

# How to setup an Edgerouter as VPN Client

Last Updated on June 18, 2020 by Rudy Mens

83 Comments

VPN clients are getting really popular in the last couple of years and for a good reason. They protect your privacy and allow you to use the internet without any restrictions (Think of watching Netflix series that are not available in your county yet).

Now the downside of VPN is that you will need a client on your device to connect to the VPN server, something that isn't possible with your smart tv for example. With an Edgerouter though, you can setup the VPN for your whole network.

In this article, I will explain how you can set up the EdgeRouter as a VPN Client for the three largest VPN providers, [NordVPN](#), [Surfshark](#), and [ExpressVPN](#).

To connect to the EdgeRouter over SSH we will use [Putty](#) and upload the configuration files to the router we are going to use [WinSCP](#). But any other SSH and FTP client will also do fine for this article

## NordVPN and Edgerouter

So lets first start with setting up NordVPN on the EdgeRouter. You will need your login credentials from [NordVPN](#), [Putty](#) to connect to your EdgeRouter over SSH and [WinSCP](#) to upload a file to the router.

1. Create a file on your computer and name it **vpnauth.txt**. Open the file and type in your NordVPN username and password. Each on their own line:

**username**

## password

- Next, we need to download the NordVPN server configuration. NordVPN has a great tool to find the best server near your location, which you can find here: <https://nordvpn.com/servers/tools/>.

In the recommended server block (left side) click on **Show all protocols** and download the **OpenVPN UDP config**.

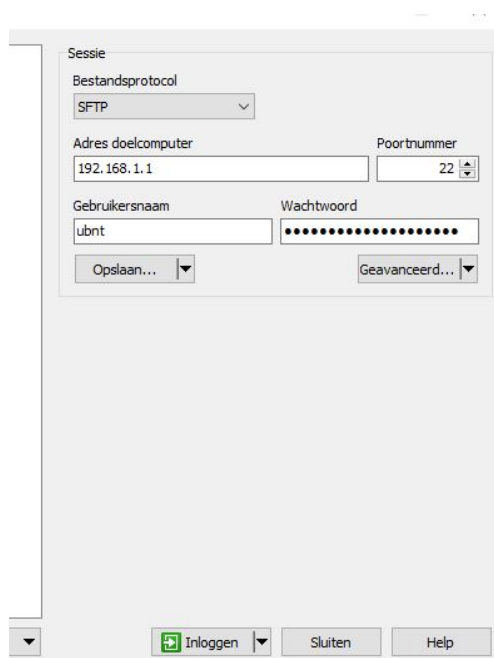
The screenshot shows the NordVPN server recommendation tool. The main heading is "Server recommended by NordVPN" with a subtext "Let our smart algorithm select the best server for you." Below this, there is a section titled "Server recommended for you" which displays the recommended server: "us4313.nordvpn.com" located in the "United States #4313". A yellow highlight is placed over the "Hide available protocols" button. Below the server information, there is a list of protocols with "Download config" links. The "OpenVPN UDP" link is highlighted in yellow. To the right of the server information, there is a section titled "Adjust server preferences" with a dropdown menu set to "Verenigde Staten" and a "Reset" button. Below the dropdown is a link for "Show advanced options".

- Open the configuration file (right-click it, open with notepad), we need to make two changes in the file:

- Change **auth-user-pass** to **auth-user-pass /config/auth/vpnauth.txt**
- Add below the **auth-user-pass** line the following: **route-nopull**

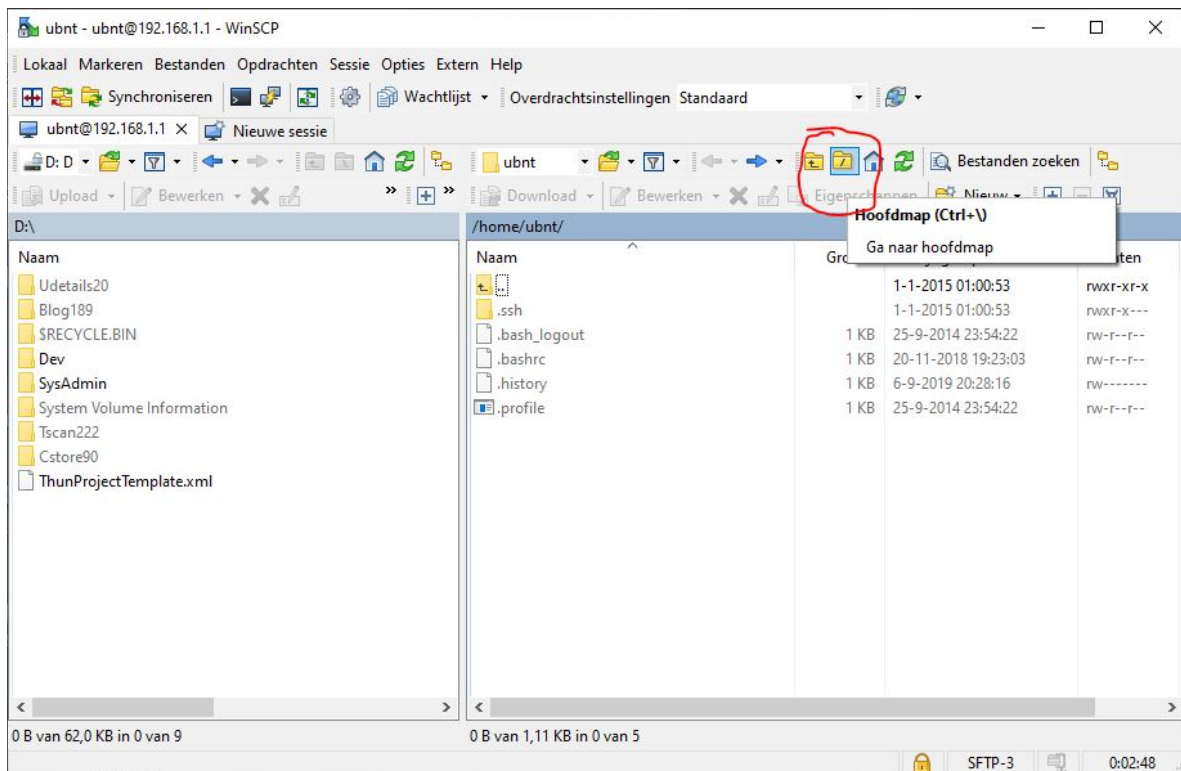
save the file

- Now we need to upload the file to our router. **Open WinSCP** and connect to your router: enter the IP address of the router (If you don't know the Ip Address of your router you can [check this article](#)), and your username and password:

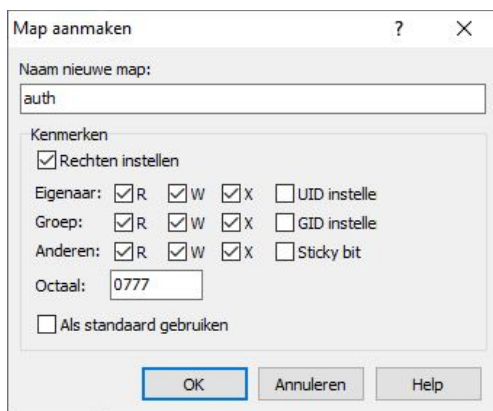


Click on **Login**, you will get a security warning and a warning from the EdgeRouter itself. Click ok for both warnings.

5. On the right side in WinSCP, you will see the file on your EdgeRouter. By default, you will be in the folder `/home/ubnt`. Click on the **root folder icon** to navigate to the root of the EdgeRouter. You will now see a lot more folder, including config.



Open the config folder – and create a new folder with the name auth. Set the permissions to 0777



6. Upload the username password file that we created in step 1 and the configuration file from step 4 to the new folder.
7. Open Putty and connect to your EdgeRouter.

Log in with the username **ubnt** and the **password** of your EdgeRouter.

8. Enter the command below:

1. `configure` #enters configuration mode on your EdgeRouter. You can close it with `exit` Copy
- 2.
3. `# We uploaded the files to /config/auth.`
4. `# REPLACE us4313.nordvpn.com.udp.ovpn with the filename that you download!`
5. `set interfaces openvpn vtun0 config-file /config`  
`/auth/us4313.nordvpn.com.udp.ovpn`
6. `set interfaces openvpn vtun0 description 'OpenVPN VPN tunnel'`
7. `commit`
- 8.
9. `set service nat rule 5000 description 'OpenVPN Clients'`
10. `set service nat rule 5000 log disable`
11. `set service nat rule 5000 outbound-interface vtun0`
12. `set service nat rule 5000 source address 192.168.1.0/24`
13. `set service nat rule 5000 type masquerade`
14. `commit`
- 15.
16. `set protocols static table 1 interface-route 0.0.0.0/0 next-hop-interface vtun0`
17. `set firewall modify SOURCE_ROUTE rule 10 description 'traffic from`  
`192.168.1.0/24 to vtun0'`
18. `set firewall modify SOURCE_ROUTE rule 10 source address 192.168.1.0/24`
19. `set firewall modify SOURCE_ROUTE rule 10 modify table 1`
20. `set interfaces switch switch0 firewall in modify SOURCE_ROUTE`

21. `commit`
- 22.
23. `save`

The configuration is applied after you pressed save. To check if the VPN Client is working on the EdgeRouter you can enter the following command:

1. `run show log`

[Copy](#)

At the end of the log file, you will see Initialization Sequence Completed. This means that your EdgeRouter is successfully connected to the servers from [NordVPN](#).

## ExpressVPN Configuration for the EdgeRouter

The configuration for [ExpressVPN](#) is pretty much the same, only a few steps are different. Just like with NordVPN, we need to get an authentication file and configuration file to get started.

1. Create an account on ExpressVPN.com and go to **My Account** on the menu. Click on **Setup ExpressVPN** and then choose **Manual Config**. Download the configuration file (`my_expressvpn_county_city_udp.ovpn`)
2. Open the configuration file with notepad. Change the following:
  - Change **auth-user-pass** to **auth-user-pass /config/auth/vpnauth.txt**
  - Add below the **auth-user-pass** line the following: **route-nopull**

Save the file

3. Next, create a new file on your computer and name it **vpnauth.txt**. Open the file and type in your **ExpressVPN username and password**, you will find these the **My Account** section where you also downloaded the configuration file.

Make sure that the username and password are each on their own line.

4. We need to upload the files to the EdgeRouter and connect to the router with

SSH. Follow steps 4 to 7 from the NordVPN part above here.

5. After you have uploaded both files to your router we can enter the configuration:

```
1. configure #enters configuration mode on your EdgeRouter. You can close it with
   exit
2.
3. # We uploaded the files to /config/auth.
4. # REPLACE my_expressvpn_county_city_udp.ovpn with the filename that you
   download!
5. set interfaces openvpn vtun0 config-file /config
   /auth/my_expressvpn_county_city_udp.ovpn
6. set interfaces openvpn vtun0 description 'OpenVPN VPN tunnel'
7. commit
8.
9. set service nat rule 5001 description 'OpenVPN Clients'
10. set service nat rule 5001 log disable
11. set service nat rule 5001 outbound-interface vtun0
12. set service nat rule 5001 source address 192.168.1.0/24
13. set service nat rule 5001 type masquerade
14. commit
15.
16. set protocols static table 1 interface-route 0.0.0.0/0 next-hop-interface vtun0
17. set firewall modify SOURCE_ROUTE rule 10 description 'traffic from
   192.168.1.0/24 to vtun0'
18. set firewall modify SOURCE_ROUTE rule 10 source address 192.168.1.0/24
19. set firewall modify SOURCE_ROUTE rule 10 modify table 1
20. set interfaces switch switch0 firewall in modify SOURCE_ROUTE
21. commit
22.
23. save
```

Copy

You should now have successfully connected your EdgeRouter to ExpressVPN, allowing every device in your network to use the services from ExpressVPN.

## Surfshark OpenVPN configuration for EdgeRouter

Also with Surfshark, we can set up an OpenVPN connection from our EdgeRouter. Surfshark is one the cheapest VPN provider supporting unlimited devices, so if you haven't picked a VPN yet, make sure you [check this article!](#)

Just like the other two, we need to get an authentication file and configuration file to get started.

1. Create an account at Surfshark.com and click on **Devices**.
2. Scroll down to **Advanced** and select **Manual**. At the bottom of the page, you will find your service credentials. We will need this later.
3. Pick a location and download the **UDP configuration file**
4. Open the configuration file with notepad. Change the following:
  - Change **auth-user-pass** to **auth-user-pass /config/auth/vpnauth.txt**
  - Add below the auth-user-pass line the following: **route-nopull**Save the file
5. Next, create a new file on your computer and name it **vpnauth.txt**. Open the file and type in the **username and password** from the service credentials (see step 2).
6. Make sure that the username and password are each on their own line.
7. We need to upload the files to the EdgeRouter and connect to the router with SSH. Follow steps 4 to 7 from the NordVPN part above here.
8. After you have uploaded both files to your router we can enter the configuration:

1. `configure #enters configuration mode on your EdgeRouter. You can close with` `exit` Copy
- 2.
3. `# We uploaded the files to /config/auth.`
4. `# REPLACE us-mia.prod.surfshark.comsurfshark_openvpn_udp.ovpn with the filename that you download!`
- 5.
6. `set interfaces openvpn vtun0 config-file /config/auth/us-mia.prod.surfshark.comsurfshark_openvpn_udp.ovpn`
7. `set interfaces openvpn vtun0 description 'OpenVPN VPN tunnel'`
8. `commit`
- 9.
10. `set service nat rule 5001 description 'OpenVPN Clients'`
11. `set service nat rule 5001 log disable`
12. `set service nat rule 5001 outbound-interface vtun0`
13. `set service nat rule 5001 source address 192.168.1.0/24`



```
14. set service nat rule 5001 type masquerade
15. commit
16.
17. set protocols static table 1 interface-route 0.0.0.0/0 next-hop-interface vtun0
18. set firewall modify SOURCE_ROUTE rule 10 description 'traffic from
    192.168.1.0/24 to vtun0'
19. set firewall modify SOURCE_ROUTE rule 10 source address 192.168.1.0/24
20. set firewall modify SOURCE_ROUTE rule 10 modify table 1
21. set interfaces switch switch0 firewall in modify SOURCE_ROUTE
22. commit
23.
24. save
```

You should now have successfully connected your EdgeRouter to Surfshark, allowing every device in your network to use the services from Surfshark.

## Conclusion

The configuration above should work in principle for every VPN provider, you only need an OpenVPN configuration file from your provider to get started. I hope this article helped you with setting up the EdgeRouter as a VPN client.

VPN's are getting really more common these days, whats is your VPN and why did you start using it? Let me know in the comments below!

[EdgeRouter](#)[expressvpn](#)[Home Network](#)[nordvpn](#)[surfshark](#)[vpn](#)

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**83 thoughts on “How to setup an Edgerouter as VPN Client”**

**Joel D**

February 22, 2023 at 22:25 | Reply

Has anyone had any luck in penning a incoming port from a vtun?

I have a open port with my VPN provider (Torguard) on a tunnel.

I can open ports ok on WAN, but same logic doesn't work on vtun

Background I have 2 tunnels, policy based routing (source addr groups) and black hole route in case one tunnel goes down.

Let me know if you want details on any of that.

**Paolo**

January 12, 2023 at 11:59 | Reply

Beautiful guide.

I use SurfShark. Is it possible route only clients connected to a VLAN through the VPN, leaving connected to ISP other clients connected to main network, or other VLANs?

For exemple if I crate a VLAN as:

```
set interfaces ethernet eth1 vif 300 description VLAN300
```

```
set vlans VLAN300 vlan-id 300
```

Regards

## William Clark

September 1, 2022 at 18:33 | Reply

Great post! Even greater is it worked for me the first time (pure luck)! 😊

ExpressVPN, EdgeRouter 12 – my ER12 is configured with eth0-7 as a L2 switch (all my local stuff attached to one of these ports) with eth9 going to my cable modem.

Two comments and I welcome any and all responses:

1) First, as with many others, my performance is so bad I really cannot use this. Download goes from about 270 Mbps to 22 — that is greater than 90% decrease! I really would not have expected this since the ER12 is a relatively “hot” device

2) But, confusing (and maybe enlightening to someone reading this) is that my upload speed is virtually unchanged at 36 Mbps

My ignorance might be getting in the way here but why should I be able to SEND data up with 0 (or minimal) degradation when data coming down is so much slower? Does this in any way reflect on the VPN server (or protocol or other VPN black magic) I am using? Note that when using ExpressVPN on my MacBook Pro (and not the router) connected to the same ExpressVPN server, download speed is only cut about 10% instead of more than 90%. Same VPN server, same local computer running the speed test. Really sounds like something in the ER12 just isn't right.

To summarize, two “questions”: 1) why such bad download performance on the ER12 and, 2) why no degradation issues during upload?

**Scott**

June 3, 2022 at 12:40 | Reply

Hi Rud

Thanks for the instructions for NordVPN.

Can you explain why the set firewall statements are required to isolate the tunnel from the lan? I have an edge router-4 with different subnets on eth1 and eth2. The firewall statements prevent communication on devices between the subnets which is not desirable.

**Emile**

June 2, 2022 at 16:42 | Reply

Thanks for the article. It works like a charm!

Except that my NPM (Nginx Proxy Manager) doesn't work anymore after using the VPN. Do you have any clue what the cause can be? I have DDNS active and the IP address is changed to the one I received from Surfshark.

**Jason H**

September 3, 2021 at 06:50 | Reply

Can someone share what speeds they are getting with a Edgerouter 4? I have an ER-X and based on it's CPU you will only get around 15Mbps especially if the auth is using SHA512 which is what nordvpn is using. aes-256-cbc and sha512. I really would like to know what is the openvpn speed from an ER-4

using nord or any other vpn provider.

## Ryan

August 16, 2021 at 20:58 | Reply

im getting an array of errors on edgeOS (ubiquiti usg), mainly during setup:

```
"[ service nat rule 5000 outbound-interface vtun0 ]
```

NAT configuration warning: interface vtun0 does not exist on this system:

then on the logs:

```
USG openvpn[12203]: TLS: Initial packet from [AF_INET]*.*.*:1194,
```

```
Aug 16 19:53:55 USG openvpn[12203]: TLS Error: TLS key negotiation failed  
to occur within 60 seconds (check your network connectivity)
```

```
Aug 16 19:53:55 USG openvpn[12203]: TLS Error: TLS handshake failed
```

```
Aug 16 19:53:55 USG openvpn[12203]: SIGUSR1[soft,tls-error] received,  
process restarting
```

also cant see how to hardcode a rule that allows -p 1194 udp to be open on the router??

any ideas welcome.

**David Alm**

September 20, 2021 at 10:37 | Reply

USG does not support TLS1.2, therefore you'll have this issue.

**Louis Bedal**

July 14, 2021 at 23:07 | Reply

Aloha Ruud,

I got it to work and use the expressvpn on my edgerouter. how do I turn it off and not use the vpn?

Mahalo,

Louis

**Rudy Mens**

July 15, 2021 at 08:16 | Reply

```
configure
delete interfaces openvpn vtun0
commit
save;exit
```



**jon**

June 21, 2021 at 06:05 | Reply

Question: do you start this process from a "reset" EdgeRouter or from one that has been LAN/WAN configured (wizard)? Thanks.

**Rudy Mens**

June 21, 2021 at 20:10 | Reply

With the LAN and WAN already configured 😊

**raoul**

May 29, 2021 at 16:54 | Reply

Hi Ruud,

thanks for sharing this.

I have one question though.

This is about all the NAT rules etc one needs to setup. Isn't it just much simpler to add a masquerade for tun0 for all traffic (before the masquerade for WAN) and you are done?

Just trying to understand why one needs to setup all these rules.

thanks,

Raoul

## Raoul

June 3, 2021 at 18:40 | Reply

Hi Ruud,  
please disregard my comment on masquerade, figured that one out.

I do however have another problem:  
First I have a EdgeMAX4, so without switch.  
Further I have VLANs and I want to have a ip range on a vla go through the vpn.  
So this is what I have (rest is the same)

```
set protocols static table 1 interface-route 0.0.0.0/0 next-hop-interface vtun0
set firewall modify SOURCE_ROUTE rule 10 description 'traffic from 192.168.11.7x to vtun0'
set firewall modify SOURCE_ROUTE rule 10 source address 192.168.11.70-192.168.11.79
set firewall modify SOURCE_ROUTE rule 10 modify table 1
set interfaces ethernet eth2 vif 11 firewall in modify SOURCE_ROUTE
commit
```

the traffic from these IP addresses does go out over vtun0, but on the webpage of the ER4 the Rx count on vtun0 remains 0, so apparently nothing is coming back.

I do use the same OpenVPN server with multiple computers (MAC, iOS and Windows) without problem. What am I doing wrong?

**Gordon**

April 4, 2021 at 22:24 | Reply

I tried doing this on my EdgeRouter Lite 3 running v2.0.9-hotfix.1 and in response to the "set interfaces openvpn vtun0 config-file /config /auth/us8540.nordvpn.com.udp.ovpn" command I get "Invalid command." Is this not supported on the Lite?

**Will**

April 3, 2021 at 22:52 | Reply

Hi Rudy,

OpenVpn on the edgerouter is crushing my internet speed. Using the ExressVPN app on the laptop I can get 300mbps in both directions from France to UK whereas I am lucky to get 8mbps through the edgerouter. Short of finding a faster endpoint is there another way of improving speed by using lightway protocol for instance or a less secure protocol – I am only using to access TV so full on security is not required. Thanks

**Mark**

April 1, 2021 at 09:29 | Reply

After commit it says configuration failed cannot open vpn

**Bill Dedic**

March 30, 2021 at 03:19 | Reply

I failed to pull a backup of my edgerouter. My throughput dropped from 400 to 16. Are there any instructions on how to back out all the changes that you posted for the Surfshark section?

**Bill Dedic**

March 30, 2021 at 03:49 | Reply

Never mind I was able to back the commands out fully.

**Billy Nomates**

March 21, 2021 at 01:06 | Reply

Why would you setup OpenVPN on an edgerouter when it supports IPsec hardware offloading?

**Will**

March 22, 2021 at 21:18 | Reply

My VPN provider doesn't support IPsec

**William**

March 11, 2021 at 21:44 | Reply

Sorry, I meant Rudy!

**Rudy Mens**

March 12, 2021 at 15:09 | Reply

Ruud is fine 😊

**William**

March 11, 2021 at 21:42 | Reply

Hi Ruud

Awesome guide thank you.

I can now connect to the ExpressVPN service great. However I am getting DNS leaks. Is there any advice you can give to troubleshoot this? Unfortunately ExpressVPN don't provide a dedicated dns server address so I can't just force it via dhcp. How do I force dns queries down the tunnel ?

Thanks in advance

**Rudy Mens**

March 12, 2021 at 15:09 | Reply

You will need to create a static router for the DNS:

```
set protocols static interface-route 1.1.1.1/32 next-hop-interface vtun0
set protocols static interface-route 1.1.0.0/32 next-hop-interface vtun0
```

**James**

March 6, 2021 at 23:14 | Reply

I almost got this working. It says EdgeRouter is successfully connected but

then the ver next log line is:  
write UDP: Operation not permitted (code=1)

there's no traffic passing. I factory reset the router and tried again before posting.

Any ideas? thanks

**Ivan Alonso**

March 3, 2021 at 06:44 | Reply

Hello Ruud

Hope you can help me with this:

I followed you manual with EdgerouterX-Nordvpn and everything was fine, however since I'm load balancing between 2 carriers I'm struggling with stability, some sites respond ok, others not; looks that it will work fine only having 1 single interface with only one carrier.

While load balancing I tried to change AD from DHCP to have only one default route, and have the VPN use that path with no success.

I also tried to create an alternate load balancing group from a specific subnet to take one of the 2 ISPs, and also in the VPN to filter traffic for that specific subnet, I mean, trying to force traffic into a specific interface... no luck as well.

I tried to have one WAN interface active, and the other as failover only, forcing the traffic to use only one interface but network connectivity is intermittent while surfing the web.

Looks like it will work only if I have a single WAN interface active... Do you know a method to force all traffic to a single interface so that the VTUN interface can route all the traffic into that path? Thanks in advance

**William**

March 12, 2021 at 17:53 | Reply

Thanks so much. Do i need to adjust those IPs according to my internal subnet which is 192.168.5.x?

Thanks



**Rudy Mens**

March 12, 2021 at 21:23 | Reply

No the 1.1.1.1 and 1.1.0.0 are the DNS server that you want to use. So you route all the traffic to the DNS server through the VPN.

**Gui**

March 12, 2021 at 22:17 | Reply

Hello, Ruud, William,

Excellent guide, Ruud, and thank you for your effort. I think the DNS Servers here would be 1.1.1.1 and 1.0.0.1. If, however, Cloudflare DNS also runs a server at 1.1.0.0, that is good to know. The first (1.1.1.1) probably responds all the time anyway, so the second (1.1.0.0) isn't being queried at all. Cloudflare DNS might never need a 2nd or backup server (1.0.0.1), but good to have the 2nd DNS server just in case.

Keep up the good work. I'll try to send coffee via Patreon!

**Mike Sciortino**

February 28, 2021 at 23:24 | Reply

Great article – almost exactly what I am looking for. This might be useful to many people: If possible, can you please add how to route just a range of IP addresses through ExpressVPN, instead of everything? The idea being to be

able to "re-geolocate" a SmartTV, Roku, etc. for geolock situations. THANKS!

### **Eduardo**

February 23, 2021 at 02:33 | Reply

Hi, Rudy. Thanks for the tutorial. I was reading a prior comment where a guy was asking how to access local computers while connected to the VPN VLAN. Your answer was that he had to segregate the networks in his ER-4 router. I have a ER-6P could you point the directions to make it work? Thanks in advance!

### **Pete**

February 12, 2021 at 00:00 | Reply

Hello Rudy, Have any of your network tried this with SurfShark? I'm keen not to lose 90% perf by implementing it as some users have experienced.

Do you know if you have any positive feedback after implementation with SurfShark?

BTW I followed you EdgeRouter install and it really improved my buffering/performance.

### **Robertus**

January 27, 2021 at 14:01 | Reply

Hello,

Thank you for this guide. With your tutorial I successfully installed ExpressVPN on my Edgerouter x. I configured for the VPN server in A'dam. So, that is for only one VPN server.

What is the easiest way to be able to connect to other VPN servers, just as in the ExpressVPN app?

Thanks

### **Rudy Mens**

January 28, 2021 at 10:02 | Reply

There isn't really an easy way, you will need a new configuration file. Or at least change your current configuration file with the server details of the other VPN location.

### **Koen**

December 31, 2020 at 00:07 | Reply

Hi Rudy,

Since the article was great but the download speed degradation was bothering me I purchased an EdgeRouter 4 with more CPU power. Most of the configuration listed works, but I'm getting 2 errors / warnings that prevent me from setting up properly, can you help me figure out what to do / change?

First warning happens after the second commit command:

```
ubnt@EdgeRouter-4# commit
[ service nat rule 5000 outbound-interface vtun0 ]
NAT configuration warning: interface vtun0 does not exist on this system
```

The second happens here:

```
ubnt@EdgeRouter-4# set interfaces switch switch0 firewall in modify
SOURCE_ROUTE
interface switch switch0: does not exist
Value validation failed
Set failed
```

Thanks in advance!

### Scott

April 29, 2021 at 08:33 | Reply

on the line "set interfaces switch switch0 firewall in modify SOURCE\_ROUTE", change switch0 to say eth1 or whatever port you are using for your internal network. Remember the ports start with eth0 (which I use for my WAN), and then eth1 & 2 for my internal network.)

Hope this helps!

### Seon

January 11, 2022 at 02:25 | Reply

Oh yeah... ethernet ethX and switch switch0 works. How can I set it to my VLAN.123?

```
#set interfaces vlan switch0.123 firewall in modify SOURCE_ROUT
```

say... The specified configuration node is not valid  
Is this VLAN setup configuration possible? If yes, how? Thanks in advance!

### **Koen van der Ven**

December 10, 2020 at 16:35 | Reply

Hi Rudy,

Thanks again, great article. I managed to get the OpenVPN working instantly using a different VPN provider though. However... the performance drop is too much to cope with, in my experience the download speed dropped by 80%.

Using the same VPN server and their app which uses IKEv2 protocol my download speed only dropped like 10%.

Would it be possible for you to describe how to configure VPN using the IKEv2 protocol on the router (if at all possible)? If so I'd be willing to compensate you as I bet many others would as well 😊

### **mike**

October 30, 2020 at 18:42 | Reply

Hello,

can you give me an example how the format look to and username and password looks?

Step 3 Next, create a new file on your computer and name it vpnauth.txt.

Open the file and type in your ExpressVPN username and Next, create a new file on your computer and name it vpnauth.txt. Open the file and type in your ExpressVPN username and password, you will find these the My Account section where you also downloaded the configuration file.

Make sure that the username and password are each on their own line., you will find these the My Account section where you also downloaded the configuration file.

Make sure that the username and password are each on their own line.

Thank you!

### **Rudy Mens**

November 2, 2020 at 11:22 | Reply

You can also do it the same way as in the ExpressVPN section: "ExpressVPN Configuration for the EdgeRouter". Where I use a vpnauth.txt file for the username and password.

### **Erik**

October 24, 2020 at 01:40 | Reply

I have the same drop on bps when using the edgerouter as VPN client. From 200 to 30 Mbps. that is a lot. If I use the app/software delivered with the vpn provider I go from 200 to 180Mbps using the same VPN IP ofcourse. I notice in the log that when negotiation the cypher encryption the edgerouter want to use the cipher AES-256-CBC and the remote server the

other one GBR i think it was. So i changed the last part CBC to GBR but that was also not working at all.

So I will stick to the software from the VPN provider.

### **Jamie**

October 19, 2020 at 20:29 | Reply

Hi, I was so happy to find this post. However I get an error after the first commit OpenVPN configuration error: Failed to start OpenVPN tunnel. Not sure where to go from here. Any help would be appreciated. I am using ExpressVPN and Edgerouter Lite.

### **Jeroen Harmsen**

October 1, 2020 at 12:50 | Reply

Hi, I've set up a VPN with ProtonVPN which works fine, at multiple servers, but saw a drop in bandwidth to 20 Mbps in two cases (both without VPN 100 Mbps and 50 Mbps: other connection). I used IKEv2, UDP protocol, had max 40% load of server, unlimited bandwidth.

With a VPN client installed on a desktop in the same network, without the vpn on the edgerouter of course, I reached 90Mbps, the bottleneck has to be the Edgerouter. Any thoughts on this?

### **Rudy Mens**

October 1, 2020 at 13:31 | Reply

Yeah, the problem is the CPU of the Edgerouter X. OpenVPN is completely software driven, so the speed of the CPU really determines the speed you can get over OpenVPN. The [ER-4](#) is better suited in this case.

## **Martin**

September 28, 2020 at 04:21 | Reply

Hello Ruud.

Thank you so much for sharing this great how-to guide – I followed it and everything worked right away!

I see the firewall rule is set to be valid for the whole 192.168.1.0 network.

Now I am wondering if it is possible to somehow make the firewall rule valid for only source UDP video protocol ? Or for destination sites like YouTube or Twitch ?

In other words, I want to route outbound UDP video through vtun0 and all other traffic through eth0 (WAN).

Is this possible ?

Thanks in advance!

## **Gary**

September 27, 2020 at 01:27 | Reply



Hi Ruud,

I used your guide to install Expressvpn on my Edgerouter X and it worked fine. Unfortunately, my download speeds dropped from 275 mpbs to 17 mpbs. If i disable the VPN, my download speeds return to 275 mpbs. I am not sure why. Any help would be appreciated.

### **Rudy Mens**

September 27, 2020 at 07:23 | Reply

Have you tried another VPN server?

### **Gary**

September 28, 2020 at 01:08 | Reply

Yes, I have tried 4 different ones with the same result.

### **SHANE523**

August 20, 2020 at 18:26 | Reply

Thanks Ruud, this helped a lot.

Is there a way to access my devices behind my Edgerouter when the tunnel is on?

For example, camera feeds, NAS, or Windows server.

I have a DDNS setup with DYNDNS.

Or am I going to have to utilize separate ports on my ER4 and not use VLANs?

### **Rudy Mens**

August 26, 2020 at 08:36 | Reply

You will need a separate port indeed. If you route all your traffic up the VPN connection, then the only way to enter your network is through to the opposite side of the VPN, but that ain't going work. So indeed, split your network is the best way to go here.

### **itrends**

August 8, 2020 at 12:20 | Reply

Is there a way to route the traffic from 2 specific devices OUTSIDE of the expressVPN and instead go via the usual WAN?

Or better yet, a way to route traffic outside of the VPN based on the destination DOMAIN NAME (Not the IP).

### **itrends**

August 7, 2020 at 21:34 | Reply

Hey – I wanted to say THANK YOU for taking the time to write and share this. I've been fighting to figure out how to setup express vpn on my new edgemax for days.

I'm left with 2 questions now that it is working.

1) How might I TEMPORARILY disabled the VPN when needed? As at present, disney+ will not work if connected to a VPN.

2) How might I use a dynamic IP service or similar to somehow get my PLEX server available to the outside world again?

I TOTALLY understand if you don't have an answer or indeed the time to reply. I feel cheeky enough even asking.

Whatever the case, thank you so very much again for sharing your knowledge and time with the rest of us as we all try to get better.

### **Rudy Mens**

August 17, 2020 at 10:18 | Reply

You can disable the VPN with `set interface openVPN vtun0 disable` . For your Plex server, you can look into dynamic DNS, this might be a solution for you

### **Koen**

December 3, 2020 at 16:03 | Reply

Great article Rudy, thanks! I'm going to try this tonight but I was curious as to how to restore the configuration changes made.. in case I mess up.

The disable comment above helps a bit, but any thoughts on how to rollback all configuration changes made during the setup? Or; what should I backup and restore?

**Rudy Mens**

December 4, 2020 at 20:41 | Reply

Hi Koen,

For a full rollback for the settings, I would indeed recommend to make a backup and restore it. That is probably the easiest way, besides disabling the VPN connecting.

**Joop Vis**

July 22, 2020 at 13:36 | Reply

hi Ruud, thanks for your article. I refer to "How to setup an Edgerouter as VPN Client". I have a MikroTik Desktop Gigabit Router-RB2011iL-IN and Nord VPN, as mentioned in the first part of your article. My router is different from the Edgerouter in the above article.

Question: how would the configuration be different for my router?

Thank you very much,  
Joop Vis – South Africa

**Rudy Mens**

July 25, 2020 at 08:11 | Reply

Hi Joop,

Sorry, I don't have any experience with MikroTik routers.

## **Arie**

June 22, 2020 at 19:12 | Reply

I have spent all afternoon to get this working. Edgerouter accepts all commands, but DL speed falls down from 205Mb/s to 5.5. Tried 4 different servers from UK and from NL, all same results... Only way to get it right again is a hard factory reset of the ERX.

There are ways to delete VPN setting in Putty (Or ERX's CLI), but the response is always: "Nothing to delete (the specified node does not exist)"

## **Arie**

June 22, 2020 at 14:34 | Reply

Hello Ruud,

At the advice of NordVPN techies I switched to the NordLynx protocol, which is indeed much faster. Will the above also work for this protocol?

Also, if you have time, could you write how to program Edgerouter X so one can safely access the LAN from the outside world?

Many thanks Ruud!

**Rudy Mens**

June 25, 2020 at 12:05 | Reply

It should be possible, let me look into it.

**Danny**

May 22, 2020 at 00:07 | Reply

Any way to do it without Open VPN (Just a l2TP or PPTP client – Server, User, Pass)?

**Rudy Mens**

May 25, 2020 at 07:21 | Reply

Sure, check out this article: <https://help.ui.com/hc/en-us/articles/204950294-EdgeRouter-L2TP-IPsec-VPN-Server>

**Danny**

June 3, 2020 at 22:06 | Reply

That does not show how to make the router a client

**Rudy Mens**

June 4, 2020 at 20:09 | Reply

Sorry about that. I haven't configured an EdgeRouter myself as an OpenVPN client. But maybe this [topic will](#) point you in the right direction.

**Gui**

May 4, 2020 at 20:56 | Reply

Thank you, Rudy, for the excellent article.

**Alex**

April 23, 2020 at 21:37 | Reply

Question, How do I disable de VPN setup? on Edge Router?

**Rudy Mens**

April 27, 2020 at 10:18 | Reply

Try: configure

delete vpn 12tp

```
commit
```

## Alberto

March 28, 2020 at 23:16 | Reply

Hi, thanks for the guide, in my EdgeRouter 10x I had to include this line for it to work:

```
set firewall modify SOURCE_ROUTE rule 10 action modify
```

## WNS

March 14, 2020 at 18:13 | Reply

Hi I followed your guide step by step, my issue is i want to restrict vtun0 to my vlan user for tath i have switch0.2 with address 192.168.3.0/24, i have done the same steps that u mentioned but in source address i putted my vlan address. when i enable openvpn i dont get internet on my primary lan also. can u help me in setting up. Thanks in advance

my Wan is pppoe

My Lan eth1 is 192.168.1.0/24

My Lan eth2 is 192.168.2.0/24

Then i have Vlan on Switch 0 vif 2 : 192.168.3.0/24

I want all vlan 2 traffic to pass through Open Vpn tunnel and all other



through PPPoE .

### **Seon**

January 11, 2022 at 02:34 | Reply

That's also my case. Maybe work: "set interfaces switch switch0 vif 2 firewall in modify SOURCE\_ROUTE"

### **Arie**

January 7, 2020 at 21:45 | Reply

Hi Ruud,

I followed the instruction to install NordVPN on my Edgerouter X. All went well, NordVPN server NL473 was advised so I used these settings. After running the script, I checked and it turned out the server was in Rumania, and my DL speed went down from 310 Mbps to 15.9.... auch... Luckily I had a backup file to undo the script, but I am still wondering why this happened, and if there is a way to be sure that the server is indeed the one that one seeks?

Thanks for all your great articles!

### **Arie**

January 7, 2020 at 18:04 | Reply

Hi Ruud,

I followed the instruction to install NordVPN on my Edgerouter X. All went well, NordVPN server NL473 was advised so I used these settings. After running the script, I checked and it turned out the server was in Rumania, and my DL speed went down from 310 Mbps to 15.9.... auch... Luckily I had a backup file to undo the script, but I am still wondering why this happened, and if there is a way to be sure that the server is indeed the one that one seeks?

Thanks for all your great articles.

### **Rudy Mens**

January 7, 2020 at 20:25 | Reply

Hi Arie,

That the download speed drops is normal, but that shouldn't be more than 30%. You can also pick a server your self, try one in the UK to see if you get a better result.

### **Michael Smith**

December 18, 2019 at 07:04 | Reply

```
set interfaces switch switch0 firewall in modify SOURCE_ROUTE
```

give me an error

Value validation failed

Set failed

[edit]

```
ubnt@ubnt# set interfaces switch switch0 firewall in modify SOURCE_ROUTE
interface switch switch0: does not exist
```

## Gui

May 4, 2020 at 20:51 | Reply

Change switch to ethernet, and switch0 to ethX (eth0 or eth1 or eth2, or whatever physical ethernet port goes to your LAN for the VPN).

Switch is a virtual group of ethernet connections (I think). If you are not using switches, or if you want to use the VPN on all connections to a physical ethernet port:

switch (virtual) = ethernet (physical port)

switch1 (name of switch) = eth1 (name of physical port on router)

The names can vary; eth0, eth1, eth2 can all be included in one virtual switch. But that gets complicated so I just use the physical ethernet port.

## Lars

October 25, 2019 at 15:17 | Reply

@J For setting up USG VPN server / client use google.

Create new network like VPN Server L2TP Remote User VPN (L2TP)

10.1.88.0/24

Create Radius profile with VPN user

or check : <https://help.ubnt.com/hc/en-us/articles/115005445768-UniFi-L2TP-Remote-Access-VPN-with-USG-as-RADIUS-Server>

## Raphael

October 24, 2019 at 02:25 | Reply

Hi,

I was wondering if you have step to step guide on how to configure step by step Cisco Sg350-10p for a home network. several home computers including laptops, home lighting – Philip Hue, Sonos, printers, smart Tvs, streaming boxes, game console. Currently have modem router combo from Verizon cable company, etc. Thank you in advance.

## Rudy Mens

October 24, 2019 at 09:08 | Reply

Hi Raphael,

I know that NordVPN isn't supporting Cisco routers anymore. If you can get it working with ExpressVPN I really don't know.

**Lars**

October 16, 2019 at 14:20 | Reply

Nice How to!, could you do another one : How to set up Site to Site VPN for an Unifi USG for example ?

Regards Lars

**Rudy Mens**

October 17, 2019 at 08:56 | Reply

Good idea, I will put it up the list.

**J**

October 13, 2019 at 00:10 | Reply

Would it be possible to setup an UniFi USG as VPN Client?

**Rudy Mens**

October 14, 2019 at 08:52 | Reply

It should be possible, but I can't test it right now. I think the main part is pretty much the same, but it seems you will need to add this masquerade:

```
set service nat rule 5004 description "masq to vpn vtun0"
```

```
set service nat rule 5004 destination address 0.0.0.0/0
set service nat rule 5004 outbound-interface vtun0
set service nat rule 5004 type masquerade
```

## Leave a Comment

Notify me of followup comments via e-mail. You can also subscribe without commenting.





Hey! I'm Ruud. I work as a SysAdmin in the Netherlands and I love to write about IT, Office 365, Smart Home stuff, and PowerShell.



Follow me on Twitter or LinkedIn

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