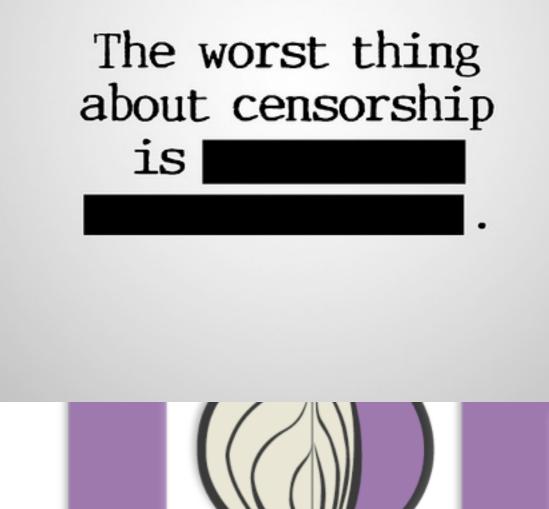
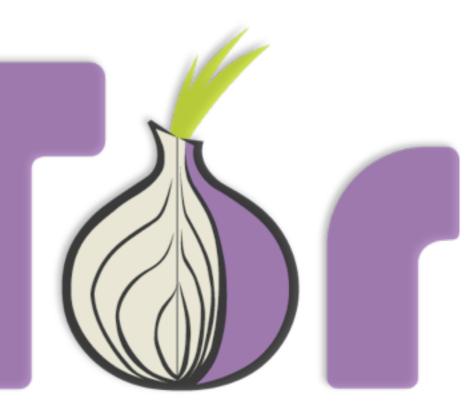
What is Internet Filtering?

- Is a form of non democratic
 oppression on people
- It allows those in power to subvert reality



FilterNet

- It's a distortion of what is in reality the internet.
- Follows the subjectiveness of the authorities
- This does not help humanity



There is no just censorship.

- Internet filtering is happening in China,
 Iran, Syria, but also in Italy, UK, Netherlands.
- The only solution to what is considered by some wrong information is more information.

طـر!			يالله بالستر!
	لتصفيح بأميان! عذرا، هذا الموقو غير ماع في دولة الإمارات العربية المتحدة. مثل شركة الانترنت وسيلة للتواصل والمعرفية وخدمة متطلبه محتوى مدرج تحت "فنات المحتويات المحقورة" حسب تعنيف معتوى مدرج تحت "فنات المحتويات المحقورة" حسب تعنيف المعرفة المتحدة. عند المات العربية المتحدة. هذا كانت لديك وجمة نظر مختلفة. الرجام الانتاري المحقوليات المات المات العربية المتحدة. معتولة المات المحقوليات المحقوليات المحقوليات المحقولية المتحدة. معتولة المات المات المحقوليات المحقوليات المحقوليات المحقوليات المحقولية المات المحقوليات المحقوليات المحقوليات المحقوليات المحقولية المات المحقولية المات المات المحقوليات المحوليات المحقوليات المحق		بية المتحدة. وخدمة متطلبات بدخوله لاشتماله ة" حسب تصنيف ة تنظيم الاتصالات
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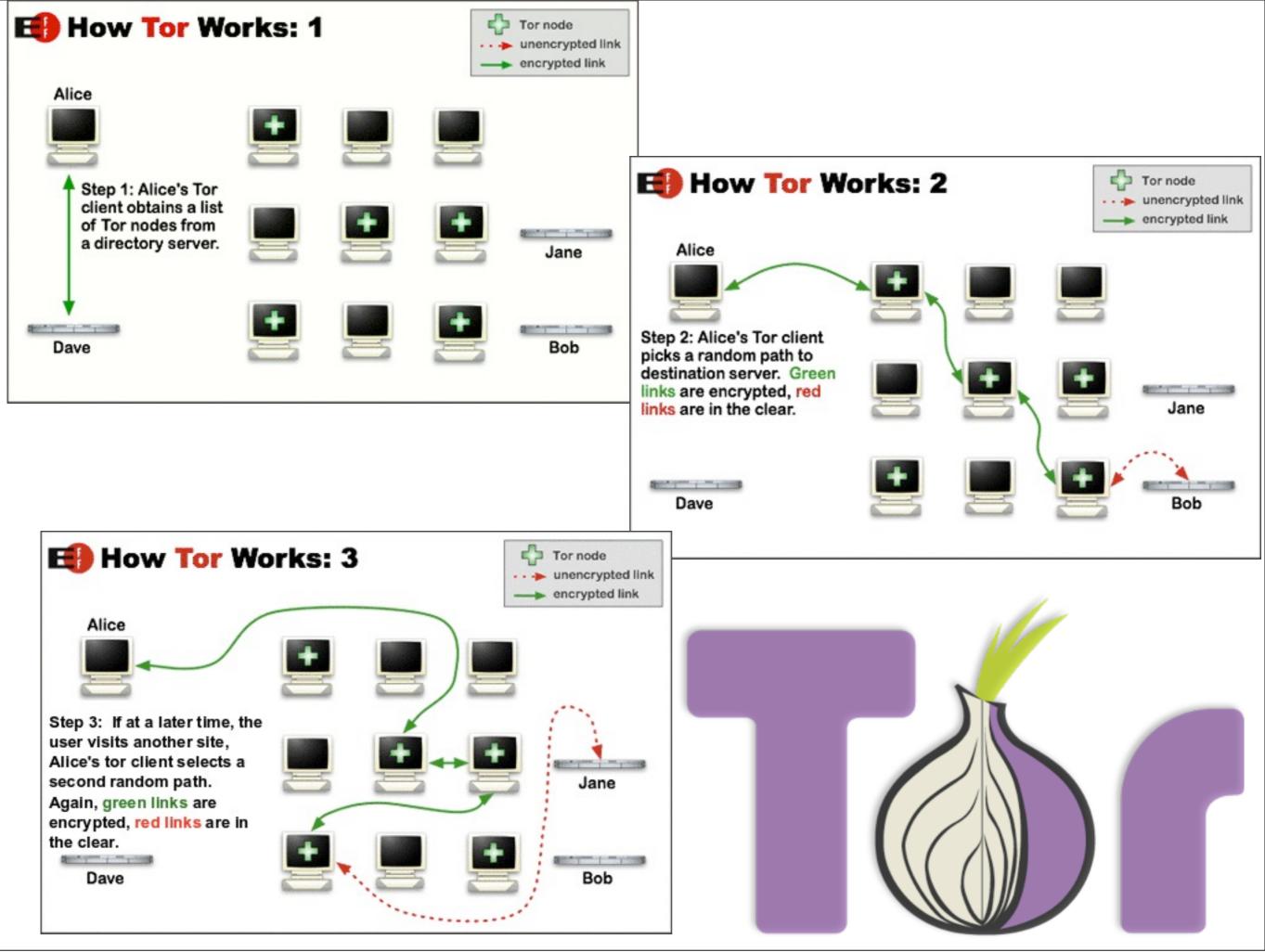


What we are doing?

- Help people access information Anonymously (Tor)
- Help people circumvent censorship (Tor, Tor Bridges)
- Measure Internet filtering in the world (OONI-Probe)
- Help people speak freely and anonymously (Tor Hidden Services, APAF)

Brief Timeline of Tor Censorship

- 2002 The Source code for Tor is released
- 2006, April Thailand DNS Filtering of tpo
- 2006 Websense/netfilter Block Tor based on Tor GET requests
- 2007 Iran, Saudi Blocks Tor thanks to Websense
- 2009, Tunisia Smartfilter to block all expect 443, 80
- XXX Tor bridges are introduced



getTor

- Tor software downloads are currently blocked from China, Iran, Lebanon, Qatar, etc.
- Tor delivers via email, write to <u>gettor@torproject.org</u> and we will send you a client to bootstrap a Tor client
- learn more: <u>https://torproject.org</u>/

Tor Bridges

- When the Tor network is blocked you can use bridges
- They are not published so it makes them harder to block
- learn more: <u>https://</u> <u>www.torproject.org/</u> <u>docs/bridges</u>



Existing filter detection tools

- Various captive portal software
 - Windows/iOS/Android/Google Chrome
- ONI has a tool called "rTurtle"
- Herdict "The verdict of the herd"
 - ...
- Some academic research
 - GATech and UC Berkeley have the best work
- Methodology, tools and data are (usually) closed



BETA

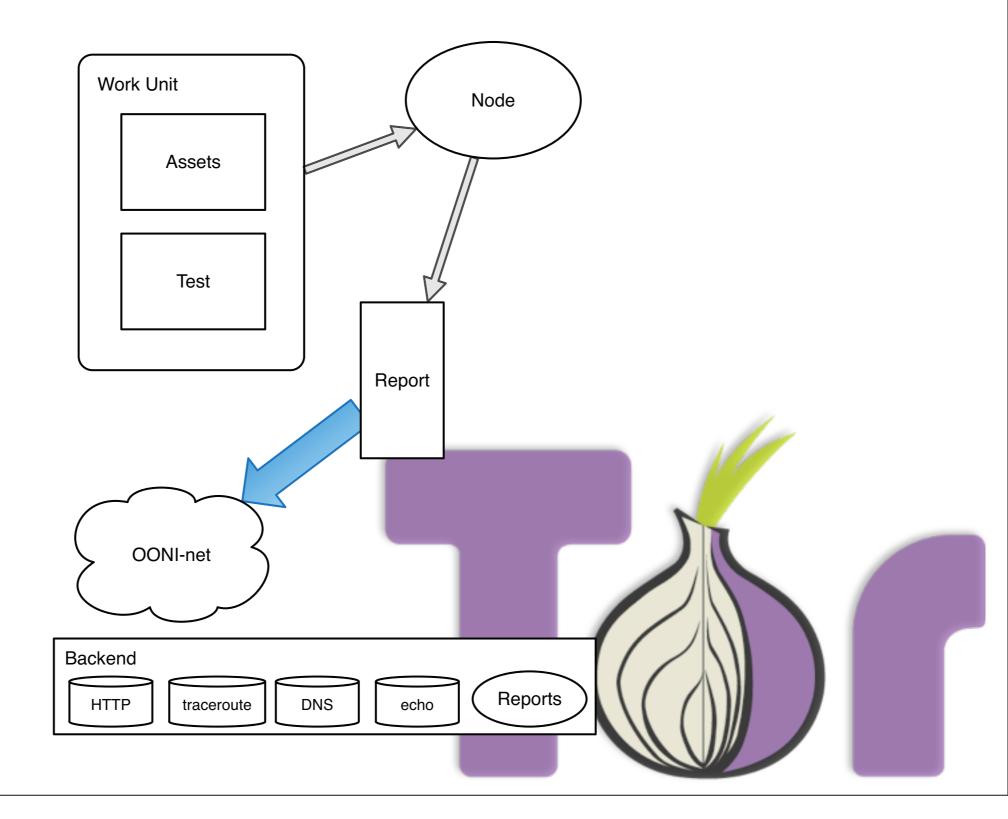
ooni-probe: Measuring filtering

- Open Observatory of Network Interference
- Provide a methodology and framework
- Make our data and code publicly available

What it detects

- It's goals is to detect:
 - Network filtering ("Is my network traffic being tampered with?")
 - Content restrictions ("What is being blocked?")
 - Filtering technique ("How is it being blocked?", "What software are they using?")

Architecture



Network filtering detection

- **Two way traceroute** If there is a difference between an inbound traceroute and an outbound traceroute for certain source and destination ports this may be an indication of traffic being routed to interception de- vices.
- Header field manipulation By varying the capitalization and adding certain headers to layer 7 protocols it is possible to detect on the receiving end if the traffic has been tampered with.

Filtered content tests

- **HTTP Host** This involves changing the Host header field of an HTTP request to that of the site one wishes to check for censorship.
- **DNS lookup** This involves doing a DNS lookup for the in question hostname. If the lookup result does not match the expected result the site is marked as being censored.
- **Keyword filtering** This involves sending an receiving data that contains certain keywords and matching for censorship. It is possible to use bisection method to understand what subset of keywords are triggering the filter.
- **HTTP scan** This involves doing a full connection to the in question site. If the content does not match the expected result then a censored flag is raised.
- **Traceroute** This involves doing TCP, UDP, ICMP traceroute for certain destination addresses if there are discrepancies in the paths with locations in the vicinities then a censorship flag is raised.
- RST packet detection This involves attempting to con- nect to a certain destination and checking if the client gets back a RST packet.

Recent impact: T-Mobile USA

T-Mobile USA Web Guard

Wed 21 Mar 2012

T-Mobile USA offers a "feature" to restrict access to certain kinds of content. This is called Web Guard. Supposedly Web Guard is supposed to inhibit access to content that falls under the following categories: Alcohol, Mature Content, Violence, Drugs, Pornography, Weapons, Gambling, Suicide, Guns, Hate, Tobacco, Ammunition.

By developing an OONI-probe test we were able to extract part of the list of censored content and discovered that sites that do not fall under these categories were also censored. This feature is enabled by default on all prepaid accounts and although it can be disabled by customers who wish to do so (if over 18 years of age), it is not clearly stated in the error page how to do so. This means that T-Mobile USA customers may be drawn into the Filternet without knowing how to get out.

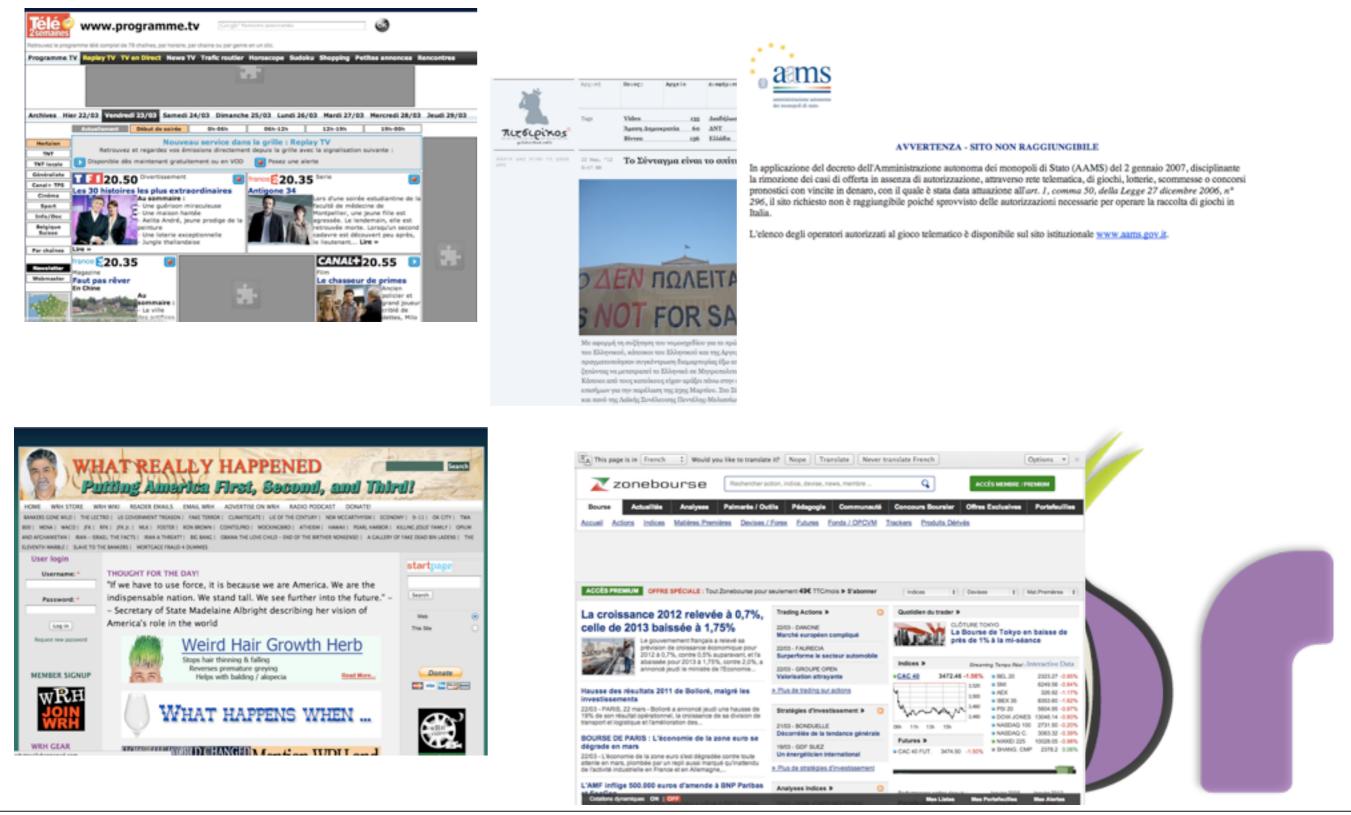
How is the censorship performed?

The technique being used by T-Mobile USA to restrict access to certain content involves deploying a transprent HTTP proxy. This proxy intercepts every HTTP packet going through the network and checks it's Host header field to see if it on the censored list. If the site is to be blocked it injects a fake response warning the user of the block. What this means is that the block is only effective against unencrypted HTTP traffic, but does not work for encrypted HTTPs traffic.

Some sites should not be censored

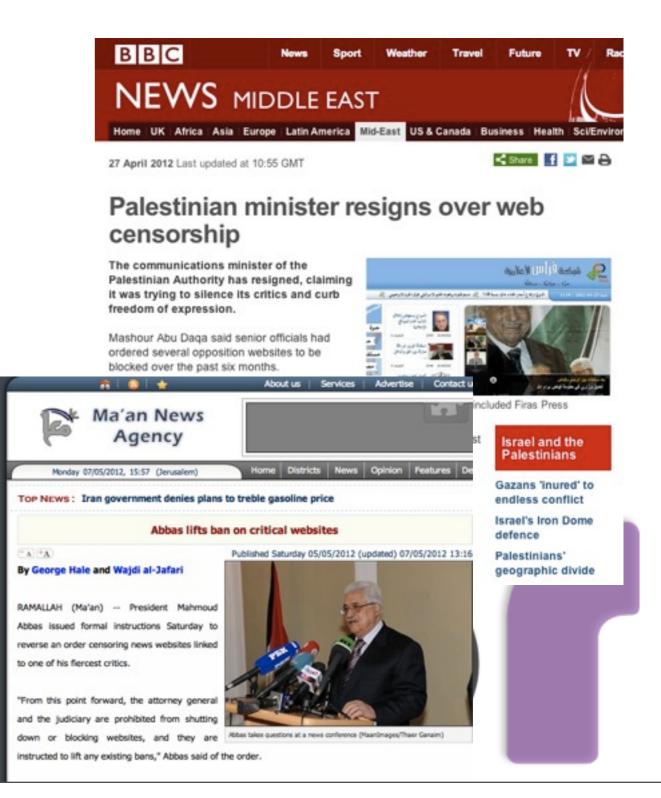
While most of the censored sites are legitimately categorized, there are certain ones that do not fall under the categories of the block. Here is a list of sites that we found to be censored, but that we don't believe belong to any of the following categories Alcohol, Mature Content, Violence, Drugs, Pornography, Weapons, Gambling, Suicide, Guns, Hate, Tobacco, Ammunition.





Handara Palestine

- 23 April 2012, released report on politically motivated censorship
- 27 April 2012, Palestian minister of Communications resigns
- 5 May 2012, Censorship removed



Tor Hidden Services

- Anonymity for the server
- eqt5g4fuenphqinx.onion
- End-to-end encryption

Why use Hidden Service?

- Avoid retaliation for what you publish
- Securely serve content
- Stealth Hidden Services

Tor2web

- Allows Tor Web HS to be accessible from the world
- Instead of xxxxx.onion you use xxxx.tor2web.org
- Tradeoff between security and anonymity for usability



Tor2web I.0 issues

- Exposed to abuse complaints
- Misuse of HS to spread of illicit content
- No disclaimer
- No reporting system
- High latency -> Little usability
- The leads to **server takedown**

Tor2web 1.0 bodycount

- In 2010 there where at one point 3 tor2web nodes
- In April 2011, there was only one server left
- In June 2011, the last of the 3 original tor2web nodes went offline

Tor2web 2.0

You are visiting a Tor Hidden Service Website trough Tor2web Proxy.



Tor2web servers **are not hosting this web content** you are viewing. Tor2web can identify the IP of visitors of this site, we strongly suggest to access this site directly with <u>Tor</u> <u>Browser Bundle</u> to increase your anonimity and efficiency.

If you feel this website violate some kind of user policy or ethical code, you can fill an <u>Abuse Complain</u>. If you want to report a bug or a problem, you can Send us an <u>Error Notification</u>.

Click here to hide this disclaimer.

This is the example page for Tor's rendezvous points system.

Read Thomas Paine's Common Sense.

Or read The Federalist papers, which were also originally published anonymously.

Future of tor2web

- Distribute responsibility
- Rewrite the code
- Get more Tor2web node!

tor2web mode

- An experimental implementation will be in tor 0.2.3.x
- Compile time flag --enable-tor2web-mode

Multidomain

- To run a tor2web node currently we need to entrust you with the wildcard SSL cert
- You should be able to run tor2web on xxxx.your_domain.org
- There can be a list of all supported tor2web domains

We need more nodes!

- Do you have a dedicated IP space?
- Do you want to help support tor2web network?
- Currently there is only I tor2web node :(

Legal help

- Write good Terms of Service
- Any lawyer interested in helping out?