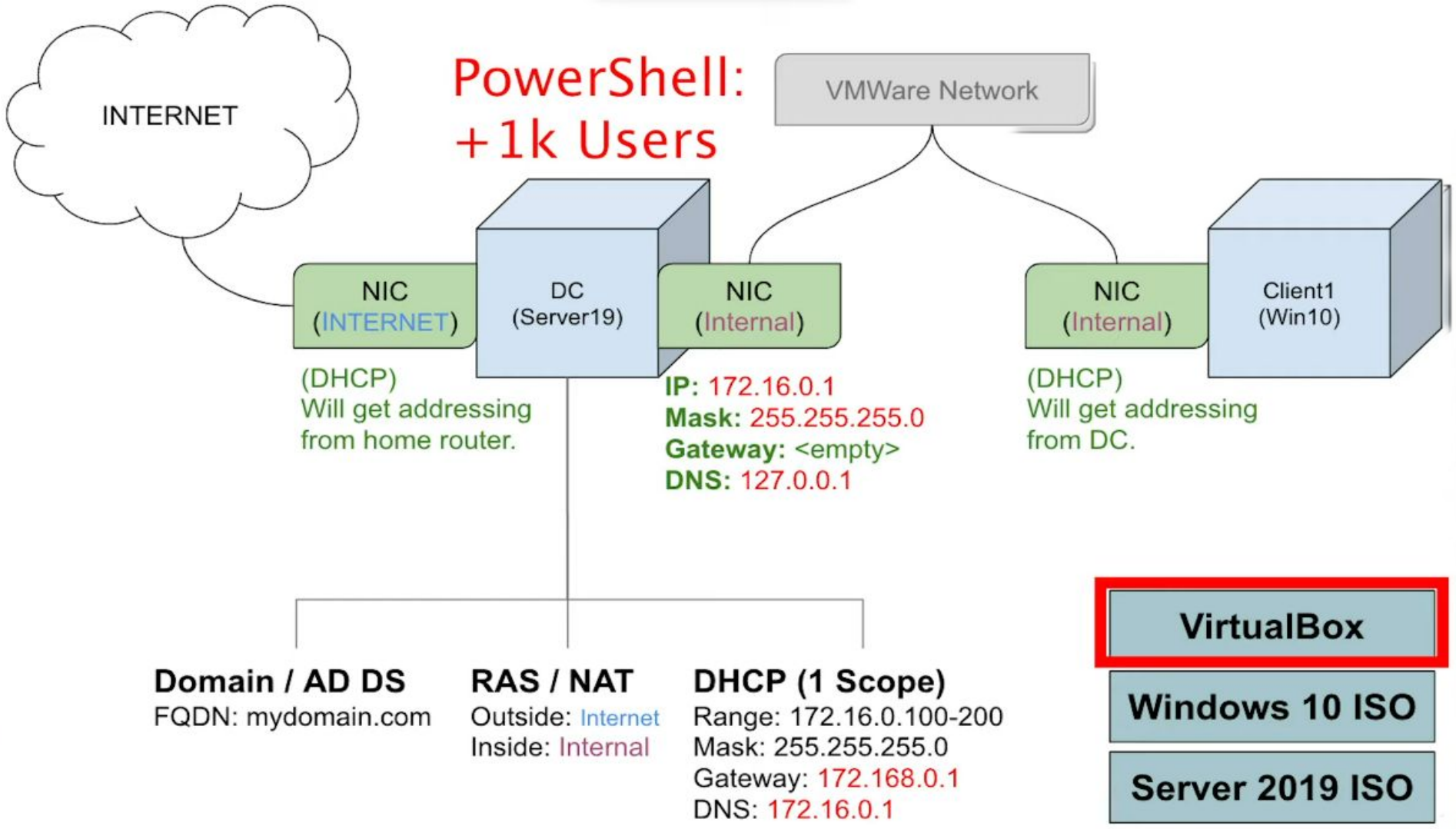
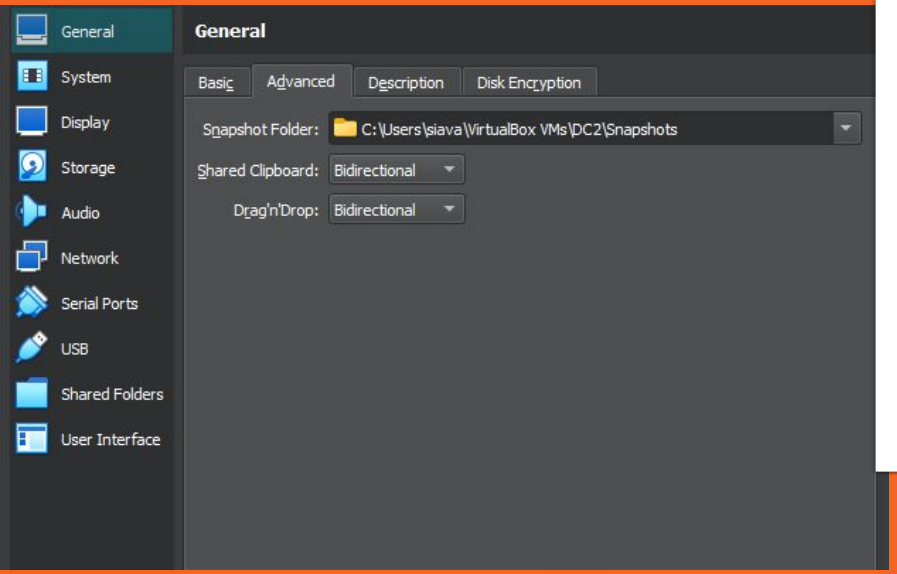
# Basic Home Lab Running Active Directory

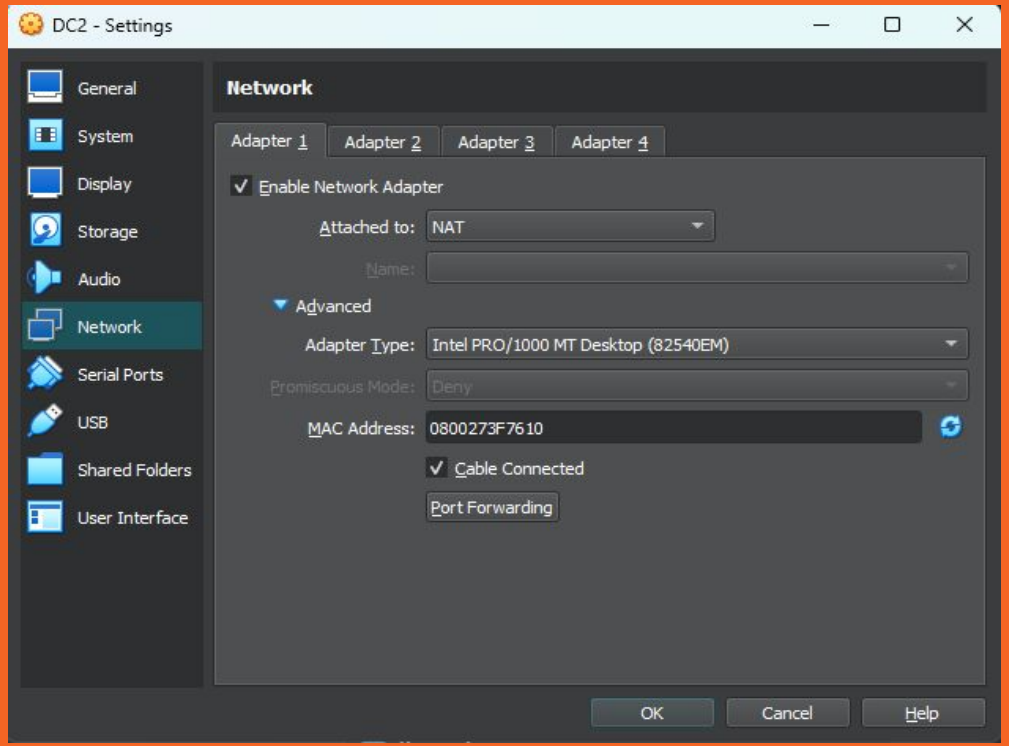
# Building Network Environment

1) Download and install VirtualBox
2) Download and install the VirtualBox extension pack
3) Download Windows 10 ISO & Windows Server 2019 ISO
4) Create Virtual Machines
    a) Domain Controller
    b) Client
5) Two network adapters one for external network and another for the internal network
6) Name server install active Directory & create domain
7) Configure NAT & routing
8) Set up DHCP on main controller
9) Run PowerShell Script to create 1000+ accounts for company

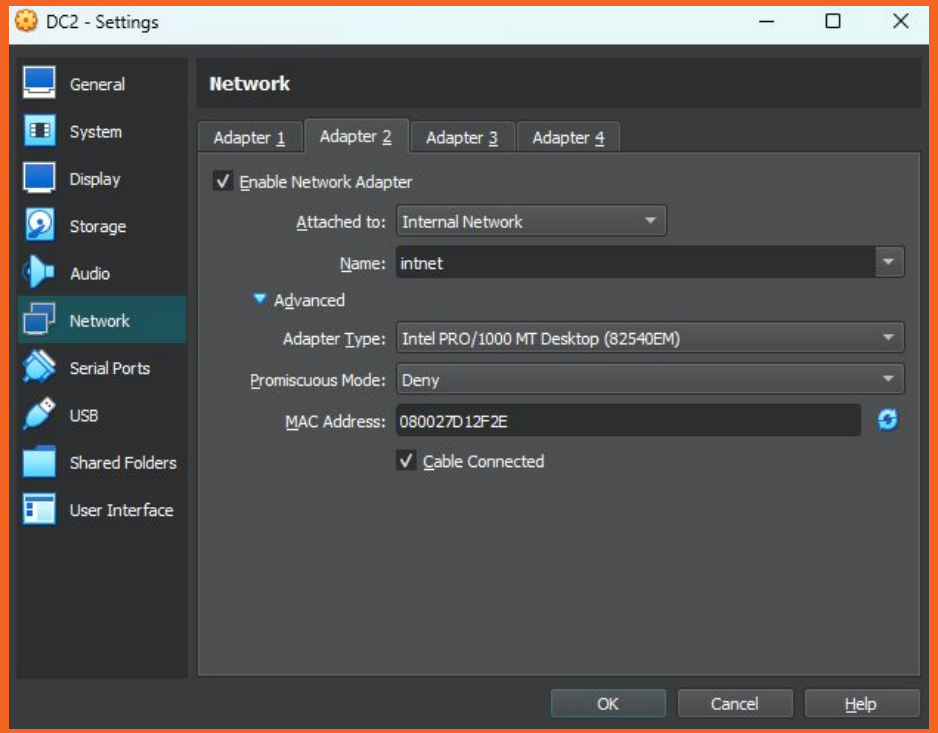

INTERNET
PowerShell:
+1k Users
VMWare Network
NIC
(INTERNET)
DC
(Server19)
NIC
(Internal)
NIC
(Internal)
Client1
(Win10)
(DHCP)
Will get addressing
from home router.
IP: 172.16.0.1
Mask: 255.255.255.0
Gateway: <empty>
DNS: 127.0.0.1
(DHCP)
Will get addressing
from DC.
Domain / AD DS
FQDN: mydomain.com
RAS / NAT
Outside: Internet
Inside: Internal
DHCP (1 Scope)
Range: 172.16.0.100-200
Mask: 255.255.255.0
Gateway: 172.168.0.1
DNS: 172.16.0.1
VirtualBox
Windows 10 ISO
Server 2019 ISO




1) When opening up virtual box use 2gb (2048mb) of RAM & other windows 64 bit - DC
2) In settings- in advanced- use bi- directional in shared clipboard & Drag ‘n Drop
    a) Allows you to drag files into the virtual machine
    b) Ctrl+c and ctrl+v works in and out of the VM from your machine
3) System-Processor- 4 CPU
4) Networks: open 2nd adapter on internal network

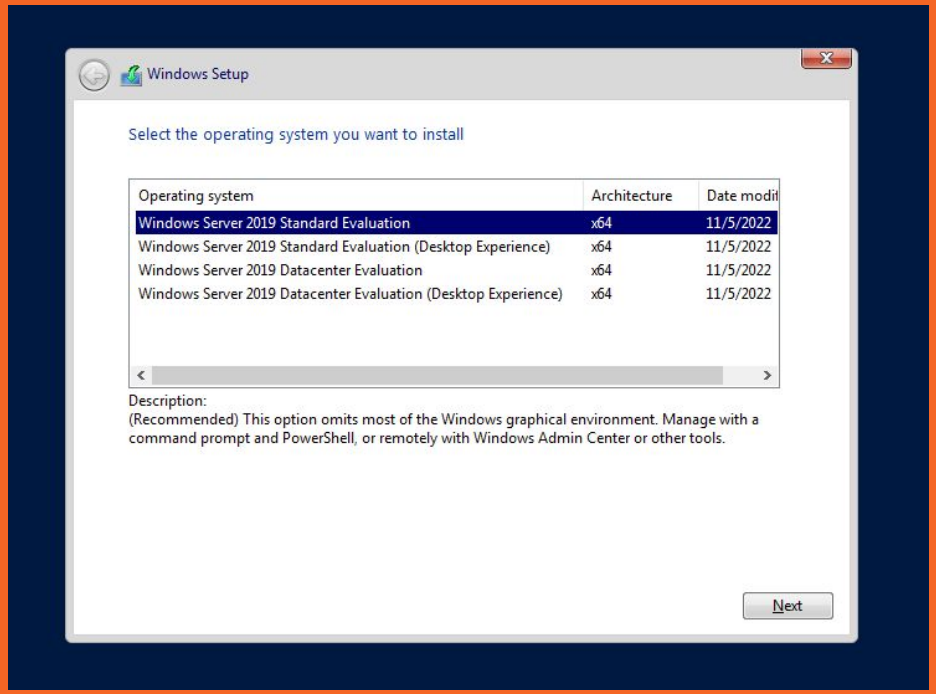


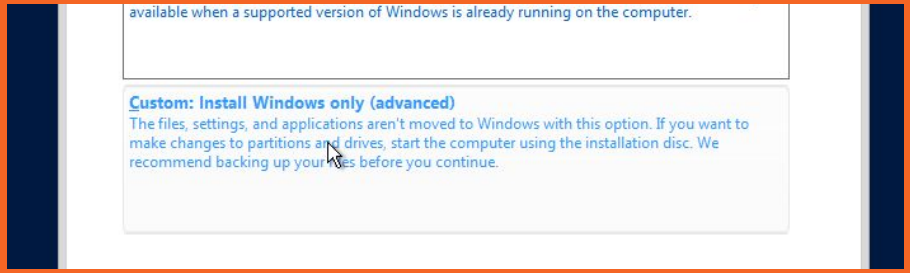

# External network

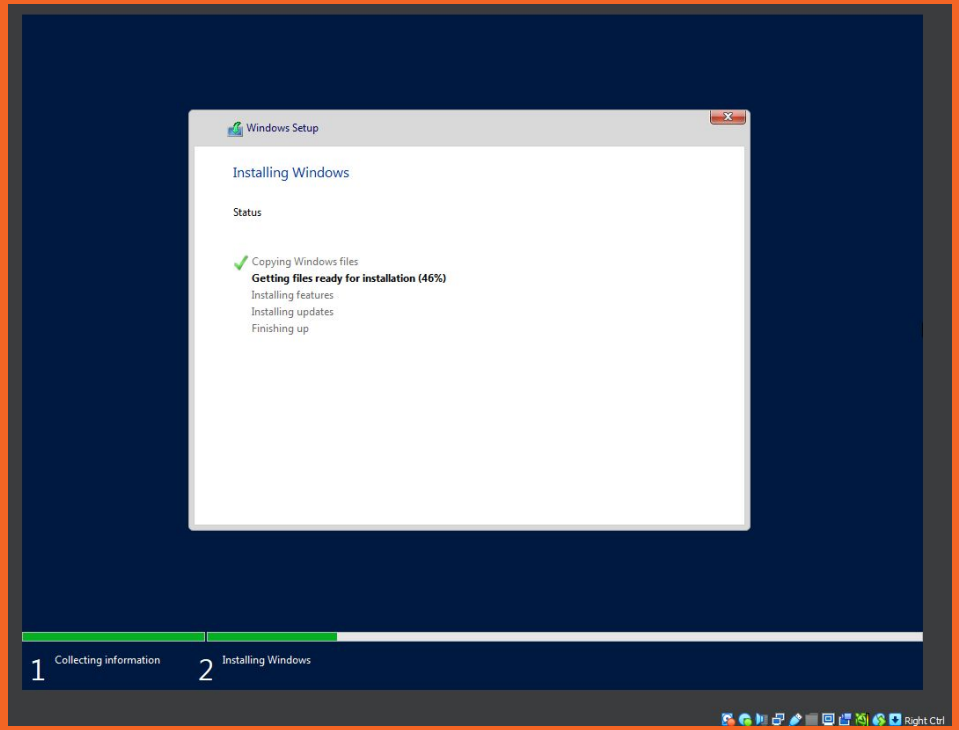



# Internal Network Settings for Network Adapter on Domain Controller

# Choose the one with a GUI (Desktop Experience)



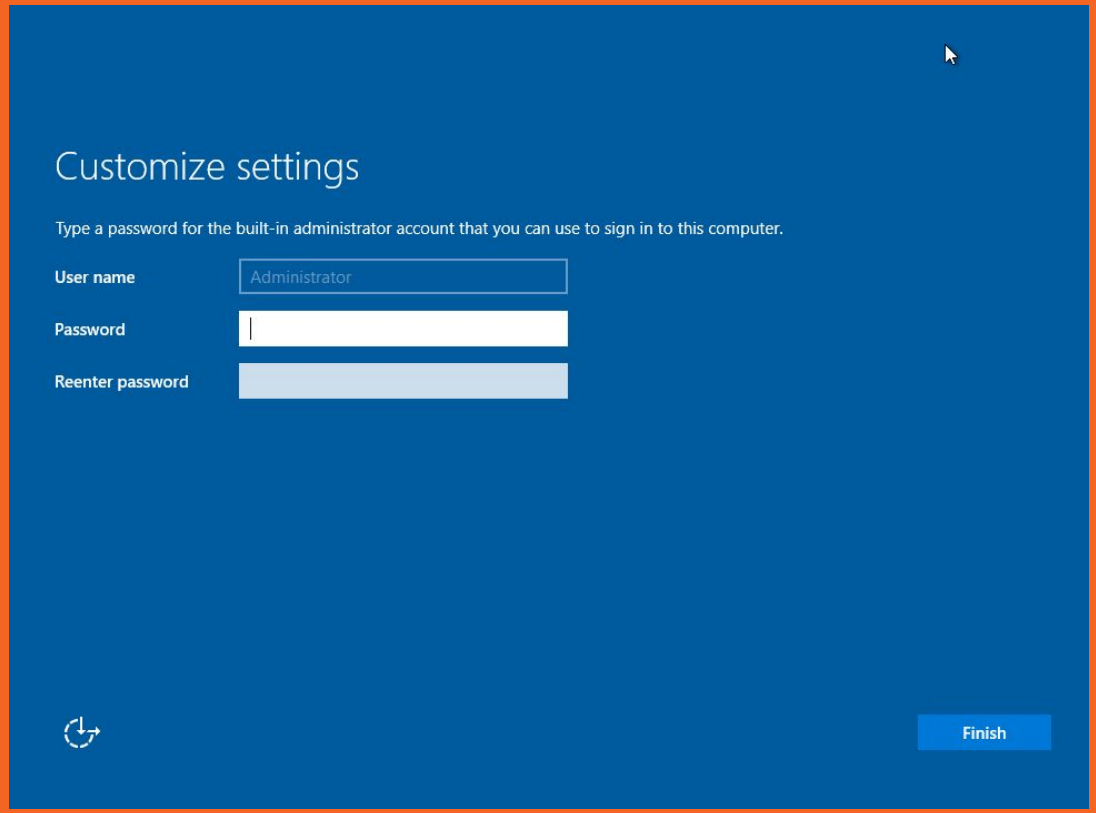



# Installation Process for Windows 2019 Server

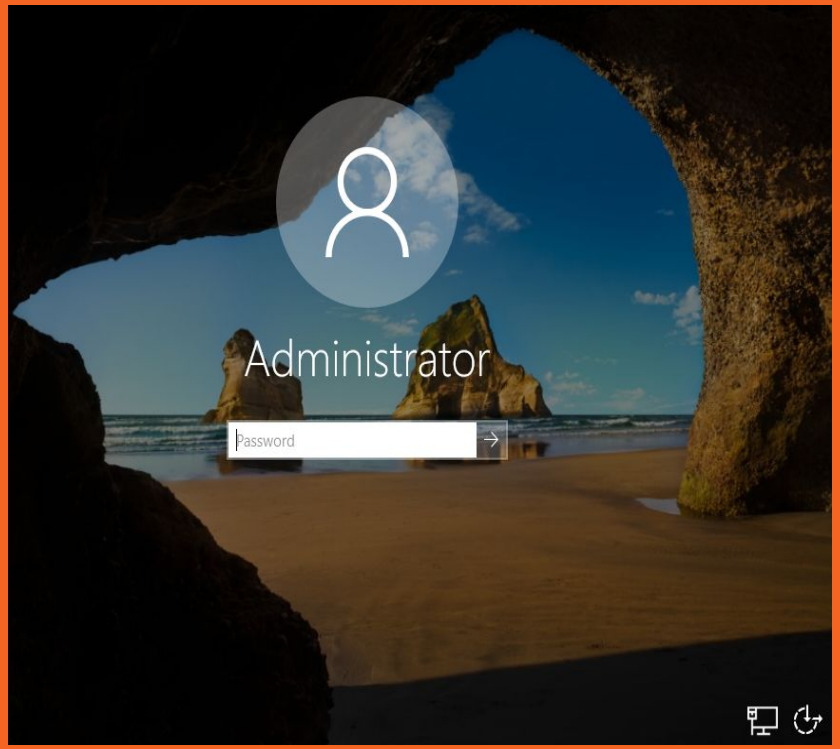
Will take a while, grab a cup of coffee…

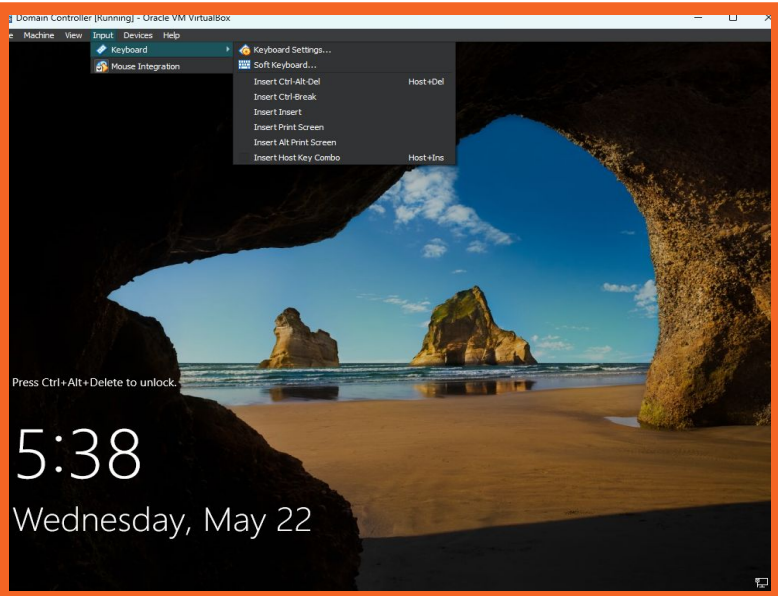
It will restart several times, just let it do it’s thing, don’t hit any buttons

# Create a password for the Admin account



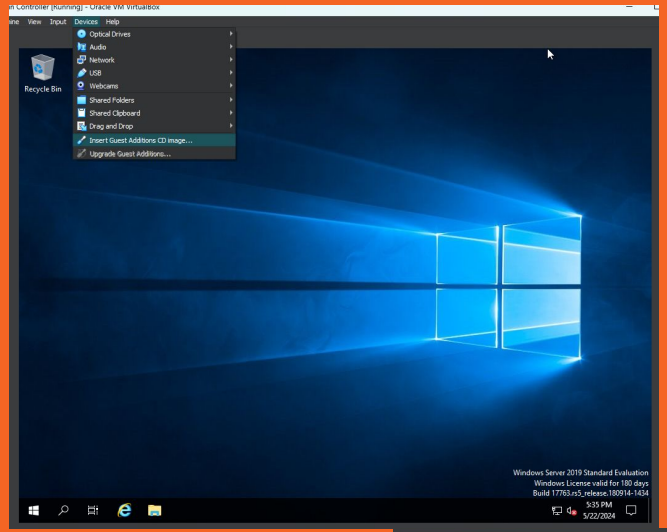

Remember treat this like a production environment and use strong good passwords!

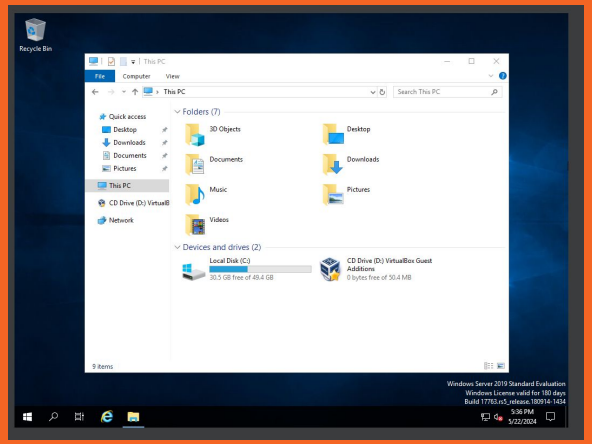


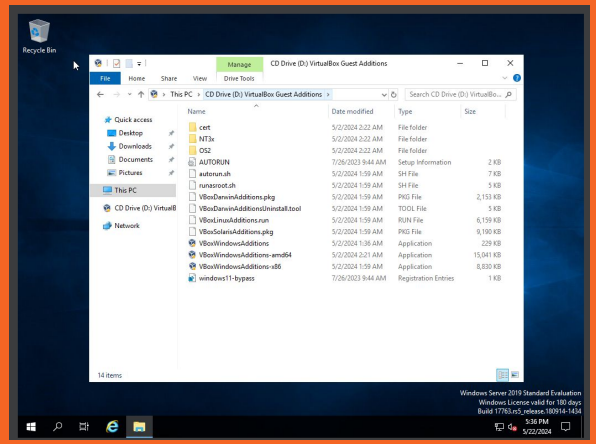



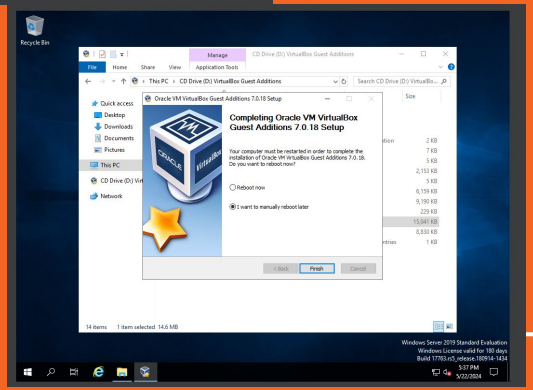

When you log in it will ask you to ctrl+alt+del per usual, to do that use input then the drop down menu to select the command

# Quality of life

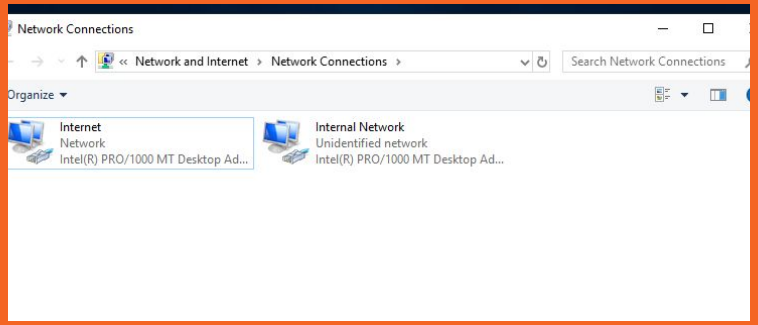


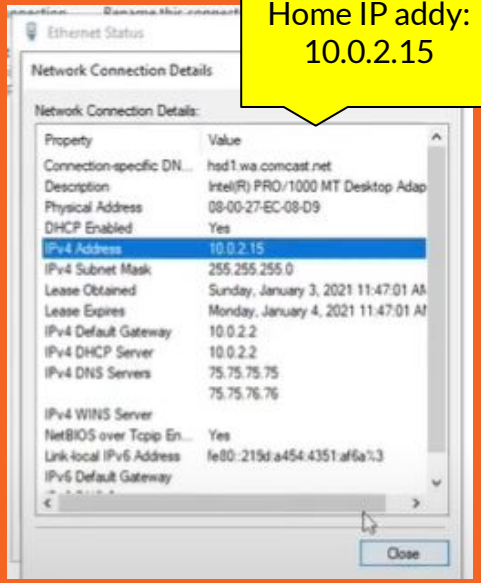



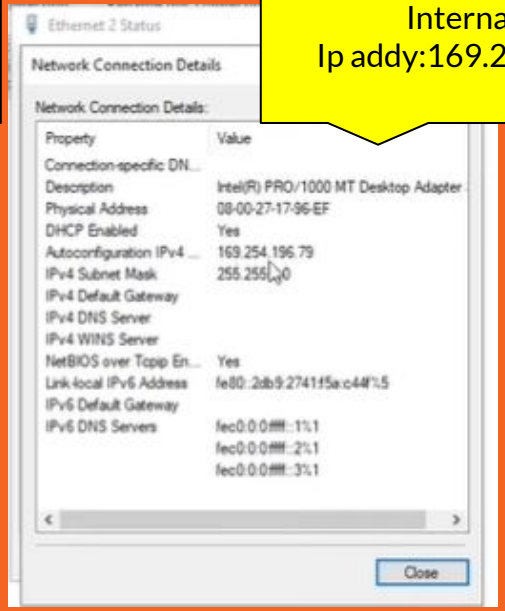

Install the amd64 version to reduce mouse input lag, refresh rate issues, and resolution resizing on VM window




Home IP addy:
10.0.2.15




Internal
Ip addy:169.254.196

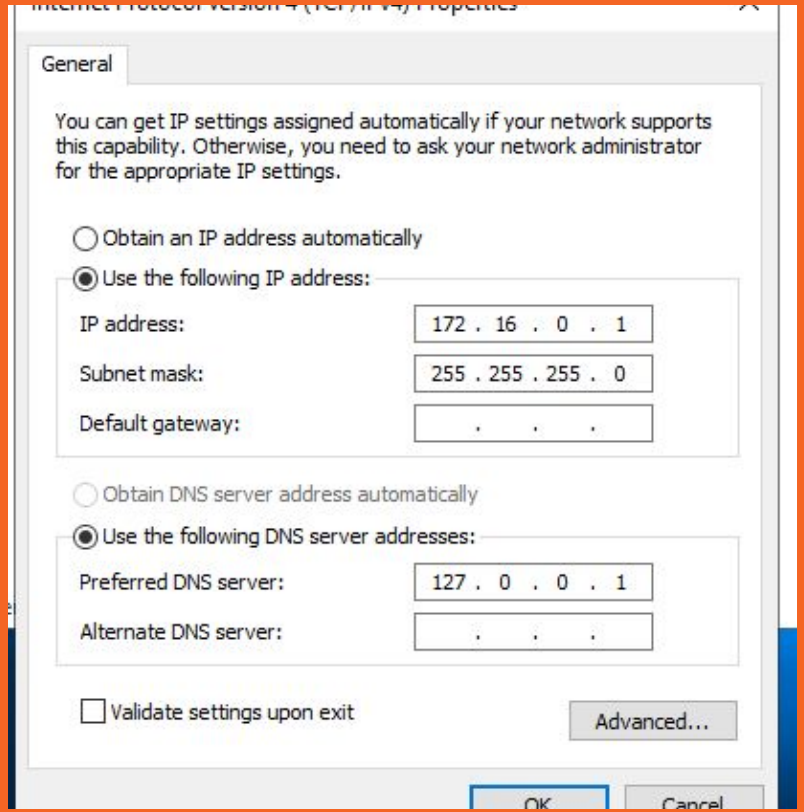



# Identifying Network -internal

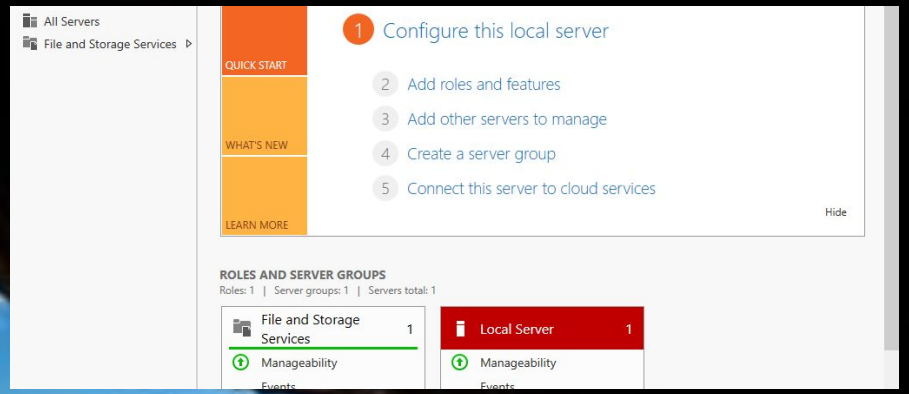
- ➔ Network- rename both networks to identify which is which
- ➔ Home IP will be pulled from your router (Internet)

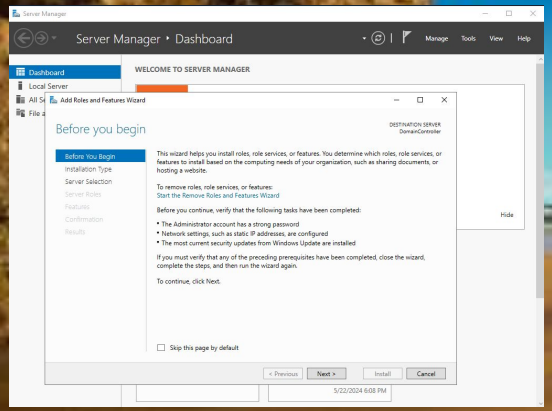
# Assign IP address

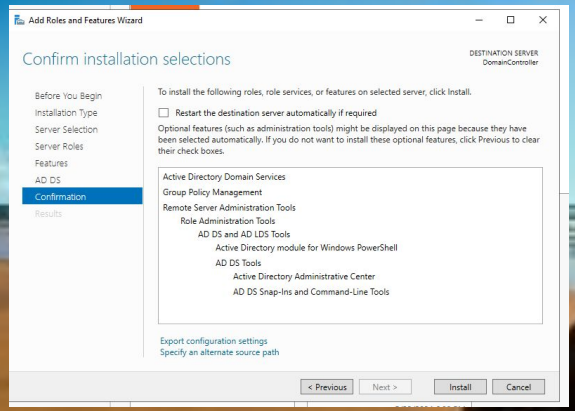
- Network (Bottom right on tray)
- Change adapter options
- Internal (right click properties)
- Chg ipp4- chg to 172.16.0.1 /subnet 255.255.255.0
- Preferred DNS Server = 127.0.0.1
  - It's a loop back to itself



# Install Active Directory Domain Services
# Installation will take a while, so get up and stretch.



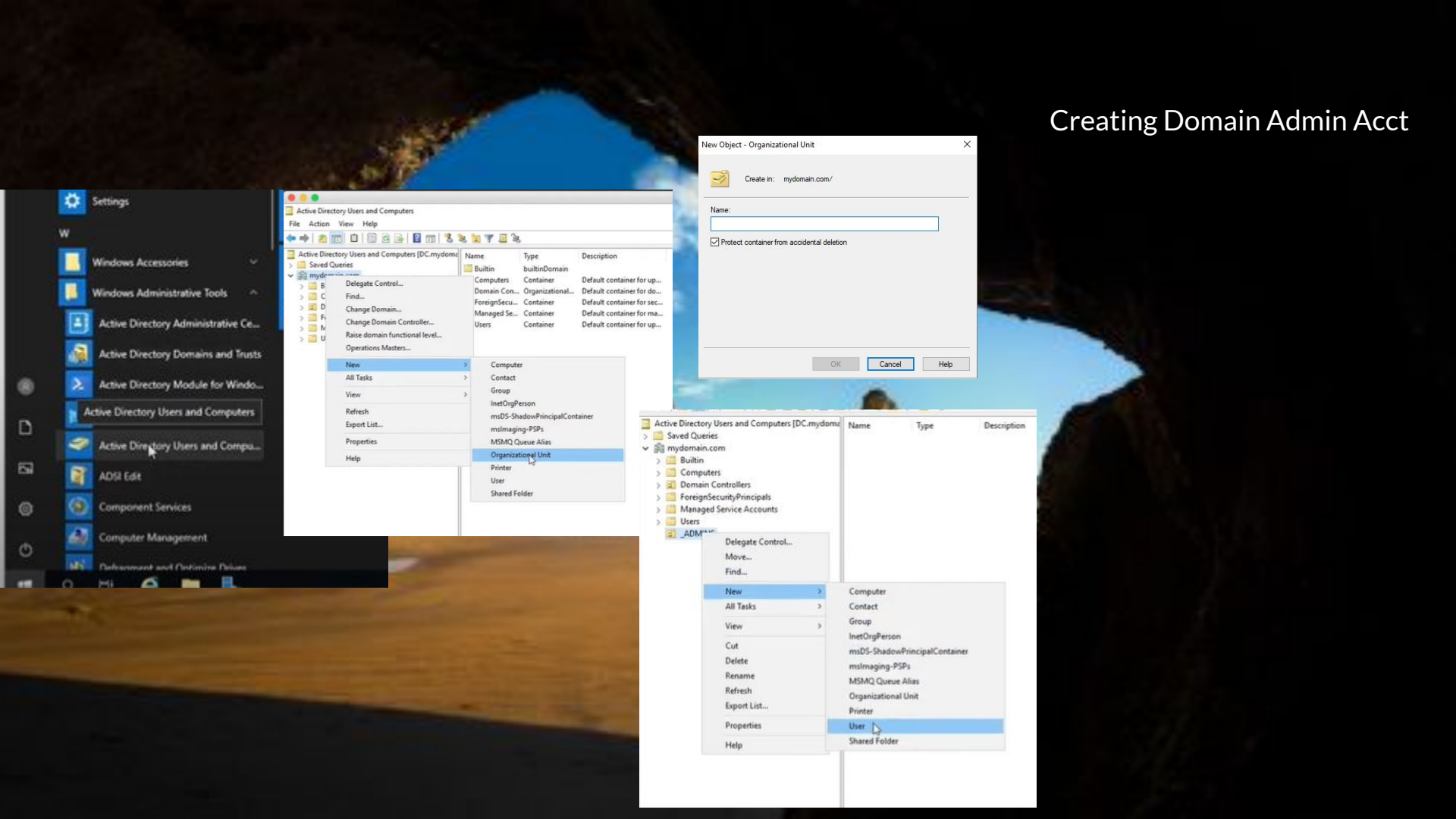




## Tip

1) Add roles & feature
2) Chose active directory domain services
3) Install

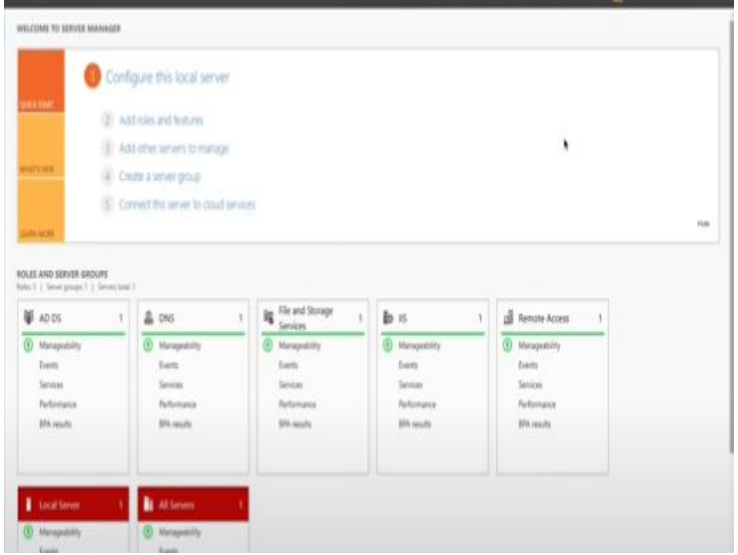
# Creating Domain Admin Acct



# Logging into Domain Admin Acct

- **INSTALL RAS/Nat**
- **Add roles to feature**
  Check off - Remote Access
- Check off- Routing
- .After clicking install go to Routing and Remote Access
- **Click on Tools**

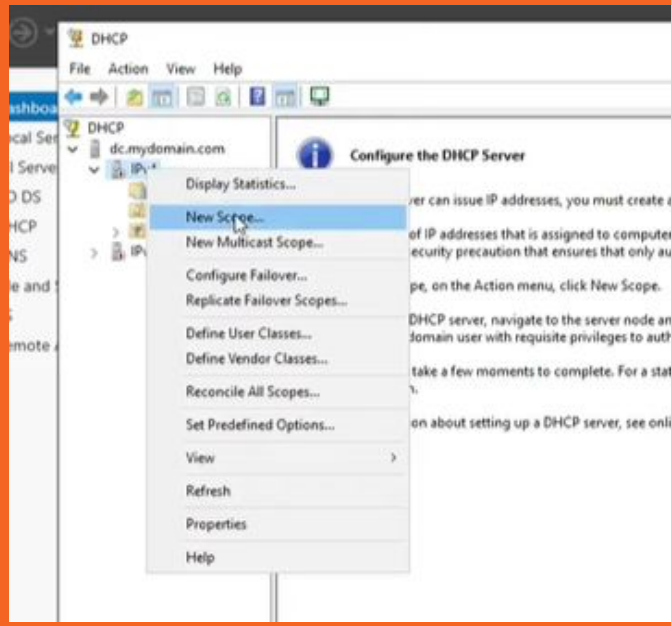
  Click on routing & remote access-configure & enable-click on NAT




**tip**

Once DHCP is installed head over to **tools -click DHCP**

**This will allow client computers on the network to create IP address**

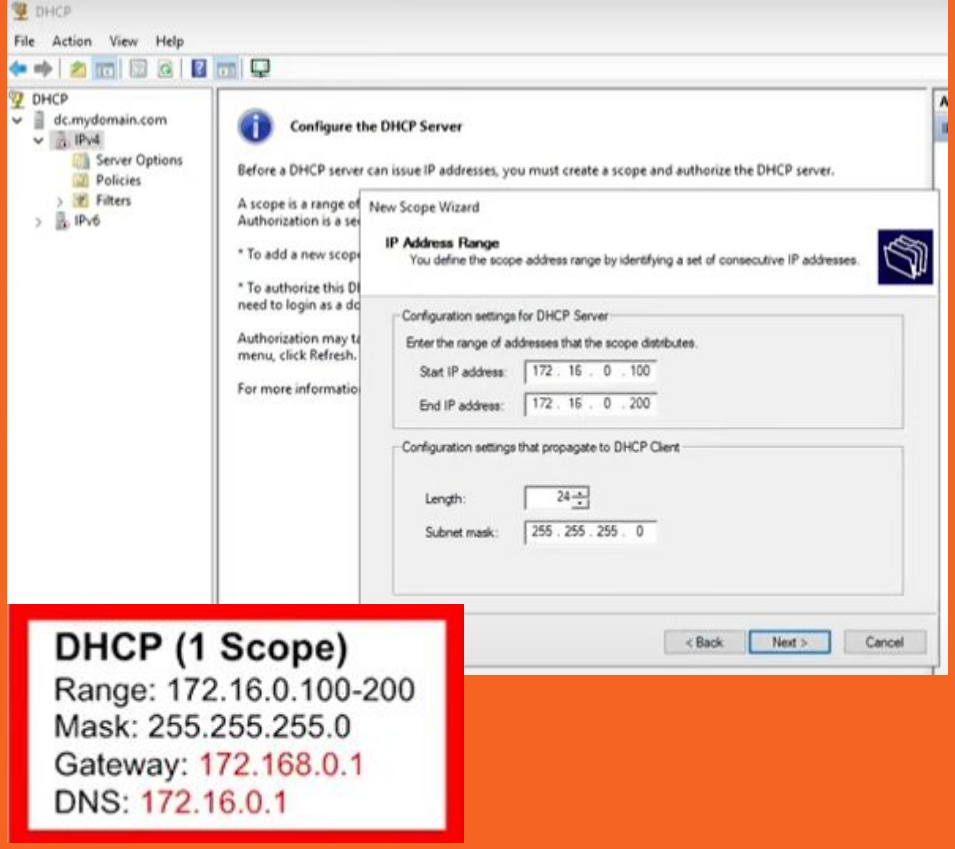



# Setting up a DHCP Server

1)Add roles

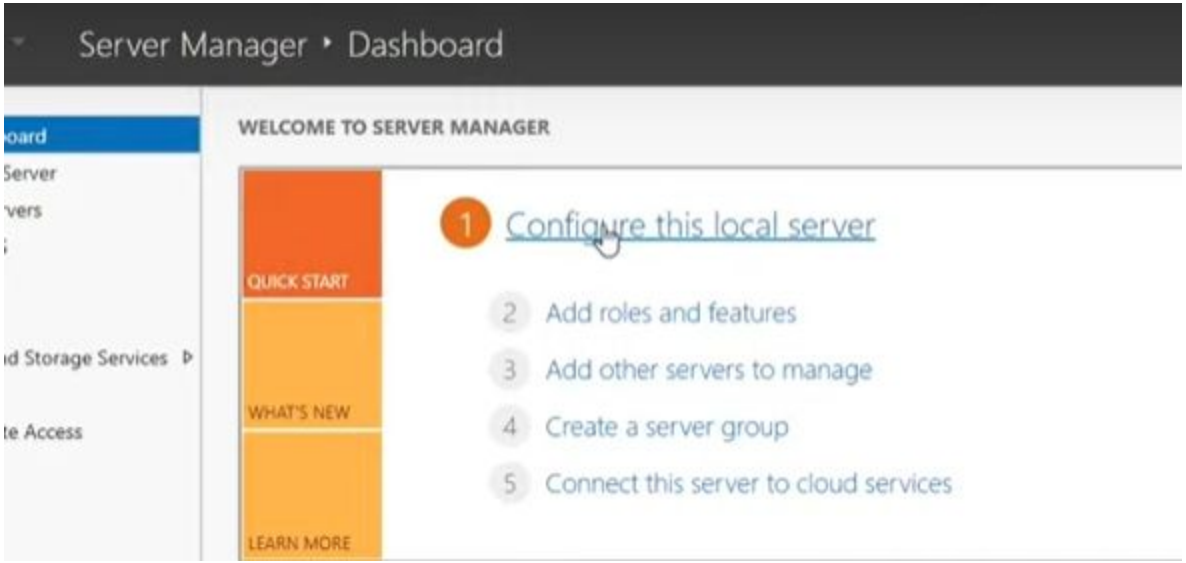
2)check DHCP & install

Name scope -
Start Ip address 172.16.0.100
End IP address 172.16.0.200
Length 24
Subnet mask 255.255.255.0- Activate scope
—After right  click domain server - authorize &refresh




**DHCP (1 Scope)**
Range: 172.16.0.100-200
Mask: 255.255.255.0
Gateway: 172.168.0.1
DNS: 172.16.0.1

1) add roles
2)IPV4 add range & subnet mask
3) lease duration ( how long you can have IP addy before it needs to be refreshed
4) Keep Parent Domain controller as the same DNS server
5)Activate scope/ right DHCP server click to authorize and refresh





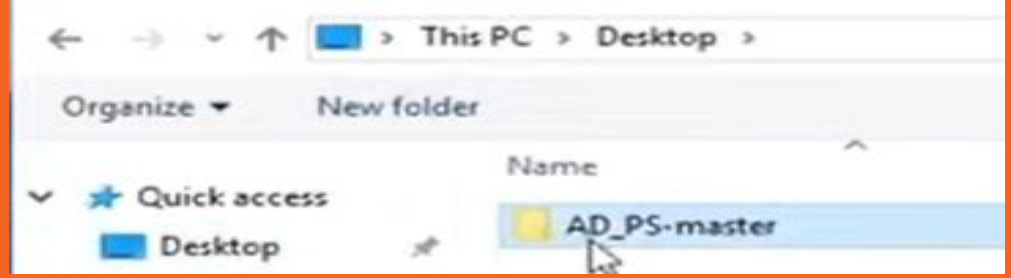
To create a powershell script-(link)
https://github.com/joshmadakor1/AD_PS...

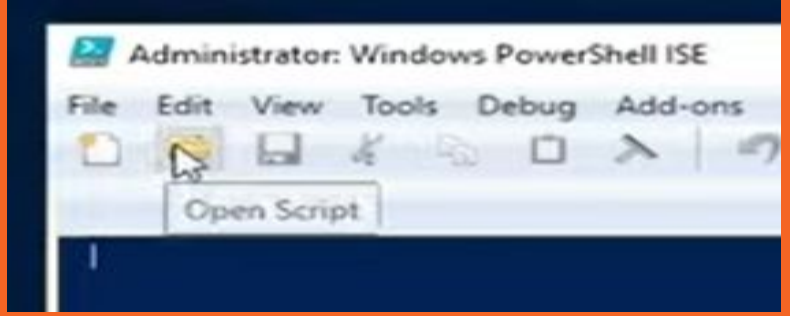
Open up a new browser save on desktop

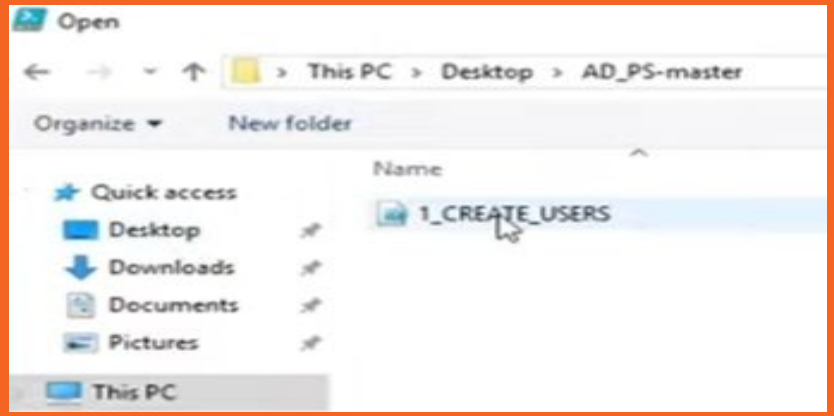
_____ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

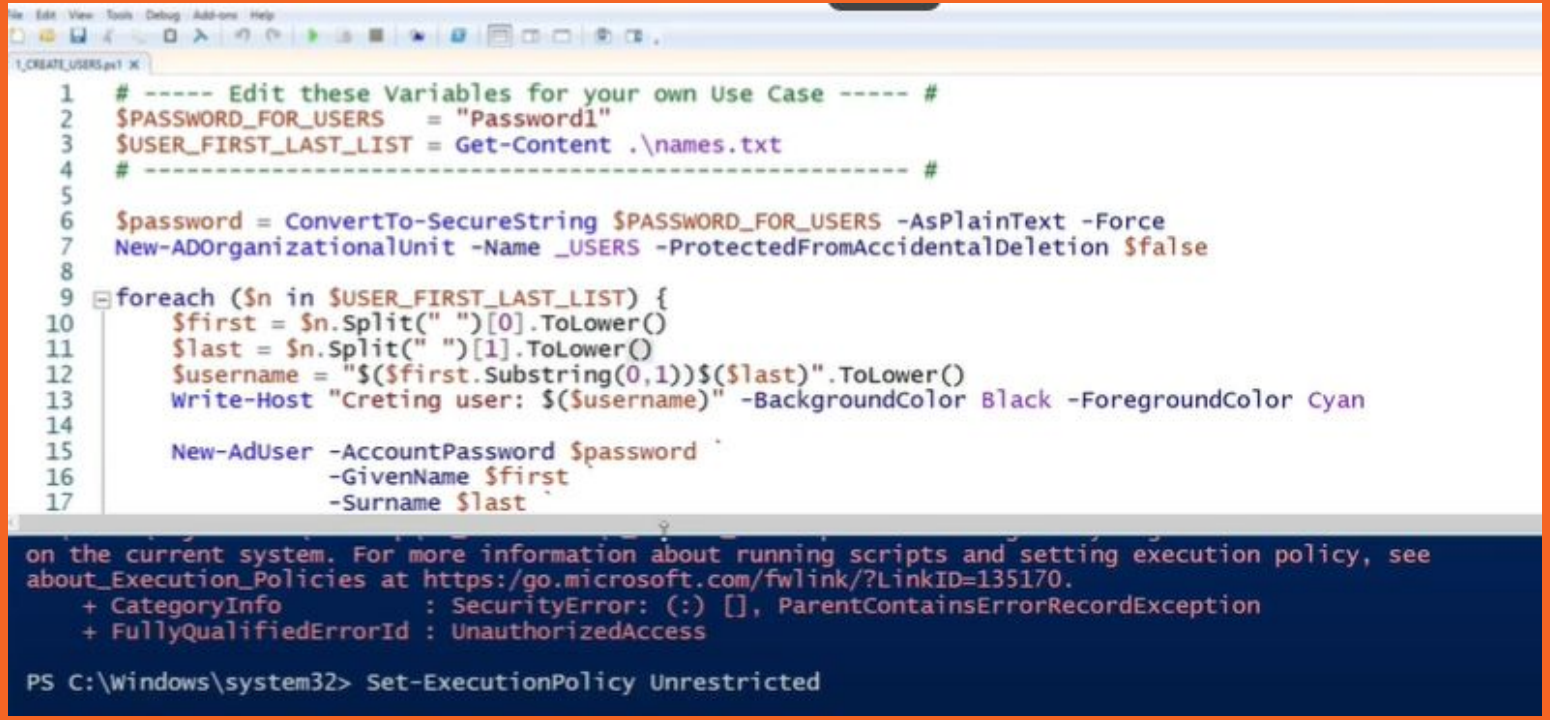
Open Names /added name /save/close
Start on desktop/Windows powershell
Ise/run as admin

Disable(admin & user = OFF)


This PC
Desktop
Organize
New folder
Name
Quick access
Desktop
AD_PS-master


Administrator: Windows PowerShell ISE
File
Edit
View
Tools
Debug
Add-ons
Open Script


Open
This PC
Desktop
AD_PS-master
Organize
New folder
Name
Quick access
Desktop
Downloads
Documents
Pictures
This PC
1_CREATE_USERS




**This powershell script generates over 1000 users for our company.**

c:\windows\system32> cd c:\users\a-(first initial name full lastname)\desktop\AD_PS-master

Then click play/run

```
10      $first = $n.Split(" ")[0].ToLower()
11      $last = $n.Split(" ")[1].ToLower()
12      $username = "$($first.Substring(0,1))$($last)".ToLower()
13      Write-Host "Creating user: $($username)" -BackgroundColor Black -ForegroundColor Cyan
14
15      New-AdUser -AccountPassword $password
16                 -GivenName $first
17                 -Surname $last
18                 -DisplayName $username
19                 -Name $username
```

```
Creting user: sgay
Creting user: hwaite
Creting user: tcofield
Creting user: lparekh
Creting user: avalerius
Creting user: yburch
Creting user: pconnor
Creting user: amakuch
Creting user: kschaner
Creting user: tlavalle
Creting user: ebrunkhorst
Creting user: agaliano
Creting user: smolder
Creting user: vmichie
```

User names imported

# Active Directory

Active Directory (AD) is a cornerstone of network management and security in modern IT infrastructures.

Its capabilities in handling authentication, authorization, and management of resources across a network

Active Directory is an essential tool for managing network infrastructure, enhancing security, and ensuring efficient operation of IT services within an organization.

*Quotes for illustration purposes only*