

M-LAB:

Open Internet Measurement

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Slides: <https://bit.ly/mlab-maprq-117>

M-Lab's Mission



Measure the internet.

Save the data.

Make it universally accessible and useful.

Agenda

- About M-Lab
 - Challenges we were created to address
 - What we do today
- M-Lab <--> MAPRG / IETF

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Why was M-Lab created?

Why was M-Lab created?

- M-Lab was created to address four primary challenges that Internet researchers were facing in 2008
 - 1. Measuring the Internet at scale
 - Sharing large datasets openly
 - Maintaining software at scale
 - 2. Measuring in the “real” Internet
 - 3. Bridging the gaps between policy, industry and academic research

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What does M-Lab do?

How does M-Lab address these challenges today?



- 1. Platform and infrastructure
- 2. Collecting and publishing data for open access
- 3. Supporting the research academics, policymakers and members of industry

M-Lab's Platform

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M-Lab servers are placed in 750+ interconnection points and cloud networks globally.

M-Lab's Platform & Open Data

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- On the M-Lab platform, we host the server-side of “experiments” or “measurement services”.
- When clients run these measurements, they test against M-Lab servers.
- Every measurement is publicly archived and published in BigQuery.



NDT (Network Diagnostic Tool)
Tests your connection speed, and provides a sophisticated diagnosis of problems limiting speed.



Neubot DASH
DASH is designed to measure the quality of tested networks by emulating a video streaming player.



Reverse Traceroute
Measures the network path back to a user from selected network endpoints.

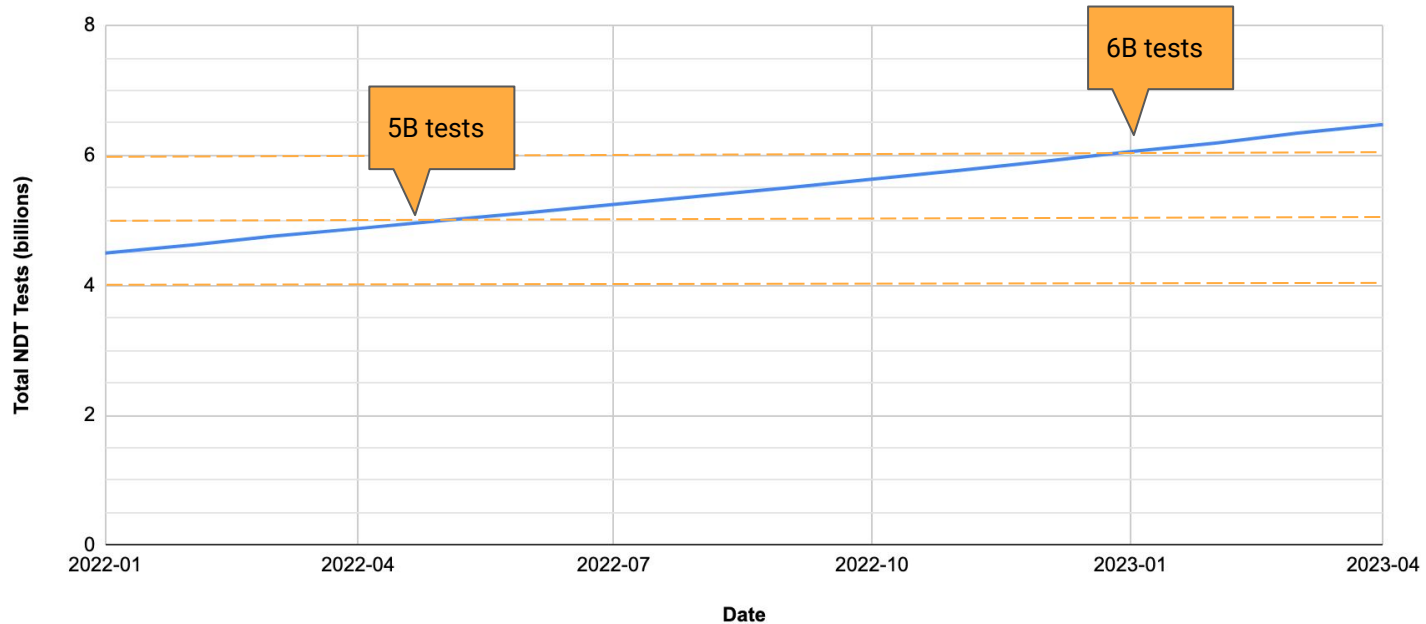


WeHe
Wehe uses your device to exchange Internet traffic recorded from real, popular apps like YouTube and Spotify, and attempts to tell you

whether your ISP is giving different performance to an app's network traffic.

M-Lab's Open Data

NDT Data Count - 2022 to current



M-Lab's Open Data

- Network Diagnostic Tool (NDT): measures the bulk transport capacity (as defined in RFC 3148) of a single-stream TCP connection
- Commonly considered a “speed” test
- While a majority of NDT results are collected via the Google Search integration, they are collected on a smaller scale in a variety of ways.

how fast is my internet

Q All Videos Shopping Books News More Tools

About 9,130,000,000 results (0.45 seconds)

Internet speed test

Check your internet speed in under 30 seconds. The speed test usually transfers less than **40 MB of data**, but may transfer more data on fast connections.

To run the test, you'll be connected to [Measurement Lab](#) (M-Lab) and your IP address will be shared with them and processed by them in accordance with their [privacy policy](#). M-Lab conducts the test and publicly publishes all test results to promote internet research. Published information includes your IP address and test results, but doesn't include any other information about you as an internet user.

[About](#) [RUN SPEED TEST](#)

M-Lab's Open Data

- Airbnb uses NDT for hosts to tell guests about the quality of their Internet connection.

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Attract guests with the new wifi speed test

Find out how to verify and showcase your wifi speed—a top Airbnb amenity.

By Airbnb on Aug 11, 2021 · 2 min read
Updated Nov 3, 2021

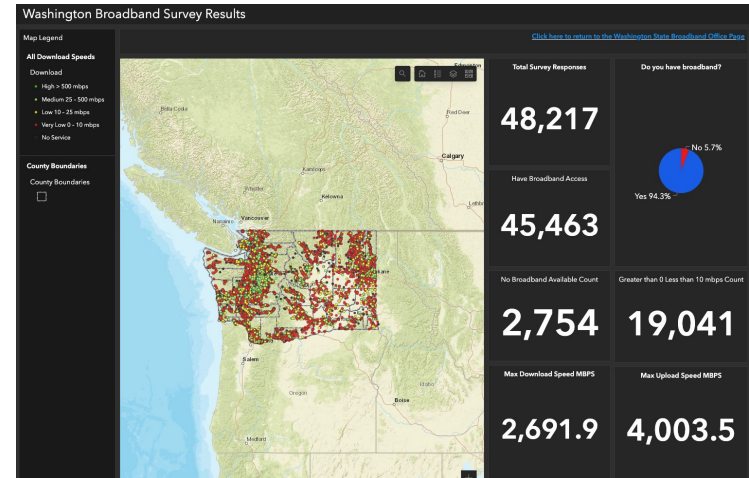
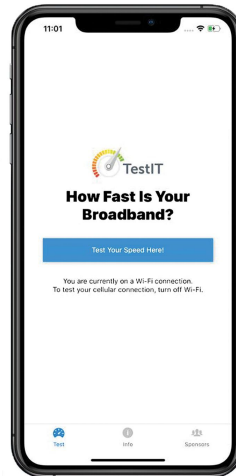
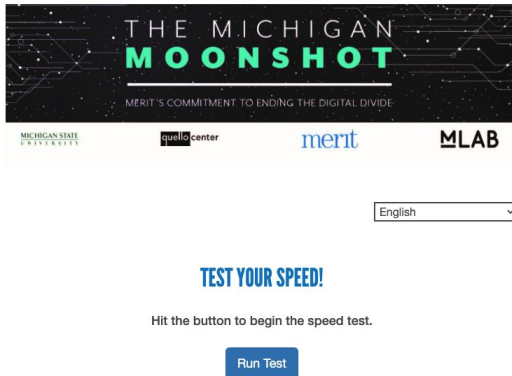


M-Lab's Open Data

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- Digital inclusion efforts such as MERIT's Michigan Moonshot Project, the State of Washington's Department of Commerce State Broadband Survey and the National Association of Counties use NDT to collect information about their constituents/communities Internet connection to advocate for their needs



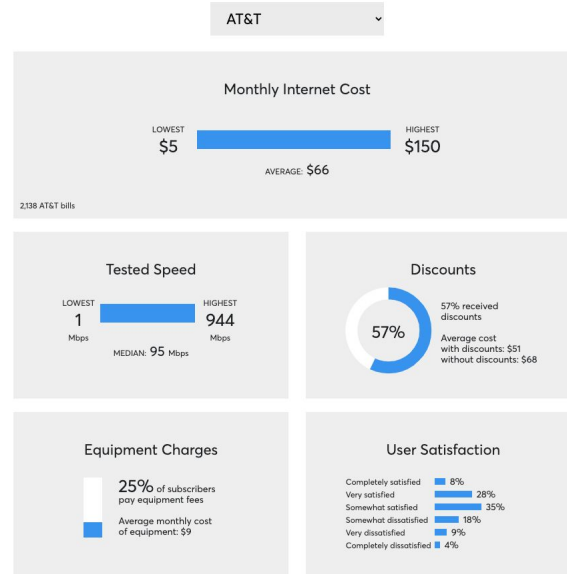
M-Lab's Open Data

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- Consumer Reports integrated NDT to provide a quantitative analysis of broadband performance in relation to its costs, user satisfaction and hidden fees.

How Your Internet Provider Stacks Up
Select your internet provider and see how your cost and experience compares with other people in CR's analysis of broadband bills.

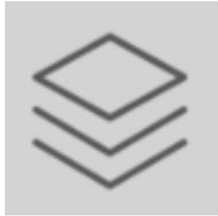


Some ISP names have changed since data was collected. Data are based on bills collected from volunteers and are not a nationally representative sample. Tested speed is downloads, in megabits per second (Mbps).

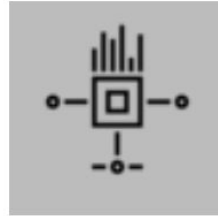
M-Lab's Open Data

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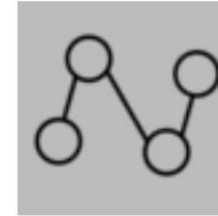
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Packet Headers
Collects packet headers for all incoming TCP flows and saves each stream of packet captures into a per-stream .pcap file.



TCP INFO
Collects statistics about the TCP connections running on the M-Lab platform using tcp-info.




Traceroute
Collects network path information for every connection to the M-Lab platform.

For every measurement that is run on the M-Lab platform, a “sidecar” service is run.

Third-Party Data


- M-Lab also hosts third-party datasets that align with M-Lab's mission. For example, Cloudflare's Internet Quality & SpeedTest data



Cloudflare Speed Test

Test your network connection and gain insights using the Cloudflare Speed Test tool


[Test my connection](#)

speed.cloudflare.com 

Cloudflare Radar + MLAB

Explore the raw Cloudflare Speed Test data at M-Lab

[Learn more](#)

www.measurementlab.net 

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M-Lab & MAPRG/IETF

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Potential points of collaboration and support:

1. Use M-Lab data in your research
2. Propose new data
 - a. New measurement services
 - b. Existing datasets to publish
3. Give us feedback

M-Lab & MAPRG/IETF

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Wrap up / Questions