

# Global Traceroute

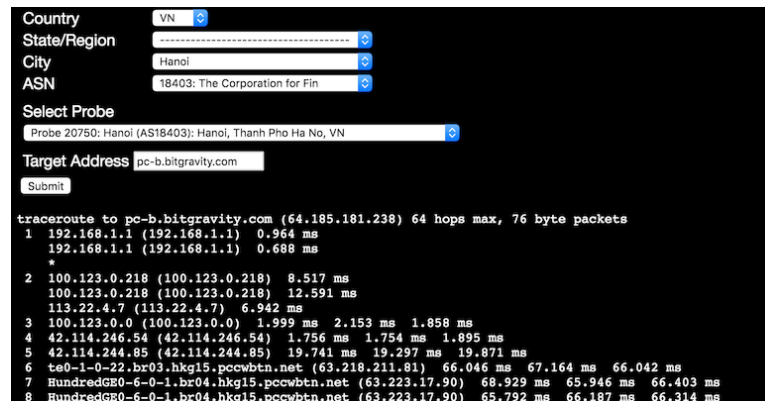
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<http://www.globaltraceroute.com>

# What is it?

- Front end to do traceroutes from RIPE Atlas probes
- Quick and easy traceroutes from most of the world's major end-user ISPs
- <https://www.globaltraceroute.com>
- RIPE Atlas is a dynamic, global network of thousands of probes that have been measuring Internet connectivity and reachability in near real time since 2010. Anyone can directly access the data collected by RIPE Atlas, as well as Internet maps, graphs, tools and analyses based on the aggregated results, at <https://atlas.ripe.net>. RIPE Atlas was developed and is operated by the RIPE NCC, along with the help of thousands of volunteers. The RIPE NCC is one of five Regional Internet Registries (RIRs) that support the global operation of the Internet.



The screenshot shows the Global Traceroute web interface. It includes a form with the following fields:

- Country: VN
- State/Region: (empty)
- City: Hanoi
- ASN: 18403: The Corporation for Fin
- Select Probe: Probe 20750: Hanoi (AS18403): Hanoi, Thanh Pho Ha No, VN
- Target Address: pc-b.bitgravity.com
- Submit button

Below the form, the traceroute output is displayed:

```
traceroute to pc-b.bitgravity.com (64.185.181.238) 64 hops max, 76 byte packets
 1  192.168.1.1 (192.168.1.1)  0.964 ms
   192.168.1.1 (192.168.1.1)  0.688 ms
 2  100.123.0.218 (100.123.0.218)  8.517 ms
   100.123.0.218 (100.123.0.218)  12.591 ms
   113.22.4.7 (113.22.4.7)  6.942 ms
 3  100.123.0.0 (100.123.0.0)  1.999 ms  2.153 ms  1.858 ms
 4  42.114.246.54 (42.114.246.54)  1.756 ms  1.754 ms  1.895 ms
 5  42.114.244.85 (42.114.244.85)  19.741 ms  19.297 ms  19.871 ms
 6  te0-1-0-22.br03.hkg15.pccwbtn.net (63.218.211.81)  66.046 ms  67.164 ms  66.042 ms
 7  HundredGE0-6-0-1.br04.hkg15.pccwbtn.net (63.223.17.90)  68.929 ms  65.946 ms  66.403 ms
 8  HundredGE0-6-0-1.br04.hkg15.pccwbtn.net (63.223.17.90)  65.792 ms  66.187 ms  66.314 ms
```

# Why?

- I do a lot of performance engineering.
- Questions that start out as, “why is performance bad for users in Country X?” turn into “why is an ISP in the Philippines sending us traffic in Las Vegas?”
- Information on inbound paths is really useful when troubleshooting, but hard to get
- Various measurement systems will tell about performance problems – measuring from your own systems or from an end-user perspective
- Flow analysis systems will tell you what path your outbound traffic is taking, but for inbound they only know what interface it came in on.
- Some performance monitoring systems even let you traceroute, but probes in datacenters don’t represent end users well

# Looking for solutions

- I've been looking for solutions to this for several years.
- Old standard was to ask end users for traceroutes. Only worked if the complaint came from an actual user, and even that was iffy.
- Provider looking glasses sometimes helped, if they had one
- Keynote allowed traceroutes from its probes. So did Thousand Eyes. Oops, not on the same networks as my users.
- RIPE Atlas! Right locations! Looks like what I was looking for. But not designed for this.

# Atlas process

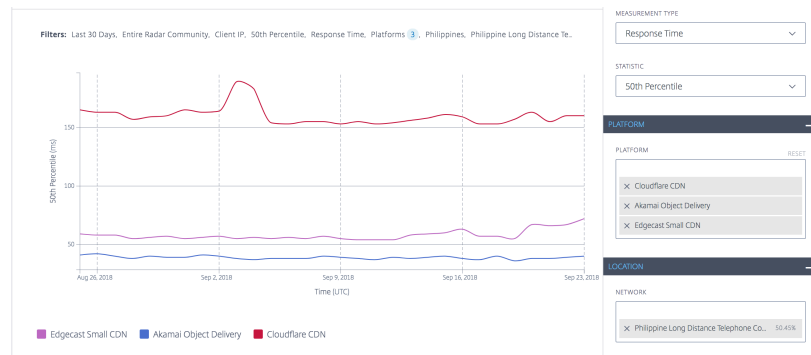
- Atlas is a research system, not designed for on the fly troubleshooting
- Requires RIPE Atlas credits, only for probe hosts, sponsors, and RIPE members
- Create measurement. Intended to be ongoing and distributed, but you can measure from one location, and you can set measurement to one-time.
- Search by location or AS, but not easily by both.
- Not a real time system. Won't automatically display results for you.
- Come back when it's done and read it.
- This worked, but it was cumbersome enough that I didn't use it unless I was desperate.

## Making it easy

- Atlas has an API
- Did my own location mapping, using Maxmind.
- Using Atlas requires credits. A request to a mailing list found a generous donor, so this didn't have to be for my own use anymore.
- Used API to create traceroutes, and request result repeatedly until it's ready.
- Results come as a big JSON blob. I reformat it into a traditional looking traceroute.

# “What happens in Manilla stays in Vegas?”

- I no longer have a global network, so picking on Cloudflare and PLDT here
- Seeing an issue in a performance report
  - Performance report is from Cedexis, portal.cedexis.com
  - My favorite way to find problems, but they don't provide enough info to diagnose.



# Troubleshooting via Global Traceroute

## Global Traceroute

[Home](#) [About](#) [Link Level Consulting](#) [Contact](#)

Global Traceroute: Traceroutes from all over the world

Select IP Version:  IPv4  
 IPv6

Filters:

Country:

State/Region:

City:

ASN:

Select Probe:

Target Address:

```
traceroute to www.globaltraceroute.com (104.28.11.195) 64 hops max, 28 byte packets
 1  10.20.1.1 (10.20.1.1) [AS???]  2.282 ms  2.241 ms  2.19 ms
 2  192.168.1.1 (192.168.1.1) [AS???]  2.421 ms  2.236 ms  2.303 ms
 3  10.254.61.37 (10.254.61.37) [AS???]  3.347 ms  3.372 ms  3.256 ms
 4  122.2.174.81.static.pldt.net (122.2.174.81) [AS9299]  5.836 ms  3.349 ms  3.399 ms
 5  210.213.132.34.static.pldt.net (210.213.132.34) [AS9299]  4.298 ms  4.176 ms  3.995 ms
 6  210.213.128.45.static.pldt.net (210.213.128.45) [AS9299]  3.888 ms  4.323 ms  6.569 ms
 7  210.213.131.77.static.pldt.net (210.213.131.77) [AS9299]  3.219 ms  40.848 ms  5.133 ms
 8  las-b3-link.telia.net (62.115.13.210) [AS1299]  151.266 ms  151.587 ms  151.189 ms
 9  las-b21-link.telia.net (62.115.136.46) [AS1299]  151.712 ms  151.562 ms  151.902 ms
10  cloudflare-ic-328257-las-b21.c.telia.net (62.115.61.149) [AS1299]  151.447 ms  151.255 ms  151.656 ms
11  104.28.11.195 (104.28.11.195) [AS13335]  150.223 ms  150.33 ms  150.404 ms
```



# Troubleshooting via Global Traceroute

- Traffic is coming into Cloudflare in Las Vegas
  - Cloudflare probably has logs that show this
  - But, why???
  - Note: There may be legitimate traffic engineering reasons for this.
- Looking at the traceroute
  - PLDT has a connection to Telia in Las Vegas, as does Cloudflare
  - Tells Cloudflare that solution might involve keeping PLDT traffic off Telia

The screenshot shows the Global Traceroute website interface. At the top, there's a navigation bar with 'Global Traceroute' and links for 'Home', 'About', 'Link Level Consulting', and 'Contact'. Below the header, the main content area is dark-themed. It starts with 'Global Traceroute: Traceroutes from all over the world'. There are options to 'Select IP Version' (IPv4 or IPv6) and 'Filters' for Country (PH), State/Region (Metro Manila), City (Quezon City), and ASN (9298: Philippine Long Distance). A 'Select Probe' dropdown shows 'Probe 4443: Quezon City (AS9299): Quezon City, Metro Manila, PH'. The 'Target Address' is 'www.globaltraceroute.c'. There are 'Submit' and 'Reset Filters' buttons. Below the form, the traceroute results are displayed as a list of hops with IP addresses, ASNs, and latency measurements.

```
traceroute to www.globaltraceroute.com (104.28.11.195) 64 hops max, 28 byte packets
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11  104.28.11.195 (104.28.11.195) [AS13335]  150.223 ms  150.33 ms  150.404 ms
```

# Thanks!

- Check it out
  - <http://www.globaltraceroute.com>
  - [info@globaltraceroute.com](mailto:info@globaltraceroute.com) or [scg@gibbard.org](mailto:scg@gibbard.org) for questions