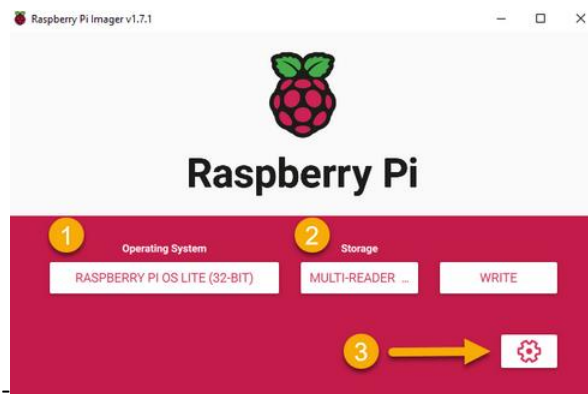# DOCUMENTATION BY: G SHYAM SURYA

FROM: AMRITA VISHWA VIDYAPEETHAM

TOPIC: SETTING UP OUR OWN VPN SERVER USING PIVPN AND ON WIFI

FIRST STEP:

1)First step is to write the raspberry pi os into micro sd card for this follow the below steps:

2)Next step is to enable the wifi (note: you should use the mobile hotspot from the device which your going to use in router)

After ensuring the above follow the below steps:

-click on the setting icon and do as below:

-Set a username if you want, or just leave the default 'pi',Set a password – this will be used to log into your PiVPN once it's up and running.

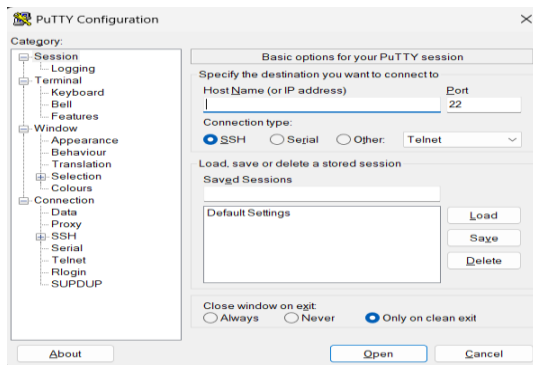After doing the above steps write it:

SECOND STEP:

1)Then get the SD micro card and insert it in the raspberry pi and connect the raspberry pi into your laptop using a USB cable.

2)After installing putty, open the putty now

3)In the hostname you gave in the process of FIRST STEP and type as "SSH" then click open.

4) The below image represent the terminal,if you get error then there is some error in connection.Type the password and work on the terminal.
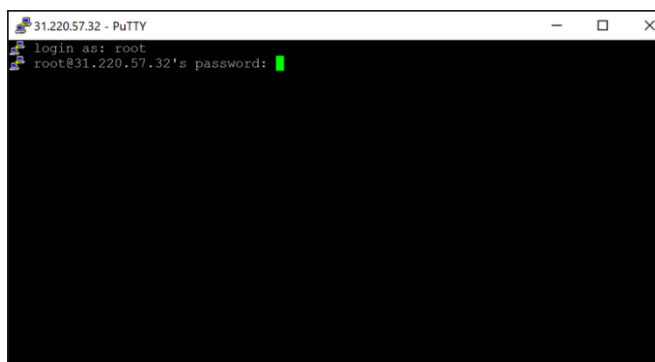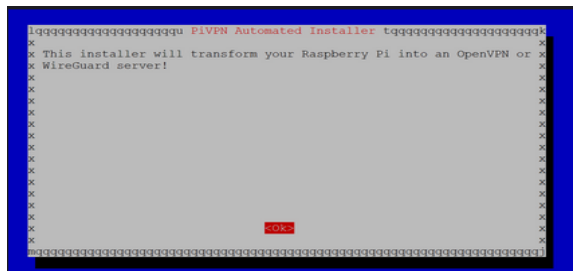

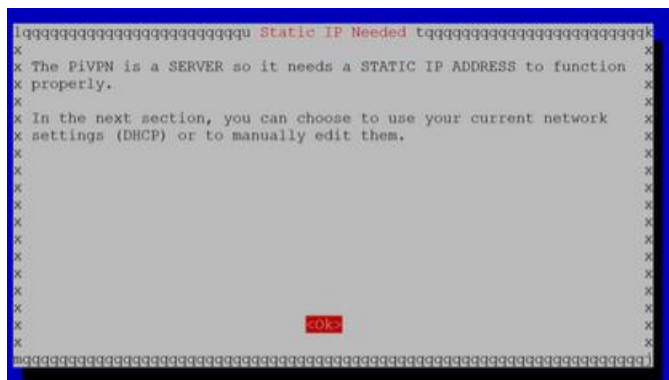5)type the command : sudo apt update && sudo apt upgrade -y

6)Check once again the raspberry pi is connected by sing the command : ip a.

THIRD STEP:

1)don't go anywhere! , Just be in putty terminal and install the pivpn using the command: curl -L https://install.pivpn.io | bash

2) This will start the PiVPN installation wizard.

3) Click OK.First step is to set a static IP on your PiVPN server. Click OK.

Note: To ensure a consistent IP address for PiVPN, a static IP address is required. This is essential for establishing a firewall rule that permits traffic to reach the PiVPN server.

To achieve a static IP address, you have two options. You can manually assign an IP address outside of your DHCP lease pool range, or you can use DHCP reservation to instruct DHCP to assign a specific IP address to your PiVPN server that remains unchanged

In my project I have used static ip

4) we will set a static IP address, so we will choose 'No' on this screen.
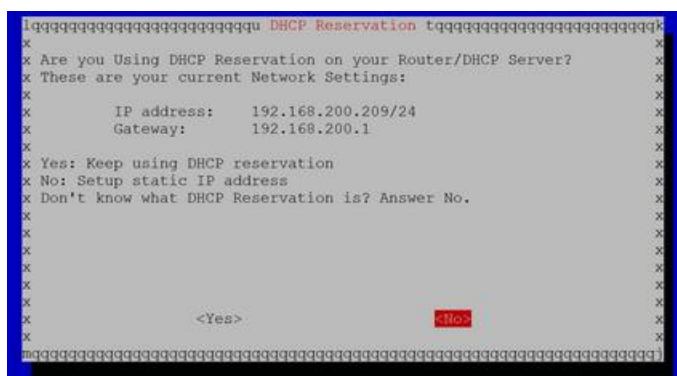
5) In this example, 192.168.200.209 is the IP address that was given to my PiVPN by the network's DHCP server. Since we want to set up a static IP, we will have to change this IP to something different. So choose 'No' because we don't want to use the DHCP IP address for the PiVPN.
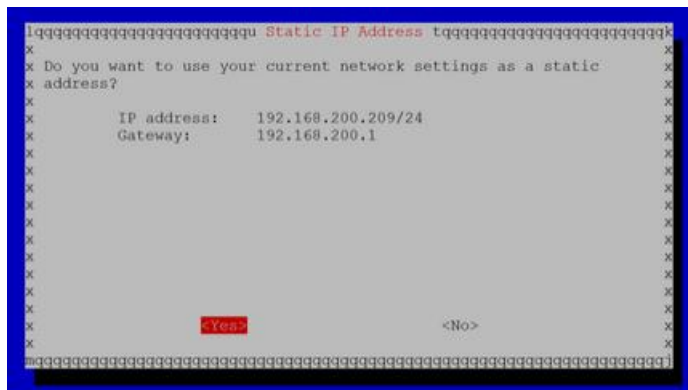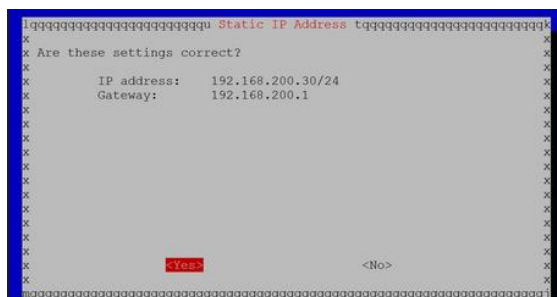
6) I have set the IP address to 192.168.200.30 in this example, which is an unused IP address outside of my network's DHCP pool range.

7)Next, set your gateway IP (it should already be correct) and click OK.


8)click ok

9)In the upcoming steps, we need to select a local user for our VPN configurations. Since we currently have only one user, simply click OK and then choose the Pi user on the following screen.


10) Now, it's time to decide which VPN software we will use: WireGuard or OpenVPN. In my project I will be using WireGuard as our preferred option.
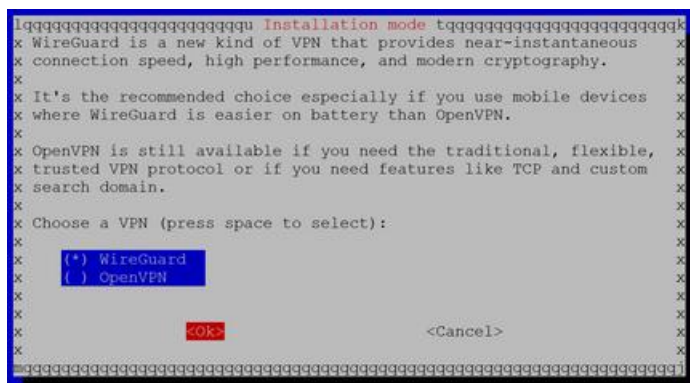

11) Moving forward, we have the option to choose a WireGuard port. The default port is UDP 51820, which we will stick with by clicking OK. However, you can select a different port if desired. Keep in mind that the firewall rule should be adjusted accordingly to match the port you choose.
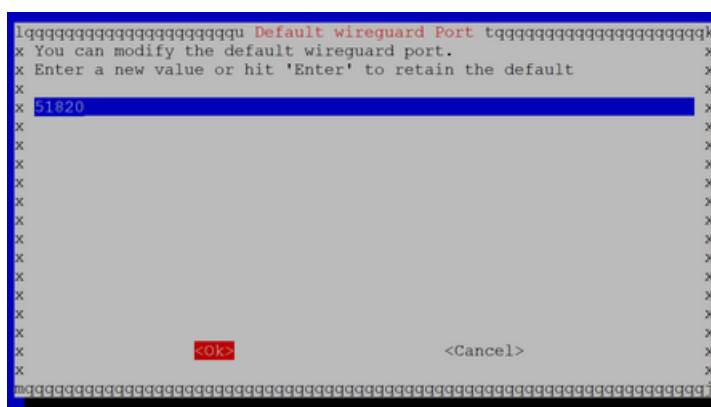
12) In the upcoming step, the wizard will prompt us to select a DNS provider for name resolution. You have the freedom to choose any of the available options. However, In my project , I will be selecting 'CloudFlare' as the DNS provider.
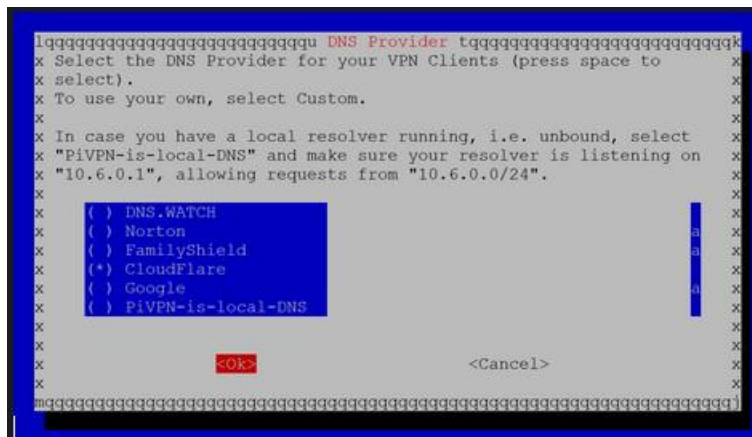
13) In the next step, the wizard requires us to specify whether we will connect to PiVPN using a DNS name (FQDN) or a WAN IP address. If your ISP has assigned you a static WAN IP address, select "IP." However, if you do not have a static IP address, it is recommended to use a DNS name. But I have choosen static ip here.
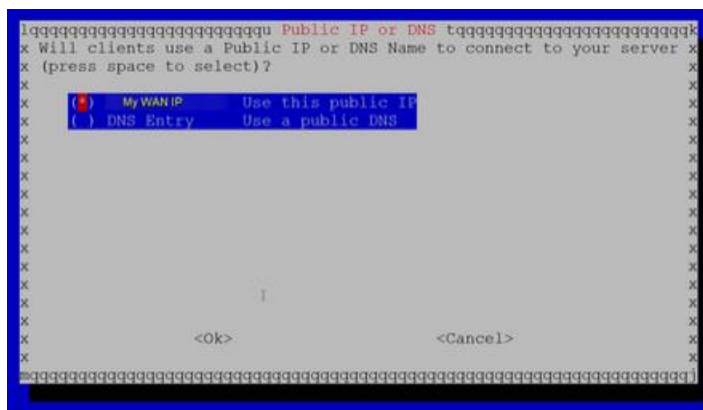
14)if you click your server keys will be generated

15)In all the upcoming just give ok because it just for rebooting .

FOURTH STEP:

1) Reconnect to your PiVPN server via SSH.
2) For adding users to vpn use the command: pivpn -a

What is port forwarding:?

Port forwarding works similarly with a static IP address, but with the added advantage of having a fixed, unchanging IP address for the device hosting the service or resource. Here's how port forwarding with a static IP address typically functions:

Static IP Assignment: Instead of relying on DHCP to assign a private IP address to the device, a static IP address is manually configured on the device itself. This ensures that the device always retains the same IP address within the local network.

4)Now we need to port forwarding :
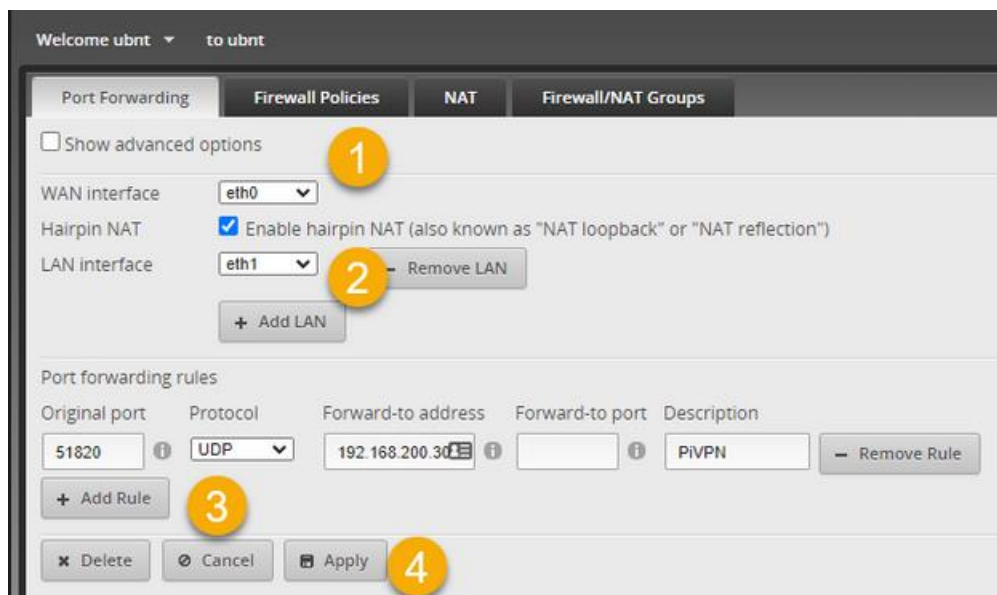
Note: The above step is port forwarding in which u have to access your own router website and it will ask for login credentials of your router and then after you enter into that , you have to configure the port forwarding as the above image according to your ip address , port number.

FIFTH STEP:

1)In this step we will set vpn for mobile

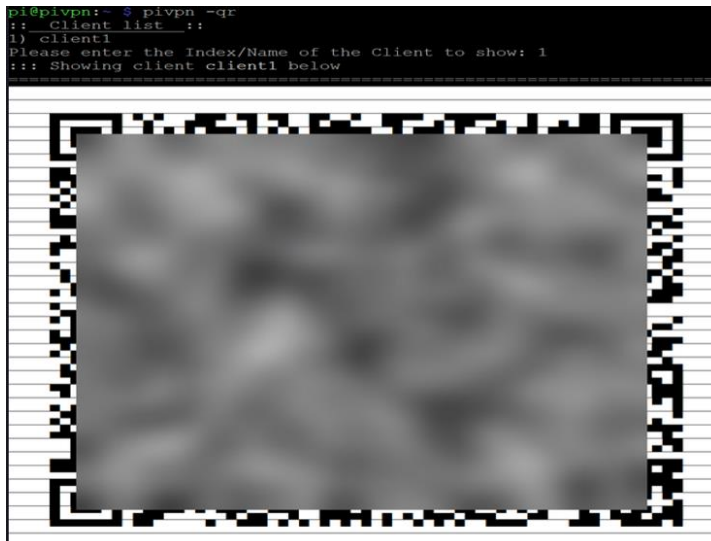2)generate the qr code for the vpn client 1 using the command: pivpn -qr
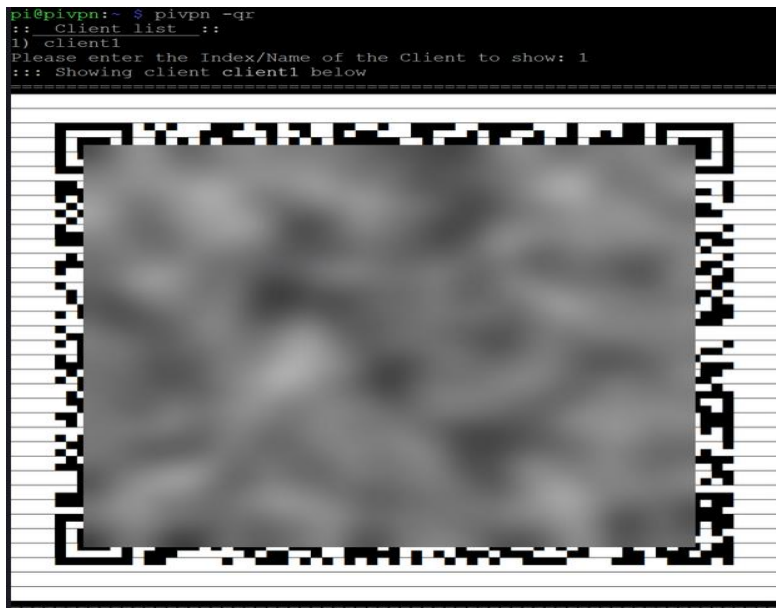
3)Then scan this qr code in the wire guard client app then we connect to vpn

SIXTH STEP:

1)In this step we will set vpn for windows

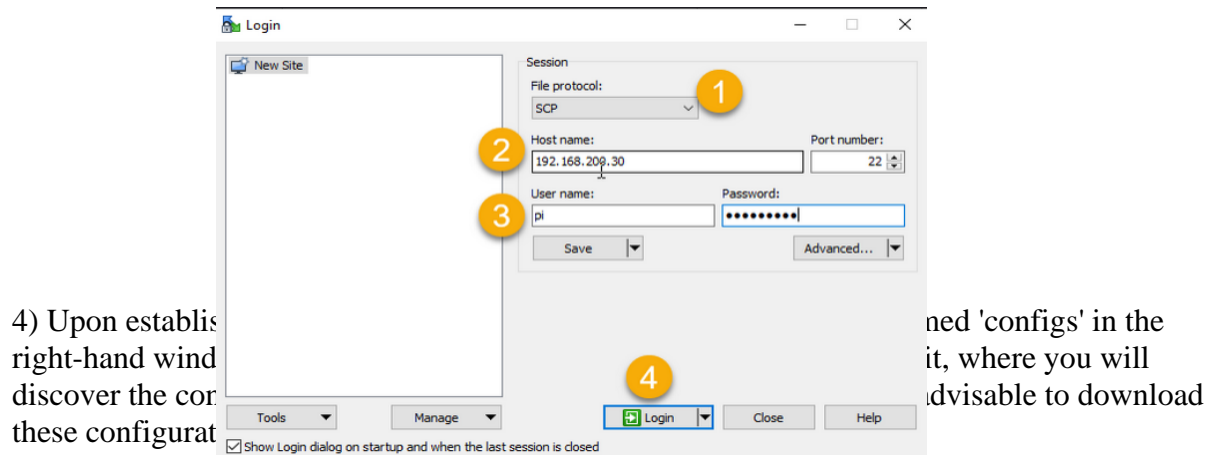2)generate the qr code for the vpn client 1 using the command: pivpn -qr

3) If you don't have a device capable of scanning a QR code, such as a Windows, Mac, or Linux desktop PC, you can still connect to your Raspberry Pi and manually download the configuration file. To accomplish this, you can utilize a program called WinSCP, which is freely available for download and installation. Once you have downloaded and installed WinSCP, follow these steps:

1. Launch WinSCP and you will be prompted to connect to a server.
2. Change the File Protocol to SCP (Secure Copy Protocol).

3. Enter the IP address of your PiVPN in the appropriate field.
4. Provide your 'pi' username and password in the designated spaces.
5. Click on the 'Login' button to initiate the connection.
6. You may encounter some windows informing you about connecting to a new server. Simply accept these prompts.

By following these steps, you will establish a connection between your desktop PC and the Raspberry Pi. This will enable you to manually retrieve the configuration file needed.

4) Upon establis   ned 'configs' in the right-hand wind   it, where you will discover the con   dvisable to download these configurat

To proceed, download and install the Windows WireGuard client on your desktop PC. Once the installation is complete, launch the WireGuard client and locate the 'Import tunnel(s) from file' option. Click on it to import the previously downloaded configuration files into the client.
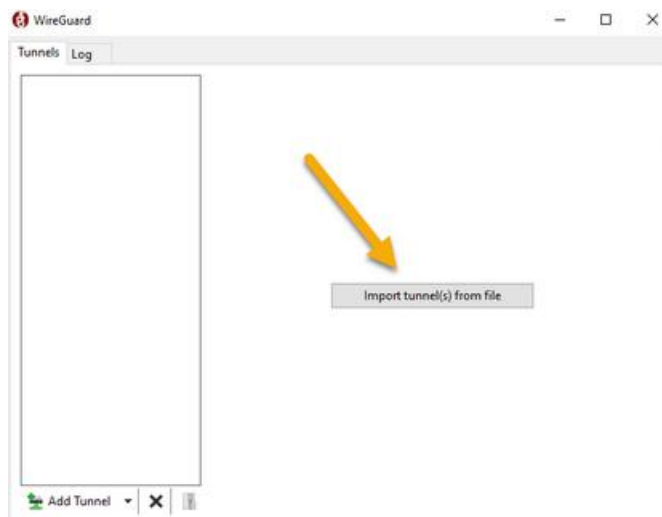
5) Browse to the file that you downloaded and double-click it. You should now see it imported in your WireGuard client.
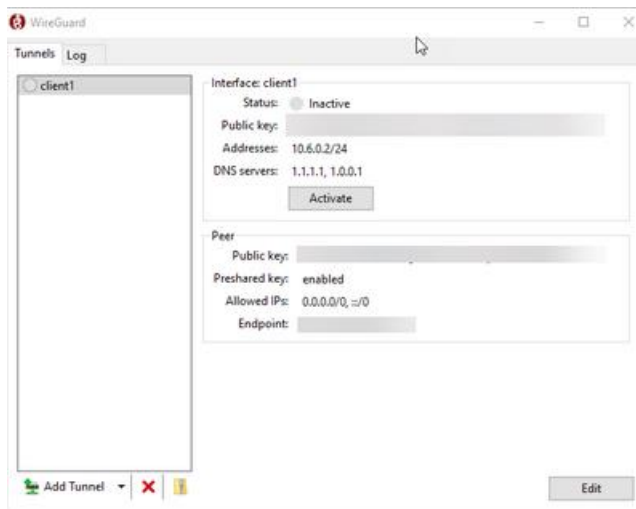
6) Click 'Activate' to activate the tunnel. Now be happy you're into your own vpn tunnel!.