

Network Measurement

A Key element in the fight against shutdowns is understanding when and how they happen in your context. Disruptions to Internet services come in many different forms making them difficult to identify with a high degree of certainty. Understanding whether Internet outages or disruptions are intentional (malign) or not is critical to making your case. Network measurement is thus a critical tool to reinforce advocacy with empirical evidence and data. This section introduces some of the most commonly used tools to measure and detect Internet anomalies, as well as guidance around how data-driven evidence can support more robust advocacy efforts.

Overview of Network Measurement

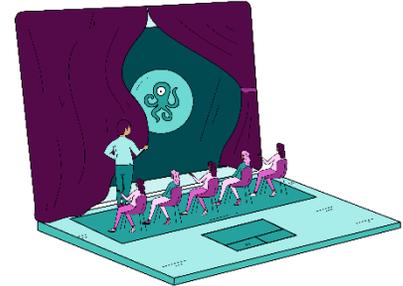
These resources provide an introduction to network measurement, including some of the tools that activists can use to collect data and how that data can be used.

- This [Network Measurement Tools map](#) outlines some of the most common tools, including how/when each is useful relative to the others.
- The [Magma guide](#) is a useful starting point for understanding the basics of network measurement, including relevant methodologies, tools, and step by step instructions for how to start collecting data yourself.
- While slightly more technical, this [introductory guide](#) provides an introduction to network measurement, looking at the key terminology and fundamentals of how shutdowns occur.
- [This short video \(in Spanish\)](#) seeks to answer three questions: What is internet censorship? Why is it problematic? How is it measured or how do I find out that I am being censored?
- Internet throttling is an increasingly common technique used to limit internet access. [This one-pager](#) introduces the concept of throttling and explores how activists can measure it.

Collecting and Analyzing Data

So how do you actually identify shutdowns? The short answer is: testing. The following section introduces various tools available to the public to be used to measure your network and collect internet performance data. It also includes guides on how and when to use those tools.

- The [OPTIMA Network Measurement Training](#) is a multi-module virtual course for anyone interested in learning the basics of internet shutdowns, and how to use three of the most common measurement tools: OONI, MLab, and IODA.
- [OONI \(Open Observatory of Network Interference\)](#) is the world's largest open dataset on internet censorship and is used to determine whether specific websites or applications have been blocked. OONI Probe allows you to collect data on your own device through an application, whereas OONI Explorer allows you to explore data that has been collected by testers from around the world.
 - For an in-depth training led by OONI Founder Maria Xynou, watch the guided OONI lecture through [Small Media's Advocacy Assembly Course](#).
 - To learn more about OONI and how to use the data you collect, watch the [OONI module](#) of the OPTIMA training here.
- [MLab \(Measurement Lab\)](#) is another useful tool used to measure the speed of your internet connection. In addition to its easily accessible browser-based tests, MLab hosts one of the largest open internet performance datasets on the planet and creates visualizations to help make sense of internet performance.
 - To take a deeper dive and learn from MLab experts themselves, watch the [MLab module](#) of the OPTIMA training here.
- [IODA \(Internet Outage Detection and Analysis\)](#) is a system with a public dashboard that monitors the internet around the world to measure internet outages in which users experience complete disconnection from the internet.
 - To learn more about IODA and how to use the tool, watch the [IODA module](#) of the OPTIMA training here.
- [Google Transparency Report](#) is another easy-to-use platform that allows users to understand disruptions to Google services, including maps and user-friendly interfaces that add to a robust understanding of network shutdowns and performance.



Repositories of already collected data to inform research and advocacy

In many cases, there may be a wealth of data already collected through one or more of the tools above that you can review for your own research. The following repositories compile these existing measurements for you to explore without conducting your own tests.

- [Internet Society Pulse](#) consolidates trusted third-party Internet measurement data from various sources into a single platform. This platform uses the data presented to examine Internet trends and tell data-driven stories so that policymakers, researchers, journalists, network operators, civil society groups and others can better understand the health, availability and evolution of the Internet.
- [Cloudflare](#) compiled this dashboard to aggregate and visualize data to help identify trends and draw insight from the information being collected.
- The [Psiphon Data Engine \(PDE\)](#) dashboard shows live data from Psiphon and M-Lab and can give an indication of changes in the network environment and circumvention tool usage during blocking.



Examples of country specific data aggregators

In a few countries, civil society groups have established dashboards that track and assess shutdown activity in their respective countries. While useful for understanding the shutdown landscape in these countries, they also serve as examples of how data is used to promote transparency and support advocacy.

- [The India Shutdown Tracker](#), developed and run by SFLC.in, aggregates measurement data to provide a country-level snapshot of shutdowns in India
- [Killswitch Pakistan](#) similarly aggregates measurement data to provide a country-level snapshot of shutdowns in Pakistan