Field Security Basics
VPNs and not-so-hotspots

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Presentation Outline

- Our Current relationship with public hotspots
- Review of some provider's ToS'
- Brief discussion of WiFi dangers
- How VPN's work and how to pick a provider
- How to use a VPN Service
- Portable Hotspots

Wait a sec….”Who Is This Git?”

- Yardell (@yardper)
- Perkitech (perkitech.com)
- 10yrs Computer Repair
- 2+ yrs Systems Adm
- 2+ yrs Web Dev & Design

A Little About Telecommuting…

- Our work is very easy to decentralize
  - Little needed in the way of furniture, hardware, personnel
- Our "offices" can be anywhere, even "home"
  - Regular work-at-home, *among the non-self-employed population*, has grown by 103% since 2005.[1]
  - 3.7 million employees now work from home at least part time.[1]
- At some point, we migrate to some "public" workspace
  - Coffeeshop or coworking space
  - Main Benefit: Shared motivation of others

Your "Previous" Routine…

FREE INTERNET ACCESS!

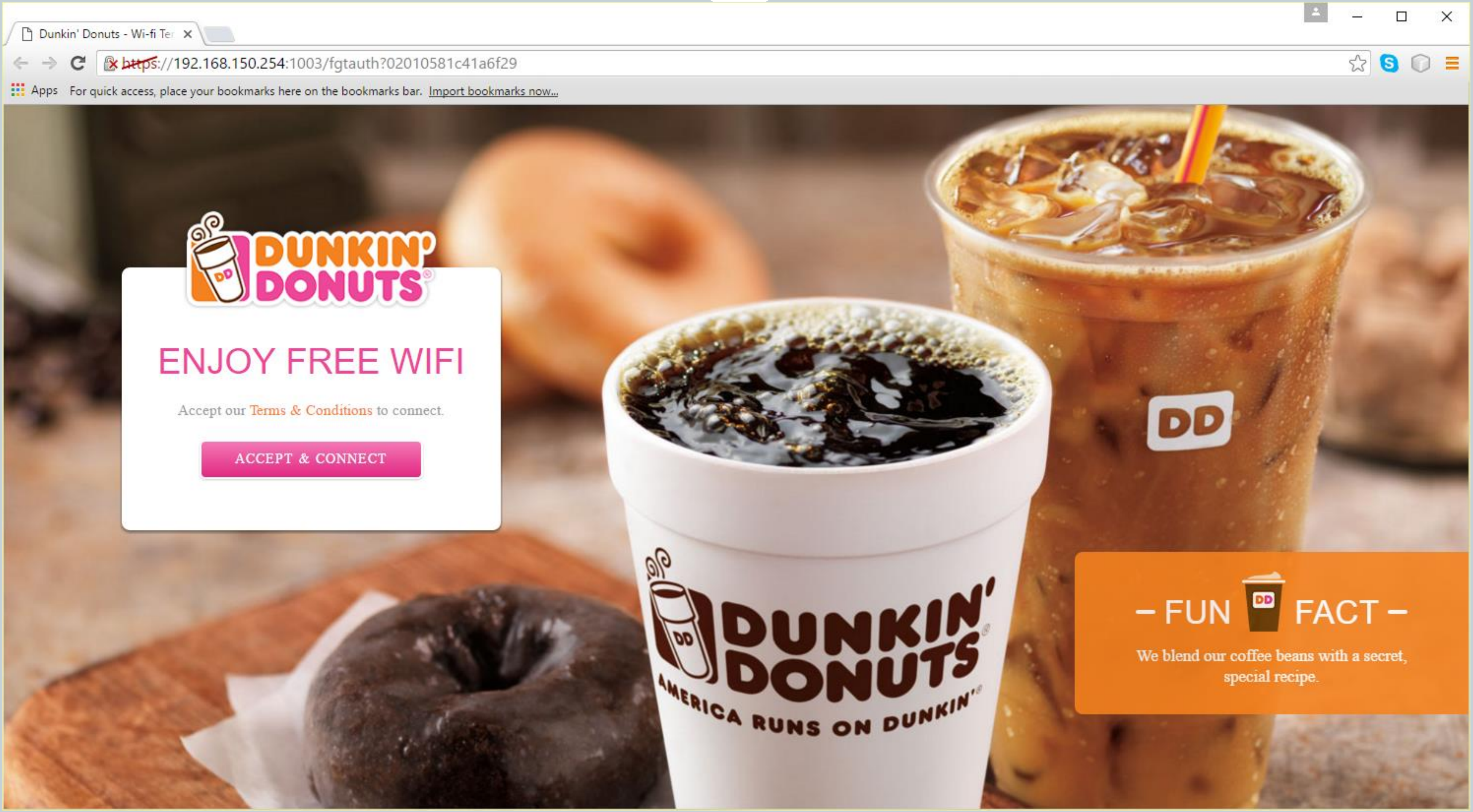
CLICK HERE

By clicking the above button, you are agreeing to our Terms of Service

Spots I Researched

- Three Major Franchises
  - Starbucks
  - Dunkin Donuts
  - McDonalds
- “Follow In My Footsteps”
  - Odds are you will run into one of the first two
  - Duck in and see their ToS for yourself
  - Go somewhere else, boutique spot, more likely think to check their own (if they have one)

Dunkin Donuts “Happy” Splash



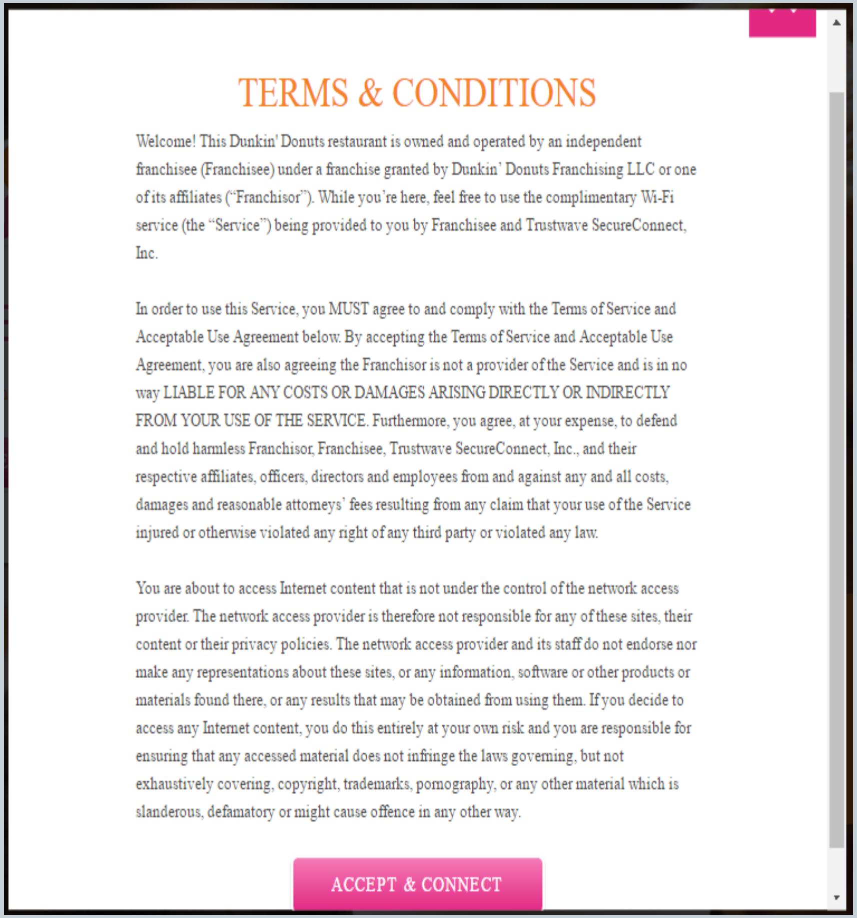
For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

ENJOY FREE WIFI

Accept our Terms & Conditions to connect.

We blend our coffee beans with a secret, special recipe.

Dunkin Donuts ToS



TERMS & CONDITIONS

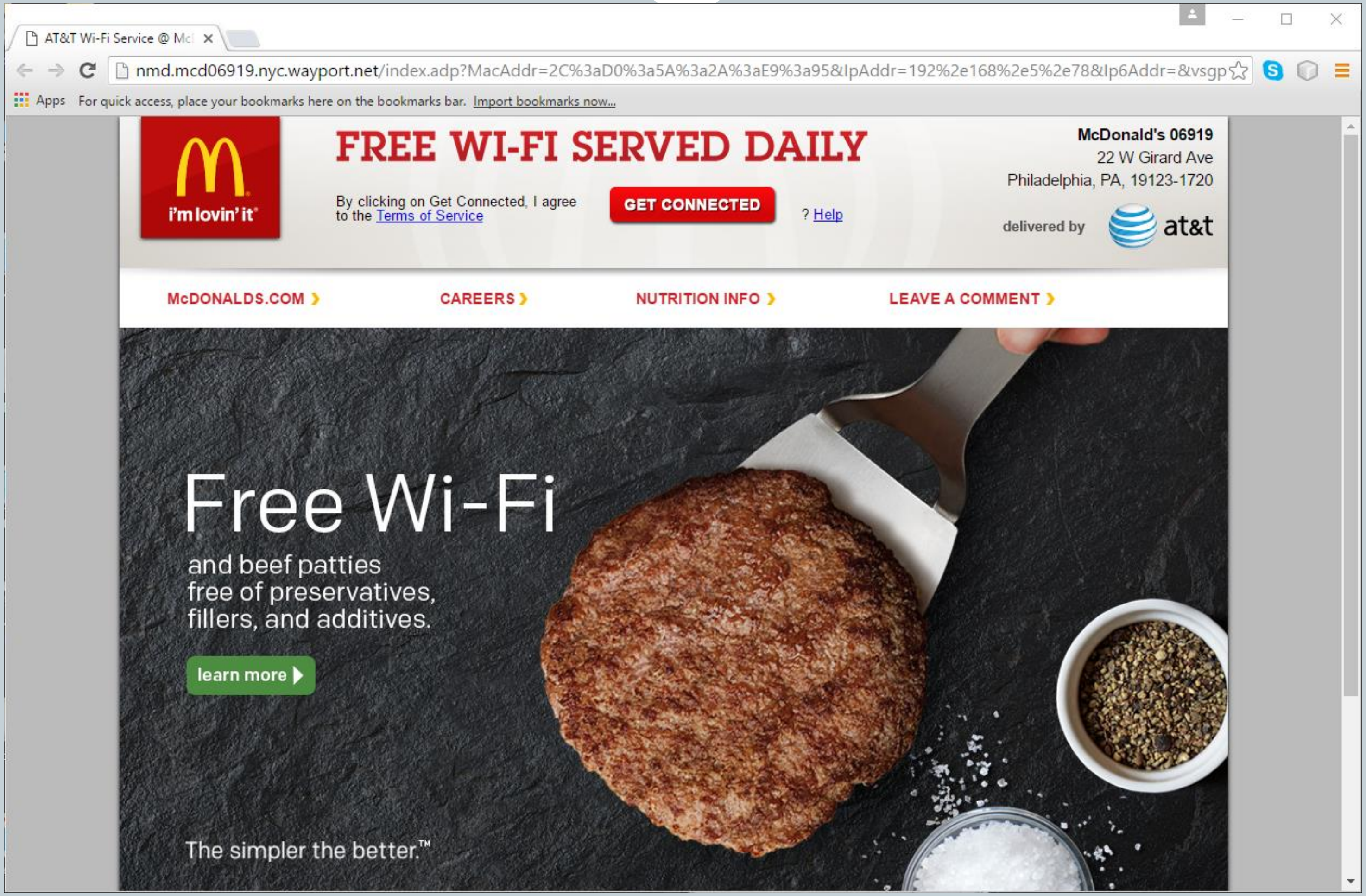
Welcome! This Dunkin' Donuts restaurant is owned and operated by an independent franchisee (Franchisee) under a franchise granted by Dunkin' Donuts Franchising LLC or one of its affiliates ("Franchisor"). While you're here, feel free to use the complimentary Wi-Fi service (the "Service") being provided to you by Franchisee and Trustwave SecureConnect, Inc.

In order to use this Service, you MUST agree to and comply with the Terms of Service and Acceptable Use Agreement below. By accepting the Terms of Service and Acceptable Use Agreement, you are also agreeing the Franchisor is not a provider of the Service and is in no way LIABLE FOR ANY COSTS OR DAMAGES ARISING DIRECTLY OR INDIRECTLY FROM YOUR USE OF THE SERVICE. Furthermore, you agree, at your expense, to defend and hold harmless Franchisor, Franchisee, Trustwave SecureConnect, Inc., and their respective affiliates, officers, directors and employees from and against any and all costs, damages and reasonable attorneys' fees resulting from any claim that your use of the Service injured or otherwise violated any right of any third party or violated any law.

You are about to access Internet content that is not under the control of the network access provider. The network access provider is therefore not responsible for any of these sites, their content or their privacy policies. The network access provider and its staff do not endorse nor make any representations about these sites, or any information, software or other products or materials found there, or any results that may be obtained from using them. If you decide to access any Internet content, you do this entirely at your own risk and you are responsible for ensuring that any accessed material does not infringe the laws governing, but not exhaustively covering, copyright, trademarks, pornography, or any other material which is slanderous, defamatory or might cause offence in any other way.

- Most Concise
  - Fits into a single sub window
- Can easily skim
- Gist of their ToS
  - Don't be a web jerk
  - Anything goes wrong, its on you

McDonalds “Happy” Splash



nmd.mcd06919.nyc.wayport.net/index.adp?MacAddr=2C%3aD0%3a5A%3a2A%3aE9%3a95&IpAddr=192%2e168%2e5%2e78&Ip6Addr=&vsgp

For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

FREE WI-FI SERVED DAILY

By clicking on Get Connected, I agree to the Terms of Service

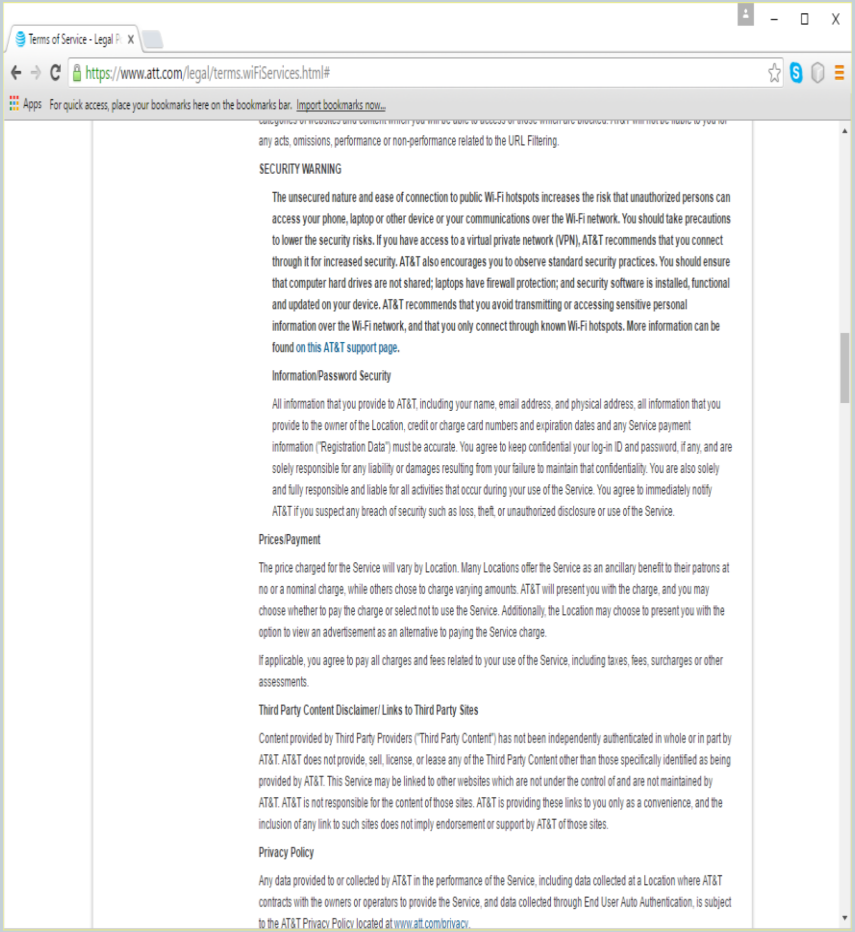
McDonald's 06919
22 W Girard Ave
Philadelphia, PA, 19123-1720

Free Wi-Fi

and beef patties free of preservatives, fillers, and additives.

The simpler the better.™

McDonalds ToS


Terms of Service - Legal P
https://www.att.com/legal/terms.wiFiServices.html#
Apps
For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

categories of websites and content which you will be able to access or those which are blocked. AT&T will not be liable to you for any acts, omissions, performance or non-performance related to the URL Filtering.

SECURITY WARNING

The unsecured nature and ease of connection to public Wi-Fi hotspots increases the risk that unauthorized persons can access your phone, laptop or other device or your communications over the Wi-Fi network. You should take precautions to lower the security risks. If you have access to a virtual private network (VPN), AT&T recommends that you connect through it for increased security. AT&T also encourages you to observe standard security practices. You should ensure that computer hard drives are not shared; laptops have firewall protection; and security software is installed, functional and updated on your device. AT&T recommends that you avoid transmitting or accessing sensitive personal information over the Wi-Fi network, and that you only connect through known Wi-Fi hotspots. More information can be found on this AT&T support page.

Information/Password Security

All information that you provide to AT&T, including your name, email address, and physical address, all information that you provide to the owner of the Location, credit or charge card numbers and expiration dates and any Service payment information ("Registration Data") must be accurate. You agree to keep confidential your log-in ID and password, if any, and are solely responsible for any liability or damages resulting from your failure to maintain that confidentiality. You are also solely and fully responsible and liable for all activities that occur during your use of the Service. You agree to immediately notify AT&T if you suspect any breach of security such as loss, theft, or unauthorized disclosure or use of the Service.

Prices/Payment

The price charged for the Service will vary by Location. Many Locations offer the Service as an ancillary benefit to their patrons at no or a nominal charge, while others chose to charge varying amounts. AT&T will present you with the charge, and you may choose whether to pay the charge or select not to use the Service. Additionally, the Location may choose to present you with the option to view an advertisement as an alternative to paying the Service charge.

If applicable, you agree to pay all charges and fees related to your use of the Service, including taxes, fees, surcharges or other assessments.

Third Party Content Disclaimer/ Links to Third Party Sites

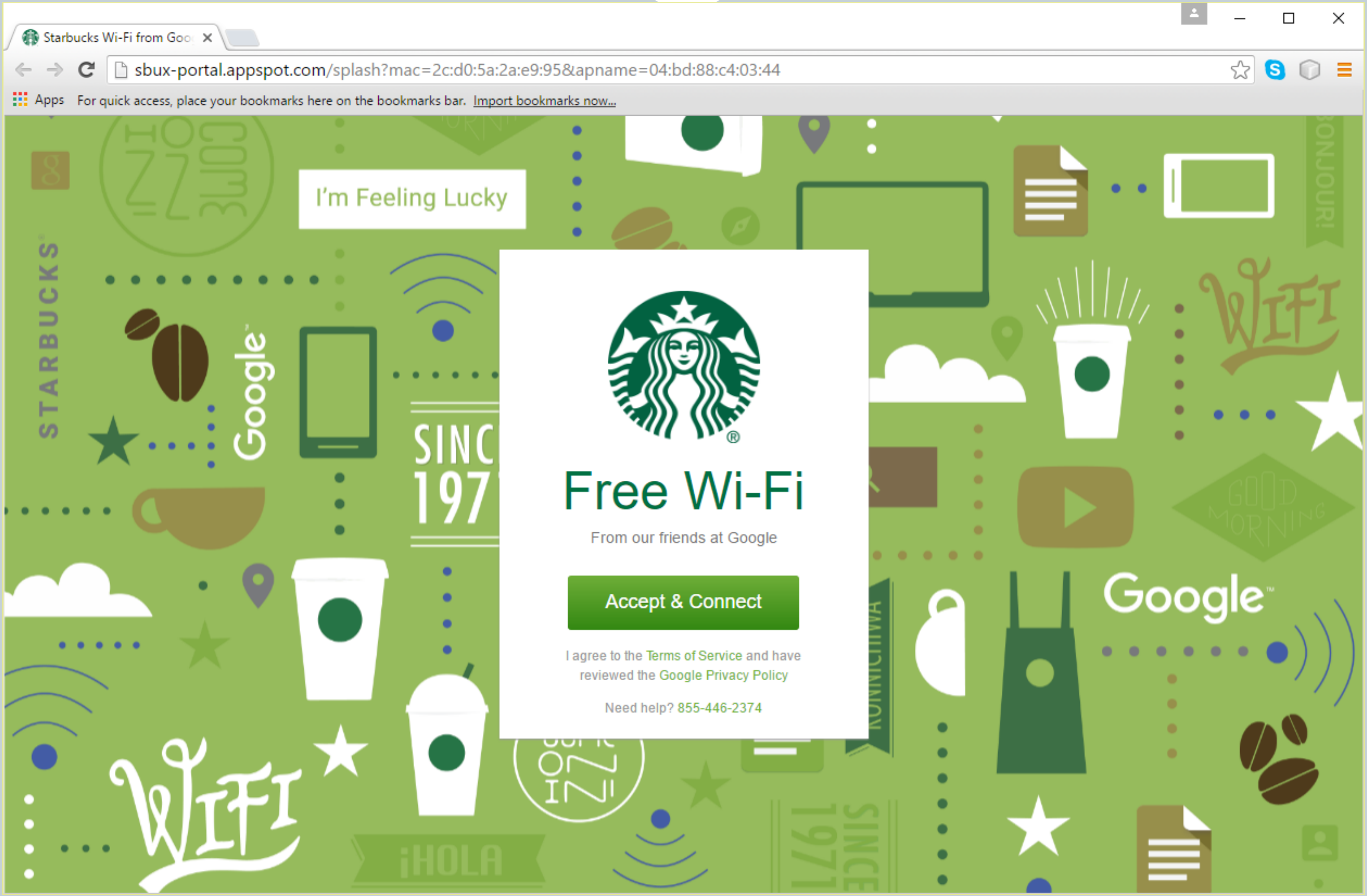
Content provided by Third Party Providers ("Third Party Content") has not been independently authenticated in whole or in part by AT&T. AT&T does not provide, sell, license, or lease any of the Third Party Content other than those specifically identified as being provided by AT&T. This Service may be linked to other websites which are not under the control of and are not maintained by AT&T. AT&T is not responsible for the content of those sites. AT&T is providing these links to you only as a convenience, and the inclusion of any link to such sites does not imply endorsement or support by AT&T of those sites.

Privacy Policy

Any data provided to or collected by AT&T in the performance of the Service, including data collected at a Location where AT&T contracts with the owners or operators to provide the Service, and data collected through End User Auto Authentication, is subject to the AT&T Privacy Policy located at www.att.com/privacy.

- Typical ToS Length / Legalese
- “Security Warning”
  - Public WiFi’s are generally unsecure
  - Suggest making use of a VPN service while on their network
- Data Collections
  - Collect metrics info
  - Nothing personal without notifying you, and with consent

Starbuck's "Happy" Splash



Starbucks Wi-Fi from Goo

sbux-portal.appspot.com/splash?mac=2c:d0:5a:2a:e9:95&apname=04:bd:88:c4:03:44

Apps For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

Free Wi-Fi

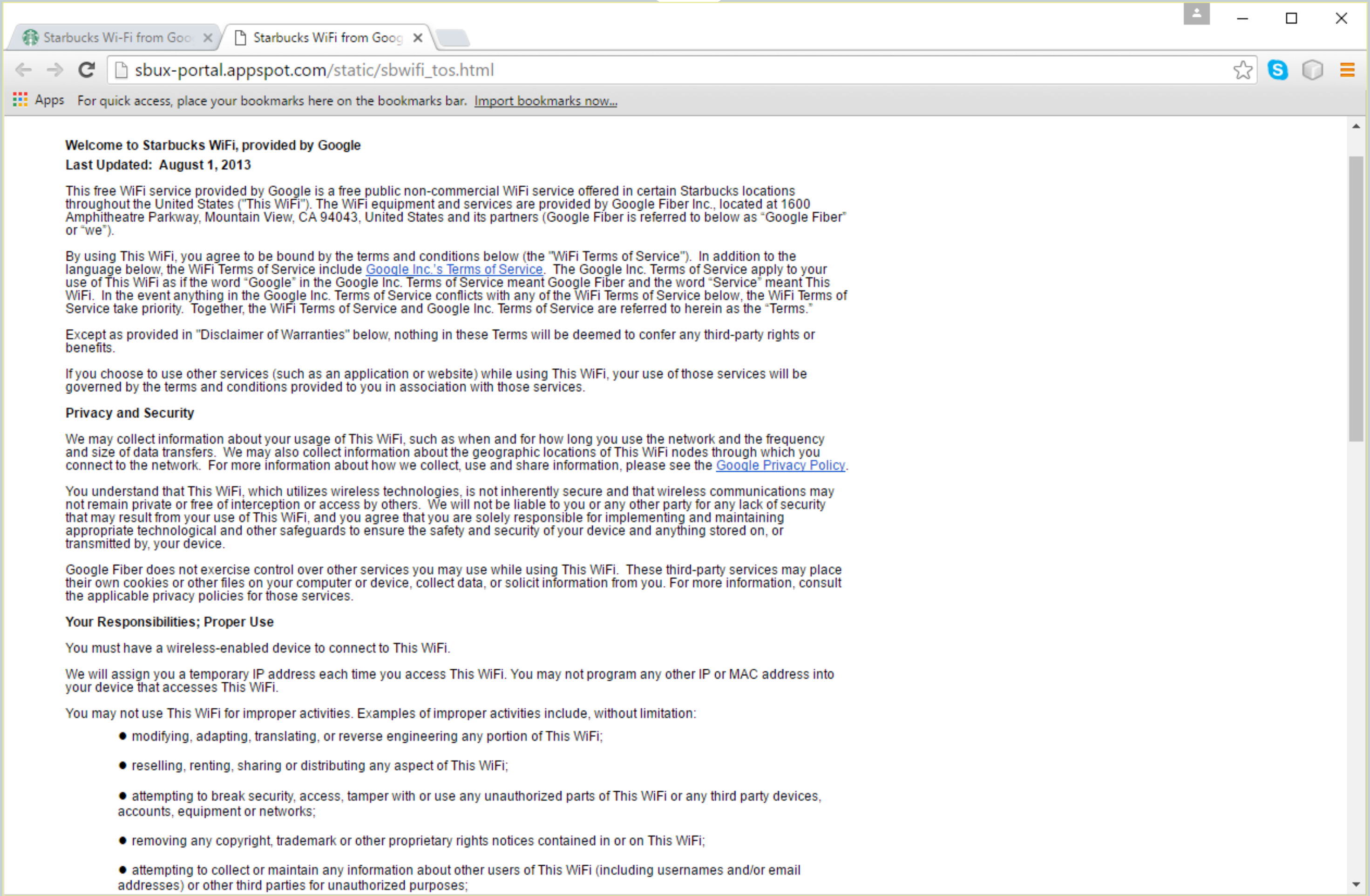
From our friends at Google

Accept & Connect

I agree to the Terms of Service and have reviewed the Google Privacy Policy

Need help? 855-446-2374

Starbucks ToS


Starbucks Wi-Fi from Goo
Starbucks WiFi from Goog
sbux-portal.appspot.com/static/sbwifi_tos.html
Apps
For quick access, place your bookmarks here on the bookmarks bar.
Import bookmarks now...

Welcome to Starbucks WiFi, provided by Google

Last Updated: August 1, 2013

This free WiFi service provided by Google is a free public non-commercial WiFi service offered in certain Starbucks locations throughout the United States ("This WiFi"). The WiFi equipment and services are provided by Google Fiber Inc., located at 1600 Amphitheatre Parkway, Mountain View, CA 94043, United States and its partners (Google Fiber is referred to below as "Google Fiber" or "we").

By using This WiFi, you agree to be bound by the terms and conditions below (the "WiFi Terms of Service"). In addition to the language below, the WiFi Terms of Service include Google Inc.'s Terms of Service. The Google Inc. Terms of Service apply to your use of This WiFi as if the word "Google" in the Google Inc. Terms of Service meant Google Fiber and the word "Service" meant This WiFi. In the event anything in the Google Inc. Terms of Service conflicts with any of the WiFi Terms of Service below, the WiFi Terms of Service take priority. Together, the WiFi Terms of Service and Google Inc. Terms of Service are referred to herein as the "Terms."

Except as provided in "Disclaimer of Warranties" below, nothing in these Terms will be deemed to confer any third-party rights or benefits.

If you choose to use other services (such as an application or website) while using This WiFi, your use of those services will be governed by the terms and conditions provided to you in association with those services.

Privacy and Security

We may collect information about your usage of This WiFi, such as when and for how long you use the network and the frequency and size of data transfers. We may also collect information about the geographic locations of This WiFi nodes through which you connect to the network. For more information about how we collect, use and share information, please see the Google Privacy Policy.

You understand that This WiFi, which utilizes wireless technologies, is not inherently secure and that wireless communications may not remain private or free of interception or access by others. We will not be liable to you or any other party for any lack of security that may result from your use of This WiFi, and you agree that you are solely responsible for implementing and maintaining appropriate technological and other safeguards to ensure the safety and security of your device and anything stored on, or transmitted by, your device.

Google Fiber does not exercise control over other services you may use while using This WiFi. These third-party services may place their own cookies or other files on your computer or device, collect data, or solicit information from you. For more information, consult the applicable privacy policies for those services.

Your Responsibilities; Proper Use

You must have a wireless-enabled device to connect to This WiFi.

We will assign you a temporary IP address each time you access This WiFi. You may not program any other IP or MAC address into your device that accesses This WiFi.

You may not use This WiFi for improper activities. Examples of improper activities include, without limitation:

- modifying, adapting, translating, or reverse engineering any portion of This WiFi;
- reselling, renting, sharing or distributing any aspect of This WiFi;
- attempting to break security, access, tamper with or use any unauthorized parts of This WiFi or any third party devices, accounts, equipment or networks;
- removing any copyright, trademark or other proprietary rights notices contained in or on This WiFi;
- attempting to collect or maintain any information about other users of This WiFi (including usernames and/or email addresses) or other third parties for unauthorized purposes;

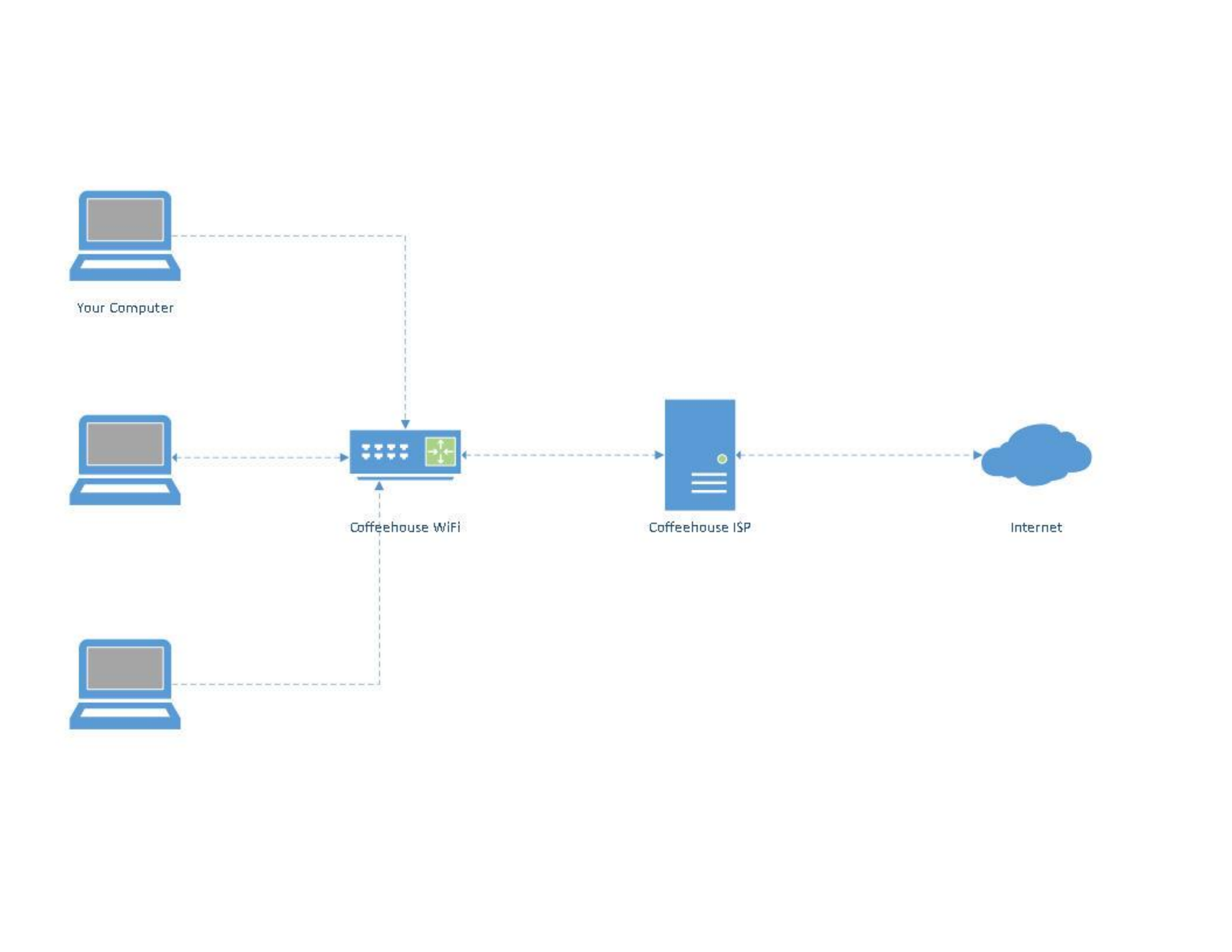
Starbucks ToS (Cont.)

- They will give you a temporary IP
  - You cannot program any other IP or MAC address into your device while using their network.
- This WiFi is not inherently secure and (any) wireless communications may not remain private or free of interception or access
- “We reserve the right to monitor, intercept, and disclose any transmission on or using our facilities, and to provide user information, or use records and other related information under certain circumstances
  - Lawful process, orders, subpoenas, warrants, Google, Persons
  - …”for Reasons”

“Nothing to hide, Why Hide Anything?”

- Right to Privacy ≠ Obfuscation of an illicit act
- “Innocent UNTIL proven guilty
  - You’re accused of something, typically the burden of proof is on the “Accuser”
  - If I say: “You stole a box from 3rd street at 5pm”…
    - I have to prove that you did
    - You don’t necessarily have to prove that you didn’t
  - The 2nd and 3rd thing you hear in an arrest
    - You have the right to remain silent
    - Anything you say may be used against you in a court of law

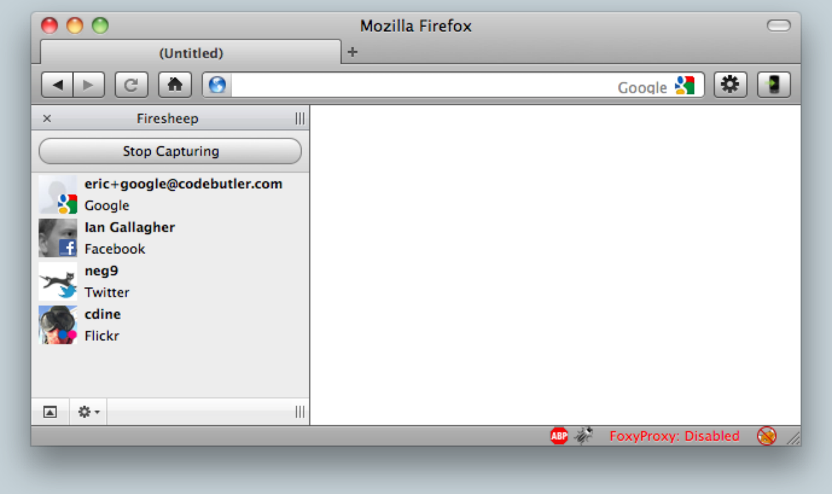
Your “Current” Connection



“Firesheep”

- http://codebutler.com/firesheep
- Firefox Extension
  - Grab a user’s session cookie to a site to gain their login information
  - On a public network, those cookies are periodically passed through the air usually unencrypted.
  - Dated (2010) but nonetheless prime example

“Firesheep” (cont.)



Mozilla Firefox

(Untitled)

Google

Firesheep

Stop Capturing

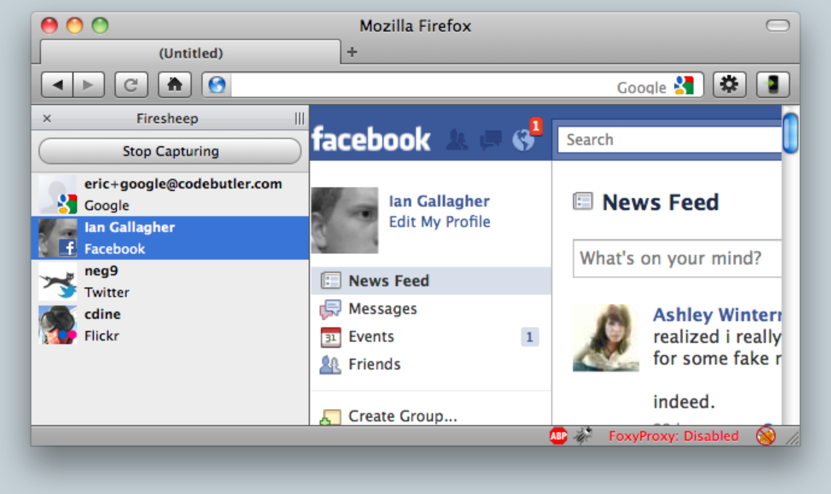
eric+google@codebutler.com
Google

Ian Gallagher
Facebook

neg9
Twitter

cdine
Flickr

FoxyProxy: Disabled



Mozilla Firefox

(Untitled)

Google

Firesheep

Stop Capturing

eric+google@codebutler.com
Google

Ian Gallagher
Facebook

neg9
Twitter

cdine
Flickr

facebook

Search

Ian Gallagher
Edit My Profile

News Feed

Messages

Events 1

Friends

Create Group...

News Feed

What's on your mind?

Ashley Winter
realized i really
for some fake r

indeed.

FoxyProxy: Disabled

The “TL;DR”

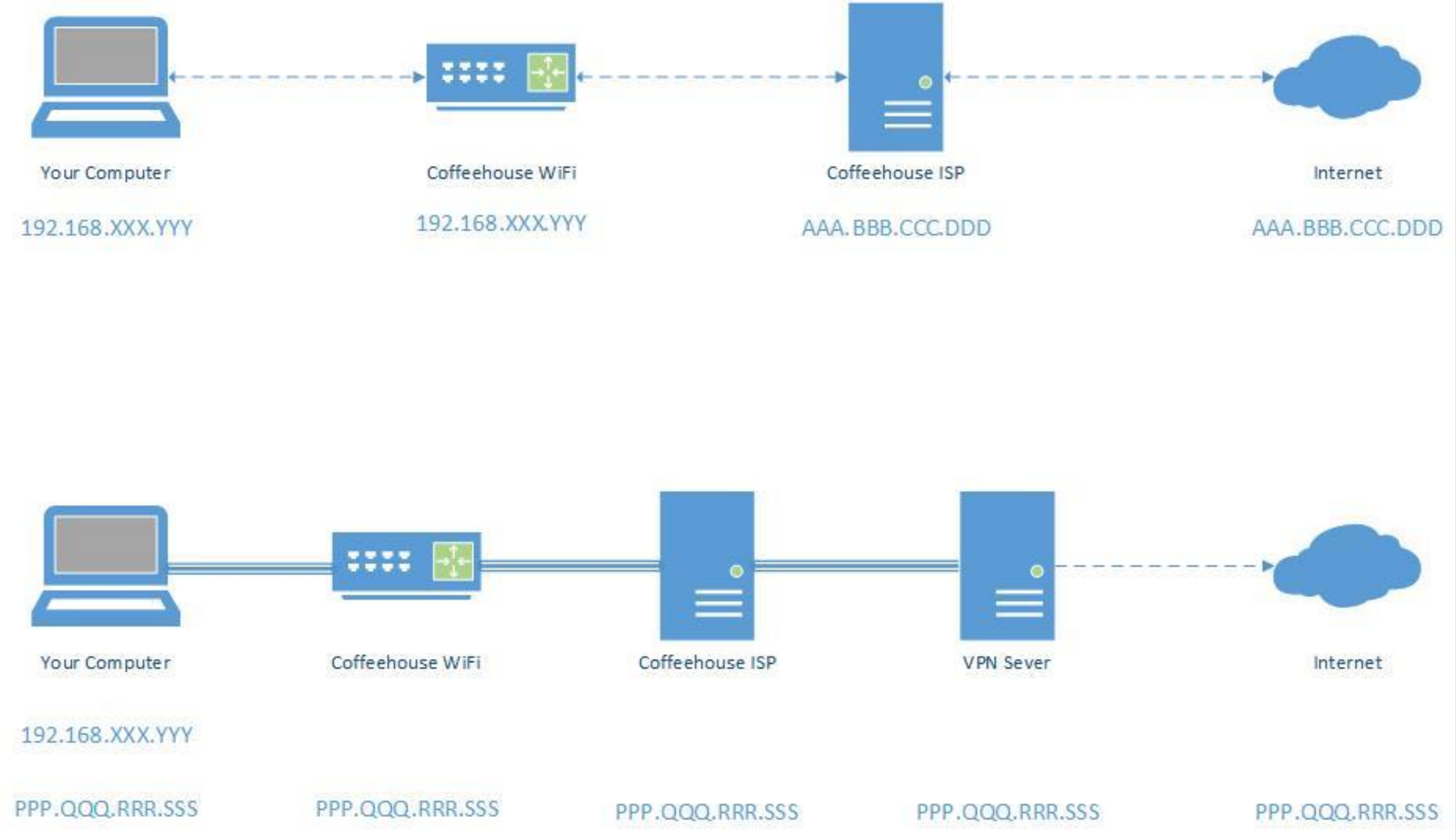
Take some time to understand what you’re signing ***onto*** when you sign ***into*** any public hotspots

- Skim the ToS
- Screenshot and Save for Later
- If you can’t find one, find another place to work

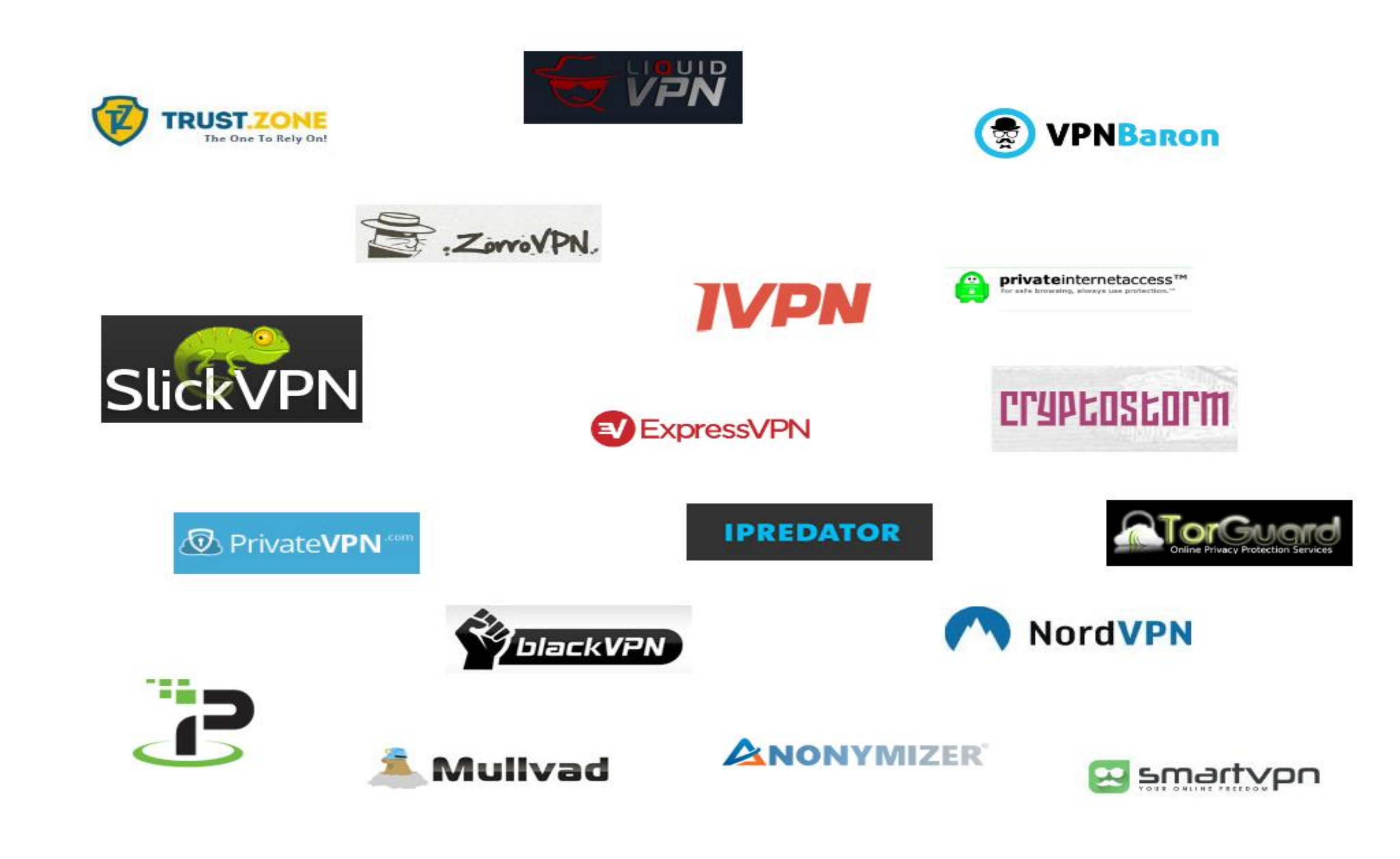
What is a "VPN"

- Wikipedia:
  - A private network that extends across a public one
  - https://en.wikipedia.org/wiki/Virtual_private_network

Your connection on a VPN



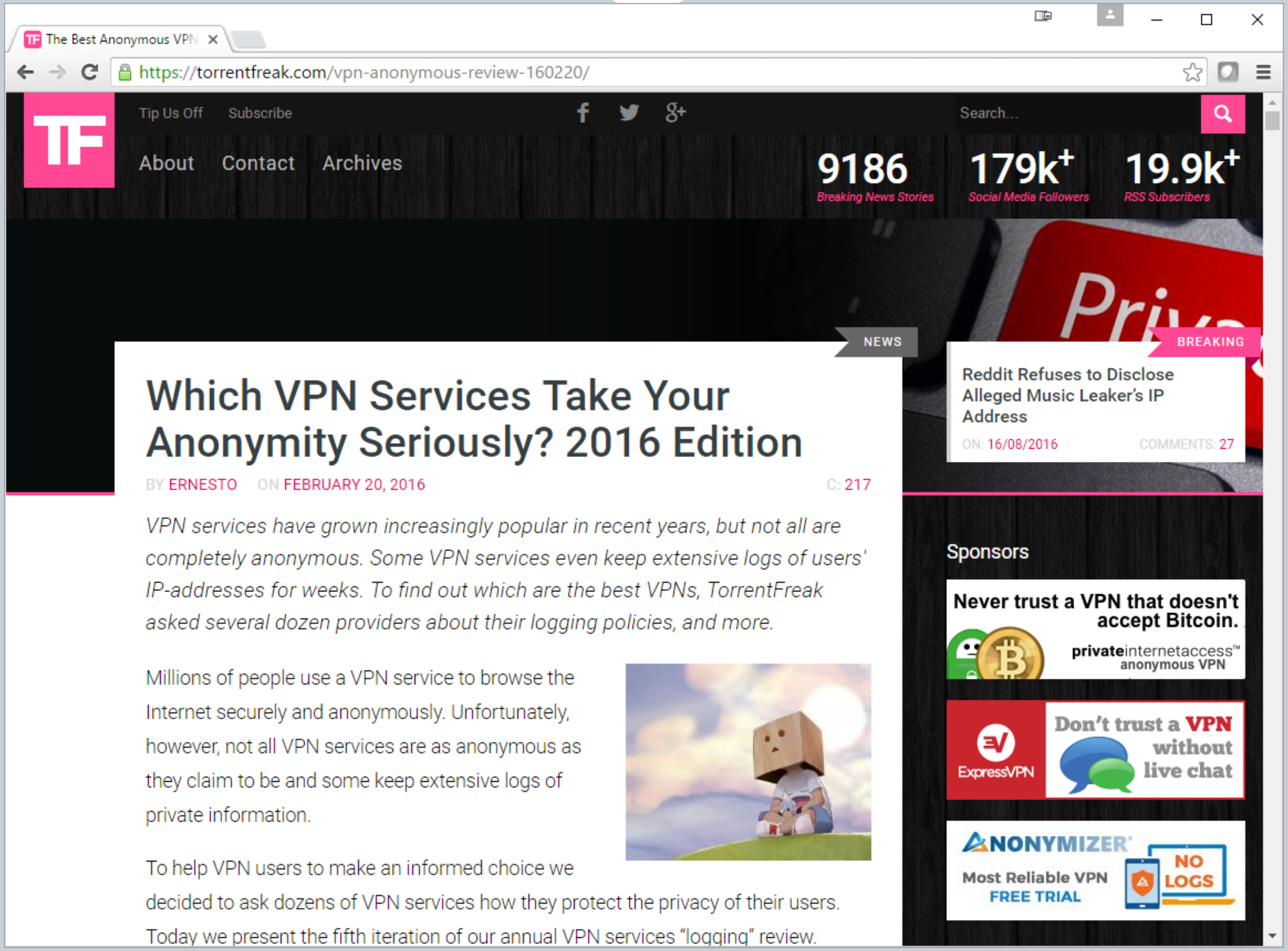
Service Providers



Some Things To Look For…

- Server Locations
  - 2-3 servers of geographic ***proximity*** to you
  - 1-2 servers of geographic ***significance*** to you
- Connection Security
  - IKEv2 – One of the stronger ones, but can be “heavy”
  - OpenVPN – All around ideal encryption protocol
  - SSTP – Meh
- Hardware / OS Support
  - You can use it on anything you’d likely use it on.
- Customer Support Access

TorrentFreak – Yearly VPN Services Article



9186 Breaking News Stories
179k+ Social Media Followers
19.9k+ RSS Subscribers

NEWS

Which VPN Services Take Your Anonymity Seriously? 2016 Edition

BY ERNESTO ON FEBRUARY 20, 2016 C: 217

VPN services have grown increasingly popular in recent years, but not all are completely anonymous. Some VPN services even keep extensive logs of users' IP-addresses for weeks. To find out which are the best VPNs, TorrentFreak asked several dozen providers about their logging policies, and more.

Millions of people use a VPN service to browse the Internet securely and anonymously. Unfortunately, however, not all VPN services are as anonymous as they claim to be and some keep extensive logs of private information.

To help VPN users to make an informed choice we decided to ask dozens of VPN services how they protect the privacy of their users. Today we present the fifth iteration of our annual VPN services "logging" review.

BREAKING

Reddit Refuses to Disclose Alleged Music Leaker's IP Address

ON: 16/08/2016 COMMENTS: 27

Sponsors

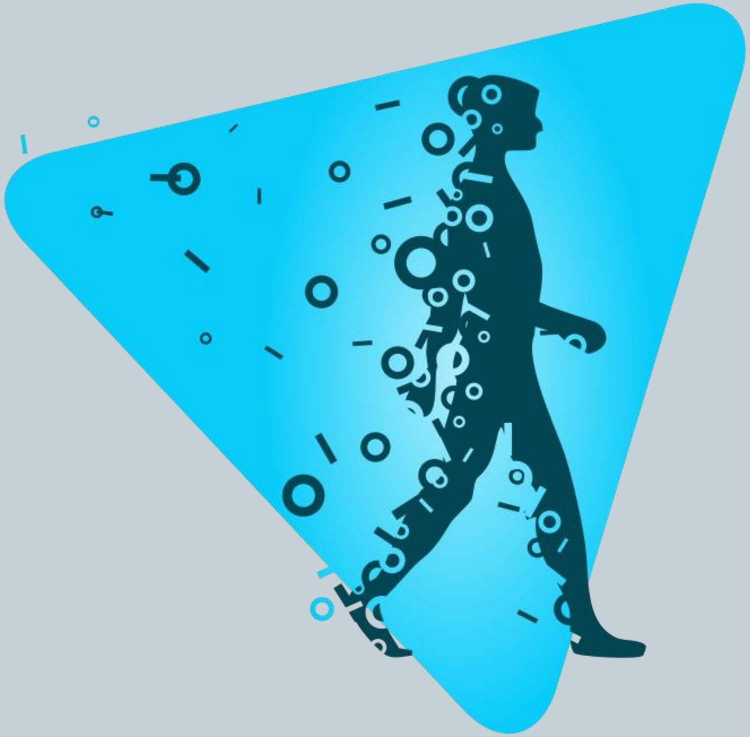
Article Suggestion…

- https://torrentfreak.com/vpn-anonymous-review-160220/Yearly Article
  - Feb – March
  - Home page - > "About" link
- Contacted Several of the major and minor VPN providers
- Asked twelve pointed questions about their offerings
  - What / Where / How of their services
  - Payment Options
  - Operating Jurisdictions

More Pertinent Questions…

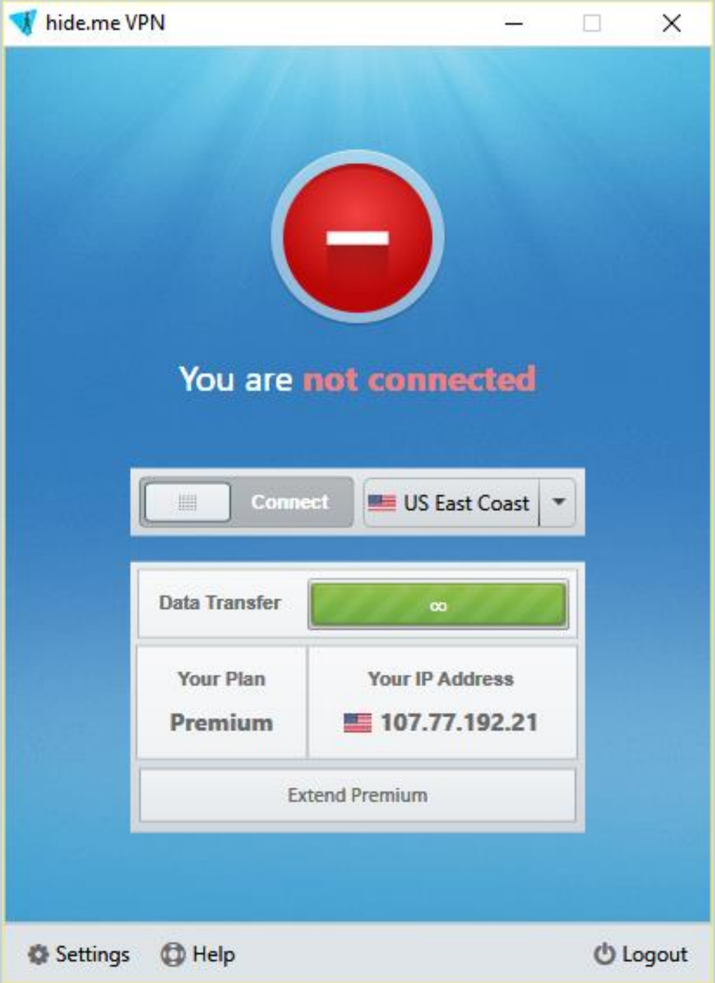
- What Countries are your servers located in?
  - Do you have physical control over your VPN servers and network or are they hosted by/accessible to a third party? ("Plus" if they do, not necessarily a "Minus" if they don't)
- What is the most secure VPN connection and encryption algorithm you would recommend to your users?
- Do you offer a custom VPN application to your users?
  - If so, for which platforms?

My Personal Pick: "Hide Me"



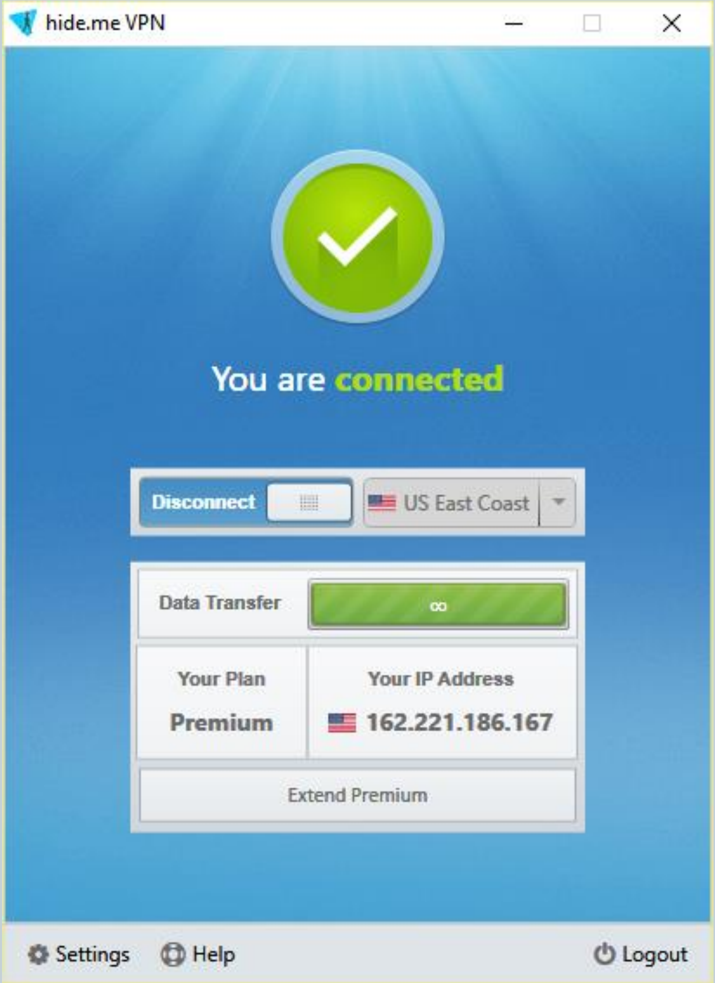
- https://hide.me/en/
- Metrics
  - Servers in 29 locations / 21 countries
    - Closely partnered with the server managers
  - Highest Encryption: IKEv2
  - Support all major hardware / software platforms

General Client Operation



You are not connected

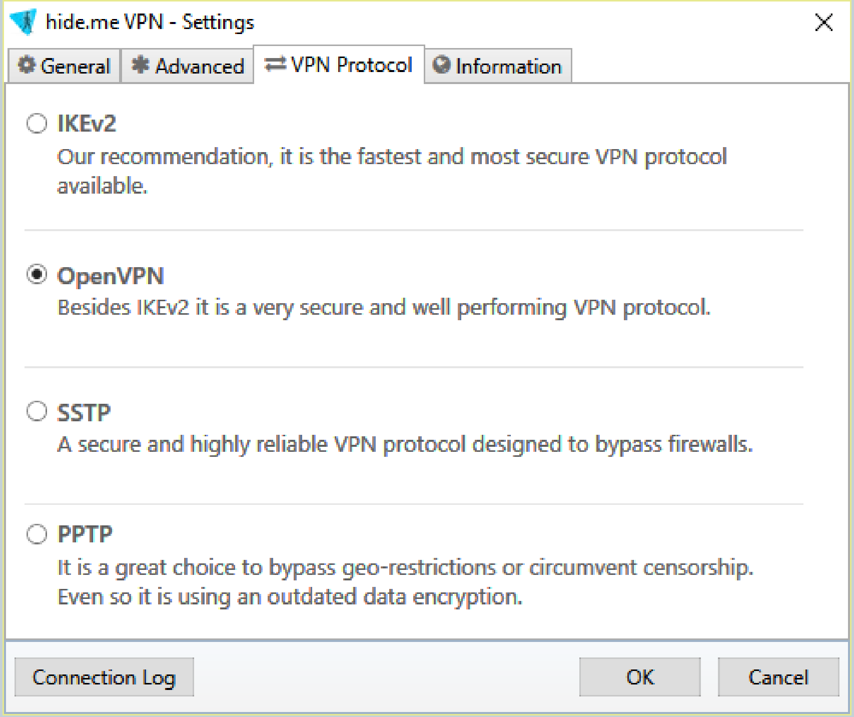
Data Transfer	∞
Your Plan	Your IP Address
Premium	107.77.192.21



You are connected

Data Transfer	∞
Your Plan	Your IP Address
Premium	162.221.186.167

App Advanced Settings

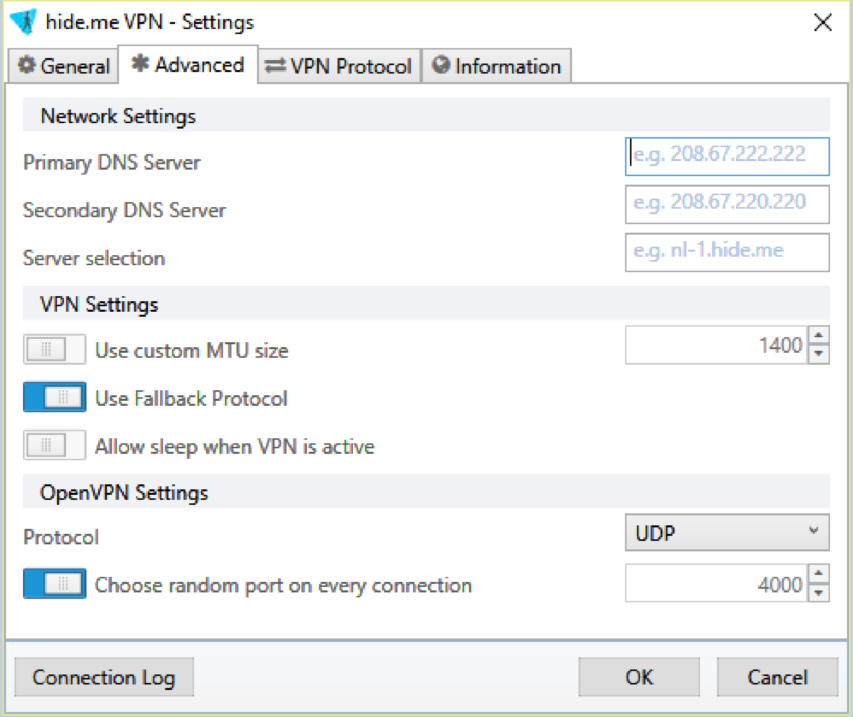


○ **IKEv2**
Our recommendation, it is the fastest and most secure VPN protocol available.

● **OpenVPN**
Besides IKEv2 it is a very secure and well performing VPN protocol.

○ **SSTP**
A secure and highly reliable VPN protocol designed to bypass firewalls.

○ **PPTP**
It is a great choice to bypass geo-restrictions or circumvent censorship.
Even so it is using an outdated data encryption.



Network Settings

Primary DNS Server: e.g. 208.67.222.222

Secondary DNS Server: e.g. 208.67.220.220

Server selection: e.g. nl-1.hide.me

VPN Settings

☐ Use custom MTU size: 1400

☑ Use Fallback Protocol

☐ Allow sleep when VPN is active

OpenVPN Settings

Protocol: UDP

☑ Choose random port on every connection: 4000

The “Extra” Mile – Personal Hotspots

- About the size/shape of a cellphone, if not smaller
- Connects through a cell network solely for data
  - Data pool separate from your cellphone data pool
- Current smartphones can do this…
  - May not be able to take calls or calls will break the connection

General Operation Notes

- Want the encryption at the “Last Mile”
  - Turn on JUST the laptop app (preferably) or just the phone app.
    - Don’t need both
- Familiarize with your providers security options
  - Some sites will slow down or “complain” about a VPN connection
  - Lowering the encryption level

Thank You

- SLIDES/ASSETS WILL BE ON THE WEBSITE BY 8/21
- TINYURL: HTTP://TINYURL.COM/HBTY5CX
- QUESTIONS /COMMENTS
- YARDELL@PERKITECH.COM

- 1) Latest Telecommuting Statistics
  - http://globalworkplaceanalytics.com/telecommuting-statistics