



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Measuring Internet Performance in Schools with RIPE Atlas

The Problem



- Schools depend on the Internet (learning, exams, cloud apps)
- Complaints like “it’s slow” are common
- ISPs, ministries, and schools need evidence, not guesses

What Is RIPE Atlas?



RIPE Atlas

A global network of probes measuring the Internet in real time

14,000+ probes connected

900+ anchors deployed

35,000+ daily measurements on average (both user-defined and built-in)



Where are the Probes in Indonesia



RIPE Atlas anchor

RIPE Atlas probe



How RIPE Atlas Works



- Small devices called probes

Probes run tests like:

- Ping (latency)
- Traceroute (path)
- DNS checks

- Results are public and transparent

Measurement Form

Use this form to create (and optionally schedule) a new measurement, or to configure an API call to do the same.

Step 1: Definitions

Please select the type of measurement you want to create (you can add multiple).



Step 2: Probe Selection



Probe Selection

50 Random Probes

Step 3: Timing and Top-up

Please select if this is a one-off (vs. periodic) measurement and start and end times (if needed). All times are displayed in your local time (but submitted in UTC).

This is a One-off:

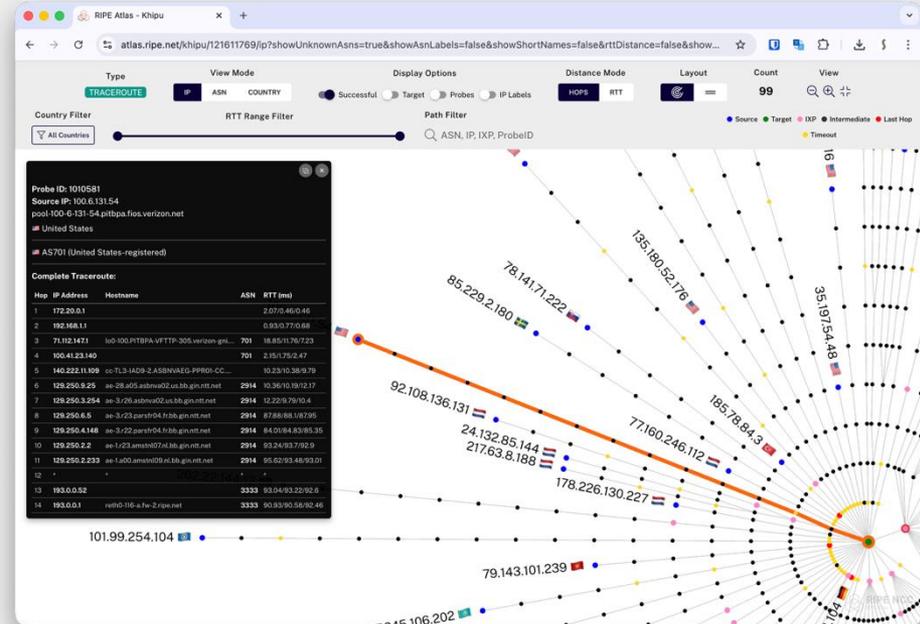
Start Time:

ASAP

Why RIPE Atlas Is Useful for Schools



- Measure latency, packet loss, reachability
- Compare school Internet vs other places
- Show problems are inside or outside the school network



Example Use Cases



- Is video learning affected by high latency?
- Does DNS fail during school hours?
- Is rural school Internet worse than nearby towns?

Measurement 73603859

QuickLook ping to kompas.com

ONE-OFF PING measurement to kompas.com via IPv4 initiated by YOU.

KHIPU

OVERVIEW

RESULTS

DETAILS



Result summary (latest, as of 2024-06-16 15:31:30 UTC):

95 probes reached their target.

1 probe did not.

1 probe did not report (yet).

Min RTT: 1.525

Mean RTT: 30.453

RTT Destination IP

<10ms: 8 <20ms: 39 <30ms: 20 <40ms: 6 <50ms: 3 <100ms: 9
>300ms: 1 >350ms: 2 >500ms: 0 No Reply: 1 No Report: 1 Total: 97

Measurement 73603859

QuickLook ping to kompas.com

ONE-OFF PING measurement to kompas.com via IPv4 initiated by YOU.

KHIPU

OVERVIEW

RESULTS

DETAILS

Search Results

DOWNLOAD RESULTS

Hide no reply Hide no report

Probe ↑	ASN	Country All	Destination IP	Time (UTC)	Min RTT	Packet Loss
822	10094	🇮🇩	13.33.183.101	2024-06-17 11:27:11	55.735 ms	0.00%
↓ 6681	133800	🇮🇩	13.249.39.63	2024-06-17 11:27:12	253.02 ms	0.00%
↓ 7016	140443	🇮🇩	18.67.181.23	2024-06-17 11:27:14	19.557 ms	0.00%
↓ 7059	23951	🇮🇩	18.154.7.37	2024-06-17 11:27:10	25.471 ms	0.00%
↓ 7108		🇮🇩	18.154.7.18	2024-06-17 11:27:09	26.244 ms	0.00%
↓ 7271	142360	🇮🇩	3.165.82.38	2024-06-17 11:27:09	21.586 ms	0.00%
↓ 7275	45725	🇮🇩	18.238.80.62	2024-06-17 11:27:10	261.094 ms	0.00%
↓ 7276	139949	🇮🇩	18.154.7.62	2024-06-17 11:27:13	14.34 ms	0.00%
↓ 7284	45701	🇮🇩	18.67.181.77	2024-06-17 11:27:09	18.227 ms	0.00%
↓ 7288	140443	🇮🇩	3.165.82.57	2024-06-17 11:27:09	24.615 ms	0.00%

Khipu Key Features



Distance Modes (IP View)

- Hops
- RTT

The screenshot shows the RIPE Atlas Khipu interface for a specific probe. The interface includes a navigation bar with tabs for Type (TRACEROUTE, IP, ASN, COUNTRY), View Mode, Display Options (Successful, Target, Probes, IP Labels), Distance Mode (HOPS, RTT), Layout, Count (99), and View. Below the navigation bar are filters for Country Filter (All Countries), RTT Range Filter, and Path Filter (ASN, IP, IXP, ProbelD). The main content area displays a network diagram with nodes and connections, and a detailed traceroute table.

Probe ID: 64474
Source IP: 168.197.240.35
168-197-240-35.abn.bo
Bolivia, Plurinational State of
AS264789 (Bolivia, Plurinational State of-registered)

Complete Traceroute:

Hop	IP Address	Hostname	ASN	RTT (ms)
1	192.168.0.1		134.0.0.0.0.0	
2	193.0.0.1	net0-110-a-Nr-2-ripu.net	3333	565.65509.568.564.62
3	10.50.0.1		576.80	576.45503.563.77
4	192.168.8.254		568.57	577.62506.36
5	193.0.0.4		576.8	576.85068.55093.37
6	190.129.90.0		6568	568.33564.682079.34
7	190.129.249.102		6568	565.535677.979.31
8	190.129.119.3		6568	578.60565.72577.35
9	190.129.249.85		6568	568.56577.87
10	190.129.249.490		6568	582.79504.19192.27
11	190.129.119.13		6568	583.56503.66582.34
12	200.87.203.11		6568	586.71584.24953.52
13	190.129.248.5		6568	579.46574.6587.52
14	190.129.248.21		6568	582.72584.54502.34
15	89.221.42.390		6762	616.502365918.61
16	89.221.193.192		6762	626.07794.6793.46
17	89.249.209.71	gwanaboa.kh1p.ripe.net	788	61781.81954.74
18	193.0.0.1	net0-110-a-Nr-2-ripu.net	3333	60120788.33792.68



How to Get Started



1. Create a RIPE Atlas account: <https://access.ripe.net/registration>
2. Use the web interface (no coding needed), API call or CLI tool
3. Redeem voucher: **ISOC2026RIPEATLAS**
4. Run measurements
5. Host a SW probe at your school





Network Requirements

- Public **IPv4 and IPv6** addresses (native, not tunneled)
- **Gateways** must be in the same subnet as the IPs (IPv6 link-local also allowed)
- **Static IPs**, unfiltered (no firewall blocking Atlas traffic)
- Up to **10 Mbit/s bandwidth** (actual usage is lower)

RIPE Atlas Anchors generate many built-in measurements (pings, traceroutes, DNS) that help in outage analysis

Application Process

Application Approved

Complete Anchor Details

Download ISO Image

Prepare Your VM

Install Software

Post-Install Steps

Internal Tests (RIPE NCC)

Anchor Goes Live!



Questions & Comments ?



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