What is a VPN – Ultimate Guide & Tutorial

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A VPN is:

- A **virtual private network**, which is:
  - a secure,
  - encrypted tunnel between your device
  - and a VPN server.
- It allows you to:
  - encrypt and hide your online activity,
  - hide your IP address and location,
  - and easily get around content restrictions and blocks.
- Let's cover some basics.

How a VPN works

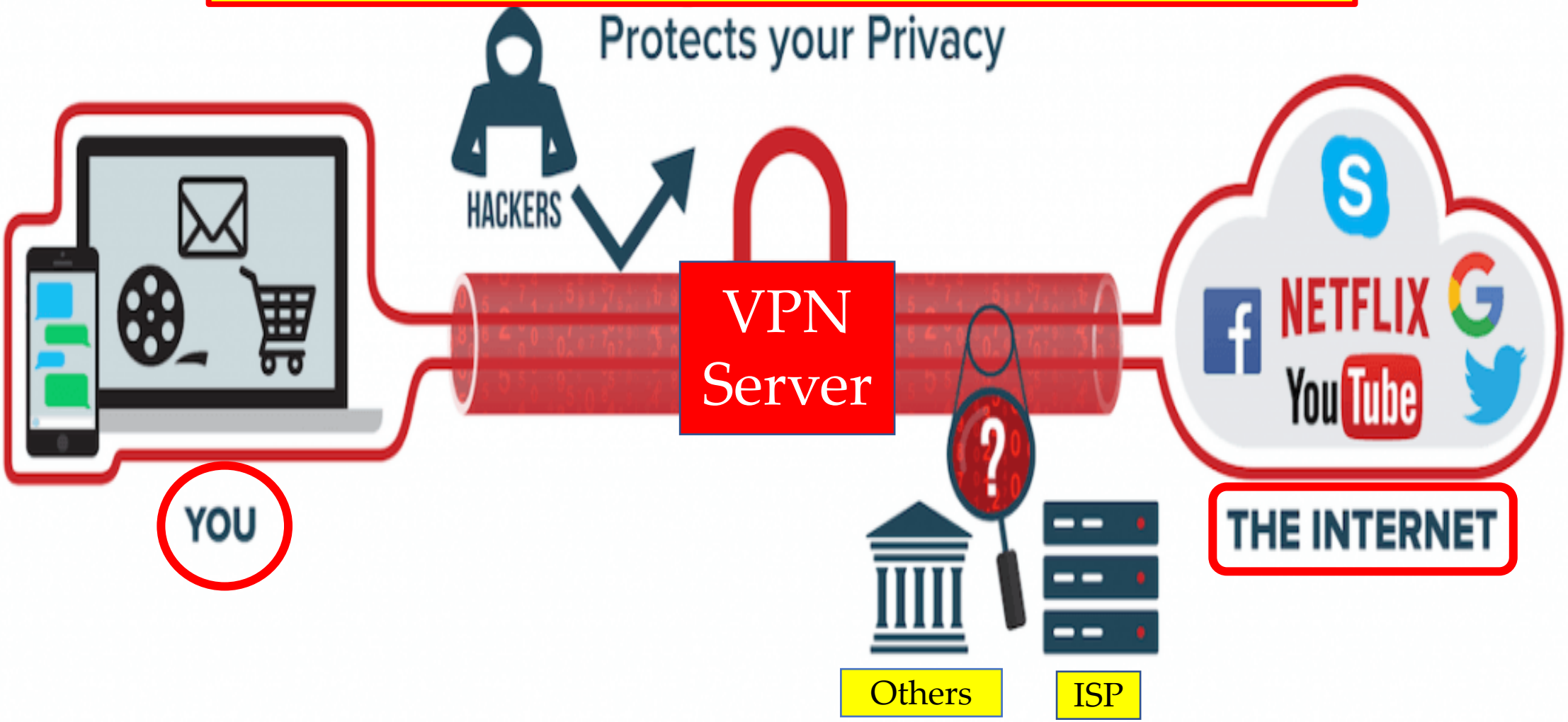
- It works by creating an encrypted connection between a computer/device and a VPN server.
  - A server is a computer that provides data to other computers.
- Think of this encrypted connection as a protected “tunnel”
  - through which it can access everything online,
  - appearing to be in the location of the VPN server connected to.
- This gives you a:
  - high level online anonymity,
  - provides added security,
  - and allows access to the internet without blocks or restrictions.

Without a VPN

- Everything done online is easily traceable to:
  - physical location
  - and the device being used,
  - via the device's IP address.
- Every device connected to the internet has a unique IP address
  - PC, phone, tablet.
- By using a VPN, hides true location.
- It replaces the computer's IP address with the VPN server's IP address.

A server is a computer designed to process requests and deliver data to another computer over the internet.

VPN a Graphic view.



Good VPN services

- Typically maintain servers all around the world.
- Allows lots of connection possibilities.
- After downloading the VPN software;
  - instantly connect to any of these worldwide servers.
- Your ISP can only see that you're online and connected to a VPN server.
- Your information is encrypted and secured;
  - which makes it completely unreadable to third parties.

Why a VPN is used

A list - some of the reasons why a VPN is used:

- Online anonymity.
- Encrypting the internet connection.
- Prevent spying on online activities (thanks to encryption).
- P2P download and stream media in safety.
  - P2P = Peer to Peer - each computer becomes a file server as well as a client.
  - (SKYPE, PayPal, Apple Pay)
- Save money - online purchases by changing the IP address
  - geographic location.
- Protection from hackers anywhere
  - especially while using public WiFi connections.
- Protects private data when online.

Are VPNs safe?

- Using a good, high-quality VPN is generally considered safe.
- https://restoreprivacy.com/
- There are a number of VPNs with known problems to avoid.
- https://restoreprivacy.com/
  - leaks, which will expose your identity.
- There are also a number of different VPN scams .
  - This applies to all the various “lifetime” VPN subscriptions.

avoid free VPNs like the plague.

- Free VPNs are generally:
  - data collection tools
  - that will sell your private information to the highest bidder.
- Here are the hidden risks of free VPNs:

1. embedded malware
2. hidden tracking
3. third party access to your data
4. browser hijacking
5. traffic leaks (IP address leaks)
6. fraud (identity theft and financial fraud)

Online privacy and security – the details

- It's very difficult to be 100% anonymous online.
- Here are things you can do to achieve a high level of online anonymity:

1. Use a good VPN that passes all leak tests.
2. Use a secure, privacy-focused browser (Firefox, Chrome, Safari).
3. Practice good privacy precautions.

Some Privacy Steps.

1. Block ads, malware, adware, trackers, phishing.
    A. Windows 10 Privacy
2. Use privacy-friendly search engines. (Searx, DuckDuckGo)
3. Secure your router
    A. secure all your electronics.
        1) Search engine – how to secure my (name and model #)
4. Say no to “home assistants”. (Google Home, Echo, Alexa etc.)
5. Delete those apps not used!.
6. Secure your social media.
7. Log out when finished!

Privacy Guide 18 Steps. http://bit.ly/2AN0tRE

Which VPN protocol to use?

- **When you select a VPN, know what Protocol they use.** (rules or procedures for transmitting data)
- There are four common VPN protocols in use today:

1. **PPTP** – Point-to-Point Tunneling Protocol - a basic, older VPN protocol with known security vulnerabilities.

2. **L2TP/IPSec** – Internet Protocol Security with Layer 2 Tunneling Protocol. Not always have the best speeds. It is commonly used with mobile devices.

3. **IKEv2 /IPSec** – Internet Protocol Security with Internet Key Exchange version 2 - a fast and secure VPN protocol.

    a. Automatically pre-configured, works very well with mobile devices.

    c. The one downside - developed by Microsoft - not an open-source project, Relies on proprietary software.

4. **OpenVPN** –This is generally considered the most secure protocol with solid speeds.

    a. In many cases, this is the best VPN protocol to be using with a VPN service.

    b. Requires the use of third-party apps.

VPN performance and speed

- When using a VPN, a lot is going on behind the scenes.
- The Device is encrypting and decrypting packets of data:
  - Being routed through a remote VPN server.
  - All of this takes more time and energy,
  - Which will ultimately affect your **internet speed.**
- It's best to connect to the closest VPN server.
  - Example: choosing a VPN server in New York is a good idea
    - Rather than Los Angeles.

Home » IP Tools » IP Lookup » 2601:881:8200:12f3:9502:6be3:b6d4:ac17

IP Details for 2601:881:8200:12f3:9502:6be3:b6d4:ac17

Share details about this IP address

This information should not be used for emergency purposes, trying to find someone's exact physical address, or other purposes that would require 100% accuracy.

Info IP address gives away.

2601:881:8200:12f3:9 Lookup IP Address

Details for 2601:881:8200:12f3:9502:6be3:b6d4:ac17

IP: 2601:881:8200:12f3:9502:6be3:b6d4:ac17
Expanded IP: 2601:0881:8200:12f3:9502:6be3:b6d4:ac17
Hostname: 2601:881:8200:12f3:9502:6be3:b6d4:ac17
ASN: 7922
ISP: Comcast Cable
Organization: Comcast Cable
Services: None detected
Type: Broadband
Assignment: Static IP
Continent: North America
Country: United States
State/Region: Florida
City: Eustis
Latitude: 28.855 (28° 51′ 18.00″ N)
Longitude: -81.6789 (81° 40′ 44.04″ W)
Postal Code: 32726

Closing Thoughts

- Big tech companies (Facebook, Google, Microsoft) are:
  - harvesting as much of your data as possible,
  - making billions selling it to third parties,
  - working closely with the governments to carry out mass surveillance,
  - all happening **without your consent**.
- There is no way to opt out.
- The Internet is full of really useful information.
- Use CAUTION in connecting to the internet.

The End.

- Questions or Comments.
- Direct to:
- jminich@apcug.org

- Thanks for being a APCUG User Group Region 5.

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