



VirtualBox

Download VirtualBox

VirtualBox 7.0.10 Oracle VM VirtualBox Extension Pack

- 1) Download Virtual Box along with its extension pack:
<https://www.virtualbox.org/wiki/Downloads>
- 2) Download Windows 10 Iso: <https://www.microsoft.com/en-us/software-download/windows10>
- 3) Create Virtual Machine 1
 - a. **Name and Operating System**
 - i. Name – DC
 - ii. Version – Windows (64-Bit)
 - b. **Memory Size**
 - i. Give it 2048MB of ram
 - ii. Otherwise give it the recommended memory size
 - c. **Hard Disk**
 - i. "Create virtual hard disk now"
 - d. *Keep all other settings as default*
- 4) In the settings menu of VM1
 - a. **Advanced General Settings**
 - i. Enable Bidirectional to copy and paste/drag files between VMs and actual Computer

Shared Clipboard: Bidirectional ▼

Drag'n'Drop: Bidirectional ▼

 - b. **System Processor**
 - i. Adjust settings according to computer's capacity load
 - c. **Network**

- i. Adapter 1 (Dedicated for the internet) (Running NAT)

Network

Adapter 1 Adapter 2 Adapter 3 Adapter 4

☒ Enable Network Adapter

Attached to: NAT

Name:

▶ Advanced

- ii. Adapter 2 (Dedicated for the internal VMware network)

Network

Adapter 1 Adapter 2 Adapter 3 Adapter 4

☒ Enable Network Adapter

Attached to: Internal Network

Name: intnet

▶ Advanced

5) Add Server 2019 ISO to “DC” VM

- a. When Installing windows selects “standard” / “Experience”

Operating system	Architecture
Windows Server 2019 Standard Evaluation	x64
Windows Server 2019 Standard Evaluation (Desktop Experience)	x64
Windows Server 2019 Datacenter Evaluation	x64
Windows Server 2019 Datacenter Evaluation (Desktop Experience)	x64

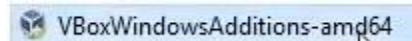
- b. Select “Custom” Install and select default settings
- c. Restart VM
- d. Set up a consistent password to use throughout the lab such as “Password1”
- e. Remember to use “Input > Keyboard > Insert Ctrl+Alt+Del” to unlock VM screen

6) Install VM Guest Additions to create a smoother experience in terms of mouse functionality and VM size

- a. “Devices > Insert Guest Additions CD image...”
- b. File Explorer
- c. Double click “Virtual box guest additions”



d. Run amd64



e. Click “next” to all default selected items and install

f. Restart VM

7) Set Up IP Addressing

a. Search “ethernet settings” in the search bar and select “Change adapter options”



b. Right click to open the status page of each connection and open the details section to identify the connections

i. 10.X.X.X” will be the network connected to the internet

1. Rename it “Internet”

ii. The other adapter will be the internal one

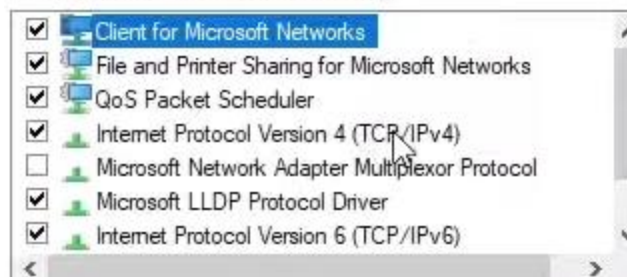
1. Rename it “Internal”

c. Right click to open the properties page to assign IPs

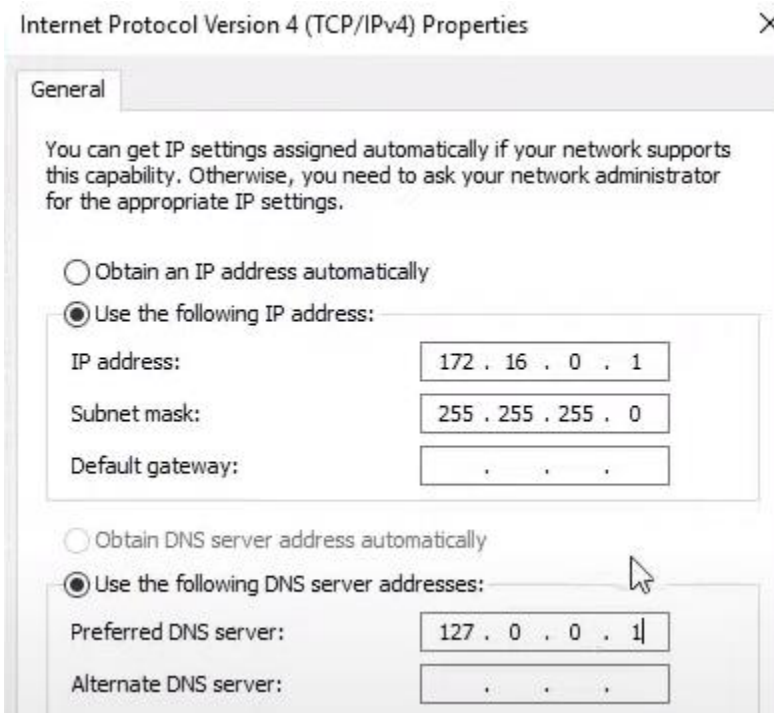
i. Internal Adapter

1. Double click IPv4

This connection uses the following items:



2. Assign the following IP's



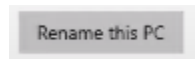
- 3.

8) Rename PC

- a. Right click start menu and go to system



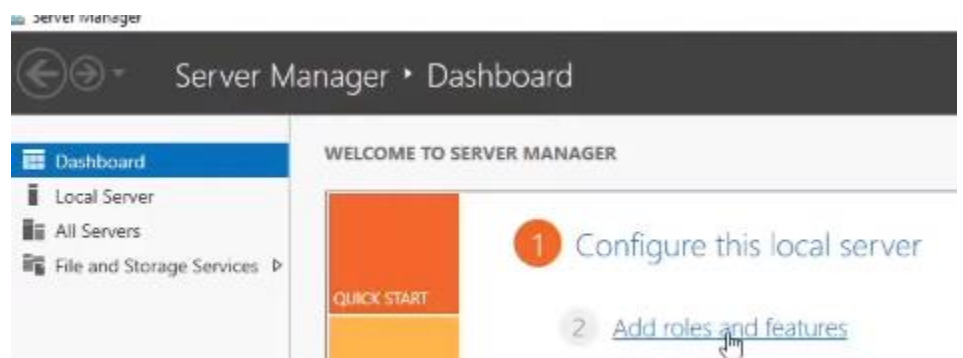
- b. Click “rename this pc” and change it to DC



- c. Select “Restart PC”

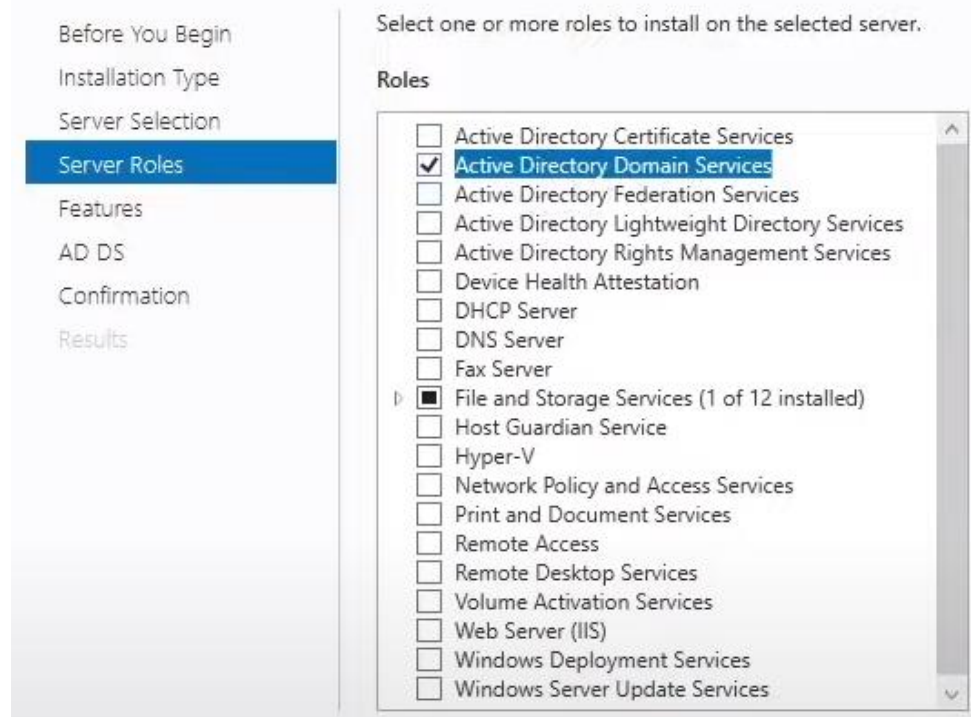
9) Install Active Directory Domain Services

- a. Select “Add roles and features” in “Server Manager”



- b. Select “Next” up to *Server Roles*
- c. At *Server Roles* make sure the following are selected

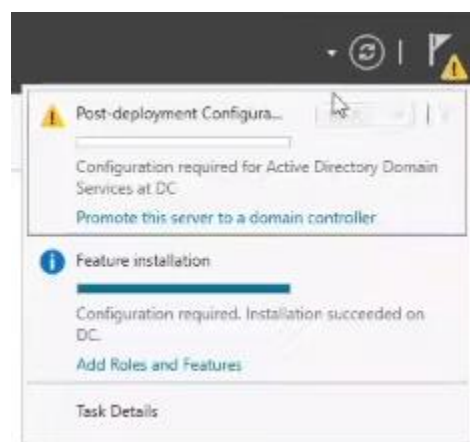
Select server roles



- d. Select “next” to everything else and select “install”

10) Post Deployment Configuration

- a. Select flag with yellow error sign and select “promote this server to domain controller” to promote the computer to a domain



- b. Select “add a new forest” and rename the *Root Domain Name* to “mydomain.com”

Active Directory Domain Services Configuration Wizard

Deployment Configuration

Deployment Configuration

Domain Controller Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Select the deployment operation

☐ Add a domain controller to an existing domain
☐ Add a new domain to an existing forest
☒ Add a new forest

Specify the domain information for this operation

Root domain name:

- c. Use consistent password you chose earlier for “password” section on next page

Domain Controller Options TARGET SI

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:

Domain functional level:

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:

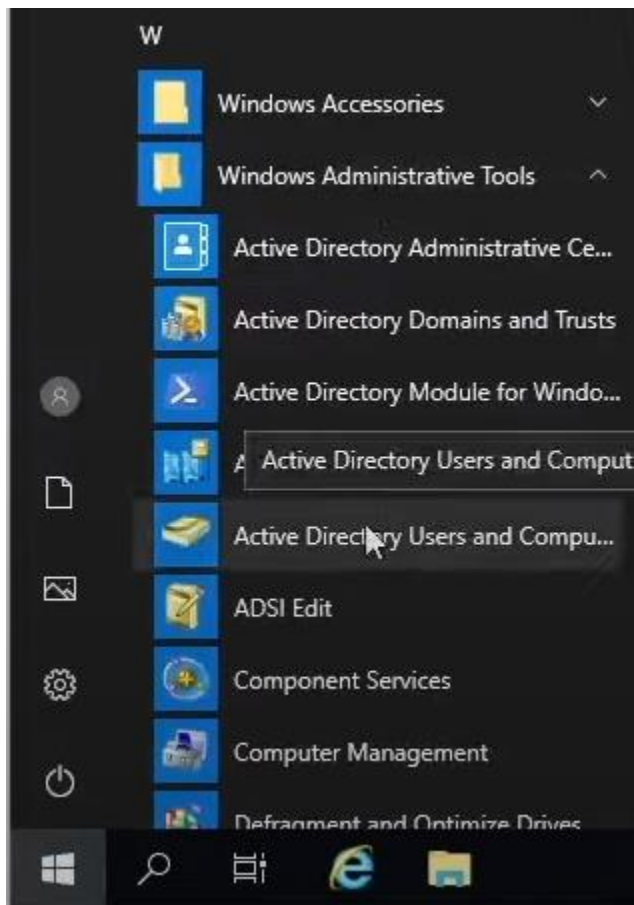
Confirm password:

- d. Select “next” to everything else and select “install”
- e. ***Computer will automatically restart***
- f. VM should now have a new looking log in name

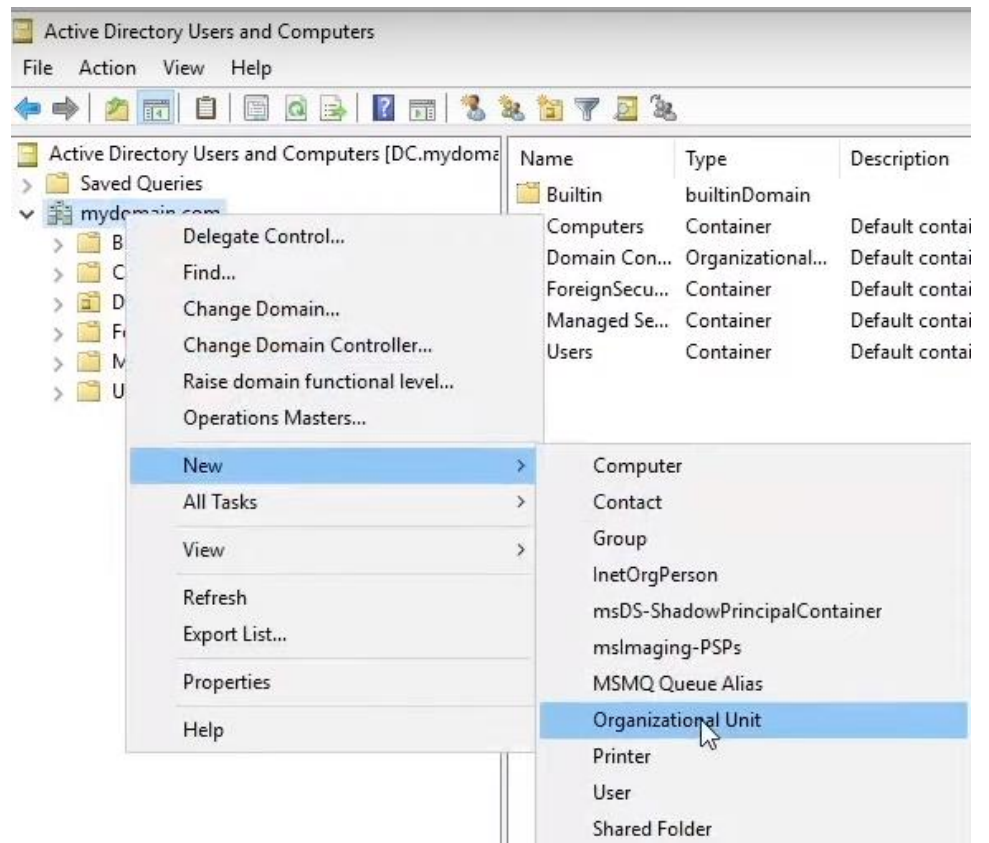


11) Create own dedicated domain admin account

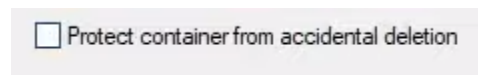
- a. Start > Windows Administrative Tools > Active Directory users and Computers



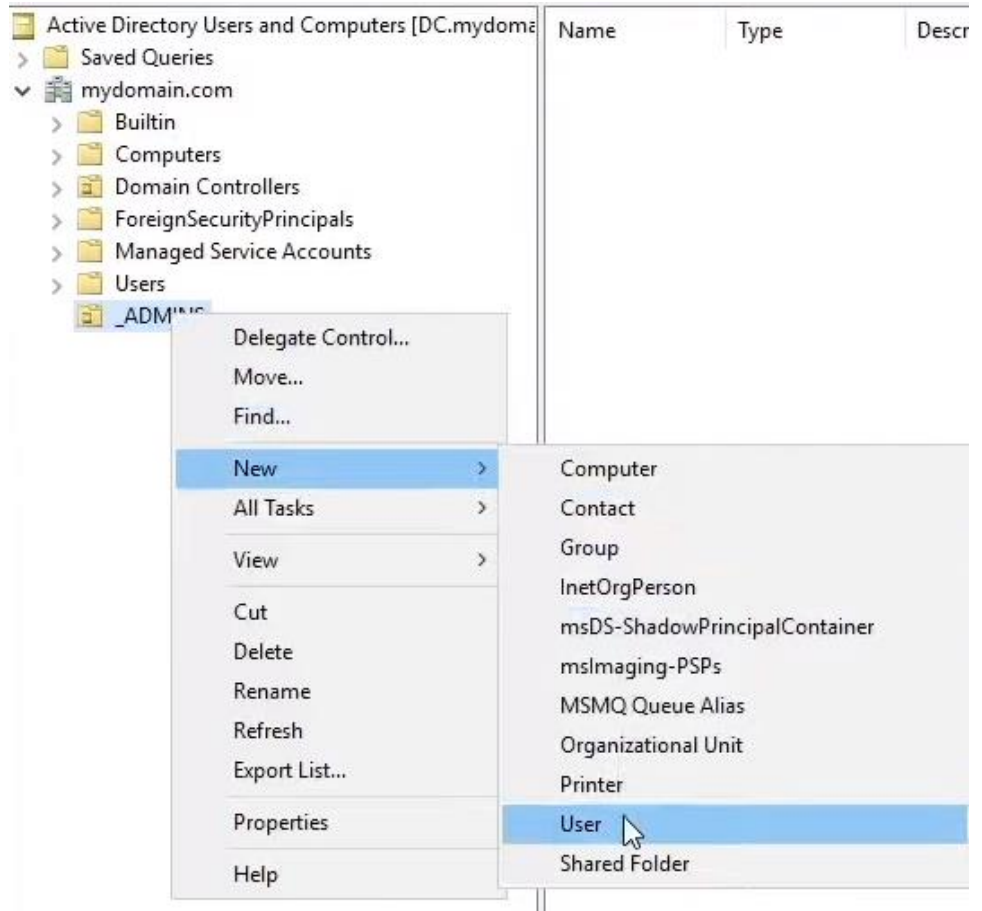
- b. Create organizational unit to put admin account in



- c. Name it "ADMINS" and uncheck box



- d. Under new folder create a new user



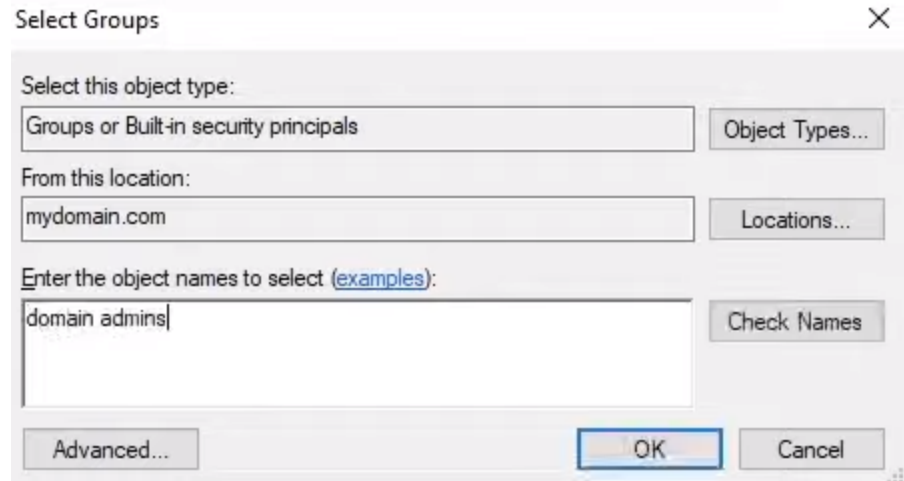
- e. Name it your name
- f. For user logon name do "a-Firstnameinitial.Lastname"
- g. Make Password the consistent password you chose earlier and since it is a lab environment select the following boxes

☐ User must change password at next logon
☐ User cannot change password
☒ Password never expires
☐ Account is disabled

- h. Select "Finish"

12) Make a Domain Admin

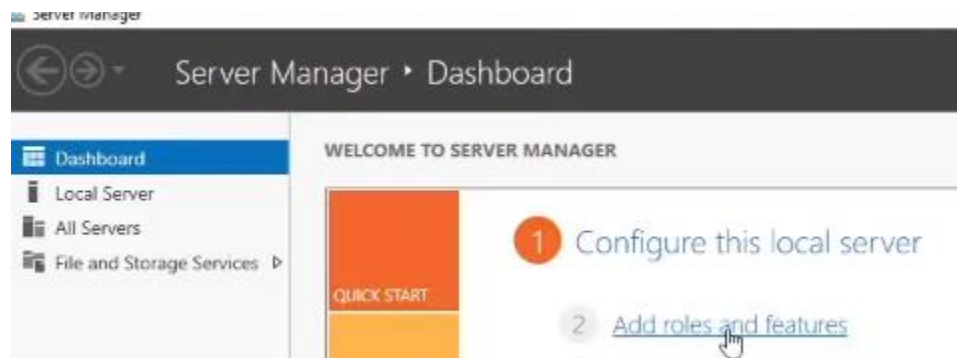
- a. Right click admin name > properties > Member of > add
- b. Type in "domain admins" and select "check names"



- c. Select "ok"
- d. Own domain admin account is created

13) Routing and Remote Access

- a. Select "Add roles and features" in "Server Manager"



- b. Select "Next" up to *Server Roles*
- c. At *Server Roles* make sure the following are selected

Select server roles

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Remote Access
 Role Services
Confirmation
Results

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

Roles

- ☐ Active Directory Certificate Services
- ☒ Active Directory Domain Services (Installed)
- ☐ Active Directory Federation Services
- ☐ Active Directory Lightweight Directory Services
- ☐ Active Directory Rights Management Services
- ☐ Device Health Attestation
- ☐ DHCP Server
- ☒ DNS Server (Installed)
- ☐ Fax Server
- ☒ File and Storage Services (2 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

- d. At *Remote Access Role Services* make sure the following are selected

Select role services

Before You Begin
Installation Type
Server Selection
Server Roles
Features
Remote Access
Role Services
Web Server Role (IIS)
 Role Services
Confirmation
Results

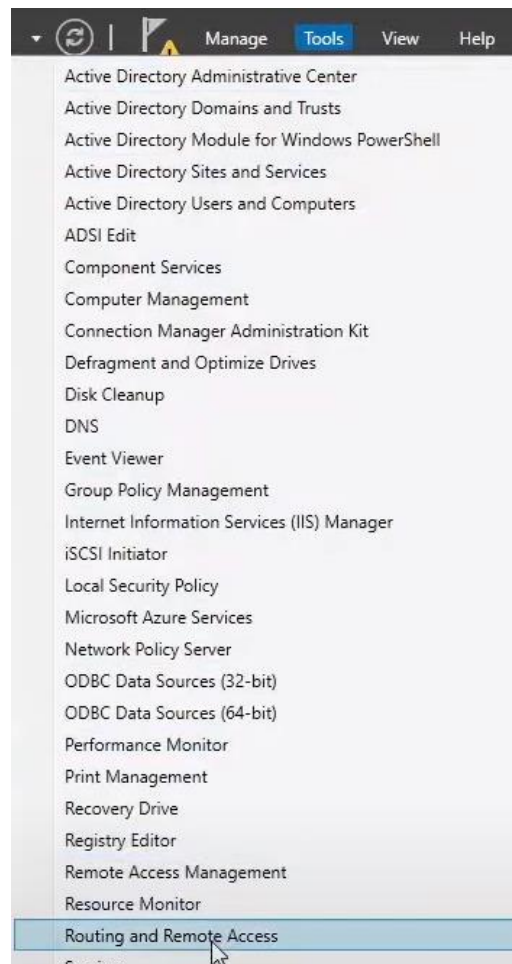
Select the role services to install for Remote Access

Role services

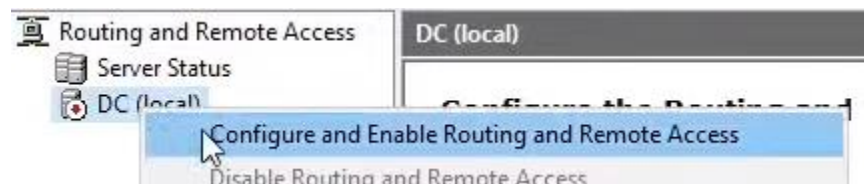
- ☒ DirectAccess and VPN (RAS)
- ☒ **Routing**
- ☐ Web Application Proxy

- e. Select “next” to everything else and select “install”

f. Tools > Routing and Remote Access



g. Right click and select the following



h. Select "NAT"

Routing and Remote Access Server Setup Wizard

Configuration

You can enable any of the following combinations of services, or you can customize this server.

- ☐ Remote access (dial-up or VPN)
Allow remote clients to connect to this server through either a dial-up connection or a secure virtual private network (VPN) Internet connection.
- ☒ Network address translation (NAT)
Allow internal clients to connect to the Internet using one public IP address.
- ☐ Virtual private network (VPN) access and NAT
Allow remote clients to connect to this server through the Internet and local clients to connect to the Internet using a single public IP address.
- ☐ Secure connection between two private networks
Connect this network to a remote network, such as a branch office.
- ☐ Custom configuration
Select any combination of the features available in Routing and Remote Access.

i. Select "internet"

Routing and Remote Access Server Setup Wizard

NAT Internet Connection

You can select an existing interface or create a new demand-dial interface for client computers to connect to the Internet.

- ☒ Use this public interface to connect to the Internet:

Network Interfaces:

Name	Description	IP Address
INTERNET_	Intel(R) PRO/1000 MT...	10.0.2.15 (DHCP)
X_Internal_X	Intel(R) PRO/1000 MT...	172.16.0.1

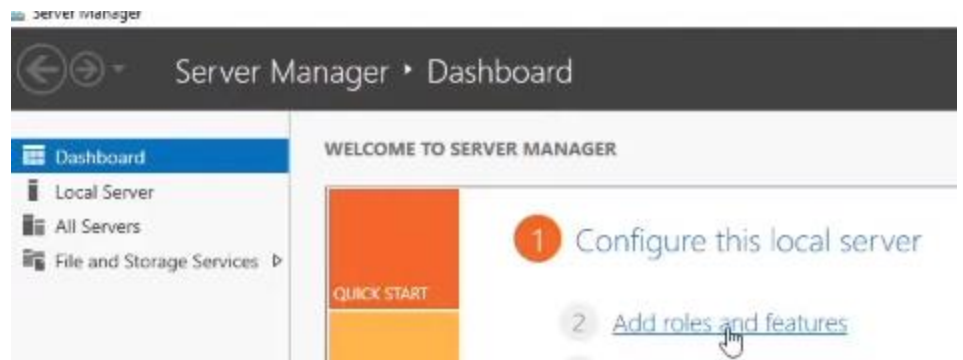
- ☐ Create a new demand-dial interface to the Internet
A demand-dial interface is activated when a client uses the Internet. Select this option if this server connects with a modem or by using the Point-to-Point Protocol over Ethernet. The Demand-Dial Interface Wizard will start at the end of this wizard.

j. "Finish"

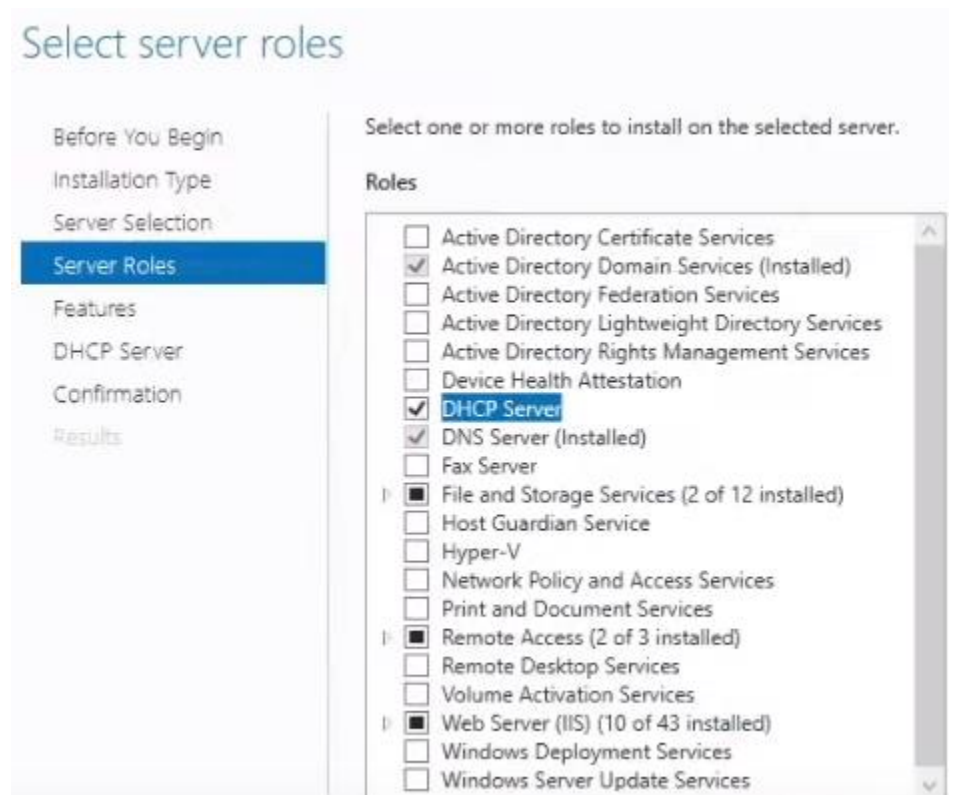
DC (local) should be green with an arrow pointing up

14) Set up DHCP server on Domain Controller which will allow windows 10 clients get an ip address and get on the internet

a. Select "Add roles and features" in "Server Manager"



- b. Select "Next" up to *Server Roles*
- c. At *Server Roles* make sure the following are selected



- d. Select "next" to everything else and select "install"
- 15) DHCP
- a. Right click "IPv4" and add new scope



b. Name Scope accordingly

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:

Description:

c. IP Address Range

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:

End IP address:

Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

d. *No Exclusions*

- e. Lease Duration
 - i. Select any amount of time you would like. Just defines how long a computer can have the IP address before it needs to be refreshed
- f. Select the following

New Scope Wizard

Configure DHCP Options

You have to configure the most common DHCP options before clients can use the scope.

When clients obtain an address, they are given DHCP options such as the IP addresses of routers (default gateways), DNS servers, and WINS settings for that scope.

The settings you select here are for this scope and override settings configured in the Server Options folder for this server.

Do you want to configure the DHCP options for this scope now?

- ☒ Yes, I want to configure these options now
- ☐ No, I will configure these options later

- g. Router (default gateway)
 - i. Forward traffic from client to the internet
 - ii. Type in the following address and select add

Router (Default Gateway)

You can specify the routers, or default gateways, to be

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

IP address:

172 . 16 . 0 . 1	Add
	Remove
	Up
	Down

- h. Keep DNS as "mydomain.com"
- i. Skip "WINS servers"
- j. Select "Yes, I want to activate this scope now"

16) Use PowerShell script to create users in active directory

- a. Open names.txt file and add your own name at the top of the list and save file
- b. Start > Windows PowerShell > Windows PowerShell ISE > More > Run as administrator
- c. Open > "Create_Users" PowerShell file
- d. Enable execution of all scripts in command line window
 - i. Type "Set-ExecutionPolicy Unrestricted" and press enter

- ii. Type `cd {file location for PowerShell script}`

Code Explanation

```
$PASSWORD_FOR_USERS = "Password1"
```

- Password all our users are going to use

```
$USER_FIRST_LAST_LIST = Get-Content .\names.txt
```

- Taking all the names from names.txt and pasting them into variable as an array

```
$password = ConvertTo-SecureString $PASSWORD_FOR_USERS -AsPlainText -Force
```

- Takes plain text password "Password1" and creates it into an object that PowerShell can use as a secure password

```
New-ADOrganizationalUnit -Name _USERS -ProtectedFromAccidentalDeletion $false
```

- Creates another organizational unit named "_USERS"
- Unchecks the same box that was unchecked earlier when creating an organizational unit

```
foreach ($n in $USER_FIRST_LAST_LIST) {
```

- This variable has a bunch of users stored in it

```
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  
}
```

- This block of code will run for each of those users in the list
- \$n is the current user that is being examined

```
$first = $n.Split(" ")[0].ToLower()
```

```
$last = $n.Split(" ")[1].ToLower()
```

- n.split is going to split the name and put the first name in \$first variable and the last name in the \$last variable

```
$username = "$($first.Substring(0,1))$($last)".ToLower()
```

- Takes first character of first name and concatenate it with the last name to create the username

```
Write-Host "Creating user: $($username)" -BackgroundColor Black -ForegroundColor Cyan
```

- It outputs something on the screen in a cyan color to alert individual that a user is being created

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

- Creates a new user in active directory

17) Run Script

- a. Creating Users

18) Create a new VM

- a. **Name and Operating System**
 - i. Name – CLIENT1
 - ii. Version – Windows (64-Bit)
- b. **Memory Size**
 - i. Give it 2048MB of ram
 - ii. Otherwise give it the recommended memory size
- c. **Hard Disk**
 - i. "Create virtual hard disk now"
- d. *Keep all other settings as default*

19) In the settings menu of VM2

- a. **Advanced General Settings**
 - i. Enable Bidirectional to copy and paste/drag files between VMs and actual Computer

Shared Clipboard: Bidirectional ▾

Drag'n'Drop: Bidirectional ▾

b. System Processor

- i. Adjust settings according to computer's capacity load

c. Network

Network

Adapter 1 Adapter 2 Adapter 3 Adapter 4

☒ Enable Network Adapter

Attached to: Internal Network ▾

Name: intnet ▾

▶ Advanced

20) Add Windows 10 ISO to "CLIENT1" VM

- a. When Installing windows select "I don't have a product key"
- b. When Installing windows select "Windows 10 Pro"
- c. Select "Custom" Install and select default settings
- d. Go through installation process
 - i. Select
 - 1. "No internet"
 - 2. "Limited setup"
- e. Name "user"
- f. No password
- g. "Not now" for Cortana

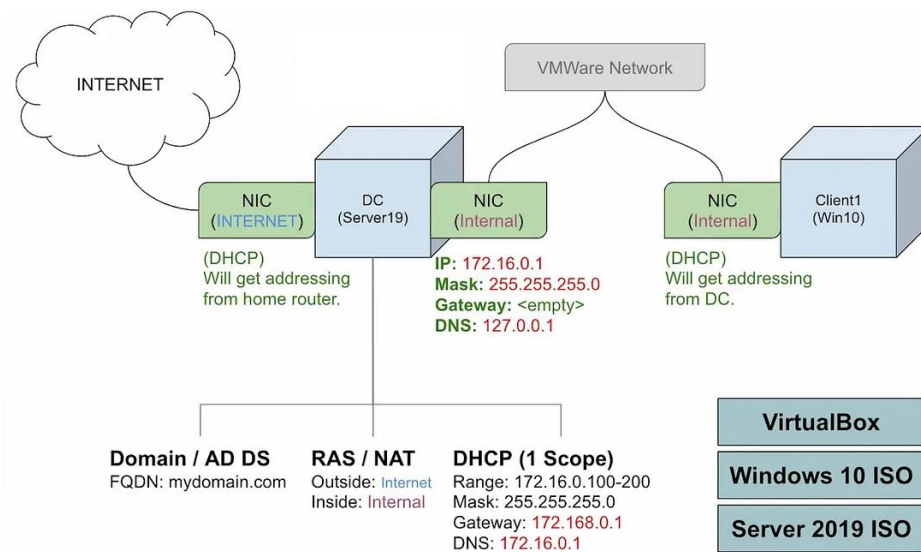
21) Open Command Prompt on "CLIENT1" VM

- a. Type Ipconfig
 - i. IP addressing should work

22) Right click start menu > system > Rename this PC (advanced) > change

- a. Rename "CLIENT1"
- b. Select *Member of Domain*
 - i. Type "mydomain.com"
 - ii. Type in a user and password for domain admin account that was created earlier

Network Referencing:



Credit for project:

https://www.youtube.com/watch?v=MHsl8hJmglI&t=2196s&ab_channel=JoshMadakor