
VPNs
(Virtual Private Networks)
by Don Arrowsmith
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apcug
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VPNs (Virtual Private Networks)

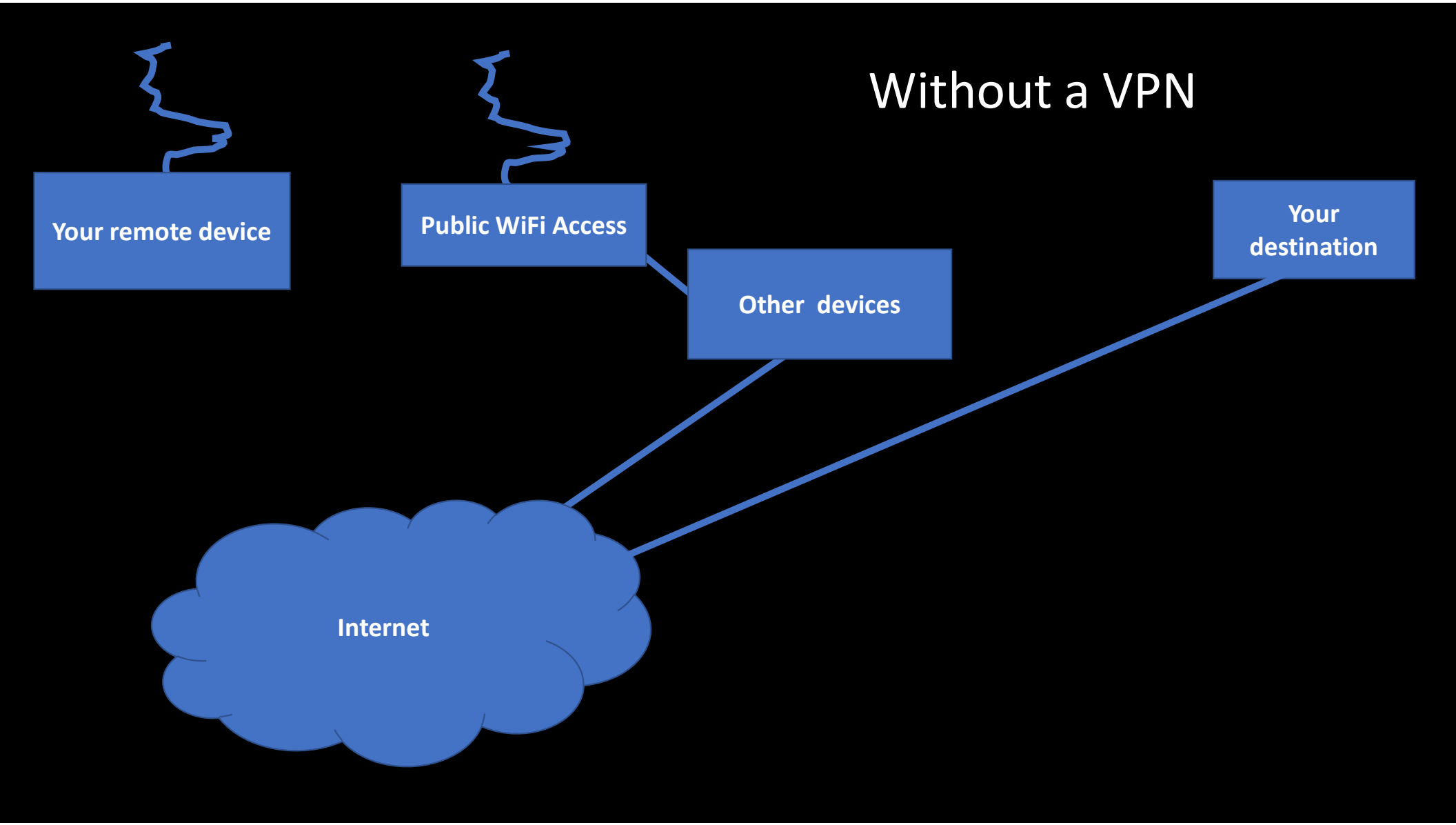
- What is a VPN?
- Why would you want one?
- How do you get one?
- How do you use one?
- Run your own for free if you have the right router, a network file server, or even a Raspberry Pi.
- How to setup a VPN on an ASUS RT-AC86U (or another router)

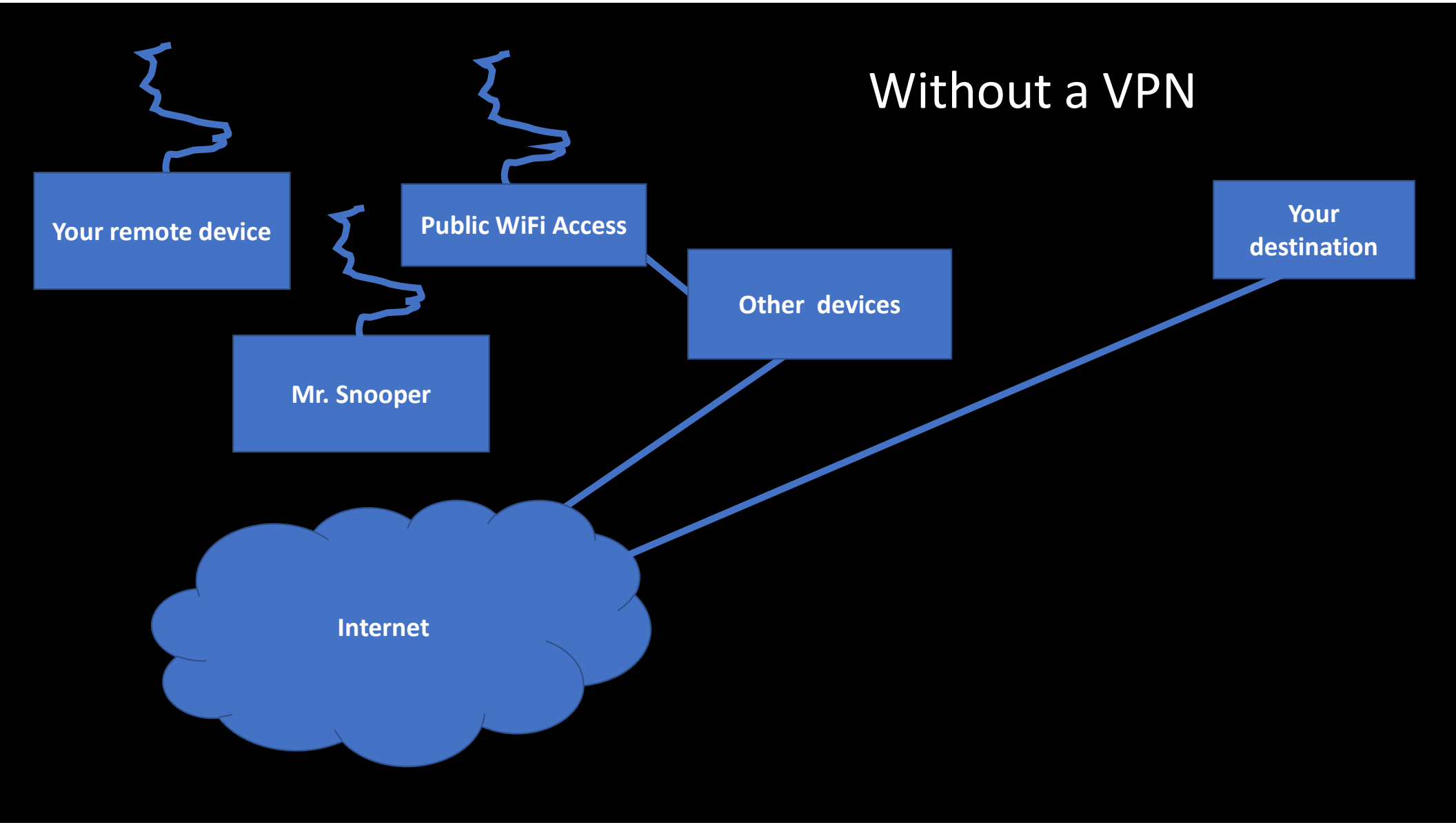
What is a VPN?

- A method to encrypt all of your device's Internet traffic - not just your browser data via HTTPS. Once you're connected to any Wi-Fi, the VPN s/w makes a 'tunnel' through which every piece of network traffic is sent.
- That traffic comes out the other end of the tunnel at your VPN server and is then decrypted and routed on to the final Internet destination.
- Considerations:
  1) There is a slowdown in your Internet traffic.
  2) You're relying on the trustworthiness and security of your VPN service to protect your privacy and provide security.

Why would you want a VPN?

- For security reasons especially while on a public Wi-Fi network at hotels, coffee shops, libraries, restaurants, convention centers, retail stores, medical offices, ...
- Hide your destinations from the ISP to prevent targeted ads, preserve your privacy, etc.
- Bypass firewalls and/or blocked domains on the public Wi-Fi
- Make it appear that you are in a different geographic location. E.g., Some streaming services might have country restrictions on what you get to see.
- If you use your own VPN server: A way to connect into your home network even while away to access files, print a document, send a fax, benefit from your ad-blocker, access your smart devices, etc.


Without a VPN
Your remote device
Public WiFi Access
Other devices
Your destination
Internet


Without a VPN
Your remote device
Public WiFi Access
Mr. Snooper
Other devices
Your destination
Internet

Wi-Fi Sniffers

11 Best Wi-Fi Sniffers – Wireless Packet Sniffers In 2021

1. SolarWinds Network Performance Monitor
2. Paessler Packet Capture
3. Acrylic Wi-Fi
4. TCPdump
5. Wireshark
6. ManageEngine NetFlow Analyzer
7. Fiddler
8. EtherApe
9. Kismet
10. Capsa
11. Ettercap

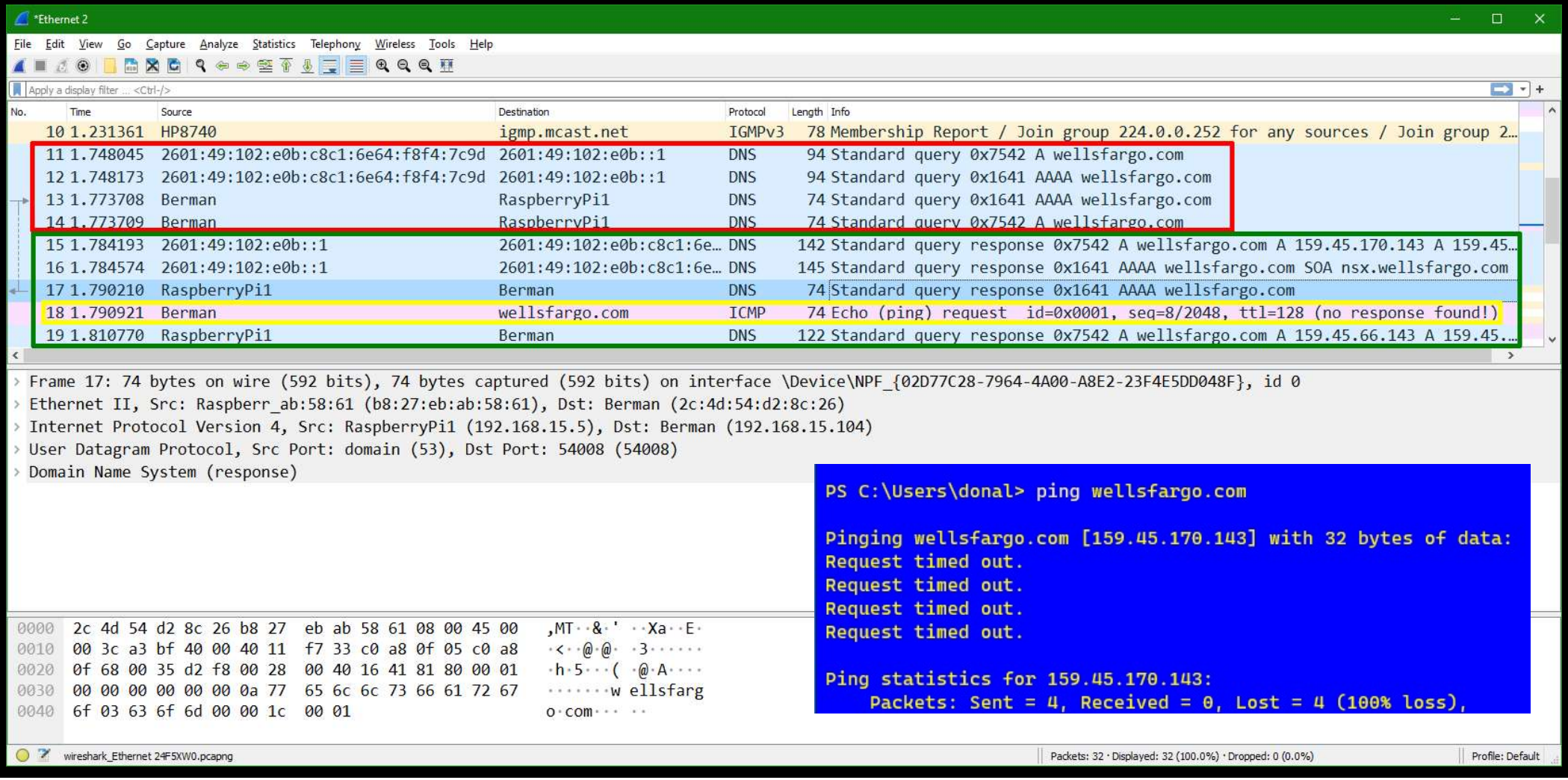
Top 25 Prominent Wireless Hacking Tools (Updated for 2021)

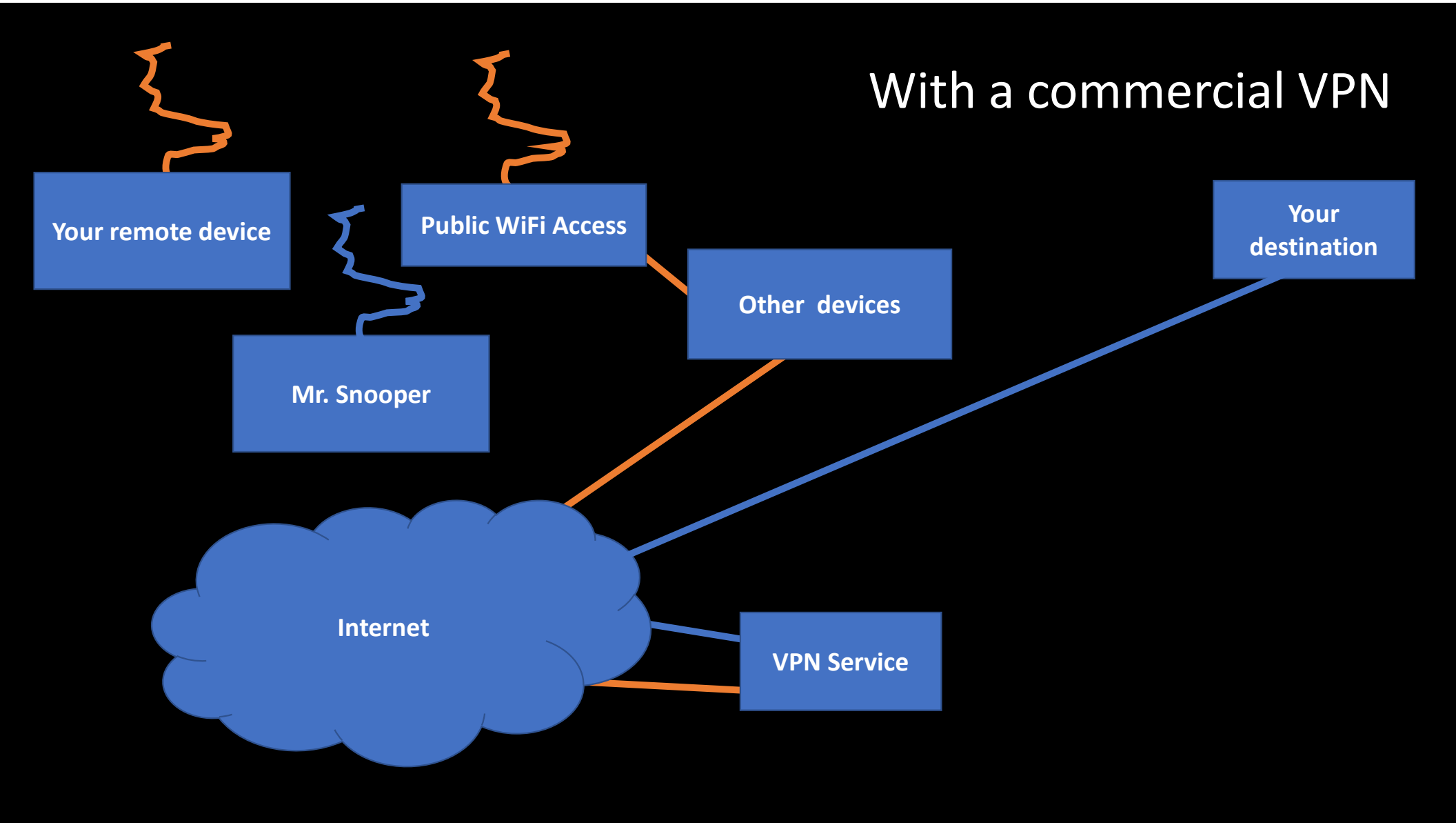
1. Aircrack-ng
2. AirSnort
3. Kismet
4. Cain and Abel
5. CoWPAtty
6. OmniPeek
7. Airjack
8. InSSIDer
9. WepAttack
10. Reaver
11. Fern Wifi Cracker
12. NetStumbler
13. Wireshark
14. Cloudcracker
15. CommView for WiFi
16. Wifiphisher
17. KisMac
18. Wifite
19. WepDecrypt
20. Pyrit
21. Network Mapper (NMAP)
22. IKECrack
23. KARMA
24. Yersinia
25. Airgeddon

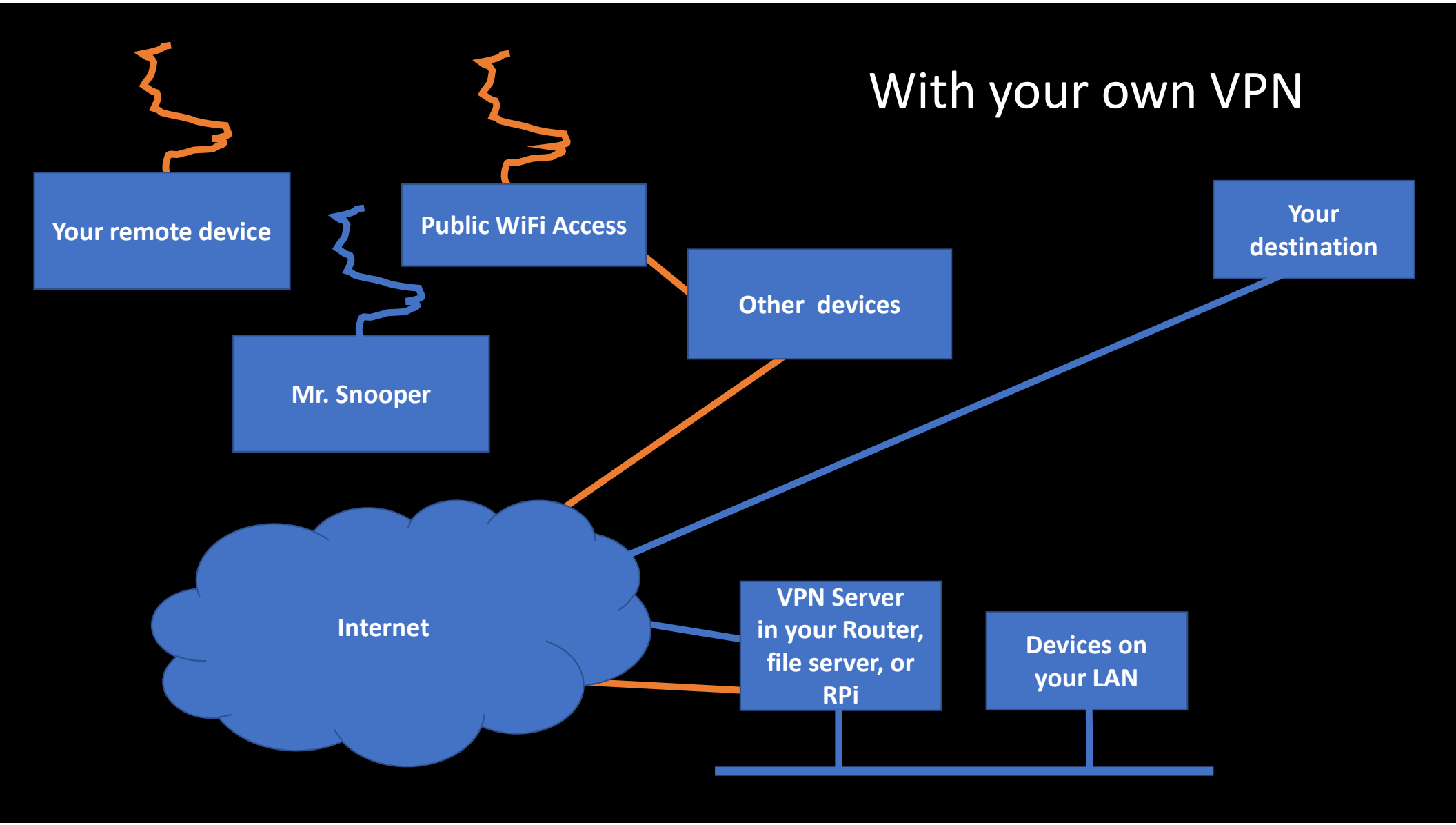
Other Threats While on Wi-Fi

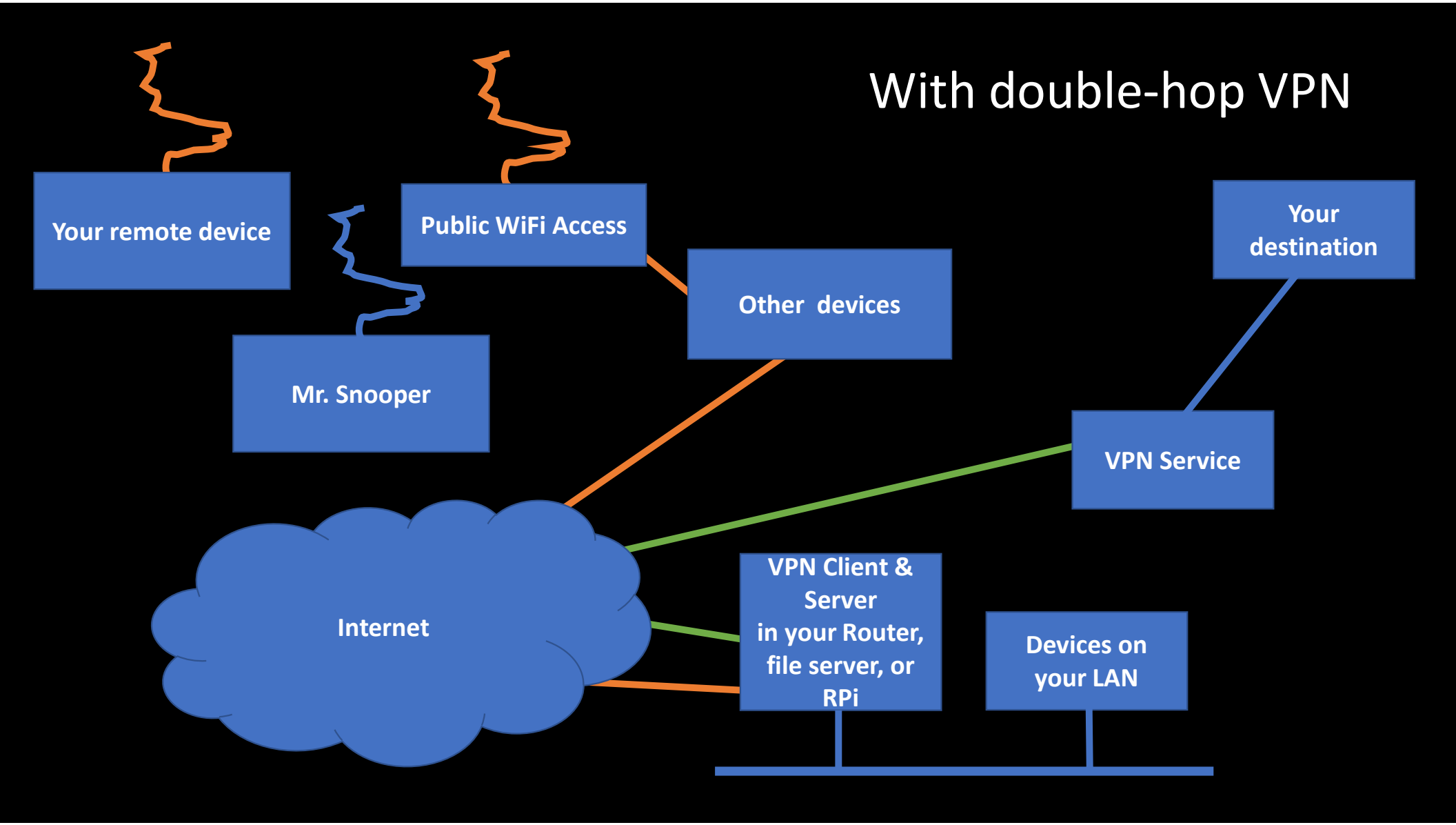
- Man-in-the-middle attacks: The attacker sets up a Wi-Fi network that monitors your traffic and then passes it on.
- Fake web sites: The attacker sets up a web site that copies the look of a real site to entice you to try to login. He will then capture your username and password.
- Data replacement: Substitute data returned from real web site with false data
- Many, many other ways

Wireshark Capture




With a commercial VPN
Your remote device
Public WiFi Access
Mr. Snooper
Other devices
Your destination
Internet
VPN Service


With your own VPN
Your remote device
Public WiFi Access
Mr. Snooper
Other devices
Your destination
Internet
VPN Server in your Router, file server, or RPi
Devices on your LAN

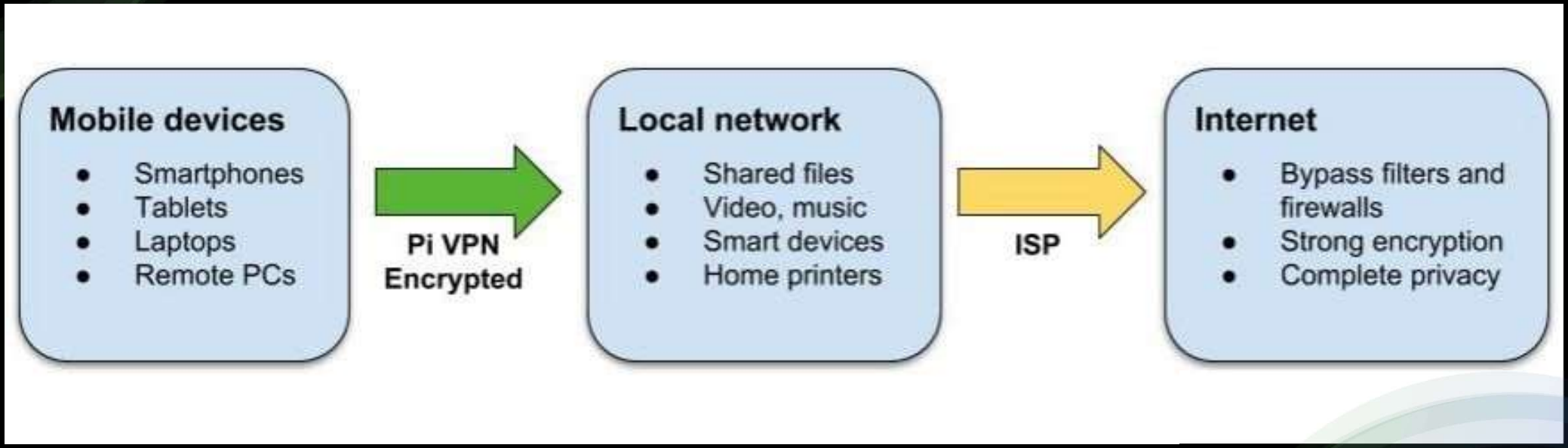

With double-hop VPN
Your remote device
Public WiFi Access
Mr. Snooper
Other devices
Your destination
VPN Service
Internet
VPN Client & Server in your Router, file server, or RPi
Devices on your LAN

VPNs relocate you!

At a cafe

At your home

Anywhere



How do you get a VPN?

- Numerous commercial services are available for a fee or free.
- Note that a free service probably has limited performance and/or limited allowable traffic.
- If you're looking for trust and privacy, you'd be dependent on whatever service you subscribe to. A free service might not be the most trustworthy. Check references.
- If you pay for a security suite, it may include a VPN service – often with performance limits – with upgraded plans available.
- Or, stay tuned to see how to run your own VPN server for free. This is the only way to give you access to your home LAN.

Commercial VPN Services

From **How to Choose the Best VPN Service for Your Needs**

- **ExpressVPN** – This VPN server has the best combination of ease-of-use, really fast servers, and supports streaming media and torrenting, all for a cheap price. [$9.99/mo]

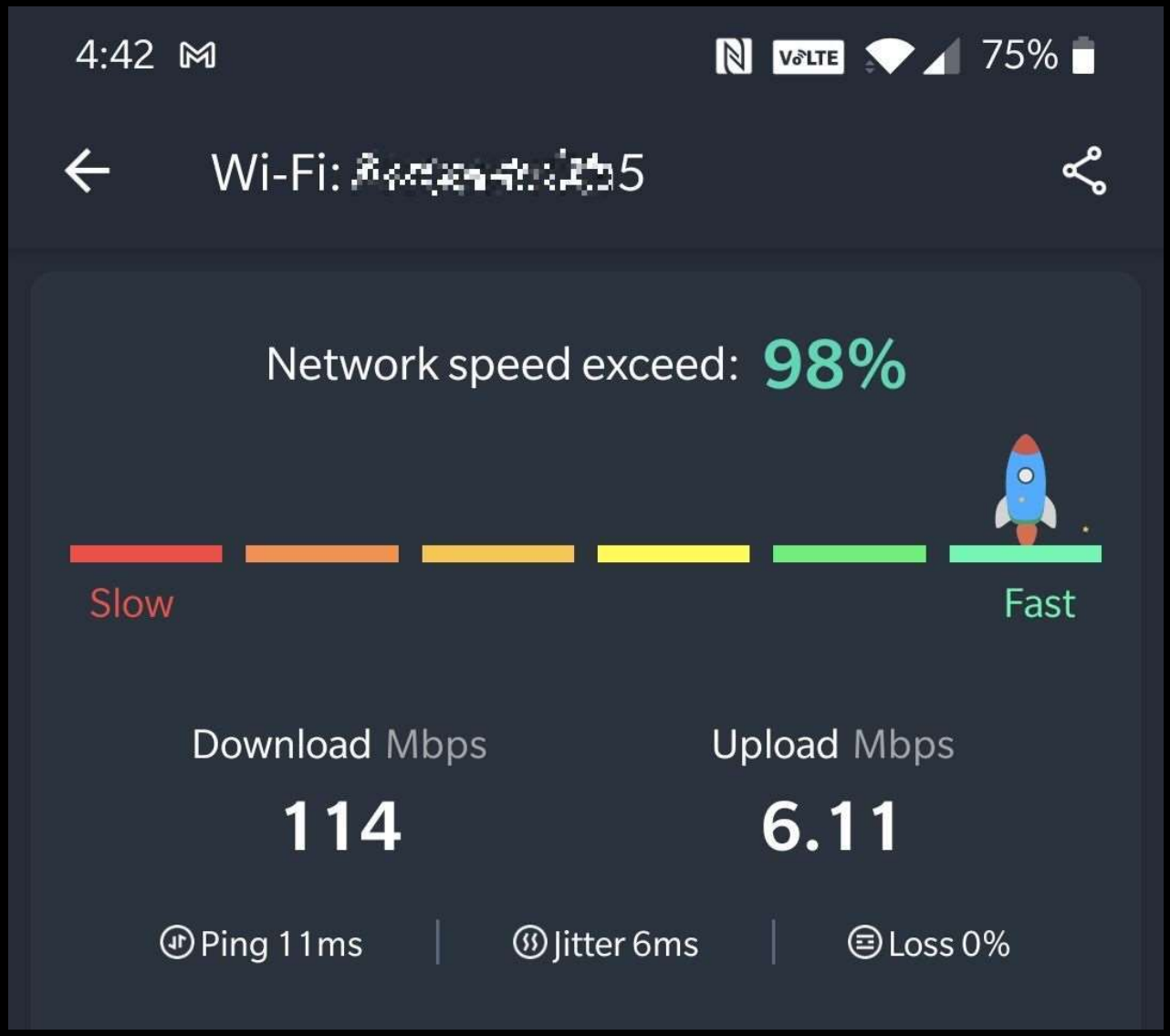
- **Tunnelbear** – This VPN is really easy to use, is great for using at the coffee shop, and has a (limited) free tier. It's not good for torrenting or streaming media though. [$4.99/mo]

- **StrongVPN** – not quite as easy to use as the others, but you can definitely use them for torrenting and streaming media. [$5.83/mo]

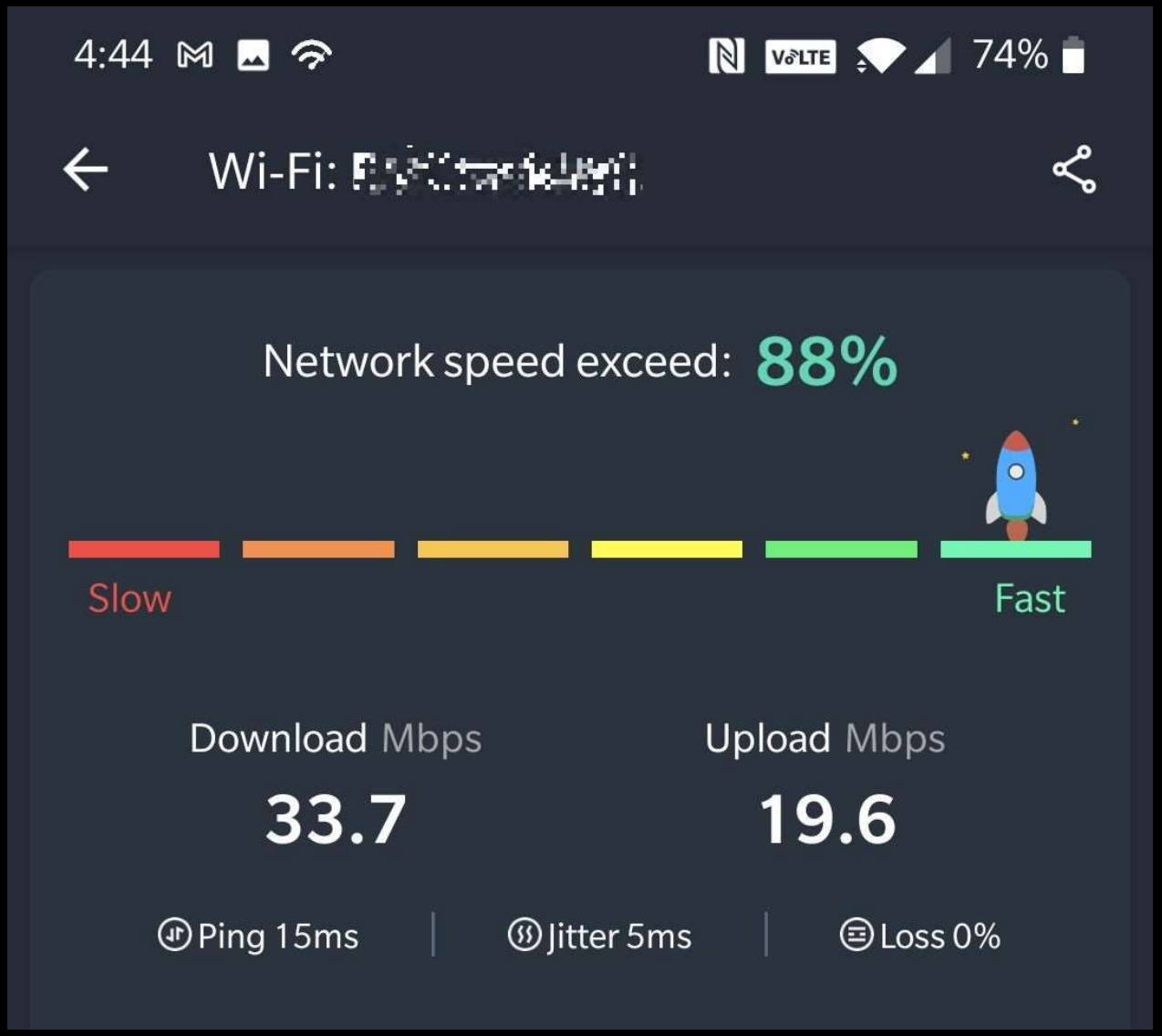
How much does a VPN slow my Internet speed?

PC PCMAG.COM	Download Speed Percent Change	Upload Speed Percent Change	Latency Percent Change
Top Scores in *Red*	(Lower Is Better)	(Lower Is Better)	(Lower Is Better)
Hotspot Shield VPN	*26.7%*	40.4%	*26.2%*
Surfshark VPN	28.3%	*4.5%*	35.3%
HMA VPN	42.2%	58.9%	35.4%
TigerVPN	49.8%	54.3%	55.8%
Mullvad VPN	59.5%	20.0%	41.5%
NordVPN	63.0%	57.3%	67.5%
Encrypt.me VPN	63.4%	59.9%	53.6%
IPVanish VPN	66.2%	52.5%	62.4%
Median Results	68.5%	63.6%	69.6%

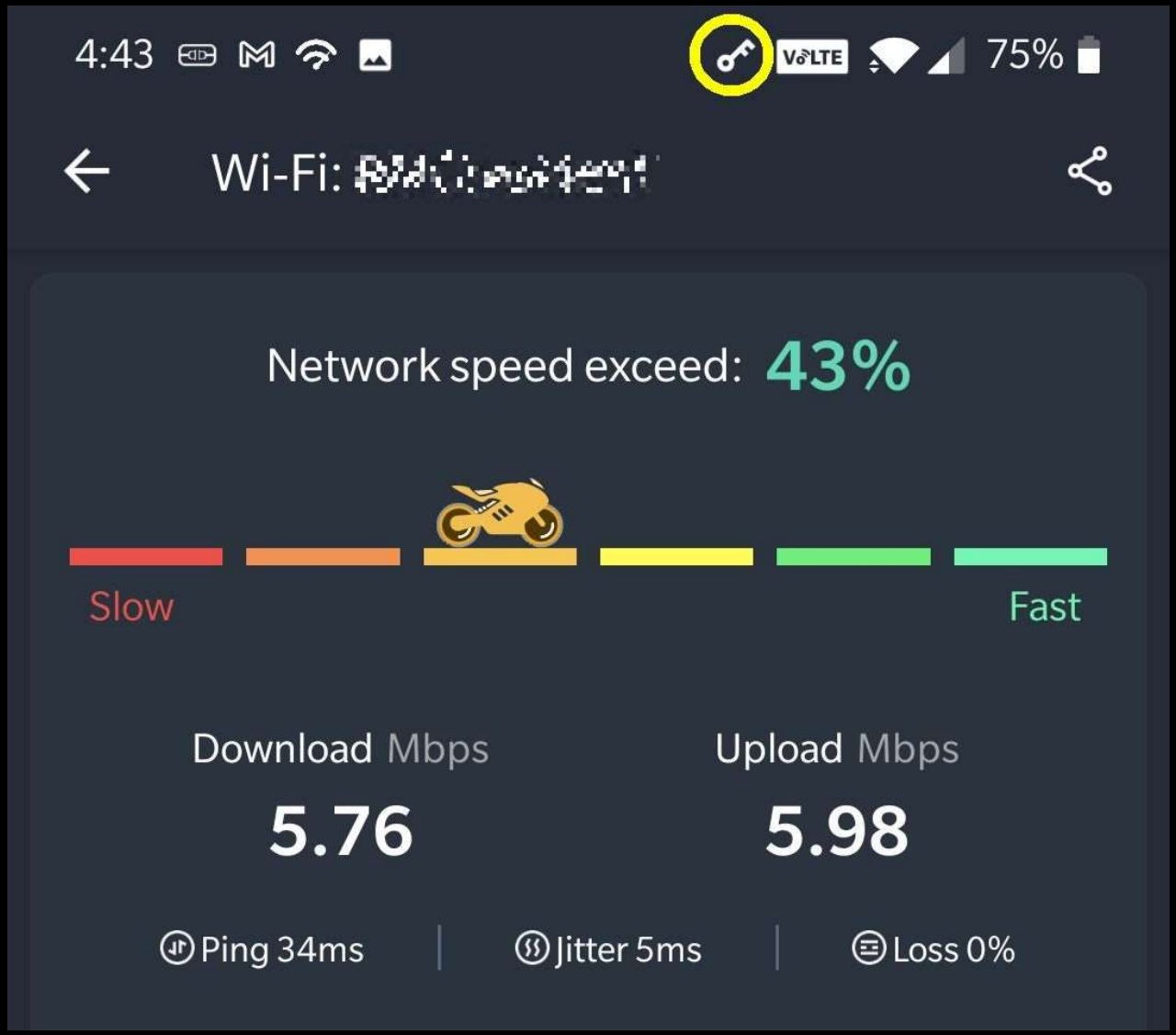
Connected to my network



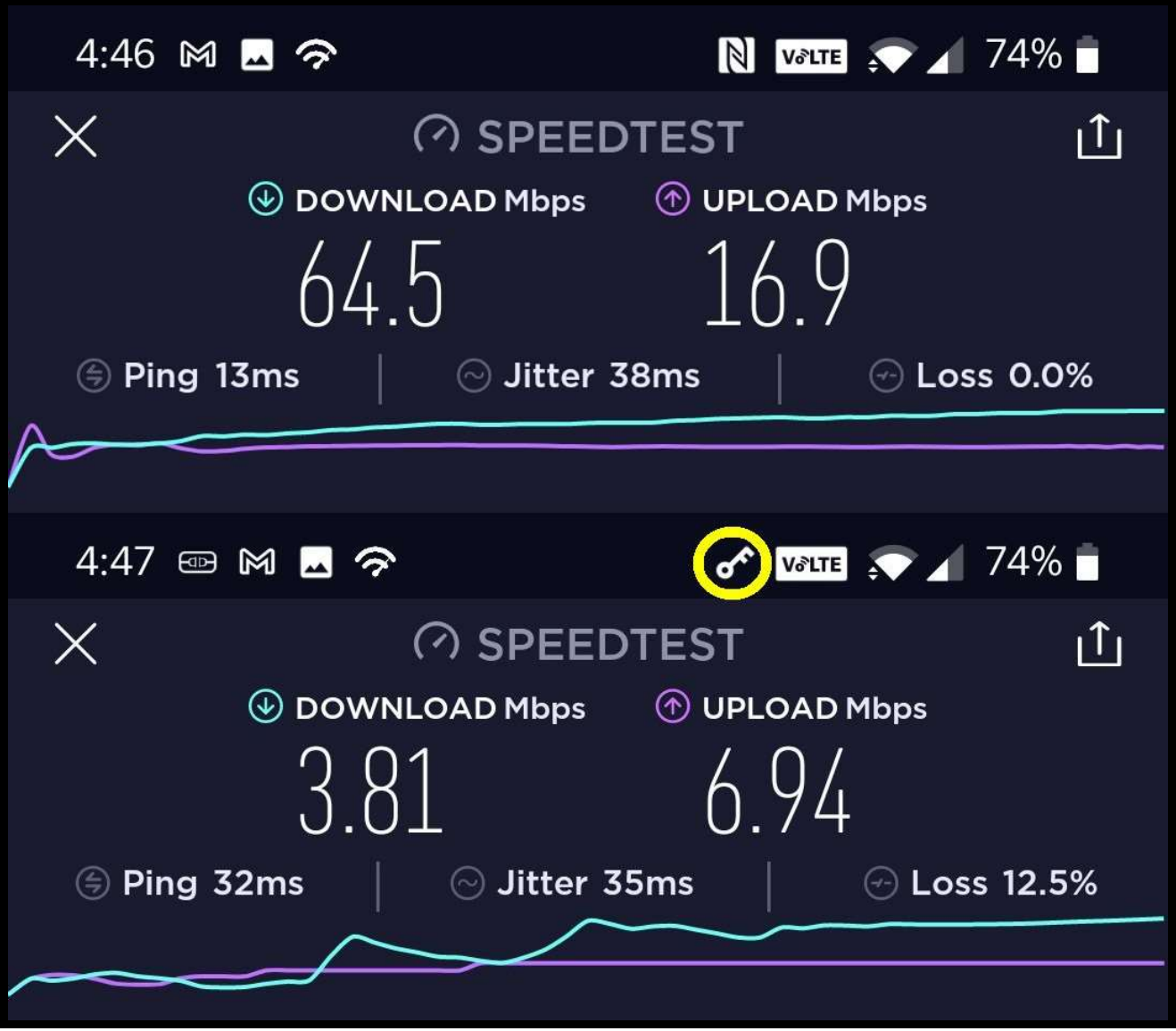
Connected to an open network



Connected to an open network with VPN running



A different speed app comparison with VPN off and then on.

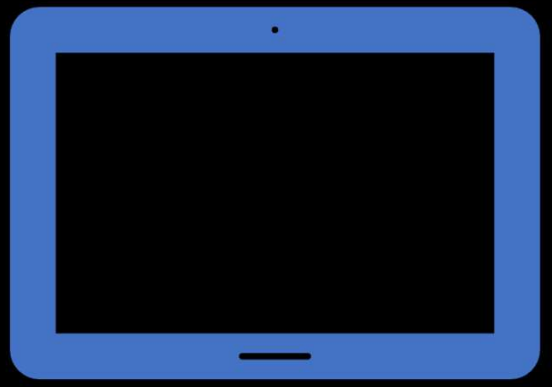


How do you use a VPN?

- Each laptop, smartphone, tablet, etc. needs to run client software to make its half of the connection.
- This client s/w is usually supplied by the service you are subscribed to.
- Just connect and that's all!

VPN client vs. server mode

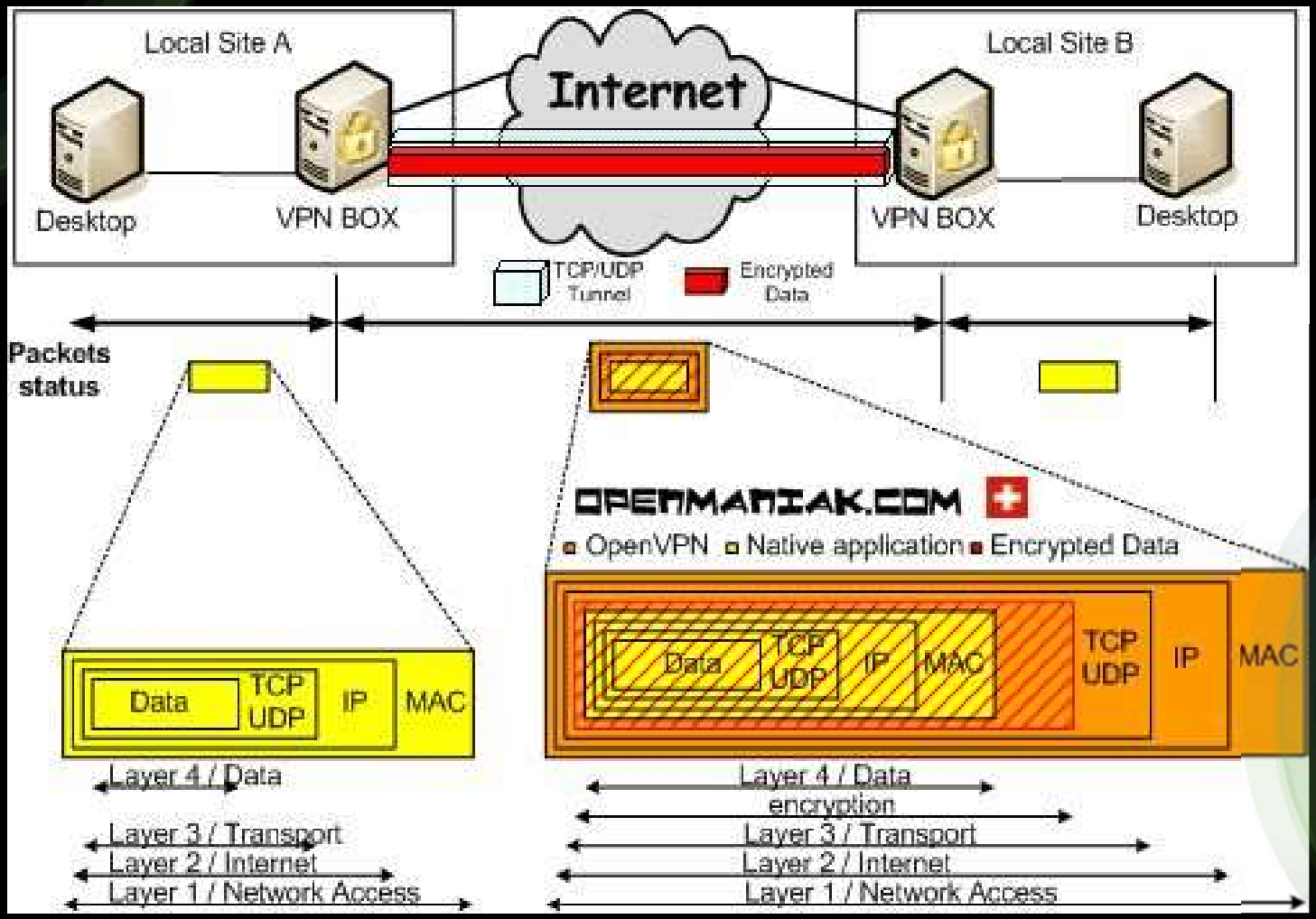
- Client piece runs on your phone, tablet, laptop, etc.
- Server piece can run on various devices: network file server (FreeNAS/TrueNAS, Synology, ...), Raspberry Pi, router, ...
- Many routers can run in VPN client mode to send all of your LAN traffic to a VPN server and shield your data from your ISP.



VPN protocols

- PPTP - Point-to-point tunneling protocol (insecure)
- L2TP/IPSEC - Layer 2 tunneling protocol / IP Security (two-steps = slower)
- SSTP - Secure socket tunneling protocol (Microsoft proprietary)
- OpenVPN - Best one is OpenVPN from both technical and cost standpoints. It's free/open source and widely used.
- Wireguard - aims for better performance and more power saving than the IPsec and OpenVPN. Newest option uses the latest most secure current encryption methods and is FOSS.

OpenVPN Packet Format

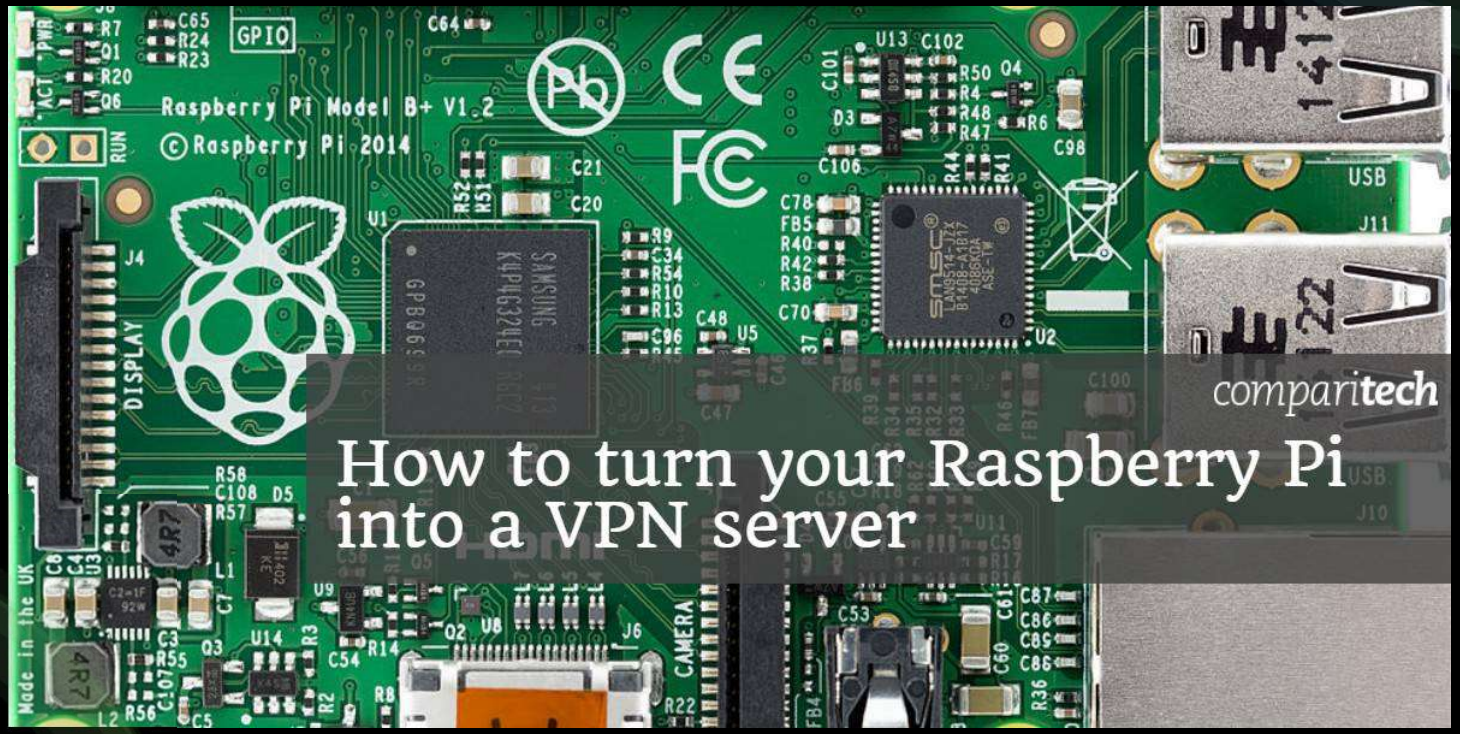


Additional notes when using your own VPN

- Possible bump: Some ISPs (Comcast...) use Carrier Grade NAT (CGN) to expand their number of IP addresses by using a second layer of Network Address Translation (NAT). CGN will disrupt having your own server. Calling the ISP and explaining that you want CGN removed because of a VPN will often work.

- If you're using cable broadband, your downstream speed may be very good, but your upstream speed is likely to be much less (<10%). Since the VPN will utilize about the same amount of up and down bandwidth, that will contribute to a general slowdown.

Install OpenVPN Server on a Raspberry Pi



Configuring OpenVPN on a router

- Several router mfrs. include OpenVPN software, usually in higher-end units (ASUS, TP-Link, Linksys, Netgear, ...).
- If they don't include OpenVPN, many routers can be flashed with different firmware that supports OpenVPN (Tomato, DD-WRT, Openwrt, ...).
- My router is an ASUS RT-AC86U and the balance of this talk will be about using this or another ASUS router as a VPN server. The basic tasks will also apply to other routers using OpenVPN.

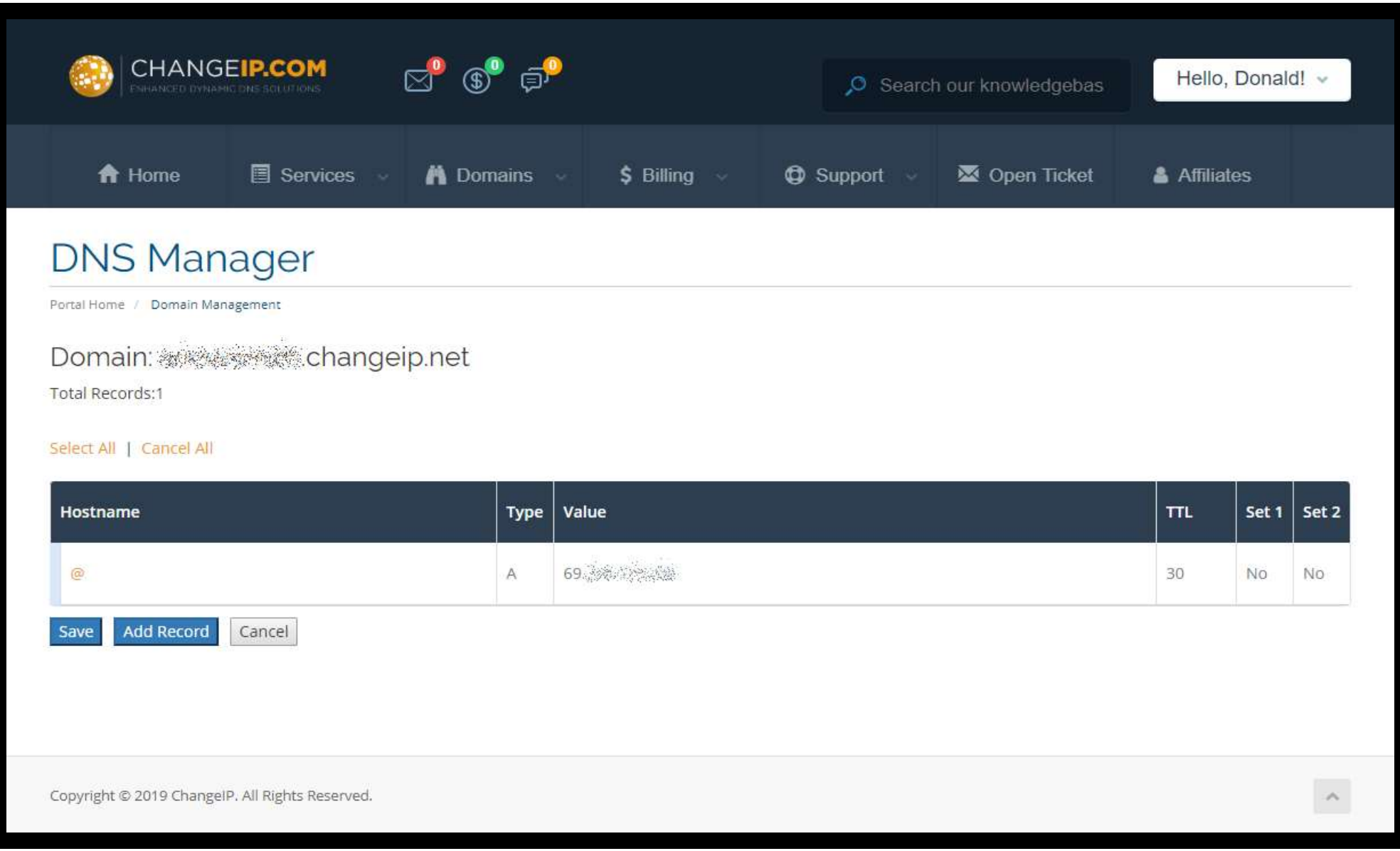
But first, DDNS

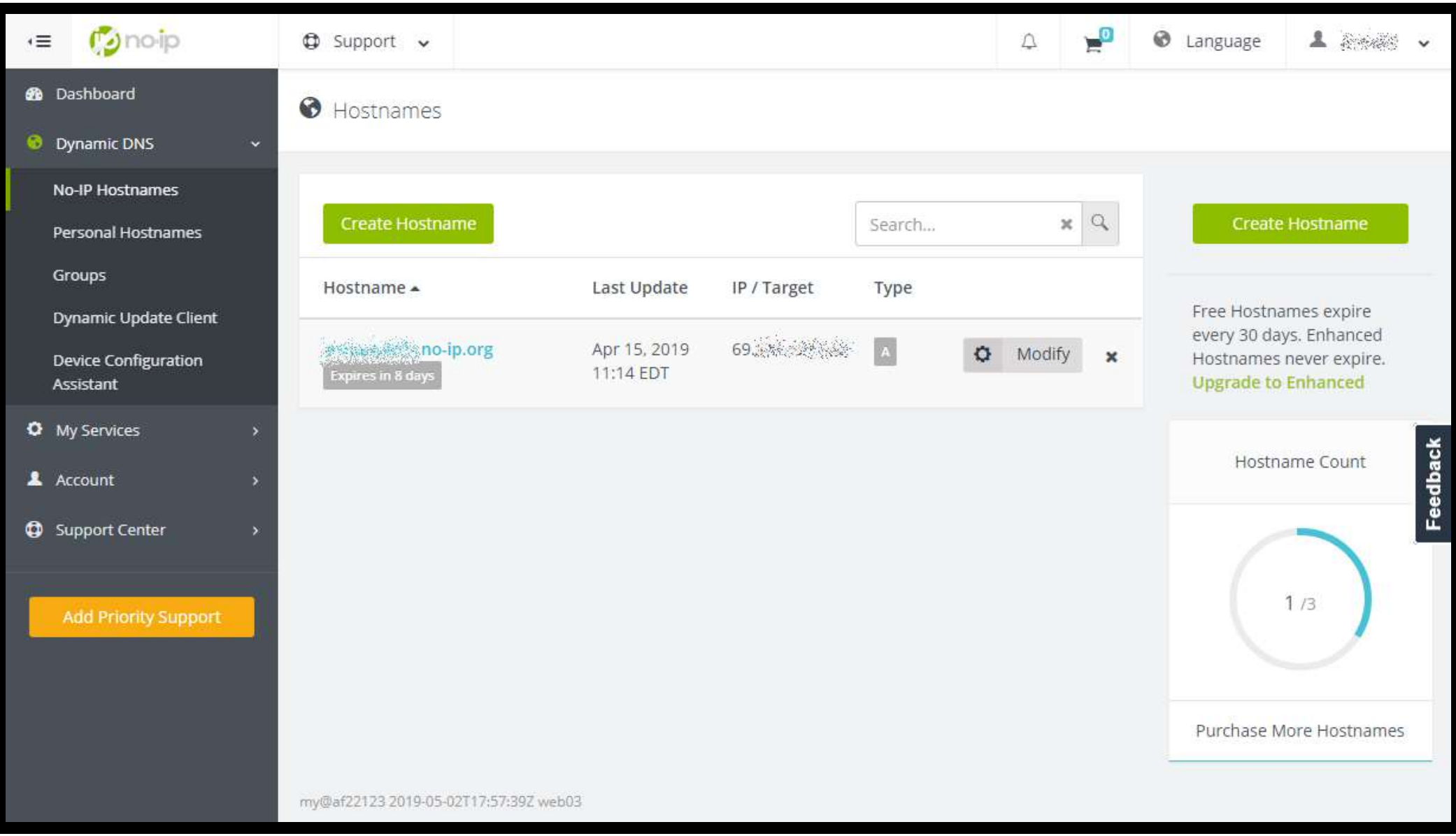
- The VPN client will need to connect to the VPN server from anywhere which means the server needs to have either a static IP or an FQDN that points to it.
- To allow a client's DNS (Domain Name System) server to translate a domain name into an IP address, for the majority of us without a static IP address, a DDNS (Dynamic DNS) service is needed
- There are many free services; I use both ChangeIP.com and NoIP.com for redundancy. How they work: You run some software on your LAN that alerts the DDNS whenever your external IP changes or at least once a month. Conveniently, many routers including my ASUS incorporate this updating feature.
- My router can update one service and checks the WAN address every few minutes. A forced update happens every two days even with no IP change.
- I use DNS-O-Matic to update the two DDNS services plus DNS service OpenDNS. DNS-O-Matic is a free service from OpenDNS.

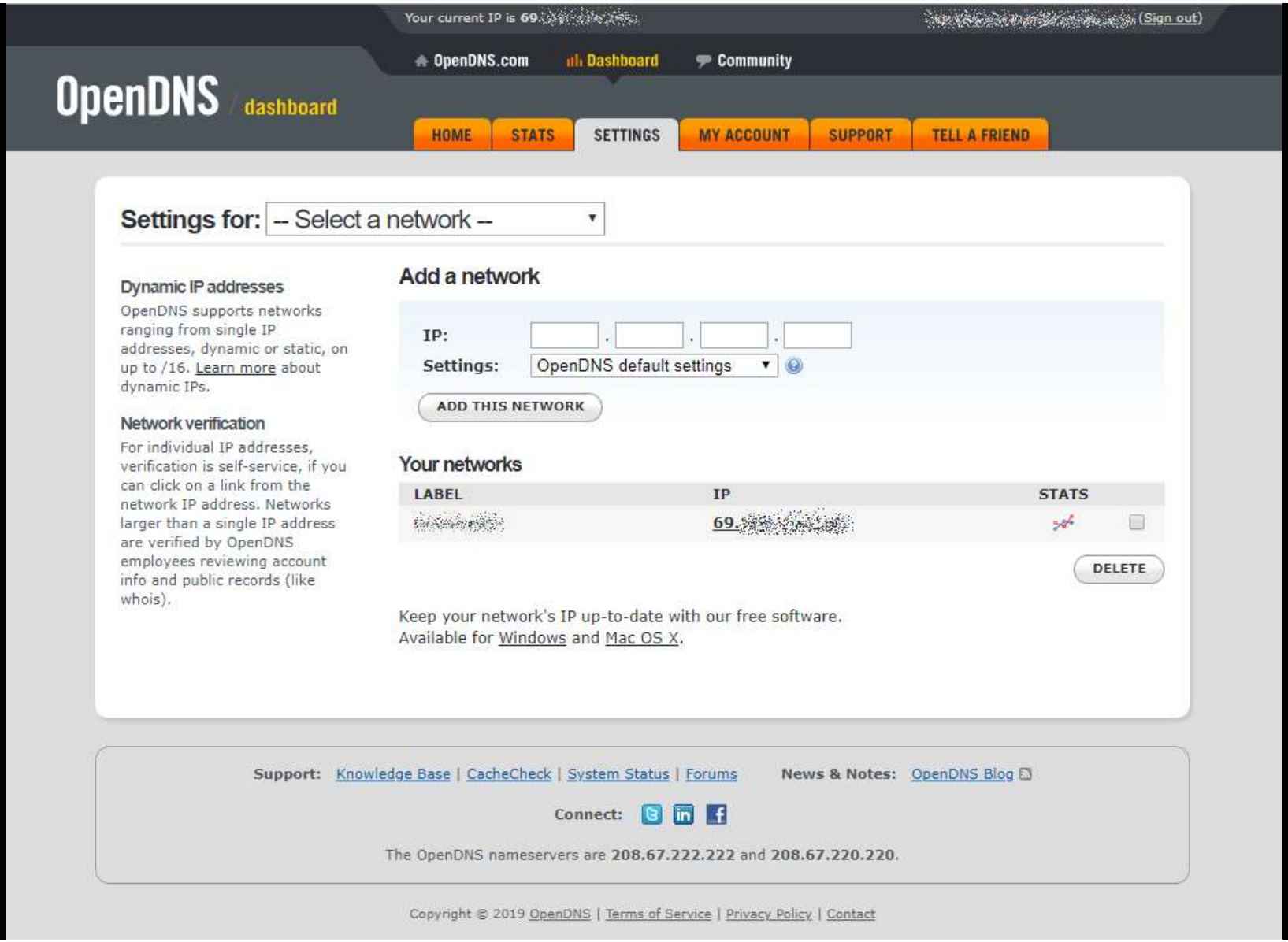
Additional notes about static IP

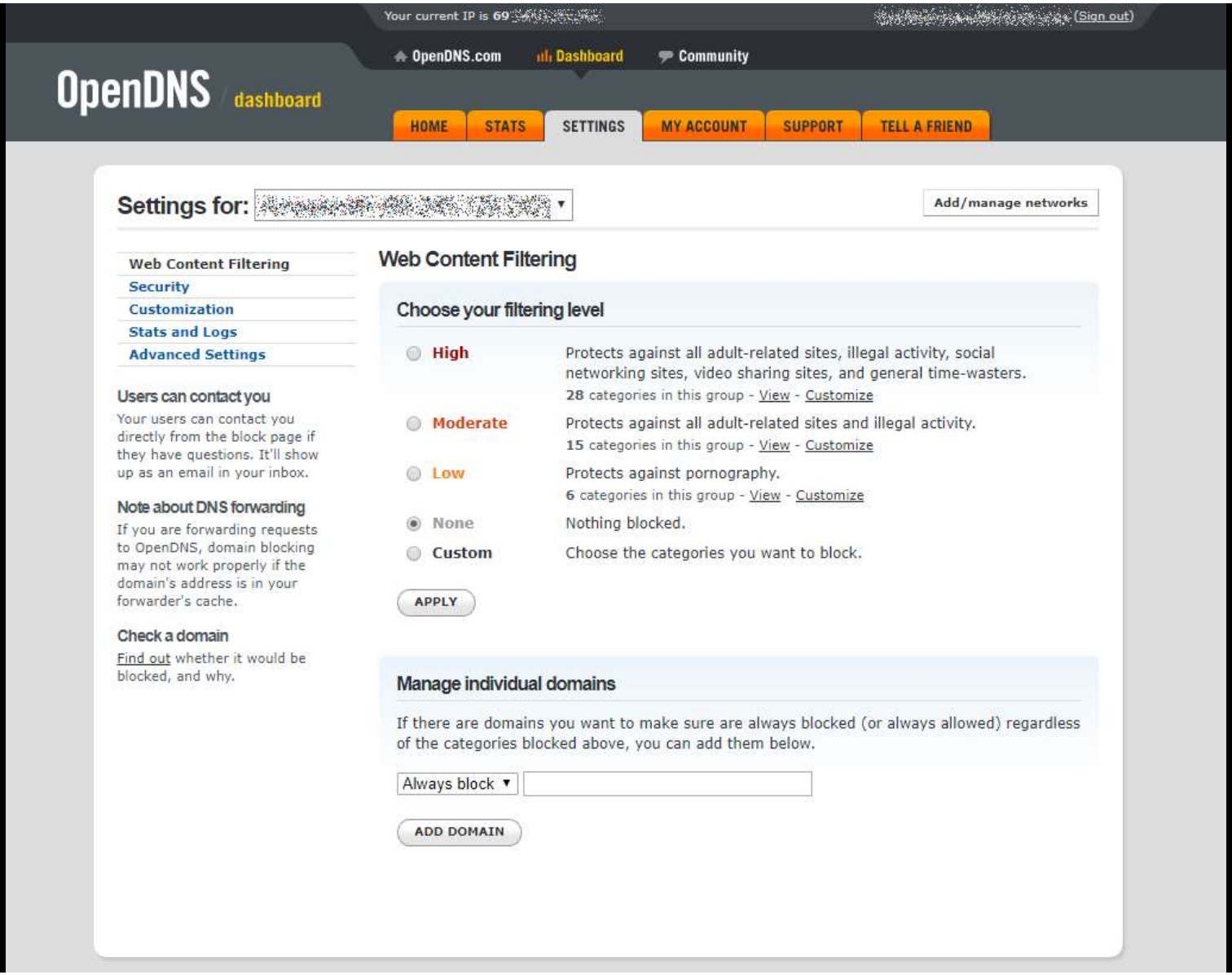
- I use Comcast as my ISP. They will issue a static IP only to business Internet accounts – which cost more than home accounts. With a business account I believe the extra cost for a static IP is $30/mo.

- And business accounts with static IPs must use Comcast's gateway. You would have to put their gateway into bridge mode to be able to use your own router with VPN. You might have a problem forwarding the needed port to connect to a VPN server on your LAN.


CHANGEIP.COM
ENHANCED DYNAMIC DNS SOLUTIONS
0
0
0
Search our knowledgebas
Hello, Donald!
Home
Services
Domains
Billing
Support
Open Ticket
Affiliates
DNS Manager
Portal Home / Domain Management
Domain: changeip.net
Total Records:1
Select All | Cancel All
Hostname
Type
Value
TTL
Set 1
Set 2
@
A
69.
30
No
No
Save
Add Record
Cancel
Copyright © 2019 ChangeIP. All Rights Reserved.


Support
Language
Dashboard
Dynamic DNS
No-IP Hostnames
Personal Hostnames
Groups
Dynamic Update Client
Device Configuration Assistant
My Services
Account
Support Center
Add Priority Support
Hostnames
Create Hostname
Search...
Hostname
Last Update
IP / Target
Type
no-ip.org
Expires in 8 days
Apr 15, 2019 11:14 EDT
A
Modify
Create Hostname
Free Hostnames expire every 30 days. Enhanced Hostnames never expire.
Upgrade to Enhanced
Hostname Count
1 /3
Purchase More Hostnames
Feedback
my@af22123 2019-05-02T17:57:39Z web03


Your current IP is 69.
(Sign out)
OpenDNS.com
Dashboard
Community
OpenDNS dashboard
HOME
STATS
SETTINGS
MY ACCOUNT
SUPPORT
TELL A FRIEND
Settings for: -- Select a network --
Dynamic IP addresses
OpenDNS supports networks ranging from single IP addresses, dynamic or static, on up to /16. Learn more about dynamic IPs.
Network verification
For individual IP addresses, verification is self-service, if you can click on a link from the network IP address. Networks larger than a single IP address are verified by OpenDNS employees reviewing account info and public records (like whois).
Add a network
IP:
Settings:
OpenDNS default settings
ADD THIS NETWORK
Your networks
LABEL
IP
STATS
69.
DELETE
Keep your network's IP up-to-date with our free software.
Available for Windows and Mac OS X.
Support: Knowledge Base | CacheCheck | System Status | Forums
News & Notes: OpenDNS Blog
Connect:
The OpenDNS nameservers are 208.67.222.222 and 208.67.220.220.
Copyright © 2019 OpenDNS | Terms of Service | Privacy Policy | Contact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Dashboard
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OpenDNS dashboard
HOME
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MY ACCOUNT
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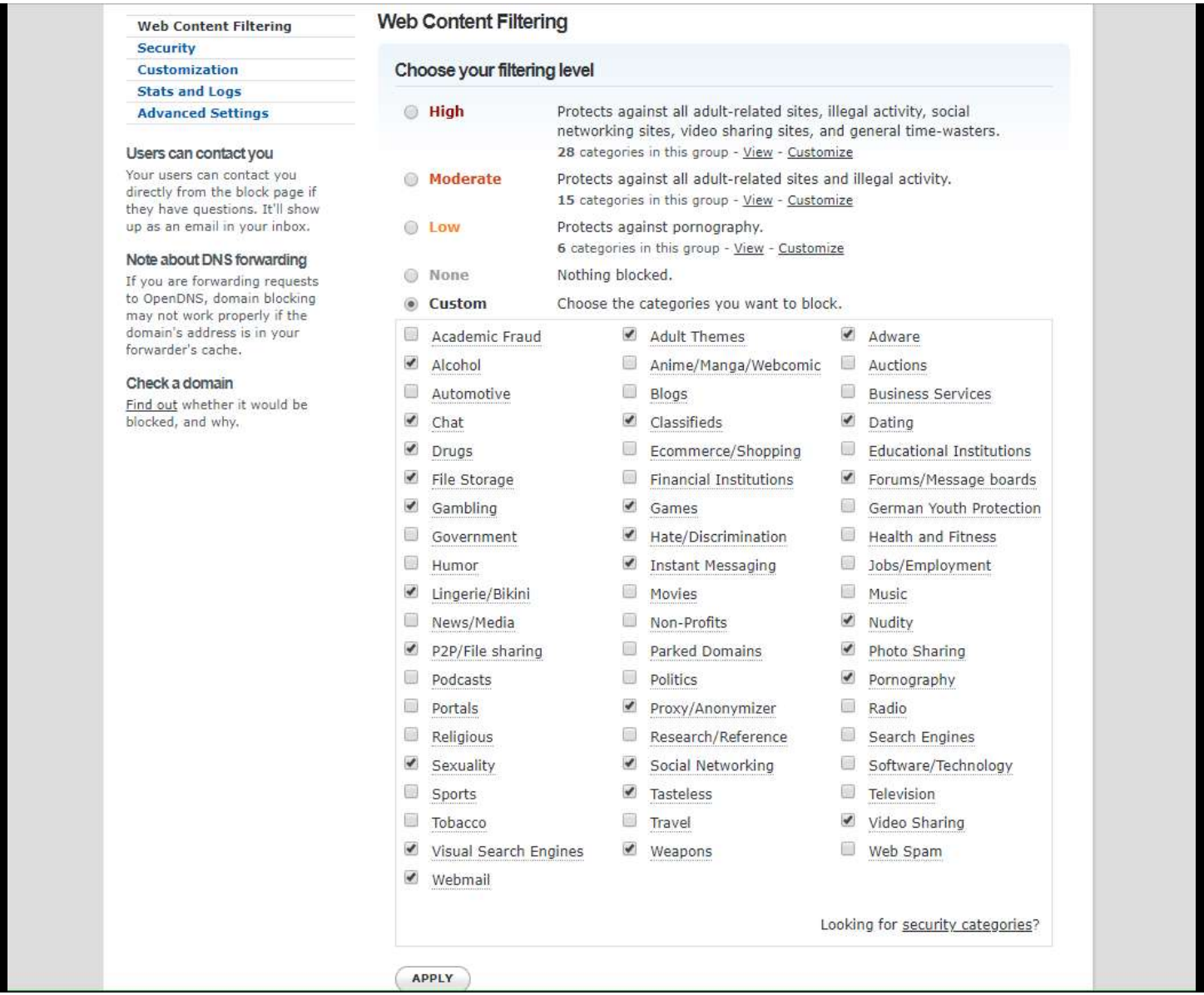
TELL A FRIEND
Settings for:
Add/manage networks
Web Content Filtering
Security
Customization
Stats and Logs
Advanced Settings
Users can contact you
Your users can contact you directly from the block page if they have questions. It'll show up as an email in your inbox.
Note about DNS forwarding
If you are forwarding requests to OpenDNS, domain blocking may not work properly if the domain's address is in your forwarder's cache.
Check a domain
Find out whether it would be blocked, and why.
Web Content Filtering
Choose your filtering level
High
Protects against all adult-related sites, illegal activity, social networking sites, video sharing sites, and general time-wasters.
28 categories in this group - View - Customize
Moderate
Protects against all adult-related sites and illegal activity.
15 categories in this group - View - Customize
Low
Protects against pornography.
6 categories in this group - View - Customize
None
Nothing blocked.
Custom
Choose the categories you want to block.
APPLY
Manage individual domains
If there are domains you want to make sure are always blocked (or always allowed) regardless of the categories blocked above, you can add them below.
Always block
ADD DOMAIN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None
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Academic Fraud
Adult Themes
Adware
Alcohol
Anime/Manga/Webcomic
Auctions
Automotive
Blogs
Business Services
Chat
Classifieds
Dating
Drugs
Ecommerce/Shopping
Educational Institutions
File Storage
Financial Institutions
Forums/Message boards
Gambling
Games
German Youth Protection
Government
Hate/Discrimination
Health and Fitness
Humor
Instant Messaging
Jobs/Employment
Lingerie/Bikini
Movies
Music
News/Media
Non-Profits
Nudity
P2P/File sharing
Parked Domains
Photo Sharing
Podcasts
Politics
Pornography
Portals
Proxy/Anonymizer
Radio
Religious
Research/Reference
Search Engines
Sexuality
Social Networking
Software/Technology
Sports
Tasteless
Television
Tobacco
Travel
Video Sharing
Visual Search Engines
Weapons
Web Spam
Webmail
Looking for security categories?
APPLY

Your current IP is 69.[redacted] [redacted] (Sign out)

OpenDNS dashboard

OpenDNS.com | Dashboard | Community

HOME | STATS | SETTINGS | MY ACCOUNT | SUPPORT | TELL A FRIEND

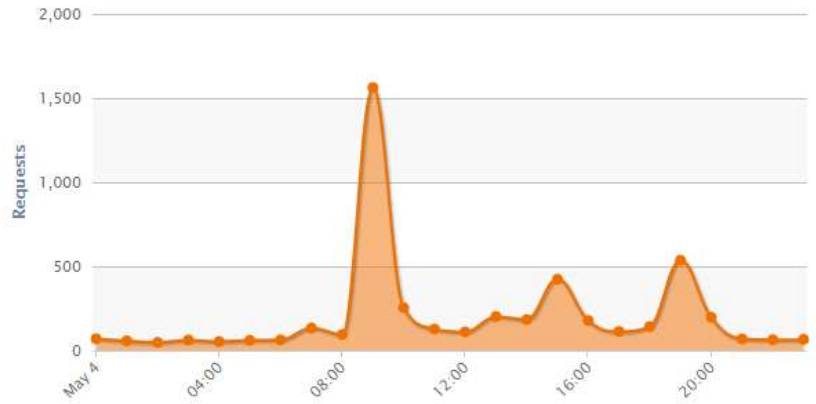
View Stats for: Personal Networks

- Total Requests
- Total Unique Domains
- Unique IPs
- Domains
- Blocked Domains
- Request Types

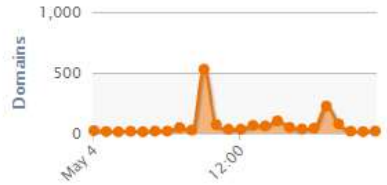
This is *your* Dashboard

Every element on this page is designed to give you a quick snapshot look into your DNS. Dive deeper for customizable charts, tables and raw data.

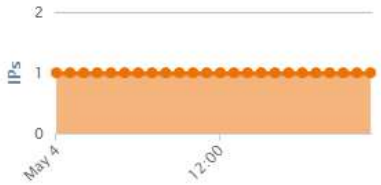
Recent Activity (all your networks, last day)



Unique Domains



Unique IPs

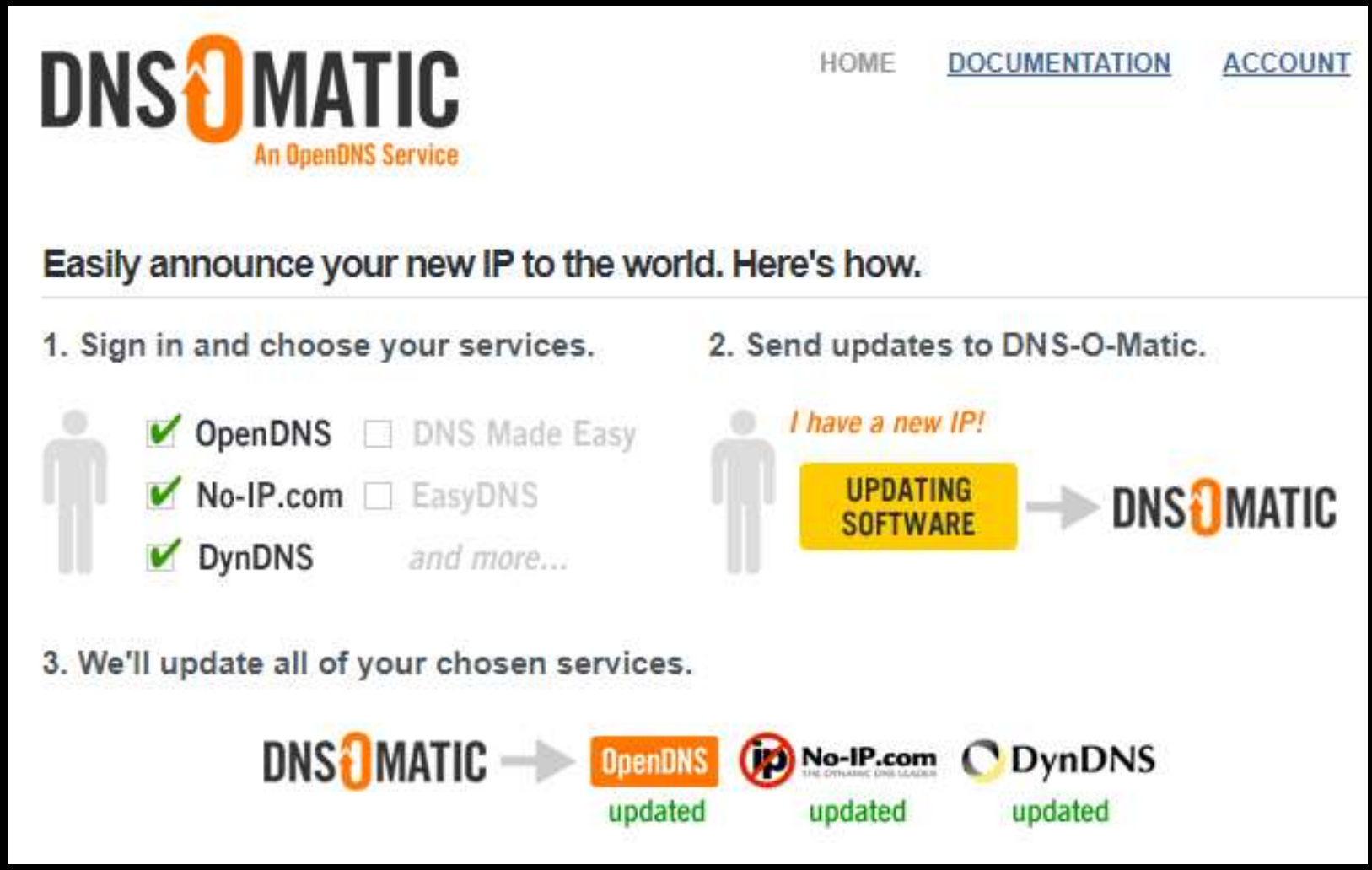


Request Types

Type	Requests
A	2562
SOA	2
AAAA	2310

Domains

Domain	Requests
dyndns.domains.live.com	240
teredo.ipv6.microsoft.com	238
array613-prod.do.dsp.mp.microsoft.com	121


DNS-O-MATIC
An OpenDNS Service
HOME
DOCUMENTATION
ACCOUNT
Easily announce your new IP to the world. Here's how.
1. Sign in and choose your services.
OpenDNS
DNS Made Easy
No-IP.com
EasyDNS
DynDNS
and more...
2. Send updates to DNS-O-Matic.
I have a new IP!
UPDATING SOFTWARE
DNS-O-MATIC
3. We'll update all of your chosen services.
DNS-O-MATIC
OpenDNS
updated
No-IP.com
updated
DynDNS
updated

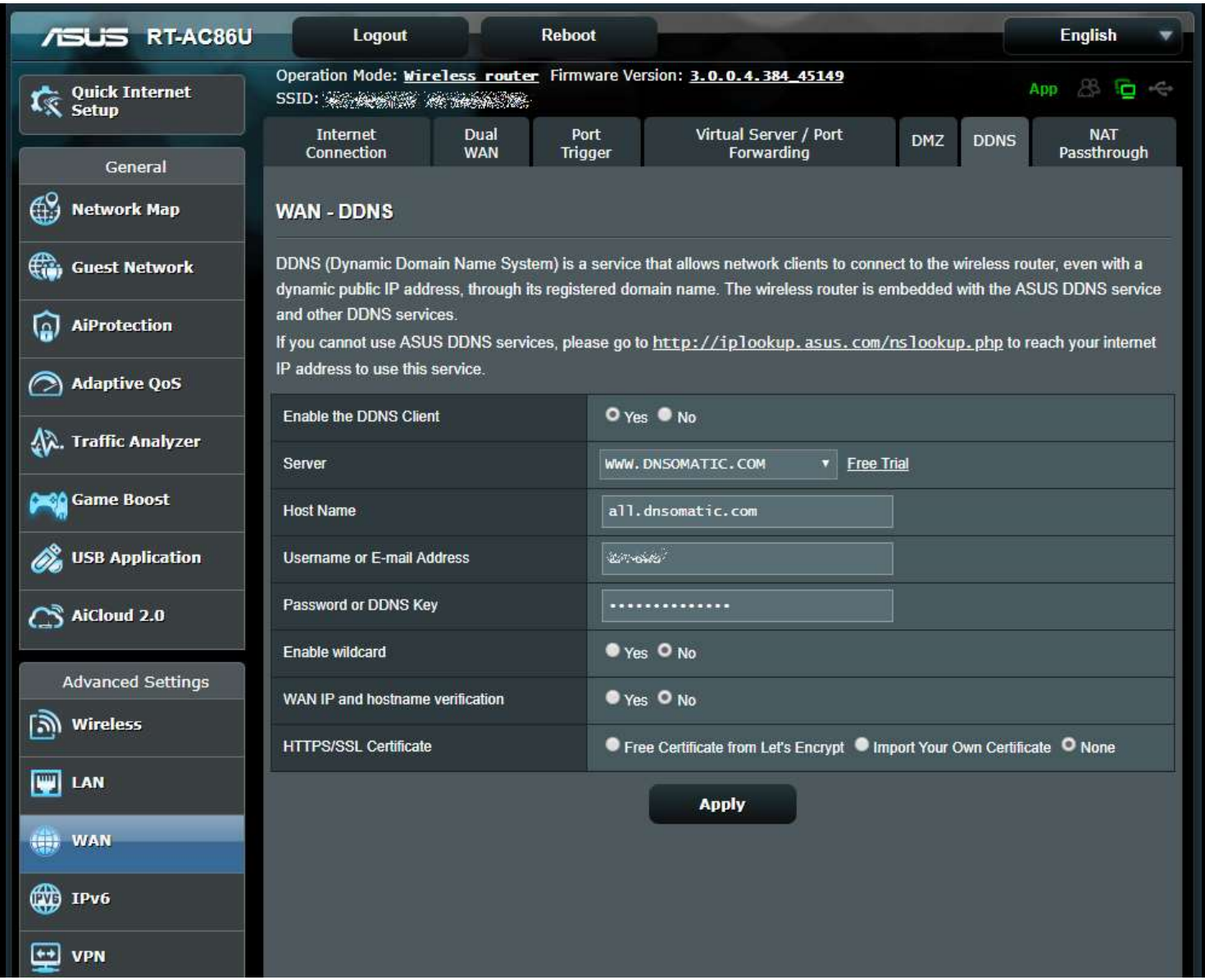
DNS O MATIC
An OpenDNS Service

Signed in: [redacted] (Sign out)

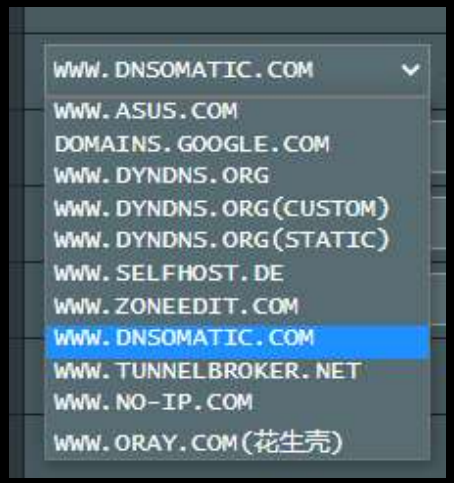
YOUR SERVICES | DOCUMENTATION | ACCOUNT

Your Services / expand all

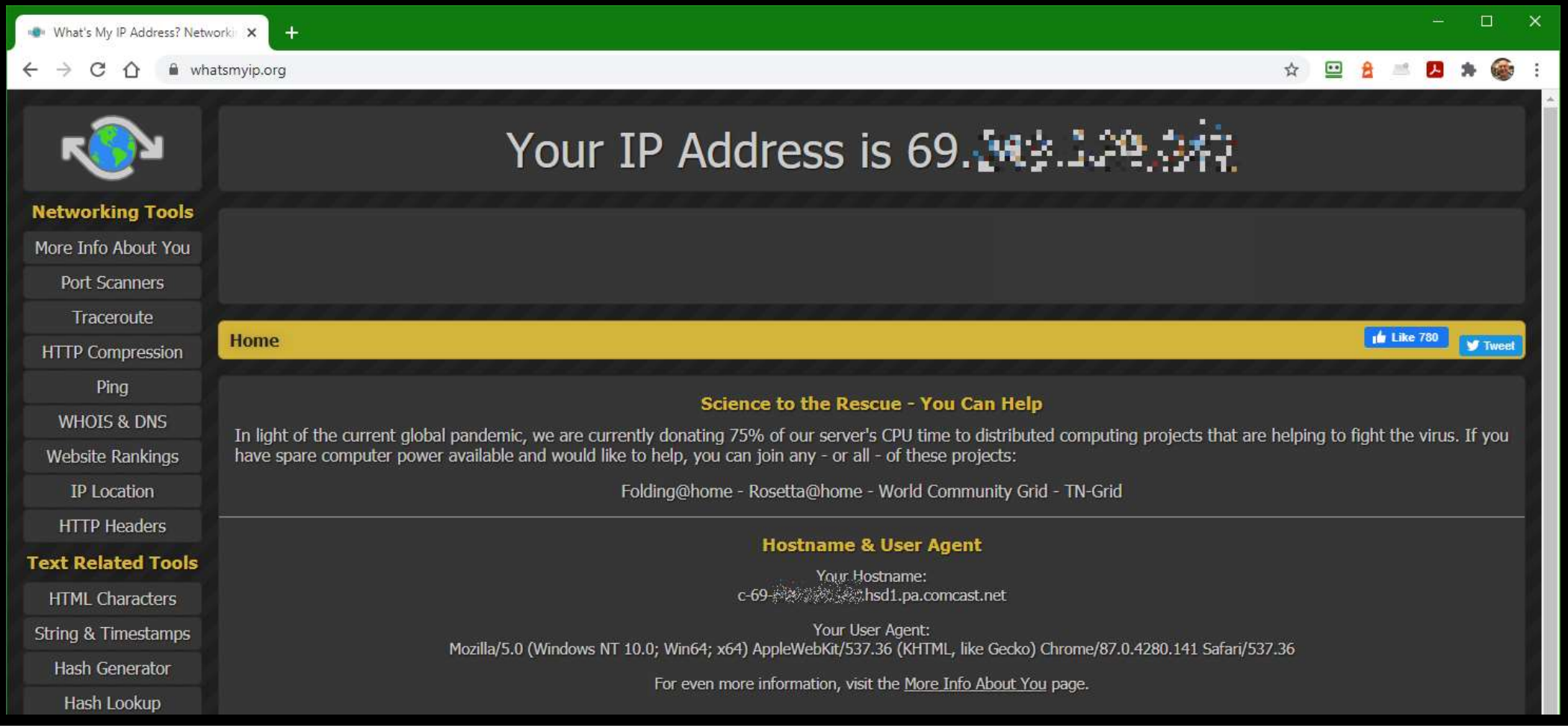
	SERVICE	STATUS	HISTORY	ACTIVE?
	ChangeIP [redacted].changeip.net	69.[redacted] Apr 15, 2019 11:14 am		
	No-IP [redacted].no-ip.org	69[redacted] Apr 15, 2019 11:14 am		
	OpenDNS [redacted]	69.[redacted] Apr 15, 2019 11:14 am		



Available DDNS services



Find the current IP address



Check that changeip.net domain will resolve

```
PS C:\Users\donal> ping [redacted].changeip.net

Pinging [redacted].changeip.net [69.[redacted]] with 32 bytes of data:
Reply from 69.[redacted]: bytes=32 time<1ms TTL=64
Reply from 69.[redacted]: bytes=32 time<1ms TTL=64
Reply from 69.[redacted]: bytes=32 time<1ms TTL=64
Reply from 69.[redacted]: bytes=32 time<1ms TTL=64
```

63	2.079174	2601:49:102:e0b:7196:7f6c:7e9b:4ce	2601:49:102:e0b::1	DNS	100	Standard query 0x4b0d A [redacted].no-ip.org
64	2.079383	2601:49:102:e0b:7196:7f6c:7e9b:4ce	2601:49:102:e0b::1	DNS	100	Standard query 0xe689 AAAA [redacted].no-ip.org
65	2.095672	2601:49:102:e0b::1	2601:49:102:e0b:7196:7f…	DNS	116	Standard query response 0x4b0d A [redacted].no-ip.org A 69.[redacted]
66	2.100548	2601:49:102:e0b::1	2601:49:102:e0b:7196:7f…	DNS	160	Standard query response 0xe689 AAAA [redacted].no-ip.org SOA nf1.no-ip.com

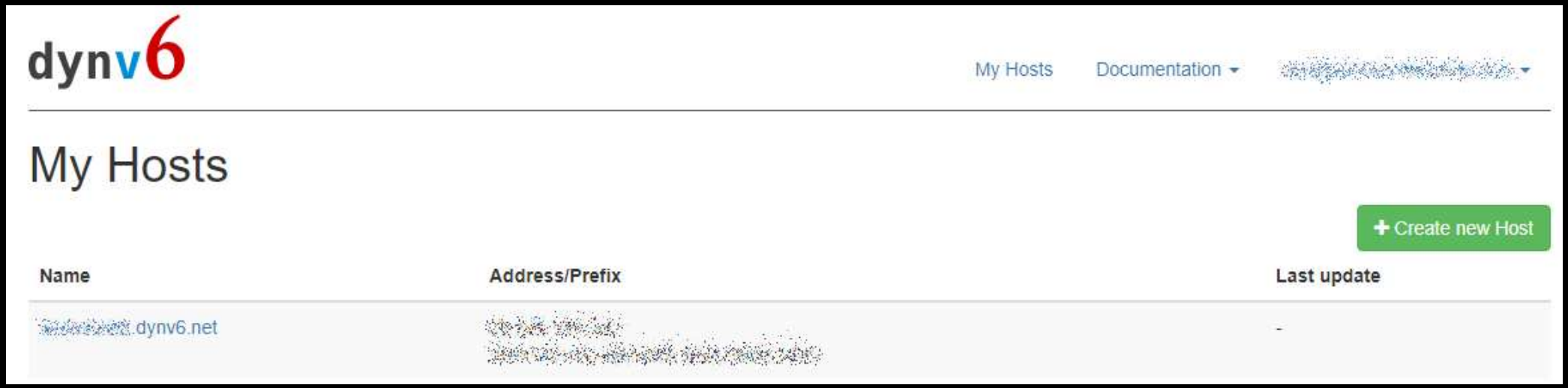
Check that no-ip.org domain will resolve

```
PS C:\Users\donal> ping [redacted].no-ip.org

Pinging [redacted].no-ip.org [69.[redacted]] with 32 bytes of data:
Reply from 69.[redacted]: bytes=32 time<1ms TTL=64
Reply from 69.[redacted]: bytes=32 time<1ms TTL=64
Reply from 69.[redacted]: bytes=32 time<1ms TTL=64
Reply from 69.[redacted]: bytes=32 time<1ms TTL=64
```

86	2.724784	2601:49:102:e0b:7196:7f6c:7e9b:4ce	2601:49:102:e0b::1	DNS	103	Standard query 0xe7d2 A [redacted].changeip.net
87	2.724925	2601:49:102:e0b:7196:7f6c:7e9b:4ce	2601:49:102:e0b::1	DNS	103	Standard query 0x11aa AAAA [redacted].changeip.net
88	2.761698	192.168.15.104	192.168.15.5	DNS	83	Standard query 0xe7d2 A [redacted].changeip.net
89	2.761698	192.168.15.104	192.168.15.5	DNS	83	Standard query 0x11aa AAAA [redacted].changeip.net
90	2.763126	2601:49:102:e0b::1	2601:49:102:e0b:7196:7f…	DNS	119	Standard query response 0xe7d2 A [redacted].changeip.net A 69.[redacted]
91	2.763126	2601:49:102:e0b::1	2601:49:102:e0b:7196:7f…	DNS	171	Standard query response 0x11aa AAAA [redacted].changeip.net SOA ns1.changeip.org

How about IPv6 DDNS?

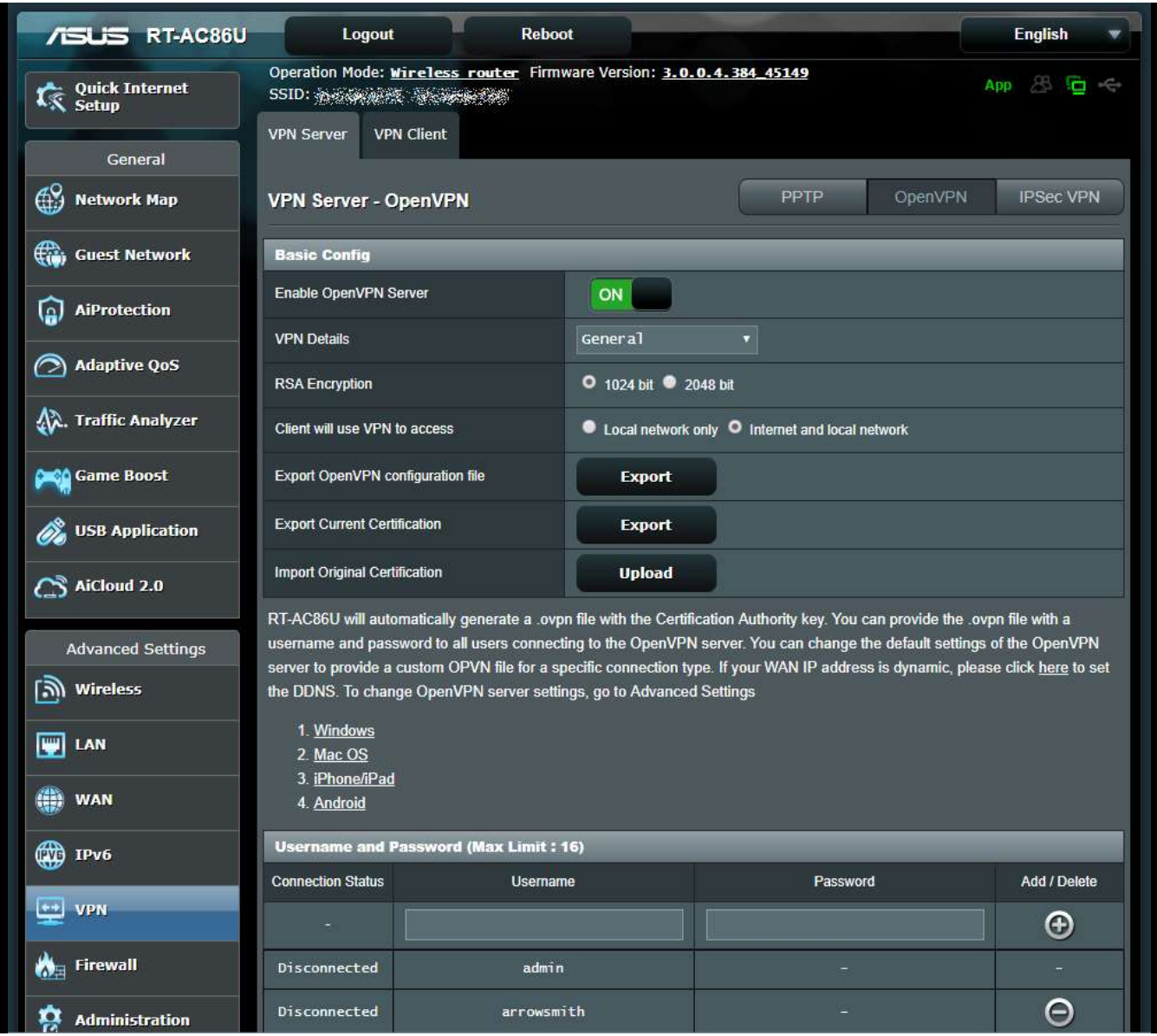


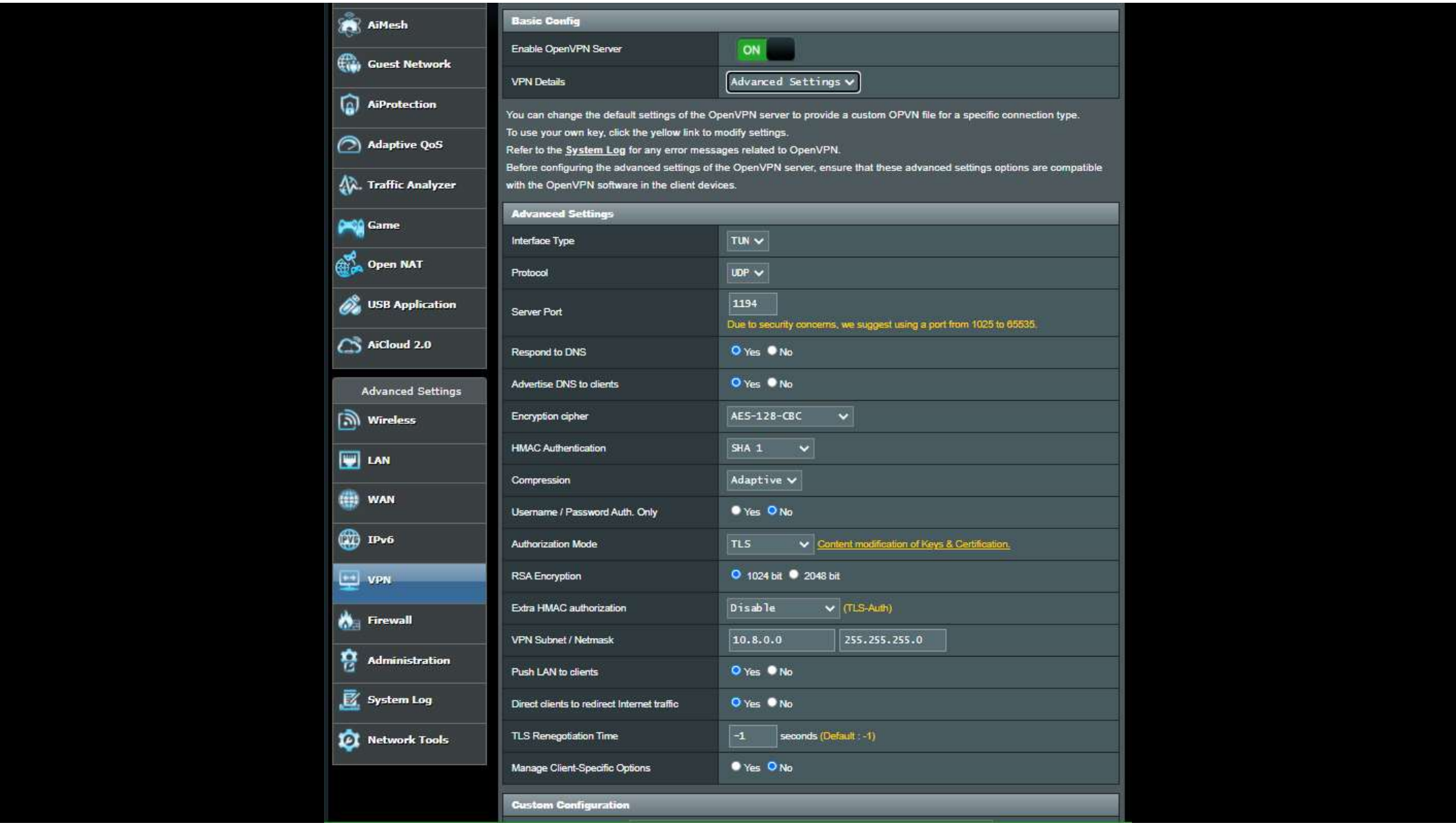
dynv6.com

And now, we can setup OpenVPN

- Now we can configure the router. Pick the protocol and answer the questions. The router will generate a file with a security certificate along with other parameters. You will need to import that file into each client's software.

- Free OpenVPN client apps are available for Windows, Linux, Mac, Android (via Google Play Store), and iOS (via Apple store).


ASUS RT-AC86U
Logout
Reboot
English
Operation Mode: Wireless router Firmware Version: 3.0.0.4.384_45149
SSID:
App
Quick Internet Setup
General
Network Map
Guest Network
AiProtection
Adaptive QoS
Traffic Analyzer
Game Boost
USB Application
AiCloud 2.0
Advanced Settings
Wireless
LAN
WAN
IPv6
VPN
Firewall
Administration
VPN Server
VPN Client
VPN Server - OpenVPN
PPTP
OpenVPN
IPSec VPN
Basic Config
Enable OpenVPN Server
ON
VPN Details
General
RSA Encryption
1024 bit
2048 bit
Client will use VPN to access
Local network only
Internet and local network
Export OpenVPN configuration file
Export
Export Current Certification
Export
Import Original Certification
Upload
RT-AC86U will automatically generate a .ovpn file with the Certification Authority key. You can provide the .ovpn file with a username and password to all users connecting to the OpenVPN server. You can change the default settings of the OpenVPN server to provide a custom OPVN file for a specific connection type. If your WAN IP address is dynamic, please click here to set the DDNS. To change OpenVPN server settings, go to Advanced Settings
1. Windows
2. Mac OS
3. iPhone/iPad
4. Android
Username and Password (Max Limit : 16)
Connection Status
Username
Password
Add / Delete
Disconnected
admin
Disconnected
arrowsmith


AiMesh
Guest Network
AiProtection
Adaptive QoS
Traffic Analyzer
Game
Open NAT
USB Application
AiCloud 2.0
Advanced Settings
Wireless
LAN
WAN
IPv6
VPN
Firewall
Administration
System Log
Network Tools
Basic Config
Enable OpenVPN Server
ON
VPN Details
Advanced Settings
You can change the default settings of the OpenVPN server to provide a custom OPVN file for a specific connection type.
To use your own key, click the yellow link to modify settings.
Refer to the System Log for any error messages related to OpenVPN.
Before configuring the advanced settings of the OpenVPN server, ensure that these advanced settings options are compatible with the OpenVPN software in the client devices.
Advanced Settings
Interface Type
TUN
Protocol
UDP
Server Port
1194
Due to security concerns, we suggest using a port from 1025 to 65535.
Respond to DNS
Yes
No
Advertise DNS to clients
Yes
No
Encryption cipher
AES-128-CBC
HMAC Authentication
SHA 1
Compression
Adaptive
Username / Password Auth. Only
Yes
No
Authorization Mode
TLS
Content modification of Keys & Certification.
RSA Encryption
1024 bit
2048 bit
Extra HMAC authorization
Disable
(TLS-Auth)
VPN Subnet / Netmask
10.8.0.0
255.255.255.0
Push LAN to clients
Yes
No
Direct clients to redirect Internet traffic
Yes
No
TLS Renegotiation Time
-1
seconds (Default : -1)
Manage Client-Specific Options
Yes
No
Custom Configuration

Additional notes

- If you are using multiple DDNS, as I am, you will need to edit the configuration file generated by the server. In my case, the router populated the server address and port with DNS-O-Matic rather than one of the target domain names – xxx.ChangeIP.net or xxx.No-IP.org – because the server didn't know about them. The file must be edited before importing it into the client app.

- If you set a NAS server or a Raspberry Pi server to be your VPN server, you will need to forward a port on your router to get the client packets to the right place on your LAN. Since I am using my router, it opens that port (usually 1194) automatically as part of enabling the VPN server function.

client.ovpn

This is a text file – mine is shown in two columns with the certificate/key data omitted:

```
remote all.dnsomatic.com 1194
float
nobind
proto udp
dev tun
sndbuf 0
rcvbuf 0
keepalive 15 60
comp-lzo adaptive
auth-user-pass
client
auth SHA1
cipher AES-128-CBC
ns-cert-type server
```

```
<ca>
-----BEGIN CERTIFICATE-----
<- omitted ->
-----END CERTIFICATE-----
</ca>

<cert>
-----BEGIN CERTIFICATE-----
<- omitted ->
-----END CERTIFICATE-----
</cert>

<key>
-----BEGIN PRIVATE KEY-----
<- omitted ->
-----END PRIVATE KEY-----
</key>
```

Google Play

Search

Apps

Categories

Home

Top Charts

New Releases

My apps

Shop

Games

Family

Editors' Choice

Account

Payment methods

My subscriptions

Redeem

Buy gift card

My wishlist

My Play activity

Parent Guide

OpenVPN Connect – Fast & Safe SSL VPN Client

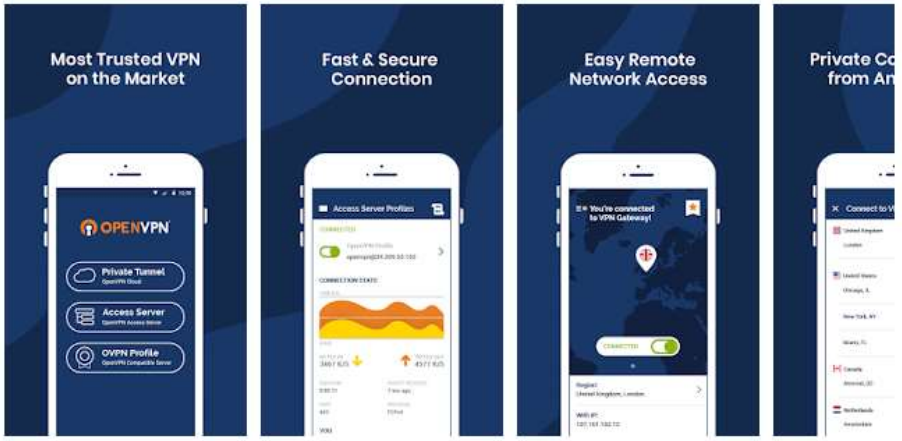
OpenVPN Tools

157,706

Everyone

This app is compatible with all of your devices.

Installed



WHAT IS OPENVPN CONNECT?

OpenVPN Connect is the official VPN application for Android developed by OpenVPN, Inc. It is a

Mac iPad iPhone Watch TV Music Support

App Store Preview

This app is only available on the App Store for iOS devices.

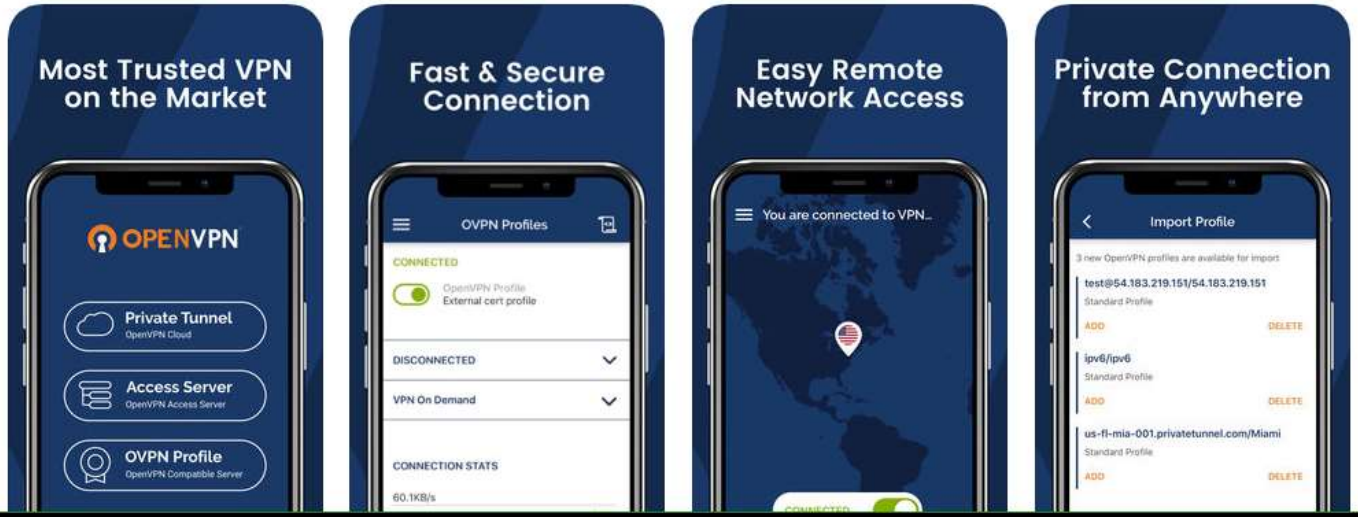
OpenVPN Connect 17+

OpenVPN Technologies

★★★★★ 3.9, 2.2K Ratings

Free

Screenshots iPhone iPad



Installation guide for OpenVPN Connect Client on Windows

GO BACK

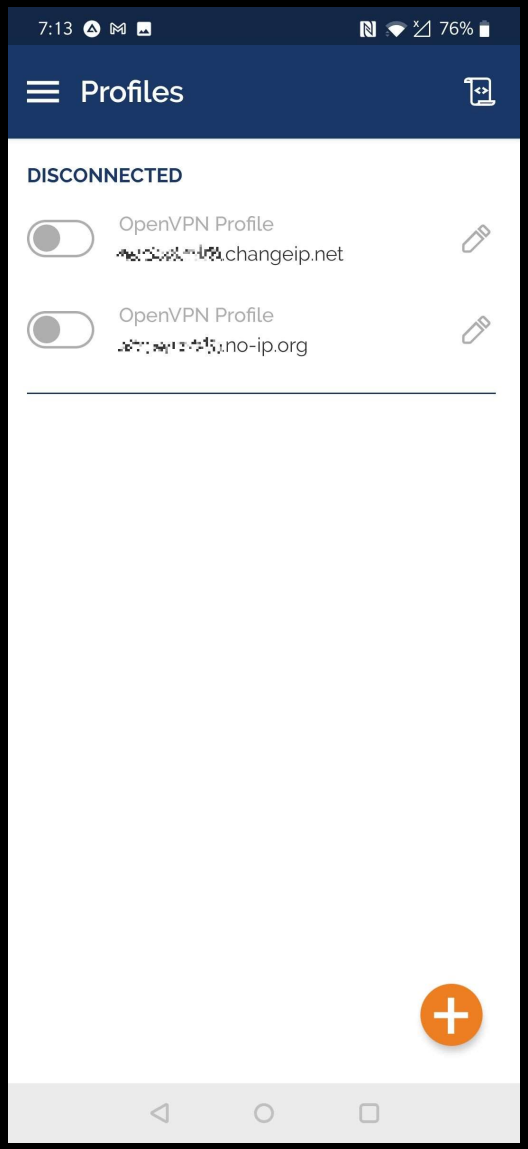
TABLE OF CONTENTS

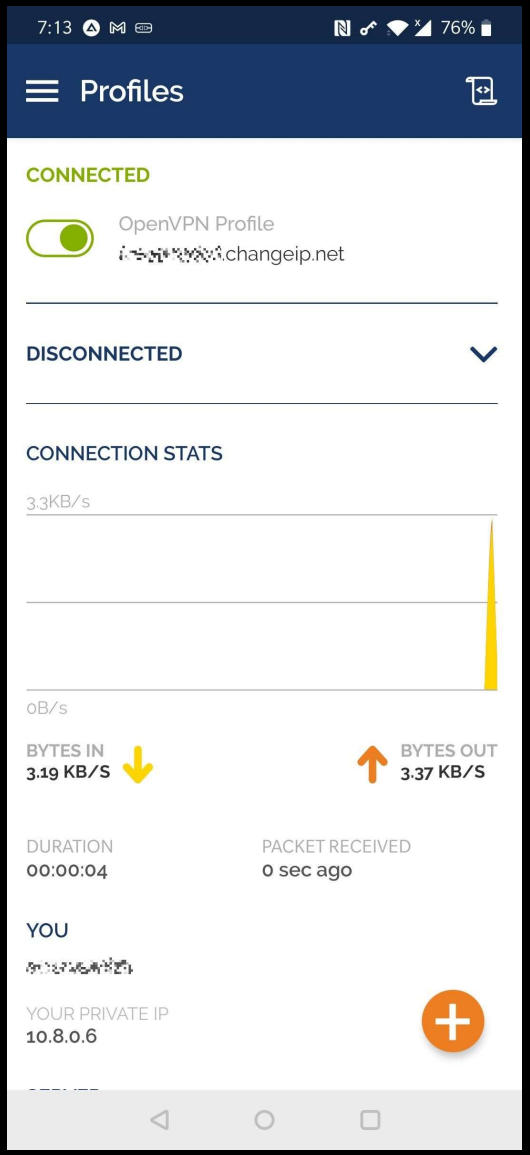
Introduction

This guide is meant for users of the OpenVPN Access Server product that wish to connect their Windows computer using the official OpenVPN Connect Client software. In the steps outlined below we'll take you through the process of obtaining the OpenVPN Connect Client from your Access Server's web interface, and installing and using it on the Windows operating system. Aside from some minor differences due to different versions of software used this guide should be accurate and easy to follow. Each step can be clicked to show a screenshot for that particular step in the installation process. Each screenshot can be clicked to reveal an image gallery you can follow to go through all the steps.

Requirements

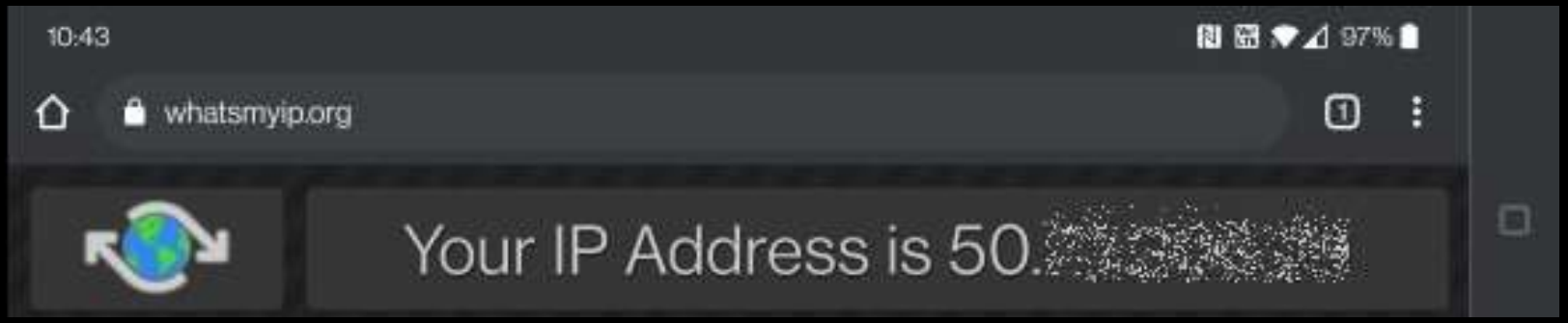
You will need to have a valid set of credentials, like user name and password, and of course the address of your OpenVPN Access Server. If you are not the administrator of the Access Server you are going to connect to, then you should contact the administrator of this server to obtain this information. We here at OpenVPN Inc. cannot provide this information, since we do not manage servers run by our customers. If you are the administrator of your Access Server, you can create new user accounts using the admin web


7:13
76%
Profiles
DISCONNECTED
OpenVPN Profile
changeip.net
OpenVPN Profile
no-ip.org

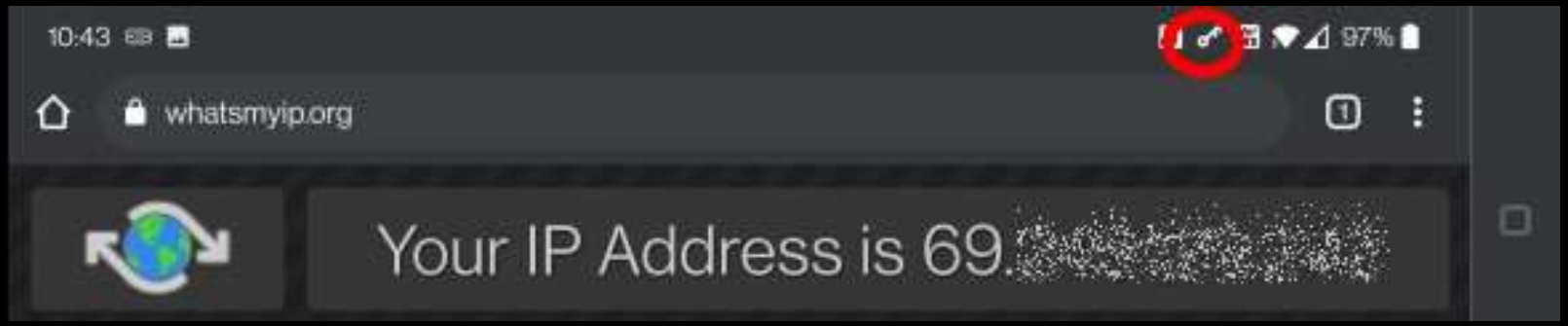

7:13
76%
Profiles
CONNECTED
OpenVPN Profile
changeip.net
DISCONNECTED
CONNECTION STATS
3.3KB/s
0B/s
BYTES IN
3.19 KB/S
BYTES OUT
3.37 KB/S
DURATION
00:00:04
PACKET RECEIVED
0 sec ago
YOU
YOUR PRIVATE IP
10.8.0.6

Your location on the Internet

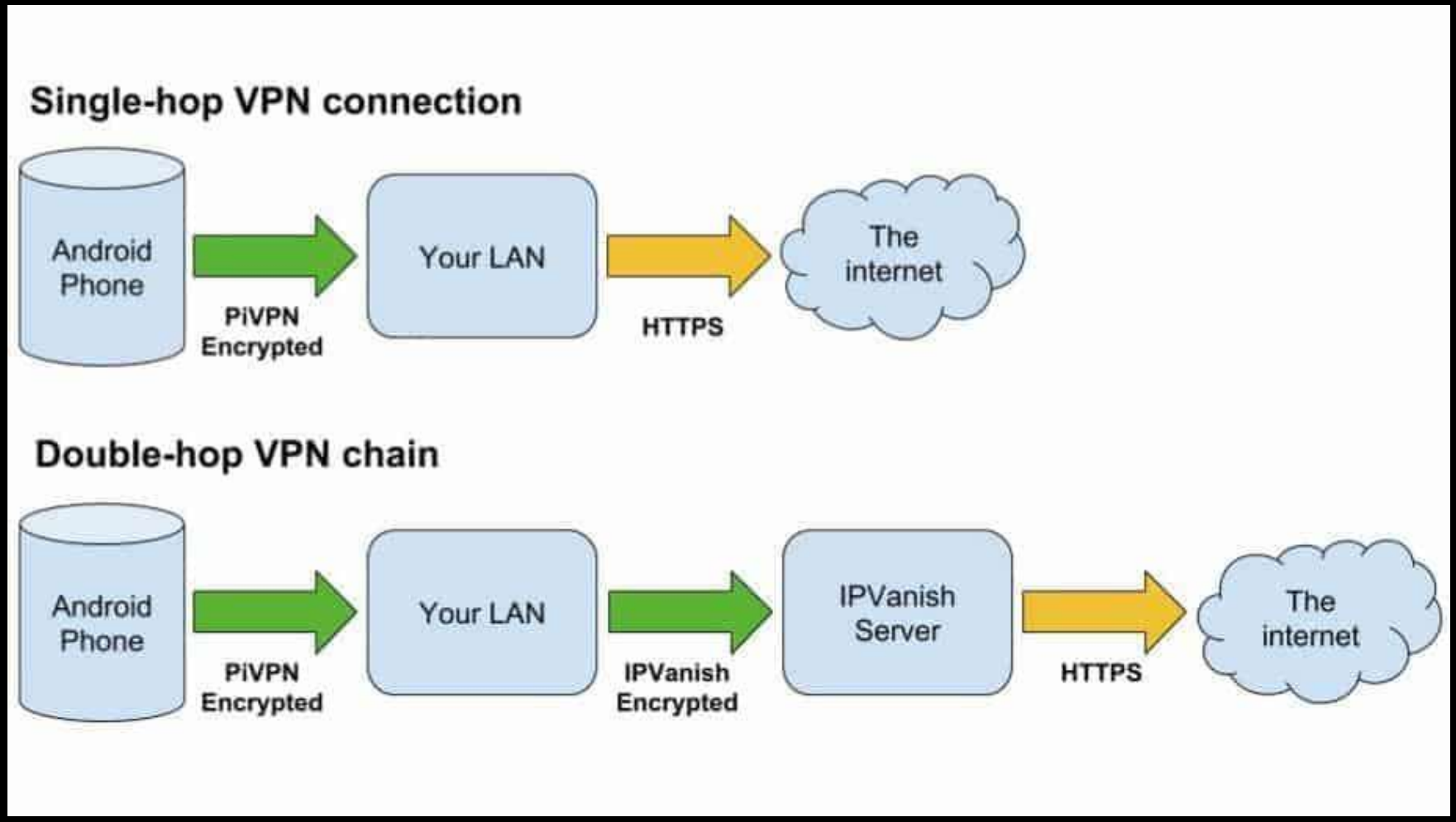
VPN Off

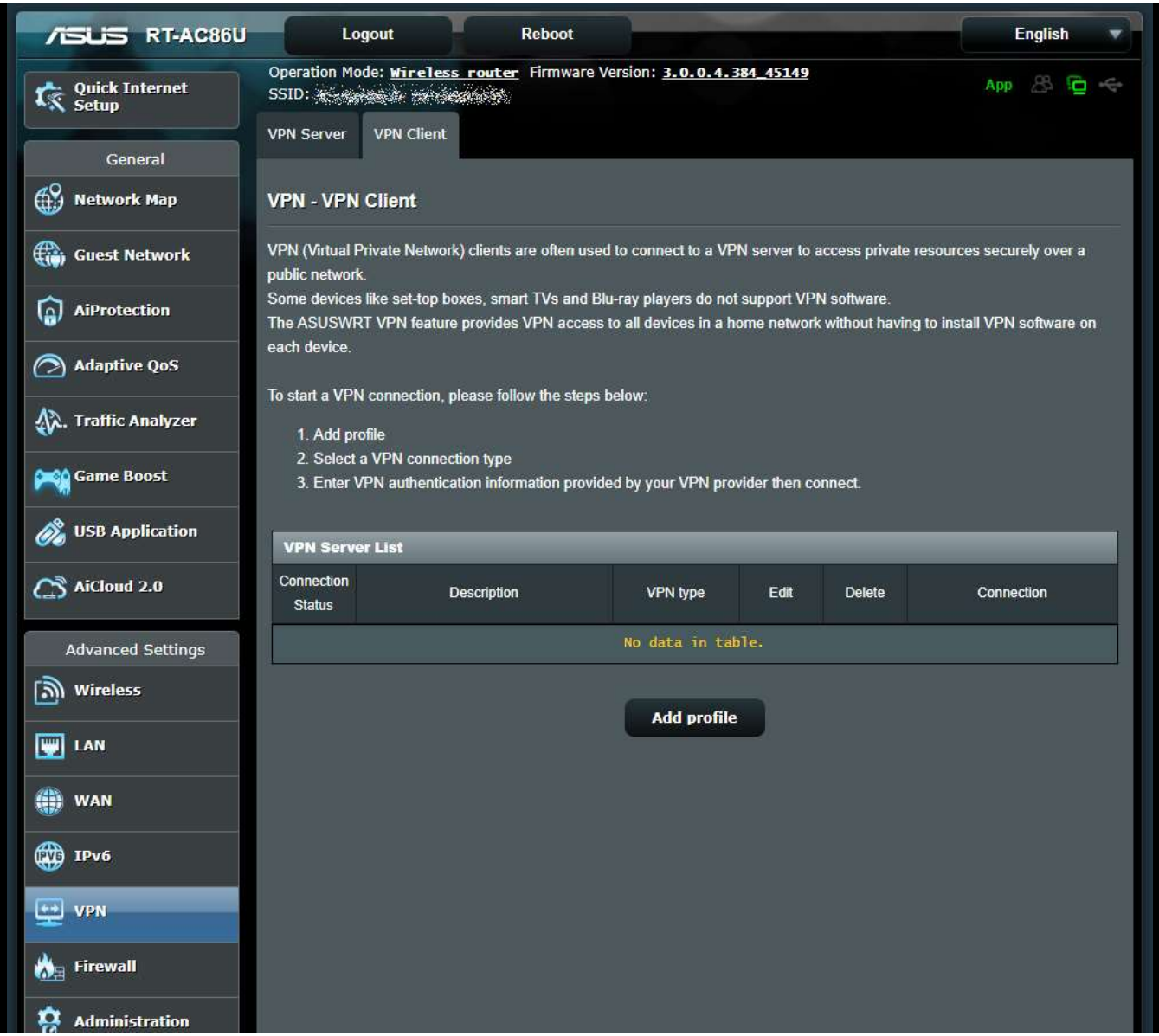


VPN On



Double-hopped VPN




ASUS RT-AC86U
Logout
Reboot
English
Operation Mode: Wireless router Firmware Version: 3.0.0.4.384_45149
SSID:
App
Quick Internet Setup
General
Network Map
Guest Network
AiProtection
Adaptive QoS
Traffic Analyzer
Game Boost
USB Application
AiCloud 2.0
Advanced Settings
Wireless
LAN
WAN
IPv6
VPN
Firewall
Administration
VPN Server
VPN Client
VPN - VPN Client
VPN (Virtual Private Network) clients are often used to connect to a VPN server to access private resources securely over a public network.
Some devices like set-top boxes, smart TVs and Blu-ray players do not support VPN software.
The ASUSWRT VPN feature provides VPN access to all devices in a home network without having to install VPN software on each device.
To start a VPN connection, please follow the steps below:
1. Add profile
2. Select a VPN connection type
3. Enter VPN authentication information provided by your VPN provider then connect.
VPN Server List
Connection Status
Description
VPN type
Edit
Delete
Connection
No data in table.
Add profile

VPN is only part of a security plan

- Keep your operating system and applications up-to-date to incorporate fixes for vulnerabilities.
- Make sure you have a good anti-virus system in place and regularly updated.
- Be sure you have a working firewall in place.
- Educate yourself on how to spot bad web links and suspicious email attachments.
- Set long, complex passwords and use a password manager to protect them.
- Don't reuse passwords between sites.
- Review and adjust your privacy settings in applications and web sites.
- Follow a good backup strategy.

Web Links

- Best VPNs for USA in 2020 for Privacy, Speed, Value, Unblocking
  https://www.comparitech.com/blog/vpn-privacy/best-vpn-for-usa/

- How to turn your Raspberry Pi into a VPN server – Installation guide
  https://www.comparitech.com/blog/vpn-privacy/raspberry-pi-vpn/

- How to Set Up Your Own Home VPN Server
  https://www.howtogeek.com/221001/how-to-set-up-your-own-home-vpn-server/

Web Links

- Install OpenVPN inside a Jail in FreeNAS/TrueNAS
  https://www.truenas.com/community/threads/step-by-step-to-install-openvpn-inside-a-jail-in-freenas-11-1-u1.61681/

- The best free VPN services in 2021
  https://www.tomsguide.com/best-picks/best-free-vpn

- What Is a VPN, and Why You Need One
  https://www.pcmag.com/news/what-is-a-vpn-and-why-you-need-one

Questions?

Virtual Private Networks
Don Arrowsmith,
Philadelphia Area Computer Society

VPN@ArrowsmithFamily.com

apcug
An International
Association of Technology
& Computer User Groups