



VPNs – What they are And Why You Need One

**June 15, 2021
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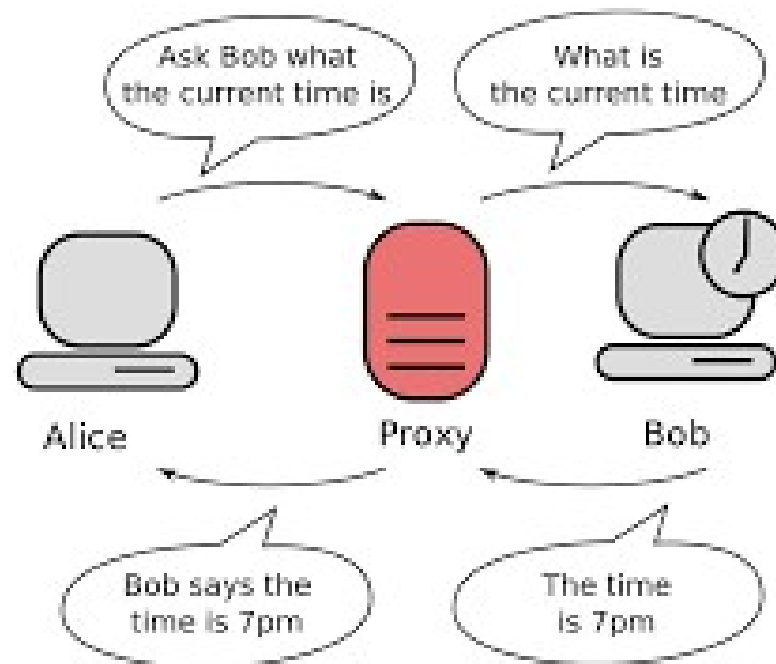


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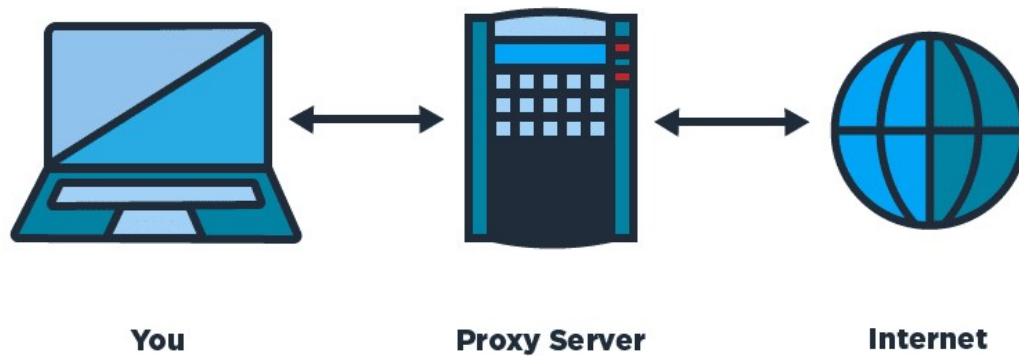
What is a VPN?

- **Stands for “Virtual Private Network”**
- **Similar to a Proxy Server**



Proxy Operation

- **Proxy on network is 1 to Many**
- **Usually on an application-by-application basis or device by device**

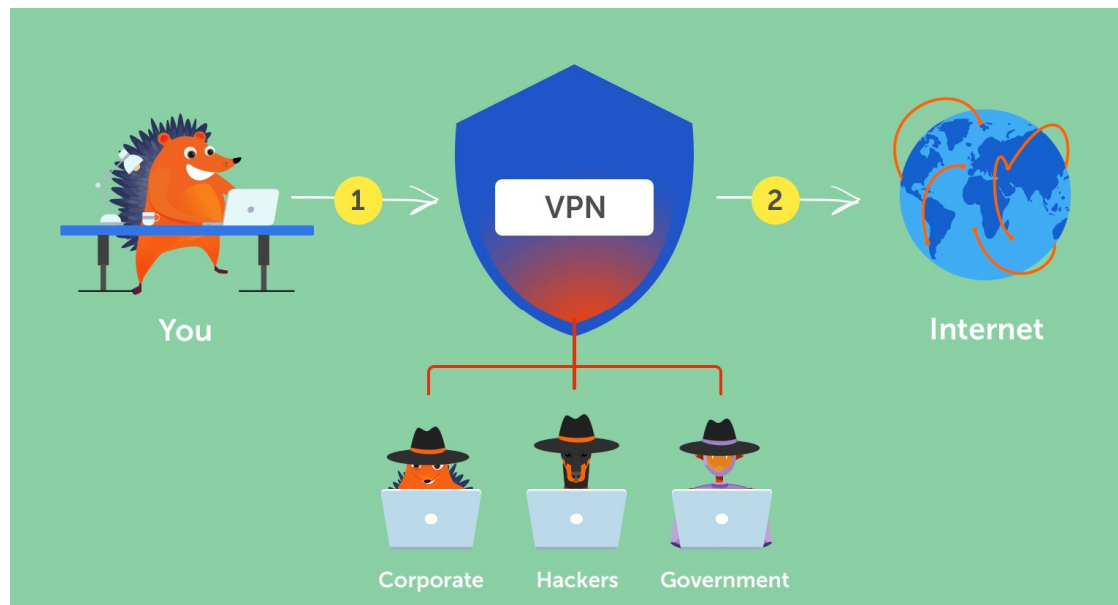


Proxy Operation

- **Every device has an IP address (either V4 or V6)**
 - **10.0.0.8, 192.168.1.2 = v4**
 - **2601:644:4400:3b20:15d9:f18e:c395:3597 = v6**
- **Most devices & proxies are only V4**
- **You have an IP address and Proxy has an IP address**
- **You create data to send on the internet and send it to the proxy to forward on your behalf.**
- **It gets the answer and sends it back to you.**

What VPN does

- **Looks like a proxy, right?**
- **VPN adds encryption between you and the VPN Server**



How VPNs help you

Your ISP cannot tell who you are really talking to (i.e. what website your browsing).

The actual data sent back and forth is encrypted.

It can defeat censorship. Since no one can tell what website you're really browsing, it can't be blocked.

Fool websites into thinking you're in a different country.

Keep yourself safe on free public Wifi (Wifi that uses a password is typically safe, because it encrypts the data)

How VPNs hurt you

VPNs are typically slower – it's a tunnel to a shared server, and encryption and decryption aren't fast

Some websites don't work through a VPN (schwab.com used to not work through my vpn)

Some VPN vendors keep logs

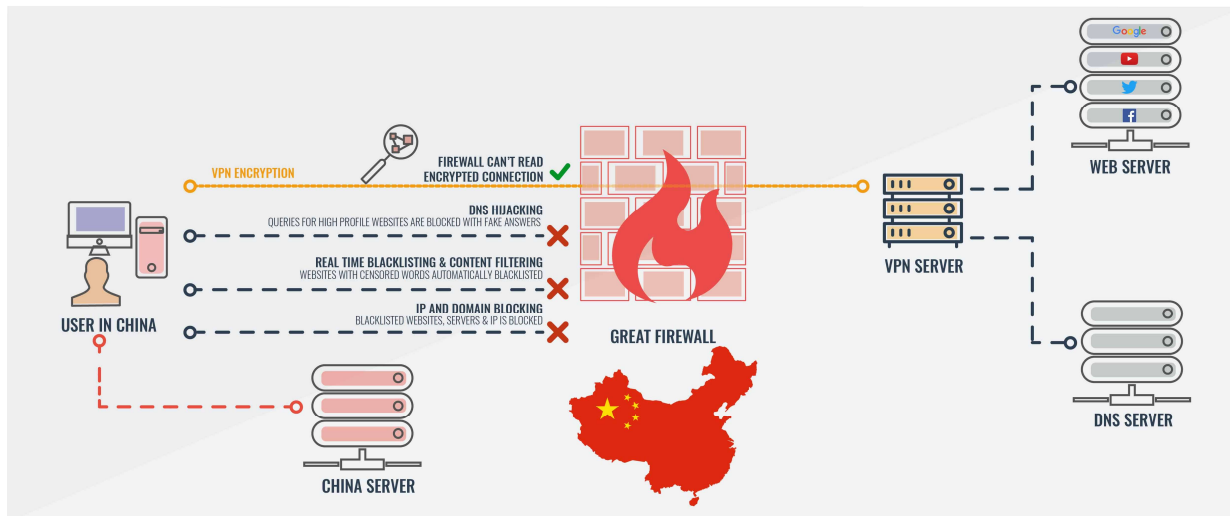
Reasons to use a VPN

- **Privacy**



Reasons to use a VPN

- **Locality – get around local firewalls**



Reasons to use a VPN

- **Locality – pretend you're from somewhere else**
 - **Some sites only work from the US – when you're on a trip, that's a problem.**
 - **Sites like Netflix sometimes have content only 1 country can see (although Netflix does try and block VPNs).**

Reasons to use a VPN

- **Website tracking**
- **Make public hotspots safe**
 - **Even if you're using https: to a site, the DNS lookup to convert from www.bofa.com to an IP address is sent in the clear.**
 - **Anybody at the coffee shops knows you went to the 'bofa' site if they're watching**
 - **There is an alternate way around this: Change your DNS server to 1.1.1.1 (cloudflare).**
 - **<https://developers.cloudflare.com/1.1.1.1/setting-up-1.1.1.1>**

Reasons to use a VPN

- **Keep your mobile internet private**
- **Bypassing mobile internet policies**
 - **Some mobile providers scale videos down from HD to SD**
 - **This will bypass that because they can't see that you're getting a video**
- **“Stingray”**
 - **Remember, even if you have nothing to hide, things taken out of context can look bad.**

VPN features

- **Split tunnelling – a little more advanced, but sometimes useful**
- **No logs**
- **Supports all your platforms that you use**
- **Speed is acceptable**
- **Ease of use**

Good VPN Services

- **ExpressVPN**
- **NordVPN**
- **CyberGhost**
- **Private Internet Access (my preference)**
- **PureVPN**
- **IPVanish**

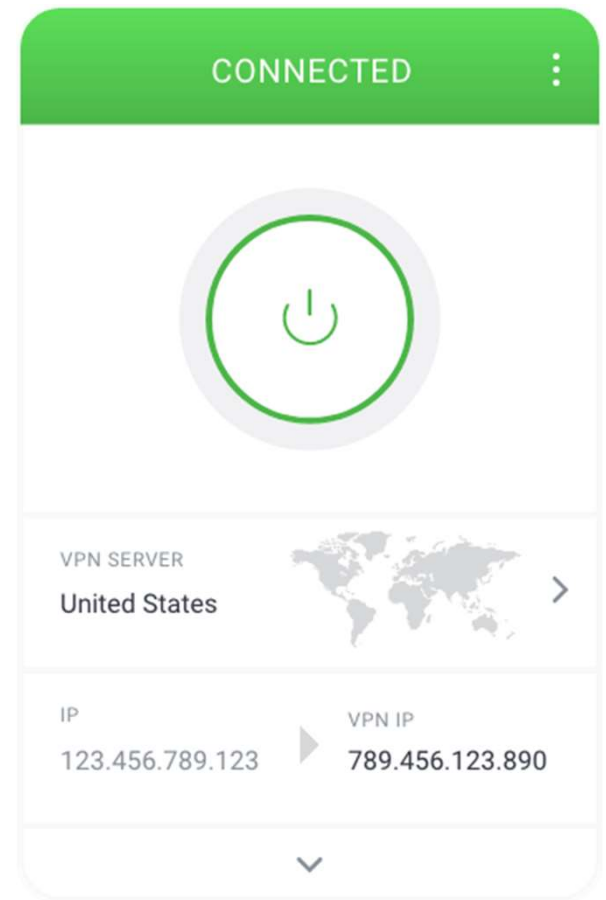
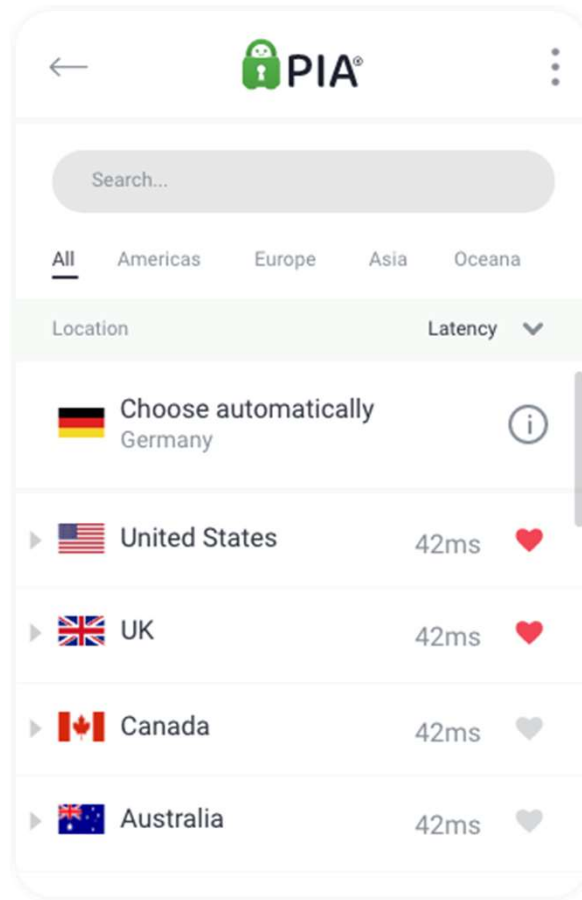
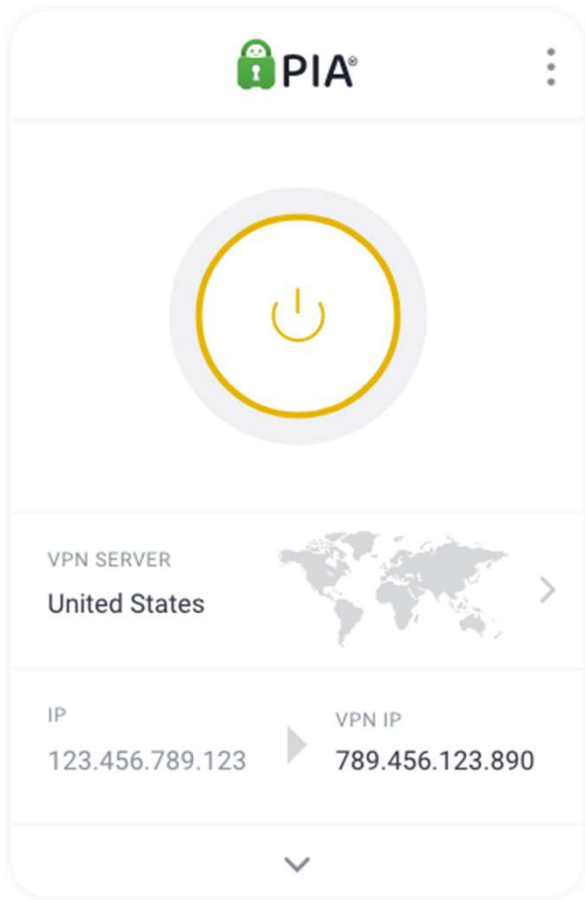
<https://www.security.org/vpn/best/> has comparisons

All around \$10/mo

All support all platforms

Most are not detected by Netflix

Private Internet Access Screens



How to tell it's working

- <https://whatismyipaddress.com>

My IP Address is:

IPv6: ? [2601:644:4400:3b20:15d9:f18e:c395:3597](#)

IPv4: ? [73.222.10.185](#)

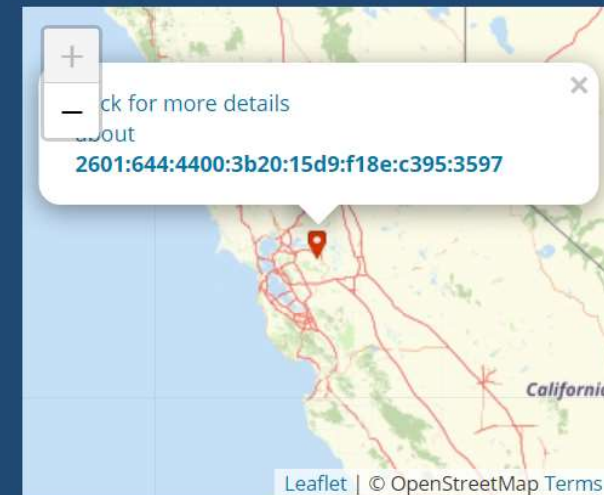
My IP Information:

ISP: Comcast Cable
City: Antioch
Region: California
Country: United States

Your private information is exposed!

 **HIDE MY IP ADDRESS NOW**

[Show Complete IP Details](#)



Location not accurate?

[Update My IP Location](#)

How to tell it's working

- <https://whatismyipaddress.com>

My IP Address is:

IPv4: ? **162.216.47.169**

IPv6: ? **Not detected**

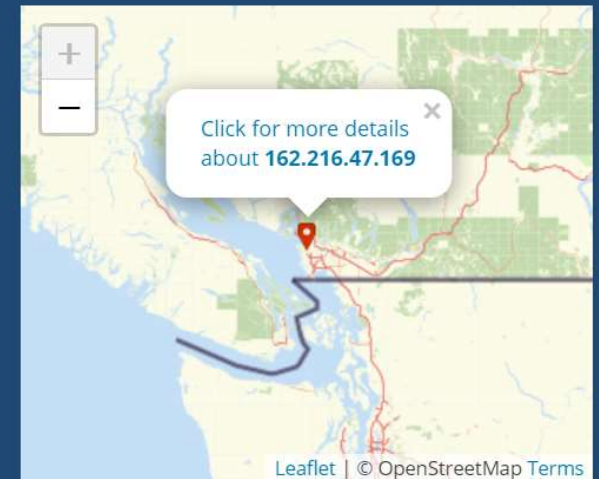
My IP Information:

ISP: Performive
City: Vancouver
Region: British Columbia
Country: Canada

Your private information is exposed!

 **HIDE MY IP ADDRESS NOW**

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