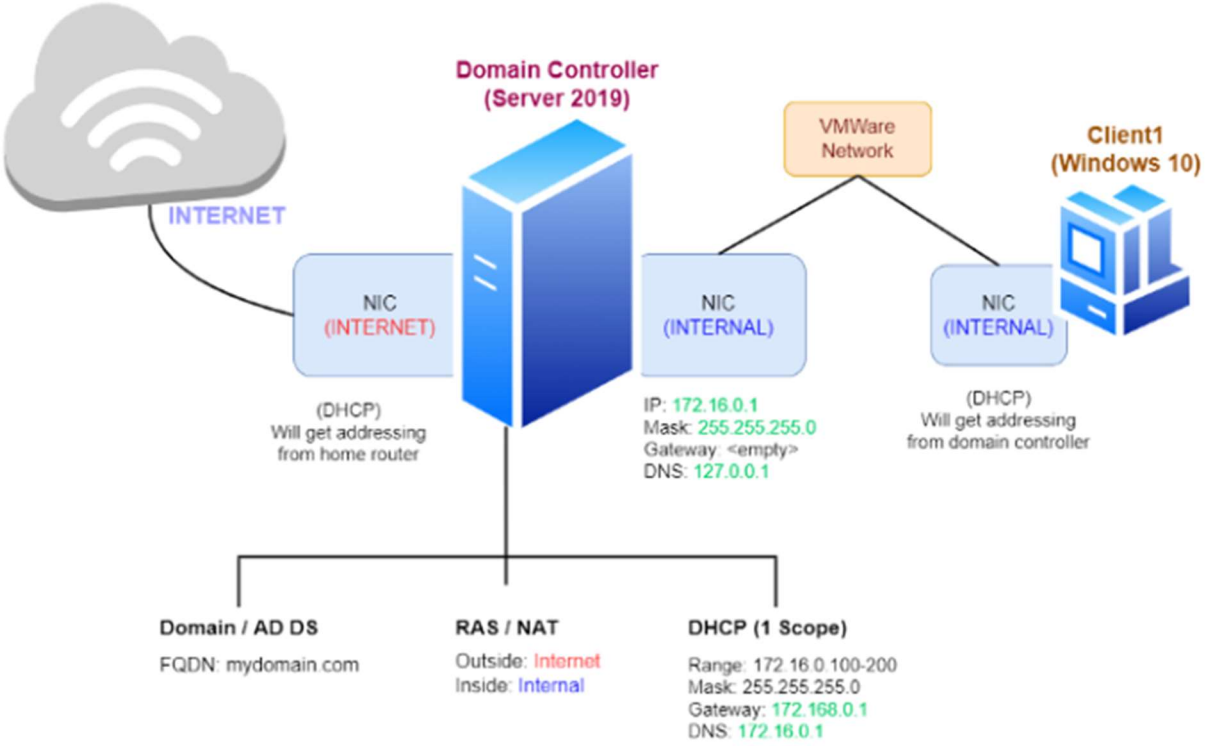
Active Directory Home Lab with PowerShell

I created an Active directory home lab environment in Oracle VM VirtualBox by installing windows 2019 Server and Windows 10 Operating System. I installed Active Directory Domain Services, Remote Access Service / Network Address Translation (RAS/NAT) and DHCP services in 2019 Server. Along with that I have created 1000 users in Active Directory by using PowerShell scripts. ‘

I also connected the installed virtual windows 10 machine to the domain which can be seen in Active Directory.

This is an example of a mini-corporate environment in which all created users can log in from their machine to the corporate domain and get connected to the network. This is how we are given unique email addresses by our university and company.

Network Diagram:



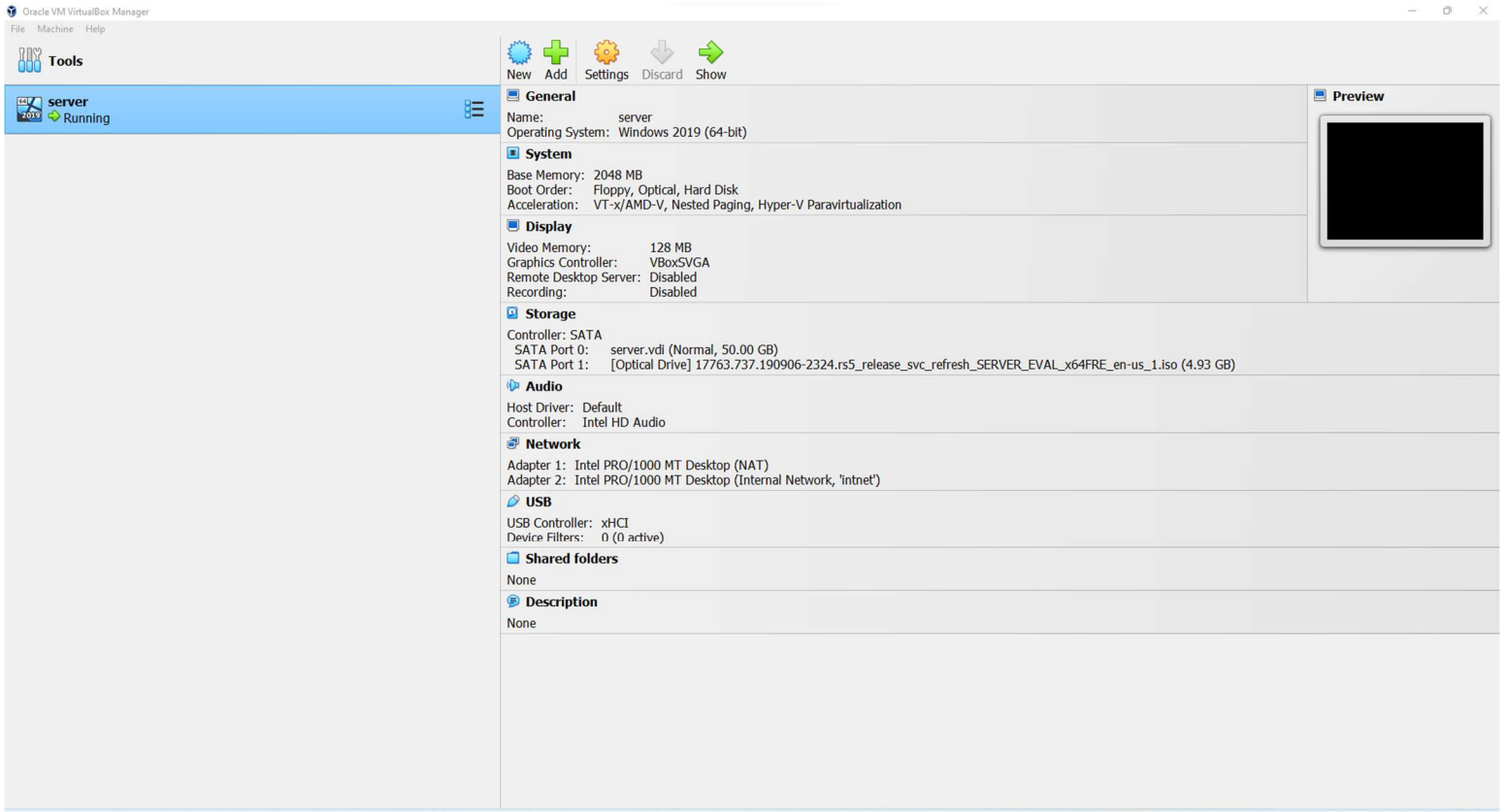
Requirements to do the project:

1.Orcale VirtualBox

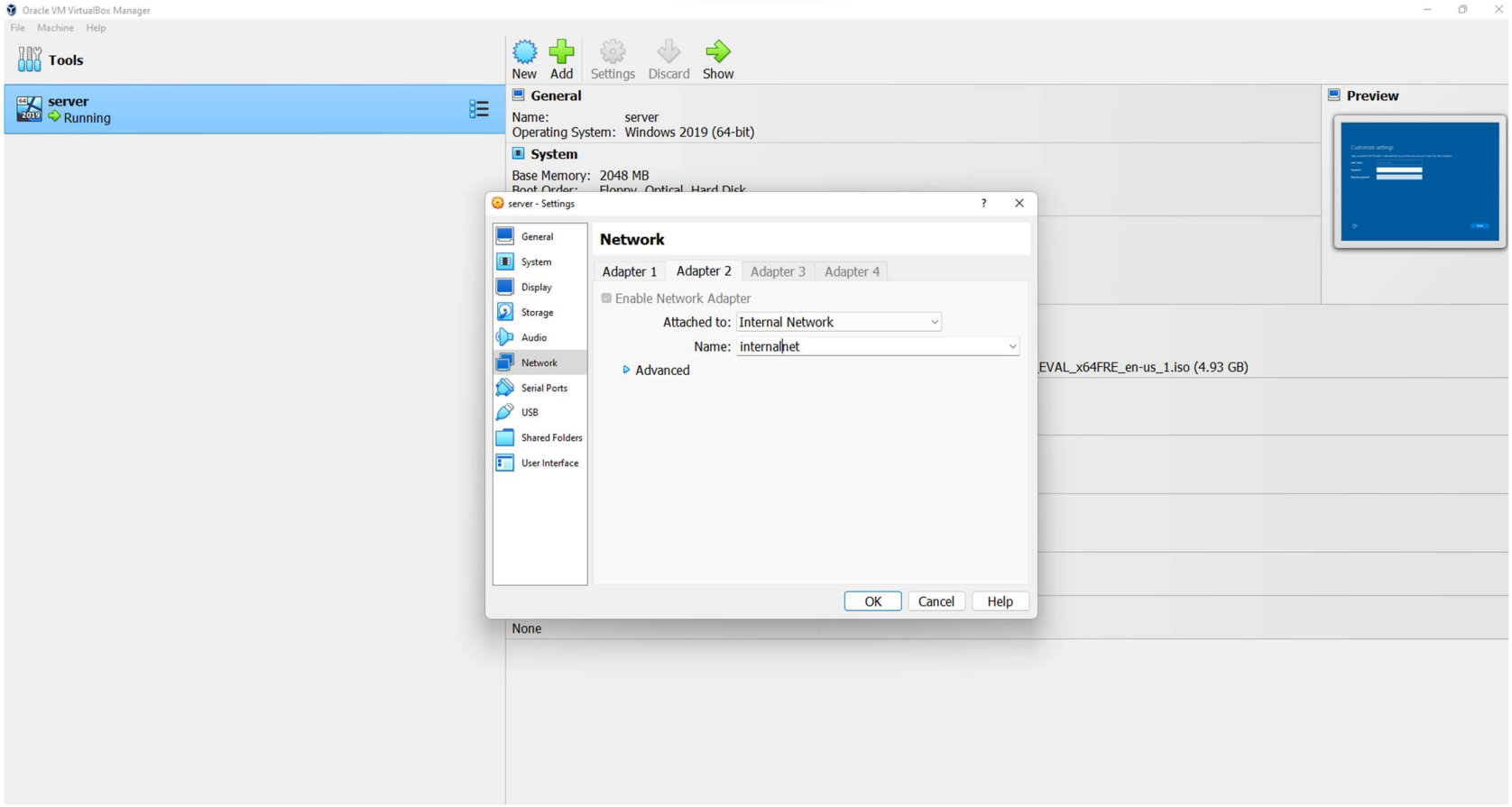
2. Server 2019 ISO

3. Windows 10 ISO

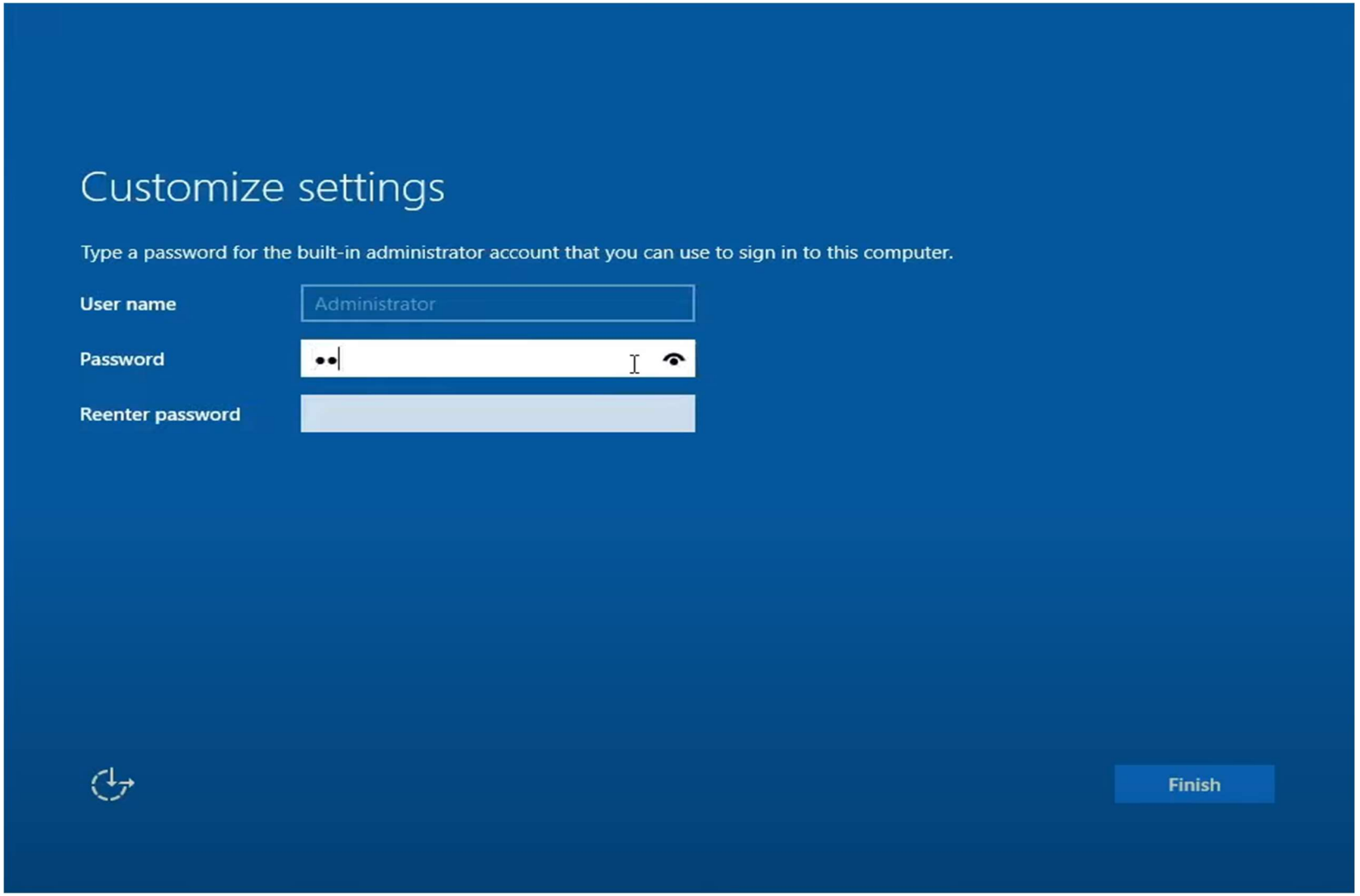
Install Windows server 2019 virtual machine which will be our domain controller

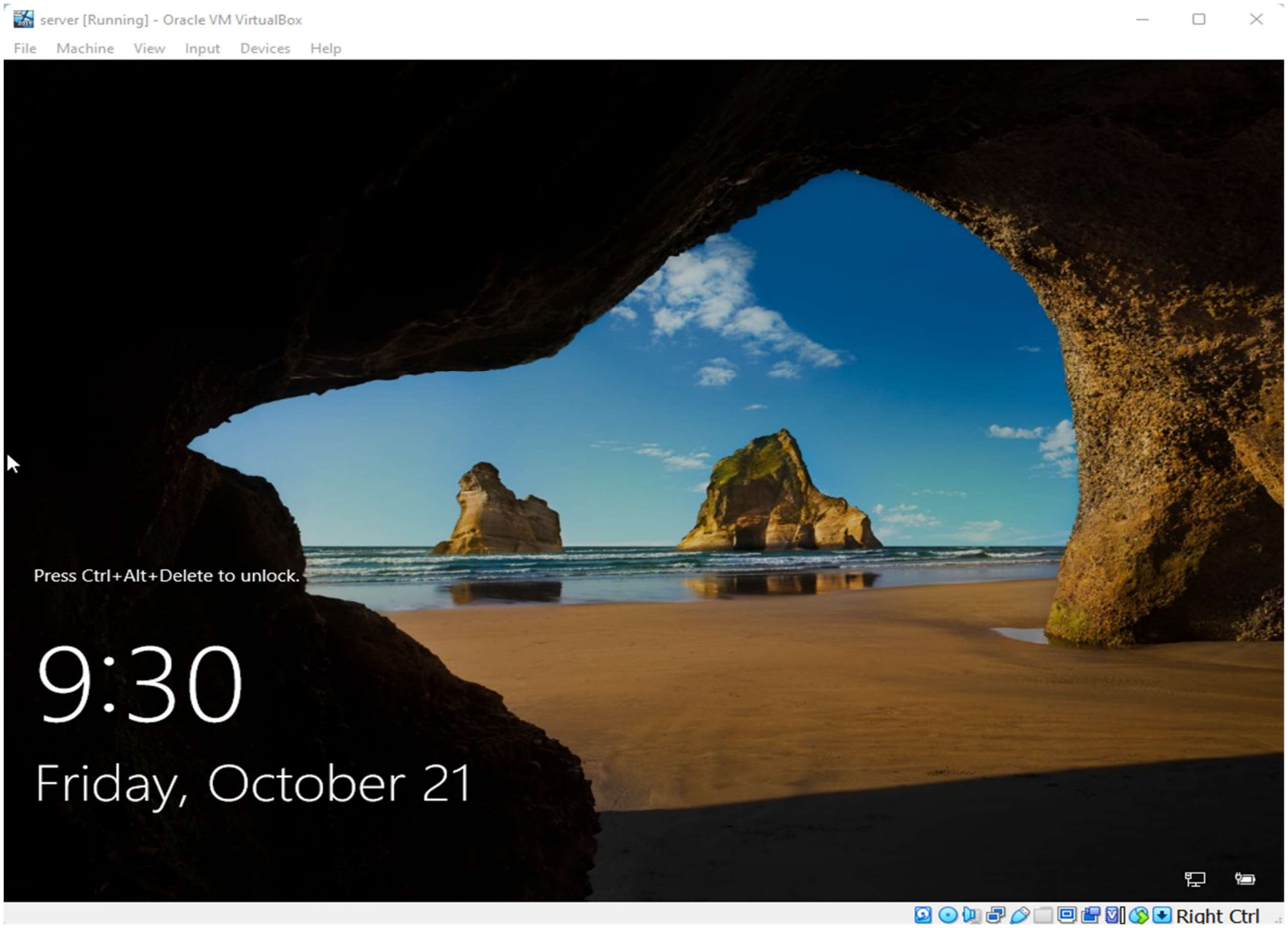


Add another Network Adapter to the machine

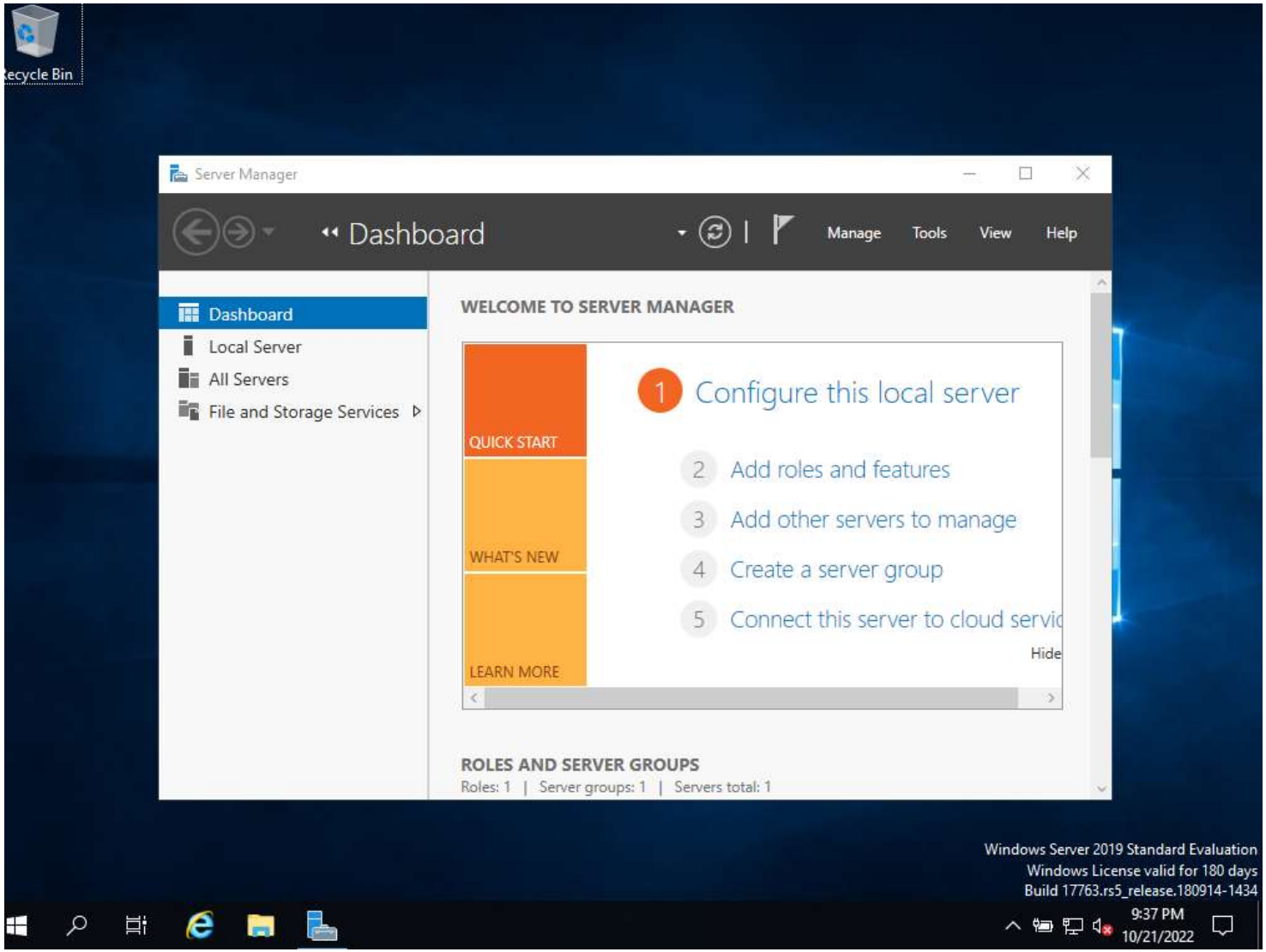


Create an administrator account and type a strong password

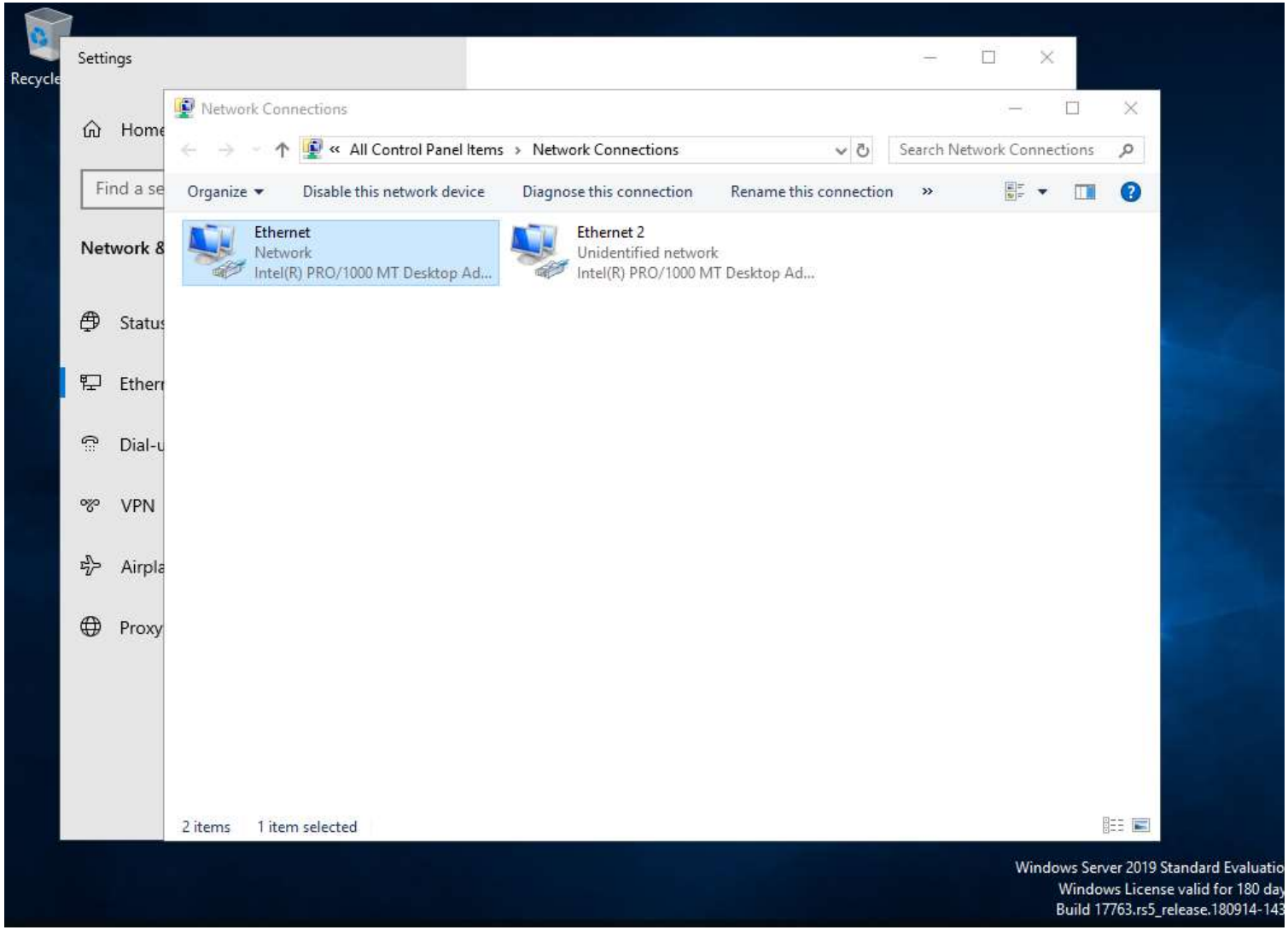



server [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Press Ctrl+Alt+Delete to unlock.
9:30
Friday, October 21
Right Ctrl

The installed 2019 Server looks like this

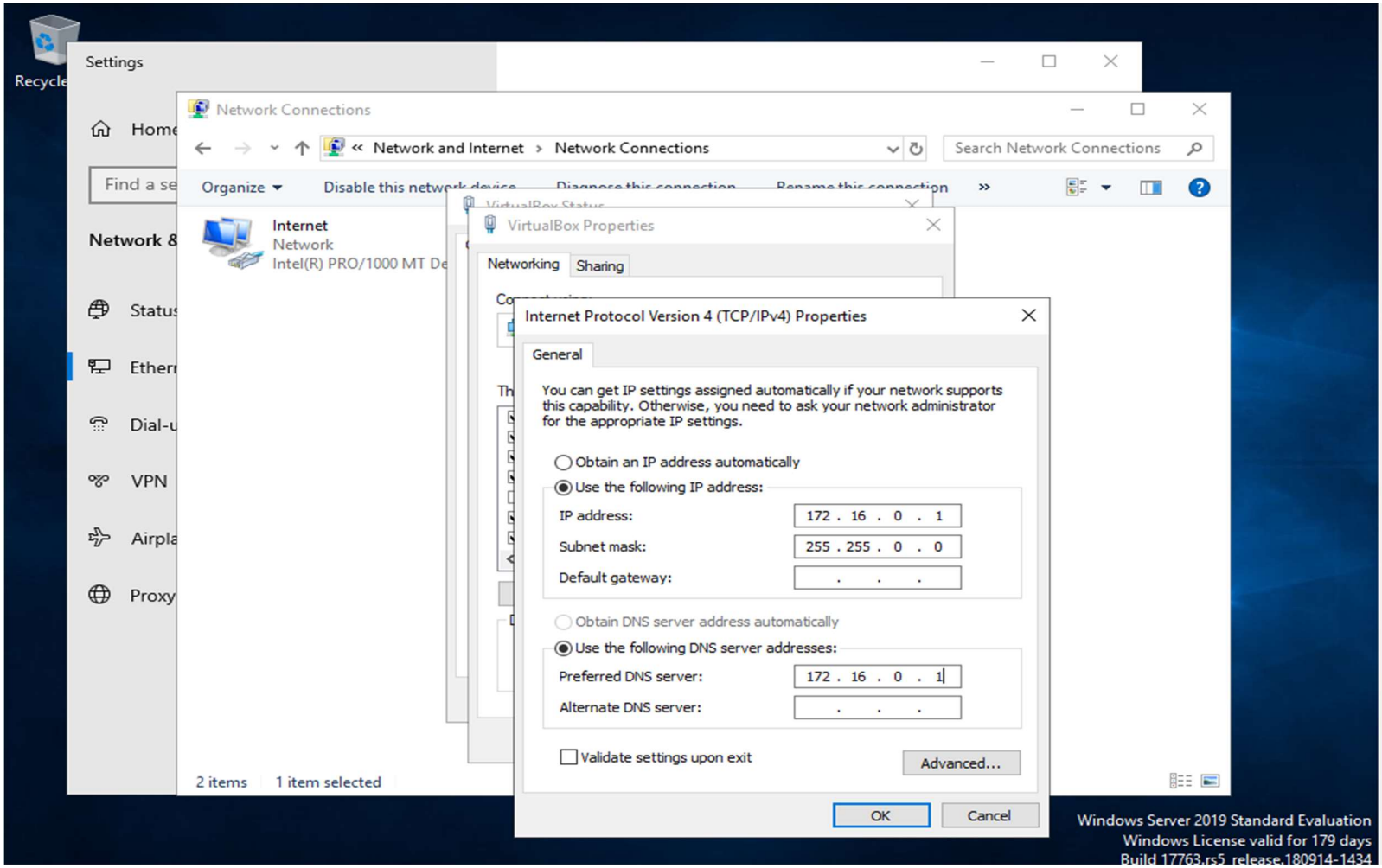


Give two different names for the Network Adapters

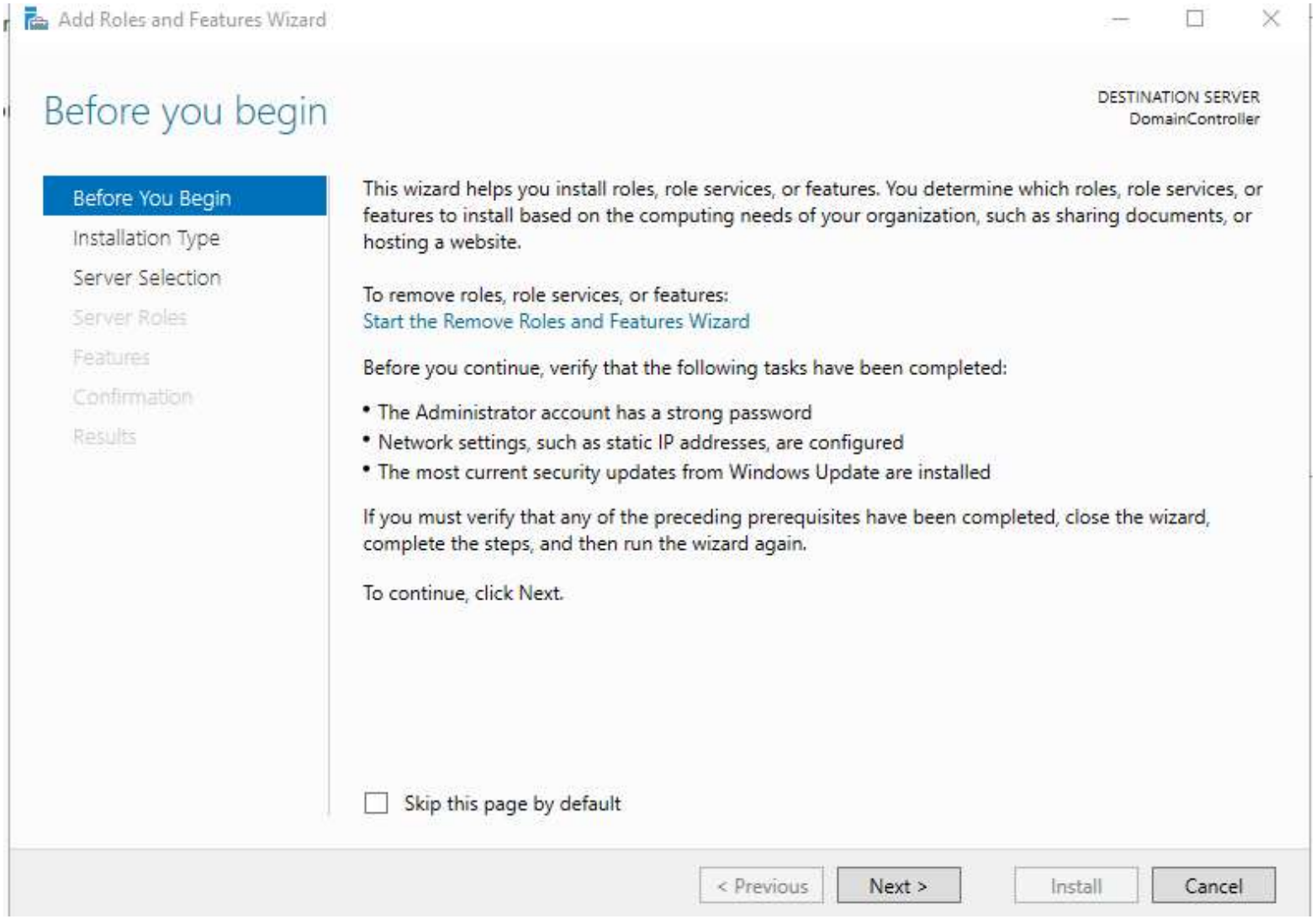


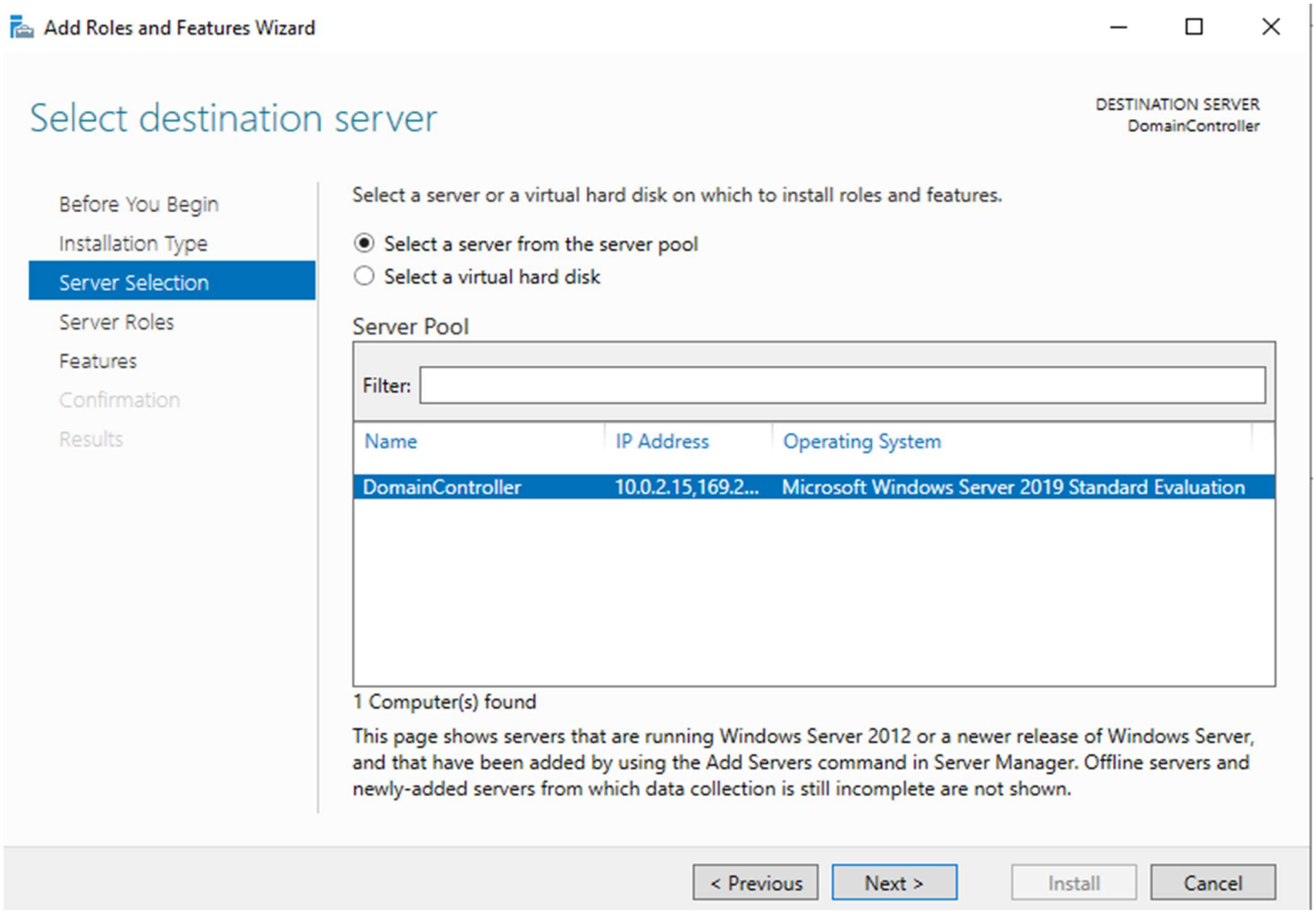
Assign the Ip address that we have in our diagram to Ethernet2 by going into the settings.

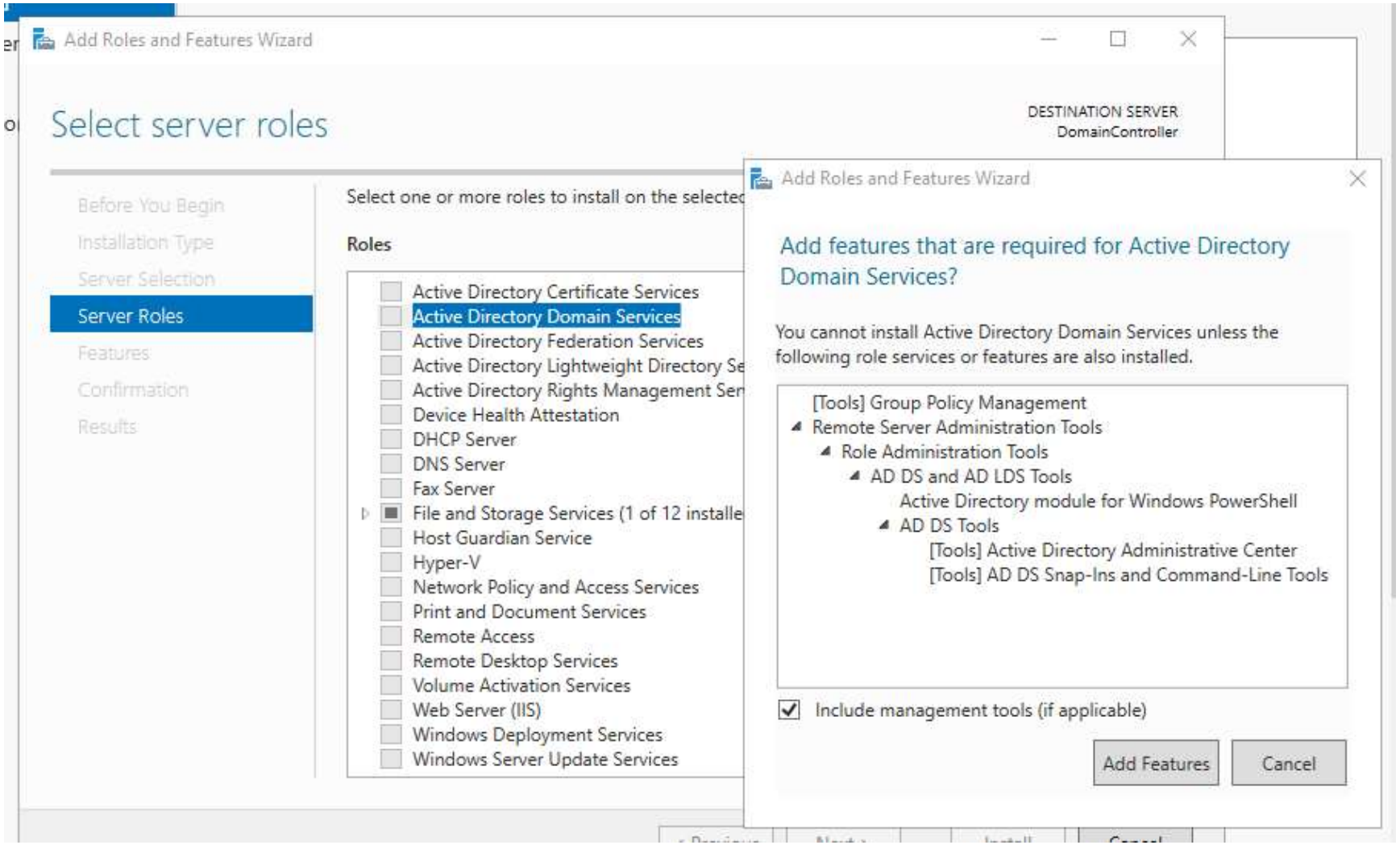
This is actually the gateway used by the virtual windows 10 to get connected to the domain

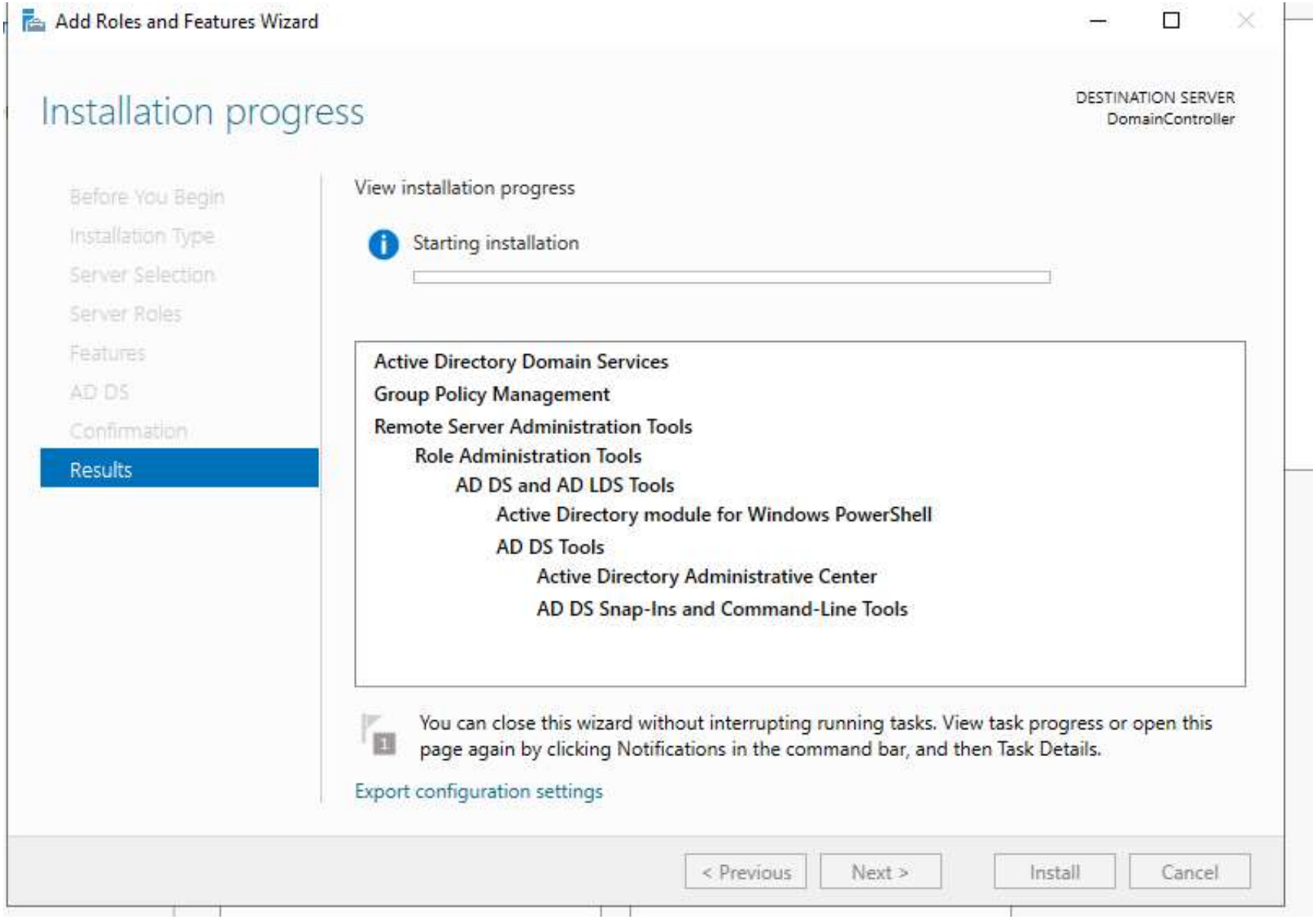


Install the Active Directory Domain service in the Server

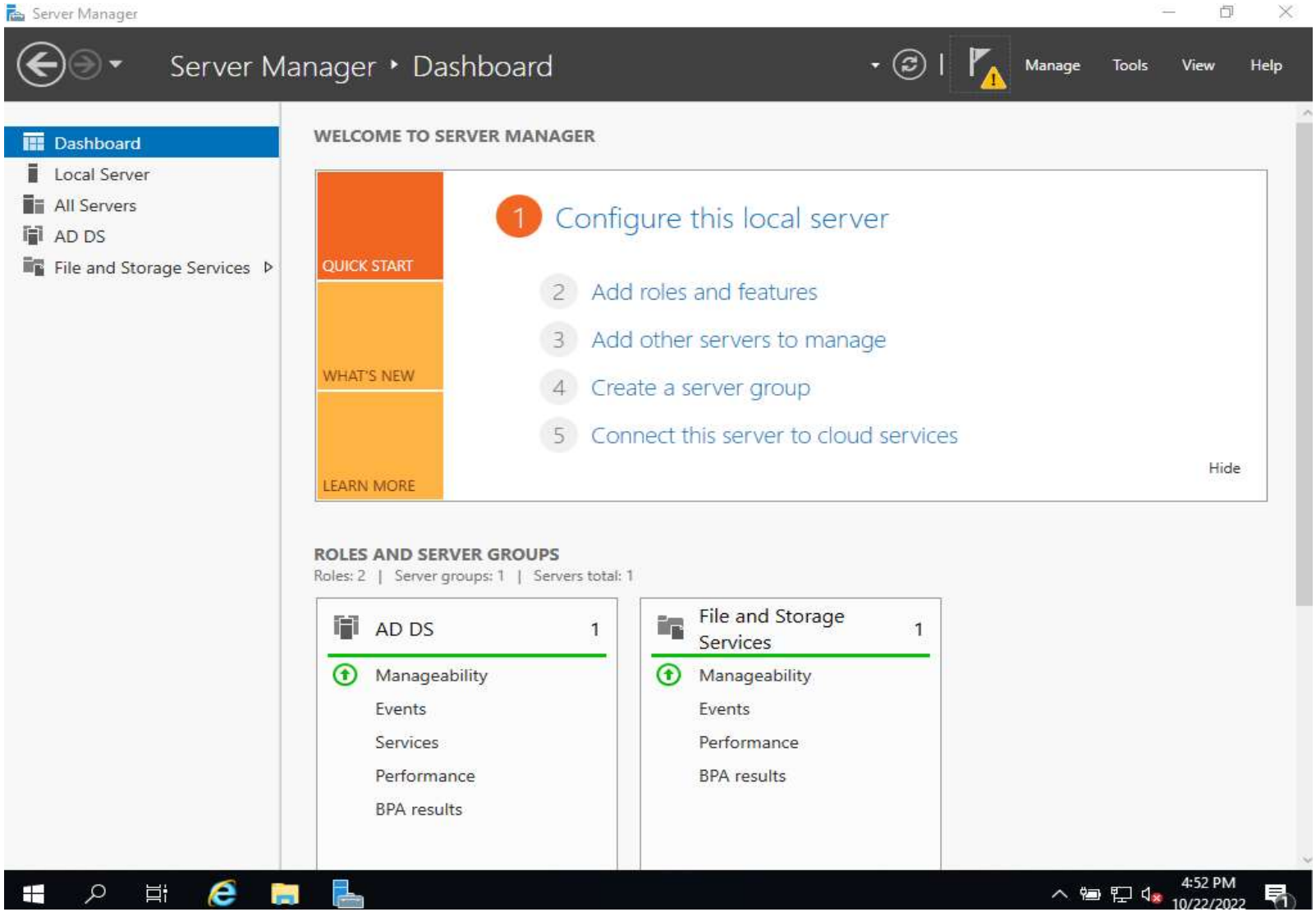



Add Roles and Features Wizard
Select destination server
DESTINATION SERVER
DomainController
Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results
Select a server or a virtual hard disk on which to install roles and features.
Select a server from the server pool
Select a virtual hard disk
Server Pool
Filter:
Name
IP Address
Operating System
DomainController
10.0.2.15,169.2...
Microsoft Windows Server 2019 Standard Evaluation
1 Computer(s) found
This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.
< Previous
Next >
Install
Cancel

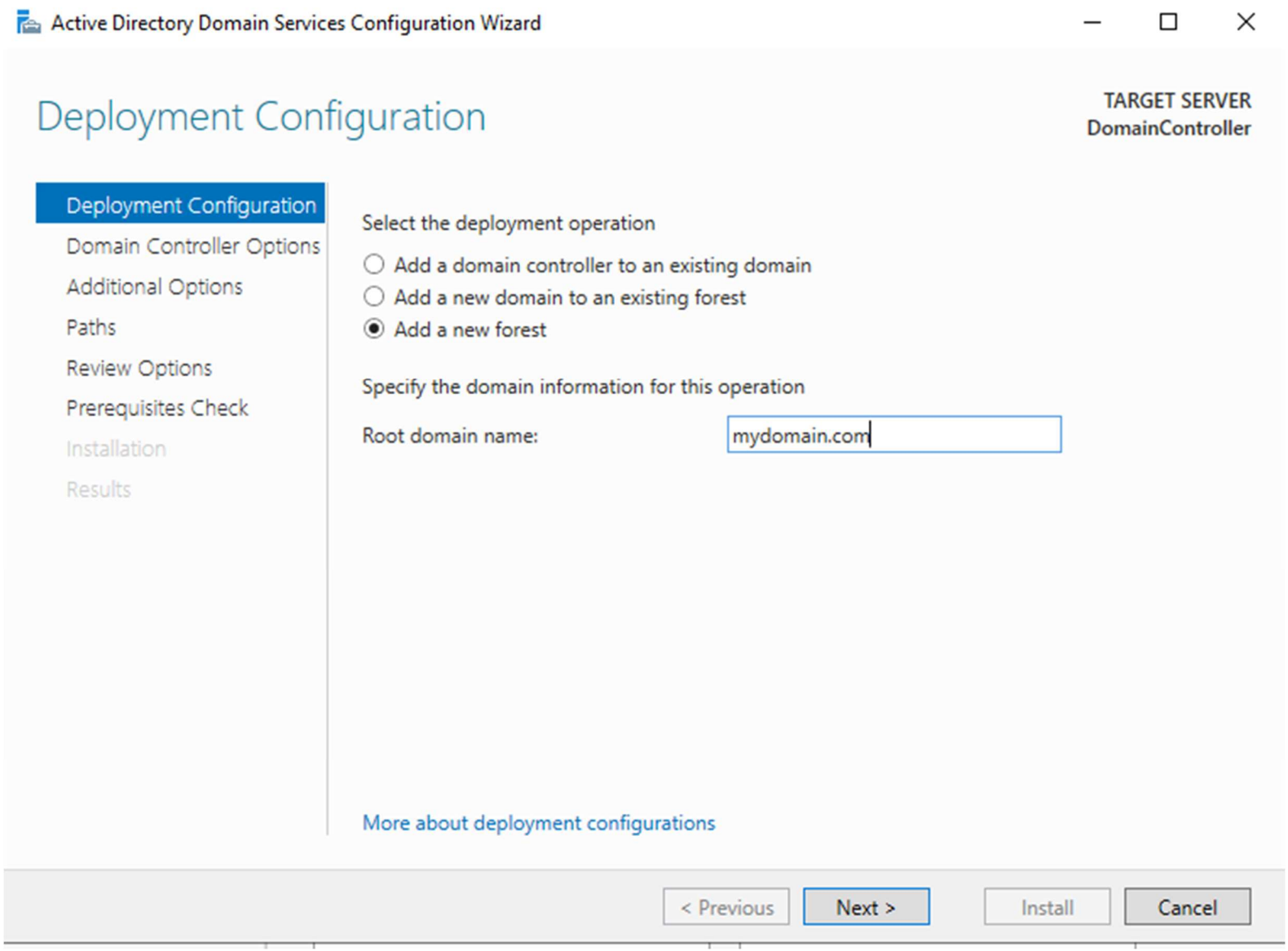

Add Roles and Features Wizard
Select server roles
DESTINATION SERVER
DomainController
Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results
Select one or more roles to install on the selected
Roles
Active Directory Certificate Services
Active Directory Domain Services
Active Directory Federation Services
Active Directory Lightweight Directory Se
Active Directory Rights Management Ser
Device Health Attestation
DHCP Server
DNS Server
Fax Server
File and Storage Services (1 of 12 installe
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
Add Roles and Features Wizard
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
Include management tools (if applicable)
Add Features
Cancel


Add Roles and Features Wizard
Installation progress
DESTINATION SERVER
DomainController
Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results
View installation progress
Starting installation
Active Directory Domain Services
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
Active Directory Administrative Center
AD DS Snap-Ins and Command-Line Tools
You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.
Export configuration settings
< Previous
Next >
Install
Cancel

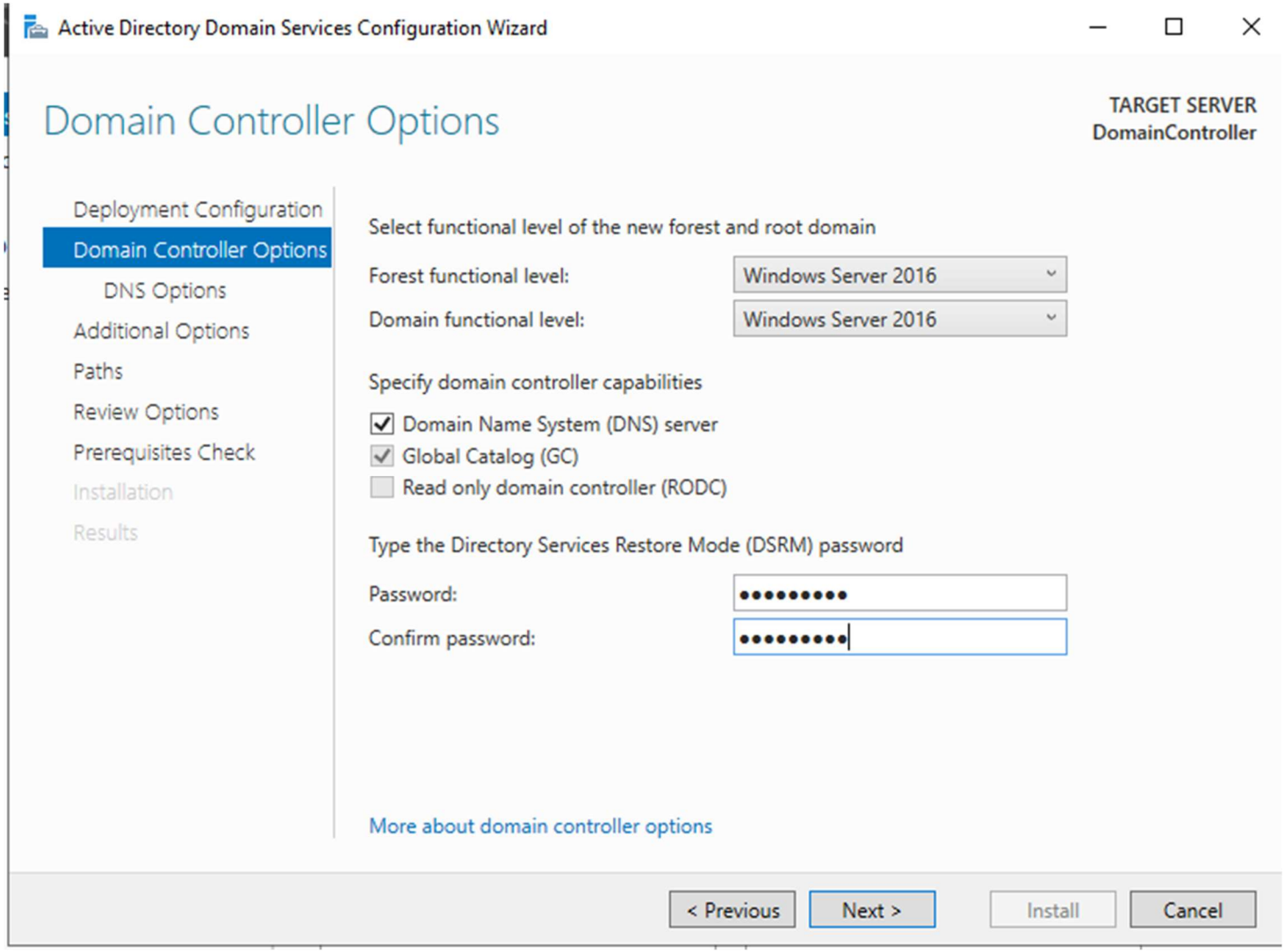
ADDS is installed in the server



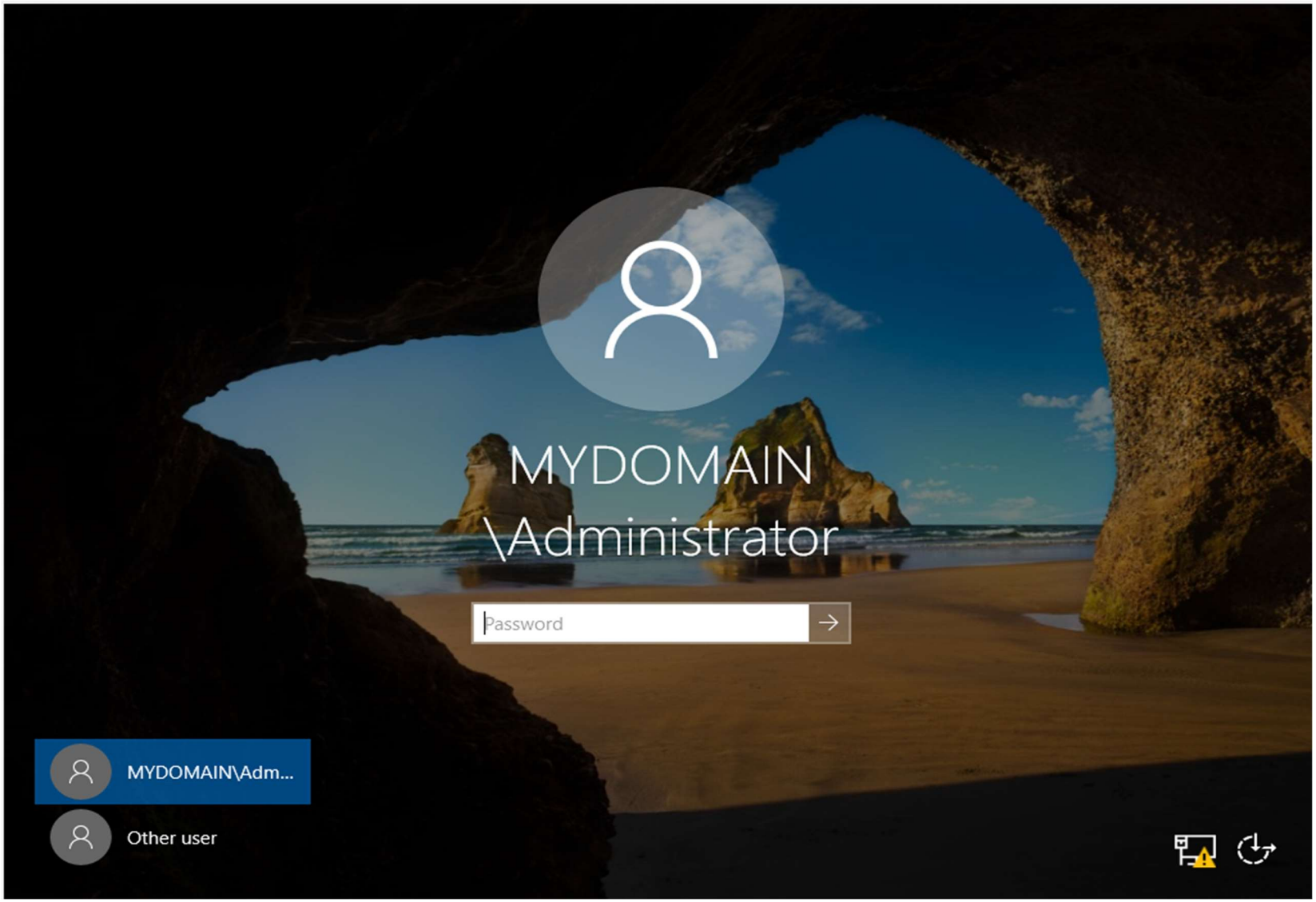
Provide customized domain name

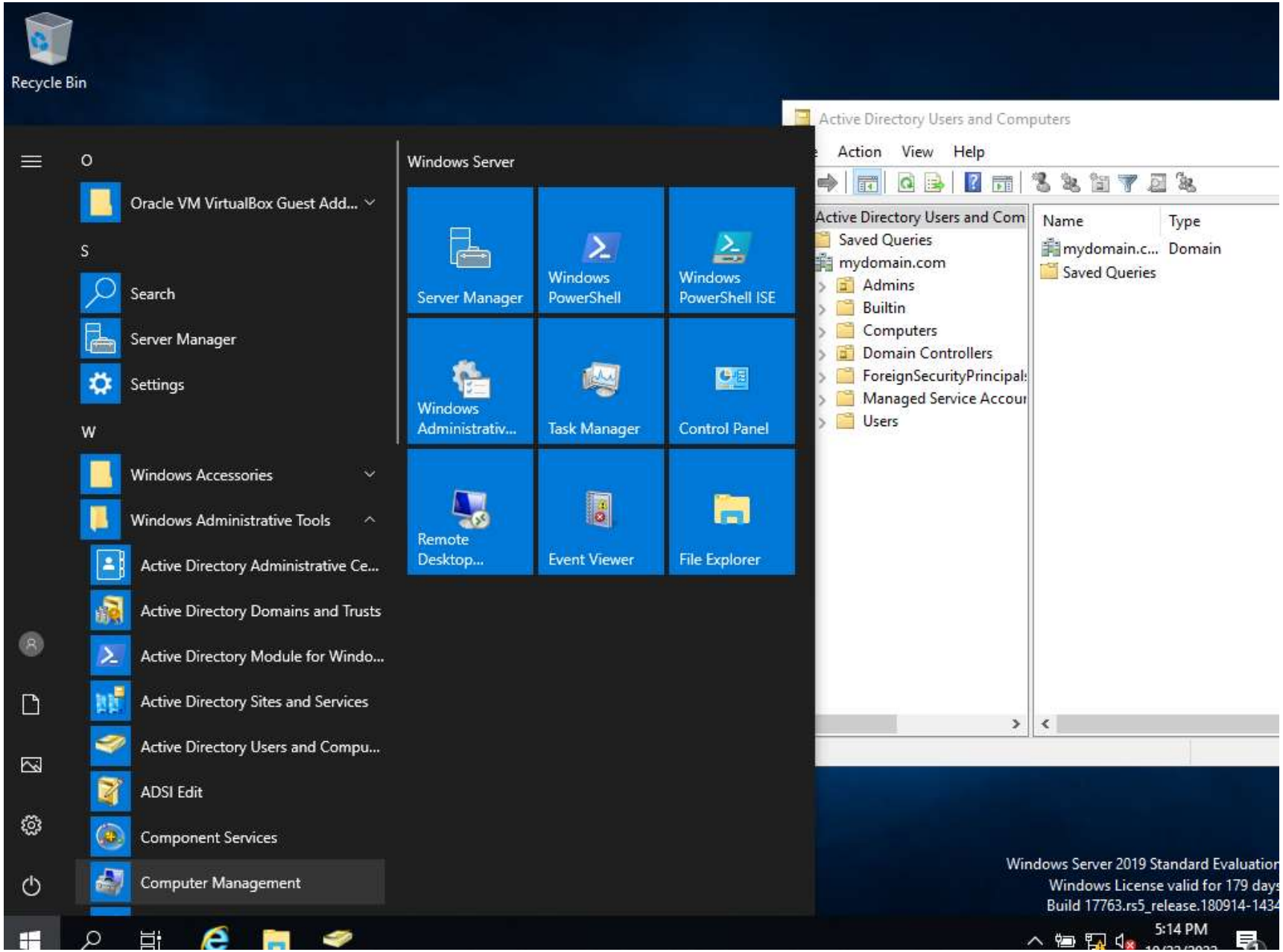


Create a strong password

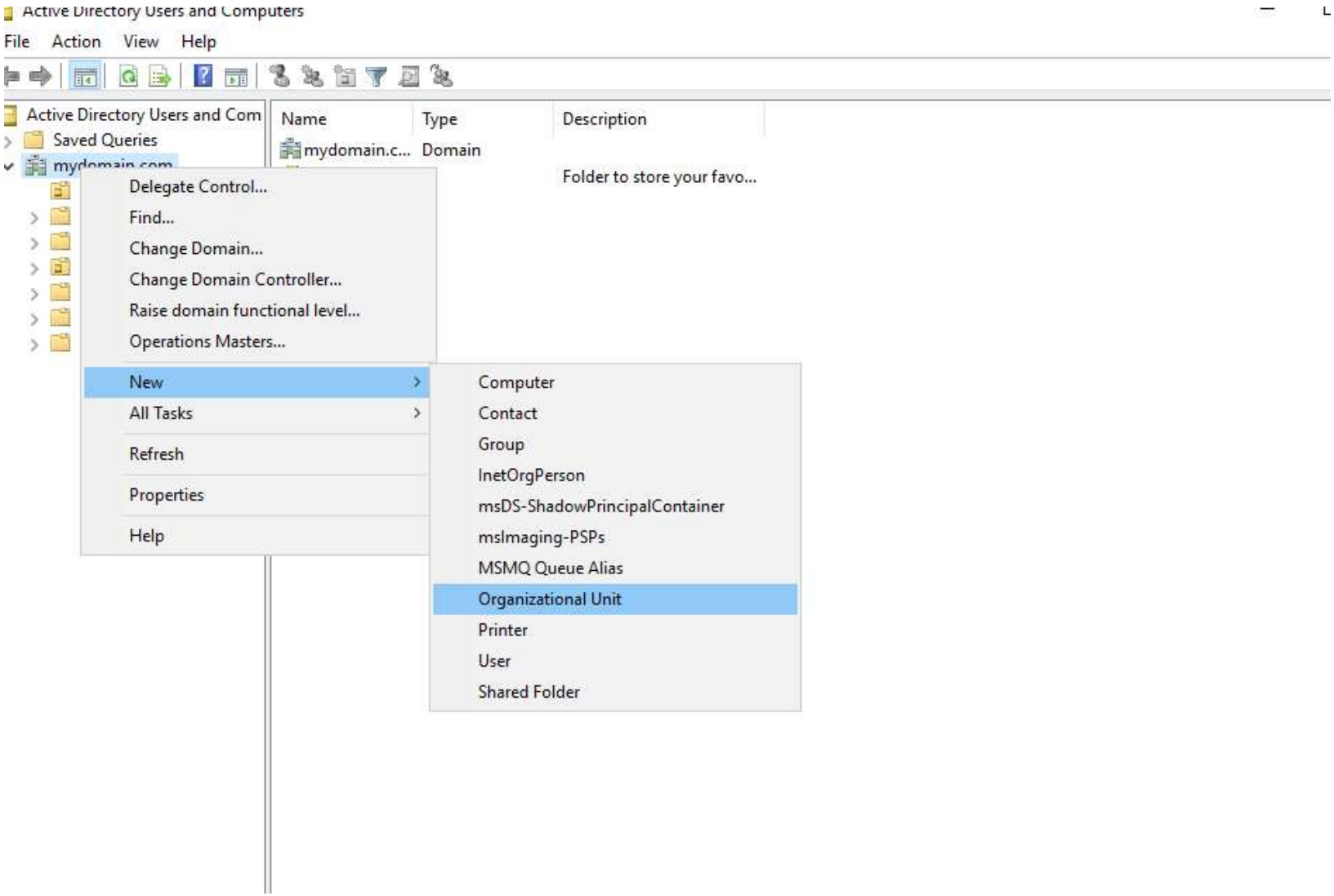


Login with built-in admin account and create another dedicated domain admin account

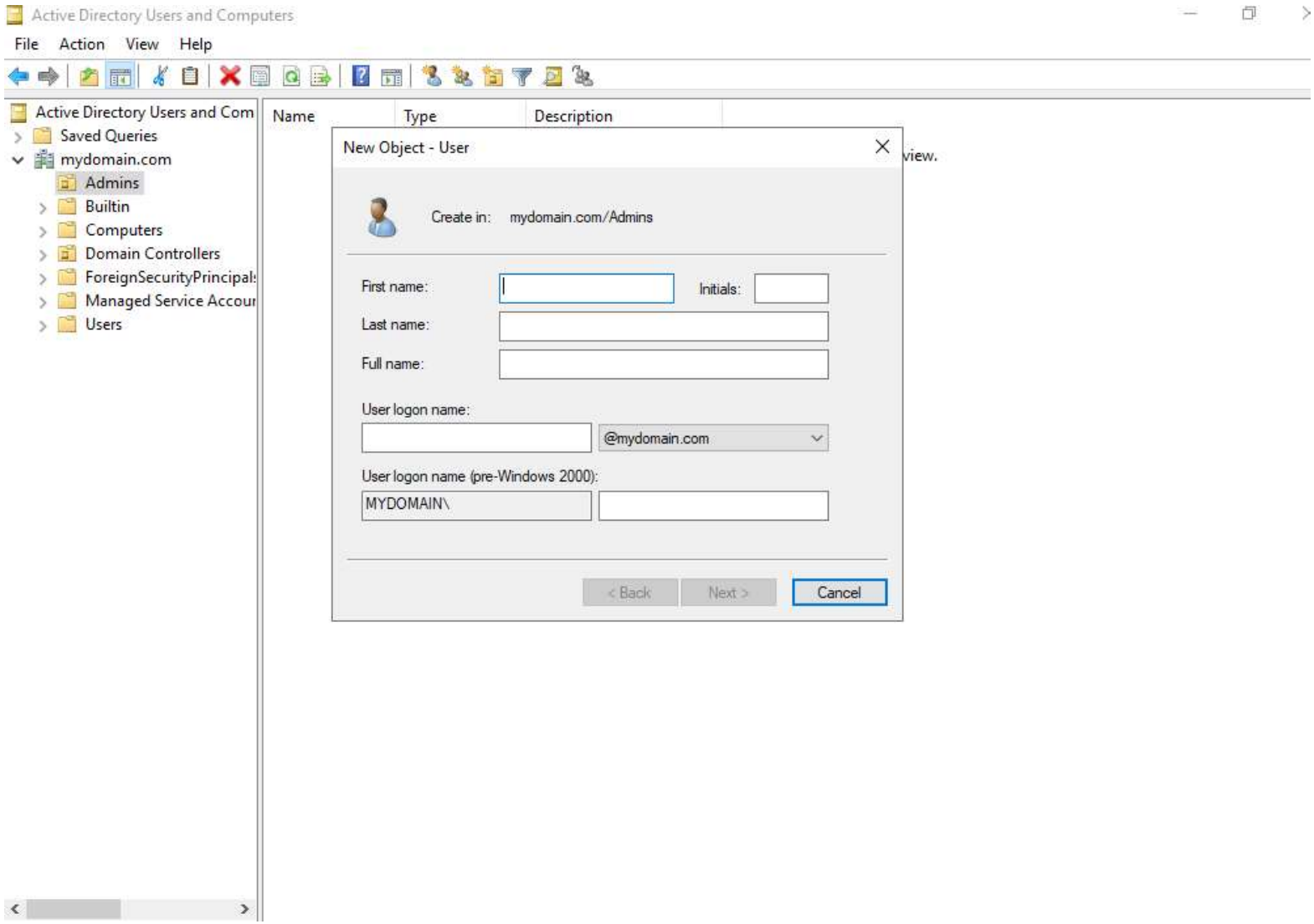



Recycle Bin
O
Oracle VM VirtualBox Guest Add...
S
Search
Server Manager
Settings
W
Windows Accessories
Windows Administrative Tools
Active Directory Administrative Ce...
Active Directory Domains and Trusts
Active Directory Module for Windo...
Active Directory Sites and Services
Active Directory Users and Compu...
ADSI Edit
Component Services
Computer Management
Windows Server
Server Manager
Windows PowerShell
Windows PowerShell ISE
Windows Administrativ...
Task Manager
Control Panel
Remote Desktop...
Event Viewer
File Explorer
Active Directory Users and Computers
Action View Help
Active Directory Users and Com
Saved Queries
mydomain.com
Admins
Builtin
Computers
Domain Controllers
ForeignSecurityPrincipal:
Managed Service Accou
Users
Name
Type
mydomain.c...
Domain
Saved Queries
Windows Server 2019 Standard Evaluation
Windows License valid for 179 days
Build 17763.rs5_release.180914-1434
5:14 PM

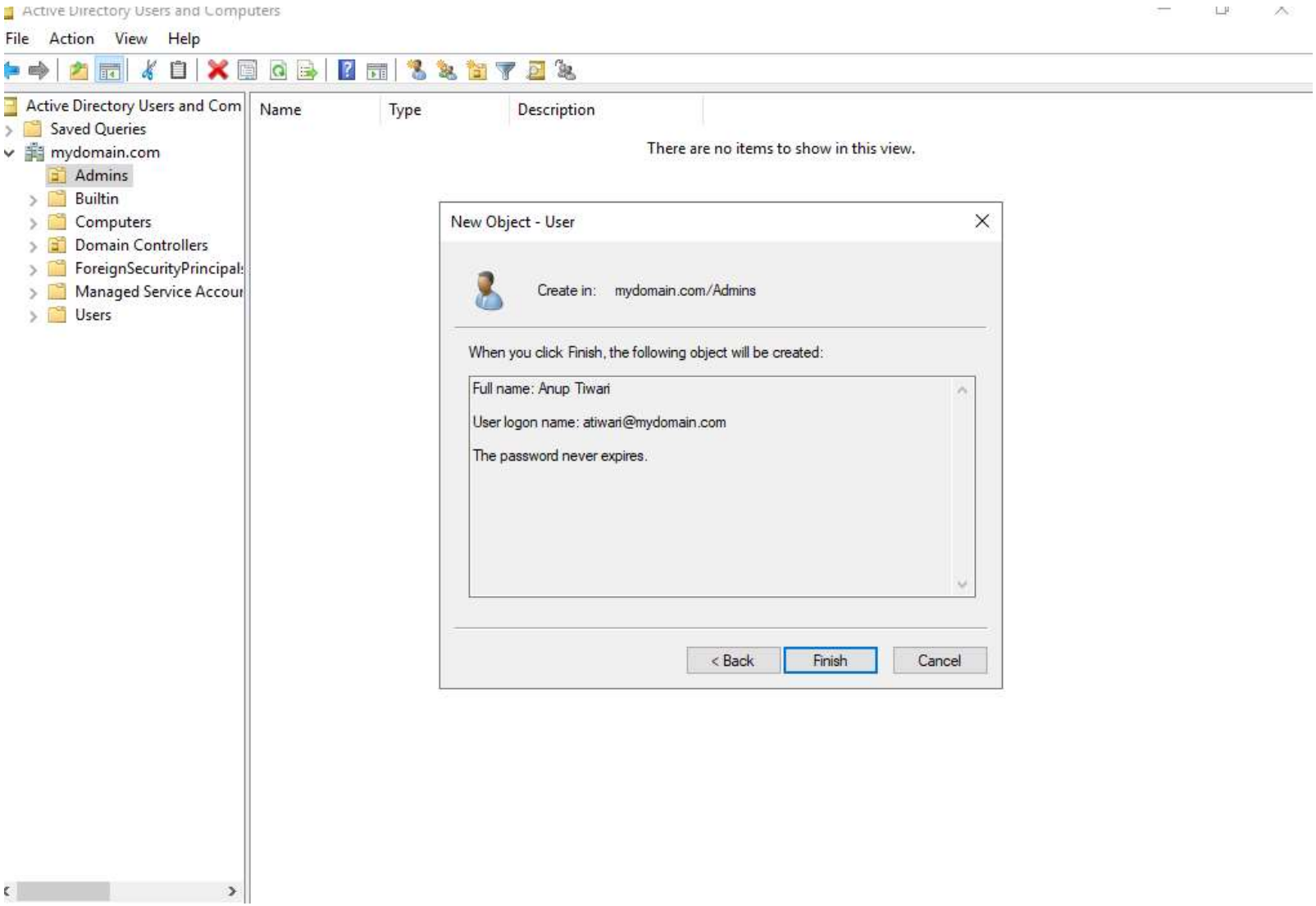
Create a new Organizational Unit (Admins)

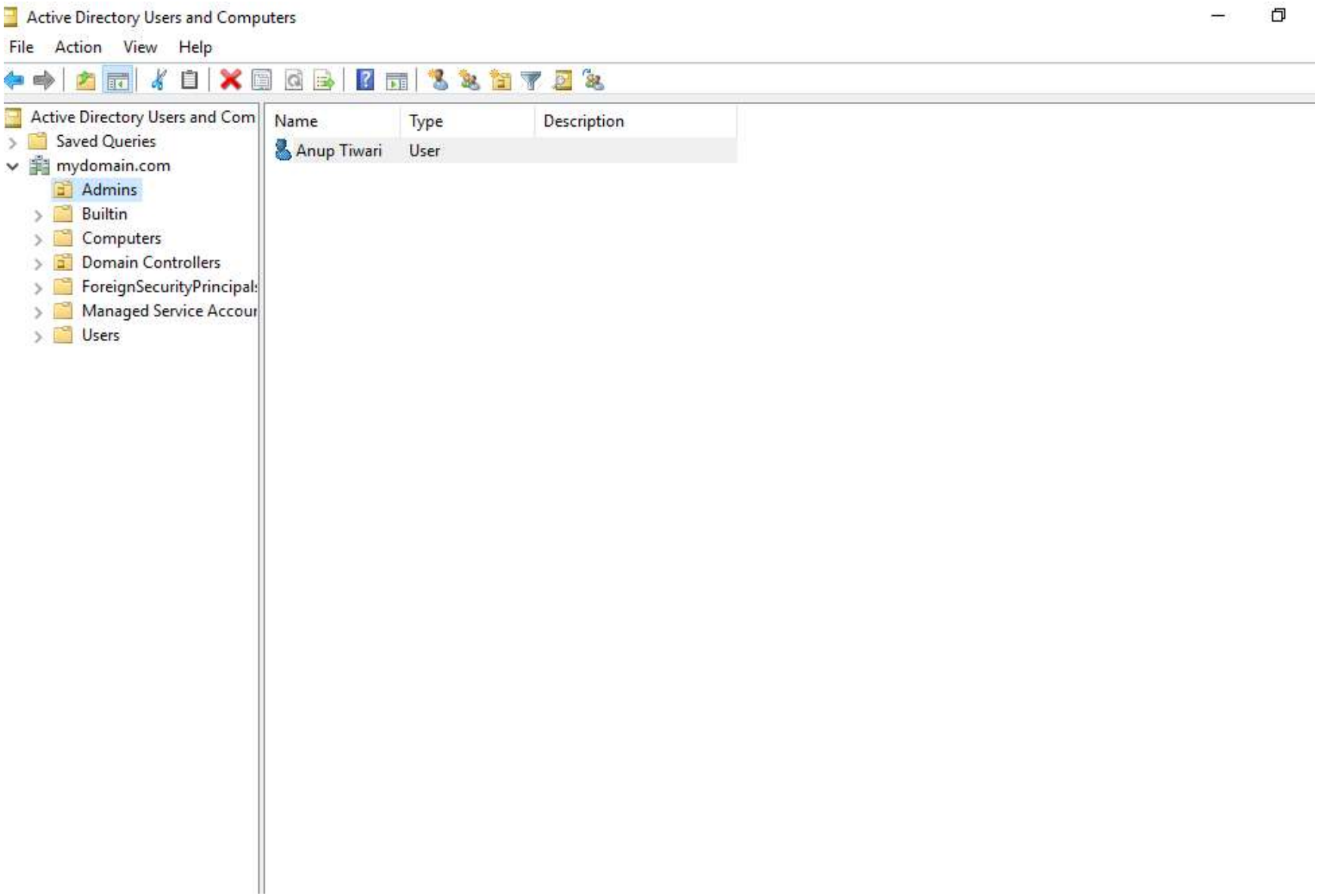


Create a new user account

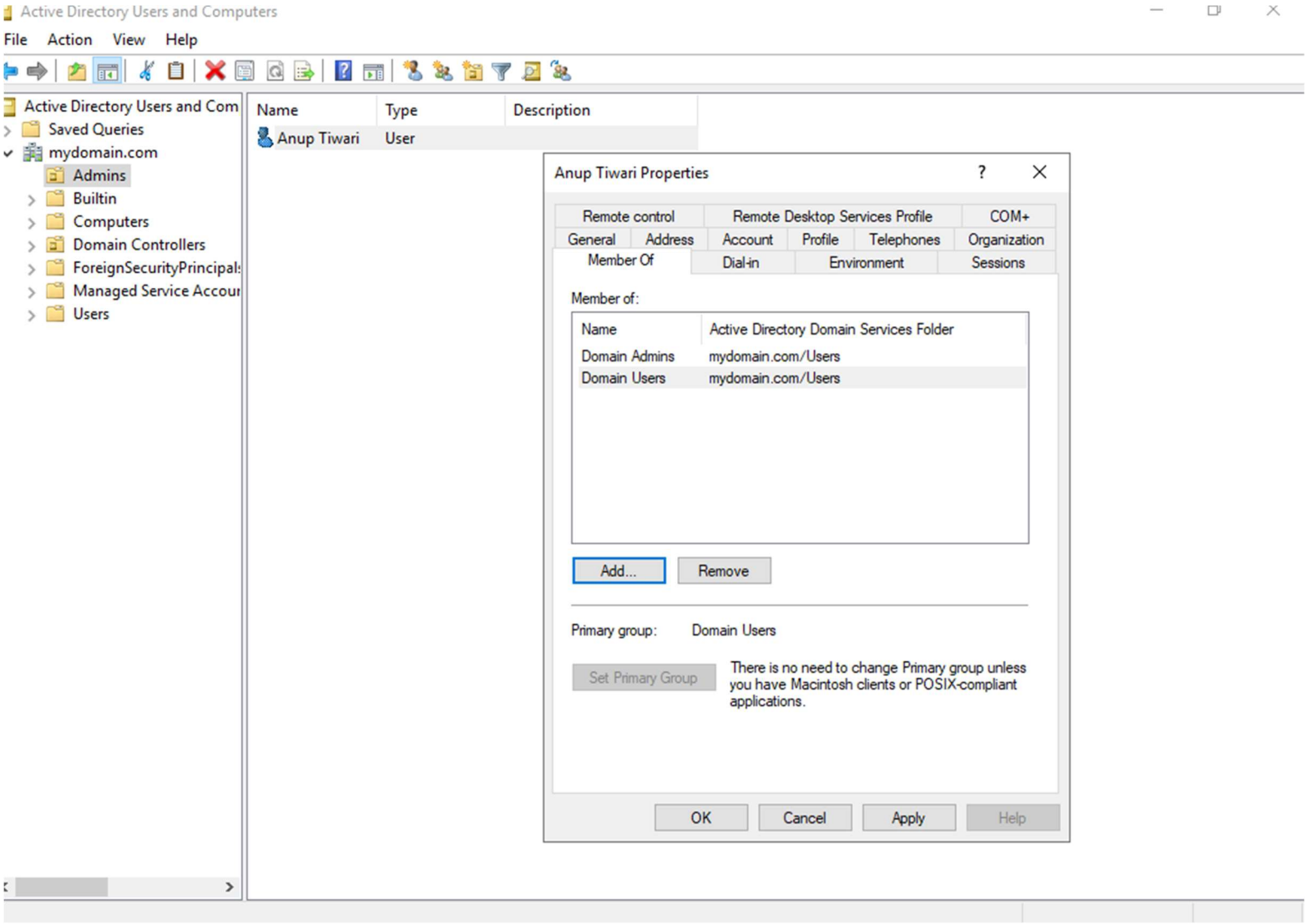


A new user is created with my own name

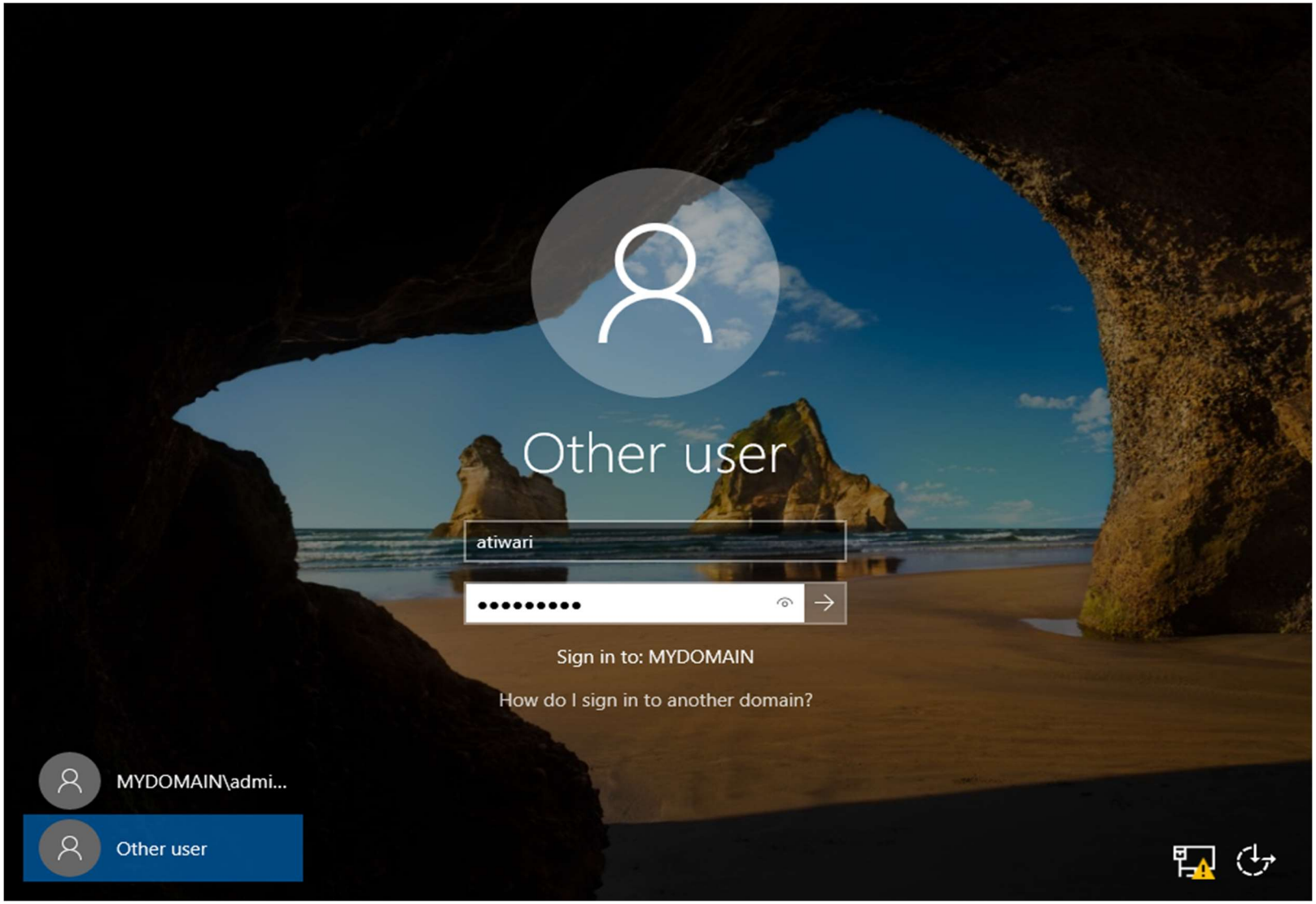



Active Directory Users and Computers
File
Action
View
Help
Active Directory Users and Com
Saved Queries
mydomain.com
Admins
Builtin
Computers
Domain Controllers
ForeignSecurityPrincipal:
Managed Service Accour
Users
Name
Type
Description
Anup Tiwari
User

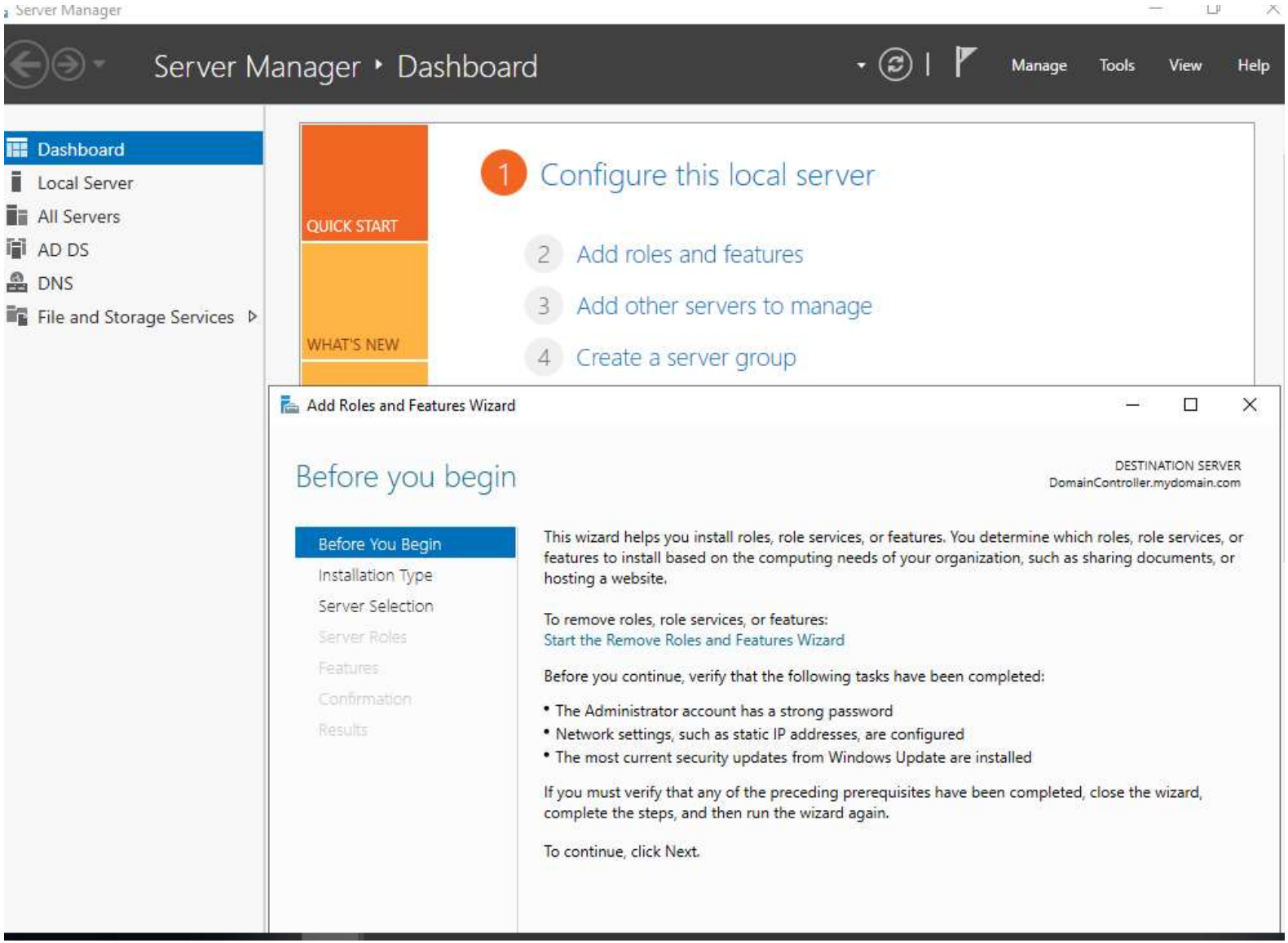
Make it domain admin



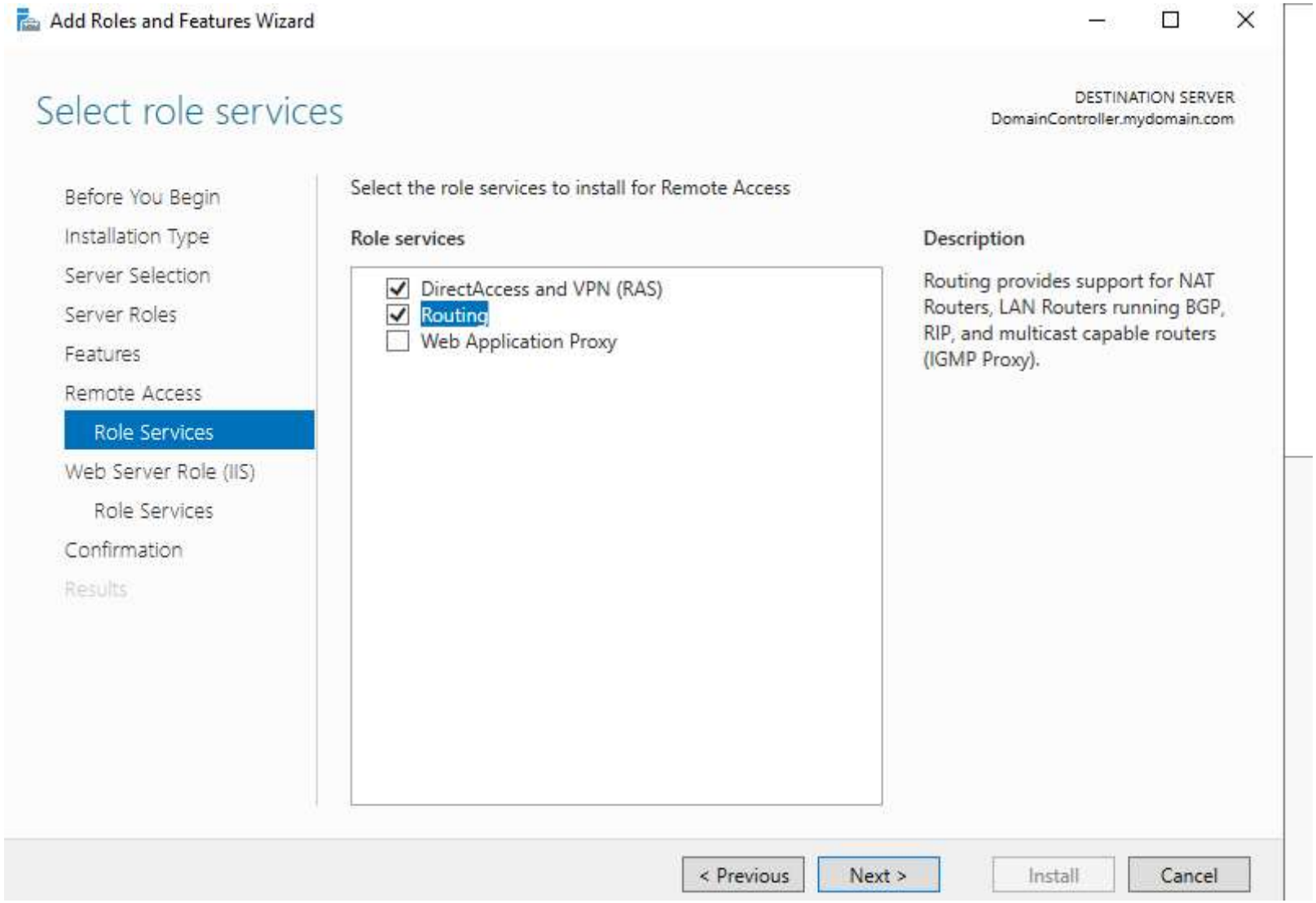
Login with new admin account



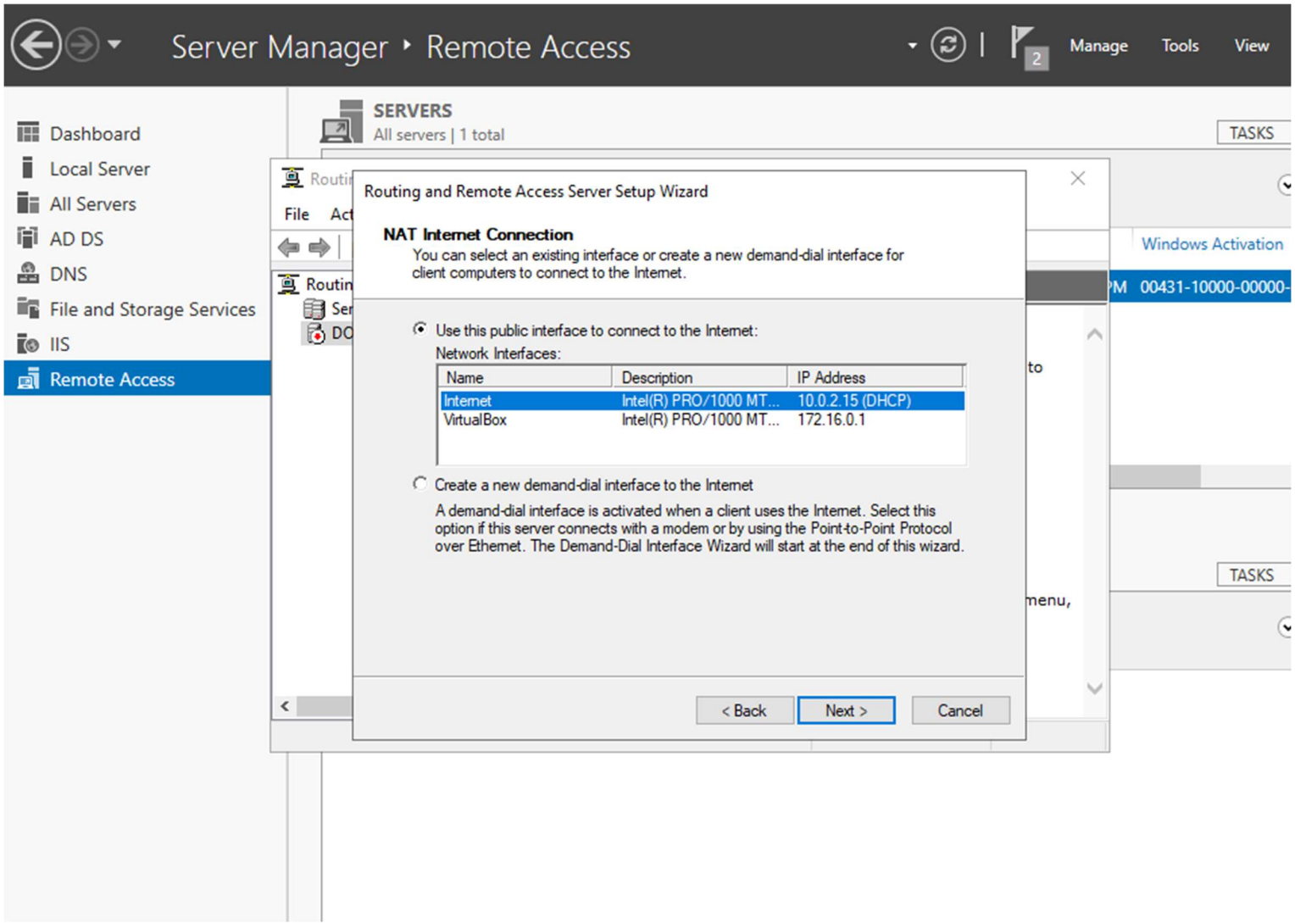
Install and configure RAS/NAT



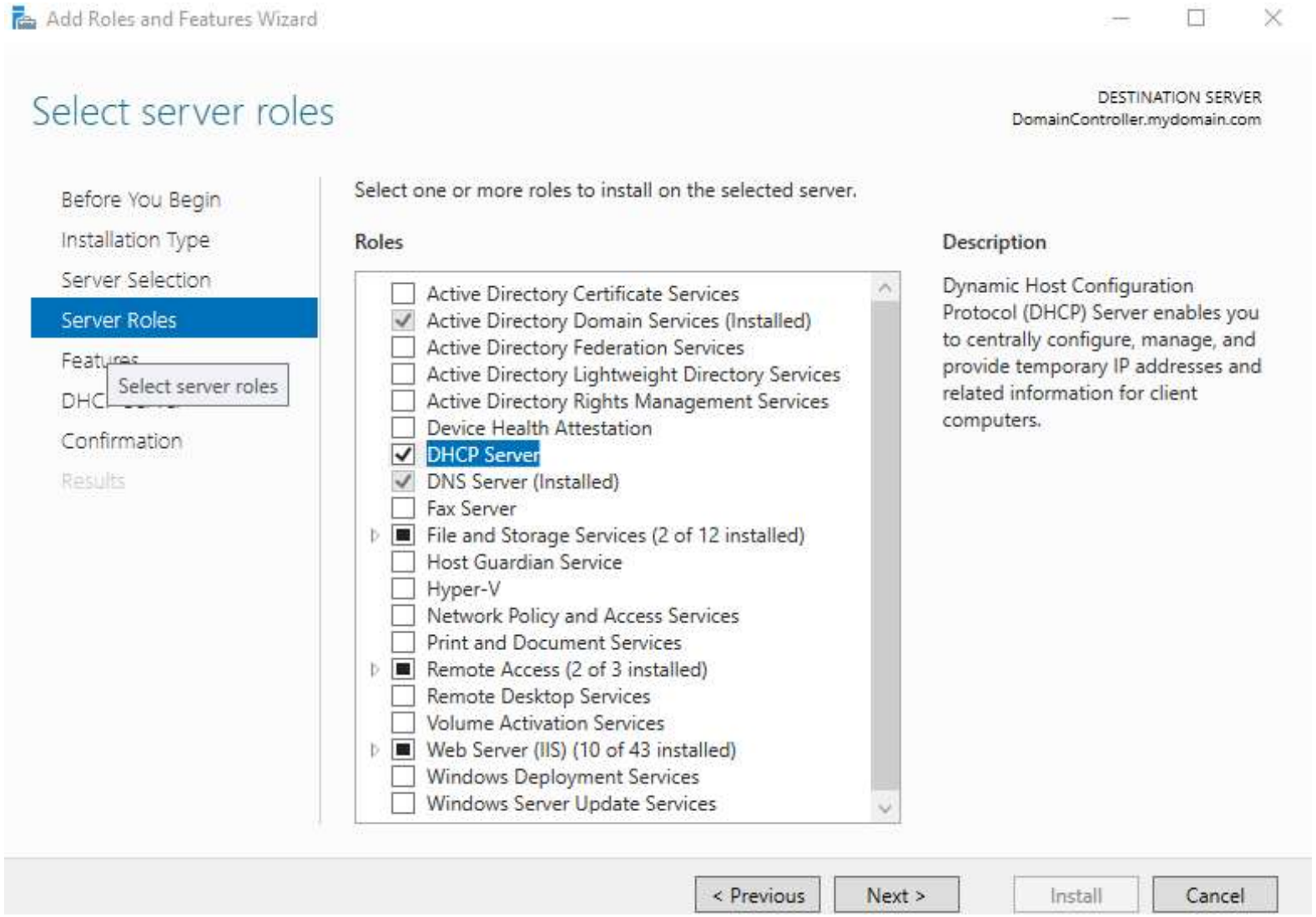
Install Routing Services

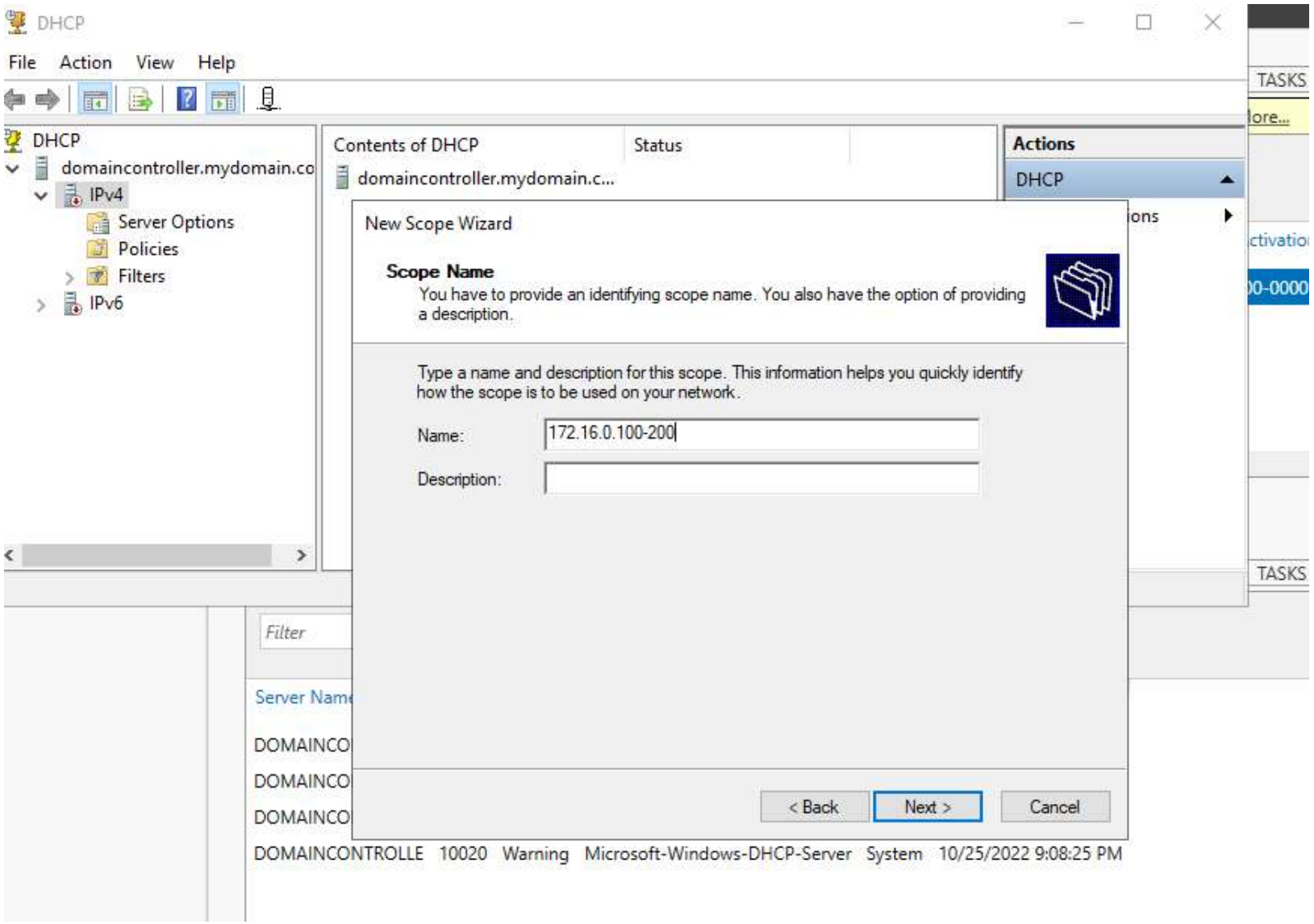


Configure the Ras/Nat by right clicking the Domain Controller and clicking “Configure and Enable Routing Services”

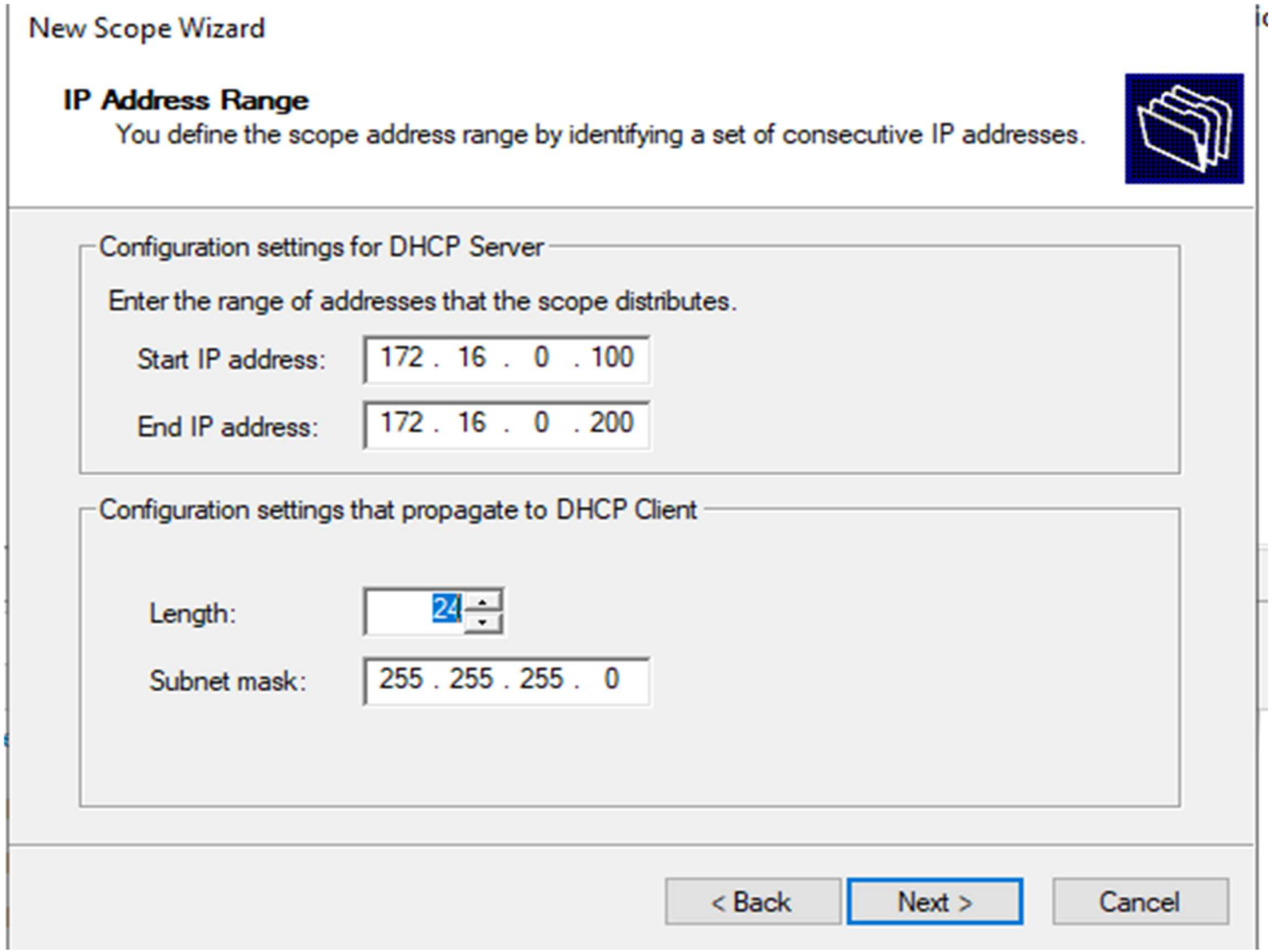


Install and configure DHCP Server in Domain Controller

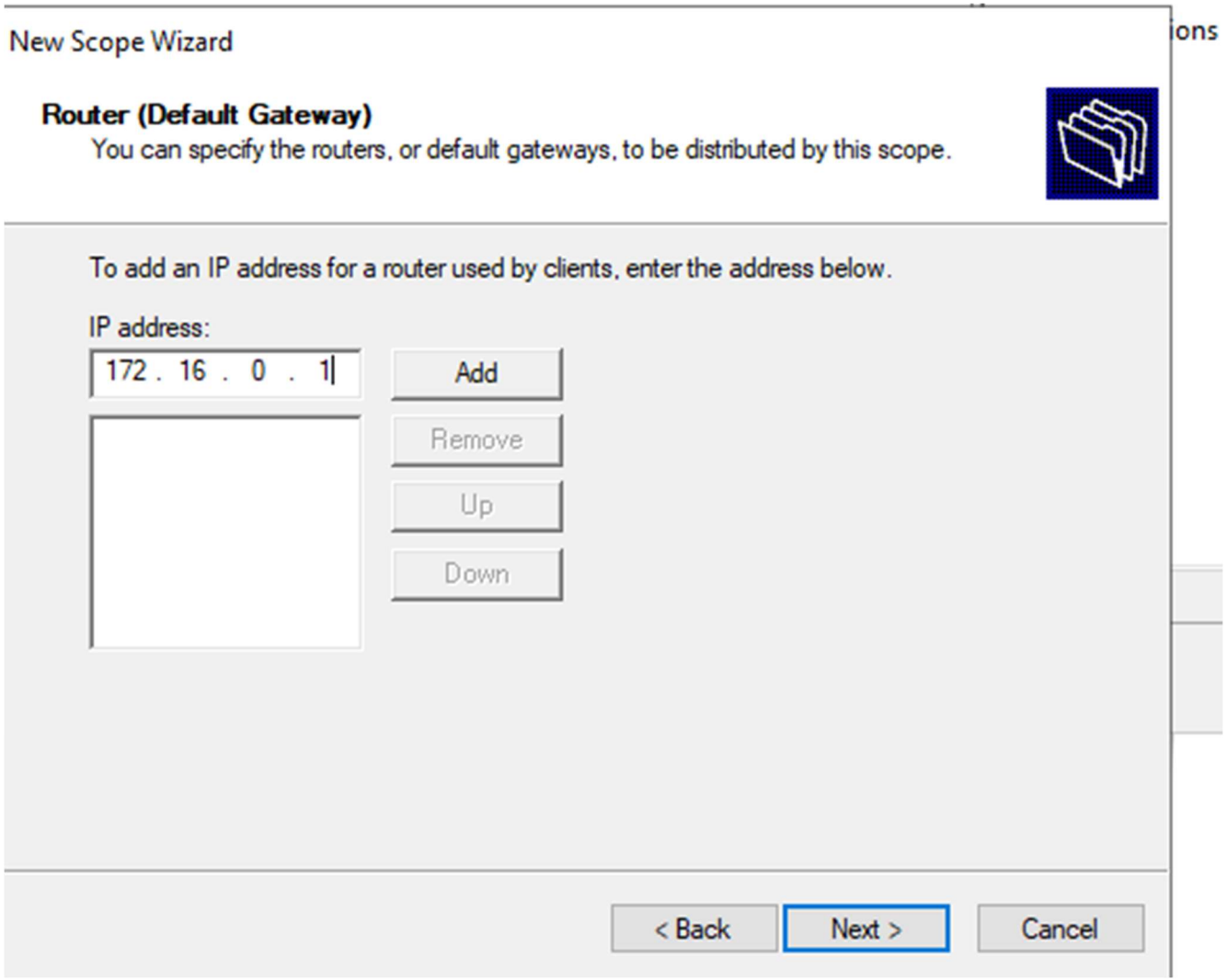



DHCP
File Action View Help
DHCP
domaincontroller.mydomain.co
IPv4
Server Options
Policies
Filters
IPv6
Contents of DHCP
Status
domaincontroller.mydomain.c...
Actions
DHCP
New Scope Wizard
Scope Name
You have to provide an identifying scope name. You also have the option of providing a description.
Type a name and description for this scope. This information helps you quickly identify how the scope is to be used on your network.
Name:
172.16.0.100-200
Description:
< Back
Next >
Cancel
TASKS
Filter
Server Name
DOMAINCO
DOMAINCO
DOMAINCO
DOMAINCONTROLLE 10020 Warning Microsoft-Windows-DHCP-Server System 10/25/2022 9:08:25 PM

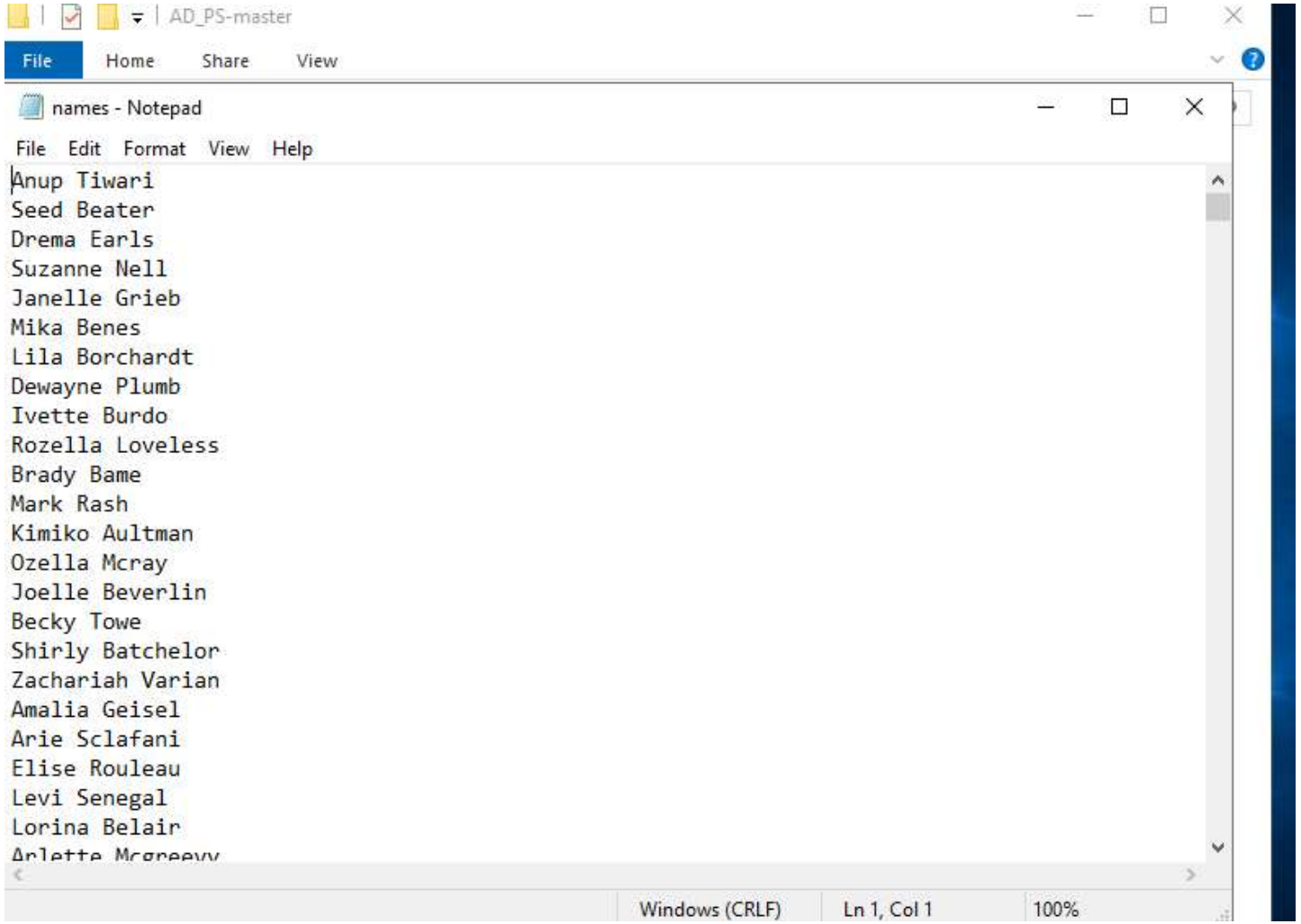
Provide the ranges for Ip address and subnet mask



Provide the default gateway Ip address

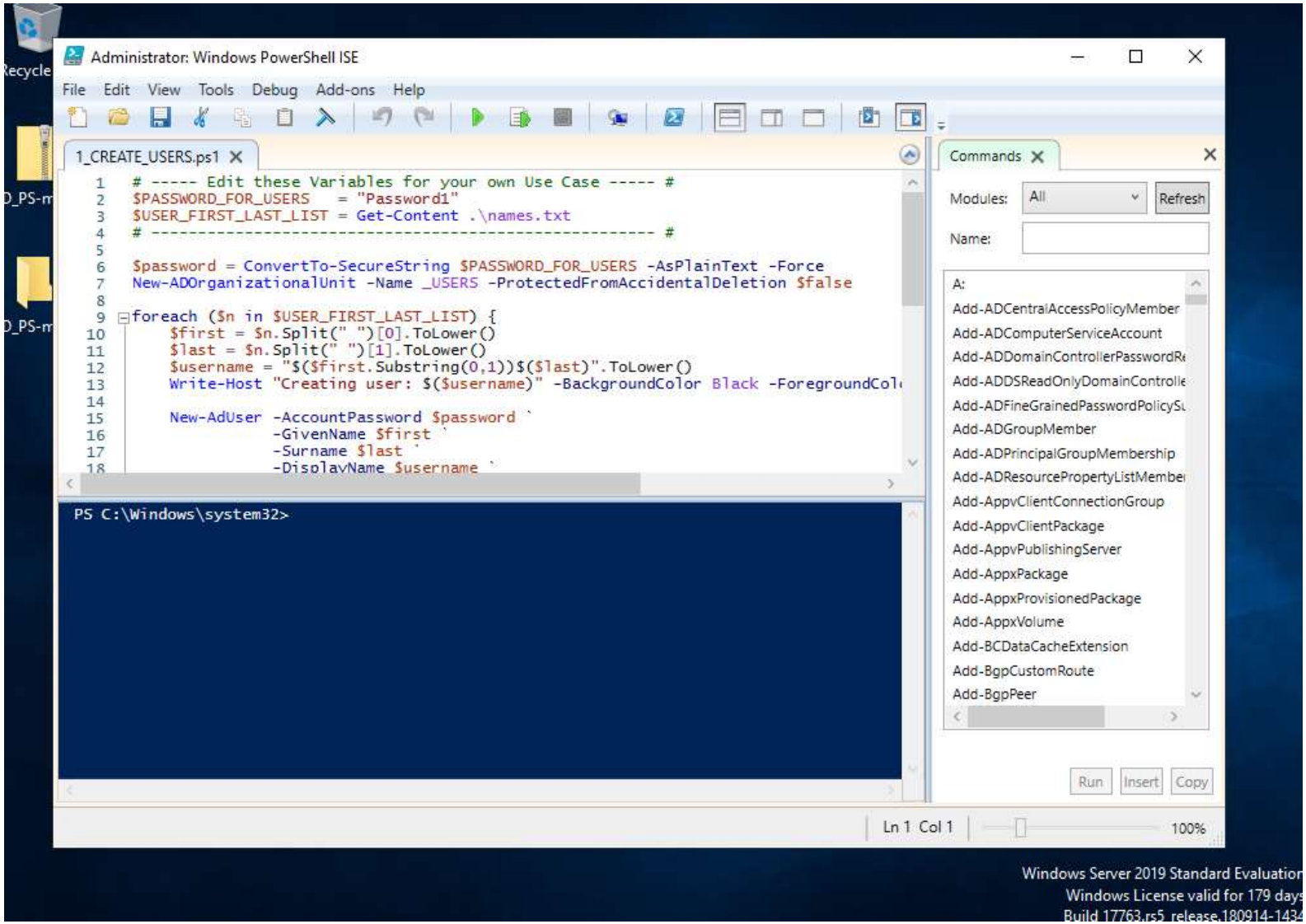


Create a file name with random 1000 names. I downloaded it online.



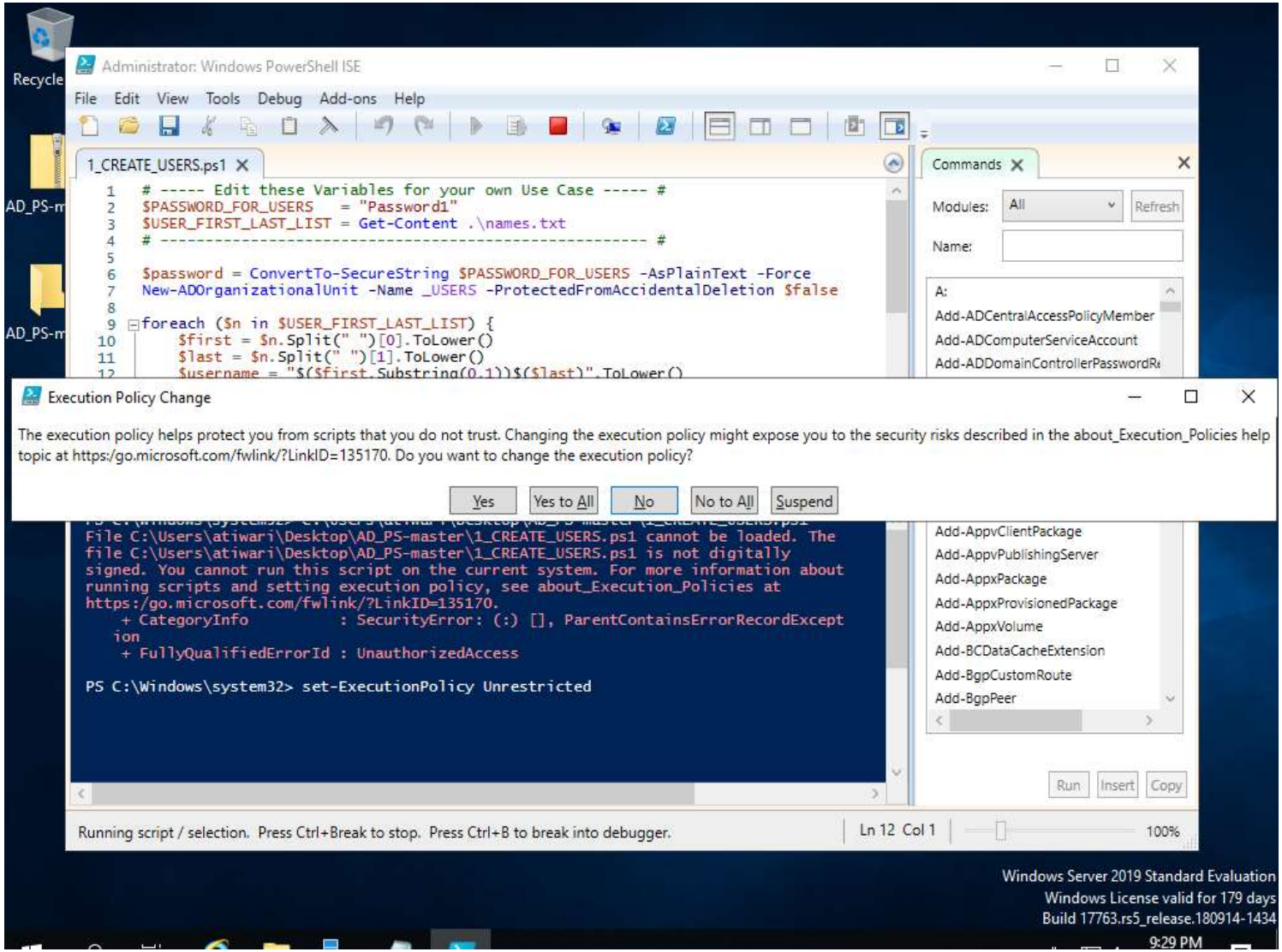
Open the PowerShell ISE as an administrator and type the following scripts

```
$PASSWORD_FOR_USERS   = "Password1"
$USER_FIRST_LAST_LIST = Get-Content .\names.txt
# ------------------------------------------------------ #


$password = ConvertTo-SecureString $PASSWORD_FOR_USERS -AsPlainText
-Force
New-ADOrganizationalUnit -Name _USERS -ProtectedFromAccidentalDeletion
$false


foreach ($n in $USER_FIRST_LAST_LIST) {
   $first = $n.Split(" ")[0].ToLower()
   $last = $n.Split(" ")[1].ToLower()
   $username = "$($first.Substring(0,1))$($last)".ToLower()
   Write-Host "Creating user: $($username)" -BackgroundColor Black -
ForegroundColor Cyan


   New-AdUser -AccountPassword $password `
            -GivenName $first `
            -Surname $last `
            -DisplayName $username `
            -Name $username `
            -EmployeeID $username `
            -PasswordNeverExpires $true `
            -Path "ou=_USERS,$(([ADSI]`"").distinguishedName)" `
            -Enabled $true
```

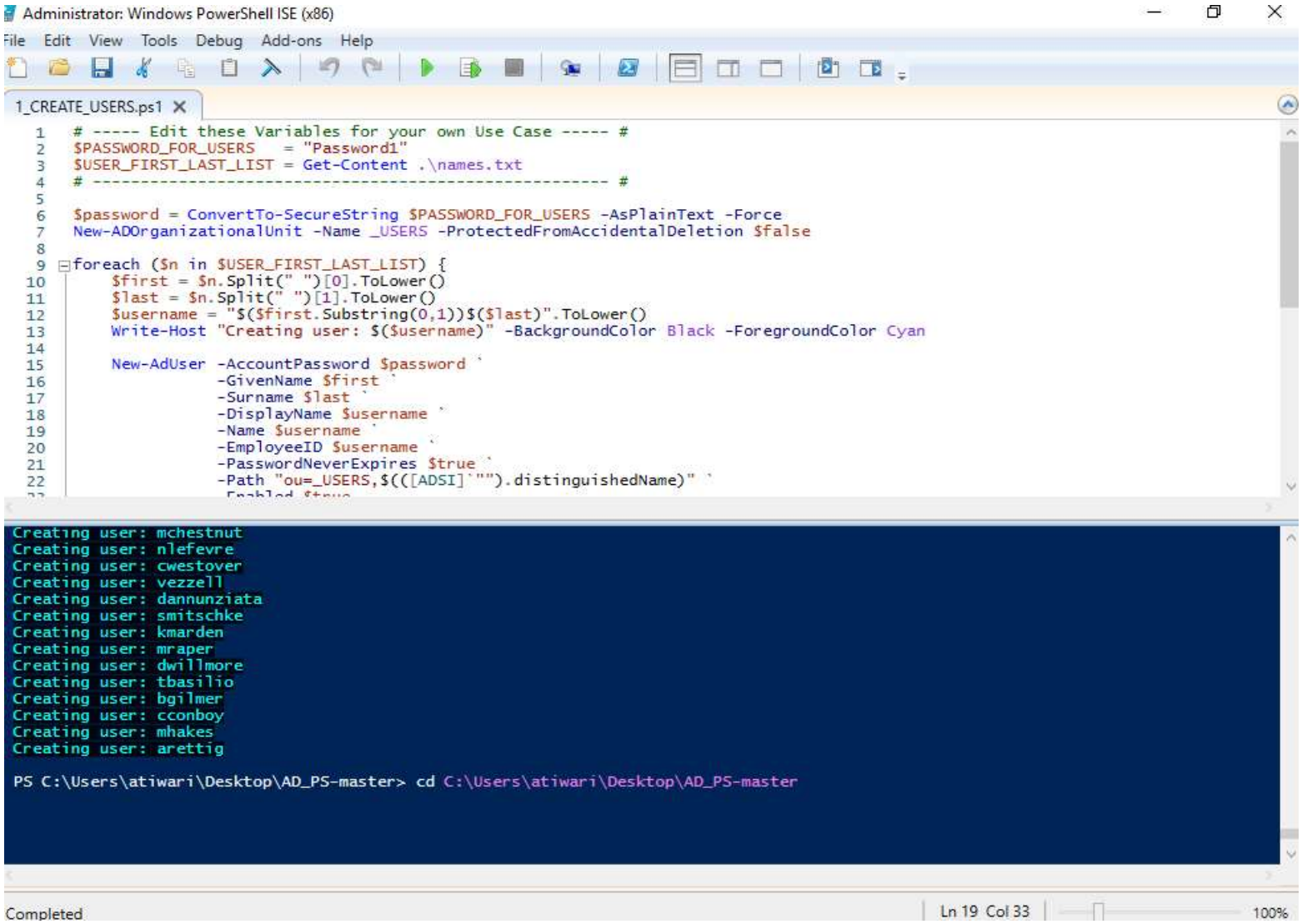

Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
1_CREATE_USERS.ps1
----- Edit these Variables for your own Use Case -----
$PASSWORD_FOR_USERS = "Password1"
$USER_FIRST_LAST_LIST = Get-Content .\names.txt

$password = ConvertTo-SecureString $PASSWORD_FOR_USERS -AsPlainText -Force
New-ADOrganizationalUnit -Name _USERS -ProtectedFromAccidentalDeletion $false
foreach ($n in $USER_FIRST_LAST_LIST) {
$first = $n.Split(" ")[0].ToLower()
$last = $n.Split(" ")[1].ToLower()
$username = "$($first.Substring(0,1))$($last)".ToLower()
Write-Host "Creating user: $($username)" -BackgroundColor Black -ForegroundCol
New-AdUser -AccountPassword $password `
-GivenName $first `
-Surname $last `
-DisplayName $username `
PS C:\Windows\system32>
Commands
Modules: All
Refresh
Name:
A:
Add-ADCentralAccessPolicyMember
Add-ADComputerServiceAccount
Add-ADDomainControllerPasswordR
Add-ADDSReadOnlyDomainControlle
Add-ADFineGrainedPasswordPolicyS
Add-ADGroupMember
Add-ADPrincipalGroupMembership
Add-ADResourcePropertyListMembe
Add-AppvClientConnectionGroup
Add-AppvClientPackage
Add-AppvPublishingServer
Add-AppxPackage
Add-AppxProvisionedPackage
Add-AppxVolume
Add-BCDataCacheExtension
Add-BgpCustomRoute
Add-BgpPeer
Run
Insert
Copy
Ln 1 Col 1
100%
Windows Server 2019 Standard Evaluation
Windows License valid for 179 days
Build 17763.rs5_release.180914-1434

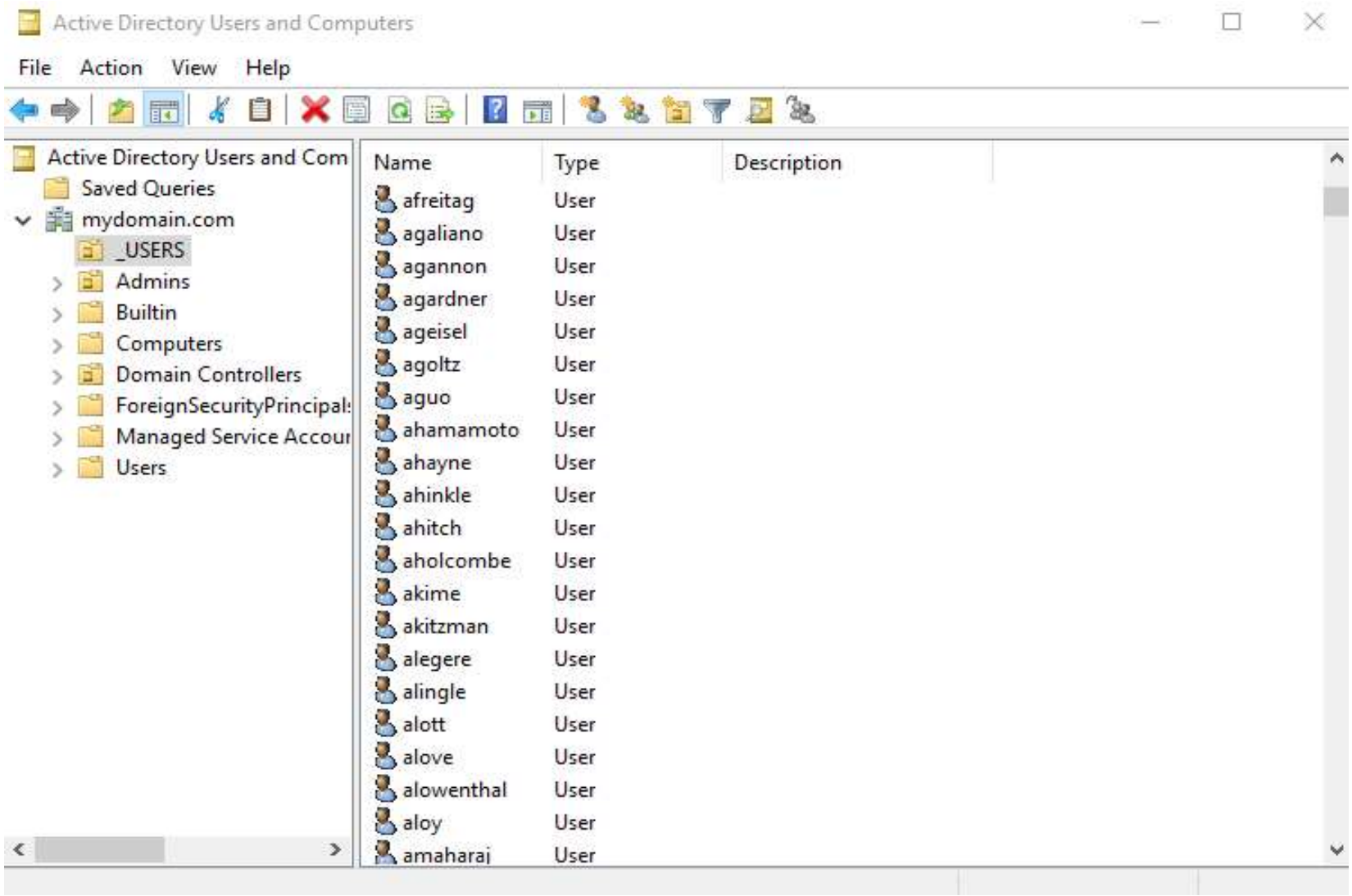
Set Execution policy to unrestricted



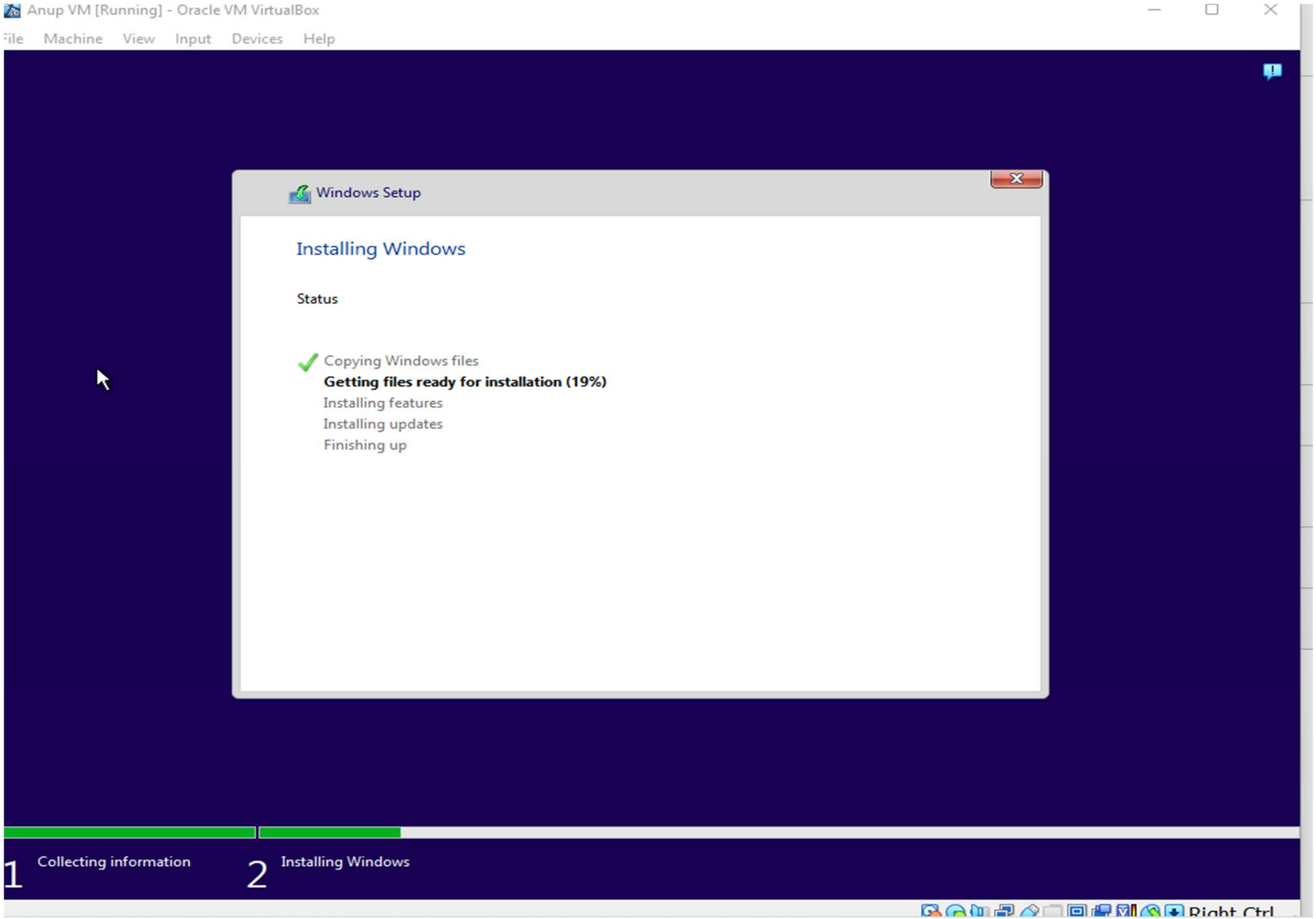
1000 users get created after running the PowerShell script

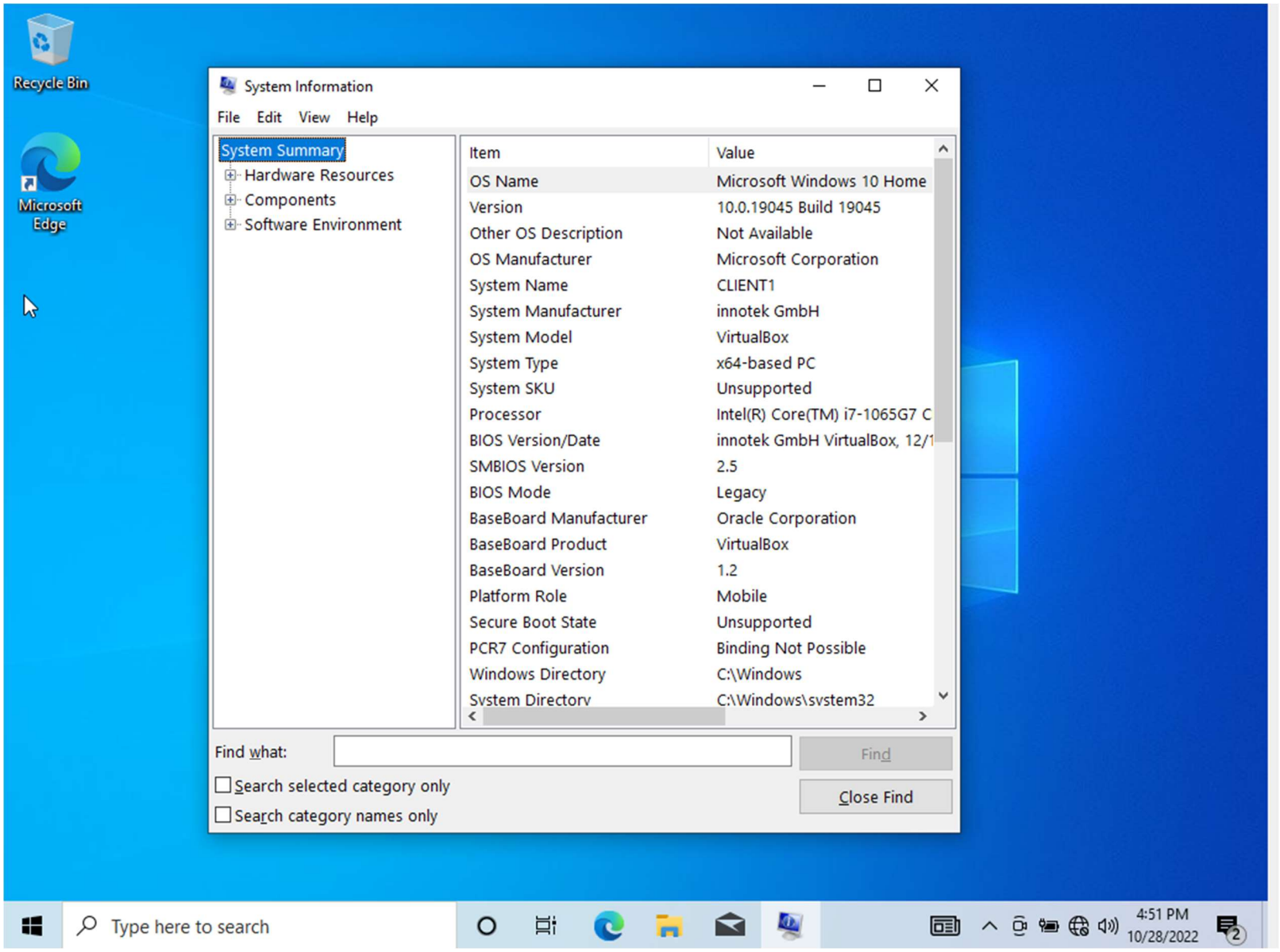


Check in the Active Directory users and computers. There will be all the users created in PowerShell.

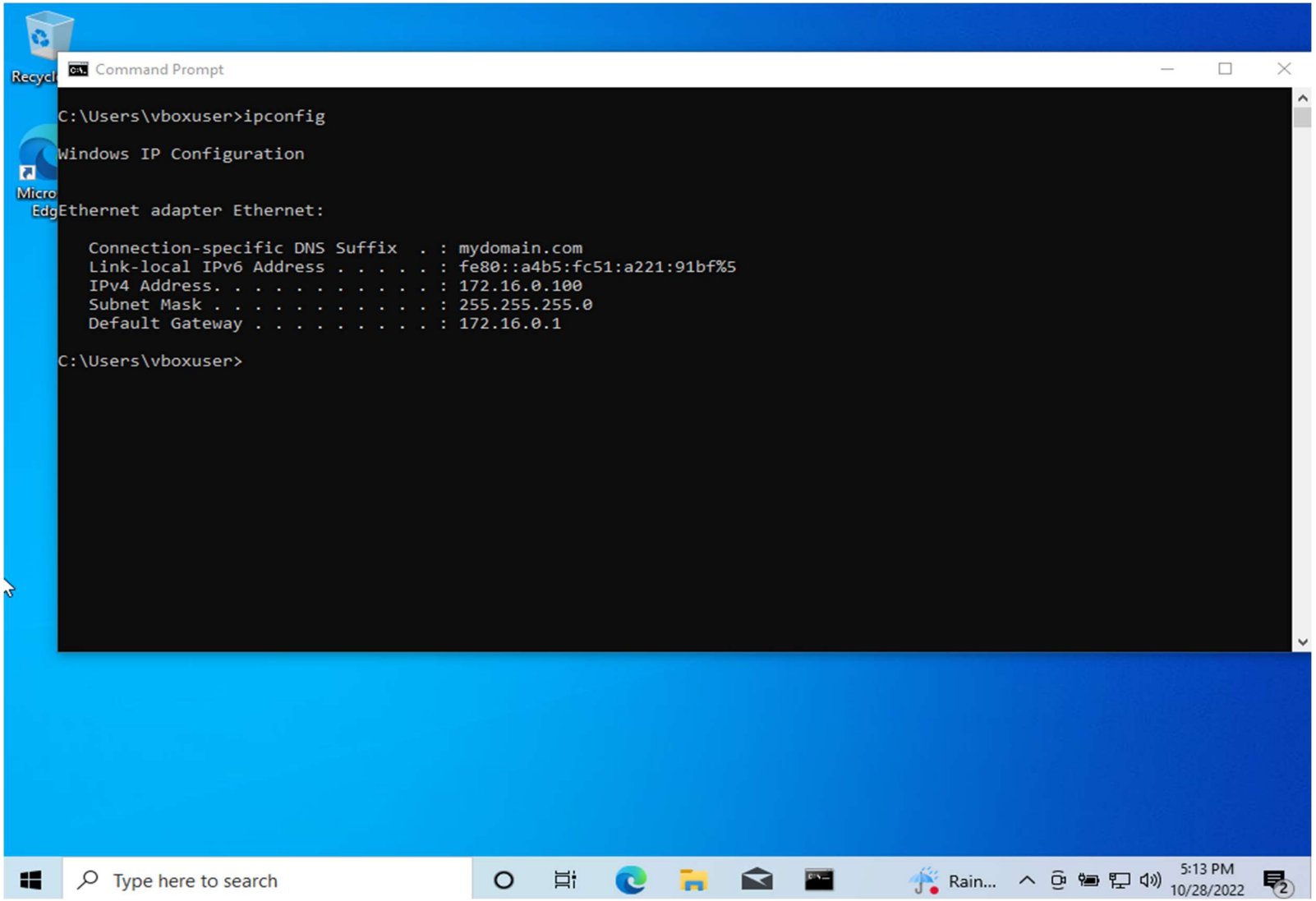


Install windows 10 pro in the virtual box

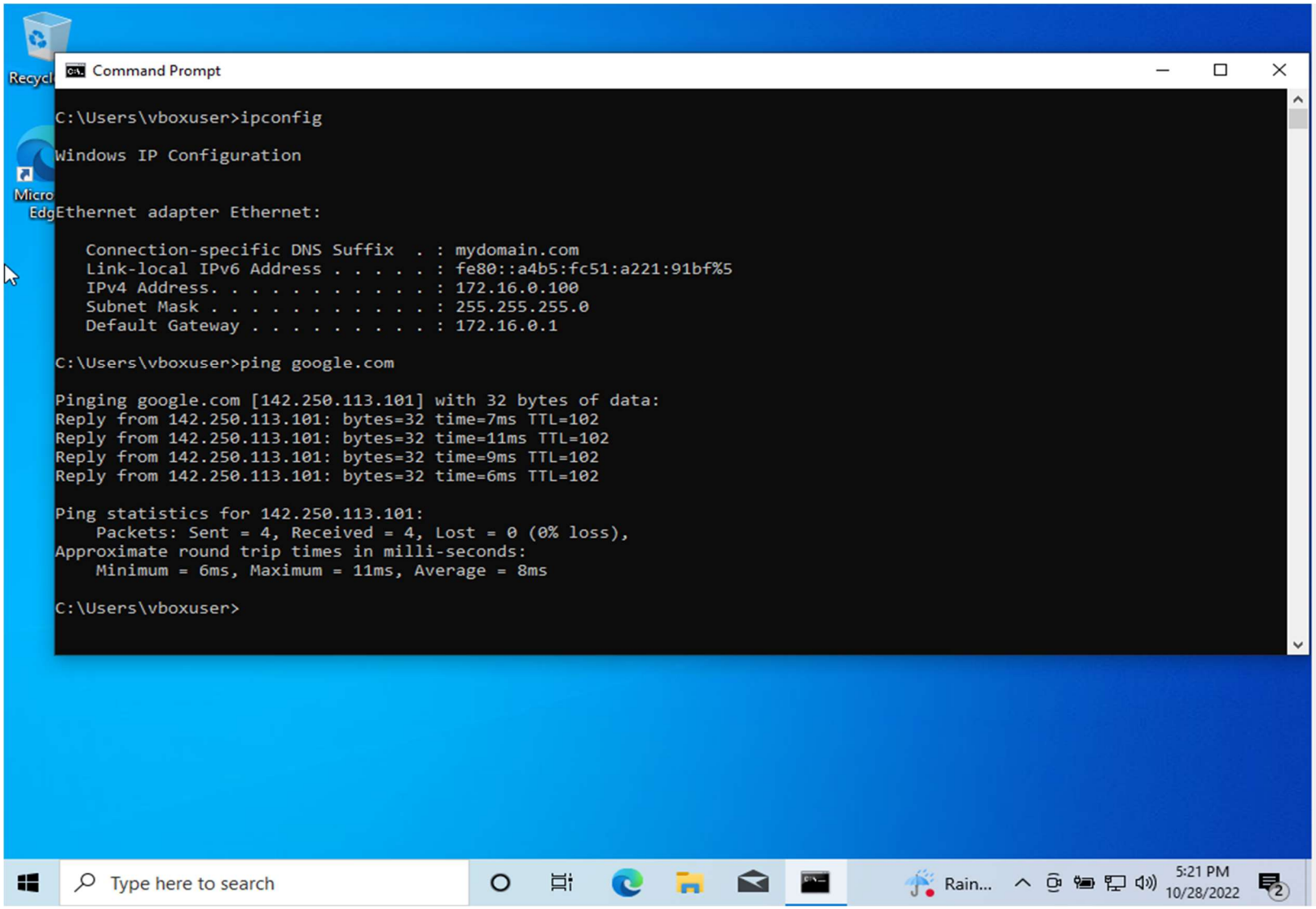



Recycle Bin
Microsoft Edge
System Information
File Edit View Help
System Summary
Hardware Resources
Components
Software Environment
Item
Value
OS Name
Microsoft Windows 10 Home
Version
10.0.19045 Build 19045
Other OS Description
Not Available
OS Manufacturer
Microsoft Corporation
System Name
CLIENT1
System Manufacturer
innotek GmbH
System Model
VirtualBox
System Type
x64-based PC
System SKU
Unsupported
Processor
Intel(R) Core(TM) i7-1065G7 C
BIOS Version/Date
innotek GmbH VirtualBox, 12/1
SMBIOS Version
2.5
BIOS Mode
Legacy
BaseBoard Manufacturer
Oracle Corporation
BaseBoard Product
VirtualBox
BaseBoard Version
1.2
Platform Role
Mobile
Secure Boot State
Unsupported
PCR7 Configuration
Binding Not Possible
Windows Directory
C:\Windows
System Directory
C:\Windows\system32
Find what:
Find
Search selected category only
Search category names only
Close Find
Type here to search
4:51 PM
10/28/2022

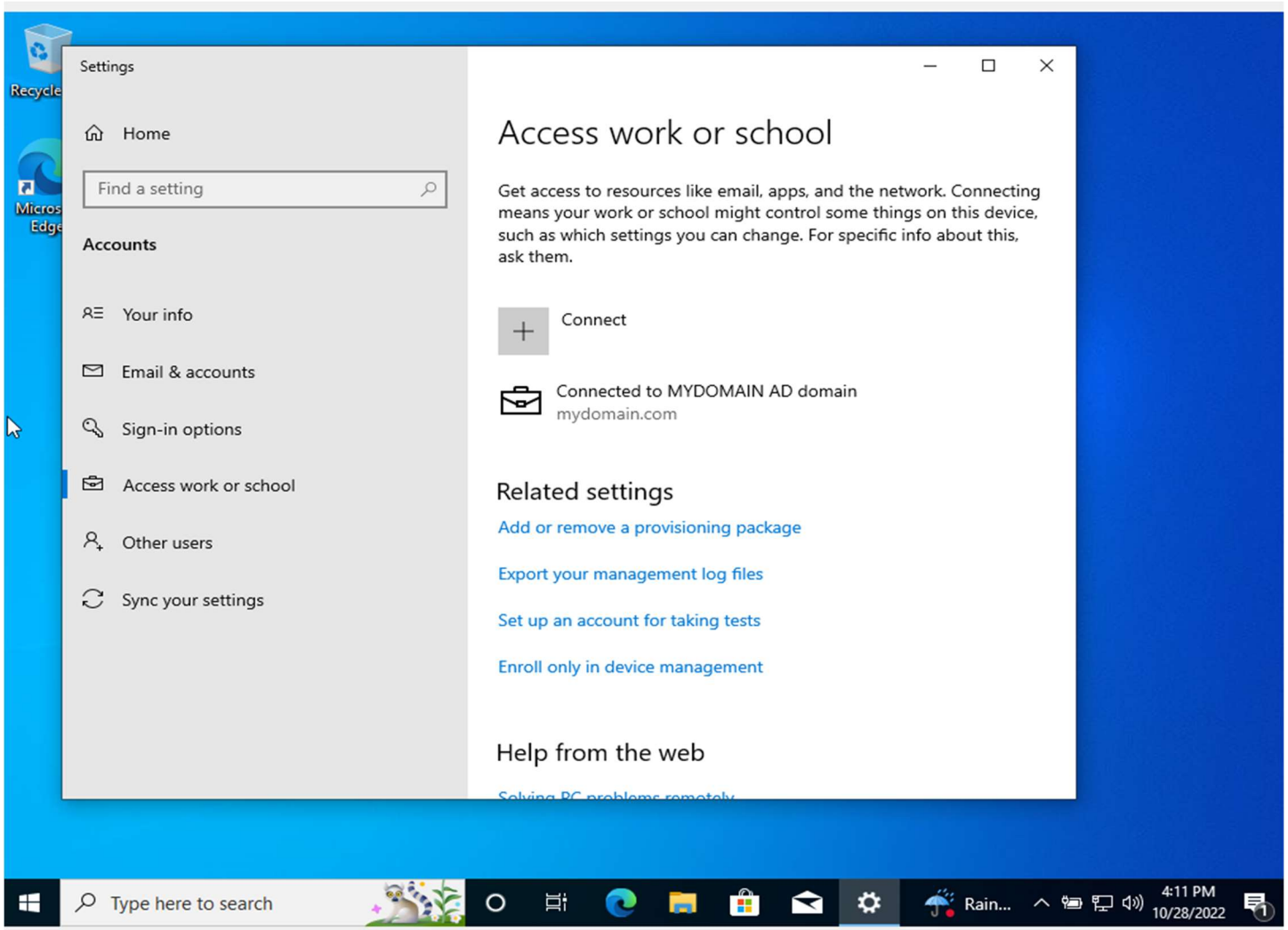
Use ipconfig to see if the default gateway matches with the domain controller



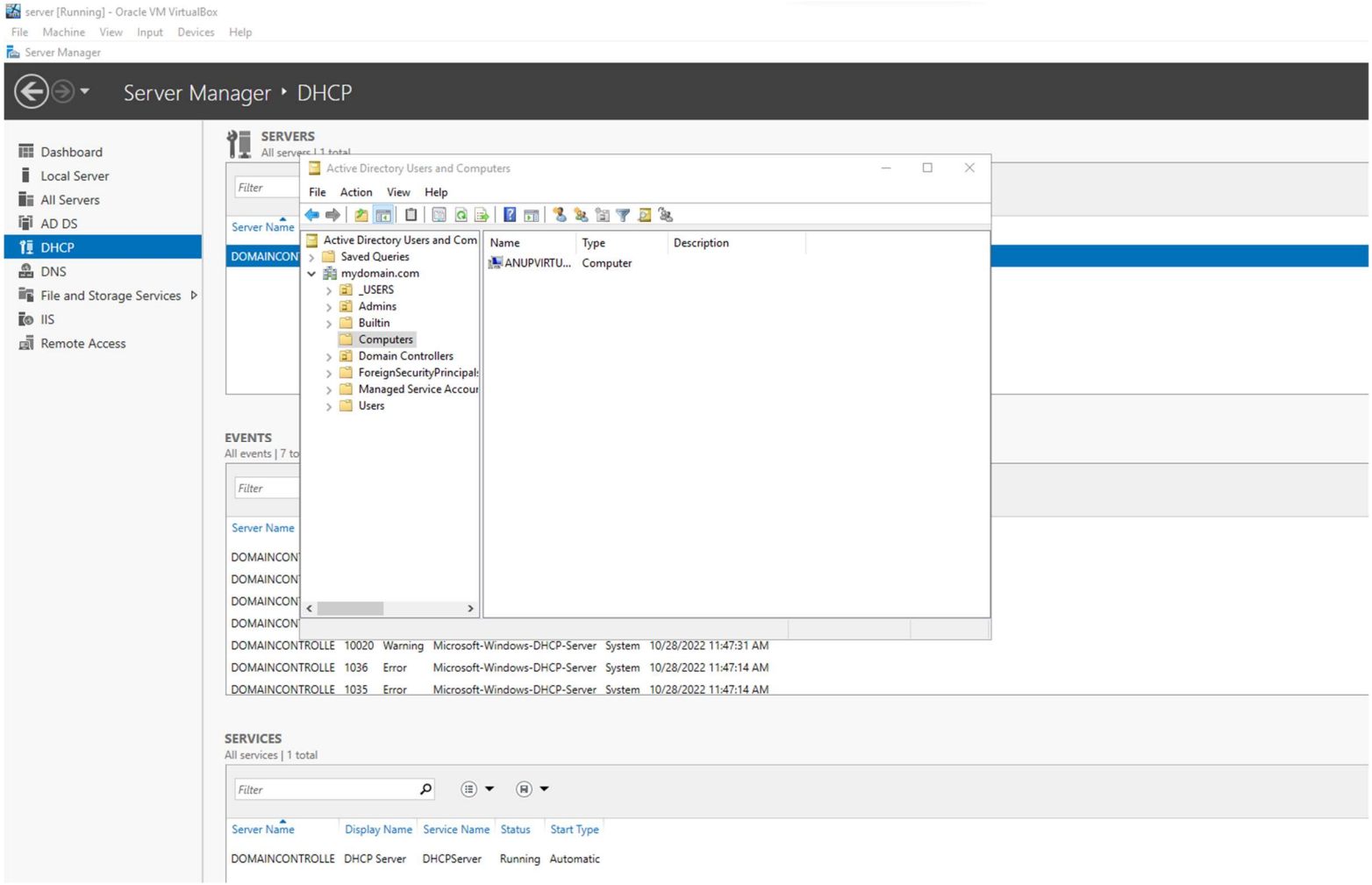
Ping googles to see if it responds or not



Connect the Virtual Windows to the domain: mydomain.com by going into the settings



New device is created in Active Directory



The network is completed, and a mini-corporate environment is created.