Using a VPN

Presented to the Peterborough Linux User Group
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January 2, 2017

What is a VPN?

- Virtual Private Network

- Is a private network that uses a public network (usually the Internet) to connect remote sites or users together

- Uses virtual connections routed through the Internet from a computer (or other device) to a remote site

- The connection is encrypted from end to end

- Nobody, including your ISP can read your transmitted data

Compare this to not using a VPN

- Just using the Internet means that data you send and receive through it is unencrypted (unless you are using the https protocol)

- Https connection usually just kicks in when you use banks, enterprise login services, etc. (you see it with a lock in your browser)

- All other data, which is most of it, goes across the internet unencrypted

- Every router between you and the website sees this traffic in cleartext

Traceroute to Google


```
jason@mars:~$ traceroute google.ca
traceroute to google.ca (172.217.4.195), 30 hops max, 60 byte packets
 1  gateway (192.168.7.1)  0.341 ms  0.330 ms  0.318 ms
 2  10.206.36.1 (10.206.36.1)  7.973 ms  11.920 ms  11.909 ms
 3  * * *
 4  * * *
 5  72.14.198.214 (72.14.198.214)  26.184 ms  26.172 ms  26.147 ms
 6  216.239.47.114 (216.239.47.114)  26.142 ms  18.145 ms 209.85.255.232 (209.85
.255.232)  18.131 ms
 7  216.239.46.153 (216.239.46.153)  36.320 ms 216.239.50.229 (216.239.50.229)
31.976 ms 108.170.236.119 (108.170.236.119)  35.723 ms
 8  108.170.236.124 (108.170.236.124)  35.708 ms 72.14.238.73 (72.14.238.73)  35
.687 ms 216.239.40.134 (216.239.40.134)  35.680 ms
 9  72.14.252.27 (72.14.252.27)  37.511 ms  41.257 ms  39.944 ms
10  lga15s48-in-f195.1e100.net (172.217.4.195)  39.917 ms  39.907 ms  39.905 ms
jason@mars:~$
```

So every search you do...

- Goes through multiple routers on its way to Google
- Every search you do sends the data along and if it's not encrypted, it can be analyzed
- In this case, Google.ca uses https so your web searches are safe from prying eyes (other than google)
- But all non-https traffic goes unencrypted across the internet, including any program that talks to the internet and doesn't already encrypt its data
- Keep in mind this includes your ISP who not only can see your unencrypted transmissions but keep logs mapping your IP address to you

Other concerns

- Since your ISP can view the unencrypted traffic you're sending, they know if you're sharing files

- If the files are copyright-protected, you could be dragged into court though you'd likely be warned first

- Geolocked sites will also block you based on your country of origin

Adanced Uses of VPN

- Log in securely to your home computer or other device securely in a way that you can use the desktop as if you were sitting right in front of it

- Extend computer networks or computers to create a wider network across the Internet, a type of WAN

Home uses of VPN

- Use a VPN client on your own computer or device to protect your privacy

  - Masks your IP address – good for torrents! ;)

  - Encrypts all data to and from the VPN server which then reaches out on your behalf

  - Bypassing geolocation by using a VPN server in the allowed country

  - Using public wifi more safely

Free or Paid?

- There are free VPN providers and paid services

- Personally, I wouldn't trust free VPN providers; remember all your traffic will be going through them

- Lots of commercial ones with prices ranging from $5-10 USD paying by the month, cheaper if you pay in multiple month contracts

- Also want to look to see if they have a Linux client
  - Can use any VPN if they don't but a native client makes it easier

- Google VPN Clients

- I use Private Internet Access (PIA) and I've heard good things about Hide My Ass! too