Network Measurements

Censorship and Digital Rights in Southeast Asia

Khairil Yusof, Sinar Project
HTTP was prevalent

A few independent efforts tested and found that through DPI, matching urls in browser requests were being blocked/delayed

*Sinar Project Summary*

Tests
Again 2014

Similar Techniques

Denials

Systematic censorship testing needed, multiple tests

Home grown Blocked or Not site

- Needed clients
- Needed more tests

Government denials
Found OONI project did everything we wanted to do and joined their amazing community of like minded people.
Regional Overview
Network Landscape

1 Million internet users as of 2016

71% internet penetration

Five main ISPs, each provide mobile and/or fiber internet to homes
Legal Background

Communications & Multimedia Act

Bans indecent, threatening or offensive content
Malaysian Censorship

2015-2018

39 websites found to be blocked through the DNS injection of block pages.
News outlets, blogs, and medium.com blocked for covering the 1MDB scandal.

2018 - Present
LGBT, Fan Fiction, interfaith religious sites
Thailand

59.8% internet penetration rate in 2016

7 major ISPs, 6 providing mobile internet

Government-ISP relationships mean ISP’s will cooperate with censorship
Legal Background

Law facilitating censorship:

Lèse-majesté

Computer Related Crime Act
Thailand Censorship

13 websites blocked via DNS Hijacking & HTTP transparent proxies

Blocked sites include:

- Wikileaks.org
- Censorship circumvention tool sites (e.g. hotspotshield.com)
- News outlets (nypost.com, dailymail.co.uk)
Myanmar

19% internet penetration on 2016

Myanmar Posts and Telecom (MPT) and Bagan Cybertech (currently Yatanarpon Telecom)

Both state controlled
Legal Background

Telecommunication Law 2013 - allows the government to both censor information and setup surveillance.

Computer Science Development, - requires permit to import computing equipment

- Various defamation laws
Myanmar Censorship

Commercial filtering devices by Bluecoat detected by OONIprobe in 2012.

No signs of this software appeared to currently be present in the 6 networks where tests were recently run.

The sites of the U.S embassy in Myanmar and of the Organization of American States (OAS) presented strong signs of TCP/IP and HTTP blocking.
Indonesia

132.7 million internet users, >50% internet penetration rate

Over 300 ISPs, only 35 owning network infrastructure

3 largest providers: Telkom, Indosat, and XL-Axiata

Both Telkom and Indosat are partially state-owned
Legal background

Electronic Information and Transactions Law

-used to prosecute individuals who distribute, transmit

(i) material against propriety,
(ii) gambling material,
(iii) defamatory material, and
(iv) material containing extortions or threats
Indonesian Censorship

161 websites were found to be blocked during the testing period

Indonesian ISPs appear to be implementing block pages primarily through DNS hijacking

Vimeo and Reddit banned

Most censorship implemented for reinforcement of cultural norms
Why test?
Data backed evidence

- Freedom of Internet and similar reports and rankings use anecdotal news reports

-
Testing Scenarios
Continuous Testing
Need data

Number of sites blocked over time
days, months, years

Different periods of censorship (more, less?)

Better coverage

Different categories, especially those related to rights and freedoms
  - Press
  - Religion
  - Political Criticism

Malaysia
3,805,613 Measurements

Myanmar (Burma)
255,341 Measurements

Singapore
330,231 Measurements

Indonesia
1,664,405 Measurements
On Servers

Run as many tests as possible

Every day, every hour

Something easily installed that runs in the background

- ooniprobe
- probe-cli
Coverage of Test Lists
Easy to generate custom URL test lists for OONI Run if URL and metadata exists on Citizen Lab test-lists by filtering by country, category and tags:

```
grep NEWS my.csv | cut -d, -f 1
```

OONI Run and OONI Probe Mobile:
- Test-list sourced specific URLs to crowdsource event specific measurements from mobile users such as elections.

OONI Probe on Raspberry Pi and Servers:
- Test-list sourced specific URLs help collect continuous comprehensive daily tests.

Dashboards / Report:
- Categories generated from metadata in test-lists make it easier to auto-generate reports/dashboard including regional and country comparisons.

Data on events:
- To provide context on censorship reports can be sourced from WikiData.

Measurement Data Source from OONI API:
- URL test coverage consistent with test-lists and categories used by reports.
### Anomaly summary for year 2020

<table>
<thead>
<tr>
<th>Country</th>
<th>2020</th>
<th>2019</th>
<th>2018</th>
<th>2017</th>
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<tr>
<td>Myanmar</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>Indonesia</td>
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<td>Viet Nam</td>
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<td>4</td>
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<tr>
<td>Cambodia</td>
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<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

### News Media

- Site URL
- Blocking by Country
- Blocking by ISP
- Blocking by Network

Censorship Dashboards from OONI API
Live Events - Elections, Protests
Dynamic
different urls, hour by hour
Need to prepare

Activists, civil society and media

It’s hard to troubleshoot problems during dynamic events such as protests, elections

Workshops to install, and test OONI apps on phone

Prepare web apps

Coverage of ISPs
Prepare some lists and test them

https://run.ooni.io

Have them ready to be modified to add new links and a channel to share it

Malaysian Elections

Censorships of Election Results

2 hour window

<table>
<thead>
<tr>
<th>Network</th>
<th>Start Time (Malaysian Time GMT+8)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
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<td>2018-05-09 17:20</td>
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</tr>
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<td>2018-05-09 17:22</td>
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</tr>
<tr>
<td>DIG AS4818</td>
<td>2018-05-09 17:30</td>
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<td>DIG AS4818</td>
<td>2018-05-09 17:45</td>
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</tr>
<tr>
<td>TMNet AS4788</td>
<td>2018-05-09 20:31</td>
<td>OK</td>
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<td>TMNet AS4788</td>
<td>2018-05-09 20:34</td>
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<td>DIG AS4818</td>
<td>2018-05-09 21:45</td>
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</tr>
<tr>
<td>DIG AS4818</td>
<td>2018-05-09 21:52</td>
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<td>DNS Hijacking</td>
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Report

Led to resignation of some members of the Malaysian Communications and Multimedia Commission.
Collaboration

● Legal Analysis
● Community Groups
  ○ Community Internet Centres
  ○ Social Welfare Sites