RIPE Atlas Command-line Tools

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ENOG 11

Introduction

RIPE Atlas

From Wikipedia, the free encyclopedia

RIPE Atlas is a global, open, distributed Internet measurement platform, consisting of thousands of measurement devices that measure Internet connectivity in real time.

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https://atlas.ripe.net

RIPE Atlas Coverage

- Countries: 184

- Originating ASNs:

  3,398 (IPv4) = 6,4% coverage
  1,246 (IPv6) = 11,21% coverage

- 9,400 active **probes**

  - 4,146 disconnected

  - 1,624 abandoned

    (as of 11 April 2016)

Country	Probes
United States of America	1062
Germany	997
France	752
United Kingdom	617
Netherlands	514
Russia	514
Czech Republic	267
Switzerland	259
Italy	256
Ukraine	222

Community Participation

- 17,000 **probes** given to volunteers

- 10,000 **active users** in 2015
  - 5,000 last quarter

- 190+ **anchors** hosted by operators

- Nine **sponsors** in 2015; six already for 2016

- 300+ **ambassadors**, at many conferences

RIPE Atlas Results

- Ongoing global measurements towards root name servers

  - Visualised as Internet traffic maps

- Ongoing regional measurements towards "anchors"

- Users can run customised measurements

  - Ping, traceroute, DNS, SSL/TLS, NTP and (limited) HTTP

- All data open and publicly available

Most Popular Features

- Web interface for user-defined measurements

- New APIs to start measurements and get results

- Powerful and informative visualisations

- CLI tools

- Streaming data for real-time results

- "Time Travel", LatencyMON, DomainMON

- Roadmap shows what's completed and coming

Command-line Interface
(CLI) Toolset

CLI Toolset: Benefits

- Access RIPE Atlas from the terminal / shell console

- Quick and dirty shortcuts for network troubleshooting

- FLOSS (free software / open-source) tools

  - Written and maintained by RIPE NCC

  - Open to community contributions

CLI Toolset: Prerequisites

- Before you can use the toolset:

  - Download the tools

  - Install

  - Configure

  - ripe-atlas configure --set authorisation.create=MY_API_KEY

- You need to have one (or more) API Keys

  - https://atlas.ripe.net/keys/

CLI Toolset: Links

- Source:
  - https://github.com/RIPE-NCC/ripe-atlas-tools/

- Documentation:
  - https://ripe-atlas-tools.readthedocs.org/

- Included in the Linux / BSD distributions:
  - OpenBSD, FreeBSD, Gentoo, Arch, Debian and Ubuntu (in progress: Fedora, Windows)

Create a Ping Measurement

- Simple: one-off, using default values (50 probes to "target")

- $ ripe-atlas measure ping --target wikipedia.org

```
Looking good!  Your measurement was created and details about it can be found here:

  https://atlas.ripe.net/measurements/3499718/


Connecting to stream...

48 bytes from probe #18433 94.112.176.45   to 91.198.174.192 (91.198.174.192): ttl=50 times:41.979,  41.492,  40.769,
48 bytes from probe #20111 37.151.230.180  to 91.198.174.192 (91.198.174.192): ttl=57 times:100.511, 100.136, 100.325,
48 bytes from probe #25003 176.193.48.211  to 91.198.174.192 (91.198.174.192): ttl=59 times:47.967,  47.476,  47.403,
48 bytes from probe #20313 5.199.160.9     to 91.198.174.192 (91.198.174.192): ttl=58 times:36.501,  36.245,  36.285,
48 bytes from probe #22573 89.176.43.44    to 91.198.174.192 (91.198.174.192): ttl=52 times:28.747,  27.712,  28.446,
48 bytes from probe #19413 89.71.47.56     to 91.198.174.192 (91.198.174.192): ttl=51 times:49.89,   49.779,  50.277,
48 bytes from probe #18635 78.52.132.137   to 91.198.174.192 (91.198.174.192): ttl=57 times:37.462,  38.095,  37.73,
48 bytes from probe #23223 62.65.126.46    to 91.198.174.192 (91.198.174.192): ttl=53 times:23.169,  23.412,  33.067,
48 bytes from probe #17511 87.81.148.2     to 91.198.174.192 (91.198.174.192): ttl=56 times:13.281,  12.885,  13.039,
48 bytes from probe #12584 46.175.22.202   to 91.198.174.192 (91.198.174.192): ttl=59 times:36.073,  35.788,  35.883,


48 bytes from probe #19368 188.75.141.6    to 91.198.174.192 (91.198.174.192): ttl=55 times:23.983,  23.833,  23.85,
48 bytes from probe #20236 94.112.19.136   to 91.198.174.192 (91.198.174.192): ttl=52 times:32.543,  32.069,  31.873,
48 bytes from probe #18830 46.42.38.244    to 91.198.174.192 (91.198.174.192): ttl=58 times:58.404,  58.075,  58.246,
48 bytes from probe #24056 176.156.201.171 to 91.198.174.192 (91.198.174.192): ttl=58 times:32.761,  32.819,  32.734,
48 bytes from probe #26946 67.233.176.217  to 91.198.174.192 (91.198.174.192): ttl=50 times:151.735, 118.041, 142.844,
48 bytes from probe #27414 170.210.70.251  to 91.198.174.192 (91.198.174.192): ttl=43 times:290.444, 285.019, 773.309,
48 bytes from probe #18607 185.75.138.141  to 91.198.174.192 (91.198.174.192): ttl=47 times:41.673,  33.16,   26.11,
48 bytes from probe #10246 194.33.189.126  to 91.198.174.192 (91.198.174.192): ttl=60 times:35.729,  35.558,  35.617,
48 bytes from probe #14724 194.231.22.155  to 91.198.174.192 (91.198.174.192): ttl=58 times:22.465,  22.181,  23.242,
48 bytes from probe #12092 93.189.153.142  to 91.198.174.192 (91.198.174.192): ttl=53 times:15.032,  13.846,  13.99,
48 bytes from probe #10506 63.130.83.21    to 91.198.174.192 (91.198.174.192): ttl=59 times:79.37,   78.971,  79.085,

Disconnecting from stream

You can find details about this measurement here:

  https://atlas.ripe.net/measurements/3499718/
```

Other Ping Examples

- Geo-specific using 20 probes from Canada:

  - $ ripe-atlas measure ping --target example.com --probes 20 --from-country ca

- 20 Canadian probes that support IPv6:

  - $ ripe-atlas measure ping --target example.com -- probes 20 --from-country ca —include-tag system-ipv6-works

- Create a recurring measurement:

  - $ ripe-atlas measure ping —target example.com --interval 3600

Traceroute

```
$ ripe-atlas measure
traceroute --probes 2
--target google.ca
```

```
Looking good!  Your measurement was created and details about it can be found here:

  https://atlas.ripe.net/measurements/3499936/

Connecting to stream...

Probe #3837

   1 192.168.8.254                        2.748 ms     1.931 ms     1.982 ms
   2 77.51.191.254                        3.286 ms     3.051 ms     3.076 ms
   3 172.27.8.174                         4.421 ms     4.775 ms     4.694 ms
   4 77.37.254.129                        5.48 ms      5.363 ms     6.52 ms
   5 72.14.209.81                         4.37 ms      4.232 ms     4.183 ms
   6 209.85.240.209                      47.099 ms    46.705 ms    41.563 ms
   7 209.85.240.102                      23.207 ms    23.001 ms    22.993 ms
   8 209.85.249.59                       40.565 ms    40.454 ms    40.004 ms
   9 209.85.254.198                      62.337 ms    45.201 ms    44.595 ms
  10 216.239.49.28                       44.999 ms    44.887 ms    44.907 ms
  11 *                                         *            *            *
  12 173.194.65.94                       77.313 ms    82.476 ms    83.303 ms

Probe #16731

   1 192.168.80.254                       0.582 ms     0.483 ms     0.413 ms
   2 188.134.205.225                      0.79 ms      0.683 ms     0.684 ms
   3 84.16.101.226                        1.13 ms      1.169 ms     1.114 ms
   4 86.61.255.241                        5.503 ms     5.711 ms     5.629 ms
   5 91.210.16.211                        5.753 ms     5.307 ms     5.579 ms
   6 216.239.56.169                      13.419 ms    13.358 ms    13.243 ms
   7 216.239.57.190                      15.311 ms    15.26 ms     15.295 ms
   8 209.85.253.216                      17.012 ms    17.091 ms    16.925 ms
   9 72.14.234.170                       21.411 ms    21.472 ms    21.318 ms
  10 216.239.51.19                       25.035 ms    24.67 ms     24.773 ms
  11 216.239.56.163                      24.607 ms    24.554 ms    24.55 ms
  12 *                                         *            *            *
  13 173.194.65.94                       25.36 ms     25.894 ms    24.296 ms

Disconnecting from stream

You can find details about this measurement here:

  https://atlas.ripe.net/measurements/3499936/
```

Search for Existing Measurements

$ ripe-atlas measurements --af 6 --status ongoing --limit 15 --search google

```
Filters:
  Search: google
  Af: 6
  Status in: (2,)

Id       Type       Description                                          Status
===============================================================================
1004005 ping        google - v6                                         Ongoing
1004732 traceroute  google v6 traceroute                                Ongoing
1007128 dns         Google.fi AAAA reply                                Ongoing
1012449 sslcert     www.google.com                                      Ongoing
1024911 ping        IPv6 Google DNS                                     Ongoing
1404300 ping        IPv6 Ping to Google                                 Ongoing
1665737 ping        google.com - 2404:6800:4003:c00::71                 Ongoing
1796260 ping        Ping measurement to www.google.com                  Ongoing
1889086 traceroute  Traceroute measurement to ipv6.google.com           Ongoing
2062542 traceroute  Traceroute measurement to ipv6.google.com           Ongoing
2062543 ping        Ping measurement to ipv6.google.com                 Ongoing
2143865 ping        Ping measurement to ipv6.google.com                 Ongoing
2486602 traceroute  IPv6 Traceroute measurement to snapchat.com         Ongoing
2486820 ping        Google IPv6                                         Ongoing
2929651 ping        campaign:th-mon-run2 type:ping host:plus.goog       Ongoing
===============================================================================
                    Showing 15 of 18 total measurements
```

Search for Very Specific Probes

$ ripe-atlas probes --asn 3333 --field id --field asn_v6 --field country --field is_public --field description --field status

```
Filters:
   ASN: 3333

ID     Asn_v6 Country Public Description                        Status
====================================================================================
9      3333    nl       ✔    SG office 1                        Connected
14     3333    nl       ✔    vty probe                          Connected
15     3333    nl       ✔    SG office 2                        Connected
111    3333    br       ✘    NIC.br                             Abandoned
237    3333    nl       ✔    The Traveling Probe                Connected
1108   3333    us       ✔    probe 1                            Abandoned
2009   3333    nl       ✔    NCC Office 2009                    Connected
3497   3333    nl       ✘                                       Abandoned
4840   3333    nl       ✘                                       Abandoned
6001   3333    nl       ✔    AA nl-ams-as3333                   Connected
6012   3333    nl       ✘    AA pre-production                  Connected
6018   3333    nl       ✘                                       Abandoned
6019   3333    nl       ✔    RIPE NCC Anchor v2                 Connected
6137   3333    nl       ✔    nl-ams-as3333-preprod             Connected
10004  3333    nl       ✔    RIPE NCC R&D Office                Abandoned
10105  3333    nl       ✘                                       Abandoned
10106  3333    nl       ✘                                       Abandoned
10888  3333    nl       ✔    Ridderkerk - UPC 120/10Mbits      Abandoned
11187  3333    nl       ✘                                       Disconnected
11283  3333    gb       ✘    DUFFPROBE                          Disconnected
12989          de       ✔    TeraStream Test Lab                Abandoned
13343  3333    ch       ✔    FSIT AG - CH-DIE001 - out of O     Abandoned
14004  3333    nl       ✘                                       Abandoned
14013  3333    nl       ✘                                       Abandoned
14020  3333    nl       ✘                                       Abandoned
====================================================================================
                                          Showing 25 of 39 total probes
```

How to Take Part

Get Involved!

- Use RIPE Atlas for your operations: monitoring, troubleshooting, measuring

- Do scientific <u>research</u>

- Participate in a <u>webinar</u>

- Add <u>multilingual</u> content

- Become an <u>ambassador</u> or a <u>sponsor</u>

- Host a <u>RIPE Atlas anchor</u>

- Place a probe in a new exotic location

Contribute to Tools and Code

- CLI tools

  - Write a patch: https://github.com/RIPE-NCC/ripe-atlas-tools/blob/master/CONTRIBUTING.rst

  - Use in your syllabus

- OpenIPMap

  - Add more data: https://marmot.ripe.net/openipmap/

  - Modify, reuse and improve the code: https://github.com/RIPE-Atlas-Community/openipmap

- Add a link to your software on GitHub:

  - https://github.com/RIPE-Atlas-Community/ripe-atlas-community-contrib/blob/master/README.md

RIPE Atlas Hackathon

- 2015: <u>data viz</u> and <u>tools</u>

- May 2016: Interfaces

- Upcoming! IXP Tools: 22-23 October, Madrid

  - Weekend before RIPE 73

RIPE ATLAS HACKATHON:
MOST FUN I HAD AT RIPE SINCE CANALS FROZE

Contact RIPE Atlas

- Articles and updates: https://labs.ripe.net/atlas

- Mailing list for active users: ripe-atlas@ripe.net

  - New: RIPE Forum (web-based interface):

  https://www.ripe.net/participate/mail/forum/ripe-atlas

- Questions: atlas@ripe.net

- Twitter: @RIPE_Atlas and #RIPEAtlas