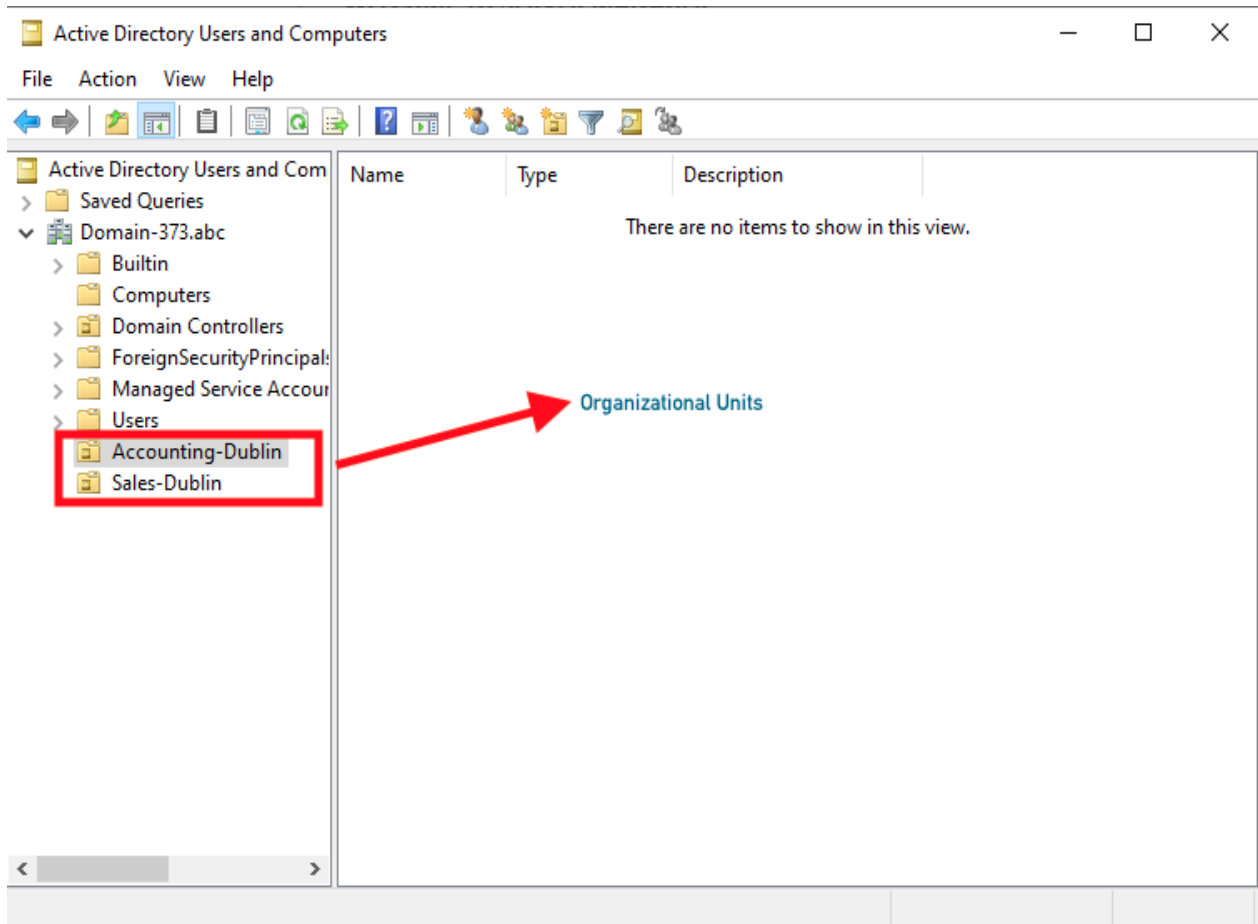


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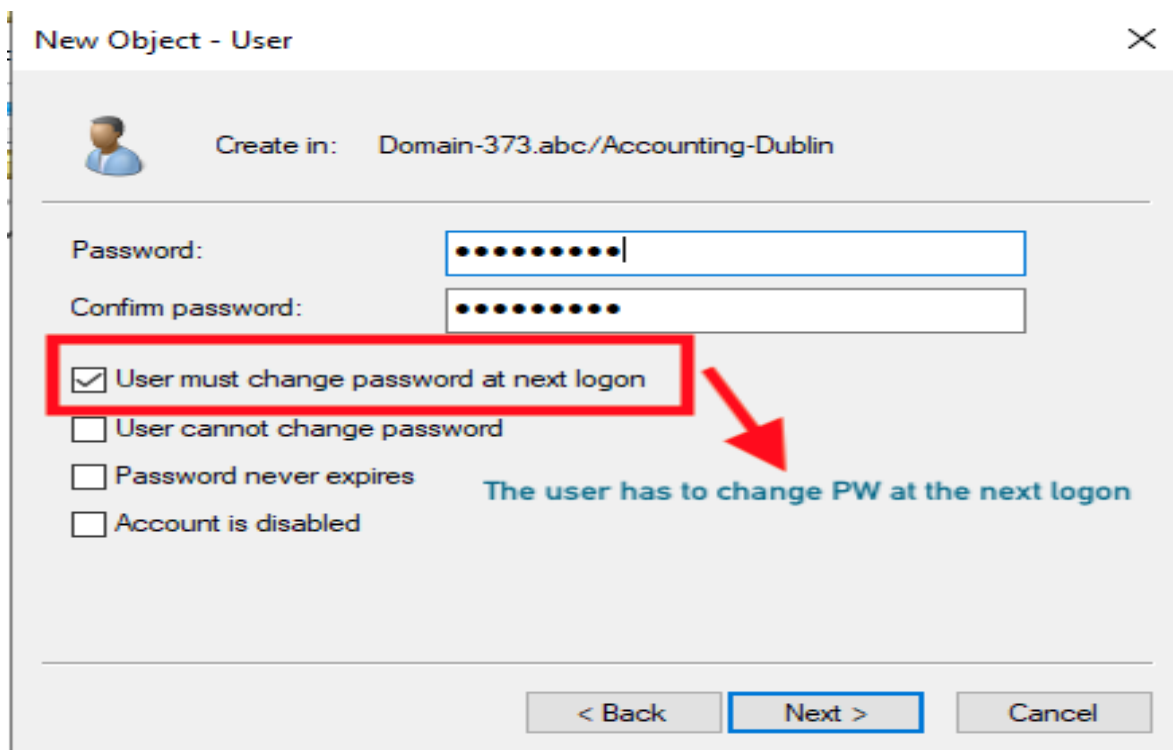
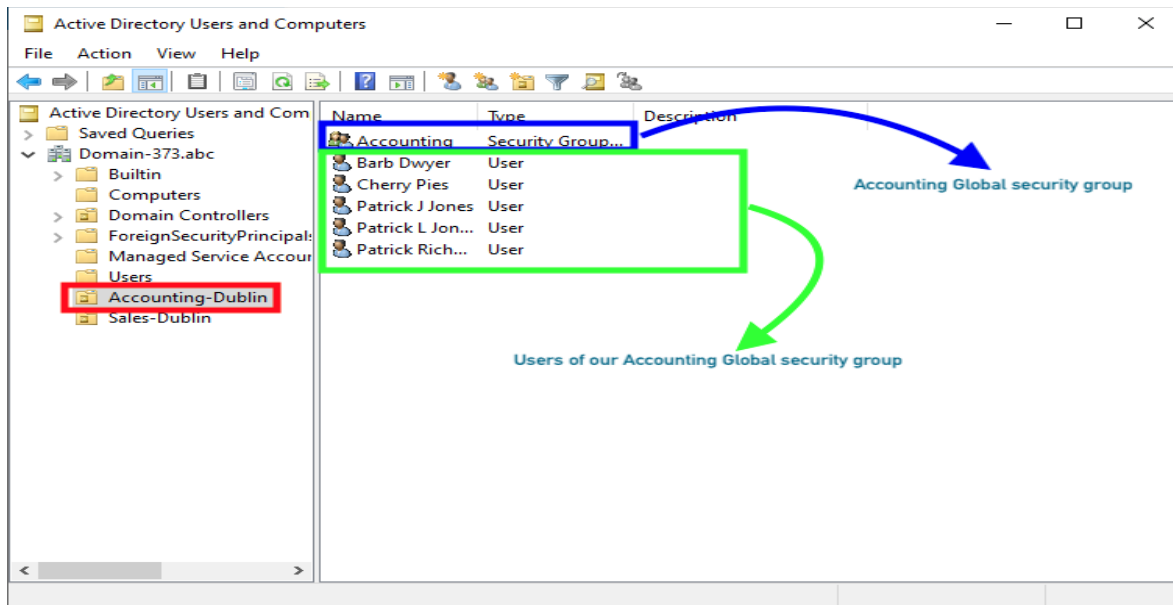
1.)	<i>Setting up the resources and network users.....</i>	<i>3</i>
a.)	DigiTech has two departments. Using Active Directory Users and Computers (ADUC), create 2 departments (Organizational Units) called Accounting-Dublin and Sales-Dublin	3
b.)	Inside the Accounting-Dublin OU create a Global Security group called Accounting and then create the 5 Accounting users accounts shown below, using the names supplied.	4
c.)	Inside each departmental OU (Accounting-Dublin and Sales-Dublin), create and share two folders (one for each department) and apply permissions as specified below:	6
d.)	Test the permissions for both the Sales-Documents folder and the Accounting-Documents folder by logging onto the Web computer by using a user account from Dublin-Sales or a user account from Dublin-Accounting.	11
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1.) Setting up the resources and network users.

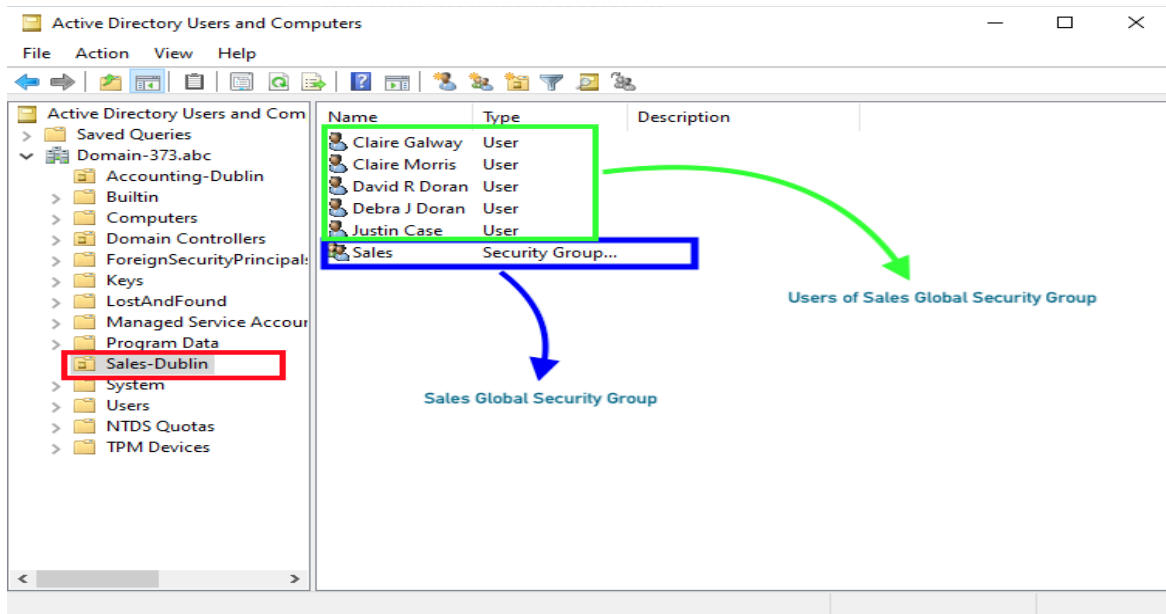
a.) DigiTech has two departments. Using Active Directory Users and Computers (ADUC), create 2 departments (Organizational Units) called Accounting-Dublin and Sales-Dublin



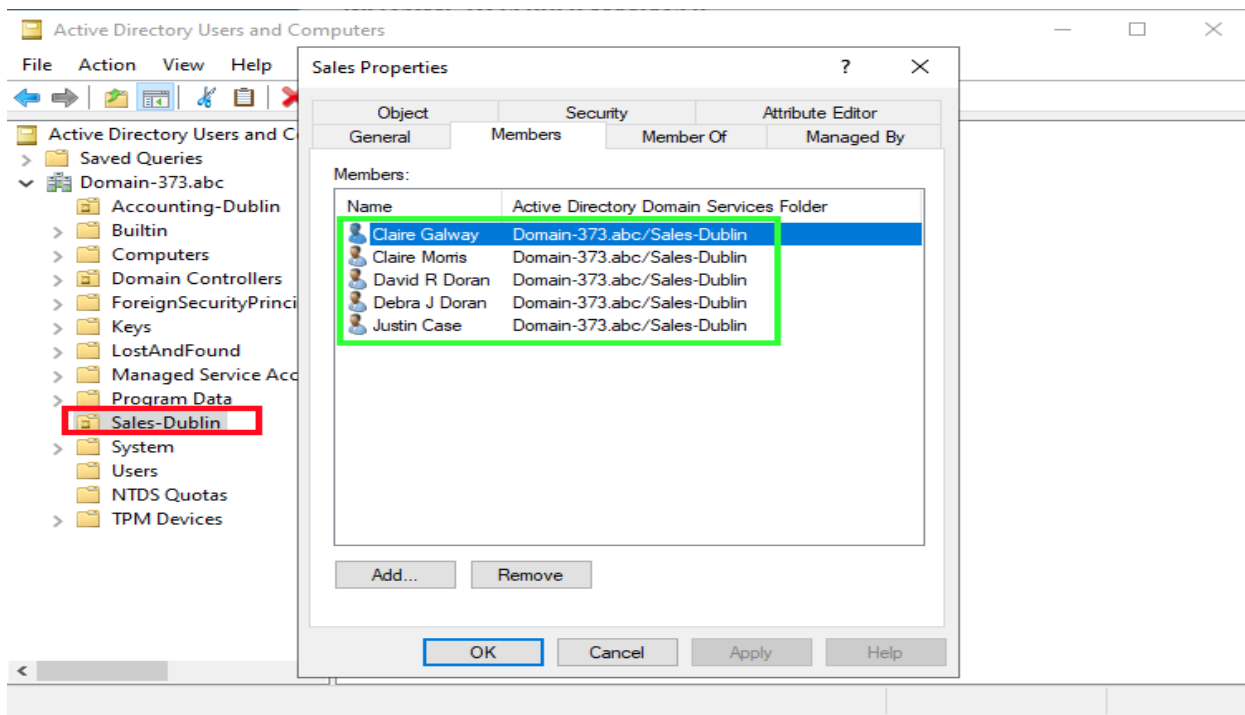
b.) Inside the Accounting-Dublin OU create a Global Security group called Accounting and then create the 5 Accounting users accounts shown below, using the names supplied.

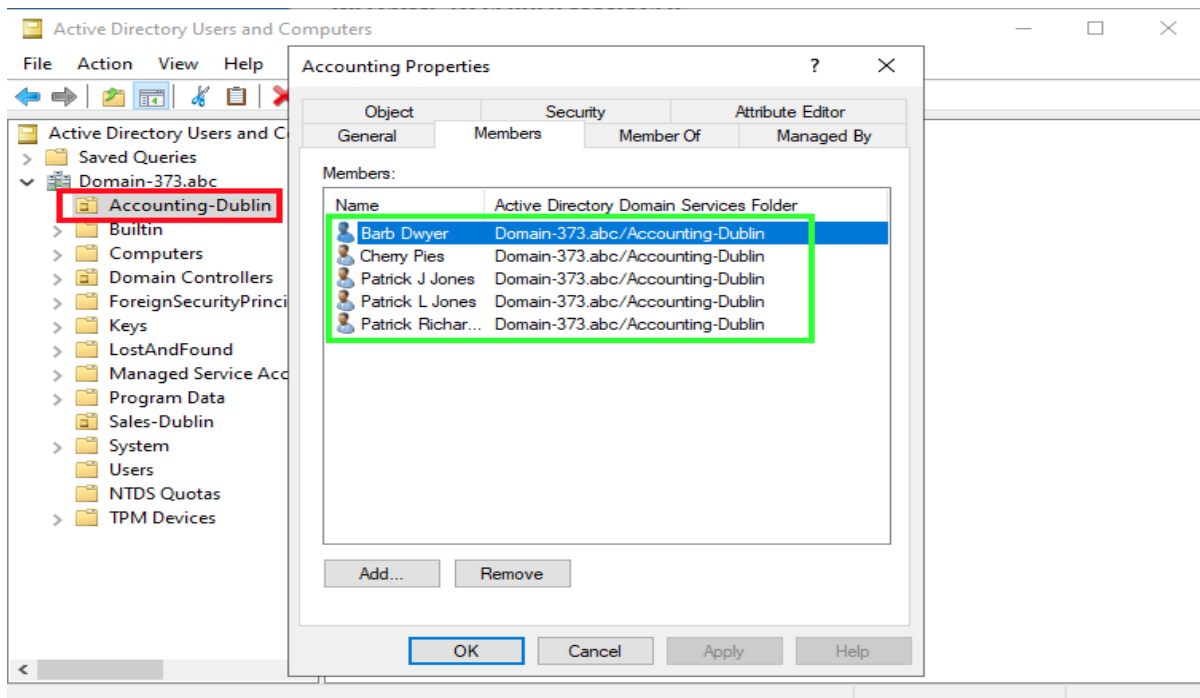


- a) Inside the Sales-Dublin OU create a Global Security group called Sales and then create the 5 Sales users accounts shown below, using the names supplied.



- b) Use ADUC to add each of the 10 users to their groups (Accounting and Sales).





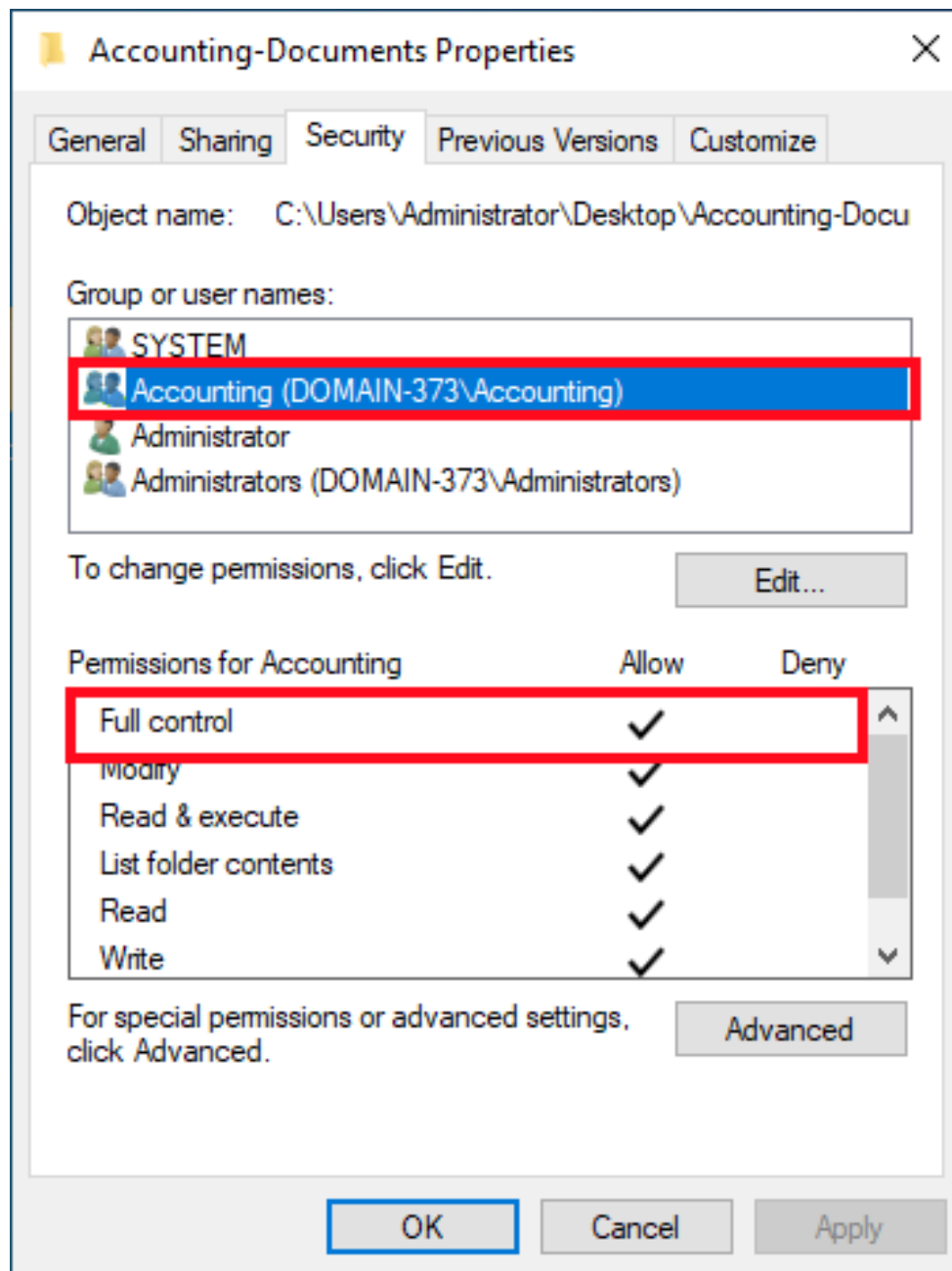
c.) Inside each departmental OU (Accounting-Dublin and Sales-Dublin), create and share two folders (one for each department) and apply permissions as specified below:
Create one folder for each department (Sales-Documents for the sales department and Accounting-Documents for the accounting department).



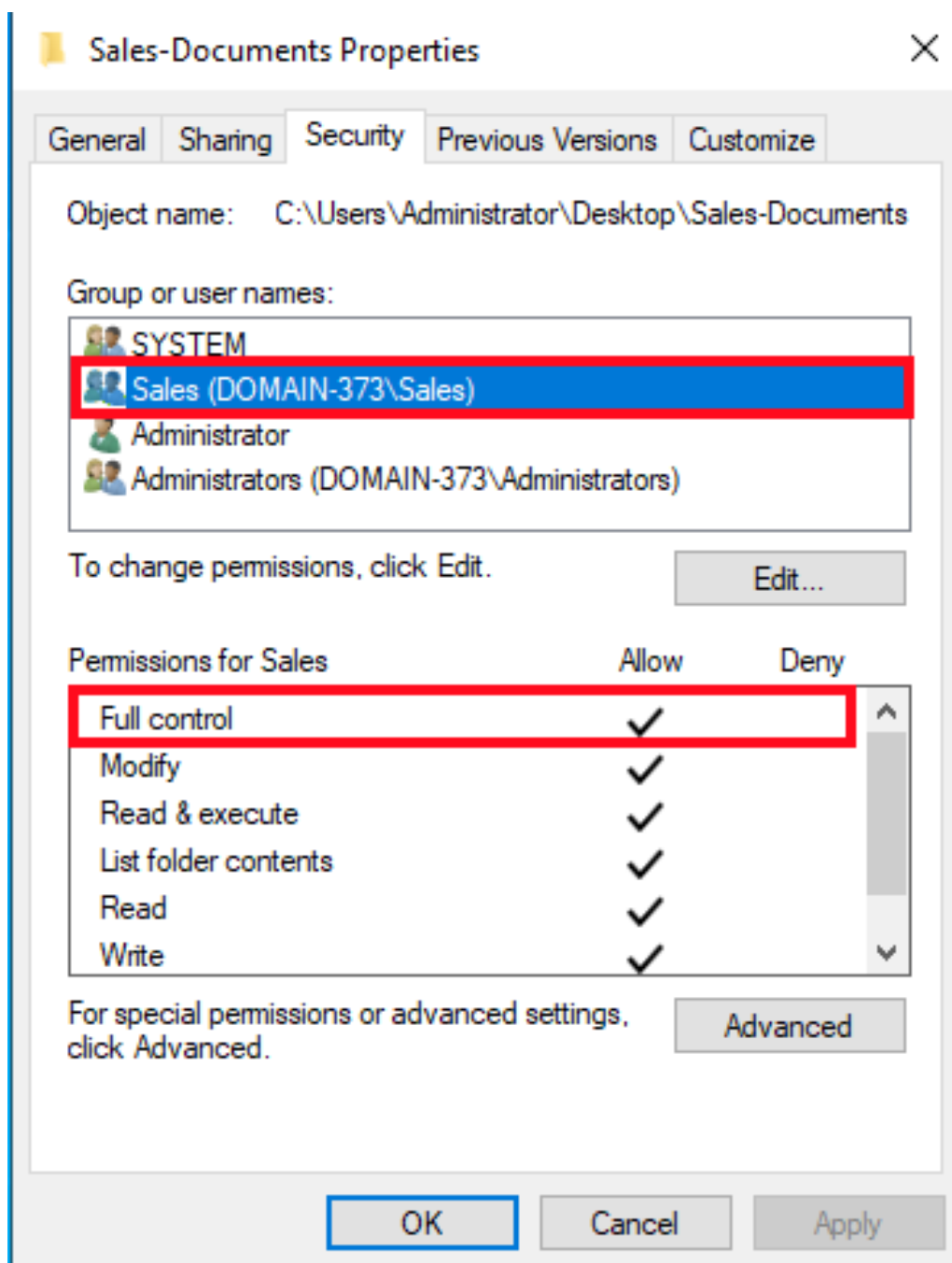
Share each of the folders applying permissions as follows:

You will apply both Share permissions and NTFS permissions.

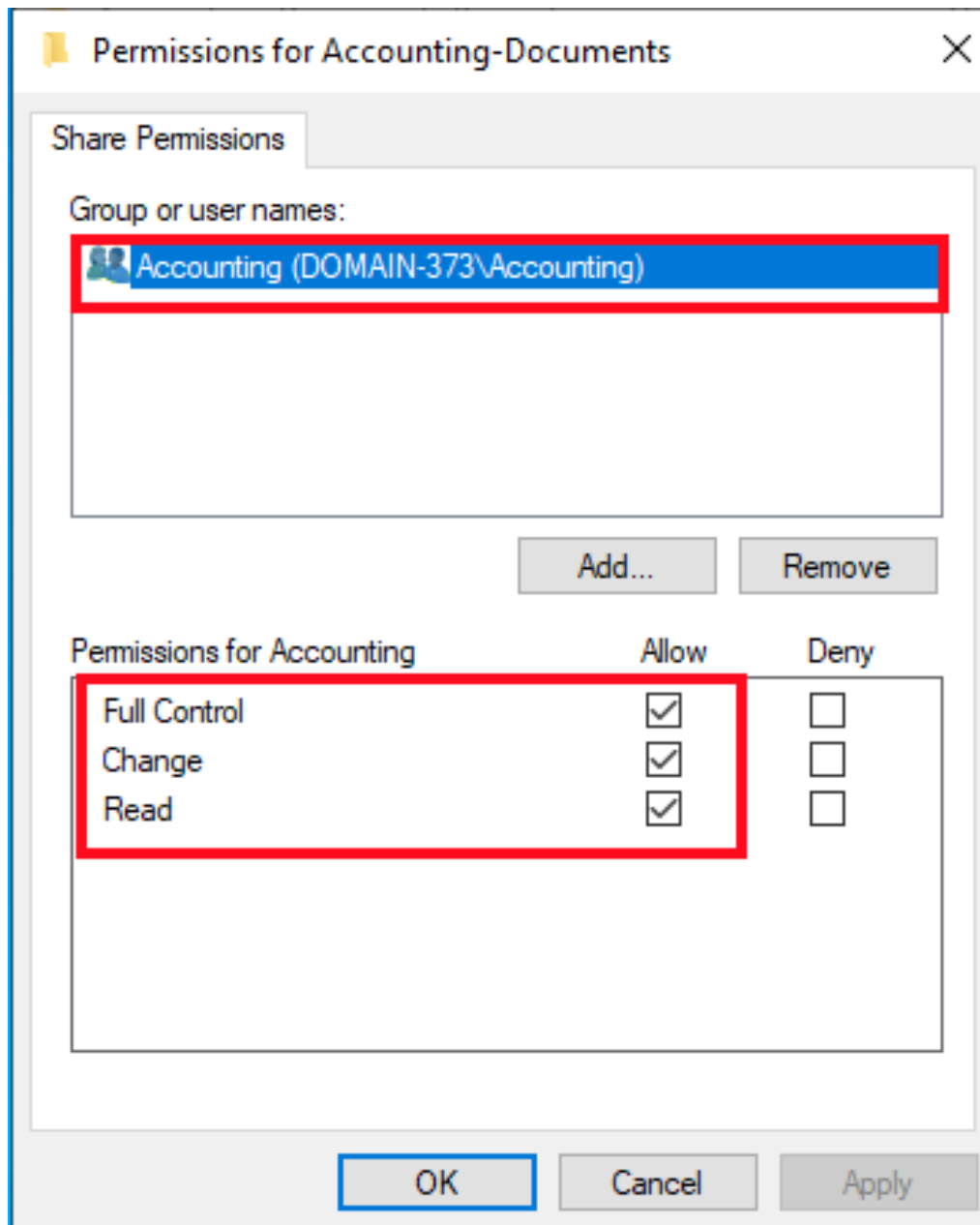
Give the Accounting group Full Control permissions for the Accounting-Documents folder.



The Sales group should have Full Control permissions for the Sales-Documents folder.




You should remove the Everyone group when applying the share permissions. Note: you will need to set the permissions on both the Share and Security tabs.



Permissions for Sales-Documents

Share Permissions

Group or user names:

 Sales (DOMAIN-373\Sales)

Add... Remove

Permissions for Sales	Allow	Deny
Full Control	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Change	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Read	<input checked="" type="checkbox"/>	<input type="checkbox"/>

OK Cancel Apply

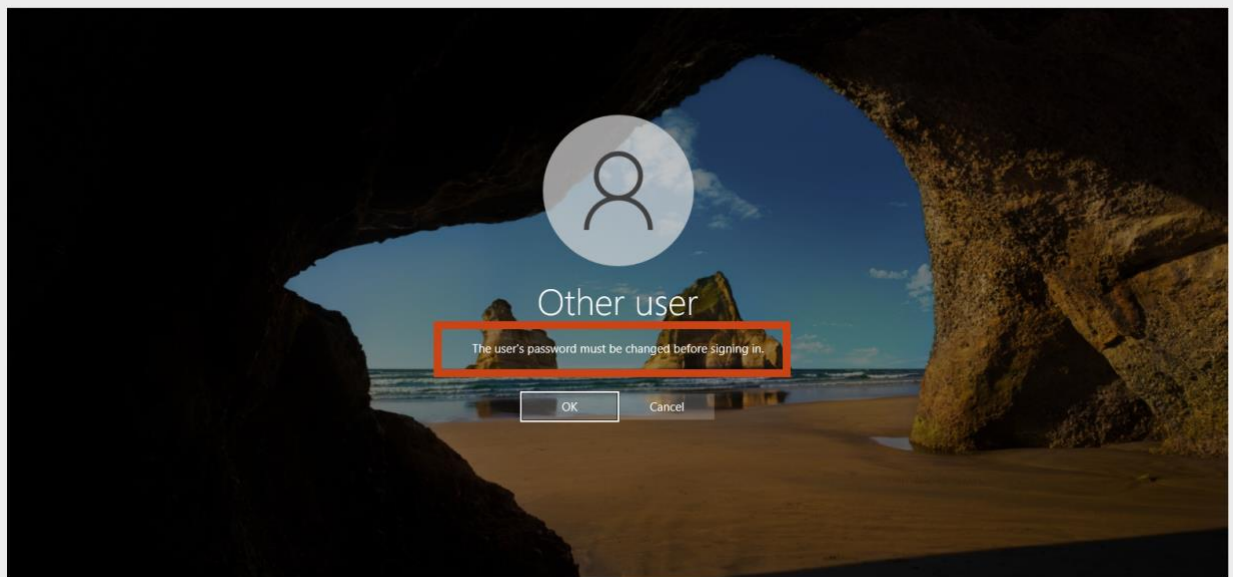
- d.) Test the permissions for both the Sales-Documents folder and the Accounting-Documents folder by logging onto the Web computer by using a user account from Dublin-Sales or a user account from Dublin-Accounting.

Use UNC format to check the permissions for both resources: \\Server-name\Share-name If the permissions do not work, go back to the Domain Controller, and troubleshoot!

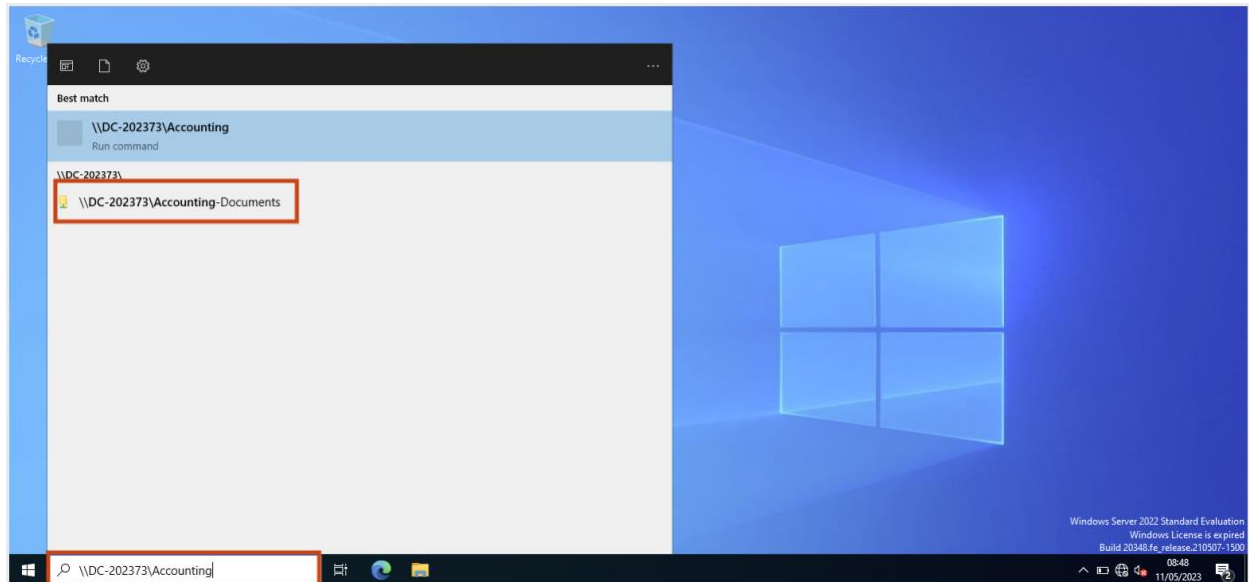
Testing the resources permissions: You should be able to demonstrate that the permissions are working for both the Sales and the Account folders. For example, if you log onto the Web server as a member of the Sales group, you should be able to access the Sales-Documents folder but have Access Denied on the Accounting folder.

-----ACCOUNTING-TEST-----

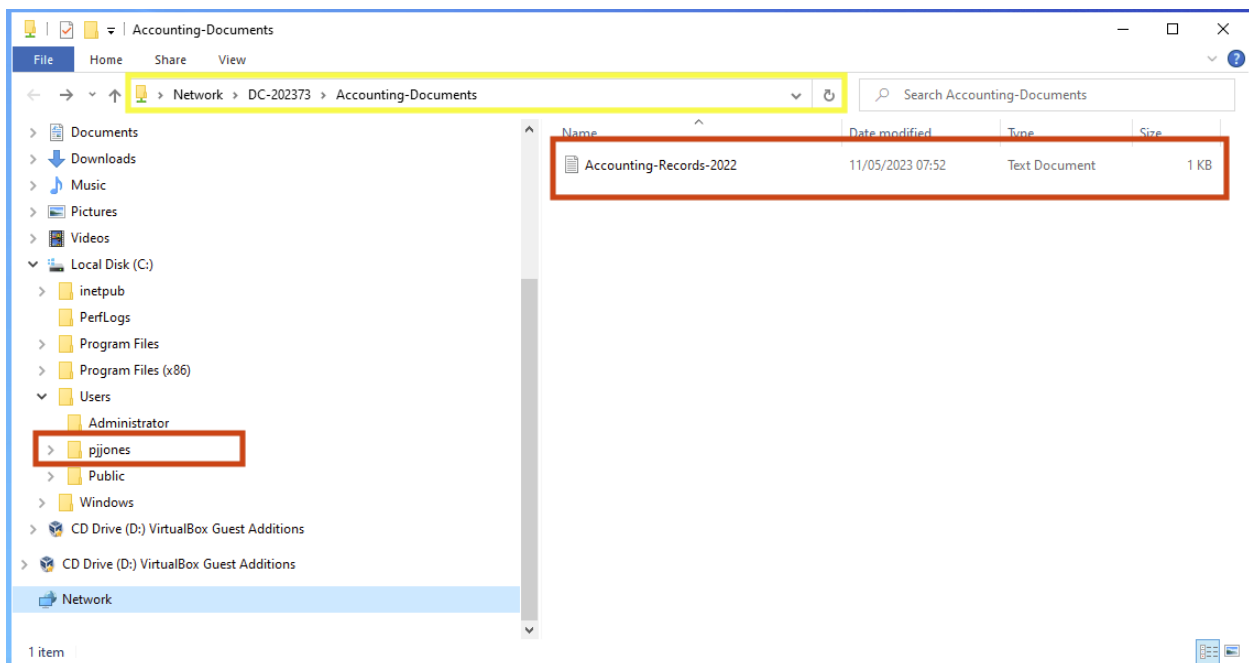
If asked to change the password during the first log-in, use pass1234\$ for the password as we have been using.



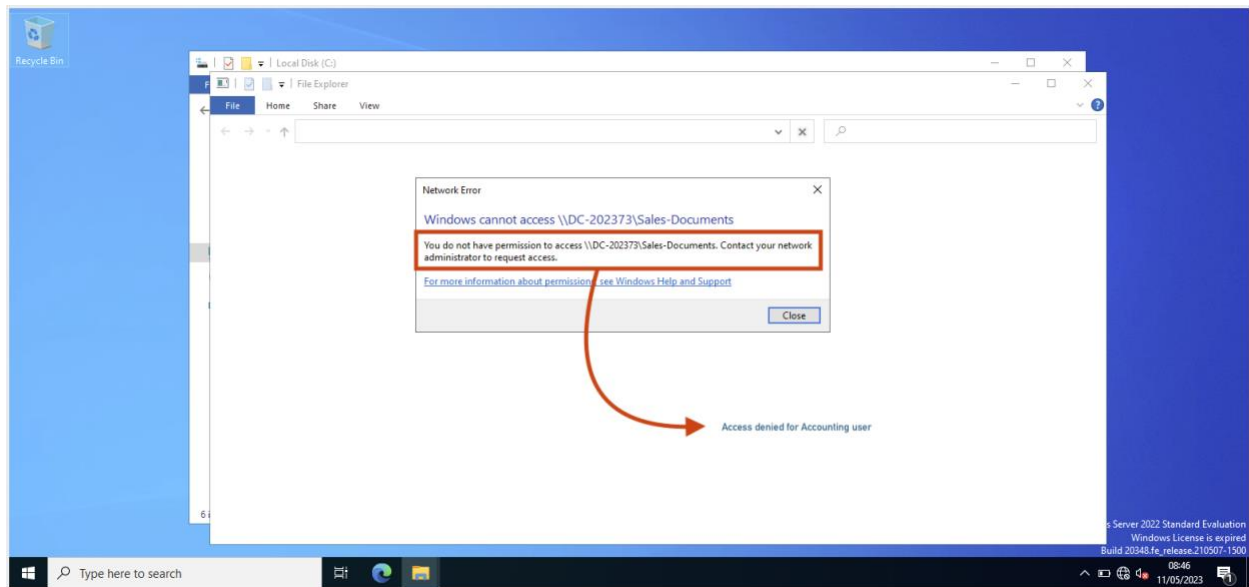
Use UNC format to check the permissions for both resources: `\\Server-name\Share-name`



Accounting-Dublin user should be able to access Accounting-Documents.

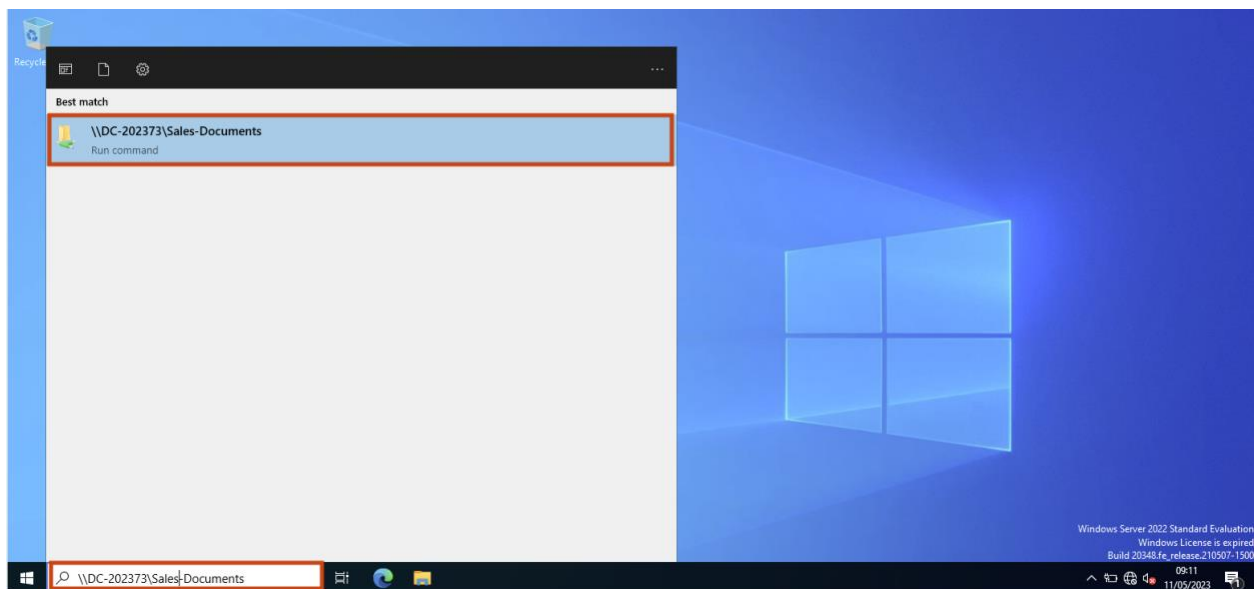


But not Sales-Documents.

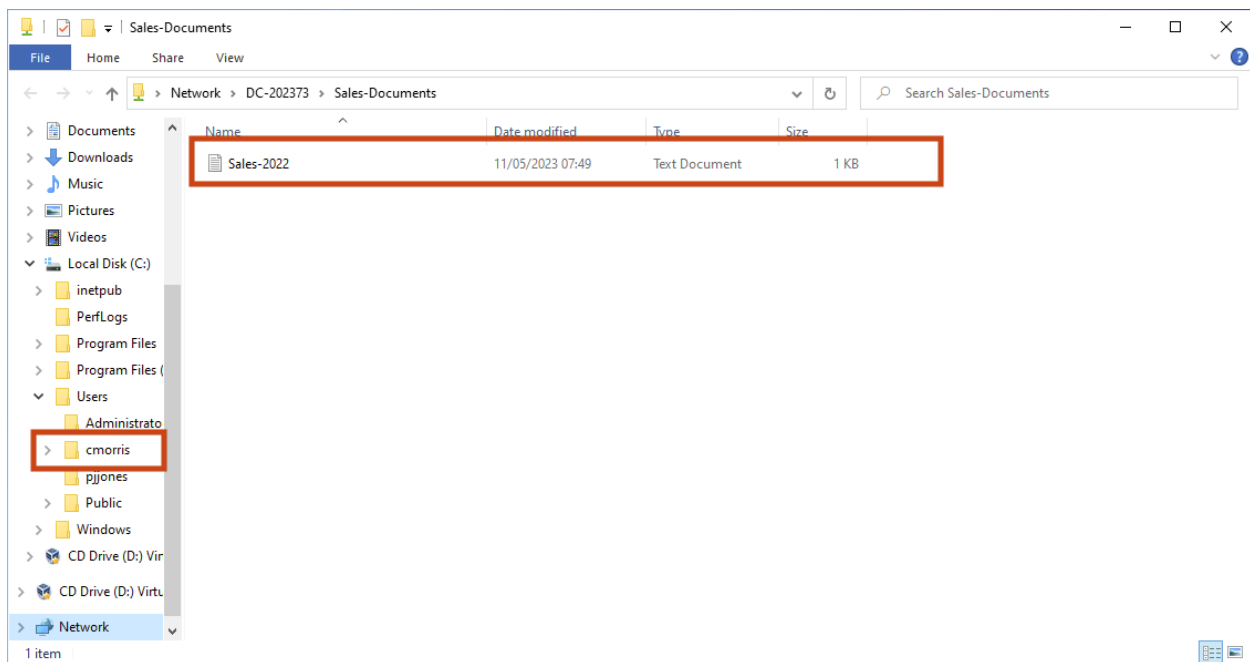


-----SALES-TEST-----

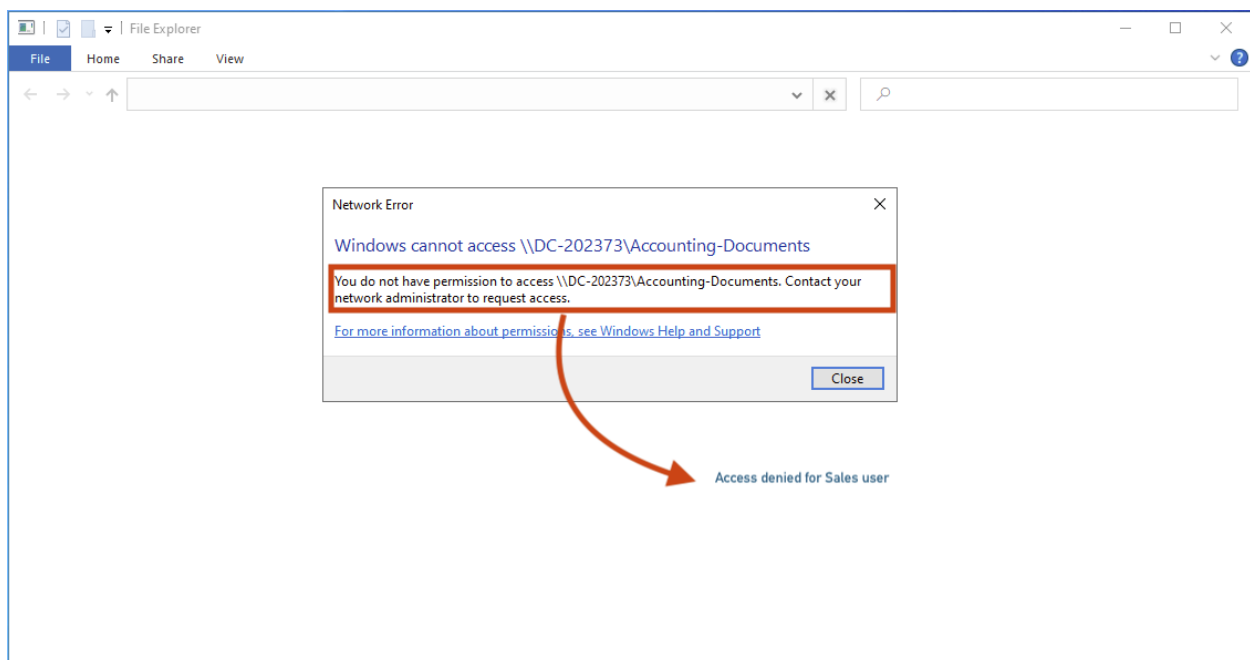
Use UNC format to check the permissions for both resources: \\\\Server-name\\Share-name



Sales-Dublin user should be able to access Sale-Documents.

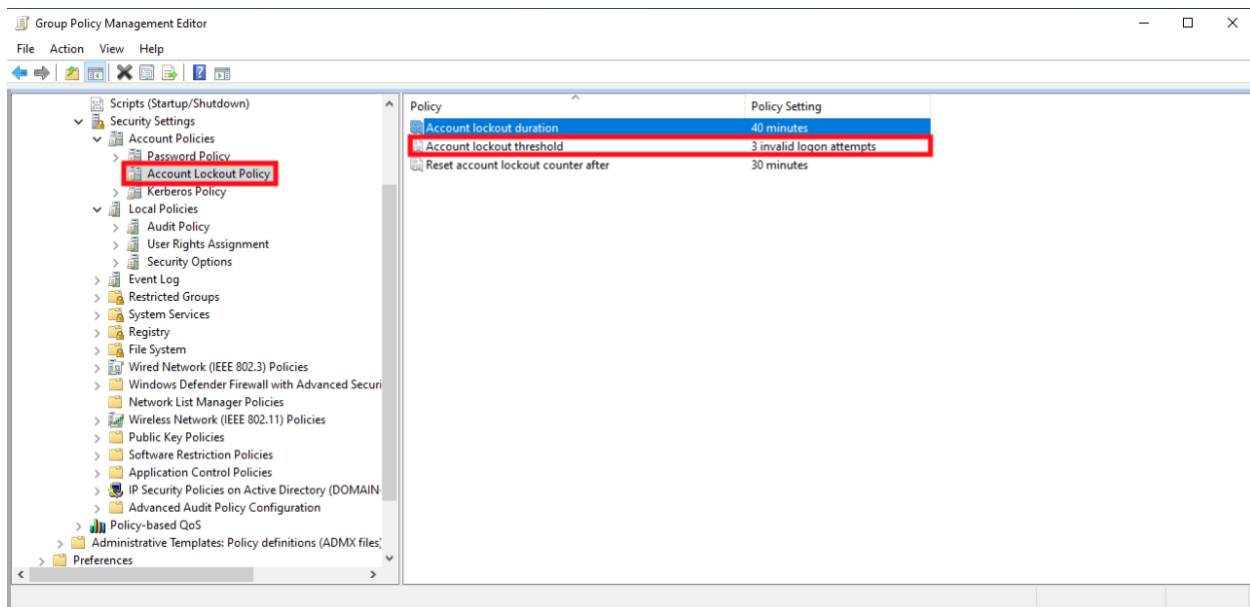


But not Accounting-Documents.

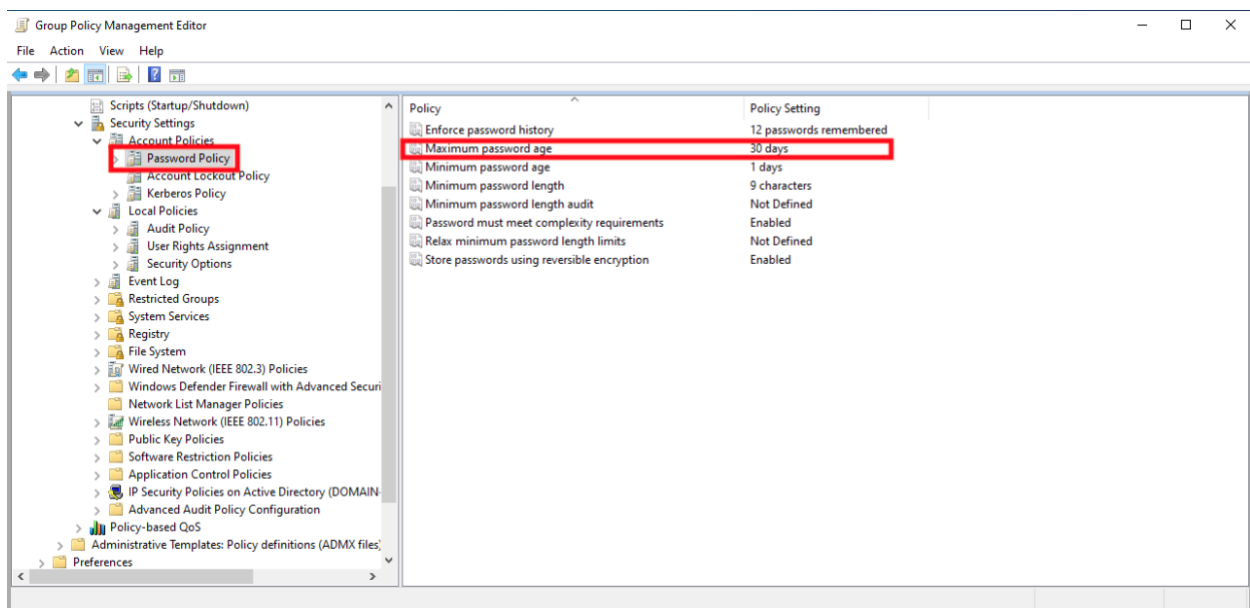


e.) Apply a suitable password policy and an account lockout policy for the entire domain.

Ensure that there is a feature to lock the account after a number of failed attempts.



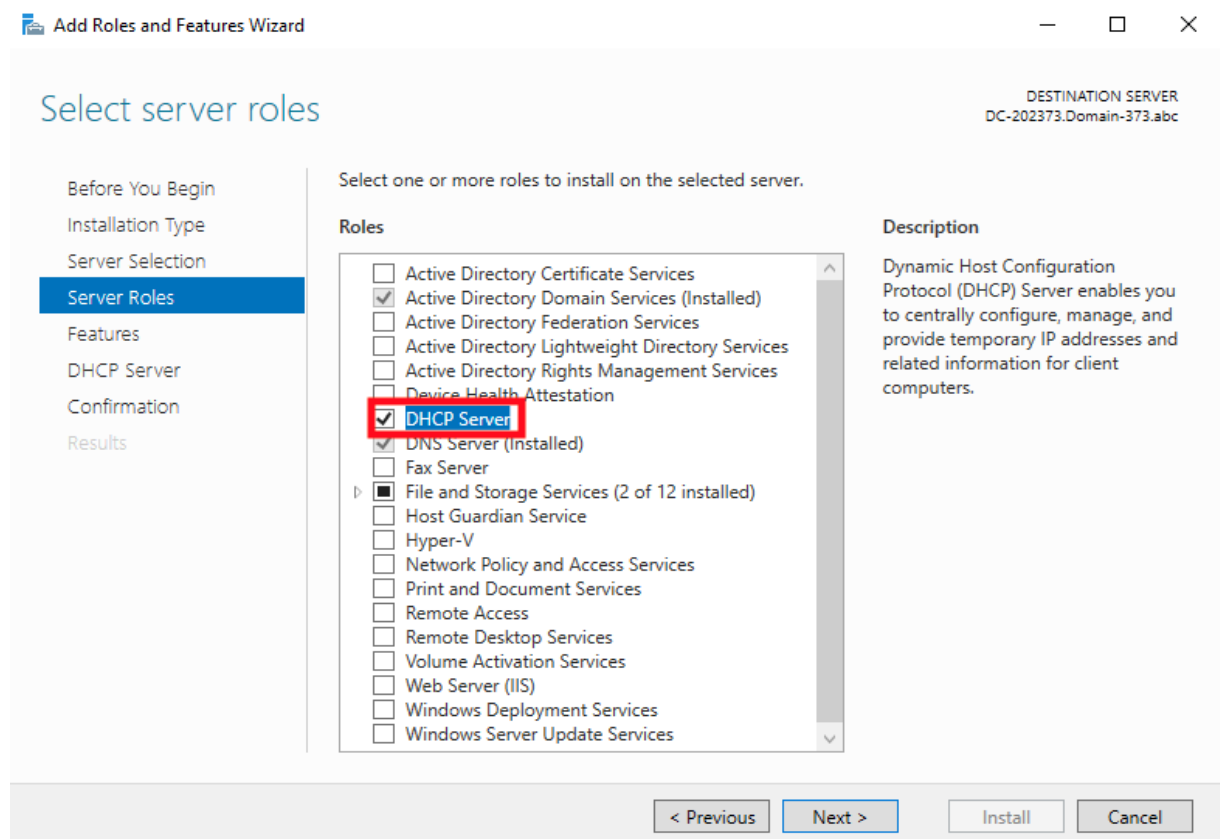
Feature that will require the user to change their password every 30 days.



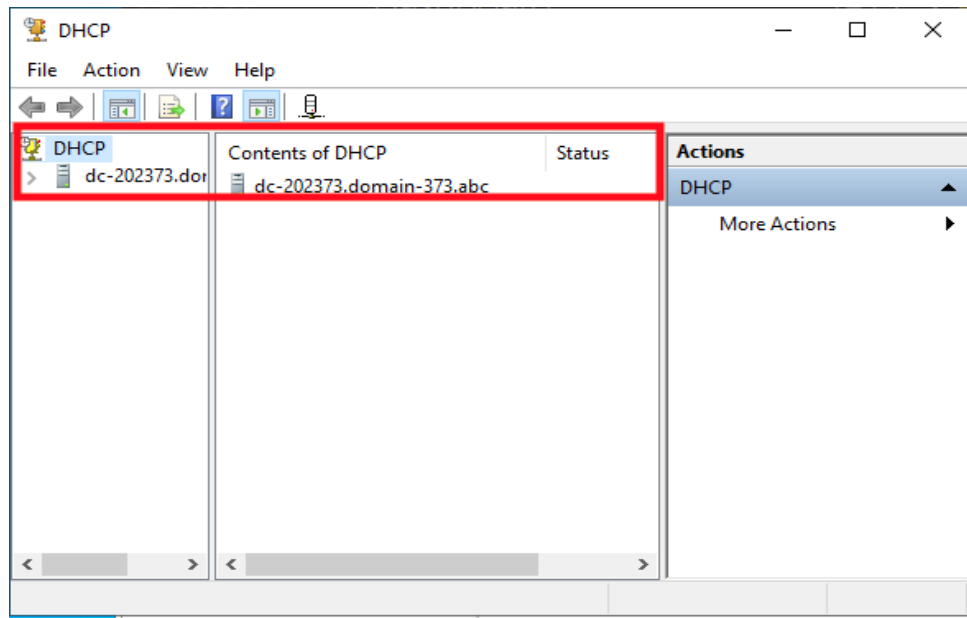
2.) Setting Up a DHCP Server for the Domain.

Your supervisor at DigiTech needs to have dynamic addresses assigned to all of the client computers in the network.

Add the DHCP server role to the Domain Controller server computer using the Add Roles and Features in the Server Manager console [for this project, you do not need to add support for WINS or IPv6].



DHCP server installed.



a) Configure DHCP using the DHCP console in Administrative Tools.

Use the following range of IP addresses for the IP Address Scope: The DHCP Scope Name should be the name of your Domain (such as Domain-123).

Starting IP address is 172.16.0.1 / Ending IP address is 172.16.0.254

New Scope Wizard

IP Address Range
You define the scope address range by identifying a set of consecutive IP addresses.

Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address: 172 . 16 . 0 . 1

End IP address: 172 . 16 . 0 . 254

Configuration settings that propagate to DHCP Client

Length: 16

Subnet mask: 255 . 255 . 0 . 0

< Back Next > Cancel

The subnet mask should be /16 and the default gateway should be 172.16.0.1.

New Scope Wizard

Router (Default Gateway)

You can specify the routers, or default gateways, to be distributed by this scope.

To add an IP address for a router used by clients, enter the address below.

IP address:

172.16.0.1

Add Remove Up Down

< Back Next > Cancel

The DNS server address should be 172.16.0.100.

New Scope Wizard

Domain Name and DNS Servers

The Domain Name System (DNS) maps and translates domain names used by clients on your network.

You can specify the parent domain you want the client computers on your network to use for DNS name resolution.

Parent domain: Domain-373.abc

To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

Server name: Domain-373

IP address:

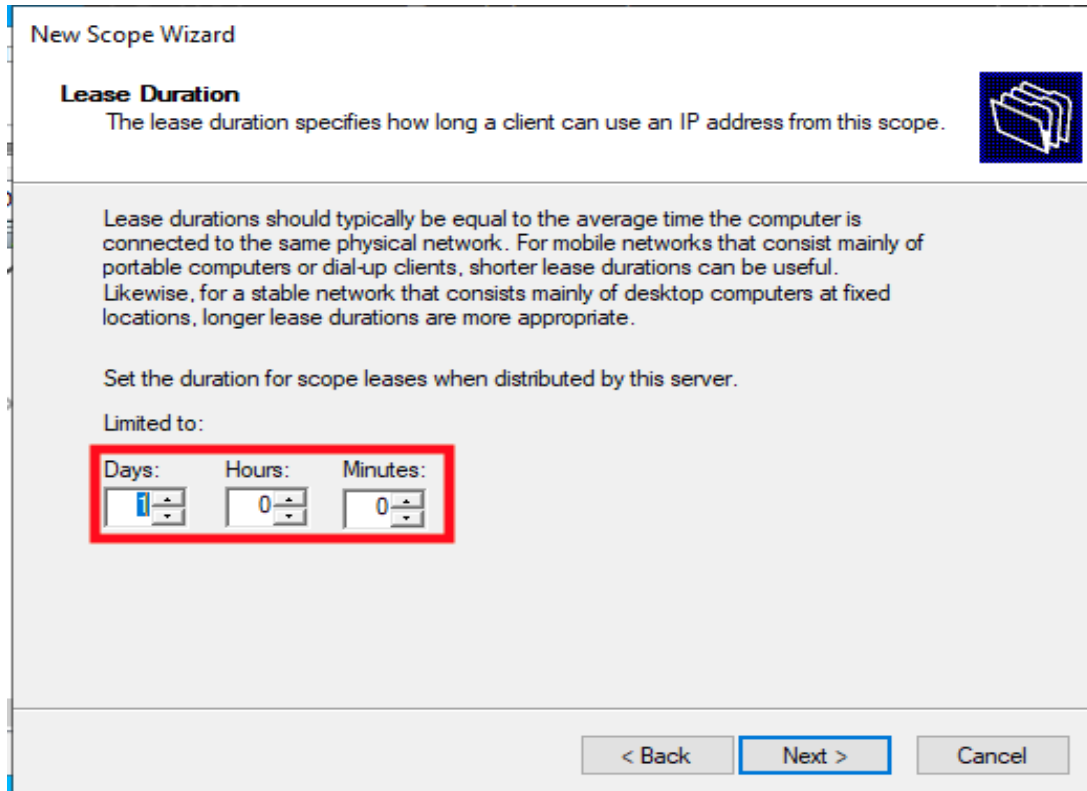
172.16.0.100
172.16.0.100

Add Remove Up Down

Resolve

< Back Next > Cancel

The lease duration should be for 24 hours.



The image shows a screenshot of the 'New Scope Wizard' window, specifically the 'Lease Duration' step. The window has a title bar 'New Scope Wizard' and a blue icon in the top right corner. The main content area is titled 'Lease Duration' and contains a description: 'The lease duration specifies how long a client can use an IP address from this scope.' Below this, there is a paragraph explaining that lease durations should typically be equal to the average time the computer is connected to the same physical network. It also mentions that shorter lease durations can be useful for portable computers or dial-up clients, and longer lease durations are more appropriate for stable networks with desktop computers at fixed locations. A section titled 'Set the duration for scope leases when distributed by this server.' is followed by 'Limited to:' and three spin boxes for 'Days:', 'Hours:', and 'Minutes:'. The 'Days:' spin box is highlighted with a red rectangle and shows the value '1'. The 'Hours:' spin box shows '0' and the 'Minutes:' spin box shows '0'. At the bottom of the window, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a blue border.

New Scope Wizard

Lease Duration

The lease duration specifies how long a client can use an IP address from this scope.

Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or dial-up clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.

Set the duration for scope leases when distributed by this server.

Limited to:

Days: 1 Hours: 0 Minutes: 0

< Back Next > Cancel

You will need to create four DHCP address exclusions.

In the Address Pool create the following four exclusion ranges:

From 172.16.0.1 to 172.16.0.1

From 172.16.0.50 to 172.16.0.50

From 172.16.0.100 to 172.16.0.100

From 172.16.0.200 to 172.16.0.200

New Scope Wizard

Add Exclusions and Delay

Exclusions are addresses or a range of addresses that are not distributed by the server. A delay is the time duration by which the server will delay the transmission of a DHCP OFFER message.

Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only.

Start IP address: End IP address:

Excluded address range:

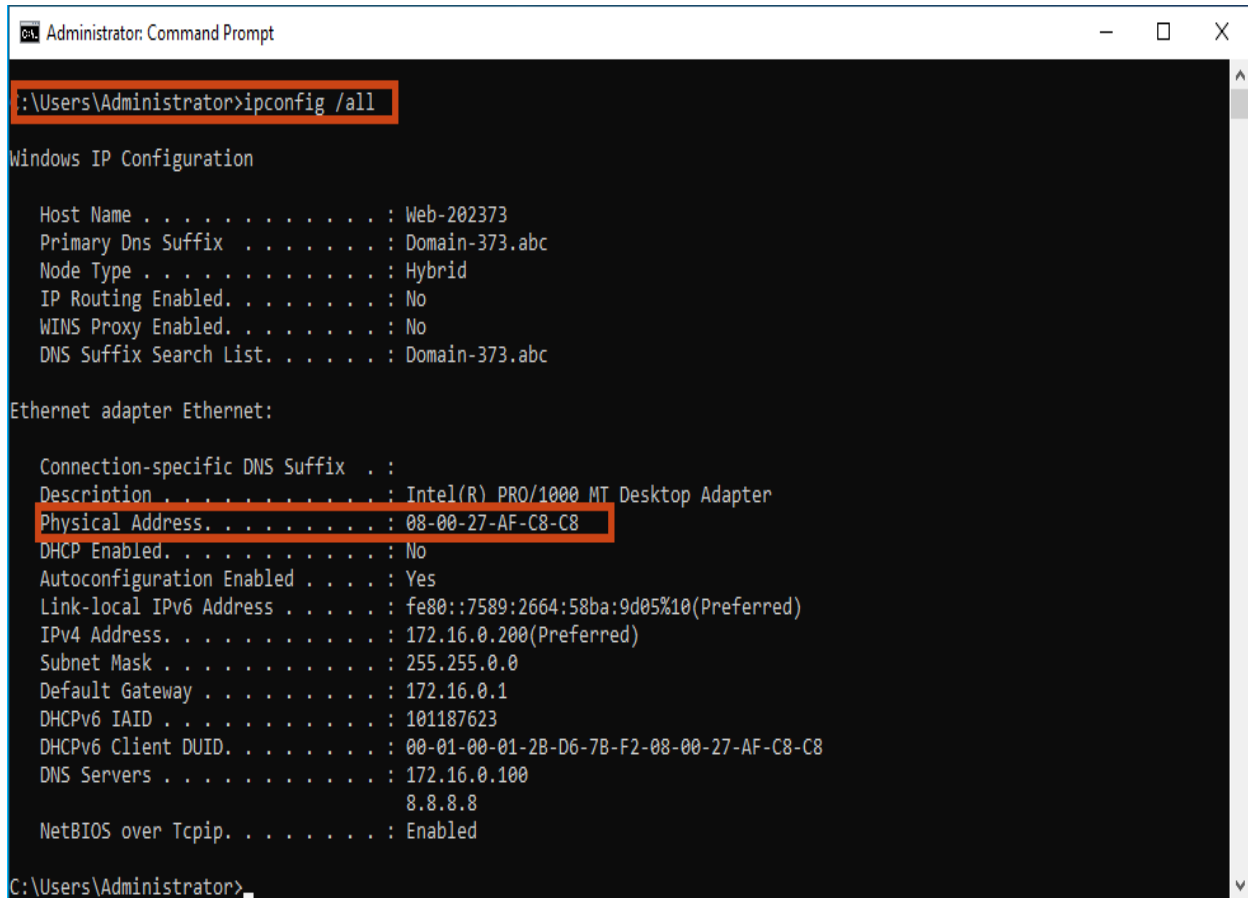
- Address 172.16.0.1
- Address 172.16.0.50
- Address 172.16.0.100
- Address 172.16.0.200

Subnet delay in milli second:

< Back **Next >** Cancel

b) You will also need to create an address reservation for the Web computer...
from Administrative Tools access the DHCP console.

In the Web computer find the MAC address of the Network Card (IPCONFIG/ ALL)



```
Administrator: Command Prompt

C:\Users\Administrator>ipconfig /all

Windows IP Configuration

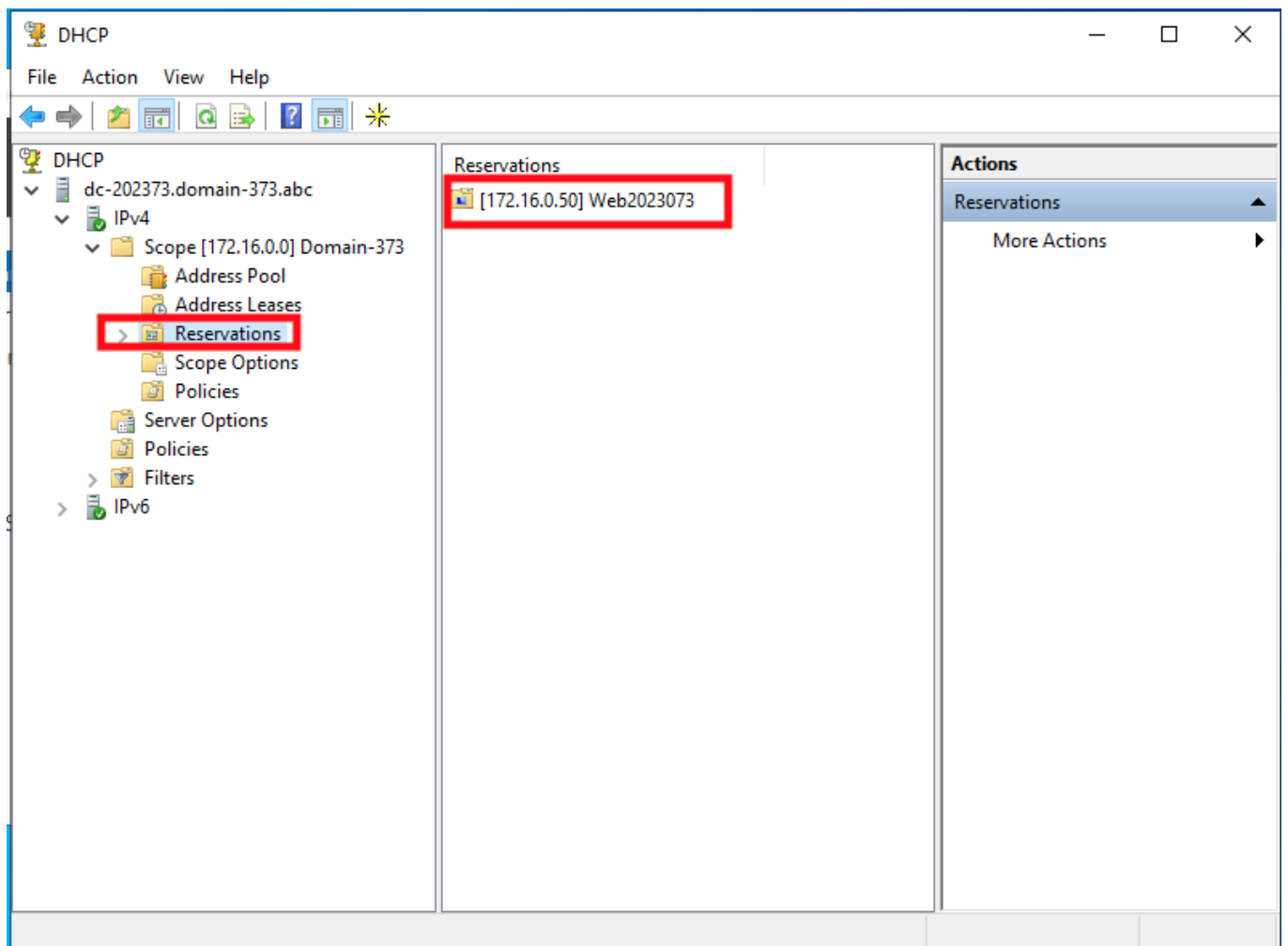
Host Name . . . . . : Web-202373
Primary Dns Suffix . . . . . : Domain-373.abc
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : Domain-373.abc

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : 
    Description . . . . . : Intel(R) PRO/1000 MT Desktop Adapter
    Physical Address. . . . . : 08-00-27-AF-C8-C8
    DHCP Enabled. . . . . : No
    Autoconfiguration Enabled . . . . : Yes
    Link-local IPv6 Address . . . . . : fe80::7589:2664:58ba:9d05%10(Preferred)
    IPv4 Address. . . . . : 172.16.0.200(Preferred)
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : 172.16.0.1
    DHCPv6 IAID . . . . . : 101187623
    DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-D6-7B-F2-08-00-27-AF-C8-C8
    DNS Servers . . . . . : 172.16.0.100
                           8.8.8.8
    NetBIOS over Tcpip. . . . . : Enabled

C:\Users\Administrator>
```

And then go to the DHCP console and make a reservation called Web 2023xyz where xyz are last digits of your student number and assign the IP address of 172.16.0.50 (description optional)



- c) *Configure the Web computer to dynamically receive the IP address from the reservation instead of using the static IP address (there is information that you will need to obtain from the Web computer).*

```
C:\Users\Administrator>IPCONFIG /RELEASE
```

```
Windows IP Configuration
```

```
Ethernet adapter Ethernet:
```

```
Connection-specific DNS Suffix . :  
Link-local IPv6 Address . . . . . : fe80::d17a:8db:47bf:278%10  
Default Gateway . . . . . :
```

```
C:\Users\Administrator>IPCONFIG /RENEW
```

```
Windows IP Configuration
```

```
Ethernet adapter Ethernet:
```

```
Connection-specific DNS Suffix . : Domain-373.abc  
Link-local IPv6 Address . . . . . : fe80::d17a:8db:47bf:278%10  
IPv4 Address. . . . . : 172.16.0.50  
Subnet Mask . . . . . : 255.255.0.0  
Default Gateway . . . . . : 172.16.0.1
```

Demonstrate that both computers can still ping each other.

```
Select Administrator: Command Prompt
Microsoft Windows [Version 10.0.20348.587]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping 172.16.0.50

Pinging 172.16.0.50 with 32 bytes of data:
Reply from 172.16.0.50: bytes=32 time=1ms TTL=128
Reply from 172.16.0.50: bytes=32 time=1ms TTL=128
Reply from 172.16.0.50: bytes=32 time=1ms TTL=128
Reply from 172.16.0.50: bytes=32 time=2ms TTL=128

Ping statistics for 172.16.0.50:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\Users\Administrator>
```

```
Administrator: Command Prompt

Res. Link-local IPv6 Address . . . . . : fe80::d17a:8db:47bf:278%10
      Default Gateway . . . . . :

C:\Users\Administrator>IPCONFIG /RENEW

Windows IP Configuration

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . : Domain-373.abc
   Link-local IPv6 Address . . . . . : fe80::d17a:8db:47bf:278%10
   IPv4 Address. . . . . : 172.16.0.50
   Subnet Mask . . . . . : 255.255.0.0
   Default Gateway . . . . . : 172.16.0.1

C:\Users\Administrator>PING 172.16.0.100

Pinging 172.16.0.100 with 32 bytes of data:
Reply from 172.16.0.100: bytes=32 time=1ms TTL=128
Reply from 172.16.0.100: bytes=32 time=1ms TTL=128
Reply from 172.16.0.100: bytes=32 time=1ms TTL=128
Reply from 172.16.0.100: bytes=32 time=1ms TTL=128

Ping statistics for 172.16.0.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

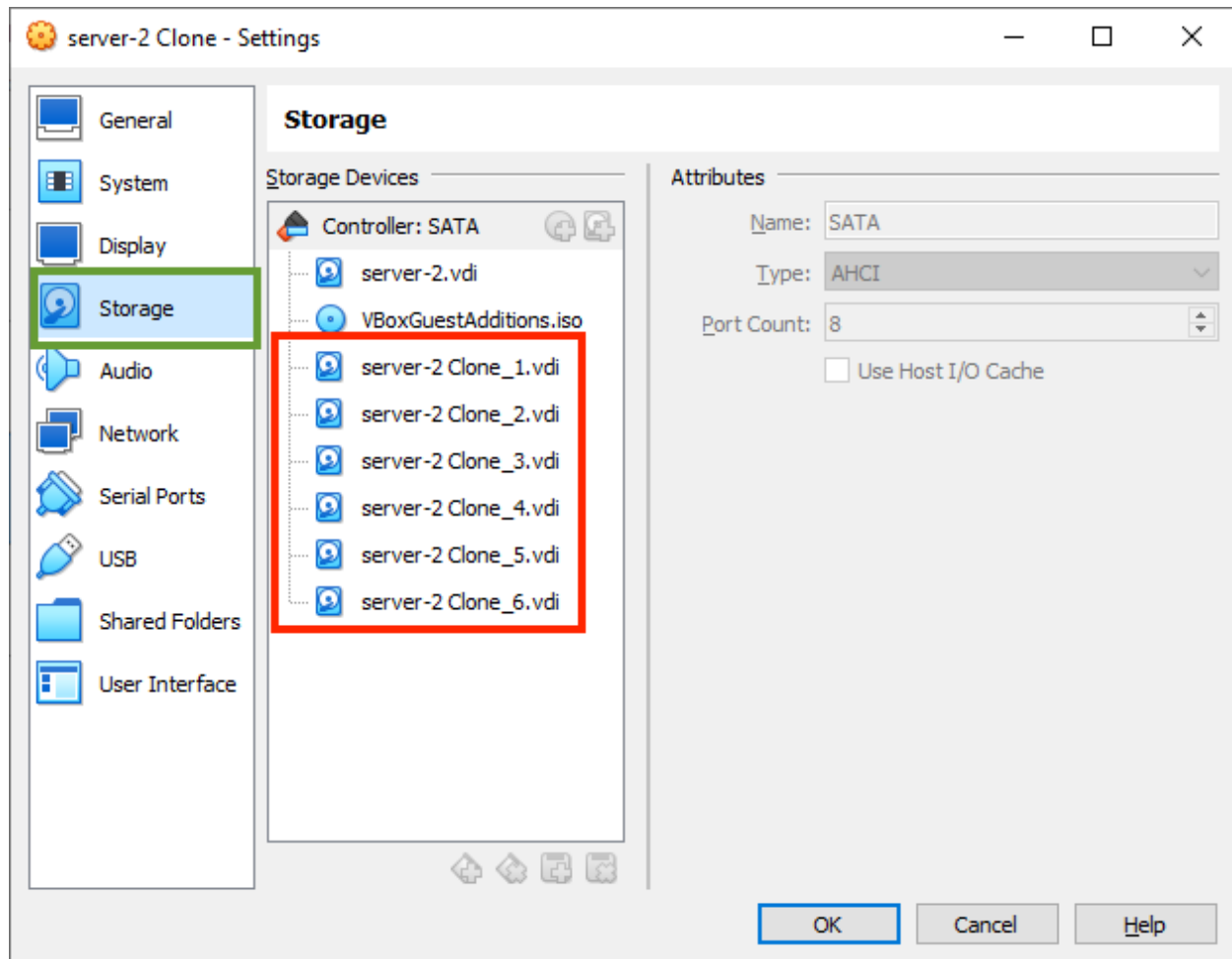
C:\Users\Administrator>
```

3.) Configuring RAID on the Web Server.

Your supervisor at DigiTech is concerned that the files on the Web server could accidentally deleted and they would like to see some fault tolerance added to the Web server computer.

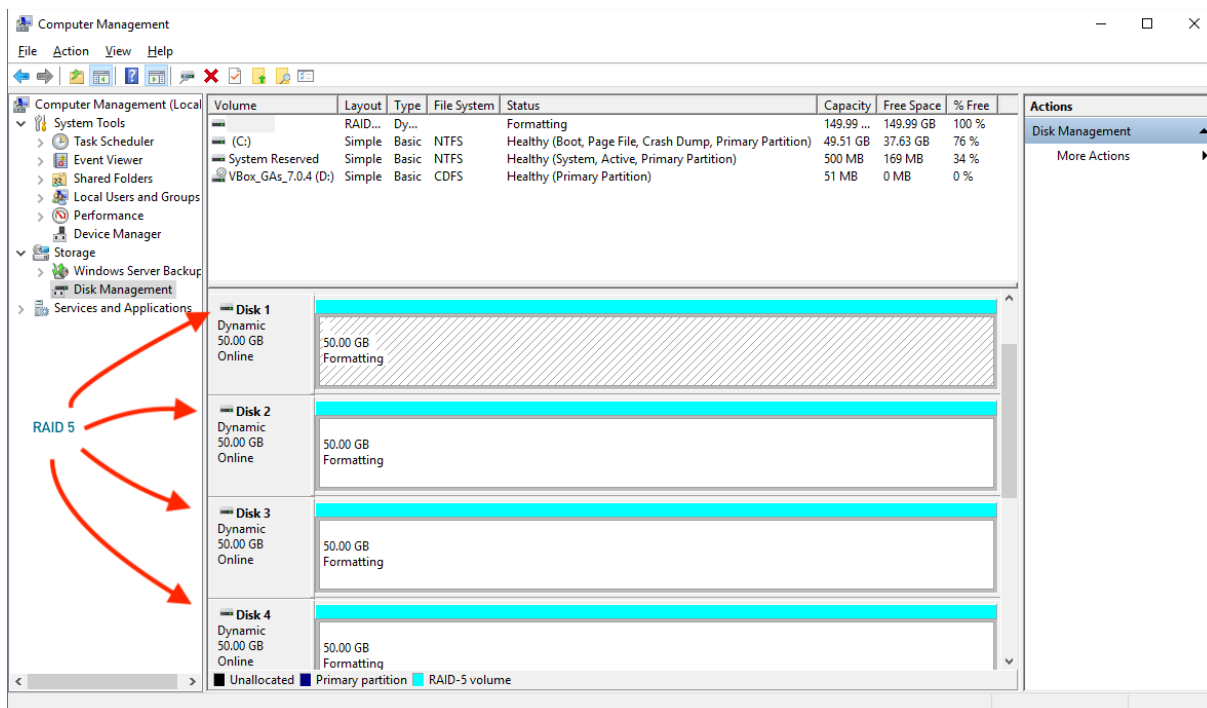
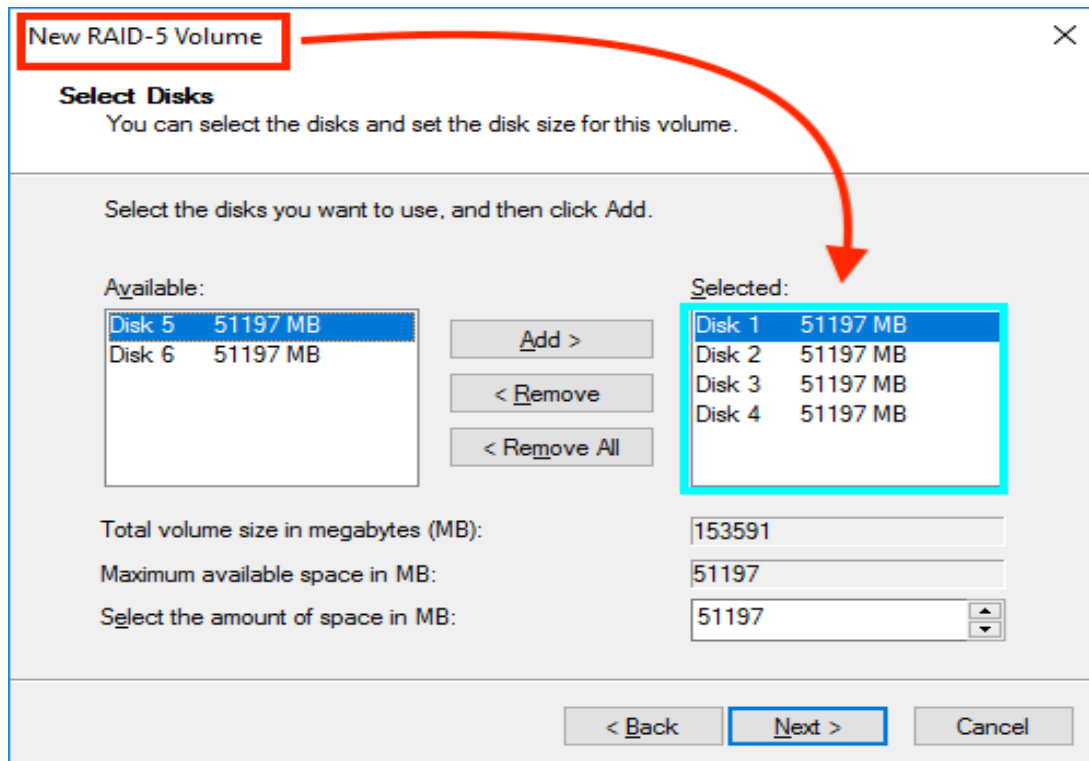
Add six additional hard drives to the Web Server VM to configure some RAID arrays on the Web server.

Currently Drive C: is the main volume on the computer and there is also a Drive D: which is the CDROM drive.



Configure the Web computer to have two new volumes that have this fault tolerance:

- a) Use four of disks to create a RAID 5 volume which will be Drive E:*



b) Use two of the hard disks to create a RAID 1 Mirrored which will be Drive F:

New Mirrored Volume

Assign Drive Letter or Path
For easier access, you can assign a drive letter or drive path to your volume.

☒ Assign the following drive letter: F

☐ Mount in the following empty NTFS folder:

☐ Do not assign a drive letter or drive path

New Mirrored Volume

Select Disks
You can select the disks and set the disk size for this volume.

Select the disks you want to use, and then click Add.

Available:

Selected:

Disk 5	51197 MB
Disk 6	51197 MB

Total volume size in megabytes (MB):

Maximum available space in MB:

Select the amount of space in MB:

4.) The tasks above provide a foundation for a network infrastructure.

Below you will find some challenge tasks that build onto of this infrastructure.

a.) The IT manager would like each department to have their own custom wallpaper for the user desktop.

Use the Sale-Department and Accounting-Department JPEG images that are posted on Moodle to set the wallpaper for each department. If a user logs in as a member of the Accounting-Department they should see the wallpaper for the Accounting department as the background on their PC.

Desktop Wallpaper

Desktop Wallpaper

Previous Setting Next Setting

☐ Not Configured Comment:

☒ Enabled

☐ Disabled Supported on: At least Windows 2000

Options:

Wallpaper Name: \\DC-2023073\\wallpaperAccounting\\Acc

Example: Using a local path:
C:\windows\web\wallpaper\home.jpg

Example: Using a UNC path:
\\Server\Share\Corp.jpg

Wallpaper Style: Center

Help:

Specifies the desktop background ("wallpaper") displayed on all users' desktops.

This setting lets you specify the wallpaper on users' desktops and prevents users from changing the image or its presentation. The wallpaper you specify can be stored in a bitmap (*.bmp) or JPEG (*.jpg) file.

To use this setting, type the fully qualified path and name of the file that stores the wallpaper image. You can type a local path, such as C:\Windows\web\wallpaper\home.jpg or a UNC path, such as \\Server\Share\Corp.jpg. If the specified file is not available when the user logs on, no wallpaper is displayed. Users cannot specify alternative wallpaper. You can also use this setting to specify that the wallpaper image be centered, tiled, or stretched. Users cannot change this specification.

If you disable this setting or do not configure it, no wallpaper is displayed. However, users can select the wallpaper of their choice.

OK Cancel Apply

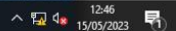


Welcome to the

ACCOUNTING DEPARTMENT

Where EVERYBODY counts!

Windows Server 2016
Windows License
Build 14393.rs1.1



If a user logs on as a member of the SalesDepartment, they should see the wallpaper for the Sales department.

The screenshot shows the 'Desktop Wallpaper' settings window. The 'Enabled' radio button is selected and highlighted with a red box. The 'Wallpaper Name' field contains the path '3\wallpaperSales\Sales-Department.jpeg', also highlighted with a red box. The 'Wallpaper Style' is set to 'Center'. The 'Help' section provides detailed instructions on how to use the setting, including examples of local and UNC paths.

Desktop Wallpaper

Previous Setting Next Setting

☐ Not Configured Comment:

☒ Enabled

☐ Disabled Supported on: At least Windows 2000

Options:

Wallpaper Name: 3\wallpaperSales\Sales-Department.jpeg

Example: Using a local path:
C:\windows\web\wallpaper\home.jpg

Example: Using a UNC path:
\\Server\Share\Corp.jpg

Wallpaper Style: Center

Help:

Specifies the desktop background ("wallpaper") displayed on all users' desktops.

This setting lets you specify the wallpaper on users' desktops and prevents users from changing the image or its presentation. The wallpaper you specify can be stored in a bitmap (*.bmp) or JPEG (*.jpg) file.

To use this setting, type the fully qualified path and name of the file that stores the wallpaper image. You can type a local path, such as C:\Windows\web\wallpaper\home.jpg or a UNC path, such as \\Server\Share\Corp.jpg. If the specified file is not available when the user logs on, no wallpaper is displayed. Users cannot specify alternative wallpaper. You can also use this setting to specify that the wallpaper image be centered, tiled, or stretched. Users cannot change this specification.

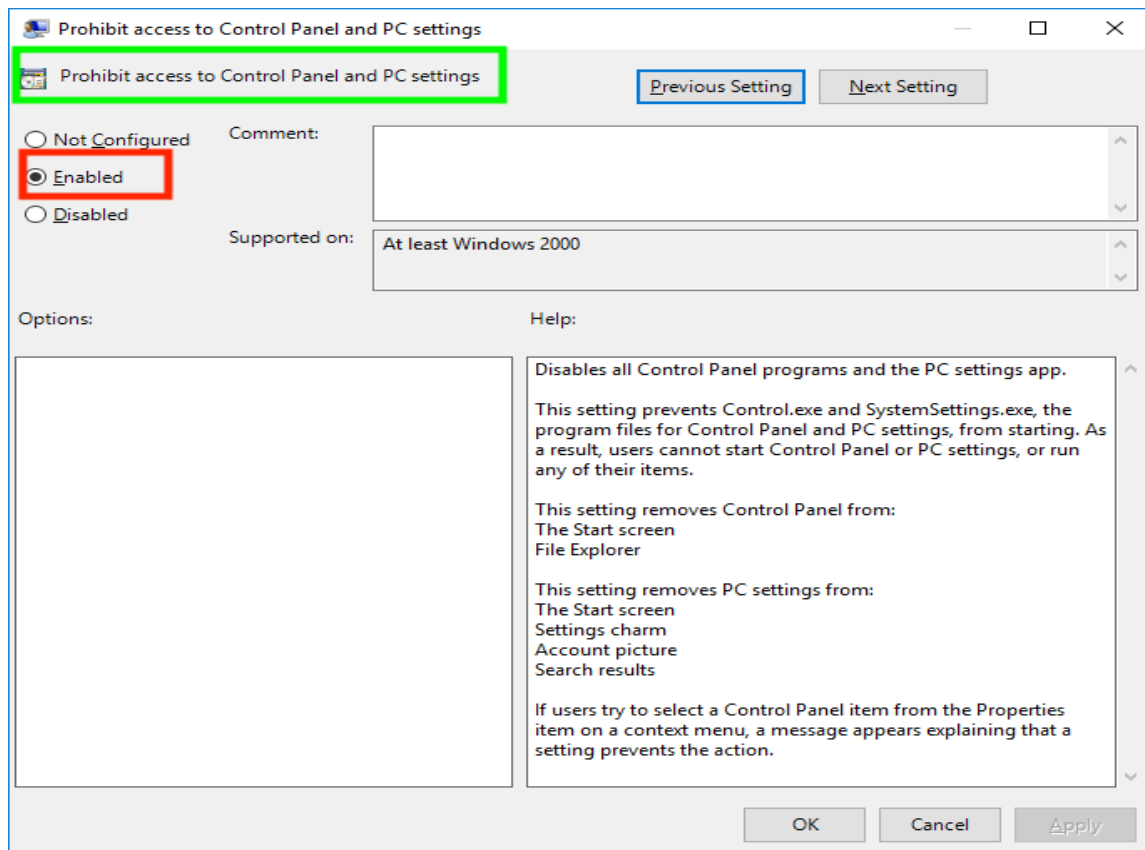
If you disable this setting or do not configure it, no wallpaper is displayed. However, users can select the wallpaper of their choice.

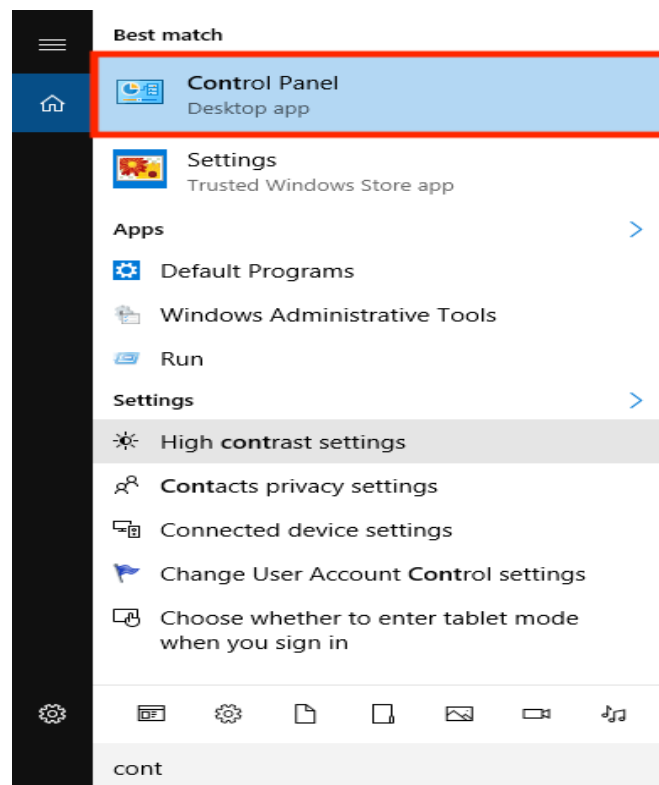
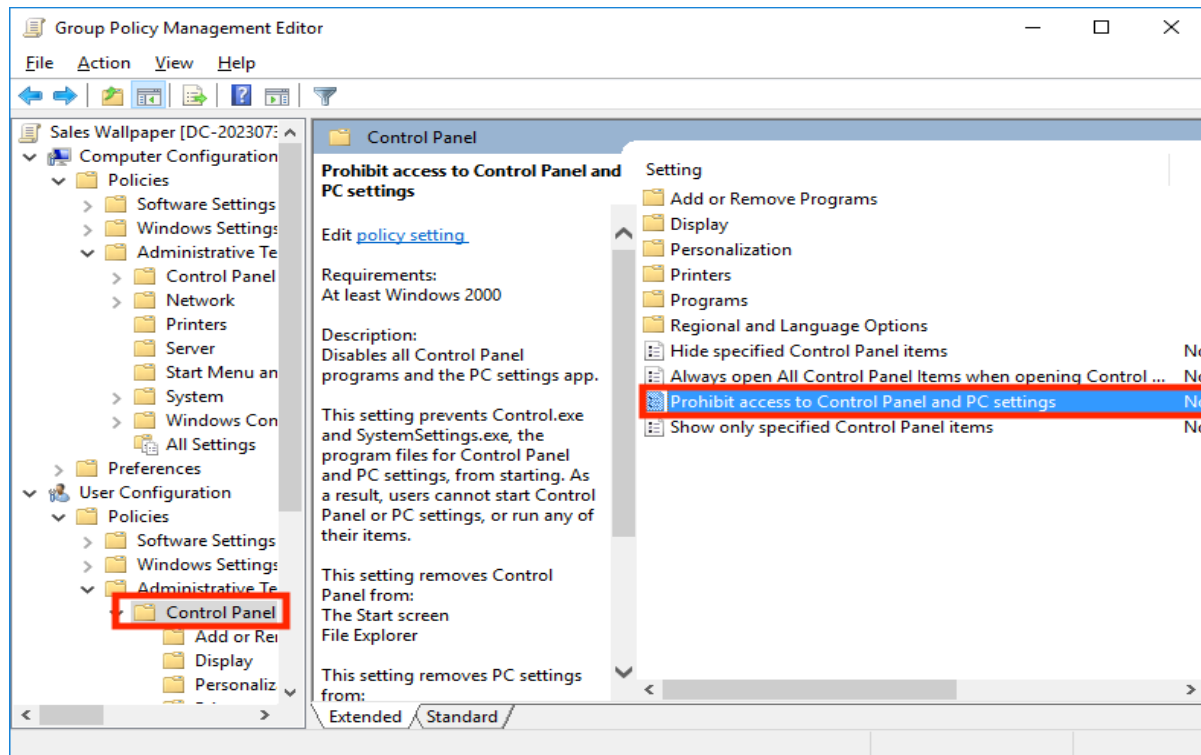
OK Cancel Apply

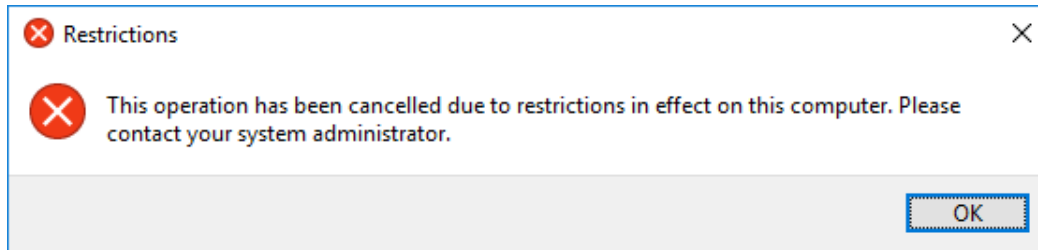


b.) The users in both the Sales department and the accounting department have been making unauthorized changes to their systems using the Control Panel.

The Chief information Officer (CIO) has requested that regular users do not have access to the Windows Control Panel. Use an appropriate method to remove the Control Panel from their desktop.



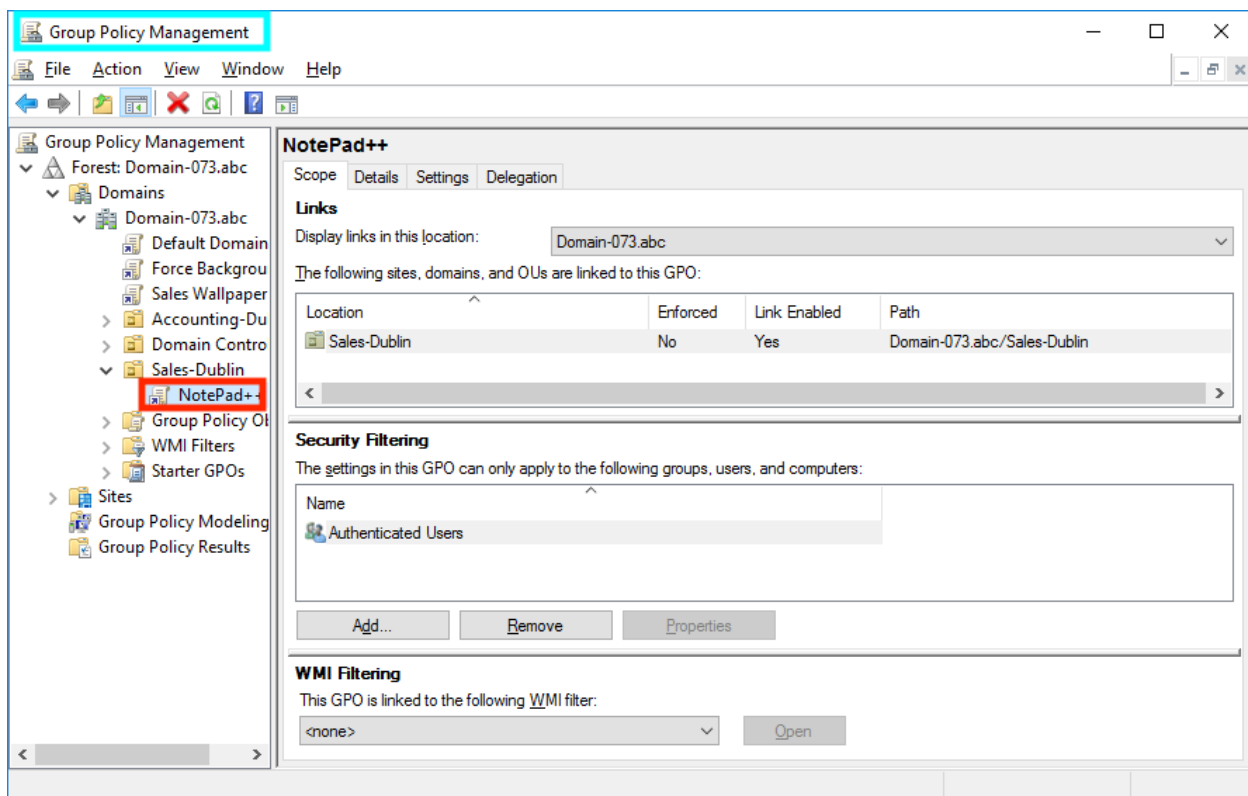


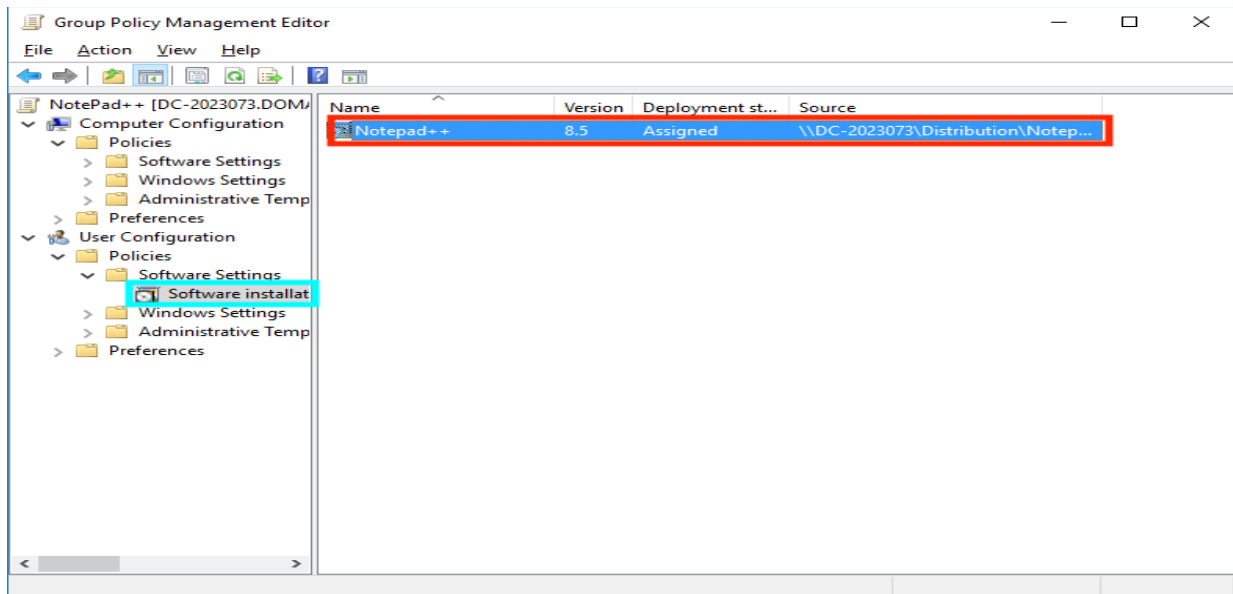


c.) Automated Software installation.

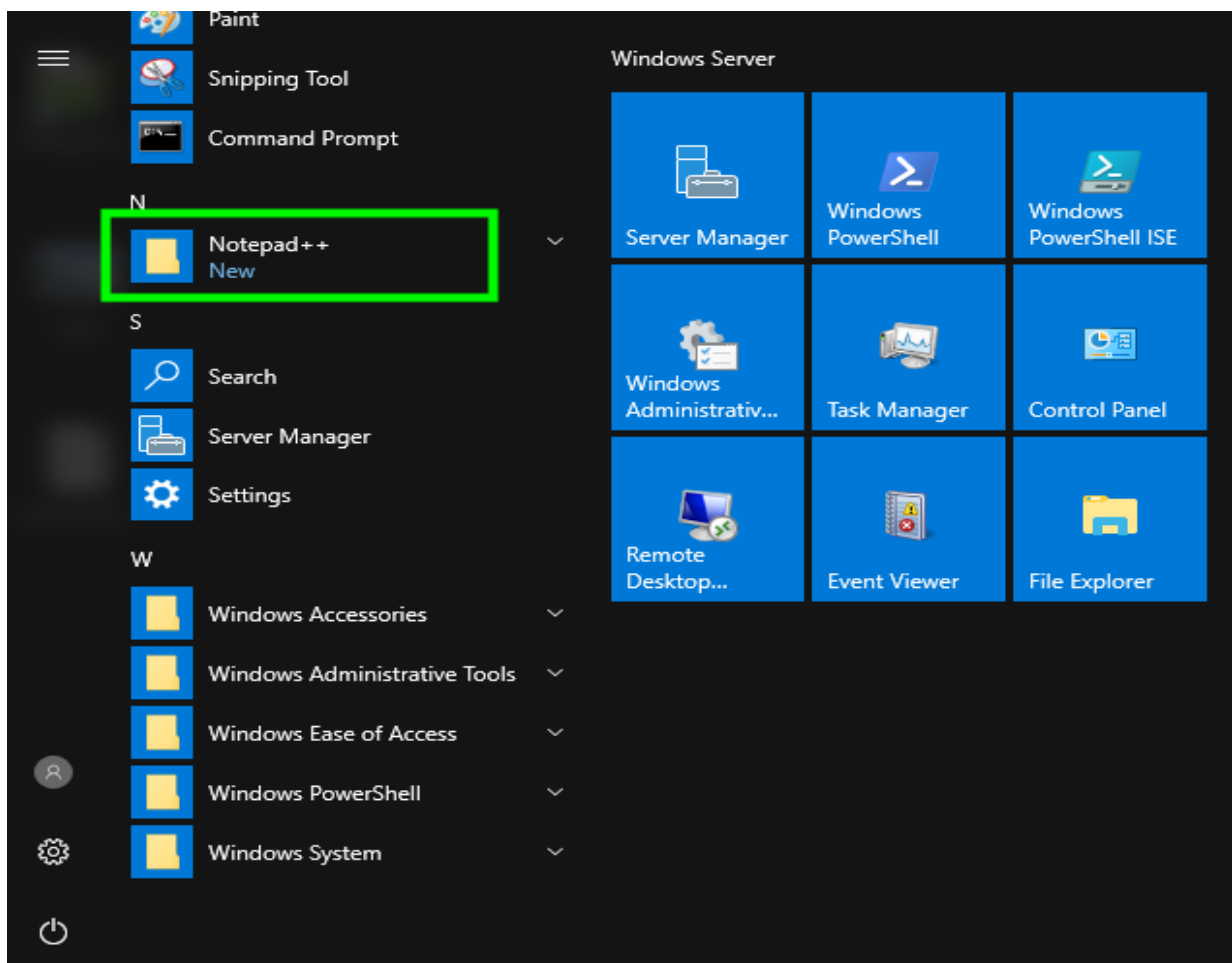
Your IT manager needs you to install software in both the Sales and Accounting departments and she needs you to do this thorough Active Directory. She needs to have Notepad++ available for the Sales department users.

You will need to create a Group Policy attached to the Sales department Organizational Unit. The policy should Assign the Notepad++ software to anyone from the Sales department who logs into the domain.





Demonstrate that you have this working by logging into the Web Server as a member of the Sales group and provide screen captures showing that Notepad++ works for a Sales user.

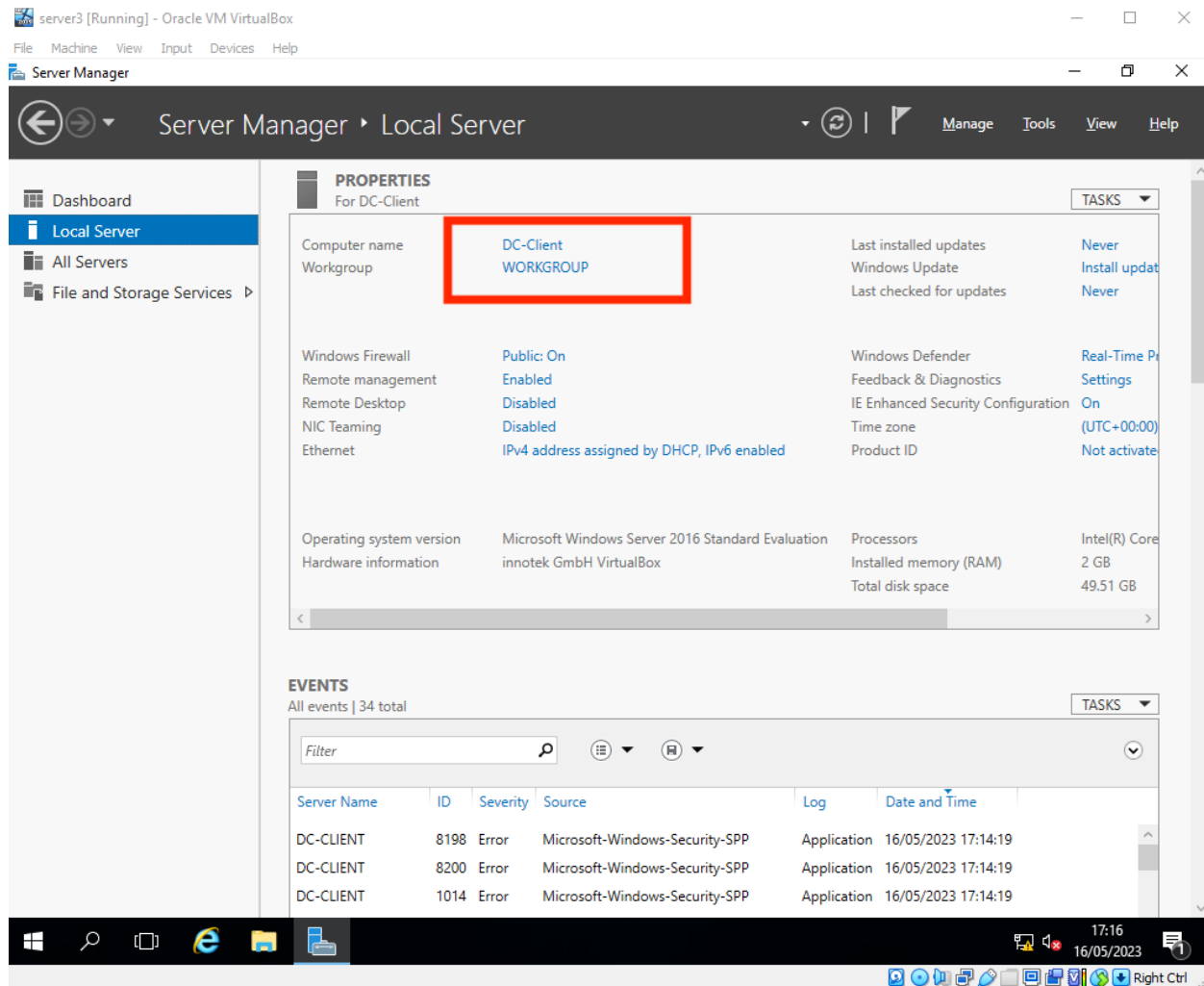




5.) PowerShell scripting

One final challenge task: This will require some research Your supervisor has heard that you have learned about PowerShell scripting and she is eager to see you demonstrate that you can speed up deployments of adding client PCs to the Active Directory domain by using this PowerShell scripting.

She needs you to create an additional virtual machine for this demonstration. You will name this new Windows Server VM with the name DC-Client.



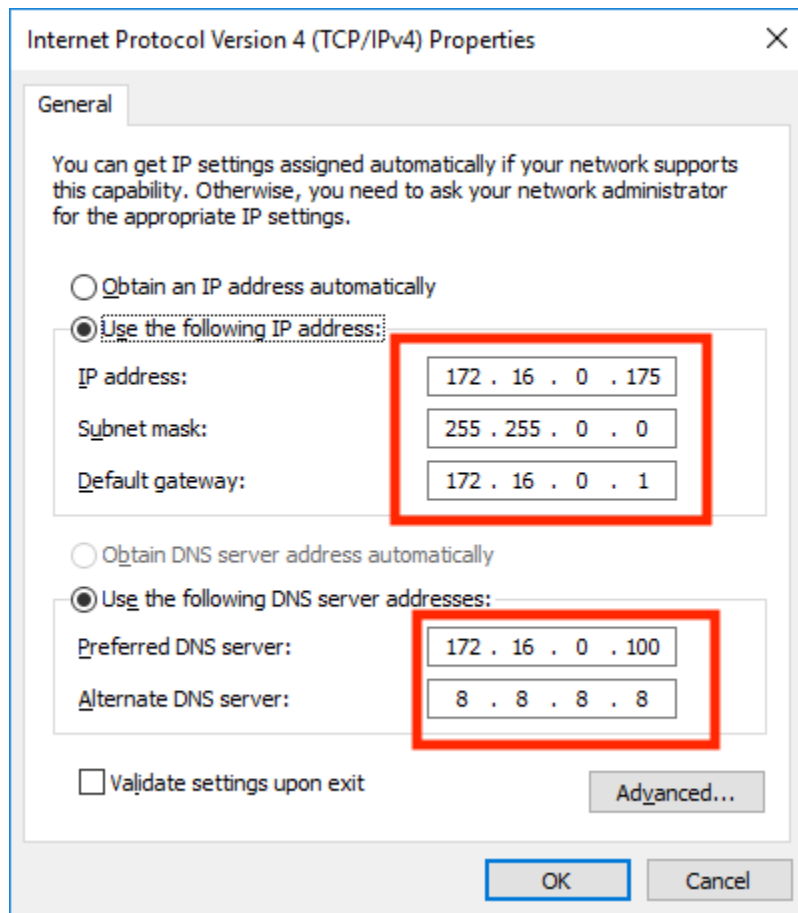
Use the following IP address configuration:

DC-Client address: 172.16.0.175/16 Note: The /16 indicates the subnet mask.

Use 172.16.0.1 as the default gateway.

for the preferred DNS Server address use 172.16.0.100

the alternate DNS Server use 8.8.8.8

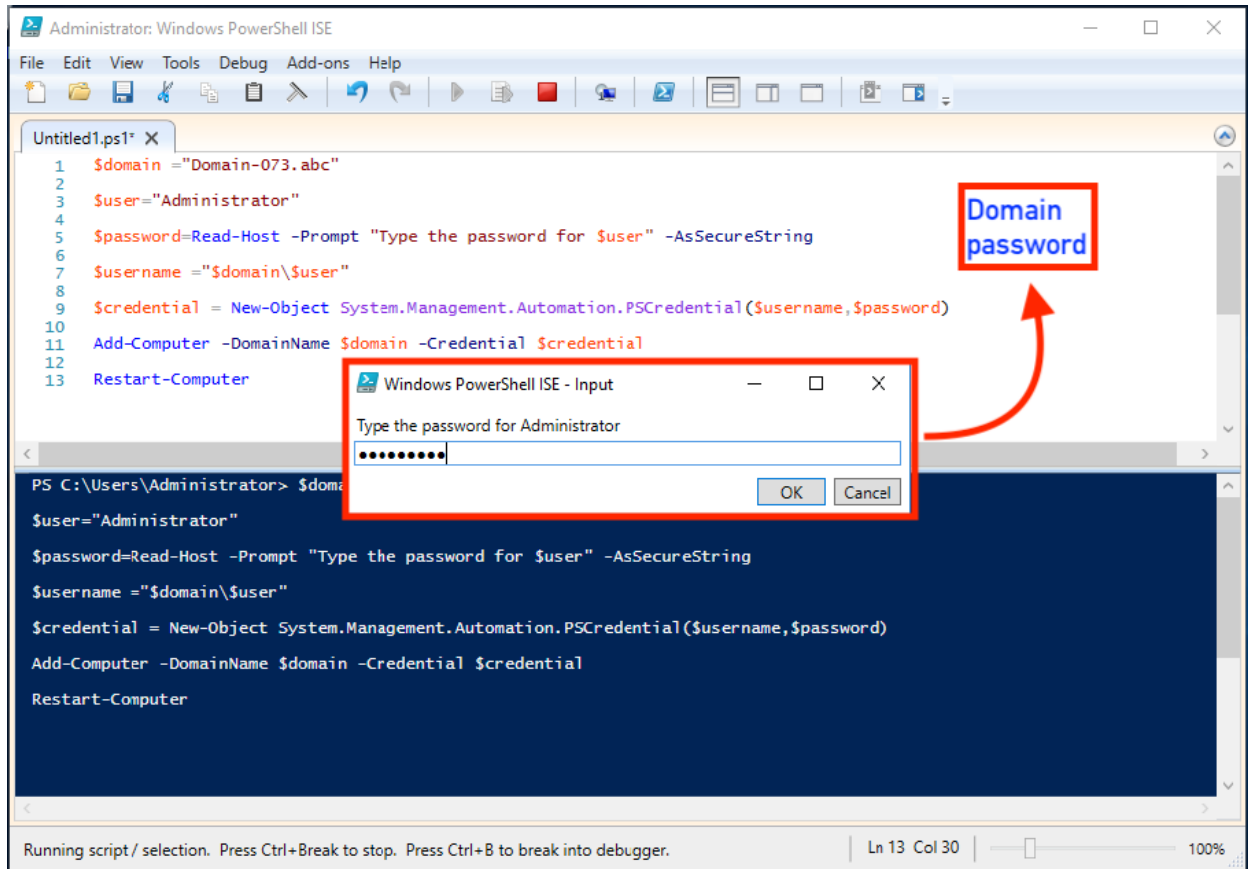


Pinging the VM-Client with the Domain.

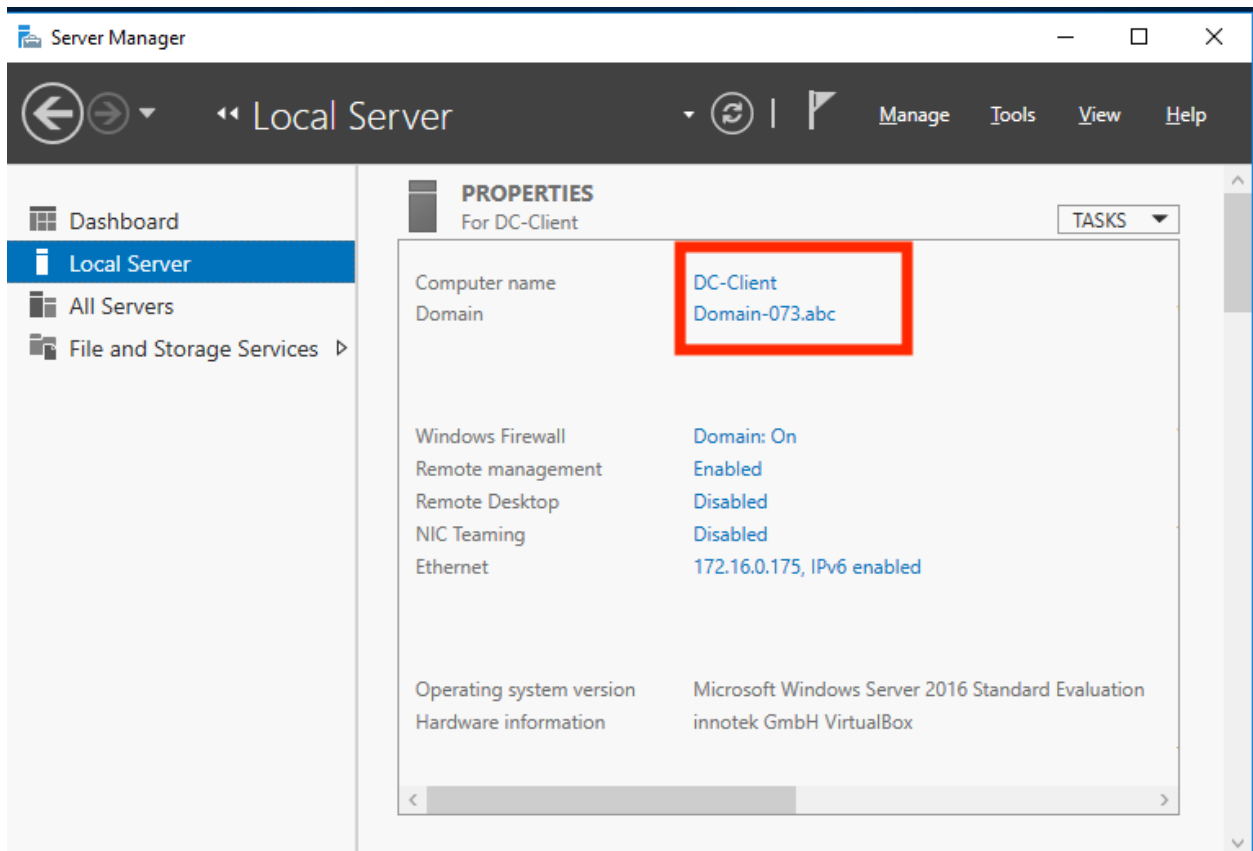
```
Administrator: Command Prompt
C:\Users\Administrato>ping 172.16.0.100
Pinging 172.16.0.100 with 32 bytes of data:
Reply from 172.16.0.100: bytes=32 time<1ms TTL=128
Reply from 172.16.0.100: bytes=32 time<1ms TTL=128
Reply from 172.16.0.100: bytes=32 time<1ms TTL=128
Reply from 172.16.0.100: bytes=32 time<1ms TTL=128

Ping statistics for 172.16.0.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Users\Administrator>
```

Once you have created this new Server VM demonstrate that you can run a PowerShell Script that will add this Server to the domain when you run the script.



Server added to the Domain.



Challenges:

The project was very lucrative in terms of knowledge, the challenges were amazing, but unfortunately, I ran into a lot of problems, not because the challenges were difficult, it's because the virtual machines use a lot of memory and the devices become very slow and you have to reboot virtual machines many times which wastes a lot of time. But I still have to say I enjoyed doing this project.

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