Guide on how to set up an OpenVPN server on a virtual machine on Microsoft Azure

Tip 1- Read the whole thing first then start doing it to avoid any errors

To set up your own VPN using a Virtual Machine , you'll need some prerequisites -

1. Download WinSCP from this website
2. Download OpenVPN client from here
3. Get your self enrolled in the GitHub Student Developer Pack using your BITS Mail and your ID Card at https://education.github.com/pack

After you're done with all this go over to explore my offers here, Open the Intro to Web Dev, scroll down till you see Microsoft Azure, and click on the link that says get access by connecting, click that and then click start free

THIS IS THE MOST IMPORTANT STEP!!!!

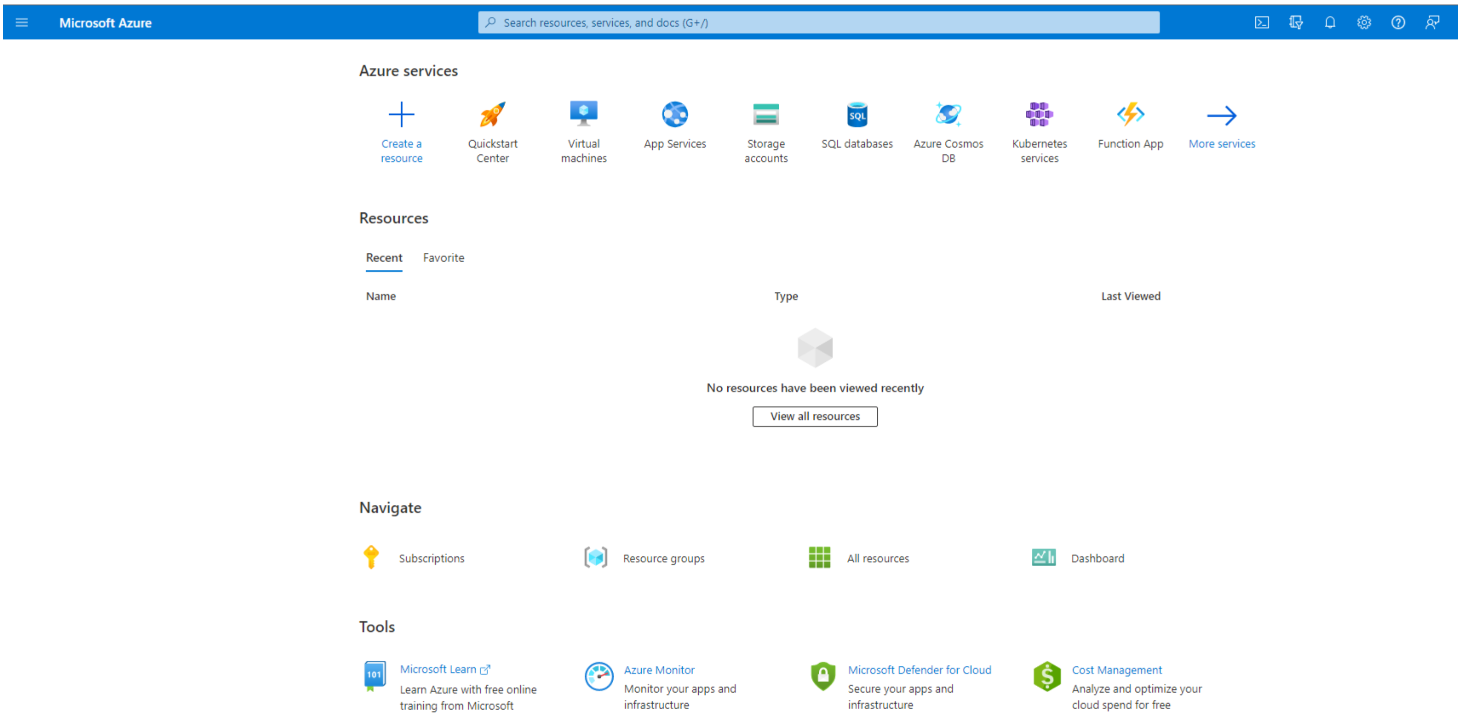
A lot of my friend's accounts have been rejected because they messed up in this. When it asks you to signup/sign in. If you have a Microsoft account sign in using that, if not make one using a regular Gmail or another email id (**APART FROM BITS MAIL**) and then proceed to add your personal info and bits email address. Do not add false/wrong info, if you do that the system will reject you. Just add info the same way you do in your amazon order. After you have done this part correctly it will redirect you to the Azure portal.

Tip 2- So the best trick I have found to avoid any errors while signing up for Azure for Students is to first try to sign in using your own mobile number. If it says an **account is linked with that number use that** AND if it says it's not linked with any account, **make an account using that phone number only and a Gmail id** (**NO BITS MAIL**)

Now here comes the interesting part.

We will be setting up a Virtual Machine on a cloud computer using Debian 11 Bullseye OS.

So, follow the steps and you'll be good to go


Microsoft Azure

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Tools

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Monitor your apps and infrastructure

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Secure your apps and infrastructure

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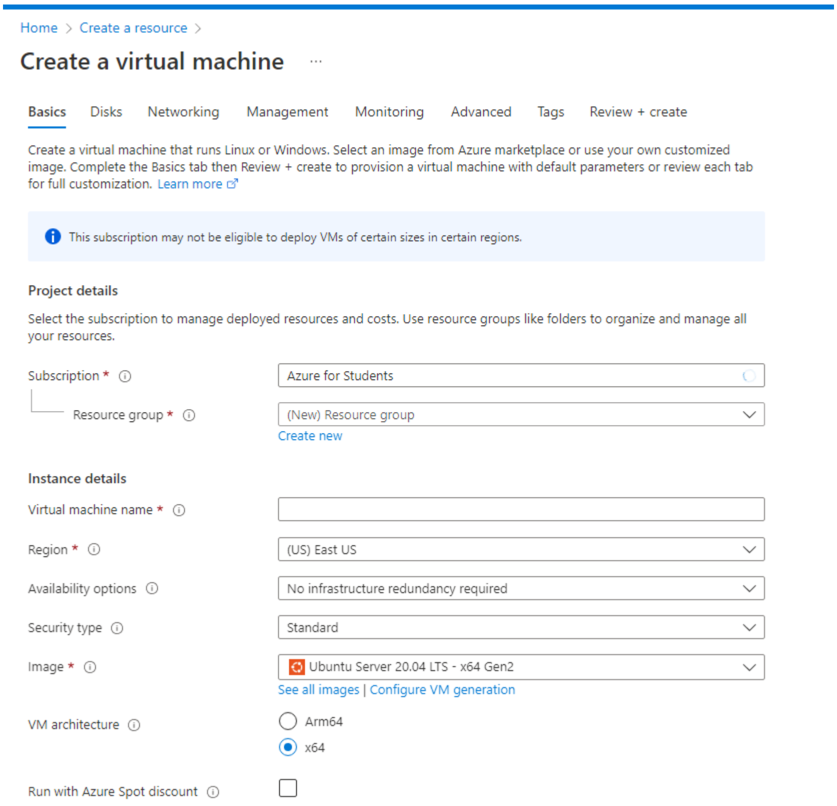
Analyze and optimize your cloud spend for free

1. When you first open your portal you'll see a screen like this , click on create a resource and then find the Virtual Machine option and click create


Home > Create a resource >

Create a virtual machine ...

Basics · Disks · Networking · Management · Monitoring · Advanced · Tags · Review + create

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. Learn more

This subscription may not be eligible to deploy VMs of certain sizes in certain regions.

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

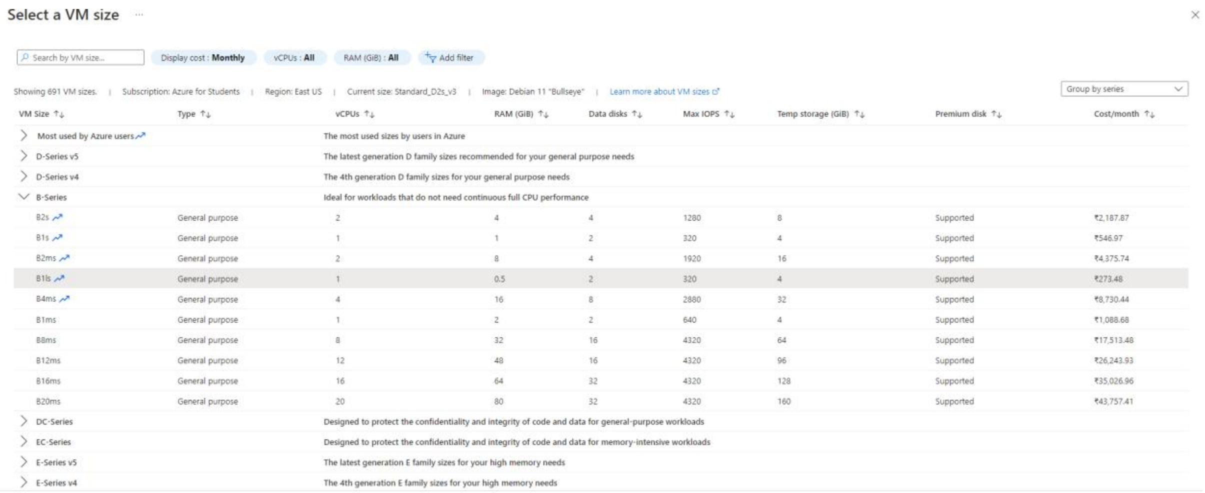
Subscription *	Azure for Students
Resource group *	(New) Resource group Create new

Instance details

Virtual machine name *	
Region *	(US) East US
Availability options	No infrastructure redundancy required
Security type	Standard
Image *	Ubuntu Server 20.04 LTS - x64 Gen2 See all images | Configure VM generation
VM architecture	○ Arm64 ● x64
Run with Azure Spot discount	□

2. You'll see a page like this

3. Only change the things that I am mentioning and rest leave as it is
4. Leave resource group, give a name to your virtual machine, select a region
5. So, for the region, if you want to play games select central India as that will give you the least ping but if you want to access content that is not available in India, select as per your convenience
6. For the image, select Debian 11 Bullseye x64 Gen2
7. For VM size, select B series with 1vcpu and 0.5GiB ram as that will cost you the least credits

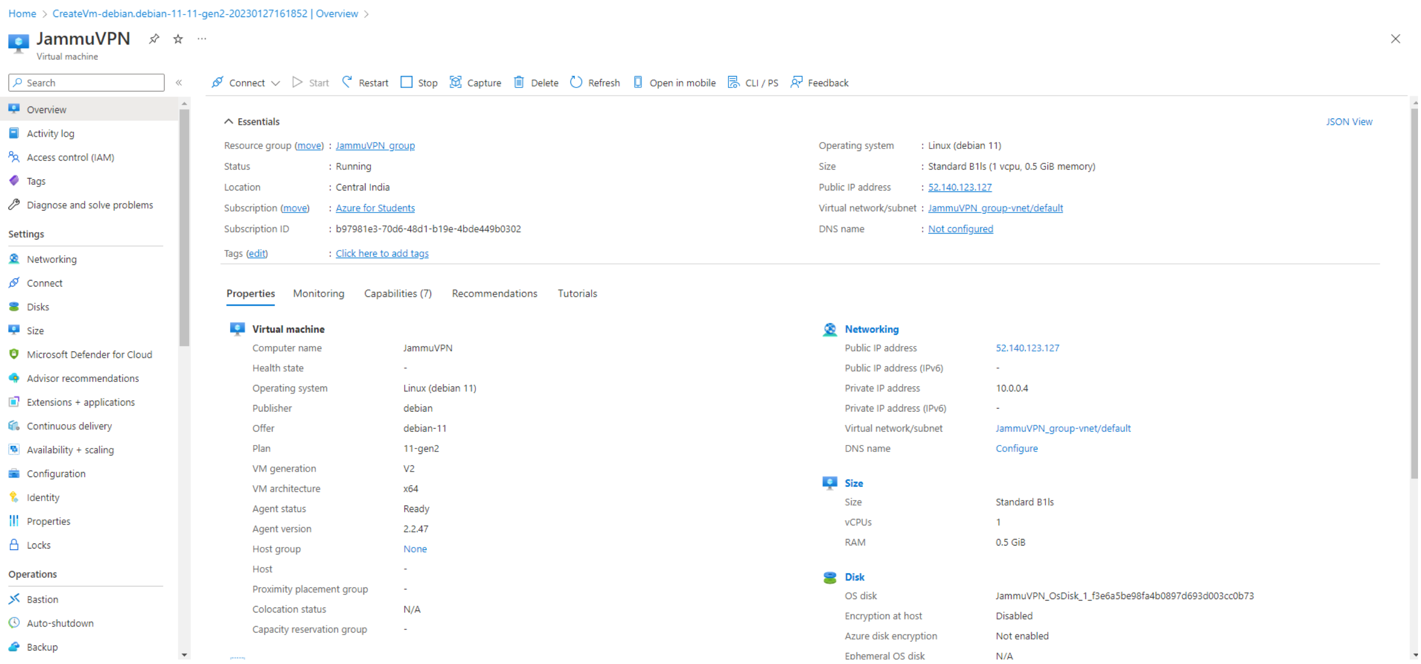


Select a VM size

Showing 691 VM sizes. | Subscription: Azure for Students | Region: East US | Current size: Standard_D2s_v3 | Image: Debian 11 "Bullseye" | Learn more about VM sizes

VM Size ↑↓	Type ↑↓	vCPUs ↑↓	RAM (GiB) ↑↓	Data disks ↑↓	Max IOPS ↑↓	Temp storage (GiB) ↑↓	Premium disk ↑↓	Cost/month ↑↓
Most used by Azure users		The most used sizes by users in Azure						
D-Series v5		The latest generation D family sizes recommended for your general purpose needs						
D-Series v4		The 4th generation D family sizes for your general purpose needs						
B-Series		Ideal for workloads that do not need continuous full CPU performance						
B2s	General purpose	2	4	4	1280	8	Supported	₹2,187.87
B1s	General purpose	1	1	2	320	4	Supported	₹546.97
B2ms	General purpose	2	8	4	1920	16	Supported	₹4,375.74
B1ls	General purpose	1	0.5	2	320	4	Supported	₹273.48
B4ms	General purpose	4	16	8	2880	32	Supported	₹8,730.44
B1ms	General purpose	1	2	2	640	4	Supported	₹1,088.68
B8ms	General purpose	8	32	16	4320	64	Supported	₹17,513.48
B12ms	General purpose	12	48	16	4320	96	Supported	₹26,243.93
B16ms	General purpose	16	64	32	4320	128	Supported	₹35,026.96
B20ms	General purpose	20	80	32	4320	160	Supported	₹43,757.41
DC-Series		Designed to protect the confidentiality and integrity of code and data for general-purpose workloads						
EC-Series		Designed to protect the confidentiality and integrity of code and data for memory-intensive workloads						
E-Series v5		The latest generation E family sizes for your high memory needs						
E-Series v4		The 4th generation E family sizes for your high memory needs						

8. Now for authentication types select password as SSH keys are hard to set up and choose your username and password. **Remember these as these will be used to access your VM later.**
9. Now after all this click on Next Disk and select OS Disk type as Standard SSD
10. Now just click on Review and create. You don’t need to change anything else on the VM and your VM is pretty much good to go. It will take some time to deploy it. After the Validation has passed just click on create.
11. After the deployment is complete, Click on go-to resource and it’ll look something like this



JammuVPN
Virtual machine

Essentials

Resource group (move) : JammuVPN_group
Status : Running
Location : Central India
Subscription (move) : Azure for Students
Subscription ID : b97981e3-70d6-48d1-b19e-4bde449b0302
Tags (edit) : Click here to add tags

Operating system : Linux (debian 11)
Size : Standard B1ls (1 vcpu, 0.5 GiB memory)
Public IP address : 52.140.123.127
Virtual network/subnet : JammuVPN_group-vnet/default
DNS name : Not configured

Virtual machine

Computer name	JammuVPN
Health state	-
Operating system	Linux (debian 11)
Publisher	debian
Offer	debian-11
Plan	11-gen2
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.2.47
Host group	None
Host	-
Proximity placement group	-
Colocation status	N/A
Capacity reservation group	-

Networking

Public IP address	52.140.123.127
Public IP address (IPv6)	-
Private IP address	10.0.0.4
Private IP address (IPv6)	-
Virtual network/subnet	JammuVPN_group-vnet/default
DNS name	Configure

Size

Size	Standard B1ls
vCPUs	1
RAM	0.5 GiB

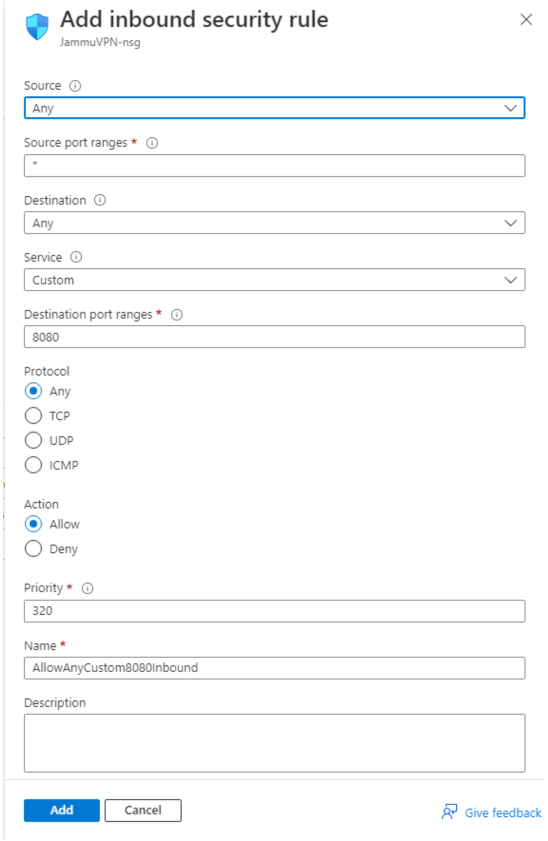
Disk

OS disk	JammuVPN_OsDisk_1_f3e6a5be98fa4b0897d693d003cc0b73
Encryption at host	Disabled
Azure disk encryption	Not enabled
Ephemeral OS disk	N/A

12. Now go to the networking tab from the left pane and click on add inbound port rule

13. It should look something like this

14. Now you need to add two port rules one by one. One is port 80 and the other is port 443. So just change the destination port ranges to 80 and click on add. And after it says port added again click on add inbound port rule and now add port 443.



Add inbound security rule
JammuVPN-nsg

Source: Any

Source port ranges *: *

Destination: Any

Service: Custom

Destination port ranges *: 8080

Protocol
● Any
○ TCP
○ UDP
○ ICMP

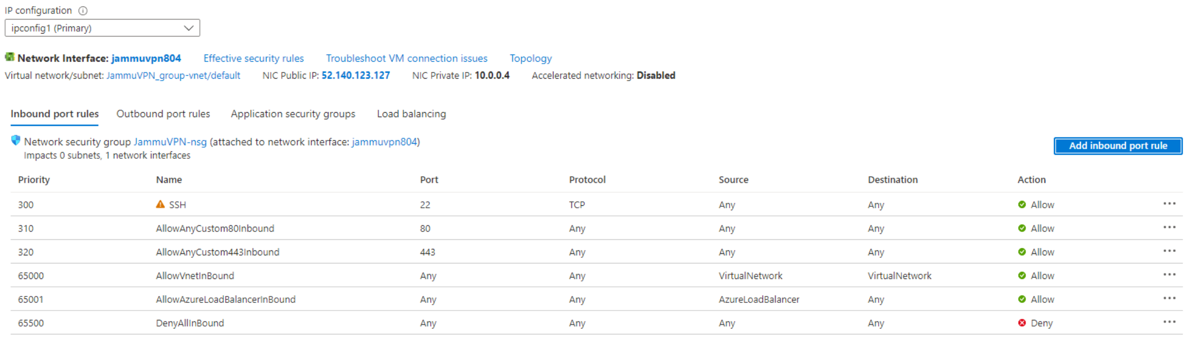
Action
● Allow
○ Deny

Priority *: 320

Name *: AllowAnyCustom8080Inbound

Description:

15.After adding both ports it should look like this



IP configuration: ipconfig1 (Primary)

Network Interface: jammuvpn804

Virtual network/subnet: JammuVPN_group-vnet/default NIC Public IP: **52.140.123.127** NIC Private IP: **10.0.0.4** Accelerated networking: **Disabled**

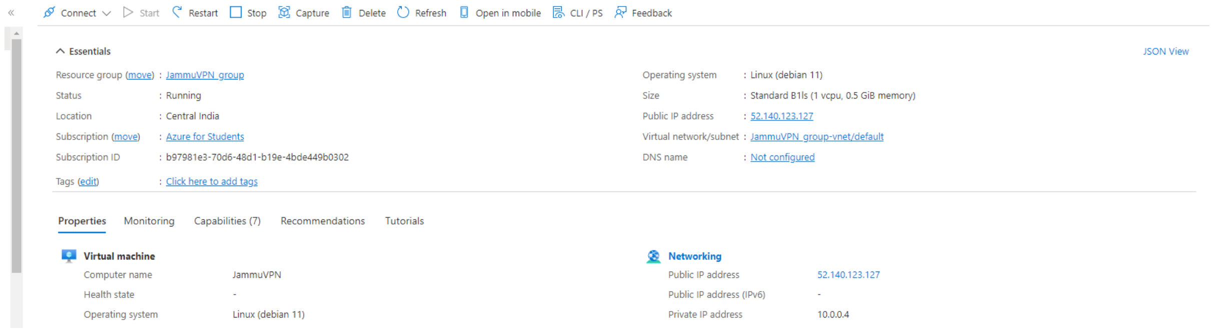
Network security group JammuVPN-nsg (attached to network interface: jammuvpn804)
Impacts 0 subnets, 1 network interfaces

Priority	Name	Port	Protocol	Source	Destination	Action
300	⚠ SSH	22	TCP	Any	Any	✓ Allow
310	AllowAnyCustom80Inbound	80	Any	Any	Any	✓ Allow
320	AllowAnyCustom443Inbound	443	Any	Any	Any	✓ Allow
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	✓ Allow
65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	✓ Allow
65500	DenyAllInBound	Any	Any	Any	Any	✕ Deny

16. After this you are pretty much good to go to install OpenVPN on your server.

Tip 3- Please disconnect BITS net now and connect to mobile data to avoid any errors before proceeding forward

17.Also go to your overview page and click on the public IP address should be on the right



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Status : Running
Location : Central India
Subscription (move) : Azure for Students
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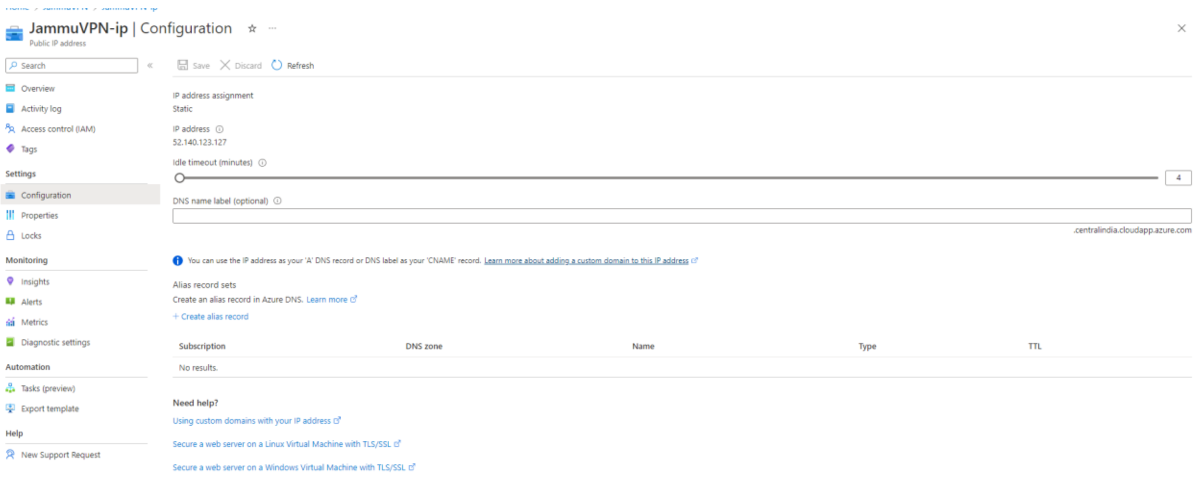
Tags (edit) : Click here to add tags

Operating system : Linux (debian 11)
Size : Standard B1ls (1 vcpu, 0.5 GiB memory)
Public IP address : 52.140.123.127
Virtual network/subnet : JammuVPN_group-vnet/default
DNS name : Not configured

Virtual machine
Computer name JammuVPN
Health state -
Operating system Linux (debian 11)

Networking
Public IP address 52.140.123.127
Public IP address (IPv6) -
Private IP address 10.0.0.4

18.Please cross-check that your IP is static and also add a DNS name label eg “AzureUser”. If its not static, make it static but it should be static.



JammuVPN-ip | Configuration
Public IP address

IP address assignment
Static

IP address
52.140.123.127

Idle timeout (minutes)
4

DNS name label (optional)
.centralindia.cloudapp.azure.com

You can use the IP address as your 'A' DNS record or DNS label as your 'CNAME' record. Learn more about adding a custom domain to this IP address

Alias record sets
Create an alias record in Azure DNS. Learn more
+ Create alias record

Subscription	DNS zone	Name	Type	TTL
No results.				

Need help?
Using custom domains with your IP address
Secure a web server on a Linux Virtual Machine with TLS/SSL
Secure a web server on a Windows Virtual Machine with TLS/SSL

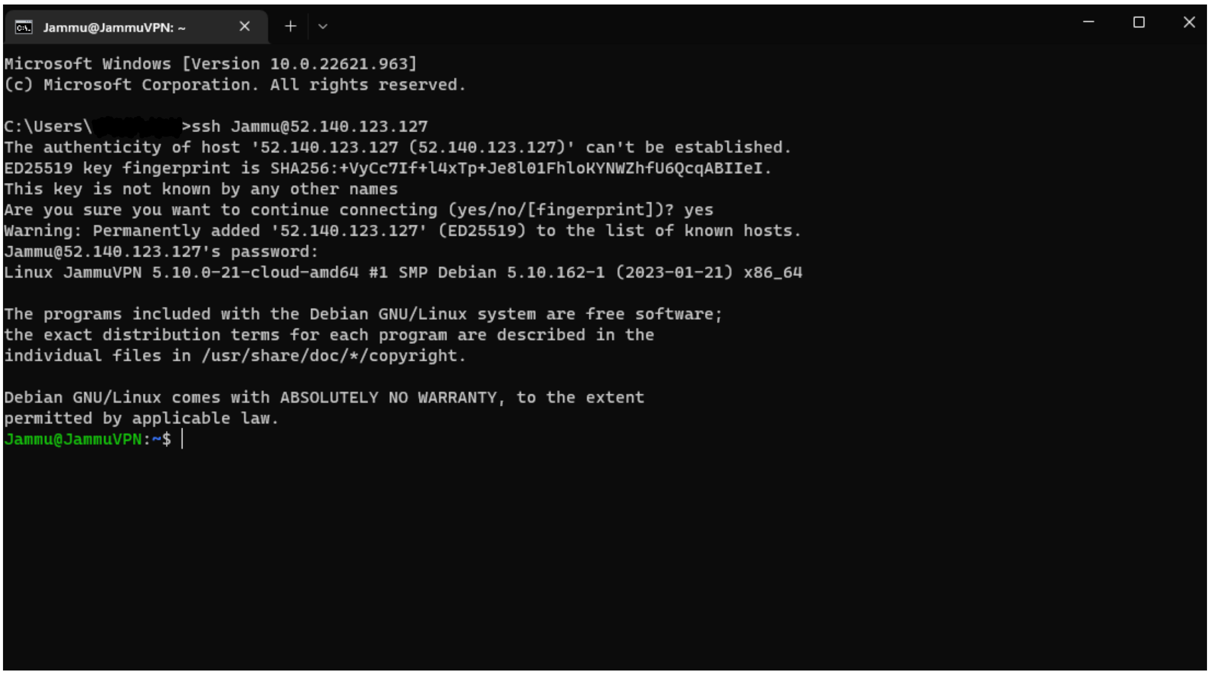
19. Now open your command prompt and type in the following command. Use right click to paste your commands in to command prompt

20. ssh username@yourpublicip where username is that you selected in step 8 and your public IP from step 17 and press enter

21. If it asks you something about fingerprint and do you still wanna connect just type yes

22. Then it will ask you your password which you used in step 8. Enter that(Don't worry it you don't see your pwd on screen its just for security)

23. If you did all that successfully you should see something like this

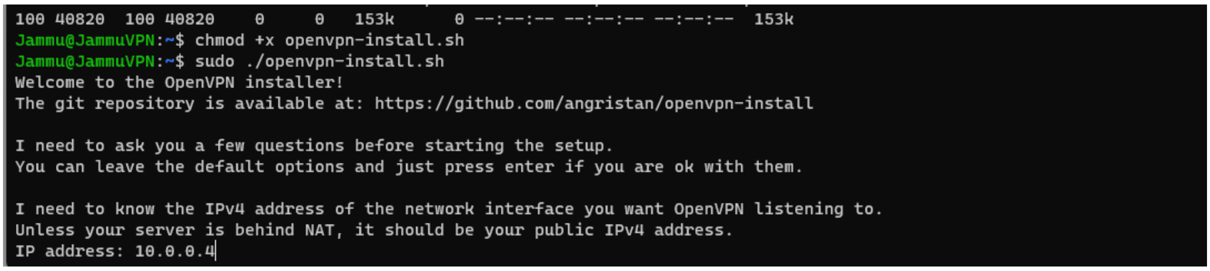


```
Microsoft Windows [Version 10.0.22621.963]
(c) Microsoft Corporation. All rights reserved.

C:\Users\[redacted]>ssh Jammu@52.140.123.127
The authenticity of host '52.140.123.127 (52.140.123.127)' can't be established.
ED25519 key fingerprint is SHA256:+VyCc7If+l4xTp+Je8l01FhloKYNWZhfU6QcqABIIeI.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '52.140.123.127' (ED25519) to the list of known hosts.
Jammu@52.140.123.127's password:
Linux JammuVPN 5.10.0-21-cloud-amd64 #1 SMP Debian 5.10.162-1 (2023-01-21) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Jammu@JammuVPN:~$ |
```

24. After that paste this command curl -O https://raw.githubusercontent.com/angristan/openvpn-install/master/openvpn-install.sh

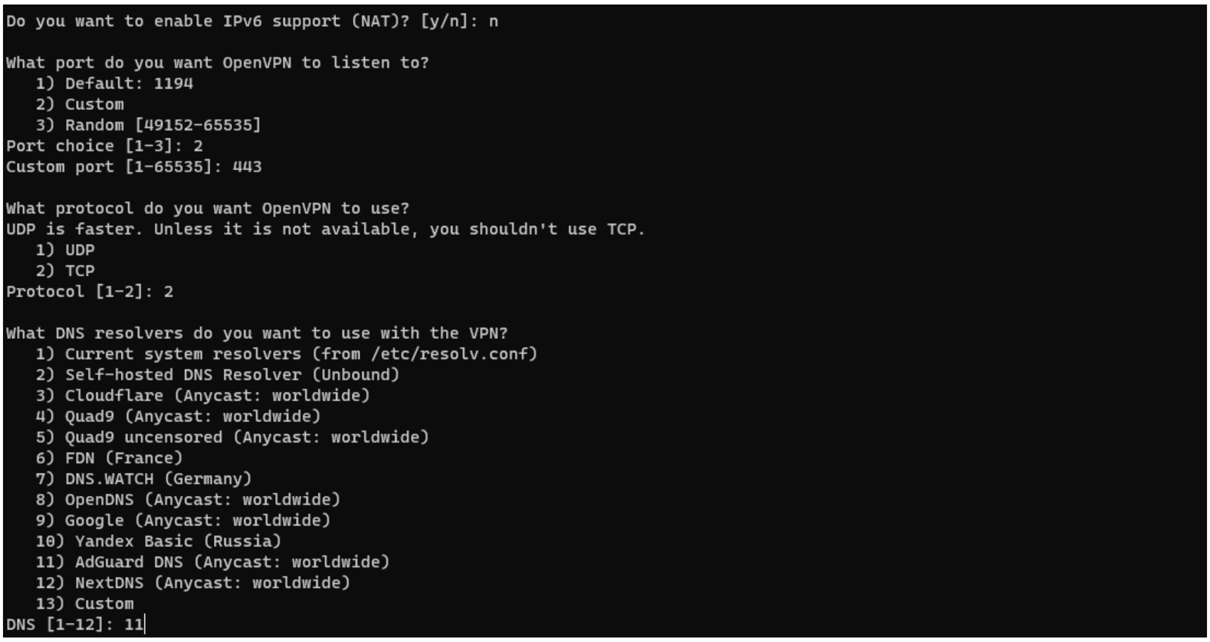
25. Now type this command chmod +x openvpn-install.sh

26. Now enter this sudo ./openvpn-install.sh



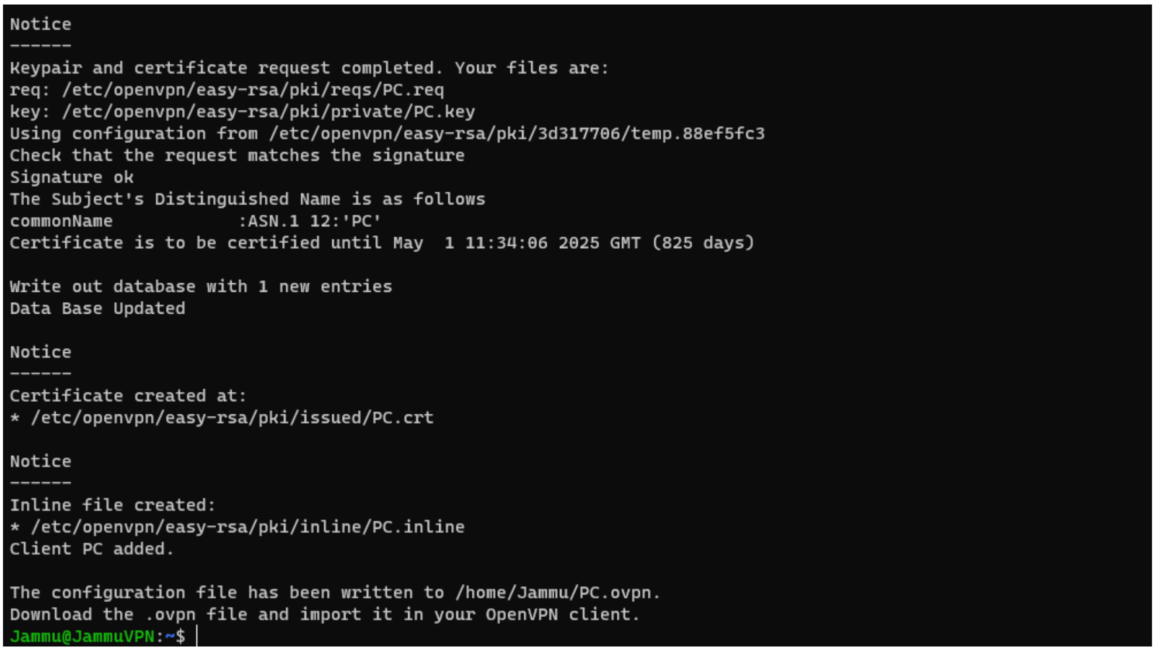
```
100 40820  100 40820    0     0   153k      0 --:--:-- --:--:-- --:--:--  153k
Jammu@JammuVPN:~$ chmod +x openvpn-install.sh
Jammu@JammuVPN:~$ sudo ./openvpn-install.sh
Welcome to the OpenVPN installer!
The git repository is available at: https://github.com/angristan/openvpn-install

I need to ask you a few questions before starting the setup.
You can leave the default options and just press enter if you are ok with them.

I need to know the IPv4 address of the network interface you want OpenVPN listening to.
Unless your server is behind NAT, it should be your public IPv4 address.
IP address: 10.0.0.4
```

27. Now change the default ip address written to your public ip address press enter and if it asks you to enable ipv6 just type “n” and press enter
28. Then it will ask you for your port choice just go for custom port by typing “2” and change the default port to port 443
29. Then it will ask for which protocol you want to use just select TCP and press enter

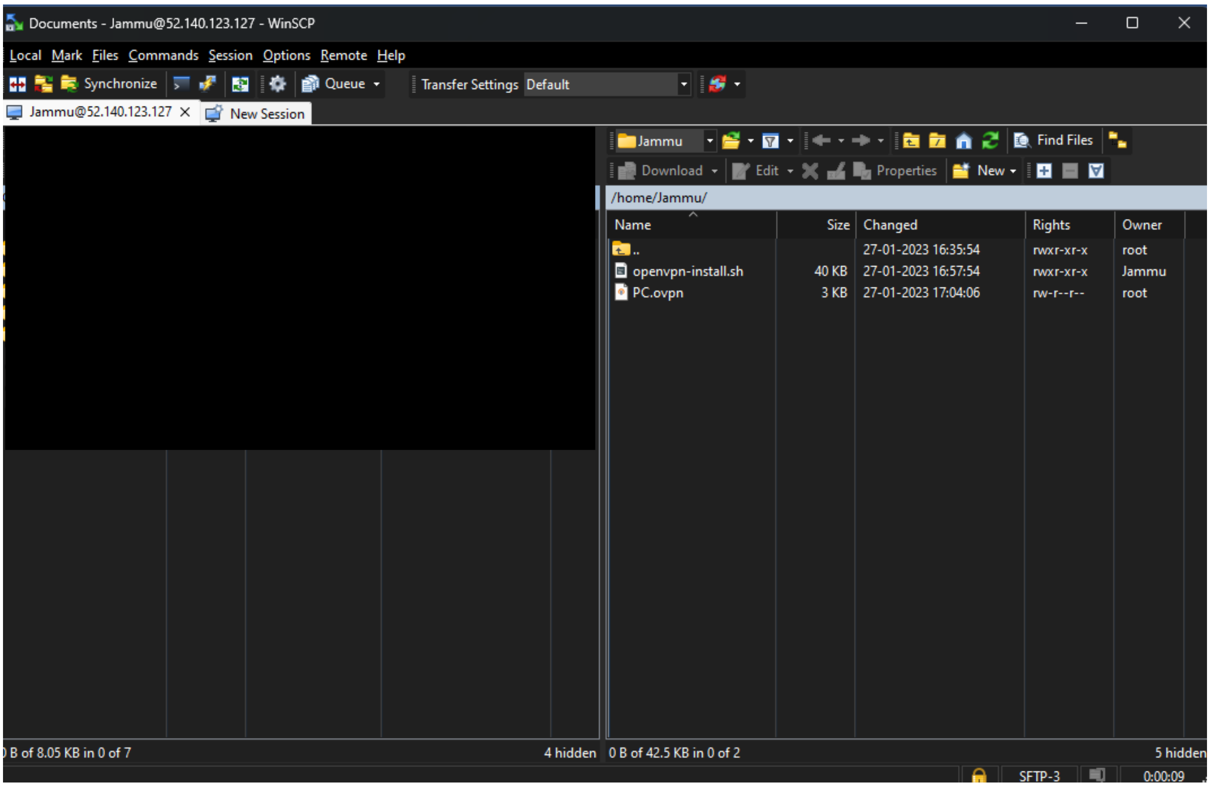


```
Do you want to enable IPv6 support (NAT)? [y/n]: n

What port do you want OpenVPN to listen to?
   1) Default: 1194
   2) Custom
   3) Random [49152-65535]
Port choice [1-3]: 2
Custom port [1-65535]: 443

What protocol do you want OpenVPN to use?
UDP is faster. Unless it is not available, you shouldn't use TCP.
   1) UDP
   2) TCP
Protocol [1-2]: 2

What DNS resolvers do you want to use with the VPN?
   1) Current system resolvers (from /etc/resolv.conf)
   2) Self-hosted DNS Resolver (Unbound)
   3) Cloudflare (Anycast: worldwide)
   4) Quad9 (Anycast: worldwide)
   5) Quad9 uncensored (Anycast: worldwide)
   6) FDN (France)
   7) DNS.WATCH (Germany)
   8) OpenDNS (Anycast: worldwide)
   9) Google (Anycast: worldwide)
   10) Yandex Basic (Russia)
   11) AdGuard DNS (Anycast: worldwide)
   12) NextDNS (Anycast: worldwide)
   13) Custom
DNS [1-12]: 11
```

30. Then select google dns by typing “9” and then just press enter three times (it will ask you for encryption and other settings just type “n” for those)
31. After all that it will ask you for your client name. Name it anything and press enter and go for a password less client.
32. Now your VPN is ready and good to go. You can exit the VM by typing exit and closing command prompt
33. Open WinSCP and type in your public ip as hostname and username and password and connect.



```
Notice
------
Keypair and certificate request completed. Your files are:
req: /etc/openvpn/easy-rsa/pki/reqs/PC.req
key: /etc/openvpn/easy-rsa/pki/private/PC.key
Using configuration from /etc/openvpn/easy-rsa/pki/3d317706/temp.88ef5fc3
Check that the request matches the signature
Signature ok
The Subject's Distinguished Name is as follows
commonName            :ASN.1 12:'PC'
Certificate is to be certified until May  1 11:34:06 2025 GMT (825 days)

Write out database with 1 new entries
Data Base Updated

Notice
------
Certificate created at:
* /etc/openvpn/easy-rsa/pki/issued/PC.crt

Notice
------
Inline file created:
* /etc/openvpn/easy-rsa/pki/inline/PC.inline
Client PC added.

The configuration file has been written to /home/Jammu/PC.ovpn.
Download the .ovpn file and import it in your OpenVPN client.
Jammu@JammuVPN:~$ 
```



Documents - Jammu@52.140.123.127 - WinSCP
Local Mark Files Commands Session Options Remote Help
Synchronize
Queue
Transfer Settings Default
Jammu@52.140.123.127
New Session
Jammu
Find Files
Download
Edit
Properties
New

/home/Jammu/

Name	Size	Changed	Rights	Owner
..		27-01-2023 16:35:54	rwxr-xr-x	root
openvpn-install.sh	40 KB	27-01-2023 16:57:54	rwxr-xr-x	Jammu
PC.ovpn	3 KB	27-01-2023 17:04:06	rw-r--r--	root

0 B of 8.05 KB in 0 of 7   4 hidden   0 B of 42.5 KB in 0 of 2   5 hidden

SFTP-3   0:00:09

34. After logging in to WinSCP youll see a screen like this and youll see the files of your VM on right side along with the client name file you created in my case it was “PC.ovpn”. right click and download it and then close WinSCP.
35. Now open your openvpn and import the “PC” file you downloaded and enjoy

Tip 4- Always turn off your VM by going here and clicking on the VM name you chose at the start and clicking on stop. This will save you some credits because azure billing runs hourly.