

# **Network Measurement Deep Dive**

Internet Policy in Africa, Kamapla, 2nd March 2018



**OONI**

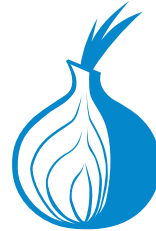
# OONI Software tests



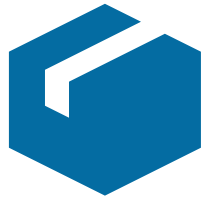
**Web Censorship**



**Instant Messaging Apps**



**Censorship  
Circumvention**



**Middleboxes**



**Speed & Performance**



**Instant Messaging**

# Instant Messaging

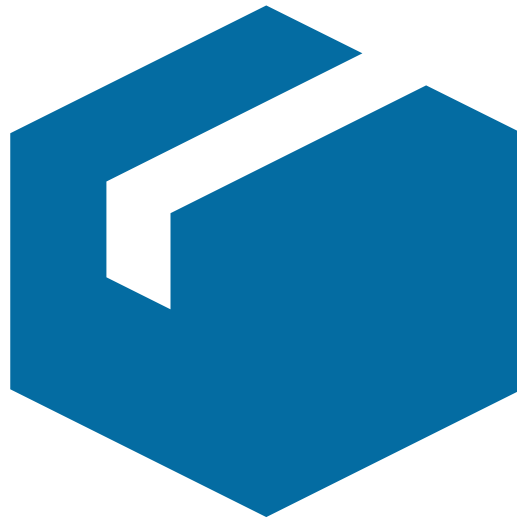
- Telegram
- Facebook Messenger
- WhatsApp



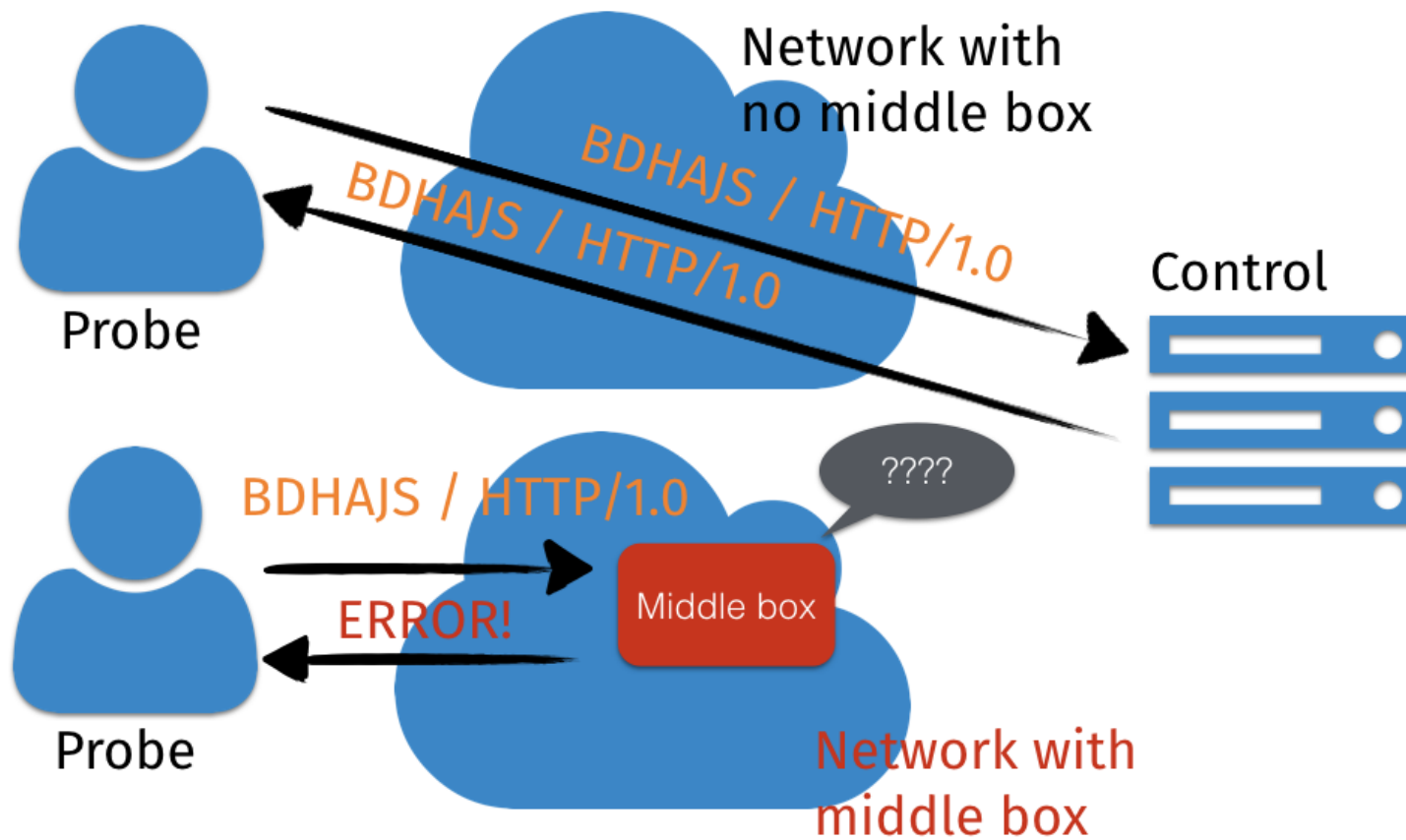
**Performance**

# Performance

- NDT Speed Test
- DASH Video Streaming

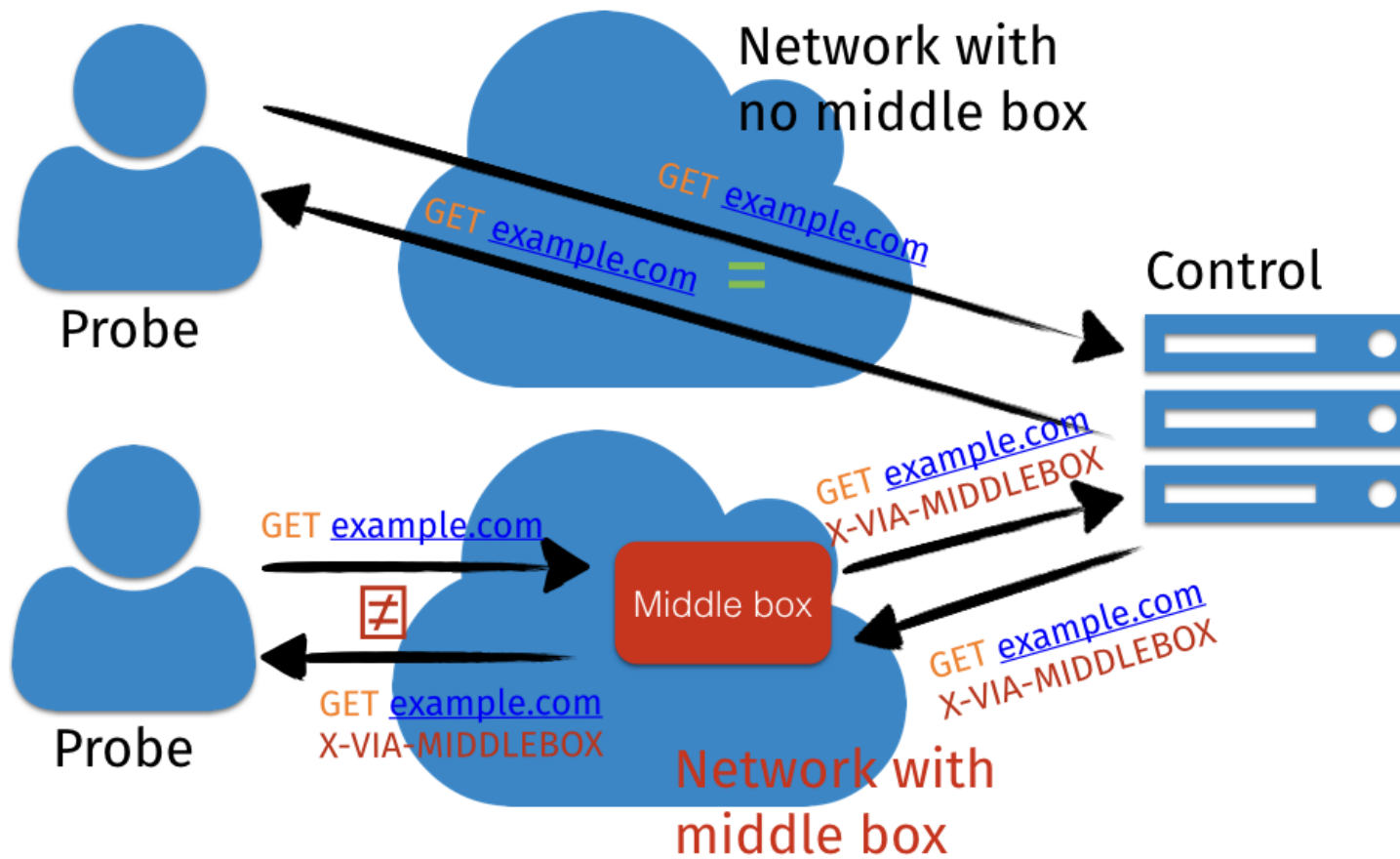


**Middleboxes**



## HTTP Invalid Request Line

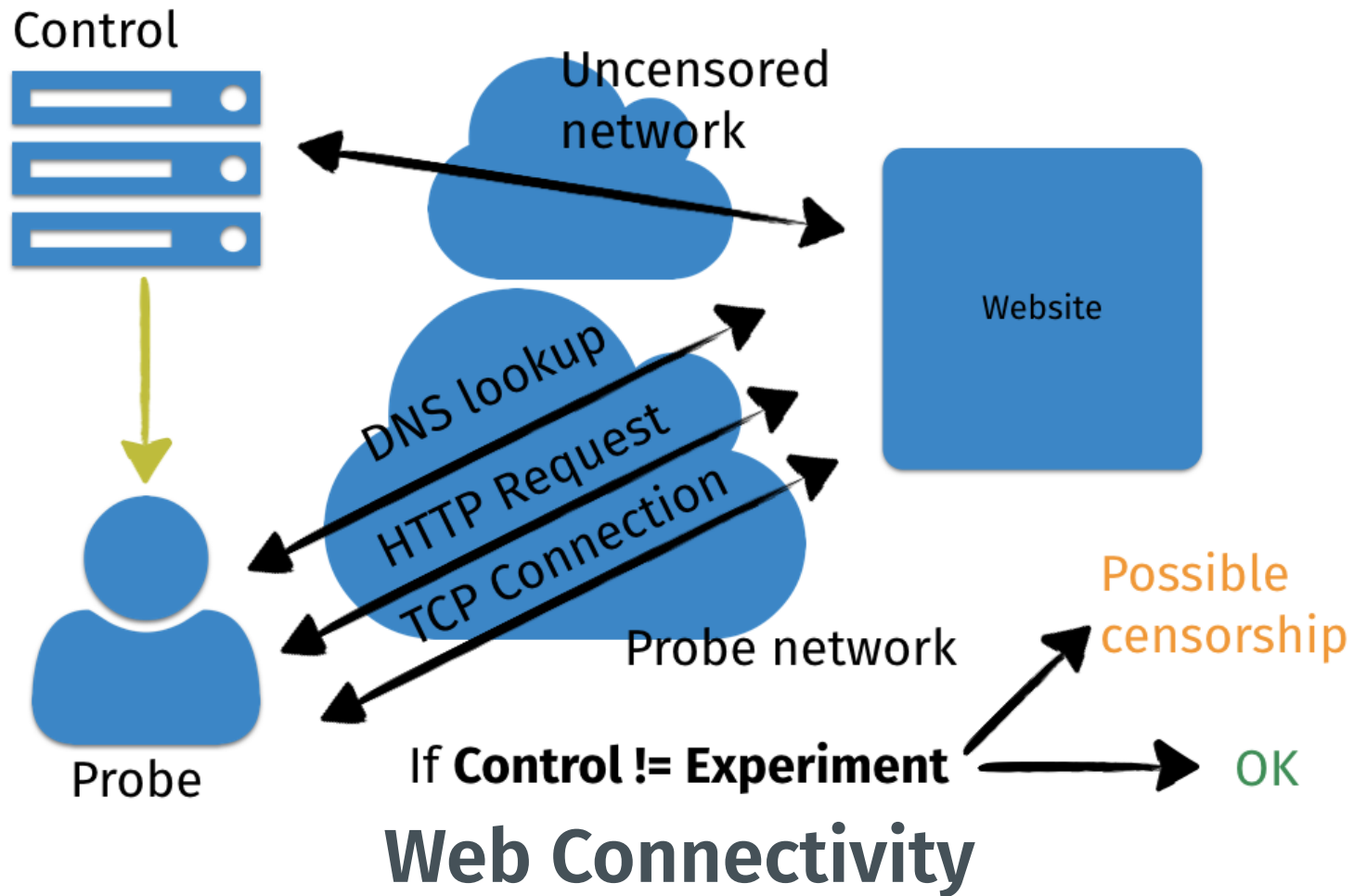




## HTTP Header Field Manipulation



**Websites**



# OPEN DATA



**OONI** | Pipeline

Provides **evidence** of censorship events



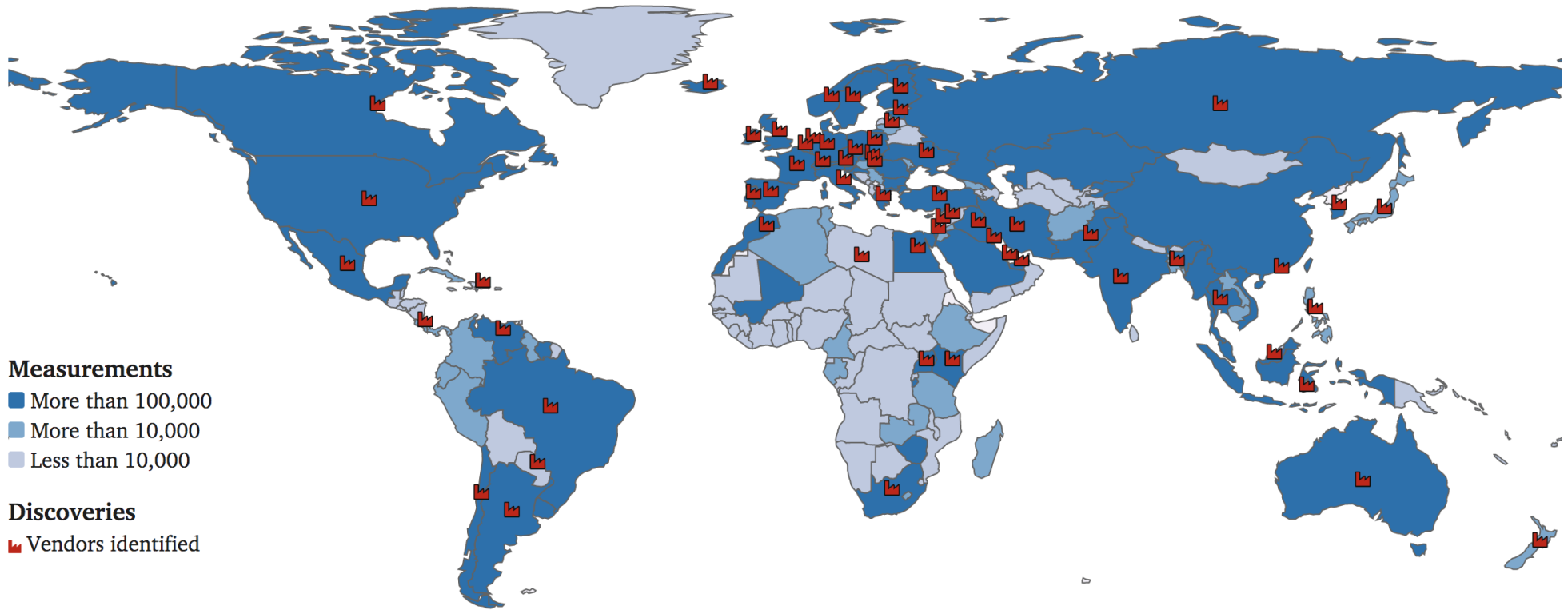
**OONI** | API

Allows researchers to conduct **independent studies** & to explore other research questions



**OONI** | Explorer

Allows the public to **verify** our findings



## Country List

Browse countries to find the one you want to investigate measurements for

Filter Country

<https://explorer.ooni.io>



**Afghanistan**

24,756

measurements



**Albania**

8,450

measurements



**Algeria**

36,756

measurements



**Andorra**

142



**Angola**

1,848



**Antigua And Barbuda**

47





Big data is anything that won't fit in Excel



[Files](#) [API docs](#) [Statistics](#)

# Welcome to the OONI API

Dynamically updated every day, the OONI API enables researchers and data scientists to analyze all data collected from OONI Probes around the world.

Download and search [OONI Probe](#) network measurements.

Join the OONI data analyst community and help uncover internet censorship worldwide!

[READ THE API DOCS](#)

## Latest Measurements

ASN	Country code	Test Start Time	Test Name	
AS9121	TR	2018-01-04 21:32:10	ndt	<a href="#">Download</a>
AS15895	<a href="https://api.ooni.io">https://api.ooni.io</a>	2017-12-30 05:49:02	ndt	<a href="#">Download</a>
AS15895	UA	2017-12-30 01:46:11	ndt	<a href="#">Download</a>
AS5438	TN	2017-12-29 11:14:18	ndt	<a href="#">Download</a>
AS197207	IR	2017-12-28 16:35:15	ndt	<a href="#">Download</a>
AS4818	MY	2017-12-28 01:59:24	ndt	<a href="#">Download</a>

# **OONI DATA FORMATS**



**Open in your browser**

<http://10.1.1.99/>

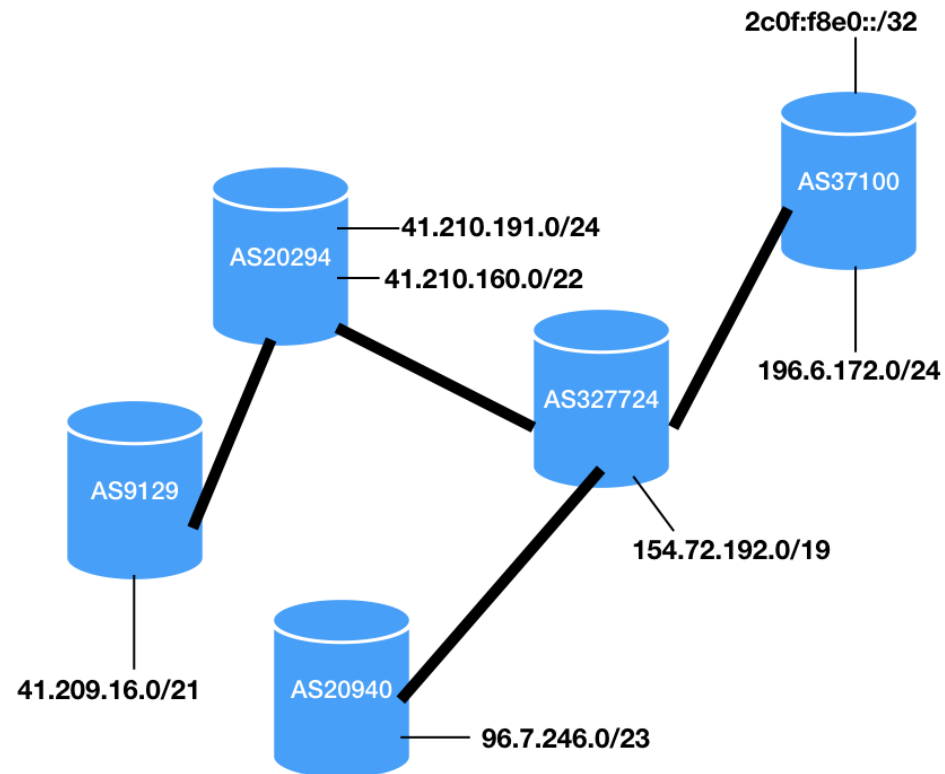
## Base Data Format

```
probe_cc      probe_asn      probe_ip
measurement_start_time  test_start_time
report_id
test_runtime
test_name      test_version
test_keys
```

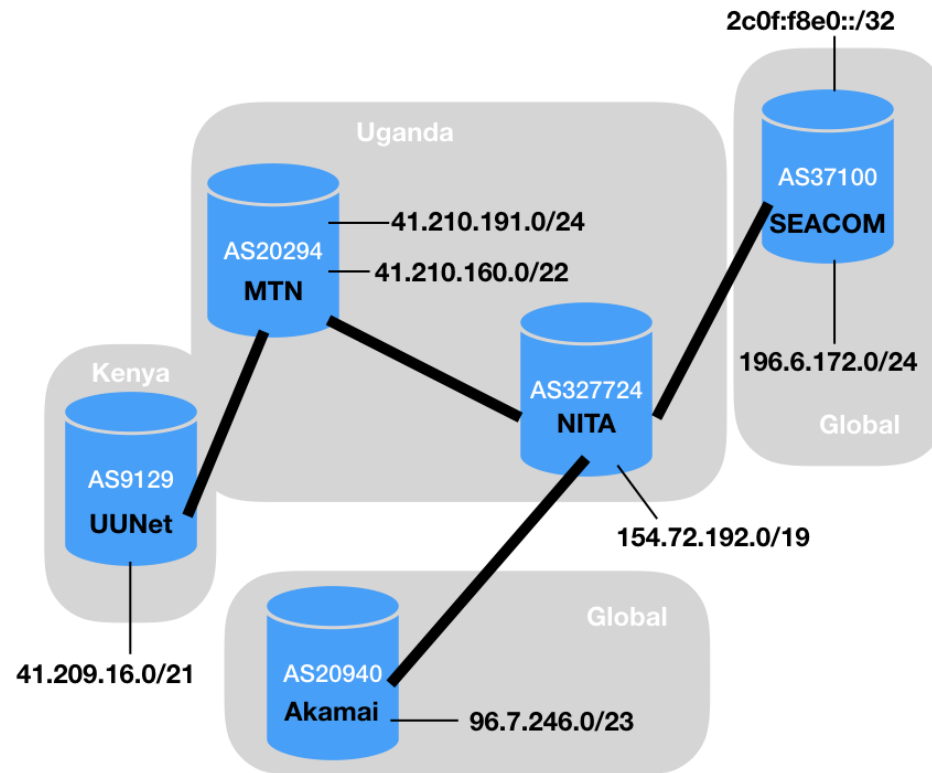
Test Specific Data format

<https://github.com/TheTorProject/ooni-spec/blob/master/data-formats/df-000-base.md>

# What is an ASN?



# What is an ASN?



# WhatsApp

**whatsapp\_endpoints\_status**

"blocked" | "ok"

**whatsapp\_endpoints\_dns\_inconsistent**

["a", "b"]

**registration\_server\_status**

"blocked" | "ok"

**whatsapp\_web\_status**

"blocked" | "ok"

**whatsapp\_web\_failure**

"ERROR STRING"

[github.com/TheTorProject/ooni-spec/blob/master/test-specs/ts-018-whatsapp.md](https://github.com/TheTorProject/ooni-spec/blob/master/test-specs/ts-018-whatsapp.md)

# HTTP Invalid Request Line

**sent**

["a", "b"]

**tampering**

true | false

**received**

["a", "b"]

[github.com/TheTorProject/ooni-spec/blob/master/test-specs/ts-007-http-invalid-request-line.md](https://github.com/TheTorProject/ooni-spec/blob/master/test-specs/ts-007-http-invalid-request-line.md)

# Web Connectivity

**body\_length\_match**

true | false | null

**headers\_match**

true | false | null

**status\_code\_match**

true | false | null

**title\_match**

true | false | null

**http\_experiment\_failure**

"FAILURE STRING"

**dns\_experiment\_failure**

"FAILURE STRING"

**control**

dns: OBJ, http\_request: OBJ,  
tcp\_connect: OBJ

# Web Connectivity

## **dns\_consistency**

"consistent" | "reverse\_match" |  
"inconsistent"

## **accessible**

true | false | null

## **blocking**

"tcp\_ip" | "dns" | "http-diff" | "http-  
failure" | null

<https://github.com/TheTorProject/ooni-spec/blob/master/test-specs/ts-017-web-connectivity.md>



# CSV exports

- `http_header_field_manipulation-anomalies.csv`
- `http_invalid_request_line-anomalies.csv`
- `vanilla_tor-anomalies.csv`
- `facebook_messenger-anomalies.csv`
- `telegram-anomalies.csv`
- `whatsapp-anomalies.csv`
- `web_connectivity-blocking_by_asn.csv`
- `web_connectivity-blocking_counts.csv`
- `web_connectivity-only_anomalies.csv`

# LEARN MORE

- <https://ooni.torproject.org/>
- <https://api.ooni.io/>
- <https://explorer.ooni.io/>

## **Contacts**

- <https://slack.openobservatory.org/>
- [contact@openobservatory.org](mailto:contact@openobservatory.org)