

Introduction to VPN's (Virtual Private Networks) 18th May 2020



What we are going to talk about

- How the Internet works
- What is a VPN
- Why Use a VPN





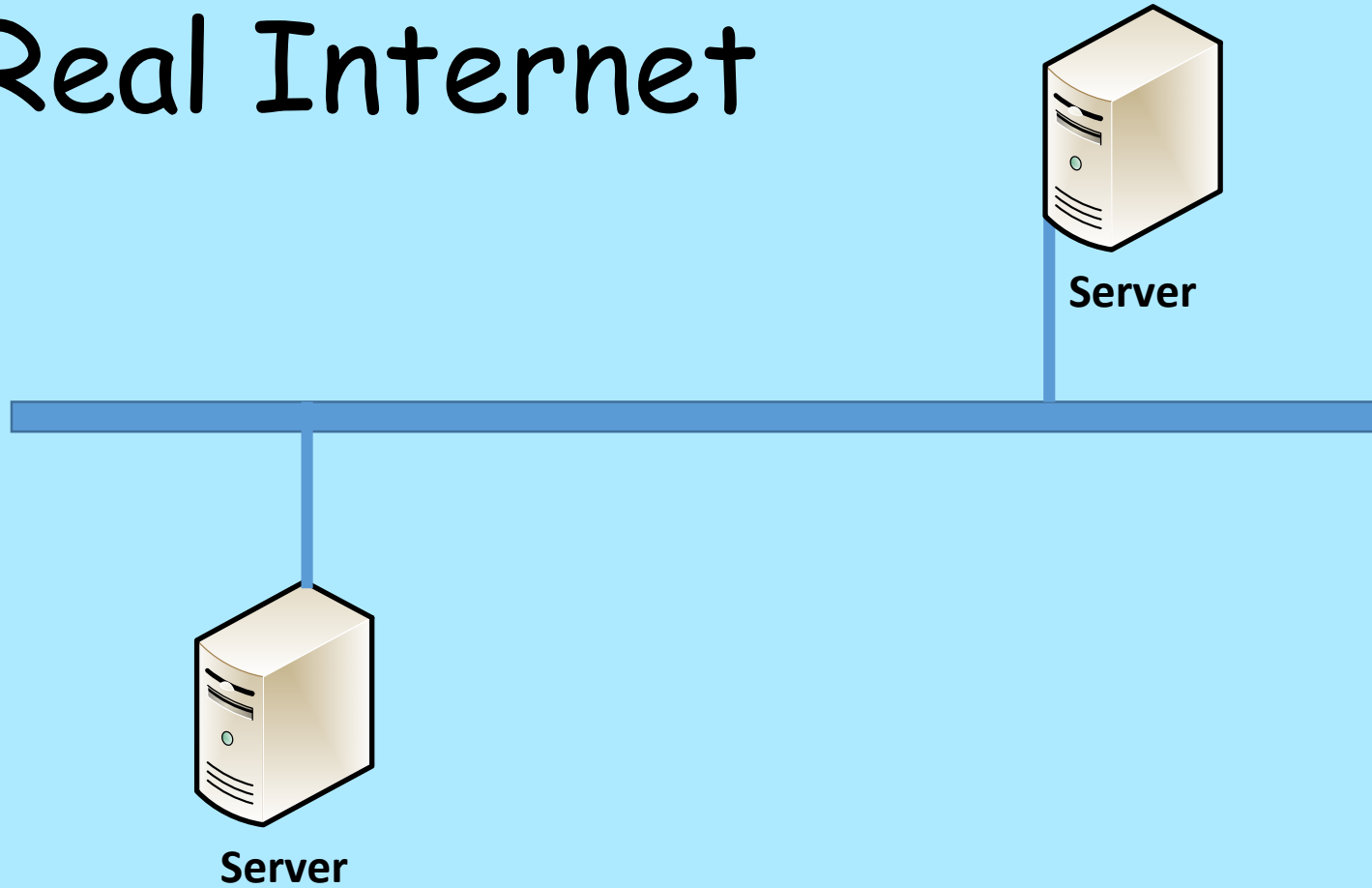
Firstly.....

How the Internet Works in 5 minutes.....

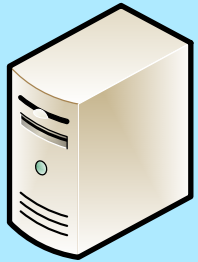


The Internet

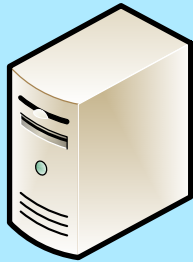
The Real Internet



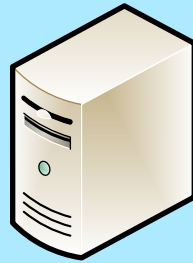
The Real Internet



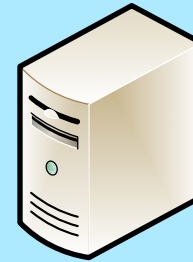
172.217.16.195
www.google.co.uk



69.63.184.142
www.facebook.com



192.124.249.62
https://u3asites.org.uk



3.21.137.128
https://zoom.us

Internet Assigned Numbers Authority (IANA)

UK Bridgeshire BridgeTown

No.4

No.3

No.2

No.1

Bridge Street

Postal Address Example

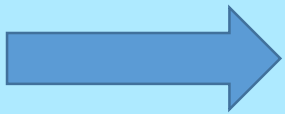
IP Address Example

UK



142.X.X.X

Bridgeshire



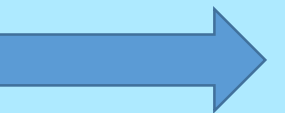
142.125.X.X

BridgeTown



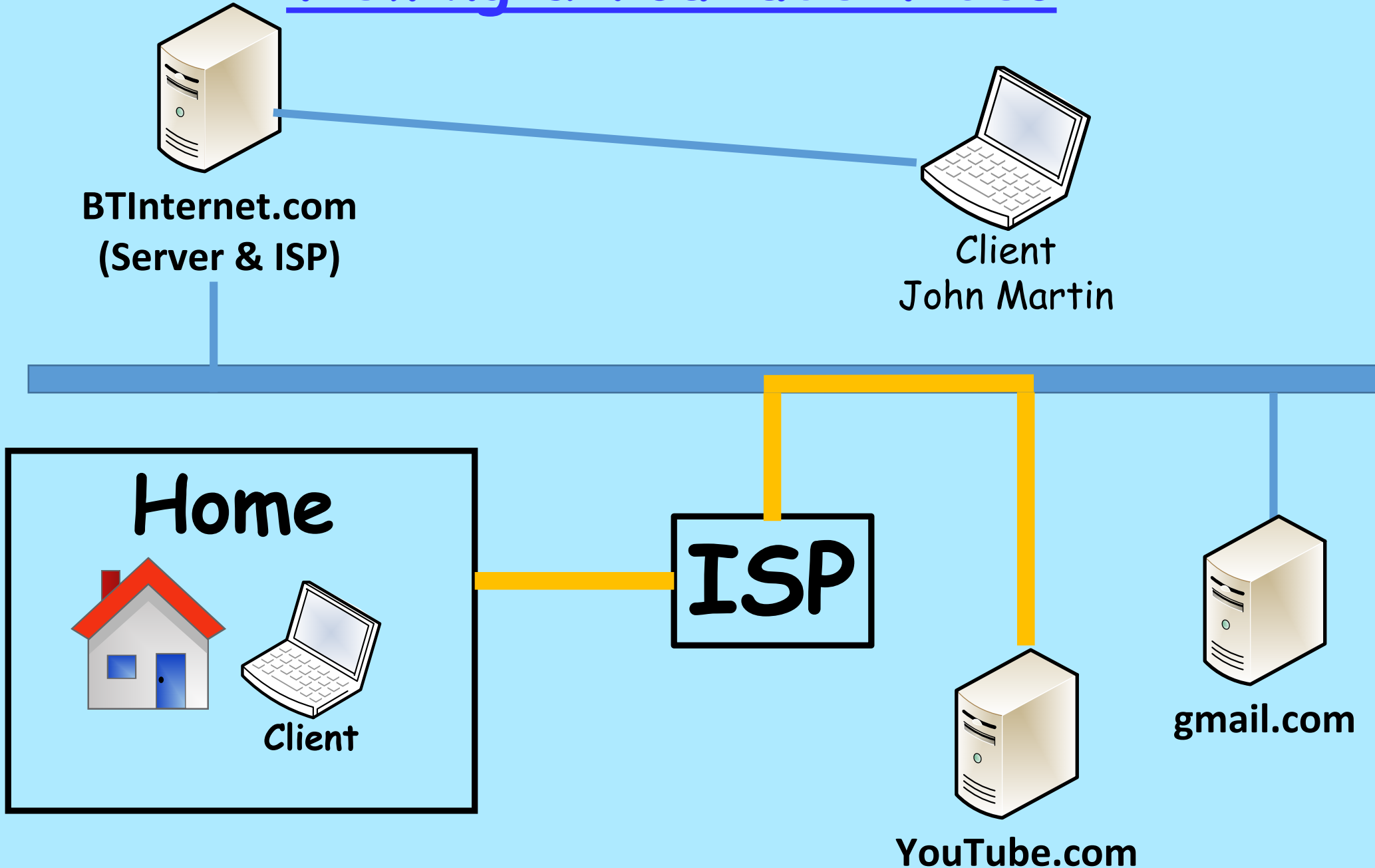
142.125.64.X

2 Bridge St

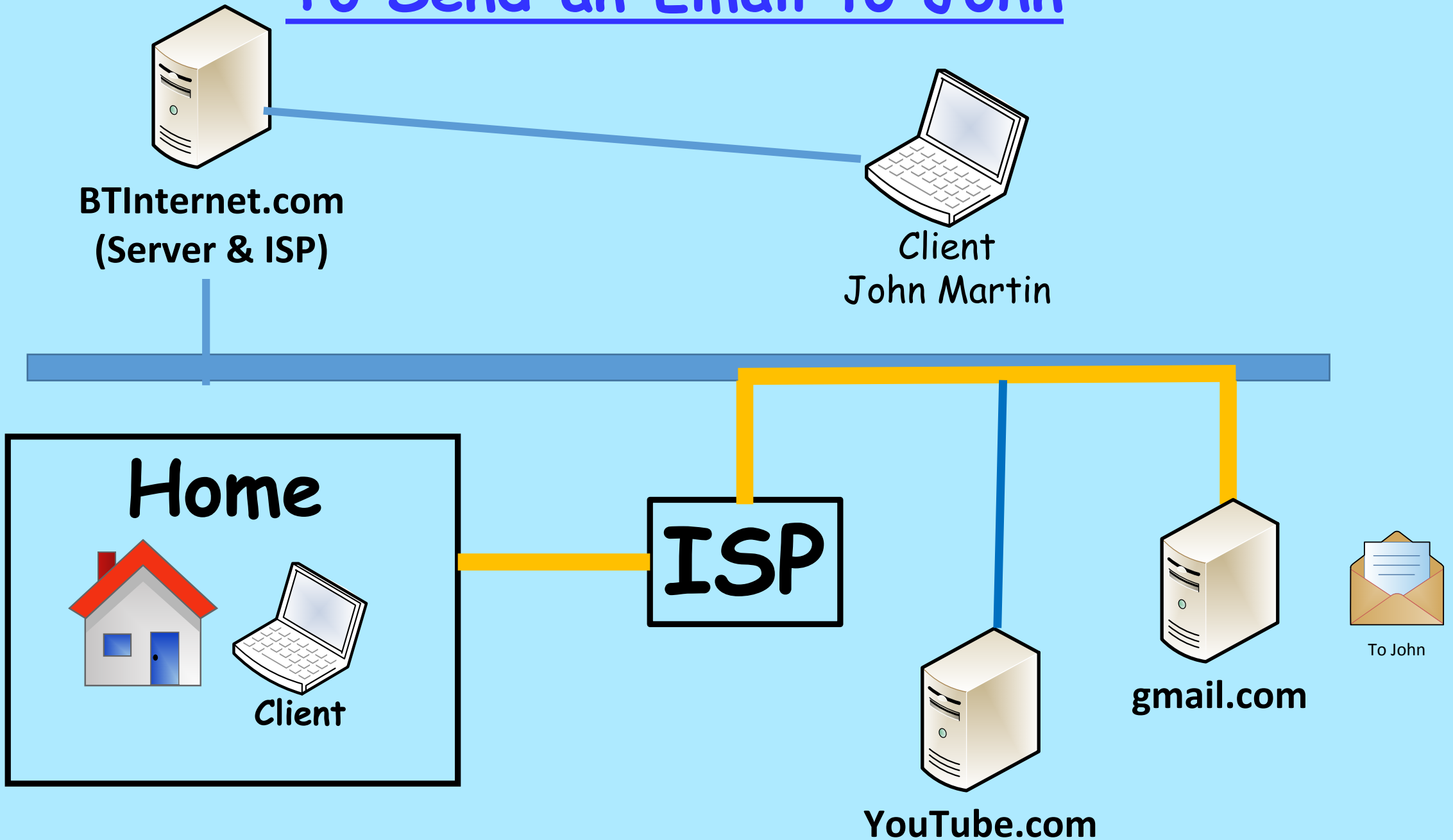


142.125.64.99

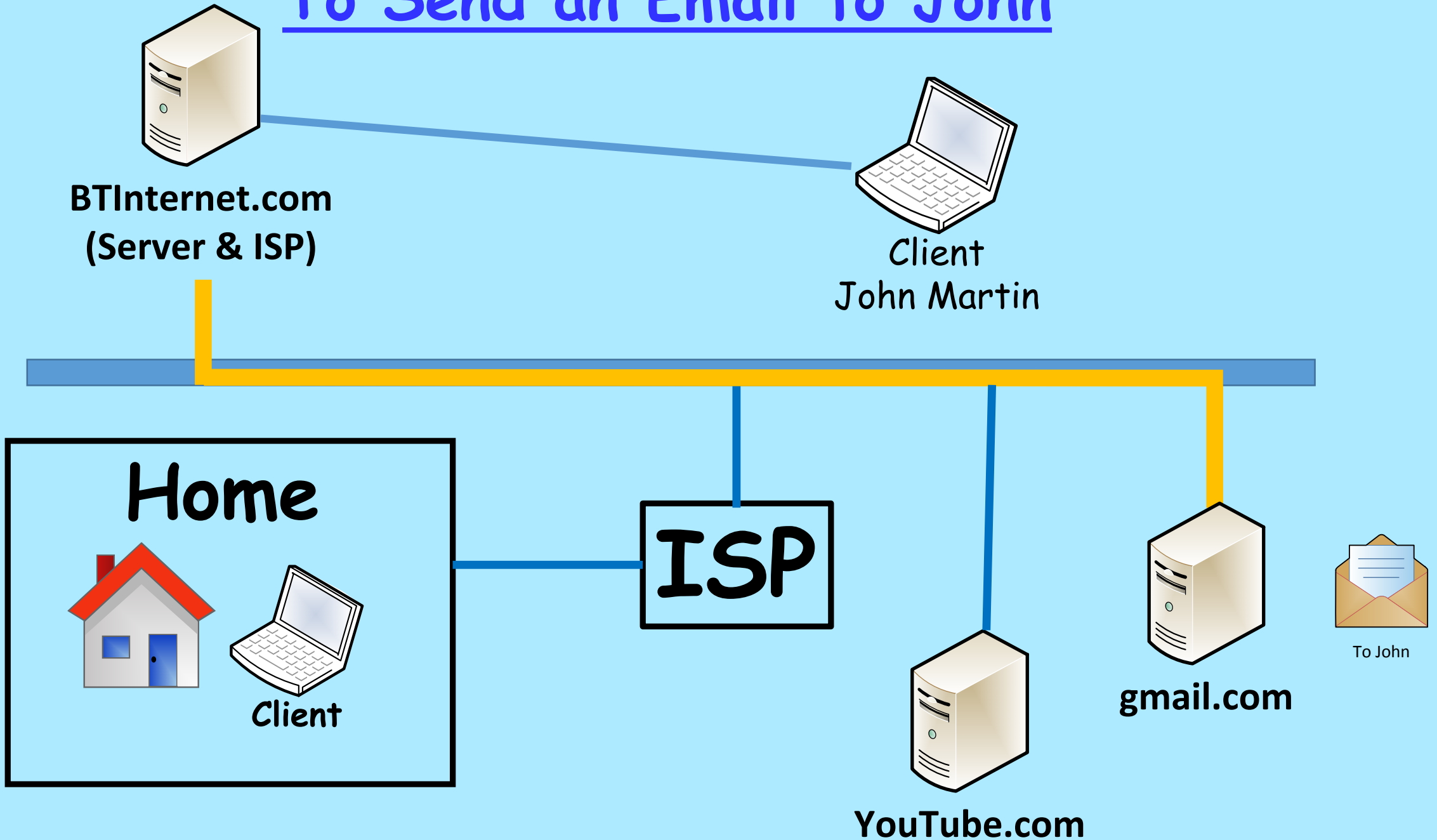
Viewing a YouTube Video



To Send an Email to John



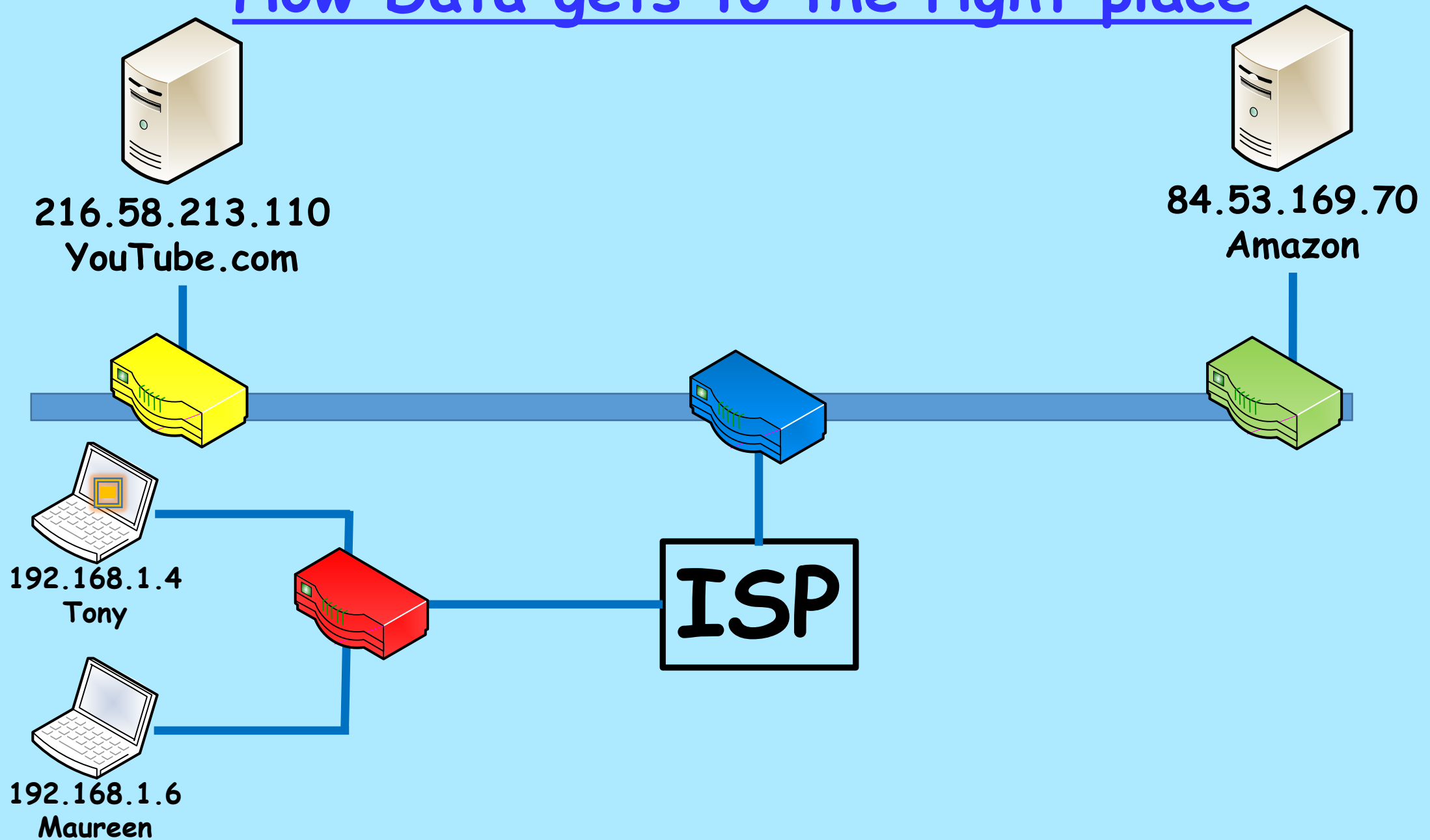
To Send an Email to John



Data is split into packets



How Data gets to the right place





Whats a VPN

It's a Virtual Private Network

It's Virtual...because it's as if you have a private connection directly to any website or another computer you connect to.

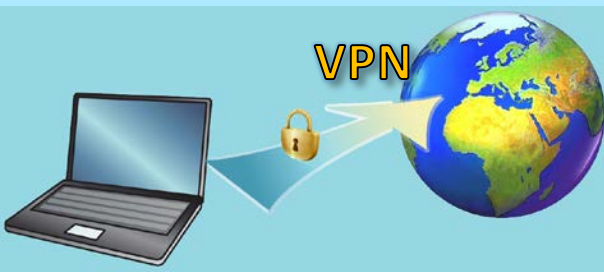
It's Private...because all your website visits and online activity is between you and the websites you visit.

It's a Network...because you're using a special network of VPN servers that covers the entire globe.

Whats a VPN

It's a Virtual Private Network

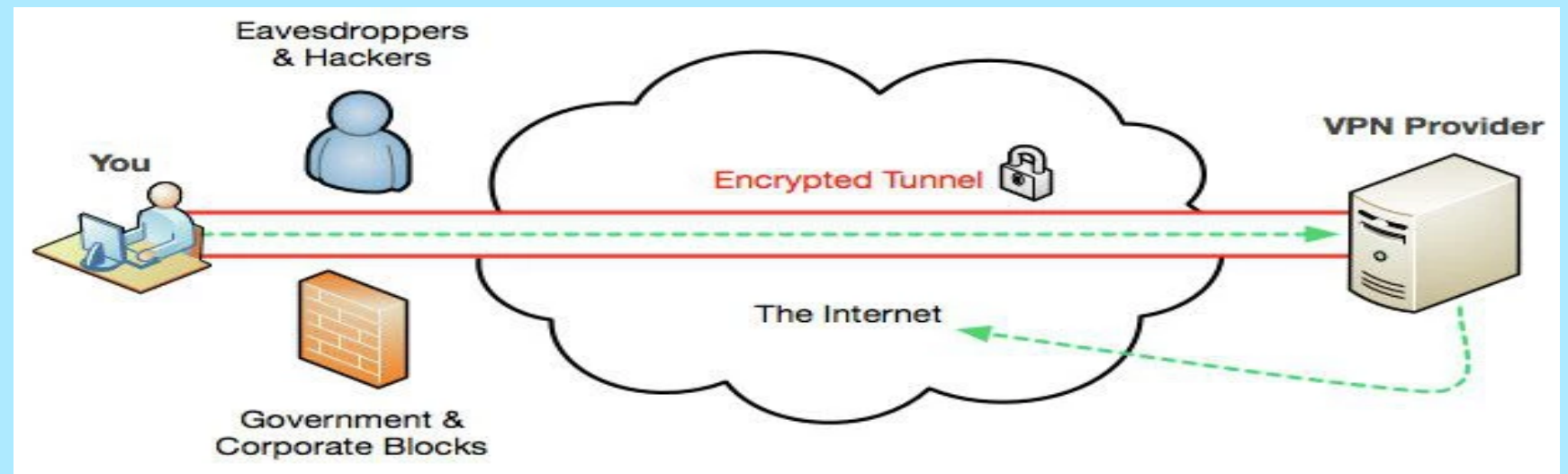
A VPN is a service with special software that lets you access the web safely and privately by routing your connection through a special server and hiding your online actions.



Whats a VPN

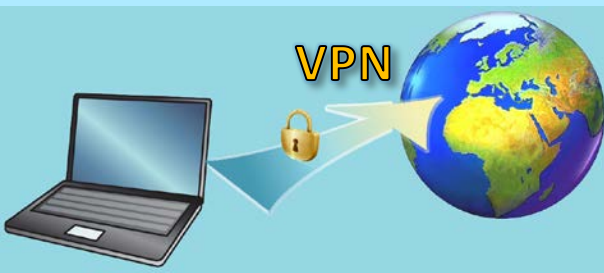
It's a Virtual Private Network

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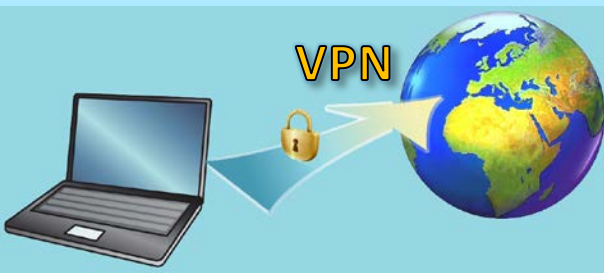
Why use a VPN

- A VPN is a way to bolster your Internet security
- It stops other monitoring what you do on the internet.
- Example- stops your ISP taking actions based on your activity
 - - stops ISP selling your data for targeted adverts
 - - stops data theft from 'open' networks (Cafes etc)
- All VPN connections are encrypted, stopping snoopers.
- Provide location benefits - shows you located in another country
 - unlocks services that are blocked from your real location
 - gamers can lower their ping using a server in the host country.



Why use a VPN

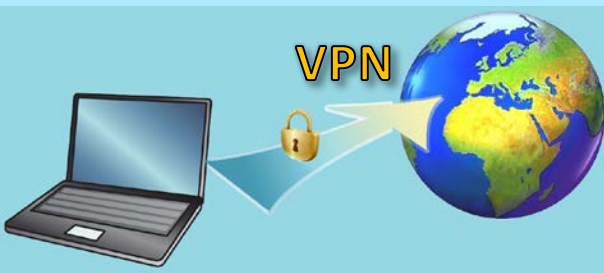
- A VPN is like an Internet PO box -
 - an address that can't be trace back to you.
- Your Computer has the VPN's IP address & not the real one.
- Search data goes to the VPN's address then to you instantly and securely.
- Thus you appear to be wherever the VPN server is located -
 - allowing you to access the Internet like a local.
- Snoopers and hackers can't trace your activity to your real address
- VPN's are used by banks, law firms, anyone with home workers
- Due to security, governments use VPN's for confidential data.



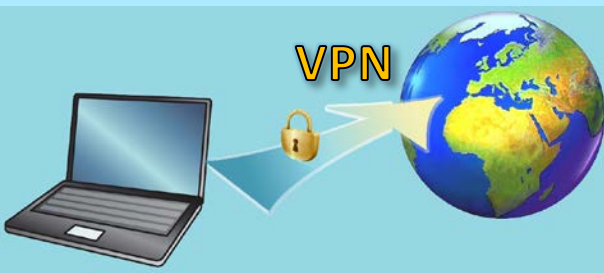
Why use a VPN

The great irony of the Internet.....

- Meant to connect everyone together and break down barriers
- However media companies erect location-based barriers - know as geoblocking.
 - For example, Hulu is not available outside the United States
 - BBC iPlayer is blocked to anyone outside of the UK.
 - YouTube is blocked in various parts of Europe
- Some people feel this is unfair & use VPN's to access content across borders



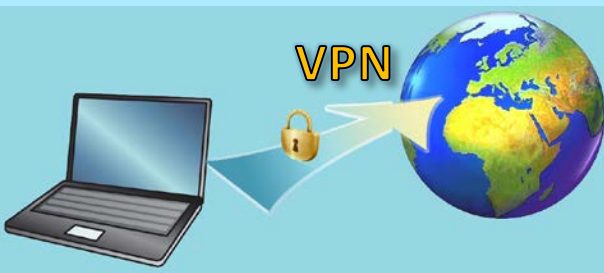
The Different Types of VPN Users



VPN Users

The Student / Worker.

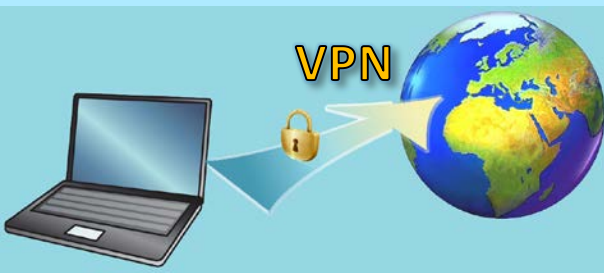
- Uses a school or company VPN to connect to it's private network
 - from home or traveling.
- Also, if concerned about security, they can use the VPN
 - on the airport or cafe WI-Fi to ensure no snooper



VPN Users

The Downloader.

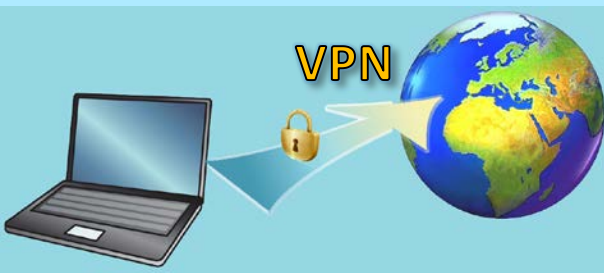
- Downloading legally or illegally, this person doesn't want company attention just because they have a torrenting app on their computer.
- VPNs provide privacy when using something like BitTorrent or TOR



VPN Users

The Privacy minded and Security advocate.

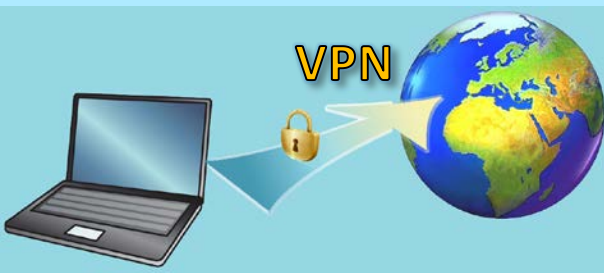
- No matter where they are (monitored or open) this person uses VPN services to keep their communications secure and encrypted.
- To them, unsecured connections mean someone's monitoring their activities



VPN Users

The Globetrotter.

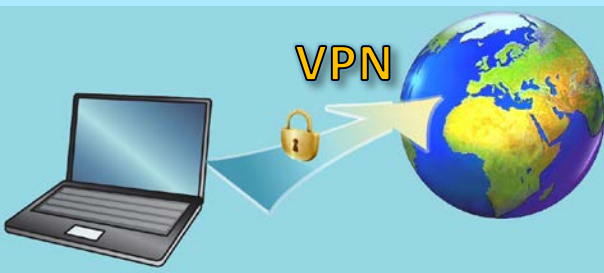
- This person wants to watch international events live which might not be available on the local network.
- They want to watch location-restricted TV
- Listen to streaming internet radio
- Use a new web service which is limited to a specific country.



Potential disadvantages with a VPN

VPN clients help protect your connection to the internet but your data is only as safe as the server you are trying to access.

- Some VPN's (mostly "free VPN") have very slow connection speeds.
- Some VPN's (mainly free) collect and store information from the user.
- Some VPN's (again, mainly free) act as a Man-in-the-Middle and can even install malware on your computer
- A VPN won't protect users who make bad choices on the internet!

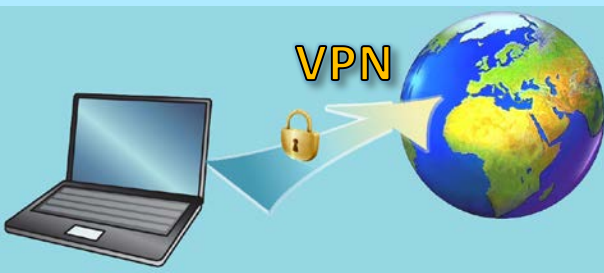




The Netflix VPN Ban

TV and film streaming service Netflix now has a VPN Ban in place

This actively prevents users from using a VPN to hide their geographic location in order to gain access to content that is not available to their country ...

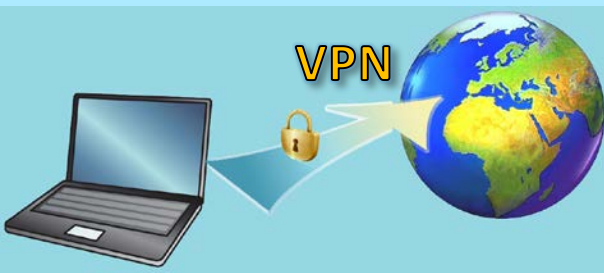




The Netflix VPN Ban

How does Netflix block?

- Blacklist popular VPN providers known to be used by many people
- Blacklist IP Addresses of VPN providers servers
- Block all connections that seem to come from the same IP address

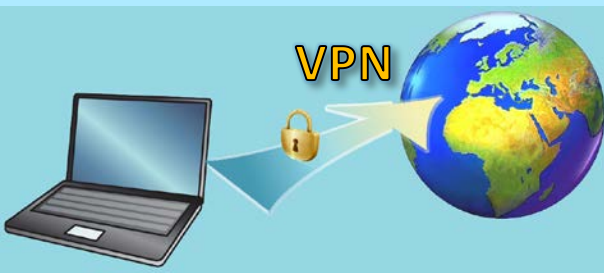




The Netflix VPN Ban

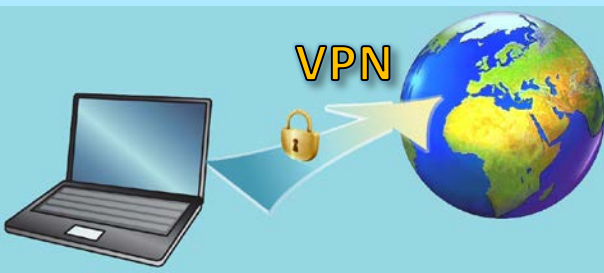
How to work around the ban

- Buy a VPN unique or Static IP address - (more cost)
- Look for suppliers that offer changing IP addresses
- Host your own VPN on your home system (e.g. Raspberry Pi)



What Makes a Good VPN

- Protocol (SSL/TLS PPTP, IPSec, L2TP)
- Server Locations
- Logging (know the policy)
- Anti-Malware/Anti-Spyware Features
- Mobile Apps
- Price



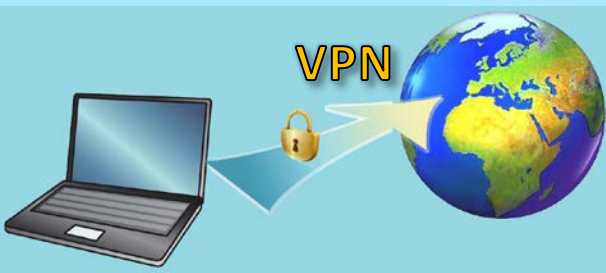
TOR (The Onion Router)

A network of servers to anonymize your Internet traffic for free.

- TOR is NOT a VPN but another type of security
- Based on a special browser bundle.

TOR Software

- Will encrypt your connection to the TOR server
- Then routes your Internet traffic through random servers across the globe
- Slows your browsing speed but cloaks your online activity from prying eyes



TOR

E F F How **Tor** Works: 1



TOR

How Tor Works: 2

