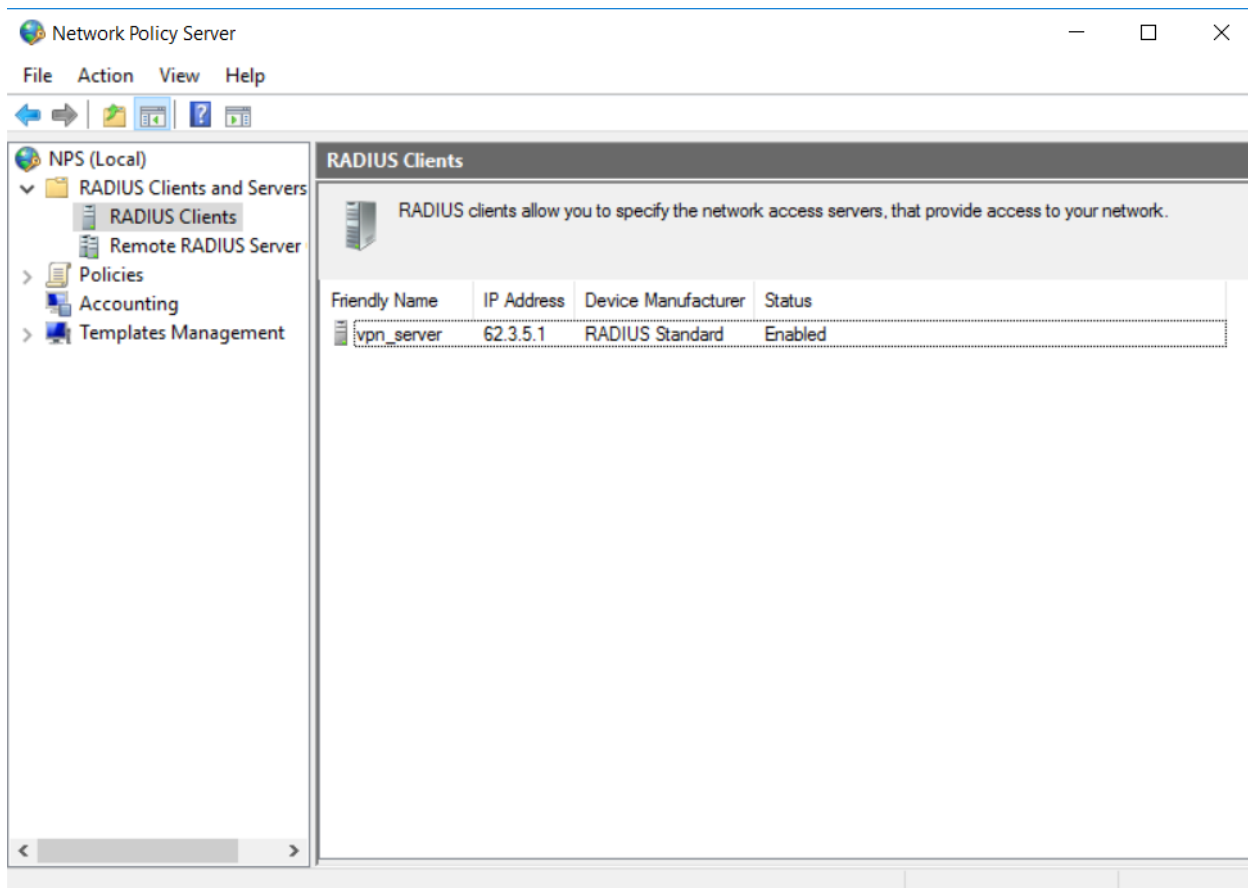
4. Create **Network Policies** for authentication.
5. Test authentication via client.

Screenshots

- NPS Installation



- RADIUS Client Configuration



✓ Outcome

- NPS successfully authenticated users via RADIUS.

← END Conclusion

This workshop provided a **hands-on, end-to-end lab** covering the most essential Windows Server administration roles:

- Automated IP management with **DHCP**.
- Inter-network communication through **RRAS Routing** and **DHCP Relay**.
- Centralized management using **Active Directory (AD DS)**.
- Reliable name resolution with **DNS**.
- Secure, policy-driven administration via **Group Policy Objects (GPOs)**.
- Remote connectivity through **VPN**.
- Centralized authentication and authorization using **NPS (RADIUS)**.

✓ By completing these steps, we built a fully functional **enterprise-like Windows Server environment**, with proper domain services, secure authentication, and centralized administration.