

Linux PQ OpenVPN Client Instructions

In Linux, there is no installer for OpenVPN Client. Also it must be built and packaged specifically for each Linux distribution. Currently the build runs only on Ubuntu 18.04.6 LTS (Bionic Beaver), so that distribution is recommended for these instructions.

First, install openvpn (non-PQ) the traditional way:

```
sudo apt install openvpn
```

The build creates the following files:

```
└─ usr
   └─ local
      └─ openvpn
         └─ lib
            ├── libcrypto.so.1.1
            ├── libssl.so.1.1
            └─ openvpn
               └─ plugins
                  ├── openvpn-plugin-auth-pam.la
                  ├── openvpn-plugin-auth-pam.so
                  ├── openvpn-plugin-down-root.la
                  └── openvpn-plugin-down-root.so
         └─ sbin
            └─ openvpn
```

The plugins are not used so there are really only three files that matter. Copy these where they belong, but preserve the original files in case something goes wrong:

```
sudo cp /usr/sbin/openvpn /root/openvpn.orig
sudo cp /usr/lib/x86_64-linux-gnu/libssl.so.1.1 /root/libssl.so.1.1.orig
sudo cp /usr/lib/x86_64-linux-gnu/libcrypto.so.1.1 /root/libcrypto.so.1.1.orig
sudo cp openvpn /usr/sbin/openvpn
sudo cp libssl.so.1.1 /usr/lib/x86_64-linux-gnu/libssl.so.1.1
sudo cp libcrypto.so.1.1 /usr/lib/x86_64-linux-gnu/libcrypto.so.1.1
```

Then run openvpn to ensure it was successful:

```
openvpn --version
```

If the version info includes “Open Quantum Safe” you know it was done correctly.

OpenVPN on Linux is best started with a script, such as this:

```
sudo openvpn --config ~/vpns/pqvpn01/pqvpn01.ovpn
```

The ovpn file for this is much like that for Windows except there will be a full path to most files. Also a parameter “askpass” is used to remember the password.

```
client
dev tun2
proto tcp
route 10.96.0.0 255.255.0.0
```

```
remote pqvpn01-vpn.nova-ten.com 443
resolv-retry infinite
nobind
persist-key
persist-tun
ca /home/username/vpns/pqvpn01/ca.crt
cert /home/username/vpns/pqvpn01/username.crt
key /home/username/vpns/pqvpn01/username.key
remote-cert-tls server
tls-auth /home/username/vpns/pqvpn01/ta.key 1
cipher AES-256-CBC
ecdh-curve frodo640aes
tls-version-min 1.3
verb 3
askpass /home/username/vpns/pqvpn01/password.txt
```

Windows PQ OpenVPN Client Instructions

Installing OpenVPN (with post-quantum) client in Windows 10

- 1) Get the installer: openvpn-install-2.4.9-I601-Win10.exe
- 2) Run it on Windows 10
- 3) Accept all defaults
- 4) Run it to test – Start | OpenVPN GUI (it cannot connect, no config!)
- 5) The configuration is in your Home folder (C:\Users\%USERNAME%\OpenVPN)
 - config folder
 - pqvpn01 – contains the config for this VPN link
 - othervpn – config for other VPN links
 - log folder
- 6) OpenVPN Administrator will provide you with a set of files:
 - ca.crt – Certificate of VPN Server
 - username.crt – Certificate of your user
 - username.key – Private key of your user
 - pqvpn01.ovpn – VPN link configuration for “pqvpn01” VPN
 - ta.key
- 7) Put the five files into C:\Users\%USERNAME%\OpenVPN\config\pqvpn01\
- 8) Install the ca.crt certificate in your local machine in the store “Trusted Root Certification Authorities”. Do this by right-clicking on ca.crt and choose “Install Certificate”.
- 9) Run it again – Start | OpenVPN GUI
- 10) There will be a tray icon that is useful (right click)
 - connect
 - see status (yellow = starting, green = connected)
 - view log
 - edit config

- 11) Right click the tray icon and choose “connect”.
- 12) The tray icon is yellow, then green, you are connected.
- 13) If not, right click the tray icon and choose “view log”