Misurazione delle censura

$ whoami

- Arturo Filastò, hellais on the internetz
- Vice-presidente del Centro Studi Hermes
- Tor Project hacker
- A Random GlobaLeaks Developer
- I make free software for freedom

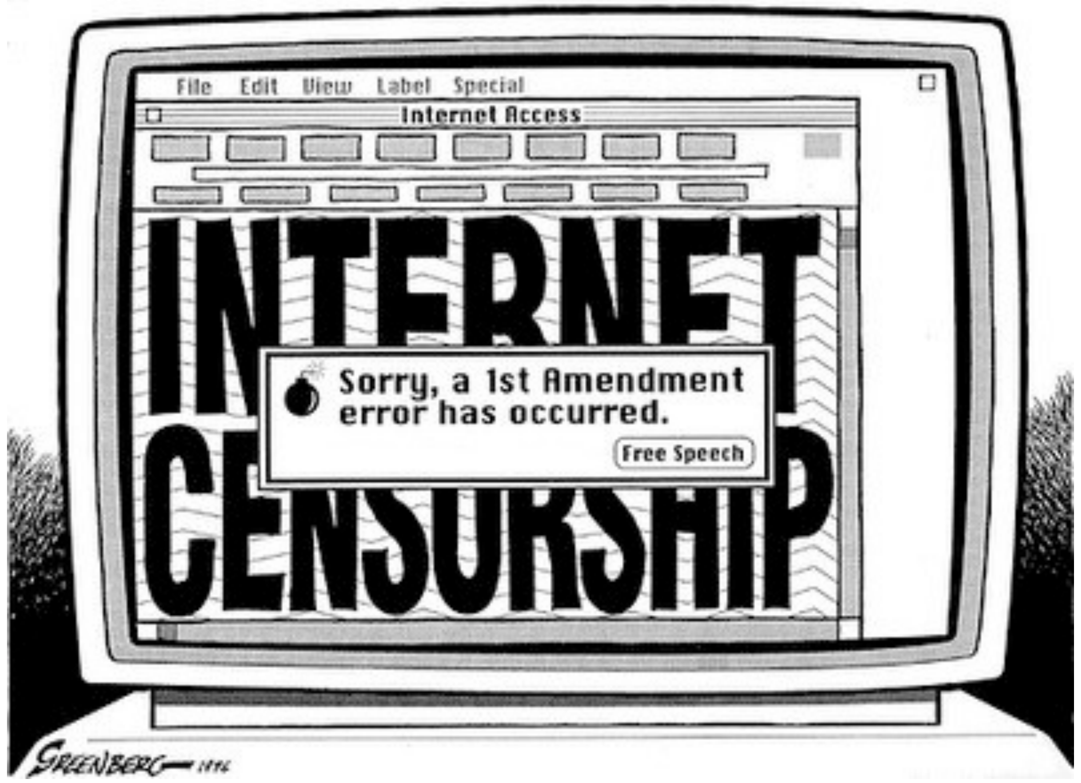
Surveillance

- Censorship is a subset of surveillance
- If they are censoring something, they are surveilling everything

Don't Worry!
ABOUT THE CLICKING
ON YOUR PHONE!
YOU'VE GOT NOTHING TO BE WORRIED ABOUT...
IF YOU'RE NOT A TERRORIST!
A MESSAGE FROM THE MINISTRY OF HOMELAND SECURITY

What is Internet Censorship?

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


File Edit View Label Special
Internet Access
INTERNET CENSORSHIP
Sorry, a 1st Amendment error has occurred.
Free Speech
GREENBERG

Filternet

- It’s a distortion of what is the reality of the internet
- It 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.

What we work on at Tor

- Help people *access information anonymously* (Tor)
- Help people *circumvent censorship* (Tor Bridges, Obfsproxy)
- Measure the *internet surveillance and censorship* in the world (OONI)
- Help people *speak freely and anonymously* (Tor Hidden Services)

Internet addressing101

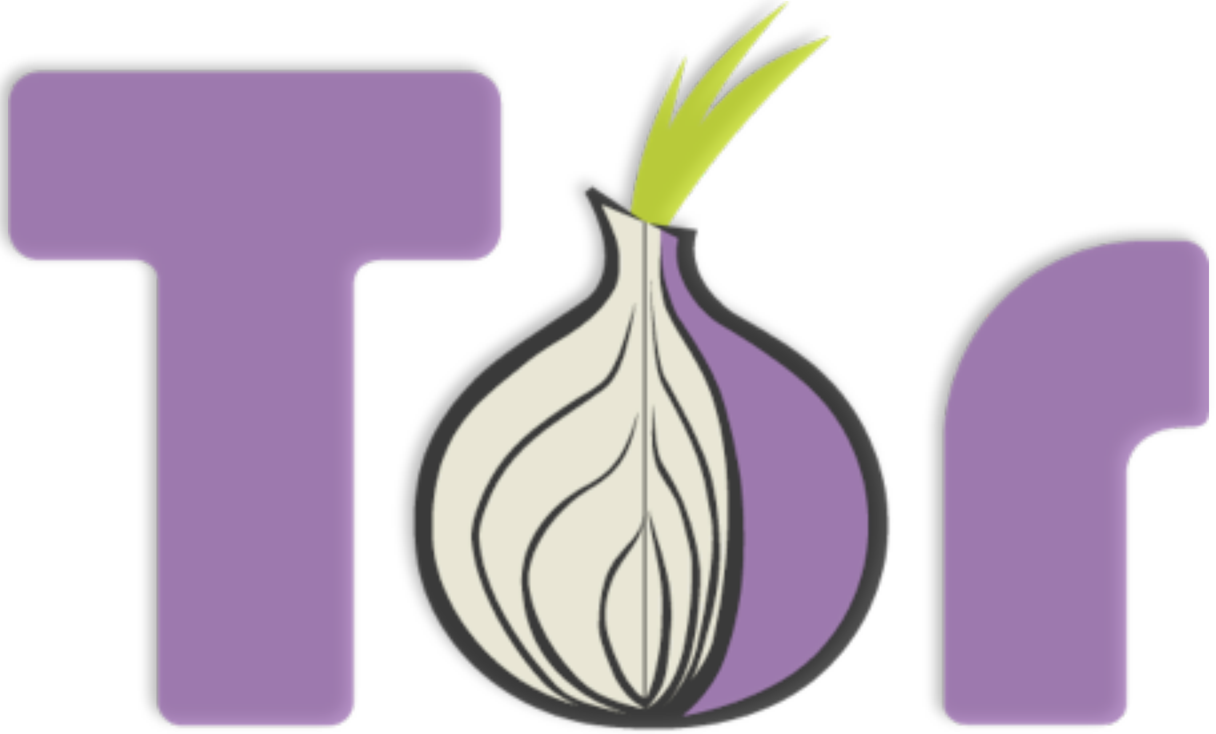
- What is an IP Address?
  - example: 212.20.1.1
- What is a Hostname?
  - example: google.com
- What is DNS?
  - provides mapping between a hostname and an IP Address (google.com = “212.20.1.1”)

Internet Filtering: DNS based blocking

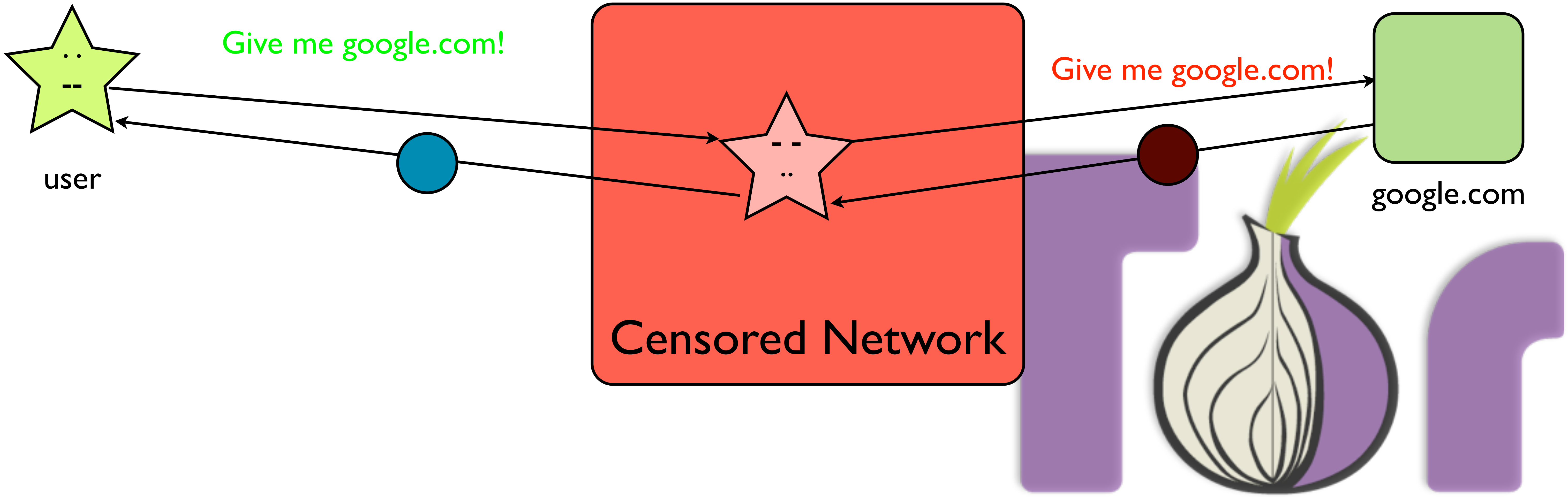
- **Effectiveness:** Low
- **Cost:** Low
- **Sophistication:** Low
- Easy to circumvent
- Used in Italy

Internet Filtering: IP Based blocking

- **Effectiveness:** High
- **Cost:** Medium-Low
- **Sophistication:** Low
- Not too easy to circumvent
- Requires constant update of blocklists
- Used in Italy



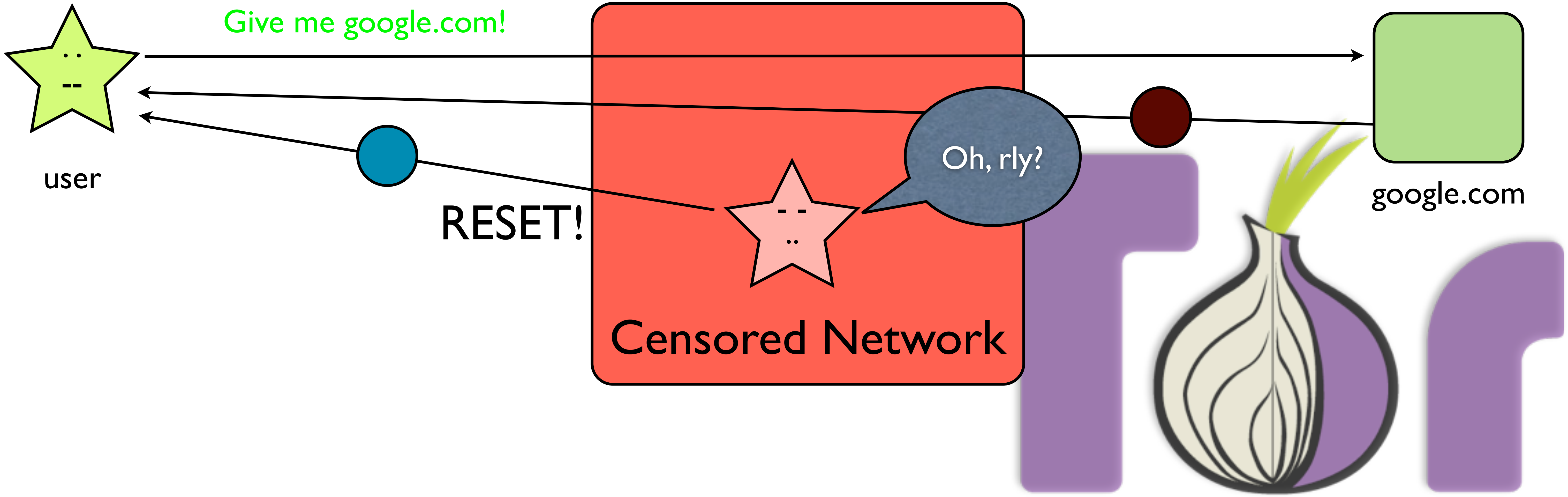
Internet Filtering: Transparent HTTP Proxy



Internet Filtering: Transparent HTTP Proxy

- **Effectiveness:** High
- **Cost:** High
- **Sophistication:** Medium
- Not too easy to circumvent
- Requires a lot of resources
- Generally used in countries where the internet network is not too big

Internet Filtering: RST Based blocking

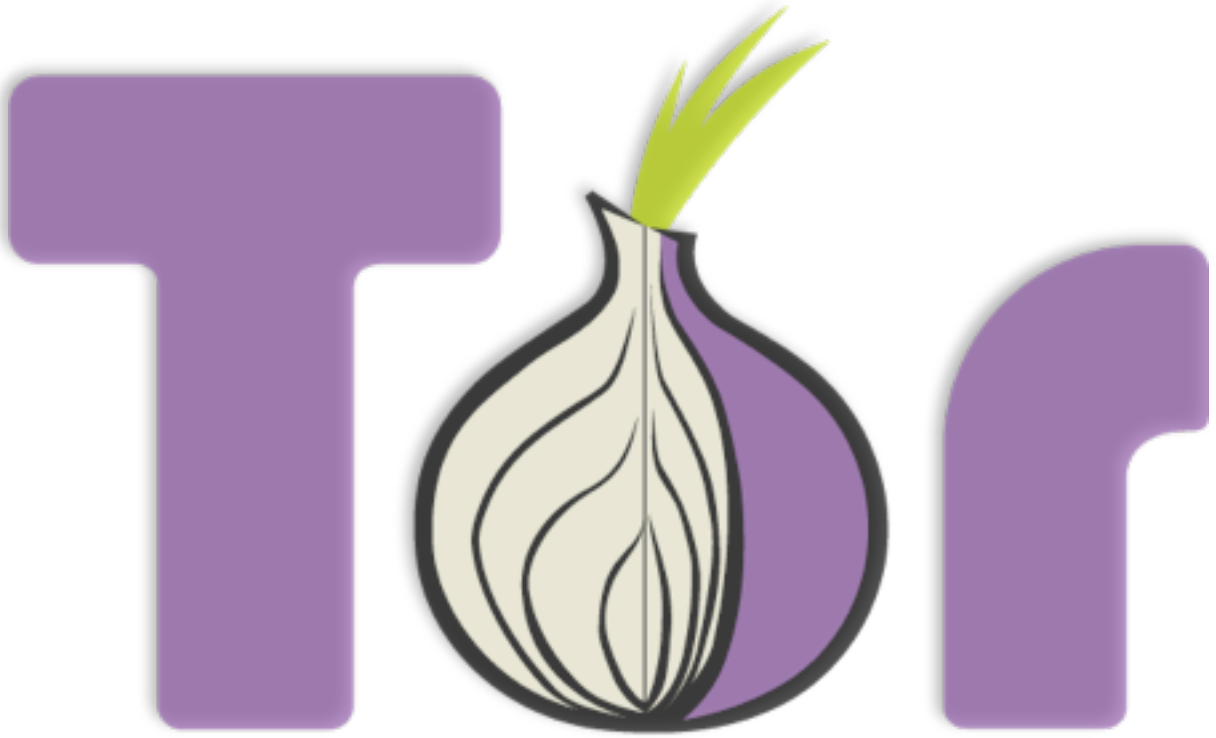


Internet Filtering: RST based blocking

- **Effectiveness:** Medium
- **Cost:** Medium-Low
- **Sophistication:** Medium-High
- Not too easy to circumvent
- Requires specialized infrastructure
- Is **Active**
- Used in China, Uzbekistan, Turkmenistan

Internet Filtering: Protocol based blocking

- Aims at blocking certain applications vs certain content
- **Effectiveness:** Medium-High
- **Cost:** High
- **Sophistication:** High
- Not too easy to circumvent
- Requires very specialized software
- Used in China, Iran, Ethiopia



Internet Filtering: Man In the Middle

- Aims at enforcing selective filtering on SSL encrypted connections
- **Effectiveness:** Medium-High
- **Cost:** High
- **Sophistication:** High
- Requires you to either own or control a certificate authority
- Has been in Iran, China.

A tale of two censors: China

- 2006 - First part of the Great Chinese Firewall (GFW) is deployed. Uses IP and DNS based Blocking and RST based blocking.
- 2009 - Blocking of public Tor addresses
- 2011 - Active scanning of Tor bridges
- 2011 - Protocol based censorship on the Tor cipher suite
- 2012 - Protocol based VPN censorship
- 2013 - Man in the middle attack on github.com with certificate from CNNIC

A tale of two censors: Italy

- 2007 - With the pretext of contrasting child abuse sites, DNS and IP based censorship is deployed
- 2007 - Such system is used for blocking gambling websites not approved by AMS
- 2008 - thepiratebay.com is blocked on an IP basis
- 2012 - indy media piemonte and toscana is blocked, because of a defamation lawsuit

OONI

- A project aimed at measuring the impact of censorship and surveillance using
- Open Methodologies
- FLOSS Software
- Open Data
- The tools used is called ooniprobe

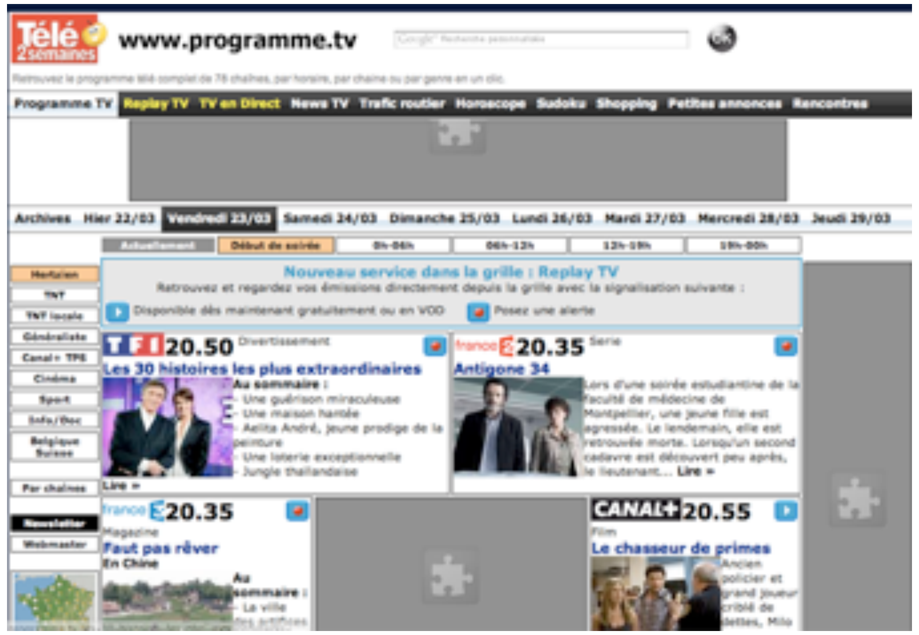
What does ooniprobe detect?

- **Traffic Manipulation**
  - Is somebody intercepting the data I am sending on the network (DPI)?
- **Content Blocking**
  - What is being blocked? (Which websites are not accessible, which keywords are being filtered, etc.)

Openness!

- Because **researchers** should base their results on data
- Because **data visualization** ninjas should have rich datasets to visualize
- Because **policy makers** should have hard data to base their decisions on
- Because **data driven journalism** is great
- Because **the public** should be able to make a mind of their own

Real world use cases: T-Mobile USA



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Actuellement | Début de soirée | 0h-06h | 06h-12h | 12h-18h | 18h-00h

Hertzien | TNT | TNT locale | Généraliste | Canal+ TPS | Cinéma | Sport | Info/Doc | Belgique Suisse | Par chaînes | Newsletter | Webmaster

Nouveau service dans la grille : Replay TV

Retrouvez et regardez vos émissions directement depuis la grille avec la signalisation suivante :

Disponible dès maintenant gratuitement ou en VOD — Posez une alerte

TF1 20.50 Divertissement

Les 30 histoires les plus extraordinaires

Au sommaire :
- Une guérison miraculeuse
- Une maison hantée
- Aelita André, jeune prodige de la peinture
- Une loterie exceptionnelle
- Jungle thaïlandaise

Lire »

france 2 20.35 Série

Antigone 34

Lors d'une soirée estudiantine de la faculté de médecine de Montpellier, une jeune fille est agressée. Le lendemain, elle est retrouvée morte. Lorsqu'un second cadavre est découvert peu après, le lieutenant... Lire »

france 3 20.35 Magazine

Faut pas rêver

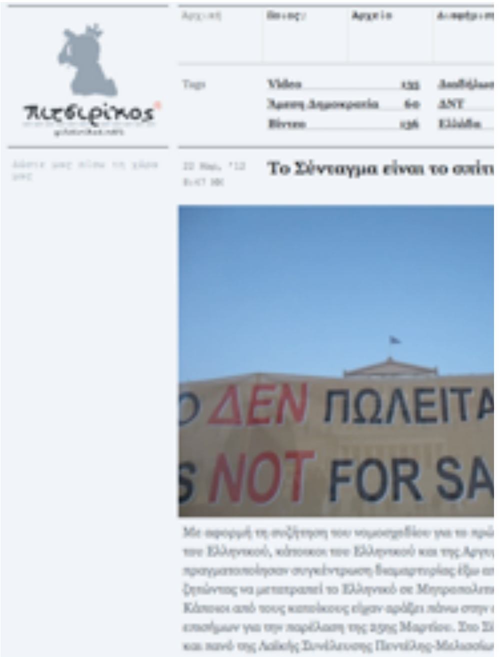
En Chine

Au sommaire :
- La ville des artifices

CANAL+ 20.55 Film

Le chasseur de primes

Ancien policier et grand joueur criblé de dettes, Milo



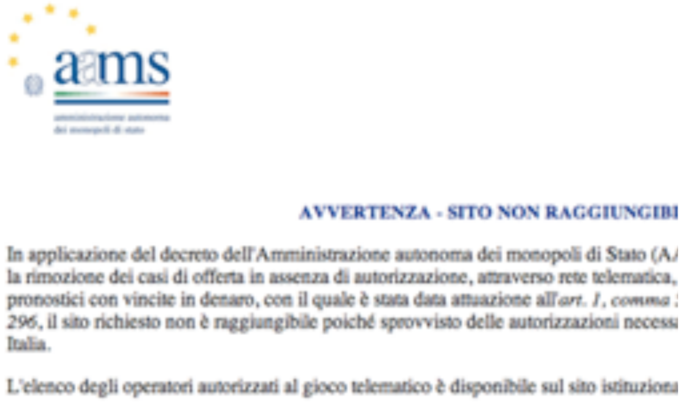
πιτσιρίκος

Videos 135 — Άμεση Δημοκρατία 60 — ΔΝΤ — Βίντεο 136 — Ελλάδα

22 Μαρ. '12

Το Σύνταγμα είναι το σπίτι

Με αφορμή τη συζήτηση του νομοσχεδίου για το πρώ του Ελληνικού, κάτοικοι του Ελληνικού και της Αργυρ πραγματοποίησαν συγκέντρωση διαμαρτυρίας έξω απ ζητώντας να μετατραπεί το Ελληνικό σε Μητροπολιτ Κάποιοι από τους κατοίκους είχαν αράξει πάνω στην επισήμων για την παρέλαση της 25ης Μαρτίου. Στο Σύ και πανό της Λαϊκής Συνέλευσης Πεντέλης-Μελισσίω



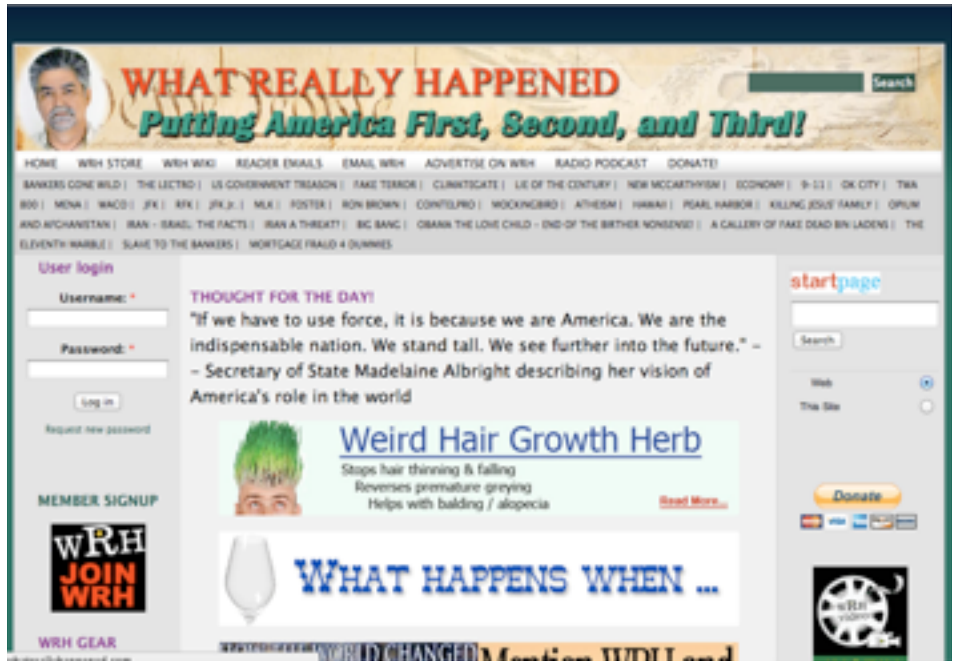
aams

amministrazione autonoma dei monopoli di stato

AVVERTENZA - SITO NON RAGGIUNGIBI

In applicazione del decreto dell'Amministrazione autonoma dei monopoli di Stato (AA la rimozione dei casi di offerta in assenza di autorizzazione, attraverso rete telematica, pronostici con vincite in denaro, con il quale è stata data attuazione all'*art. 1, comma* 296, il sito richiesto non è raggiungibile poiché sprovvisto delle autorizzazioni necessa Italia.

L'elenco degli operatori autorizzati al gioco telematico è disponibile sul sito istituziona



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WHAT HAPPENS WHEN ...

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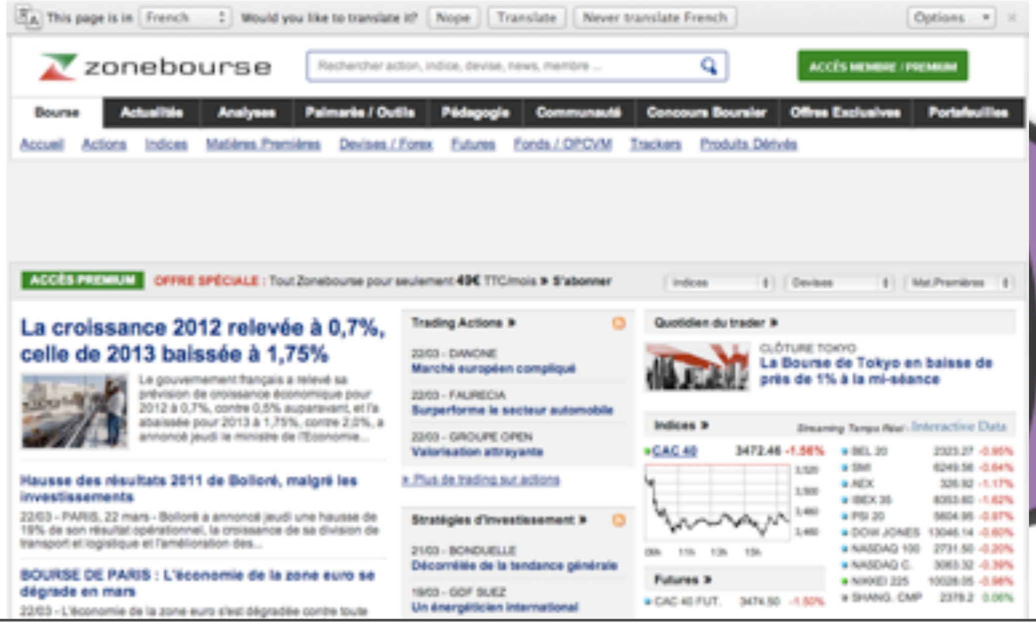

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La croissance 2012 relevée à 0,7%, celle de 2013 baissée à 1,75%

Le gouvernement français a relevé sa prévision de croissance économique pour 2012 à 0,7%, contre 0,5% auparavant, et l'a abaissée pour 2013 à 1,75%, contre 2,0%, a annoncé jeudi le ministre de l'Economie...

Hausse des résultats 2011 de Bolloré, malgré les investissements

22/03 - PARIS, 22 mars - Bolloré a annoncé jeudi une hausse de 19% de son résultat opérationnel, la croissance de sa division de transport et logistique et l'amélioration des...

BOURSE DE PARIS : L'économie de la zone euro se dégrade en mars

22/03 - L'économie de la zone euro s'est dégradée contre toute

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La Bourse de Tokyo en baisse de près de 1% à la mi-séance

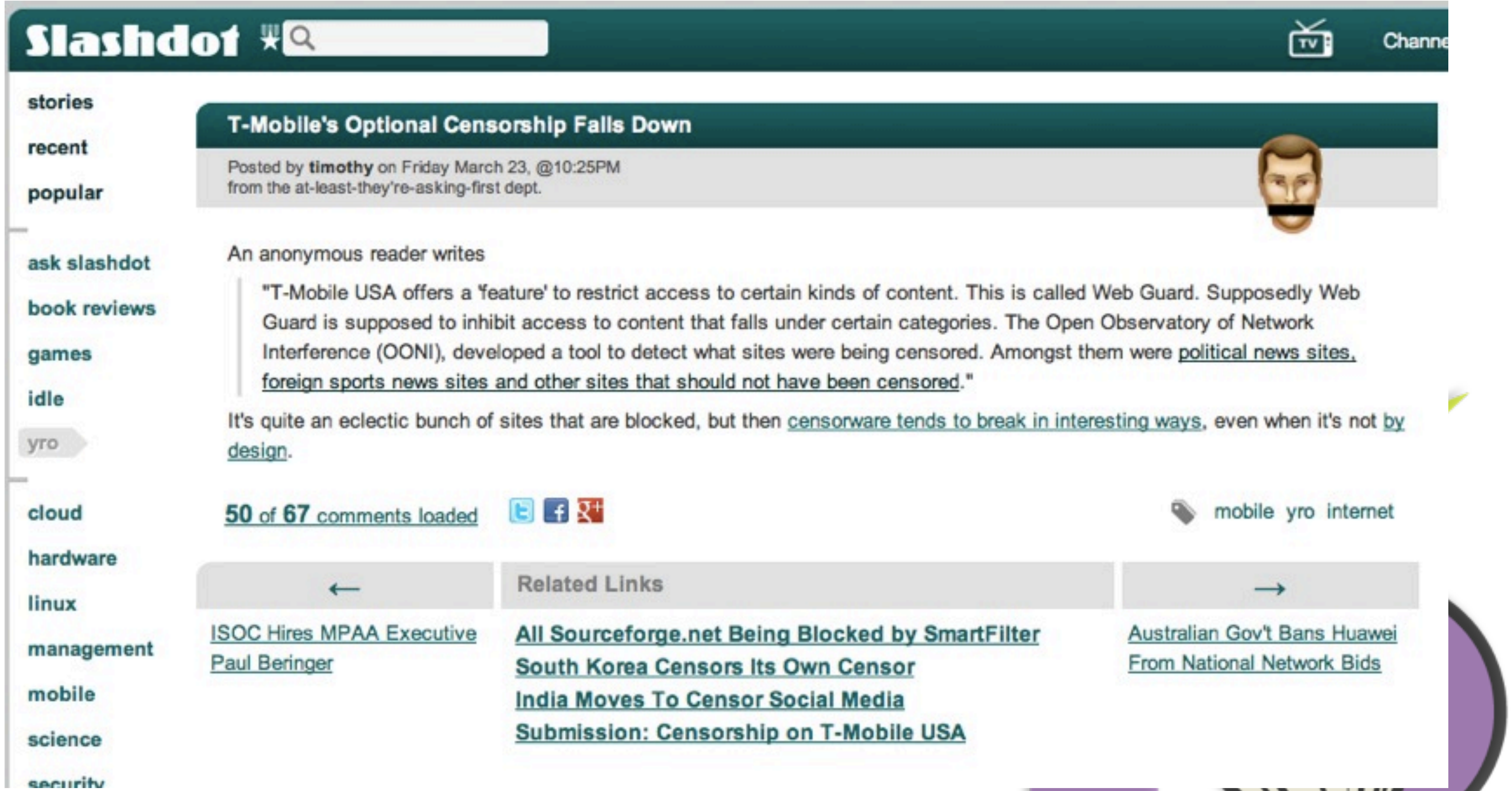
Indices ▸ — Streaming Temps Réel : Interactive Data

CAC 40	3472.46	-1.56%
BEL 20	2323.27	-0.95%
SMI	6249.56	-0.64%
AEX	326.92	-1.17%
IBEX 35	8353.80	-1.62%
PSI 20	5604.95	-0.97%
DOW JONES	13046.14	-0.60%
NASDAQ 100	2731.50	-0.20%
NASDAQ C.	3063.32	-0.39%
NIKKEI 225	10026.05	-0.96%
SHANG. CMP	2378.2	0.06%

Futures ▸

CAC 40 FUT.	3474.50	-1.50%

Real world use cases: T-Mobile USA



T-Mobile's Optional Censorship Falls Down

Posted by **timothy** on Friday March 23, @10:25PM
from the at-least-they're-asking-first dept.

An anonymous reader writes

> "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 certain categories. The Open Observatory of Network Interference (OONI), developed a tool to detect what sites were being censored. Amongst them were political news sites, foreign sports news sites and other sites that should not have been censored."

It's quite an eclectic bunch of sites that are blocked, but then censorware tends to break in interesting ways, even when it's not by design.

50 of 67 comments loaded

mobile yro internet

←

ISOC Hires MPAA Executive Paul Beringer

Related Links

All Sourceforge.net Being Blocked by SmartFilter
South Korea Censors Its Own Censor
India Moves To Censor Social Media
Submission: Censorship on T-Mobile USA

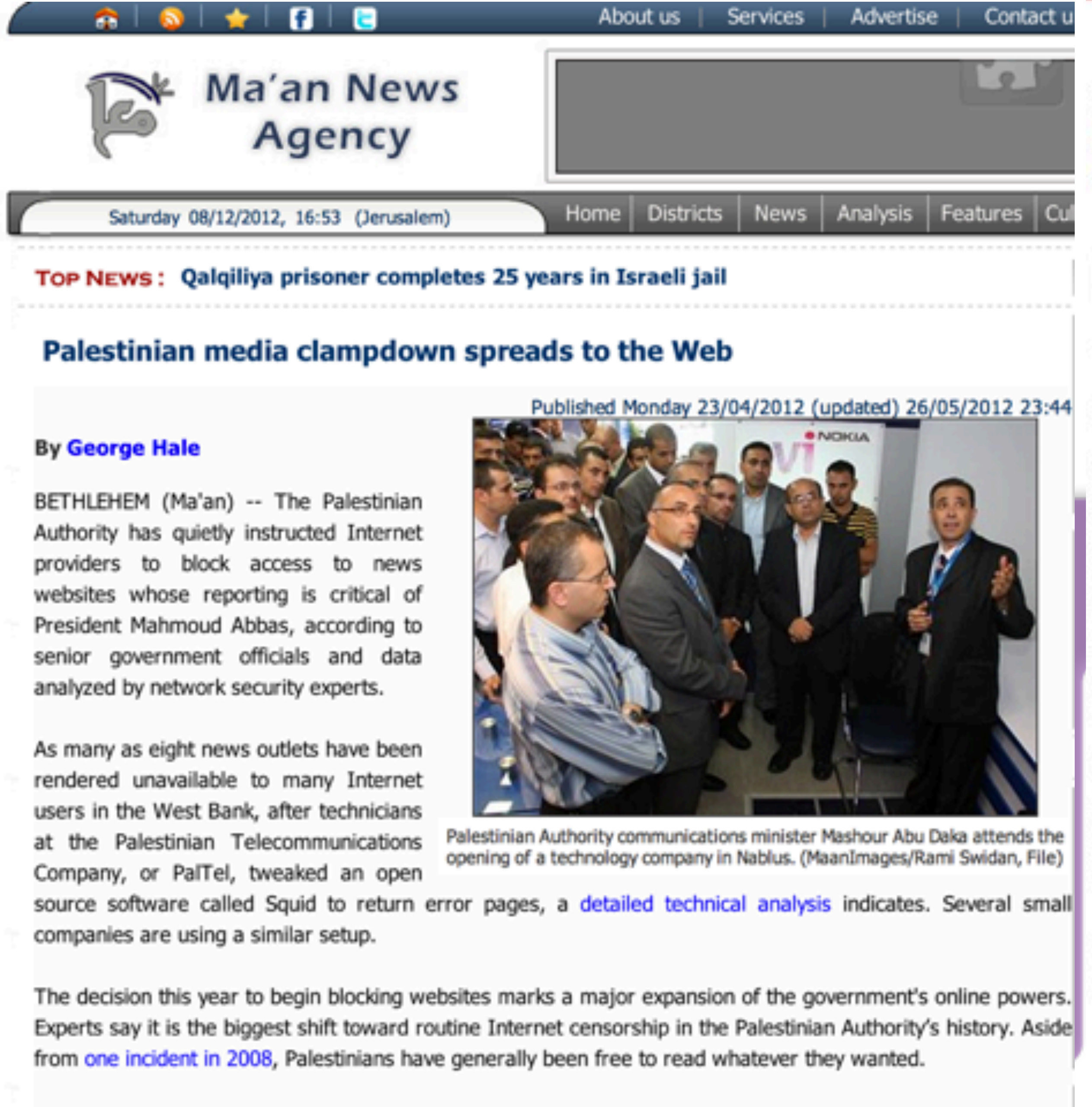
→

Australian Gov't Bans Huawei From National Network Bids

Real world use cases: Handara Palestine

- With George Hale from from Ma’an

- This lead to the removal of censorship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TOP NEWS : Qalqiliya prisoner completes 25 years in Israeli jail

Palestinian media clampdown spreads to the Web

Published Monday 23/04/2012 (updated) 26/05/2012 23:44

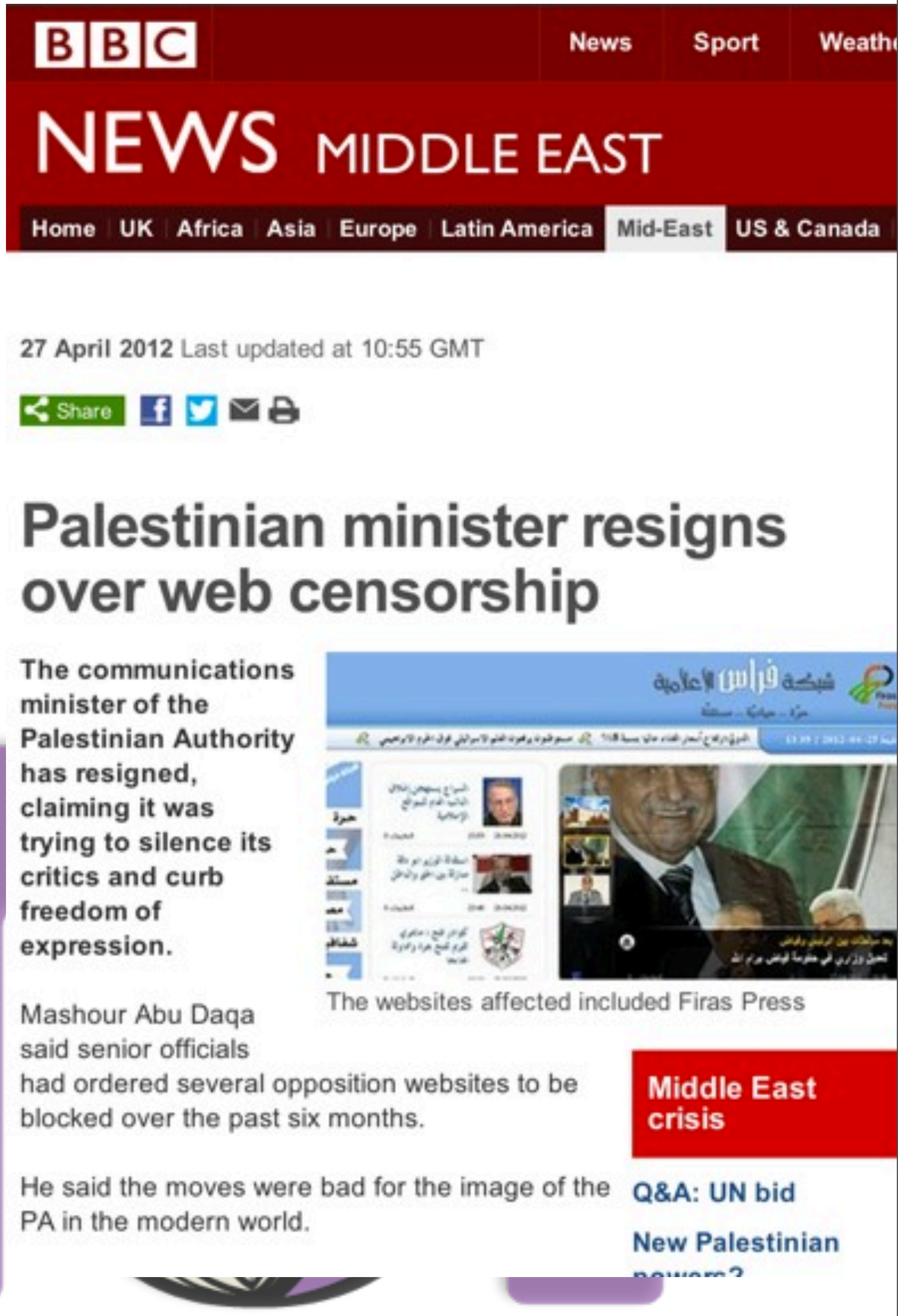
By George Hale

BETHLEHEM (Ma'an) -- The Palestinian Authority has quietly instructed Internet providers to block access to news websites whose reporting is critical of President Mahmoud Abbas, according to senior government officials and data analyzed by network security experts.

Palestinian Authority communications minister Mashour Abu Daka attends the opening of a technology company in Nablus. (MaanImages/Rami Swidan, File)

As many as eight news outlets have been rendered unavailable to many Internet users in the West Bank, after technicians at the Palestinian Telecommunications Company, or PalTel, tweaked an open source software called Squid to return error pages, a detailed technical analysis indicates. Several small companies are using a similar setup.

The decision this year to begin blocking websites marks a major expansion of the government's online powers. Experts say it is the biggest shift toward routine Internet censorship in the Palestinian Authority's history. Aside from one incident in 2008, Palestinians have generally been free to read whatever they wanted.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27 April 2012 Last updated at 10:55 GMT

Palestinian minister resigns over web censorship

The communications minister of the Palestinian Authority has resigned, claiming it was trying to silence its critics and curb freedom of expression.

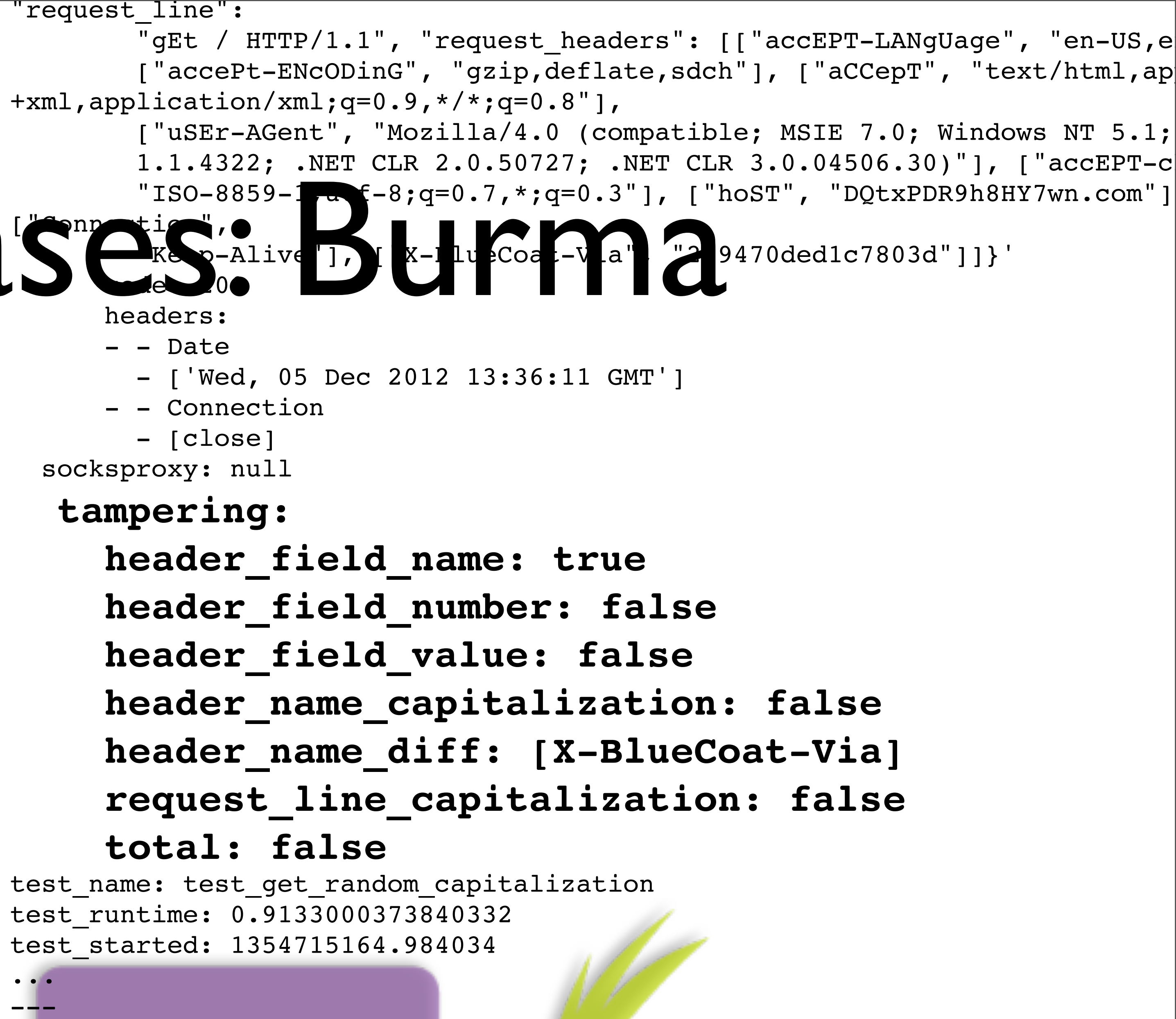
The websites affected included Firas Press

Mashour Abu Daqa said senior officials had ordered several opposition websites to be blocked over the past six months.

He said the moves were bad for the image of the PA in the modern world.

Real world use cases: Burma

- https://ooni.torproject.org/reports/0.1/MM/report_http_header_field_manipulation_05_December_2012_13-45-16.yamloo
- We were able to detect the presence of Bluecoat devices inside of Burma. Automatically!



```
"request_line":
        "gEt / HTTP/1.1", "request_headers": [["accEPT-LANgUage", "en-US,e
        ["accePt-ENcODinG", "gzip,deflate,sdch"], ["aCCepT", "text/html,ap
+xml,application/xml;q=0.9,*/*;q=0.8"],
        ["uSEr-AGent", "Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1;
        1.1.4322; .NET CLR 2.0.50727; .NET CLR 3.0.04506.30)"], ["accEPT-c
        "ISO-8859-1,utf-8;q=0.7,*;q=0.3"], ["hoST", "DQtxPDR9h8HY7wn.com"]
["Connection",
        "Keep-Alive"], ["X-BlueCoat-Via", "2[illegible]9470ded1c7803d"]]}'
      code: 200
      headers:
      - - Date
        - ['Wed, 05 Dec 2012 13:36:11 GMT']
      - - Connection
        - [close]
  sockproxy: null
  tampering:
      header_field_name: true
      header_field_number: false
      header_field_value: false
      header_name_capitalization: false
      header_name_diff: [X-BlueCoat-Via]
      request_line_capitalization: false
      total: false
test_name: test_get_random_capitalization
test_runtime: 0.9133000373840332
test_started: 1354715164.984034
...
---
```

Real world use cases: Turkmenistan and Uzbekistan

- https://ooni.torproject.org/reports/0.1/UZ/
- https://ooni.torproject.org/reports/0.1/TM/
- We discovered how to bypass the filter by adding tabs to the end of HTTP Requests

Current project status

- Currently you need to be a developer to run ooniprobe
- I can help you set up ooniprobe tomorrow
- Bugs are everywhere, let’s hunt them down!

How can I help?

- Come and hack with us!
  - #ooni irc.oftc.net
  - https://gitweb.torproject.org/ooni-probe.git
- Run ooniprobe!
  - https://gitweb.torproject.org/ooni-probe.git/blob/HEAD:/README.md
- Come talk to me!

Learn more

- Website:
  https://ooni.torproject.org/
- Developer Documentation:
  https://ooni.torproject.org/docs/
- Reports:
  https://ooni.torproject.org/reports/
- Test documentation:
  https://ooni.torproject.org/docs/tests/
- Code:
  https://gitweb.torproject.org/ooni-probe.git

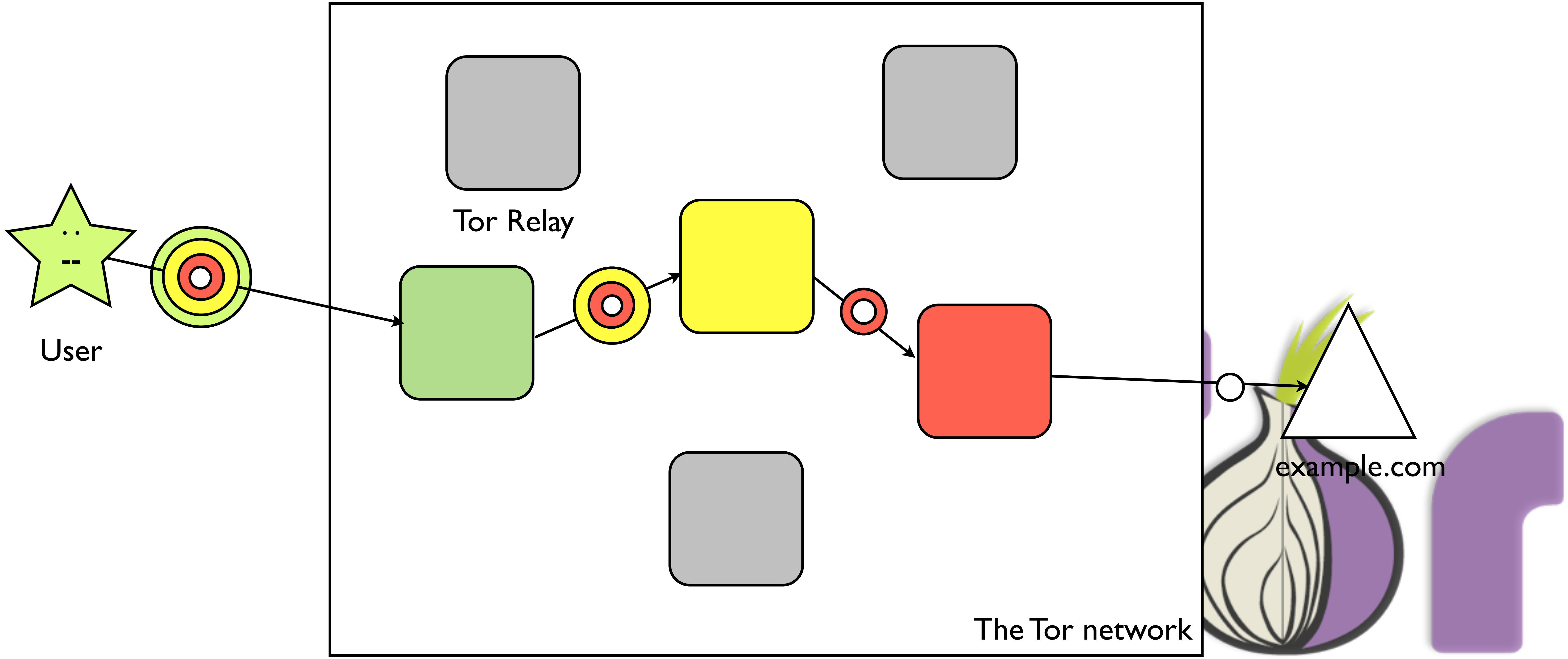
Thank you for your attention!

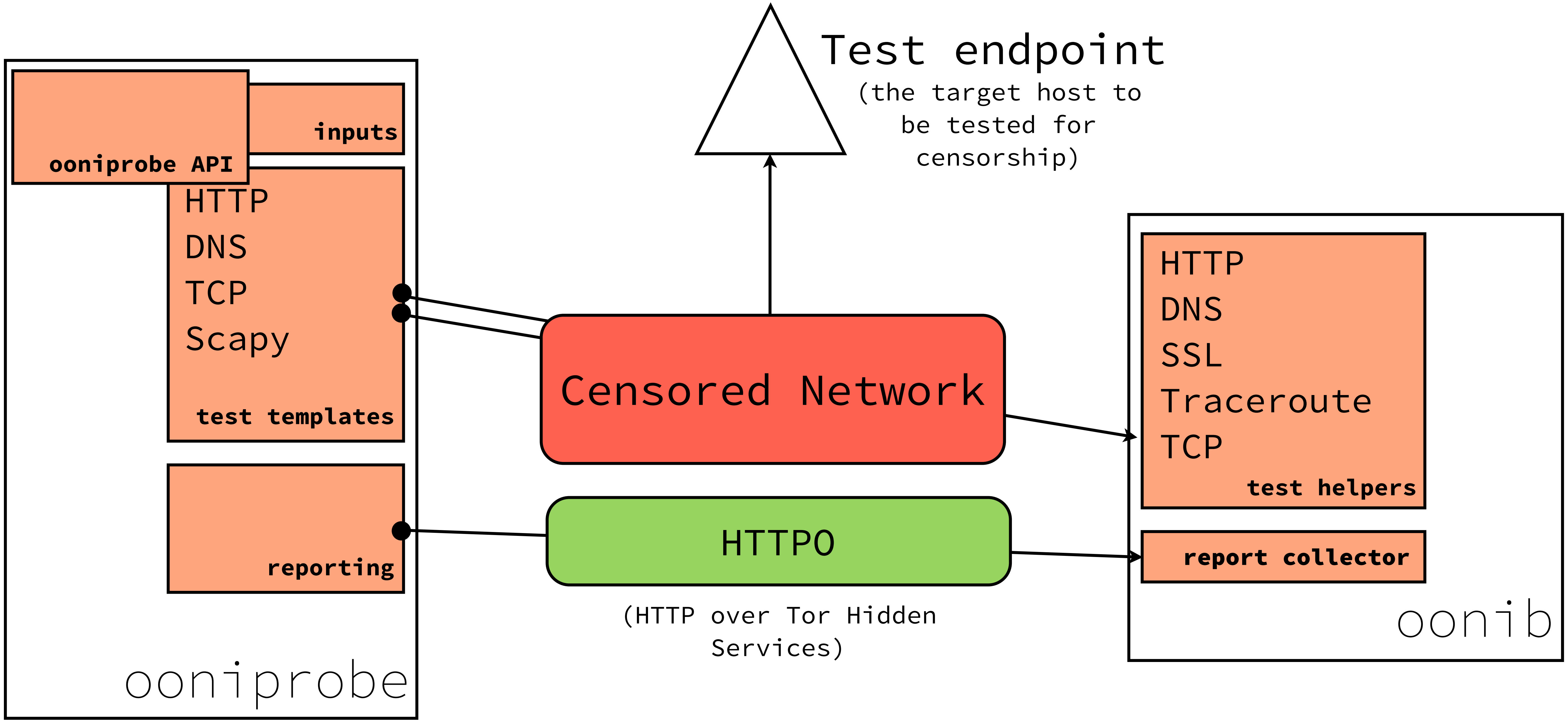
Questions?

Tor: The Onion Router

- Tor allows people to access internet services anonymously
- Censorship circumvention is a counter-effect

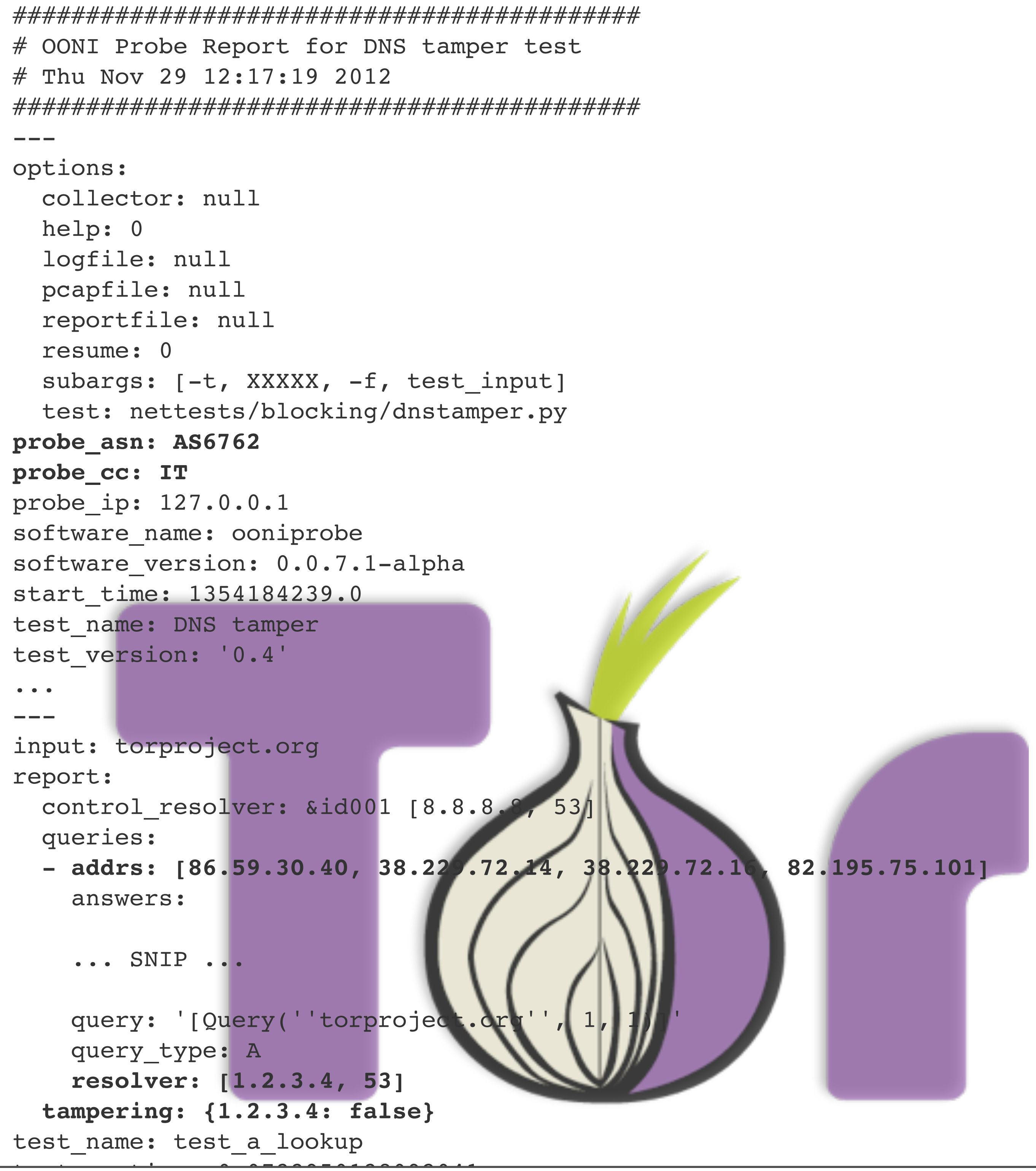
How Tor works




Test endpoint
(the target host to be tested for censorship)
ooniprobe API
inputs
HTTP
DNS
TCP
Scapy
test templates
reporting
ooniprobe
Censored Network
HTTPO
(HTTP over Tor Hidden Services)
HTTP
DNS
SSL
Traceroute
TCP
test helpers
report collector
oonib

Reporting format

- Uses YAML
- Every test follows a test template
- More info: https://ooni.torproject.org/docs/reports.html

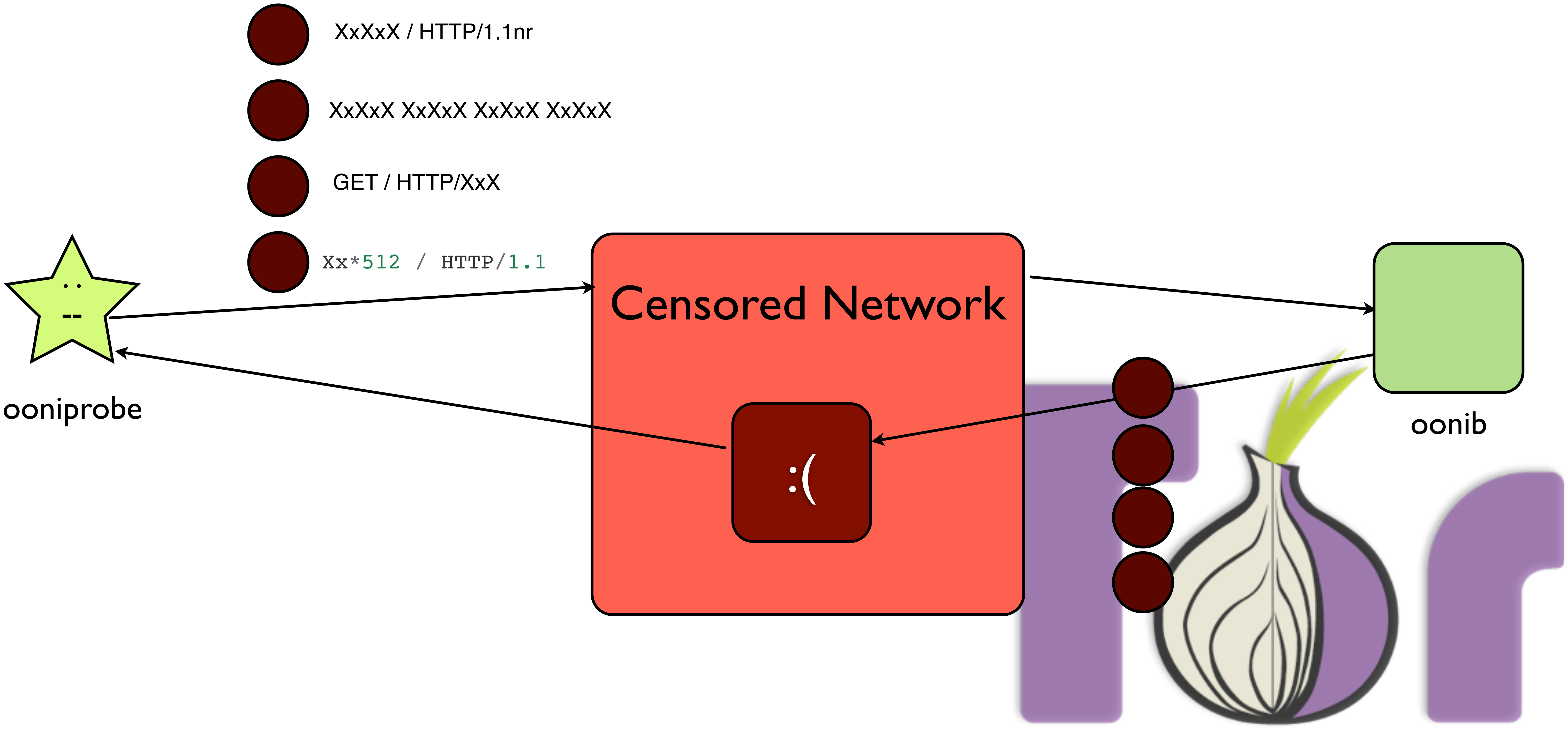


```
############################################
# OONI Probe Report for DNS tamper test
# Thu Nov 29 12:17:19 2012
############################################
---
options:
  collector: null
  help: 0
  logfile: null
  pcapfile: null
  reportfile: null
  resume: 0
  subargs: [-t, XXXXX, -f, test_input]
  test: nettests/blocking/dnstamper.py
probe_asn: AS6762
probe_cc: IT
probe_ip: 127.0.0.1
software_name: ooniprobe
software_version: 0.0.7.1-alpha
start_time: 1354184239.0
test_name: DNS tamper
test_version: '0.4'
...
---
input: torproject.org
report:
  control_resolver: &id001 [8.8.8.8, 53]
  queries:
  - addrs: [86.59.30.40, 38.229.72.14, 38.229.72.16, 82.195.75.101]
    answers:

    ... SNIP ...

    query: '[Query(''torproject.org'', 1, 1)]'
    query_type: A
    resolver: [1.2.3.4, 53]
  tampering: {1.2.3.4: false}
test_name: test_a_lookup
```

Tests: HTTP Invalid Request Line



XxXxX / HTTP/1.1nr

XxXxX XxXxX XxXxX XxXxX

GET / HTTP/XxX

```
Xx*512 / HTTP/1.1
```

Censored Network

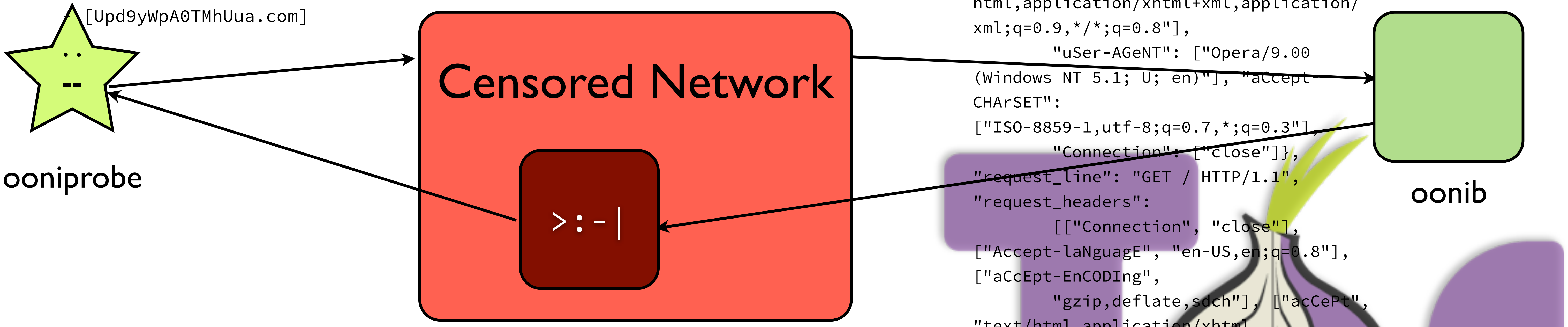
:(

ooniprobe

oonib

Tests: HTTP Header Field Manipulation

```
headers:
        - - Accept-laNguagE
          - ['en-US,en;q=0.8']
        - - aCcEpt-EnCODIng
          - ['gzip,deflate,sdch']
        - - acCePt
          - ['text/html,application/xhtml
+xml,application/xml;q=0.9,*/*;q=0.8']
        - - uSer-AGeNT
          - [Opera/9.00 (Windows NT 5.1;
U; en)]
        - - aCcept-CHArSET
          -
['ISO-8859-1,utf-8;q=0.7,*;q=0.3']
        - - HosT
          - [Upd9yWpA0TMhUua.com]
```



```
      body: '{"headers_dict": {"Accept-
laNguagE": ["en-US,en;q=0.8"], "aCcEpt-
EnCODIng":
        ["gzip,deflate,sdch"], "HosT":
["Upd9yWpA0TMhUua.com"], "acCePt": ["text/
html,application/xhtml+xml,application/
xml;q=0.9,*/*;q=0.8"],
        "uSer-AGeNT": ["Opera/9.00
(Windows NT 5.1; U; en)"], "aCcept-
CHArSET":
["ISO-8859-1,utf-8;q=0.7,*;q=0.3"],
        "Connection": ["close"]},
"request_line": "GET / HTTP/1.1",
"request_headers":
        [["Connection", "close"],
["Accept-laNguagE", "en-US,en;q=0.8"],
["aCcEpt-EnCODIng",
        "gzip,deflate,sdch"], ["acCePt",
"text/html,application/xhtml
+xml,application/xml;q=0.9,*/*;q=0.8"],
        ["uSer-AGeNT", "Opera/9.00
(Windows NT 5.1; U; en)"], ["aCcept-
CHArSET",
"ISO-8859-1,utf-8;q=0.7,*;q=0.3"],
        ["HosT", "Upd9yWpA0TMhUua.com"]]}'
```

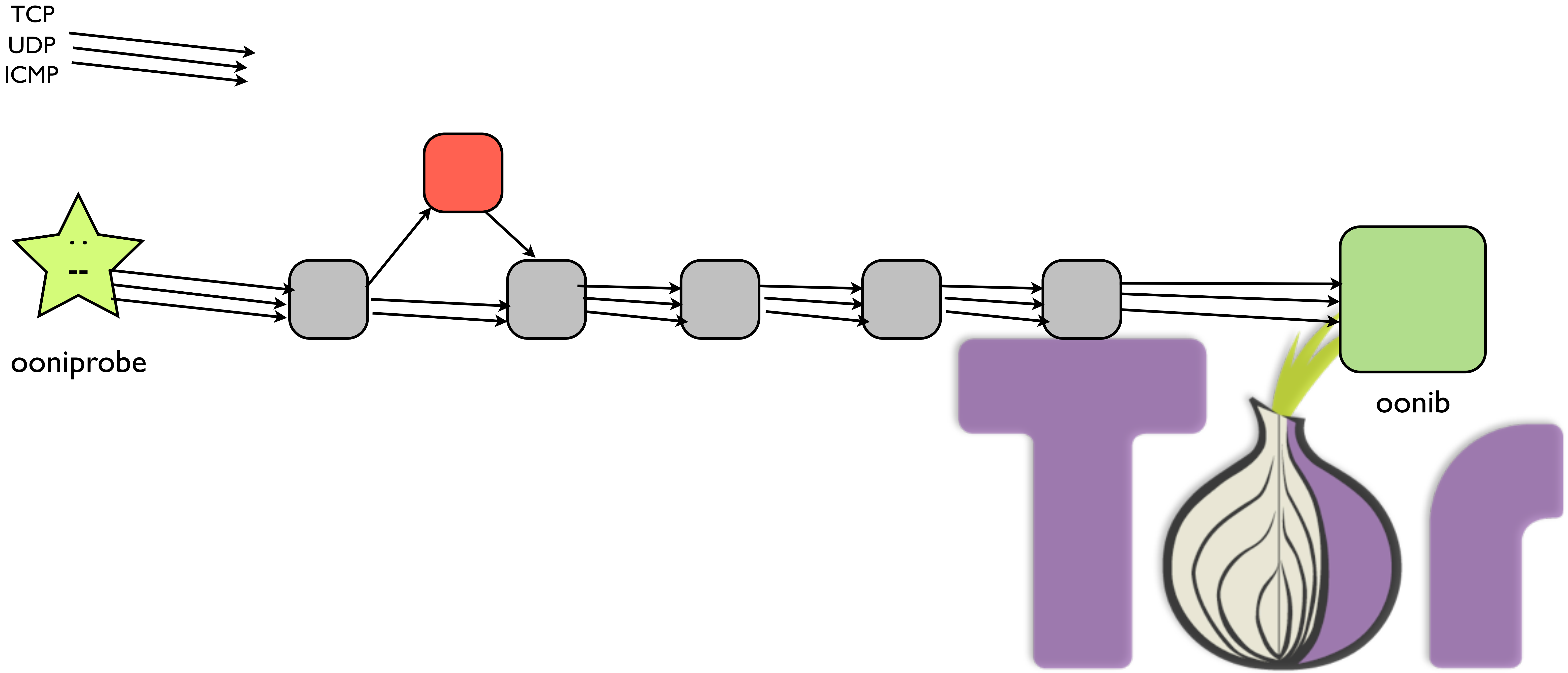
Tests: HTTP Header Field Manipulation

```
requests:
- request:
    body: null
    headers:
    - - accEPT-LANgUage
      - ['en-US,en;q=0.8']
    - - accePt-ENcODinG
      - ['gzip,deflate,sdch']
    - - aCCepT
      - ['text/html,application/xhtml+xml,application/
xml;q=0.9,*/*;q=0.8']
    - - uSEr-AGent
      - [Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET
CLR 1.1.4322; .NET
          CLR 2.0.50727; .NET CLR 3.0.04506.30)]
    - - accEPT-charSeT
      - ['ISO-8859-1,utf-8;q=0.7,*;q=0.3']
    - - hoST
      - [DQtxPDR9h8HY7wn.com]
    method: gEt
```

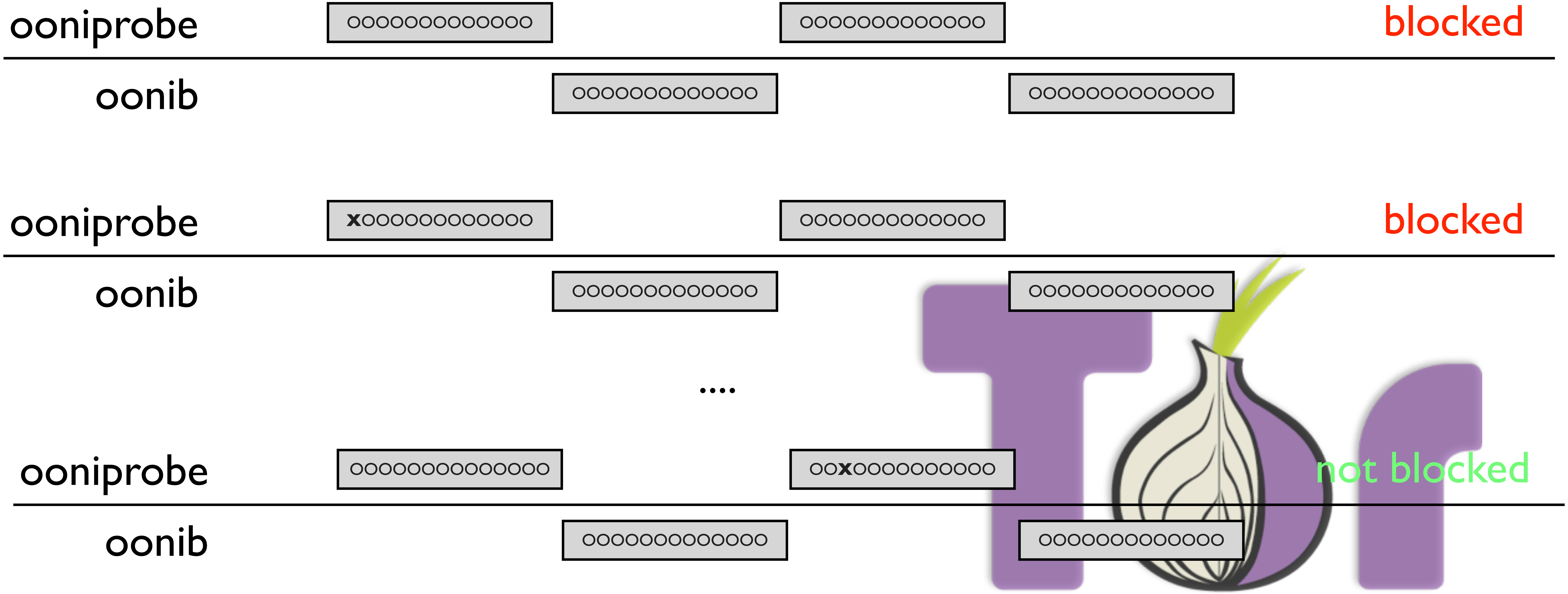
```
tampering:
  header_field_name: true
  header_field_number: false
  header_field_value: false
  header_name_capitalization: false
  header_name_diff: [X-BlueCoat-Via]
  request_line_capitalization: false
  total: false
test_name: test_get_random_capitalization
test_runtime: 0.9133000373840332
test_started: 1354715164.984034
```

```
  response:
    body: '{"headers_dict": {"accEPT-LANgUage": ["en-
US,en;q=0.8"], "accePt-ENcODinG":
        ["gzip,deflate,sdch"], "X-BlueCoat-Via":
["279470ded1c7803d"], "Connection":
        ["Keep-Alive"], "aCCepT": ["text/html,application/xhtml
+xml,application/xml;q=0.9,*/*;q=0.8"],
        "uSEr-AGent": ["Mozilla/4.0 (compatible; MSIE 7.0; Windows
NT 5.1; .NET CLR
        1.1.4322; .NET CLR 2.0.50727; .NET CLR 3.0.04506.30)"],
"accEPT-charSeT":
        ["ISO-8859-1,utf-8;q=0.7,*;q=0.3"], "hoST":
["DQtxPDR9h8HY7wn.com"]}, "request_line":
        "gEt / HTTP/1.1", "request_headers": [["accEPT-LANgUage",
"en-US,en;q=0.8"],
        ["accePt-ENcODinG", "gzip,deflate,sdch"], ["aCCepT", "text/
html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8"],
        ["uSEr-AGent", "Mozilla/4.0 (compatible; MSIE 7.0; Windows
NT 5.1; .NET CLR
        1.1.4322; .NET CLR 2.0.50727; .NET CLR 3.0.04506.30)"],
["accEPT-charSeT",
        "ISO-8859-1,utf-8;q=0.7,*;q=0.3"], ["hoST",
"DQtxPDR9h8HY7wn.com"], ["Connection",
        "Keep-Alive"], ["X-BlueCoat-Via", "279470ded1c7803d"]]}'
    code: 200
    headers:
    - - Date
      - ['Wed, 05 Dec 2012 13:36:11 GMT']
    - - Connection
      - [close]
  socksproxy: null
```

Tests: Multi protocol traceroute



Tests: Daphne



ooniprobe oooooooooooooo oooooooooooooo blocked

oonib oooooooooooooo oooooooooooooo

ooniprobe xoooooooooooo oooooooooooooo blocked

oonib oooooooooooooo oooooooooooooo

....

ooniprobe ooooooooooooooo ooxoooooooooo not blocked

oonib ooooooooooooo ooooooooooooo

4 teh geekz

- ooniprobe is based on Twisted and Scapy
- We include a non blocking Scapy super socket implementation
- Test templates facilitate the writing of tests
  - https://ooni.torproject.org/docs/api/ooni.templates.htm