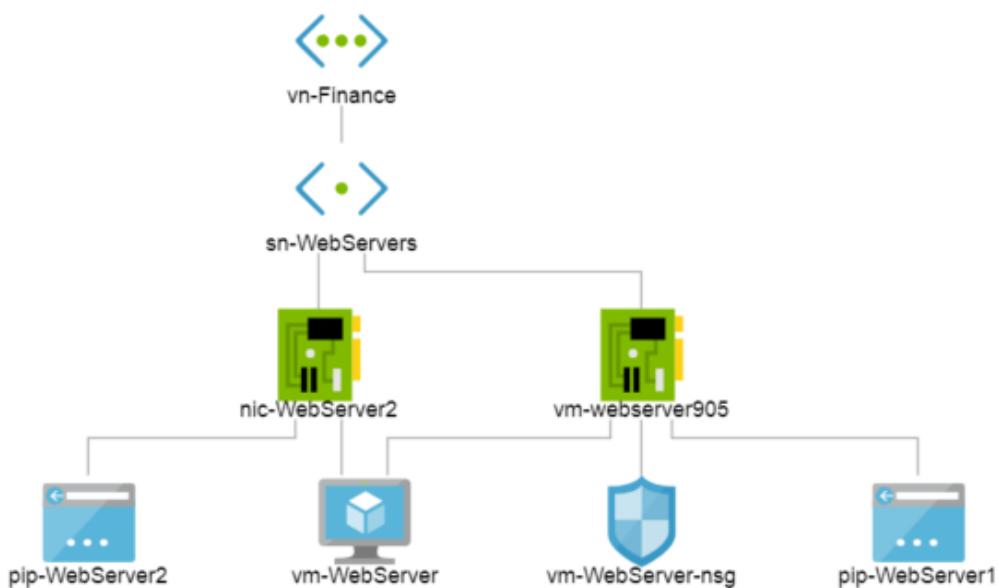


Configure Multiple Network Interfaces And Public IPs To A Virtual Machine

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

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

- Name: rg-NetworkServices
- Region: (US) Central US

The screenshot shows the 'Create a resource group' wizard. At the top, there are three tabs: 'Basics' (which is selected), 'Tags', and 'Review + create'. Below the tabs, a descriptive text explains what a resource group is: 'Resource group - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization.' A 'Learn more' link is provided. The 'Project details' section contains two fields: 'Subscription' (set to 'Visual Studio Professional') and 'Resource group' (set to 'rg-NetworkServices', which is highlighted with a purple border and a green checkmark). The 'Resource details' section contains one field: 'Region' (set to '(US) Central US').

We can see the newly created Resource Group.

The screenshot shows the 'Resource groups' blade. At the top, there are buttons for '+ Add', 'Edit columns', 'Refresh', 'Export to CSV', and 'Assign tags'. Below that, a message says 'Subscriptions: 1 of 2 selected - Don't see a subscription? Open Directory + Subscription settings'. There are filters for 'Filter by name...', 'SUBSCRIPTION', 'LOCATION', 'All locations', 'All tags', and 'No grouping'. The main table lists one item: 'rg-NetworkServices' under 'NAME', 'Visual Studio Professional' under 'SUBSCRIPTION', 'Central US' under 'LOCATION', and has a '...' button on the right.

Step 02: Create a new Virtual Network

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

- 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

Fields marked with ***** are required.

Name: vn-Finance (Valid)

Address space: 99.0.0.0/16 (Valid)
99.0.0.0 - 99.0.255.255 (65536 addresses)

Subscription: Visual Studio Professional

Resource group: rg-NetworkServices (Valid)
[Create new](#)

Location: (US) Central US

Subnet

Name: sn-WebServers (Valid)

Address range: 99.0.1.0/24 (Valid)
99.0.1.0 - 99.0.1.255 (256 addresses)

DDoS protection: Basic (selected)

Service endpoints: Disabled (selected)

Firewall: Disabled (selected)

Create **Automation options**

We can see the newly created Virtual Network.

The screenshot shows the 'Virtual networks' blade in the Azure portal. It displays a single item named 'vn-Finance'. The details are as follows:

NAME	RESOURCE GROUP	LOCATION	SUBSCRIPTION
vn-Finance	rg-NetworkServices	Central US	Visual Studio Professional

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

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

The screenshot shows the 'vn-Finance - Subnets' blade. It displays one subnet named 'sn-WebServers'. The details are as follows:

NAME	ADDRESS RANGE	IPV4 AVAILABLE ADDRESSES	DELEGATED TO	SECURITY GROUP
sn-WebServers	99.0.1.0/24	251	-	-

Resources:

The screenshot shows the 'rg-NetworkServices' Resource group blade. In the 'Subscriptions' section, it shows a single subscription entry:

Subscription	ID	Deployment Status
(change)	Visual Studio Professional	1 Succeeded

Below the subscriptions, there is a list of resources:

NAME	TYPE	LOCATION
vn-Finance	Virtual network	Central US

Step 03: Add a new Virtual Machine

We are going to create a new Virtual Machine.

- Resource Group: rg-NetworkServices
- 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)
- Public inbound ports: Allow selected ports (*important – set this option to remote in)
- Selected inbound ports: RDP (*important – set this option to remote in)

The screenshot shows the 'Create a virtual machine' wizard in the Azure portal, specifically the 'Basics' step. The page title is 'Home > Virtual machines > Create a virtual machine'. The sub-page title is 'Create a virtual machine'. Below it, there are tabs: Basics, Disks, Networking, Management, Advanced, Tags, and Review + create. The Basics tab is active. A note at the top says: 'Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization.' Below this, there's a link 'Looking for classic VMs? Create VM from Azure Marketplace'. The 'Project details' section asks to select a subscription and resource group. The subscription is set to 'Visual Studio Professional' and the resource group is 'rgNetworkServices'. The 'Instance details' section includes fields for 'Virtual machine name' (vm-WebServer1), 'Region' (US Central US), 'Availability options' (No infrastructure redundancy required), 'Image' (Windows Server 2016 Datacenter), and 'Size' (Standard B1ls). The 'Administrator account' section requires a 'Username' (param), 'Password', and 'Confirm password'. Under 'INBOUND PORT RULES', it says 'Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.' It shows 'Public inbound ports' set to 'Allow selected ports' and 'Select inbound ports' set to 'RDP'. A note below says: 'These ports will be exposed to the internet. Use the Advanced controls to limit inbound traffic to known IP addresses. You can also update inbound traffic rules later.' At the bottom, there are buttons for 'Review + create', '< Previous', and 'Next : Disks >'.

Click Next: Disks button.

- OS disk type: Standard HDD

The screenshot shows the 'Create a virtual machine' wizard on the 'Basics' step. Under 'Disk options', 'Standard HDD' is selected. In the 'Data disks' section, there's a note that Ultra Disk compatibility is not available for this VM size and location. The 'Networking' tab is visible at the top.

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)

The screenshot shows the 'Networking' step of the 'Create a virtual machine' wizard. It configures the network interface with 'vn-Finance' as the virtual network, 'sn-WebServers' as the subnet, and 'pip-WebServer1' as the public IP. Under 'Public inbound ports', 'RDP' is selected. A warning message states: 'These ports will be exposed to the internet. Use the Advanced controls to limit inbound traffic to known IP addresses. You can also update inbound traffic rules later.' The 'Accelerated networking' option is turned off.

To create a new Public IP, click on Create New

- Name: pip-WebServer1

Create public IP address

X

* Name

pip-WebServer1 ✓

SKU ⓘ

Basic Standard

Assignment

Dynamic Static

OK

Click Review + Create button.

The screenshot shows the 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20190823095829 - Overview' page. The main heading 'Your deployment is complete' is displayed with a green checkmark icon. Below it, deployment details are listed: Deployment name: CreateVm-MicrosoftWindowsServer.WindowsServer-201-20190823095829; Subscription: Visual Studio Professional; Resource group: rg-NetworkServices; Start time: 8/23/2019, 10:01:18 AM; Correlation ID: 8b401ec7-35aa-4531-83b9-d93626c7eb68. A table titled 'Deployment details' shows the status of various resources: shutdown-computevm-vn (Created), vm-WebServer (OK), vm-webserver905 (Created), vm-WebServer-nsg (OK), pip-WebServer1 (OK), and rgnetworkservicesdiagfd2 (OK). On the right side, there are links to 'Security Center' and 'Free Microsoft tutorials'.

We can see the newly created Virtual Machine.

The screenshot shows the 'Virtual machines' list page. The table displays one item: 'vm-WebServer1' (Virtual machine, Running, rg-NetworkServices, Central US, Marketplace, Visual Studio Professional). The table has columns for NAME, TYPE, STATUS, RESOURCE GROUP, LOCATION, SOURCE, MAINTENANCE STATUS, and SUBSCRIPTION.

NAME	TYPE	STATUS	RESOURCE GROUP	LOCATION	SOURCE	MAINTENANCE STATUS	SUBSCRIPTION
vm-WebServer1	Virtual machine	Running	rg-NetworkServices	Central US	Marketplace	-	Visual Studio Professional

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 networking 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

Network Interface: vm-webserver905

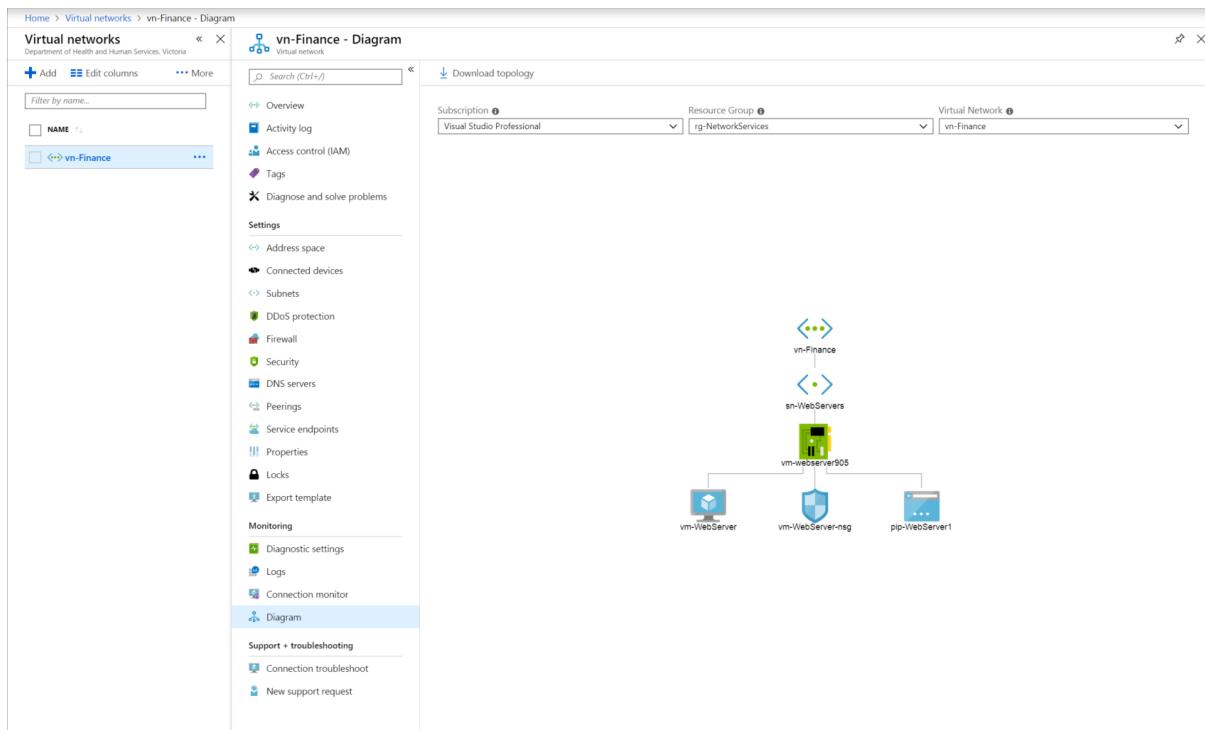
PRIORITY	NAME	PORT	PROTOCOL	SOURCE	DESTINATION	ACTION
300	RDP	3389	TCP	Any	Any	Allow
65000	AllowVnetInbound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerInbound	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInbound	Any	Any	Any	Any	Deny

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

Resource Group: rg-NetworkServices

NAME	TYPE	LOCATION
pip-WebServer1	Public IP address	Central US
rgnetworkservicesdiag682	Storage account	Central US
vm-WebServer	Virtual machine	Central US
vm-webserver905	Network interface	Central US
vm-WebServer-nsg	Network security group	Central US
vn-Finance	Virtual network	Central US

Virtual Network diagram:



Step 04: Remote Desktop to Virtual Machine

Click on vm-WebServer.

The screenshot shows the Azure portal's 'Virtual machines' page. A single item, 'vm-WebServer', is selected. The details pane on the right shows the following information:

NAME	TYPE	STATUS	RESOURCE GROUP	LOCATION	SOURCE	Maintenance Status	Subscription
vm-WebServer	Virtual machine	Running	rg-NetworkServices	Central US	Marketplace	-	Visual Studio Professional

Get the Public IP Address copied – 40.122.73.32

The screenshot shows the detailed view of the selected virtual machine, 'vm-WebServer'. In the main content area, the 'CPU (average)' chart shows 'Resource not found.' The 'Network (total)' chart also shows 'Resource not found.' On the right side, under the 'Public IP address' section, the value '40.122.73.32' is highlighted with a blue selection box, and a tooltip with a 'Copy to clipboard' button is visible.

Click on Connect button.

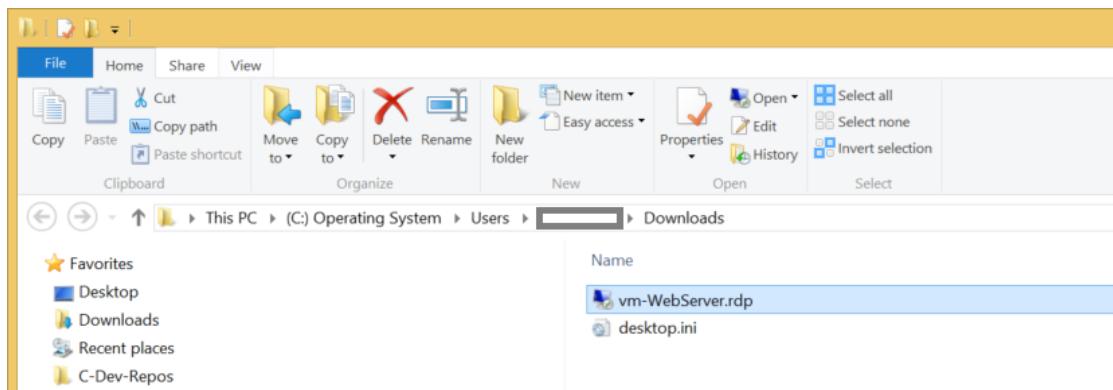
Click Download RDP File button.

The screenshot shows the Azure portal interface for managing virtual machines. On the left, a sidebar lists 'Virtual machines' under 'Department of Health and Human Services, Victoria'. A search bar at the top right contains 'vm-WebServer'. The main content area displays the 'vm-WebServer' VM details, including its status as 'Running', location as 'Central US', and subscription information. A 'Connect' button is visible at the top right of the main panel. To the right, a 'Connect to virtual machine' overlay is open, showing connection options for 'RDP' and 'SSH'. It includes fields for 'Public IP address' (set to 40.122.73.32) and 'Port number' (set to 3389). A 'Download RDP File' button is also present. Below the connection options, there's a link to 'Having trouble connecting to this VM?' followed by troubleshooting links for 'Diagnose and solve problems', 'Troubleshoot connection', and 'Serial console'.

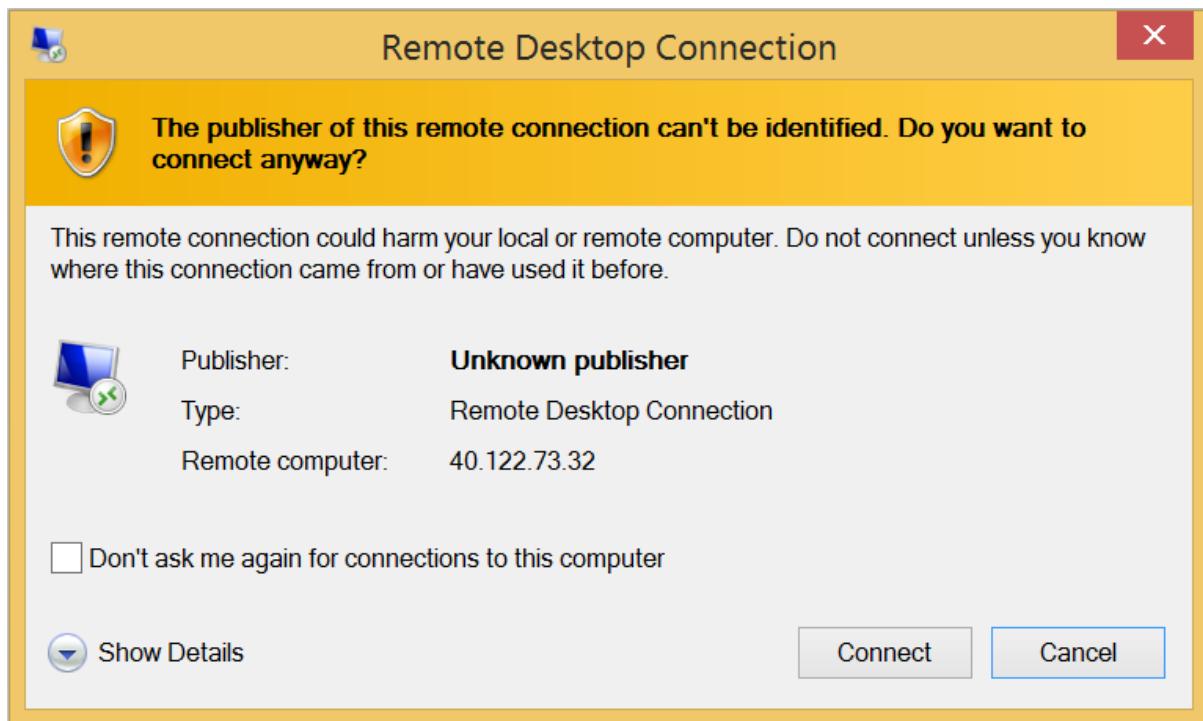
It will download the RDP file to your downloads folder.

The screenshot shows the Microsoft Azure portal interface. On the left is the navigation sidebar with various services like Home, Dashboard, and Virtual machines. The main area shows the 'Virtual machines' blade for 'vm-WebServer'. A context menu is open over the 'vm-WebServer' item in the list, with options: Open, Always open files of this type, Show in folder, and Cancel. The 'Open' option is highlighted. To the right of the main content is the 'vm-WebServer' details panel, which includes tabs for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings, Operations, and a list of configuration items.

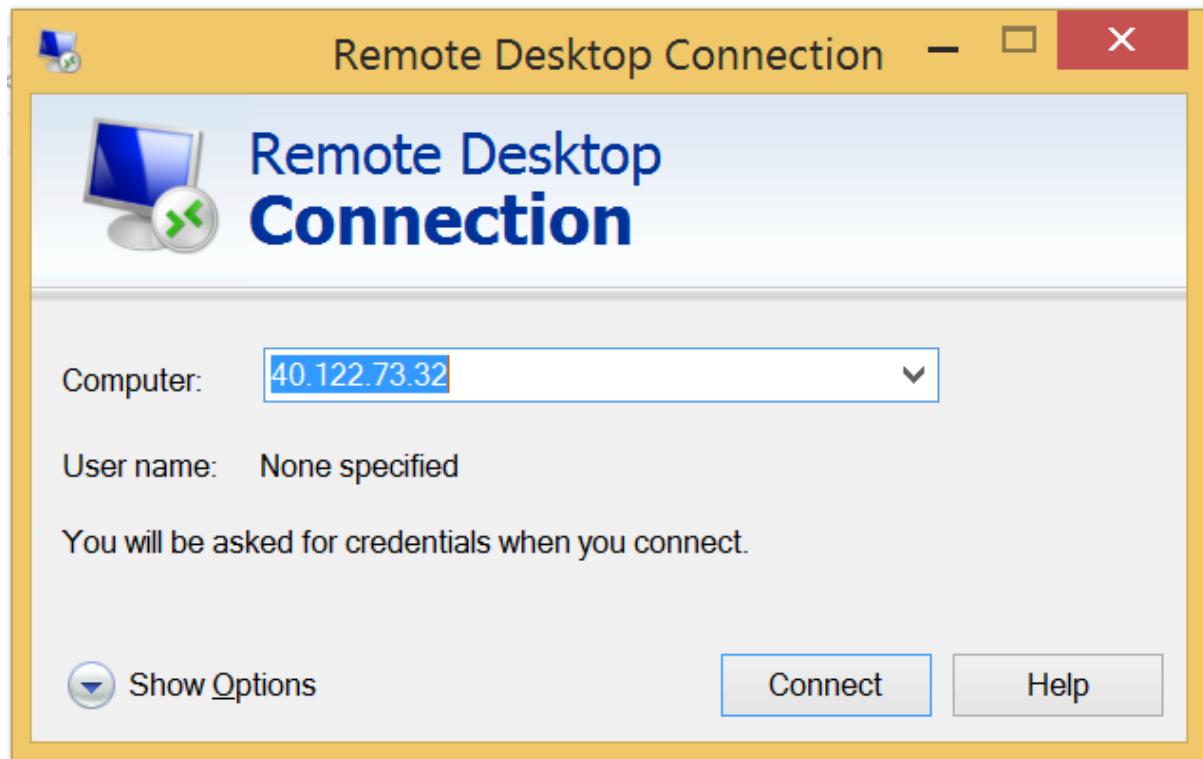
Click on the RDP file.



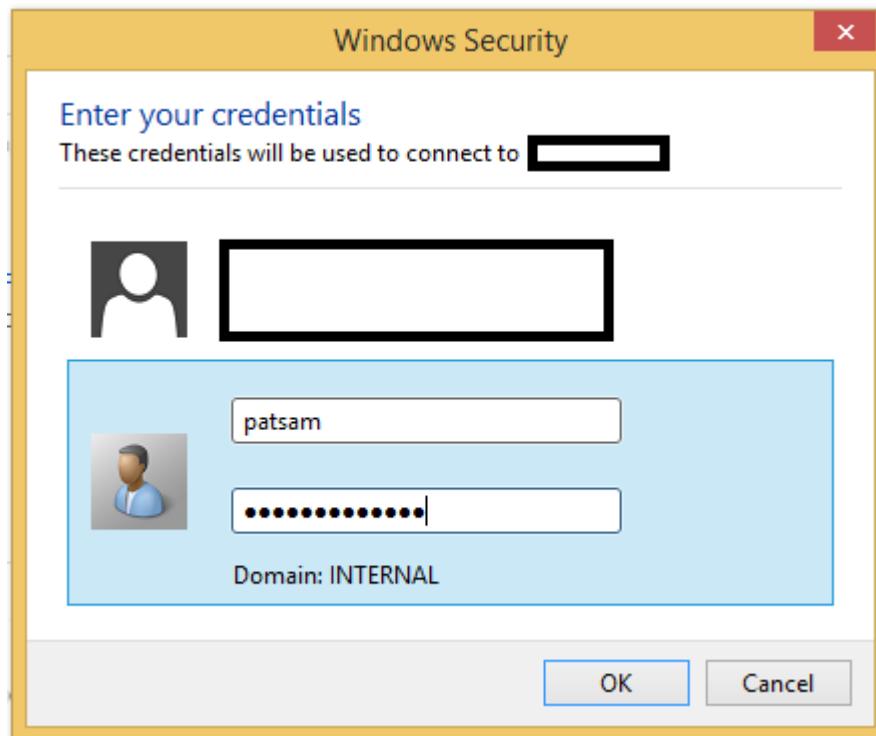
Click on Connect.



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



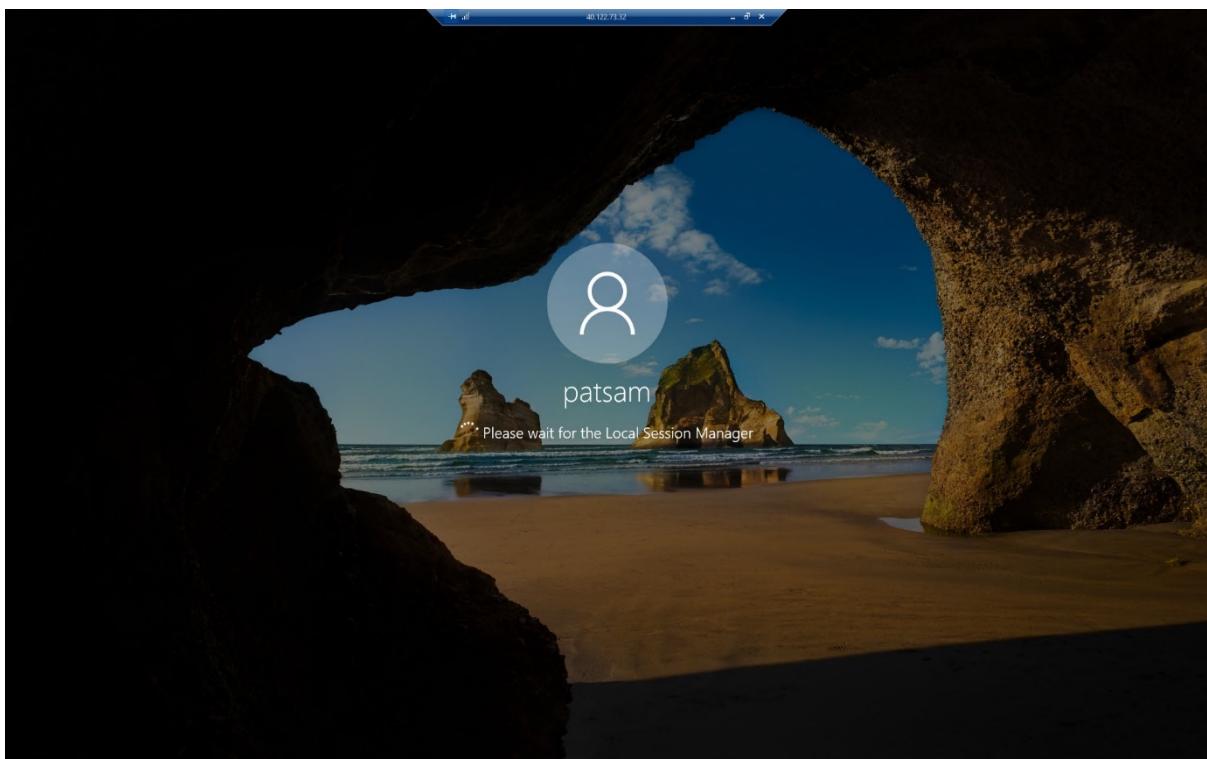
Enter the username/password which we used when creating the Virtual Machine.



To accept the certificate, click Yes.



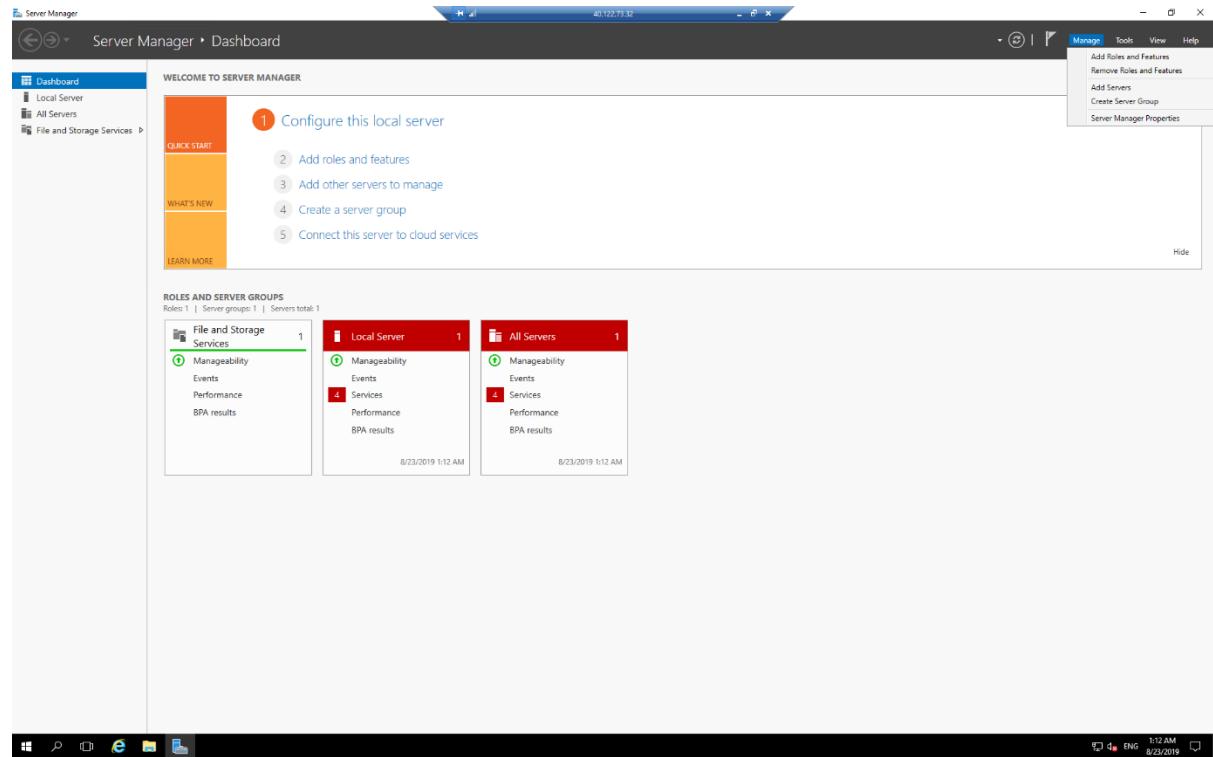
You should be able to access the Virtual Machine.



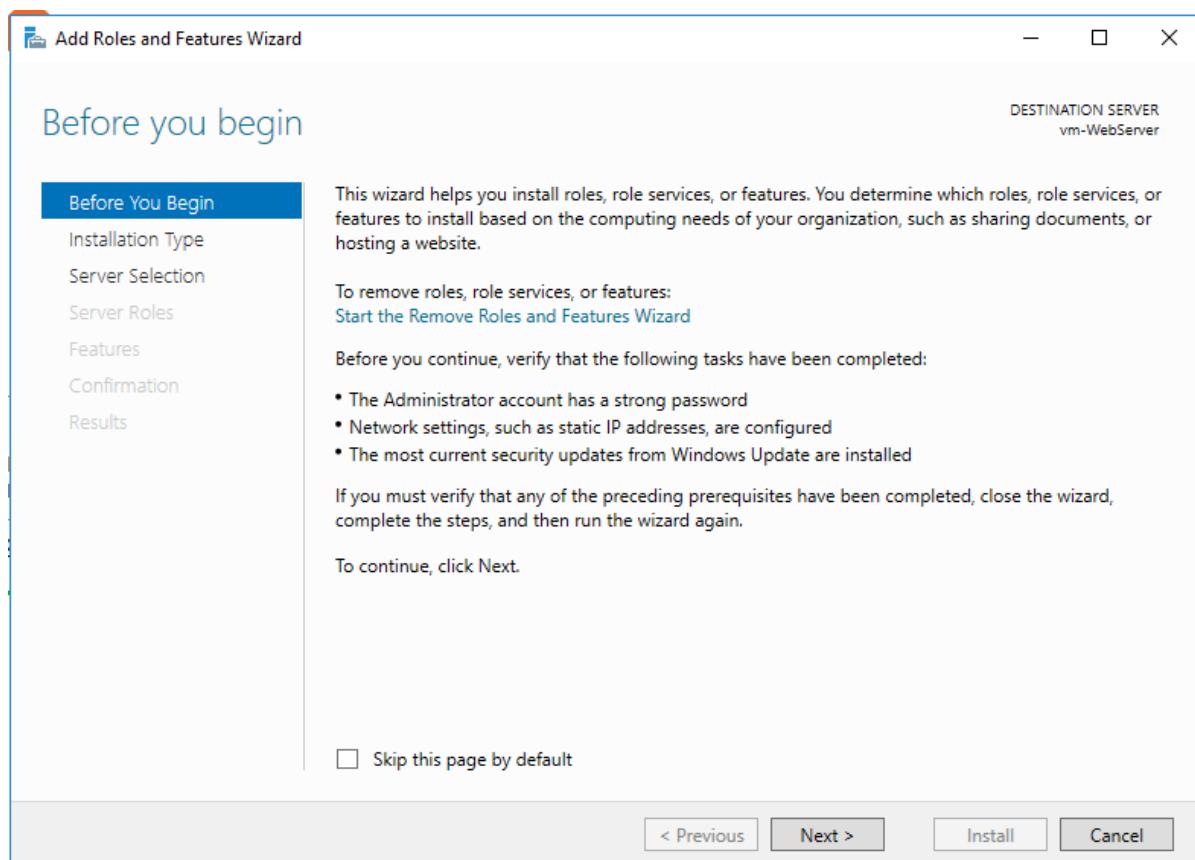
Step 05: Install IIS on Virtual Machine

Go to Server Manager on the Virtual Machine.

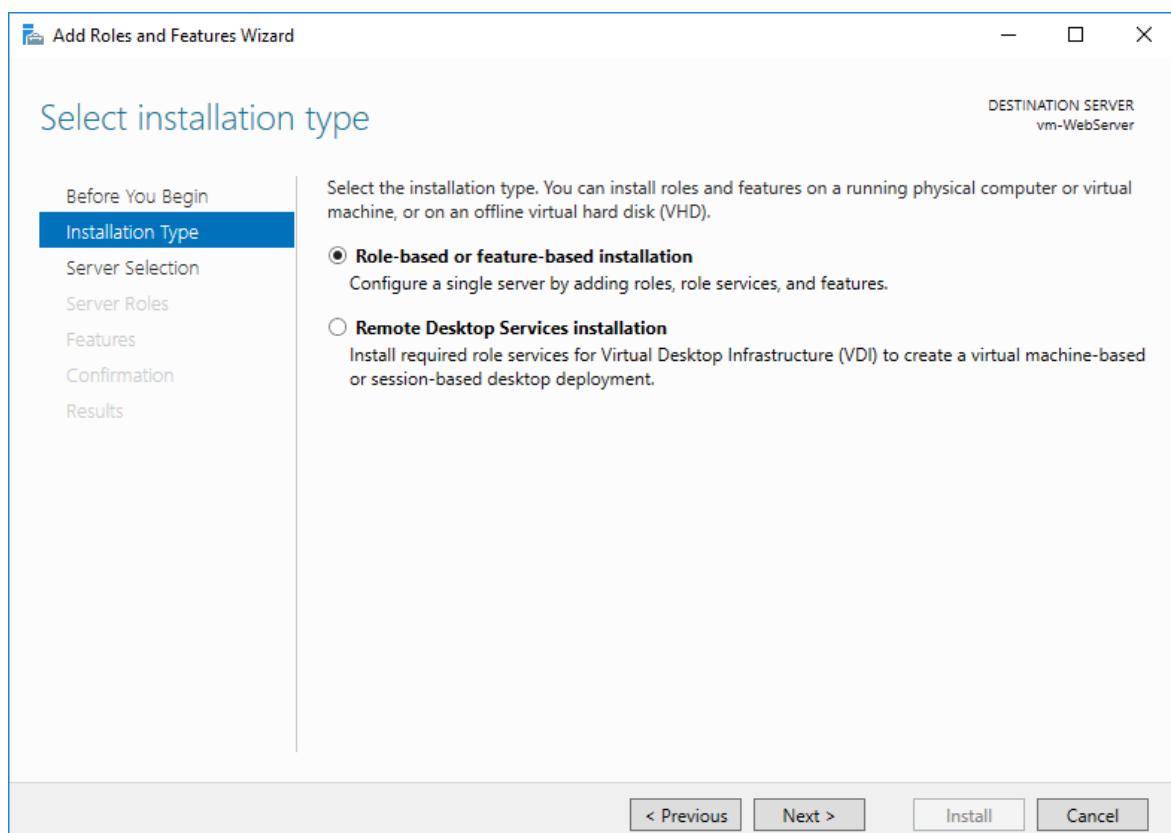
Click Manage → Add Roles and Features



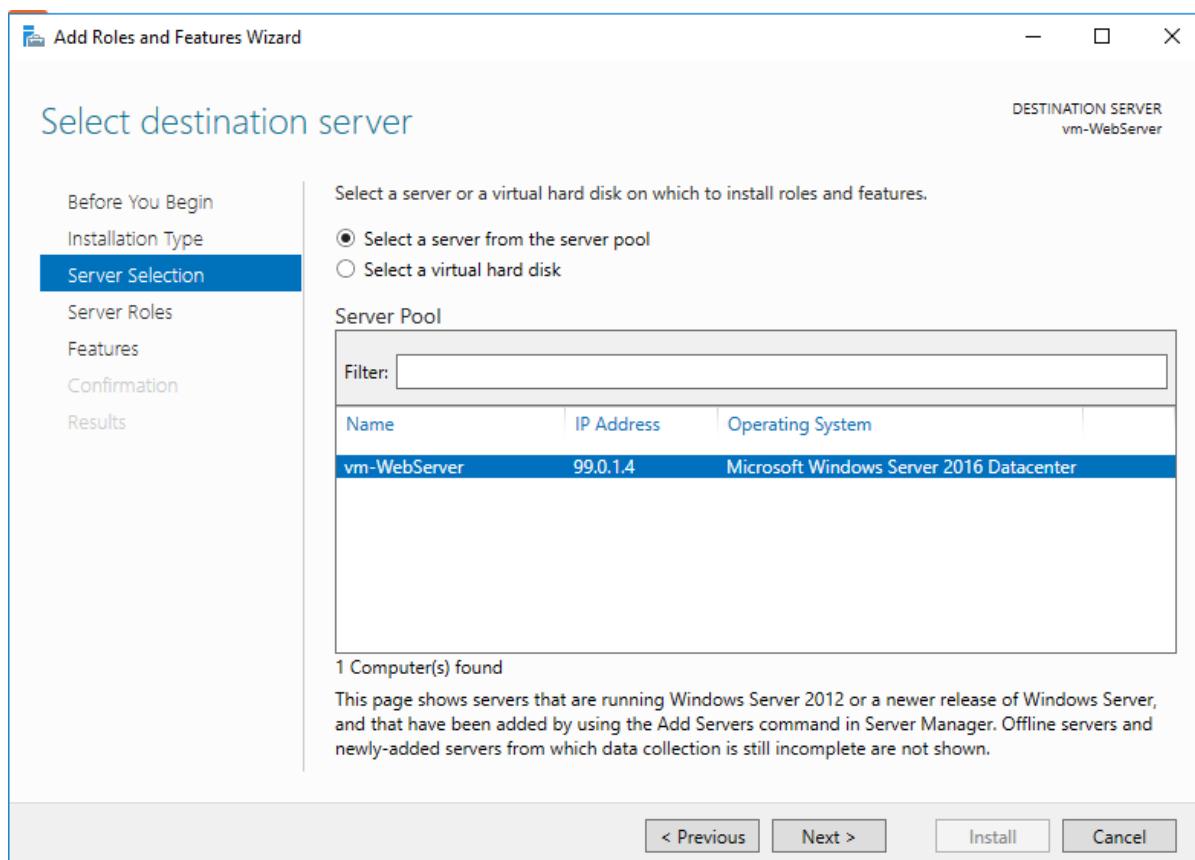
Click Next



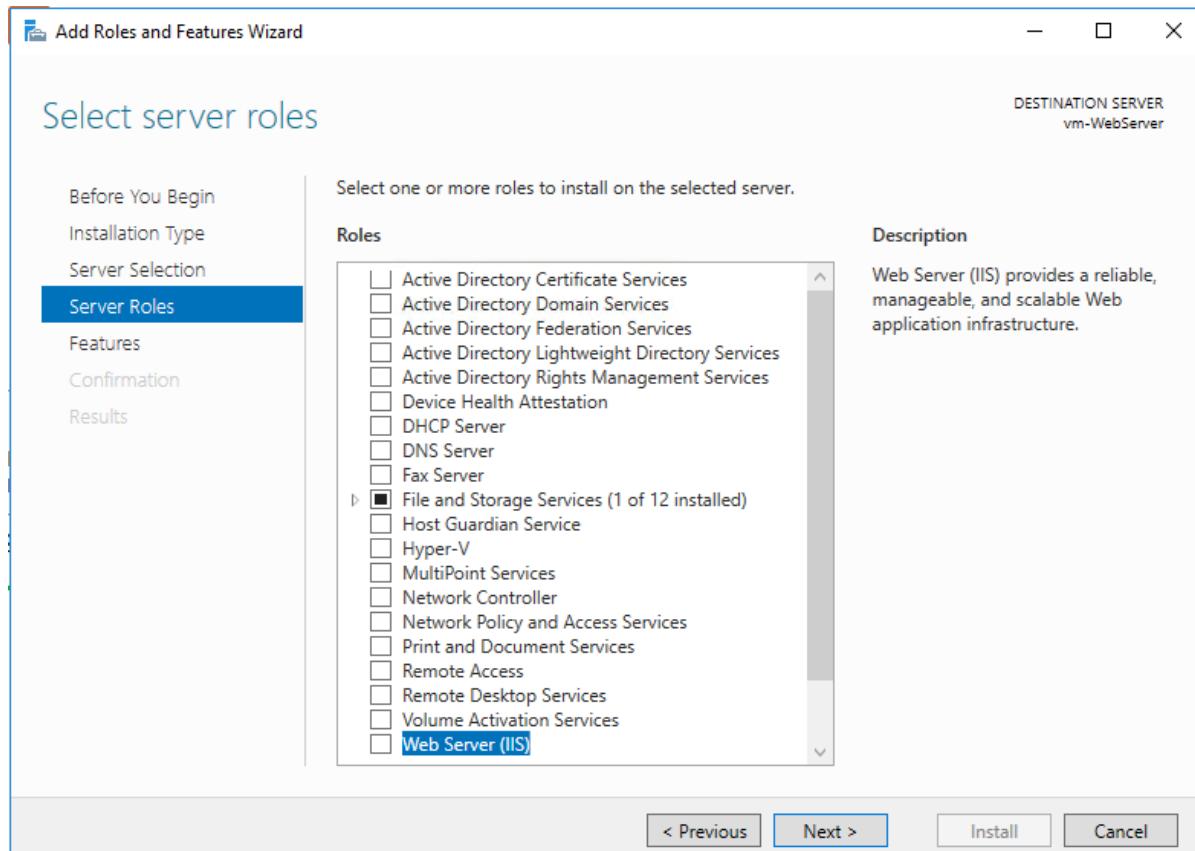
Click Next



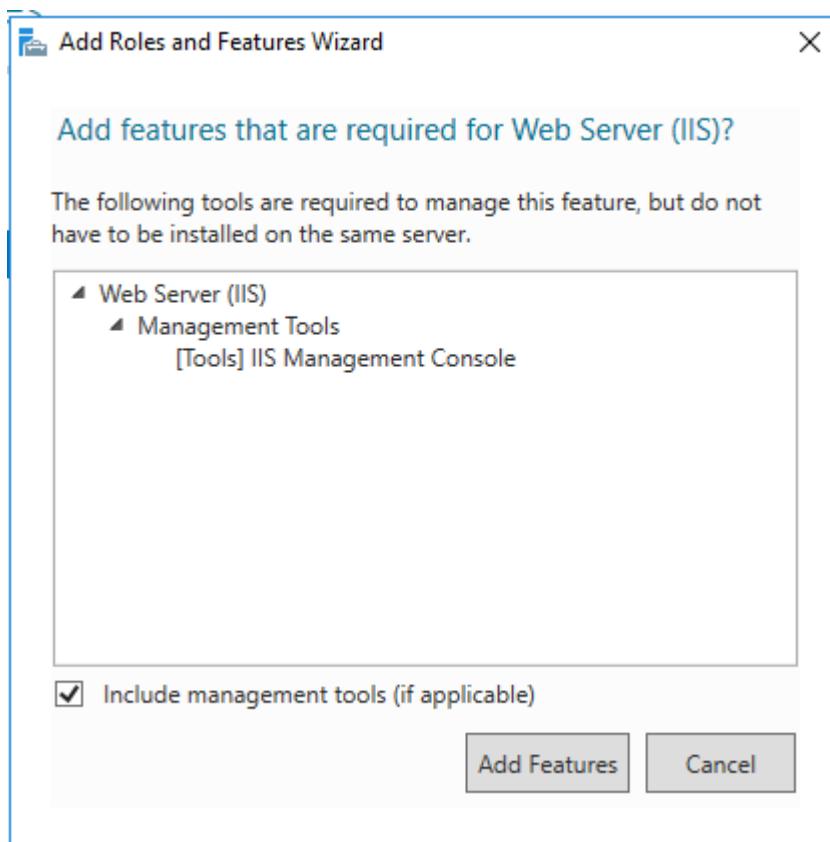
Click Next



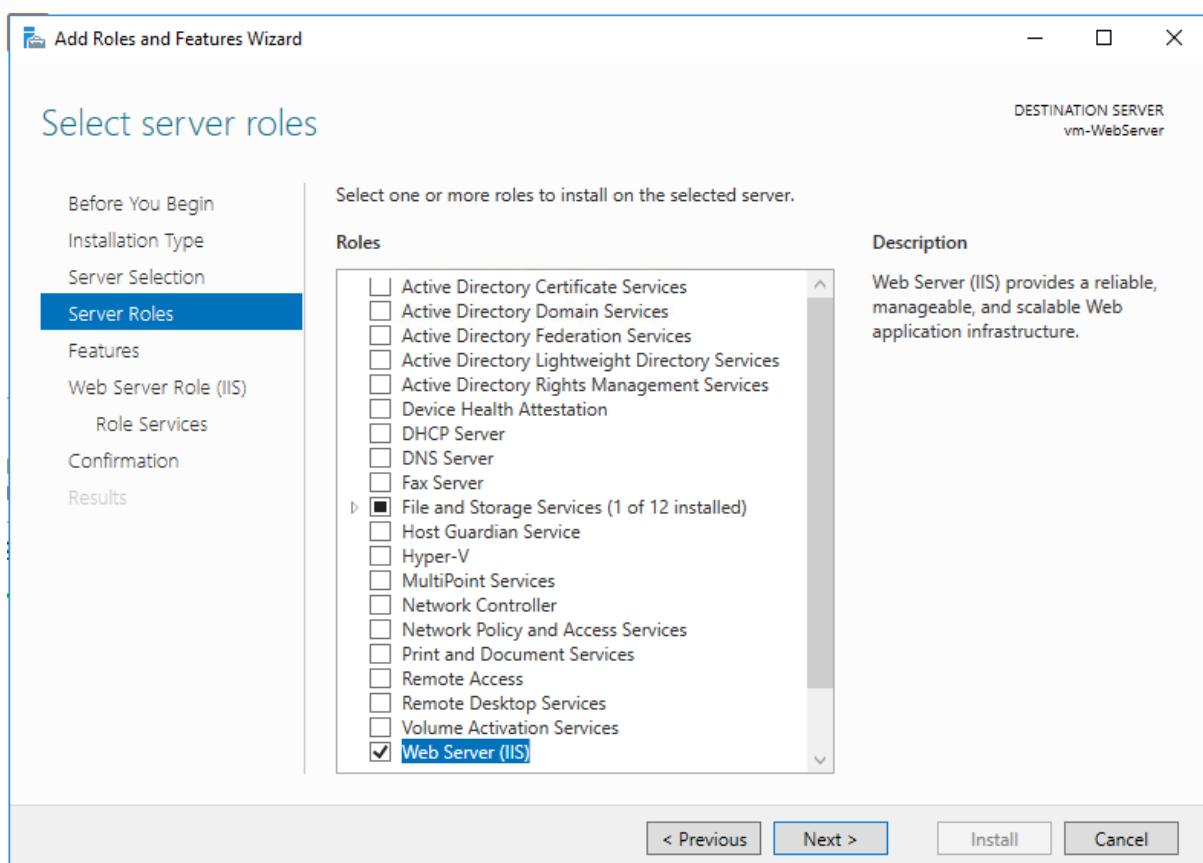
Click on Web Server (IIS)



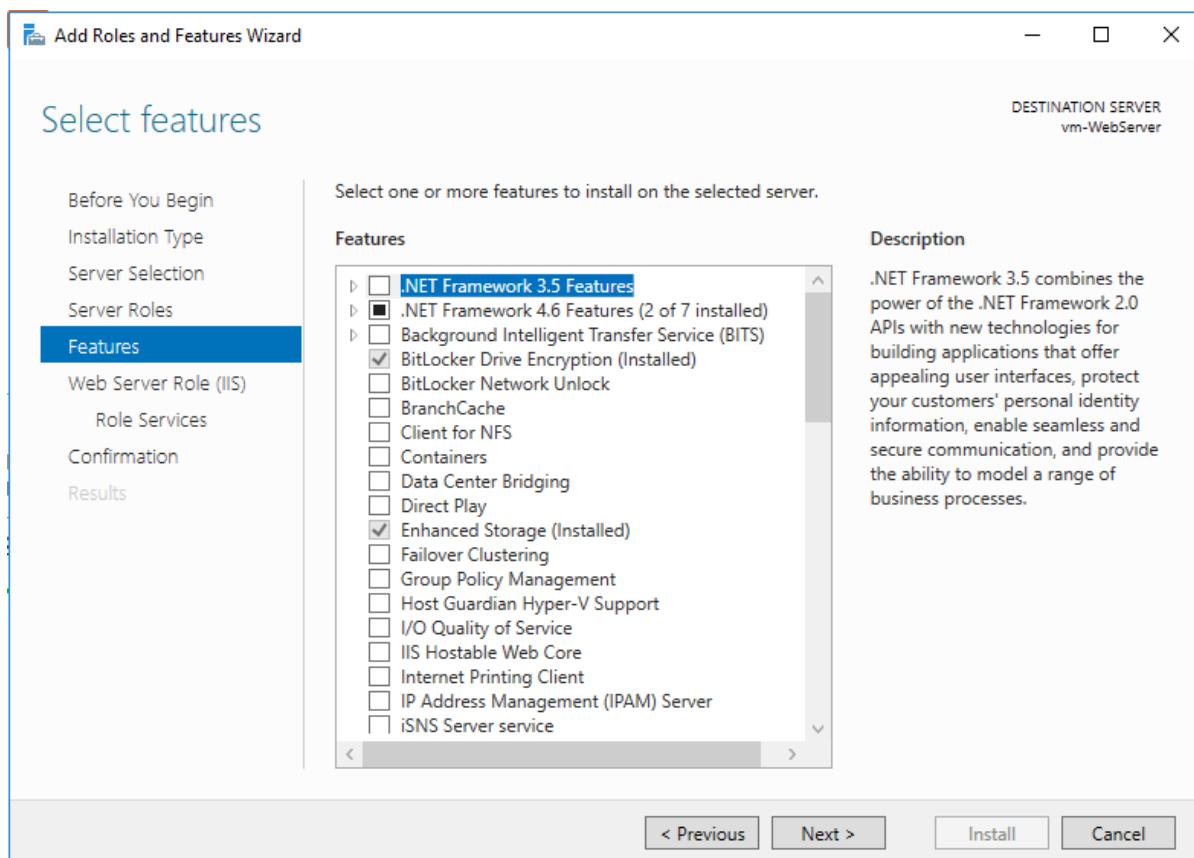
Click on Add Features



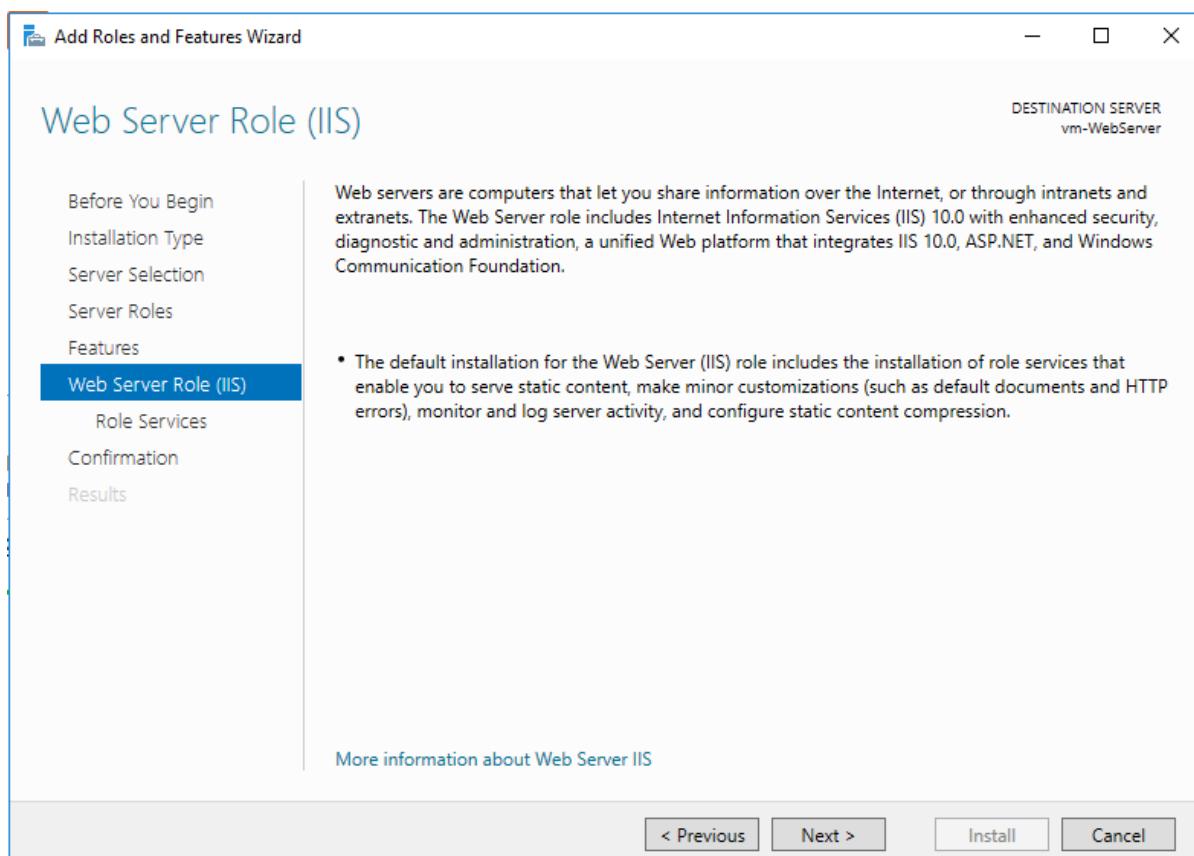
Click on Next



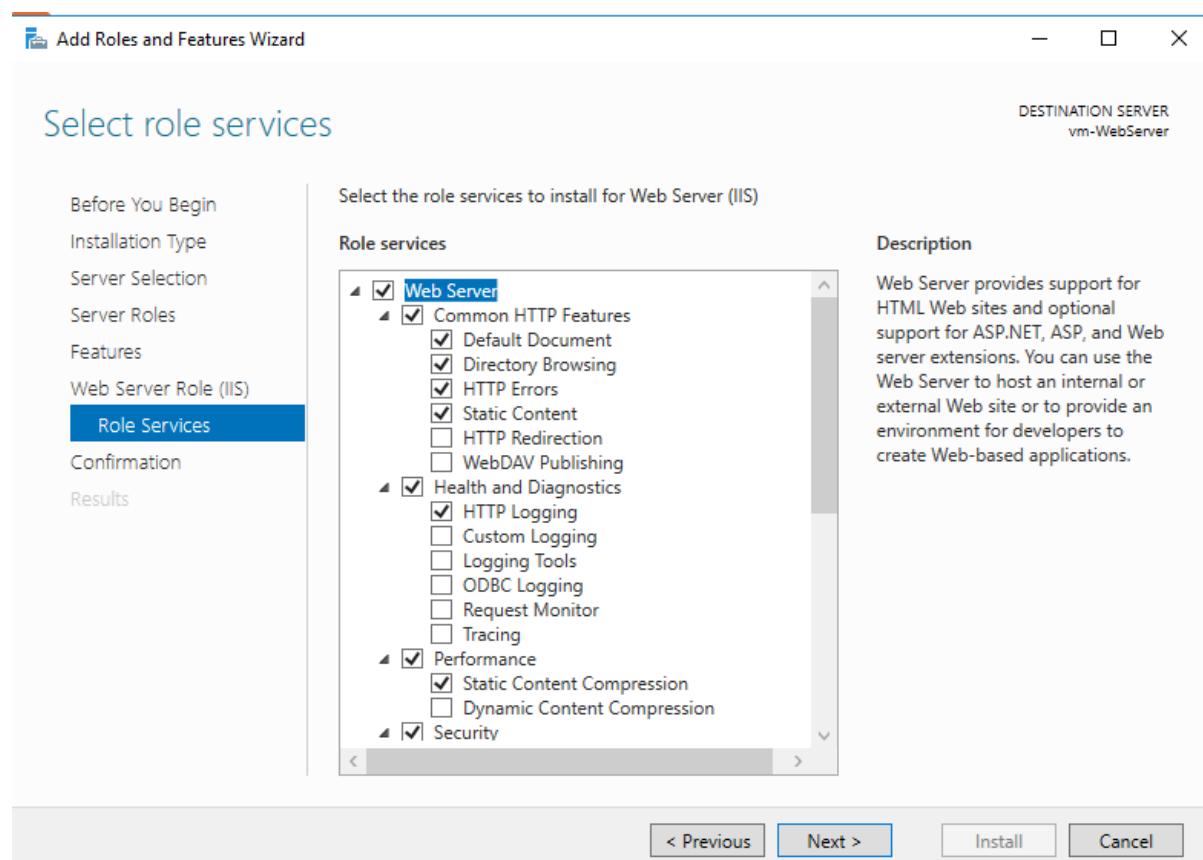
Click on Next



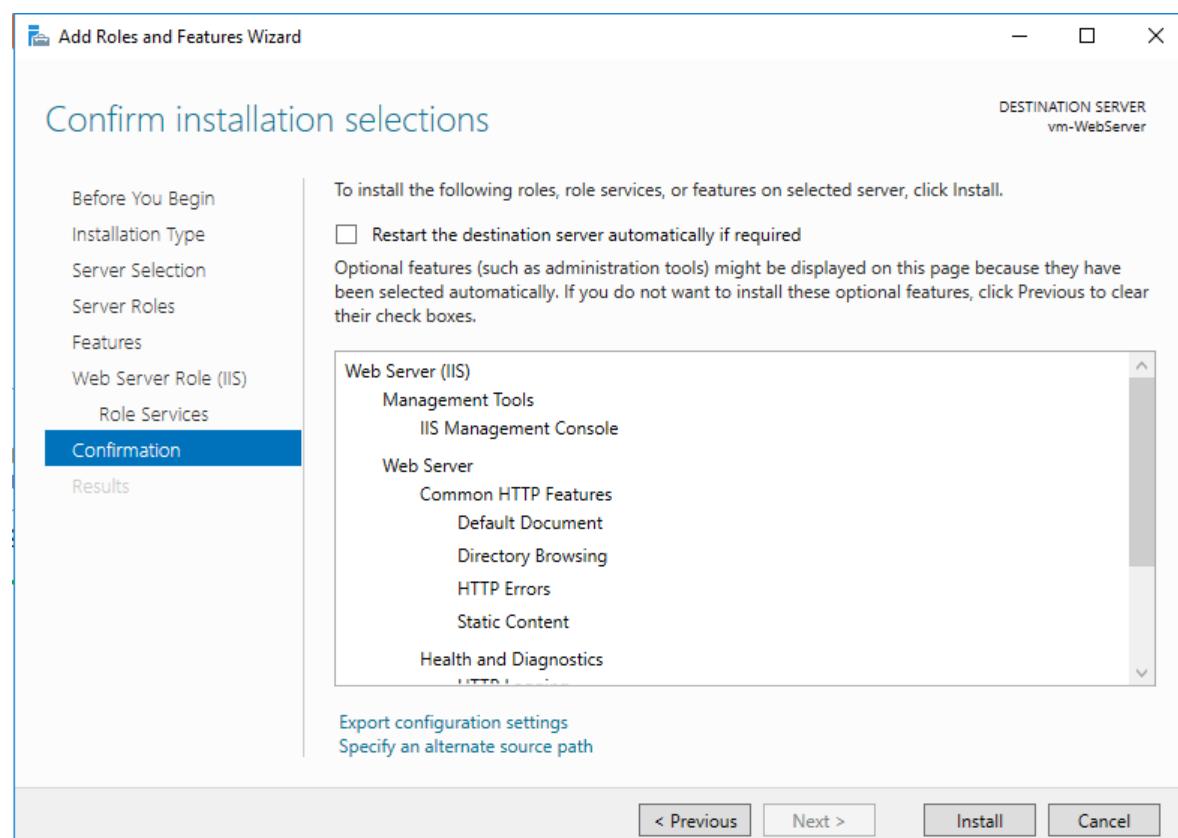
Click on Next



Click on Next

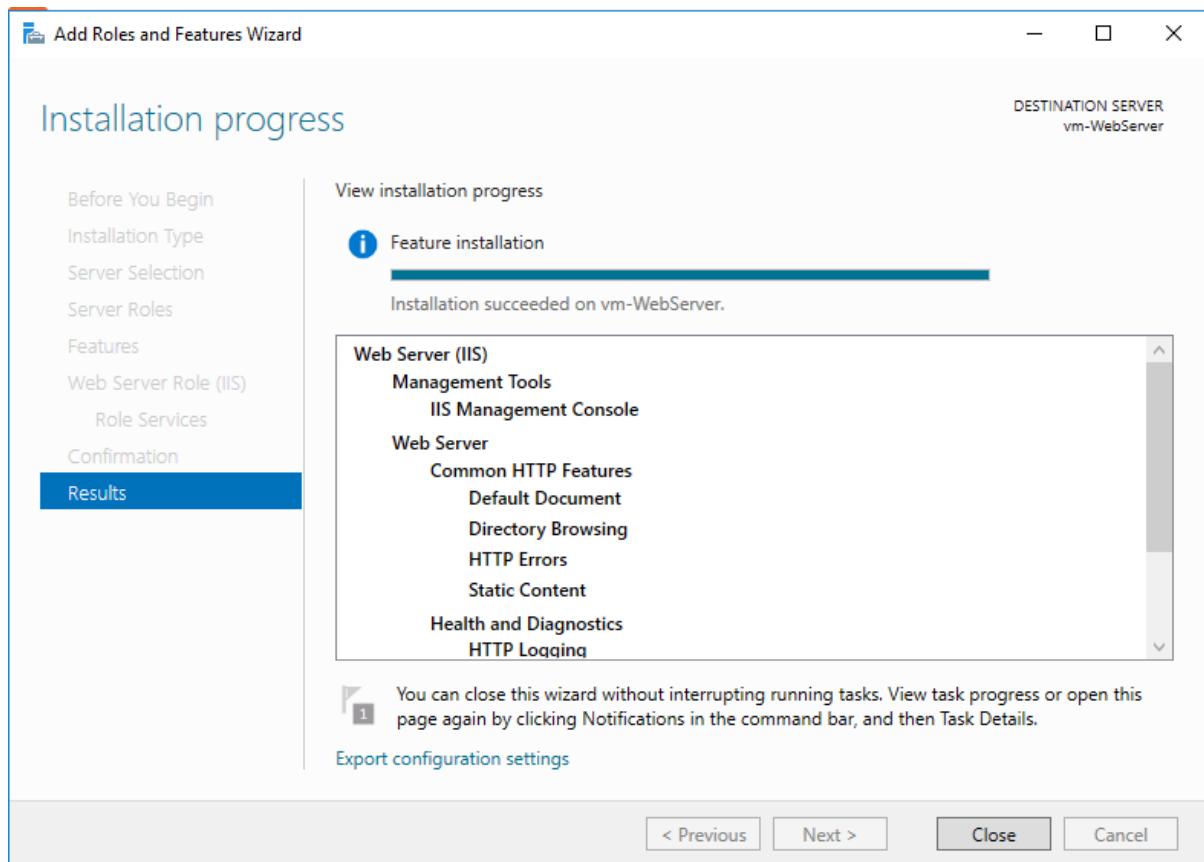


Click on Install



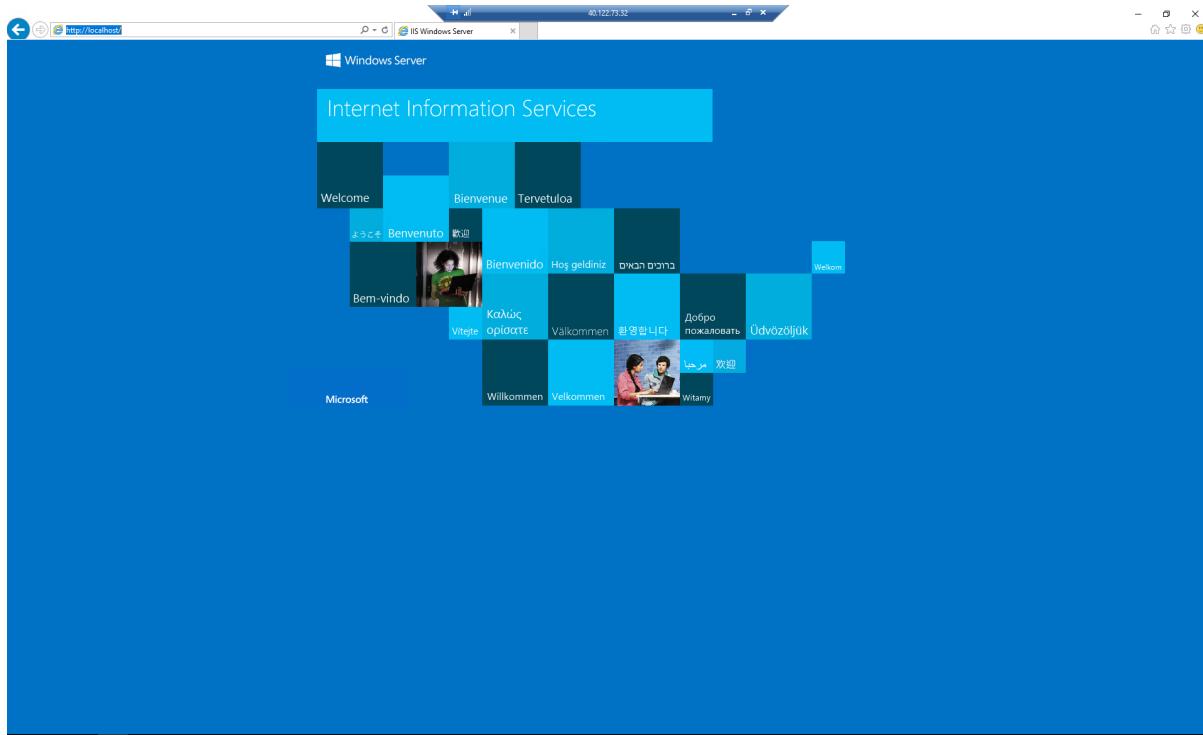
This will install IIS on this Virtual Machine.

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/>



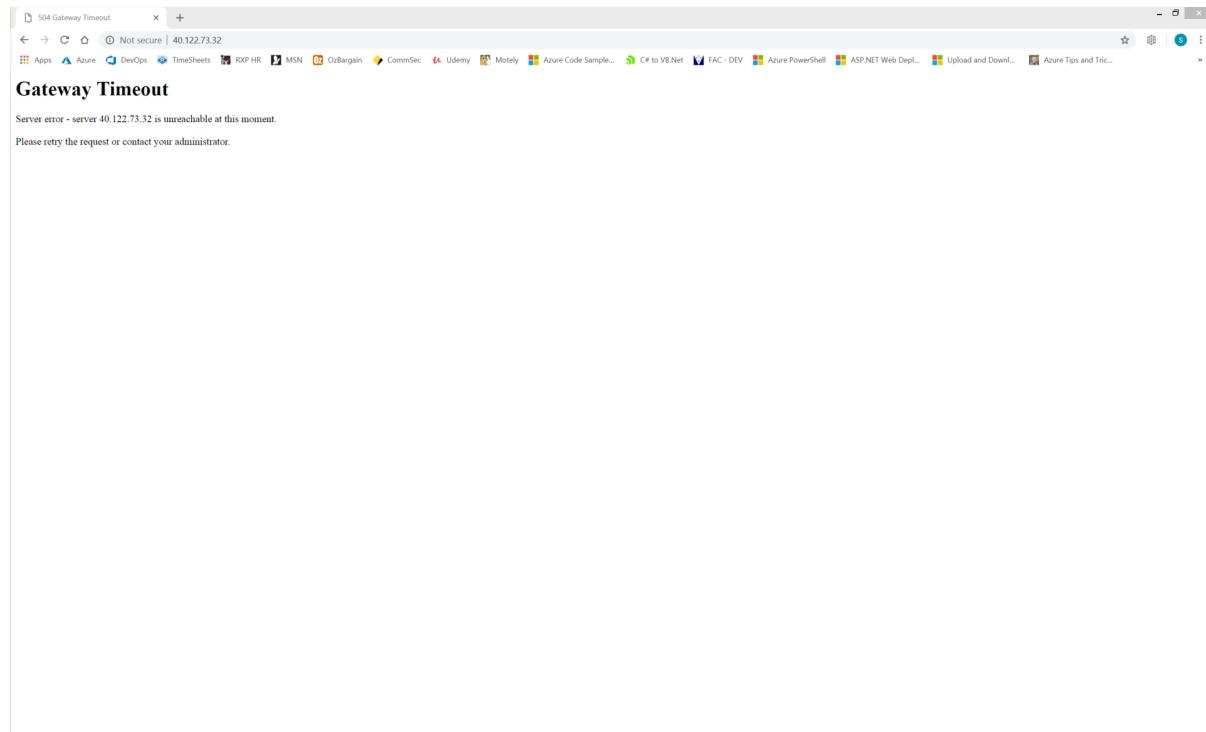
Next, we need to find out whether we can access this page from externally. (out side of this Virtual Machine)

Copy the Public IP Address from the Virtual Machine.

Detail	Value
Computer name	: vm-WebServer
Operating system	: Windows (Windows Server 2016 Datacenter)
Size	: Standard B1ms (1 vCPU, 1.75 GB memory, 20 GB storage)
Ephemeral OS disk	: N/A
Public IP address	: 40.122.73.32
Private IP address	: 99.0.1.4
Virtual network/subnet	: vn-Finance/sn-WebServers
DNS name	: Configure

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

PRIORITY	NAME	PORT	PROTOCOL	SOURCE	DESTINATION	ACTION
300	RDP	3389	TCP	Any	Any	Allow
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalanceInBound	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny

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

Click on Add Inbound Port Rule button.

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

 **AllowHttp** X
vm-WebServer-nsg

Save Discard Basic Delete

*** Source** !

*** Source port ranges** !

*** Destination** !

*** Destination port ranges** !

*** Protocol**
Any TCP UDP ICMP

*** Action**
Allow Deny

*** Priority** !

*** Name**

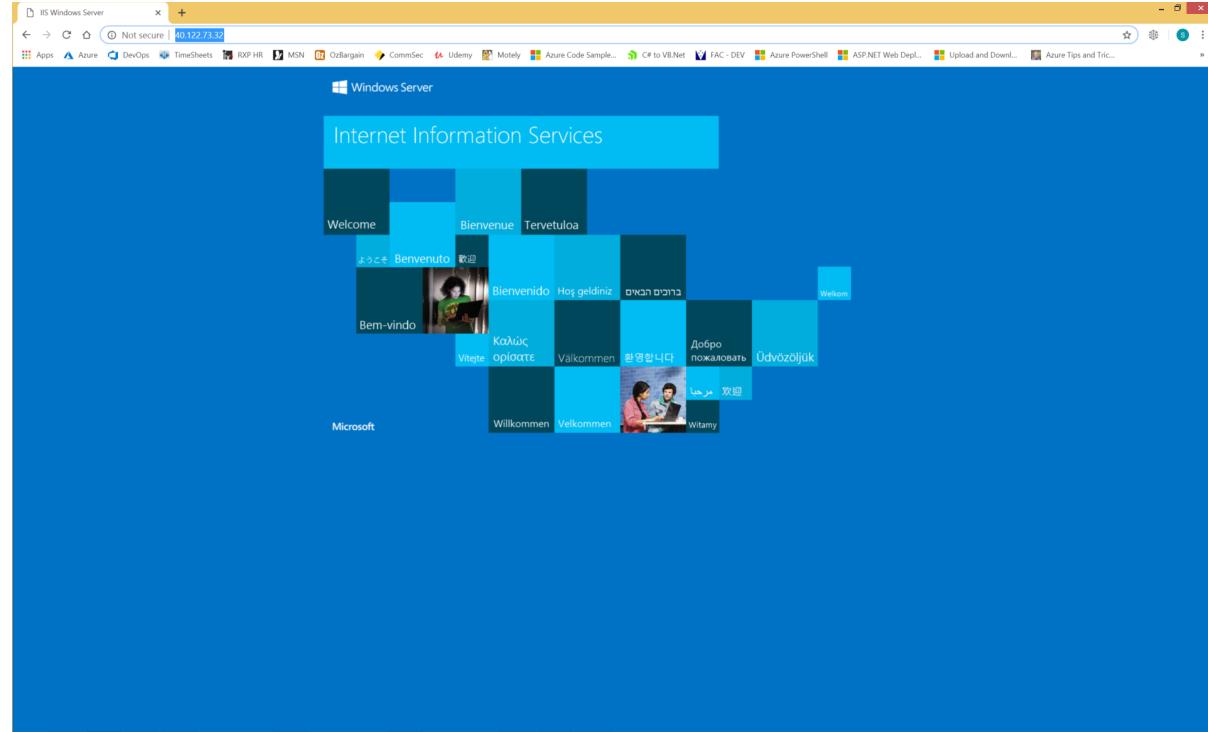
Description

Now the Inbound Port Rules look like bellow.

		Attach network interface	Detach network interface			
		Network Interface: vm-webserver905				
		Effective security rules	Topology			
Virtual network/subnet:	vn-Finance/sn-WebServers	NIC Public IP: 40.122.73.32	NIC Private IP: 99.0.1.4			
Accelerated networking:	Disabled					
Inbound port rules		Outbound port rules	Application security groups			
Load balancing						
Network security group vm-WebServer-nsg (attached to network interface: vm-webserver905)		Impacts 0 subnets, 1 network interfaces				
		Add inbound port rule				
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)

```
Administrator: C:\Windows\System32\cmd.exe
(c) 2016 Microsoft Corporation. All rights reserved.

C:\windows\system32>ipconfig /all

Windows IP Configuration

Host Name . . . . . : vm-WebServer
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : 103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . . : 103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net
Description . . . . . : Microsoft Hyper-V Network Adapter
Physical Address . . . . . : 00-0D-3A-42-24-DB
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::9c16:fce4:b645:97a9%4(Preferred)
IPv4 Address. . . . . : 99.0.1.4(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Friday, August 23, 2019 1:08:34 AM
Lease Expires . . . . . : Monday, September 29, 2155 8:28:52 AM
Default Gateway . . . . . : 99.0.1.1
DHCP Server . . . . . : 168.63.129.16
DHCPv6 IAID . . . . . : 50335034
DHCPv6 Client DUID. . . . . : 00-01-00-01-24-F0-83-71-00-0D-3A-42-24-DB
DNS Servers . . . . . : 168.63.129.16
NetBIOS over Tcpip. . . . . : Enabled

Tunnel adapter isatap.103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net:

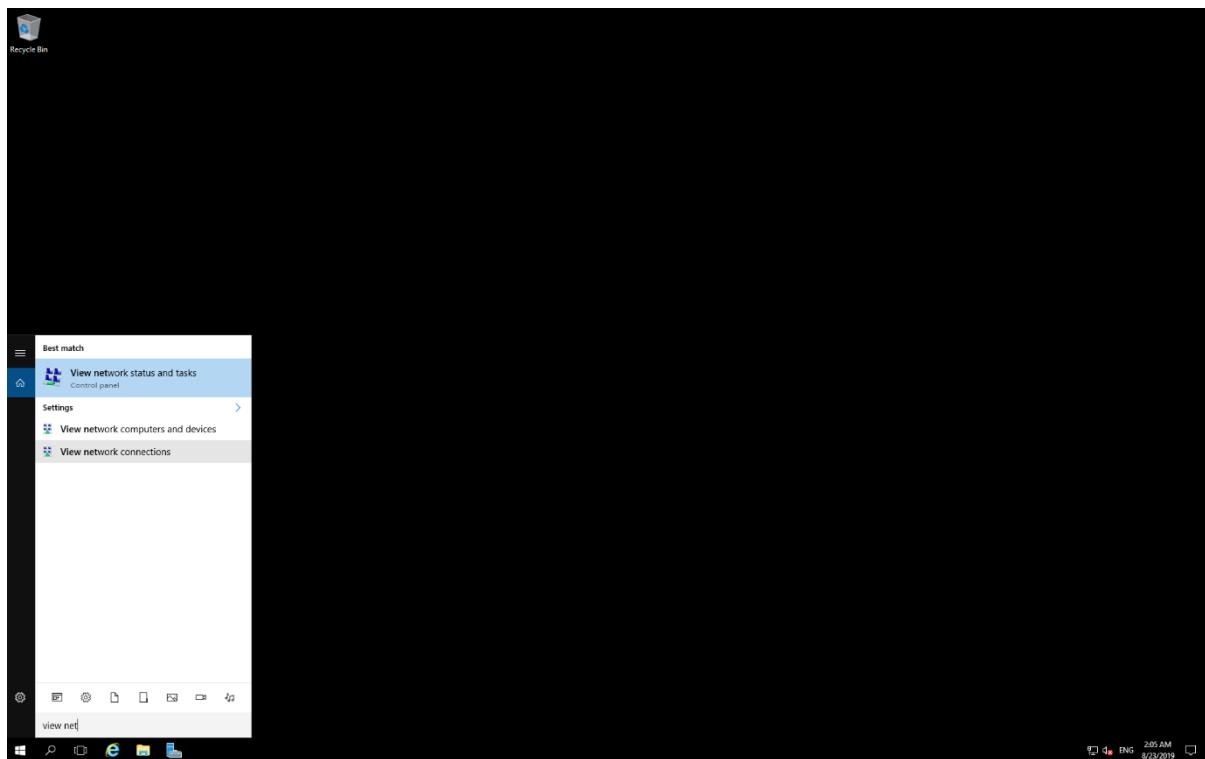
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . . : 103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net
Description . . . . . : Microsoft ISATAP Adapter
Physical Address. . . . . : 00-00-00-00-00-00-E0
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes

Tunnel adapter Teredo Tunneling Pseudo-Interface:

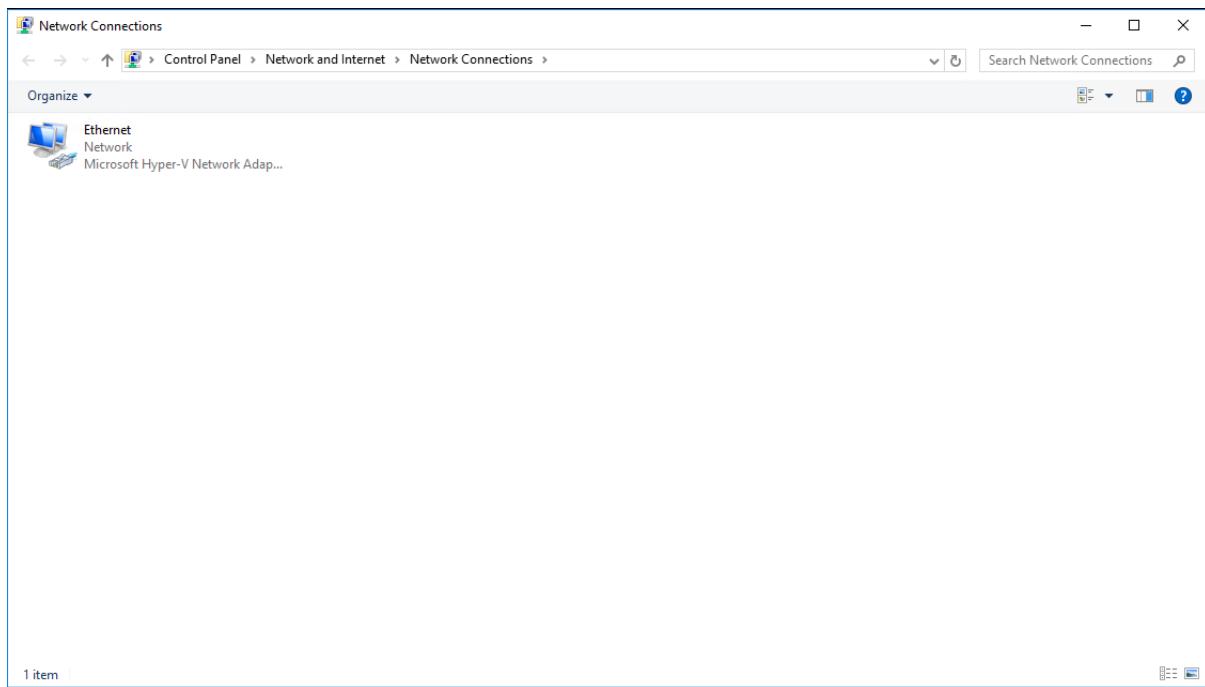
Connection-specific DNS Suffix . . . :
Description . . . . . : Teredo Tunneling Pseudo-Interface
Physical Address. . . . . : 00-00-00-00-00-00-E0
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes
IPv6 Address. . . . . : 2001:0:34f1:8072:14db:3334:9cff:febf(Preferred)
Link-local IPv6 Address . . . . . : fe80::14db:3334:9cff:febf%2(Preferred)
Default Gateway . . . . . : ::
DHCPv6 IAID . . . . . : 134217728
DHCPv6 Client DUID. . . . . : 00-01-00-01-24-F0-83-71-00-0D-3A-42-24-DB
NetBIOS over Tcpip. . . . . : Disabled

C:\windows\system32>
```

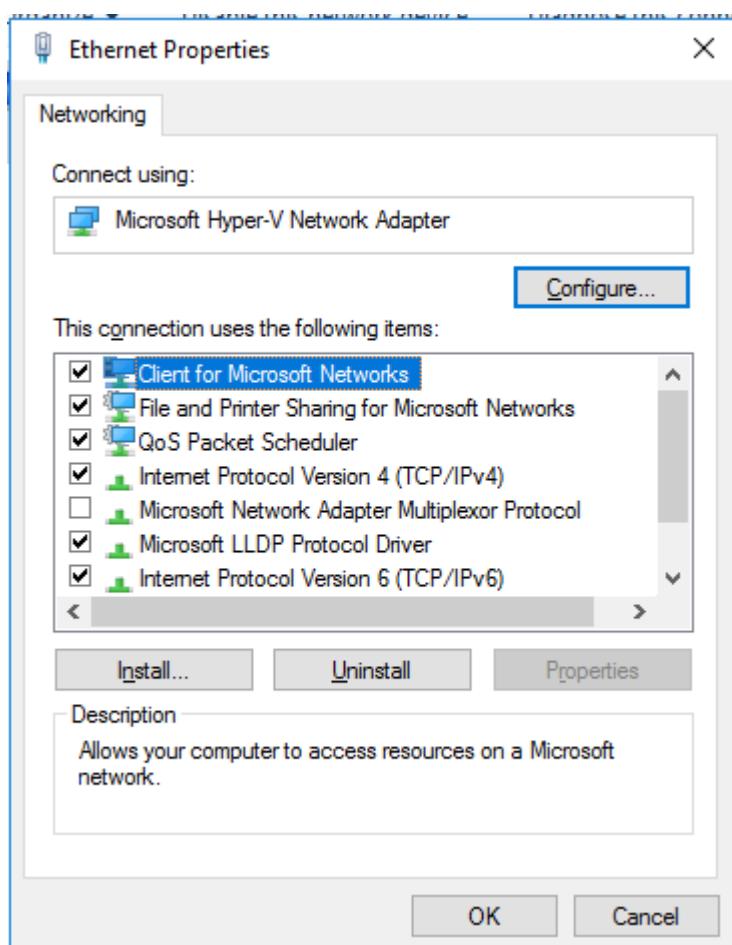
You can view the Network Connections.



Currently there is 1 network connection - Ethernet



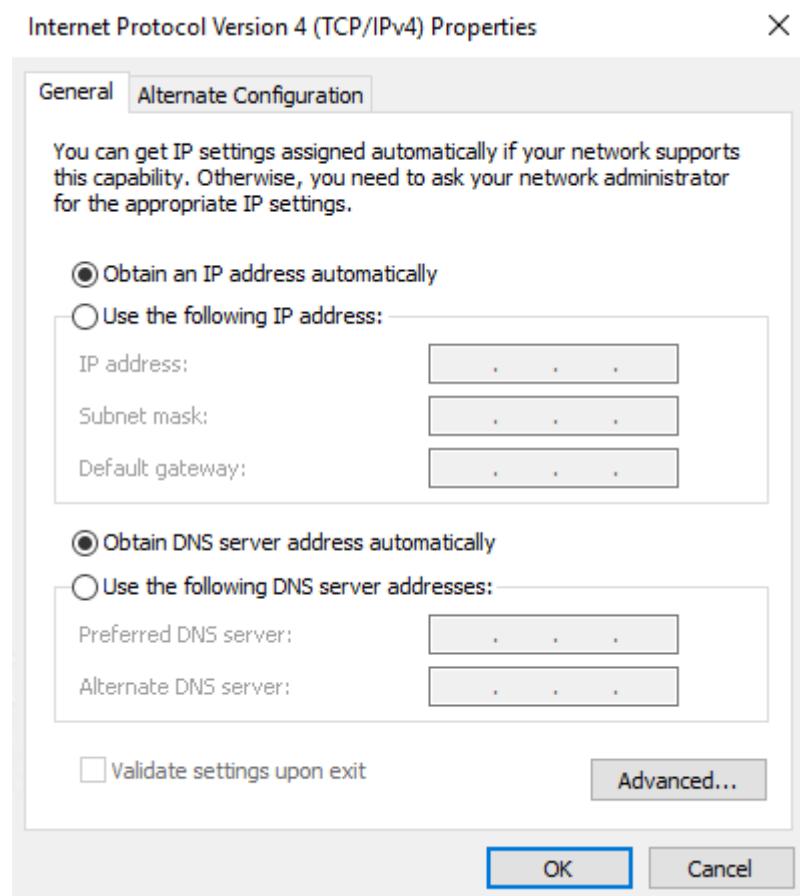
Right click on Ethernet network connection and click on Properties.



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 i
vn-Finance

* Subnet i
sn-WebServers (99.0.1.0/24)

Private IP address assignment
 Dynamic Static

Network security group i >
None

Private IP address (IPv6)

* Subscription
Visual Studio Professional

* Resource group i
rg-NetworkServices

[Create new](#)

* Location
(US) Central US

Create Automation options

We can see the newly created Network Interface.

Network interfaces

Subscriptions: 1 of 2 selected – Don't see a subscription? Open Directory + Subscription settings

NAME	VIRTUAL NETWORK	PRIMARY PRIVATE IP	ATTACHED TO	RESOURCE GROUP	LOCATION	SUBSCRIPTION
nic-WebServer2	vn-Finance	99.0.1.5	-	rg-NetworkServices	Central US	Visual Studio Professional
vm-webserver905	vn-Finance	99.0.1.4	vm-WebServer	rg-NetworkServices	Central US	Visual Studio Professional

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

□ X

* 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.

NAME	RESOURCE GROUP	LOCATION	SUBSCRIPTION
pip-WebServer1	rg-NetworkServices	Central US	Visual Studio Professional
pip-WebServer2	rg-NetworkServices	Central US	Visual Studio Professional

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

NAME	VIRTUAL NETWORK	PRIMARY PRIVATE IP	ATTACHED TO	RESOURCE GROUP	LOCATION	SUBSCRIPTION
nic-WebServer2	vn-Finance	99.0.1.5	-	rg-NetworkServices	Central US	Visual Studio Professional
vm-webserver905	vn-Finance	99.0.1.4	vm-WebServer	rg-NetworkServices	Central US	Visual Studio Professional

Click on IP Configuration tab.

Click on ipconfig1.

NAME	IP VERSION	TYPE	PRIVATE IP ADDRESS	PUBLIC IP ADDRESS
ipconfig1	IPv4	Primary	99.0.1.5 (Dynamic)	-

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.

Home > Network interfaces > nic-WebServer2 - IP configurations > ipconfig1

ipconfig1
nic-WebServer2

Save Discard

Public IP address settings

Public IP address

Disabled Enabled

* IP address *Configure required settings*

Private IP address settings

Virtual network/subnet
vn-Finance/sn-WebServers

Assignment

Dynamic Static

* IP address
99.0.1.5

Select newly created Public IP Address: pip-WebServer2

Home > Network interfaces > nic-WebServer2 - IP configurations > ipconfig1 > Choose public IP address

ipconfig1
nic-WebServer2

Save Discard

Public IP address settings

Public IP address

Disabled Enabled

* IP address *Configure required settings*

Private IP address settings

Virtual network/subnet
vn-Finance/sn-WebServers

Assignment

Dynamic Static

* IP address
99.0.1.5

Choose public IP address

Dynamic public IP addresses that are not in use won't have an IP address assigned to them.

i These are the public IP addresses in the selected subscription and location 'Central US'.

Create new

+ pip-WebServer2
rg-NetworkServices

pip-WebServer1
rg-NetworkServices

Click Save button.

The screenshot shows the 'ipconfig1' configuration page for 'nic-WebServer2'. It includes sections for 'Public IP address settings' and 'Private IP address settings'. In the 'Public IP address settings' section, the 'Enabled' radio button is selected. Under 'IP address', it shows 'pip-WebServer2 (Unassigned)'. In the 'Private IP address settings' section, the 'Dynamic' radio button is selected. Under 'IP address', it shows '99.0.1.5'.

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

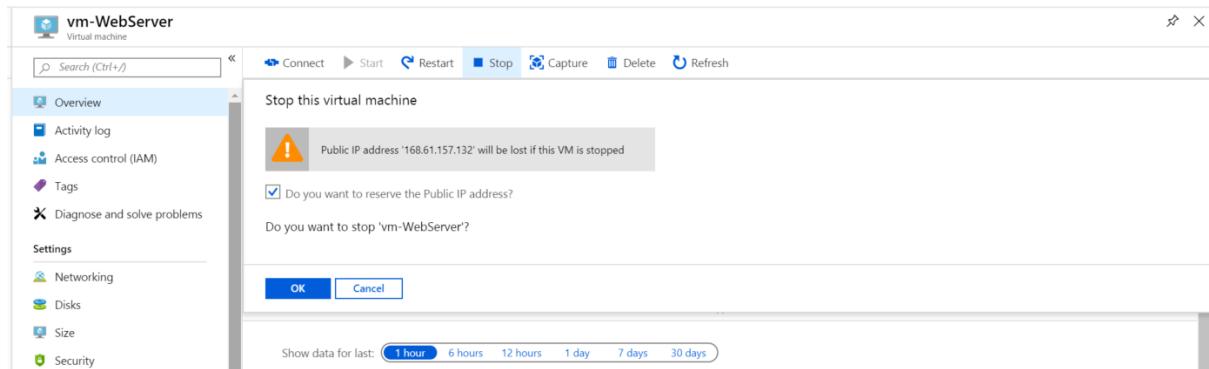
nic-WebServer2 → vm-WebServer

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

The screenshot shows the 'Virtual machines' list page. It displays one item: 'vm-WebServer' (Virtual machine, Stopped (deallocated), rg-NetworkServices, Central US, Marketplace, Visual Studio Professional). The status is 'Stopped'.

** Important

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



Make sure you tick Reserve Public IP Address option if you want 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.

A screenshot of the Azure portal showing the 'vm-WebServer - Networking' page. The left sidebar shows the 'Networking' tab is selected. The main area displays network interface details for 'vm-webserver905', including its effective security rules, topology, and inbound port rules. An 'Add inbound port rule' button is visible. The table below shows the current inbound port rules:

Click on Attach Network Interface button.

A screenshot of the Azure portal showing the 'Attach network interface' dialog for 'vm-WebServer'. The 'Create network interface' button is highlighted. A dropdown menu shows 'nic-WebServer2' is selected. Below the dropdown is an 'OK' button. The main interface shows the VM's networking settings, including its effective security rules and inbound port rules table.

Select “nic-Webserver2” from the options and click OK.

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

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

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 if we want to retain the IP Addresses. In my case I didn't tick it. So that's why the Public IP Addresses now I have 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/>

vm-WebServer - Networking

Network Interface: nic-WebServer2 **Effective security rules:** **Topology:**

Virtual network/subnet: vn-Finance/sn-WebServers NIC Public IP: **168.61.157.138** NIC Private IP: **99.0.1.5** Accelerated networking: **Disabled**

Inbound port rules **Outbound port rules** Application security groups Load balancing

This network interface does not contain network security groups

pip-WebServer2

Public IP address

Associate **Dissociate** **Move** **Delete** **Refresh**

Resource group (change) : rg-NetworkServices SKU : Basic **Copy to clipboard**

Location : Central US IP address : 168.61.157.138

Subscription (change) : Visual Studio Professional DNS name : webserver2.centralus.cloudapp.azure.com

Subscription ID : 9d5cbf7-cfb8-45d2-9c16-17cd8c093cd3 Associated to : nic-WebServer2

Virtual machine : vm-WebServer

Tags (change) : Click here to add tags

It gives below error.

vm-WebServer - Microsoft Azure 504 Gateway Timeout

← → ⌂ ⌂ Not secure | 168.61.157.138

Apps Azure DevOps TimeSheets RXP HR MSN OzBargain CommSec Udemy Motley Azure Code Samples C# to VB.NET FAC - DEV Azure PowerShell ASP.NET Web Deploy Upload and Download Azure Tips and Tricks

Gateway Timeout

Server error - server 168.61.157.138 is unreachable at this moment.

Please retry the request or contact your administrator.

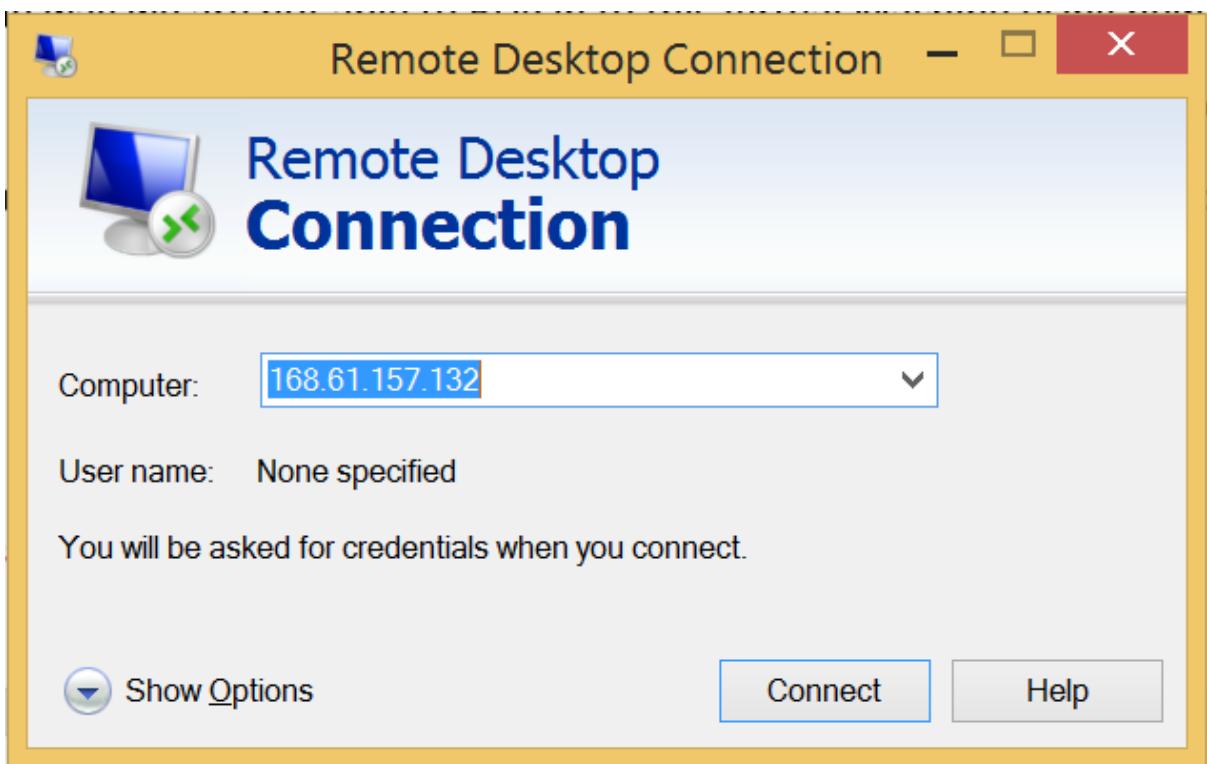
We are not able to RDP in to this Virtual Machine using new Public IP Address.

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

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

The screenshot shows the Azure portal interface for a virtual machine named 'vm-WebServer'. The left sidebar has sections for Overview, Activity log, Access control (IAM), Tags, Configuration, Properties, Locks, Export template, Monitoring, Diagnostic settings, Logs, and Support + troubleshooting. The main content area displays the public IP address '168.61.157.132' under the 'Public IP address' section. A tooltip 'Copy to clipboard' is shown over the IP address field. Other details listed include Resource group (rg-NetworkServices), Location (Central US), Subscription (Visual Studio Professional), Subscription ID (f9d5cbf7-cf8b-45d2-9c16-17cd8c093cd3), SKU (Basic), DNS name (empty), Associated to (vm-webserver905), and Virtual machine (vm-WebServer). A 'Tags (change)' section with a 'Click here to add tags' link is also present.

RDP using old Public IP Address: 168.61.157.132

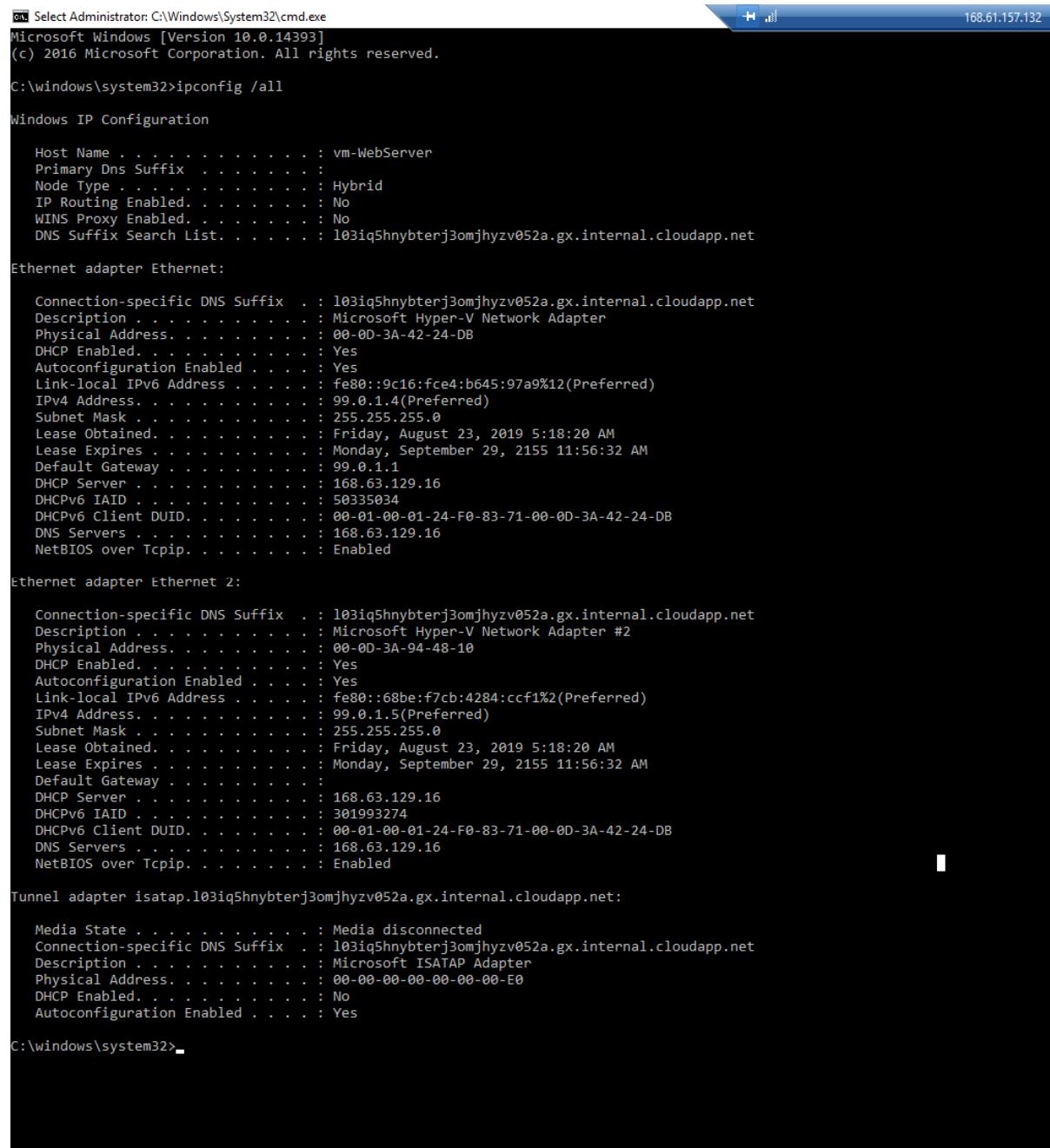


When you are inside the Virtual Machine run bellow command in command line.

Ipconfig /all

Now we can see 2 Ethernet Adaptors:

- Ethernet adapter Ethernet
- Ethernet adapter Ethernet 2



```
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\windows\system32>ipconfig /all

Windows IP Configuration

Host Name . . . . . : vm-WebServer
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : 103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . . . . : 103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net
Description . . . . . : Microsoft Hyper-V Network Adapter
Physical Address. . . . . : 00-0D-3A-42-24-DB
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::9c16:fce4:b645:97a9%12(PREFERRED)
IPv4 Address. . . . . : 99.0.1.4(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Friday, August 23, 2019 5:18:20 AM
Lease Expires . . . . . : Monday, September 29, 2155 11:56:32 AM
Default Gateway . . . . . : 99.0.1.1
DHCP Server . . . . . : 168.63.129.16
DHCPv6 IAID . . . . . : 50335034
DHCPv6 Client DUID. . . . . : 00-01-00-01-24-F0-83-71-00-0D-3A-42-24-DB
DNS Servers . . . . . : 168.63.129.16
NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter Ethernet 2:

Connection-specific DNS Suffix . . . . . : 103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net
Description . . . . . : Microsoft Hyper-V Network Adapter #2
Physical Address. . . . . : 00-0D-3A-94-48-10
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::68be:f7cb:4284:ccf1%2(PREFERRED)
IPv4 Address. . . . . : 99.0.1.5(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Friday, August 23, 2019 5:18:20 AM
Lease Expires . . . . . : Monday, September 29, 2155 11:56:32 AM
Default Gateway . . . . . :
DHCP Server . . . . . : 168.63.129.16
DHCPv6 IAID . . . . . : 301993274
DHCPv6 Client DUID. . . . . : 00-01-00-01-24-F0-83-71-00-0D-3A-42-24-DB
DNS Servers . . . . . : 168.63.129.16
NetBIOS over Tcpip. . . . . : Enabled

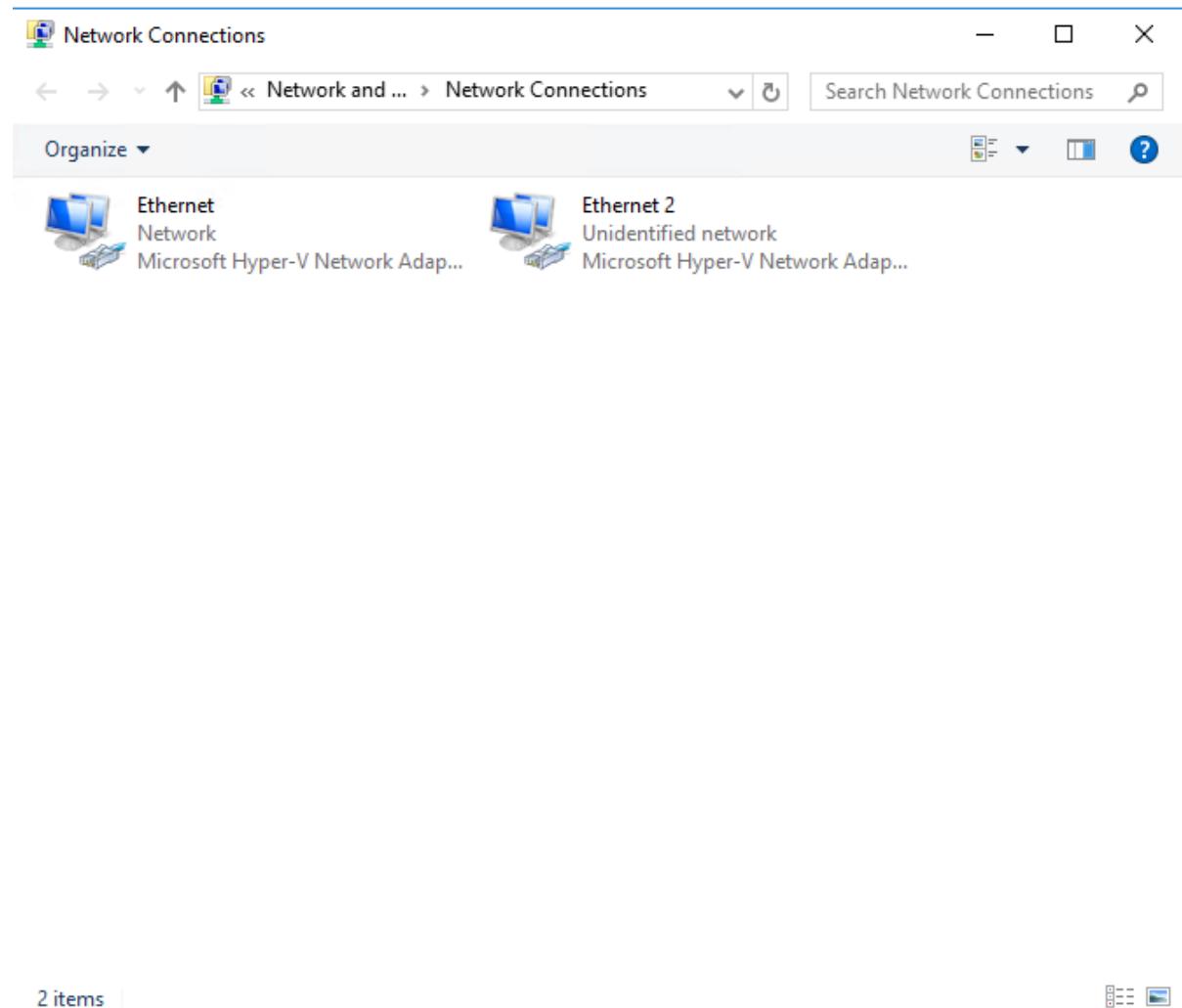
Tunnel adapter isatap.103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . . . . : 103iq5hnybterj3omjhyzv052a.gx.internal.cloudapp.net
Description . . . . . : Microsoft ISATAP Adapter
Physical Address. . . . . : 00-00-00-00-00-00-E0
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes

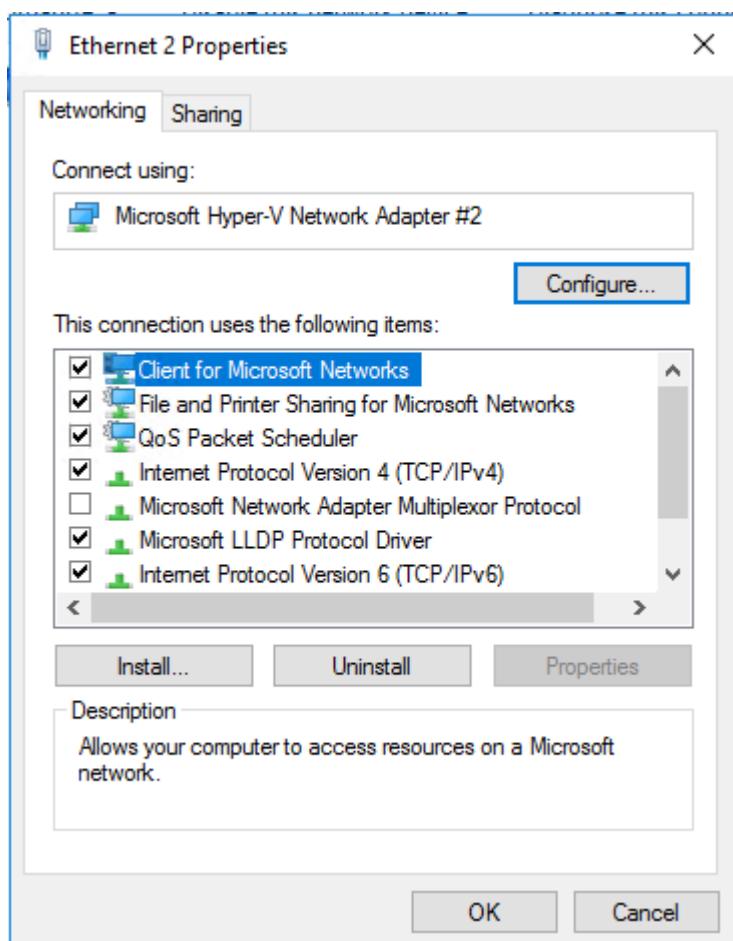
C:\windows\system32>
```

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

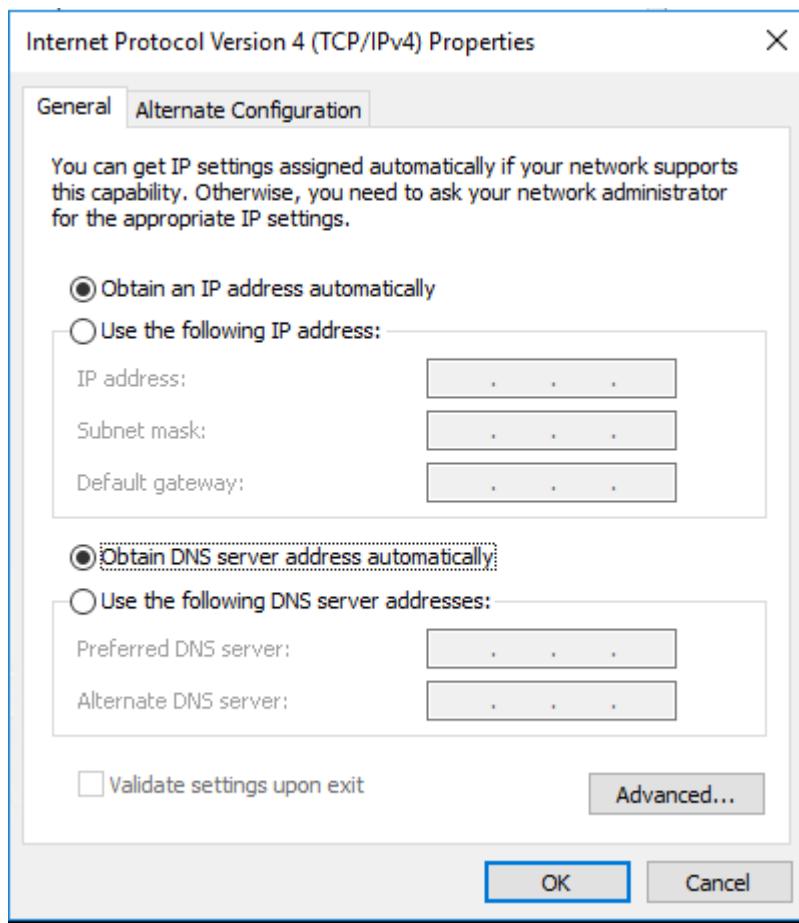
- Ethernet
- Ethernet 2



Right click on Ethernet 2 and click on Properties.



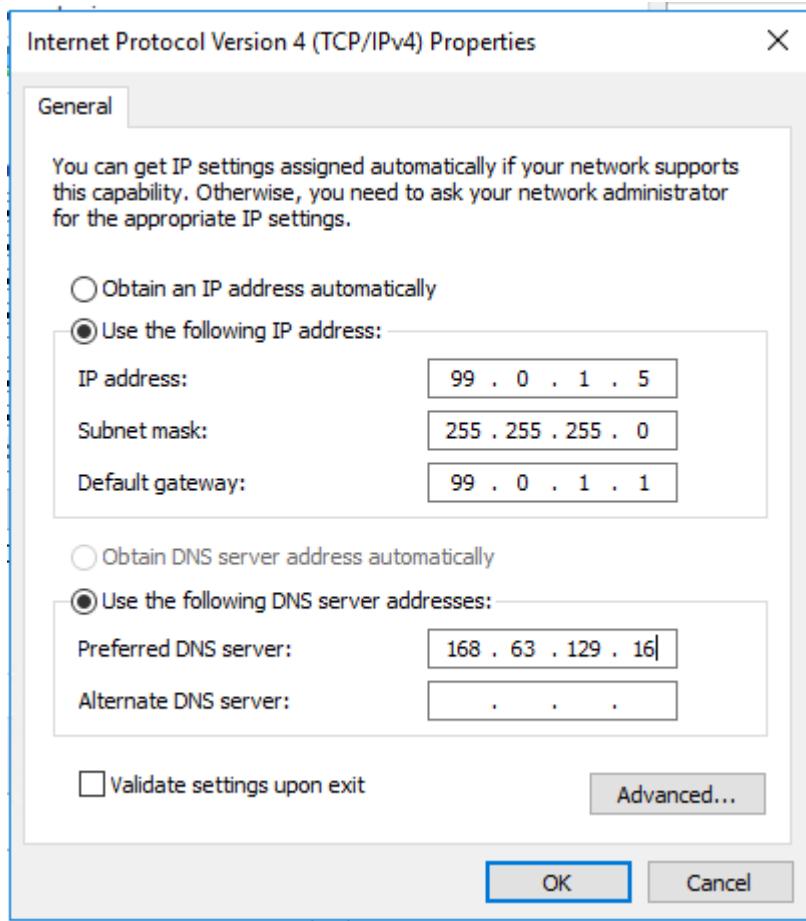
Click on Internet Protocol Version 4 (TCP/IPv4)



Enter below 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

vm-WebServer - Networking

Network Interface: vm-webserver905 Effective security rules Topology

Virtual network/subnet: vn-Finance/sn-WebServers NIC Public IP: **168.61.157.132** NIC Private IP: **99.0.1.4** Accelerated networking: **Disabled**

Inbound port rules Outbound port rules Application security groups Load balancing

Network security group **vm-WebServer-nsg** (attached to network interface: **vm-webserver905**) Impacts 0 subnets, 1 network interfaces

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

vm-WebServer - Networking

Network Interface: nic-WebServer2 Effective security rules Topology

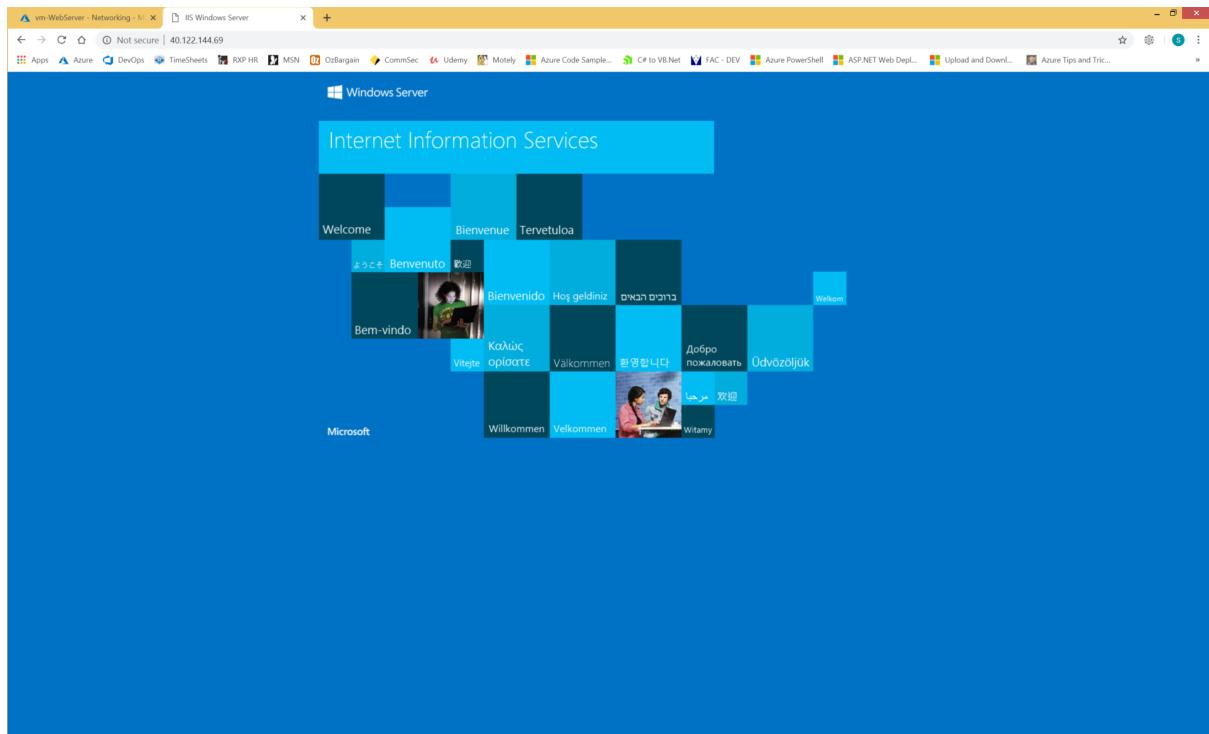
Virtual network/subnet: vn-Finance/sn-WebServers NIC Public IP: **40.122.144.69** NIC Private IP: **99.0.1.5** Accelerated networking: **Disabled**

Inbound port rules Outbound port rules Application security groups Load balancing

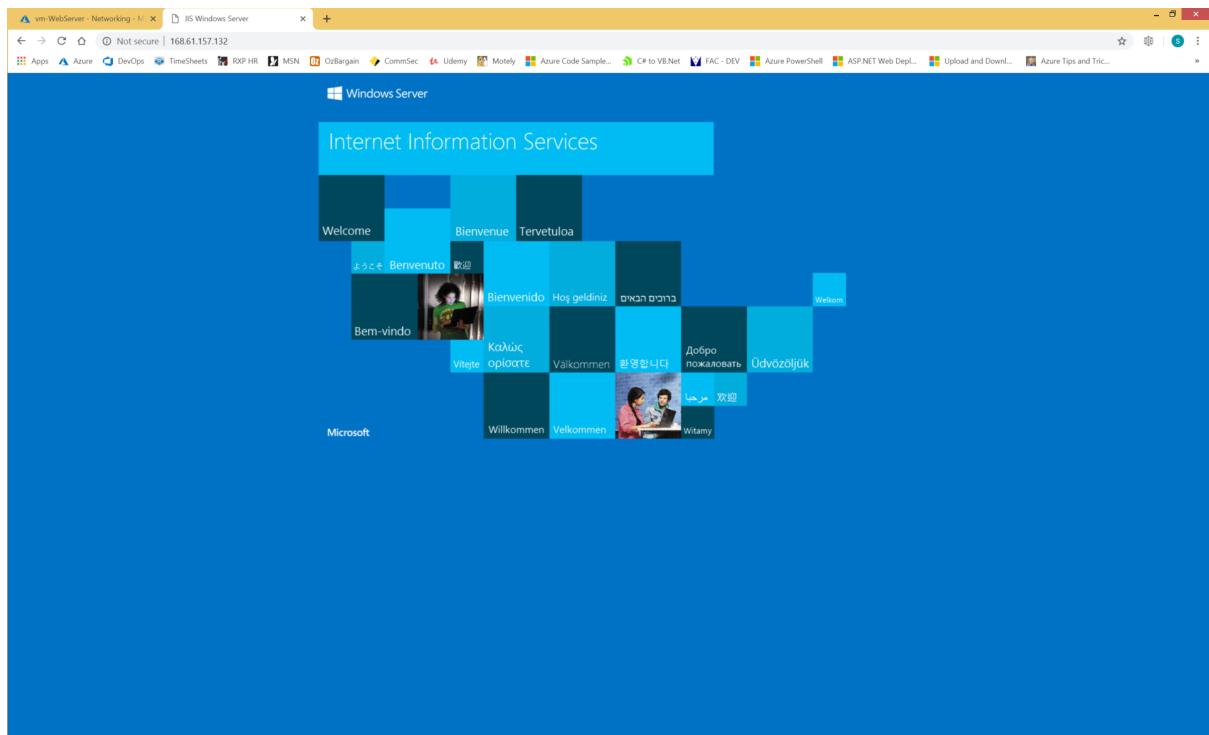
This network interface does not contain network security groups

HTTP:

<http://40.122.144.69/>



<http://168.61.157.132/>



Also, we did set up DNS name for “pip-WebServer2” Public IP Address. So using that DNS name we can send http traffic to the Virtual Machine.

The screenshot shows the Azure portal interface for managing a virtual machine named 'pip-WebServer2'. The left sidebar lists navigation options like Overview, Activity log, Access control (IAM), Tags, Settings, Configuration, Properties, Locks, and Export template. The main content area displays the VM's details, including its Resource group ('rg-NetworkServices'), Location ('Central US'), Subscription ('Visual Studio Professional'), and Subscription ID ('f9d5cbf7-cf8b-45d2-9c16-17cd8c093cd3'). A 'Tags (change)' section allows adding tags, with a note to 'Click here to add tags'. The 'Virtual machine' section is highlighted with a blue dashed box, containing the IP address ('40.122.149.77'), SKU ('Basic'), DNS name ('webserver2.centralus.cloudapp.azure.com'), and the fact that it is 'Associated to nic-WebServer2'. The IP address is also listed under the 'SKU' and 'DNS name' sections.

<http://webserver2.centralus.cloudapp.azure.com/>

The screenshot shows a web browser window with the URL 'http://webserver2.centralus.cloudapp.azure.com' in the address bar. The page itself is titled 'Internet Information Services' and features a large grid of welcome messages in multiple languages. The grid includes rows for 'Welcome', 'Bienvenue', 'Tervetuloa', 'Bem-vindo', 'Benvenuto', '歡迎', ' Bienvenido', 'Hoş geldiniz', 'ברוכים הבאים', 'Bem-vindo', 'Viteje', 'Каліўс орласце', 'Välkommen', '환영합니다', 'Добро пожаловать', 'مرحبا', '欢迎', 'Velkommen', 'Willkommen', and 'Witamy'. The Microsoft logo is visible at the bottom left of the grid.

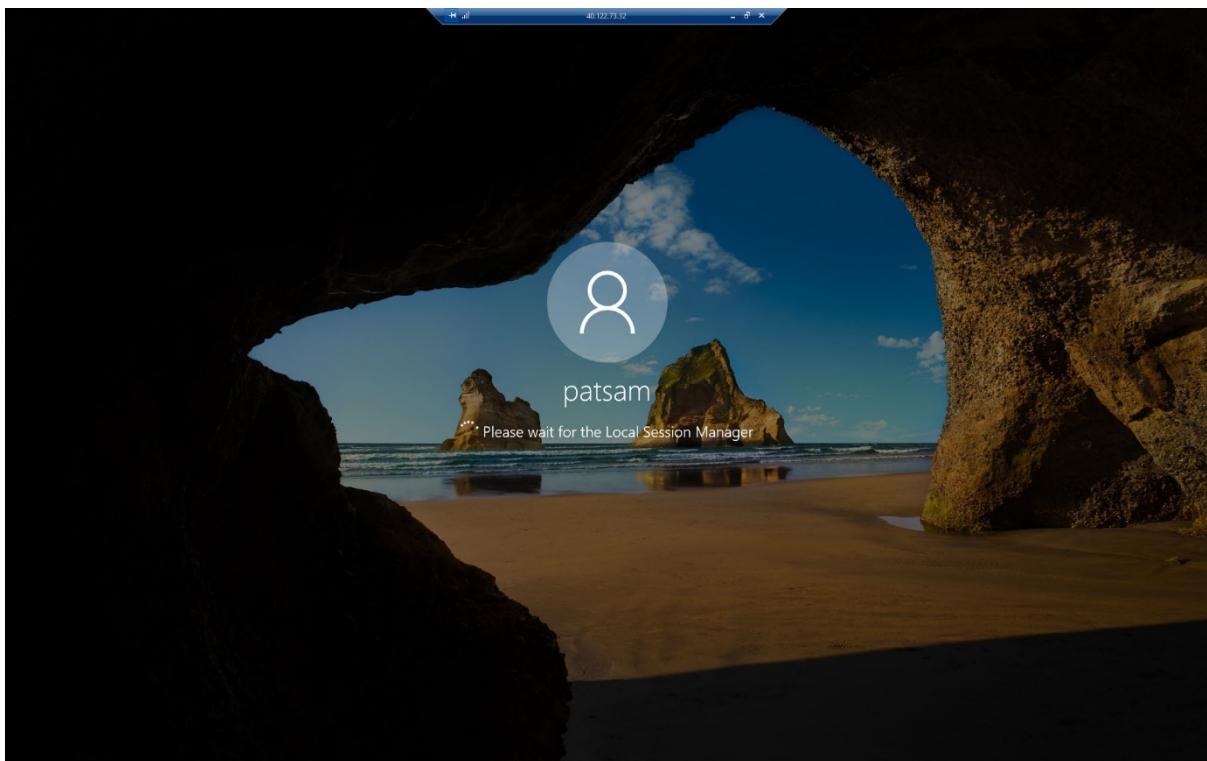
RDP:

168.61.157.132



40.122.144.69





Network Diagram

