



D A R K N E T

What is Darknet?

- an overlay network
- for accessing
 - Authentication
 - Configurations
 - uses specific software(tor, freenet, etc)
 - often using non-standard communications protocols and ports
- types
 - friend-to-friend like freenet(for file sharing like in peer-to-peer)
 - anonymity networks like TOR via an anonymized series of connections



History of Darknet

- 1970 term "darknet" introduced
- 1995 development began on "Onion Routing"
- 2002 US Naval Research Lab releases ONR v2 (aka TOR)
- 2002 Freenode is released
- 2004 Hidden Services introduced: Hidden wiki setup
- 2013 freenode project center shutdown, however freenode continues to operate
- 2014 Sponsors include US dept. of State, Radio free Asia, The Four Foundation, Google, EFF, 4300 individuals.

Anonymous Network



- The Onion Router (TOR)
- I2P

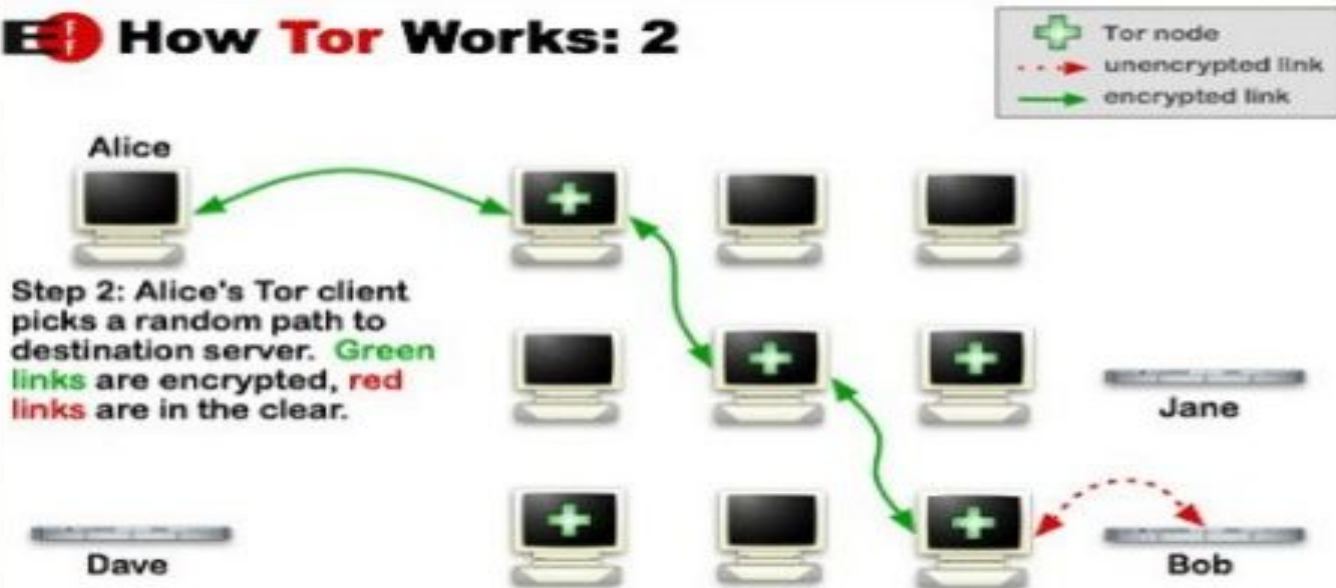
The Onion Router(TOR)

How Tor Works: 1



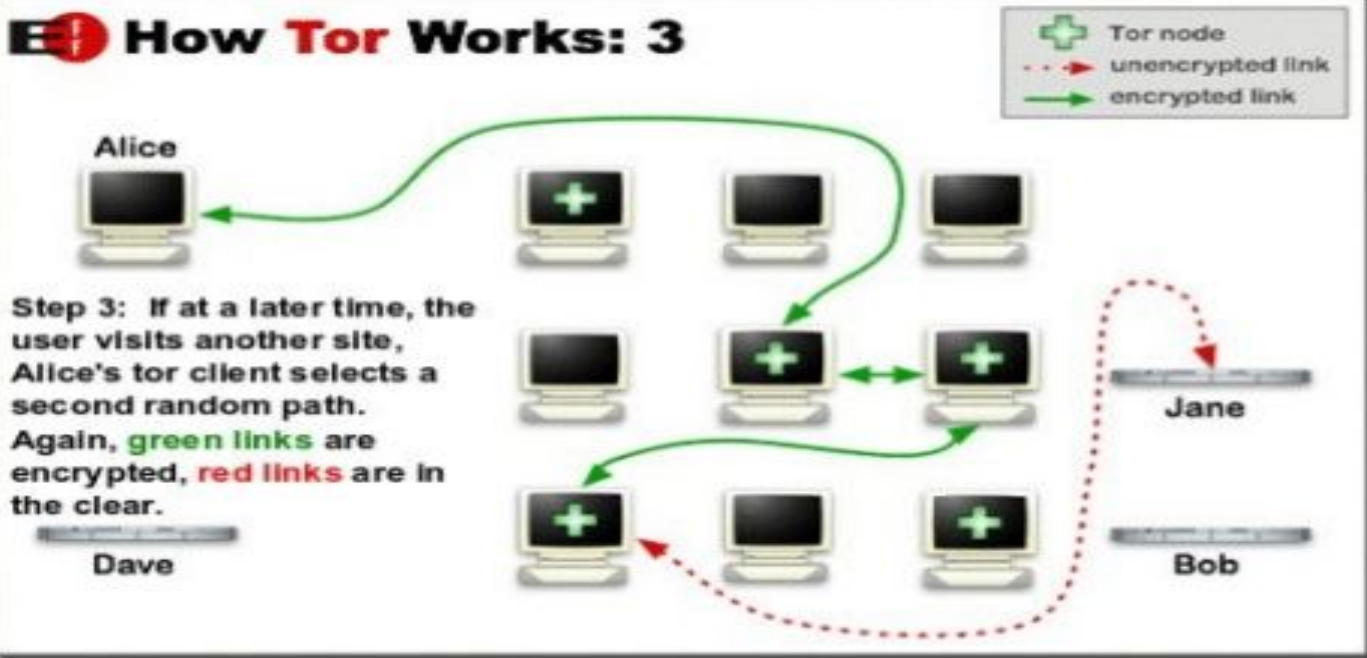
The Onion Router(TOR) cont...

How Tor Works: 2



The Onion Router(TOR) cont...

How Tor Works: 3

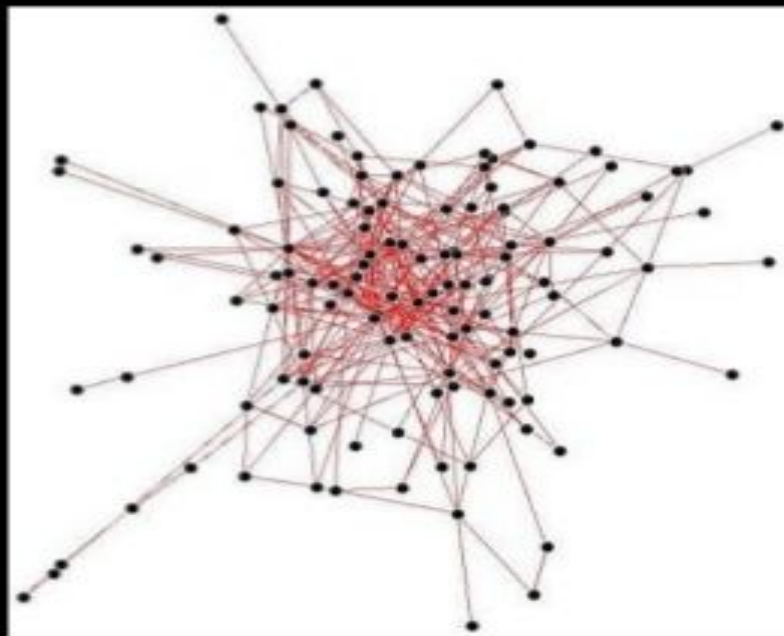


Why Onions?

- The client encrypts the original data in such a way that only the exit relay can decrypt it.
- This encrypted data is then encrypted again in such a way that only the middle relay can decrypt it.
- Finally, this encrypted data is encrypted once more in such a way that only the guard relay can decrypt it.



Friend-to-Friend Network



- Freenet
- anoNET

Freenet

- Friend-to-friend platform for censorship-resistant communication.
- Decentralized distributed data store.
- Goal to provide freedom of speech on the Internet with anonymity protection.
- Store and retrieve data by an associated key.
- No central servers.
- Encryption makes it difficult to know who store the data and who is retrieving it.
- Each node allocated some amount of space.

Why use darknet?

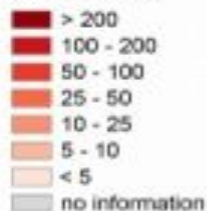
Darknet in general may be used for various reasons, such as:

- To better protect the privacy rights of citizens from targeted and mass surveillance.
- Protecting dissidents from political reprisal.
- Whistleblowing and news leaks.
- Computer crime(Hacking, file corruption etc)
- Sale of restricted goods on darknet markets.
- File sharing (pornography, confidential file, illegal or counterfeit software etc)



The anonymous Internet

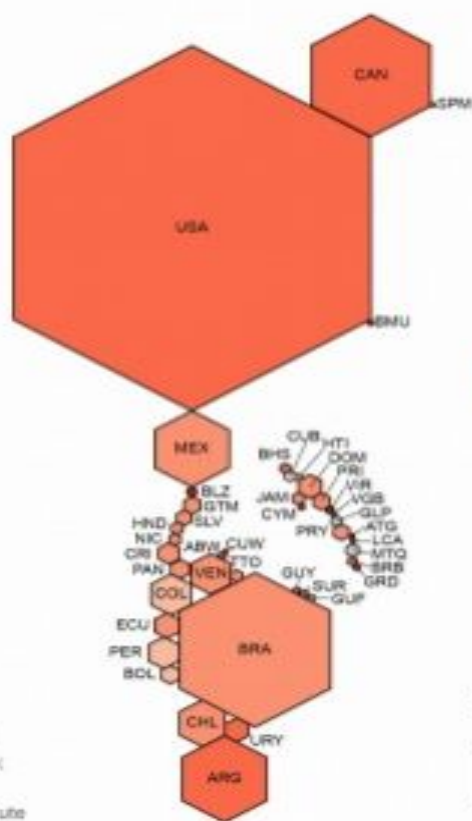
Daily Tor users
per 100,000
Internet users



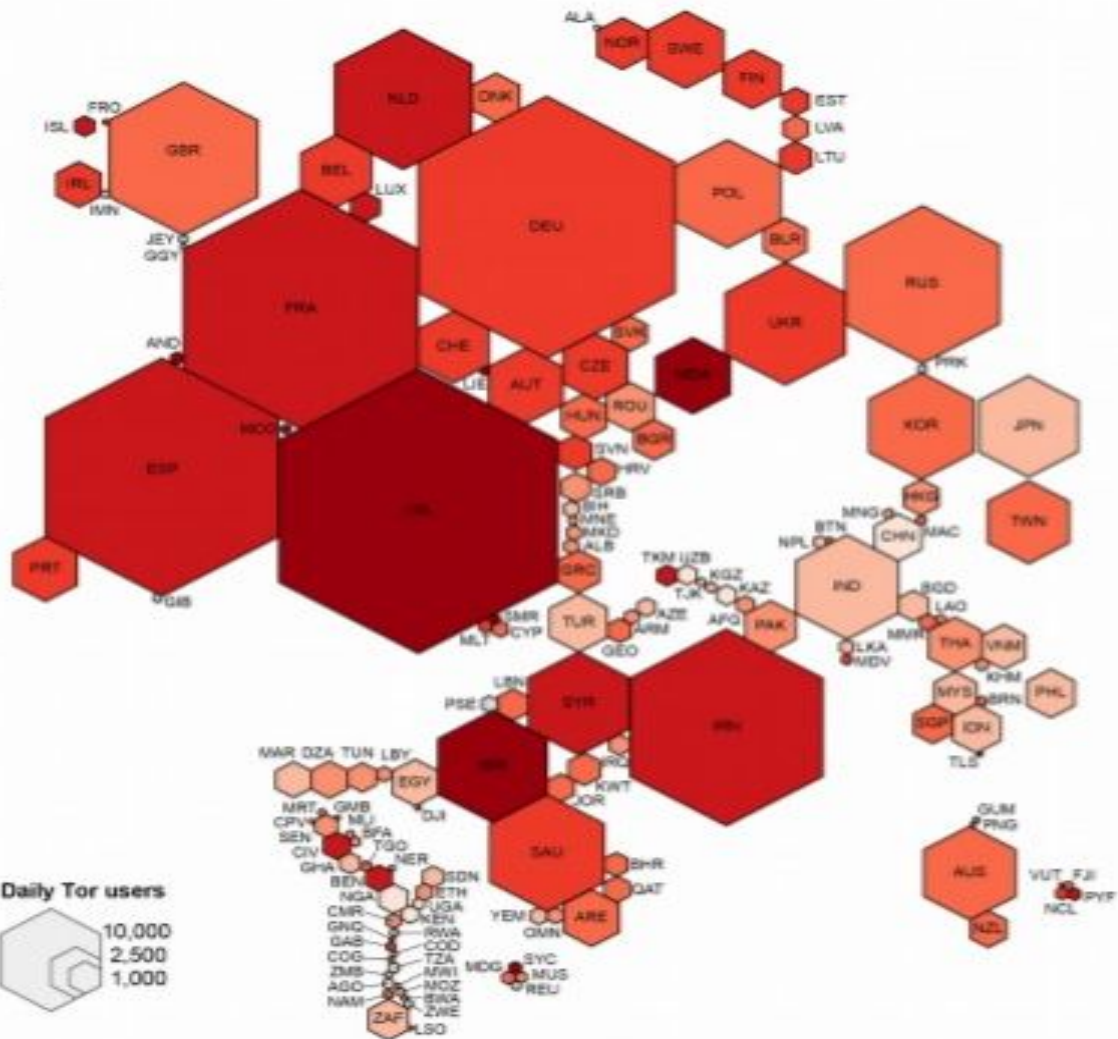
Average number of
Tor users per day
calculated between
August 2012 and
July 2013

data sources:
Tor Metrics Portal
metrics.torproject.org
World Bank
data.worldbank.org

by Mark Graham
(@geoplace) and
Stefano De Sabbata
(@maps4thought)
Internet Geographies at
the Oxford Internet Institute
2014 • geography.ox.ac.uk



Daily Tor users



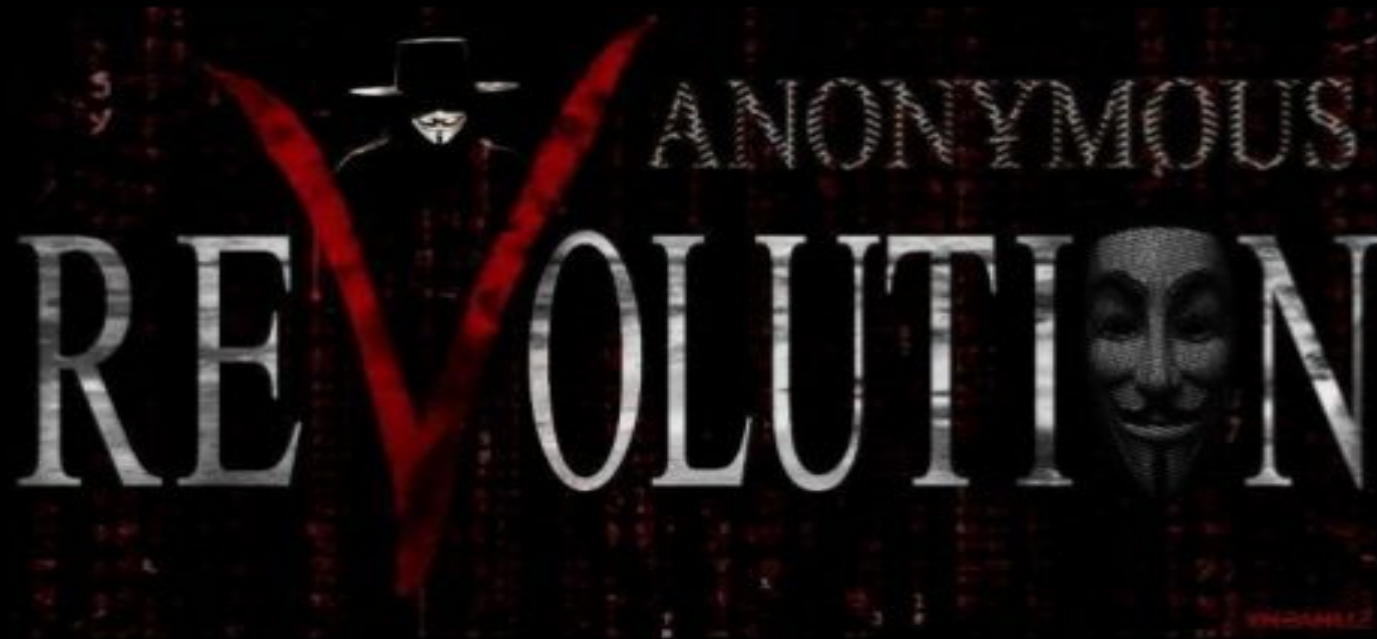
TAILS

- Linux Live distro (Debian) dedicated to staying anonymous.
- Forces all traffic through TOR.
- Will not touch the hard disk (without a fight).
- Ability to disguise UI as Windows XP so it doesn't raise suspicions in public areas.
- Comes with preinstalled software
 - HTTPS Everywhere plugin
 - OpenPGP
 - Pidgin OTR
 - Truecrypt
 - KeePassX

TOR HIDDEN SERVICES

- Services that live only in the Tor Network
 - Turns Tor into a Darknet
- Services use .onion
- Can not open .onion site without tor.

Bright side of Darknet



Wikileaks

- To upload a document anonymously using Tor:
- <http://suw74isz7wqzpmgu.onion/>
(this link will only work once you have installed and configured Tor.)
- Wikileaks Tor uses fully encrypted end-to-end anonymous connections.
- Without tor if you use <https://wikileaks.org/> all your data is encrypted, but internet spies maybe able note how long your computer spent talking to Wikileaks servers.

Dark side of Darknet



Silkroad

- Buy and sell drugs, hitman, weapons, fake id, Digital goods, illegal services, pornography, etc.
- Every transaction take place in Bitcoin.



Finding Hidden Services

- Hidden Wiki
 - http://zqktlwi4fecvo6ri.onion/wiki/index.php/Main_Page
- Torfind
 - <http://kbhpodhnfxl3clb4.onion/>
- TorSearch
 - <http://kbhpodhnfxl3clb4.onion>
- Grams - Google like search of the TOR darkne
 - <http://grams7enufi7jmdl.onion/>
- Deep Web Links ← NOT IN TOR
 - <http://deepweblinks.org/>
- DuckDuckGo
 - <https://3g2upl4pq6kufc4m.onion/>



Where do we go from here?



Thank You!



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