



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE Atlas

Measuring the Internet

What is RIPE Atlas?



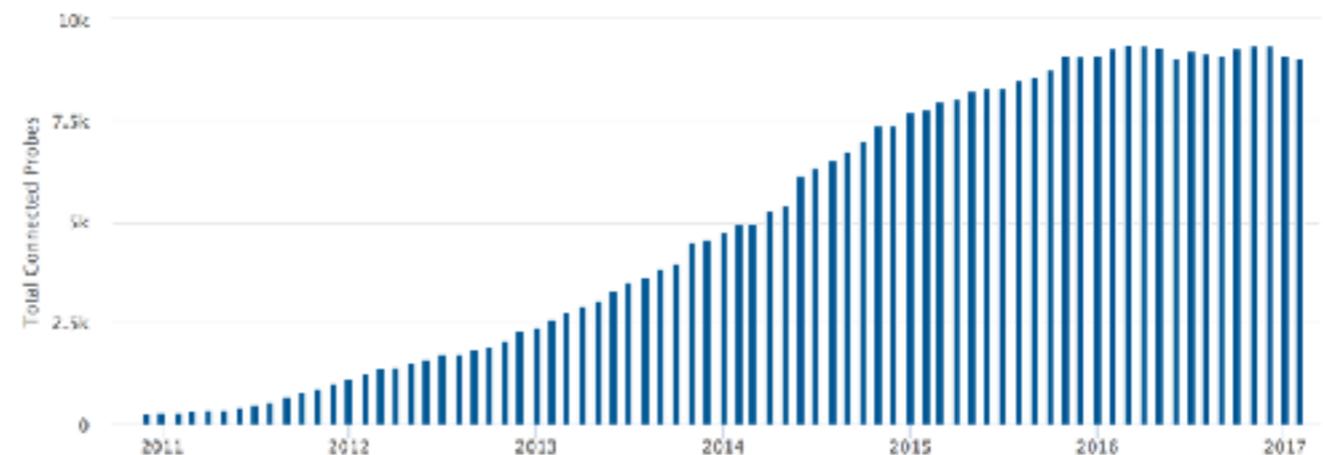
Composed by: Probes



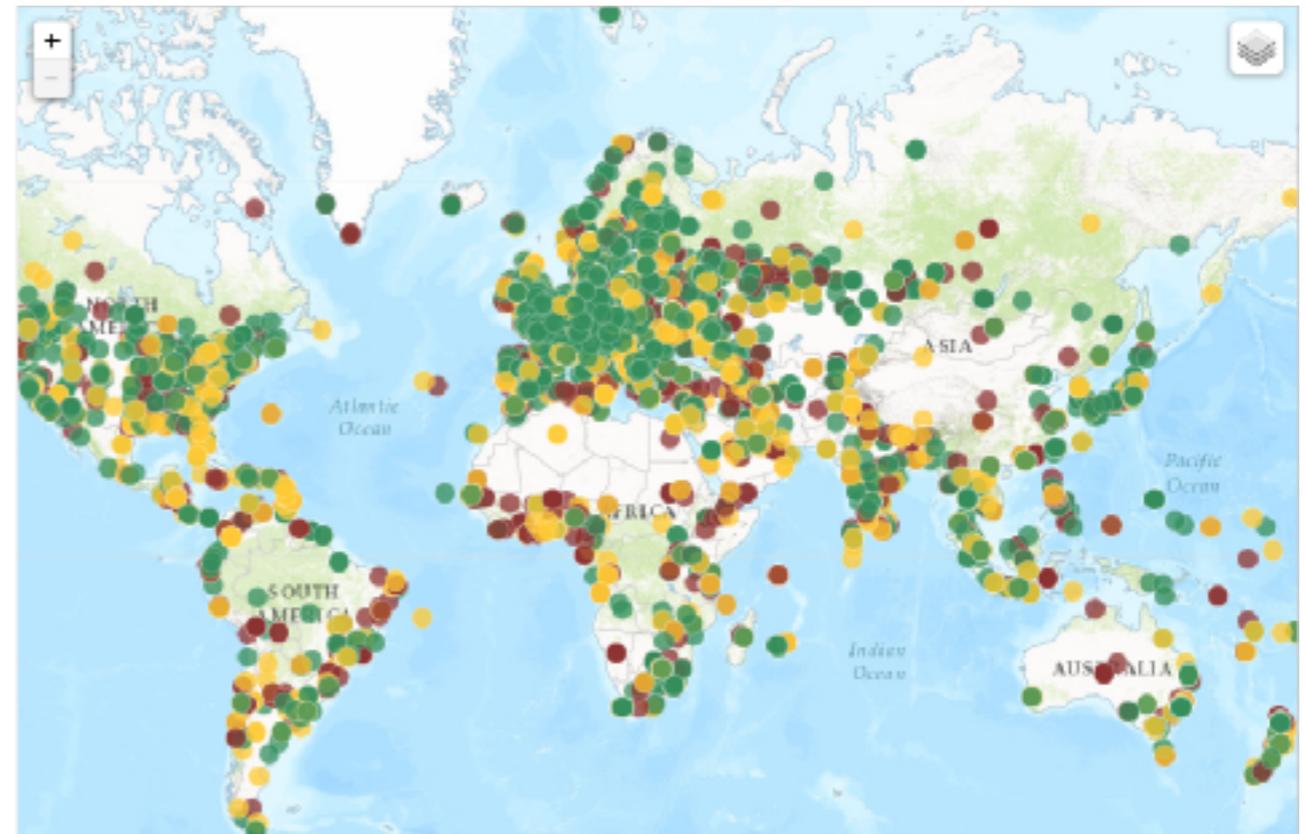
Probes

The number of connected probes

- 9700+



- Around the world



What is RIPE Atlas?



Composed by: Anchors



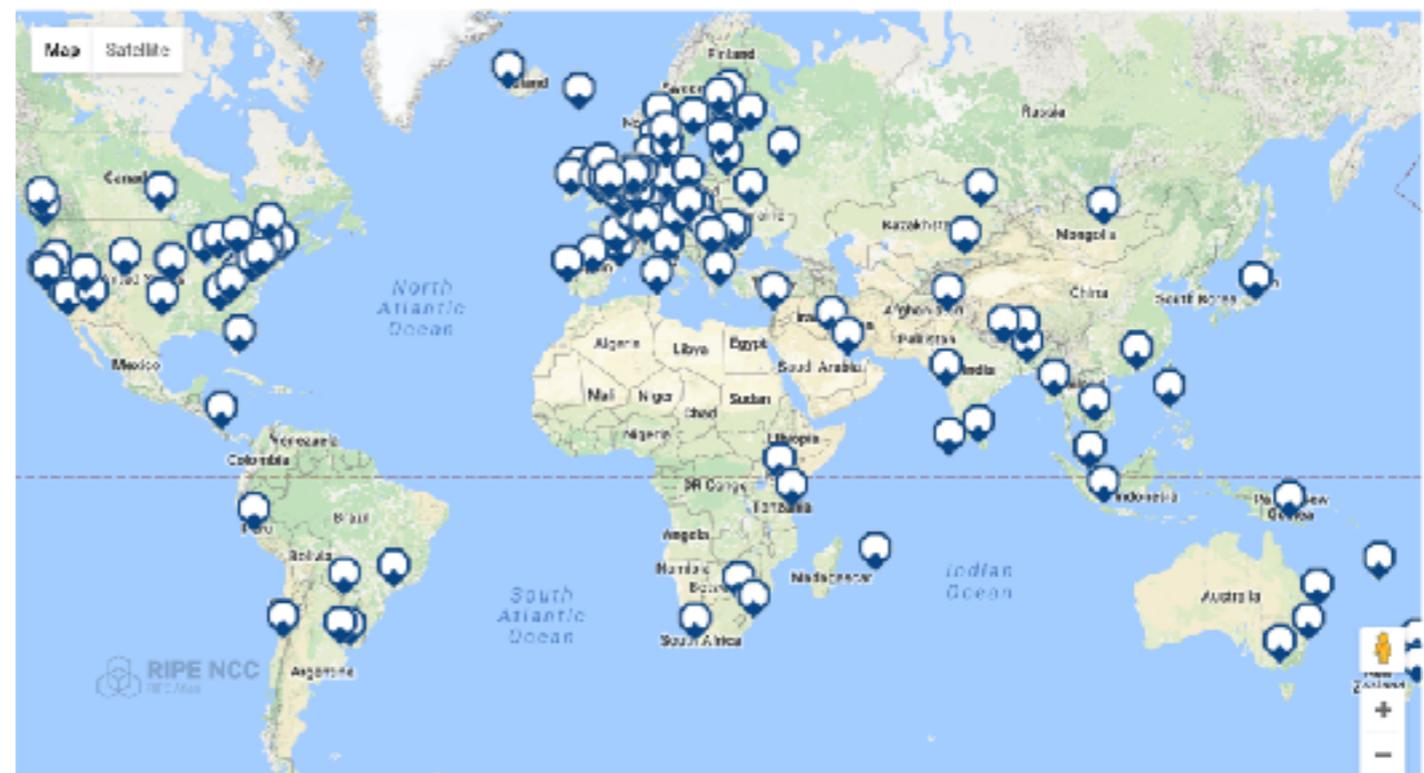
RIPE Atlas Anchors

Growth in the number of RIPE Atlas anchors over time



- 250+

- Around the world



What is RIPE Atlas?



Goals:

- Internet wide measurement system
 - Internet infrastructure, not all applications
- Real time & historical info
- Outbound and inbound measurements
- Collaborative effort
- Open and free
- IPv4 and IPv6 capable

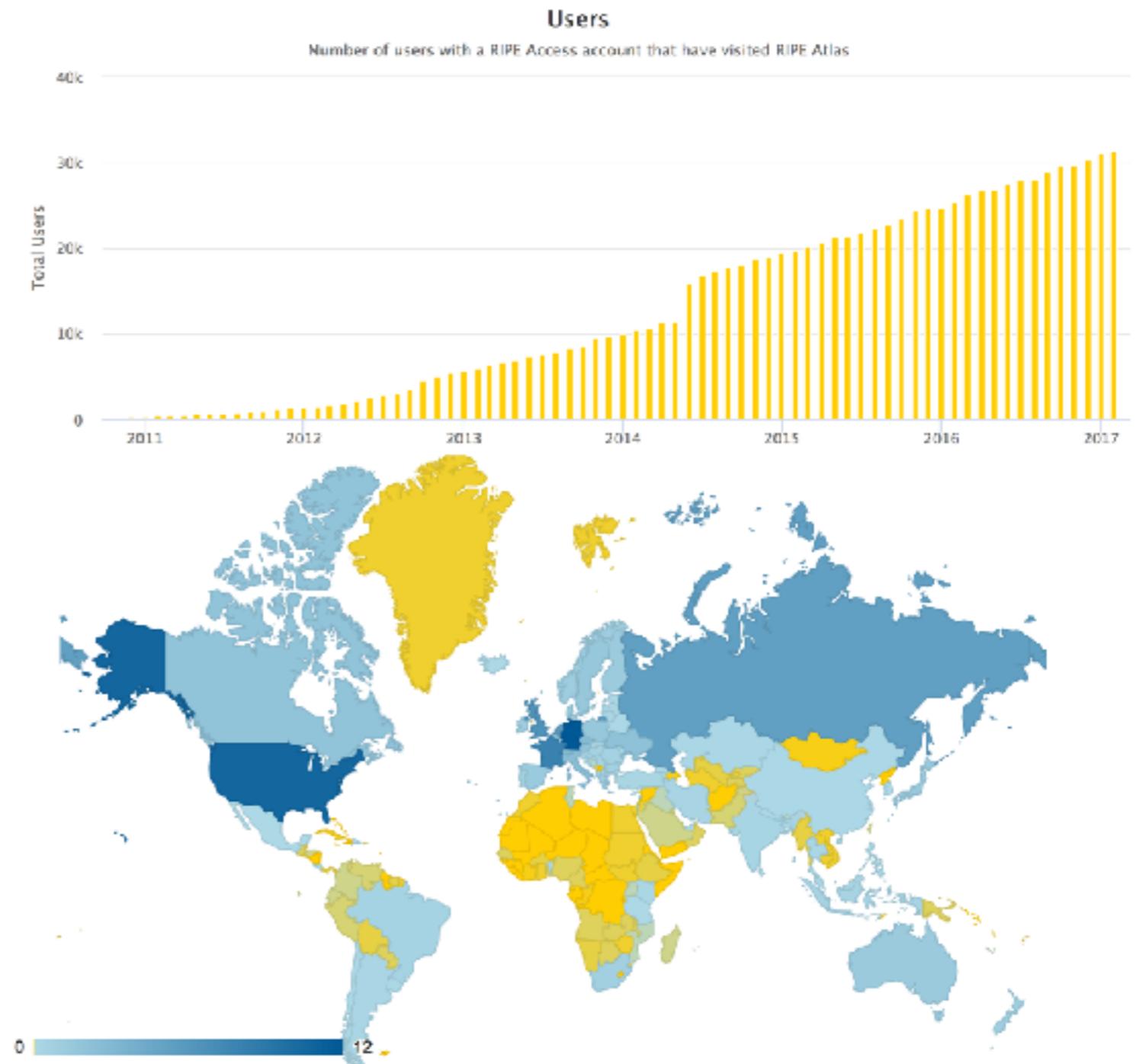


What is RIPE Atlas



Composed by: **RIPE Atlas Community**

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



What is RIPE Atlas

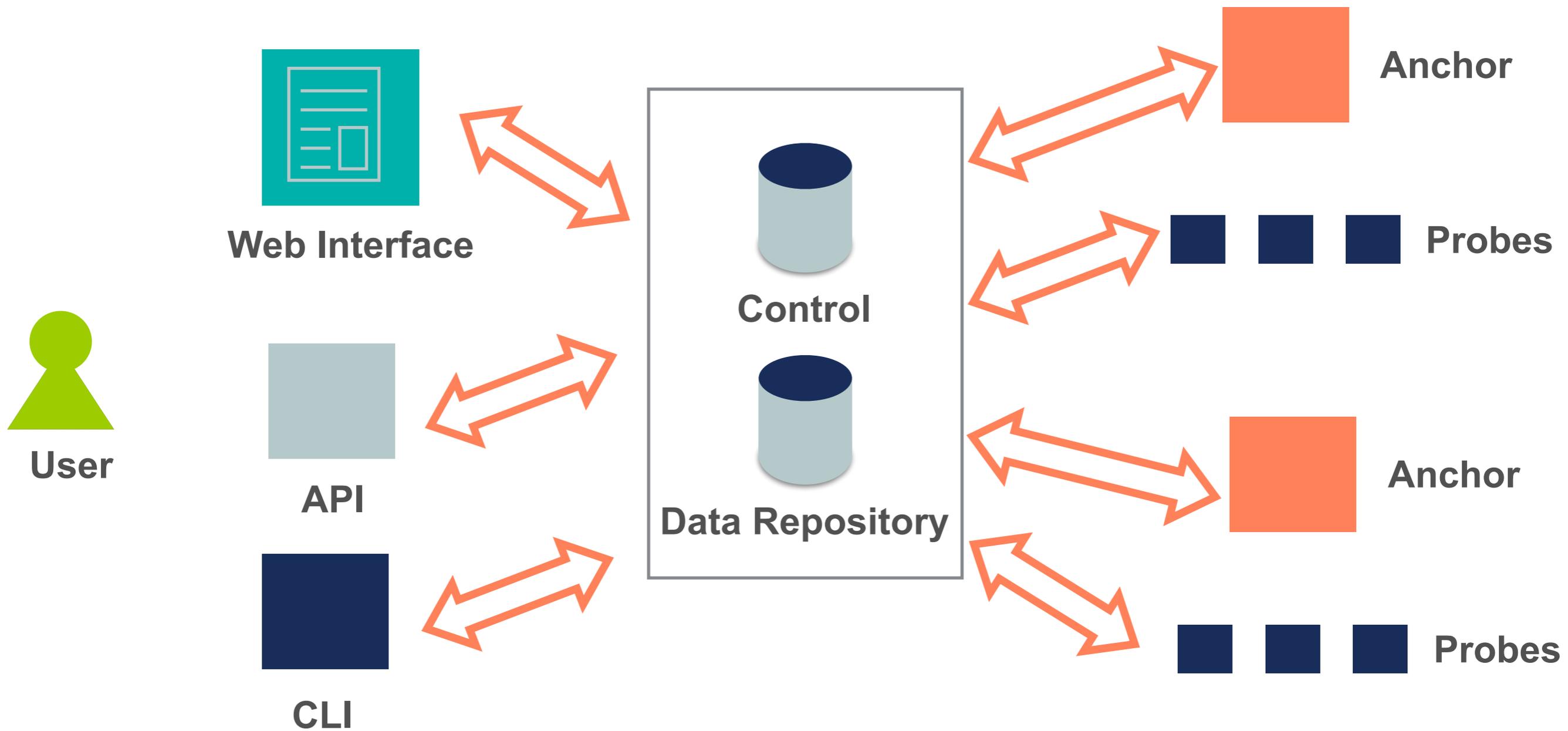


Composed by: Measurements

Measurements currently running

	Built-in	User-defined			
		Total UDM	Anchoring	DNSMON	Other
Ping	41	4363	505	0	3858
Traceroute	45	3303	507	817	1979
DNS	158	4869	0	3268	1601
SSL/TLS Certificate	4	225	0	0	225
NTP	0	44	0	0	44
HTTP	4	540	506	0	34

RIPE Atlas Overview



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

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)

Security Aspects



- Probes:
 - Hardware trust material (regular server address, keys)
 - 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



RIPE NCC
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RIPE Atlas News

Victor Naumov | ENOG13

Current Numbers



- Number of connected probes: ~9700
 - Was ~9350 during RIPE 73
 - Recovered from the previous slow-down/dip
- Covered ASes: ~3400 (IPv4), ~1250 (IPv6)
- Collecting ~4500 results/sec (~390M/day)



Some More Current Numbers



- 384 RIPE Atlas ambassadors
 - Including RIPE NCC staff acting as ambassadors
- 1940 Twitter followers (@RIPE_Atlas)
- 33000+ users total, 6400+ active last quarter
- 1000+ mailing list subscribers
- 2 RIPE Atlas sponsors in 2017 (+3 pending)
 - Let us know if you feel like sponsoring!

Recent Use Cases

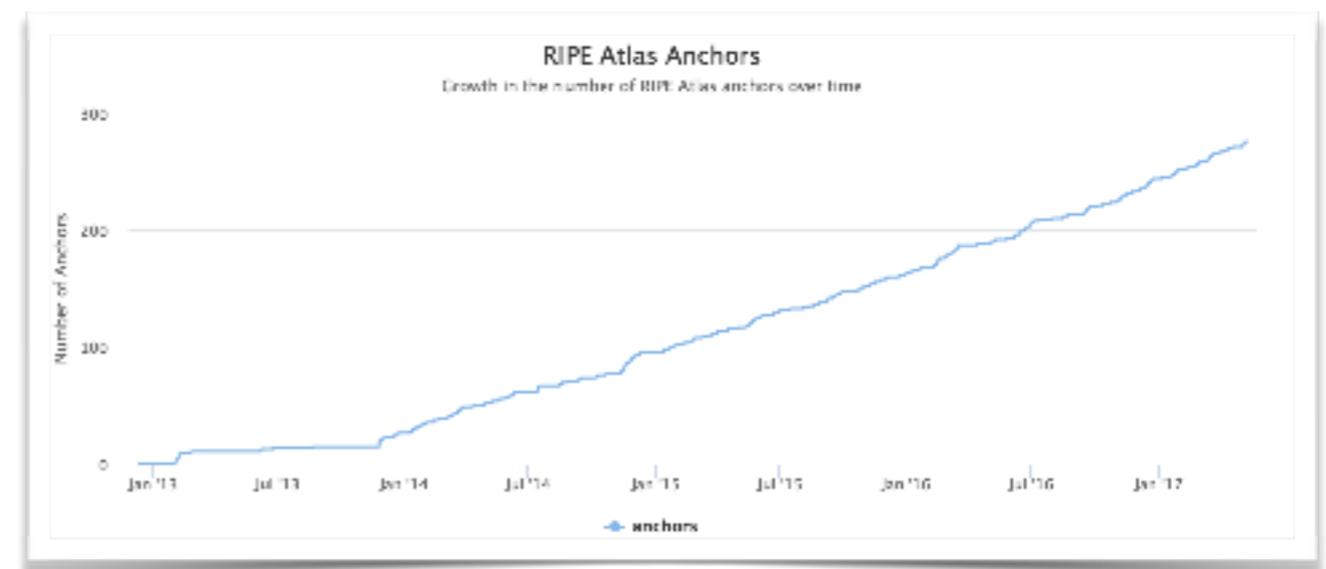


- Turning on Anycast on B-Root
 - https://labs.ripe.net/Members/giovane_moura/anycast-on-b-root-and-ripe-atlas-view
- Using RIPE Atlas to Measure Latency to Reunion Island
 - https://labs.ripe.net/Members/rehan_noordally/using-ripe-atlas-to-measure-latency-to-reunion-island
- Using RIPE Atlas to Validate International Routing Detours
 - https://labs.ripe.net/Members/anant_shah/using-ripe-atlas-to-validate-international-routing-detours
- Reviewing the 2016 Leap Second
 - https://labs.ripe.net/Members/stephen_strowes/reviewing-the-2016-leap-second
- Reasons Dynamic Addresses Change
 - https://labs.ripe.net/Members/ramakrishna_padmanabhan/reasons-dynamic-addresses-change

Anchors



- An anchor is a probe and a willing target
 - Automatically measured and generate more credits
- Number of anchors: 250+ (224 last time)
- Thanks to APNIC, LACNIC, ISOC & AFRINIC who are sponsoring anchors in other regions
 - Let us know if you also want to sponsor these



Probes



- We're looking at candidates for “version 4” probes
 - Should be capable, stable, inexpensive and available
- Version 1 and 2 probes already lived beyond their foreseen life time
 - We still have ~600 + ~1400 of these up and running
 - Version 1 probes approached their technical limits
 - We'll freeze their firmware soon but otherwise continue supporting them for as long as possible (e.g. still do security updates if needed)

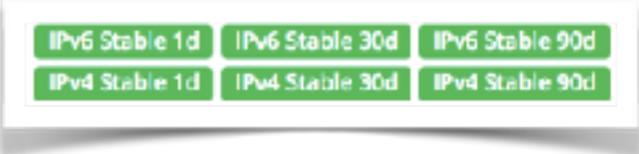
Going Virtual (?)



- We're evaluating the potential for virtual probes
 - Probes where the physical device is replaced by a Virtual Machine provided by the host
 - Could reach places that physical probes can't
 - The costs: higher risks and changes in operations, “noisy neighbours”, avoiding “fast flux” deployments, etc.
- Perhaps even virtual anchors, as a next step

In Other News



- New “probe stability” system tags 
- New DNS root zone measurements
- May be coming: “Cloud Reachability”
 - Reachability measurements against servers “in the cloud”
- Held a DNS measurements hackathon in April 2017
 - https://labs.ripe.net/Members/alun_davies/dns-measurements-hackathon-2017

Out Now: TraceMON



- Our newest traceroute visualisation tool
 - Watch Massimo's presentation for details



The screenshot shows a detailed information popup for the node 'France-IX (AS57734)'. The popup is overlaid on a network diagram showing connections between 'AS34019', 'France-IX', and 'IX Australia NSW'. The popup contains the following information:

- France-IX (AS57734)**
- IP: 37.49.236.2
- Located in: Paris, FR [Update](#)
- PeeringDB:**
 - IXP: France-IX, Paris, FR
 - Lan: 37.49.236.0/23
 - [Update PeeringDB](#)
- Routing Info:**
 - 57734 - FRANCEIX, FR
 - Announced: Yes
- Registry info:**
 - Resource: 57344-58067
 - Name: IANA 16-bit Autonomous System (AS)
 - Numbers Registry
 - Desc: Assigned by RIPE NCC

At the bottom of the popup, there are three buttons: [Contact holder](#), [Whois](#), and [See BGP events](#).

Almost There: Wi-Fi Measurements



- Verifying if Wi-Fi connections work or not
 - Using regular, wired probes
- Not general purpose “is my home Wi-Fi ok?”
 - Targets specific WiFi networks; Eduroam first
- Probes/hosts will have to opt-in
- Main benefit for RIPE Atlas: potential wider coverage of networks

OpenIPMap



- First production release is imminent

The screenshot displays the OpenIPMap web application interface. The top navigation bar includes links for Home, Analyse, Internet Measurements, BPE Atlas, OpenIPMap, Collections, Atlas Measurements, Traceroutes, GeIP, and View. The main content area is divided into two columns. The left column features a world map with a red dot in the US and a blue dot in Africa, connected by a dashed line representing a traceroute path. Below the map, a summary box indicates 'Current Collection aggregated by Atlas measurement and time' with results from May 1st, 2017, showing 8 traceroutes from 8 probes. The right column displays 'Details atlas measurement 8345845'. It includes a 'GENERAL' section with a list of all probes used as source, the target host (72.21.80.200), start and stop times, and a 'LOADED TRACEROUTES' section with two specific routes. A 'SUMMARY' section shows a list of hops with their respective ASNs, locations, and latencies. A modal window is open over the summary, allowing the user to edit the host location, showing the current location as Seattle, US.

Home > Analyse > Internet Measurements > BPE Atlas

OpenIPMap Collections Atlas Measurements Traceroutes GeIP View

Details atlas measurement 8345845

GENERAL

all probes used as source: 24 32 304 1046 1058 1116 1134 1189 1193 1196 2567 2685 2759 3041 3444 3579 3644 4155 6061 6062 6065 6066 6072 6080 6122 6147 6223 10185 10334 10422 10423 10595 10770 10790 11171 11528 11687 11857 12105 12108 12115 12116 12134 12380 12452 12546 12685 12693 12802 12806 13128 13146 13614 14284 14641 14882 14933 15542 15958 17587 17797 17914 18275 18451 18512 18664 19096 19460 19761 19911 21195 22379 22382 22511 22710 22802 23017 23033 23036 23903 24899 25004 27667 27952 28529

target host: 72.21.80.200

start: 2017-05-01T08:00:24Z

stop: 2017-05-01T08:10:07Z

LOADED TRACEROUTES

probes used: 24 32 304 1046 1058 1116 1134 1189

timerange: 2017-05-01T08:00:24Z - 2017-05-01T08:00:27Z

TRACEROUTE 73.254.190.25 → AS7922 AS7922 AS1299 AS15133

TRACEROUTE 24.16.252.197 → AS7922 AS7922 AS1299 AS15133

SUMMARY

AS7922 → 1058 comcast.net Port Elizabeth, ZA

- 8ms (172.16.50.1)
- 12ms 324167 (96.120.100.53) Kampala, UG
- 13ms 655029 comcast.net Casablanca, MA
- 16ms 813304 comcast.net New York City, US

AS7922

EDIT HOST LOCATION

HOST

AS1299 68.139.164.158 be-43-ar01.seattle.wa.seattle.comcast.net

AS15133

CURRENT LOCATION

City

see

Country

United States

cities that match your input

Seattle, US

CANCEL SUBMIT

19ms 681756 comcast.net Boston, US

16ms comcast.net ADD A LOCATION

Current Collection aggregated by Atlas measurement and time

Results from May 1st 2017, 08:00:27 UTC

ATLAS MEASUREMENT

ID 8345845

RAN 8 days ago

8 traceroutes from 8 probes loaded



Questions



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