Vaping

A healthy alternative to SmokePing!

20C TWENTIETH CENTURY

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WHAT IS VAPING?

A **SmokePing alternative** written in python

https://github.com/20c/vaping

http://vaping.readthedocs.io/en/latest

REAL TIME DEMOS

Something to look at while I ramble…

https://vaping.20C.com

https://status.unitedix.net

WHY?

We all love SmokePing; it's very useful, but it's a **huge pain to install** and **not real time**.

CHALLENGE:
Can we write a replacement in less time than it takes us to install SmokePing?

Short answer: **Yes!**

GOALS

- **Easy to install** (no frustrating Perl dependencies)
- **Real-time display** based on trading charts
- **Fast IO** and queuing engine
- **100% plugin based**
- **Easy to edit**, inherited config file

ULTIMATE GOAL: FANCY LOGO

A BRIEF HISTORY

Version 0.1.0

- Two people
- Three hours
- **Successfully real-time graphing fping**.*

We had a messaging bus and real-time charts from work we've done in trading markets, so it wasn't a huge amount of work.

A BRIEF HISTORY

Version 0.3.0

- **Met goals**
- Added **python 3**
- Fixed a handful of **real world bugs**

A BRIEF HISTORY

Version 0.4.0

- Added **time series database abstraction**
- Added **RRD**
- Added **WhisperDB** (Graphite / Plotly)

A BRIEF HISTORY

Then...

Stagnated a bit—it met all customer needs and everyone was using it successfully.

Now we're back at it. (hint, customer needs)

A BRIEF HISTORY

And now...

Version 0.6.0

- **d3.js**
- **mtr graph**
- **NANOG time,** add more tests

ARCHITECTURE: IO

High performance async IO

Efficiently multiplexes input / output for you, currently uses gevent, but the io layer is completely abstracted to be able to swap out backends at ease (think py3 asyncio).

ARCHITECTURE: DISTRIBUTED

Run probes from any N servers and they report back to Vaping process

This means you can easily **test paths from both sides of two endpoints**.

Web interface can **run from any server**

ARCHITECTURE: PLUGINS

Everything is a plugin!

Nicely abstracted so you can leverage the benefits with simple code.

Write plugins for probes, storage, filters—can write simple things and queue data passed through at any stage.

CURRENT PLUGINS

fping	uses fping to ping multiple hosts
fping_mtr	mtr style output using fping
command*	run a command and take output
zeromq	sends output over zeromq to configured host
vodka	standalone real time web server for displaying graphs
rrdtool	store collected data in RRD
whisper	store collected data in WhisperDB

* `ssh | display json` *is up to 10x faster than SNMP on Juniper QFXs*

TIME SERIES DB

Base plugin, add any time series database in a minimal amount of lines of code

Currently supports **RRD** and **Whisper**

Use **Graphite** or **plotly** to view and manipulate data

PLANNED PLUGINS

Command plugin fixes and **refactoring**

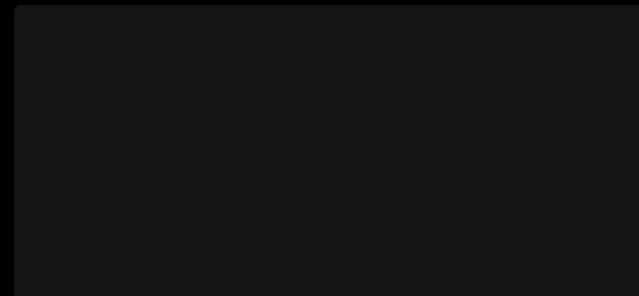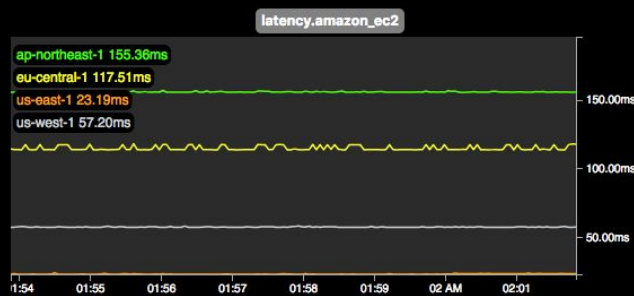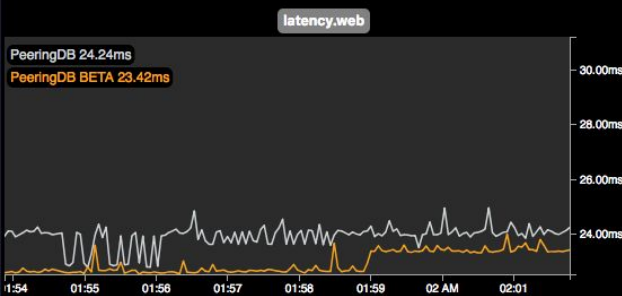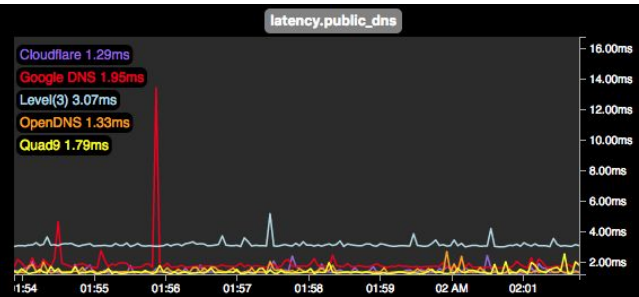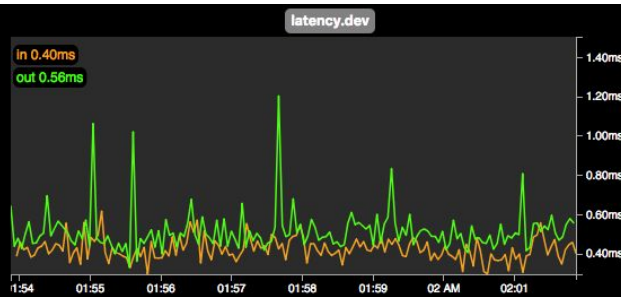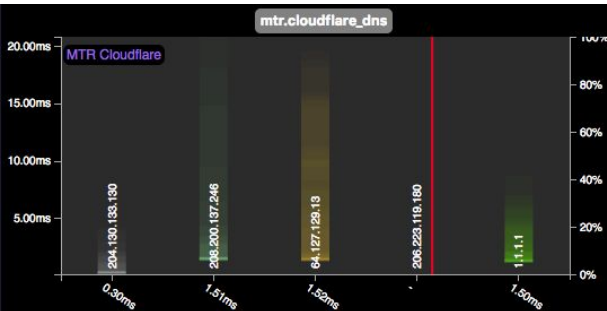**scapy**—need to plan out how to securely escalate permissions

Community input: **what plugins would you like to see?**

Better said: **what plugins would you like to submit a pull request for?**

DASHBOARD

Quick overview, very customizable and useful for NOCs: https://vaping.20C.com
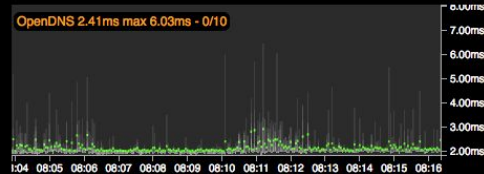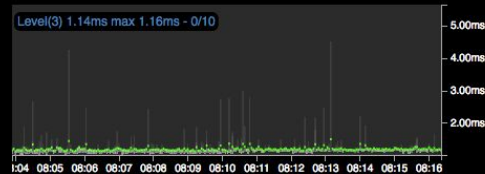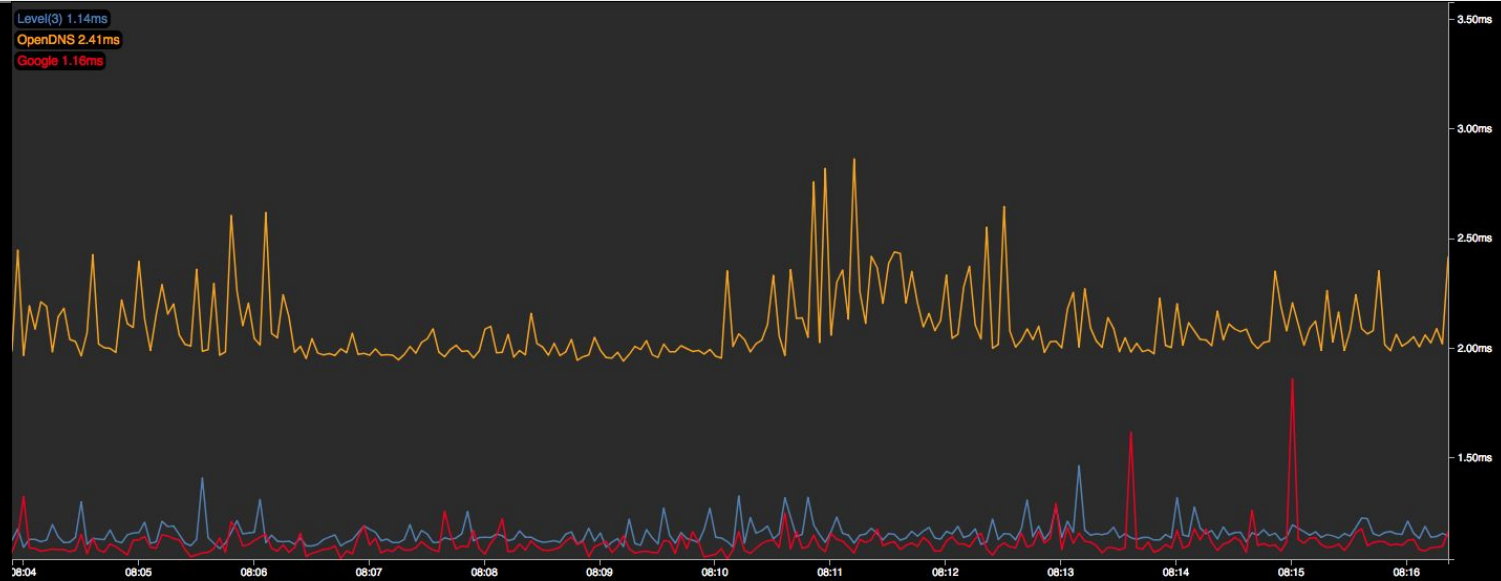
DASHBOARD

LATENCY GRAPH

Realtime line graph for latency

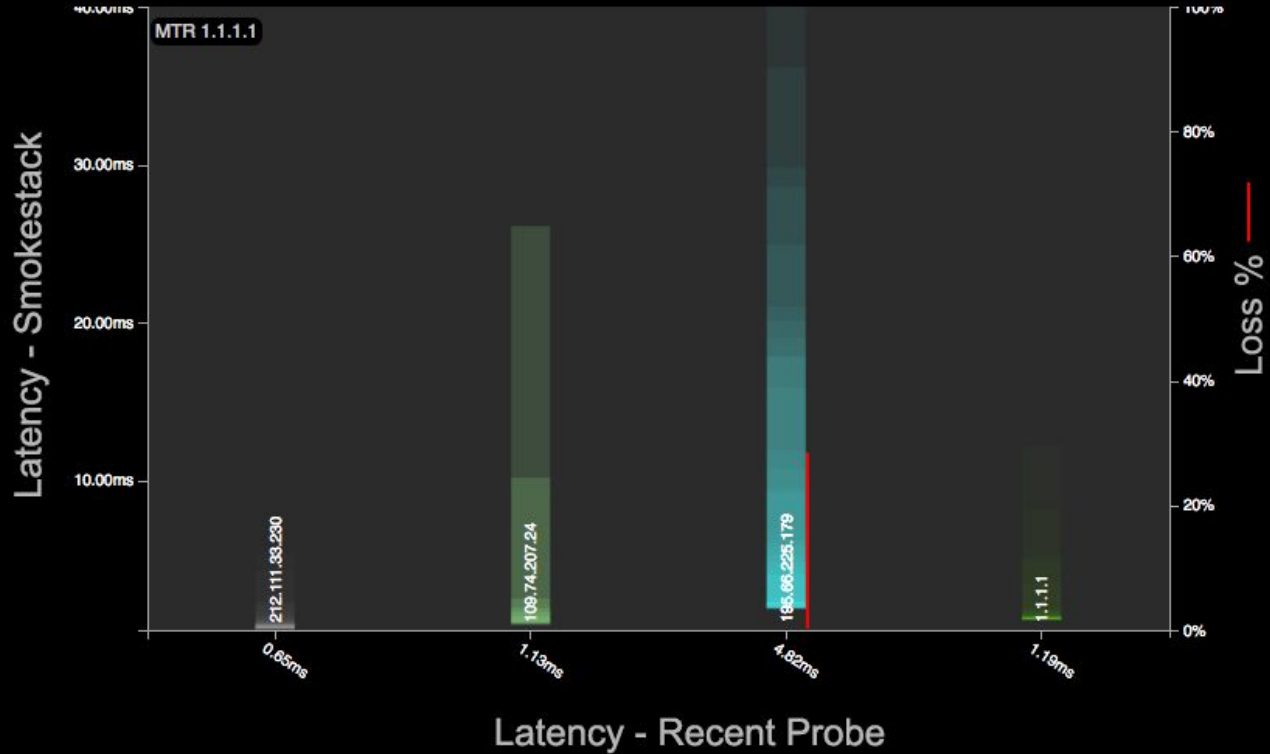**Smokestack graph** for each host as detail

LATENCY GRAPH

MTR Graphs

MTR style graph

- **traceroute with fpings** to every hop
- shows each hop as a **smokestack**

Quite useful when troubleshooting connectivity—very easy to tell where an issue is at a glance

Vertical representation and **better hop history** coming!

MTR GRAPH

HOW TO USE IT

Full docs at http://vaping.readthedocs.io/en/latest

Better developer docs are coming. Feel free to open tickets.

CONFIG

More examples:

https://github.com/20c/vaping/tree/master/examples

CONFIG FILE

```yaml
probes:
  - name: latency
    type: std_fping
    output:
      - vodka
    public_dns:
      hosts:
        - host: 8.8.8.8
plugins:
  - name: std_fping
    type: fping
```

CONFIG INHERITANCE

Type can be a plugin type, or a configured plugin.

```
plugins:
  - name: std_fping
    type: fping
    count: 10
    interval: 3s

  - name: more_fping
    type: std_fping
    count: 20
```

RECENT ADDITIONS: d3
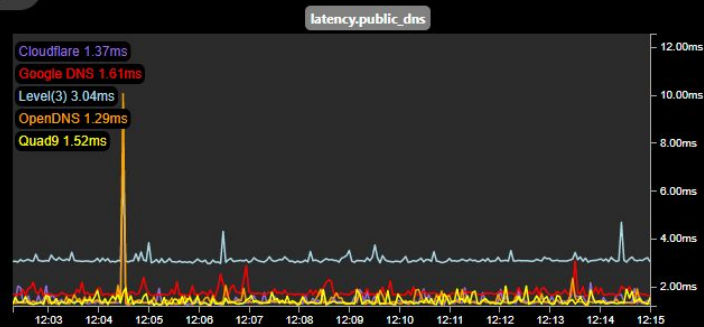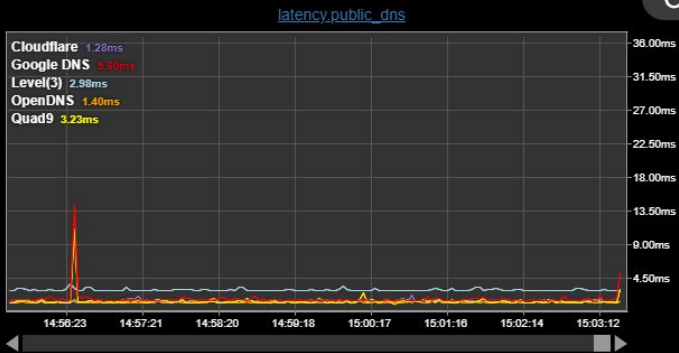
Moved graphing to d3 (https://d3js.org/)

Very performant, not market data fast, but fast enough for anything we can imagine doing with Vaping

Looks much smoother, easier for others to add graph types

Most importantly, **allows us to focus more on the server side engine**

Comparison - Old vs. d3.js

RECENT ADDITIONS: MTR

Added MTR graph

- **Works great**, but is just the first version and needs more refining.
- Next will be a **vertical graph**

VERSION 1.0

Everything is stable; **we're ready for version 1.0**, so will tag and release August 1st, 2018.

After NANOG 73, hopefully we'll get more eyeballs on it and address more issues before the release

HELP WANTED

- **Use Vaping** – open issues
- **Contribute to Vaping**, get lots of integers less than 3
- New idea? **Challenge us** with it!

QUESTIONS / COMMENTS?

https://github.com/20c/vaping

https://pypi.org/project/vaping/

http://vaping.readthedocs.io/en/latest

REFERENCES

fping	https://fping.org/
RRDtool	https://oss.oetiker.ch/rrdtool/
vodka	https://pypi.org/project/vodka/
whisper	https://github.com/graphite-project/whisper
zeroMQ	http://zeromq.org/

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