



BISmark Platform

2015/16 Status and Roadmap

Agenda

- Project Status & Architecture
- What we have (deployed)?
- What we want (roadmap)?

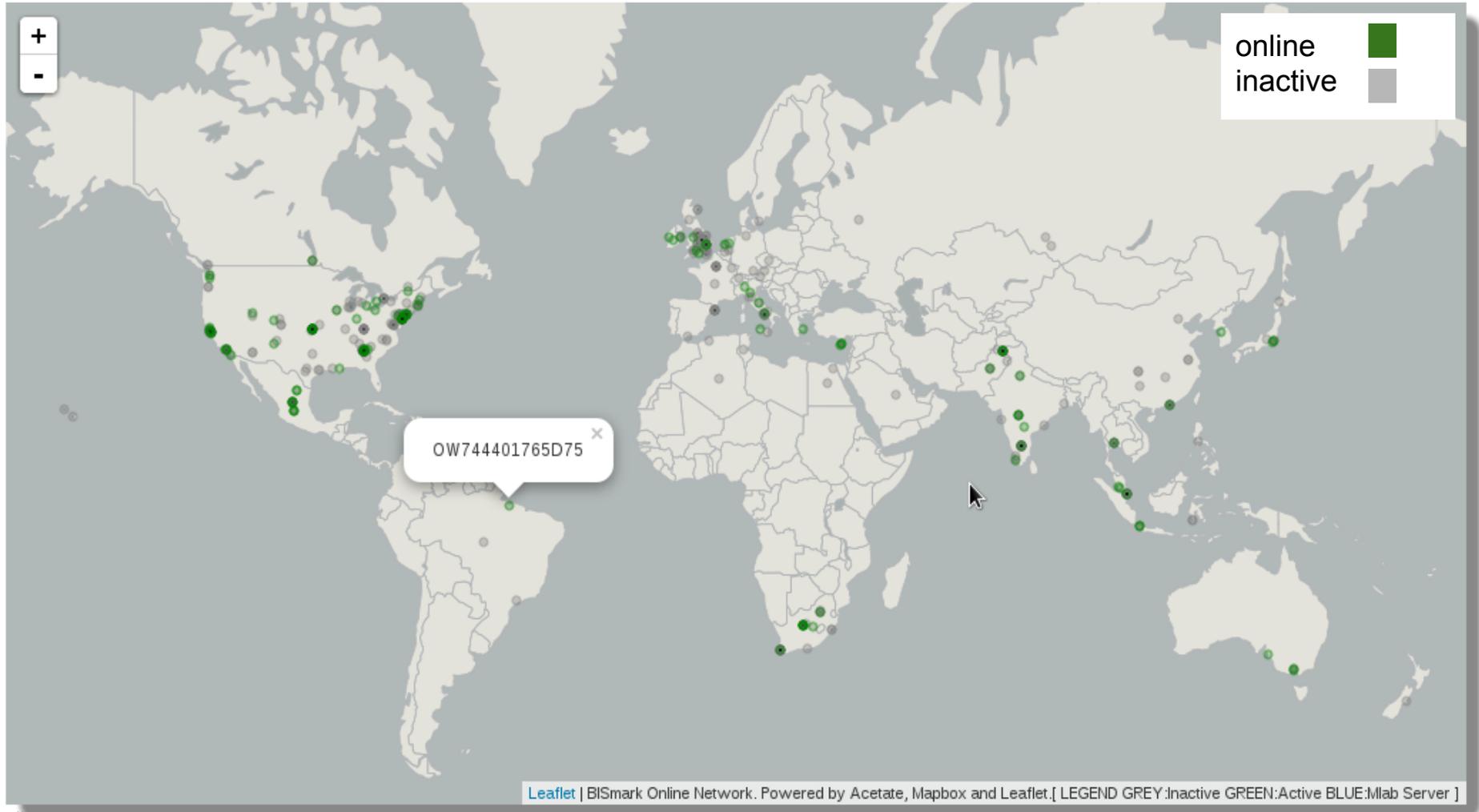
Project Status

- Broadband Internet Service Benchmark 2010;
- OpenWrt based customized firmware;
- embedded experiments for internet perf. measurements;
- ~ 120 reliable online routers over 5 continents;
- > 500 unique routers seen in our database;
- Alternatives: port for deb packages, compatible packages for Debian wheezy, Raspian (Raspberry PI).

Project Status

- **Users:**
 - free router (WND3800 Netgear, WDR3600 TP-Link)
 - Netgear 16MB / TP-Link 8MB (128MB RAM)
 - historical charts for bandwidth & latency at networkdashboard.org
- **Researchers:**
 - vantage points (censorship, perf. measurements, experiments)
- **NetOps:**
 - references/comparisons

Project Status



click: nothing

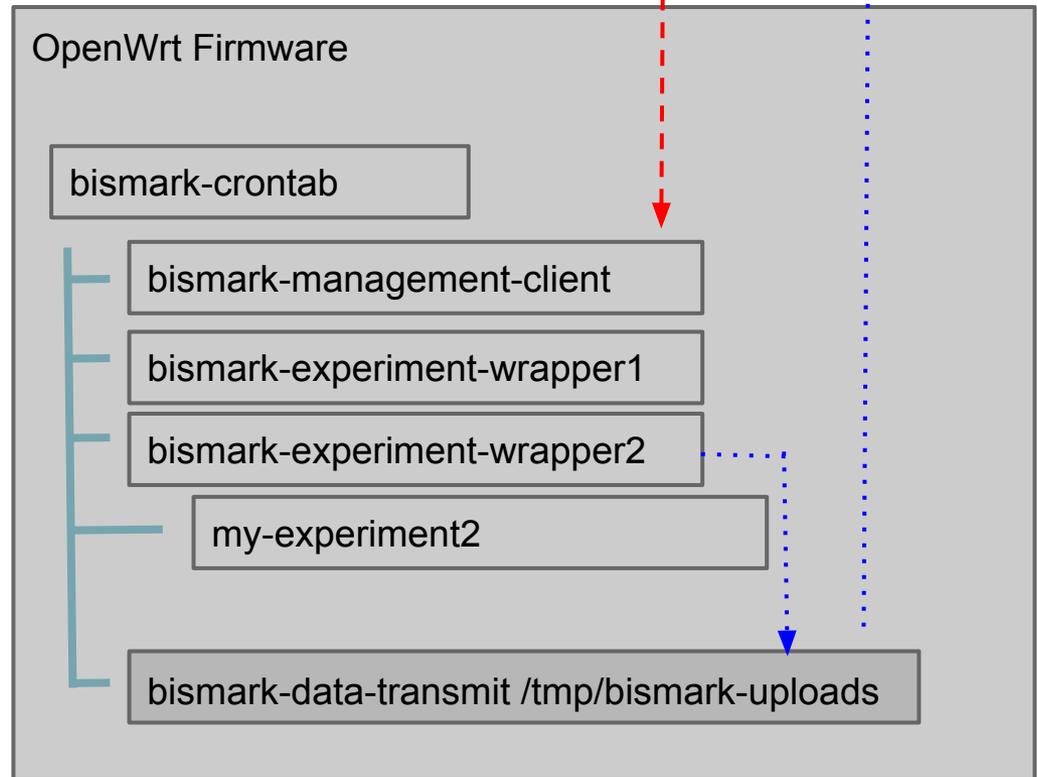
Architecture

Adding experiments:

```
$brm groups new my-experiment2  
$brm groups add-nodes 0W0209A65CFF  
$brm experiments new my-experiment2  
$brm import packages my-exp2.ipkg ...  
$brm experiments add-packages my-exp  
$brm check  
$brm commit  
$brm deploy
```

Control Plane 

Data Plane 



Active Measurements

- Automated measurements
 - netperf
 - fping
 - paris-traceroute
- Provides valuable information for:
 - Troubleshooting
 - Diagnosing & benchmarking ISP's connections

Example: Latency

Download Throughput

Upload Throughput

Round Trip Latency

Last Mile Latency

Shape Rate

Under Load

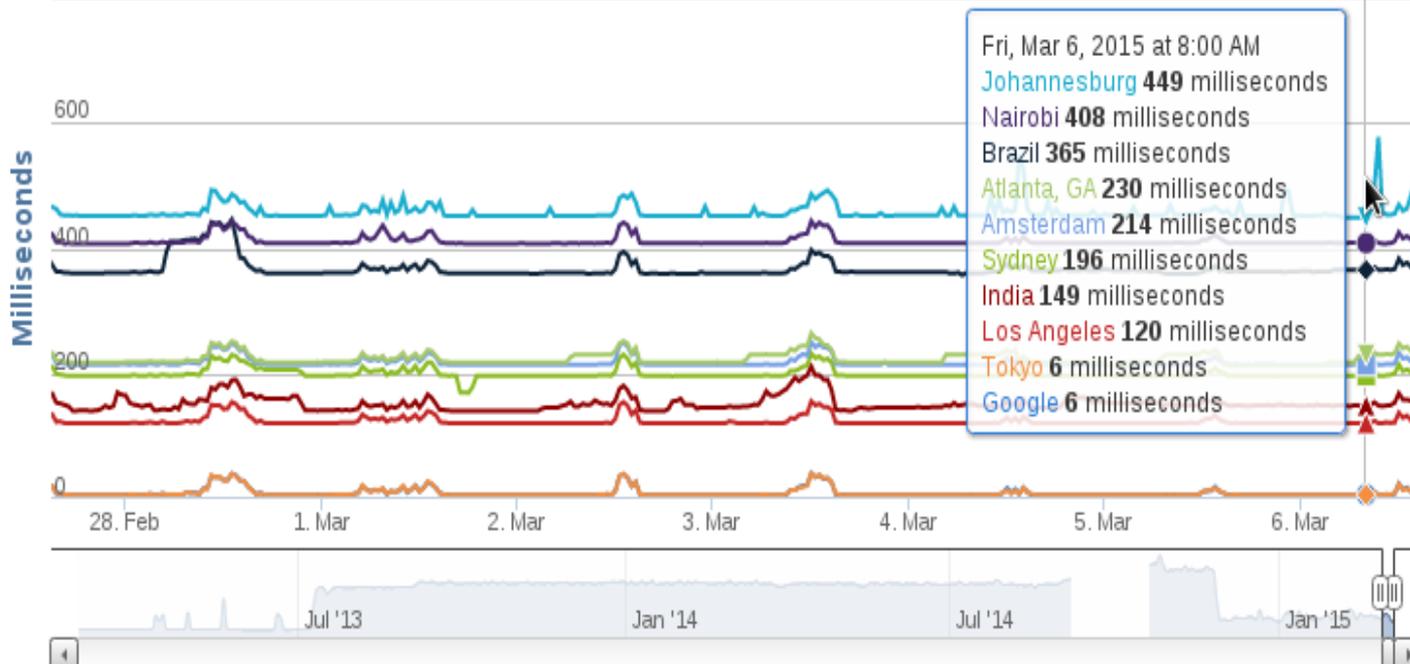
Show All

What is Round Trip Latency?

Google Brazil Sydney India Johannesburg Nairobi Tokyo Amsterdam Los Angeles
Atlanta, GA

Zoom 1d 1w 1m 3m 6m All

From Feb 27, 2015 To Mar 6, 2015



Example: Latency

Download Throughput

Upload Throughput

Round Trip Latency

Last Mile Latency

Shape Rate

Under Load

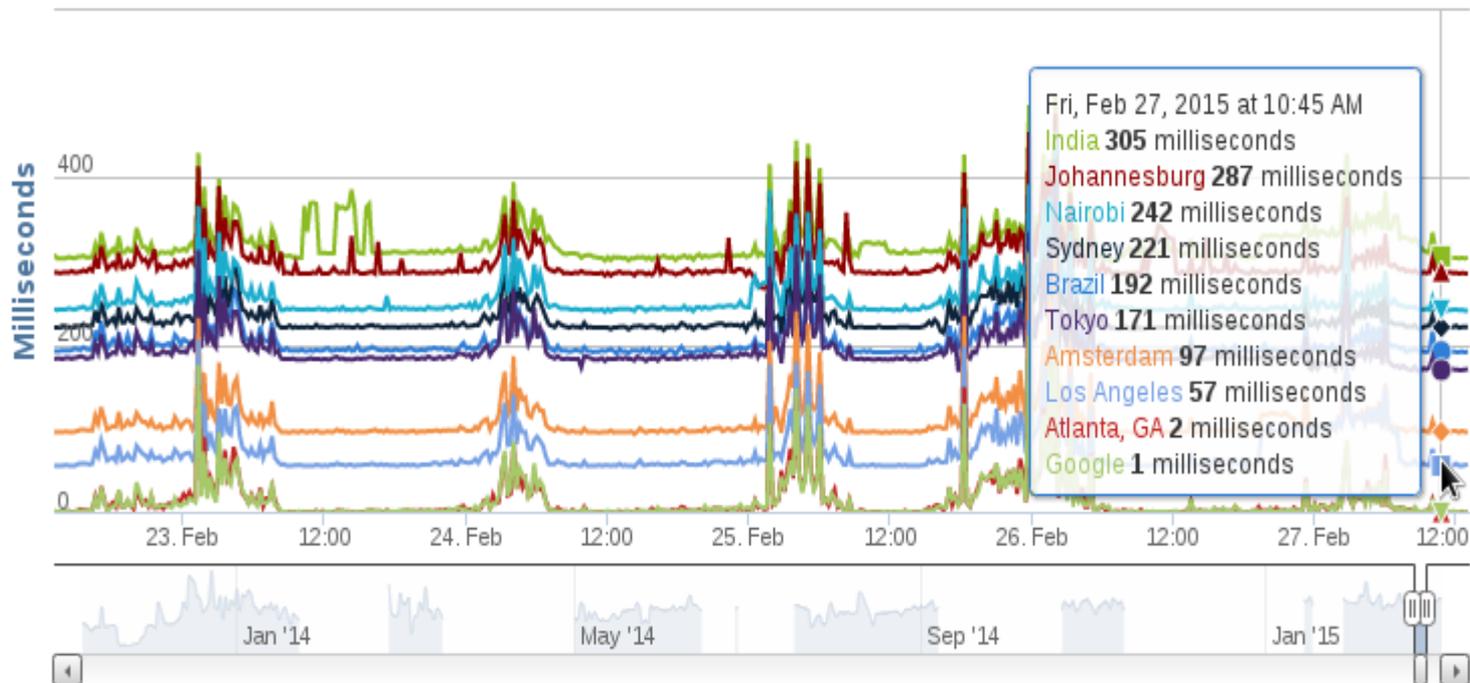
Show All

[What is Round Trip Latency?](#)

— Brazil — Sydney — India — Johannesburg — Nairobi — Tokyo — Amsterdam — Los Angeles — Atlanta, GA
— Google

Zoom

From To



Example: Bandwidth

Download Throughput

Upload Throughput

Round Trip Latency

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Shape Rate

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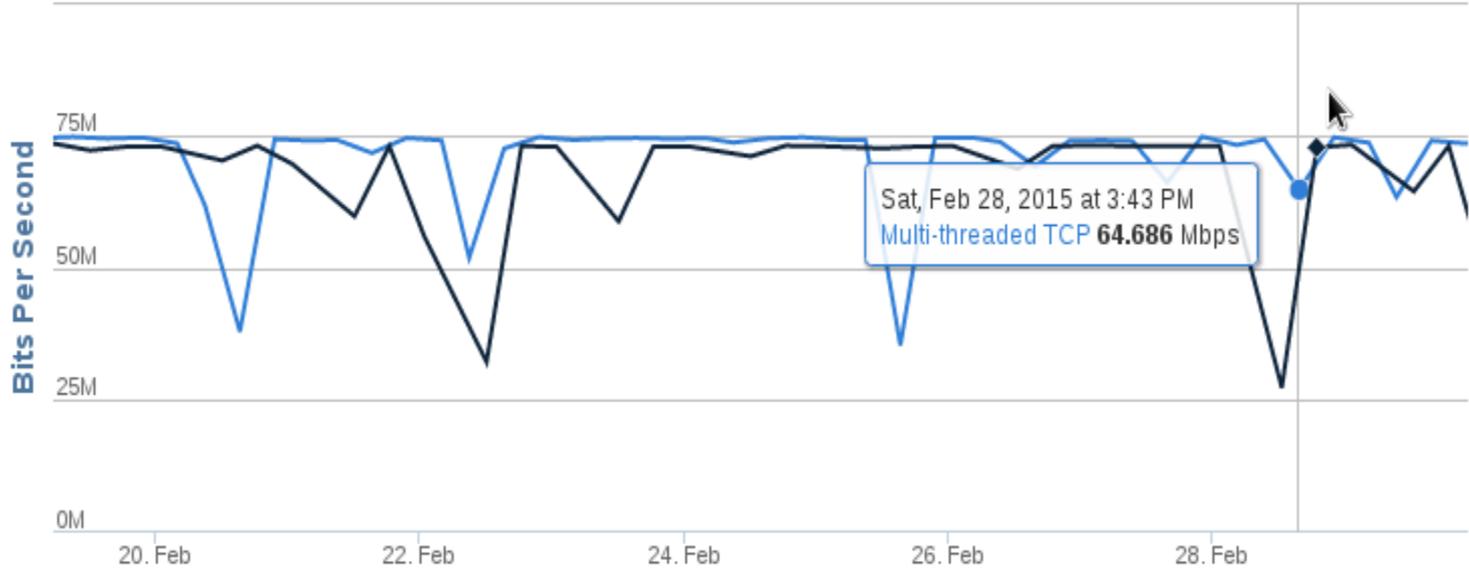
Show All

What is Download Throughput?

Multi-threaded TCP Single-threaded TCP

Zoom 1d 1w 1m 3m 6m All

From Feb 19, 2015 To Mar 1, 2015



Example: Bandwidth

Download Throughput

Upload Throughput

Round Trip Latency

Last Mile Latency

Shape Rate

Under Load

Show All

What is Download Throughput?

— Multi-threaded TCP — Single-threaded TCP

Zoom

1d

1w

1m

3m

6m

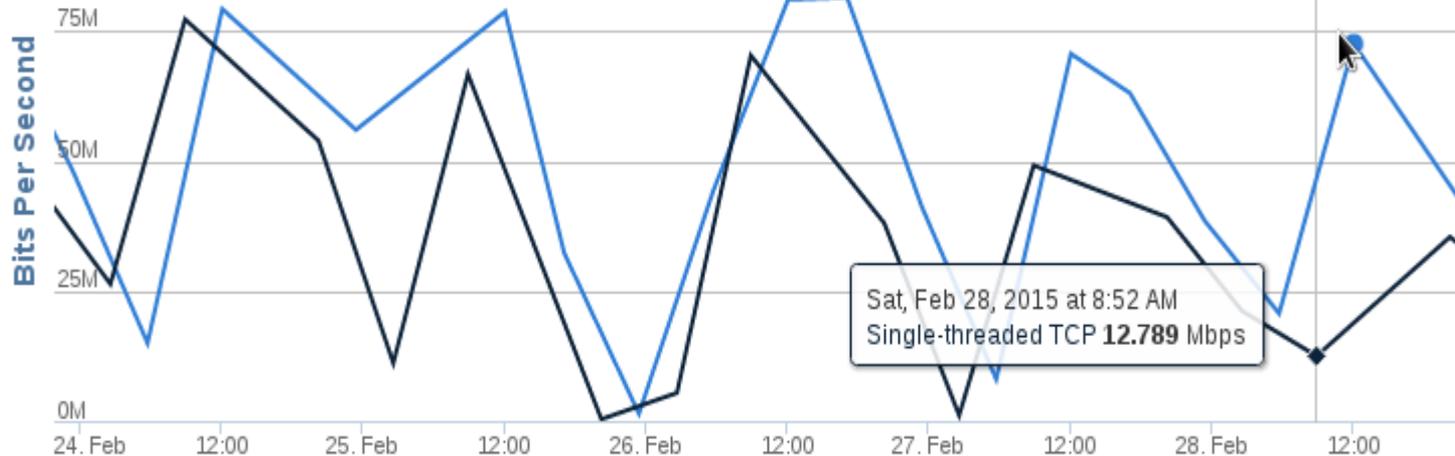
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From

Feb 23, 2015

To

Feb 28, 2015



Passive Measurements

Peeking Behind the NAT: An Empirical Study of Home Networks. Authors: Sarthak Grover, et al.

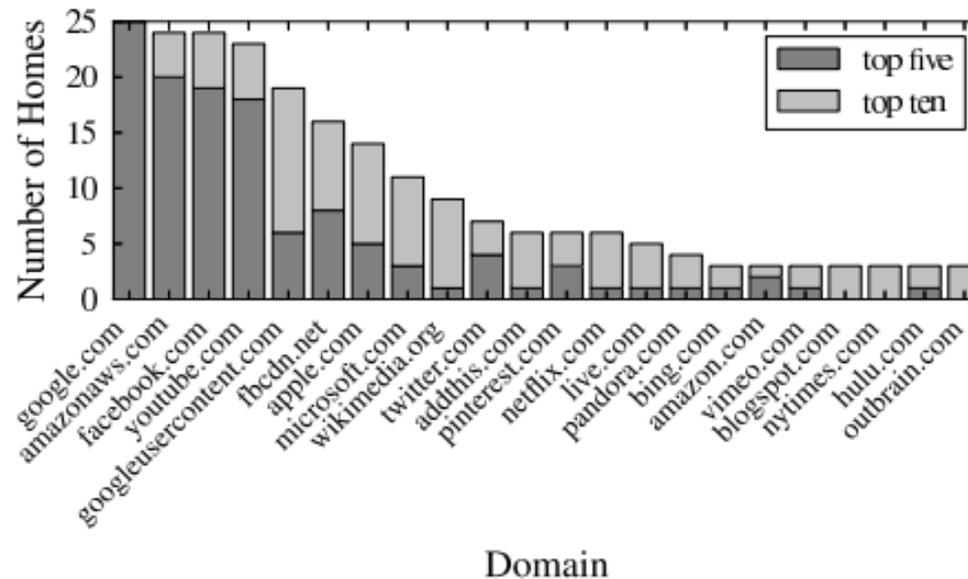
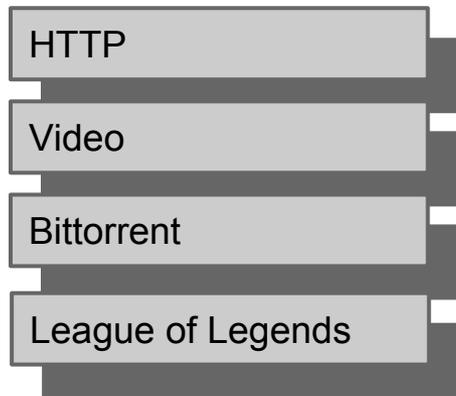


Figure 18: *The number of home networks in the Traffic data set for which a particular domain appeared in the top-five or top-ten domains, ranked by total traffic volume.*

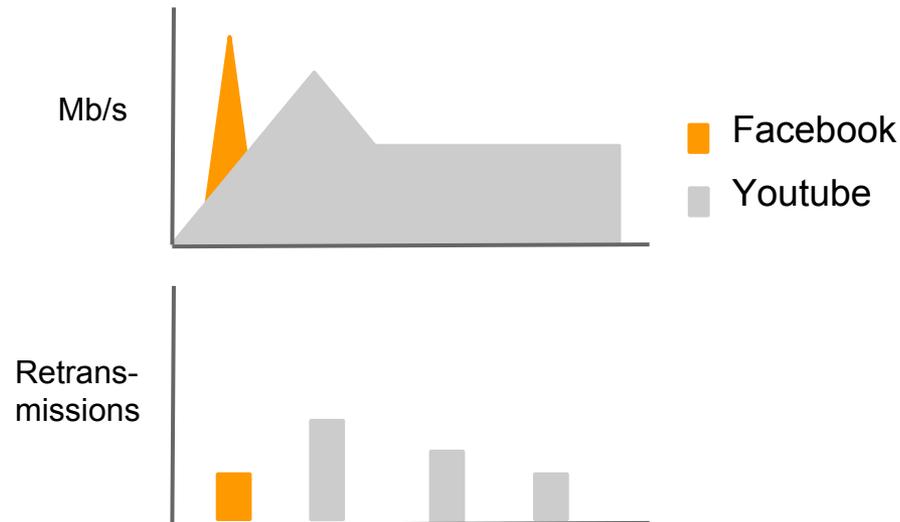
Advanced Active & Passive Packages

- *Converge to one-size-fits-all;*
- *User interest and interaction through widgets;*
- *Active: Emulate/Mimic applications;*
- *Passive: Monitor user's white list;*
- *Non-intrusive passive;*

App Test Buttons:



Realtime impairments monitoring:



END