DARKNETS: FUN AND GAMES WITH ANONYMIZING PRIVATE NETWORKS

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http://Irongeek.com

About Adrian

- I run Irongeek.com
- I have an interest in InfoSec education
- I don’t know everything - I’m just a geek with time on my hands

What is this talk about

Darknets

- There are many definitions, but mine is "anonymizing private networks "
- Use of encryption and proxies (some times other peers) to obfuscate who is communicating to whom

Isn’t the Internet anonymous enough? Not really

- IPs can be associated with ISPs
- Bills have to be paid
- Websites log IPs as a matter of course
- ISPs can look at their logs for who was leased an IP
- Lots of plain text protocols allow for easy sniffing

http://www.irongeek.com/i.php?page=security/ipinfo

http://www.irongeek.com/i.php?page=security/AQuickIntrotoSniffers

http://www.irongeek.com/i.php?page=videos/footprinting-scoping-and-recon-with-dns-google-hacking-and-metadata

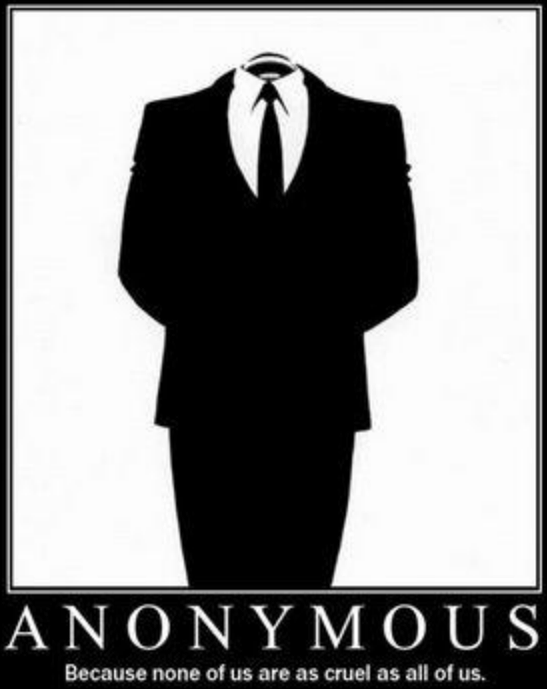
Who cares?

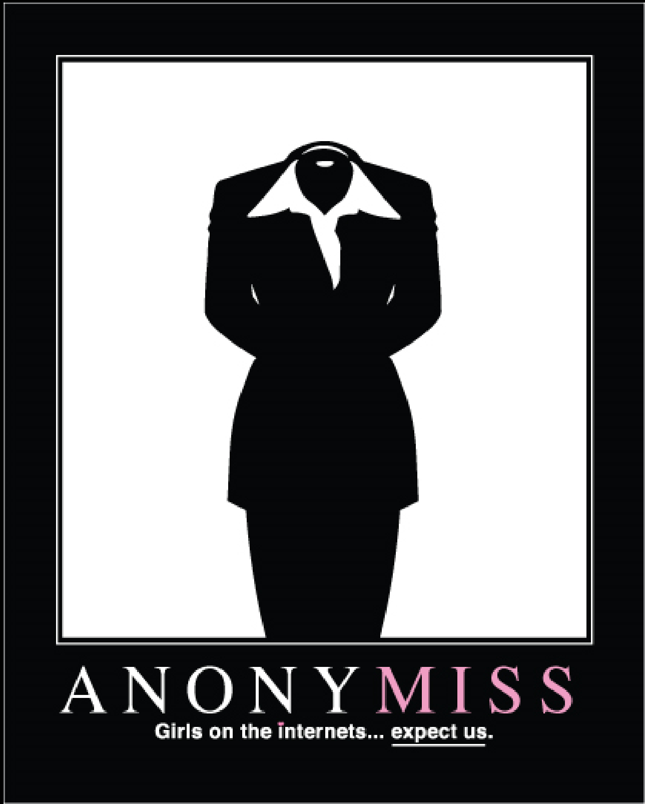
- Privacy enthusiasts and those worried about censorship
- Firms worried about policy compliance and leaked data
- Law enforcement

Average Citizen
Why do you care?

Do you want to stay anonymous?

- P2P
- Censorship
- Privacy





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Corporations
Why do you care?

Is someone sneaking out private data?

- Trade secrets
- Personally identifiable information

http://Irongeek.com

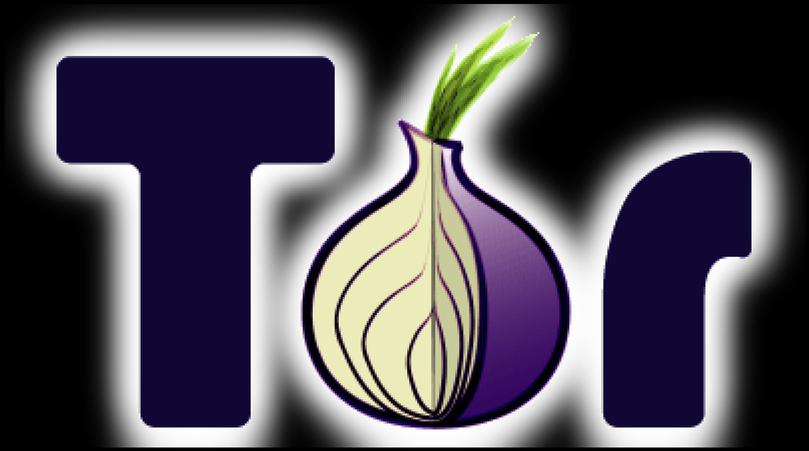
Law Enforcement
Why do you care?

Contraband and bad people everywhere

- Criminals
- Terrorists
- Pedos

Some key terms

- Proxy
  Something that does something for something else
- Encryption
  Obfuscating a message with an algorithm and one or more keys
- Signing
  Using public key cryptography, a message can be verified based on a signature that in all likelihood had to be made by a signer that had the secret key
- Small world model
  Ever heard of six degrees of Kevin Bacon?



The Onion Router

Overview

- **Who?**
  First the US Naval Research Laboratory, then the EFF and now the Tor Project (501c3 non-profit).
  http://www.torproject.org/
- **Why?**
  “Tor is free software and an open network that helps you defend against a form of network surveillance that threatens personal freedom and privacy, confidential business activities and relationships, and state security known as traffic analysis.” ~ As defined by their site
- **What?**
  Access normal Internet sites anonymously, and Tor hidden services.
- **How?**
  Locally run SOCKS proxy that connects to the Tor network.

Layout to connect to Internet

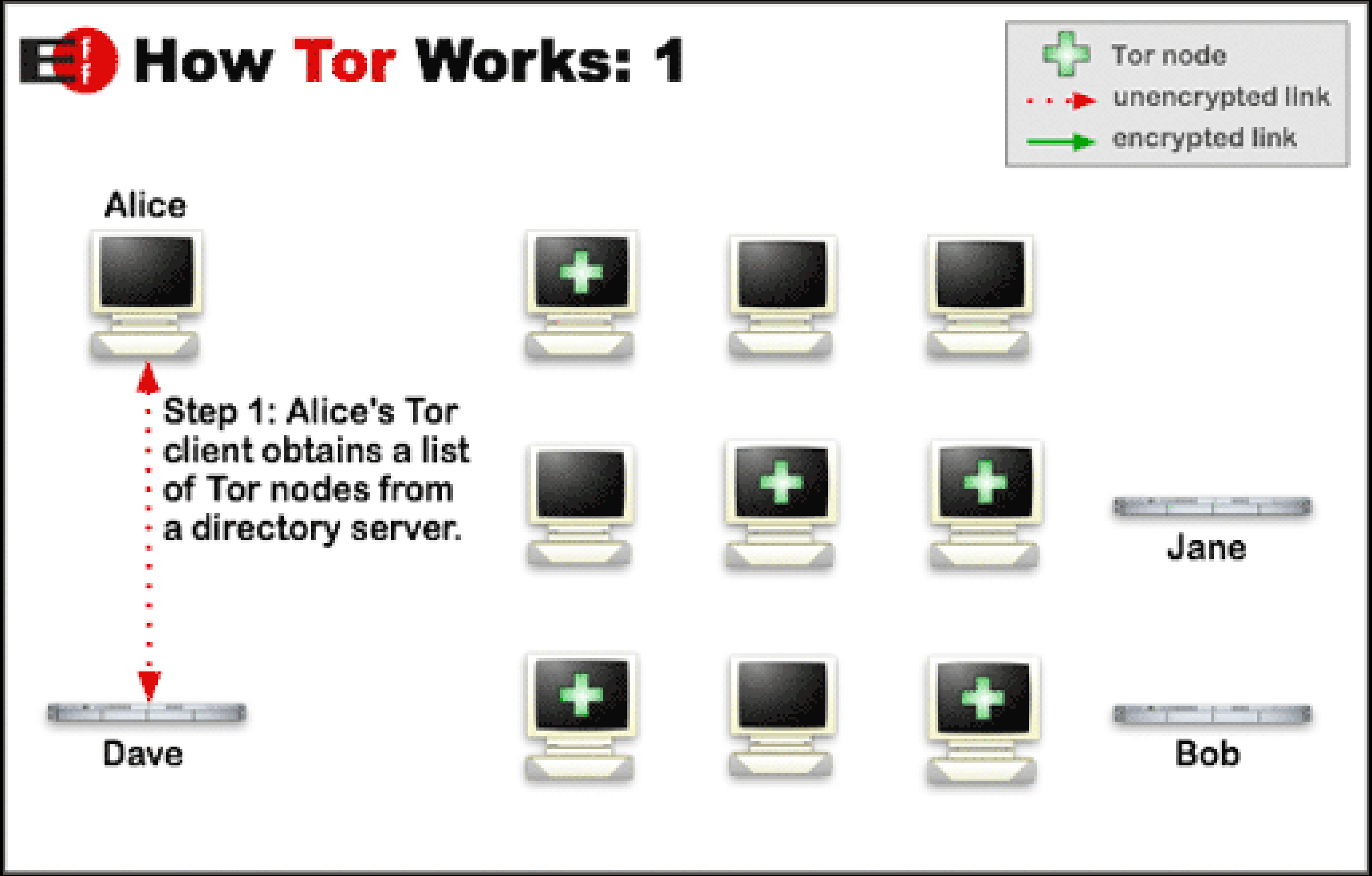

How Tor Works: 1
Tor node
unencrypted link
encrypted link
Alice
Step 1: Alice's Tor client obtains a list of Tor nodes from a directory server.
Jane
Dave
Bob

Image from http://www.torproject.org/overview.html.en

http://Irongeek.com

Layout to connect to Internet

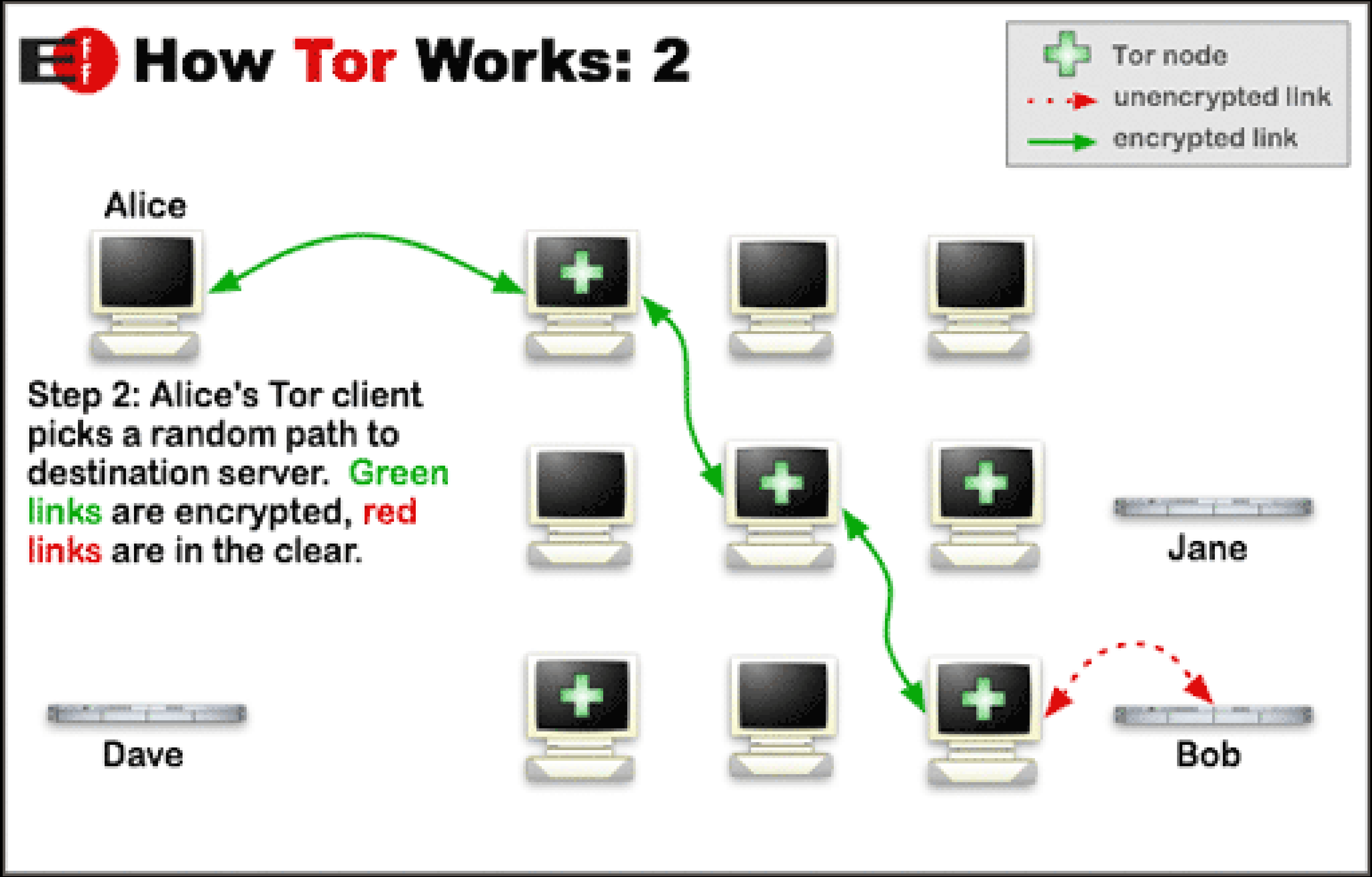
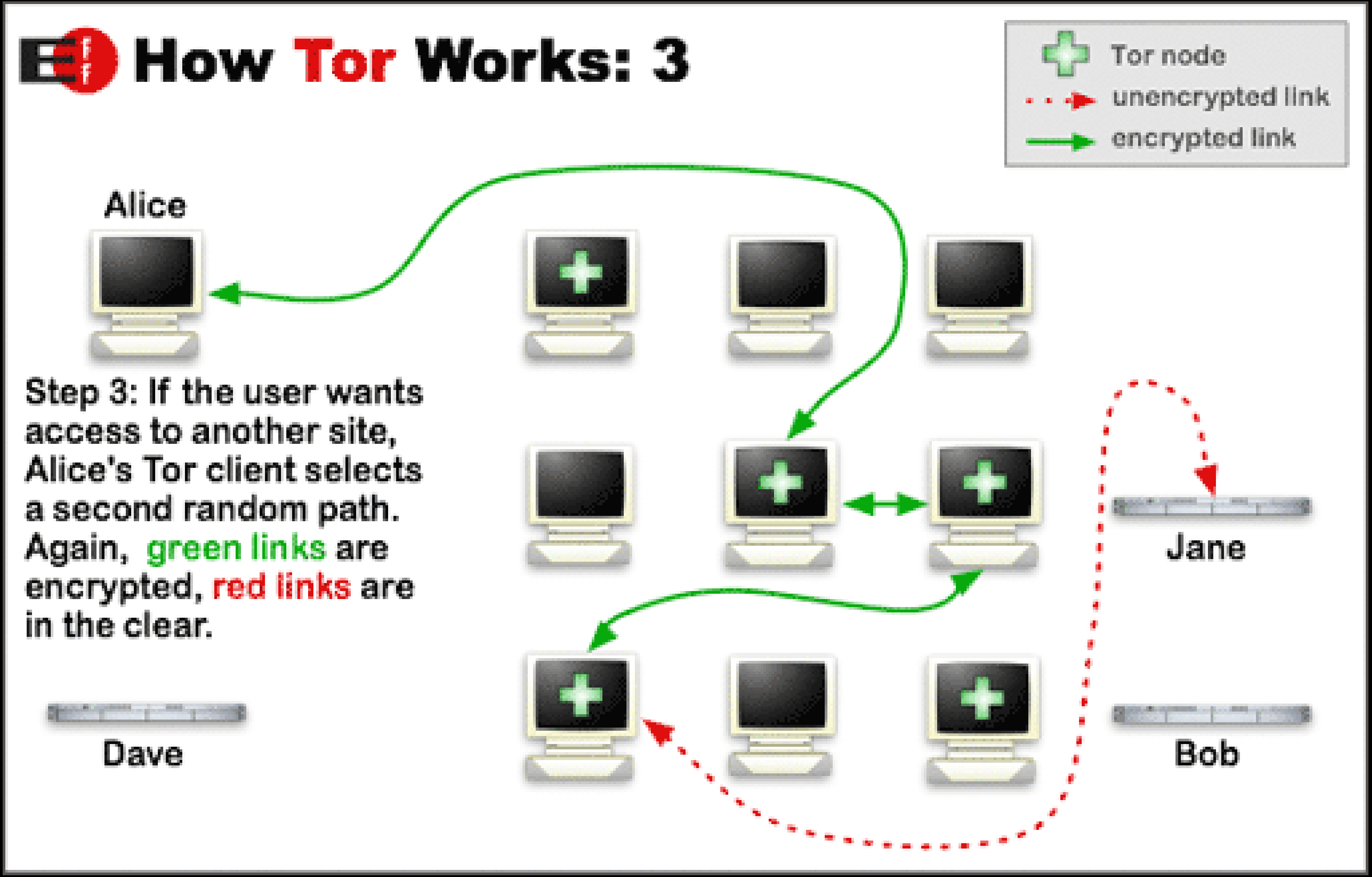

How Tor Works: 2
Tor node
unencrypted link
encrypted link
Alice
Step 2: Alice's Tor client picks a random path to destination server. Green links are encrypted, red links are in the clear.
Jane
Dave
Bob

Image from http://www.torproject.org/overview.html.en

http://Irongeek.com

Layout to connect to Internet



Step 3: If the user wants access to another site, Alice's Tor client selects a second random path. Again, green links are encrypted, red links are in the clear.

Image from http://www.torproject.org/overview.html.en

Layout to connect to Hidden Sevice

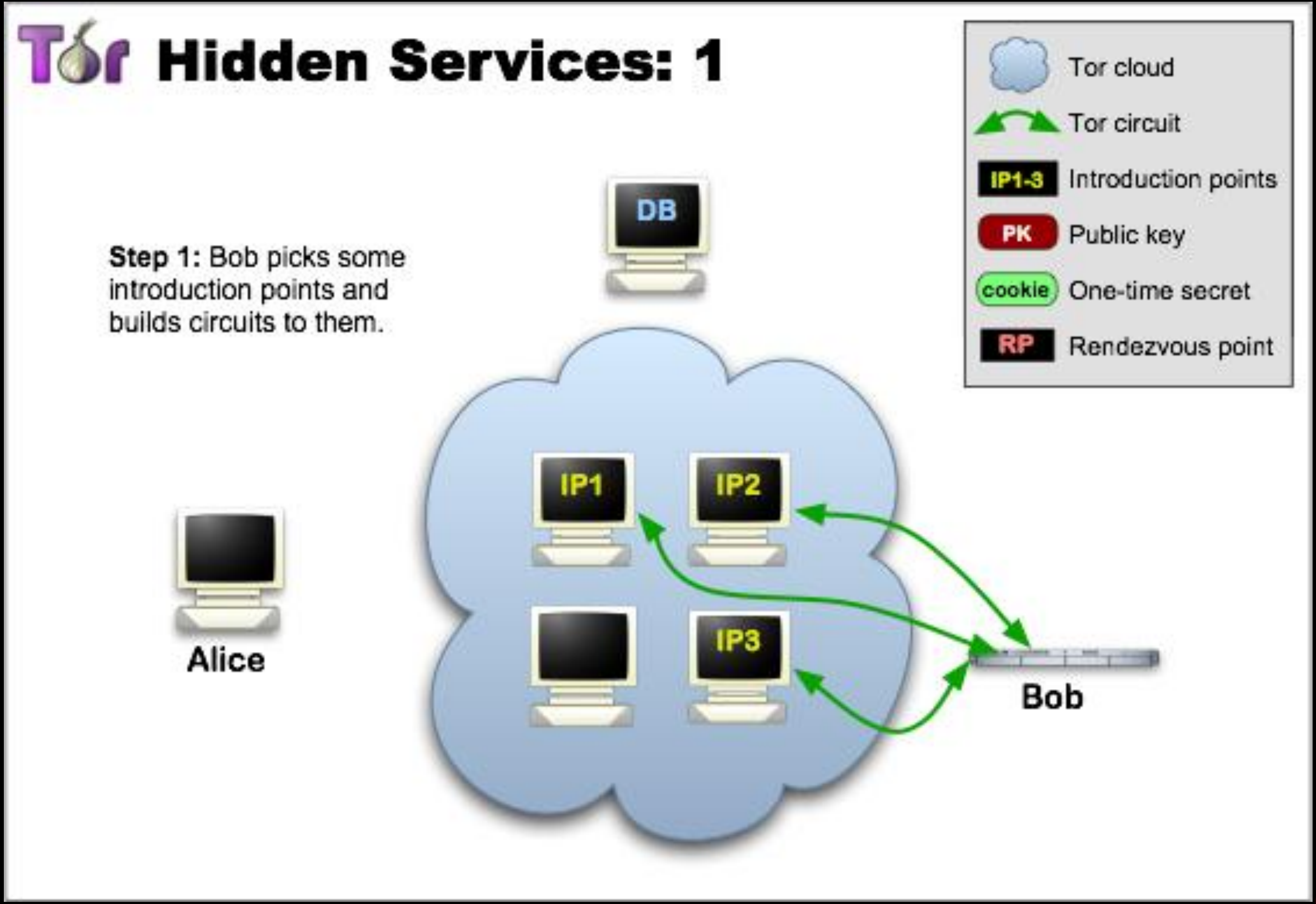
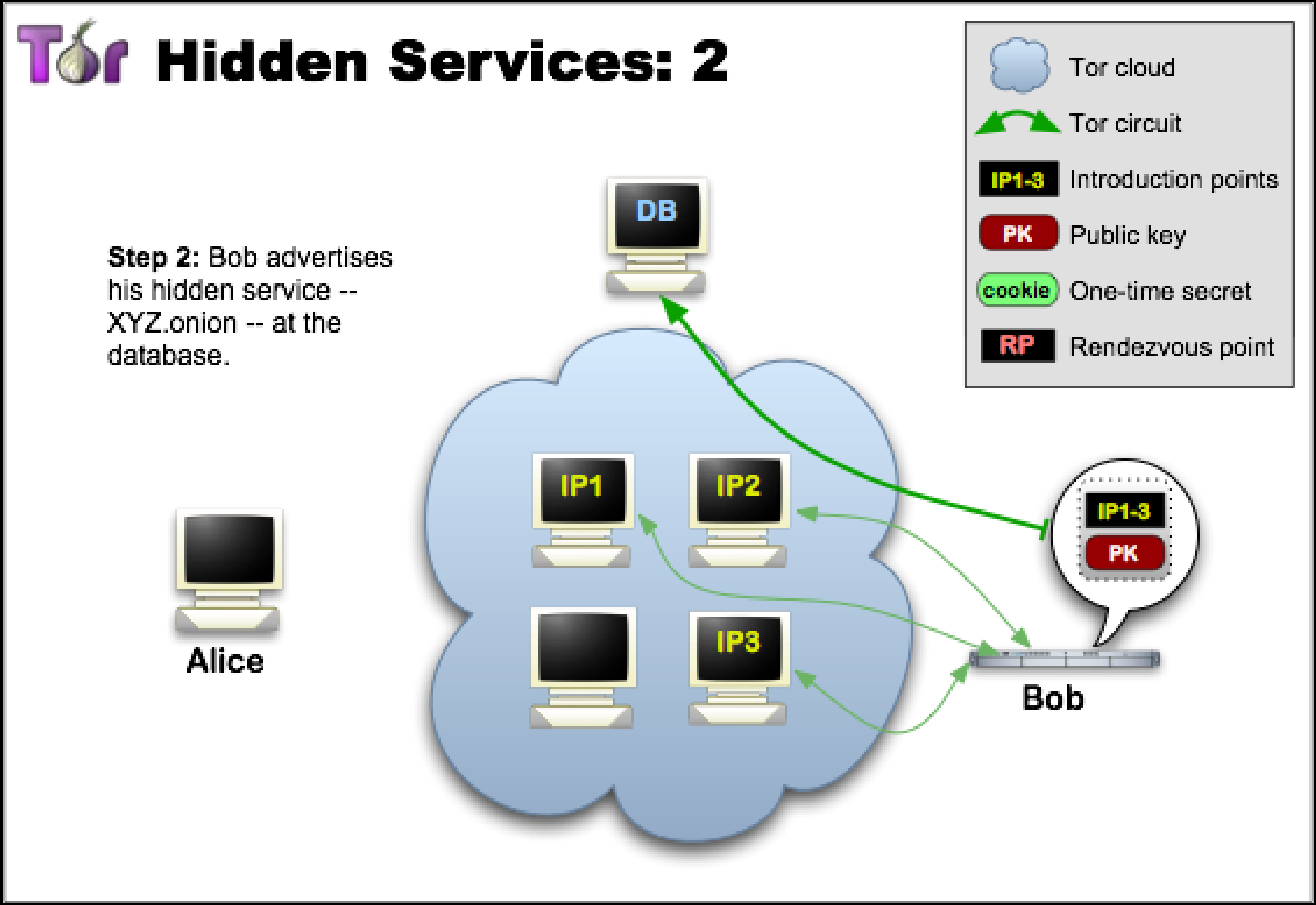


Image from http://www.torproject.org/hidden-services.html.en

Layout to connect to Hidden Sevice

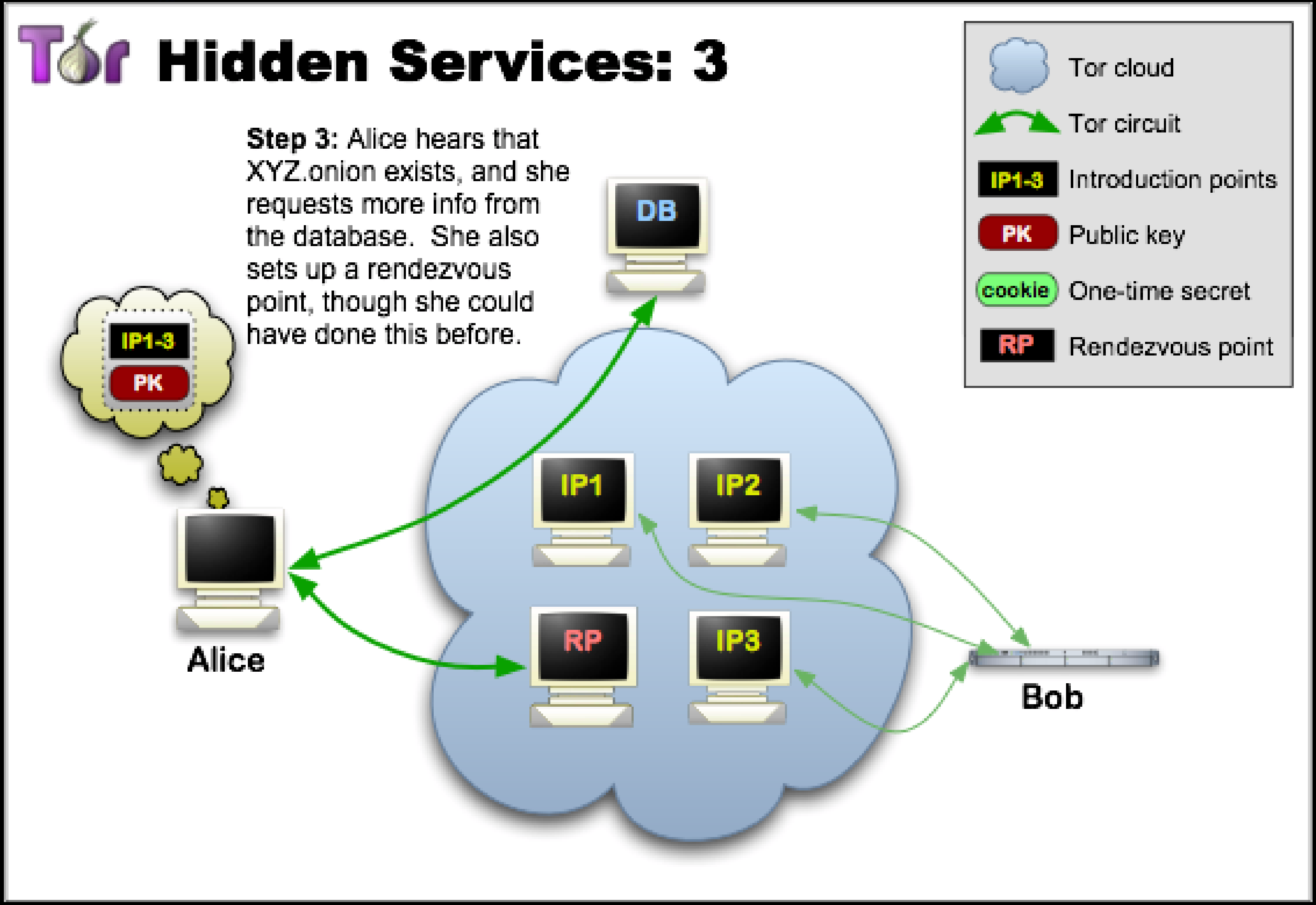


Hidden Services: 2

Step 2: Bob advertises his hidden service -- XYZ.onion -- at the database.

Image from http://www.torproject.org/hidden-services.html.en

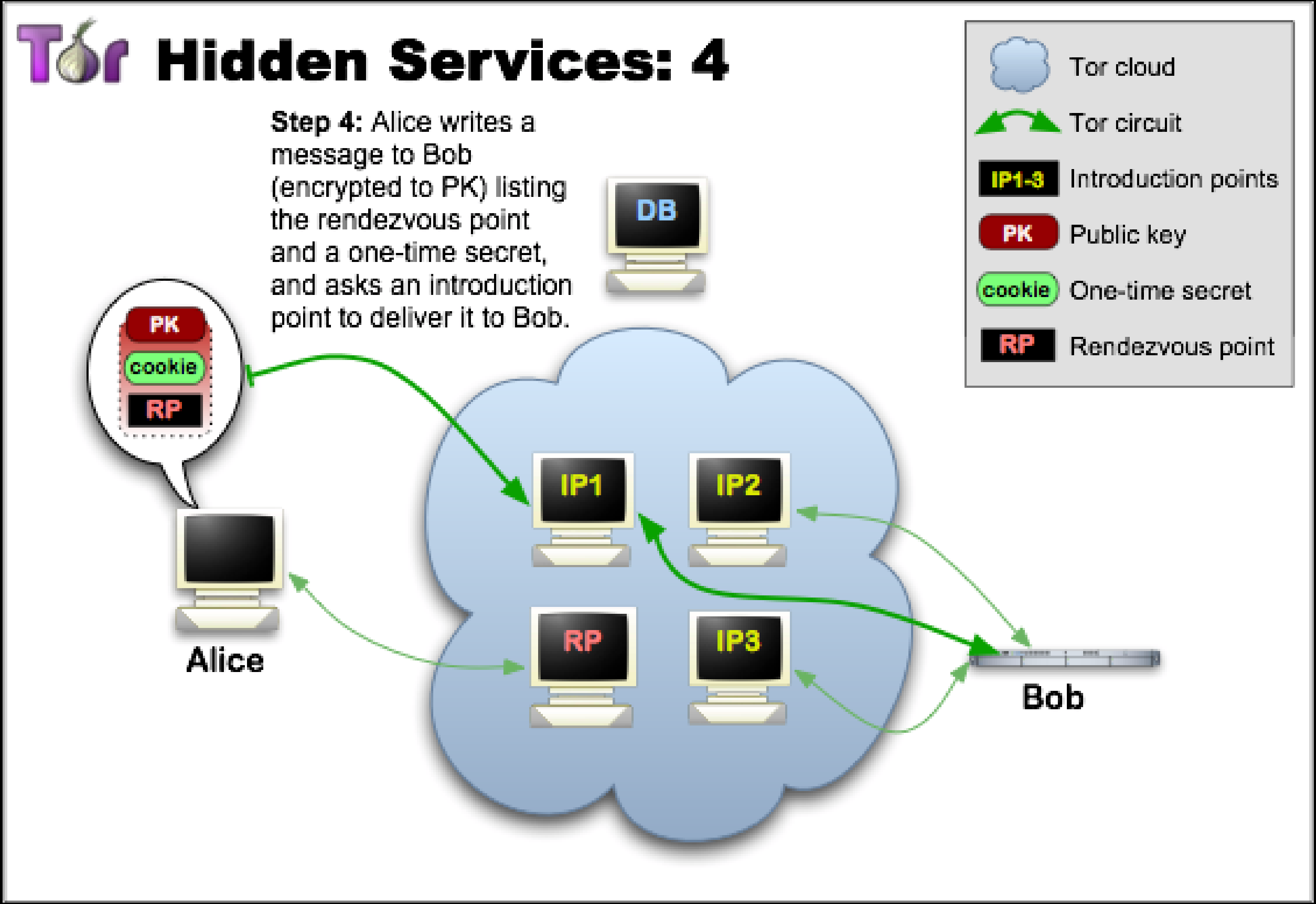
Layout to connect to Hidden Sevice



Step 3: Alice hears that XYZ.onion exists, and she requests more info from the database. She also sets up a rendezvous point, though she could have done this before.

Image from http://www.torproject.org/hidden-services.html.en

Layout to connect to Hidden Sevice



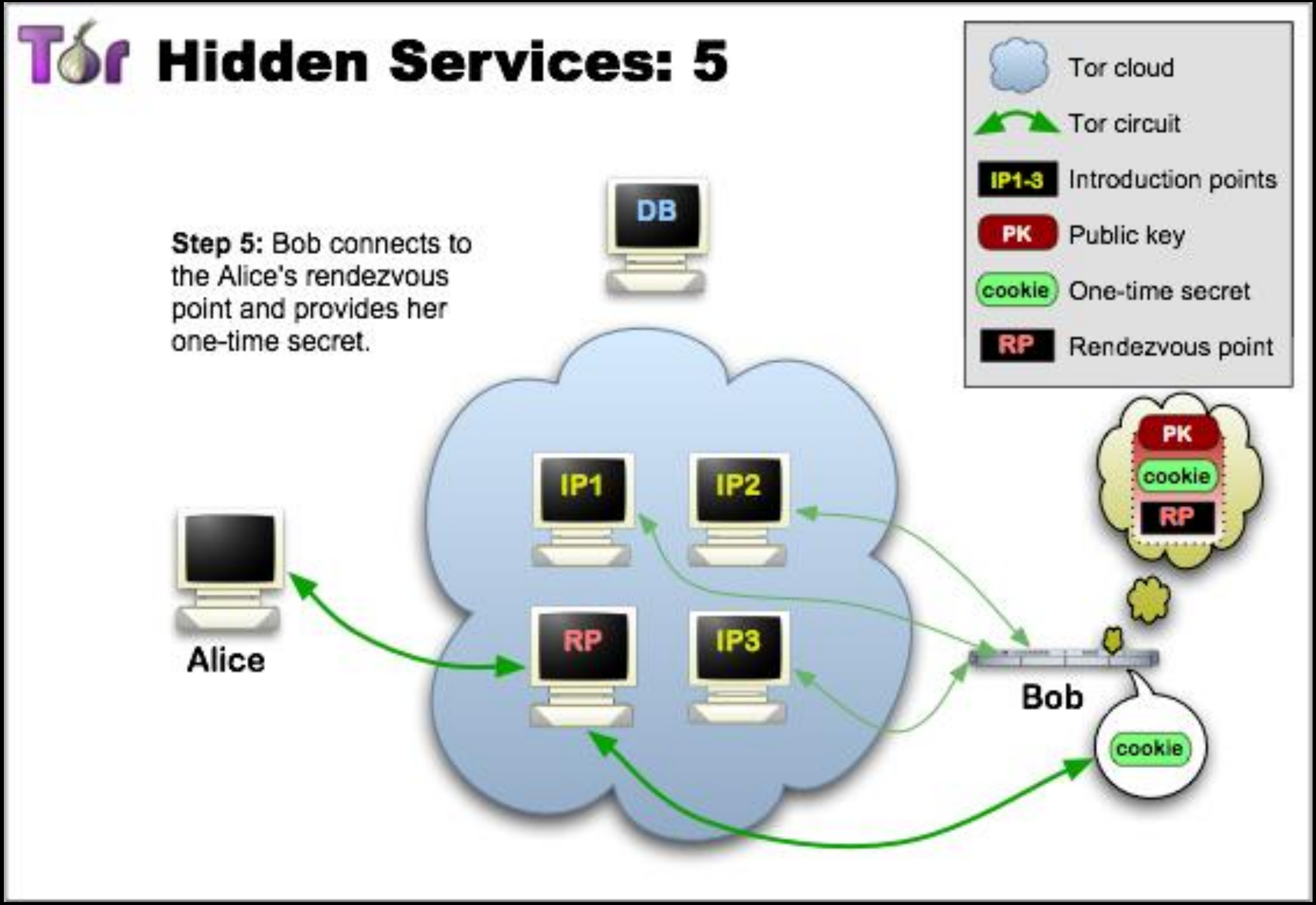
Tor Hidden Services: 4

Step 4: Alice writes a message to Bob (encrypted to PK) listing the rendezvous point and a one-time secret, and asks an introduction point to deliver it to Bob.

☁	Tor cloud
↔	Tor circuit
IP1-3	Introduction points
PK	Public key
cookie	One-time secret
RP	Rendezvous point

Image from http://www.torproject.org/hidden-services.html.en

Layout to connect to Hidden Sevice



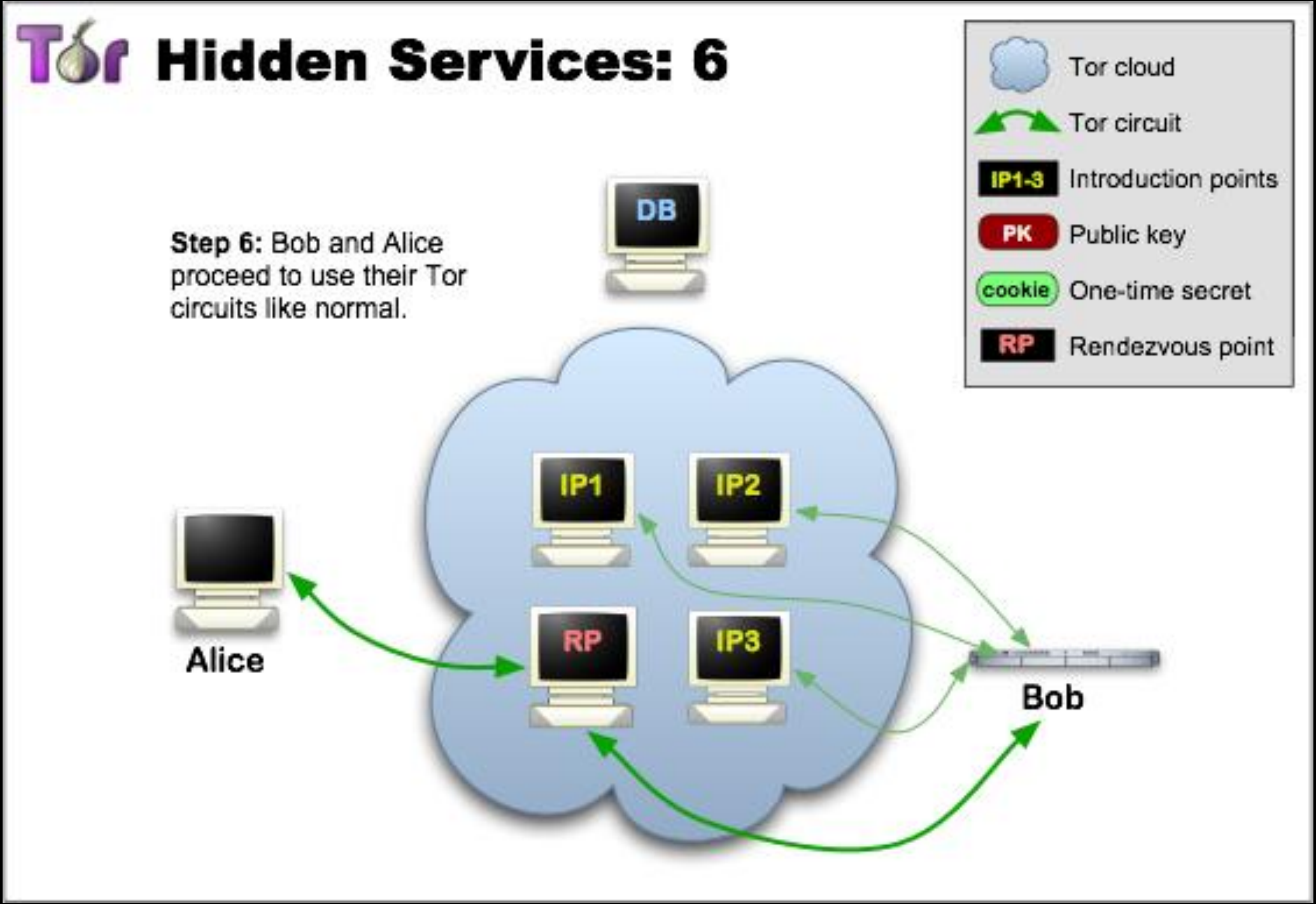
Tor Hidden Services: 5

Step 5: Bob connects to the Alice's rendezvous point and provides her one-time secret.

Image from http://www.torproject.org/hidden-services.html.en

http://Irongeek.com

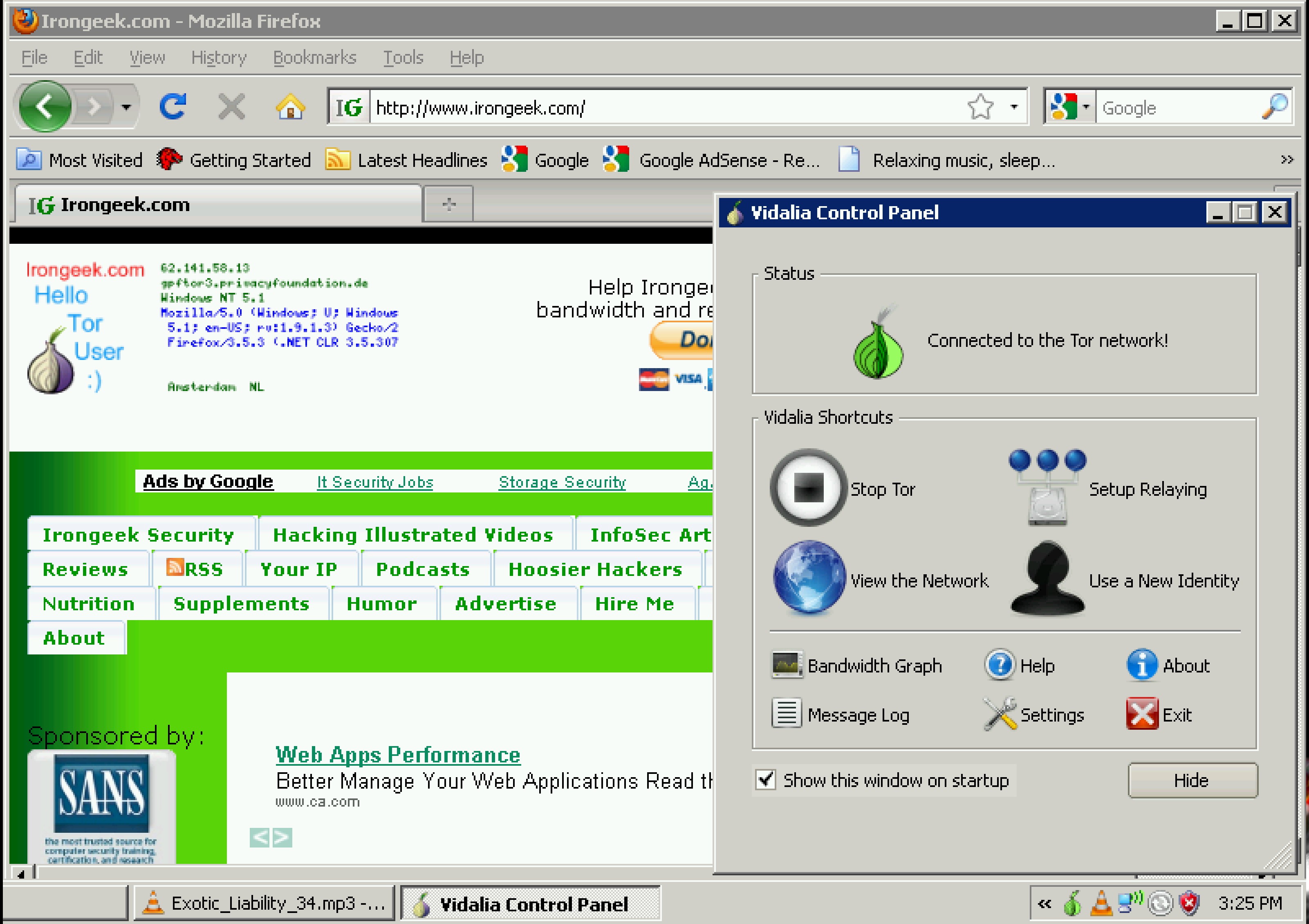
Layout to connect to Hidden Sevice



Step 6: Bob and Alice proceed to use their Tor circuits like normal.

Image from http://www.torproject.org/hidden-services.html.en

What does it look like to the user?



Irongeek.com
Hello Tor User :)

```
62.141.58.13
gpftor3.privacyfoundation.de
Windows NT 5.1
Mozilla/5.0 (Windows; U; Windows
 5.1; en-US; rv:1.9.1.3) Gecko/2
 Firefox/3.5.3 (.NET CLR 3.5.307

 Amsterdam  NL
```

Help Irongee
bandwidth and re

Web Apps Performance
Better Manage Your Web Applications Read th
www.ca.com

Connected to the Tor network!

☑ Show this window on startup

http://Irongeek.com

Applications/Sites

- Anonymous proxy to the normal web
  http://www.irongeek.com/i.php?page=videos/tor-1

- Hidden services
  Normally websites, but can be just about any TCP connection
  http://www.irongeek.com/i.php?page=videos/tor-hidden-services

- Tor2Web Proxy
  http://tor2web.com

- Tor Hidden Service Example (Wikileaks) :
  http://gaddbiwdftapglkq.onion/

Tor Pros and Cons

Pros

- If you can tunnel it through a SOCKS proxy, you can make just about any protocol work.
- Three levels of proxying, each node not knowing the one before last, makes things very anonymous.

Cons

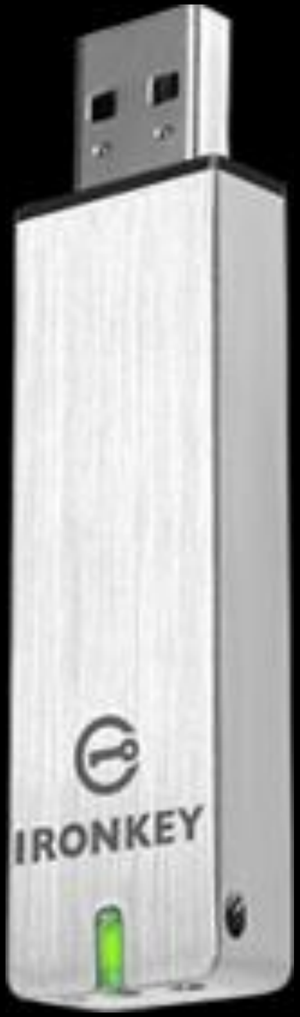
- Slow
- Do you trust your exit node?
- Semi-fixed Infrastructure:
  Sept 25th 2009, Great Firewall of China blocks 80% of Tor relays listed in the Directory, but all hail bridges!!!
  https://blog.torproject.org/blog/tor-partially-blocked-china
  http://yro.slashdot.org/story/09/10/15/1910229/China-Strangles-Tor-Ahead-of-National-Day
- Fairly easy to tell someone is using it from the server side
  http://www.irongeek.com/i.php?page=security/detect-tor-exit-node-in-php

What does the traffic look like?

(Keep in mind, this is just the defaults)

- Local
  9050/tcp Tor SOCKS proxy
  9051/tcp Tor control port
  8118/tcp Privoxy
- Remote
  443/tcp and 80/tcp mostly
  Servers may also listen on port 9001/tcp, and directory information on 9030.
- More details
  http://www.irongeek.com/i.php?page=security/detect-tor-exit-node-in-php
  http://www.room362.com/tor-the-yin-or-the-yang

Private Tor based network



- Ironkey’s Secure Sessions https://www.ironkey.com/private-surfing
- Much faster than the public Tor network
- How much do you trust the company?

ANONET AND DARKNET CONGLOMERATION

Roll your own, with OpenVPN and BGP routers

Overview

- **Who?**

  AnoNet: Good question
  http://anonetnfo.brinkster.net
  DarkNET Conglomeration: BadFoo.NET, ReLinked.ORG, SmashTheStack.ORG, and SABS (perhaps a few others).
  http://darknet.me

- **Why?**

  To run a separate semi-anonymous network based on normal Internet protocols.

- **What?**

  Other sites and services internal to the network, but gateways to the public Internet are possible.

- **How?**

  OpenVPN connection to the network.

Layout

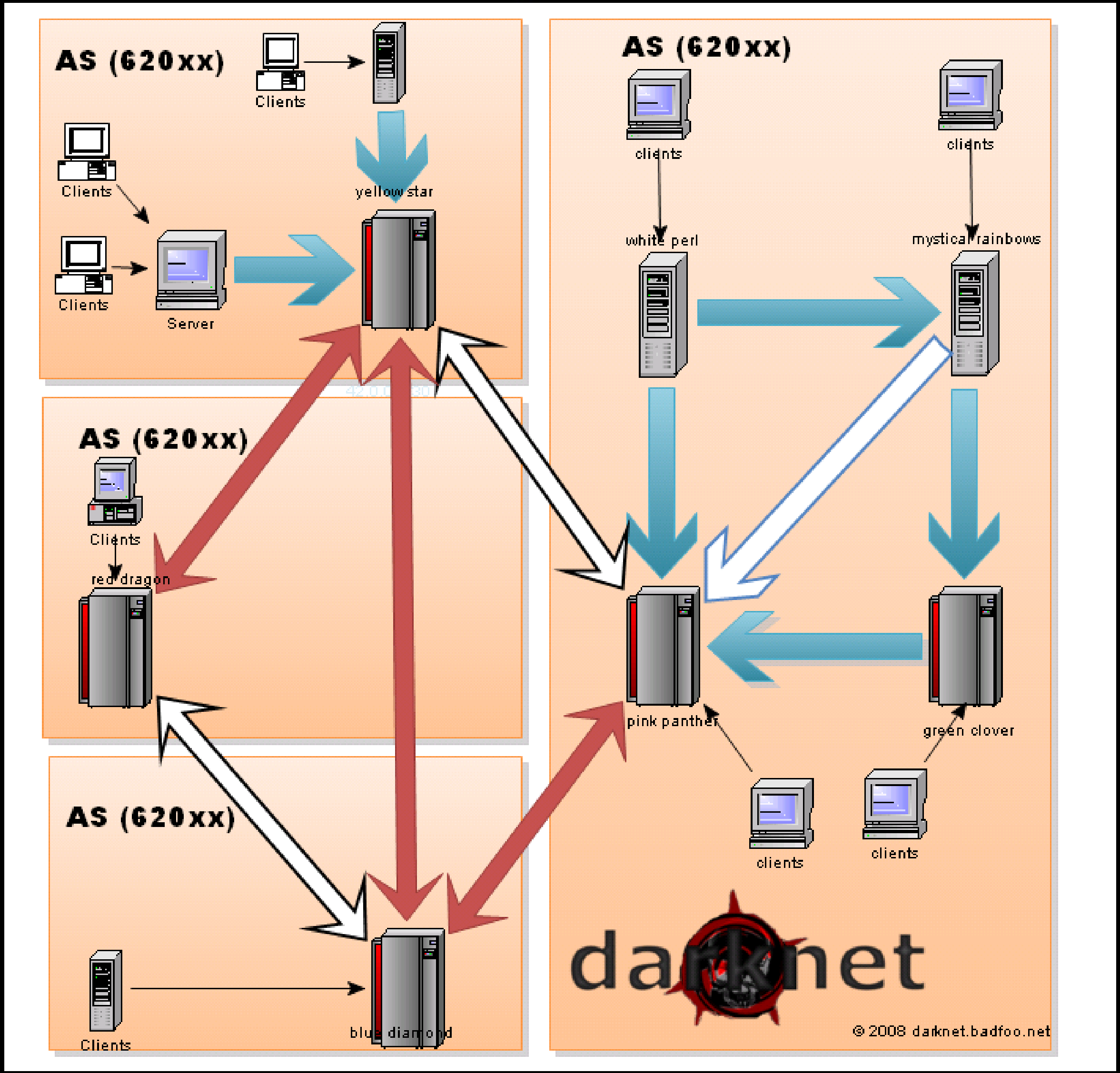


Image from http://darknet.me/whatthe.html

Anonet and DarkNET Conglomeration Pros and Cons

Pros

- Fast
- Just about any IP based protocol can be used

Cons

- Not as anonymous as Tor since you can see whom you are peering with
- Not a lot of services out there (DC)
- Entry points seem to drop out of existence (AN)

What does the traffic look like?

(Keep in mind, this is just the defaults)

- Whatever the OpenVPN clients and servers are configured for. I've seen:
- AnoNet
  5555/tcp
  22/tcp
- Darknet Conglomeration
  2502/tcp

FREENET

All the world will be your enemy, Prince of a Thousand enemies. And when they catch you, they will kill you. But first they must catch you…
~ Watership Down

Overview

- **Who?**

  The Freenet Project, but started by Ian Clarke.
  http://freenetproject.org/

- **Why?**

  “Freenet is free software which lets you anonymously share files, browse and publish "freesites" (web sites accessible only through Freenet) and chat on forums, without fear of censorship.”

- **What?**

  Documents and Freenet Websites for the most part, but with some extensibility.

- **How?**

  Locally run proxy of a sort that you can connect to and control via a web browser.

Layout

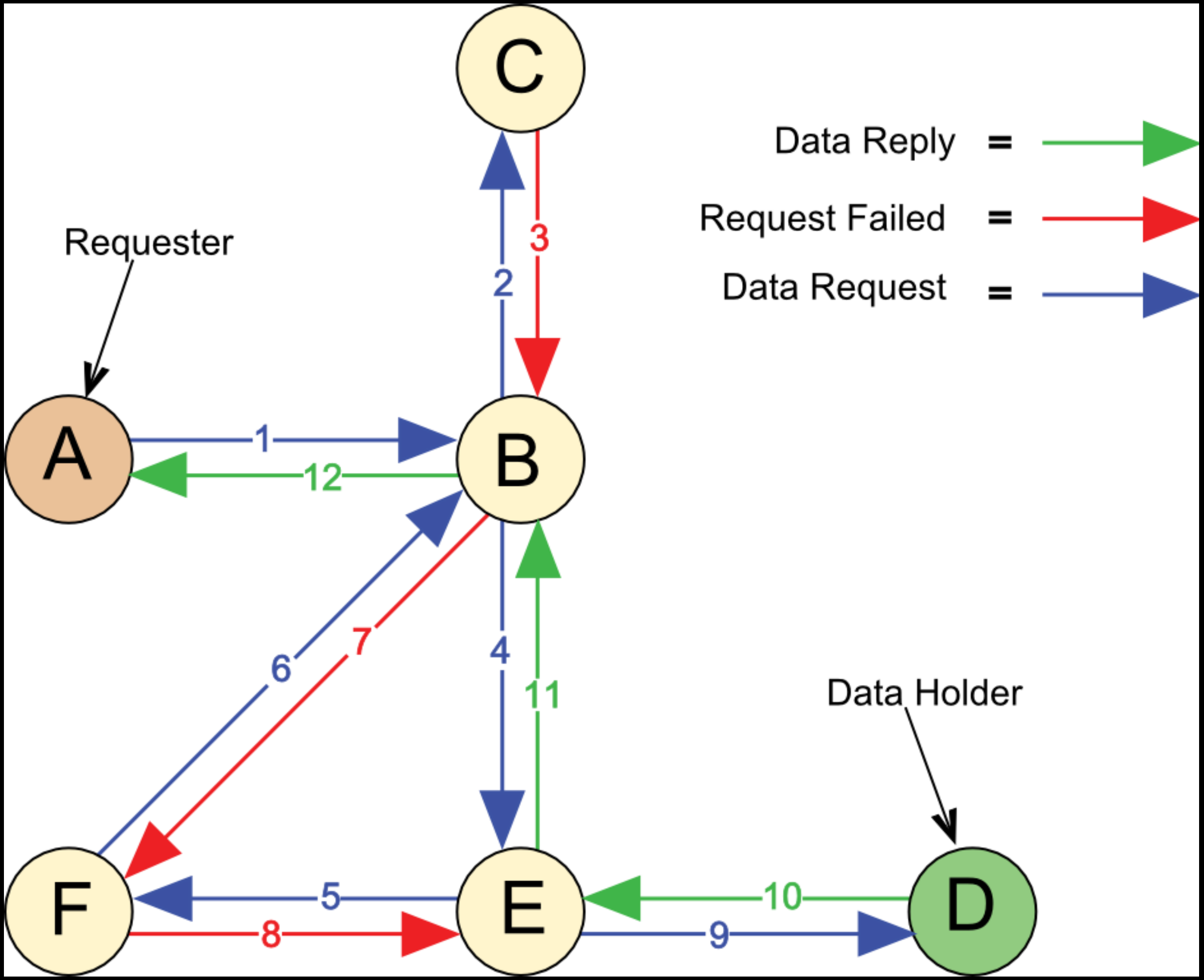
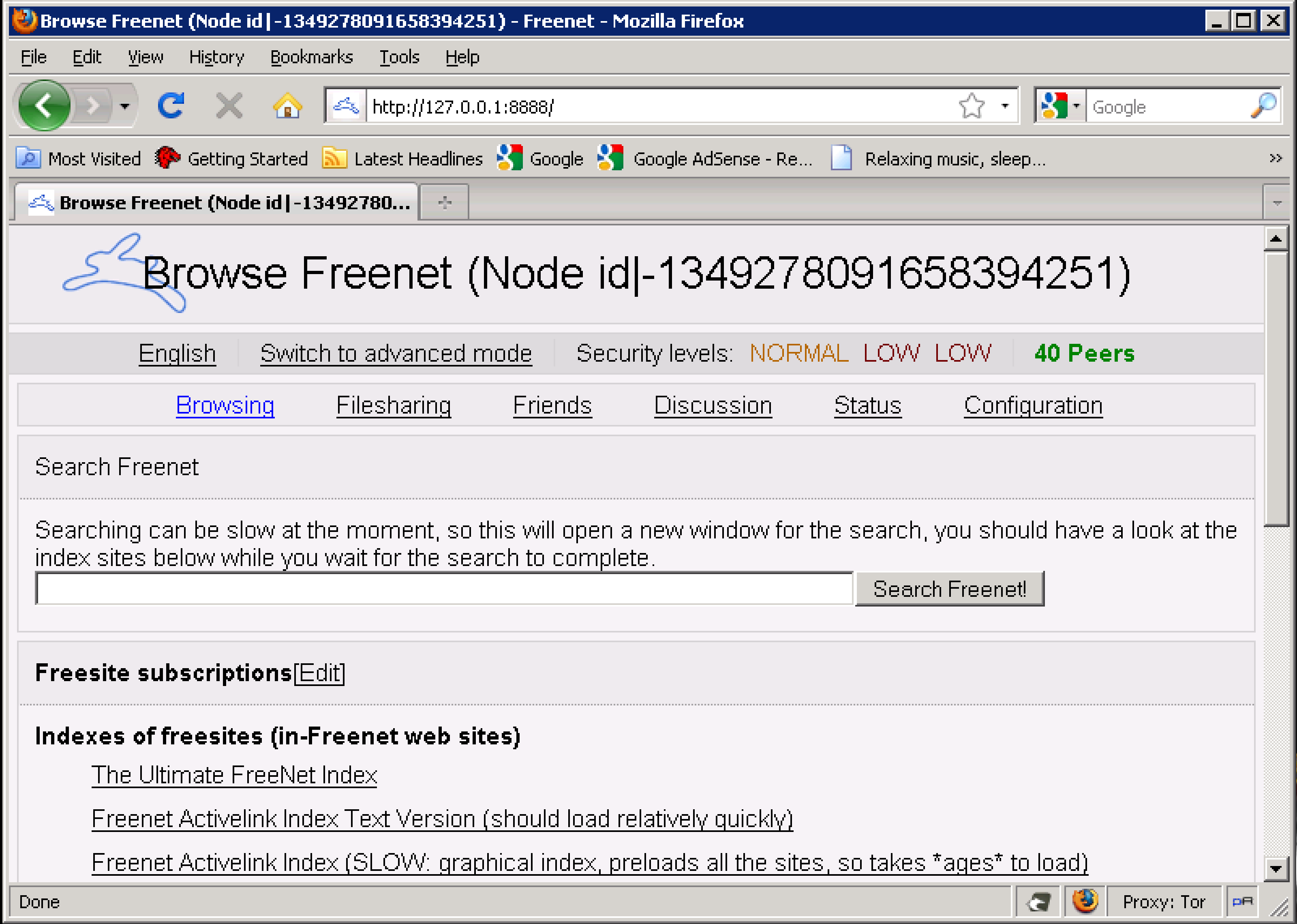


Image from http://en.wikipedia.org/wiki/File:Freenet_Request_Sequence_ZP.svg

What does it look like to the user?



Browse Freenet (Node id|-1349278091658394251) - Freenet - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://127.0.0.1:8888/
Google
Most Visited Getting Started Latest Headlines Google Google AdSense - Re... Relaxing music, sleep...
Browse Freenet (Node id|-13492780...

Browse Freenet (Node id|-1349278091658394251)

English | Switch to advanced mode | Security levels: NORMAL LOW LOW | 40 Peers

Browsing Filesharing Friends Discussion Status Configuration

Search Freenet

Searching can be slow at the moment, so this will open a new window for the search, you should have a look at the index sites below while you wait for the search to complete.

Search Freenet!

Freesite subscriptions[Edit]

Indexes of freesites (in-Freenet web sites)

The Ultimate FreeNet Index

Freenet Activelink Index Text Version (should load relatively quickly)

Freenet Activelink Index (SLOW: graphical index, preloads all the sites, so takes *ages* to load)

Key types

- URI Example:
  http://127.0.0.1:8888/USK@0I8gctpUE32CM0iQhXaYpCMvtPPGfT4pjXm01oid5Zc,3dAcn4fX2LyxO6uCnWFTx-2HKZ89uruurcKwLSCxbZ4,AQACAAE/Ultimate-Freenet-Index/52/

- **CHK** - Content Hash Keys
  These keys are for static content, and the key is a hash of the content.
- **SSK** - Signed Subspace Keys
  Used for sites that could change over time, it is signed by the publisher of the content. Largely superseded by USKs.
- **USK** - Updateable Subspace Keys
  Really just a friendly wrapper for SSKs to handle versions of a document.
- **KSK** - Keyword Signed Keys
  Easy to remember because of simple keys like “KSK@myfile.txt” but there can be name collisions.

Modes of operation

- Opennet
  Lets any one in

- Darknet
  Manually configured “friend to friend”

Applications

- jSite
  A tool to create your own Freenet site
  http://freenetproject.org/jsite.html
- Freemail
  Email system for Freenet
  http://freenetproject.org/freemail.html
- Frost
  Provides usenet/forum like functionality
  http://freenetproject.org/frost.html
- Thaw
  For file sharing
  http://freenetproject.org/thaw.html

Freenet Pros and Cons

Pros

- Once you inject something into the network, it can stay there as long as it is routinely requested
- Does a damn good job of keeping one anonymous
- Awesome for publishing documents without maintaining a server

Cons

- Slow
- Not really interactive
- Not used for accessing the public Internet
- UDP based, which may be somewhat more noticeable/NAT issues
- Not meant for standard IP protocols

What does the traffic look like?

(Keep in mind, this is just the defaults)

- Local
  FProxy: 8888/TCP (web interface)
- Remote
  Darknet FNP: 37439/UDP (used to connect to trusted peers i.e. Friends; forward this port if you can)
  Opennet FNP: 5980/UDP (used to connect to untrusted peers i.e. Strangers; forward this port if you can)
  FCP: 9481/TCP (for Freenet clients such as Frost and Thaw)

I2P

Invisible Internet Project

Overview

- **Who?**

  I2P developers, started by Jrandom.
  http://www.i2p2.de/

- **Why?**

  "I2P is an effort to build, deploy, and maintain a network to support secure and anonymous communication. People using I2P are in control of the tradeoffs between anonymity, reliability, bandwidth usage, and latency." ~ from the I2p web site

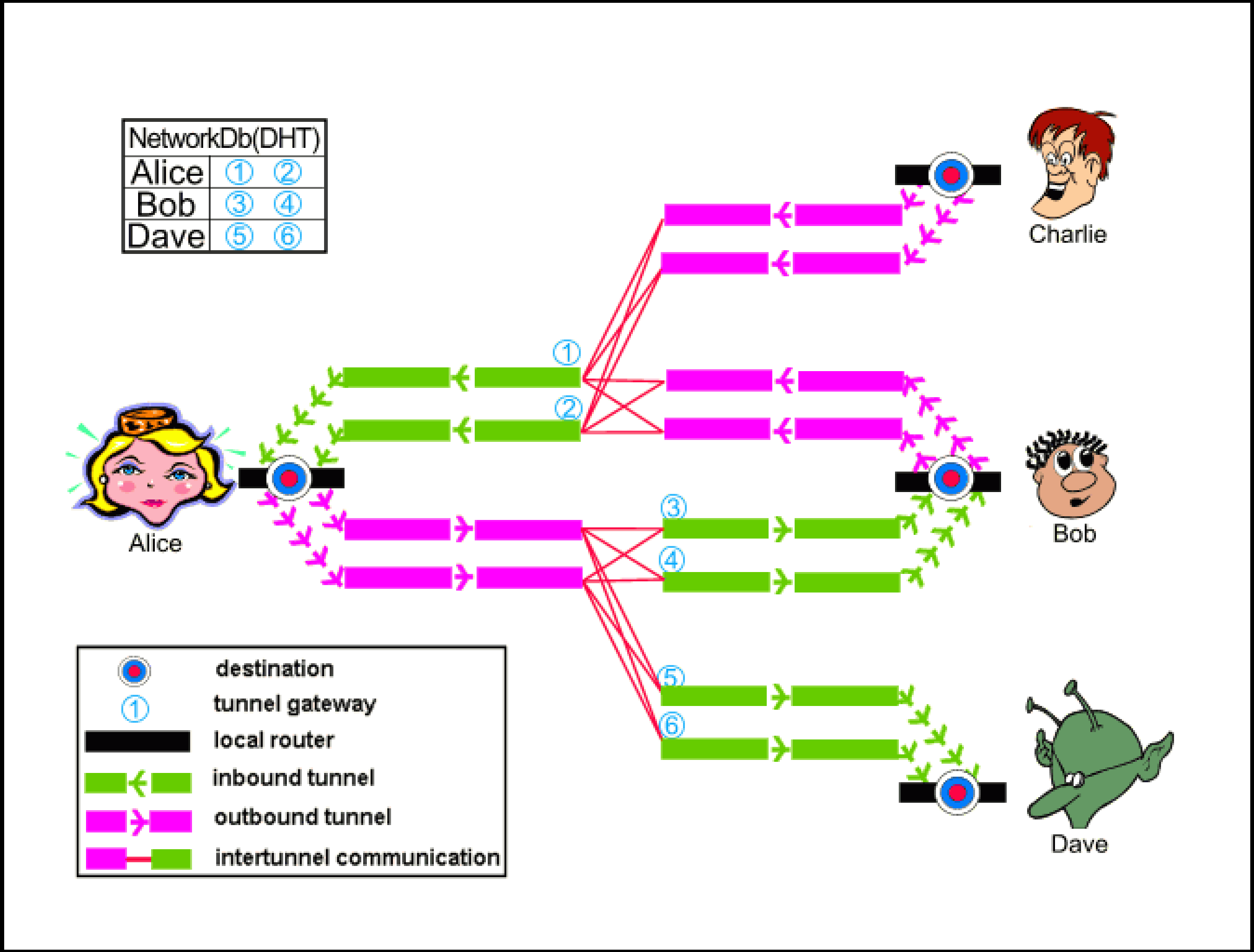
- **What?**

  Mostly other web sites on I2P (Eepsites), but the protocol allows for P2P (iMule, i2psnark), anonymous email and public Internet via out proxies.

- **How?**

  Locally ran proxy of a sort that you can connect to and control via a web browser.

Layout

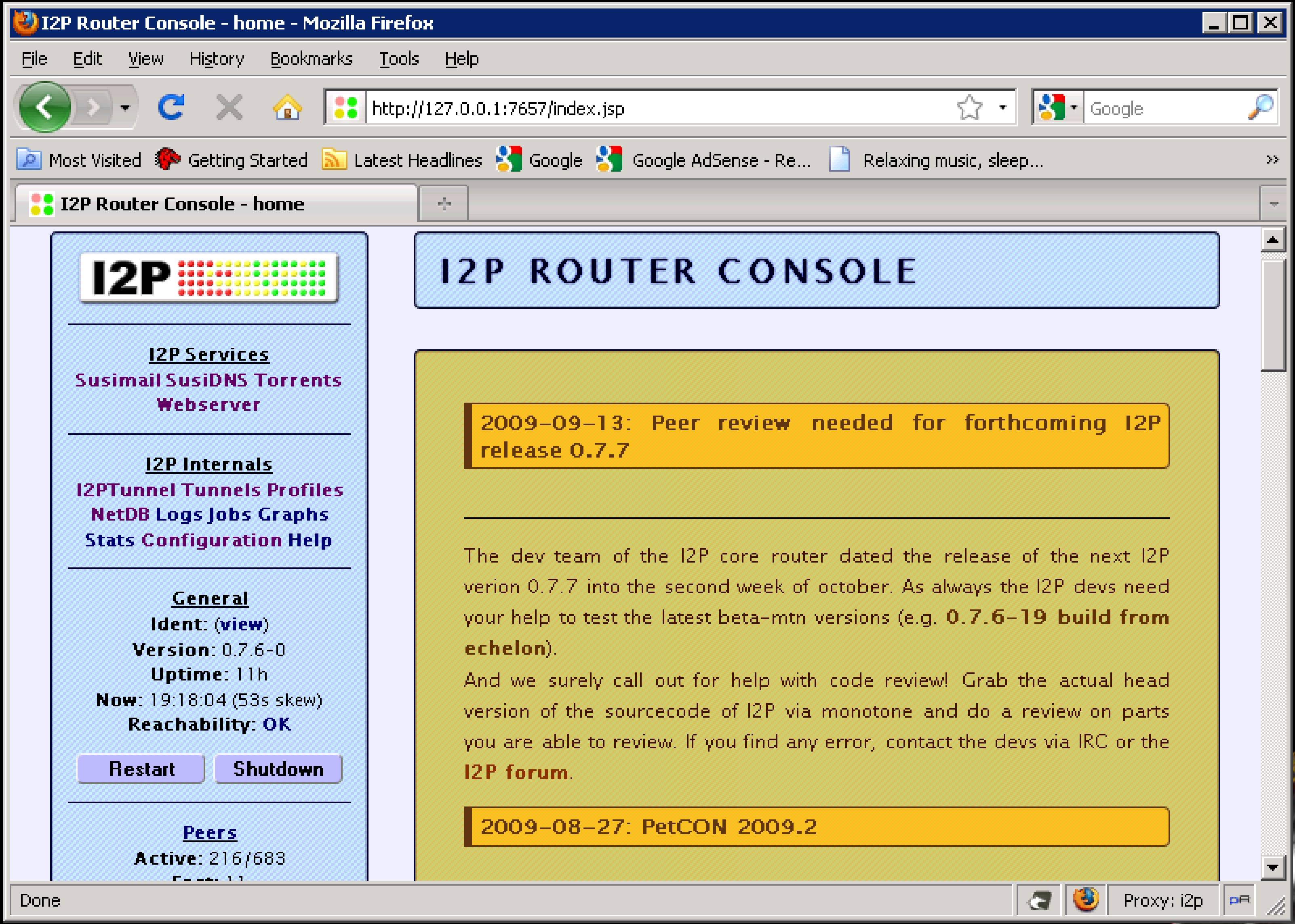


NetworkDb(DHT)		
Alice	①	②
Bob	③	④
Dave	⑤	⑥

- ◉ destination
- ① tunnel gateway
- ▬ local router
- 🟩←🟩 inbound tunnel
- 🟪→🟪 outbound tunnel
- 🟪–🟩 intertunnel communication

Image from http://www.i2p2.de/how_intro

What does it look like to the user?


I2P Router Console - home - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://127.0.0.1:7657/index.jsp
Google
Most Visited
Getting Started
Latest Headlines
Google
Google AdSense - Re...
Relaxing music, sleep...
I2P Router Console - home
Done
Proxy: i2p

I2P

I2P Services
Susimail SusiDNS Torrents Webserver

I2P Internals
I2PTunnel Tunnels Profiles NetDB Logs Jobs Graphs Stats Configuration Help

General
Ident: (view)
Version: 0.7.6-0
Uptime: 11h
Now: 19:18:04 (53s skew)
Reachability: OK

Restart Shutdown

Peers
Active: 216/683

I2P ROUTER CONSOLE

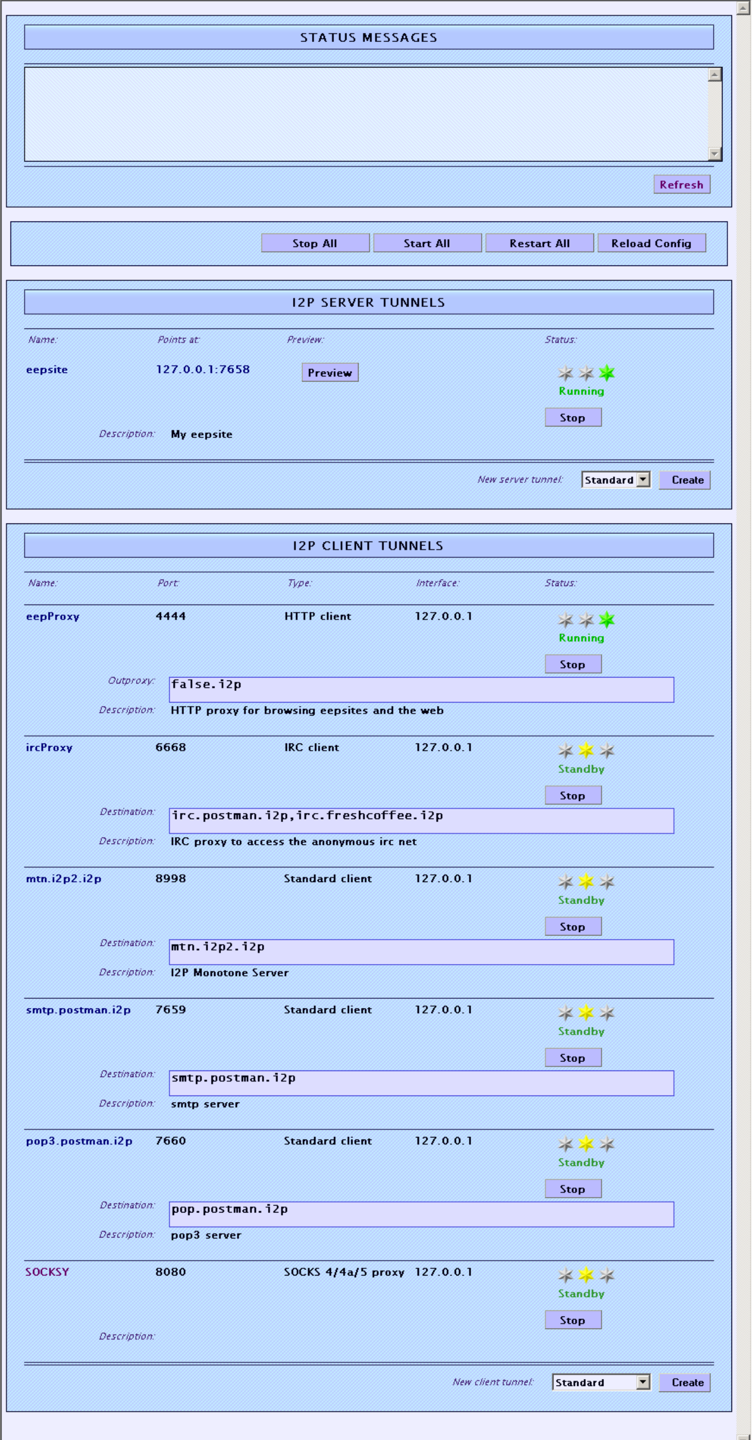
2009-09-13: Peer review needed for forthcoming I2P release 0.7.7

The dev team of the I2P core router dated the release of the next I2P verion 0.7.7 into the second week of october. As always the I2P devs need your help to test the latest beta-mtn versions (e.g. **0.7.6-19 build from echelon**).

And we surely call out for help with code review! Grab the actual head version of the sourcecode of I2P via monotone and do a review on parts you are able to review. If you find any error, contact the devs via IRC or the **I2P forum**.

2009-08-27: PetCON 2009.2

Tunnel Setup



STATUS MESSAGES

Refresh

Stop All | Start All | Restart All | Reload Config

I2P SERVER TUNNELS

Name:	Points at:	Preview:	Status:
eepsite	127.0.0.1:7658	Preview	Running Stop

Description: My eepsite

New server tunnel: Standard ▾ Create

I2P CLIENT TUNNELS

Name:	Port:	Type:	Interface:	Status:
eepProxy	4444	HTTP client	127.0.0.1	Running Stop

Outproxy: false.i2p

Description: HTTP proxy for browsing eepsites and the web

Name:	Port:	Type:	Interface:	Status:
ircProxy	6668	IRC client	127.0.0.1	Standby Stop

Destination: irc.postman.i2p,irc.freshcoffee.i2p

Description: IRC proxy to access the anonymous irc net

Name:	Port:	Type:	Interface:	Status:
mtn.i2p2.i2p	8998	Standard client	127.0.0.1	Standby Stop

Destination: mtn.i2p2.i2p

Description: I2P Monotone Server

Name:	Port:	Type:	Interface:	Status:
smtp.postman.i2p	7659	Standard client	127.0.0.1	Standby Stop

Destination: smtp.postman.i2p

Description: smtp server

Name:	Port:	Type:	Interface:	Status:
pop3.postman.i2p	7660	Standard client	127.0.0.1	Standby Stop

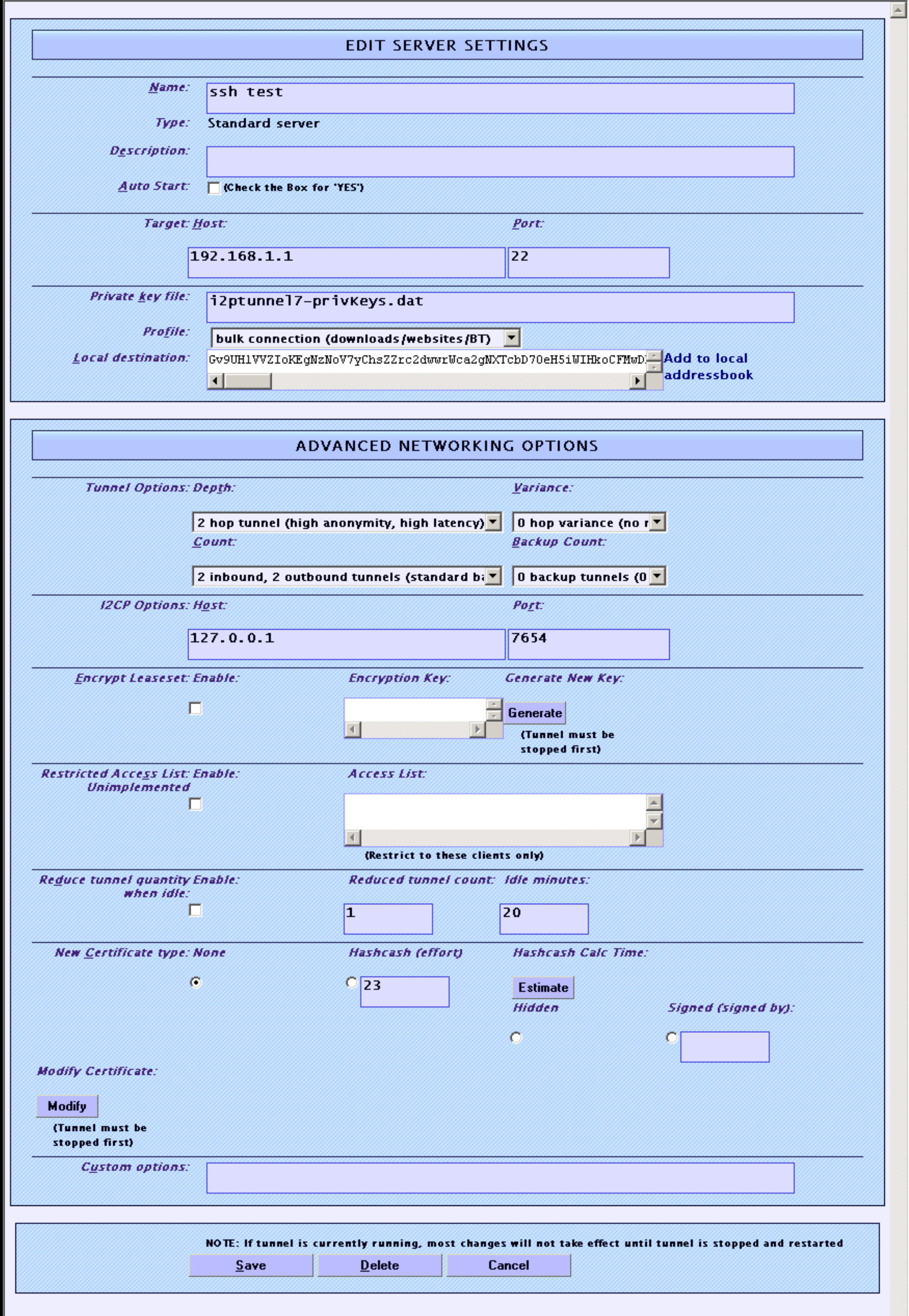
Destination: pop.postman.i2p

Description: pop3 server

Name:	Port:	Type:	Interface:	Status:
SOCKSY	8080	SOCKS 4/4a/5 proxy	127.0.0.1	Standby Stop

Description:

New client tunnel: Standard ▾ Create



EDIT SERVER SETTINGS

Name: ssh test

Type: Standard server

Description:

Auto Start: □ (Check the Box for 'YES')

Target: Host: 192.168.1.1 Port: 22

Private key file: i2ptunnel7-privKeys.dat

Profile: bulk connection (downloads/websites/BT) ▾

Local destination: Gv9UHlVVZIoKEgNzNoV7yChsZZrc2dwwrWca2gNXTcbD70eH5iWIHkoCFMwD: Add to local addressbook

ADVANCED NETWORKING OPTIONS

Tunnel Options: Depth: 2 hop tunnel (high anonymity, high latency) ▾ Variance: 0 hop variance (no r ▾

Count: 2 inbound, 2 outbound tunnels (standard ba ▾ Backup Count: 0 backup tunnels (0 ▾

I2CP Options: Host: 127.0.0.1 Port: 7654

Encrypt Leaseset: Enable: □ Encryption Key: Generate New Key: Generate (Tunnel must be stopped first)

Restricted Access List: Enable: Unimplemented □ Access List: (Restrict to these clients only)

Reduce tunnel quantity when idle: Enable: □ Reduced tunnel count: 1 Idle minutes: 20

New Certificate type: None ● Hashcash (effort) ○ 23 Hashcash Calc Time: Estimate

Hidden ○ Signed (signed by): ○

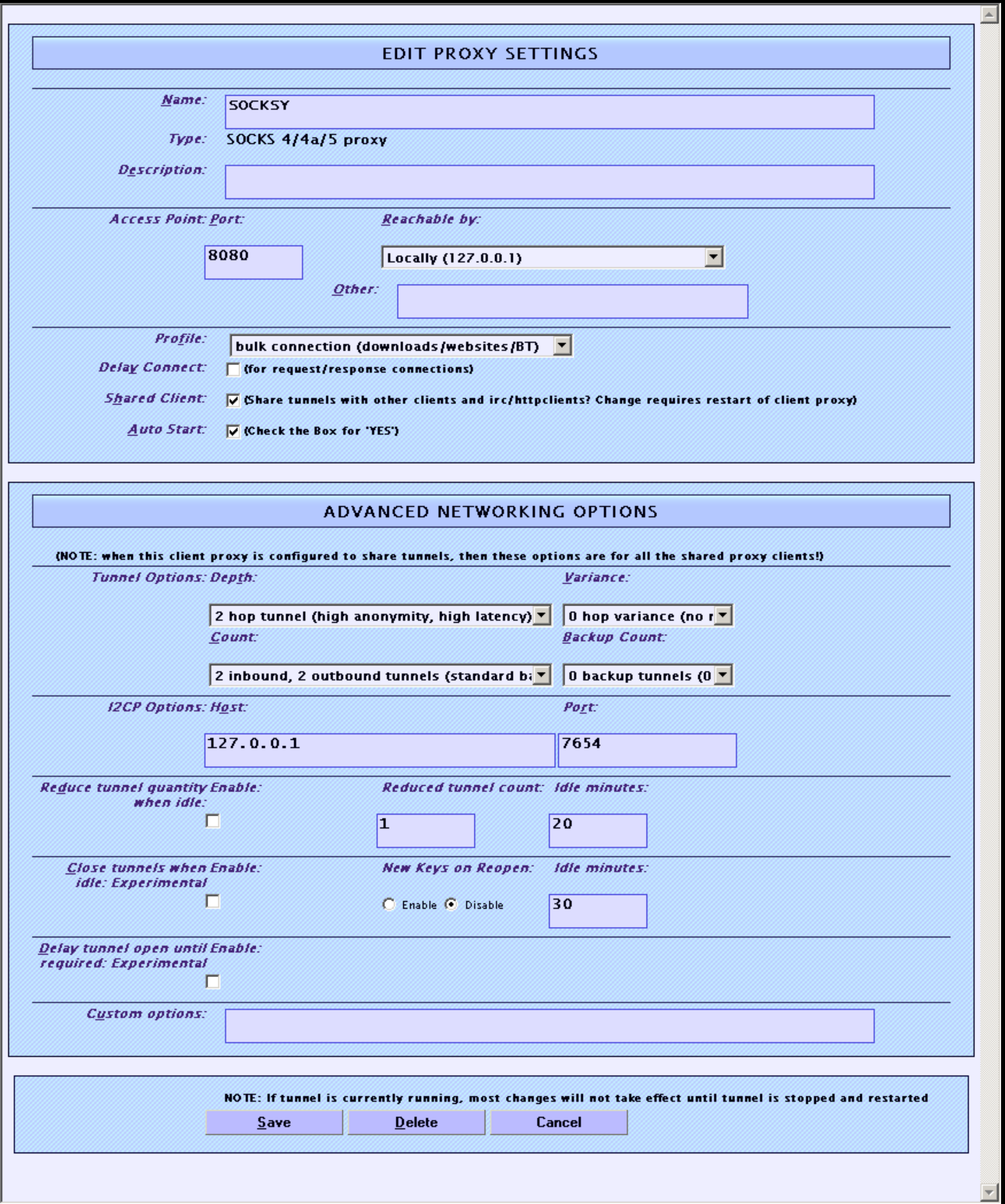
Modify Certificate: Modify (Tunnel must be stopped first)

Custom options:

NOTE: If tunnel is currently running, most changes will not take effect until tunnel is stopped and restarted

Save | Delete | Cancel

Tunnel Setup



EDIT PROXY SETTINGS

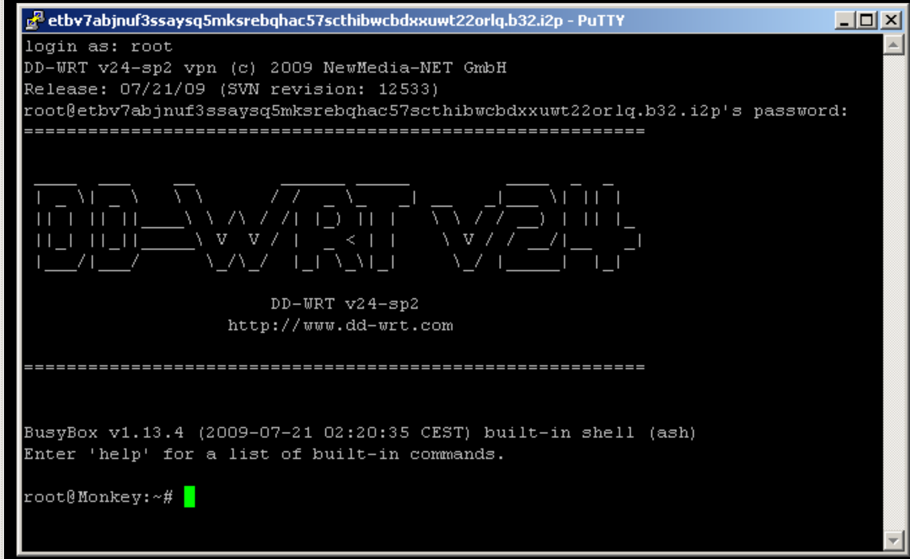
Name:	SOCKSY
Type:	SOCKS 4/4a/5 proxy
Description:	
Access Point: Port:	8080
Reachable by:	Locally (127.0.0.1)
Other:	
Profile:	bulk connection (downloads/websites/BT)
Delay Connect:	□ (for request/response connections)
Shared Client:	☑ (Share tunnels with other clients and irc/httpclients? Change requires restart of client proxy)
Auto Start:	☑ (Check the Box for 'YES')

ADVANCED NETWORKING OPTIONS

(NOTE: when this client proxy is configured to share tunnels, then these options are for all the shared proxy clients!)

Tunnel Options: Depth:	2 hop tunnel (high anonymity, high latency)
Variance:	0 hop variance (no r
Count:	2 inbound, 2 outbound tunnels (standard ba
Backup Count:	0 backup tunnels (0
I2CP Options: Host:	127.0.0.1
Port:	7654
Reduce tunnel quantity when idle: Enable:	□
Reduced tunnel count:	1
Idle minutes:	20
Close tunnels when idle: Experimental Enable:	□
New Keys on Reopen:	○ Enable ● Disable
Idle minutes:	30
Delay tunnel open until required: Experimental Enable:	□
Custom options:	

NOTE: If tunnel is currently running, most changes will not take effect until tunnel is stopped and restarted



etbv7abjnuf3ssaysq5mksrebqhac57scthibwcbdxxuwt22orlq.b32.i2p - PuTTY

```
login as: root
DD-WRT v24-sp2 vpn (c) 2009 NewMedia-NET GmbH
Release: 07/21/09 (SVN revision: 12533)
root@etbv7abjnuf3ssaysq5mksrebqhac57scthibwcbdxxuwt22orlq.b32.i2p's password:
==========================================================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                       DD-WRT v24-sp2
                   http://www.dd-wrt.com

==========================================================


BusyBox v1.13.4 (2009-07-21 02:20:35 CEST) built-in shell (ash)
Enter 'help' for a list of built-in commands.

root@Monkey:~#
```

Naming and Addresses

- Check out the details
  http://www.i2p2.de/naming.html
- 516 Character Address

```
ji02vZzrp51aAsi~NZ8hwMLbr1rzMtdPUSiWAU94H89kO-~9Oc8Vucpf2vc6NOvStXpeTOqcRz-WhF01W8gj-
YLP3WFskbjCcUwz0yF8dHonBeC4A5l4CjupAaztBSMbhu4vyN9FJkqZUFN01eZbQ9UqgXgLWMp4DtbUwf78y8VrzdAfmUOr
Vn6Iu89B~HUfOAKnpIlQXyGsQk1fnLw3PzDo2PVi8Q3C1Ntn0ybovD1xDKPrrHliTK4or2YujTcEOhSBLK4tQGvouN-
tWqcVoF9O814yNGtze~uot62ACGJj9nvEU3J7QPgOl~fgBJ5Hvom0Qu-
yPAGJuAZa29LSHnvRhih~z~6lWZYHREBYXQ58IzKktk90xJWcTwlwRRhyO-
Sz3A5JYR3jM97h4SsoYBVrjK9TWnvGKj~fc8wYRDzt1oFVfubLlT-17LUzNc59H-
2Vhxx8yaey8J~dqdWO0YdowqekxxlZf2~IVSGuLvIZYsr7~f--mLAxCgQBCjOjAAAA
```

- SusiDNS Names
  something.i2p
- Hosts.txt and Jump Services
- Base32 Address
  {52 chars}.b32.i2p

Applications/Sites

- My getting started with I2P primer
  http://www.irongeek.com/i.php?page=videos/getting-started-with-the-i2p-darknet

- I2PSnark
  Built-in Bittorrent Client

- iMule
  Kad file sharing network client
  http://www.imule.i2p.tin0.de/

- Syndie
  Blogging application, very alpha

- I2PTunnel
  Built-in, allows for setting up arbitrary TCP/IP tunnels between nodes

Applications/Sites

- Out Proxies
  For connecting to the normal Internet

- Susimail
  Built-in mail client, but you need to register an account at *www.mail.i2p*

- InProxy I2P Eepsite
  http://inproxy.tino.i2p/status.php

- Awesome blog on I2P
  http://privacy.i2p

- I2P.to, like Tor2Web, but for Eepsites
  http://i2p.to example: eepsitename.i2p.to

- Back up your config so you don’t lose your Eepsite’s name
  XP: C:\Documents and Settings\<user>\Application Data\I2P
  Vista/Windows 7: C:\Users\<user>\AppData\Roaming\I2P

I2P Pros and Cons

Pros

- ▣ Lots of supported applications
- ▣ Can create just about any hidden service if you use SOCKS5 as the client tunnel
- ▣ Eepsites somewhat faster compared to Tor Hidden Services (Subjective, I know)

Cons

- ▣ ~~UDP based, which may be somewhat more noticeable/NAT issues~~

  Oops, I was wrong, it can use UDP but TCP is preferred
- ▣ Limited out proxies
- ▣ Out proxies don't handle SSL (I'm not 100% on this)

What does the traffic look like?

(Keep in mind, this is just the defaults)

- Local
  1900/udp: UPnP SSDP UDP multicast listener. Cannot be changed. Binds to all interfaces. May be disabled on config.jsp.
  2827: BOB bridge, a higher level socket API for clients Disabled by default. May be enabled/disabled on configclients.jsp. May be changed in the bob.config file.
  4444: HTTP proxy May be disabled or changed on the i2ptunnel page in the router console.
  6668: IRC proxy May be disabled or changed on the i2ptunnel page in the router console.
  7652: UPnP HTTP TCP event listener. Binds to the LAN address. May be changed with advanced config i2np.upnp.HTTPPort=nnnn. May be disabled on config.jsp.
  7653: UPnP SSDP UDP search response listener. Binds to all interfaces. May be changed with advanced config i2np.upnp.SSDPPort=nnnn. May be disabled on config.jsp.
  7654: I2P Client Protocol port, used by client apps. May be changed with the advanced configuration option i2cp.port but this is not recommended.
  7655: UDP for SAM bridge, a higher level socket API for clients Only opened when a SAM V3 client requests a UDP session. May be enabled/disabled on configclients.jsp. May be changed in the clients.config file with the SAM command line option sam.udp.port=nnnn.
  7656: SAM bridge, a higher level socket API for clients Disabled by default for new installs as of release 0.6.5. May be enabled/disabled on configclients.jsp. May be changed in the clients.config file.
  7657: Your router console May be changed in the clients.config file
  7658: Your eepsite May be disabled in the clients.config file
  7659: Outgoing mail to smtp.postman.i2p May be disabled or changed on the i2ptunnel page in the router console.
  7660: Incoming mail from pop.postman.i2p May be disabled or changed on the i2ptunnel page in the router console.
  8998: mtn.i2p2.i2p (Monotone - disabled by default) May be disabled or changed on the i2ptunnel page in the router console.
  32000: local control channel for the service wrapper
- Remote
  Outbound 8887/udp to arbitrary remote UDP ports, allowing replies
  Outbound TCP from random high ports to arbitrary remote TCP ports
  Inbound to port 8887/udp from arbitrary locations
  Inbound to port 8887/tcp from arbitrary locations (optional, but recommended by default, I2P does not listen for inbound TCP connections)
  Outbound on port 123/udp, allowing replies for I2P's internal time sync (via SNTP)

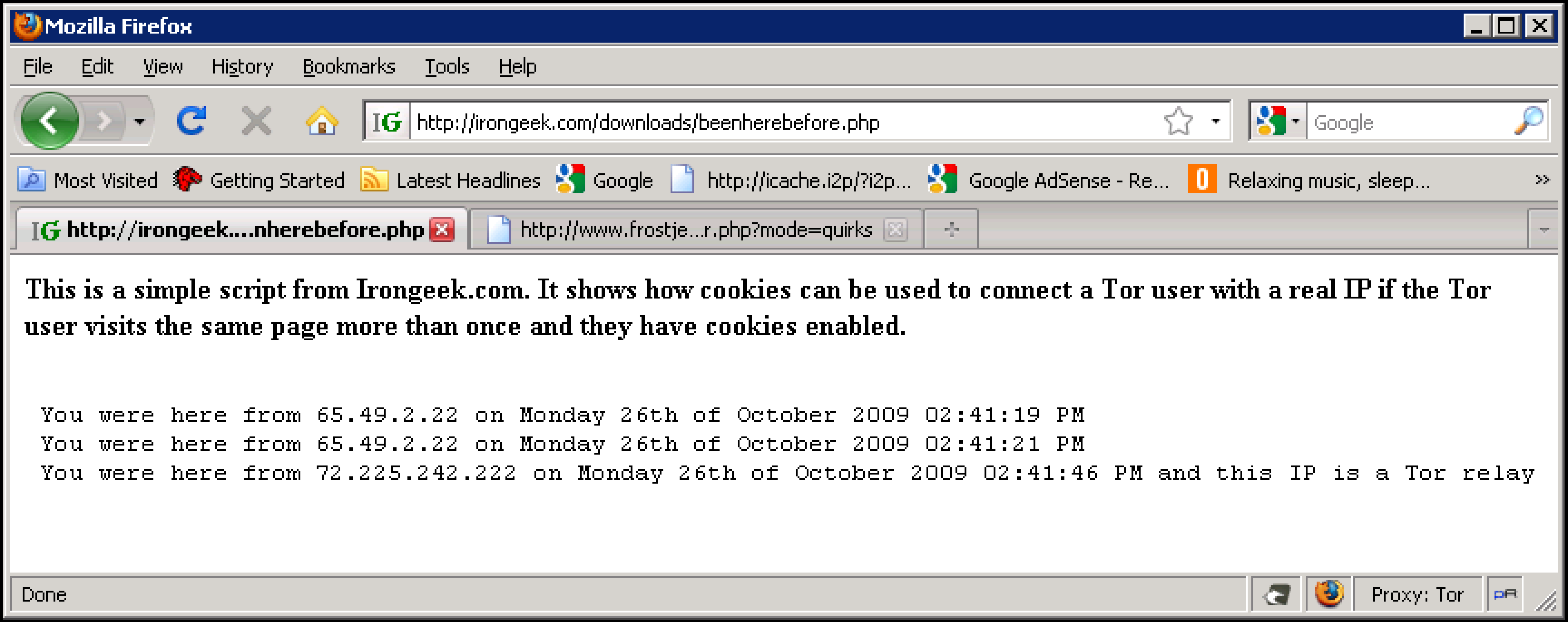
Some common Darknet weaknesses

Not all Darknets have all of these, but all of them have some of them ☺

Remote:

- Traffic analysis
- DNS leaks
- Cookies from when not using the Darknet
  http://www.irongeek.com/browserinfo.php
  http://irongeek.com/downloads/beenherebefore.php
  http://irongeek.com/downloads/beenherebefore.txt
- Plug-ins giving away real IP
  http://ha.ckers.org/weird/tor.cgi
  http://evil.hackademix.net/proxy_bypass/
  http://www.frostjedi.com/terra/scripts/ip_unmasker.php
  http://www.frostjedi.com/terra/scripts/phpbb/proxy_revealer.zip
  “moz-binding / expression” worked fine against I2P, but not Tor

Cookie Example


Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://irongeek.com/downloads/beenherebefore.php
Google
Most Visited
Getting Started
Latest Headlines
Google
http://icache.i2p/?i2p...
Google AdSense - Re...
Relaxing music, sleep...
http://irongeek....nherebefore.php
http://www.frostje...r.php?mode=quirks
Done
Proxy: Tor

This is a simple script from Irongeek.com. It shows how cookies can be used to connect a Tor user with a real IP if the Tor user visits the same page more than once and they have cookies enabled.

```
You were here from 65.49.2.22 on Monday 26th of October 2009 02:41:19 PM
You were here from 65.49.2.22 on Monday 26th of October 2009 02:41:21 PM
You were here from 72.225.242.222 on Monday 26th of October 2009 02:41:46 PM and this IP is a Tor relay
```

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Remote (continued):

- Un-trusted peers
- Un-trusted exit points
  Dan Egerstad and the "Hack of the year“
  http://www.schneier.com/blog/archives/2007/11/dan_egerstad_ar.html
  http://encyclopediadramatica.com/The_Great_Em/b/assy_Security_Leak_of_2007
- The snoopers may not know what you are sending, or to who, but they may know you are using a Darknet and that could be enough to take action.
- Read This
  http://ugha.i2p.to/HowTo/EepProxyAnonymity

Local:

- Cached data and URLs (Privacy mode FTW)
  http://www.irongeek.com/i.php?page=videos/anti-forensics-occult-computing

Things to worry about if you decide to research Darknets (IANAL)

- Opening holes into your network
- Encryption laws of your country http://rechten.uvt.nl/koops/cryptolaw/
- Inadvertently possessing child porn
  - Wipe and forget?
  - Tell the authorities?
  - http://detroit.fbi.gov/crimes2.htm

Other things to check out

- HP Veiled
  Matt Wood & Billy Hoffman’s Blackhat Slides
  http://www.blackhat.com/presentations/bh-usa-09/HOFFMAN/BHUSA09-Hoffman-VeilDarknet-SLIDES.pdf

- FlashBlock
  https://addons.mozilla.org/en-US/firefox/addon/433

- Multiproxy Switch
  https://addons.mozilla.org/en-US/firefox/addon/7330

- Wippien
  http://www.wippien.com/

Events

- Free ISSA classes
- ISSA Meeting
  http://issa-kentuckiana.org/
- Louisville Infosec
  http://www.louisvilleinfosec.com/
- Phreaknic/Notacon/Outerz0ne
  http://phreaknic.info
  http://notacon.org/
  http://www.outerz0ne.org/

Thanks

- ZZZ for answering my questions
- Folks at Binrev and Pauldotcom
- Louisville ISSA
- Hacker Consortium
- Free ISSA Classes

Helping with the free classes

- Got old hardware you would like to donate?
- Is there a subject you would like to teach?
- Let others know about upcoming classes, and the videos of previous classes.

QUESTIONS?

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