



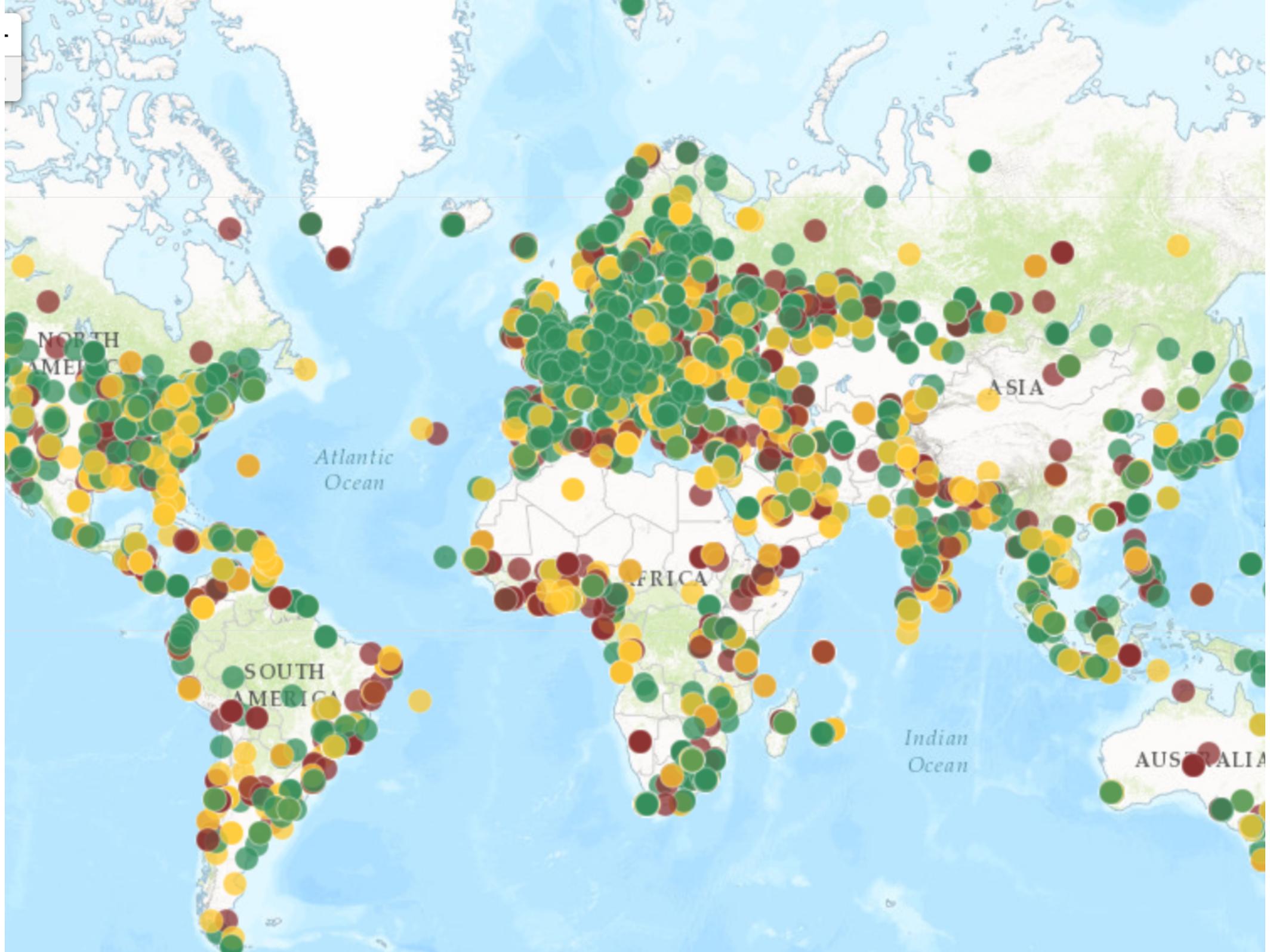
RIPE NCC

RIPE NETWORK COORDINATION CENTRE

Introduction to RIPE Atlas



atlas.ripe.net





Overview

- **Why RIPE Atlas**
- **What is RIPE Atlas**
- **How to use RIPE Atlas**
- **Use Cases**



Why

What is it useful for?



Why RIPE Atlas? (1)

Lack of Internet wide measurements

Measurements

Monitor

Troubleshoot

Improve

Security



What

What is RIPE Atlas



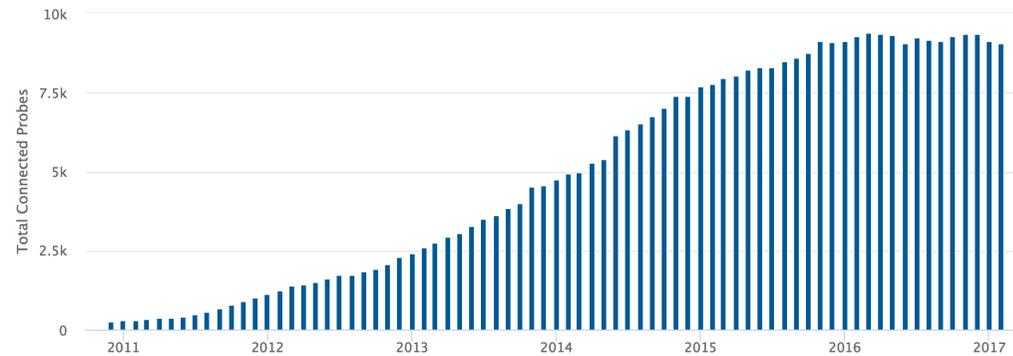
What is RIPE Atlas (1)

Composed of: **Probes**



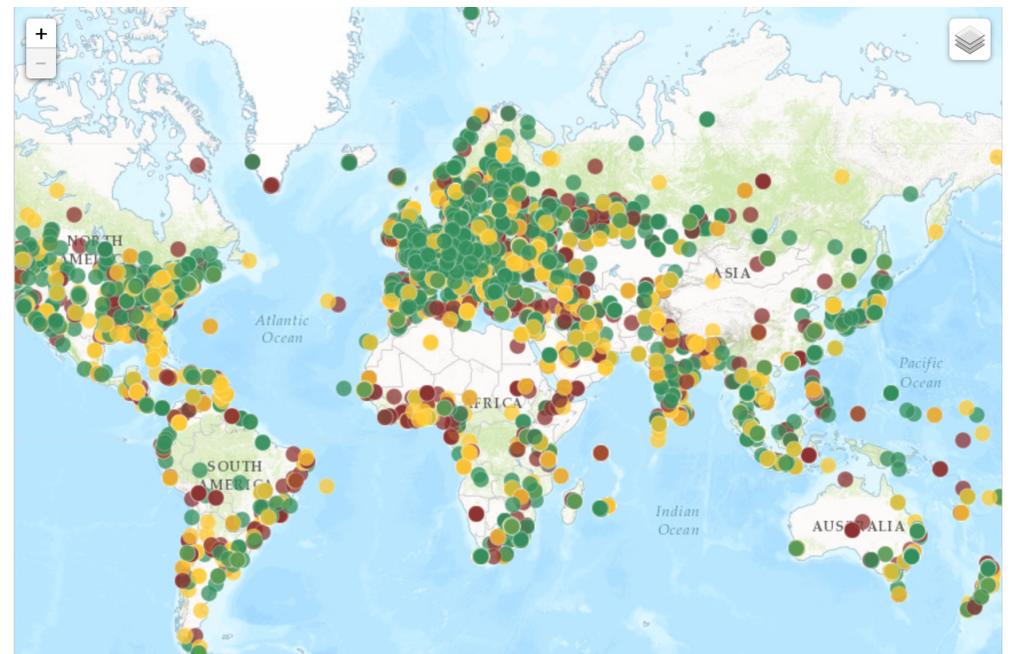
Probes

The number of connected probes



- 10000+

- Around the world





What is RIPE Atlas (2)

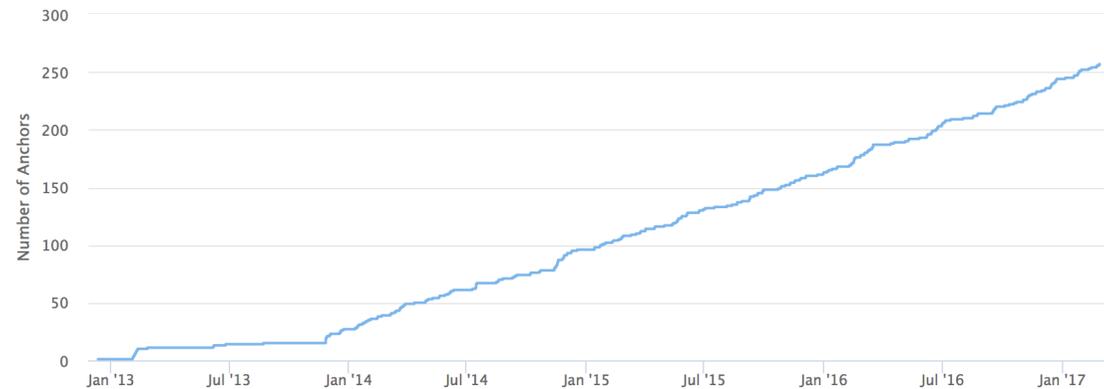
Composed of: **Anchors**



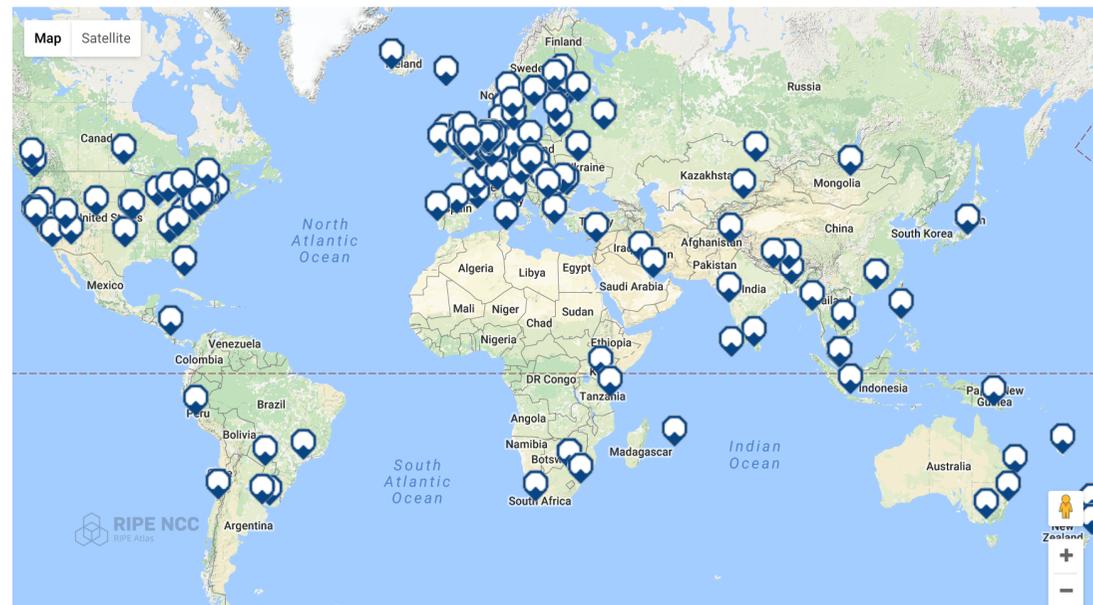
- 280+

RIPE Atlas Anchors

Growth in the number of RIPE Atlas anchors over time



- Around the world





What is RIPE Atlas (3)

Composed of: **Web interface / API / CLI**

- RIPE Atlas <<
- About RIPE Atlas >
- Get Involved >
- Probes and Anchors >
- Measurements, Maps and Tools >
- Resources >
- RIPE NCC Members
- My Atlas** v
- Credits
- API Keys
- Messages
- Ambassador Probes
- Settings

My RIPE Atlas Dashboard

RIPE NCC Members

As a RIPE NCC member, you enjoy special RIPE Atlas benefits regardless of whether or not you host a probe, including the ability to measure your IPv6 connectivity, claim a million credits, and perform quick look measurements to get an instantaneous snapshot of how the RIPE Atlas network sees a target of your choice.

- Test your IPv6 connectivity
- Claim your million credits
- Perform a quick look measurement

Measurements

20 0 0 +

- *⁴ Ping measurement to publico.pt
- ⚡⁴ Traceroute measurement to wikipedia.org
- *⁴ Ping measurement to wikipedia.org
- *⁴ Ping measurement to nu.nl
- *⁴ Ping measurement to trouw.nl
- *⁴ Ping measurement to elpais.es
- *⁴ Ping measurement to wikipedia.org
- *⁴ Ping measurement to bbc.co.uk
- ⚡⁴ Traceroute measurement to wikipedia.org
- *⁴ Ping measurement to wikipedia.org
- *⁴ Ping measurement to bbc.co.uk
- ⚡⁴ Traceroute measurement to google.nl
- *⁴ Ping measurement to bbc.co.uk
- *⁴ Ping measurement to wikipedia.org
- *⁴ Ping measurement to bbc.co.uk

Probes

0 0 0

You are not hosting or sponsoring any probes, which is the best way to earn credits for running measurements. Please visit the [host a probe](#) or [sponsor a probe](#) page to start earning credits.

Anchors

0 0 0

Credits

-566 4.8 million

Daily Credits Balance

total daily income 2,160
total daily expenditure 0

surplus 2.16k

probe 4961

API Keys

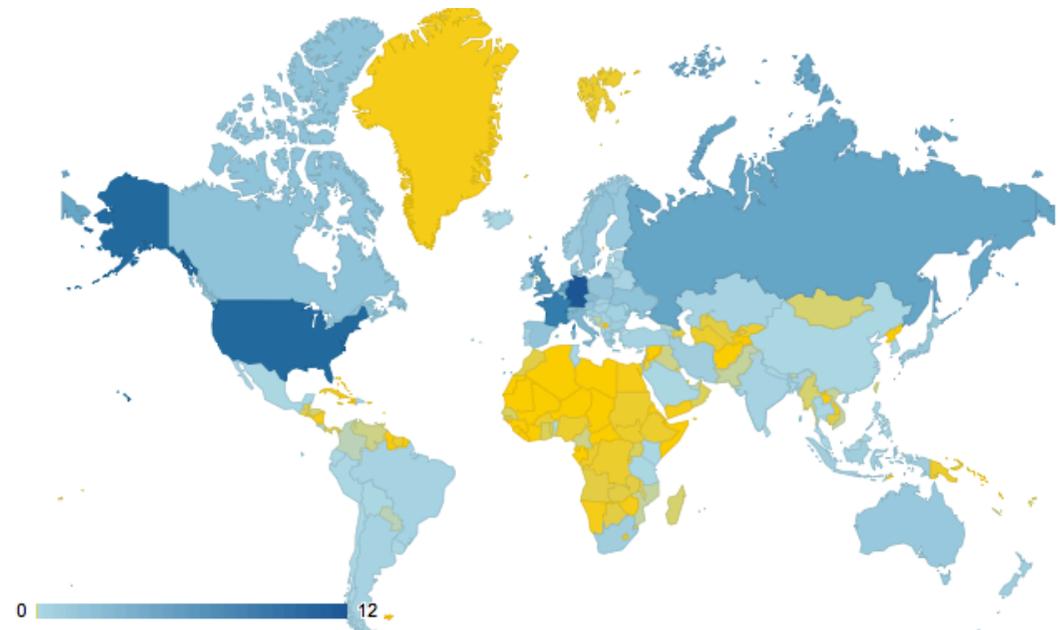
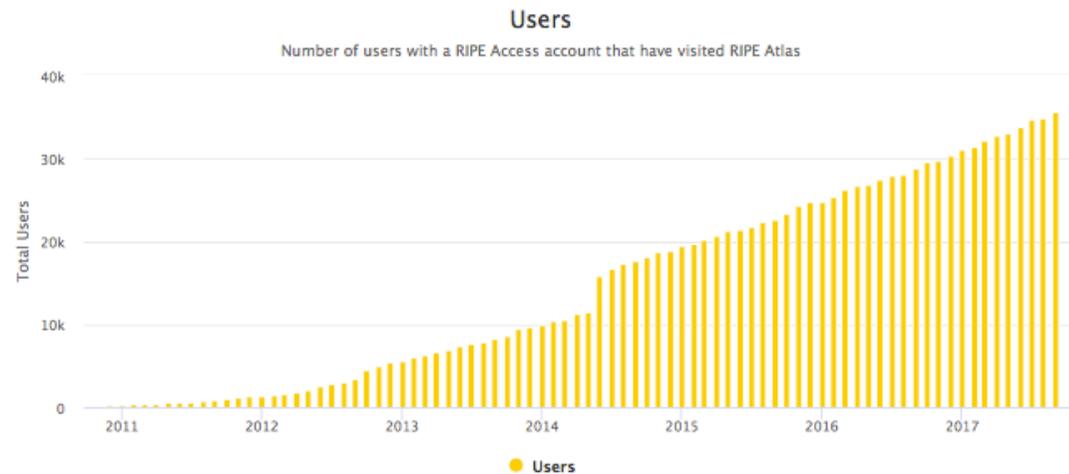
You have 10 API keys. [Go to the API Key manager.](#)



What is RIPE Atlas (4)

Composed of: RIPE Atlas Community

- Users
- Hosts
 - Probes
 - Anchors
- Sponsors
- Ambassadors





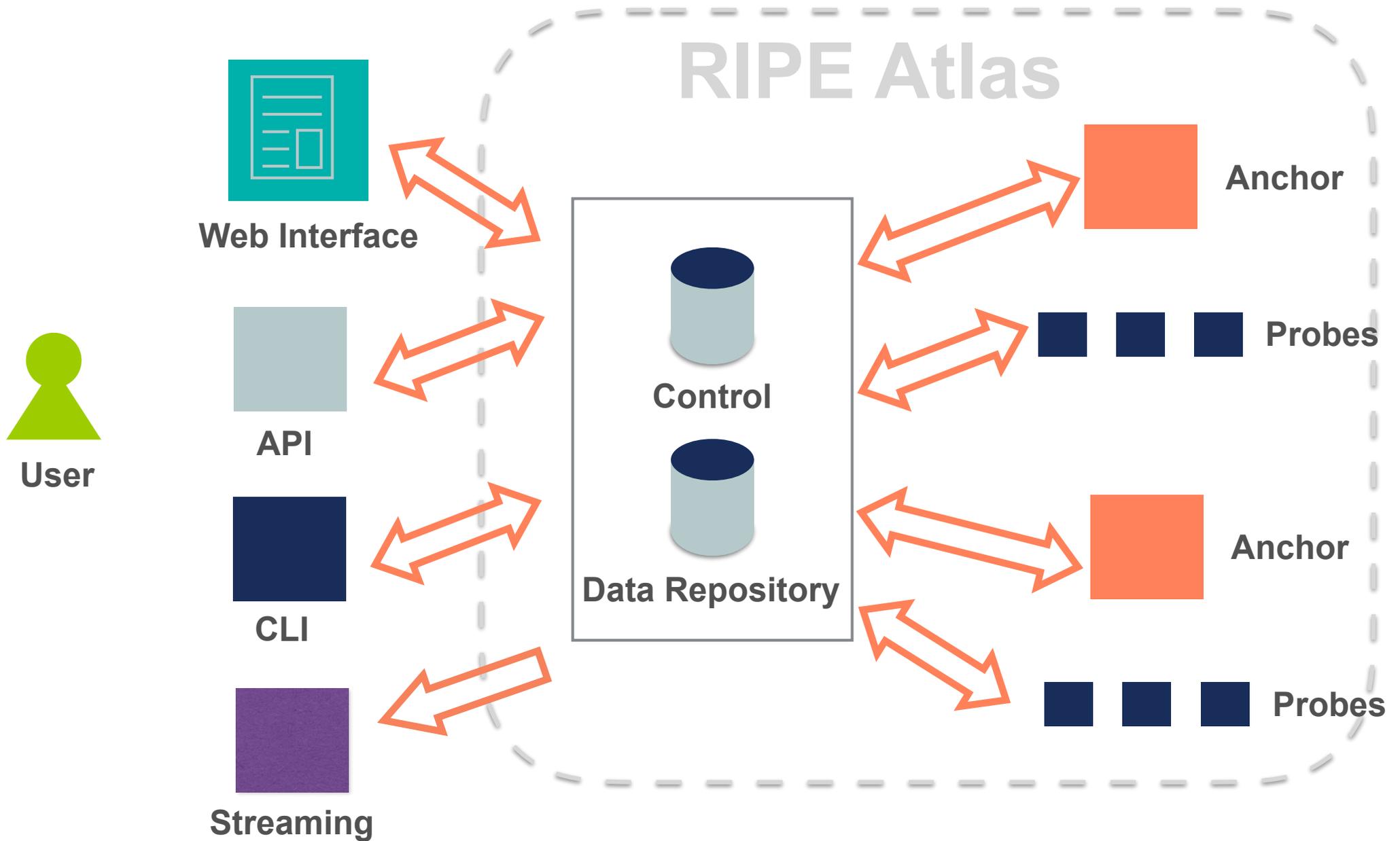
What is RIPE Atlas (5)

Composed by: Measurements

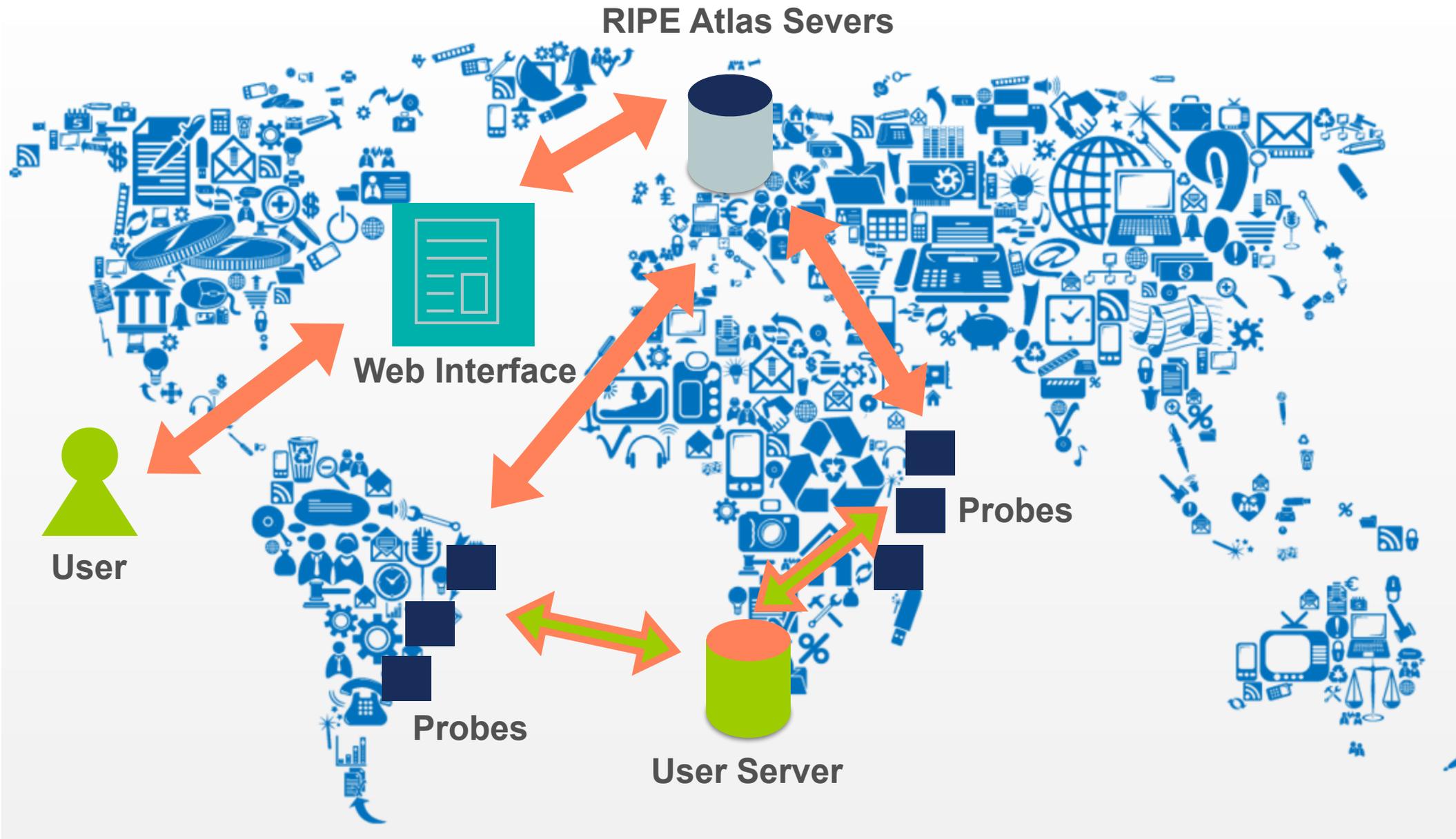
Measurements currently running

	Built-in	User-defined			
		Total UDM	Anchoring	DNSMON	Other
Ping	41	5896	1145	0	4751
Traceroute	45	4538	1147	849	2542
DNS	158	5148	0	3396	1752
SSL/TLS Certificate	4	246	0	0	246
NTP	0	60	0	0	60
HTTP	4	1194	1146	0	48
WiFi	0	15	0	0	15

RIPE Atlas Overview (1)



RIPE Atlas Overview (2)





How

How can you use it?



How to use RIPE Atlas

- User friendly web interface, API or CLI
- System based on credits
- Create measurements (ping, trace route, etc.)
- Access (historical) data
- Can be integrated with Icinga, Nagios



Credits

- Every measurement has a cost in credits
- Why? Fairness and to avoid overload
- How to earn credits?
 1. Hosting a probe / anchor
 2. Being an RIPE NCC member (LIR)
 3. Being RIPE Atlas sponsor
 4. being a RIPE Atlas Ambassador
 5. Transfer
 6. Voucher...



RIPE Atlas measurements

- **Built-in** global measurements towards root nameservers
 - Visualised as Internet traffic maps
- **Built-in** regional measurements towards “anchors”
- **Users** can run customised measurements



Highlights

- Six types of measurements: ping, traceroute, DNS, SSL/TLS, NTP and HTTP (to anchors)
- APIs and CLI tools to start measurements and get results
- Streaming data for real-time results
- Status checks (Icinga & Nagios)
- New: “Time Travel”, LatencyMON, DomainMON, TraceMON



Security Aspects

- Probes:
 - No open ports; initiate connection; NAT is okay
 - Don't listen to local traffic
 - No passive measurements
 - Automatic FW updates
- Measurements triggered by “command servers”
 - Inverse ssh tunnels
- Source code published



Creating Measurements (1)

Create a New Measurement

Step 1 Definitions

+ Ping

+ Traceroute

+ DNS

+ SSL

+ HTTP

+ NTP

Step 2 Probe Selection

Worldwide

10



+ New Set - wizard

+ New Set - manual

+ IDs List

+ Reuse a set from a measurement

Step 3 Timing

This is a One-off:

Start time (UTC):

As soon as possible



Stop time (UTC):

Never



Creating Measurements (2)



Step 1 Definitions

+ Ping

+ Traceroute

+ DNS

+ SSL

+ HTTP

+ NTP

▼ Ping measurement ✕

Target:

An IP address or hostname

Address Family*:
IPv4

Packets:
3

Size:
48

▼ Advanced Options

Packet interval:

Time between packets (ms)

Skip DNS check:
Disables target DNS check on measurement creation

Description:
Ping measurement

Interval:
240
How often this should be done (seconds between samples). Note that this value is ignored for one-off measurements.

Resolve on Probe:
Force the probe to do DNS resolution

Spread:

Spread of uniformly distributed random probe start time phase

▼ Traceroute measurement ✕

Target*:

An IP address or hostname

Address Family*:
IPv4

Timeout (ms):
4000

Description:
Traceroute measurement

Protocol*:
ICMP

Interval:
900
How often this should be done (seconds between samples). Note that this value is ignored for one-off measurements.

Resolve on Probe:
Force the probe to do DNS resolution

▼ Advanced Options

Packets:
3

Size:
48
Size of the packet

First Hop:
1

Paris:
16
Number of different variations for paris traceroute. Set 0 for standard traceroute.

Destination Extension Header Size:
0
The size of the destination extension header to include in the IPv6 packet.



Creating Measurements (3)

Step 2 Probe Selection

Worldwide 10 ✕

+ New Set - wizard

+ New Set - manual

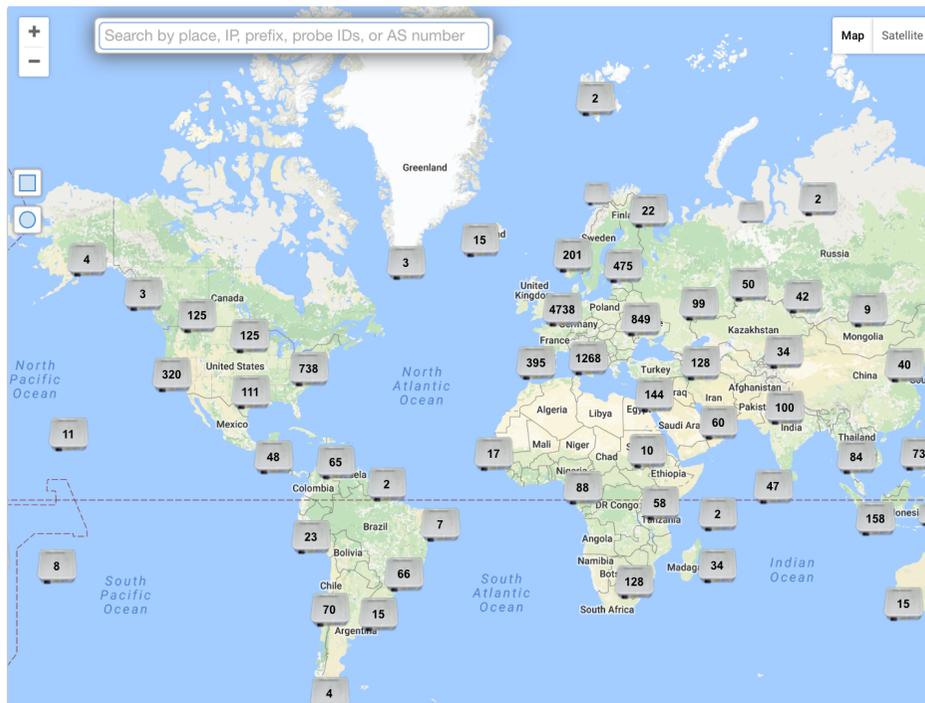
+ IDs List

+ Reuse a set from a measurement



Create your selection

In this panel you can manually create a probe selection. If you need more help or you want to visualize where the probes are, please use the wizard selection.



Type (mandatory)

- ✓ area
- country
- prefix
- asn

Number of probes (mandatory)

50

Include tags

Exclude tags

Cancel Add



Creating Measurements (4)

Step 3 Timing

This is a One-off:

Start time (UTC):

As soon as possible



Stop time (UTC):

Never



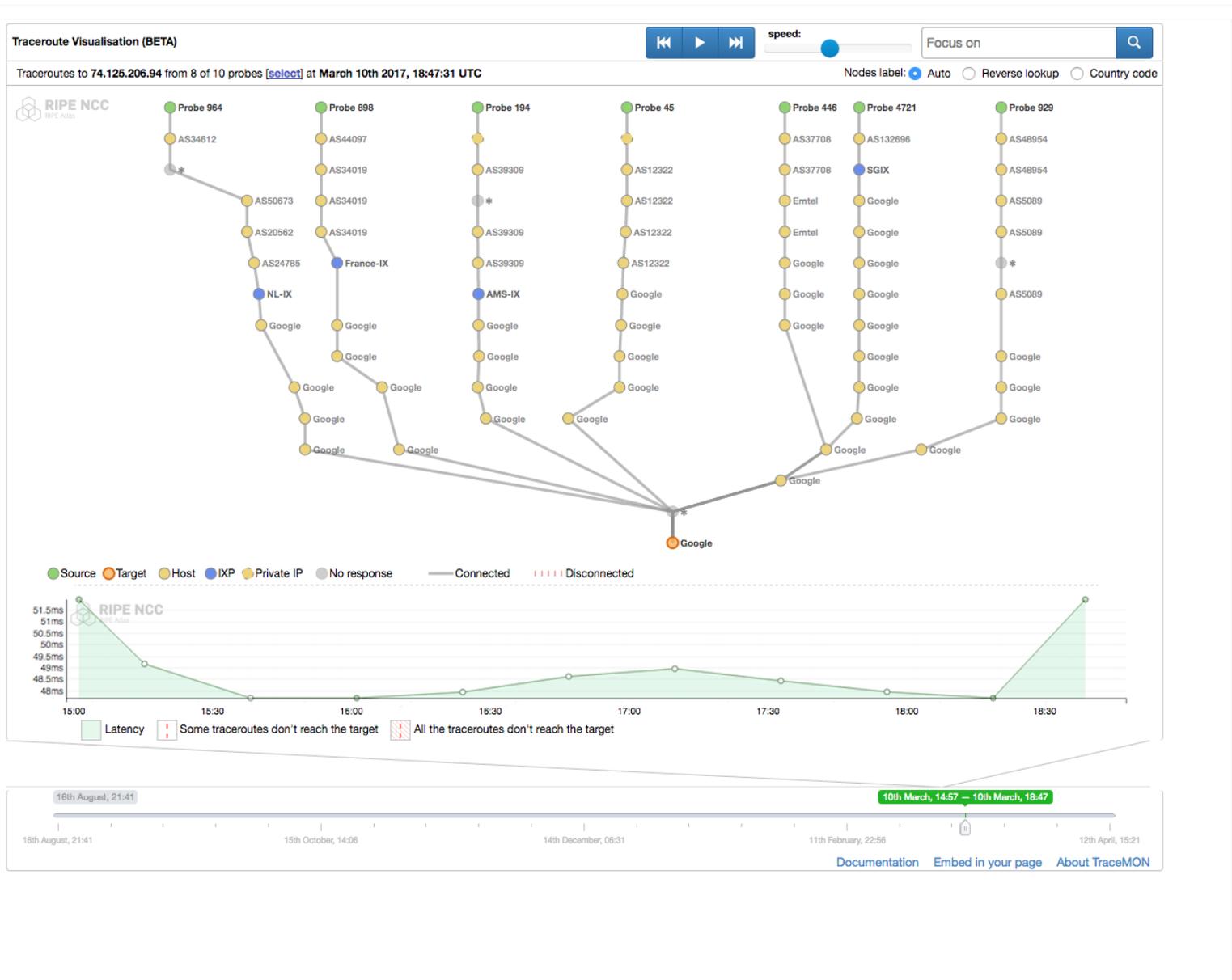


Traceroute view: list

General Information	Probes	Map	LatencyMON	OpenIPMap Prototype	Results	Modification
Probe	ASN (IPv4)	ASN (IPv6)	🇮🇹 🇺🇸	Time (UTC)	RTT	Hops
2713	60706	60706	🇮🇹 🇺🇸	2016-11-18 10:52	33.192	14
2941	25394		🇩🇪 🇺🇸	2016-11-18 10:51	50.783	20
3055	6412		🇪🇬 🇺🇸	2016-11-18 10:53	150.683	15
3222	6829		🇳🇴 🇺🇸	2016-11-18 10:49	36.686	24
4166	50581		🇺🇦 🇺🇸	2016-11-18 10:52	39.533	16
4554	6703		🇺🇦 🇺🇸	2016-11-18 10:51	82.704	19
4952	3244		🇮🇪 🇺🇸	2016-11-18 10:51	35.700	19
6078	202040	202040	🇩🇪 🇺🇸	2016-11-18 10:47	9.279	14
6091	5459	5459	🇬🇧 🇺🇸	2016-11-18 10:50	9.719	14
6112	197216	197216	🇩🇪 🇺🇸	2016-11-18 10:52	33.767	11
6139	18106	18106	🇸🇰 🇺🇸	2016-11-18 10:47	216.946	19
10166	5379		🇪🇺 🇺🇸	2016-11-18 10:49	60.850	19
10282	49009	49009	🇩🇪 🇺🇸	2016-11-18 10:47	32.699	11
10312	11426		🇺🇸 🇺🇸	2016-11-18 10:49	116.443	29



Traceroute view: TraceMon





Use cases

Examples of RIPE Atlas use

Use cases



Using RIPE Atlas to Validate International Routing Detours

[Anant Shah](#) — 30 Jan 2017

A Quick Look at the Attack on Dyn

[Massimo Candela](#)  — 24 Oct 2016

Contributors: [Emile Aben](#)

Using RIPE Atlas to Monitor Game Service Connectivity

[Annika Wickert](#) — 14 Sep 2016

Using RIPE Atlas to Measure Cloud Connectivity

[Jason Read](#) — 06 Sep 2016

Using RIPE Atlas to Debug Network Connectivity Problems

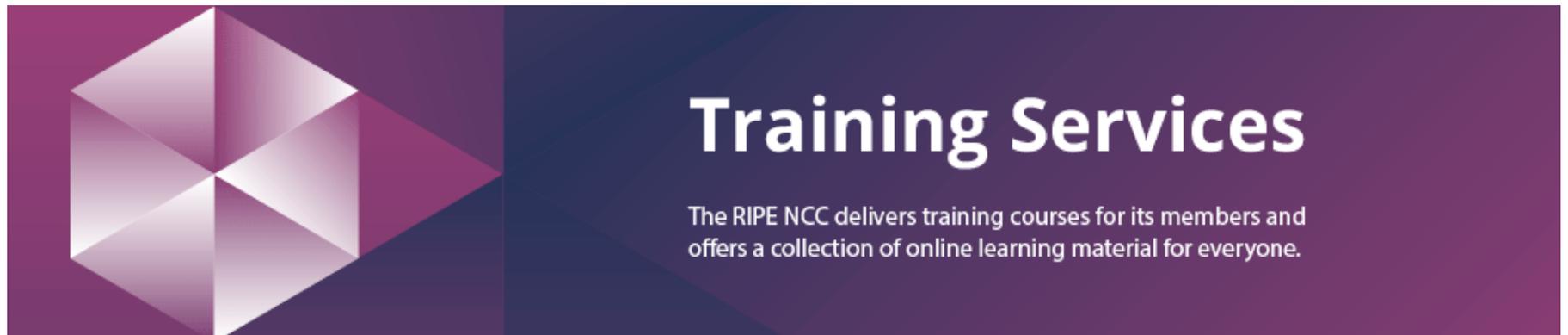
[Stéphane Bortzmeyer](#) — 10 May 2016



Training

- Webinar
- Training Course

- All material available at RIPE web site
<https://www.ripe.net>





RIPE Atlas Contact Info

- <https://atlas.ripe.net>
- <http://roadmap.ripe.net/ripe-atlas/>
- Users' mailing list: ripe-atlas@ripe.net
- Articles and updates: <https://labs.ripe.net/atlas>
- Questions and bugs: atlas@ripe.net
- Twitter: @RIPE_Atlas and #RIPEAtlas



Questions

