Measuring Library Broadband Networks

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Measuring Library Broadband Networks

Institute of Museum and Library Services (**IMLS**)
National Leadership Grant for Libraries program

Award #[LG-71-18-0110-18]

Website: [http://slis.simmons.edu/blogs/mlbn/about/]

MLBN Overview

Overview: 2-year research project (2018-2020)

Goal: To develop an open-source broadband measurement system for public libraries

- Year 1: 10-15 public libraries
- Year 2: 50-60 public libraries

Website: http://slis.simmons.edu/blogs/mlbn/about/

MLBN: Research Question

Research Question:*

How can public libraries utilize broadband measurement tools to develop a better understanding of the relationship between library network infrastructure and digital services?

*Builds on findings from University of Maryland's Digital Inclusion Survey: https://digitalinclusion.umd.edu

MLBN: Methodology

- Qualitative data
  - participatory design workshop (fall 2018)
  - interviews with library services and IT professionals
  - focus groups with library patrons
  - user feedback via Discourse forums
- Quantitative data
  - surveys with public library participants
  - broadband measurement data

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MLBN: Year 1 Participating Public Libraries:

- Bennington Free Library (VT)
- Hollis Public Library (AK)
- Multnomah County Library (OR)
- Pasco County Public Library (FL)
- Saint Paul Public Library (MN)
- Twin Falls Public Library (ID)
- Truro Public Library (MA)
- Thomas J. Harrison Pryor Public Library (OK)
- Ventura County Library (CA)
- Westchester County Library (NY)

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MLBN Final Deliverables (May 2020)

1. Open-source broadband measurement system
2. Training manual
3. Final report on the research project

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Background

- Goal: Open source, Lightweight, automated testing devices
- Alexandria, Virginia Pilot
  - ODroids running NDT tests on a randomized schedule
  - Devices in classrooms (on wired & wireless)
- IMLS Measuring Library Broadband Networks
  - Partners: Internet2, Simmons University
  - More measurement tests
  - Year 1: 10-15 Libraries
  - Year 2: 50-60 Libraries

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MLBN System

The current measurement system consists of three main components:

One or more small computers, connected to an institution's network, configured to run M-Lab's Network Diagnostic Tool (NDT).

Resin.io cloud service used to manage, provision, administer, and update all of the measurement computers in the field.

Prometheus.io cloud service receives test data from small computers, and is visualized by *Grafana* service, where project and library staff can access.

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MLBN System

Additional General Features Envisioned by the Project Team:

* Add support for additional M-Lab network measurement tests and potentially other tests not provided by M-Lab.
* Support multiple types of measurement computers.

* Support self-managed option for managing, provisioning, and administering measurement computers.

* Add a robust user portal, to provide a user login service, multiple roles for users configuration of measurement devices, configuration of measurement tests to run, and visualization of test data from *Prometheus* and *Grafana*.
* Add a plugin architecture to support connections to other network systems.
* Provide a function to upload local data to compare with measurement data.

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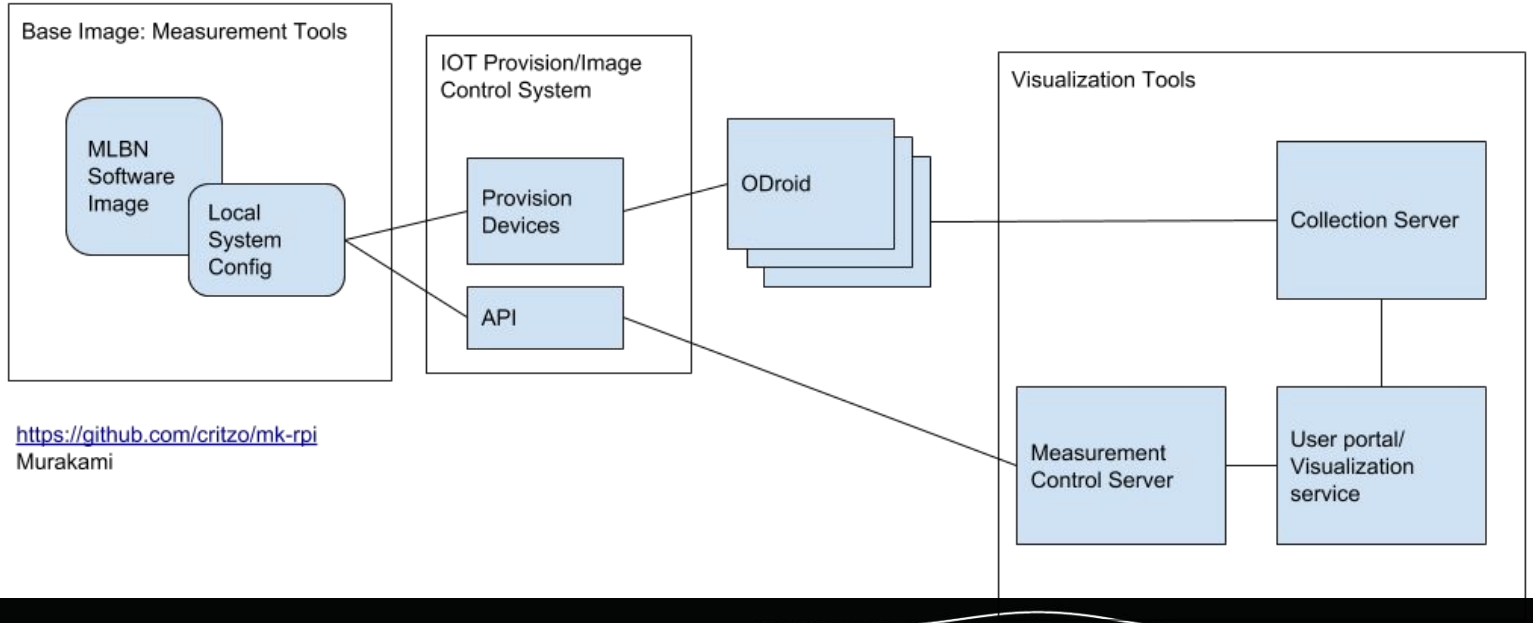

https://github.com/critzo/mk-rpi
Murakami

MLBN System

- Tests that running
  - M-Lab NDT
  - M-Lab DASH
  - Speedtest CLI
- Devices
  - Year 1: 2 Wired connections, 1 wireless connection
  - Year 2: 1 wired, 1 wireless connected devices

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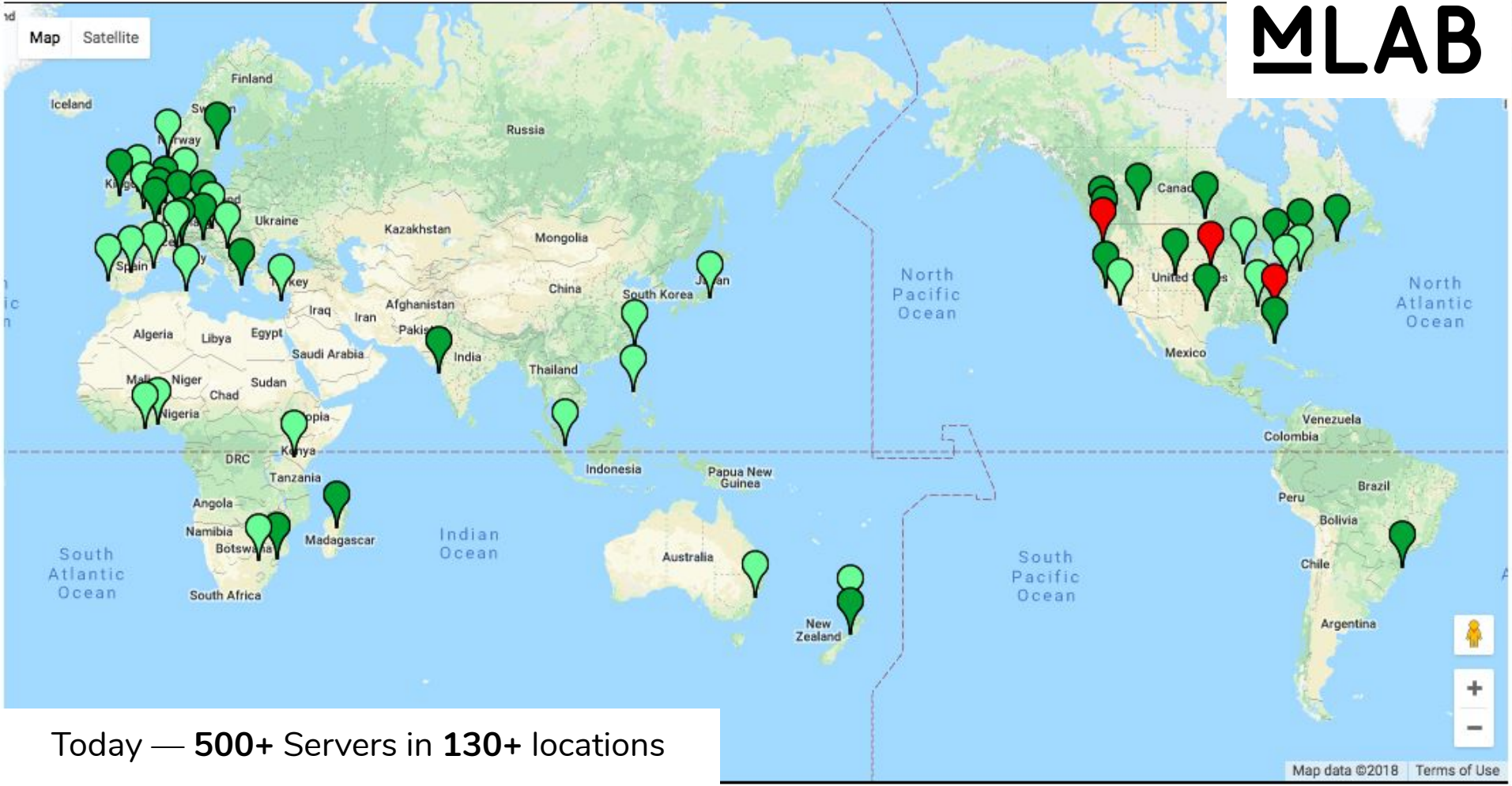
Why M-Lab?
What is M-Lab?

M-Lab’s Mission

Measure the internet.

Save the data.

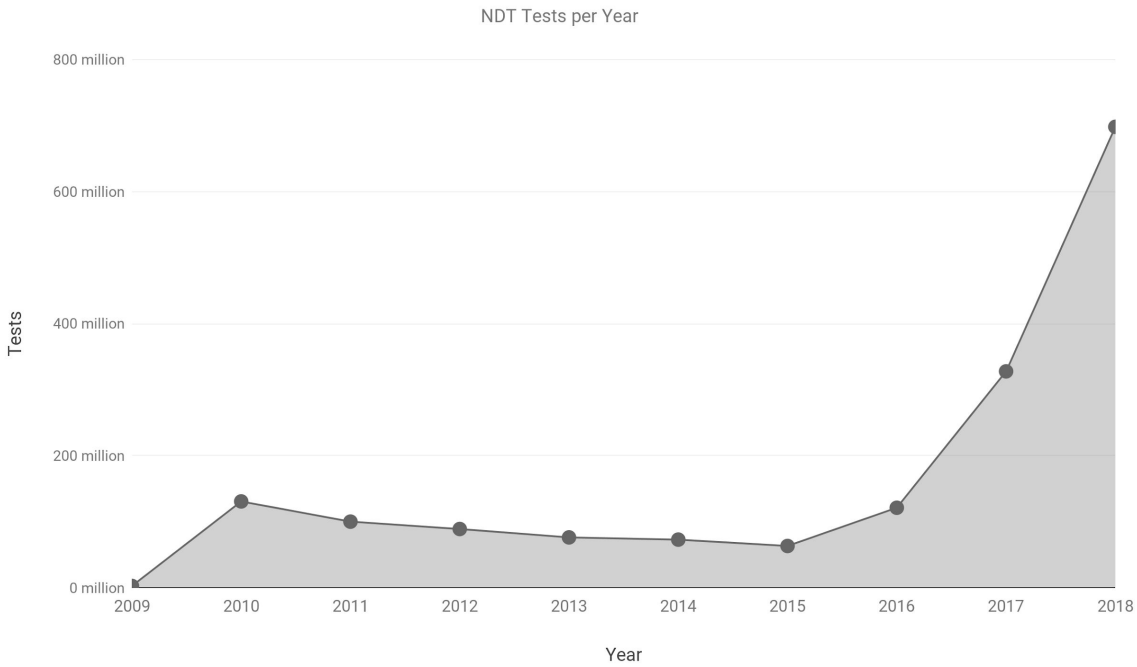
Make it universally accessible and useful.



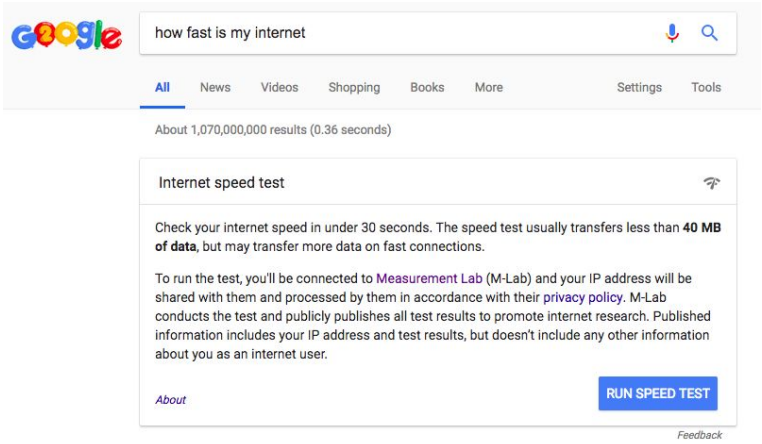
Today — **500+** Servers in **130+** locations

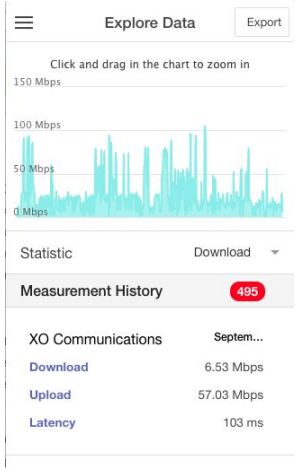
The Data

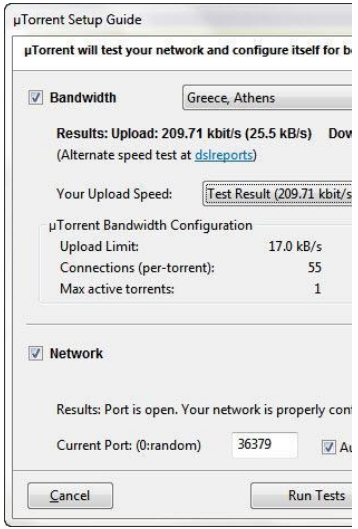
- Current Daily volume ~2,000,000 new NDT measurements per day
- Not counting sidestream, paris-traceroute, diffdetect, etc.



Where do tests come from?

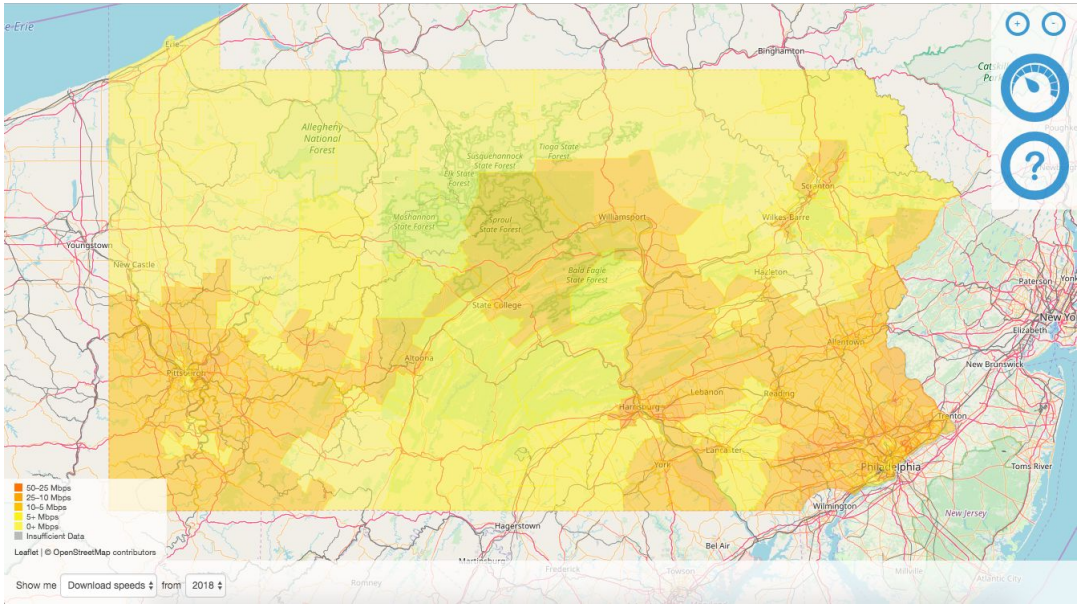


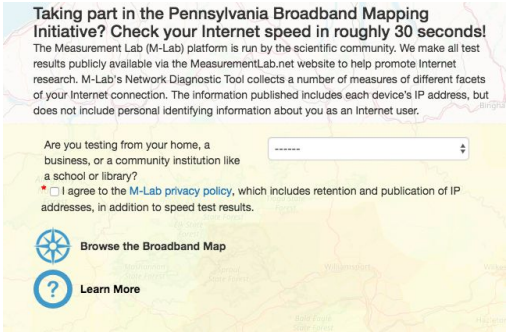




Google Search, Software Integrations (uTorrent), Router Integrations, Fingbox, Chrome Extension, the M-Lab Website

Where do tests come from?

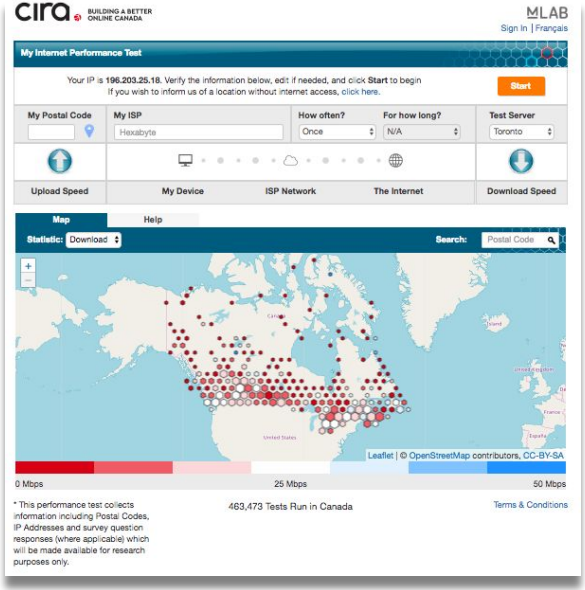




- Partnered with Center for Rural PA & Penn State, ILSR, https://pa.broadbandtest.us
  Adding comparisons to Form 477 Data
- Stevens County & State CIO
  https://stevenscountybroadband.net
- City of Seattle
  https://broadbandmap.seattle.gov/
- And many more!

Where do tests come from?

- Partnerships with Regulatory Agencies: Monitoring the progress of broadband deployment for policy-making.
- Examples: United States (FCC & SamKnows), EC (Alladin.IT), Canada/CIRA, Greece, Cyprus, Thailand, Austria, Netherlands.



Notes

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BigQuery & DataStudio:

- https://datastudio.google.com/s/mhfKLWtgb1g
- https://www.google.com/search?q=internet+speed+test

Preview: United States of Broadband mapping project:

- https://opentechinstitute.github.io/USBB/SOTI.html

Useful Tools:

- Chrome Extension: https://chrome.google.com/webstore/detail/m-lab-measure/leijmacehibmiomcnpaolboihcdepokh/related?hl=en-US
- M-Lab Speed Test Site: https://speed.measurementlab.net/#/
- Google Search: https://www.google.com/search?q=internet+speed+test
- NaCO — TestIT: https://www.naco.org/testit

Data Access

- Sign up for the M-Lab Discuss List to get open & free access to the data: https://www.measurementlab.net/quickstart/

MLBN: How you can help!

- Looking for Year 2 partners
- If libraries that you work with would be interested, or if you want to reach out to other libraries, that'd be great!
- Website: http://slis.simmons.edu/blogs/mlbn/about/
- Email: mlbn@measurementlab.net

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Thank you!