OpenWRT Netbird

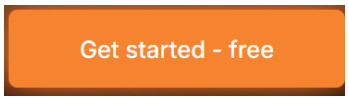
version 3
Latest version:
https://raw.githubusercontent.com/egc112/OpenWRT-egc-add-on/main/notes/OpenWRT%20Netbird.pdf

This is a WIP and just some poorly redacted personal notes, I am working to make a real install guide

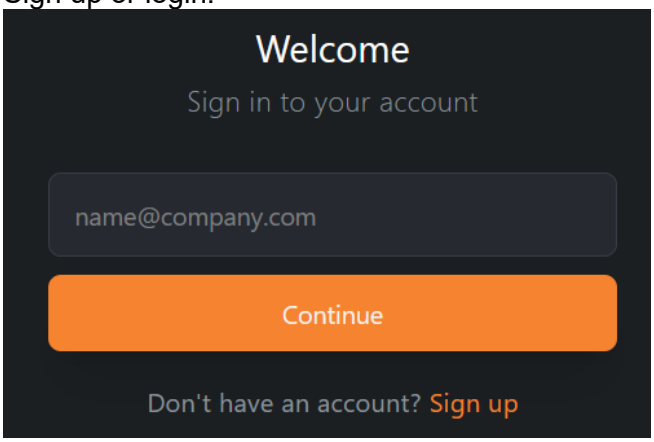
Start with viewing: https://docs.netbird.io/how-to/getting-started
All the docs can be found at: https://docs.netbird.io/

Make a free account on Netbird

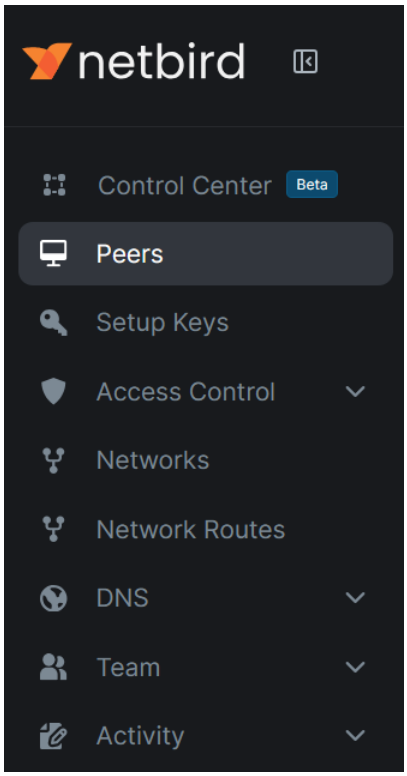
go to: http://netbird.io

Click: 

Sign up or login:

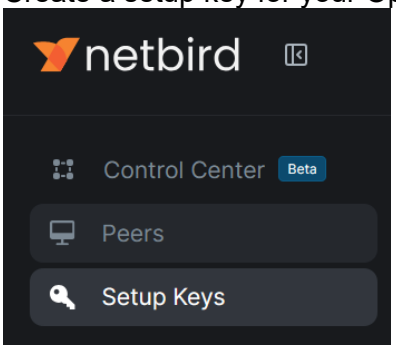


Now you are connected to your Netbird Dashboard the central administration:

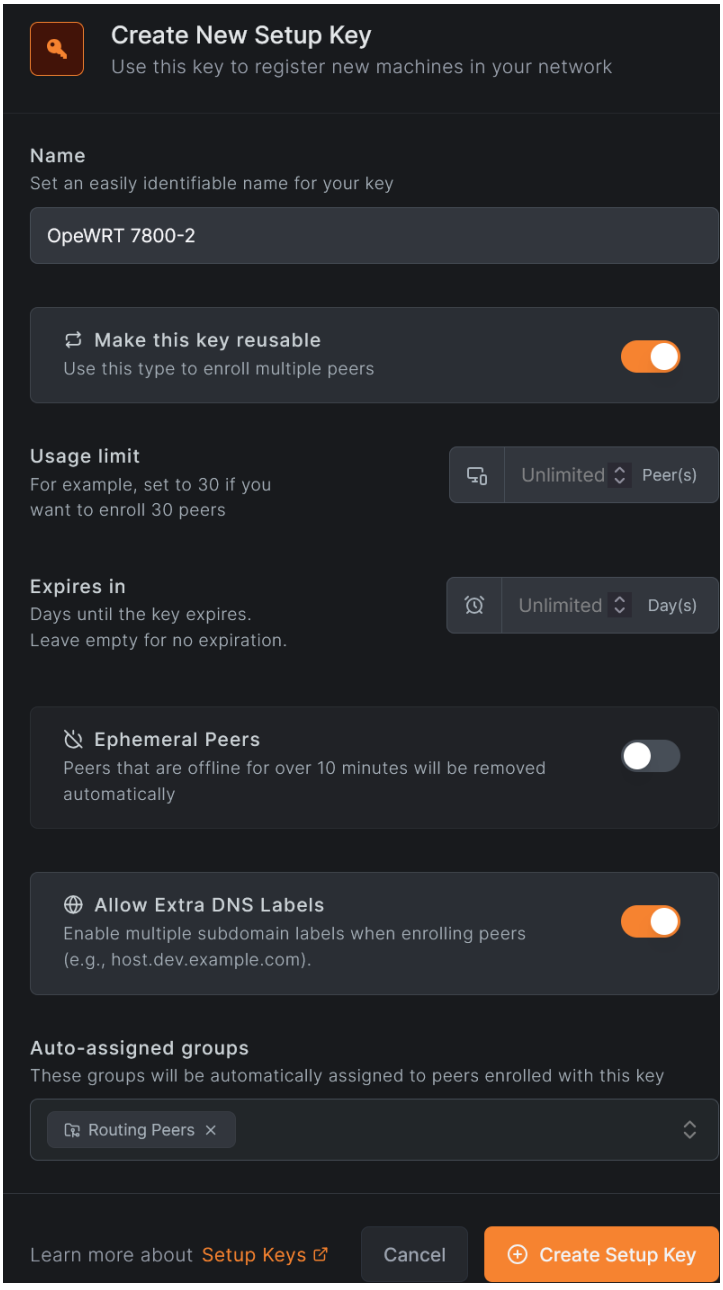

netbird
Control Center
Beta
Peers
Setup Keys
Access Control
Networks
Network Routes
DNS
Team
Activity

Next step is to create a setup key for your OpenWRT router

Create a setup key for your OpenWRT router, in your Netbird Dashboard click *Setup Keys*:



Fill in the name of your router and change the other items, shown are my settings, when done Click *Create Setup Key.*



Copy and store the setup key

Install Netbird on OpenWRT router

For opkg:
opkg update
opkg install netbird

or for apk:
apk update
apk add netbird

Netbird is a rather large package around 20 MB written in Go so make sure your storage is sufficient

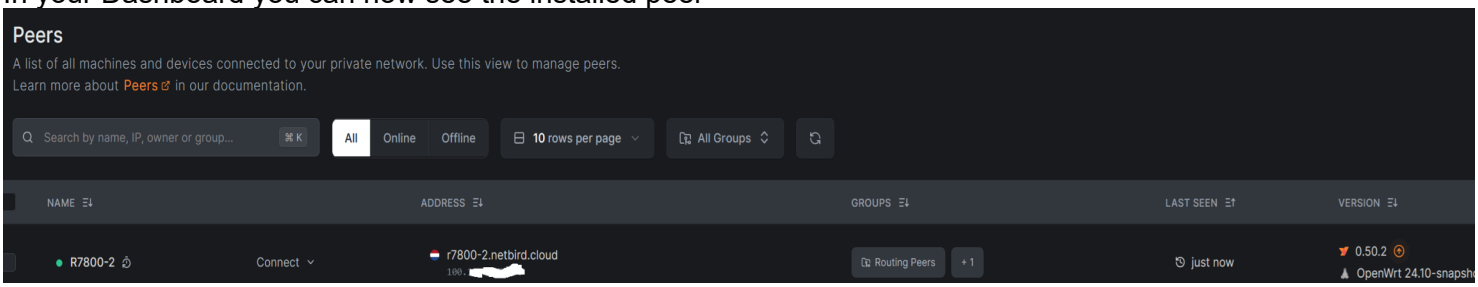
The netbird executable is stored in /usr/share/netbird.
The service is called from /etc/init.d/netbird

When installed you can setup with:
netbird up --setup-key <key from previous step>

After some time you will see:
root@R7800-2:~# netbird up --setup-key E20033F4-0C99-470E-A27A-5F066D8590EA
Connected
root@R7800-2:~#

You can use netbird help to see the available commands e,g,:
netbird up/down/status etc
but using e.g.:
service netbird status/stop/start etc. will also work (for complete list: service netbird)

In your Dashboard you can now see the installed peer



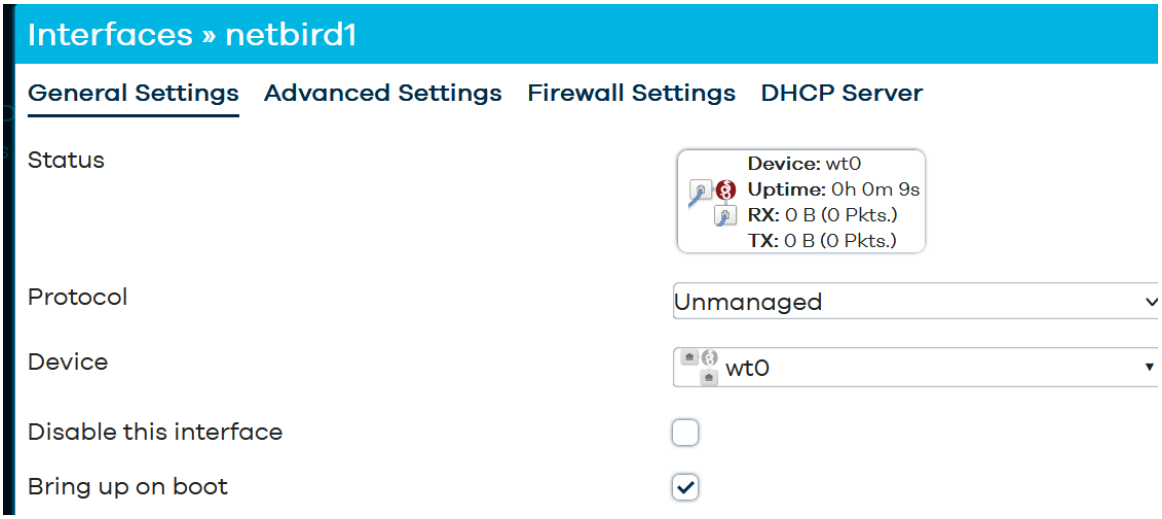
with ifconfig or ip address show on the router, you should see the new interface (device) wt0
If not reboot the router and check netbird status: *netbird status*

Netbird log:

Showing netbird log:
cat /tmp/log/netbird/client.log

Next Firewall setup:

Luci > Network > scroll down and Add new interface:
Name e.g.: netbird1
Protocol: Unmanaged
Device: scroll down and choose wt0



/etc/config/network:

```
config interface 'netbird1'
        option proto 'none'
        option device 'wt0'
```

Head over to Firewall settings and add to LAN zone:

/etc/config/firewall:

```
config zone
        option name 'lan'
        option input 'ACCEPT'
        option output 'ACCEPT'
        option forward 'ACCEPT'
        list network 'lan'
        list network 'netbird1'
```

In the end reboot the router or do service network restart, service firewall restart and service netbird restart.

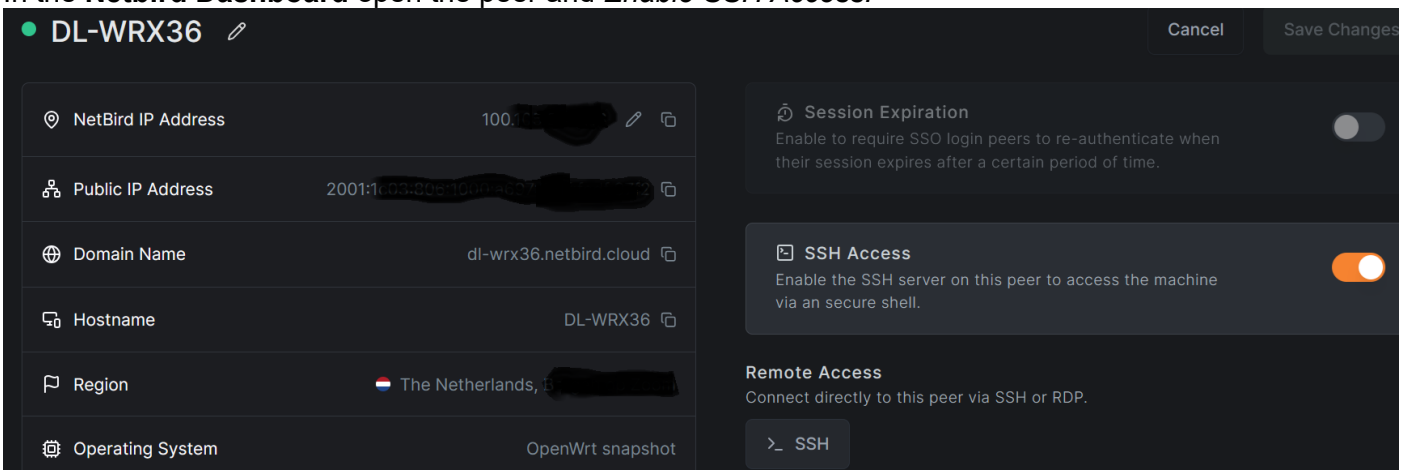
Check with ifconfig (ip a) and ip route that the interface (wt0) and route ar present:

```
root@DL-WRX36:~# ip address show wt0
31: wt0: <POINTOPOINT,NOARP,UP,LOWER_UP> mtu 1280 qdisc noqueue state UNKNOWN group
default qlen 1000
    link/none
    inet 100.105.224.116/16 brd 100.105.255.255 scope global wt0
       valid_lft forever preferred_lft forever

root@DL-WRX36:~# ip route
default via 192.168.0.1 dev wan proto static src 192.168.0.9
100.105.0.0/16 dev wt0 proto kernel scope link src 100.105.224.116
```

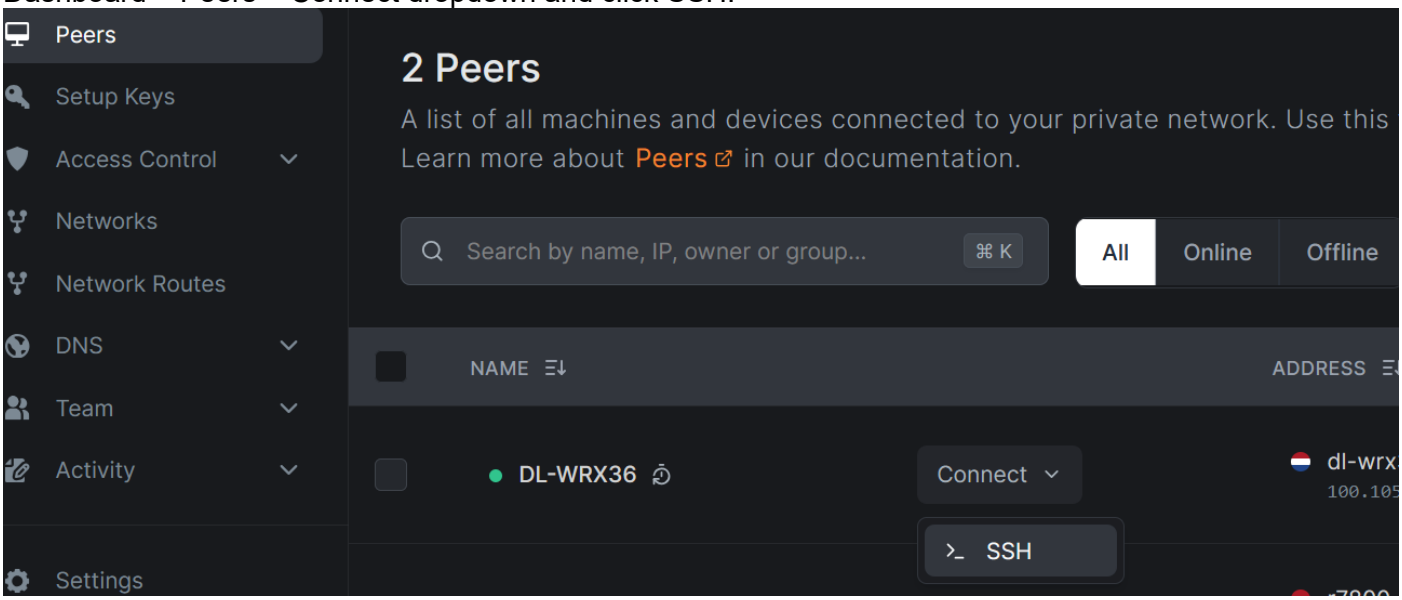
Allow SSH access from Dashboard

In the **Netbird Dashboard** open the peer and *Enable SSH Access:*

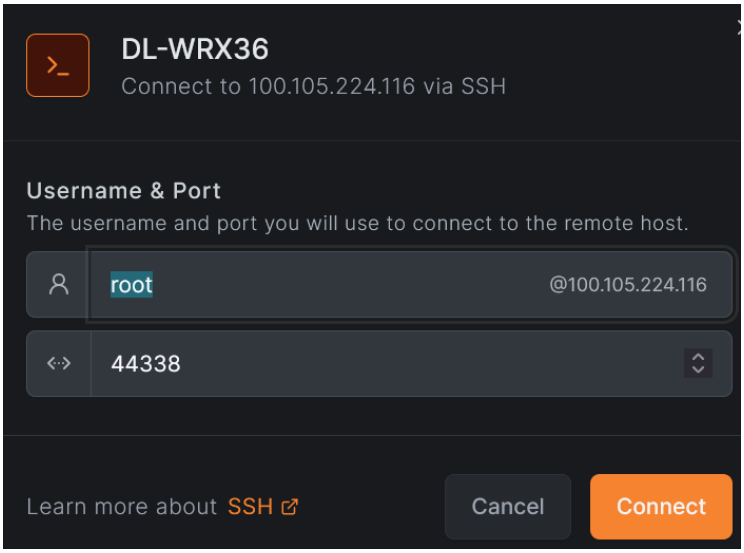


On the router (client)
Make sure SSH is allowed (https://github.com/netbirdio/netbird/issues/2632):
netbird down
netbird up --allow-server-ssh

From your Netbird dashboard you should now be able to SSH into your router:
Dashboard > Peers > Connect dropdown and click SSH:



Connect with the default port 44338 to the in netbird included SSH server:



Netbird install a special routing table with the routes which are advertised to the peers

Create routing rules

See: https://docs.netbird.io/how-to/routing-traffic-to-private-networks

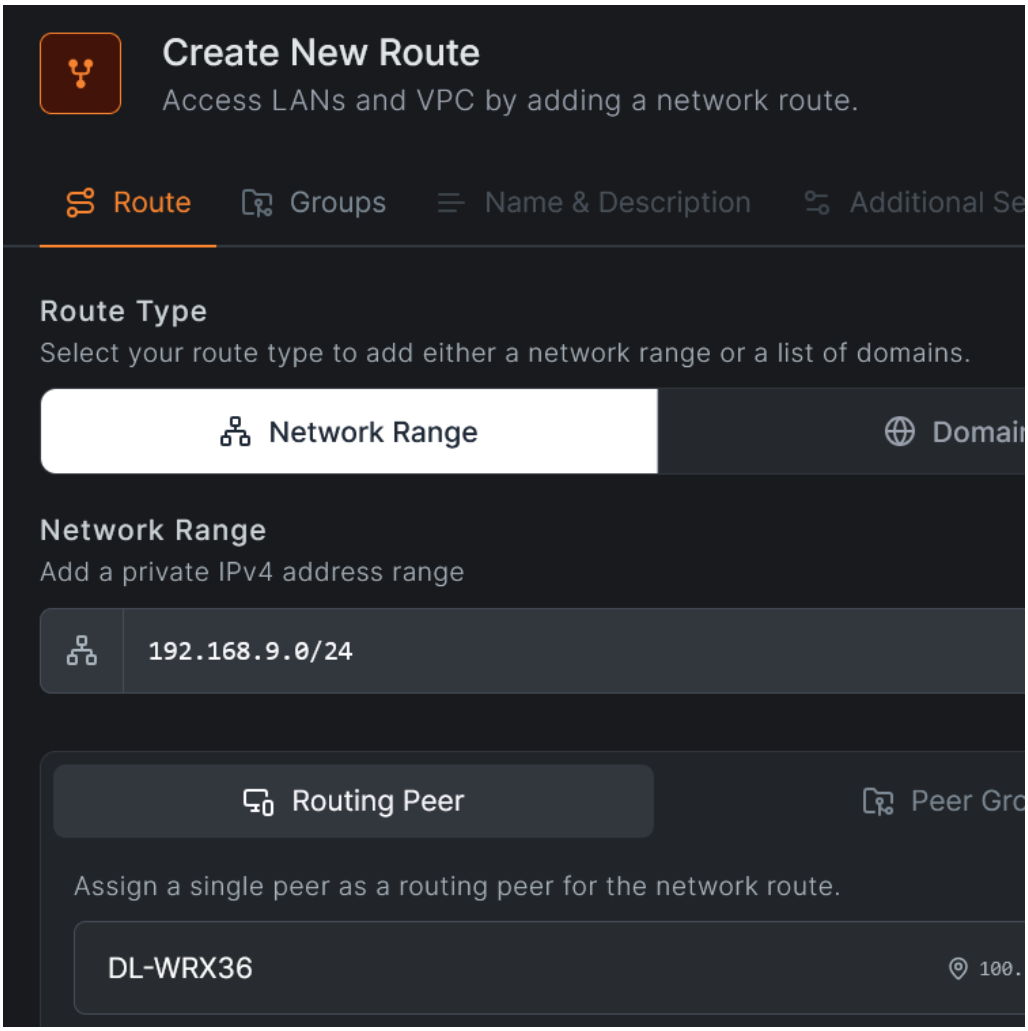
Note for routing between your peers it is imperative that all involved subnets are unique!

My DL-WRX36 has subnet 192.168.9.0/24.
I will create a routing rule to create a route for this 192.168.9.0/24 subnet to my DL-WRX36 and push that route to all peers.
Those pushed routes are pushed to an alternate routing table on all peers, this table is usually called netbird.

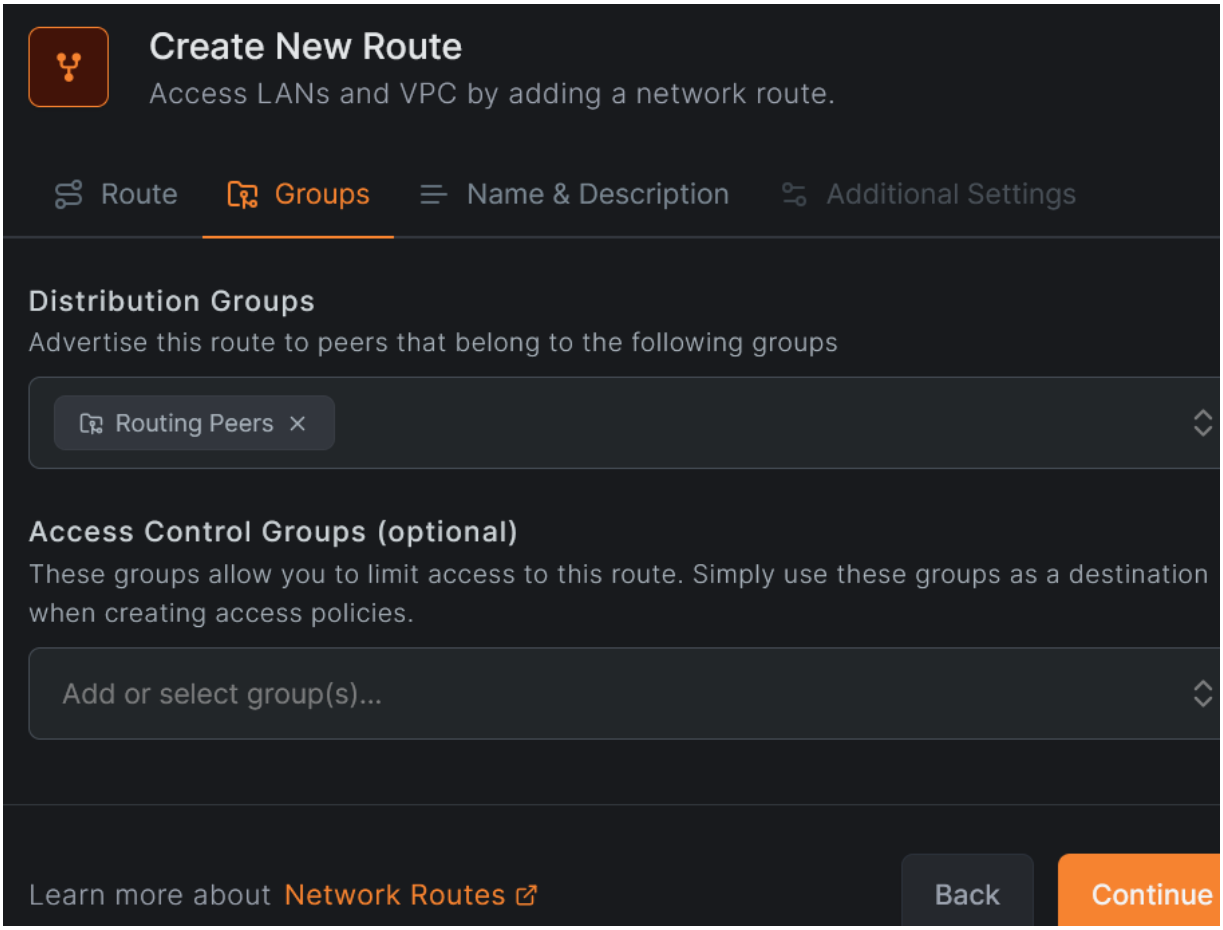
Lets go:

Netbird Dashboard> Network Routes > Add Route

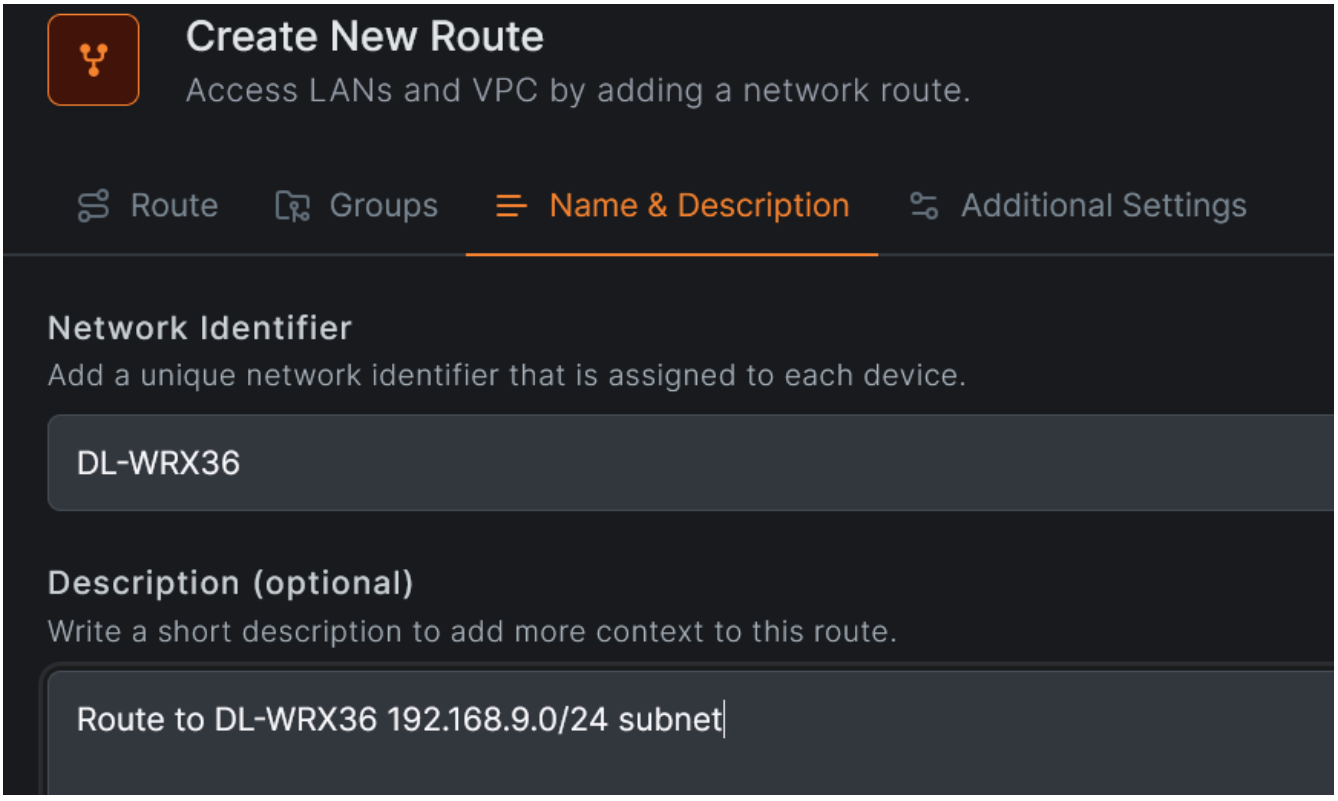
Add the network range to my DL-WRX36:



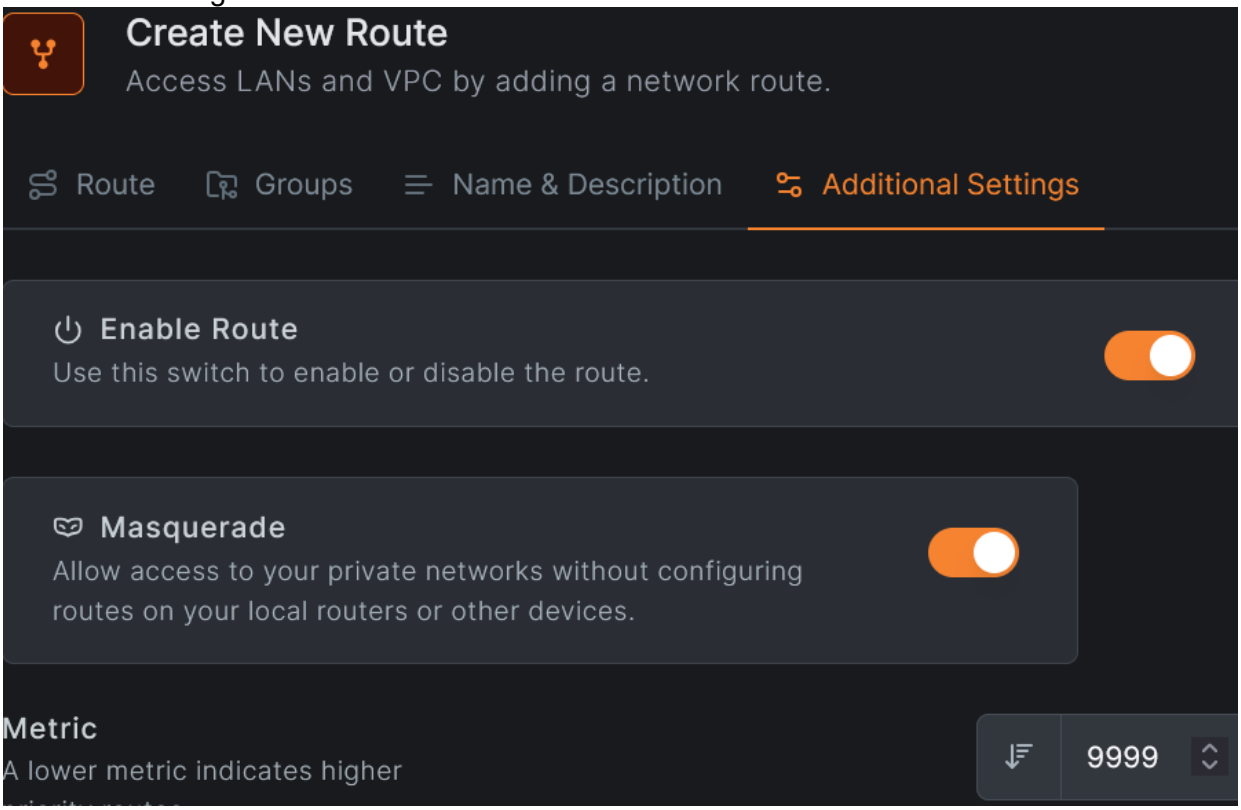
Advertise this route to all my peers:



Name and description:



Additional settings:



You might need to restart netbird on all peers

On my Oracle VPS you can see the rules and the alternate routing table created by netbird:
ubuntu@vps-egc:~$ ip rule show
0:	from all lookup local
105:	from all lookup main suppress_prefixlength 0
110:	not from all fwmark 0x1bd00 lookup netbird
32766:	from all lookup main
32767:	from all lookup default
ubuntu@vps-egc:~$

ubuntu@vps-egc:~$ ip route sho table netbird
192.168.9.0/24 dev wt0
ubuntu@vps-egc:~$

So from my oracle VPS there now is a route to my DL-WRX36 subnet

Install on Oracle VPS with Ubuntu (24.04)

sudo apt-get update
sudo apt install ca-certificates curl gnupg -y
curl -sSL https://pkgs.netbird.io/debian/public.key | sudo gpg --dearmor --output /usr/share/keyrings/netbird-archive-keyring.gpg
echo 'deb [signed-by=/usr/share/keyrings/netbird-archive-keyring.gpg] https://pkgs.netbird.io/debian stable main' | sudo tee /etc/apt/sources.list.d/netbird.list

sudo apt-get update
sudo apt-get install netbird
 # only for the GUI
#sudo apt-get install netbird-ui

netbird up –setup-key <setup-key made on dashboard> --allow-server-ssh

Log on Ubuntu: *cat /var/log/netbird/client.log*

SSH access note that the user name is usually: *ubuntu*

For (SSH) Access add thes firewall rules

sudo iptables -I INPUT 3 -p udp --dport 3478 -j ACCEPT # NetBird TURN
sudo iptables -I INPUT 4 -p tcp --dport 44338 -j ACCEPT # SSH service port from netbird

sudo iptables -I INPUT 5 -p udp --dport 51820 -j ACCEPT # NetBird WireGuard
#sudo iptables -t nat -I POSTROUTING -o ens3 -j MASQUERADE #To Masquerade traffic

Make persistent:
`sudo netfilter-persistent save`

vcn-XXX > Security > Default Security List for vcn-XXX > Security rules:

☐	No	0.0.0.0/0	UDP	All	3478
☐	No	0.0.0.0/0	TCP	All	44338
☐	No	0.0.0.0/0	UDP	All	51820

netbird up will register the OpenWRT router as peer on the netbird dashboard as the router is using the same IP address as you it can register in your own dashboard