This project demonstrates the design and implementation of a complete Active Directory infrastructure in a simulated enterprise environment. It includes the deployment of domain controllers, organizational unit (OU) and user management, Group Policy configuration, file server setup, network drive mapping, and PowerShell automation. Additionally, it covers common troubleshooting scenarios to validate practical, real-world IT support skills.

Installing AD DS Role

The process starts with adding the Active Directory Domain Services r using Server Manager to prepare the server.

Promoting to Domain Controller

After installation, promote the server to a Domain Controller by creati new forest and specifying the root domain name.
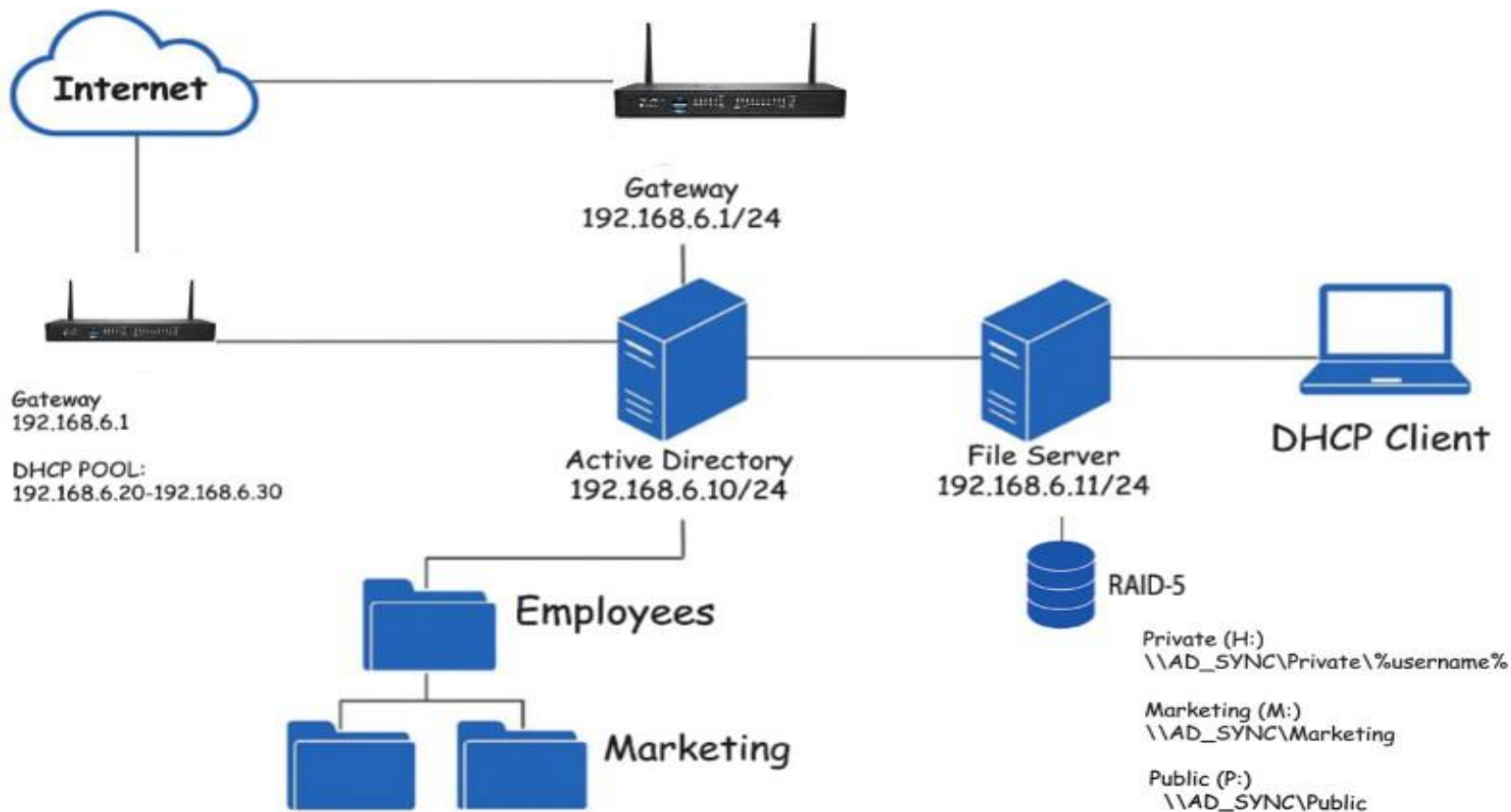
Configuring DNS and IP Settings

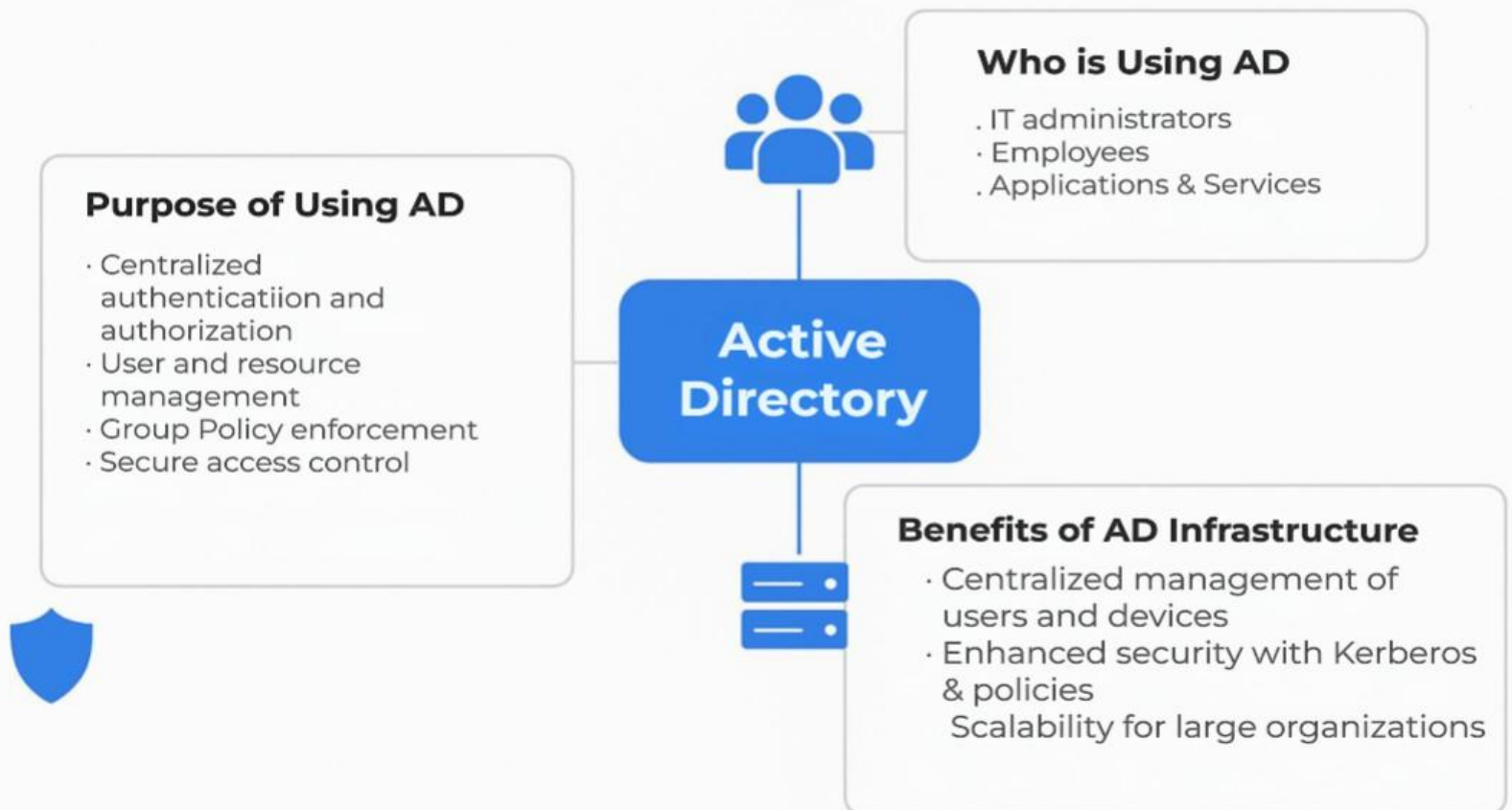Enable DNS and Global Catalog services and set a static IP for stable connectivity and reliable name resolution.

Setting Functional Levels and Recovery

Configure domain and forest functional levels to support modern feat and set a DSRM password for recovery.

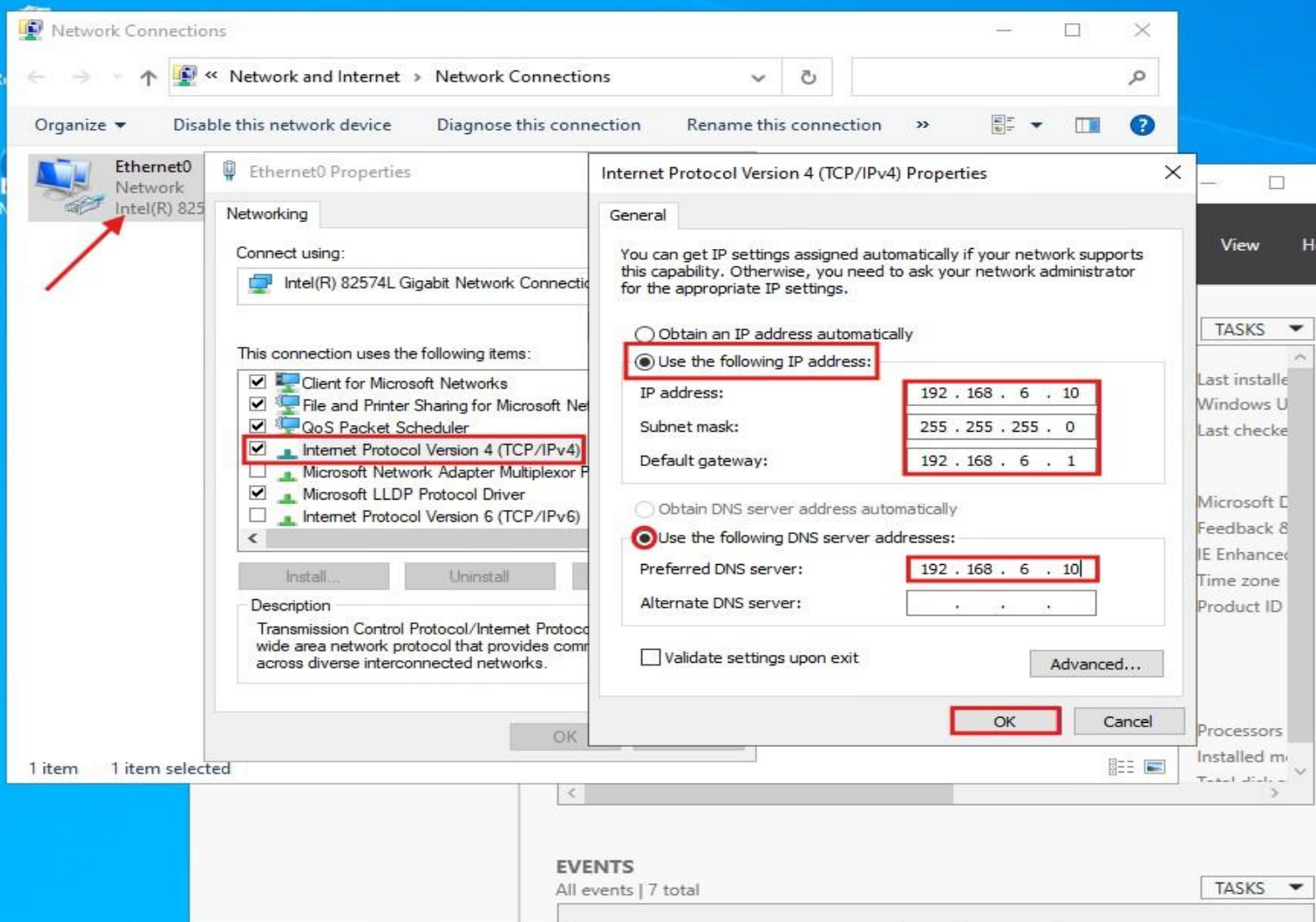# Active Directory Infrastructure Deployment and Management

Internet

Gateway
192.168.6.1/24

Gateway
192.168.6.1

DHCP POOL:
192.168.6.20-192.168.6.30

Active Directory
192.168.6.10/24

File Server
192.168.6.11/24

DHCP Client

Employees

Marketing

RAID-5

Private (H:)
\\AD_SYNC\Private\%username%

Marketing (M:)
\\AD_SYNC\Marketing

Public (P:)
 \\AD_SYNC\Public

Active Directory Overview

Who is Using AD
. IT administrators
· Employees
. Applications & Services

Purpose of Using AD
· Centralized
  authenticatiion and
  authorization
· User and resource
  management
· Group Policy enforcement
· Secure access control

Active Directory

Benefits of AD Infrastructure
· Centralized management of
  users and devices
· Enhanced security with Kerberos
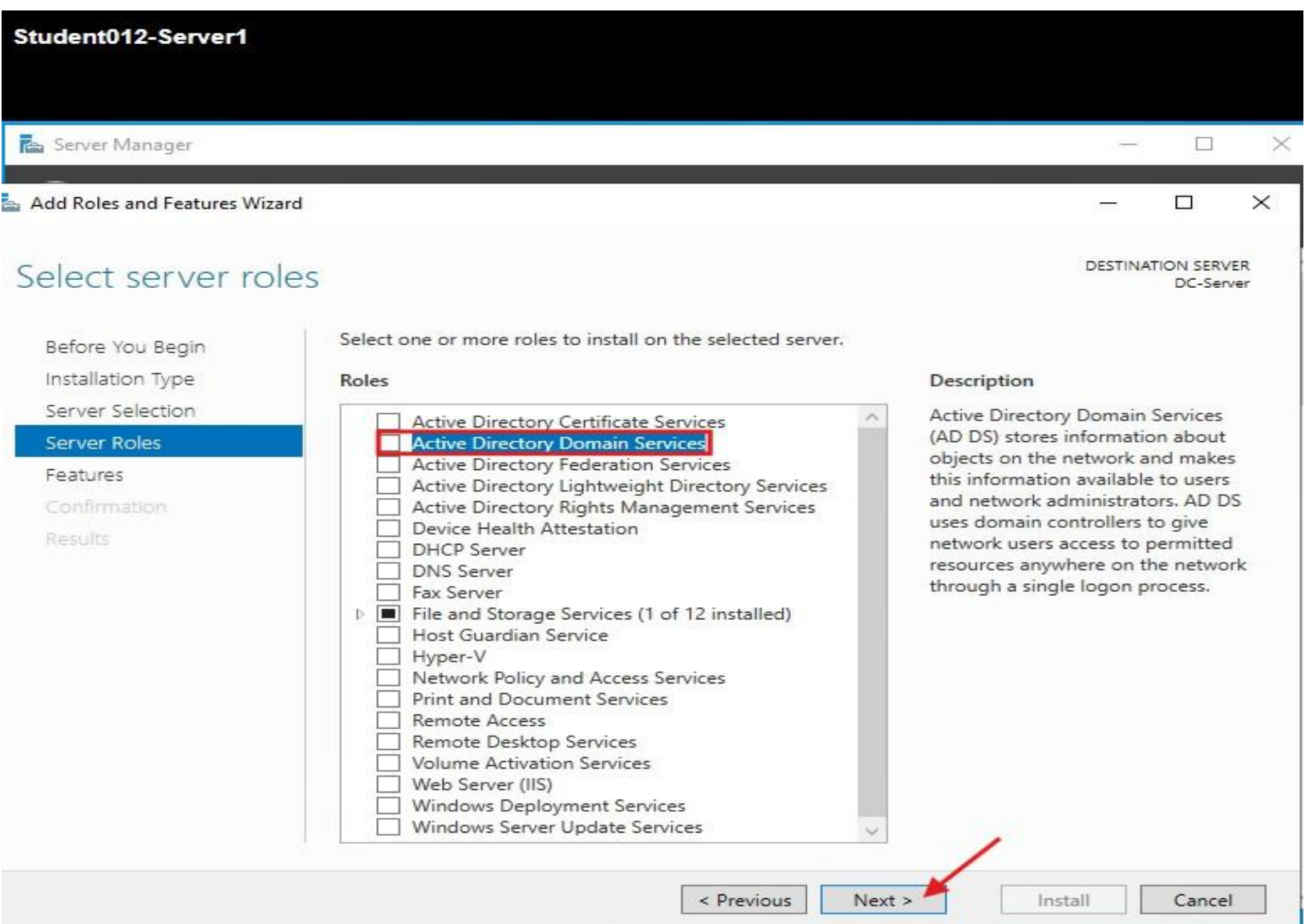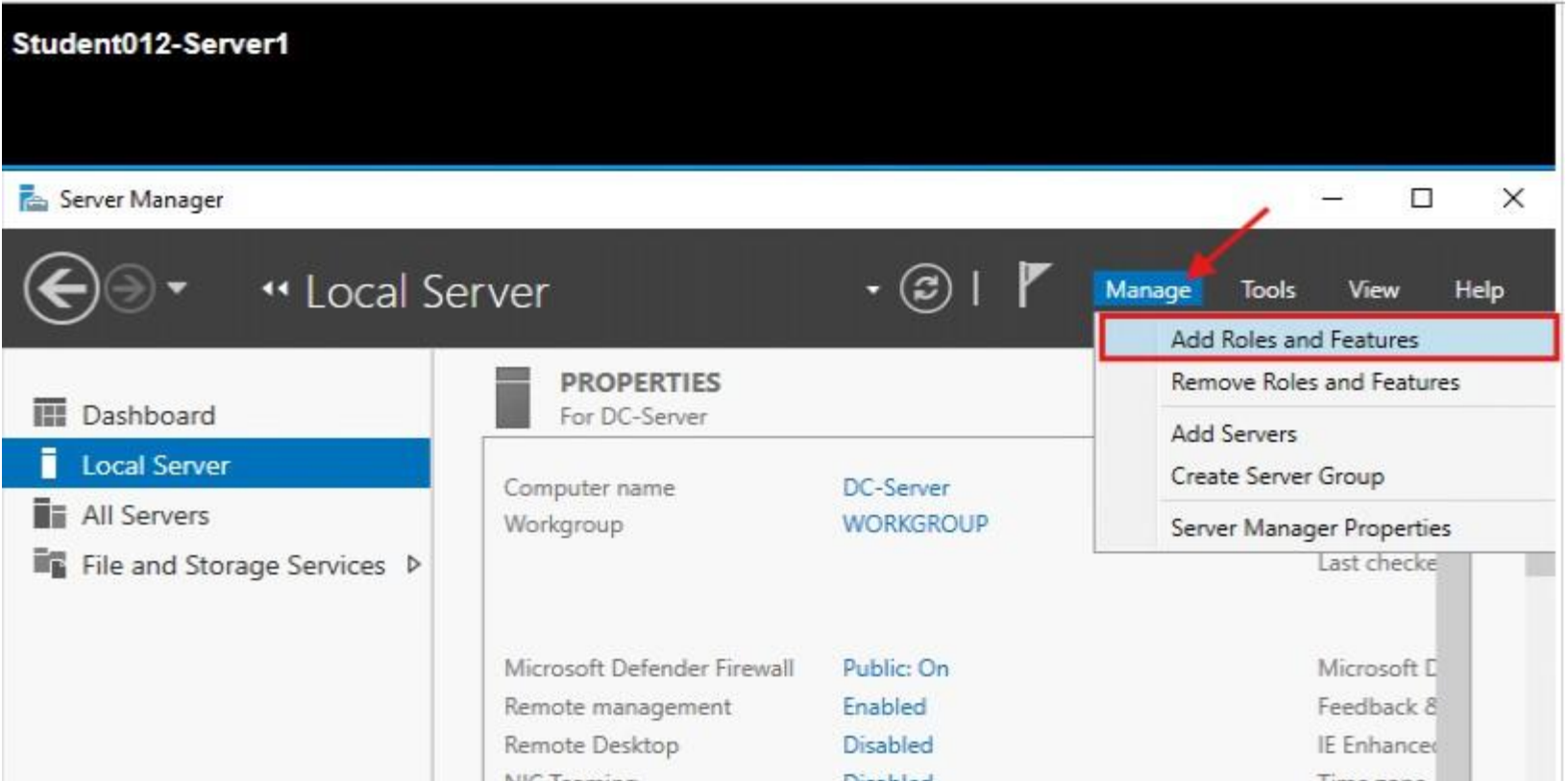 & policies
   Scalability for large organizations

- ❖ A static IP address is a fixed, manually assigned IP address that does not change over time. Unlike a dynamic IP (which is automatically assigned by DHCP and can change), a static IP ensures the device always uses the same address on the network. This is important for servers, printers, and network devices because it provides consistent connectivity, easier management, and reliable DNS resolution. For example, setting
your server to 192.168.6.10/24 guarantees that Active Directory and other services can always locate it using that address.
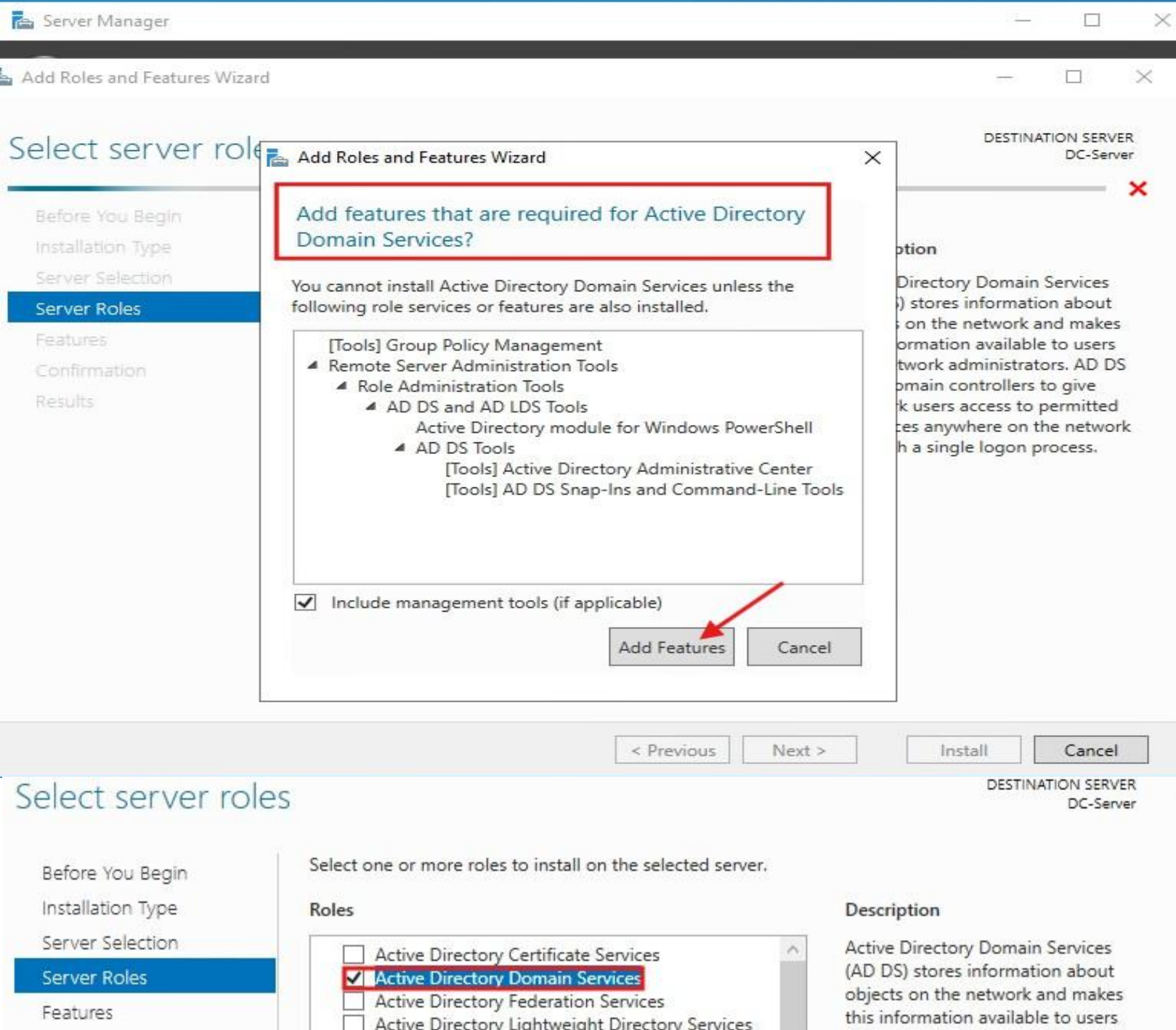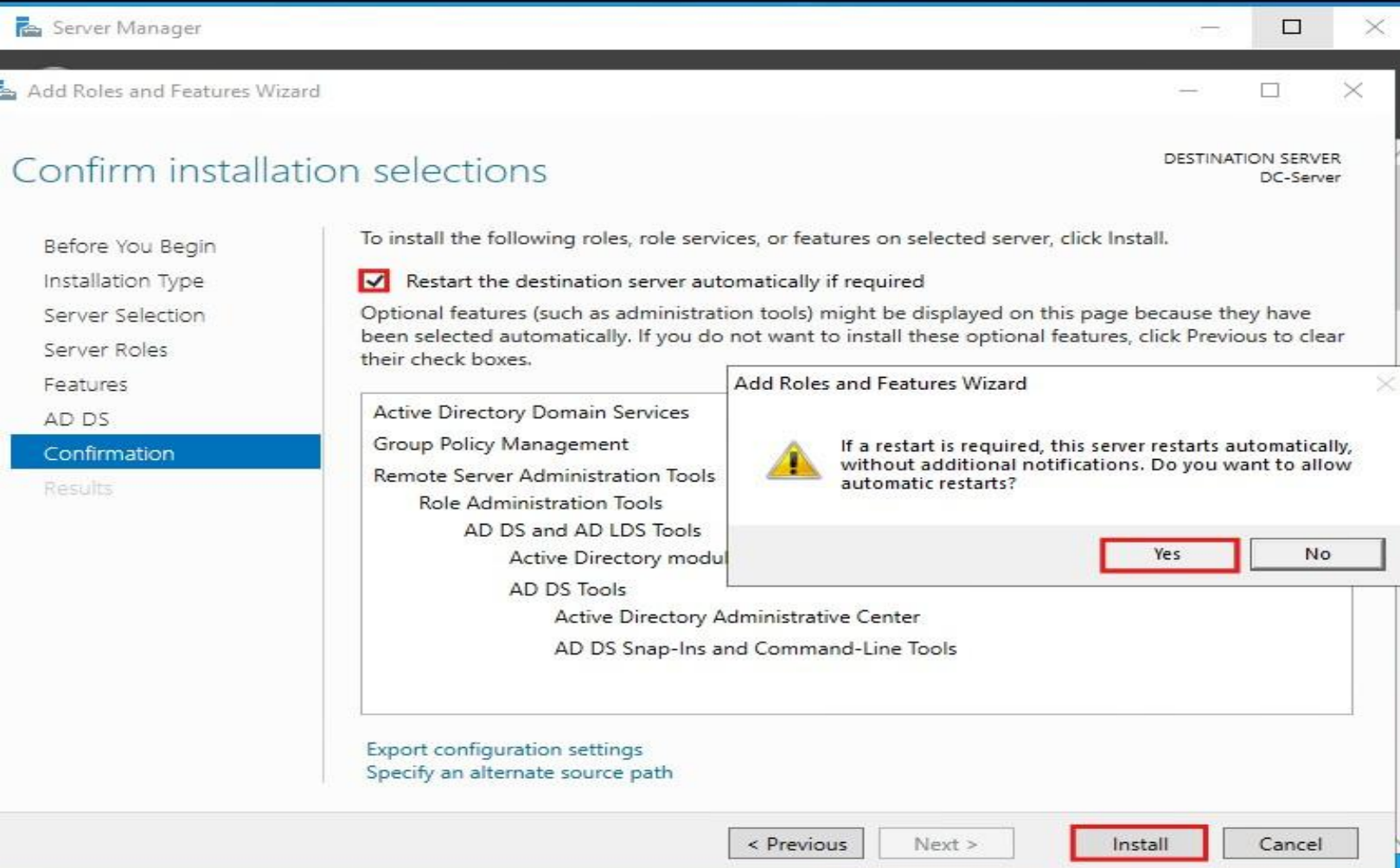

- ❖ Install Active Directory Domain Services (AD DS)

  Open Server Manager → Click Add Roles and Features.
  Select Active Directory Domain Services role.
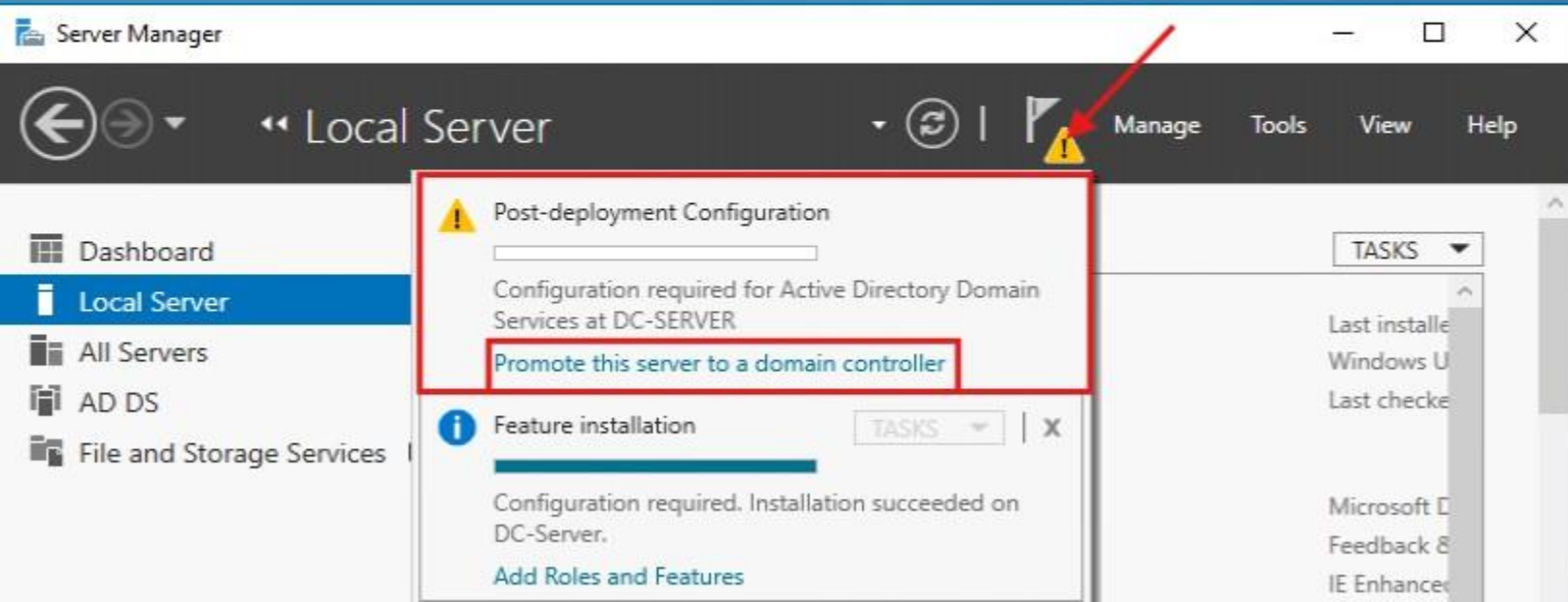 Complete the installation and restart the server.

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Server Manager

⊙ ⊙ ▾ **◂◂ Local Server** ▾ ⊙ | ⚑   Manage   Tools   View   Help

Add Roles and Features

Remove Roles and Features

Dashboard   **PROPERTIES**
                                   For DC-Server   Add Servers
Local Server
                                                          Create Server Group
All Servers   Computer name   DC-Server
                                   Workgroup   WORKGROUP   Server Manager Properties
File and Storage Services ▷
                                                                Last checke

                                   Microsoft Defender Firewall   Public: On   Microsoft D
                                   Remote management   Enabled   Feedback 8
                                   Remote Desktop   Disabled   IE Enhanced
                                   NIC Teaming   Disabled   Time zone

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Server Manager   —   □   ✕

Add Roles and Features Wizard   —   □   ✕

Select server roles   DESTINATION SERVER
                                                                     DC-Server

Before You Begin   Select one or more roles to install on the selected server.
Installation Type
Server Selection   **Roles**   **Description**
Server Roles
Features   ☐ Active Directory Certificate Services   Active Directory Domain Services
Confirmation   ☐ **Active Directory Domain Services**   (AD DS) stores information about
Results   ☐ Active Directory Federation Services   objects on the network and makes
                          ☐ Active Directory Lightweight Directory Services   this information available to users
                          ☐ Active Directory Rights Management Services and network administrators. AD DS
                          ☐ Device Health Attestation   uses domain controllers to give
                          ☐ DHCP Server   network users access to permitted
                          ☐ DNS Server   resources anywhere on the network
                          ☐ Fax Server   through a single logon process.
                          ▷ ■ File and Storage Services (1 of 12 installed)
                          ☐ Host Guardian Service
                          ☐ Hyper-V
                          ☐ Network Policy and Access Services
                          ☐ Print and Document Services
                          ☐ Remote Access
                          ☐ Remote Desktop Services
                          ☐ Volume Activation Services
                          ☐ Web Server (IIS)
                          ☐ Windows Deployment Services
                          ☐ Windows Server Update Services

                                    < Previous   **Next >**   Install   Cancel

Server Manager — □ ✕

Add Roles and Features Wizard — □ ✕

Select server role DESTINATION SERVER
DC-Server

✕

Add Roles and Features Wizard ✕

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

Add features that are required for Active Directory Domain Services?

You cannot install Active Directory Domain Services unless the following role services or features are also installed.

[Tools] Group Policy Management
▲ Remote Server Administration Tools
   ▲ Role Administration Tools
      ▲ AD DS and AD LDS Tools
         Active Directory module for Windows PowerShell
         ▲ AD DS Tools
            [Tools] Active Directory Administrative Center
            [Tools] AD DS Snap-Ins and Command-Line Tools

ption

Directory Domain Services
) stores information about
on the network and makes
ormation available to users
twork administrators. AD DS
omain controllers to give
k users access to permitted
es anywhere on the network
h a single logon process.

☑ Include management tools (if applicable)

Add Features   Cancel

< Previous   Next >   Install   Cancel

Select server roles

DESTINATION SERVER
DC-Server

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Select one or more roles to install on the selected server.

Roles

☐ Active Directory Certificate Services
☑ Active Directory Domain Services
☐ Active Directory Federation Services
☐ Active Directory Lightweight Directory Services

Description

Active Directory Domain Services (AD DS) stores information about objects on the network and makes this information available to users

❖ Final confirmation in the Add Roles and Features Wizard, where you allow the server to install Active Directory Domain Services and restart automatically if required by clicking Install and then Yes for automatic restart.

Server Manager

Add Roles and Features Wizard

Confirm installation selections

DESTINATION SERVER
DC-Server

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

To install the following roles, role services, or features on selected server, click Install.

☑ Restart the destination server automatically if required

Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

Add Roles and Features Wizard

Active Directory Domain Services
Group Policy Management
Remote Server Administration Tools
   Role Administration Tools
      AD DS and AD LDS Tools
         Active Directory modul
      AD DS Tools
         Active Directory Administrative Center
         AD DS Snap-Ins and Command-Line Tools

⚠ If a restart is required, this server restarts automatically, without additional notifications. Do you want to allow automatic restarts?

Yes   No

Export configuration settings
Specify an alternate source path

< Previous   Next >   Install   Cancel

❖ After installing AD DS, you need to click "Promote this server to a domain controller" to complete the configuration.

Server Manager

← → ▾ ‹‹ Local Server   ▾ ⊘ | ⚠ Manage Tools View Help

▦ Dashboard
▌ Local Server
▊ All Servers
▊ AD DS
▊ File and Storage Services

⚠ Post-deployment Configuration

Configuration required for Active Directory Domain Services at DC-SERVER
Promote this server to a domain controller

ⓘ Feature installation

TASKS ▾ | ✕

Configuration required. Installation succeeded on DC-Server.

Add Roles and Features

TASKS ▾

Last installe
Windows U
Last checke

Microsoft D
Feedback &
IE Enhance

❖ Setting up a new Active Directory environment by choosing "Add a new forest", which means you are creating a completely new domain structure. In the Root domain name field, you entered laborhub.store, which will be the main domain for your network. After entering this, you click Next to proceed with configuring domain controller options.

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Server Manager

◀◀ Local Server   Manage   Tools   View   Help

Active Directory Domain Services Configuration Wizard

Deployment Configuration   TARGET SERVER
                                                             DC-Server

Deployment Configuration   Select the deployment operation
Domain Controller Options
Additional Options   ○ Add a domain controller to an existing domain
Paths   ○ Add a new domain to an existing forest
Review Options   ● Add a new forest
Prerequisites Check
Installation   Specify the domain information for this operation
Results
                                Root domain name: laborhub.store

                                More about deployment configurations

                                        < Previous   Next >   Install   Cancel

❖ Set the forest and domain functional level, enable DNS and Global Catalog, and create a DSRM password for recovery before clicking Next.

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Server Manager — □ X

◀◀ Local Server Manage Tools View Help

Active Directory Domain Services Configuration Wizard — □ X

Domain Controller Options

TARGET SERVER
DC-Server

Deployment Configuration
Domain Controller Options
DNS Options
Additional Options
Paths
Review Options
Prerequisites Check
Installation
Results

Select functional level of the new forest and root domain

Forest functional level: Windows Server 2016   ⌄

Domain functional level: Windows Server 2016   ⌄

Specify domain controller capabilities

☑ Domain Name System (DNS) server
☑ Global Catalog (GC)
☐ Read only domain controller (RODC)

Type the Directory Services Restore Mode (DSRM) password

Password: •••••••••••

Confirm password: •••••••••••

More about domain controller options

< Previous   Next >   Install   Cancel

❖ Verify or change the NetBIOS domain name (LABORHUB) before clicking Next to continue the domain controller setup.

Server Manager

← → ▼   ◄◄ Local Server   ▼ ⟳ | Manage   Tools   View   Help

Active Directory Domain Services Configuration Wizard

Additional Options

TARGET SERVER
DC-Server

Deployment Configuration
Domain Controller Options
DNS Options
Additional Options
Paths
Review Options
Prerequisites Check
Installation
Results

Verify the NetBIOS name assigned to the domain and change it if necessary

The NetBIOS domain name: LABORHUB

More about additional options

< Previous   Next >   Install   Cancel

❖ All prerequisite checks have passed successfully, so you can click Install to begin installing and configuring the Domain Controller.

Server Manager

← → ▼   ◄◄ Local Server   ▼ ⟳ | Manage   Tools   View   Help

Active Directory Domain Services Configuration Wizard

Prerequisites Check

TARGET SERVER
DC-Server

✓ All prerequisite checks passed successfully. Click 'Install' to begin installation.   Show more   ✕

Deployment Configuration
Domain Controller Options
DNS Options
Additional Options
Paths
Review Options
Prerequisites Check
Installation
Results

Prerequisites need to be validated before Active Directory Domain Services is installed on this computer

Rerun prerequisites check

⌃ View results

cryptography algorithms when establishing security channel sessions.

For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).

⚠ A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain "laborhub.store". Otherwise, no action is required.

ⓘ Prerequisites Check Completed

✓ All prerequisite checks passed successfully. Click 'Install' to begin installation.

⚠ If you click Install, the server automatically reboots at the end of the promotion operation.

More about prerequisites

< Previous   Next >   Install   Cancel

❖ Go to Server Manager → Tools → Active Directory Users and Computers to start

❖ Right-click your domain (laborhub.store) in Active Directory Users and Computers, select New → Organizational Unit to create a parent OU for organizing users and groups.
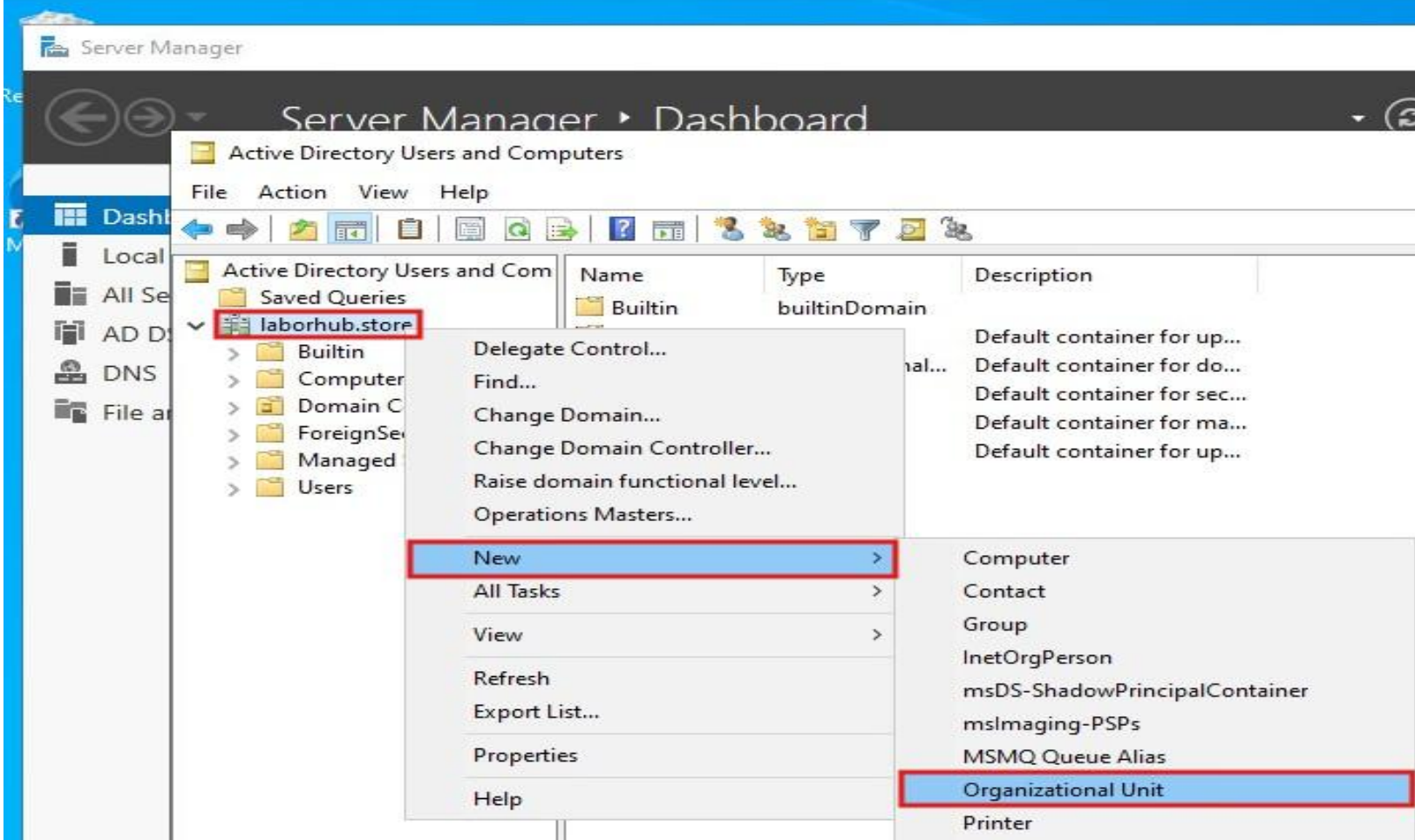
❖ Creating a parent OU named Employees under the domain laborhub.store. The check box "Protect container from accidental deletion" is enabled to prevent accidental removal. After entering the name, you click OK to finalize the OU creation.
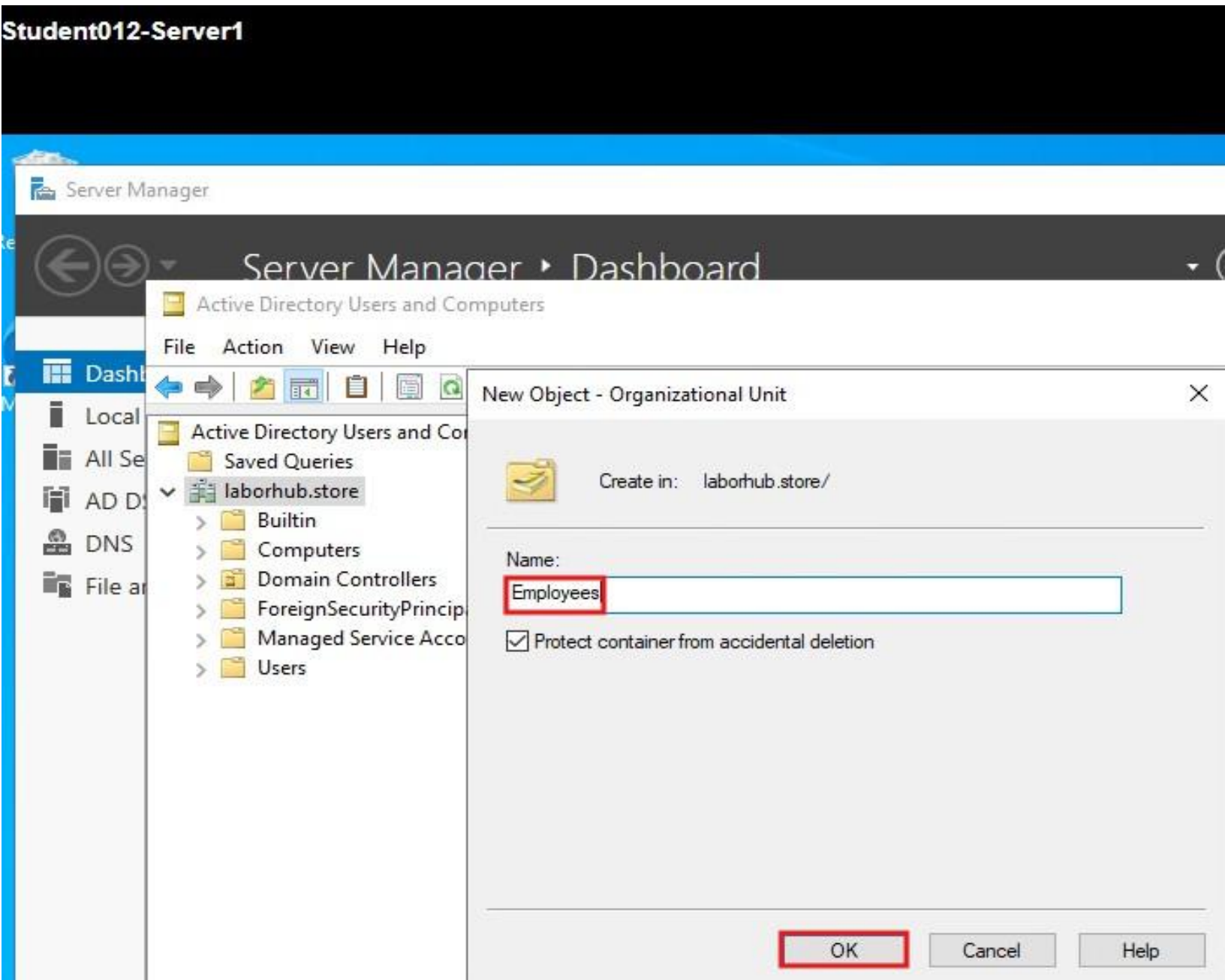
❖ You right-click on the Employees OU, select New → Organizational Unit, and then you will enter the name for the child OU (for example, "Marketing"). This helps organize users by department under the main Employees OU.

Server Manager

Server Manager • Dashboard

Active Directory Users and Computers

File   Action   View   Help

Active Directory Users and Com
- Saved Queries
- laborhub.store
  - Builtin
  - Computers
  - Domain Controllers
  - ForeignSecurityPrincipals
  - Managed Service Accour
  - Users
  - **Employees**

Name	Type	Description
	There are no items to show in this view.	

Delegate Control...
Move...
Find...

New   >   Computer
All Tasks   >   Contact
                                   Group
View   >   InetOrgPerson
                                   msDS-ShadowPrincipalContainer
Cut   msImaging-PSPs
Delete   MSMQ Queue Alias
Rename   **Organizational Unit**
Refresh   Printer
Export List...

Create a new object..

Server Manager

Server Manager • Dashboard

Active Directory Users and Computers

File   Action   View   Help

Active Directory Users and Com
- Saved Queries
- laborhub.store
  - Builtin
  - Computers
  - Domain Controllers
  - ForeignSecurityPrincipals
  - Managed Service Accour
  - Users
  - Employees

Name

New Object - Organizational Unit

Create in: laborhub.store/Employees

Name:

Marketing

☑ Protect container from accidental deletion

OK   Cancel   Help

❖ You right-click on the Marketing OU, select New → User, which opens a dialog where you can enter the user's details (First Name, Last Name, Username, etc.). This is how you add individual user accounts under a specific department OU.

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❖ **Emily Johnson** and **Michael Brown** user accounts are now added inside the **Marketing OU** under the domain **laborhub.store.**
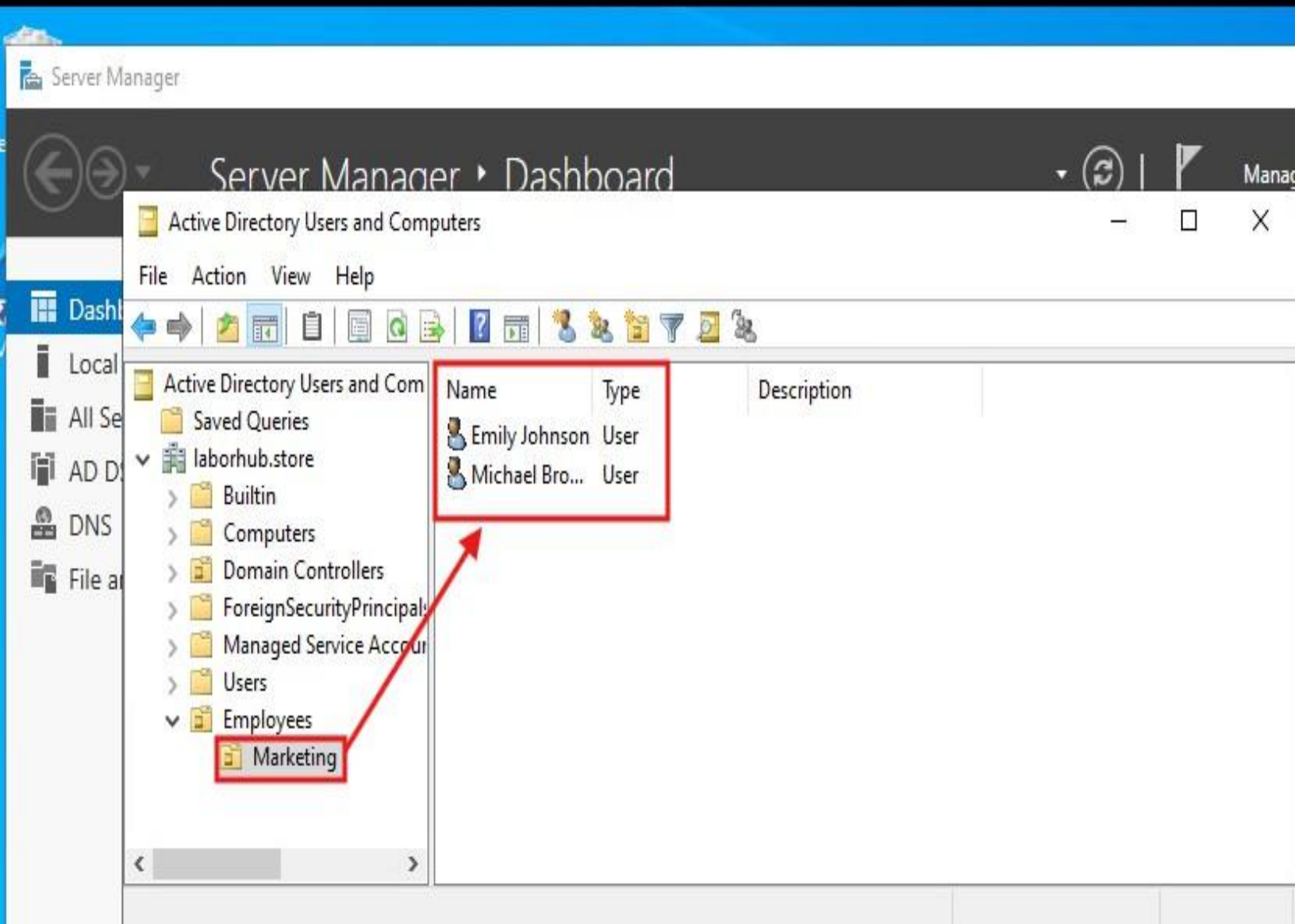
❖ Creates a Global Security Group named Marketing Group inside the Marketing OU for managing permissions.
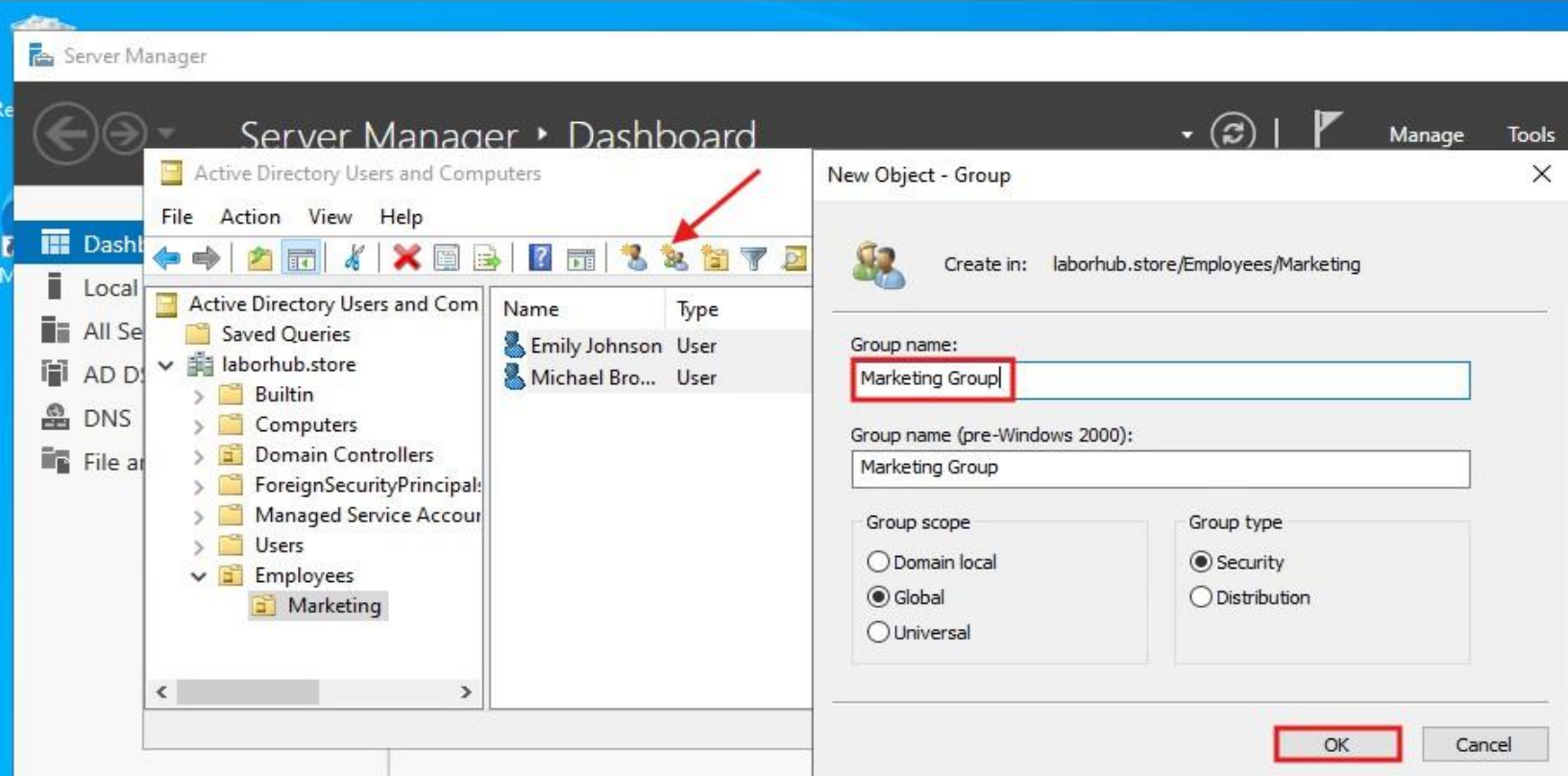
❖ Add to a group, to include the user in the Marketing Group for permission management.
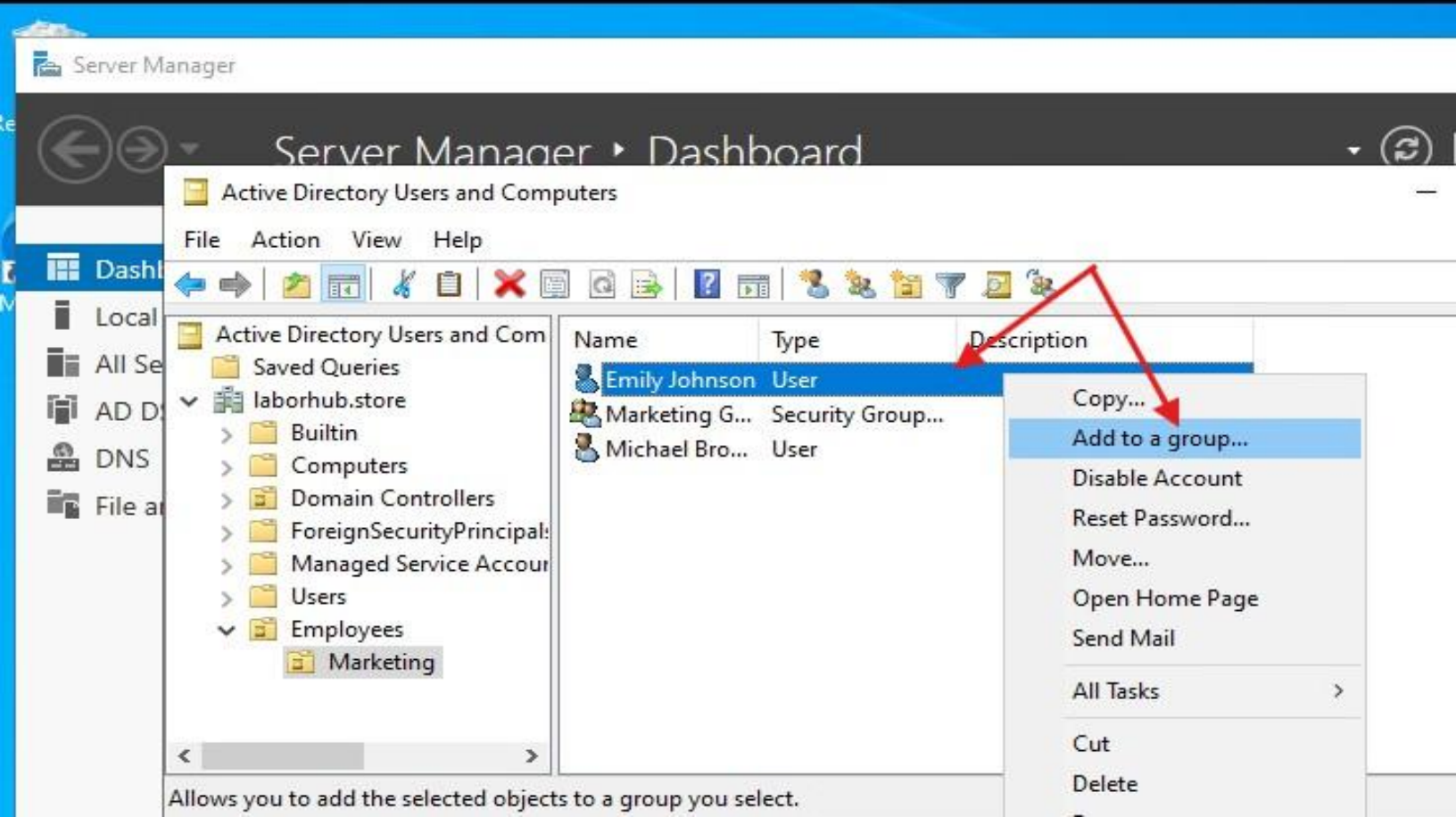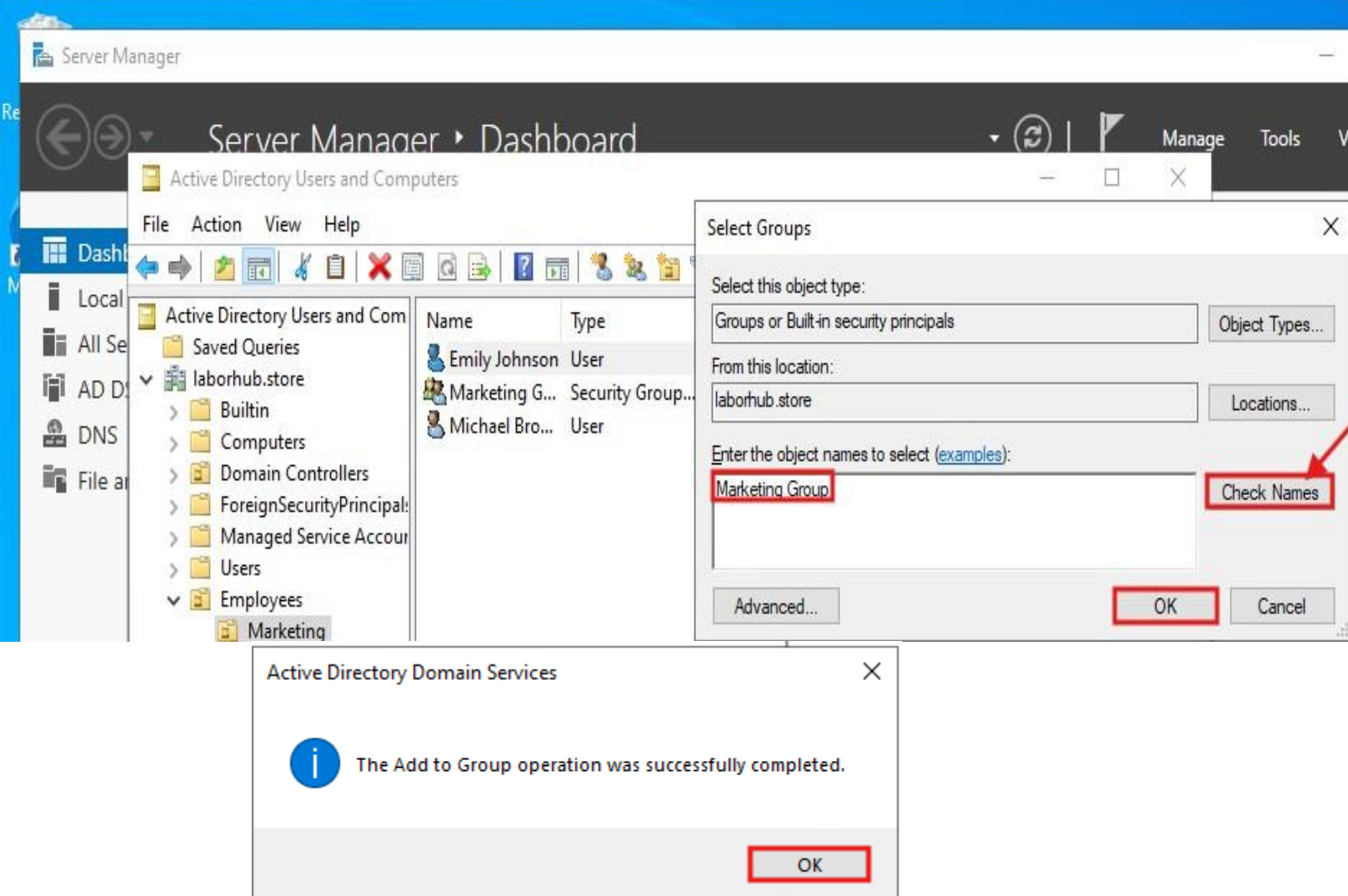
Bonus:

❖ If a user is accidentally added to a group, open the group's properties, navigate to the Members tab, select the user, and click Remove to revoke their membership."

❖ Static IP (192.168.5.11), subnet mask (255.255.255.0), and DNS server (192.168.5.10) in the IPv4 properties to ensure stable network connectivity for the file server.

❖ You change the computer's membership from Workgroup to Domain (laborhub.store),
   enter domain admin credentials, and click OK to join the server to the

- ❖ Right-click the RAID-5 volume in Disk Management, select Format, choose NTFS, name the volume, and click OK to complete formatting.
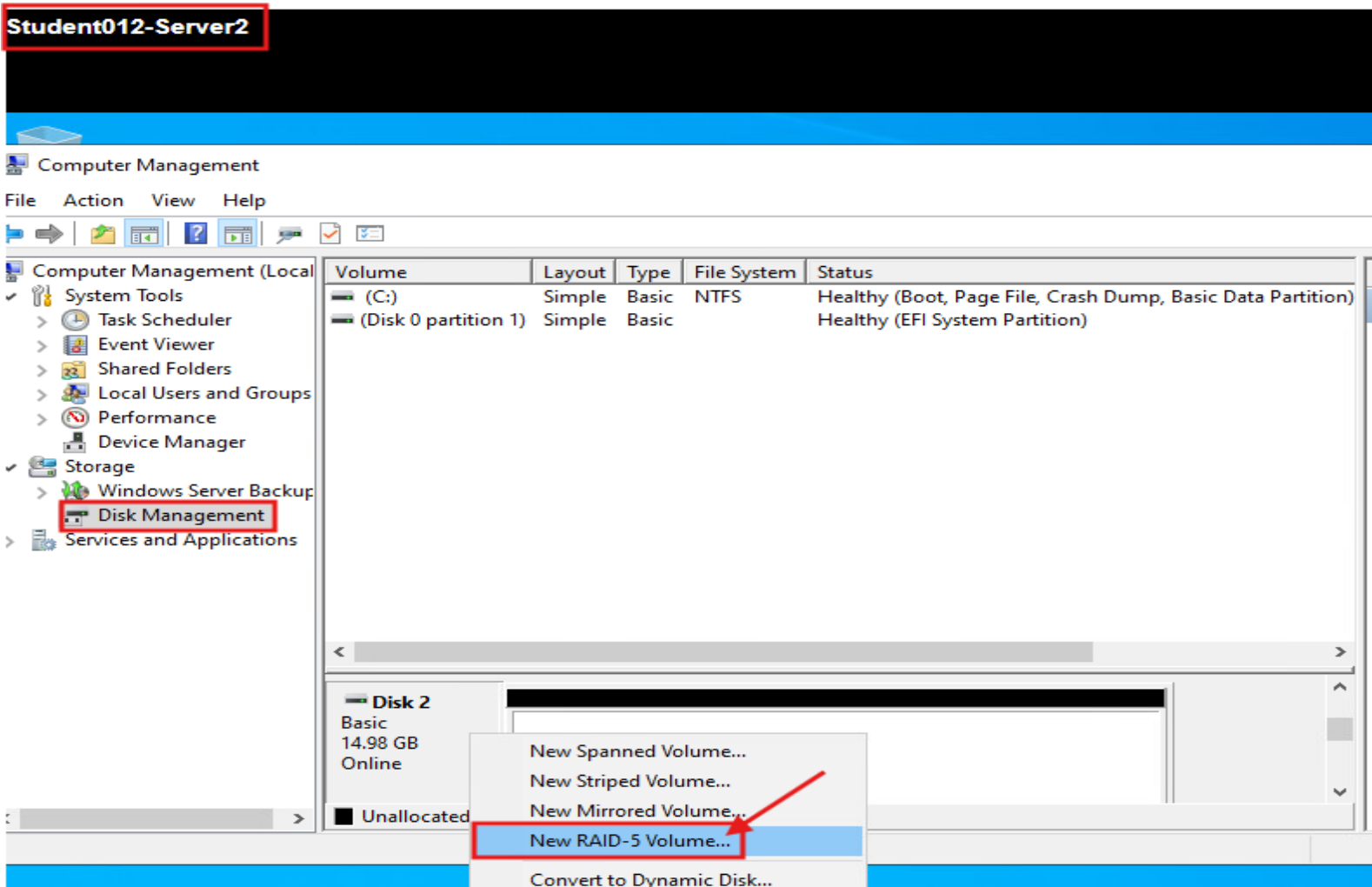
- ❖ Shows the New RAID-5 Volume setup in Disk Management, where three disks (Disk 2, Disk 3, Disk 4) of equal size (10,222 MB each) have been selected to create a RAID-5 volume.
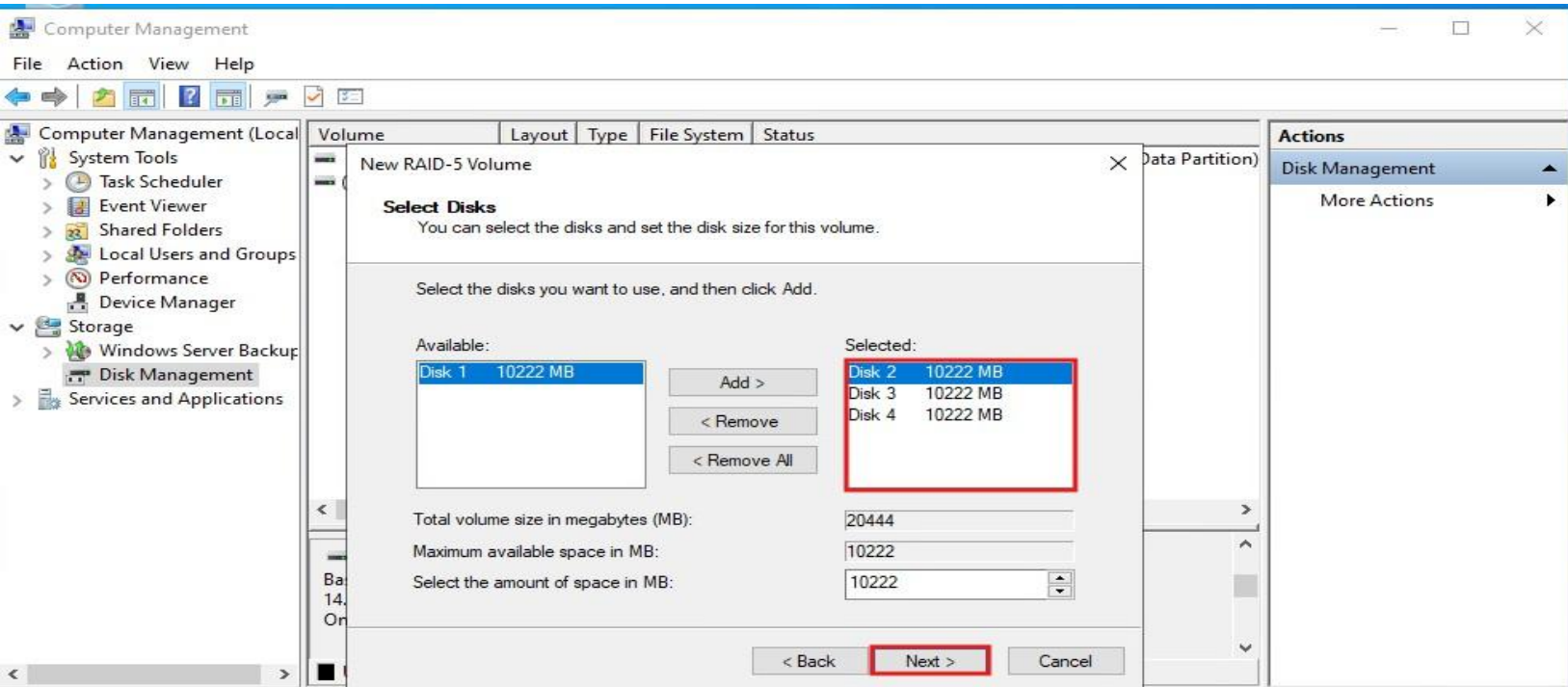
❖ This folder is stored on drive F: created using RAID-5, which provides fault tolerance and distributed parity across multiple disks.
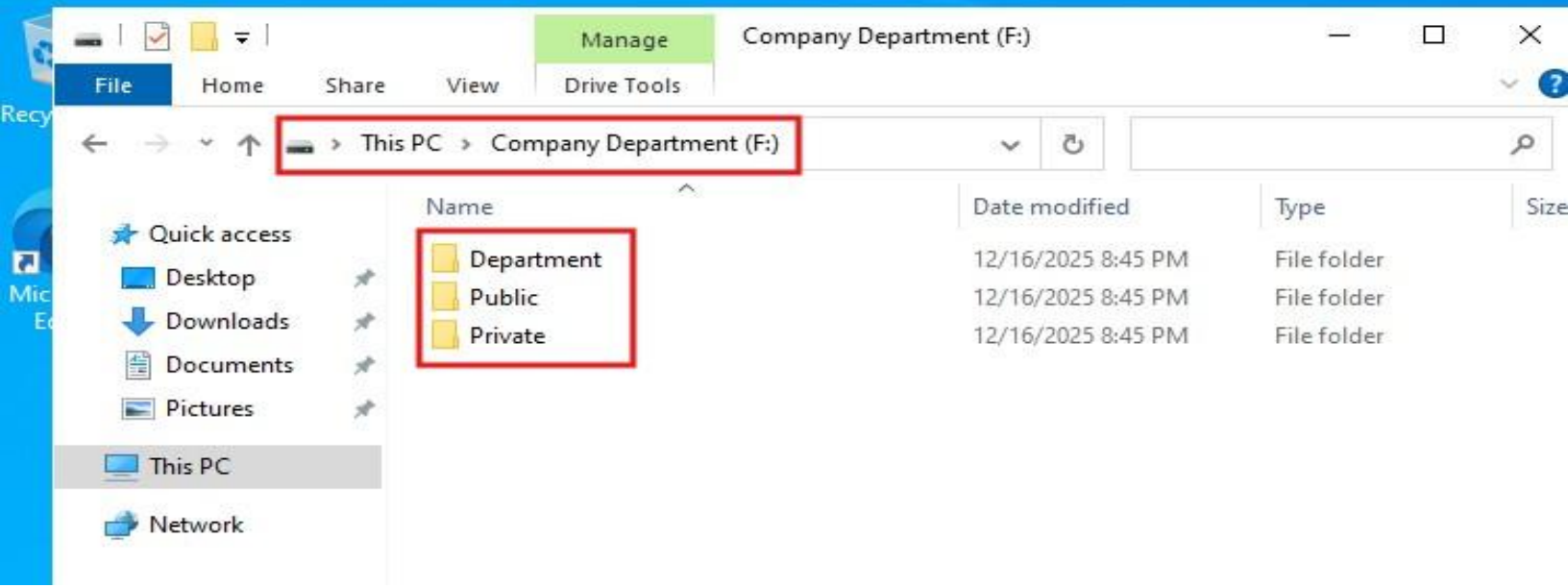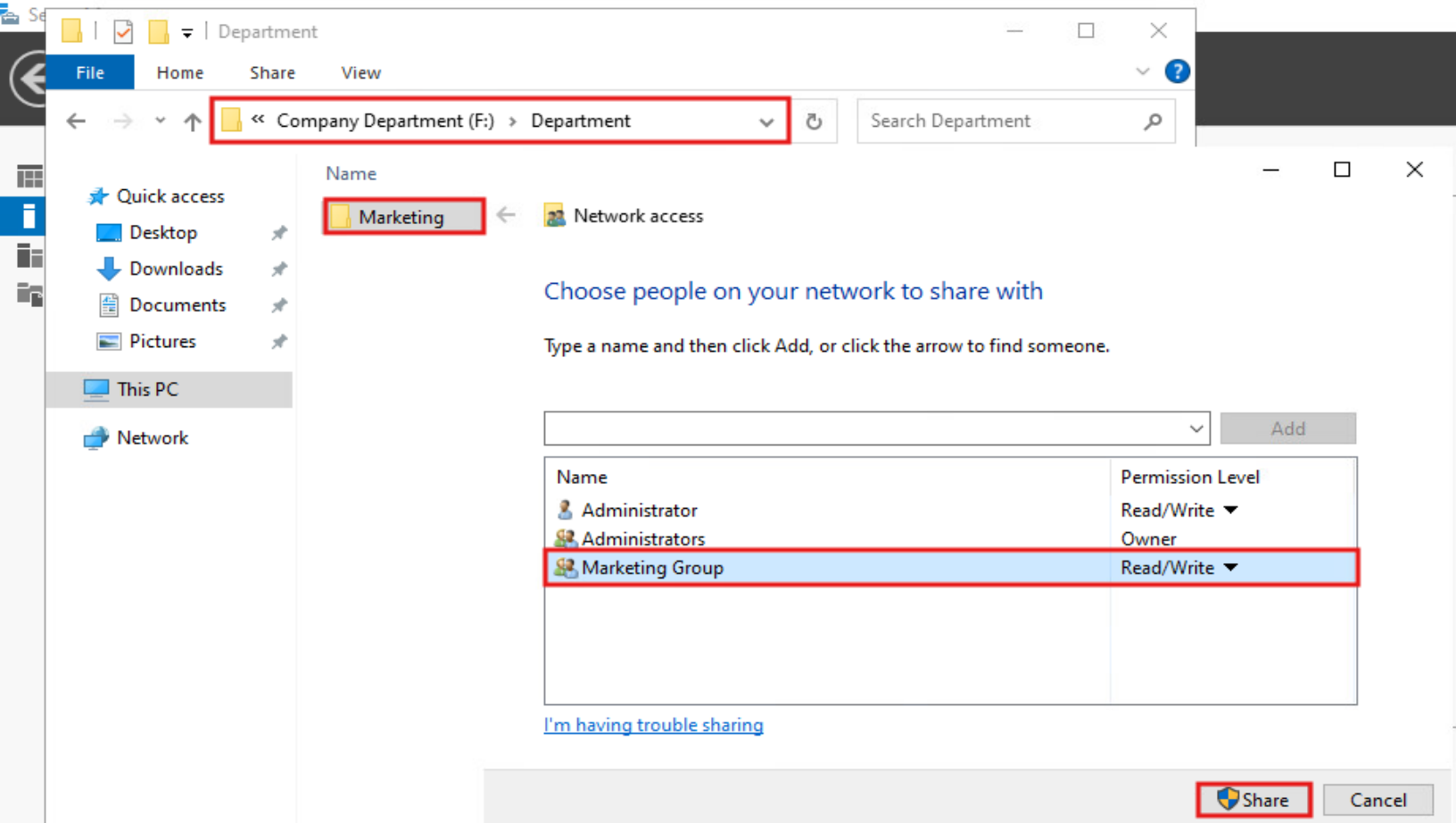
❖ Confirms that the Marketing folder has been successfully shared on the network, and its network path is \AD_SYNC\Marketing, making it accessible to authorized users over the network.
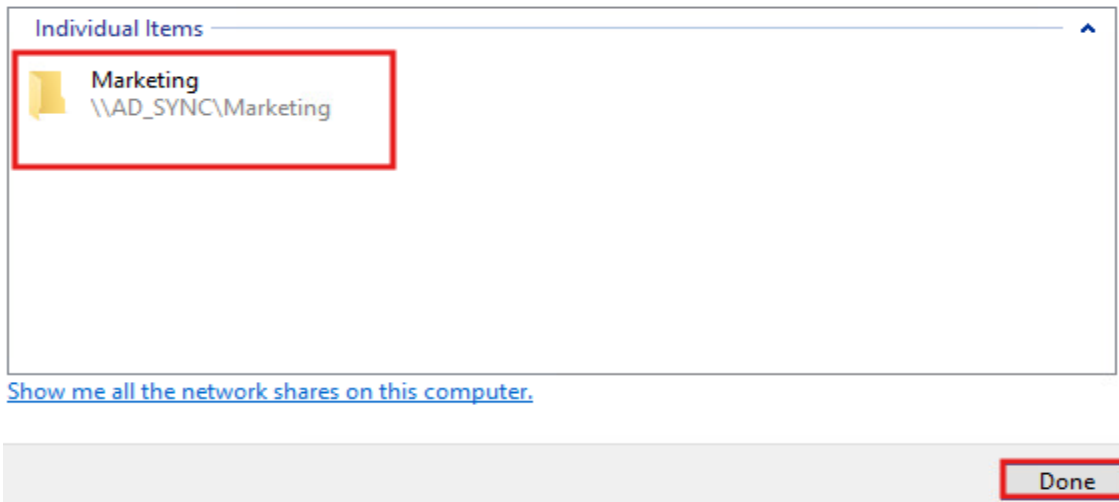
❖ Private folder is being shared with Domain Users
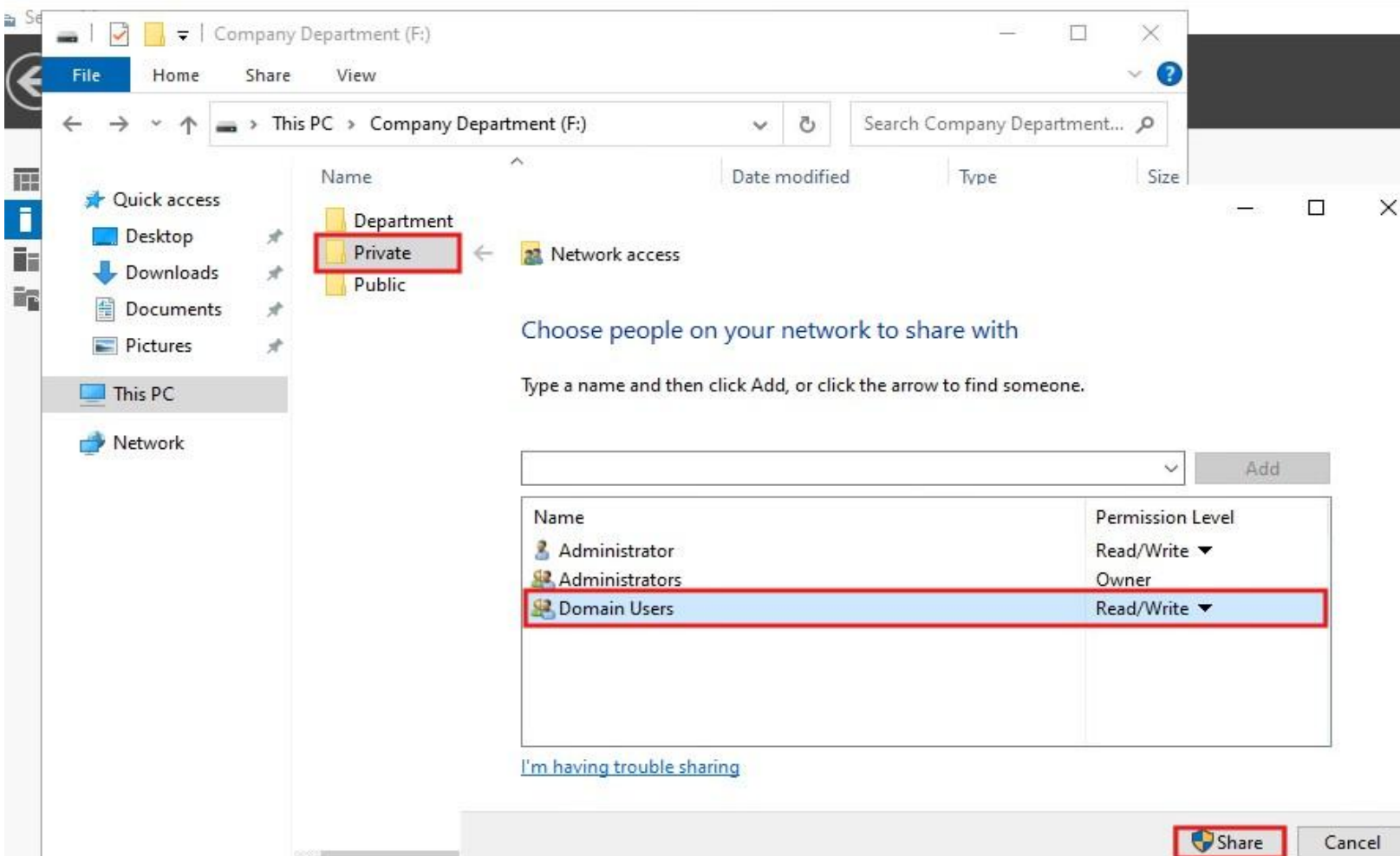
- ❖ This shows that Domain Users are given specific permissions (Read, Write, Modify) on the Private folder only, using advanced security settings in Windows.
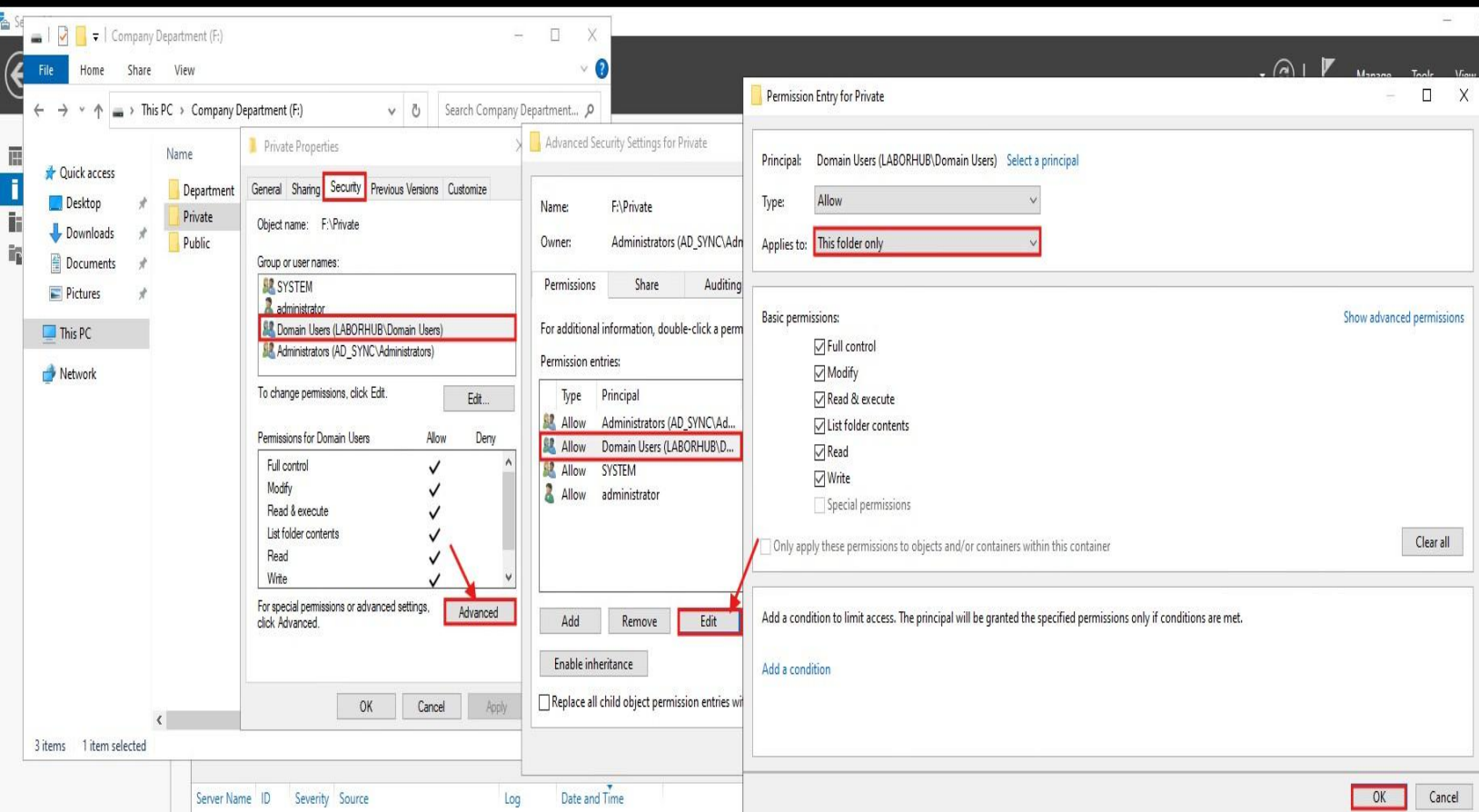
- ❖ The user "Emily Johnson" is located at laborhub.store/Employees/Marketing/Emily Johnson in Active Directory, and under the Profile tab, her Home Folder is mapped to drive H: connected to \\AD_SYNC\Private\emily.johnson. (\\AD_SYNC\Private\%username%)
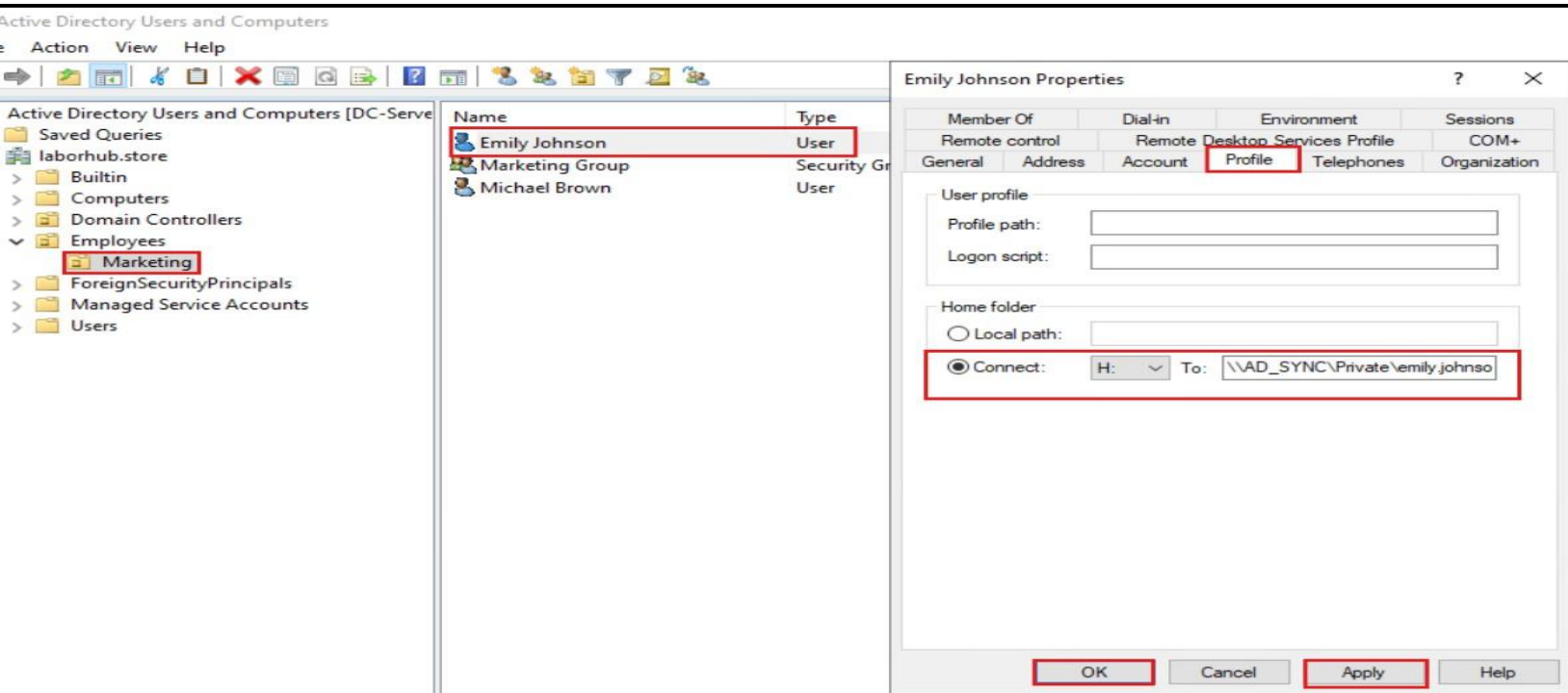
❖ This confirms that the Private folder is correctly shared and contains user-specific folders (emily.johnson, michael.brown) on the file server.
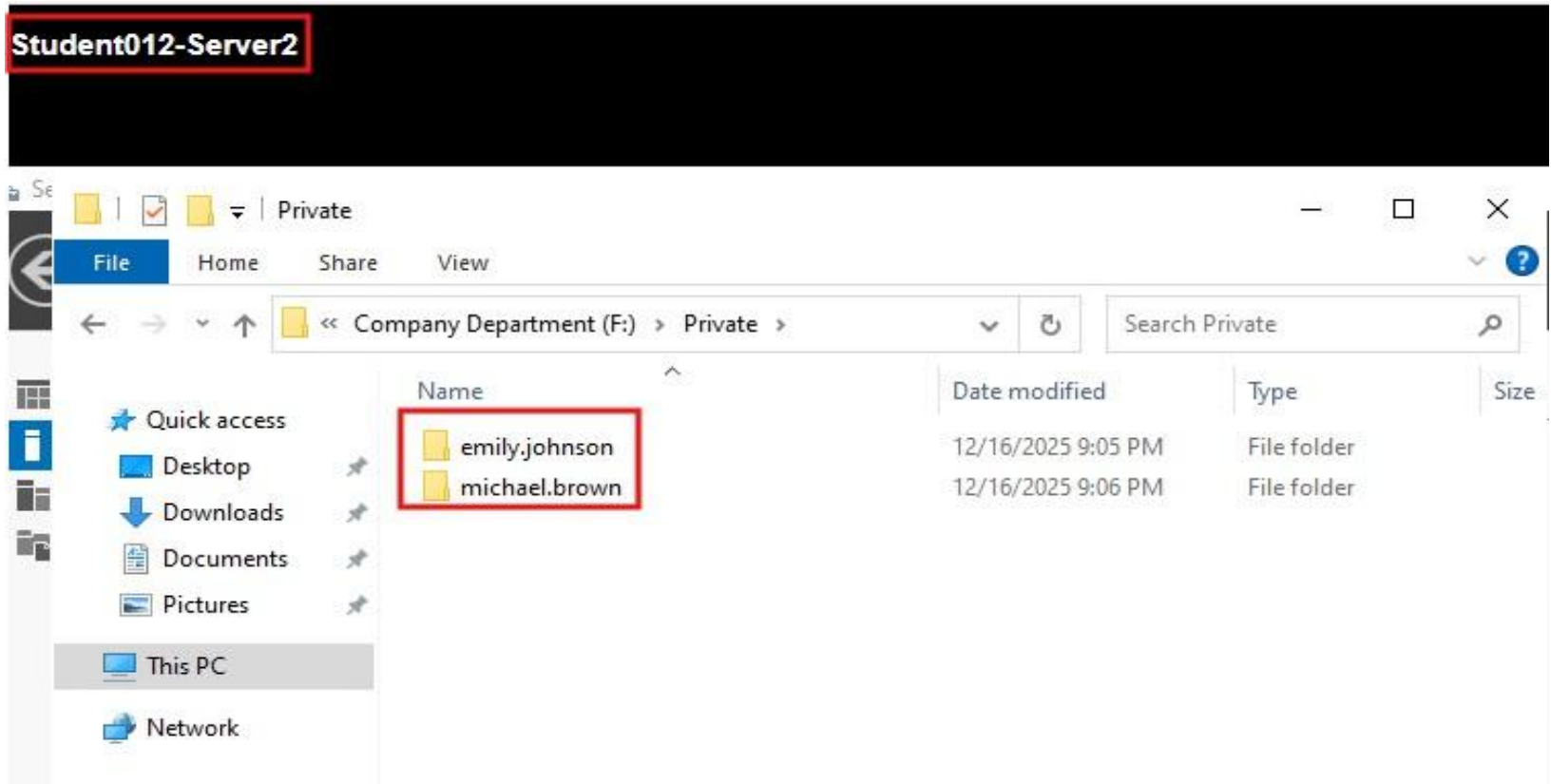
❖ This shows that the Public folder is being shared with Domain Users. So all employees in the Active Directory domain can access the files in this folder.
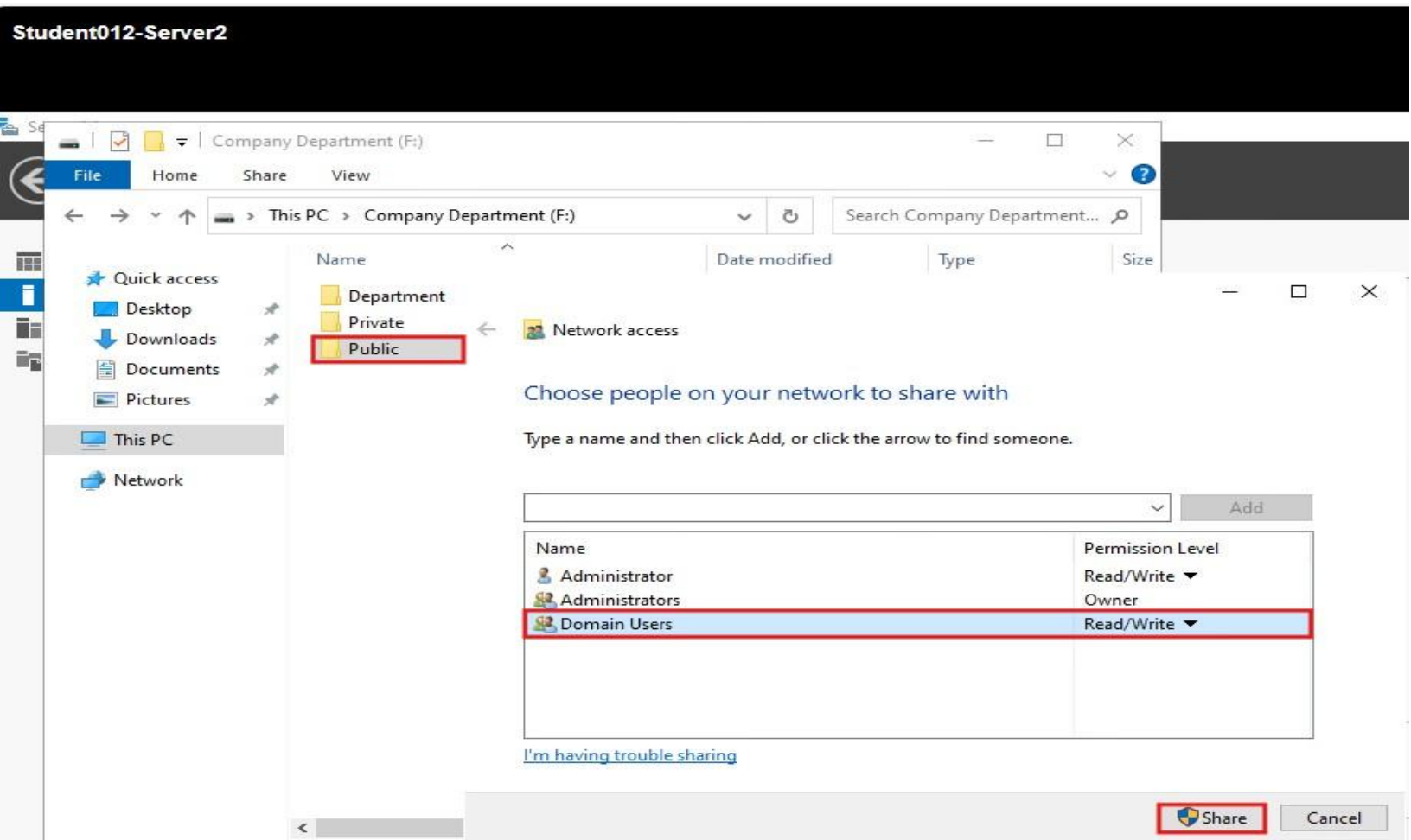
❖ This shows that Group Policy Management is opened from Server Manager → Tools to create a GPO for mapping network drives in Active Directory.
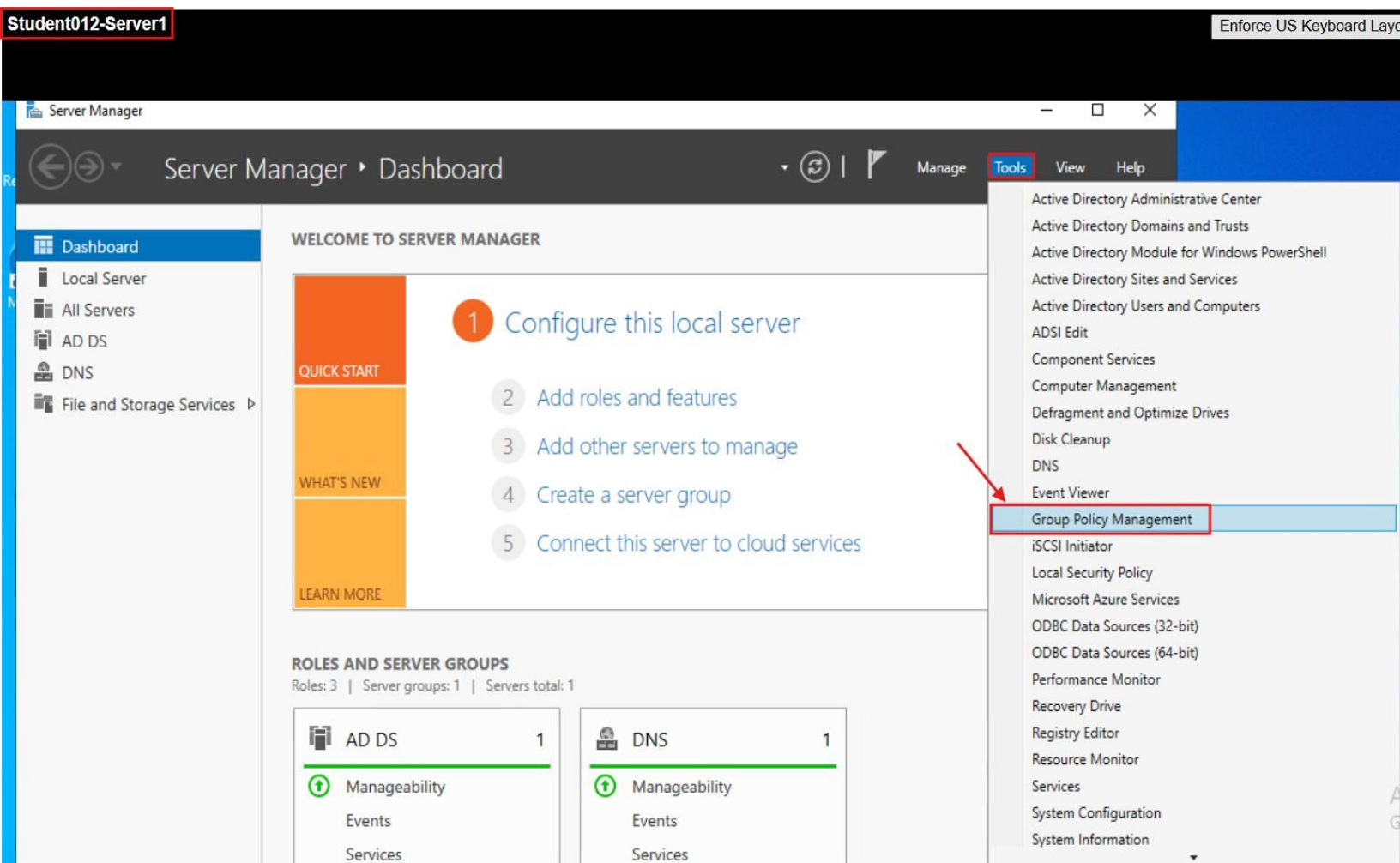
❖ This shows that a new Group Policy Object (GPO) is being created and linked to the Employees OU in Active Directory to apply drive mapping settings.
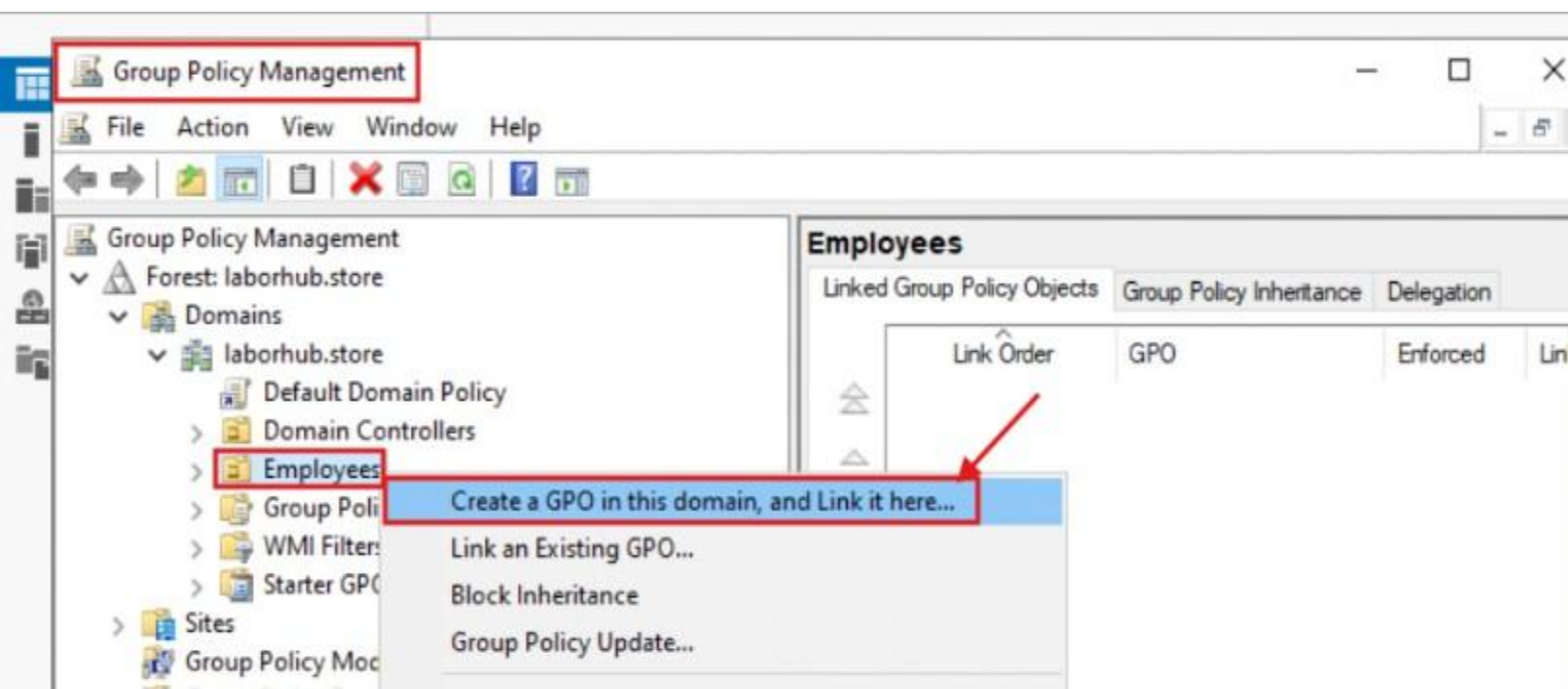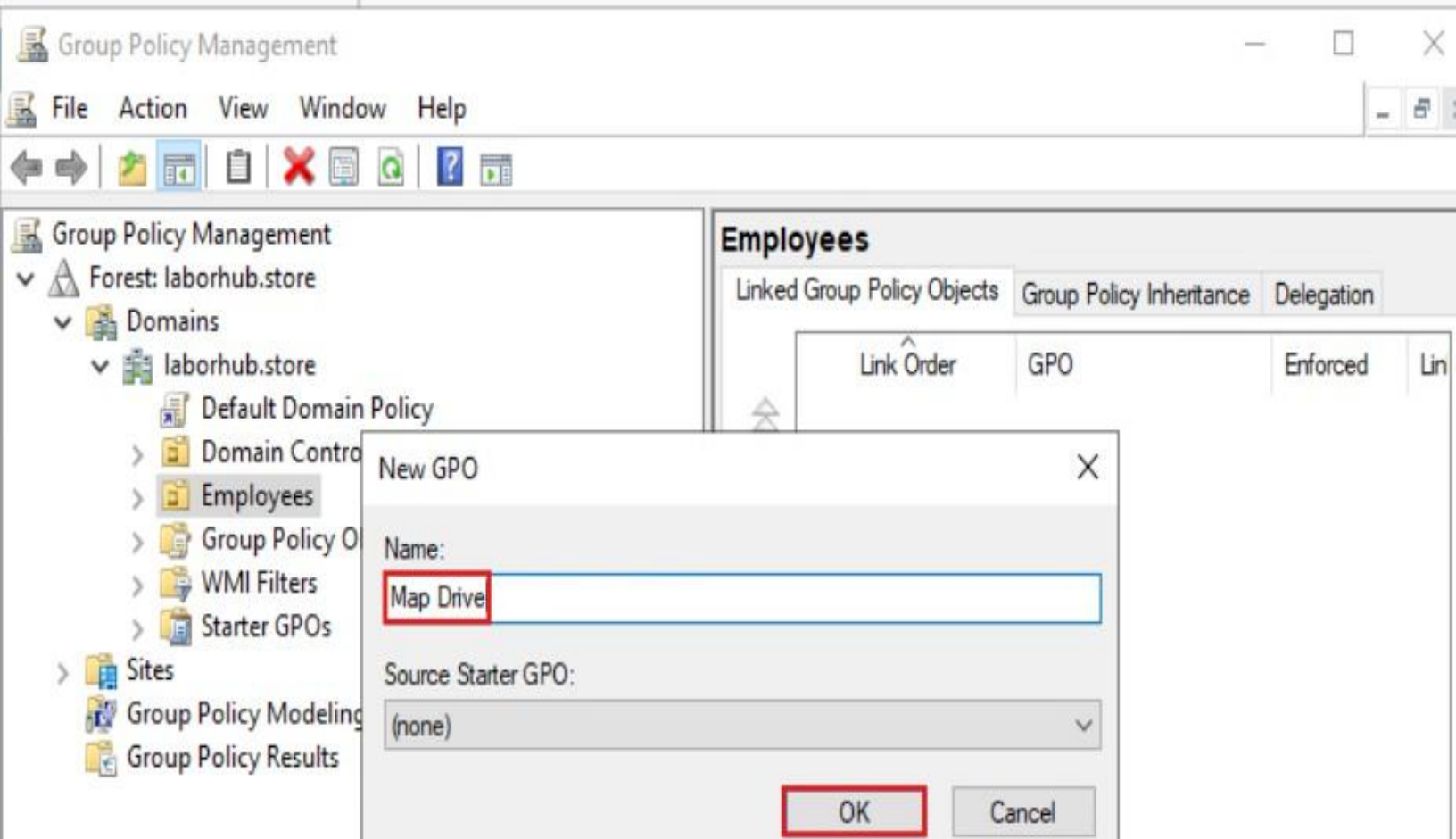
❖ Right-clicking the "Map Drive" and selecting "Edit" to open the Group Policy Management Editor, where you can configure drive mapping settings for Active Directory users.
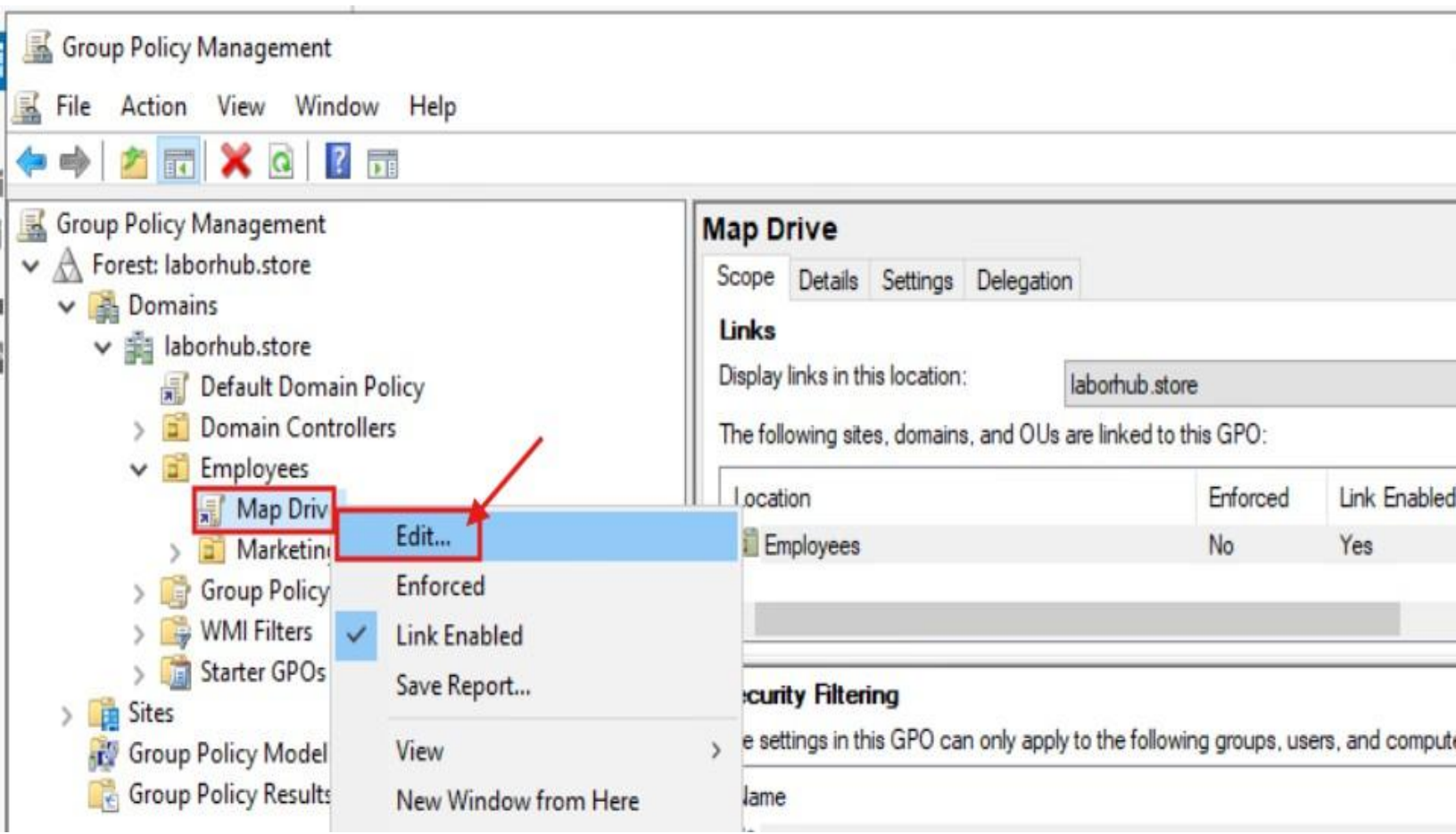
- ❖ Creating a **mapped network drive for the Marketing folder** using Group Policy, so all users in the Marketing OU can automatically access the shared Marketing folder from their computers.
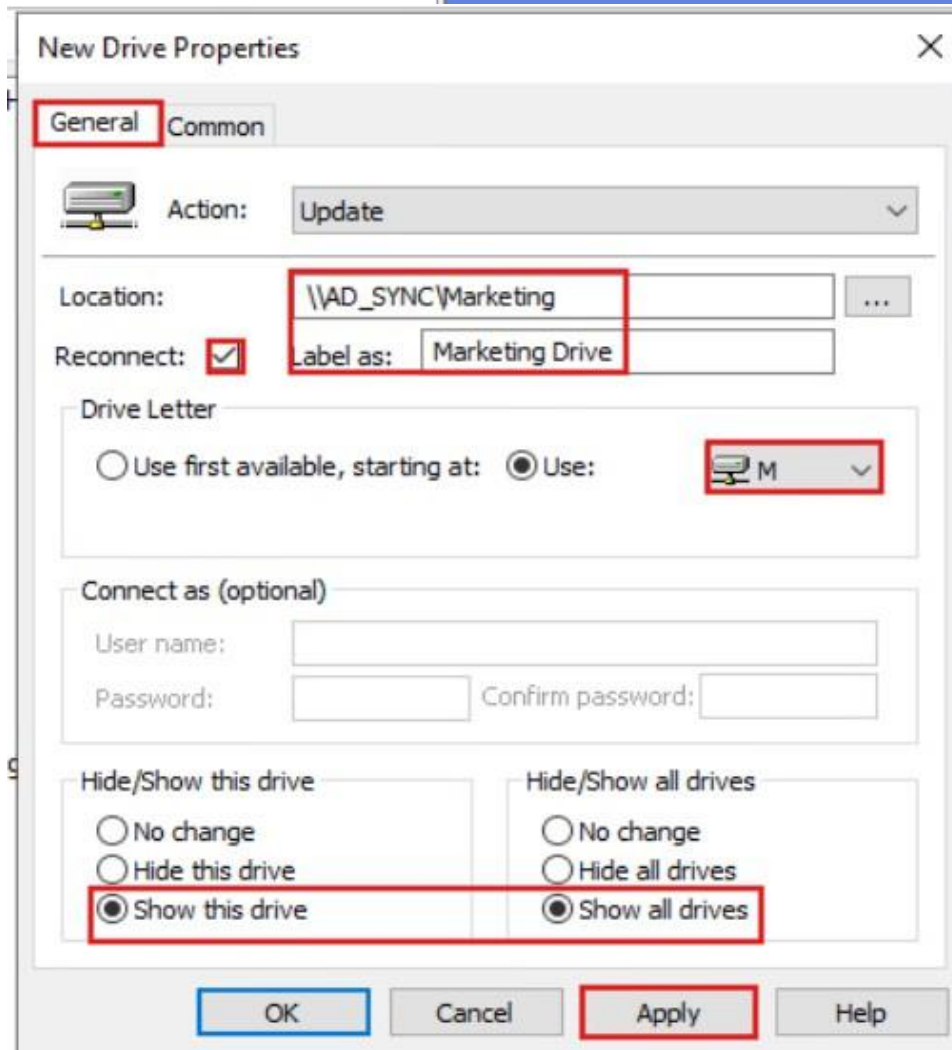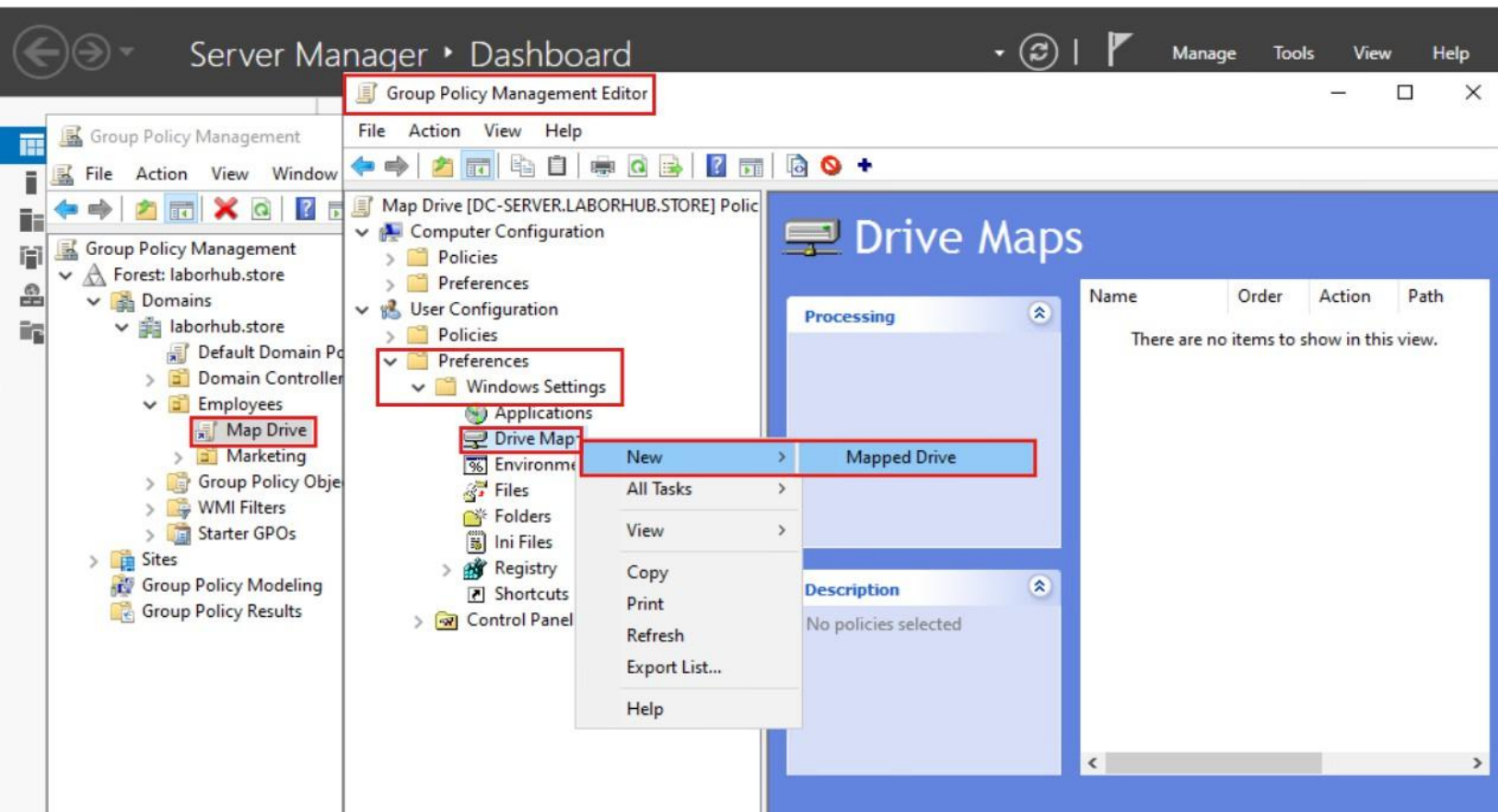
❖ This shows that Item-level targeting is enabled in the Common tab, and an Organizational Unit condition is added so only users in that specific OU can access the mapped drive.

Targeting ensures that the Marketing drive is mapped only for Marketing team members, not for all users.
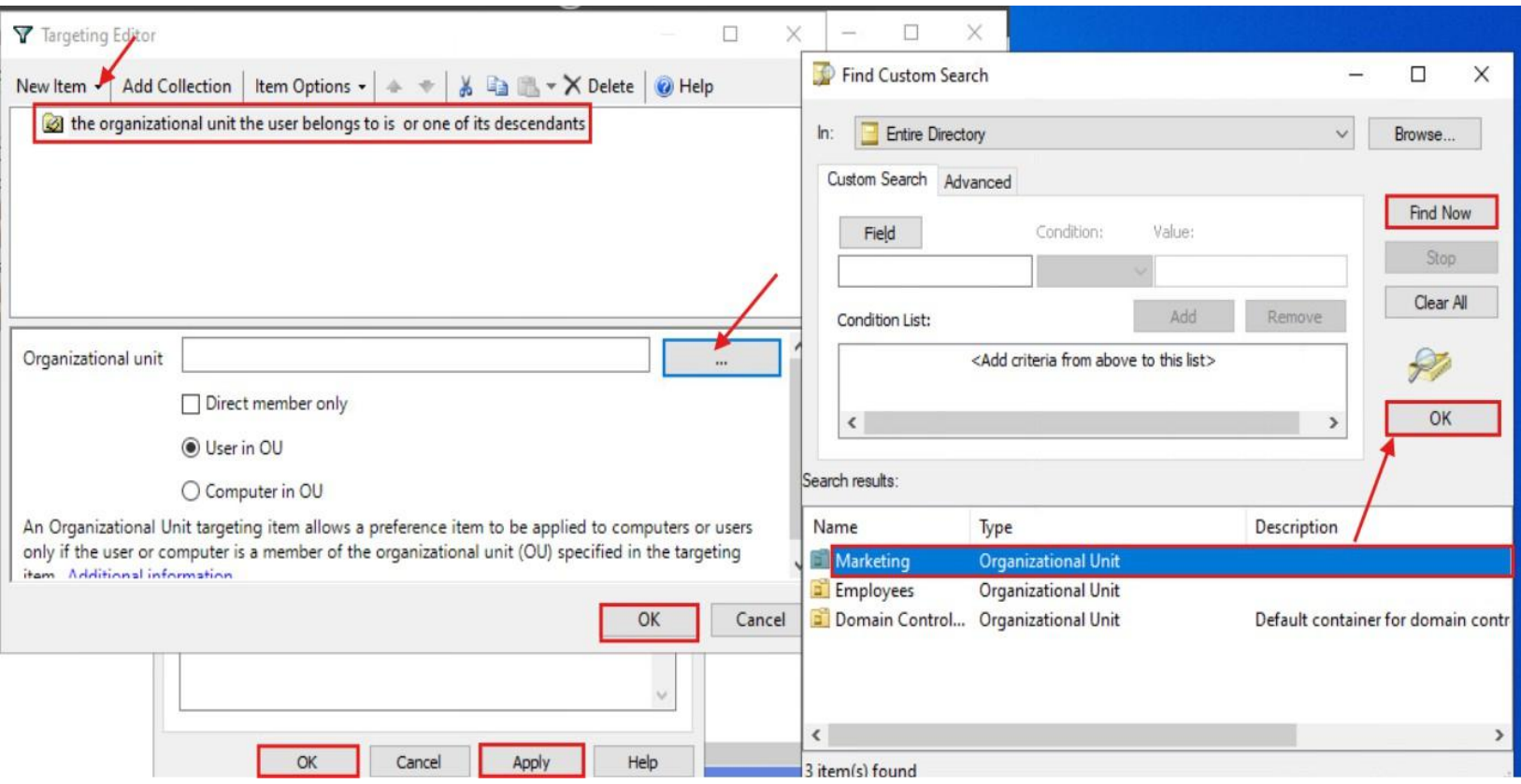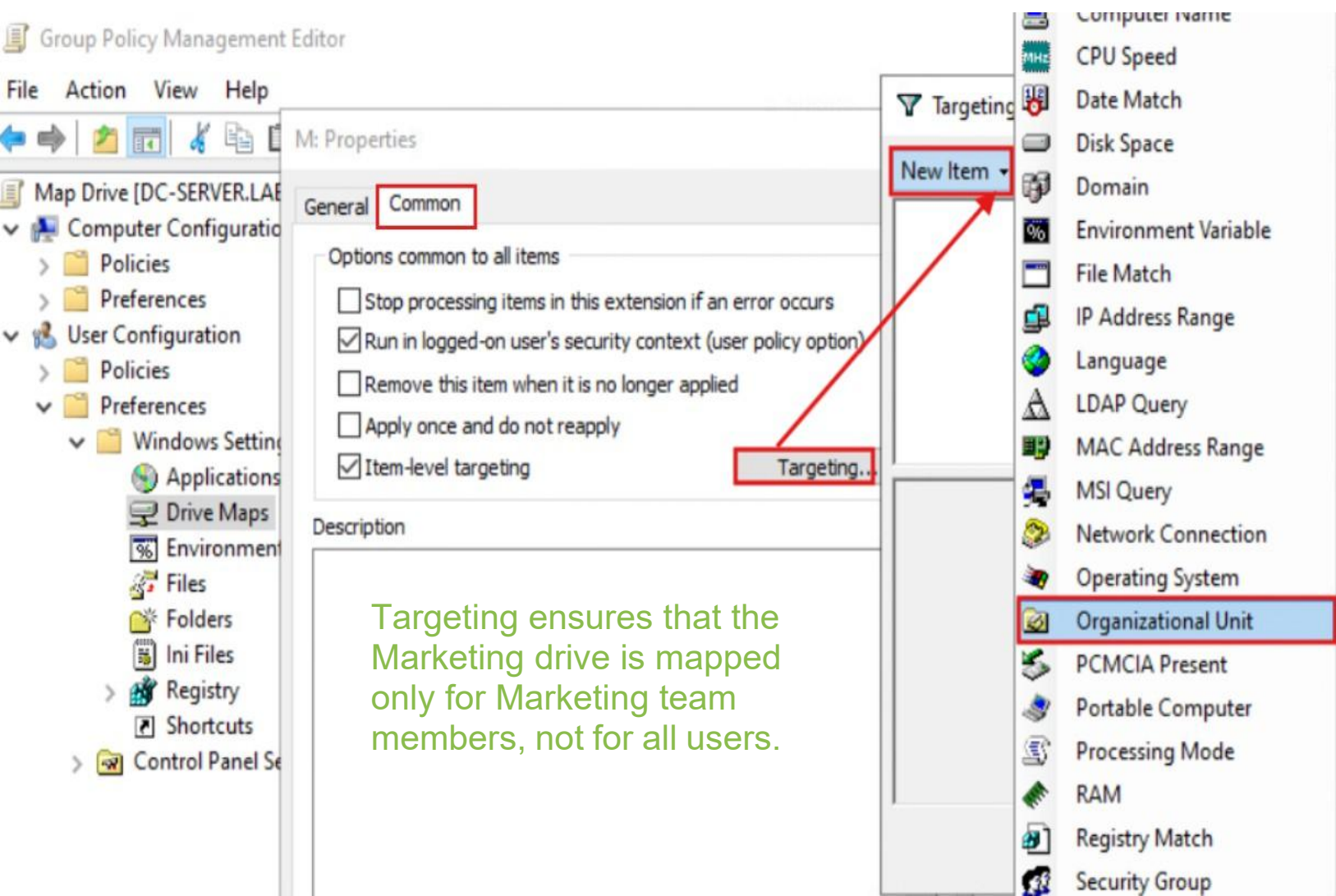
New Drive Properties

General | Common

Action: Update

Location: \\AD_SYNC\Public

Reconnect: ☑ Label as: Public Drive

Drive Letter

○ Use first available, starting at: ● Use: P

Connect as (optional)

User name:

Password: Confirm password:

Hide/Show this drive
○ No change
○ Hide this drive
● Show this drive

Hide/Show all drives
○ No change
○ Hide all drives
● Show all drives

OK | Cancel | Apply | Help

P: Properties

General | Common

Options common to all items
☐ Stop processing items in this extension if an error occurs
☑ Run in logged-on user's security context (user policy option)
☐ Remove this item when it is no longer applied
☐ Apply once and do not reapply
☑ Item-level targeting   Targeting...

Description

For Public Drive (P:), do not need item-level targeting because this drive is intended for all users in the organization.

OK | Cancel | Apply | Help

❖ After configuring and applying Group Policy Objects (GPOs), run gpupdate /force in Command Prompt to immediately refresh and ensure all policies take effect successfully right away.


Server Manager

Administrator: Command Prompt

```
Microsoft Windows [Version 10.0.20348.4405]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator>gpupdate/force
Updating policy...

Computer Policy update has completed successfully.
User Policy update has completed successfully.

C:\Users\Administrator>
```

❖ After logging in to her PC, the new user Emily Johnson can now see all mapped network drives applied through Group Policy. Under "This PC," the following drives are available:

➢ Private Drive (H:) – Personal storage mapped to \\AD_SYNC\Private for Emily's files.
➢ Marketing Drive (M:) – Departmental shared drive for Marketing team collaboration.
➢ Public Drive (P:) – Organization-wide shared drive for common resources.
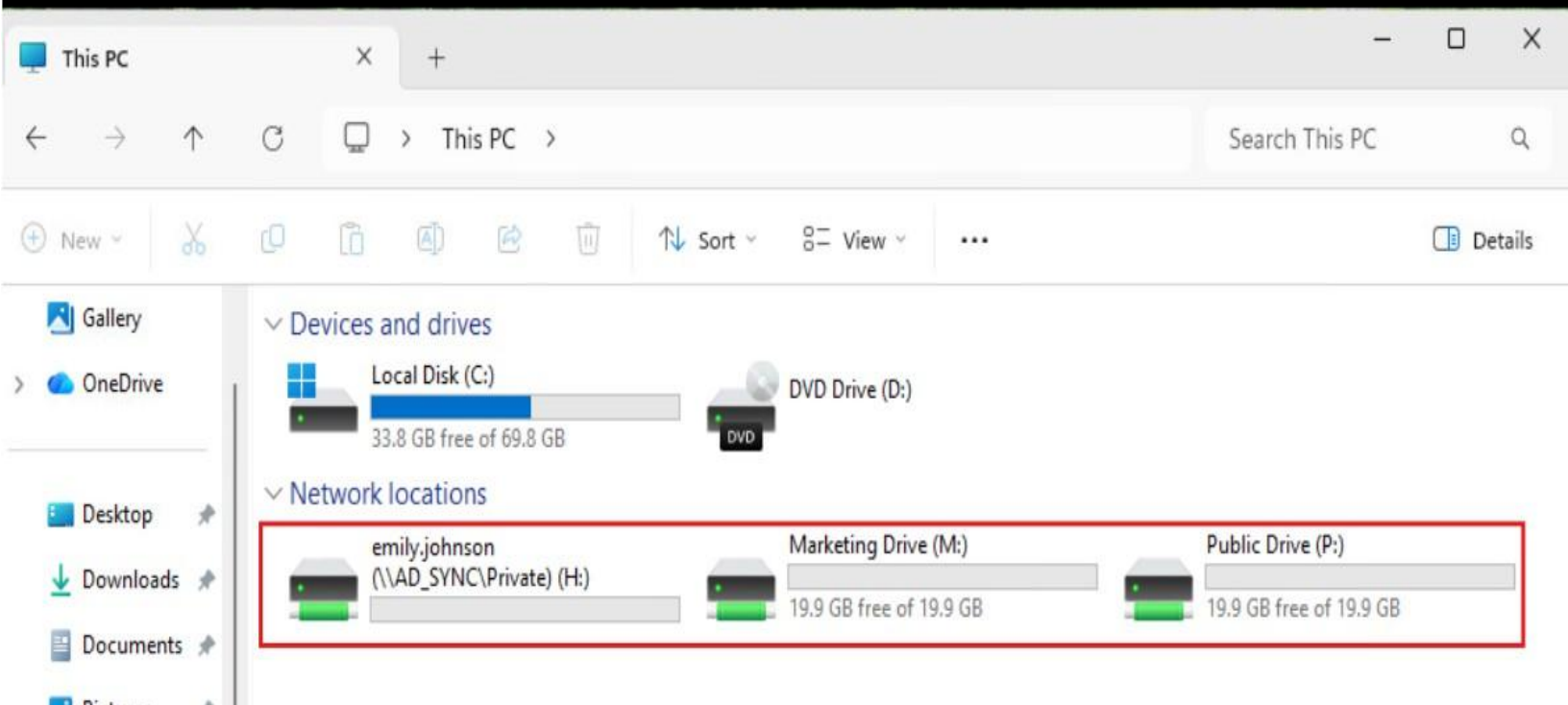
❖ This confirms that Group Policy Drive Mapping settings have been successfully applied to the user account.

❖ Below is the PowerShell script used to create users in bulk to automate the process. Before creating and running the PowerShell script, I created an Excel worksheet where I filled in the employee details for all users whose accounts needed to be created in Active Directory. I then saved the worksheet as a .csv file. Once the worksheet was ready, I ran the PowerShell script to automate the user creation process.

```powershell
    Import-Module ActiveDirectory

# ===========================
# Constants
# ===========================
$csvPath = "C:\data.csv"
$baseOU  = "OU=Employees2,DC=laborhub,DC=store"

# Default temporary password
$defaultPassword = ConvertTo-SecureString "Pineapple123$" -AsPlainText -Force


# ===========================
# Import CSV
# ===========================
$users = Import-Csv -Path $csvPath

# Track usernames to avoid duplicates
$usernames = @{}

foreach ($user in $users) {

    # Build username
    $firstName = $user.'First Name'.Trim()
    $lastName  = $user.'Last Name'.Trim()
    $username  = ("$firstName.$lastName").ToLower()

    # Skip duplicate usernames
    if ($usernames.ContainsKey($username)) {
        Write-Host "Skipped duplicate user: $username" -ForegroundColor Yellow
        continue
    }
    $usernames[$username] = $true

    # Department and OU path
    $department = $user.Department.Trim()
    $ouPath = "OU=$department,$baseOU"

    # ===========================
    # Create OU if not exists
    # ===========================
    if (-not (Get-ADOrganizationalUnit -Filter "Name -eq '$department'" -SearchBase $baseOU -
ErrorAction SilentlyContinue)) {
        New-ADOrganizationalUnit -Name $department -Path $baseOU
        Write-Host "Created OU: $department" -ForegroundColor Cyan
    }

    # ===========================
    # Create Security Group
```

```powershell
    # ==========================
    $groupName = "$department-SG"
    if (-not (Get-ADGroup -Filter "Name -eq '$groupName'" -SearchBase $ouPath -ErrorAction
SilentlyContinue)) {
        New-ADGroup `
            -Name $groupName `
            -GroupScope Global `
            -GroupCategory Security `
            -Path $ouPath `
            -Description "Security Group for $department"
        Write-Host "Created Group: $groupName" -ForegroundColor Cyan
    }

    # ==========================
    # Create User
    # ==========================
    $name = "$firstName $lastName"
    $upn  = "$username@laborhub.store"

    # Create user with forced password change at first login
    New-ADUser `
        -Name $name `
        -GivenName $firstName `
        -Surname $lastName `
        -UserPrincipalName $upn `
        -SamAccountName $username `
        -Title $user.Title `
        -Description $user.Description `
        -Department $department `
        -OfficePhone $user.'Phone Number' `
        -StreetAddress $user.'Street Address' `
        -City $user.City `
        -State $user.State `
        -Path $ouPath `
        -AccountPassword $defaultPassword `
        -Enabled $true `
        -ChangePasswordAtLogon $true

    # ==========================
    # Add User to Security Group
    # ==========================
    Add-ADGroupMember -Identity $groupName -Members $username

    Write-Host "Created user: $username (forced password change at first login)" -ForegroundColor
Green
}

Write-Host "User creation process completed successfully." -ForegroundColor Cyan
```

- ❖ This output confirms that multiple users were successfully created in their respective Organizational Units (OUs) and added to security groups. In short, this script automates bulk user creation with complete properties and OU placement.

Student012-Server1

Administrator: Windows PowerShell ISE

File   Edit   View   Tools   Debug   Add-ons   Help

Untitled1.ps1* ✕

```powershell
48        # Create user
49        $name = "$firstName $lastName"
50        $userPrincipalName = "$username@laborhub.store"
51        $userDN = "CN=$name,$ouPath"
52
53        New-ADUser `
54            -Name $name `
55            -GivenName $firstName `
56            -Surname $lastName `
57            -UserPrincipalName $userPrincipalName `
58            -SamAccountName $username `
59            -Title $user.Title `
60            -Description $user.Description `
61            -Department $department `
62            -OfficePhone $user.'Phone Number' `
63            -StreetAddress $user.'Street Address' `
64            -City $user.City `
65            -State $user.State `
66            -Path $ouPath `
67            -AccountPassword $defaultPassword `
68            -Enabled $true `
69            -ChangePasswordAtLogon $false
70
71        # Add to security group
```

```
Created user: Jamie.Smith in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Quinn.Johnson in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Jordan.Martinez in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Alex.Brown in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Riley.Miller in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Sydney.Martinez in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Cameron.Garcia in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Peyton.Jones in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Avery.Williams in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Jordan.Johnson in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Cameron.Brown in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created user: Casey.Williams in OU=Production,OU=Employees2,DC=laborhub,DC=store and added to Production-SG
Created OU: Executive Assistant
Created Group: Executive Assistant-SG
Created user: Alexis.Taylor in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant
Created user: Jasmine.Allen in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant
Created user: Faith.Young in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant-S
Created user: Alexis.Scott in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant-
Created user: Hailey.King in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant-S
Created user: Grace.Allen in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant-S
Created user: Faith.Clark in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant-S
Created user: Jasmine.Green in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant
Created user: Hailey.Clark in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant-
Created user: Brooke.Green in OU=Executive Assistant,OU=Employees2,DC=laborhub,DC=store and added to Executive Assistant-

PS C:\Users\Administrator>
```
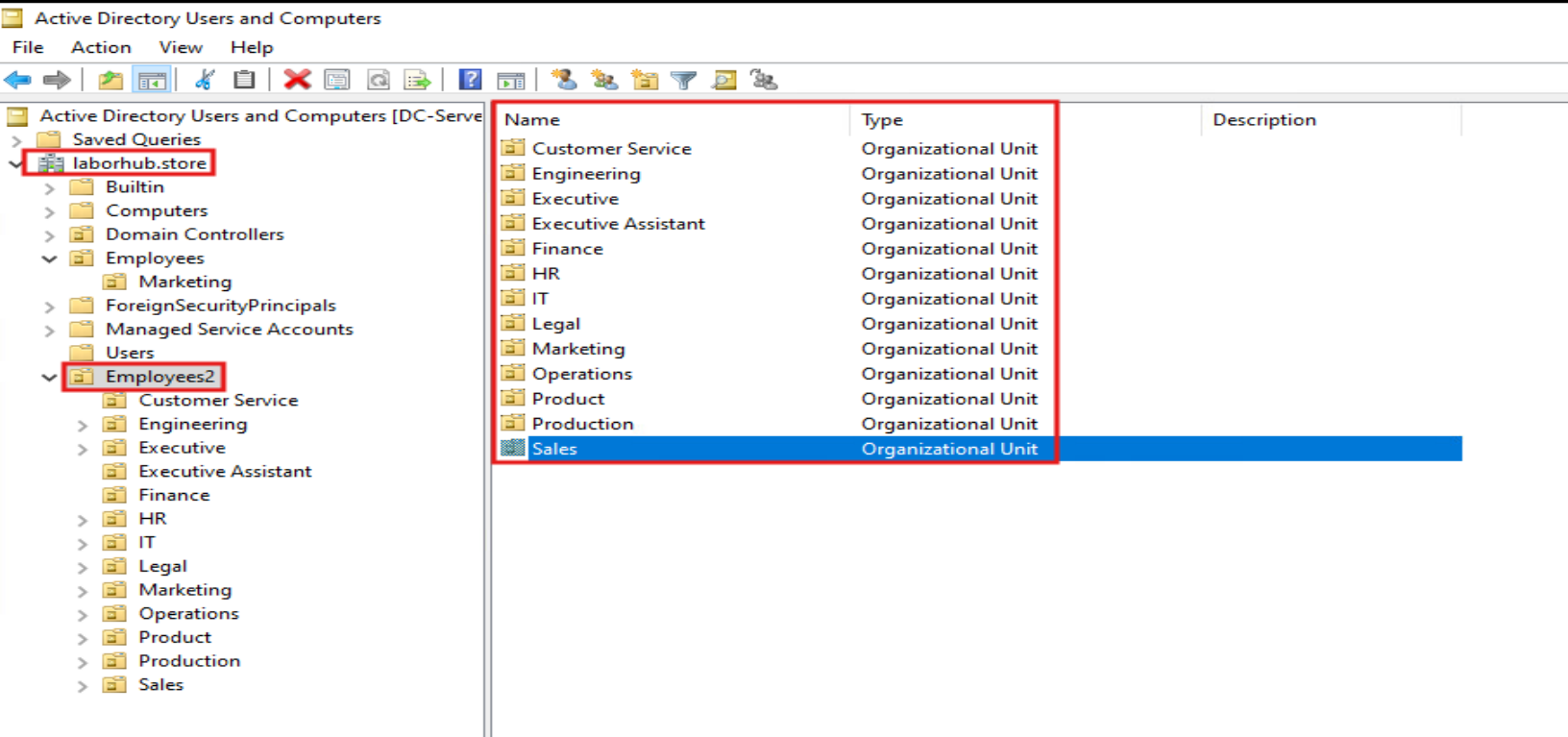
❖ This verifies the script worked: the Customer Service OU under Employees2 contains the user Donald Werner, and the properties match the CSV details, confirming correct creation and placement.
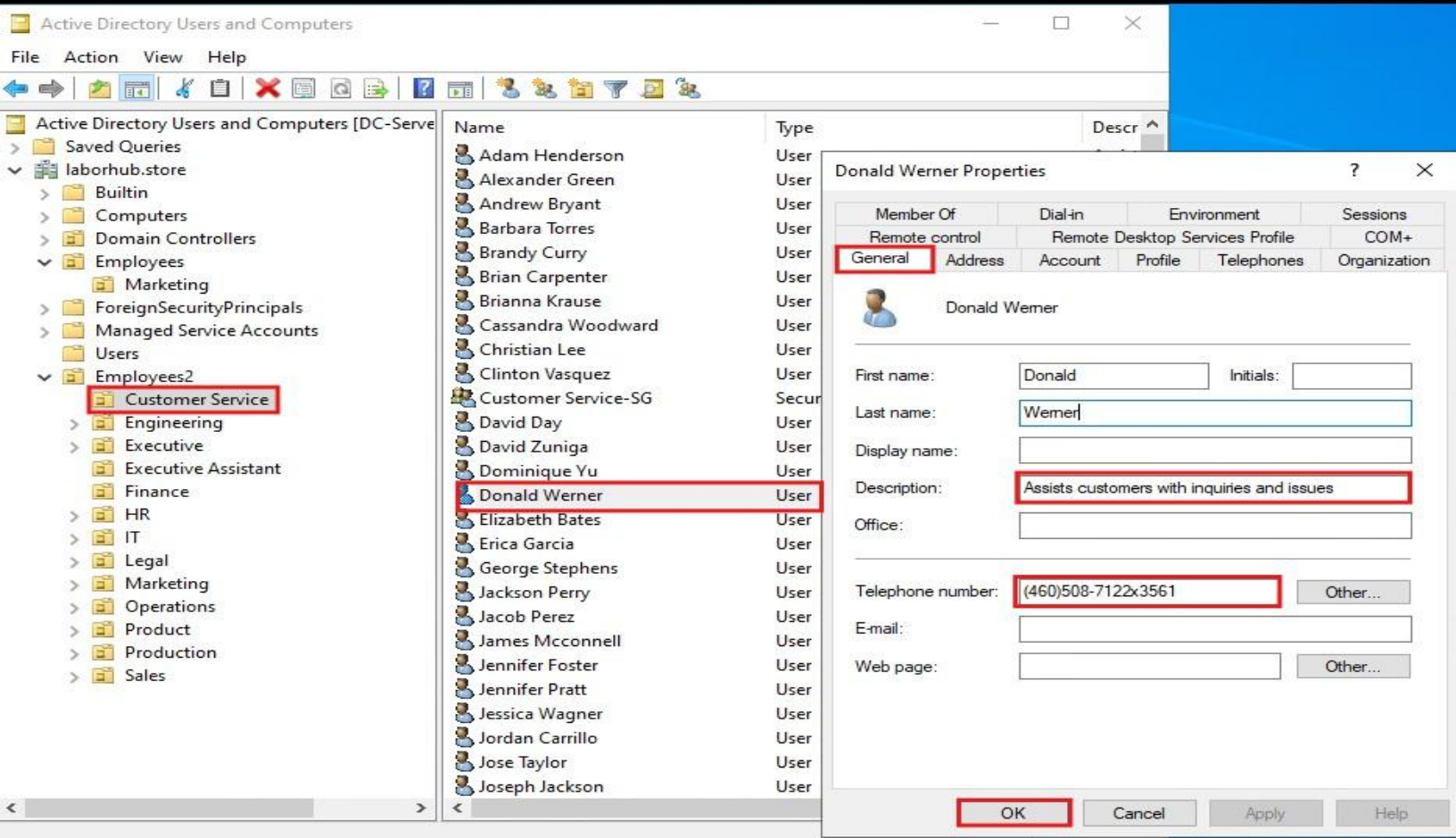
❖ This verifies the script worked: the Legal OU under Employees2 contains Jennifer Rodriguez, and her address details match the CSV, confirming correct creation and placement.
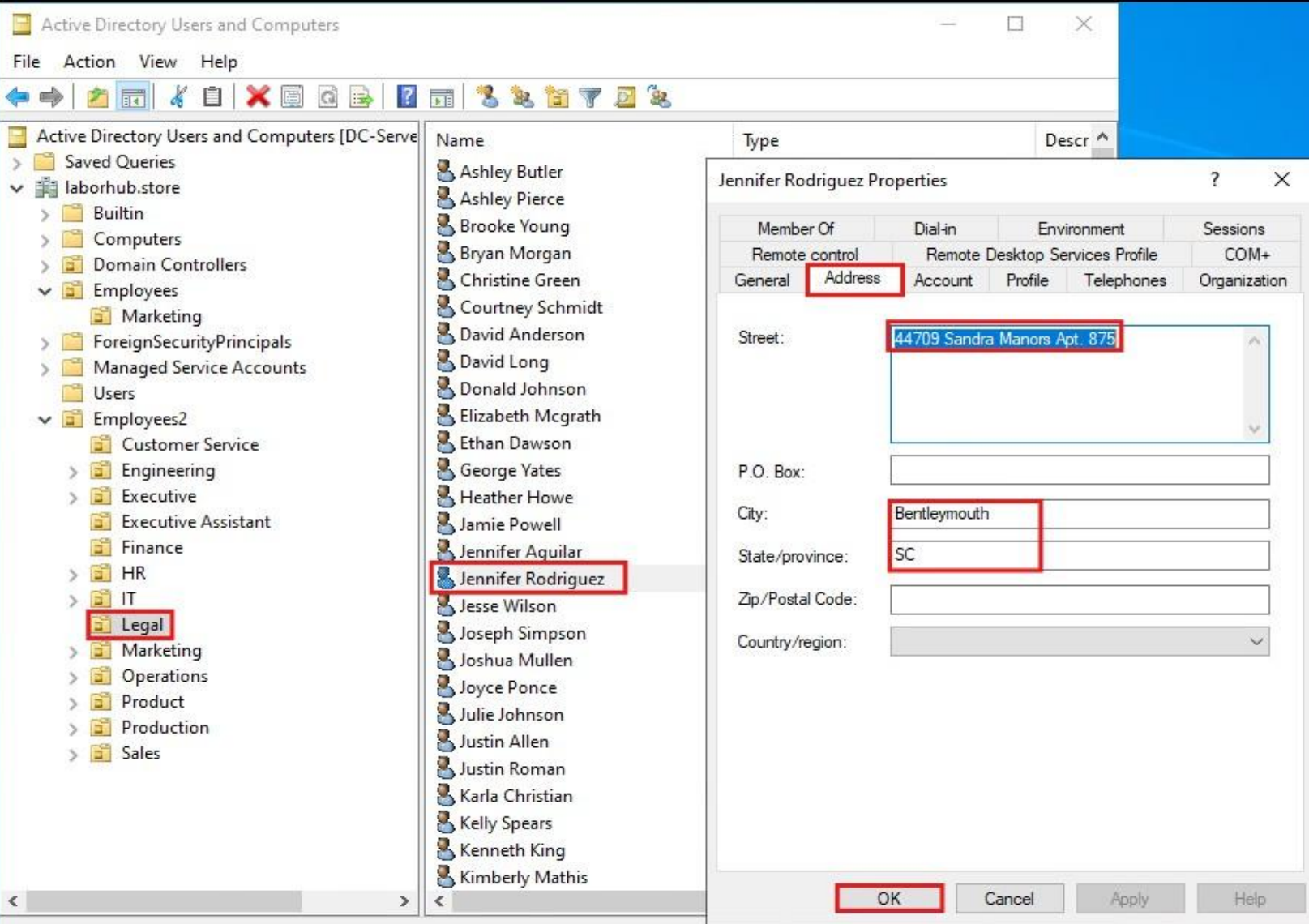
❖ Troubleshooting Overview

This section highlights the most common issues encountered during the Active Directory infrastructure setup and explains the practical steps and paths used to identify and resolve them. The troubleshooting approach follows real-world IT diagnostic practices to ensure system stability and user accessibility.

Troubleshooting Steps and Paths

AD DS Service Verification

Check static IP, DNS settings, and confirm AD DS service is running to resolve directory service failures.

Login and Domain Checks

Verify user account status and domain membership to troubleshoot login errors effectively.

File Access Permissions

Review NTFS and share permissions and confirm group memberships to fix file access issues.

GPO and PowerShell Troubleshooting

Check GPO linkage, refresh policies, and verify PowerShell script paths and modules for smooth automation.

Active Directory Infrastructure – Troubleshooting Guide

1. AD DS Not Working: Verify static IP, DNS pointing to DC, AD DS service running. Path: Server Manager → Local Server → IPv4 | Server Manager → Tools → Services

2. User Cannot Login: Ensure user is enabled and computer joined to domain. Path: ADUC → User → Properties → Account | System Properties → Computer Name

3. Shared Folder Access Denied: Check NTFS and share permissions. Path: Folder → Properties → Security | Sharing → Advanced Sharing

4. Drive Mapping Not Working: Verify GPO link and item-level targeting. Path: GPMC → User Config → Preferences → Drive Maps

5. Home Drive Missing: Confirm home folder path and permissions. Path: ADUC → User → Profile | \AD_SYNC\Private\%username%

6. GPO Not Applying: Run gpupdate and check policies. Path: Command Prompt → gpupdate /force | gpresult /r

7. PowerShell Script Fails: Check CSV file path and run as admin. Path: C:\data.csv | PowerShell → Run as Administrator 8. DNS Issues: Verify DNS, test ping and nslookup. Path: IPv4 Properties → DNS | CMD → ping | nslookup

❖ Conclusion

This project shows how Active Directory can be used to manage users, computers, and shared resources in an organized and secure way. By setting up a domain controller, creating OUs and groups, configuring file shares, applying Group Policies, and automating user creation with PowerShell, the environment works like a real company network. The included troubleshooting steps show how common issues such as login problems, drive mapping errors, and permission issues are identified and fixed. Overall, this project demonstrates practical IT support and system administration skills that are commonly used in real-world enterprise environments.