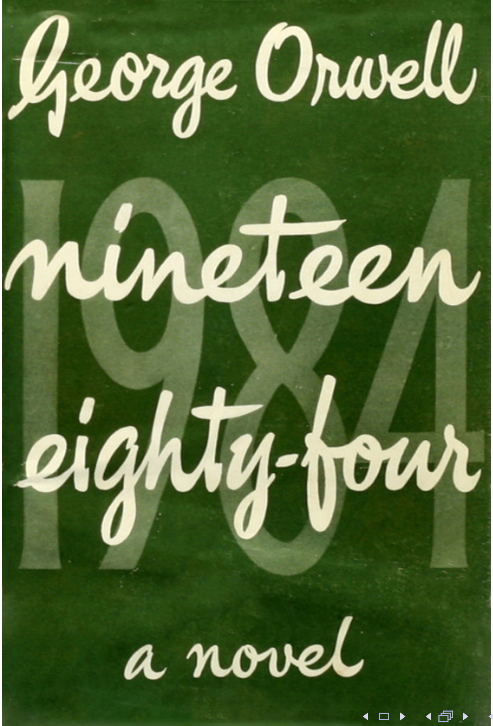
# SECURE Poland 2013

Andrew Lewman
andrew@torproject.org

09 October 2013

TorProject.org


George Orwell
1984
nineteen
eighty-four
a novel

# George Orwell was an optimist

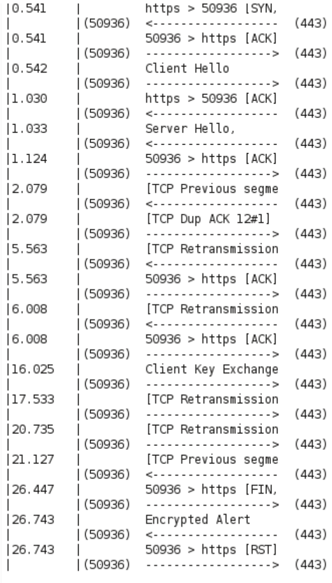
> *Who controls the past, controls the future: who controls the present controls the past*

— George Orwell, Nineteen Eighty Four, 1949

# Internet Surveillance is getting more advanced

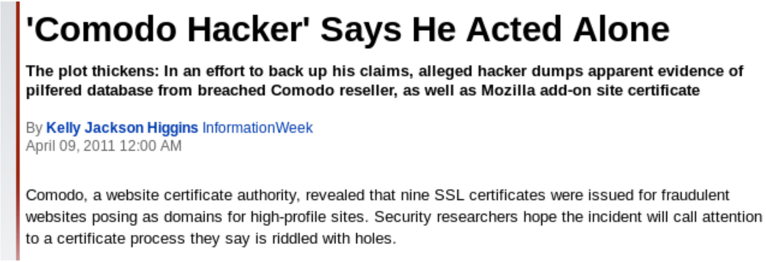
If You Can See It
You Can Monetize It
Evolved DPI – See what's flowing through your network

# Internet Surveillance is getting more advanced



```
|0.541      |          https > 50936 [SYN,
|           |(50936)   <-----------------   (443)
|0.541      |          50936 > https [ACK]
|           |(50936)   ----------------->   (443)
|0.542      |          Client Hello
|           |(50936)   ----------------->   (443)
|1.030      |          https > 50936 [ACK]
|           |(50936)   <-----------------   (443)
|1.033      |          Server Hello,
|           |(50936)   <-----------------   (443)
|1.124      |          50936 > https [ACK]
|           |(50936)   ----------------->   (443)
|2.079      |          [TCP Previous segme
|           |(50936)   <-----------------   (443)
|2.079      |          [TCP Dup ACK 12#1]
|           |(50936)   ----------------->   (443)
|5.563      |          [TCP Retransmission
|           |(50936)   <-----------------   (443)
|5.563      |          50936 > https [ACK]
|           |(50936)   ----------------->   (443)
|6.008      |          [TCP Retransmission
|           |(50936)   <-----------------   (443)
|6.008      |          50936 > https [ACK]
|           |(50936)   ----------------->   (443)
|16.025     |          Client Key Exchange
|           |(50936)   ----------------->   (443)
|17.533     |          [TCP Retransmission
|           |(50936)   ----------------->   (443)
|20.735     |          [TCP Retransmission
|           |(50936)   ----------------->   (443)
|21.127     |          [TCP Previous segme
|           |(50936)   <-----------------   (443)
|26.447     |          50936 > https [FIN,
|           |(50936)   ----------------->   (443)
|26.743     |          Encrypted Alert
|           |(50936)   <-----------------   (443)
|26.743     |          50936 > https [RST]
|           |(50936)   ----------------->   (443)
```

# Internet Surveillance is getting more advanced



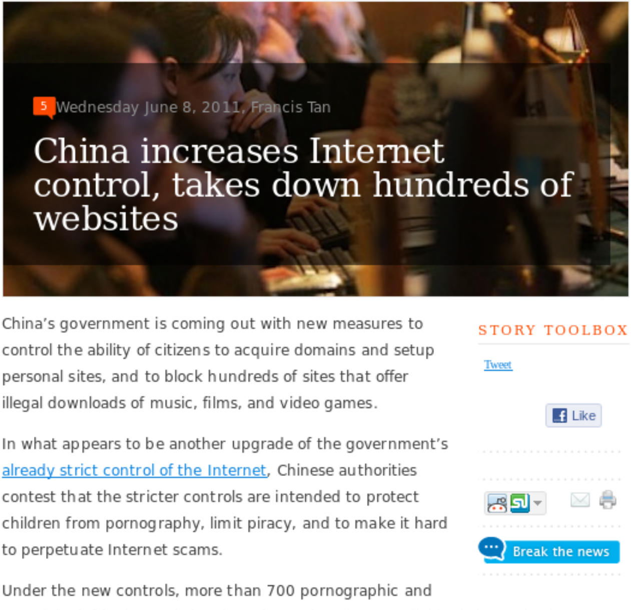
## 'Comodo Hacker' Says He Acted Alone

**The plot thickens: In an effort to back up his claims, alleged hacker dumps apparent evidence of pilfered database from breached Comodo reseller, as well as Mozilla add-on site certificate**

By **Kelly Jackson Higgins** InformationWeek
April 09, 2011 12:00 AM

Comodo, a website certificate authority, revealed that nine SSL certificates were issued for fraudulent websites posing as domains for high-profile sites. Security researchers hope the incident will call attention to a certificate process they say is riddled with holes.

# Internet Surveillance is getting more advanced



5 Wednesday June 8, 2011, Francis Tan

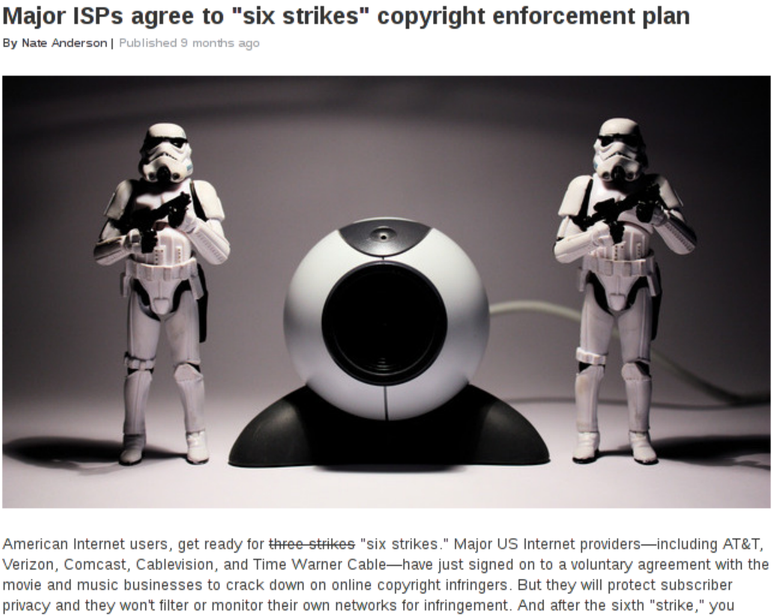
## China increases Internet control, takes down hundreds of websites

China's government is coming out with new measures to control the ability of citizens to acquire domains and setup personal sites, and to block hundreds of sites that offer illegal downloads of music, films, and video games.

In what appears to be another upgrade of the government's already strict control of the Internet, Chinese authorities contest that the stricter controls are intended to protect children from pornography, limit piracy, and to make it hard to perpetuate Internet scams.

Under the new controls, more than 700 pornographic and

# Internet Surveillance is getting more advanced

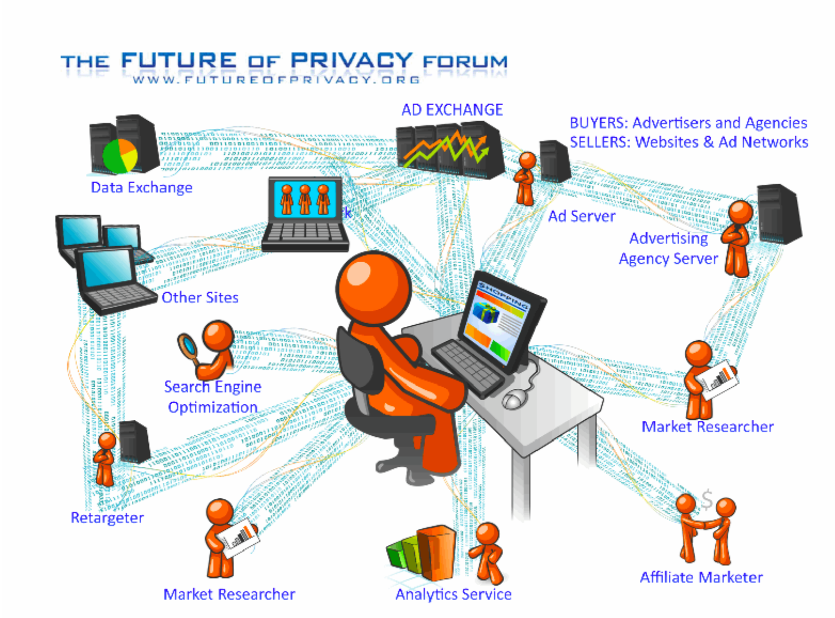


## Major ISPs agree to "six strikes" copyright enforcement plan

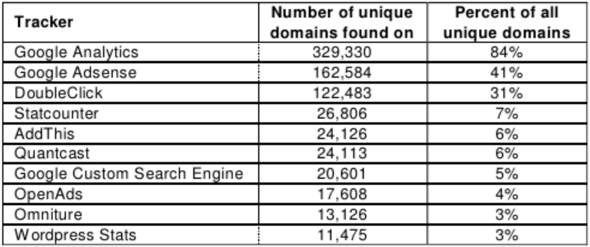
By Nate Anderson | Published 9 months ago

American Internet users, get ready for ~~three strikes~~ "six strikes." Major US Internet providers—including AT&T, Verizon, Comcast, Cablevision, and Time Warner Cable—have just signed on to a voluntary agreement with the movie and music businesses to crack down on online copyright infringers. But they will protect subscriber privacy and they won't filter or monitor their own networks for infringement. And after the sixth "strike," you

# Internet Surveillance is getting more advanced



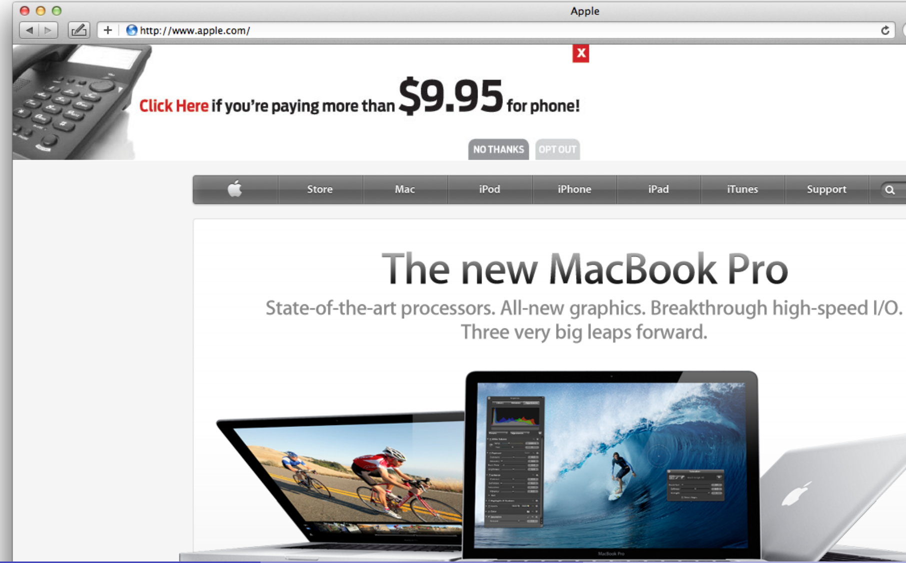
# Internet Surveillance is getting more advanced



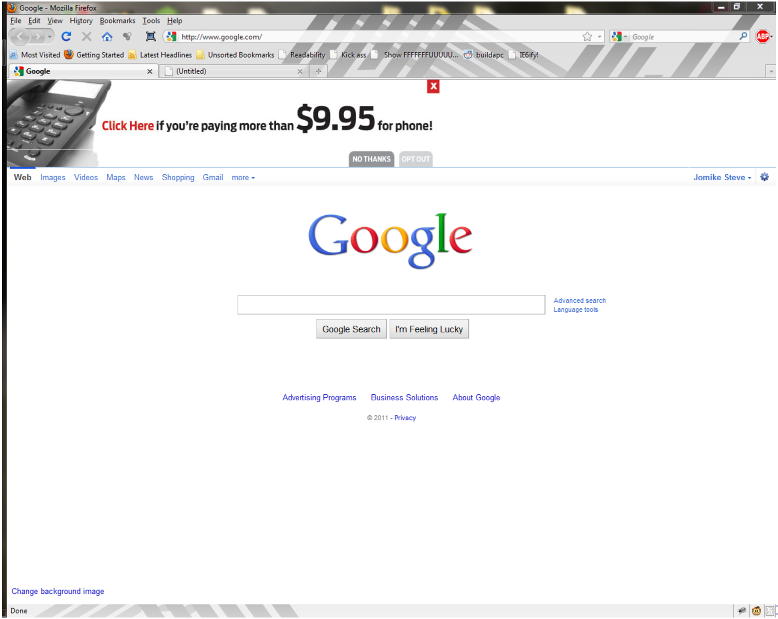
| Tracker | Number of unique domains found on | Percent of all unique domains |
|---|---|---|
| Google Analytics | 329,330 | 84% |
| Google Adsense | 162,584 | 41% |
| DoubleClick | 122,483 | 31% |
| Statcounter | 26,806 | 7% |
| AddThis | 24,126 | 6% |
| Quantcast | 24,113 | 6% |
| Google Custom Search Engine | 20,601 | 5% |
| OpenAds | 17,608 | 4% |
| Omniture | 13,126 | 3% |
| Wordpress Stats | 11,475 | 3% |

**Figure 11 Percentage of Domains each Web bug was found on, March 2009**

# Internet Surveillance is getting more advanced


Apple
http://www.apple.com/
X
Click Here if you're paying more than $9.95 for phone!
NO THANKS
OPT OUT
Store
Mac
iPod
iPhone
iPad
iTunes
Support
The new MacBook Pro
State-of-the-art processors. All-new graphics. Breakthrough high-speed I/O.
Three very big leaps forward.

# Internet Surveillance is getting more advanced



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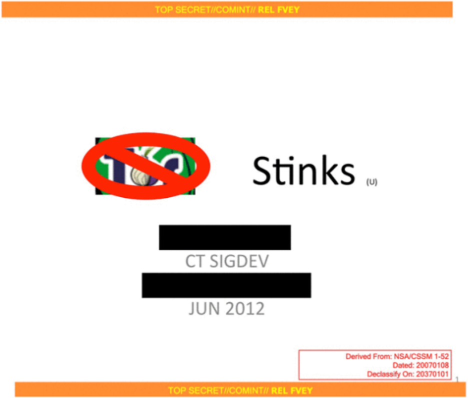


TOP SECRET//COMINT// REL FVEY

Stinks (U)

[redacted]

CT SIGDEV

[redacted]

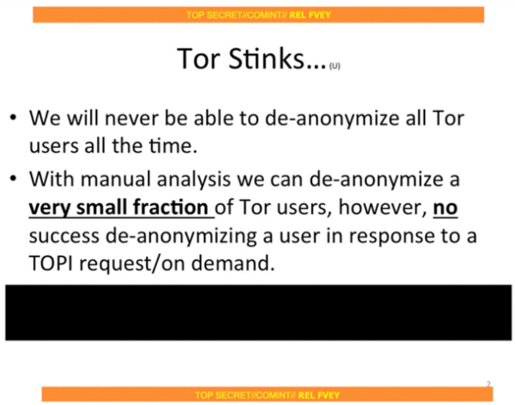
JUN 2012

Derived From: NSA/CSSM 1-52
Dated: 20070108
Declassify On: 20370101

1

TOP SECRET//COMINT// REL FVEY

# Internet Surveillance is getting more advanced



TOP SECRET//COMINT// REL FVEY

## Tor Stinks... (U)

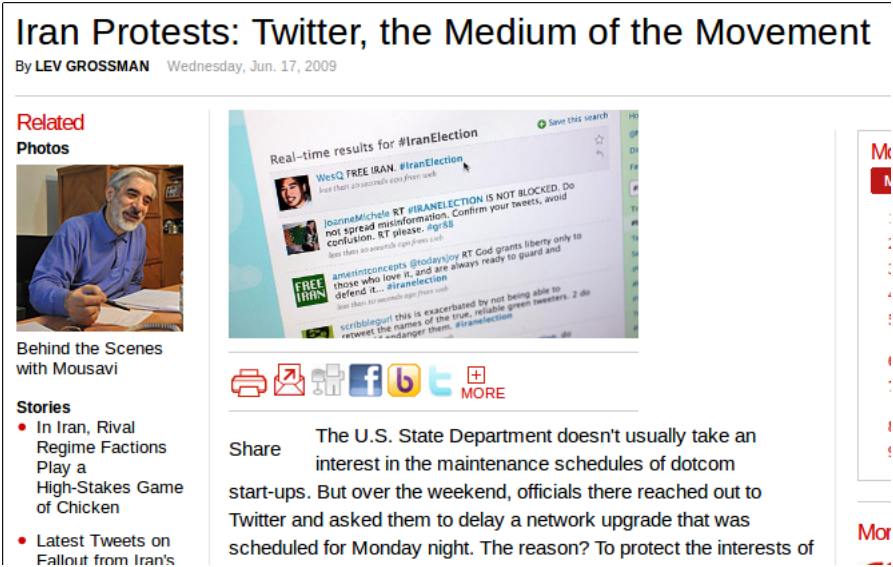
- We will never be able to de-anonymize all Tor users all the time.
- With manual analysis we can de-anonymize a **very small fraction** of Tor users, however, **no** success de-anonymizing a user in response to a TOPI request/on demand.

[redacted]

2

TOP SECRET//COMINT// REL FVEY

# Twitter in Iran: Good.



## Iran Protests: Twitter, the Medium of the Movement

By **LEV GROSSMAN** Wednesday, Jun. 17, 2009

**Related**

**Photos**

Behind the Scenes with Mousavi

**Stories**

- In Iran, Rival Regime Factions Play a High-Stakes Game of Chicken
- Latest Tweets on Fallout from Iran's

Real-time results for #IranElection

WesQ FREE IRAN. #IranElection

JoanneMichele RT #IRANELECTION IS NOT BLOCKED. Do not spread misinformation. Confirm your tweets, avoid confusion. RT please. #gr88

amerintconcepts @todaysjoy RT God grants liberty only to those who love it, and are always ready to guard and defend it... #iranelection

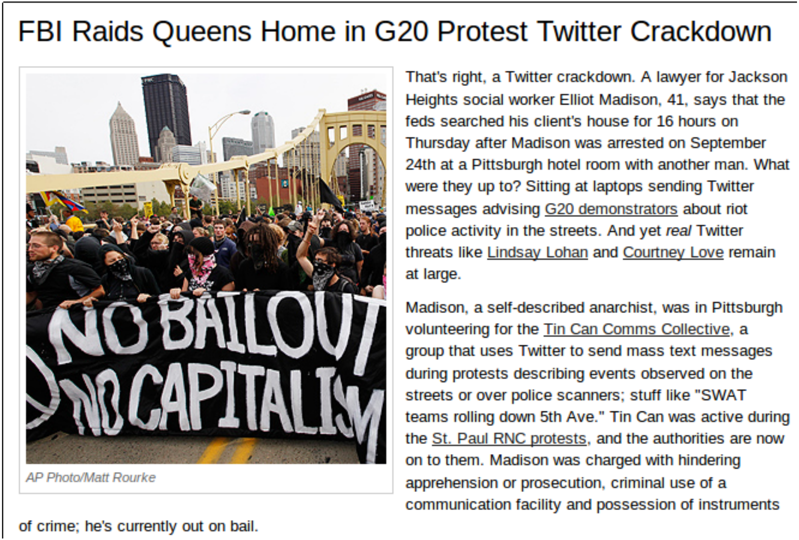
scribbleguri this is exacerbated by not being able to retweet the names of the true, reliable green tweeters. 2 do ... endanger them. #iranelection

Share

The U.S. State Department doesn't usually take an interest in the maintenance schedules of dotcom start-ups. But over the weekend, officials there reached out to Twitter and asked them to delay a network upgrade that was scheduled for Monday night. The reason? To protect the interests of

From http://www.time.com/time/world/article/0,8599,1905125,00.html

# Twitter in USA: Bad.



## FBI Raids Queens Home in G20 Protest Twitter Crackdown

AP Photo/Matt Rourke

That's right, a Twitter crackdown. A lawyer for Jackson Heights social worker Elliot Madison, 41, says that the feds searched his client's house for 16 hours on Thursday after Madison was arrested on September 24th at a Pittsburgh hotel room with another man. What were they up to? Sitting at laptops sending Twitter messages advising G20 demonstrators about riot police activity in the streets. And yet *real* Twitter threats like Lindsay Lohan and Courtney Love remain at large.

Madison, a self-described anarchist, was in Pittsburgh volunteering for the Tin Can Comms Collective, a group that uses Twitter to send mass text messages during protests describing events observed on the streets or over police scanners; stuff like "SWAT teams rolling down 5th Ave." Tin Can was active during the St. Paul RNC protests, and the authorities are now on to them. Madison was charged with hindering apprehension or prosecution, criminal use of a communication facility and possession of instruments of crime; he's currently out on bail.

from http://gothamist.com/2009/10/05/fbi_raids_queens_home_in_g20_protes.php

# The Tor Project, Inc.

501(c)(3) non-profit organization dedicated to the research and development of technologies for online anonymity and privacy

# What is Tor?

- online anonymity software and network

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- open source, freely available (3-clause BSD license)

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- active research environment:
  Drexel, Univ of Waterloo, Georgia Tech, Princeton, Boston University, University College London, Univ of Minnesota, National Science Foundation, Naval Research Labs, Cambridge UK, Bamberg Germany, MIT, NORDUnet...

# What is Tor?

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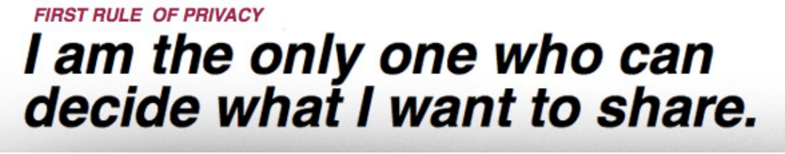
- active research environment:
  Drexel, Univ of Waterloo, Georgia Tech, Princeton, Boston University, University College London, Univ of Minnesota, National Science Foundation, Naval Research Labs, Cambridge UK, Bamberg Germany, MIT, NORDUnet...
- increasingly diverse toolset:
  Tor, Tor Browser Bundle, Tails LiveCD, Pluggable Transports, Tor Weather, Tor auto-responder, Secure Updater, Orbot, Gibberbot, Arm and so on.

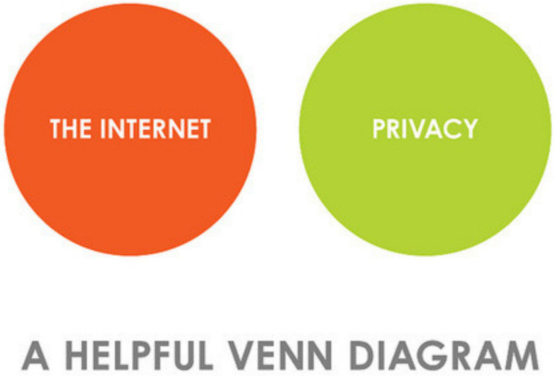
# Why Tor?



FIRST RULE OF PRIVACY

*I am the only one who can decide what I want to share.*

# Why Tor?

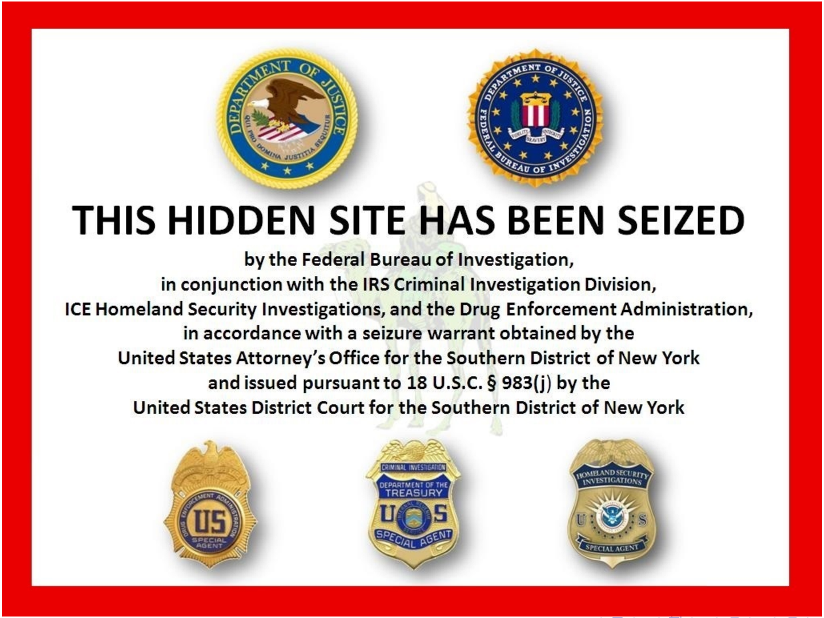


# Who uses Tor?

- Normal people
- Law Enforcement
- Human Rights Activists
- Business Execs
- Militaries
- Abuse Victims

# Online and Offline change happens

# You missed a use case

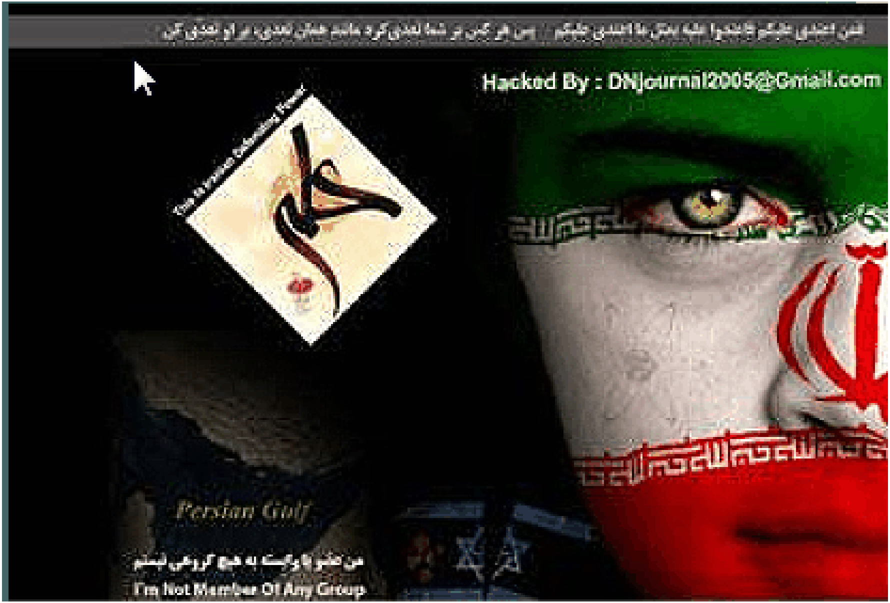


THIS HIDDEN SITE HAS BEEN SEIZED

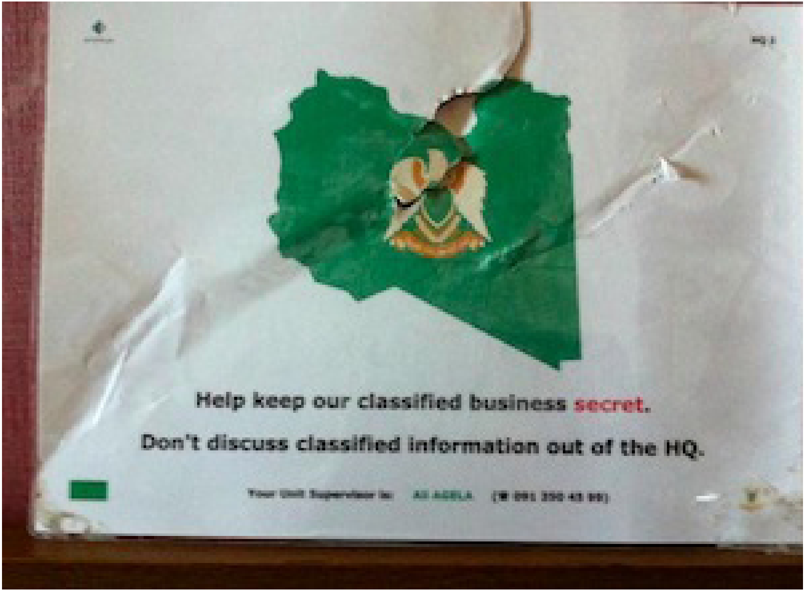
by the Federal Bureau of Investigation,
in conjunction with the IRS Criminal Investigation Division,
ICE Homeland Security Investigations, and the Drug Enforcement Administration,
in accordance with a seizure warrant obtained by the
United States Attorney's Office for the Southern District of New York
and issued pursuant to 18 U.S.C. § 983(j) by the
United States District Court for the Southern District of New York

DEPARTMENT OF JUSTICE
QUI PRO DOMINA JUSTITIA SEQUITUR
DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
FIDELITY BRAVERY INTEGRITY
DRUG ENFORCEMENT ADMINISTRATION
US
SPECIAL AGENT
CRIMINAL INVESTIGATION
DEPARTMENT OF THE TREASURY
U S
SPECIAL AGENT
HOMELAND SECURITY INVESTIGATIONS
U S
SPECIAL AGENT

# You missed a use case

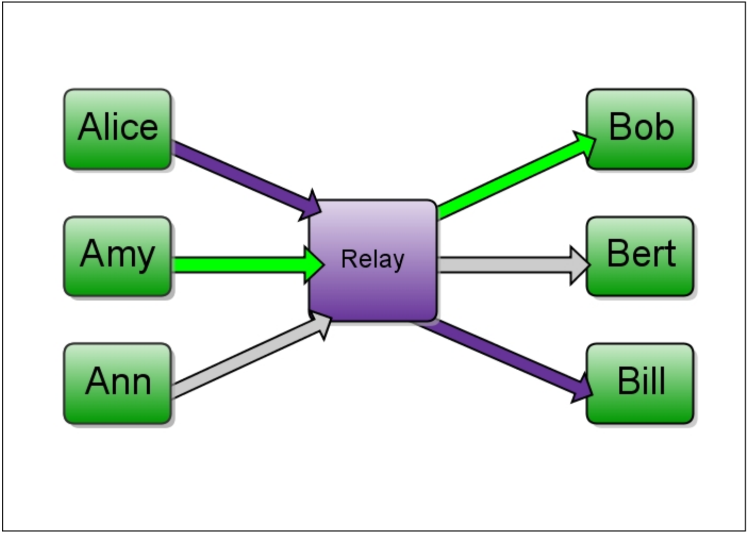

فمن اعتدی علیکم فاعتدوا علیه بمثل ما اعتدی علیکم پس هر کس بر شما تعدی کرد مانند همان تعدی بر او تعدی کن
Hacked By : DNjournal2005@Gmail.com
Persian Gulf
من عضو یا وابسته به هیچ گروهی نیستم
I'm Not Member Of Any Group

# You missed a use case


Help keep our classified business secret.
Don't discuss classified information out of the HQ.
Your Unit Supervisor is: Ali AGEILA (☎ 091 350 43 99)

# estimated 1 million daily users

# How is Tor different from other systems?



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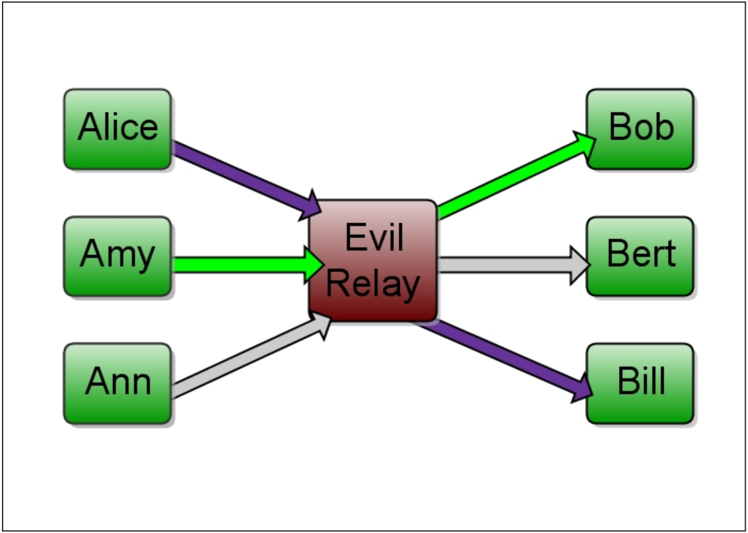


Alice

Amy

Ann

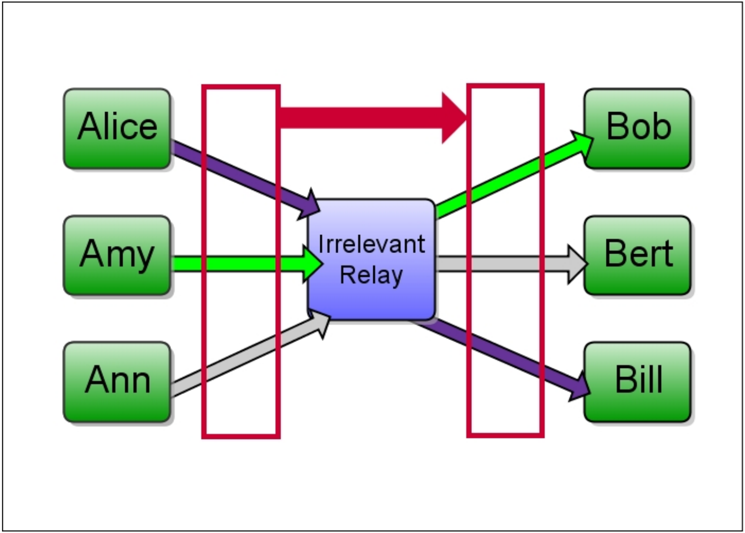
Evil Relay

Bob

Bert

Bill

# How is Tor different from other systems?



# Tor hides communication patterns by relaying data through volunteer servers

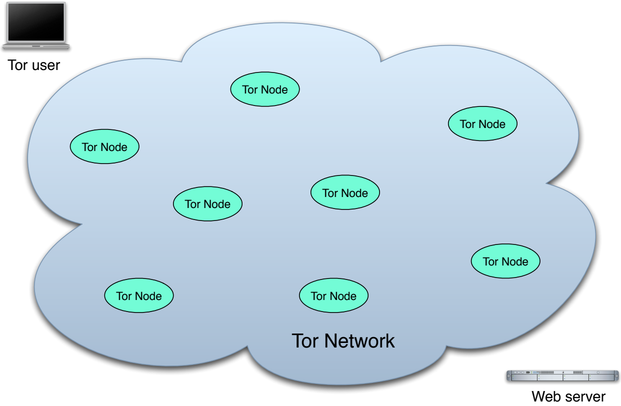


Diagram: Robert Watson

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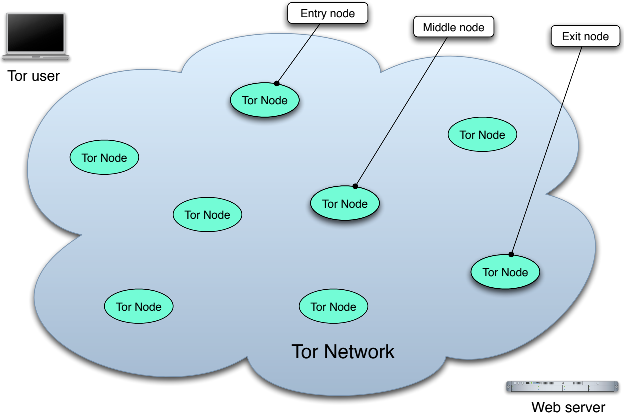

Diagram: Robert Watson

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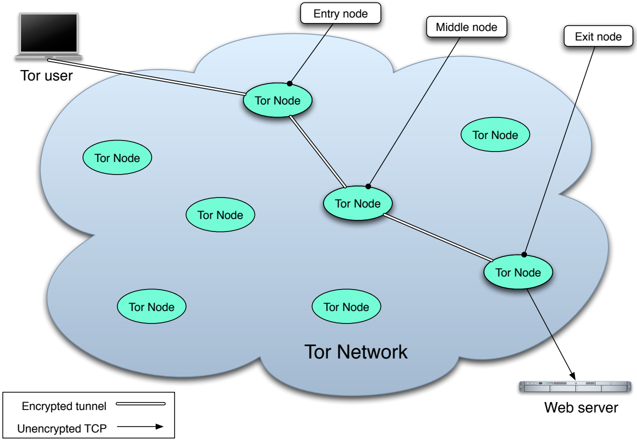

Diagram: Robert Watson

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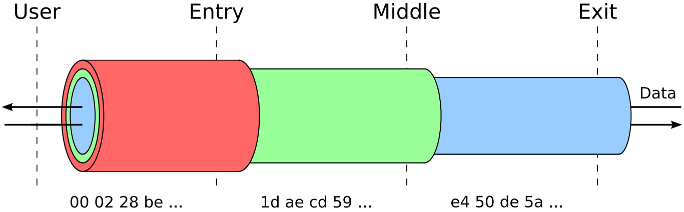
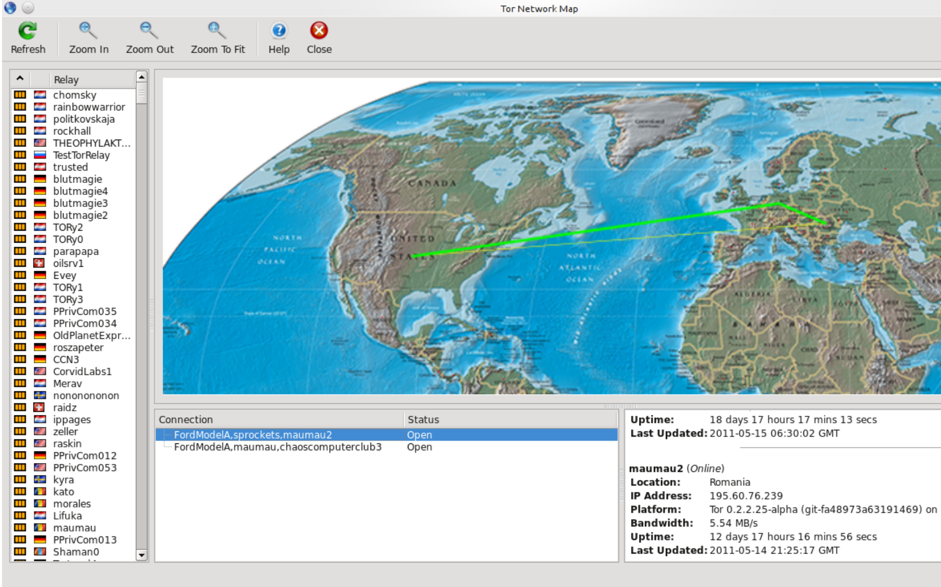


Diagram: Robert Watson

# Vidalia Network Map



| Relay |
|---|
| chomsky |
| rainbowwarrior |
| politkovskaja |
| rockhall |
| THEOPHYLAKT... |
| TestTorRelay |
| trusted |
| blutmagie |
| blutmagie4 |
| blutmagie3 |
| blutmagie2 |
| TORy2 |
| TORy0 |
| parapapa |
| oilsrv1 |
| Evey |
| TORy1 |
| TORy3 |
| PPrivCom035 |
| PPrivCom034 |
| OldPlanetExpr... |
| roszapeter |
| CCN3 |
| CorvidLabs1 |
| Merav |
| nonononon |
| raidz |
| ippages |
| zeller |
| raskin |
| PPrivCom012 |
| PPrivCom053 |
| kyra |
| kato |
| morales |
| Lifuka |
| maumau |
| PPrivCom013 |
| Shaman0 |

| Connection | Status |
|---|---|
| FordModelA,sprockets,maumau2 | Open |
| FordModelA,maumau,chaoscomputerclub3 | Open |

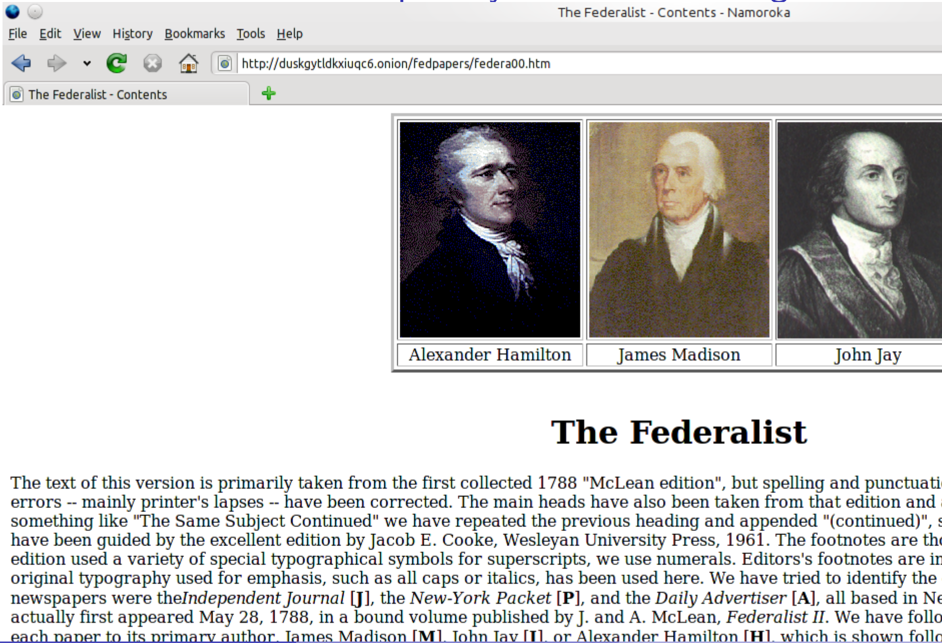
**Uptime:** 18 days 17 hours 17 mins 13 secs
**Last Updated:** 2011-05-15 06:30:02 GMT

**maumau2** *(Online)*
**Location:** Romania
**IP Address:** 195.60.76.239
**Platform:** Tor 0.2.2.25-alpha (git-fa48973a63191469) on
**Bandwidth:** 5.54 MB/s
**Uptime:** 12 days 17 hours 16 mins 56 secs
**Last Updated:** 2011-05-14 21:25:17 GMT

# Metrics

- Measuring metrics anonymously
- NSF research grant
- Archive of hourly consensus, ExoneraTor, VisiTor
- Metrics portal: `https://metrics.torproject.org/`

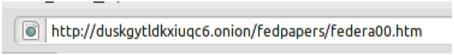
# Tor hidden services allow privacy enhanced hosting


The Federalist - Contents - Namoroka
File Edit View History Bookmarks Tools Help
http://duskgytldkxiuqc6.onion/fedpapers/federa00.htm
The Federalist - Contents
Alexander Hamilton
James Madison
John Jay

## The Federalist

The text of this version is primarily taken from the first collected 1788 "McLean edition", but spelling and punctuati
errors -- mainly printer's lapses -- have been corrected. The main heads have also been taken from that edition and
something like "The Same Subject Continued" we have repeated the previous heading and appended "(continued)", s
have been guided by the excellent edition by Jacob E. Cooke, Wesleyan University Press, 1961. The footnotes are th
edition used a variety of special typographical symbols for superscripts, we use numerals. Editors's footnotes are in
original typography used for emphasis, such as all caps or italics, has been used here. We have tried to identify the
newspapers were the*Independent Journal* **[J]**, the *New-York Packet* **[P]**, and the *Daily Advertiser* **[A]**, all based in Ne
actually first appeared May 28, 1788, in a bound volume published by J. and A. McLean, *Federalist II*. We have follo
each paper to its primary author, James Madison [M], John Jay [J], or Alexander Hamilton [H], which is shown follo

# dot onion you say?



http://duskgytldkxiuqc6.onion/fedpapers/federa00.htm

# Thanks!

Visit `https://www.torproject.org/` for more information, links, and ideas.

# Credits & Thanks

- applied theory, third image: Information Week,2011-04-09, http://www.informationweek.com/news/security/attacks/229400850
- applied theory, fourth image: Al Jazeera, February 2011
- six strikes, ars technica, http://arstechnica.com/tech-policy/news/2011/07/major-isps-agree-to-six-strikes-copyright-enforcement-pla
ars
- spring is in the air, Paco Pomet, http://pacopomet.wordpress.com/
- who uses tor? http://www.flickr.com/photos/mattw/2336507468/siz, Matt Westervelt, CC-BY-SA.
- danger!, http://flickr.com/photos/hmvh/58185411/sizes/o/, hmvh, CC-BY-SA.
- 1 Million, http://www.flickr.com/photos/lukaskracic/334850378/sizes/l/, Luka Skracic, used with permission.