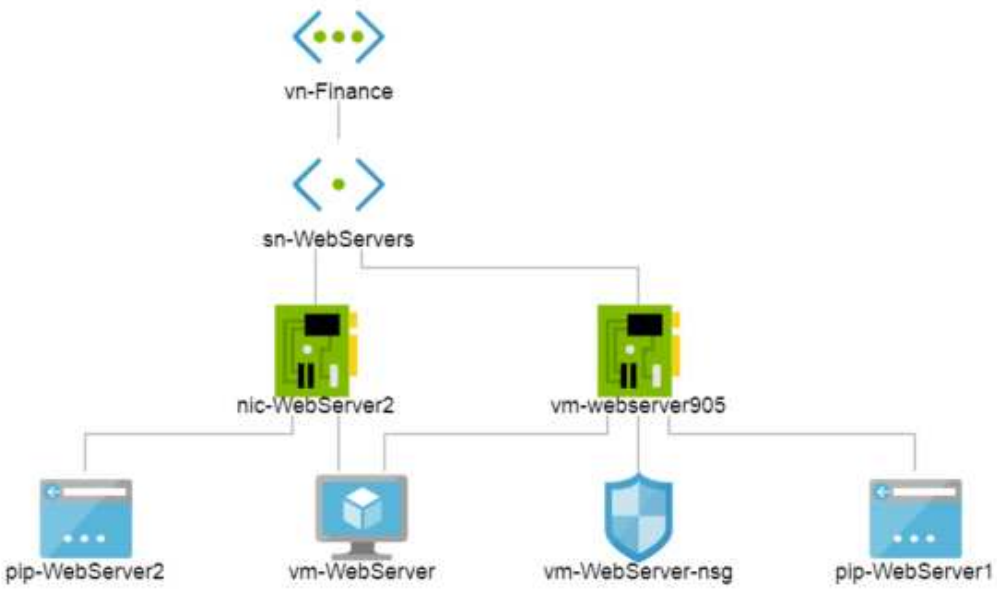
Configure Multiple Network Interfaces And Public IPs To A Virtual Machine

In this tutorial I'm going to show how to:

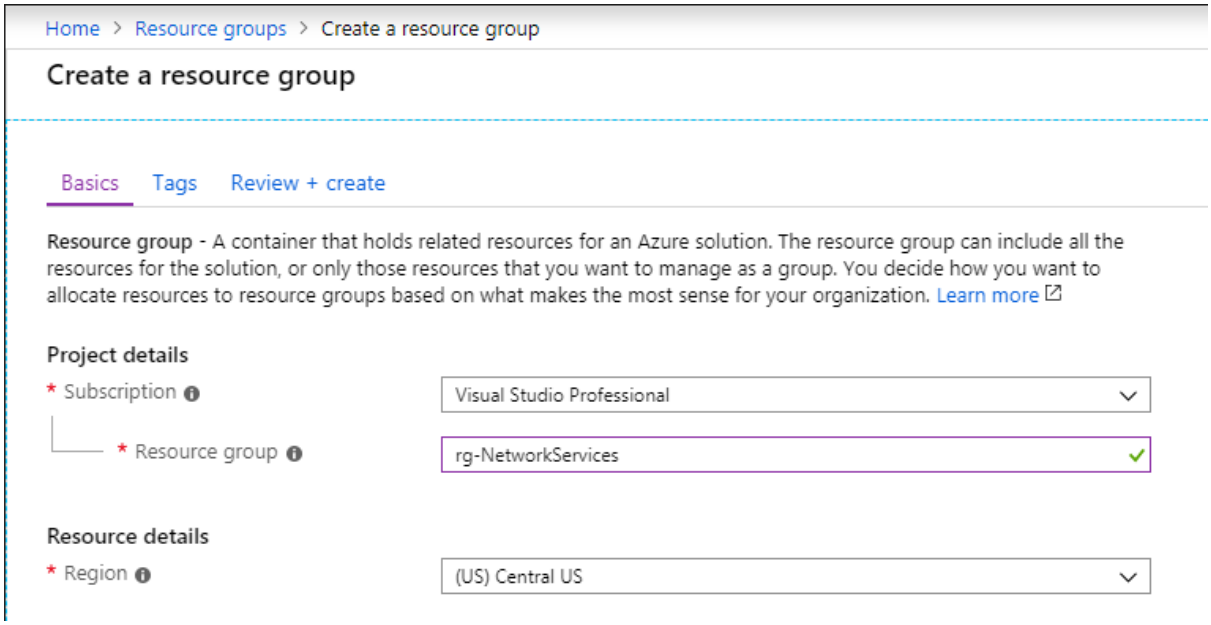
- Create new Resource Group
- Create a Virtual Network and associate it with Resource Group
- Add Subnet to Virtual Network
- Add Virtual Machine to the Virtual Network
- Associate multiple NICs and PIPs to a Virtual Machine
- Remote in to a Virtual Machine
- Install IIS on the Virtual Manager
- Send http traffic to the Virtual Machine

At the end of this tutorial we will be ending up with a network topology which will look something like bellow.

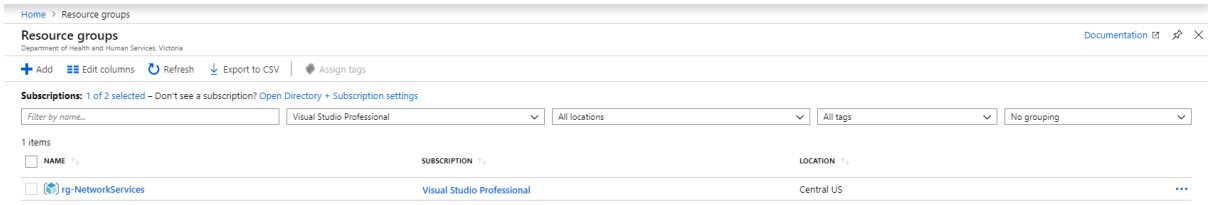


Step 01: Create a new Resource Group

- Give it name: rg-NetworkServices
- Select region: (US) Central US



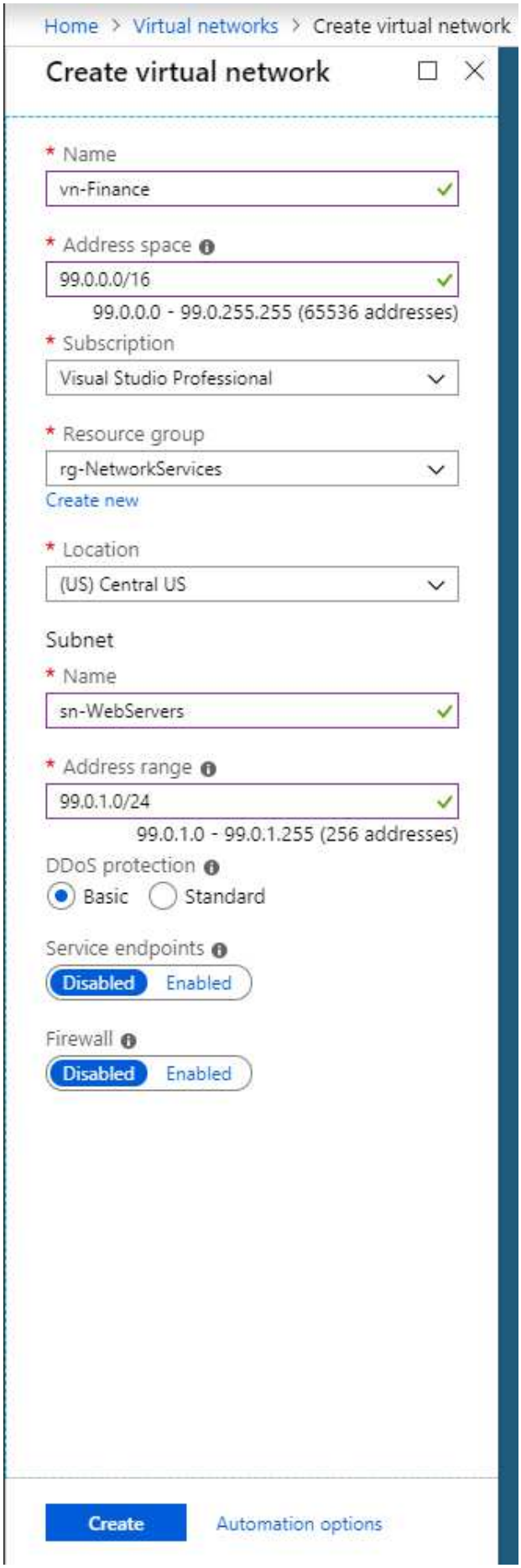
We can see the newly created Resource Group.



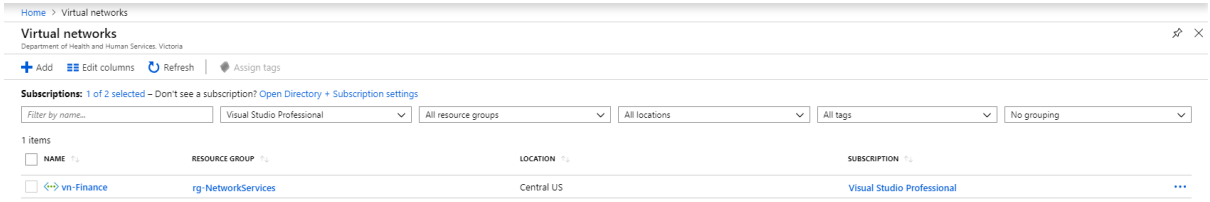
Step 02: Create a new Virtual Network

We are going to create a Virtual Network and associate a Subnet.

- Give it name: vn-Finance
- Address space: 99.0.0.0/16
- Resource group: rg-NetworkServices (the resource group we created earlier)
- Location: (US) Central US
- Subnet name: sn-WebServers
- Address range: 99.0.1.0/24

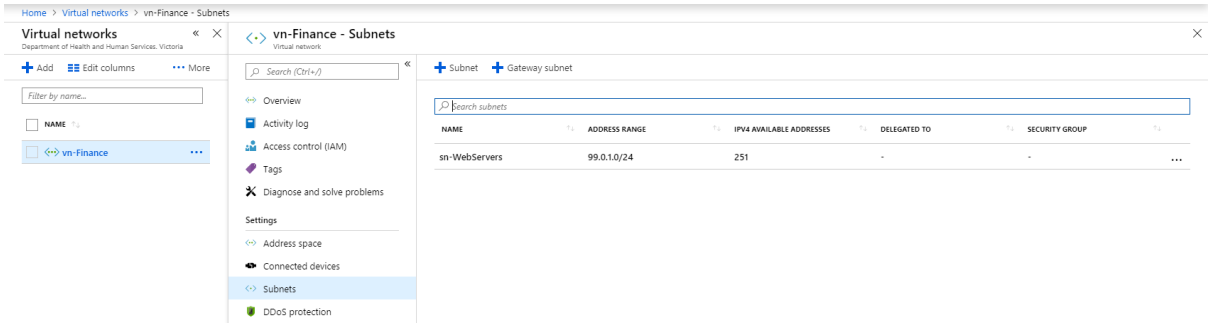

Home > Virtual networks > Create virtual network
Create virtual network
* Name
vn-Finance
* Address space
99.0.0.0/16
99.0.0.0 - 99.0.255.255 (65536 addresses)
* Subscription
Visual Studio Professional
* Resource group
rg-NetworkServices
Create new
* Location
(US) Central US
Subnet
* Name
sn-WebServers
* Address range
99.0.1.0/24
99.0.1.0 - 99.0.1.255 (256 addresses)
DDoS protection
Basic
Standard
Service endpoints
Disabled
Enabled
Firewall
Disabled
Enabled
Create
Automation options

We can see the newly created Virtual Network.

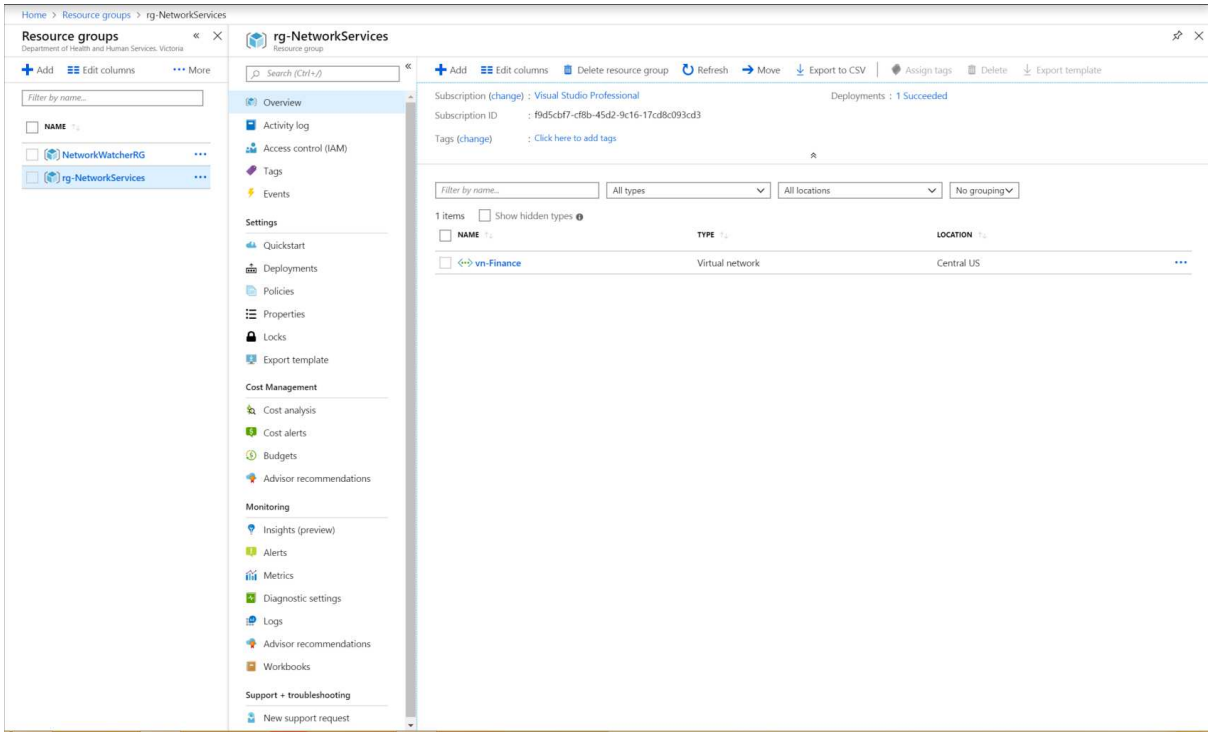


Click on “vn-Finance” Virtual Network and go in to it.

Under Subnets we can see the new subnet we created: sn-WebServers



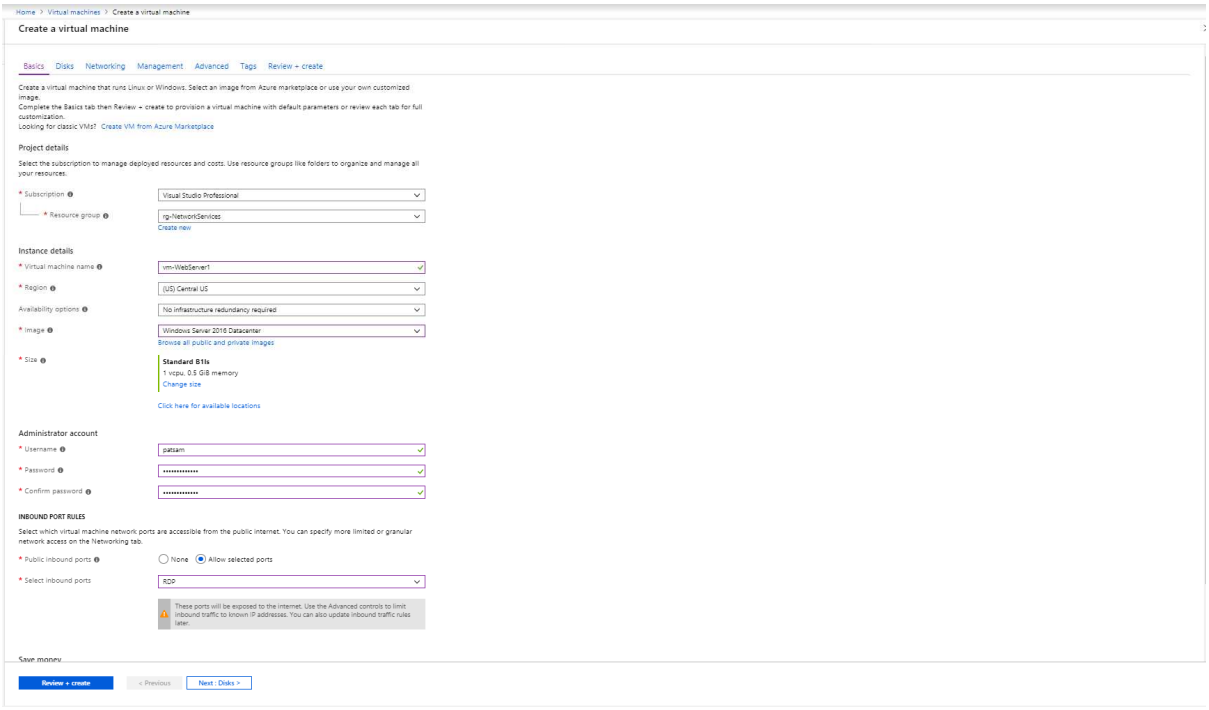
Resources:



Step 03: Add a new Virtual Machine

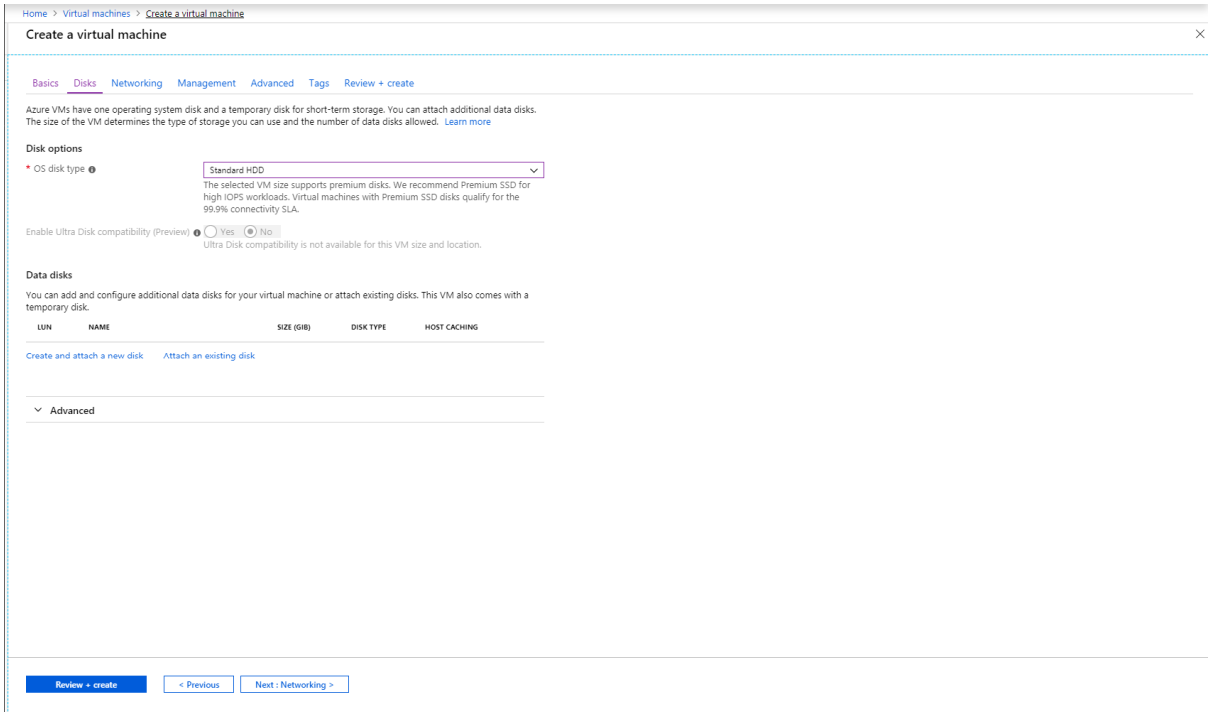
We are going to create a new Virtual Machine.

- Resource Group: rg-NetworkServices
- Give it name: vm-WebServer
- Region: (US) Central US
- Image: Windows Server 2016 Datacentre
- Size: Standard B1ls
- Username/password (we are going to remote in to this machine later on)
- Public inbound ports: Allow selected ports (*important – set this option to remote in)
- Selected inbound ports: RDP (*important – set this option to remote in)



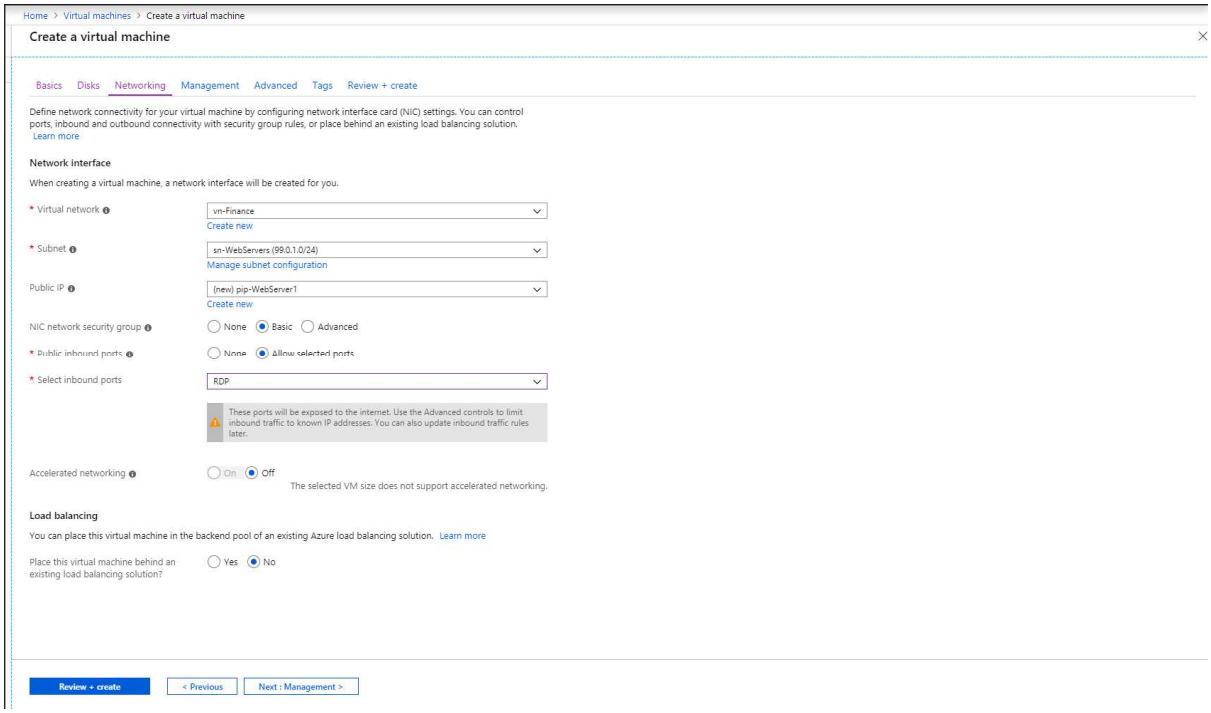
Click Next: Disks button.

- OS disk type: Standard HDD



Click Next: Networking button.

- Virtual network: vn-Finance (the Virtual Network we created earlier)
- Subnet: sn-WebServers
- Public inbound ports: Allow selected ports (*important – set this option to remote in)
- Selected inbound ports: RDP (*important – set this option to remote in)

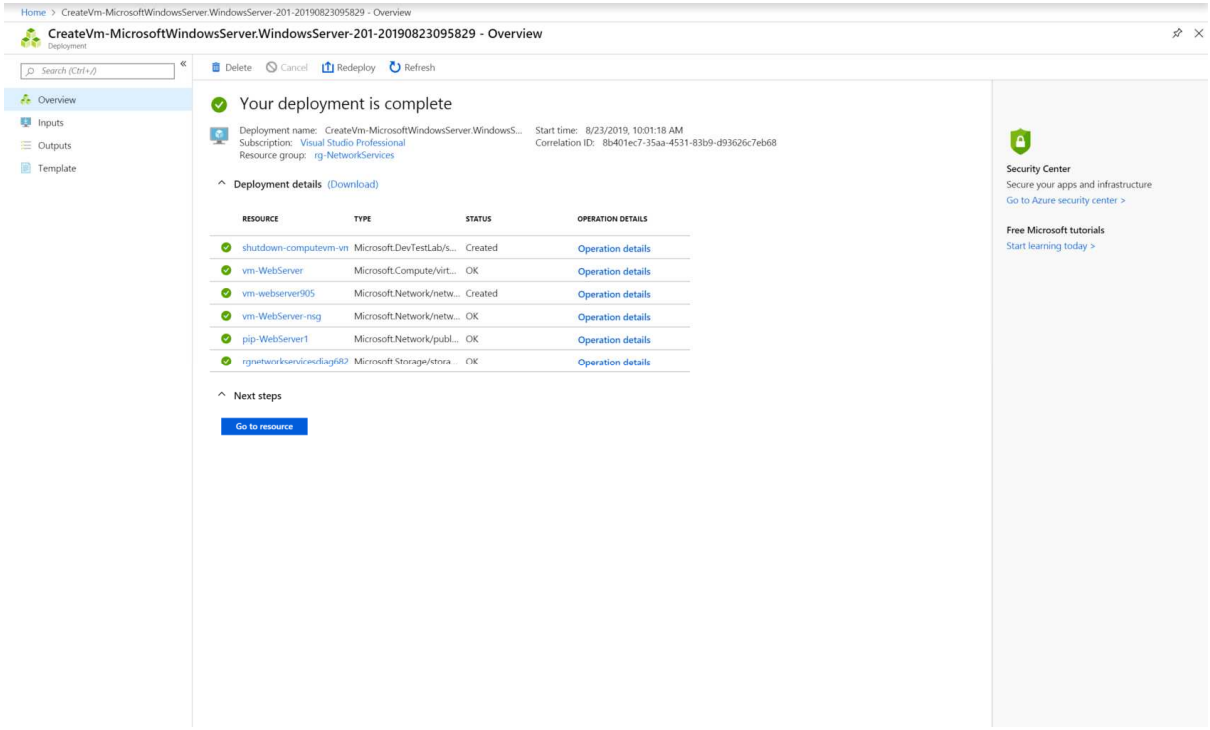


To create a new Public IP, click on Create New

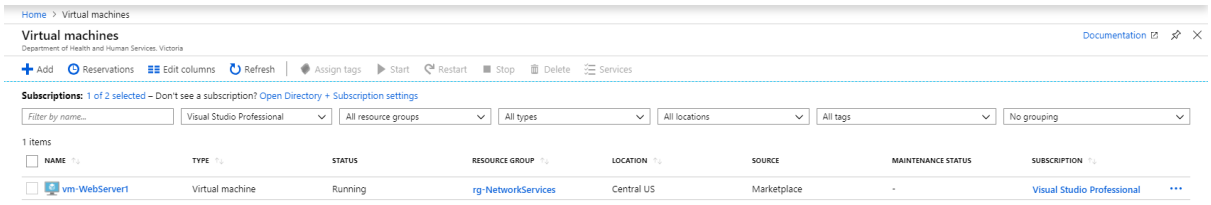
- Name: pip-WebServer1


Create public IP address
* Name
pip-WebServer1
SKU
Basic
Standard
Assignment
Dynamic
Static
OK

Click Review + Create button.



We can see the newly created Virtual Machine.



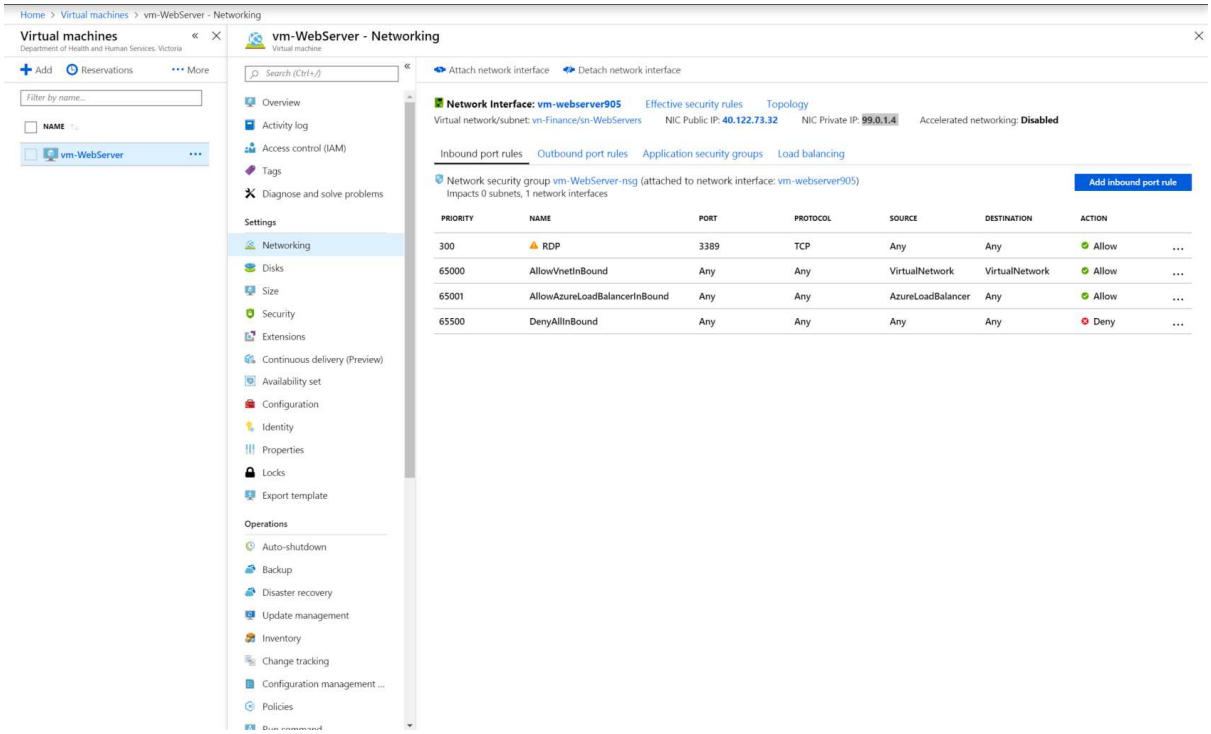
Click on the newly created Virtual Machine.

Mind you when we created the Virtual Machine, it automatically creates:

- Network Interface
- Network Security Group

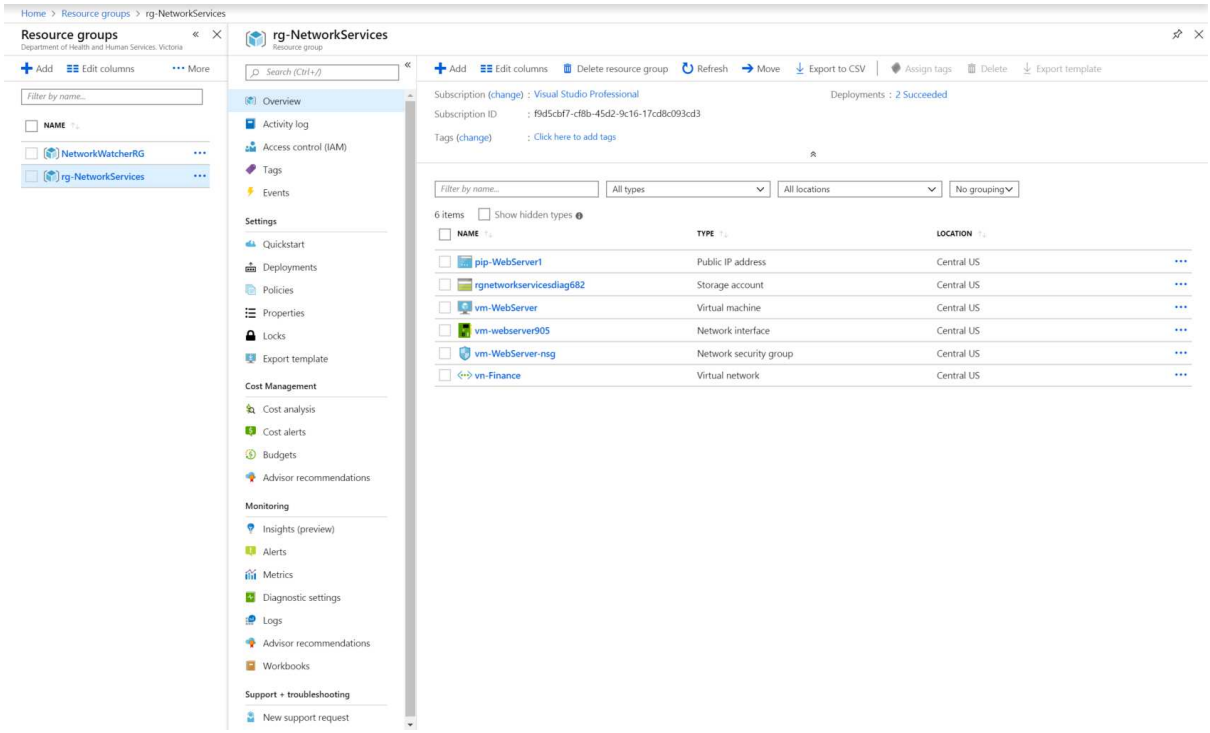
We can view the important details relating to vm-WebServer1 under Networking tab.

- Network Interface: vm-webserver905
- NIC Public IP: 40.122.73.32
- NIC Private IP: 99.0.1.4

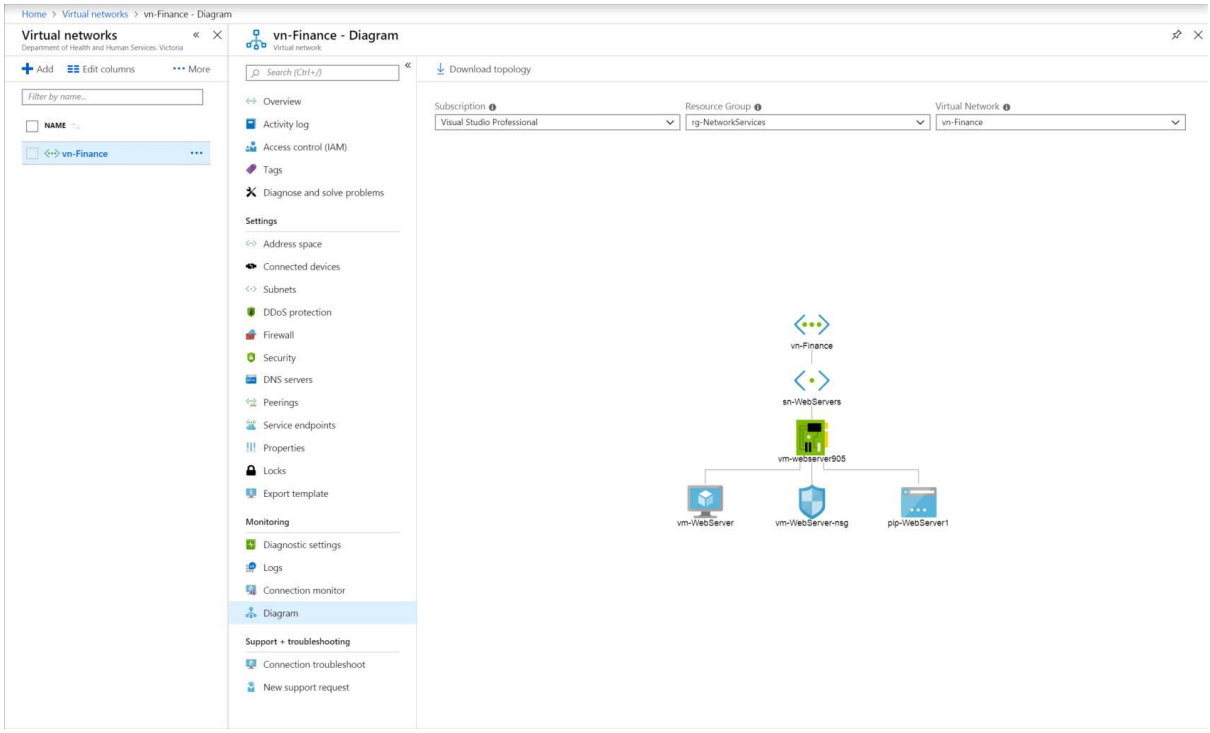


As a summary we'll look in to all the resources we created.

Resource Group: rg-NetworkServices

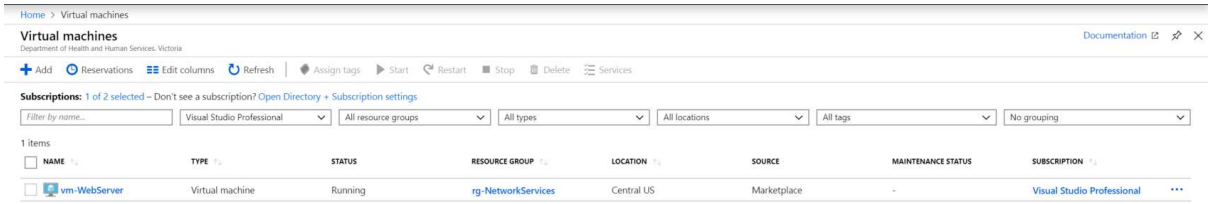


Virtual Network diagram:

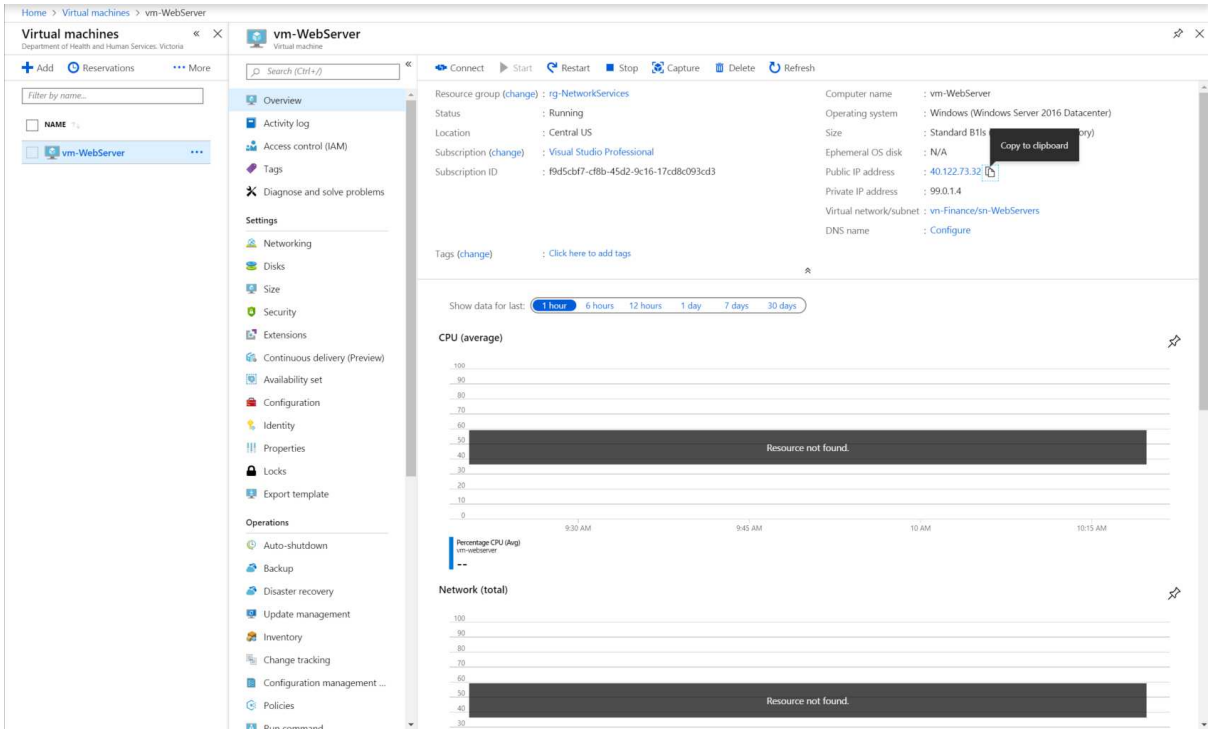


Step 04: Remote Desktop to one of the Virtual Machine

Click on vm-WebServer.

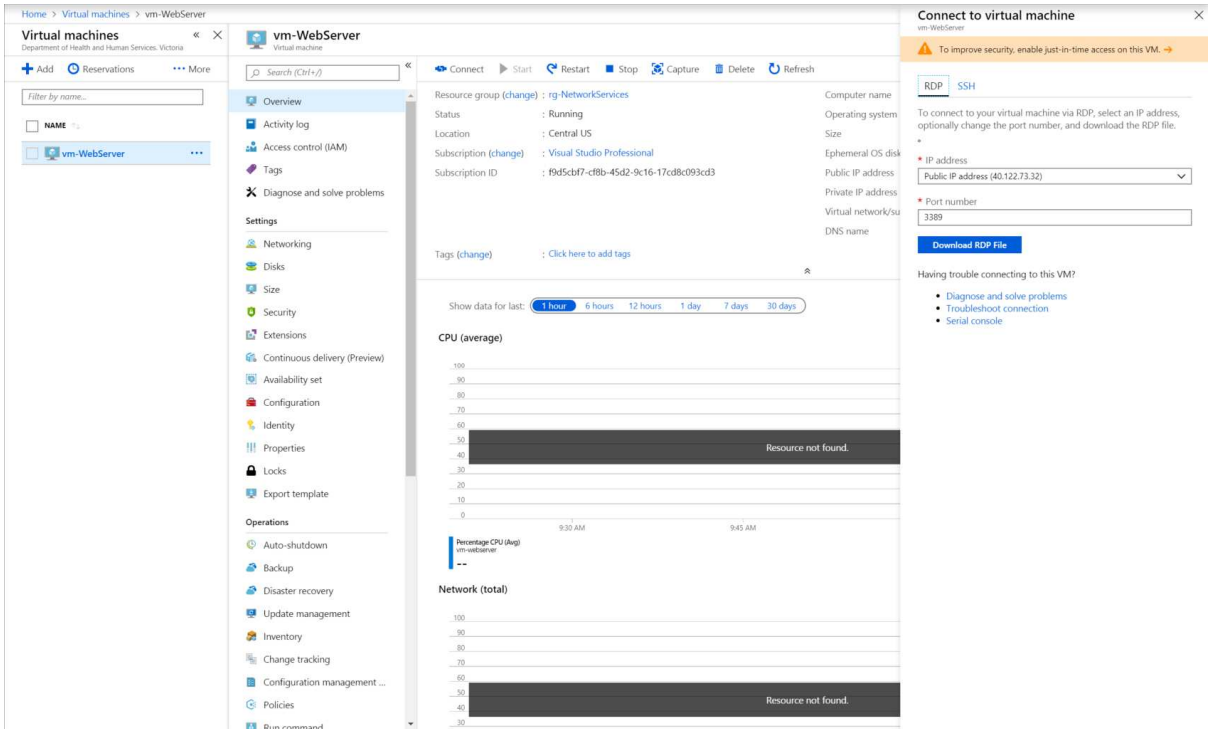


Get the Public IP Address copied – 40.122.73.32

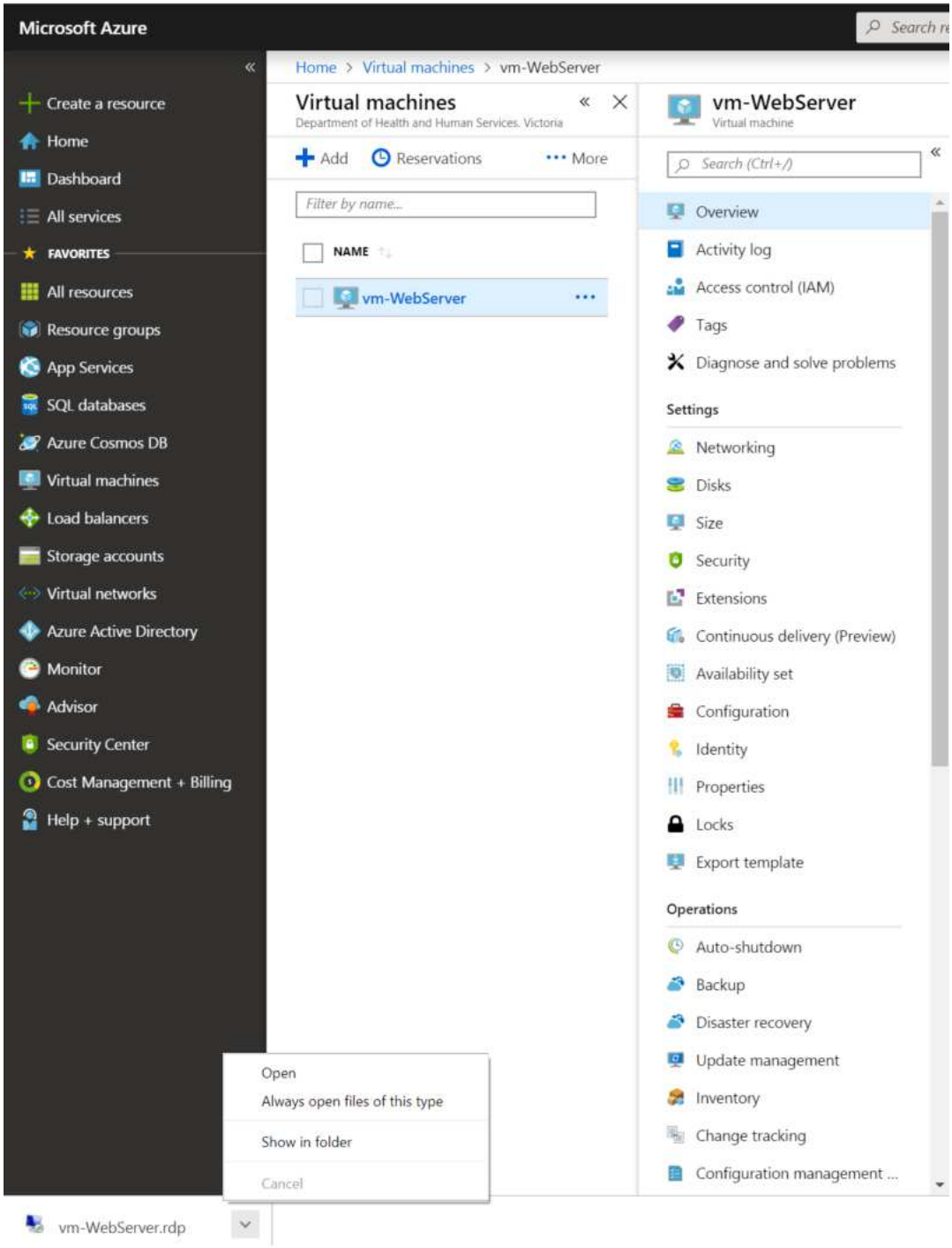


Click on Connect.

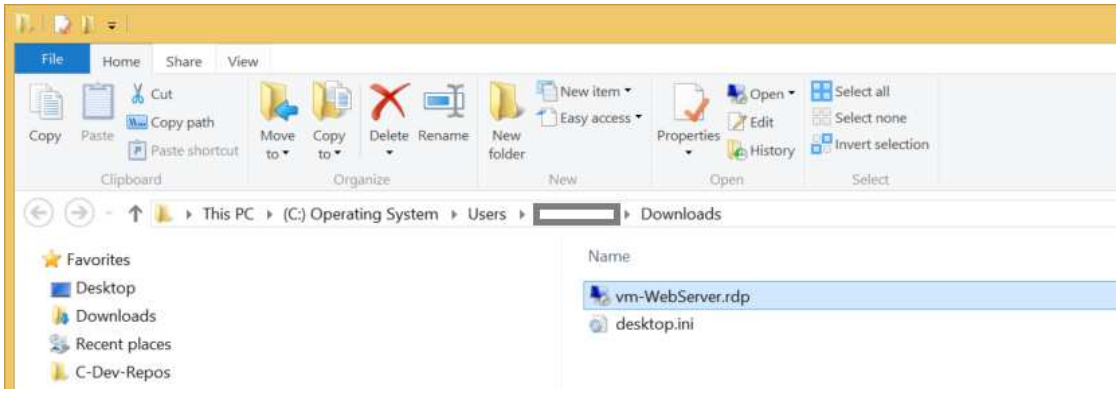
Click Download RDP File button.



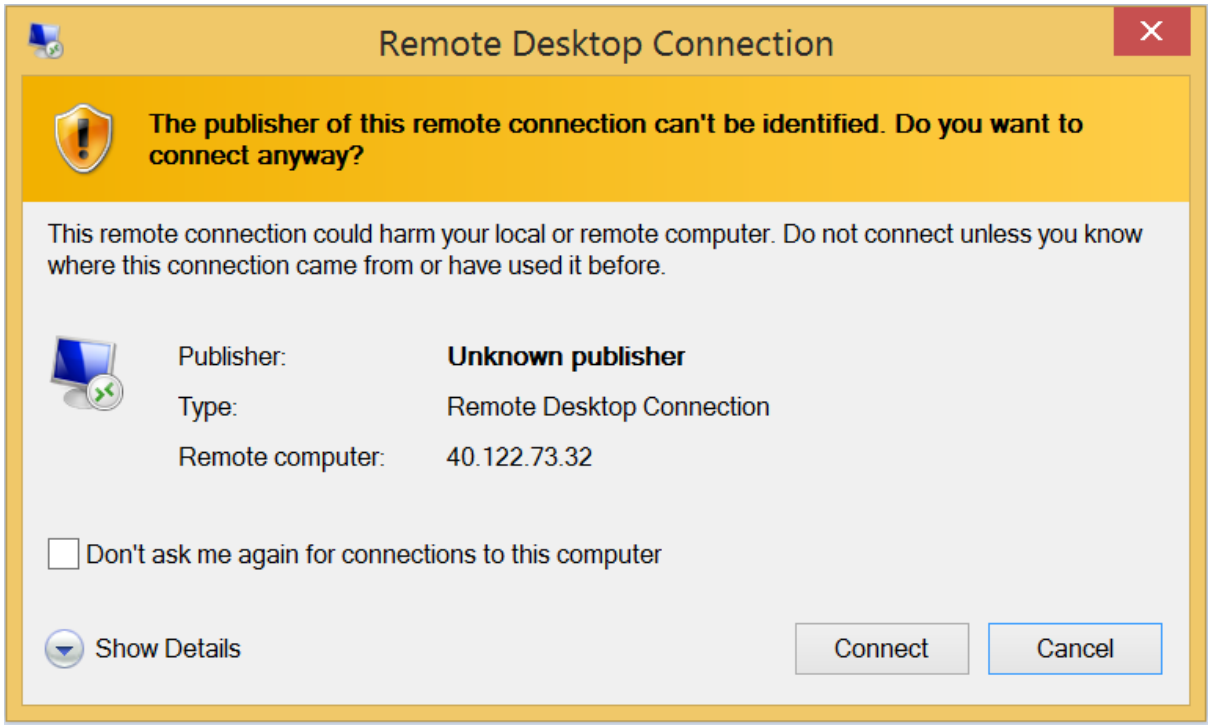
It will download the RDP file to your downloads.



Click on the RDP file.

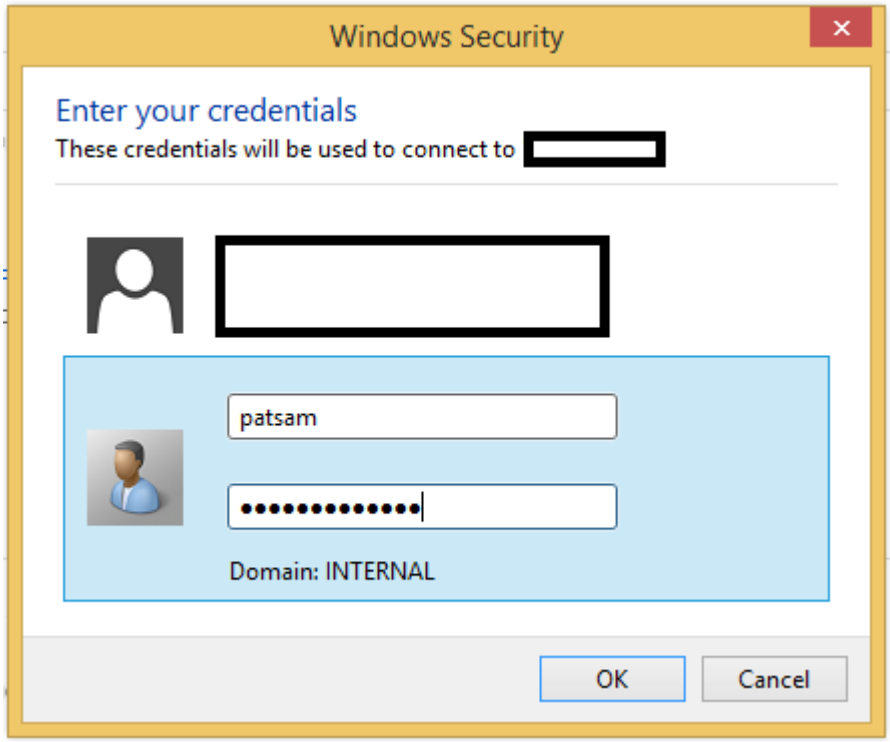


Click on Connect.

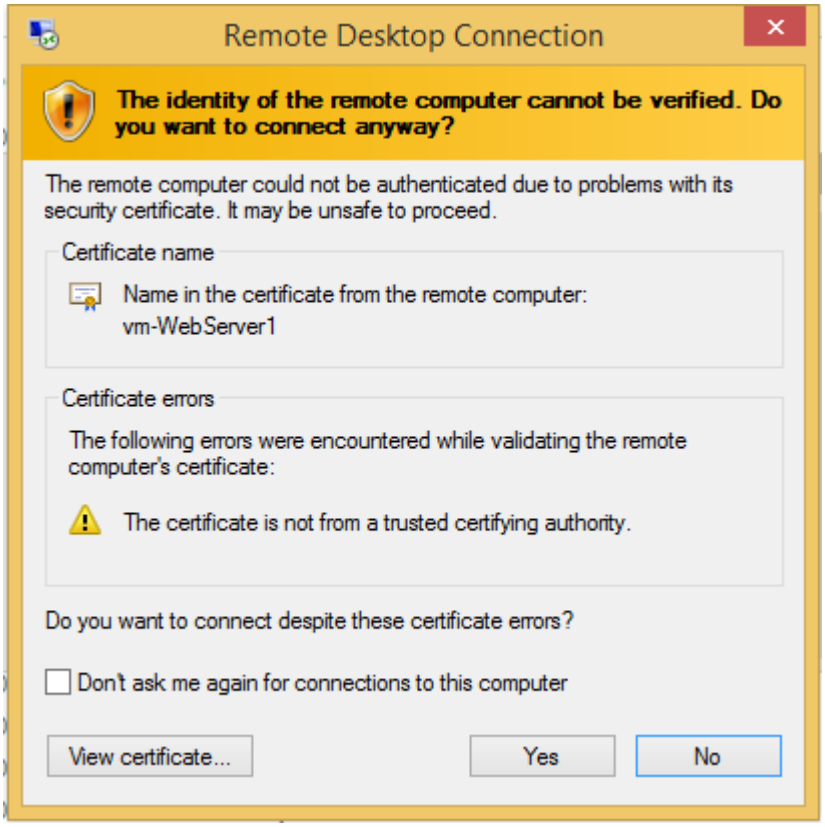


Also, you can go to Remote Desktop Connection on Windows and manually type in the IP address:

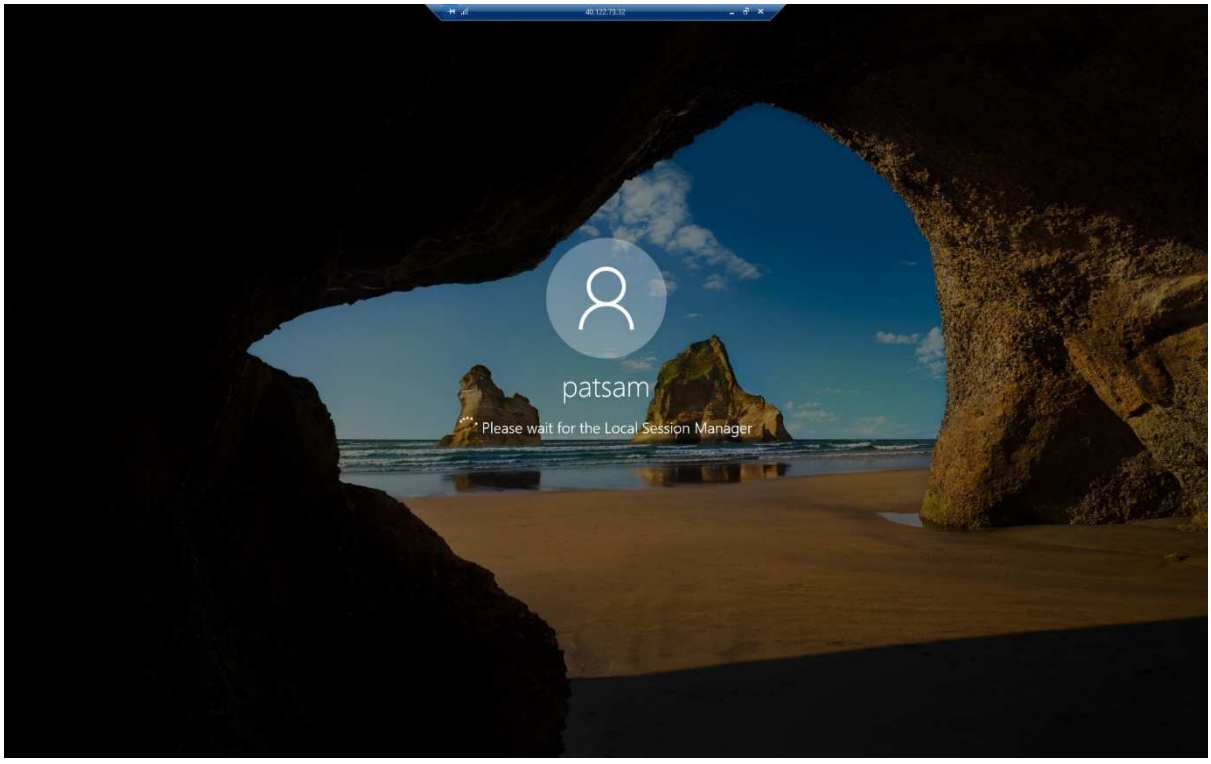
Enter the username/password which we used when creating the Virtual Machine.



To accept the certificate, click Yes.



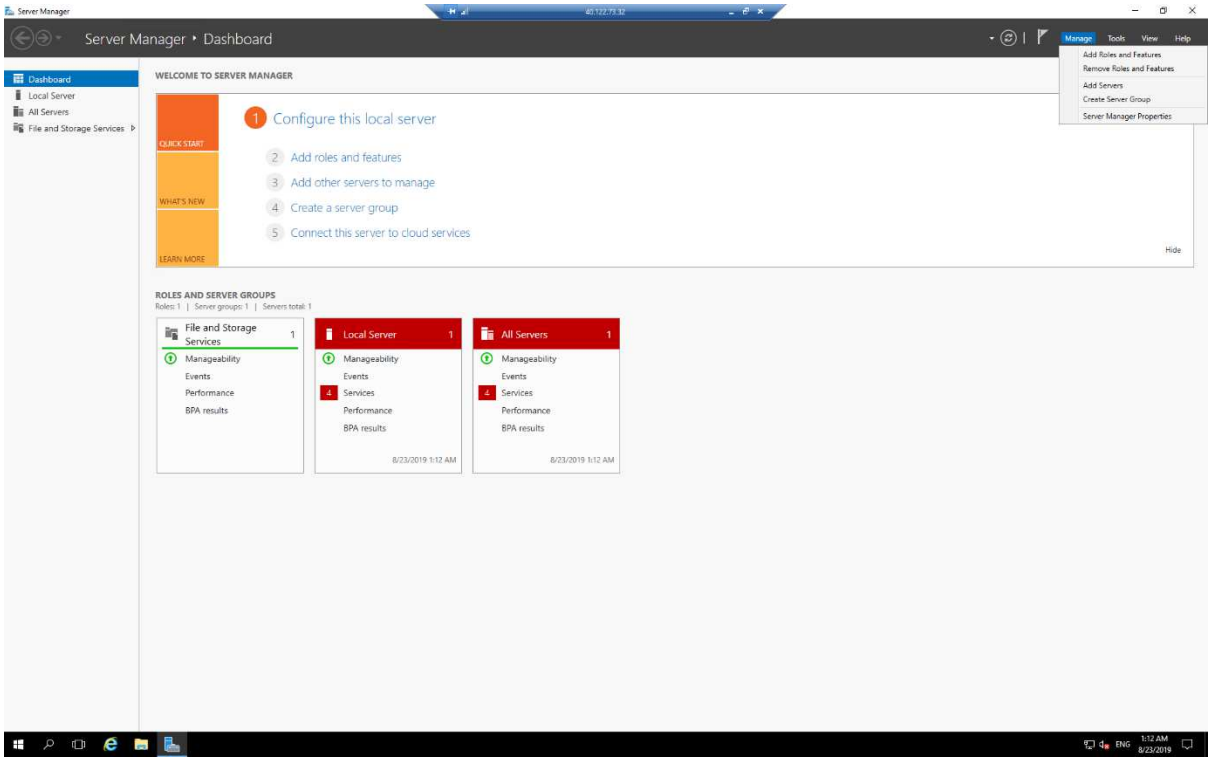
You should be able to access the Virtual Machine.



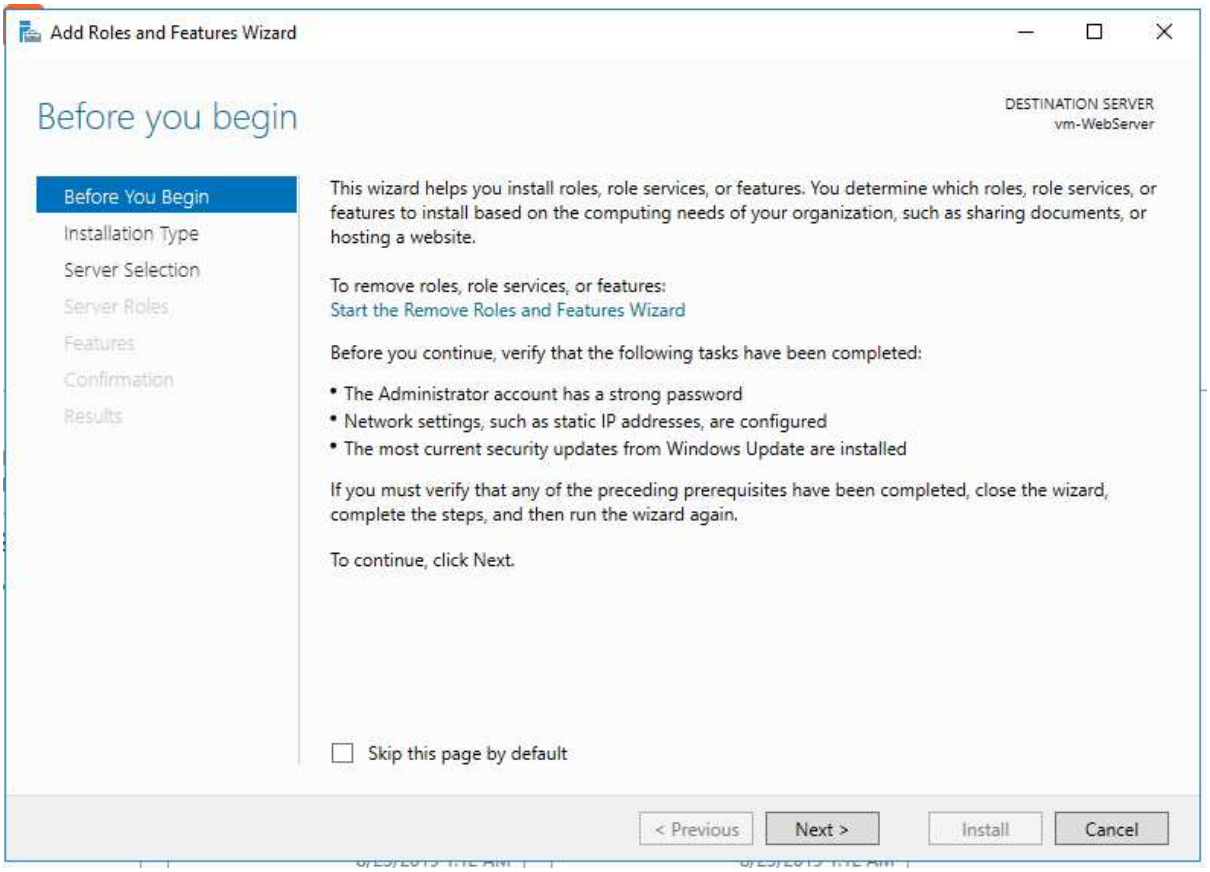
Step 05: Install IIS

Go to Server Manager on the Virtual Machine.

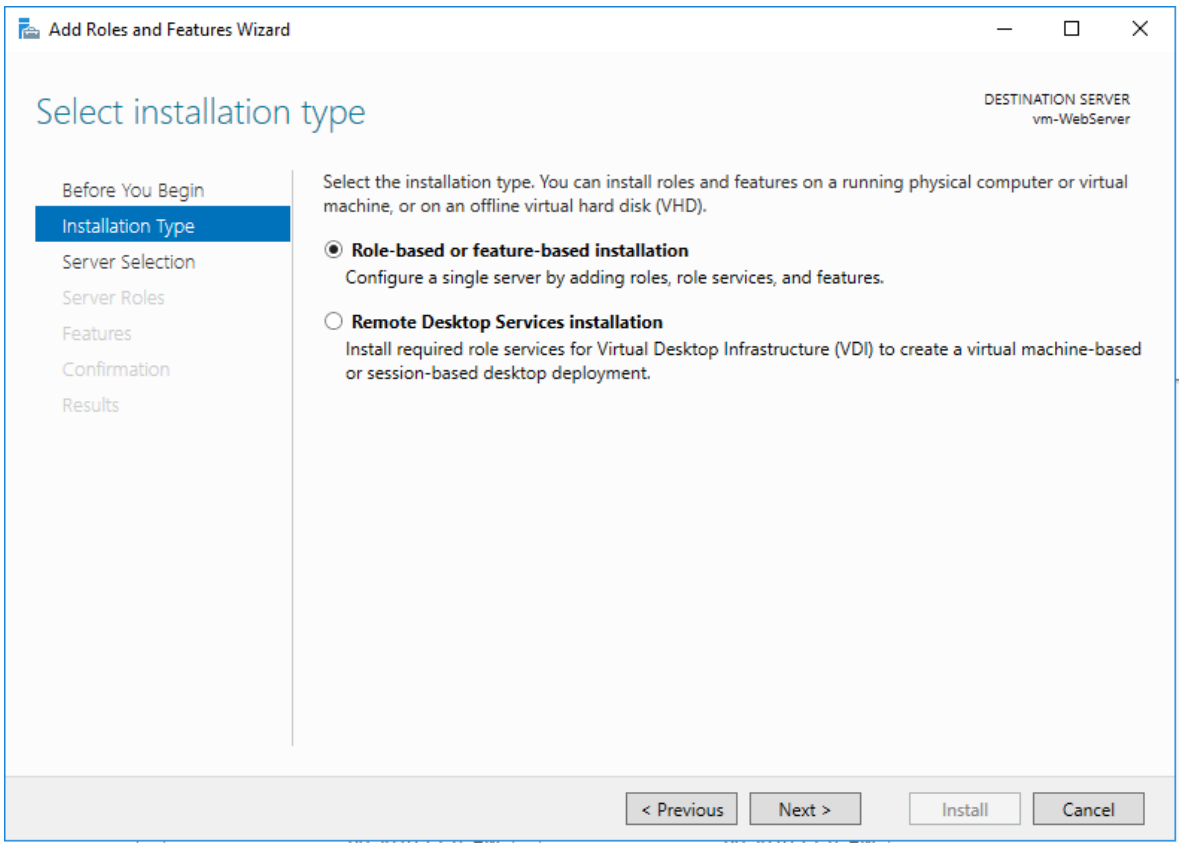
Click Manage → Add Roles and Features



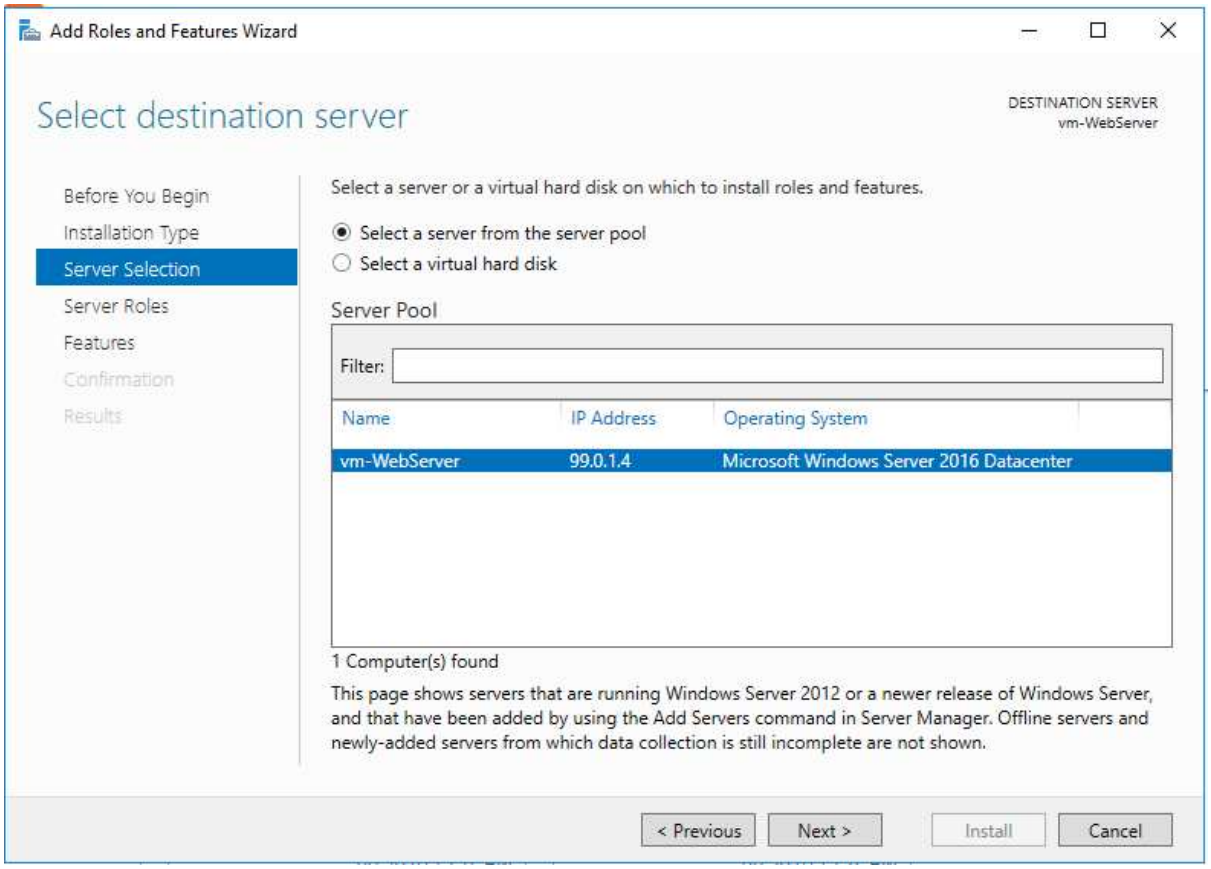
Click Next



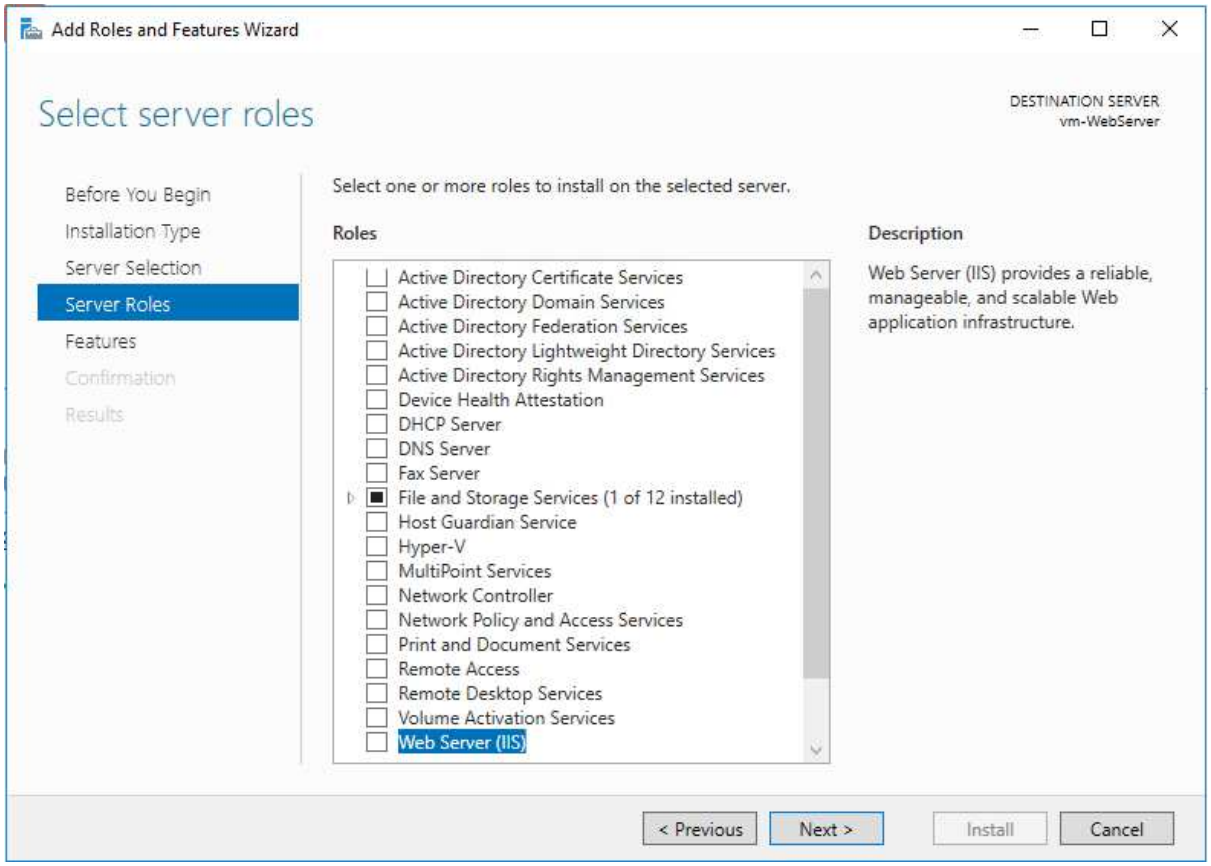
Click Next



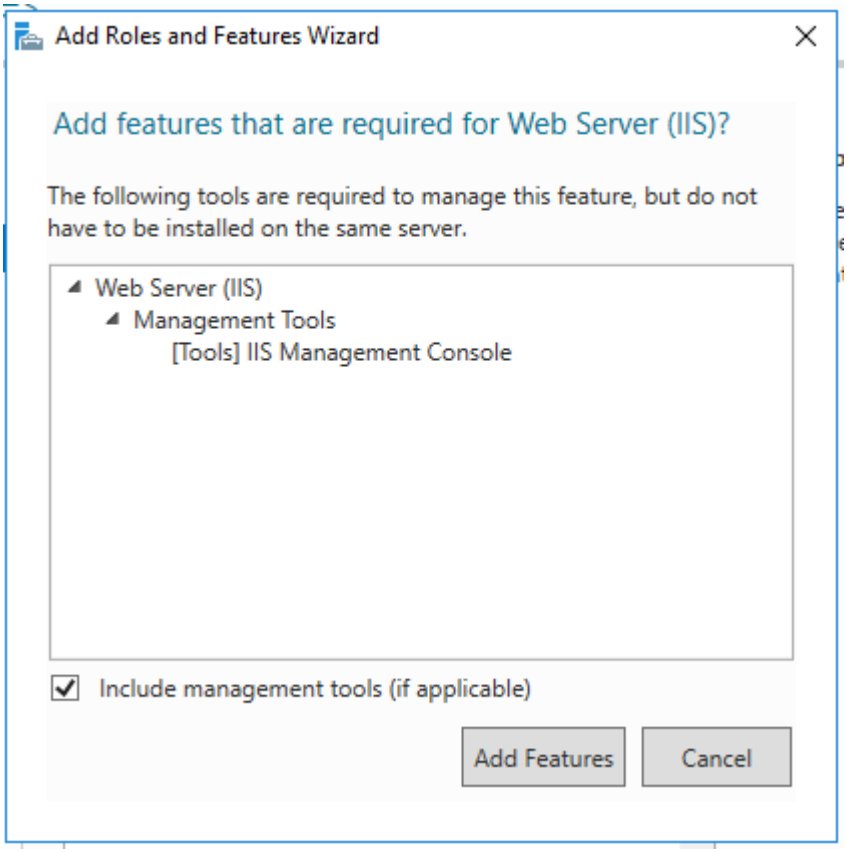
Click Next



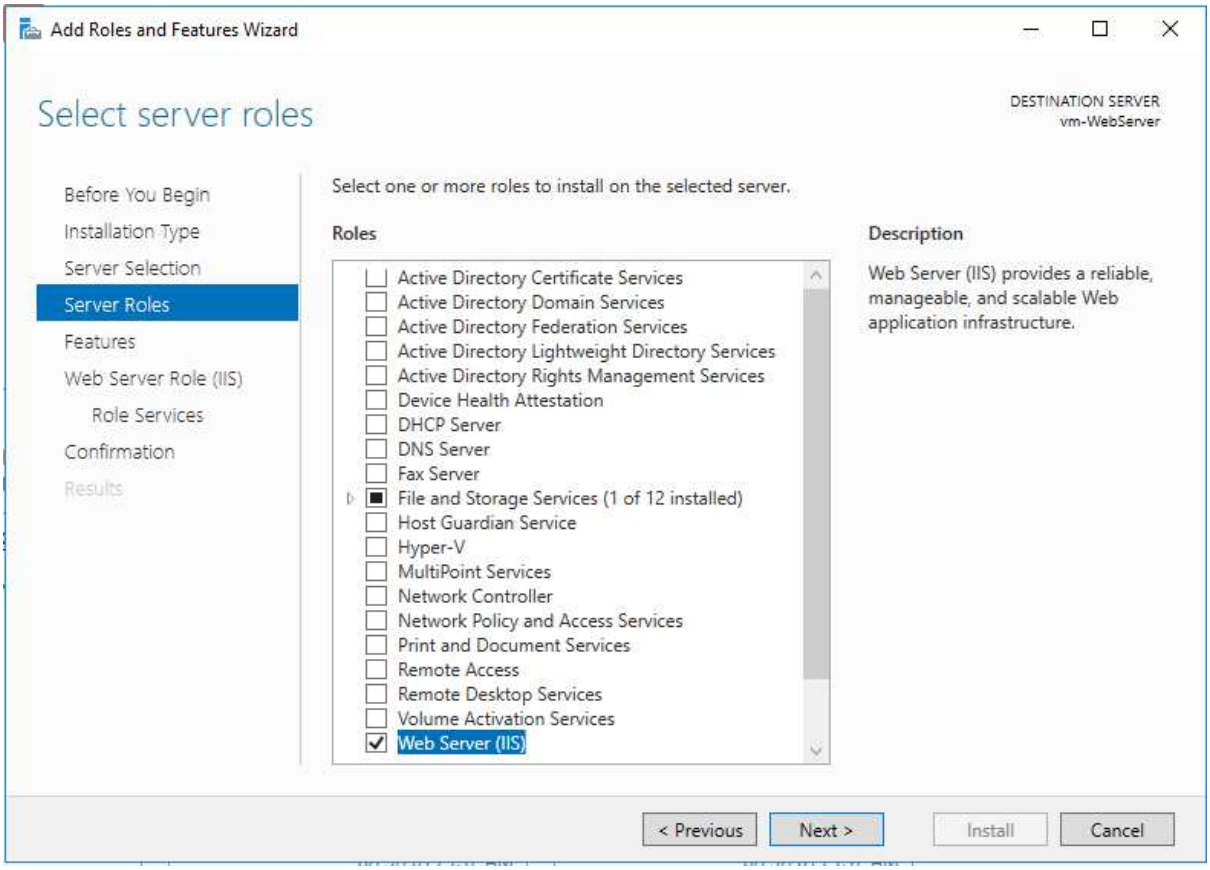
Click on Web Server (IIS)



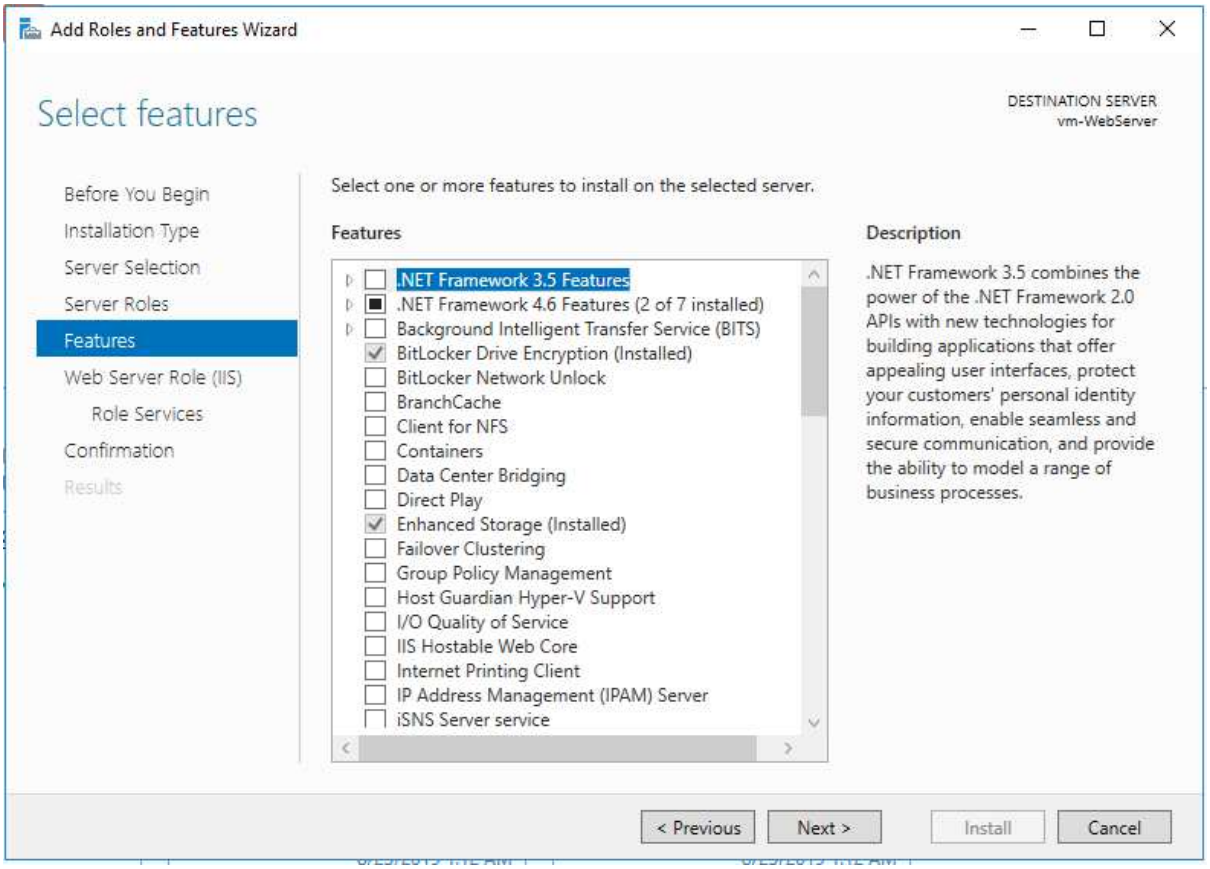
Click on Add Features



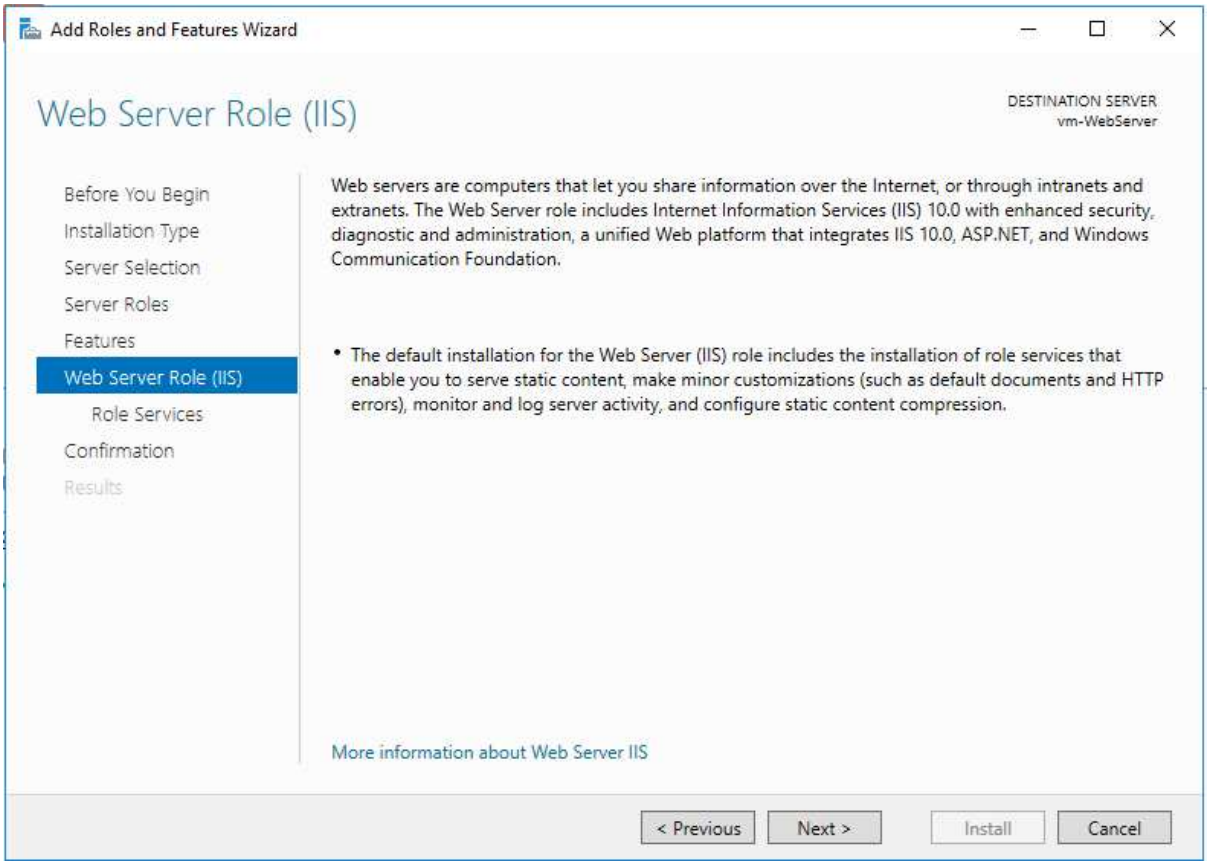
Click on Next



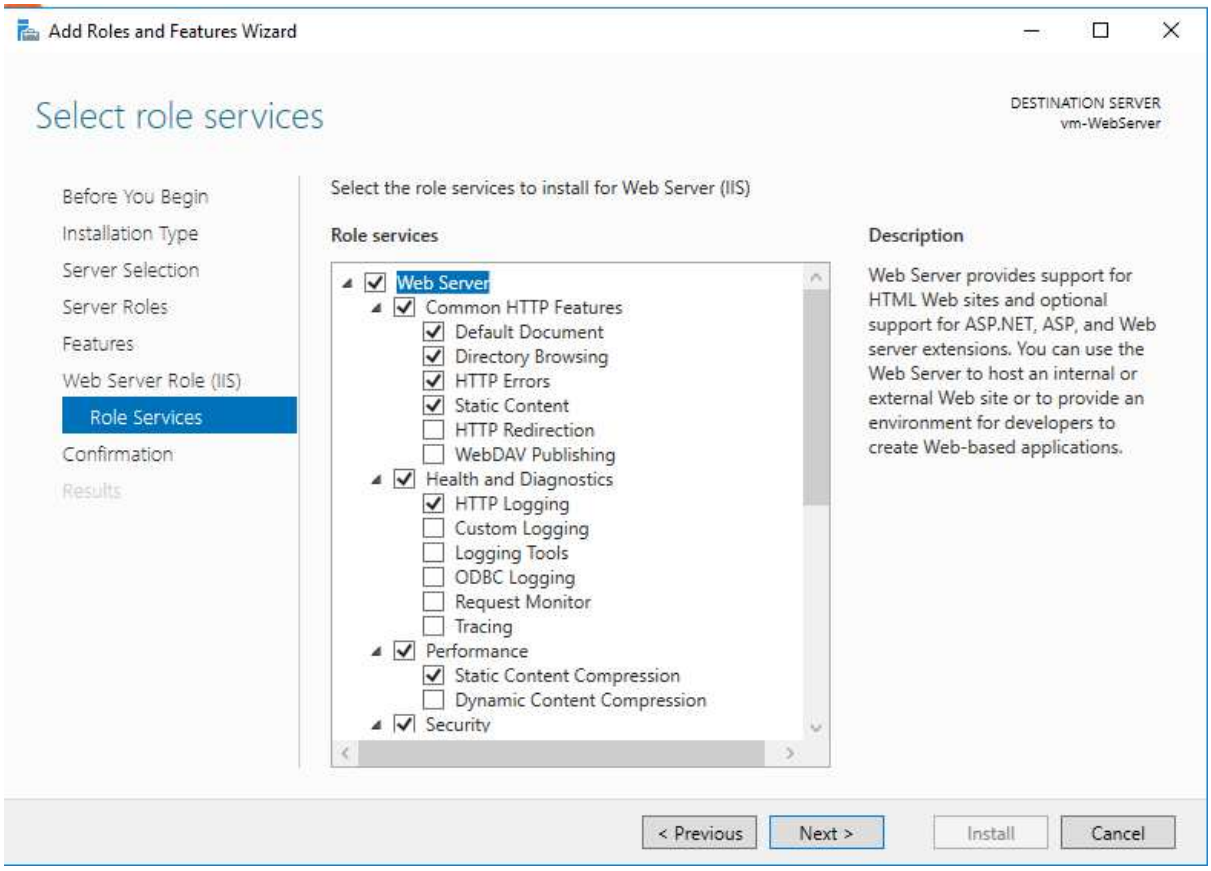
Click on Next



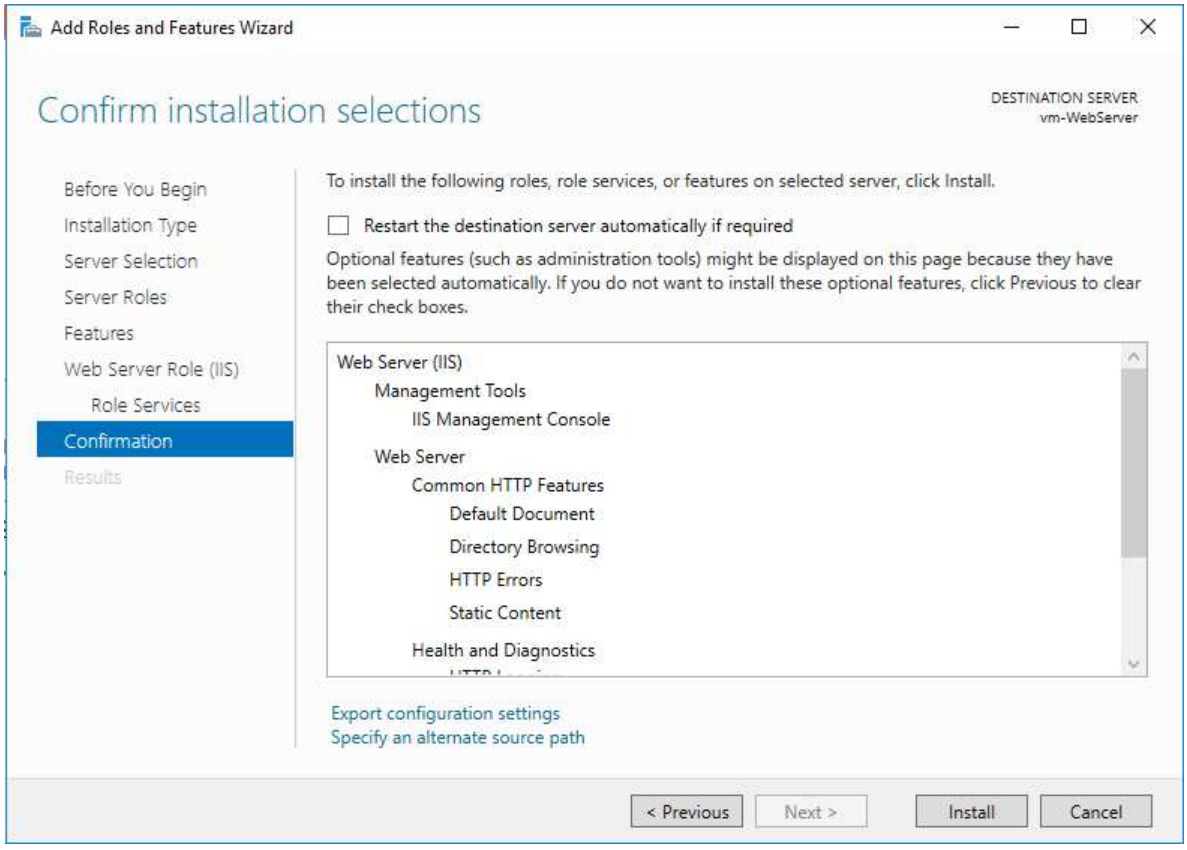
Click on Next



Click on Next

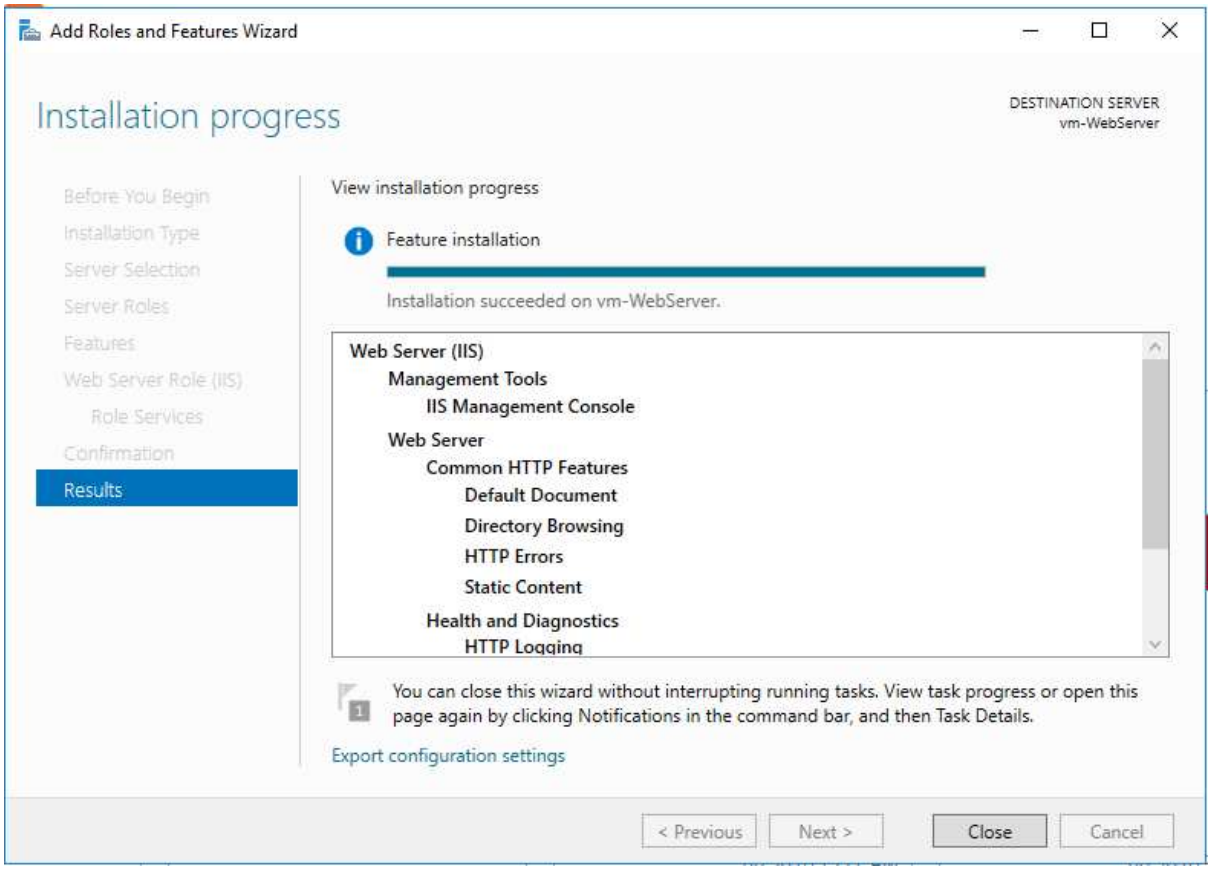


Click on Install



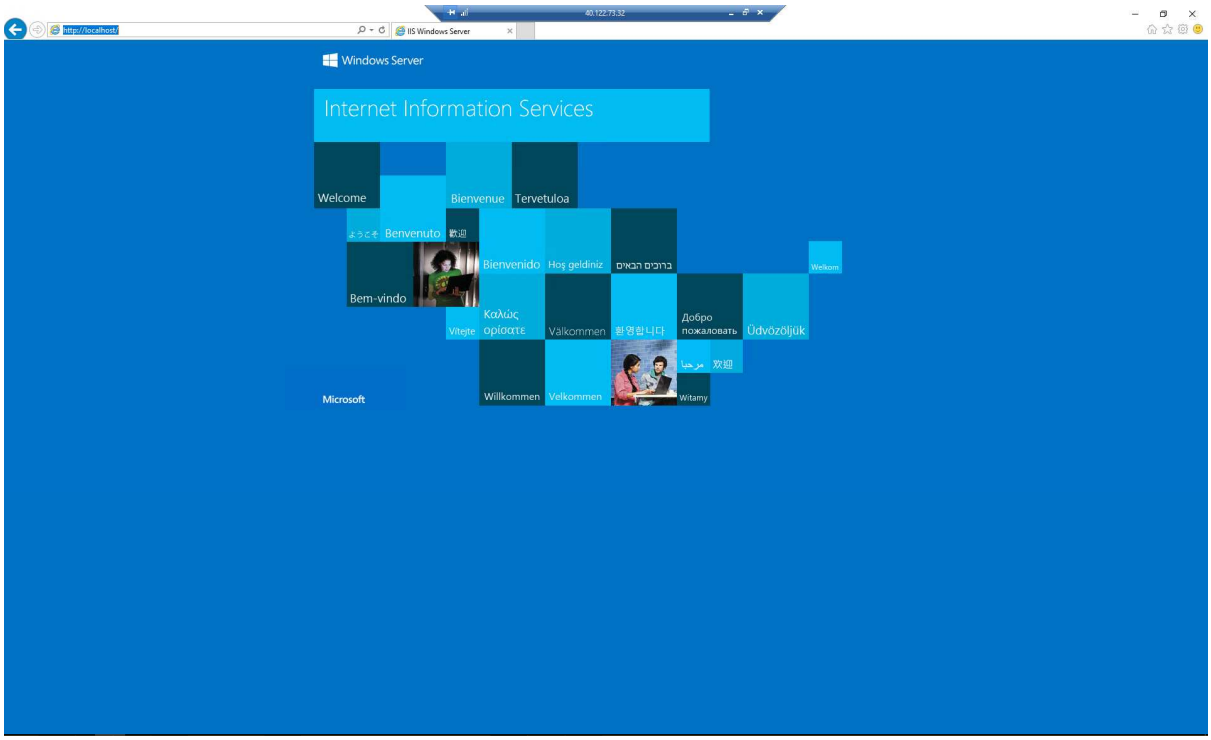
This will install IIS on this Virtual Machine.

Once finishes installing IIS click Close.



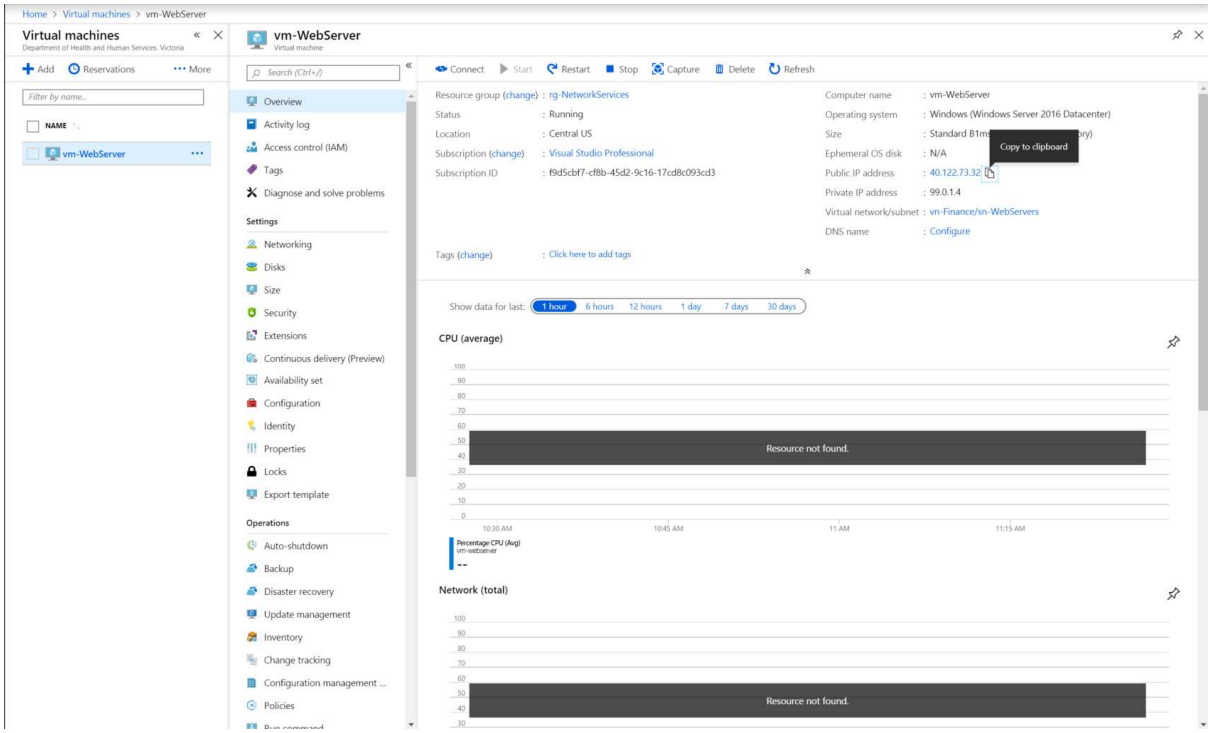
To test whether we have installed IIS correctly and it's working fine, open IE web browser on the Virtual Machine and type in localhost.

http://localhost/



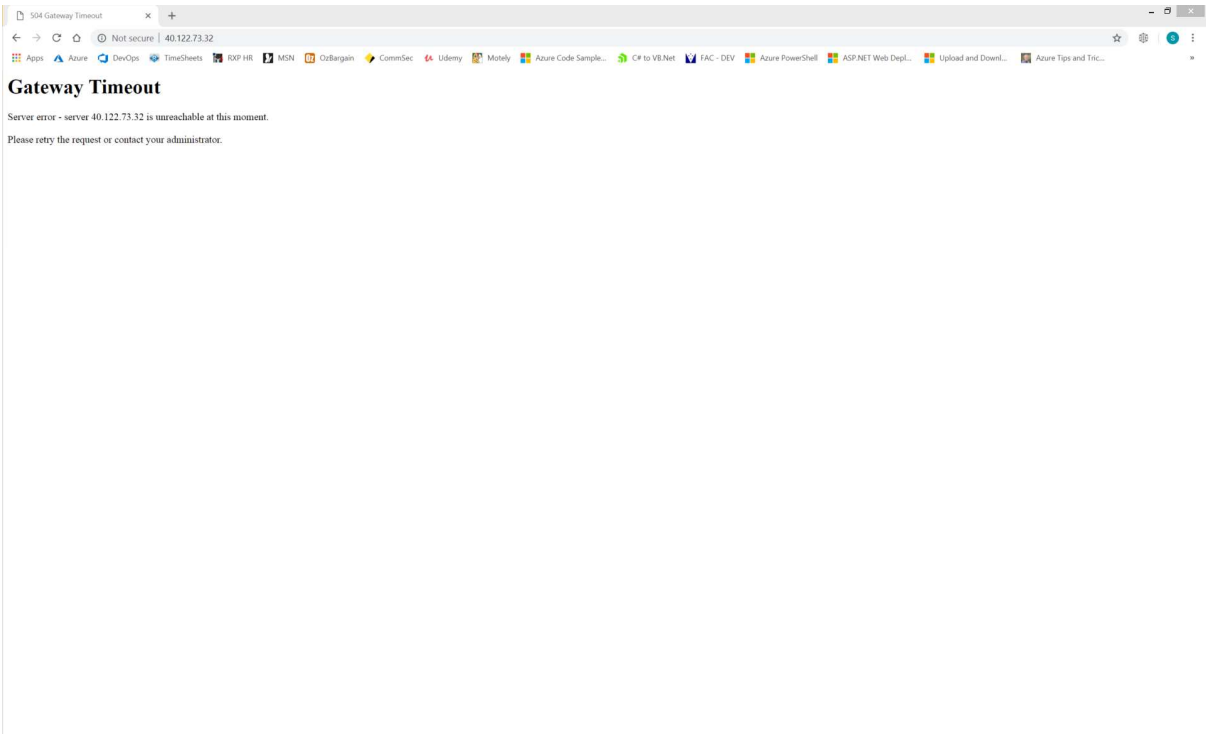
Next, we need to find out whether we can access this page from externally. (out side of this Virtual Machine)

Copy the Public IP Address from the Virtual Machine.



Paste the Public IP Address to a browser - http://40.122.73.32/

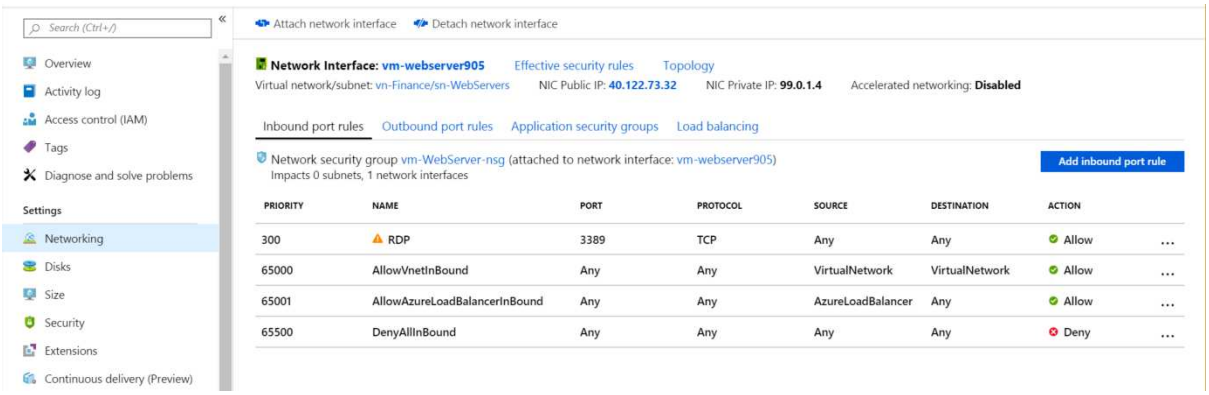
Seems like we cannot connect to the Virtual Machine we created.



That is because we haven't defined a network rule to accept http traffic.

Bellow are the list of rules we have now.

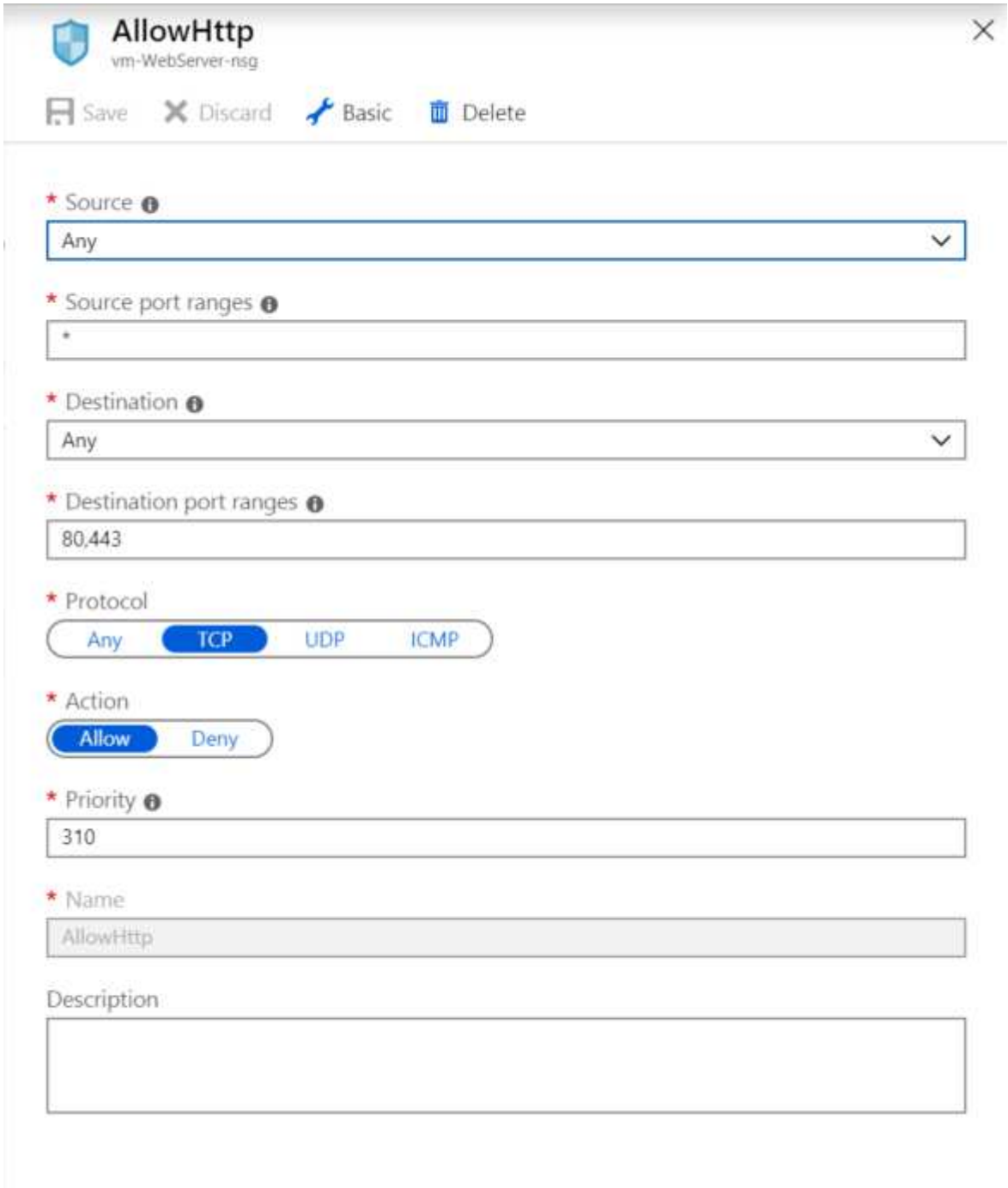
- RDP – Allows RDP traffic
- AllowVnetInBound – Allow Virtual Network traffic
- AllowAzureLoadBalanceInBound – Allow Load Balancer traffic
- DenyAllInBound – Deny any other traffic



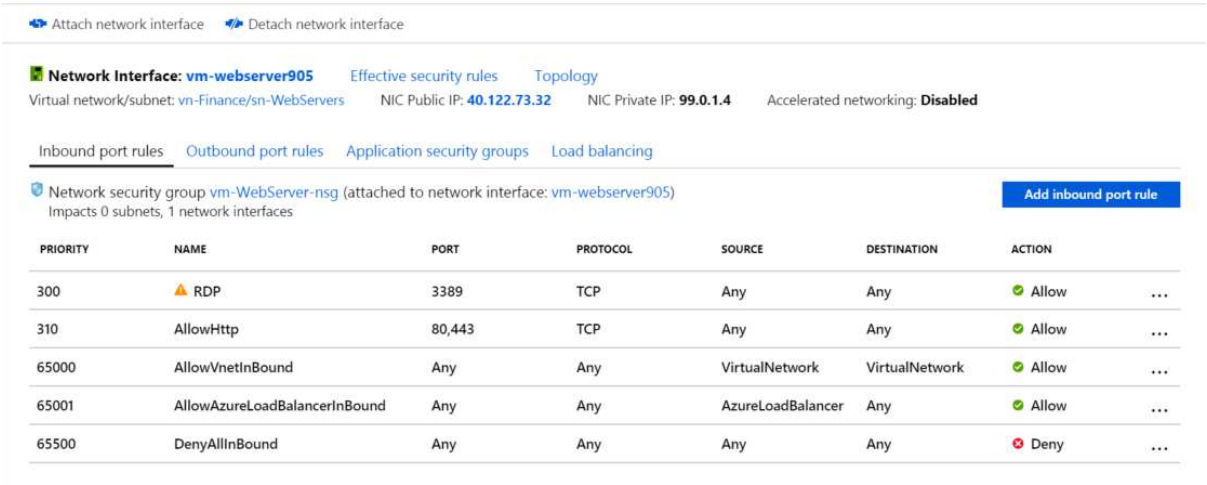
Now we need to add another new rule to accept http/https traffic.

Click on Add Inbound Port Rule button.

- Name: AllowHttp
- Source: *
- Detonation: Any
- Detonation port ranges: 80,443
- Protocol: TCP
- Action: Allow
- Priority: 310



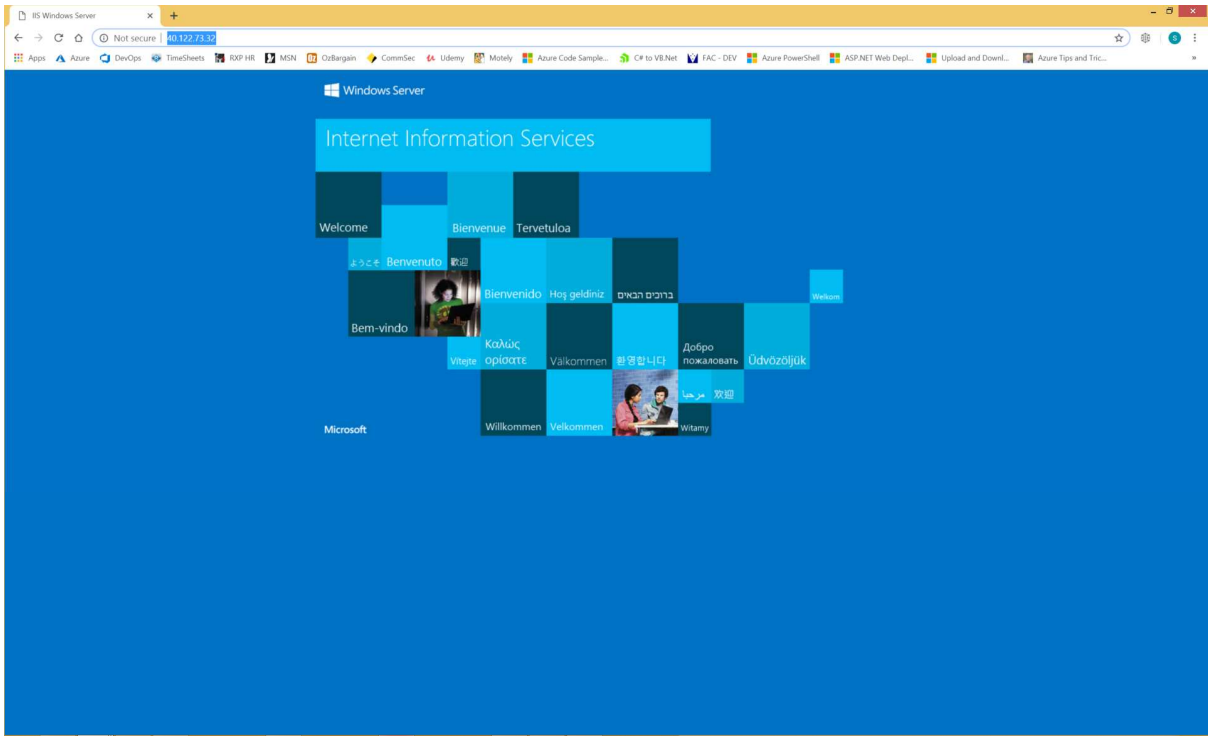
Now the Inbound Port Rules look like bellow.



PRIORITY	NAME	PORT	PROTOCOL	SOURCE	DESTINATION	ACTION
300	RDP	3389	TCP	Any	Any	Allow ...
310	AllowHttp	80,443	TCP	Any	Any	Allow ...
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow ...
65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	Allow ...
65500	DenyAllInBound	Any	Any	Any	Any	Deny ...

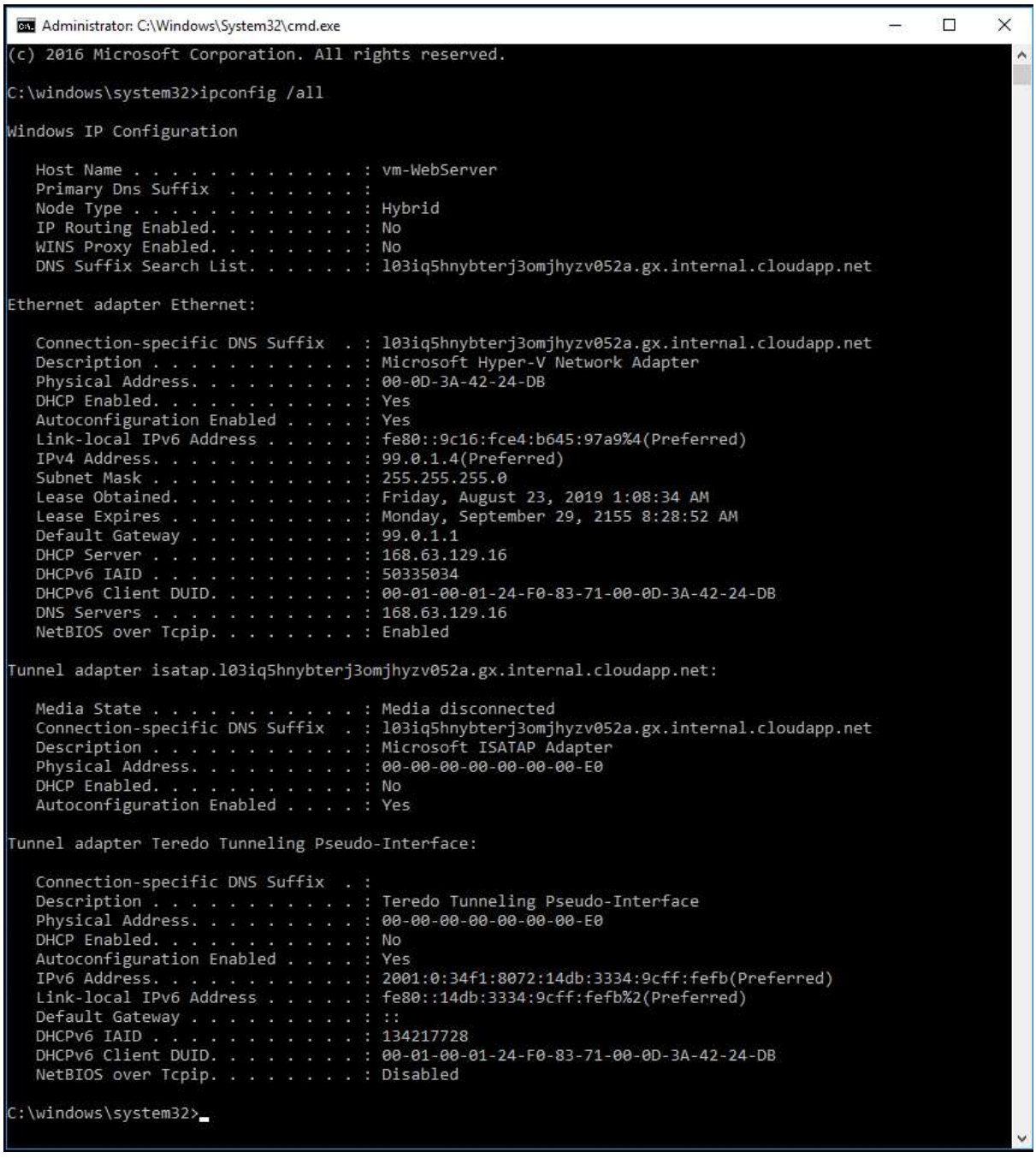
Paste the Public IP Address to a browser again - http://40.122.73.32/

It works fine this time.

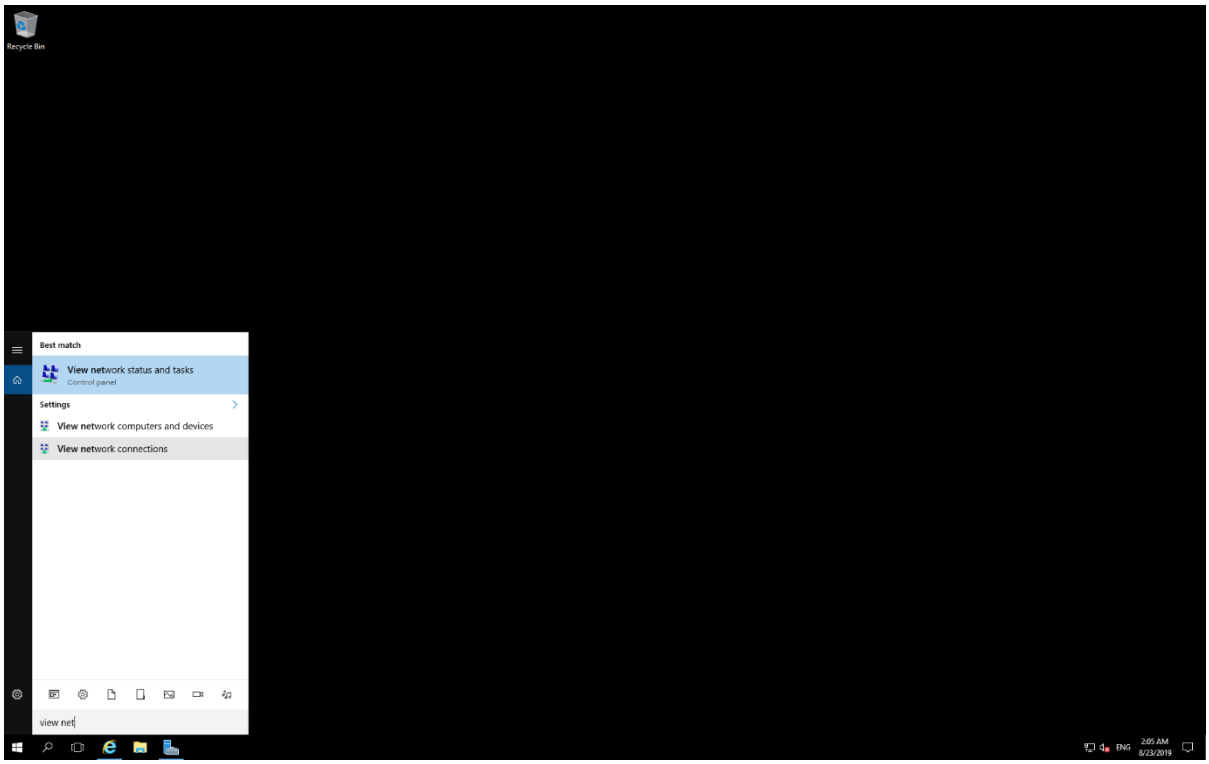


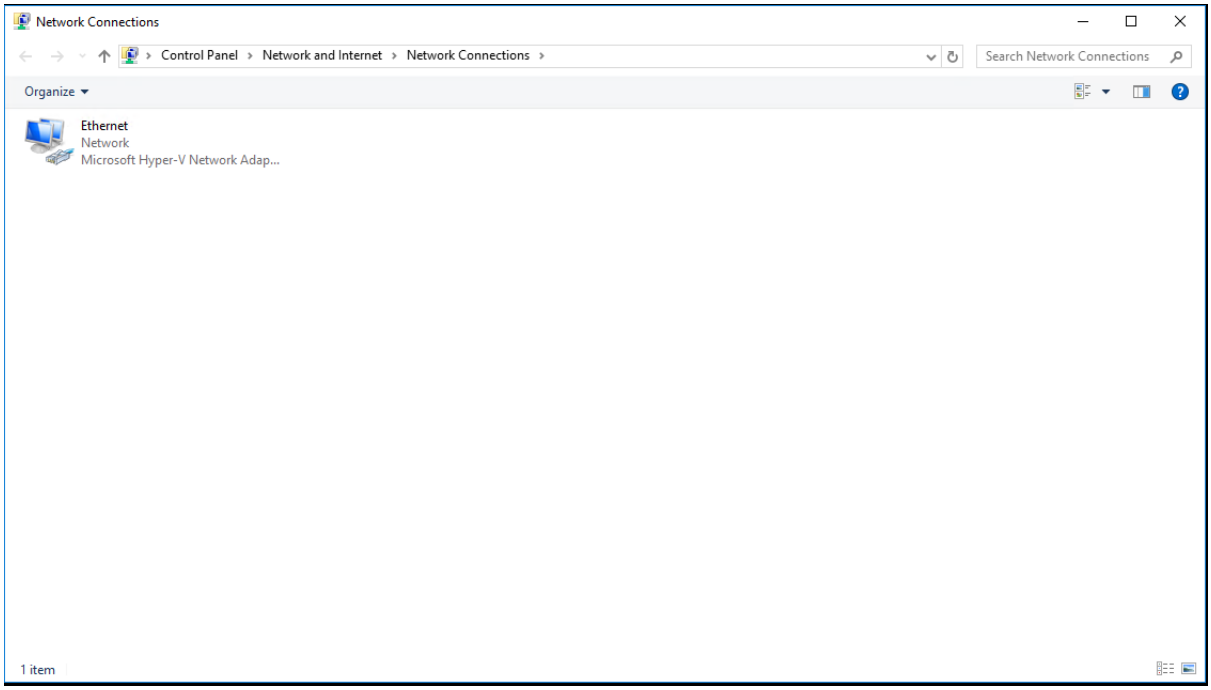
We'll have a quick look at the IP configuration of the Virtual Machine.

Run ipconfig /all command on command prompt. (on the Virtual Machine)

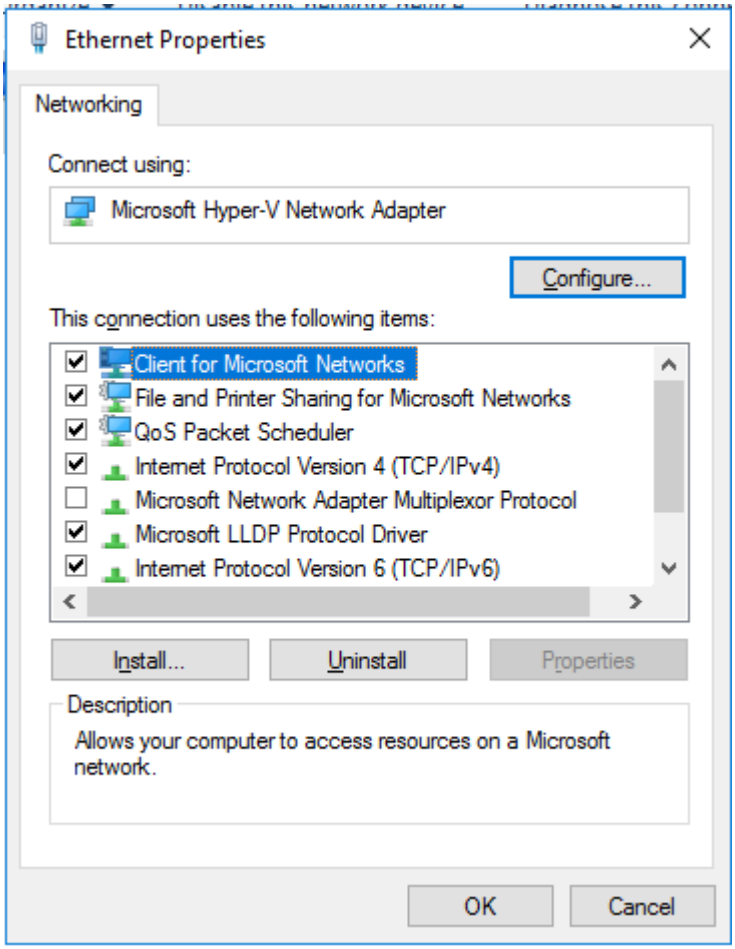


You can view the Network Connections.





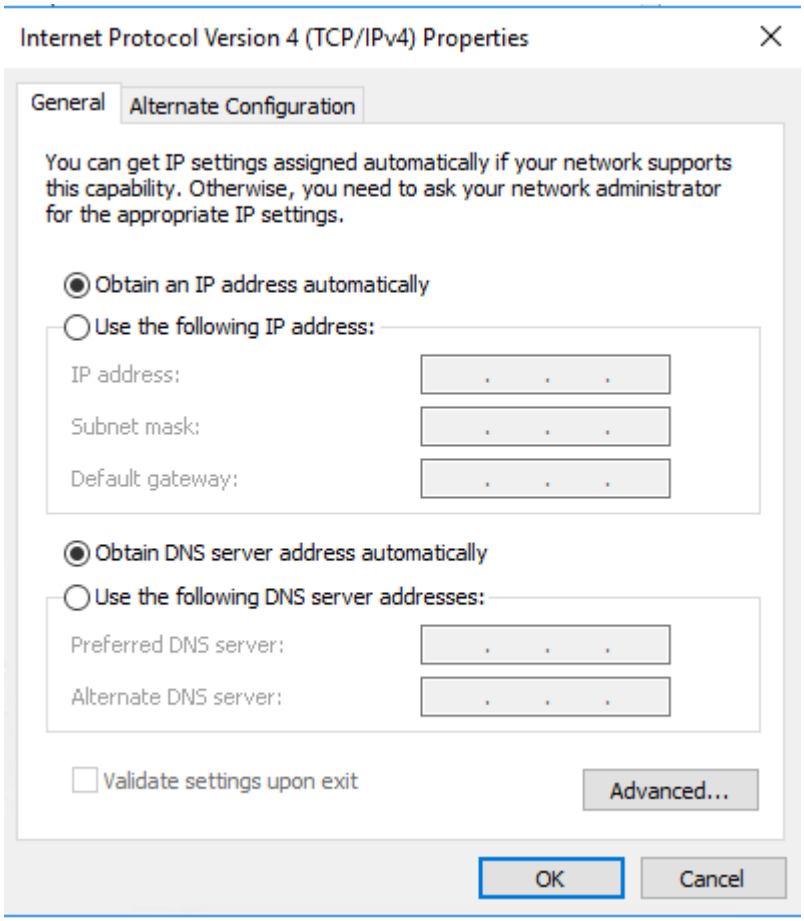
Right click on Ethernet and click on Properties.



Click on Internet Protocol Version 4 (TCP/IPv4).

There we have the selected option as:

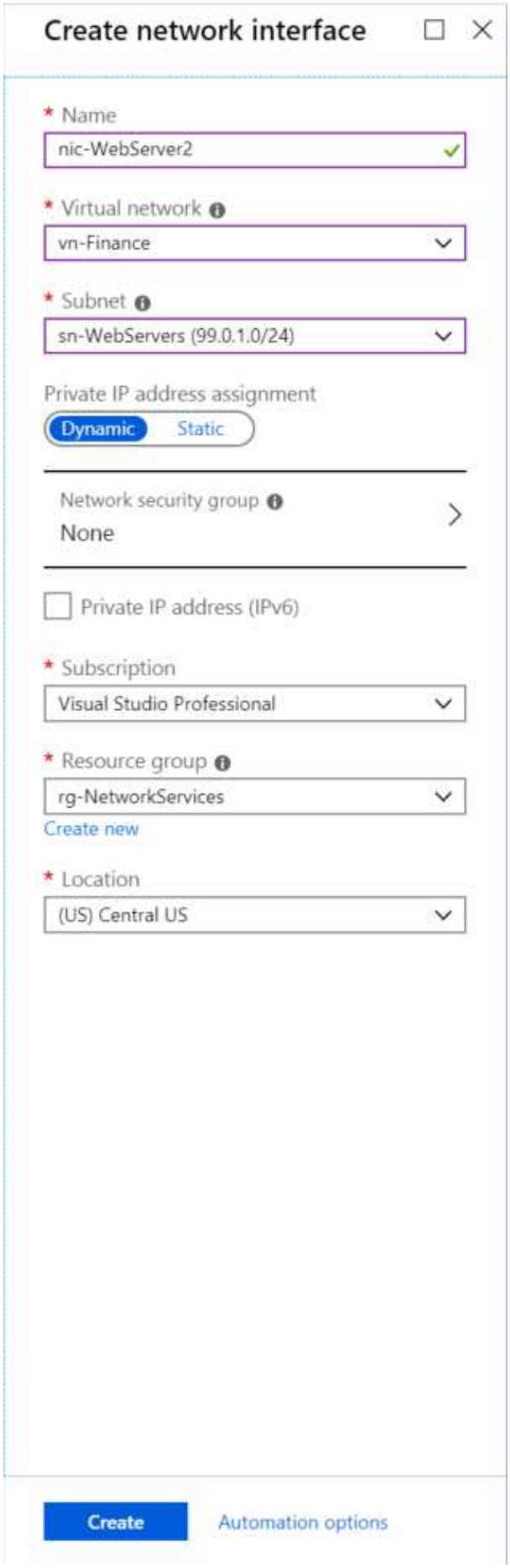
- Obtain an IP address automatically
- Obtain DNS server address automatically



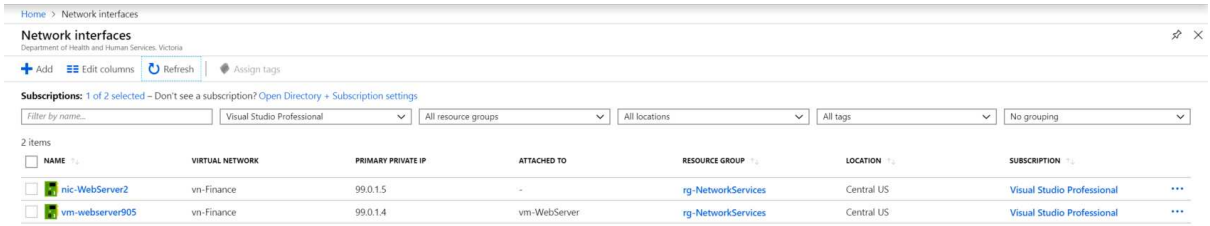
Step 6: Associate multiple NICs and PIPs to a Virtual Machine

Create new Network Interface.

- Name: nic-WebServer2
- Virtual network: vn-Finance
- Subnet: sn-WebServers
- Resource group: rg-NetworkServices
- Location: (US) Central US


Create network interface
* Name
nic-WebServer2
* Virtual network
vn-Finance
* Subnet
sn-WebServers (99.0.1.0/24)
Private IP address assignment
Dynamic
Static
Network security group
None
Private IP address (IPv6)
* Subscription
Visual Studio Professional
* Resource group
rg-NetworkServices
Create new
* Location
(US) Central US
Create
Automation options

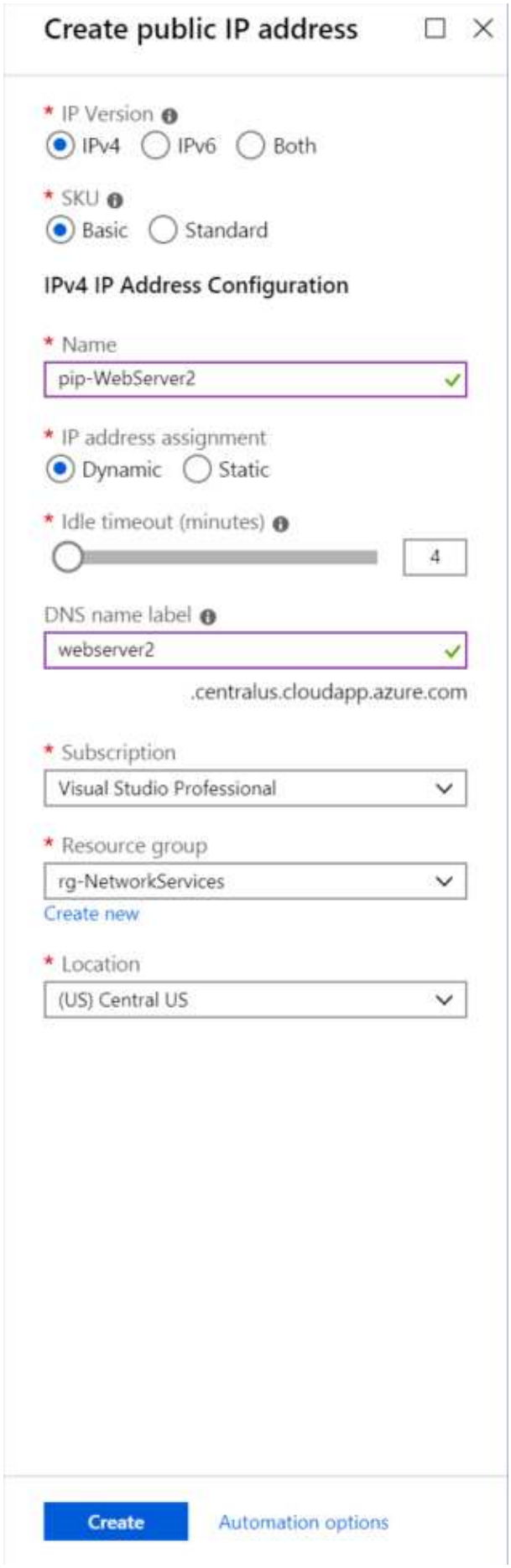
We can see the newly created Network Interface.



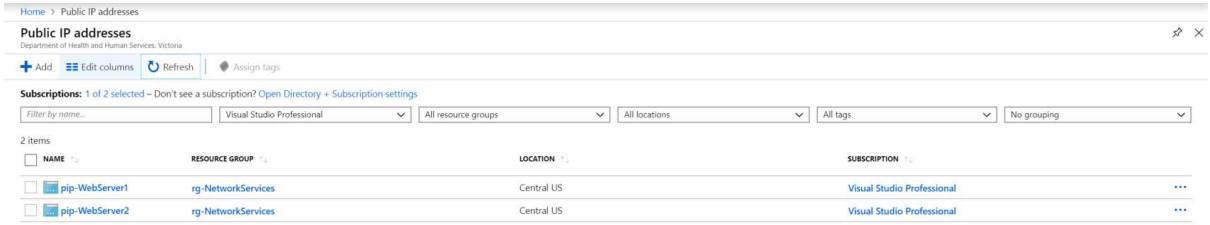
Next create a new Public IP Address.

To create a new Public IP, click on Create New

- Name: pip-WebServer1
- DNS name label: webserver2


Create public IP address
* IP Version
IPv4
IPv6
Both
* SKU
Basic
Standard
IPv4 IP Address Configuration
* Name
pip-WebServer2
* IP address assignment
Dynamic
Static
* Idle timeout (minutes)
4
DNS name label
webserver2
.centralus.cloudapp.azure.com
* Subscription
Visual Studio Professional
* Resource group
rg-NetworkServices
Create new
* Location
(US) Central US
Create
Automation options

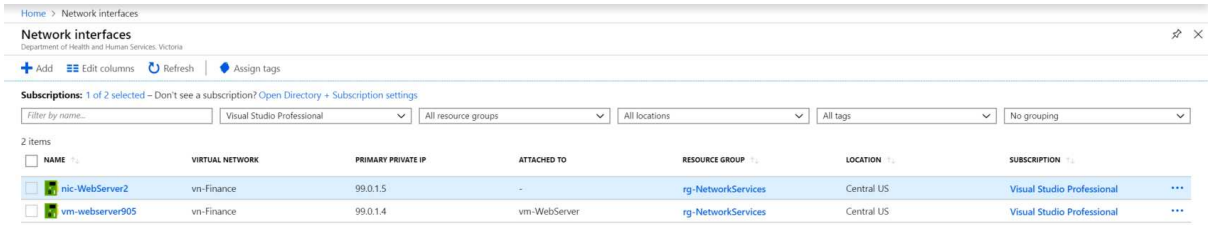
We can see the newly created Public IP Address.



Next, we need to associate newly created Public IP Address to newly created Network Interface.

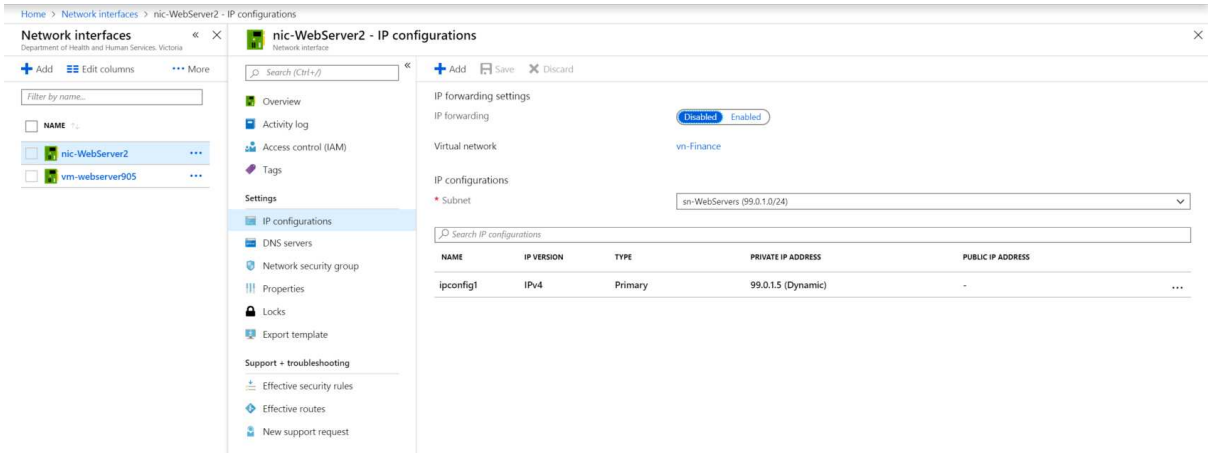
pip-Webserver2 → nic-WebServer2

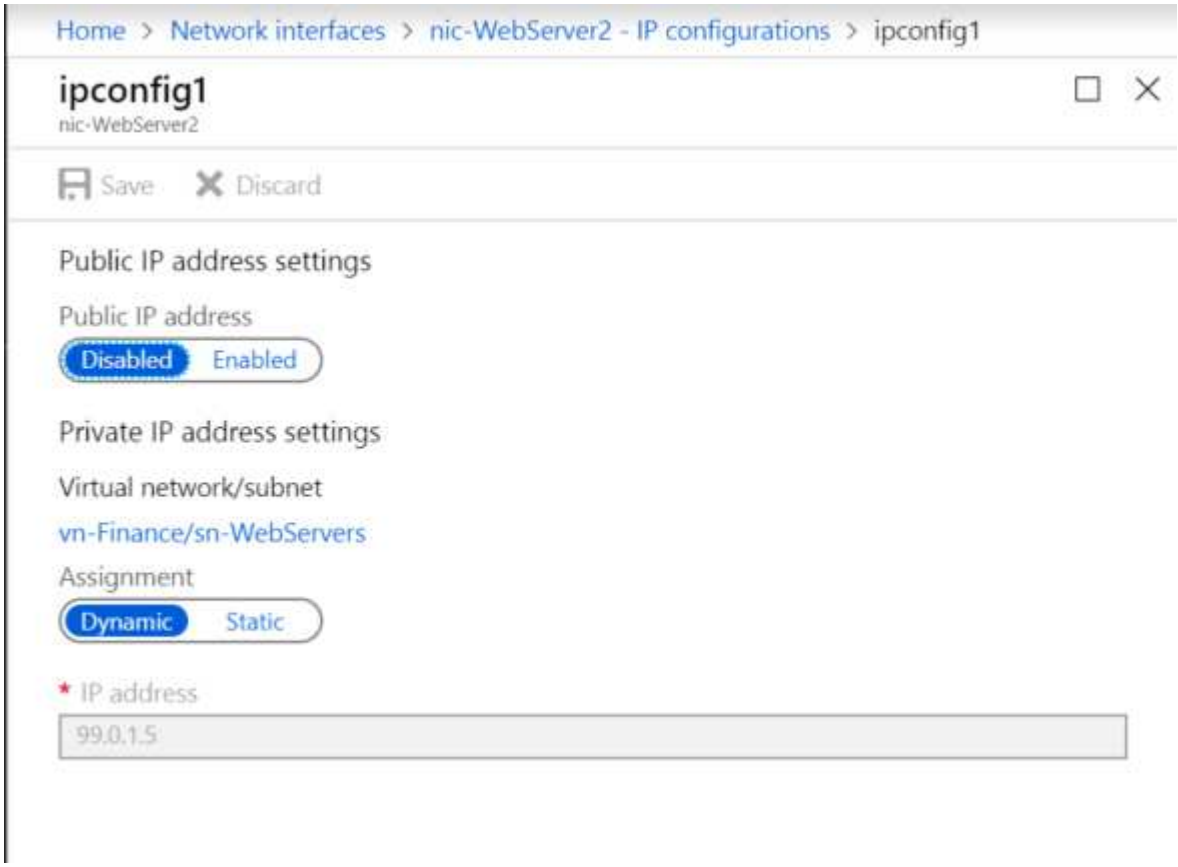
Go to Network Interfaces and click on nic-WebServer2



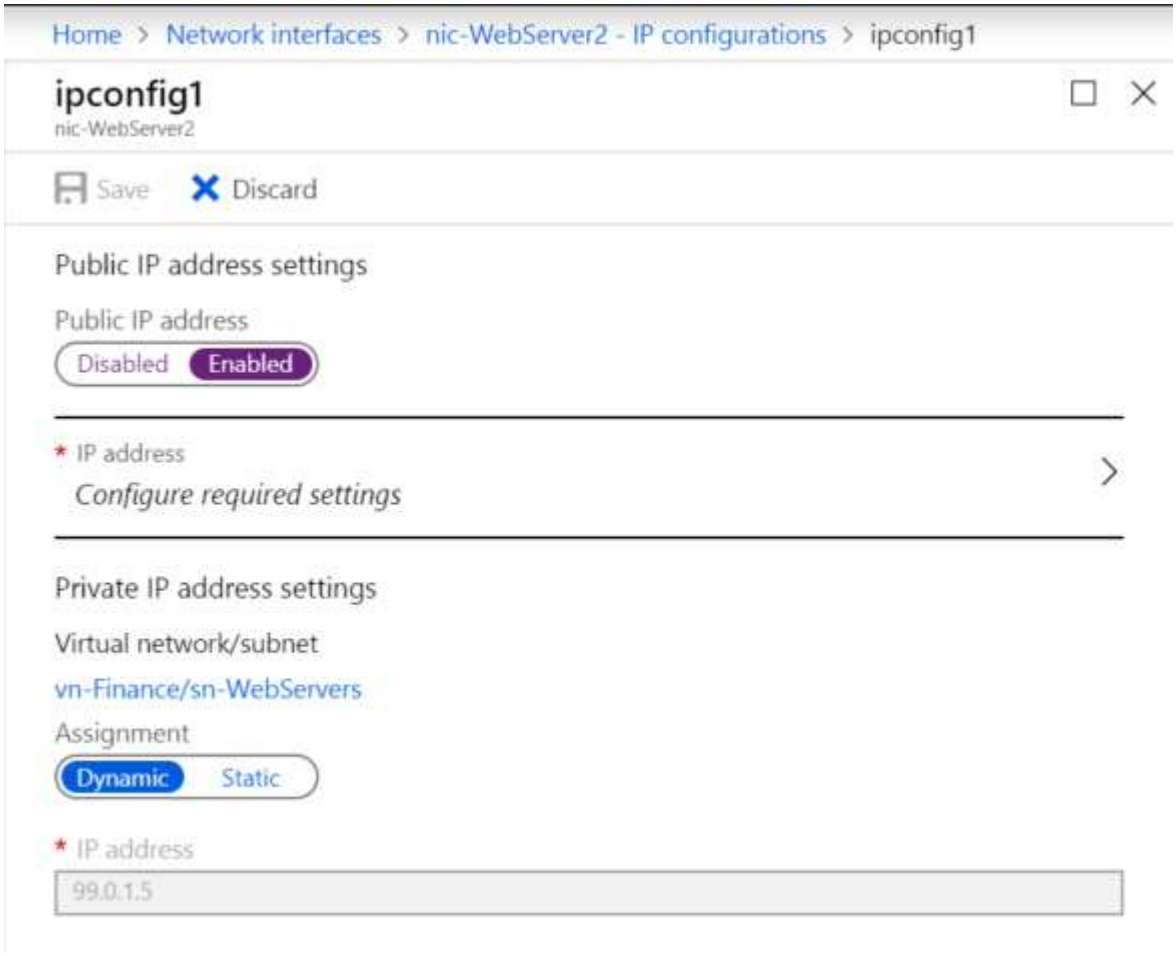
Click on IP Configuration tab.

Click on ipconfig1.

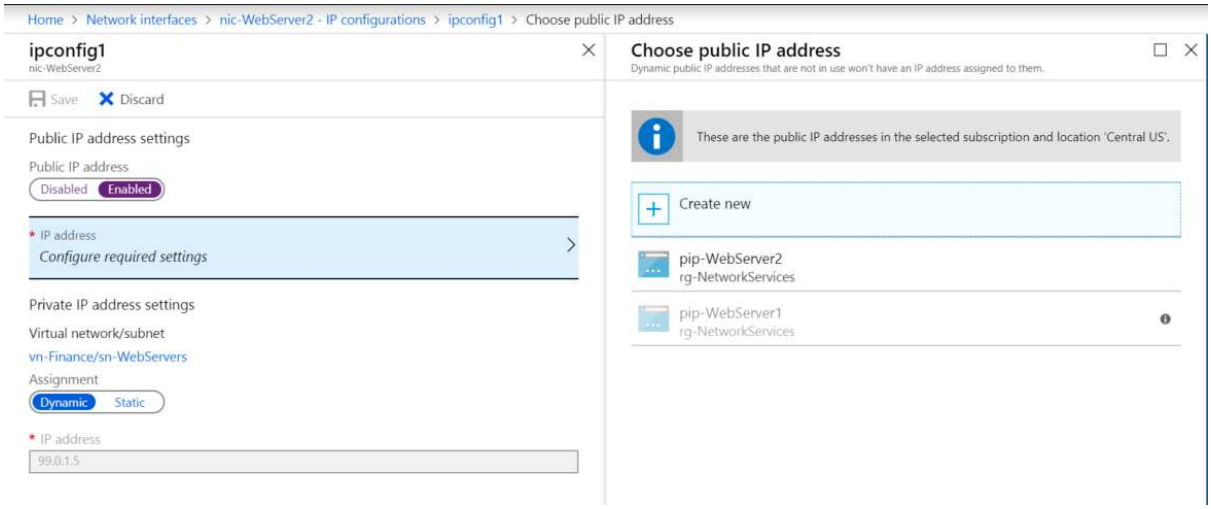



Home > Network interfaces > nic-WebServer2 - IP configurations > ipconfig1
ipconfig1
nic-WebServer2
Save
Discard
Public IP address settings
Public IP address
Disabled
Enabled
Private IP address settings
Virtual network/subnet
vn-Finance/sn-WebServers
Assignment
Dynamic
Static
* IP address
99.0.1.5

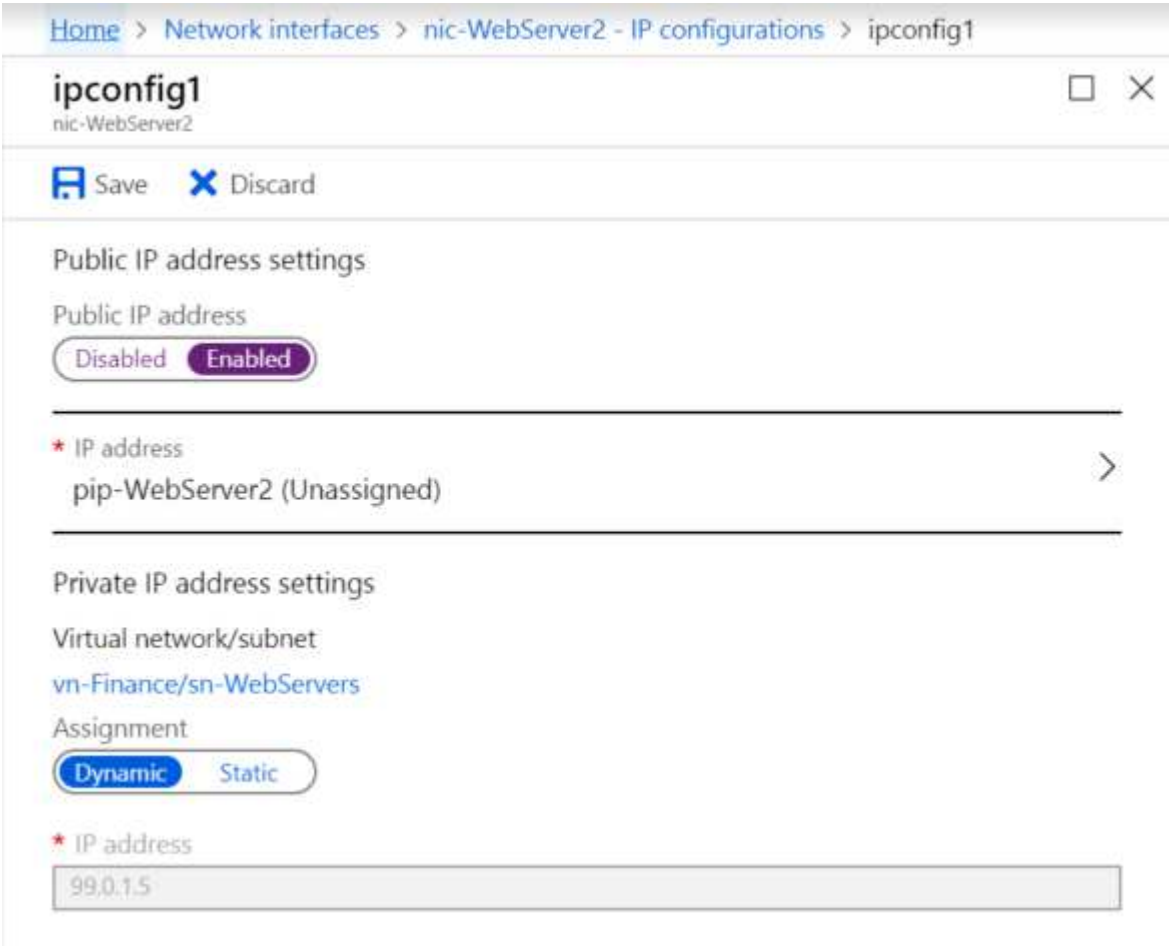
Click on Public IP Address – Enabled option. Then click on Configure Required Settings option.



Select newly created Public IP Address: pip-WebServer2



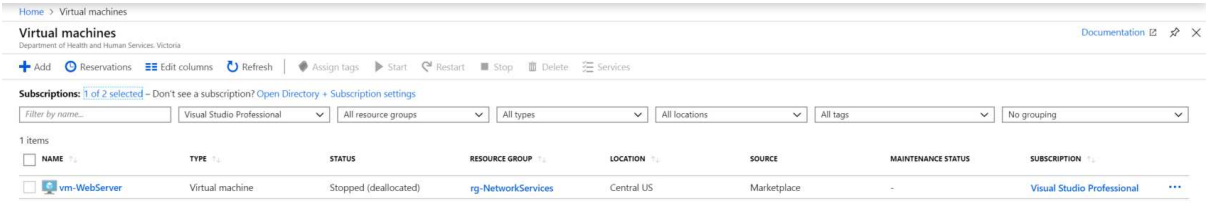
Click Save button.



Next step is to associate this Network Interface to the Virtual Machine.

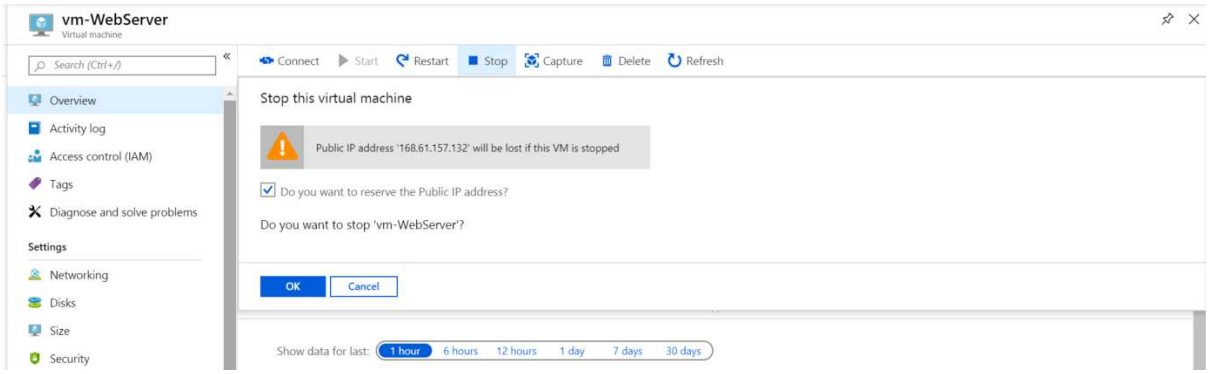
nic-WebServer2 → vm-WebServer

Click on vm-WebServer virtual machine. Make sure the Virtual Machine is in Stopped status.



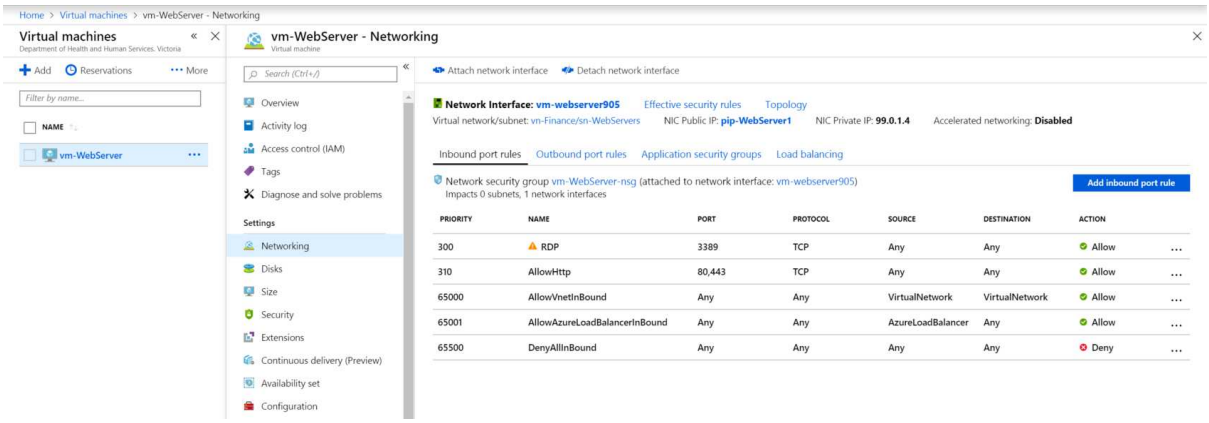
** Important

When stopping the Virtual Machine, it will prompt bellow warning.

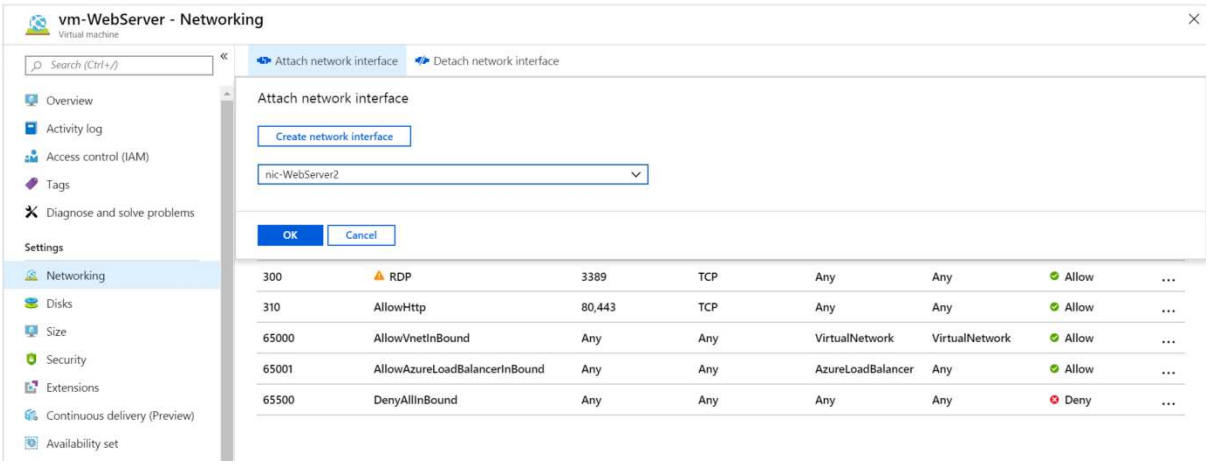


Make sure you tick Reserve Public IP Address option to retain the current Public IP Addresses. Or else when you re start it next time, there will be different Public Ip Addresses next time.

Click on Networking tab.

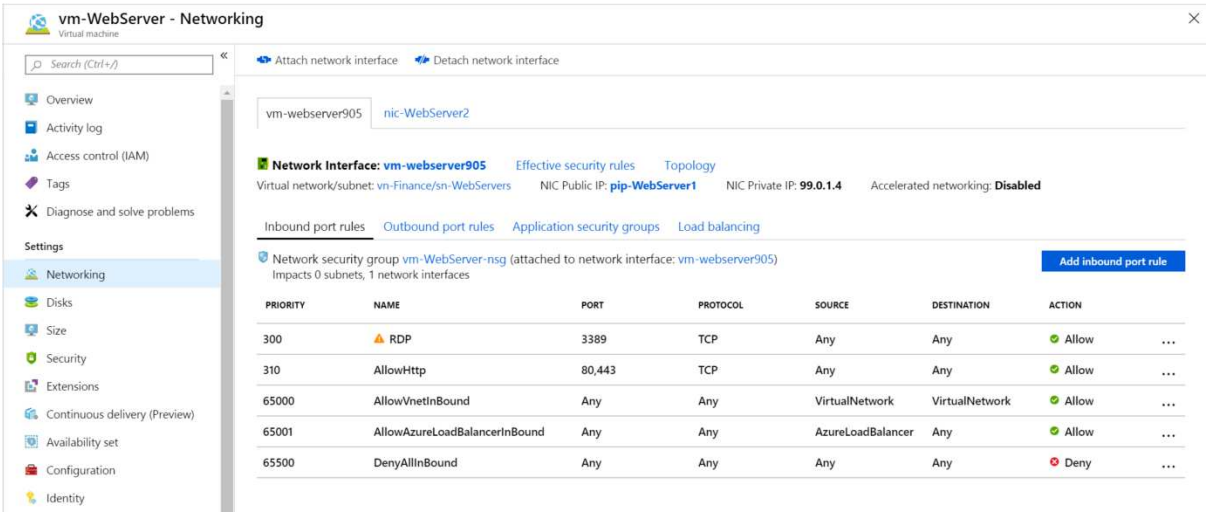


Click on Attach Network Interface button.

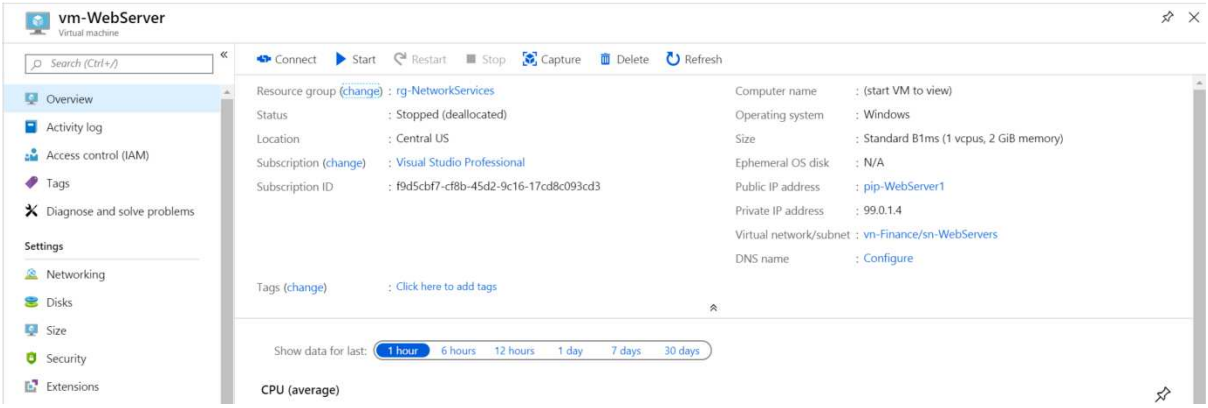


Select nic-Webserver2 from the options and click OK.

It will add a new Network Interface. (new tab: nic-Webserver2)



Re start the Virtual Machine.



Now this Virtual Machine have 2 Network Interfaces.

- vm-webserver905
- nic-WebServer2

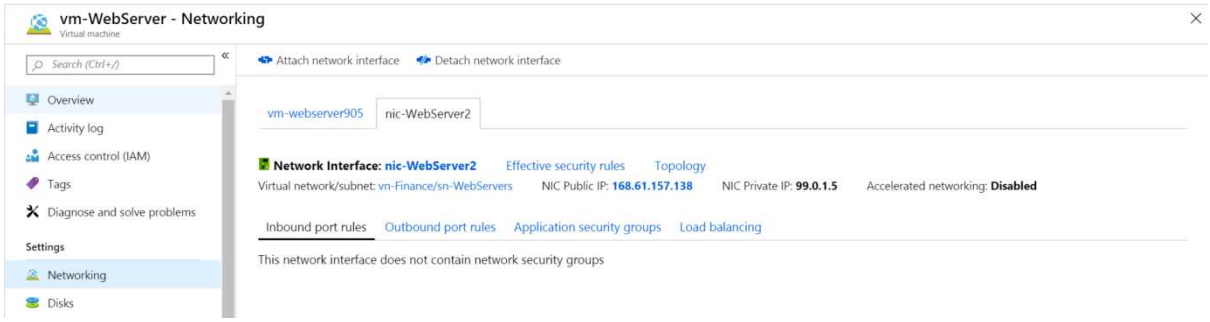
Because of that now this Virtual Machine has 2 Private IP Addresses and 2 Public IP addresses.

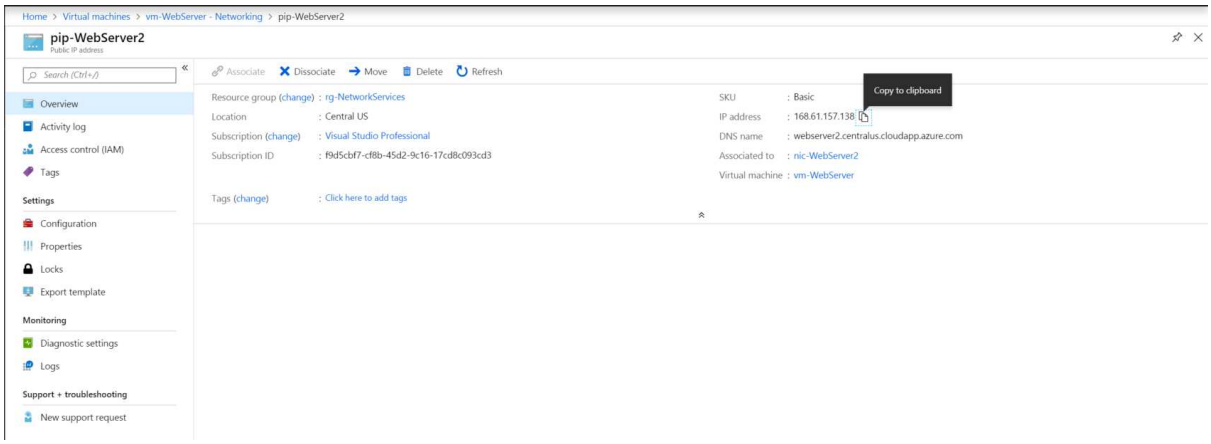
- Private IP Address: 99.0.1.4 | 99.0.1.5
- Public IP Address: 168.61.157.132 | 40.122.144.69

** Important: Remember I mentioned when Stopping the Virtual Machine, it gave me a warning saying to tick the option Reserve Public IP Address. In my case I didn't tick it. So that's why the Public IP Addresses now I have set for this Virtual Machine is different to earlier.

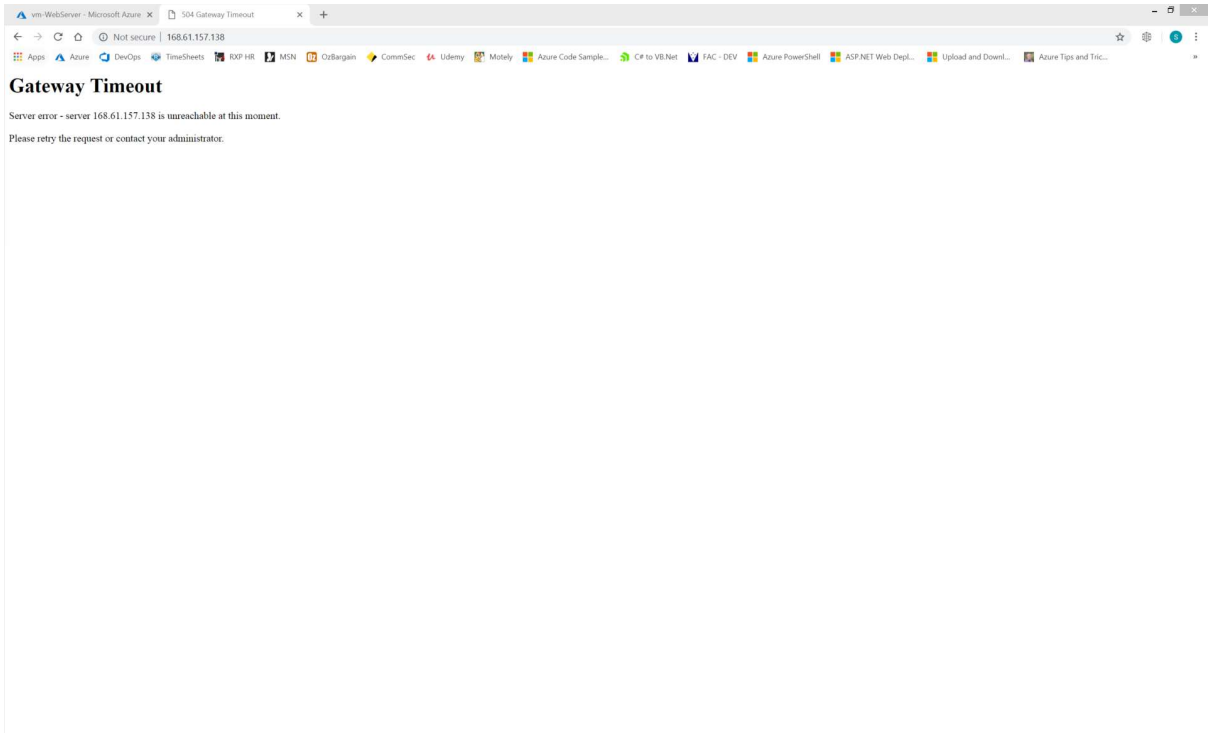
Last time we did connected to this Virtual Machine through internet using old Public IP Address. Now we are going to connect to the same machine using new Public IP Address.

Get the new Public IP Address and paste the Public IP Address to a browser again - http://168.61.157.138/





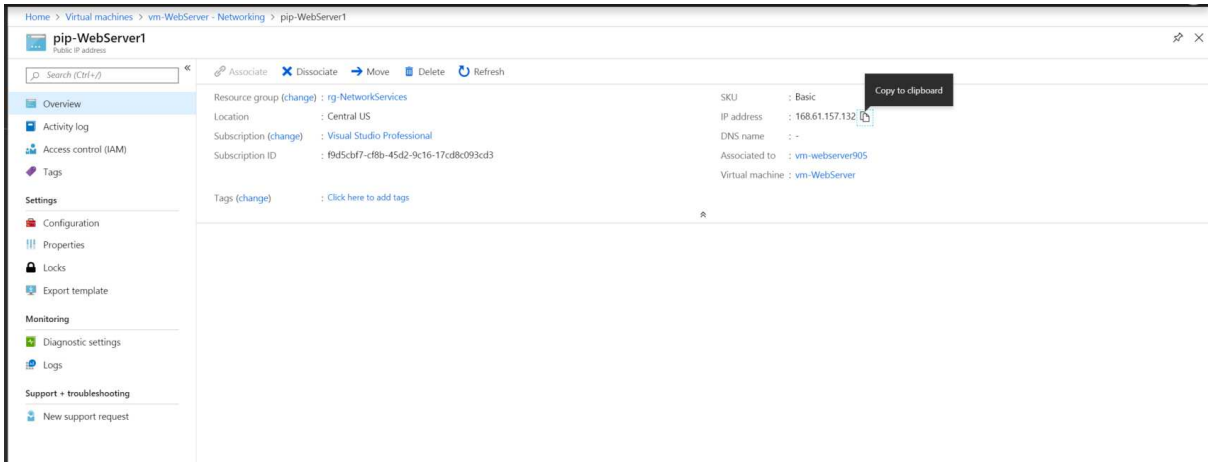
It gives bellow error.



We are not able to RDP in to this Virtual Machine using new Public IP Address.

This is because we need to configure new the Network Interface on the Virtual Machine level.

In order to RDP in to the Virtual Machine get the old Public IP Address: 168.61.157.132



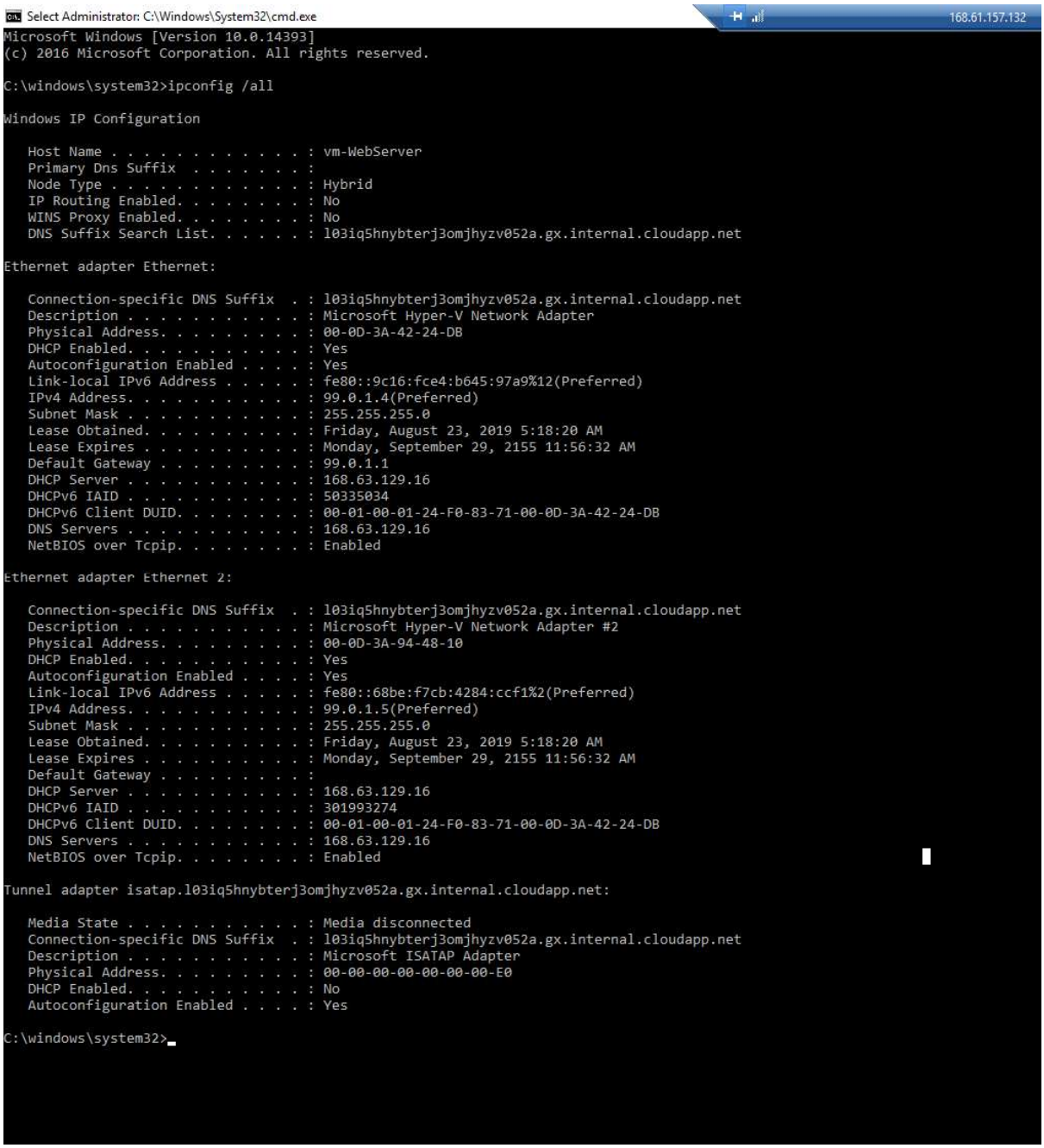
RDP using old Public IP Address: 168.61.157.132

When you are inside the Virtual Machine run bellow command in command line.

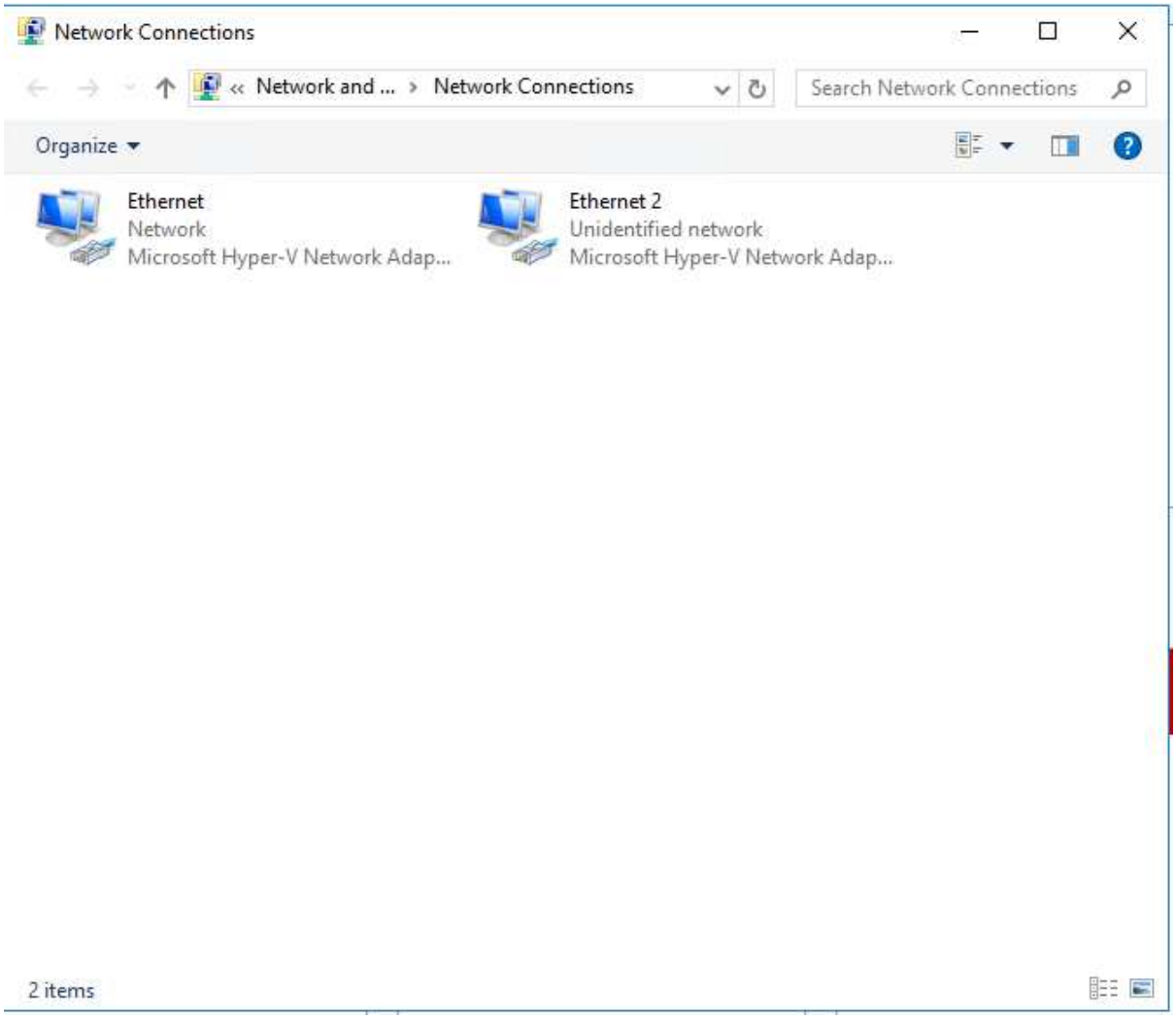
Ipconfig /all

Now we can see 2 Ethernet Adaptors:

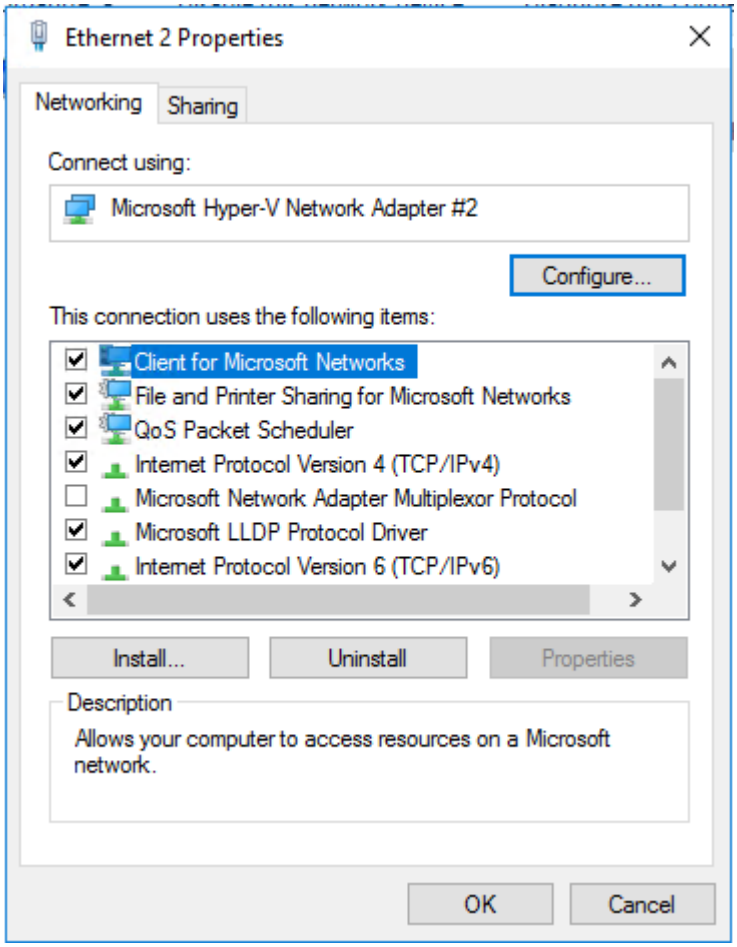
- Ethernet adapter Ethernet
- Ethernet adapter Ethernet 2



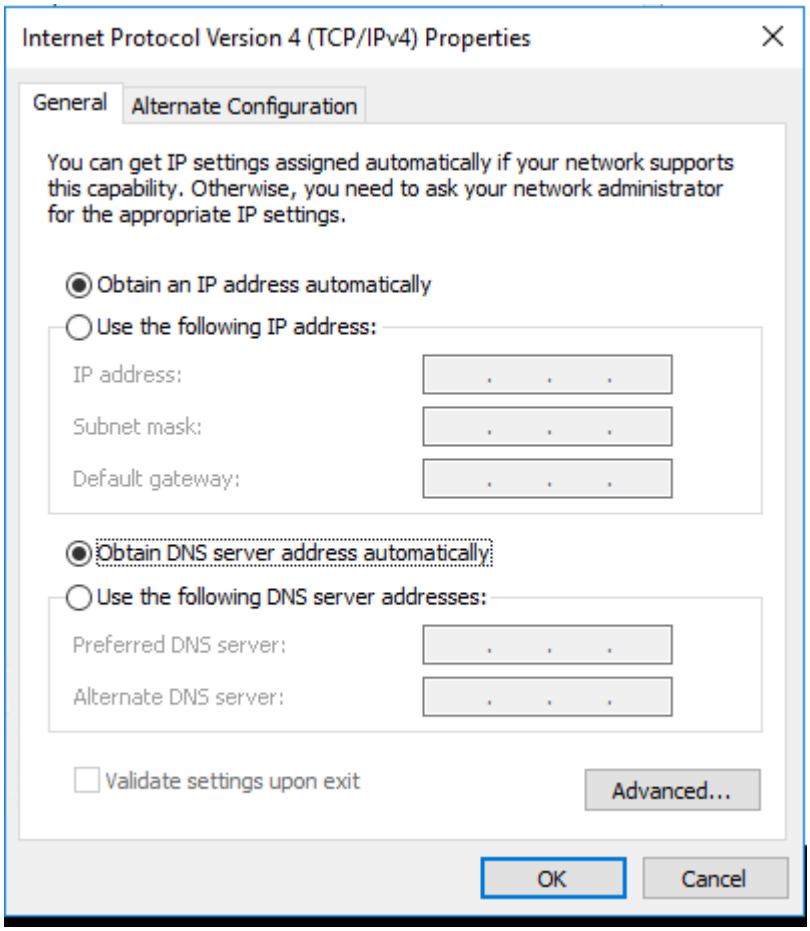
Go in to Network Connections. Now we can see 2 Network Connections.



Right click on Ethernet 2 and click on Properties.



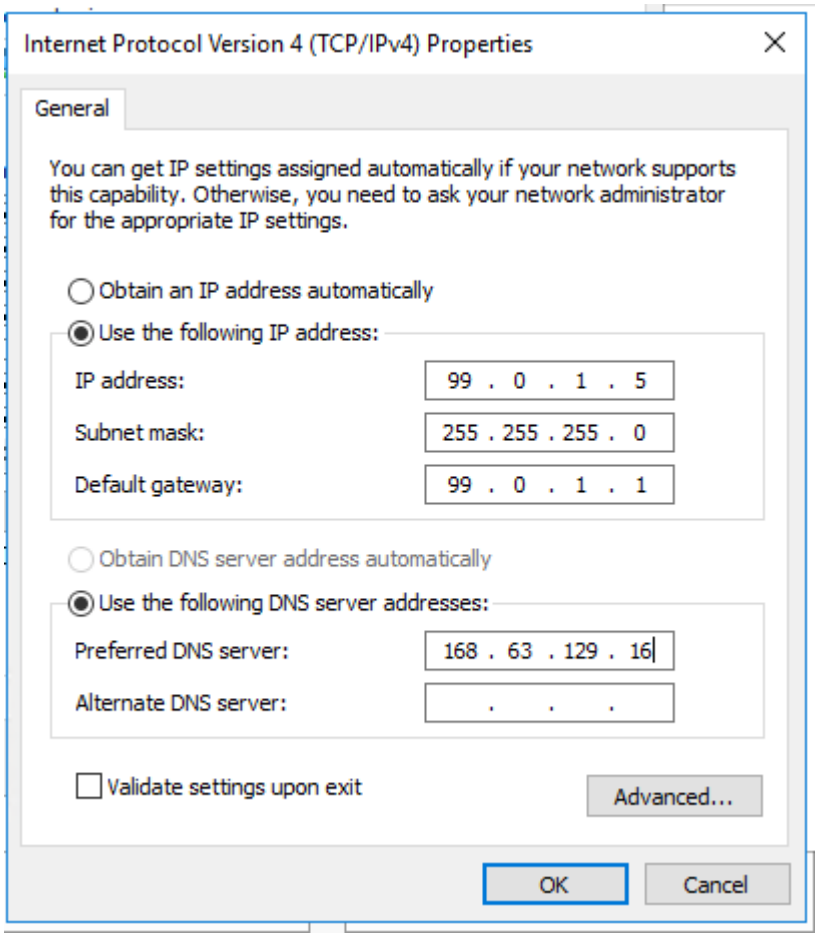
Click on Internet Protocol Version 4 (TCP/IPv4)



Enter bellow details: (obtained from running ipconfig command)

Select option Use the Following IP Address/Use the Following Server Address Automatically

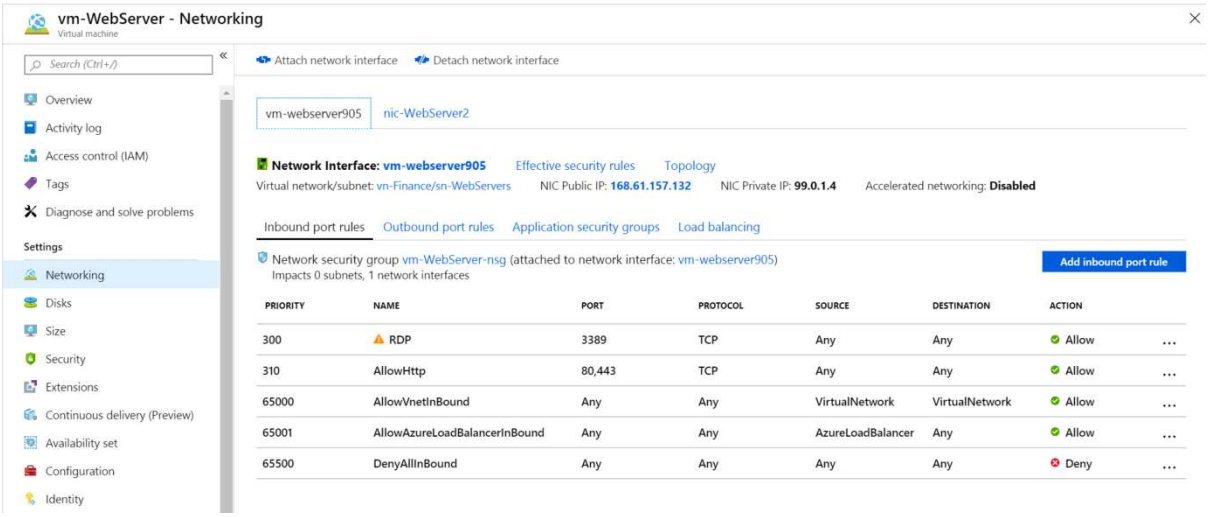
- IP address: 99.0.1.5
- Subnet mask: 255.255.255.0
- Default gateway: 99.0.1.1
- Preferred DNS server: 168.63.129.16
- Alternate DNS server: blank

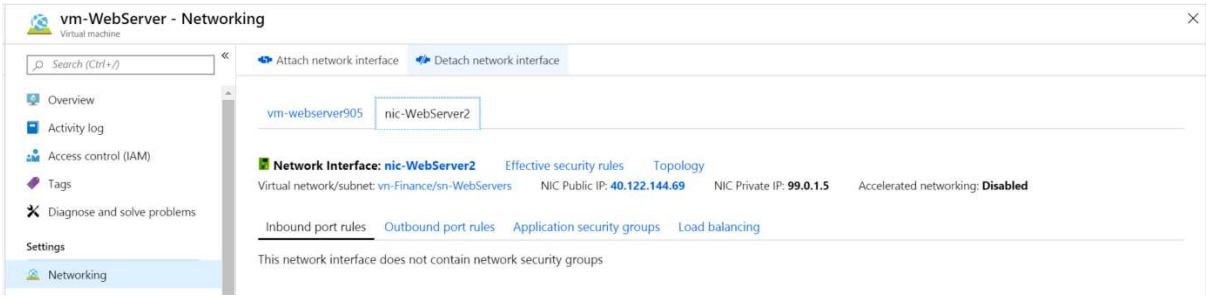


Click OK.

Now try to RDP and send http traffic using both Public IP Addresses.

- 168.61.157.132
- 40.122.144.69



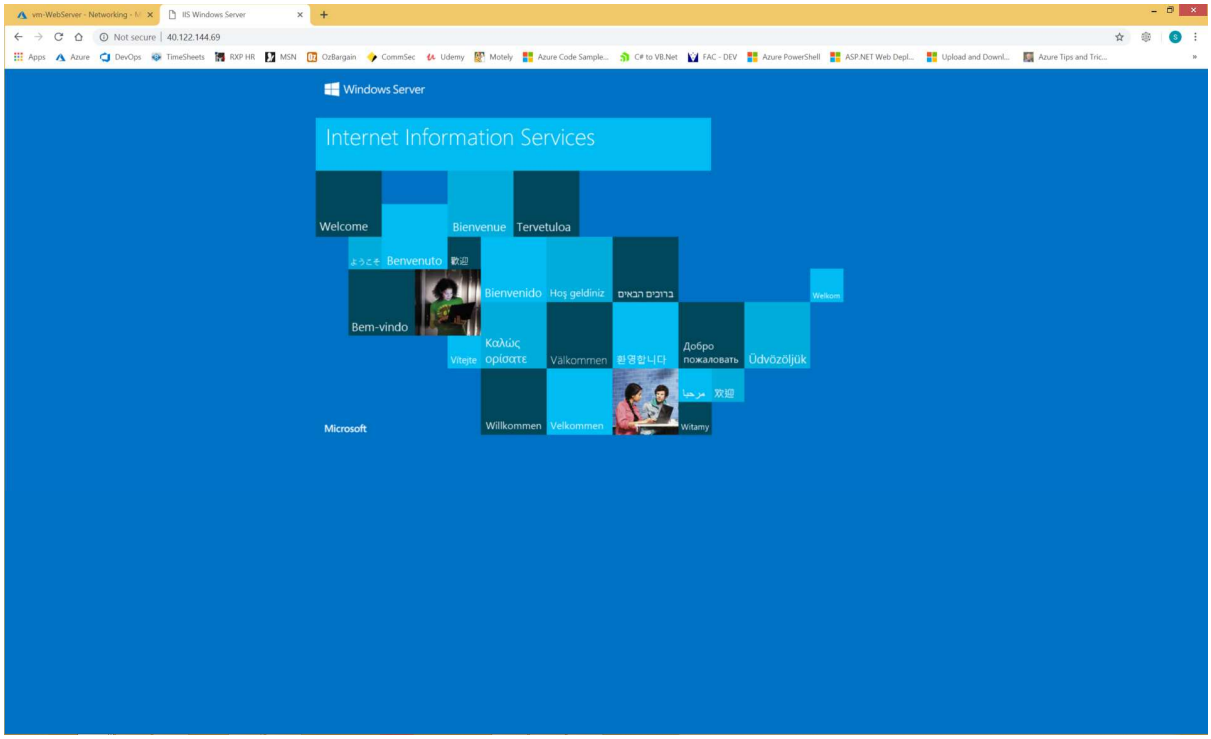


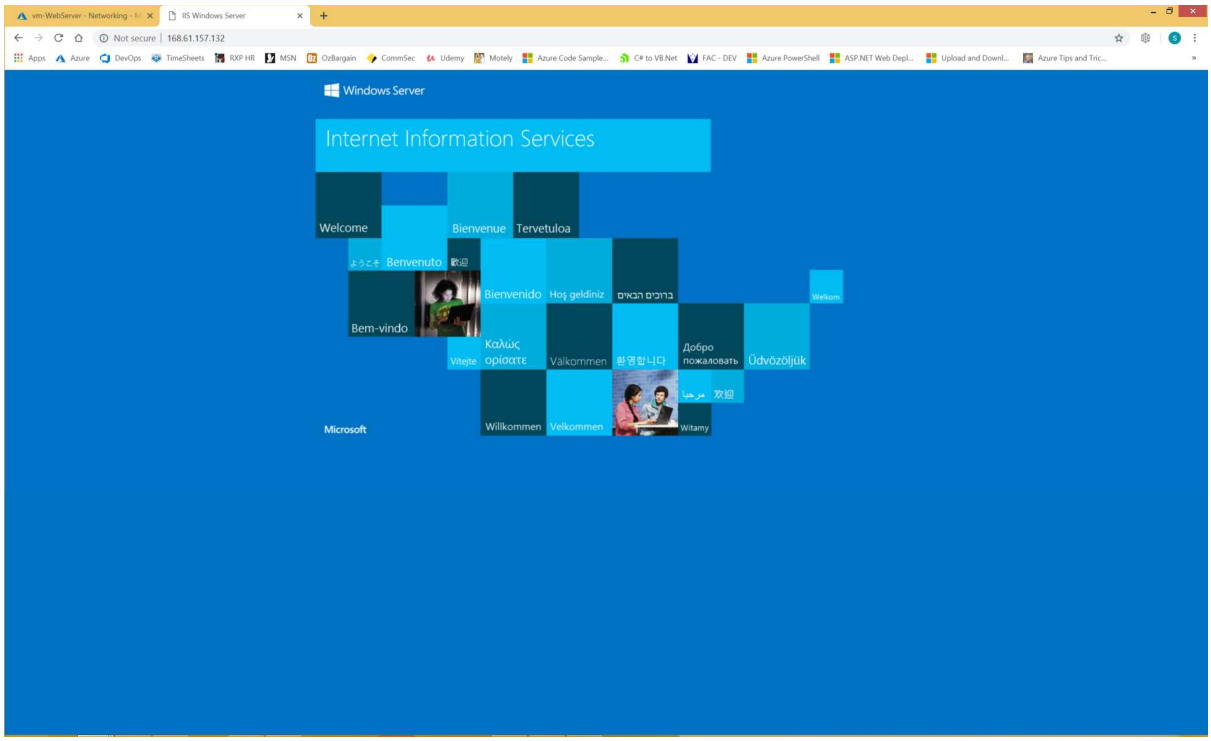
RDP:


Remote Desktop Connection
Remote Desktop
Connection
Computer:
168.61.157.132
User name:
INTERNAL\patsam
You will be asked for credentials when you connect.
Show Options
Connect
Help


Remote Desktop Connection
Remote Desktop
Connection
Computer:
40.122.144.69
User name:
INTERNAL\patsam
You will be asked for credentials when you connect.
Show Options
Connect
Help

HTTP:


Not secure 40.122.144.69
Windows Server
Internet Information Services
Welcome
Bienvenue
Tervetuloa
Benvenuto
Bienvenido
Hoş geldiniz
ברוכים הבאים
Bem-vindo
Vítejte
Καλώς ορίσατε
Välkommen
환영합니다
Добро пожаловать
Üdvözöljük
مرحبا
Willkommen
Velkommen
Witamy
Microsoft


Not secure 168.61.157.132
Windows Server
Internet Information Services
Welcome
Bienvenue
Tervetuloa
Benvenuto
Bienvenido
Hoş geldiniz
ברוכים הבאים
Bem-vindo
Vítejte
Καλώς ορίσατε
Välkommen
환영합니다
Добро пожаловать
Üdvözöljük
مرحبا
Willkommen
Velkommen
Witamy
Microsoft

Network Diagram