



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Network Monitoring and Troubleshooting Made Easy

RIPESstat and RIPE Atlas

Michela Galante & Massimo Candela | September 2017 | LACNIC 28



Overview 1 - RIPEstat

- Introduction to RIPE and the RIPE NCC
- Introduction to RIPEstat
- More about widgets
- Visualising BGP Routing Information
- Comparing Networks

RIPEstat



Overview 2 - RIPE Atlas

- Introduction to RIPE Atlas
- Public Measurements
- Creating a Measurement
- Command-line Interface Toolset
- Network Monitoring (Real Time)
- Use Cases
- More RIPE Atlas Features
- Take Part in the Atlas Community



Course Goals

- RIPLEstat Goals:
 - Find out information about yours and other networks
 - Analyse BGP visibility of your network
- RIPLE Atlas Goals:
 - Learn how to use RIPLE Atlas for network monitoring and troubleshooting
 - Learn how to create specific tailor-made measurements that suit your exact needs using API calls or the command line interface
- Opportunity for hands on practice



RIPE NCC - Who are we?



- Located in Amsterdam
- Not-for-profit organisation
- One of the five Regional Internet Registries (RIRs)
- 16,500+ members (LIRs)

Our service region



RIPE NCC
RIPE NETWORK COORDINATION CENTRE



ARIN
American Registry for Internet Numbers

IACNIC

AFRINIC
The Internet Numbers Registry for Africa

APNIC



Introduction to RPEstat



What is RIPEstat?

One interface for Internet data and statistics

“One-stop shop”



RIPE NCC
RIPEstat



RIPeStat interface



stat.ripe.net

RIPEStat — Internet Measurements and Analysis

RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Manage IPs and ASNs > Analyze > Participate > Get Support > Publications > About Us >

You are here: Home > Analyze > Statistics > RIPeStat

RIPEStat Home <<
About RIPeStat >
Documentation >
Use Cases >

Your IP address is:
2001:67c:2e89::c100:14e6

System Statistics

1,425,616
Requests seen in the last full hour on RIPeStat

On RIPE Labs

New Feature: Easily Embed your RIPeStat Widgets in RIPE Labs Articles
Jan 17, 2017

Processing RIPE Atlas and RIPeStat Data with Hadoop
Nov 19, 2015

Updates to the RIPE NCC Routing Information Service
Oct 12, 2015

The Internet in North Korea - Hanging by a Single Thread?
Aug 26, 2015

Is it Really Worth Peering at IXP57A
Comparative Study
Aug 03, 2015

Search RIPeStat

Your network: AS3333, 2001:67c:2e89:48

e.g.: IPv4 prefix/range, IPv6, ASN

Search

Lost in the address space?
Find your way with the Address Space Hierarchy widget.

About RIPeStat	Documentation	Use Cases
FAQ	Interfaces & APIs	Notable Network Events
Data Sources	Demos	Compare Results
Widget List	Roadmap	Looking for Abuse Information
Top Queries	Changelog	Global Internet Statistics
Workshops	Known Issues	
Feedback		



Query Types

- IPv6 address/prefix
- IPv4 address/prefix
- ASN
- Hostname
- Country code



What data? What sources?

- RIPE Database
- Other RIR data
- BGP routing data (RIS)
- Active measurements (RIPE Atlas, DNSMON)
- Geolocation (external dataset, but...)
- Blacklist data (external dataset)
- More...

Results page



RIPE Database (Whois) Website
Search the content of this website

Manage IPs and ASNs > Analyse > Participate > Get Support > Publications

You are here: Home > Analyse > Statistics > Ripesat > AS3333

AS3333

Search

permalink

More tabs with results

- At a Glance (4)
- Routing (12)
- DNS (1)
- Anti Abuse (1)
- Database (1)
- Geographic (1)
- Activity (1)
- Suggestions (1)

AS Overview (AS3333)

Originating Prefixes

Holder of this ASN:
RIPE-NCC-AS Reseaux IP Europeens Network Coordination Centre (RIPE NCC), NL

RIR	Status	Registration	Country
RIPE NCC	ALLOCATED	1994-05-19	EU

Show IANA Registry Information

Geoloc (AS3333)

Geoloc details

Data is based on MaxMind's GeoLite City data set and valid for the stated query time (see below)

Showing results for AS3333 as of 2017-02-28 00:00:00 UTC

Whois Matches (AS3333)

aut-num	3333
as-name	RIPE-NCC-AS
descr	Reseaux IP Europeens Network Coordination Centre (RIPE NCC)
org	ORG-RIEN1-RIPE
status	ASSIGNED
mnt-by	RIPE-NCC-END-MNT
mnt-by	RIPE-NCC-MNT
source	RIPE

Showing results for AS3333 as of 2017-02-28 09:07:00 UTC

Routing Status (AS3333)

At 2017-02-28 00:00:00 UTC, AS3333 was visible to 100% of 161 IPv4 and 99% of 151 IPv6 RIS full peers.

- First ever seen as origin announcing 193.0.0/22, on 2000-08-18 08:00:00 UTC.
- Originated IPv4 prefixes: 7
- Originated IPv6 prefixes: 1
- Observed BGP neighbours: 219
- Address space announced (IPv4): 4864 IPs
- Address space announced (IPv6): equiv. to 1 /48s

Showing results for AS3333 as of 2017-02-28 00:00:00 UTC

Widgets



Why use RIPv6?

- For your own network:
 - Is someone else announcing my prefix?
 - How visible is my new IPv6 network?
 - Is my BGP routing consistent with the Routing Registry?
 - Are my DNS and reverse DNS consistent?
 - Location of my customers' prefixes
 - Was my prefix visible yesterday in Tokyo?



Why use RIPv6?

- For viewing other networks:
 - How many IPv6 prefixes are announced in my country?
 - IPv6 in my country compared to neighbours
 - Who has more peers, AS1 or AS2?
 - Is the prefix/ASN that I want already announced?
 - Which ASN announces an IP?
 - Where can I report abuse from an IP?

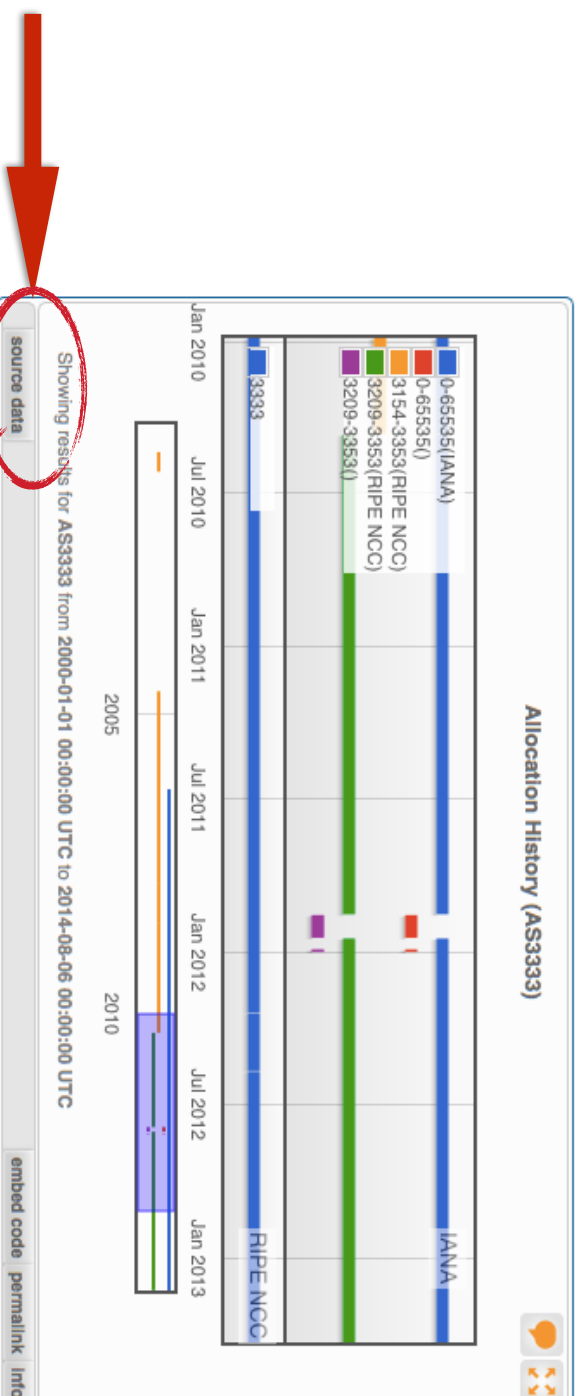


RIPEstat Interfaces

- Web interface
 - <https://stat.ripe.net>
- RIPEstat data API
 - https://stat.ripe.net/docs/data_api



Get the data behind the widget!



source data

Get the data behind this widget with the Data API

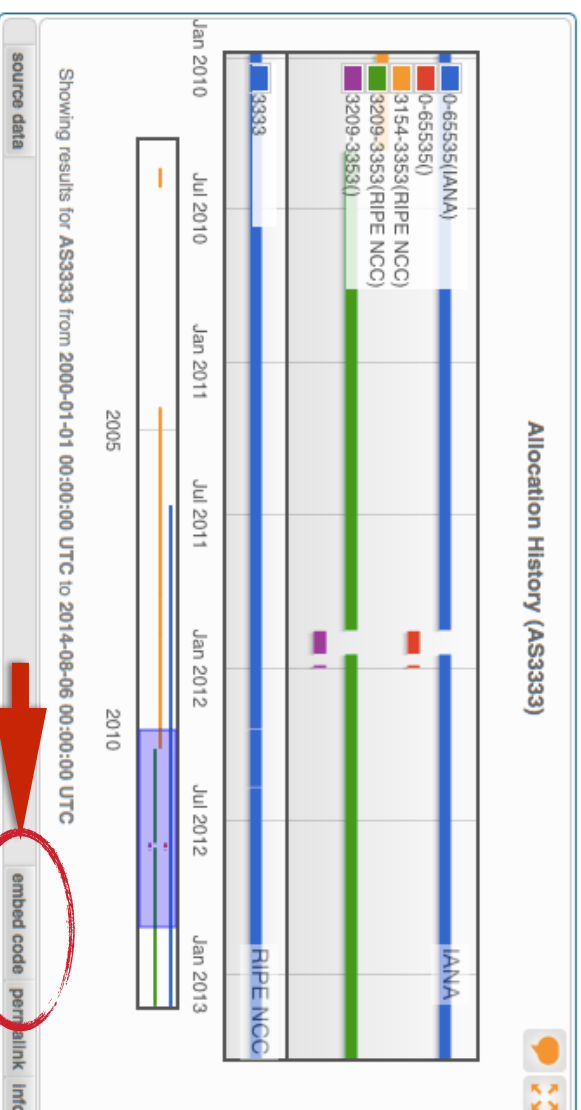
<https://stat.ripe.net/data/allocation-history/data.json?resource=AS3333>

embed code permalink info

```
{
  "cached": true,
  "data": {
    "query_endtime": "2014-08-06T00:00:00",
    "query_starttime": "2000-01-01T00:00:00",
    "resource": "3333",
    "results": {
      "IANA": [
        {
          "resource": "0-65535",
          "status": "IANA",
          "timelines": [
            {
              "endtime": "2007-10-11T00:00:00",
              "starttime": "2007-10-11T00:00:00"
            },
            {
              "endtime": "2008-11-03T00:00:00",
              "starttime": "2007-10-27T00:00:00"
            }
          ]
        }
      ]
    }
  }
}
```



Embed the widget!



source data

Embed this widget on your page

```
<script src="https://stat.ripe.net/widgets/widget_apl.js"></script>
<div class="statwidget"><script>ripestat.init("allocation-history",
{"resource": "AS3333", null, {"size": "medium", "disable": [{"controls"}]})</script>
...</div>
```

embed code permalink info

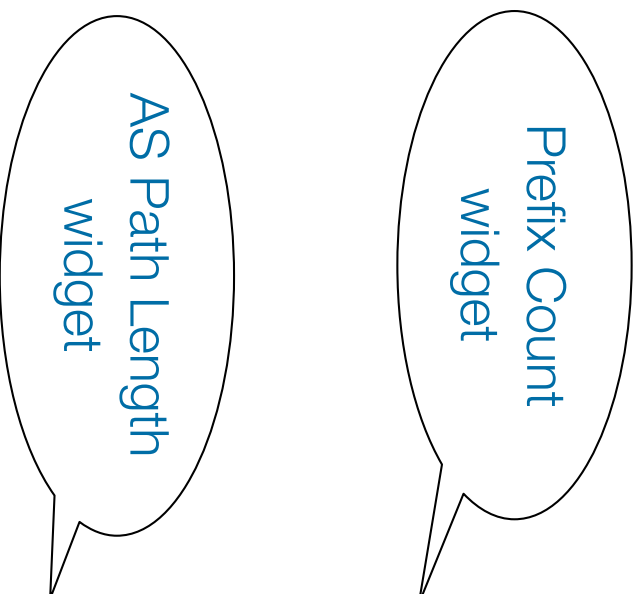
Copy and paste this code into an HTML webpage. Note: `widget_apl.js` (the 1st line) only needs to be included once per page.

For more usage details please view the RIPEstat Widget API documentation.



Embedding widgets on your site

- ISP embedded widgets on its page



interdix/colloidingnetwork

Home Network lead Peers Peering policy Maintenance Loading glass

AS42093

Welcome

Welcome to the AS42093.net Network.
On this website you can learn about our network.
In case of emergency you should contact: +31 (0)53 8509812

Network status

There are no network issues at this moment.

Network Details

Here are some interesting tools that show different information details about our network. The tools are generated by Rigs.

Prefixes

The table shows every prefix that originated from our AS in the last week.

number of * Prefixes * Addresses

IPv4 Prefixes
IPv6 Prefixes

AS Path Length

The diagram shows the average length of all AS paths seen in the last week originating from our AS.

Spider diagram for AS42093 from 2000-01-01 00:00:00 UTC to 2013-09-09 00:00:00 UTC

Spider diagram for AS42093 from 2013-09-09 08:00:00 UTC to 2013-09-09 18:00:00 UTC



Visualising BGP Routing Information



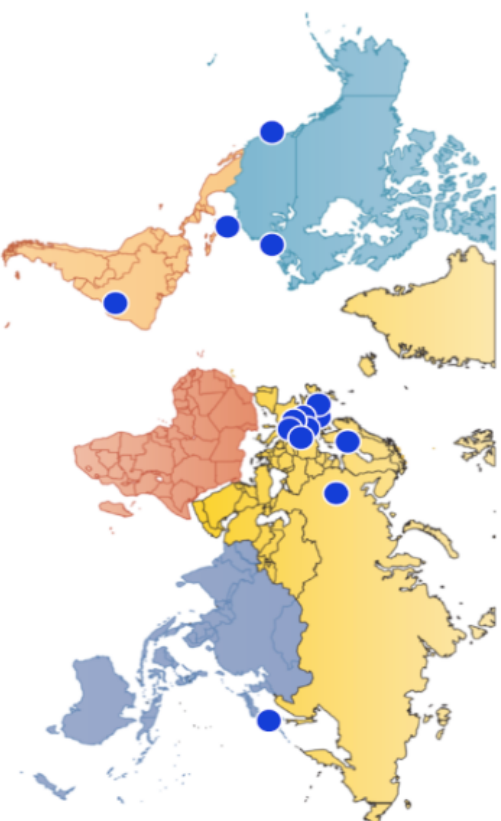
Querying

- IP or ASN queried?
 - You get different widgets!
- ASN query shows all the prefixes announced by that AS

RIS - Routing Information Service



- RIPE NCC collecting BGP information since 1999
 - Raw data: ris.ripe.net
- 22 route collectors
600+ peers
- RIPLEstat visualises RIS data





At-a-glance view: Prefix queried



At a Glance (4)

permalink

Announced?
By which AS?

Prefix Overview (140.78.0.0/16)

✓ Announced

This prefix is announced by **AS1205**
"JKU-LINZ-AS University Linz, AT"

Resource	RIR	Country
140.78.0.0/16	RIPE NCC	AT

Showing results for 140.78.0.0/16 as of 2017-02-28 08:00:00 UTC

source data embed code permalink info

Registered in the RIPE Database?

Whois Matches (140.78.0.0/16)

inetnum	140.78.0.0/16
netname	JKU-LAN
descr	Johannes Kepler University Campus LAN
country	AT
org	ORG-JKUT-RIPE
status	LEGACY
mnt-by	AS1205-MNT
mnt-by	ACONET-LIR-MNT
source	RIPE

Showing results for 140.78.0.0/16 as of 2017-02-28 10:04:00 UTC

source data embed code permalink info

Geoloc (140.78.0.0/16)

100.00%

Showing results for 140.78.0.0/16 as of 2017-02-28 10:00:00 UTC

source data embed code permalink info

Announced?
By which AS?
What % visible?
Since when?

Routing Status (140.78.0.0/16)

At 2017-02-28 08:00:00 UTC, 140.78.0.0/16 was 100% visible (by 161 of 161 RIS full peers).

First ever seen announced by AS1205, on 2000-08-18 08:00:00 UTC.

Originated by: AS1205 (valid route object in RIPE)

No less-specific covering prefixes.

Showing results for 140.78.0.0/16 as of 2017-02-28 08:00:00 UTC

source data embed code permalink info



At-a-glance view: ASN queried



At a Glance (4)

Routing (12)

DNS (1)

Anti Abuse (1)

Data

Geog

Active

Sugg

AS Overview (AS1205)

Originating Prefix(es)

JKU JKU University Linz, AT

Order of this ASN

Status REGISTERED

Registration Country AT

LOCATED 1993-09-01

IANA Registry Information

Showing results for AS1205 as of 2017-02-28 08:00:00 UTC

source data embed code permalink info

Whois Matches (AS1205)

aut-num	1205
as-name	JKU-LINZ-AS
org	ORG:JKU-RIPE
descr	University Linz
descr	Linz, Austria
descr	AT
status	LEGACY
mnt-by	AS1205-MNT
mnt-by	ACONET-LIR-MNT
source	RIPE

Last updated less than about 11 hours ago. Showing results for AS1205 as of 2017-02-28 10:14:00 UTC

source data embed code permalink info

Geoloc (AS1205)

100.00%

Geoloc details

Data is based on MaxMind's Geolite City data set and valid for the stated query time (see below)

Showing results for AS1205 as of 2017-02-07 00:00:00 UTC

source data embed code permalink info

Routing Status (AS1205)

At 2017-02-28 08:00:00 UTC, AS1205 was visible to 100% of 161 IPv4 and 1% of 151 IPv6 RIS full peers.

First ever seen as origin announcing 140,78,0,0/16, on 2000-08-18 08:00:00 UTC.

Originated IPv4 prefixes: 3

Originated IPv6 prefixes: 0

Observed BGP neighbours: 2

Address space announced (IPv4): 67584 IPs

Address space announced (IPv6): equi.v. to 0 /48s

Advanced Settings

Showing results for AS1205 as of 2017-02-28 08:00:00 UTC

1 Results exclude routes with very low visibility (less than 3 RIS full-feed peers seen).

Given query time (2017-02-28 08:00:00 UTC) has been changed because it is earlier than the time there is data available for!

source data embed code permalink info

The rest is the same as for a prefix



BGPlay

- See how your network is routed
 - Announcements
 - Withdrawals
 - Path changes
- Shows routing history
 - Animated graphic
 - Highly interactive

<https://stat.ripe.net/widget/bgplay>

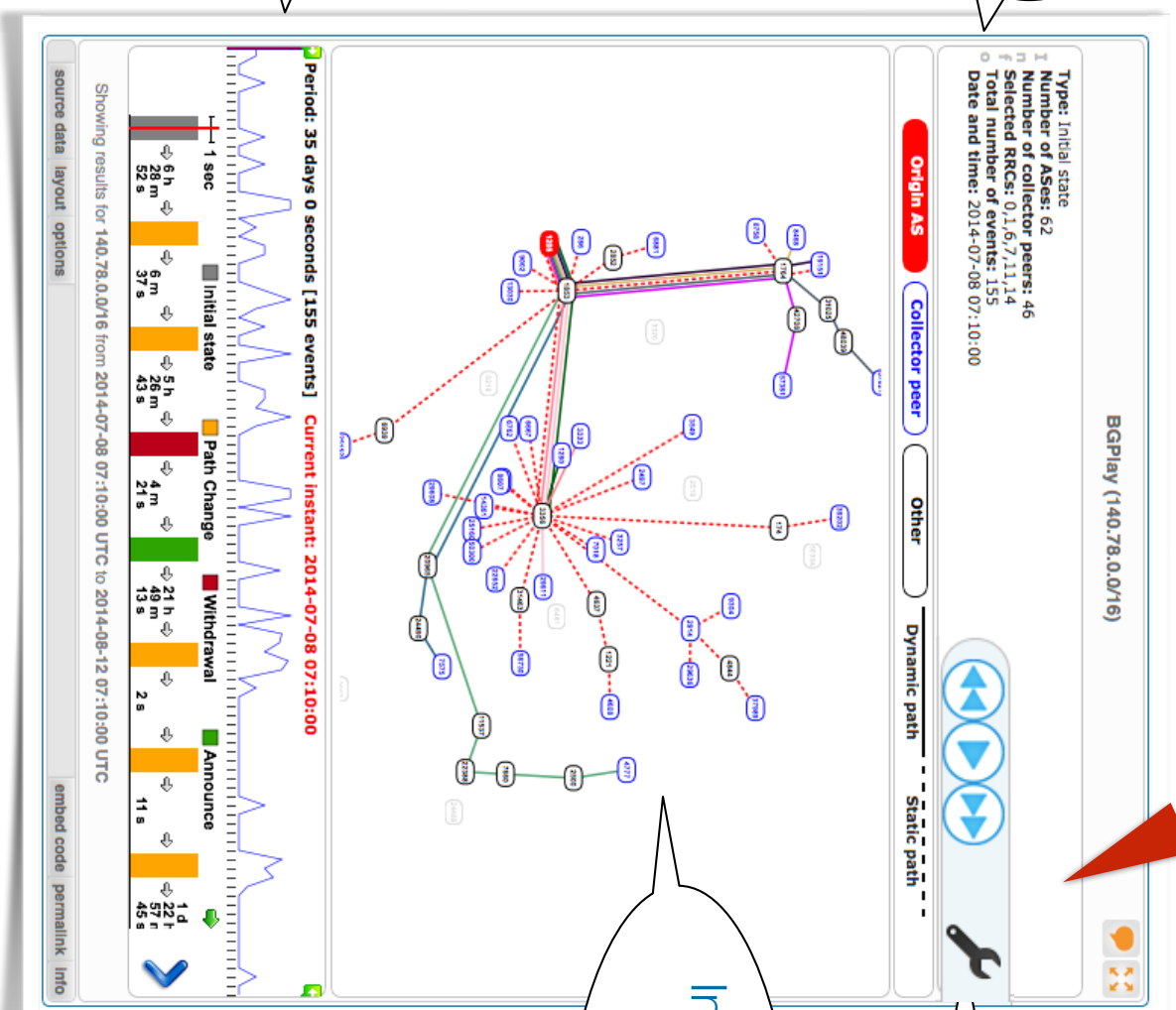
BGPplay

click play



BGP event, ASN
or ASN path details

Control timeline

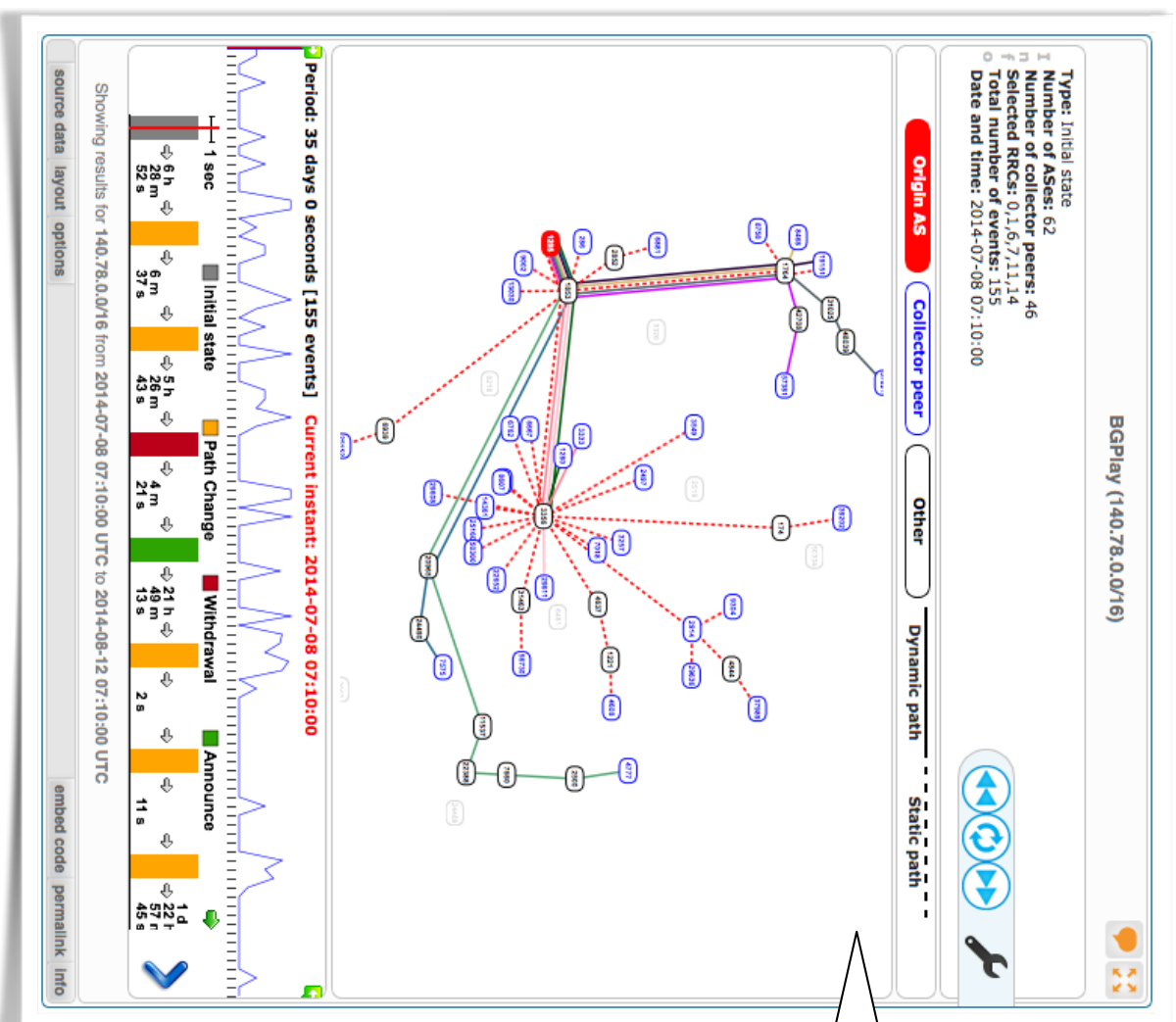


- Control panel:
- Covered time period
 - RRC selection

Interactive animated
graph

Detailed timeline
with events

BGPplay



- Examples: (2013/8/28-30)
- Prefix with announcements & withdrawals:
84.205.64.0/24
- Check IPv6 connectivity:
2001:67c:2e8::/48
- Multi-homed prefix:
199.7.80.0/24
- BGP hijacking
2008-02-28: 208.65.153.0/24
Youtube traffic by Pakistan Telecom
AS17557
- Blackholing:
193.33.96.64

Prefixes visible for this ASN



Announced Prefixes (AS1205)

Show entries

Search:

Prefix	First Seen ?	Last Seen ?
193.186.176.0/22	2014-07-30 08:00:00 UTC	2014-08-13 08:00:00 UTC
193.186.172.0/22	2014-07-30 08:00:00 UTC	2014-08-13 08:00:00 UTC
140.78.0.0/16	2014-07-30 08:00:00 UTC	2014-08-13 08:00:00 UTC

Showing 1 to 3 of 3 entries

Click here to load the entire history, starting from 2004-01-01 00:00 UTC!

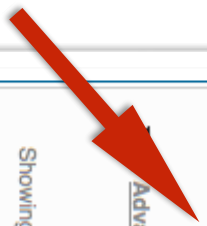
[Advanced Settings](#)

Exclude low visibility prefixes

Showing results for AS1205 from 2014-07-30 08:00:00 UTC to 2014-08-13 08:00:00 UTC

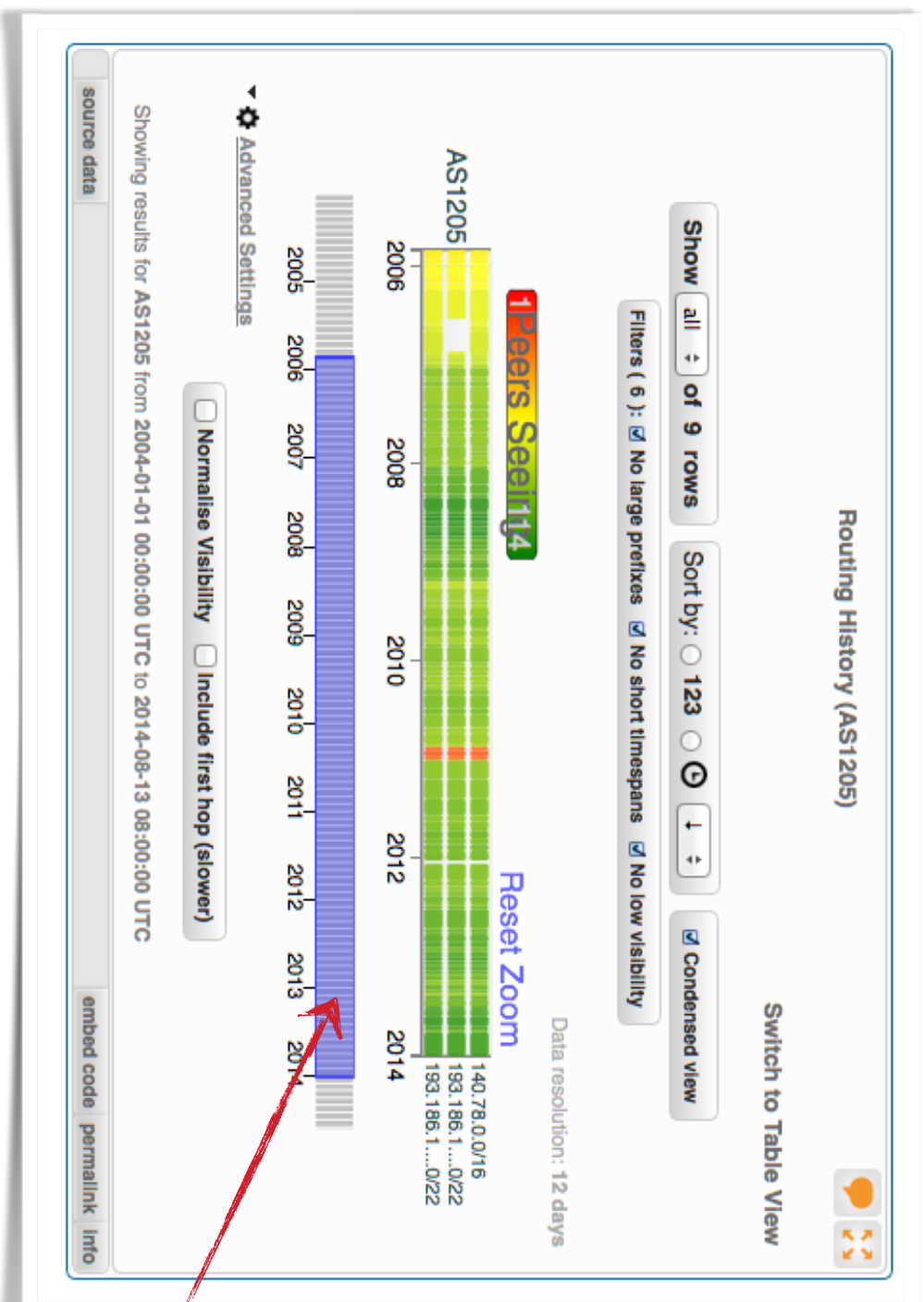
Results exclude routes with very low visibility (less than 3 RIS peers seeing).

source data embed code permalink info



**Time period
shown in widget
Default:
last two weeks**

History of Prefixes Announced by ASN



Time scale selection

Questions





Querying for a Resource



Tasks

- Which network announces 140.78.50.90?
- Is 193.3.4.2 routed?
- In which country is 91.229.42.0/23 used?
- What is its corresponding inetnum object?
- What widget shows the BGP visibility status?
- How would you share interesting network events with a colleague?



RIPPE Atlas



Overview 2 - RIPE Atlas

RIPE Atlas

- Introduction to RIPE Atlas
- Using RIPE Atlas as a Visitor
- Looking up Public Probes
- Finding Results of Public Measurements
- Creating a Measurement
 - *Demo and Exercise*
 - Network Monitoring
 - *Exercise: Using Streaming API*
- Command-line Interface Toolset
 - *Exercise: Using RIPE Atlas CLI*
- Use Cases
- More RIPE Atlas Features
- **Take Part in the Atlas Community**

Goals



- Learn how to use RRIPE Atlas for network monitoring and troubleshooting
- Learn how to create specific tailor-made measurements that suit your exact needs, using API calls or the command line interface
- Opportunity for hands-on practice
- Get answers to your questions



Prerequisites

- We assume you have already used RIPE Atlas
- Do you have a RIPE NCC Access account?
 - If not - quickly create one: access.ripe.net
- Do you have credits to spend?
 - You get a voucher from us: LACNIC28MONTEVIDEO
 - Redeem the voucher here: <https://atlas.ripe.net/user/credits/#!redeem>



Introduction to RIPv2 Atlas



An Introduction

- RIPe Atlas is a global active measurements platform
- Goal: view Internet reachability
- Probes hosted by volunteers
- Data publicly available

atlas.ripe.net



What is RIPE Atlas? (1)



- RIPE Atlas video

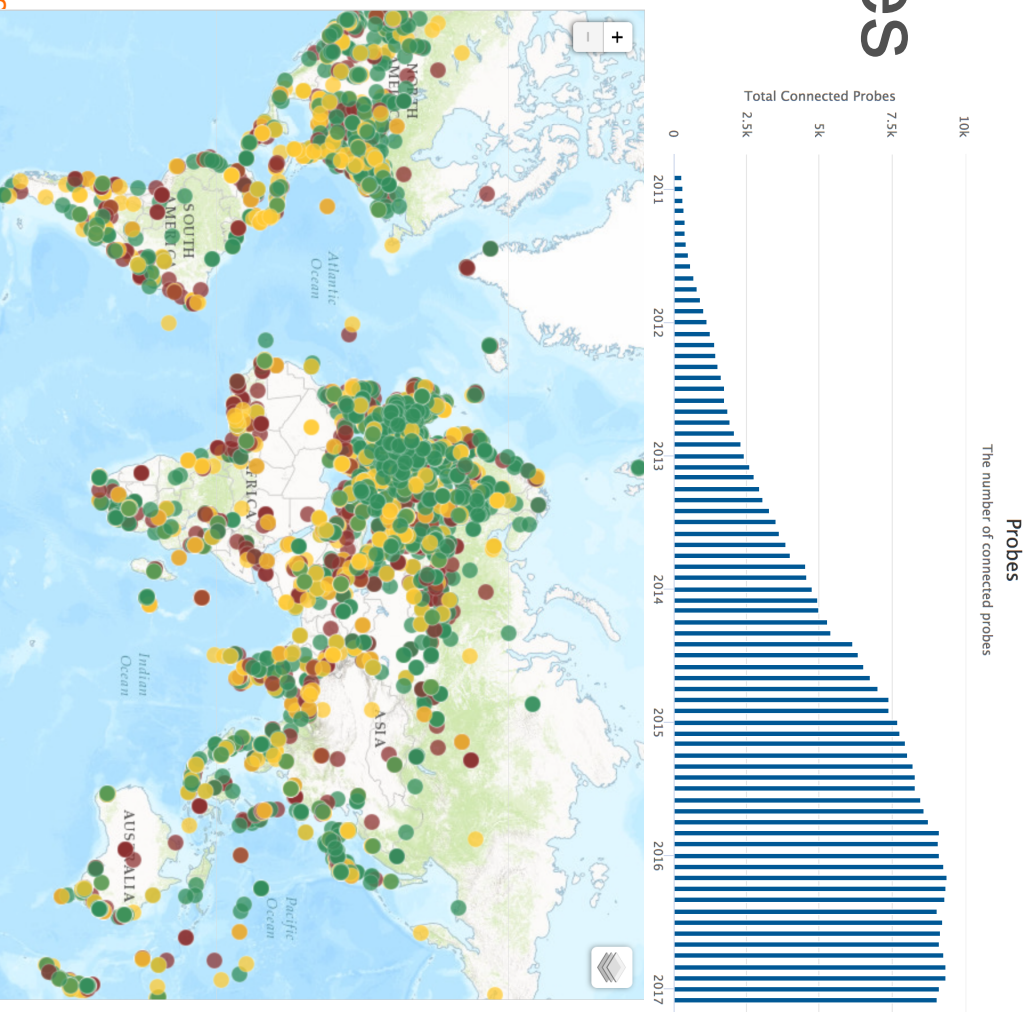
- 10,000+ active probes

- 2,606 disconnected
- 6,692 abandoned

- Countries: 177

- Originating ASNs:

- 3,394 (IPv4) = 5.9%
- 1,241 (IPv6) = 9.2%





What is RIPE Atlas? (2)

Composed by: Anchors

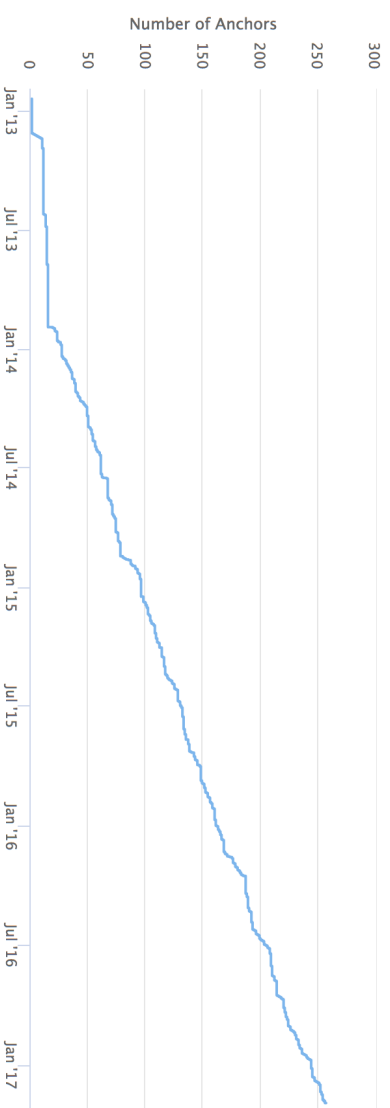
- 288

- Nine in LAC

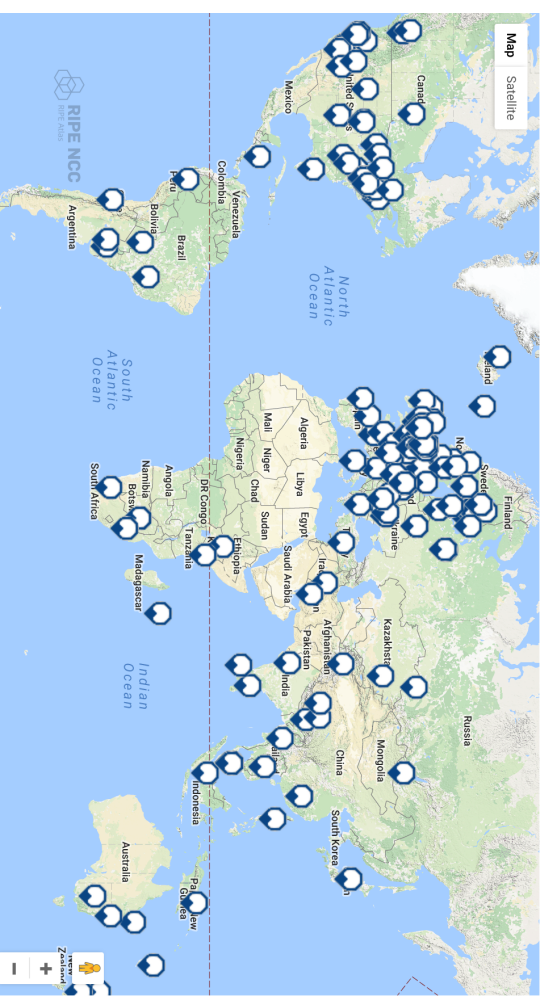


RIPE Atlas Anchors

Growth in the number of RIPE Atlas anchors over time



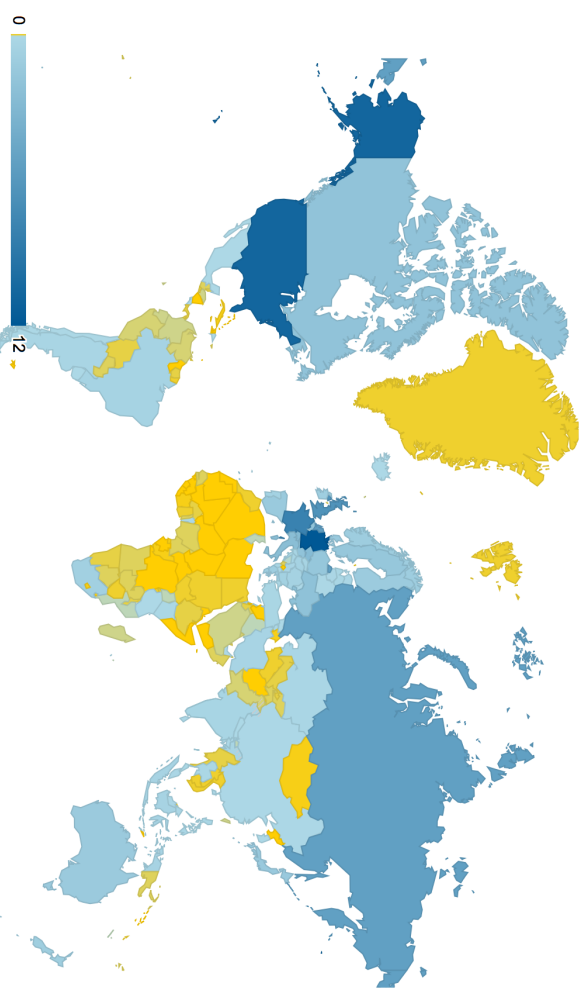
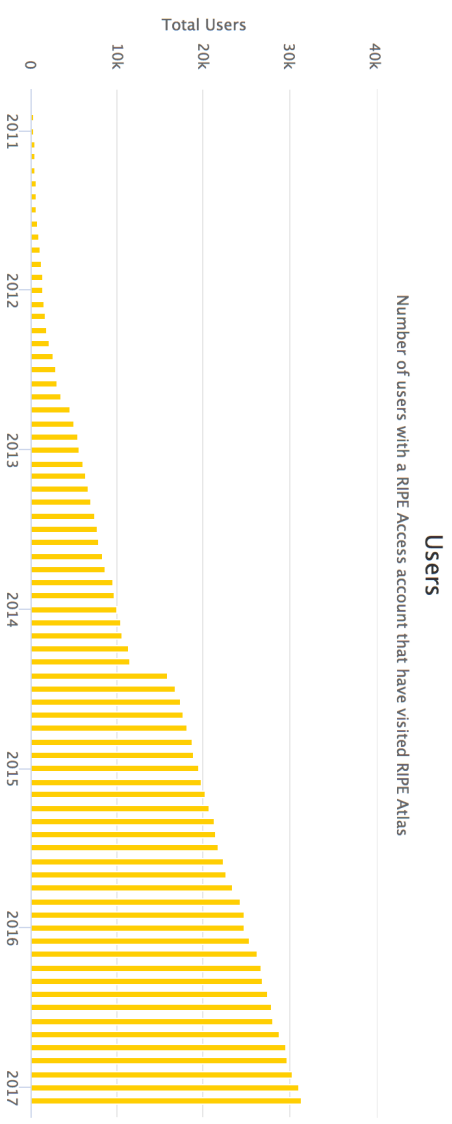
- Worldwide coverage improving, also thanks to cooperation with other RIRs and ISOC



RIPe Atlas Community



- Users
 - Probes
 - Anchors
- Hosts
 - Five sponsors in 2016
 - Two already for 2017
- Sponsors
- 300+ Ambassadors at many conferences





Highlights

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

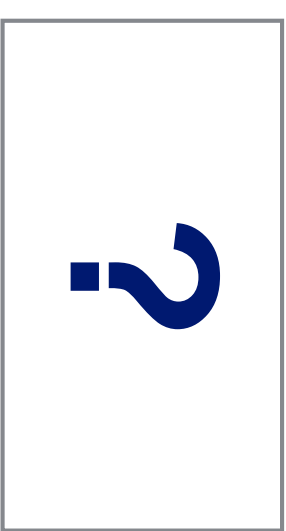


RIPe Atlas measurements

- **Built-in** global measurements towards root nameservers
 - Visualised as Internet traffic maps
- **Built-in** regional measurements towards “anchors”
- **Users** can run customised measurements
 - ping, traceroute, DNS, SSL/TLS, NTP and HTTP



Probes and Anchors



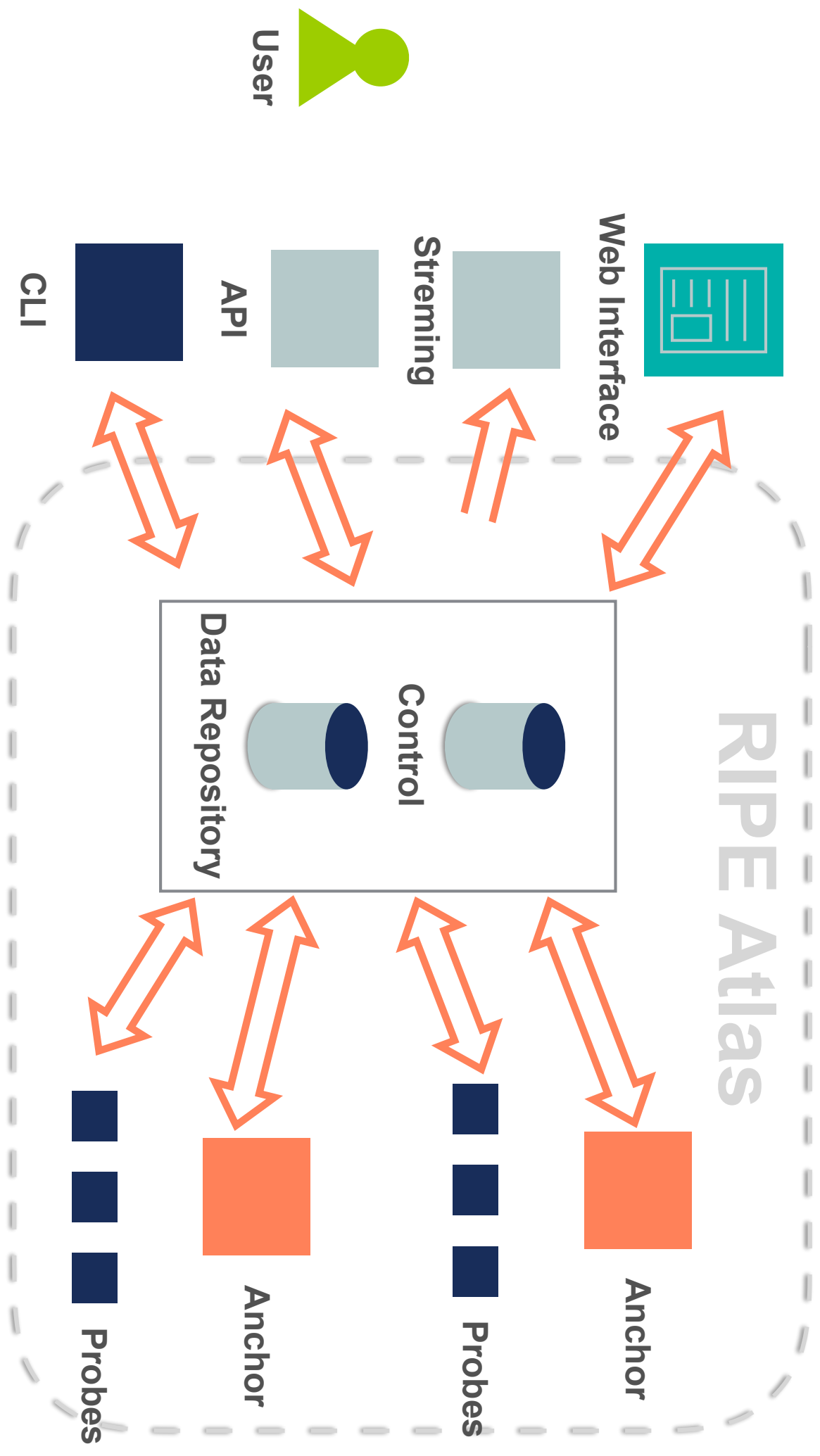
- 10,000+ probes connected (288 RIPE Atlas Anchors)
- 5,100+ results collected per second
- 17,100+ measurements currently running



RIPe Atlas Security aspects

- Probes:
 - Can be behind a NAT or Firewall
 - Don't need public IP addresses, No open ports
 - Don't listen to local traffic and no passive measurements
- External Security Reviews
- Source code published
- Reported Vulnerabilities
 - <https://atlas.ripe.net/docs/security/>

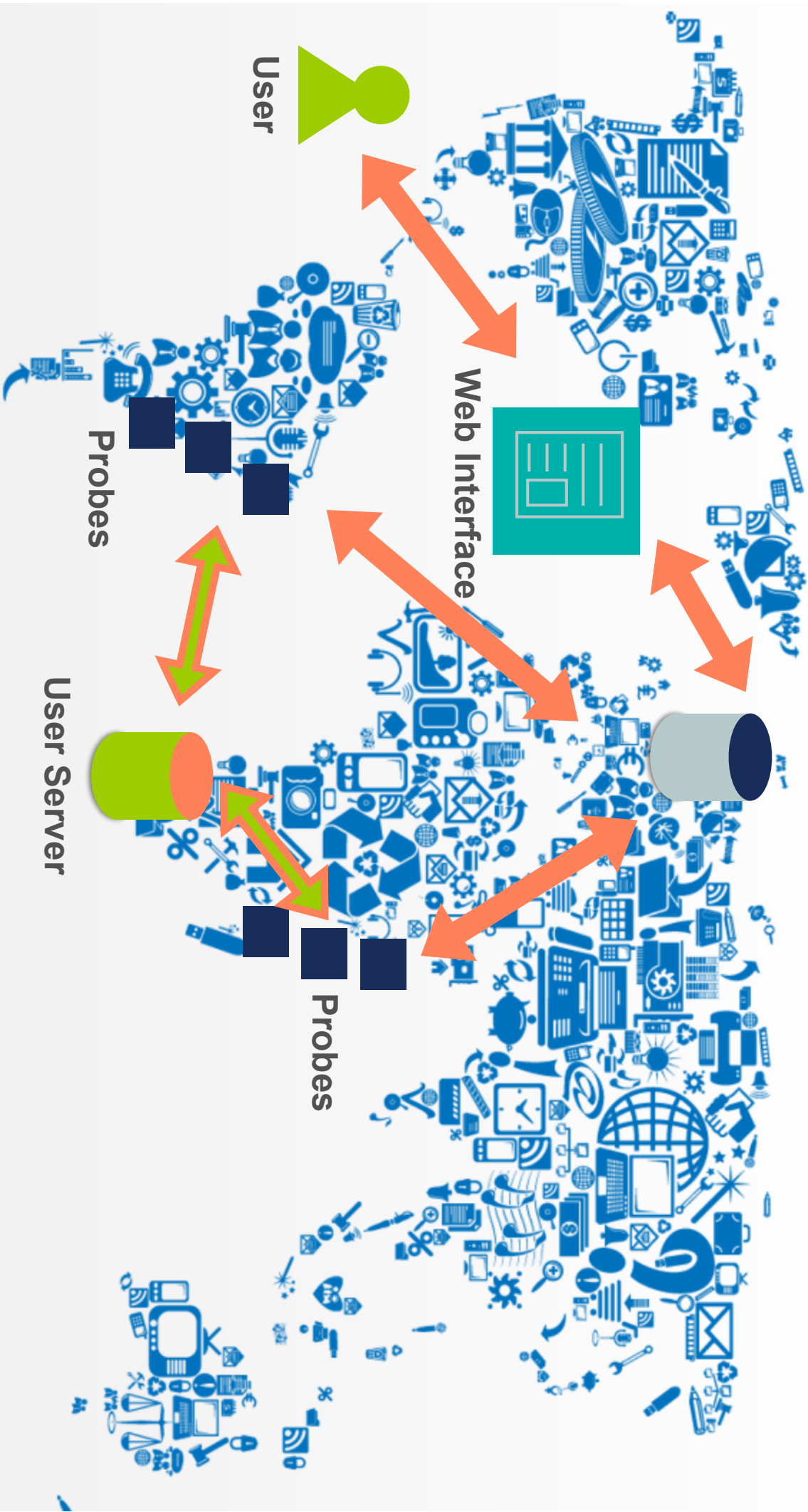
RIPe Atlas Overview (1)



RIPe Atlas Overview (2)

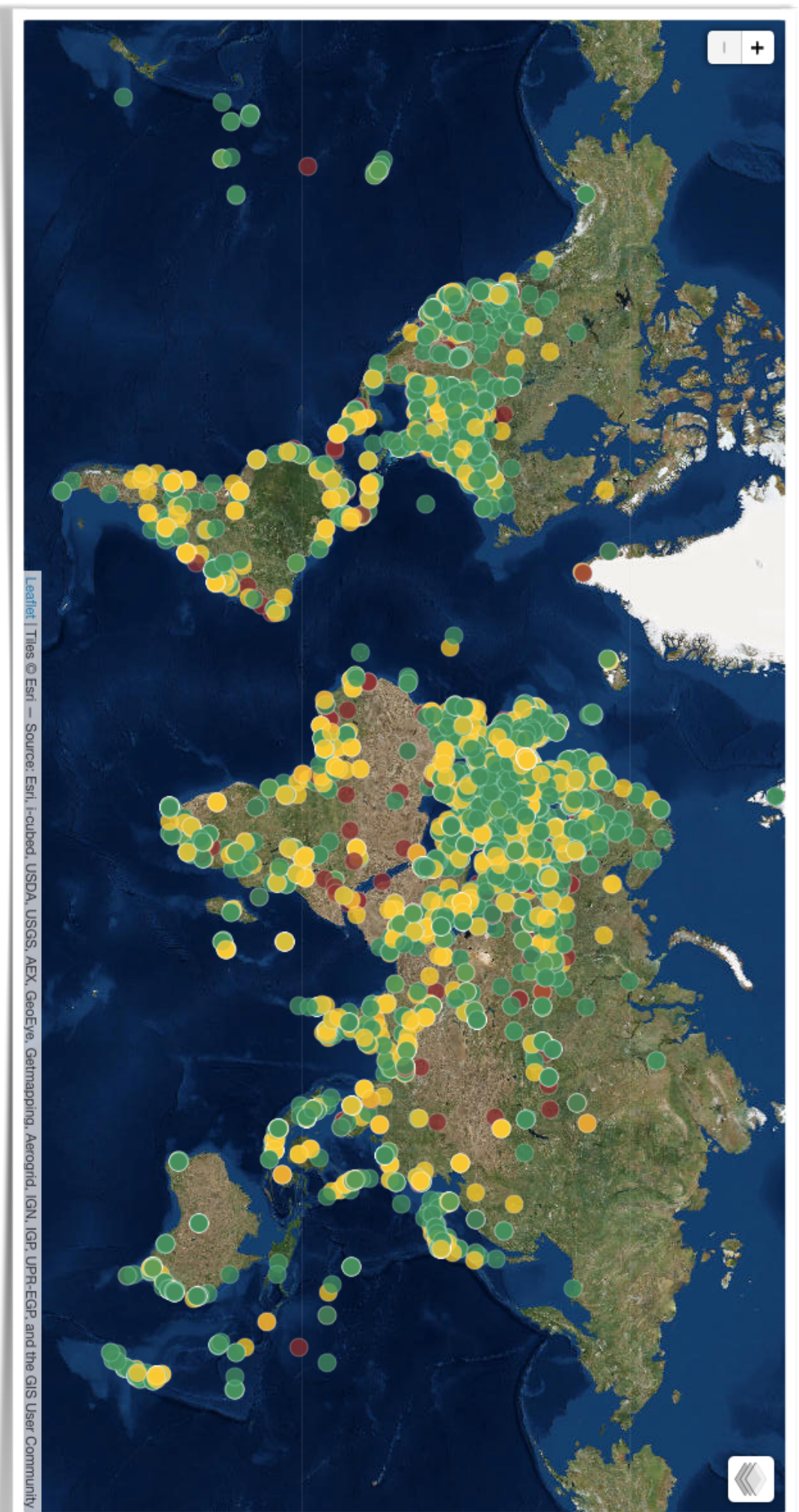


RIPe Atlas Controllers





RIP E Atlas Global Coverage





Most Popular Features

- 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
- New: “Time Travel”, LatencyMON, DomainMON
- Status checks (Icinga & Nagios)



Using

RIPE Atlas As a Visitor

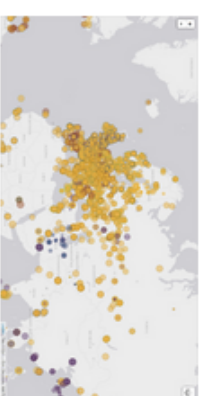


Internet Traffic Maps

RIPE Atlas	»
About RIPE Atlas	>
Get Involved	>
Probes and Anchors	>
Measurements, Maps and Tools	∨
Measurements	
Internet Maps	
Tools	
Resources	>
RIPE NCC Members	
My Atlas	>
Staff Pages	>

Internet Maps

DNS Root Instances



Shows, for each probe, which root DNS server instance the probe ends up querying, when they ask a particular root server. In other words, it shows the "gravitational radius" for root DNS server instances.

Comparative DNS Root RTT



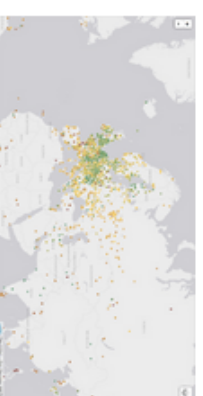
Shows a comparison of response time for DNS SOA queries to all the root DNS servers. For each probe, a marker shows the "best" root server with colour identifying the related minimum response time.

Root Server Performance



This map shows the reply time to the SOA query of a particular root DNS server, over the selected transport protocol (UDP, TCP or comparison of the two) for each probe.

RTT to Fixed Destinations



Shows the colour coding for the RTT value for the particular destination for each probe. The minimum / average / maximum values are based on standard "ping" measurements.

Reachability of Fixed Destinations

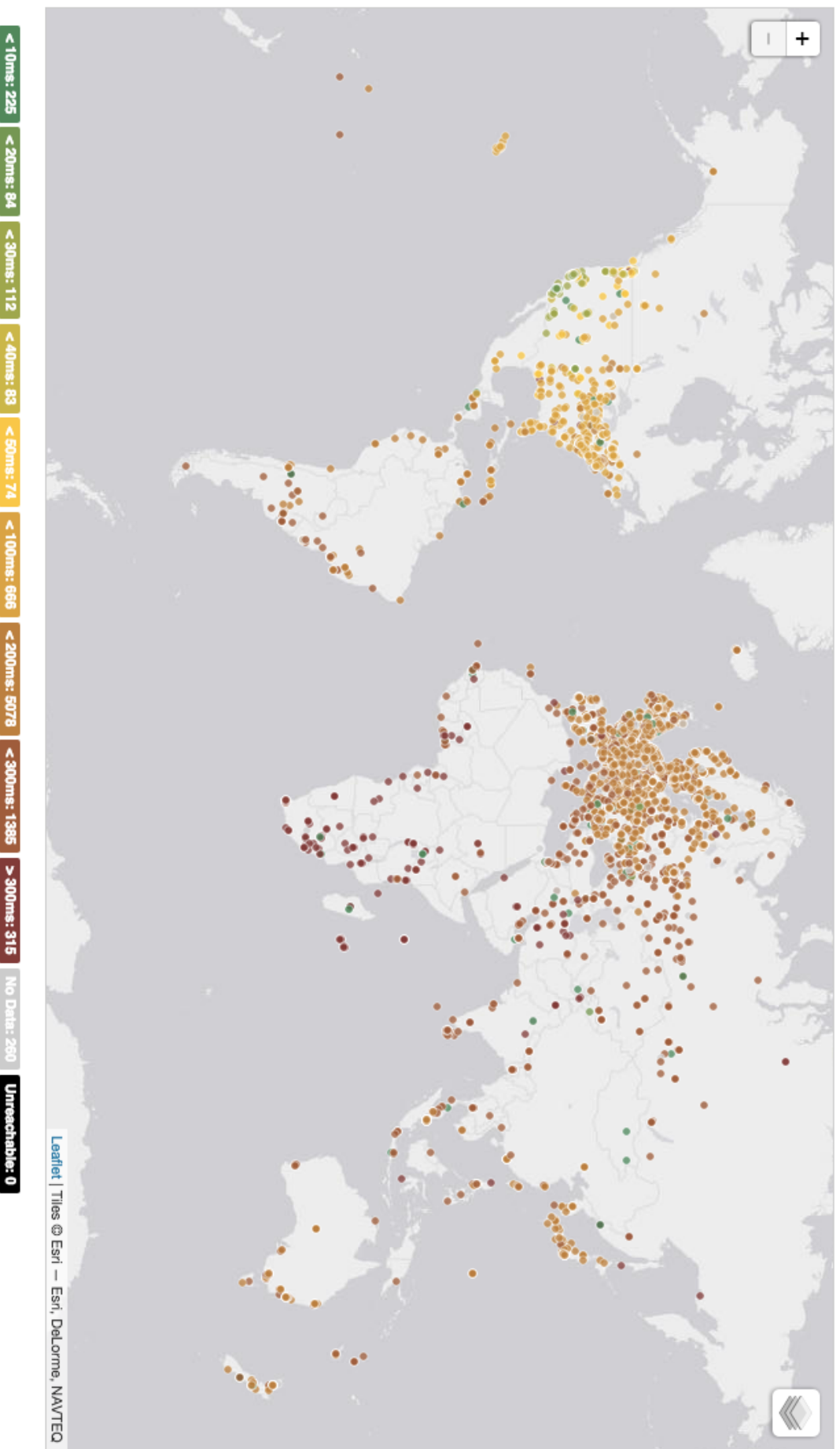


Shows if the particular fixed destination is reachable or not from each probe. Red markers indicate that the specific destination for these probes are unreachable and green reachable.



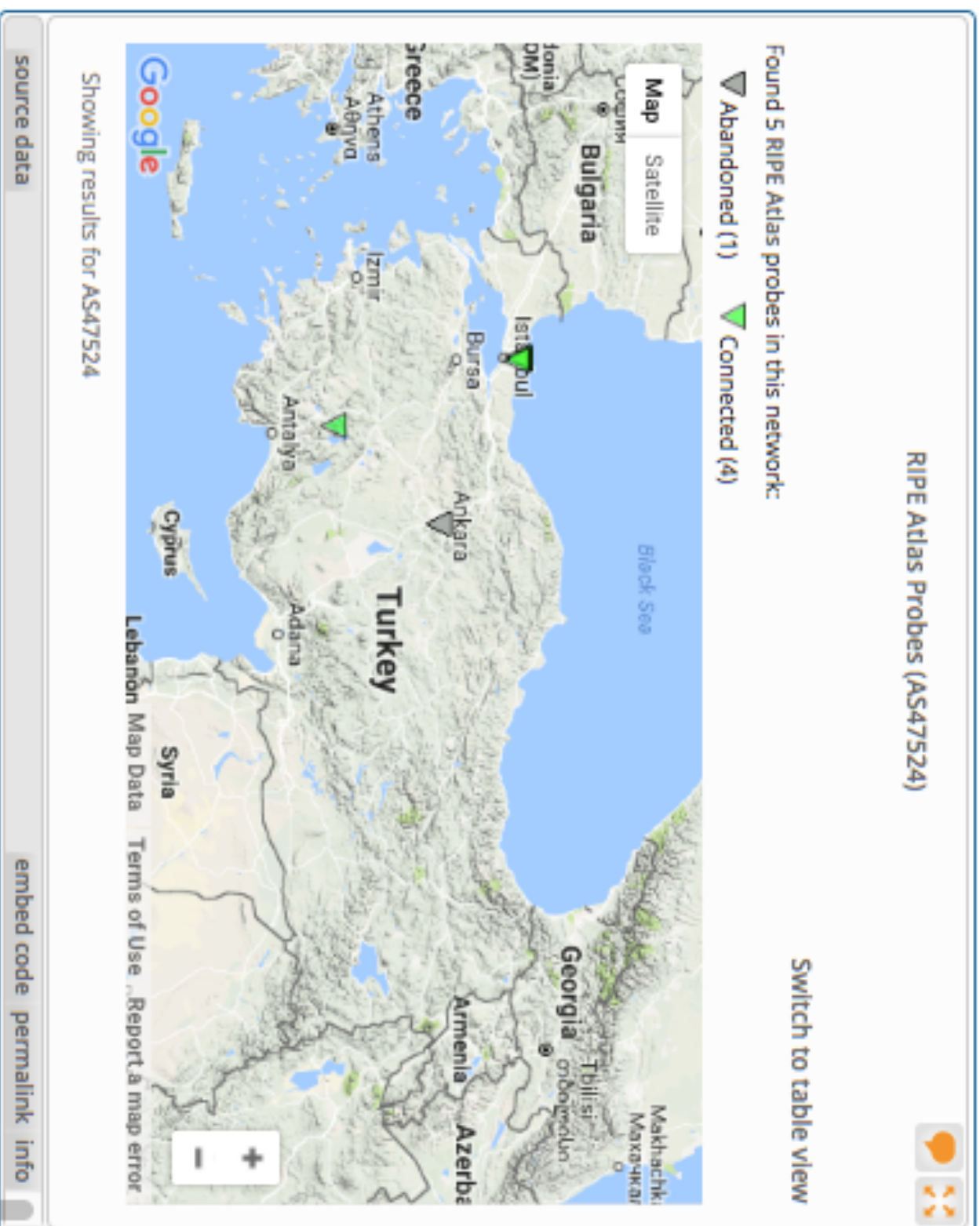
Where is B-root?

We display measurement results from the last hour only.



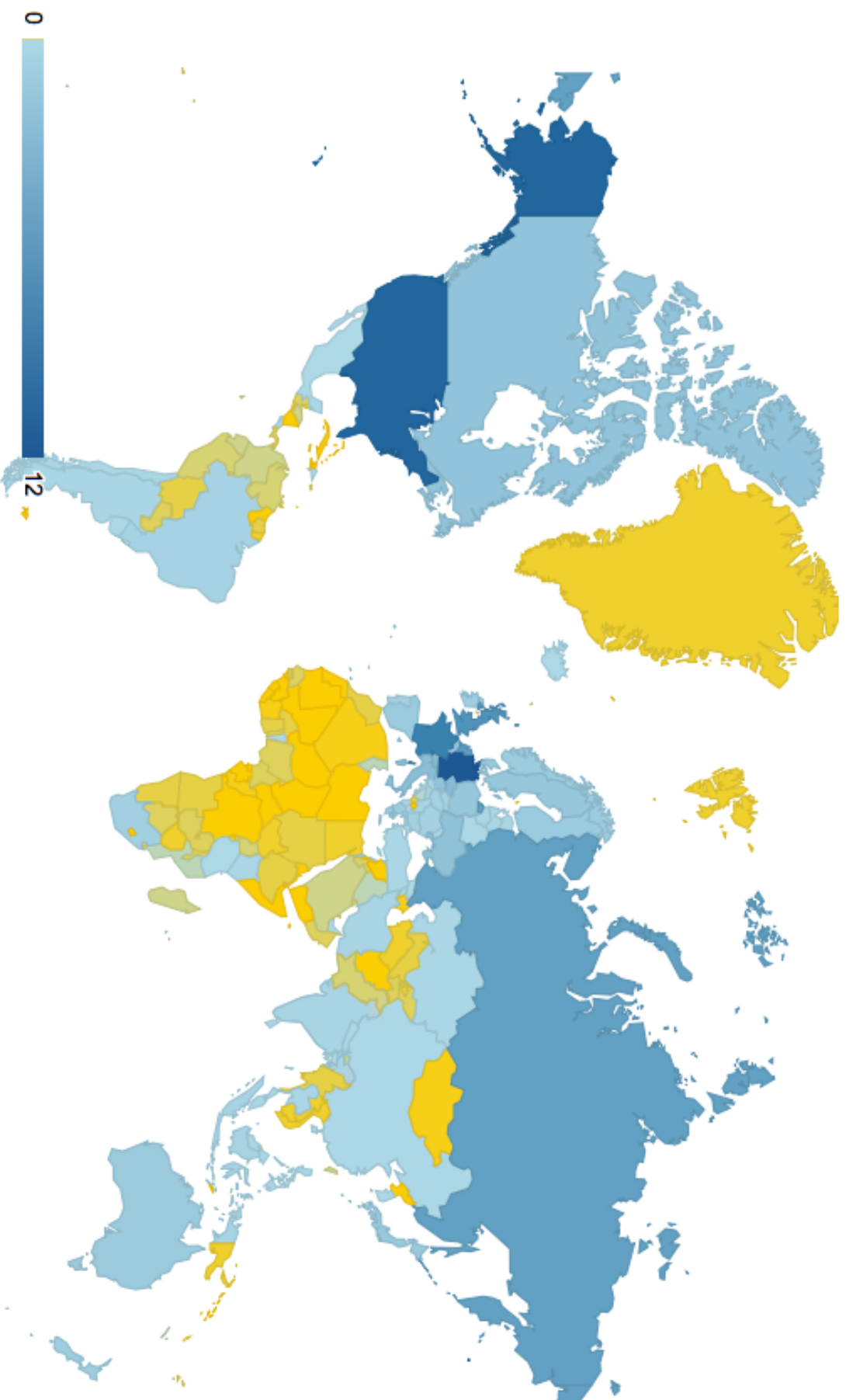


Probes per ASN (in RIPEstat)





Where we want to place probes





Looking Up Public Probes



Searching for probes

- <https://atlas.ripe.net/probes>

The screenshot shows the RIPE NCC Atlas Probes page. At the top, there's a navigation bar with 'RIPE NCC' and 'RIPE NETWORK COORDINATION CENTRE'. Below it, there are tabs for 'Manage IPs and ASNs', 'Analyse', 'Participate', 'Get Support', and 'Publications'. A search bar is present with the text 'Search IP Address or ASN'. The main content area is titled 'Probes' and contains a list of probes. A red callout bubble points to the filter options, stating 'Filter based on ASN, country, location...'. The filter options include 'Filter by id/asn/country/description', 'Any Status', 'IPv4/IPv6', and 'Any Country'. The table below shows the following data:

Id	ASN v4	ASN v6	Country	Description	Connection Status
6175	1103	1103		SURFnet bv	4 weeks
6146	60781	60781		Leaseweb Network B.V.	4 weeks
6152	28753	28753		Leaseweb Network B.V.	4 weeks
6137	3333	3333		nl-ams-as3333-preprod	4 weeks
6147	33280	33280		Affiliis	4 weeks
6112	197216	197216		Delta Softmedia Ltd	4 weeks
6161	27843	27843		Optical Technologies	4 weeks
6142	63403	63403		Affiliis	4 weeks
6008	2607	2607		AA-sk-bts-as2607	4 weeks
6001	3333	3333		AA-nl-ams-as3333	4 weeks

Probe page



» You are here: Home > Analyse > Internet Measurements > RIPE Atlas > Probes > Probe #10010

Probe #10010 (Register)

General Network Built-in Measurements User-defined Measurements

General Information

[Edit](#)

Connection & Traffic

[↗](#)

Id 10010

MAC Address F8:D1:1:A9:F3:2C

Architecture tl-mr3020

Firmware Version 4680 (1070)

Router Type

Bandwidth Limit Not set

DNS Entry Off

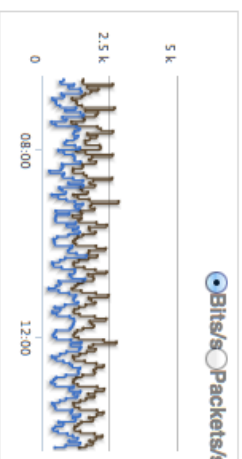
Shared Publicly Yes

User Tags [NAT](#) [Chello 200MiB](#)

System Tags [V3](#) [Resolves A Correctly](#) [Resolves AAAA Correctly](#) [IPv4 Works](#) [Auto GEOIP city](#) [IPv4 Capable](#) [IPv4 RFC1918](#)

Management Sharing

Only the probe host is permitted to administer this probe.



Connected Time

[↗](#) 3 days, 9 hours



 [↗](#) 3 days, 9 hours

Firmware 4680

Architecture tl-mr3020

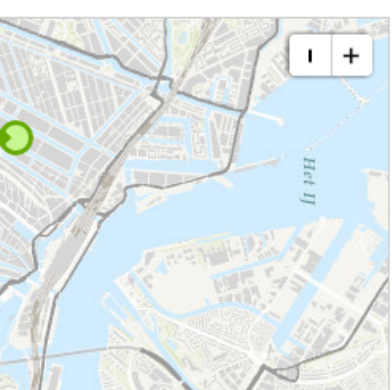
MAC Address F8:D1:1:A9:F3:2C

#10010



The displayed location is an automatic best guess of the **city** based on IP address. By manually setting a more accurate location you can help to improve the usefulness and correctness of RIPE Atlas.

[Update Location](#) [↗](#)





Zoomable Ping Graph

- Replace multiple RRD graphs: zoom in/out in time, in the same graph
- Easier visualisation of an event's details
- Selection of RTT class (max, min, average)





Public Measurements



Looking up Measurements Results

- GUI: <https://atlas.ripe.net/measurements/>

The screenshot shows the RIPE Atlas web interface. A navigation menu on the left includes 'RIPE Atlas', 'About RIPE Atlas', 'Get Involved', 'Probes and Anchors', 'Measurements, Maps and Tools', 'Measurements', 'Internet Maps', and 'Tools'. The main content area displays a table of measurements with the following columns: ID, Description, Probes, Time (UTC), and Status. A filter box at the top allows filtering by target and/or description, any status, IPv4/v6, all types, and of all time.

ID	Description	Probes	Time (UTC)	Status
RIPE NCC Members	hog.net			
1411440	de-muc-as5539.anchors.atlas...	0	2019-11-14 00:30 No Stop Defined	⚙️
3625872	uk-ion-as5459.anchors.atlas...	Calculating...	2016-03-17 12:00 2016-03-21 12:00	⚙️
3625873	ca-mtr-as852.anchors.atlas...	Calculating...	2016-03-17 12:00 2016-03-21 12:00	⚙️
3625874	it-mil-as16004.anchors.atla...	Calculating...	2016-03-17 12:00 2016-03-21 12:00	⚙️
3625875	nl-haa-as201682.anchors.atl...	Calculating...	2016-03-17 10:42 No Stop Defined	⚙️
3625876	nl-haa-as201682.anchors.atl...	Calculating...	2016-03-17 10:42 No Stop Defined	⚙️

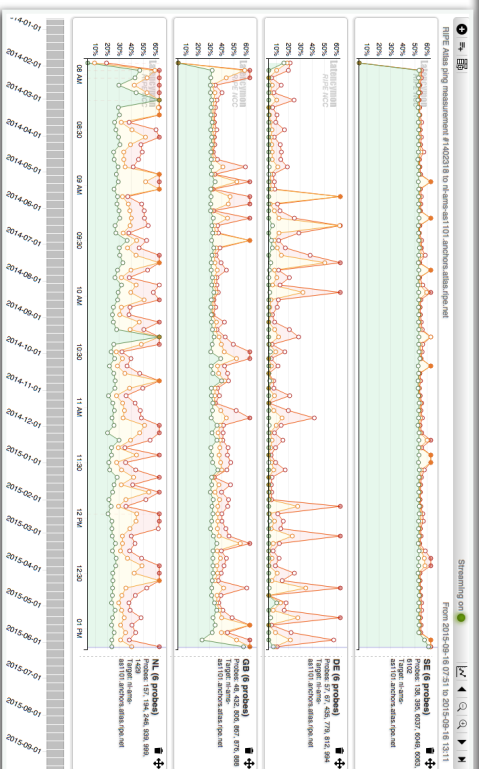
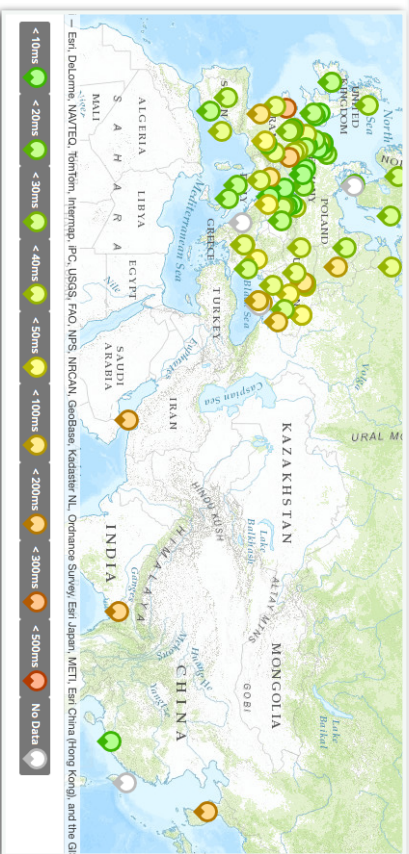
- API: <https://atlas.ripe.net/api/v2/measurements/>



Available visualisations: ping

- List of probes: sortable by RTT
- Map: colour-coded by RTT
- LatencyMON: compare multiple latency trends

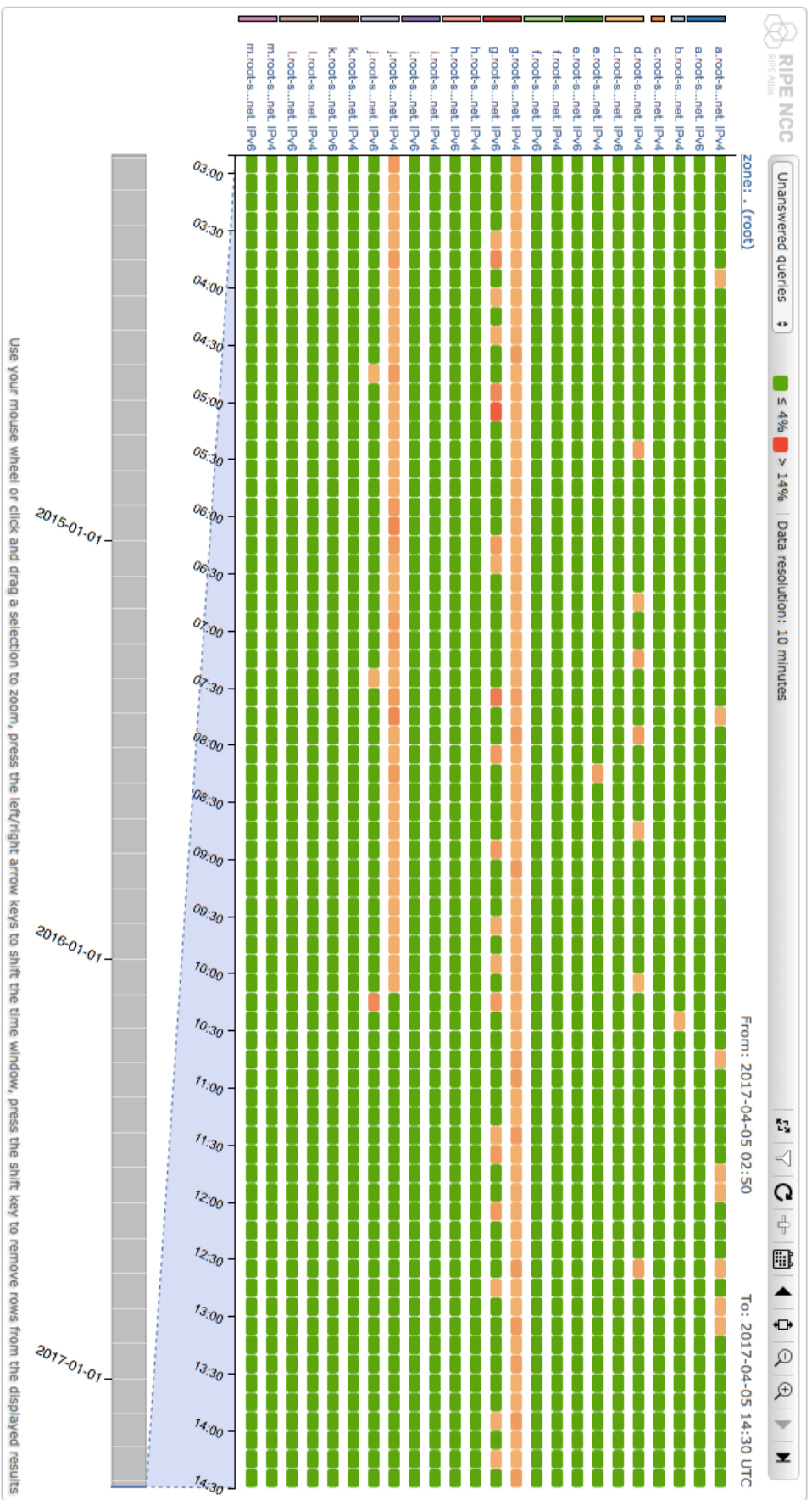
Probe	ASN (v4)	ASN (v6)	Time	RTT
6019	3333	3333	2015-05-19 09:23	11.157
6069	59469	59469	2015-05-19 09:23	15.253
6111	198068	198068	2015-05-19 09:23	37.760
6112	197216	197216	2015-05-19 09:23	35.494
10008	3851		2015-05-19 09:23	24.664
10218	6876		2015-05-19 09:23	37.952
10246	39608		2015-05-19 09:23	36.313
10252	50288		2015-05-19 09:23	62.441
10267	12322		2015-05-19 09:23	31.498
10296	51214		2015-05-19 09:23	Unreachable





Available visualisations: DNS

- DNSMON (<https://dnsmmon.ripe.net>)
 - Monitoring of root and many Top-Level Domain zones
- DomainMON (<https://atlas.ripe.net/domainmon/>)
 - Up-to-date performance overview of your DNS zone

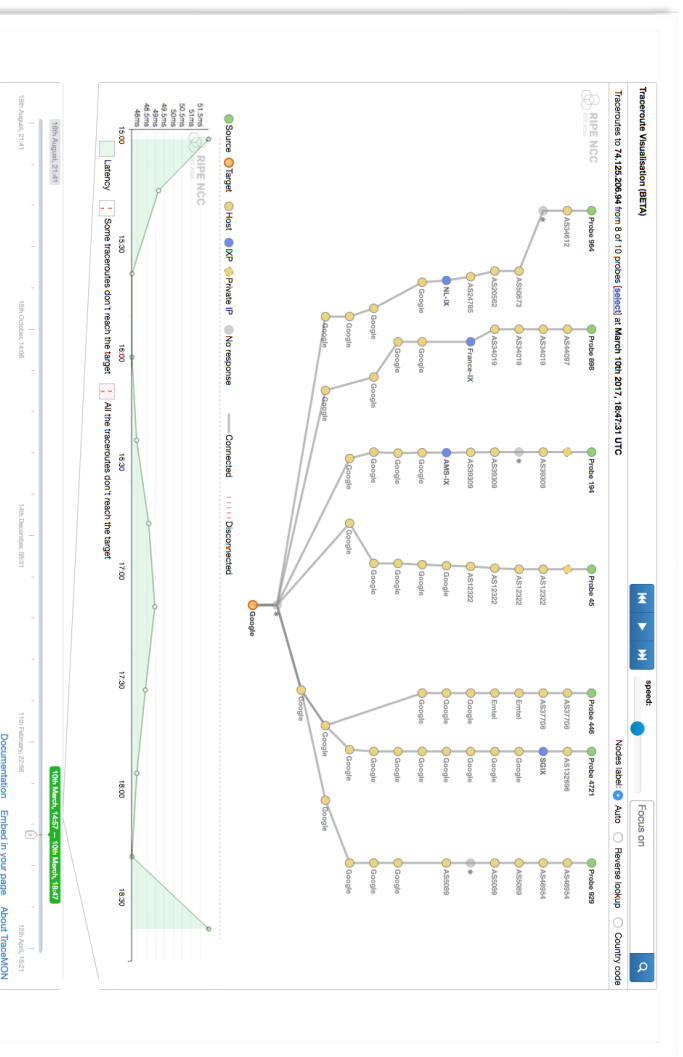


Use your mouse wheel or click and drag a selection to zoom, press the left/right arrow keys to shift the time window, press the shift key to remove rows from the displayed results

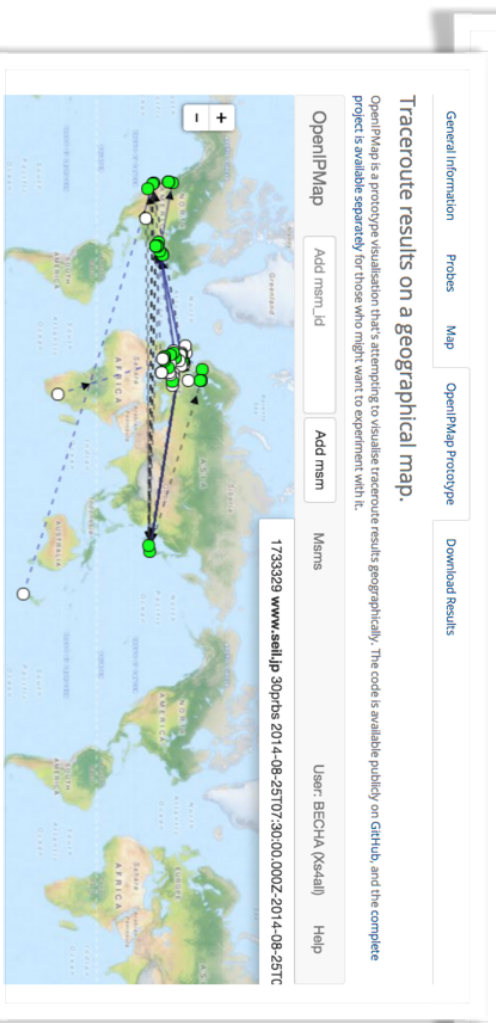


Available visualisations: traceroute

- TraceMON: network topology, latency and nodes information



- OpenIPMap: hops geolocation on map (prototype)

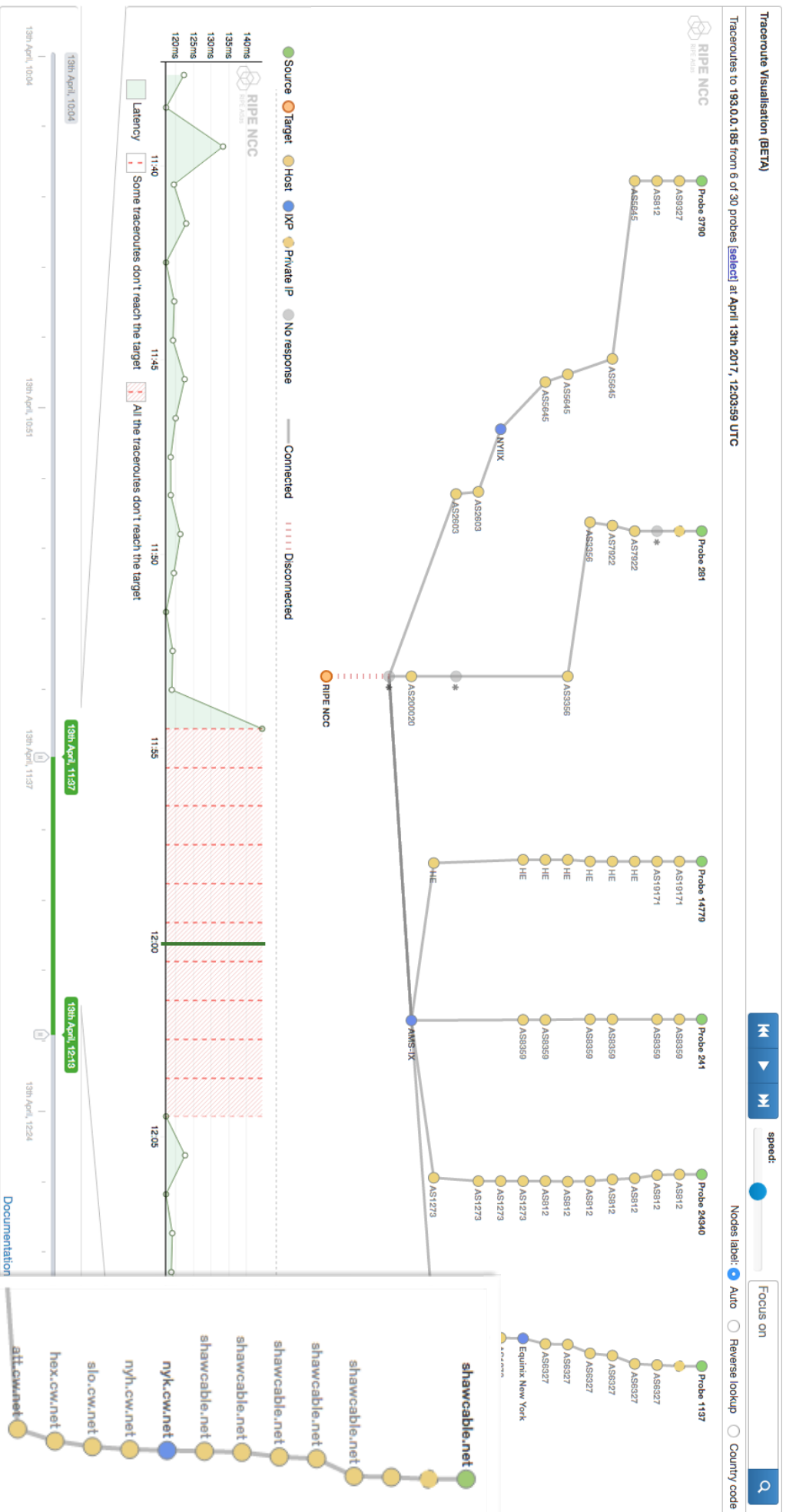




TraceMON Use Cases

- Where does my traffic stop?
- Who is behind that “*”?
- Are we passing through an IXP?
- What are the latencies involved?
- Do we know more about the network node?
 - CDN node? Local cache?
 - Registry information
 - BGP data

TraceMON





Resource Info

AS34019 — France-IX — IX Australia NSW

AS7477

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: 57344-58367
Name: IANA 16-bit Autonomous System (AS)
Numbers Registry
Desc: Assigned by RIPE NCC

[Contact holder](#) [Whois](#) [See BGP events](#)

Probe 281
10.7.4.1 (AS7922) *

* (Guess AS7922)

Located in: Not available

Best Guess :
7922 - COMCAST-7922 - Comcast Cable
Communications, Inc., US
Announced: Yes

Registry info:
Resource: 7911-7926
Name: IANA 16-bit Autonomous System (AS)
Numbers Registry
Desc: Assigned by ARIN

[Contact holder](#) [Whois](#)

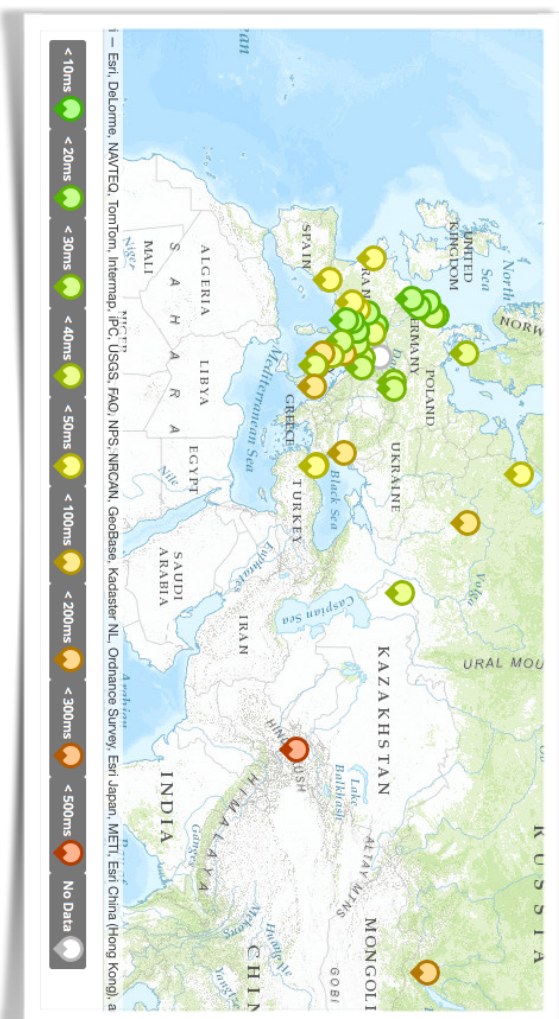
RIPE NCC

TraceMON tries to guess private addresses and wildcards



Available visualisations: DNS

- Map, colour-coded response time or diversity
- List of probes, sortable by response time

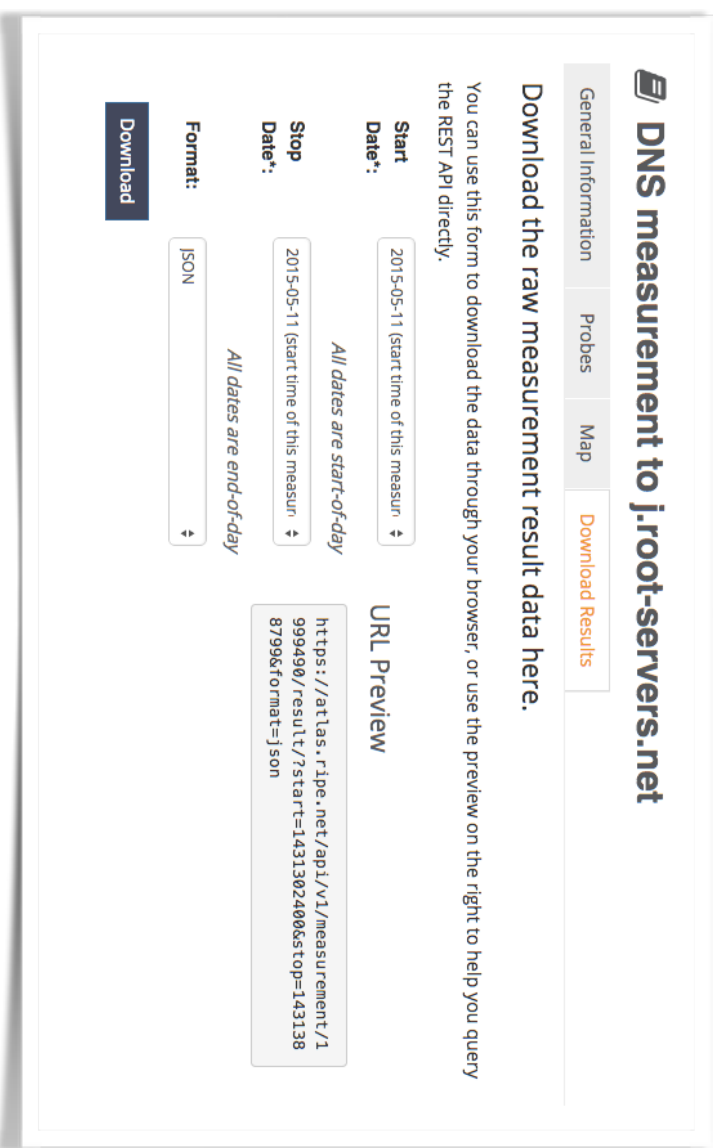


DNS measurement to ns1.opteamax.de

Probe	ASN (v4)	ASN (v6)	Time	Name	Response Time
17840	6327		2015-05-19 09:38		362,009
18035	43030		2015-05-19 09:50		347,39
18129	327805		2015-05-19 09:49		207,743
15844	32098		2015-05-19 09:48		184,237
17857	852		2015-05-19 09:37		177,694
19894	6327		2015-05-19 09:36		168,689
19204	21513		2015-05-19 09:50		141,199
15922	30036		2015-05-19 09:47		133,309

Downloading Measurements Results

- Click on msm, then “Download”
- Or URL
- Or API
- Results in JSON
- Libraries for parsing on GitHub



DNS measurement to j.root-servers.net

General Information Probes Map **Download Results**

Download the raw measurement result data here.

You can use this form to download the data through your browser, or use the preview on the right to help you query the REST API directly.

Start Date*: 2015-05-11 (start time of this measur...
All dates are start-of-day

Stop Date*: 2015-05-11 (start time of this measur...
All dates are end-of-day

Format: JSON

Download

URL Preview

```
https://atlas.ripe.net/api/v1/measurement/1999490/result/?start=1431302400&stop=1431388799&format=json
```



Looking at the Result

```
[{"af": 6, "avg": 61.32,
```

Destination (IP & name)

```
"dst_addr": "2a00:1450:4004:802::1014", "dst_name": "www.google.com",
```

```
"dup": 0,
```

Source (probe public IP address)

```
"from": "2001:8a0:7f00:b201:220:4aff:fec5:5b5b",
```

```
"fw": 4660, "lts": 411,
```

```
"max": 62.148, "min": 60.372,
```

Reference (msm ID)

```
"msm_id": 1004005, "msm_name": "Ping",
```

```
"prb_id": 722, "proto": "ICMP", "rcvd": 10,
```

Packet loss: difference between sent & received!

```
"result": [{"rtt": 62.148}, {"rtt": 61.437}, {"rtt": 61.444}, {"rtt": 61.448}, {"rtt": 61.794}, {"rtt": 61.533}, {"rtt": 60.372}, {"rtt": 60.373}, {"rtt": 61.384}, {"rtt": 61.267}],
```

```
"sent": 10, "size": 64,
```

```
"src_addr": "2001:8a0:7f00:b201:220:4aff:fec5:5b5b",
```

```
"step": 240, "timestamp": 1410220847, "ttl": 54, "type": "ping"},
```




Finding one specific measurement

- If you know the measurement ID:
 - <https://atlas.ripe.net/measurements/ID>
 - <https://atlas.ripe.net/measurements/2340408/>
- To get results:
 - <https://atlas.ripe.net/measurements/2340408/results>



Use Existing Measurements

- Many measurements already running!
- Search for existing public measurements first...
- Only then schedule your own measurement



Creating a Measurement

Benefits of your own measurements



- Customer problem: cannot reach your server
 - Schedule measurements (pings or traceroutes) from up to 1,000 RIPE Atlas probes worldwide to check where the problem is
- Measuring packet loss on suspected “bad” link
- Testing anycast deployment



Prerequisites

- RIPE NCC Access account ?
 - If not, create one: ripe.net/register
- Do you have credits to spend?
 - Redeem voucher LACNIC28MONTEVIDEO: <https://atlas.ripe.net/user/credits/#!redeem>



Logging In

- Log in to atlas.ripe.net
 - Use your RIPE NCC Access account
 - Same account for LIR Portal, RIPE Atlas, RIPEstat, RIPE Labs...
 - Create an account if you don't already have one

The screenshot shows the RIPE NCC homepage. At the top, there is a navigation menu with links for 'Manage IPs and ASNs', 'Analyse', 'Participate', 'Get Support', 'Publications', and 'About Us'. Below the menu, there is a search bar for the 'RIPE Database (Whois)'. The main content area features a 'Welcome to RIPE Atlas!' message, a 'Statistics' section showing 'Probes connected to RIPE Atlas: 9397' and 'Measurements currently running: 11986', and a 'Current Sponsors' section featuring ICANN. There are also links for 'Log In' and 'Use Cases'.

The screenshot shows the RIPE NCC sign-in page. It features a navigation menu similar to the homepage. The main content area has a heading 'Sign in using your RIPE NCC Access account' and a sub-heading 'If you don't have a RIPE NCC Access account, click here to create one.' Below this is a form with two input fields: 'Email' (with a placeholder 'Your email address') and 'Password' (with a placeholder 'Your password'). A 'Sign in' button is located below the password field. A yellow box on the left contains the text: 'New: Two-step verification. Learn more...'. A 'Forgot your password?' link is located below the password field.



Credits system

- Measurements cost credits
 - ping = 10 credits, traceroute = 20, etc.
- Why? Fairness and to avoid overload
- Spending limit and max number of measurements



How can you earn credits?

- Hosting a RIPE Atlas probe
- Being a RIPE NCC member
- Hosting an anchor
- Sponsoring probes

Credits overview



Manage IPs and ASNs > Analyse > Participate > Get Support > Publications > About Us

RIPE Database (Whois) Website

Search the content of this website

You are here: Home > Analyse > Internet Measurements > RIPE Atlas > My Atlas > My Credits

- RIPE Atlas
- About RIPE Atlas
- Get Involved
- Probes and Anchors
- Measurements, Maps and Tools
- Resources
- RIPE NCC Members
- My Atlas

Credits

Here you can see the history of your credit use and current consumption, transfer credits to someone else, and redeem a voucher for credits if you have one.

153,033,561
9,000.00 credits / hour

- History
- Charts & Archives
- Transfer
- Standing Order
- Redeem voucher

My Atlas > Credits

Give credits to someone

Comm	Change	Balance
Probe ID:6019 Anchor uptime 5x extra credit	+ 108,000	153,033,561
Probe ID:6019 Anchor uptime 5x extra credit	+ 108,000	152,925,561
Probe ID:6019 Anchor uptime 5x extra credit	+ 108,000	152,817,561
Probe ID:6019 Anchor uptime 5x extra credit	+ 108,000	152,709,561
Probe ID:6019 Anchor uptime 5x extra credit	+ 108,000	152,601,561
Probe ID:6019 Anchor host 5x extra credit	+ 108,000	152,493,561
Probe ID:6019 Anchor uptime 5x extra credit	+ 108,000	152,385,561
Probe ID:6019 Anchor host 5x extra credit	+ 108,000	152,277,561



Scheduling a measurement

- Log in to atlas.ripe.net
- Four methods:
 - 1. Quick and easy**
 - 2. Advanced GUI usage**
 - 3. API (curl and JSON code)**
 - 4. CLI**



1. Quick and easy

Create a New Measurement

Step 1 Definitions

1 Target: Description:

2 Address Family*: Interval:

Packets: Resolve on Probe:

Size: Force the probe to do DNS resolution

[Advanced Options](#)

Step 2 Probe Selection

Worldwide 10

Step 3 Timing

This is a One-off:

Start time (UTC): Stop time (UTC):

[Measurement API Compatible Specification](#)

Costs summary

Daily cost: 10800 credits

You will run out of credits in about 124 days

Date	Balance	Total Expenses
29/10/2016	10800	0
9/0/2017	10800	0
19/1/2017	10800	0
2/3/2017	0	10800

Users who will supply credits for this measurement:

2. Use GUI to schedule a measurement

- Mostly used for a periodic, long-term measurement
 - Or “One-off”
- Choose type, target, frequency, start/end time, # of probes, region...
- Each measurement will have **unique ID**
- “**API Compatible Specification**” is generated too



2. Advanced GUI

Create a New Measurement

Step 1 Definitions

Target: **Description:**

Address Family*: **Interval:**

Packets: **Resolve on Probe:**

Size: **Force the probe to do DNS resolution**

Advanced Options

Step 2 Probe Selection

Worldwide

Step 3 Timing

This is a One-off:

Start time (UTC): **Stop time (UTC):**

Measurement API Compatible Specification

Costs summary

Daily cost: 10800 credits
You will run out of credits in about 124 days

Users who will supply credits for this measurement:
ferenc@ripe.net

A **B** **C** **D** **E** **F** **G**

Create a Measurement Using the GUI

- Periodic, long-term measurement
 - Single measurement? Choose “one-off”
- Choose type, target, frequency, number of probes, region...
- You will spend credits
- Each measurement: unique ID



3: Use API to schedule a measurement

- Using command-line and scripting:
Application Programming Interface (API)
 - <https://atlas.ripe.net/docs/api/v2/manual/measurements/types/>
 - <https://atlas.ripe.net/keys/>
- You will need API keys
 - To create measurements without logging in
 - To securely share your measurement data



3. API Compatible

Create a New Measurement

Step 1 Definitions

▼ Ping measurement to bbc.co.uk

Target: **Description:**

An IP address or hostname

Address Family*: **Interval:**

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

Packets: **Resolve on Probe:**

Force the probe to do DNS resolution

Size:

Advanced Options

+ Ping **+ Traceroute** **+ DNS** **+ SSL** **+ HTTP** **+ NTP**

Step 2 Probe Selection

Worldwide

+ 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): **Stop time (UTC):**

Measurement API Compatible Specification

Create Mv Measurements!

Costs summary

Daily cost: 10800 credits
You will run out of credits in about 124 days

Total Expenses **Balance**

Users who will supply credits for this measurement:

[cont...] 3. API Compatible



Measurement API Compatible Specification

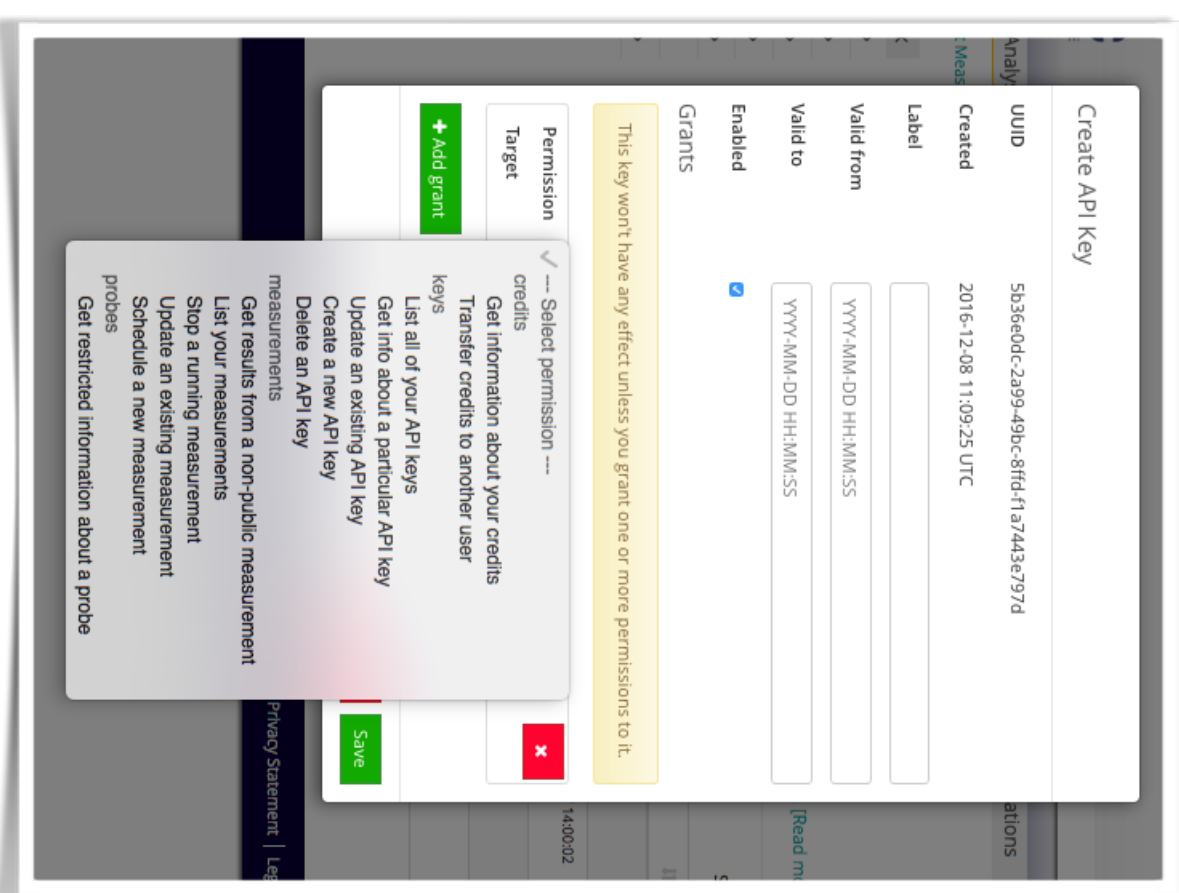
```
curl --dump-header - -H "Content-Type: application/json" -H "Accept: application/json" -X POST -d '{
  "definitions": [
    {
      "target": "nrc.ni",
      "af": 4,
      "packets": 3,
      "size": 48,
      "description": "Ping measurement to nrc.ni",
      "interval": 240,
      "resolve_on_probe": false,
      "skip_dns_check": false,
      "thund": "rain"
```

Copy to clipboard

Create API Key



- Go to MyAtlas
- Click on “Create an API Key”
- Choose type: “create a new user-defined measurement”
- “Object” is not applicable (N/A) for this type
- Give it a label





DEMO

Create a Measurement (GUI)
Explore advanced parameters



Create a Measurement



Exercise

- Create a ping measurement:
 - Involving ten probes
 - To a target of your choice
 - Source is your country
 - Duration of two days



Tasks

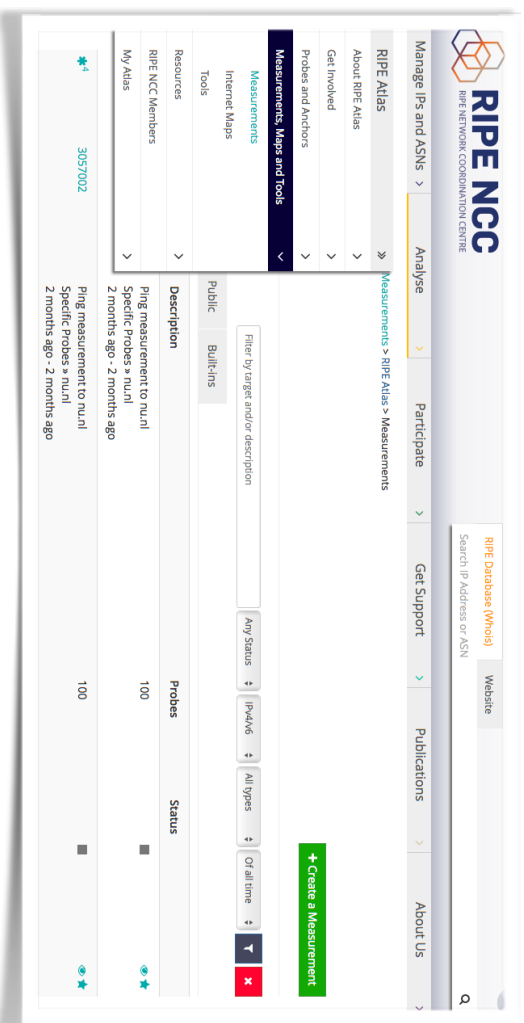
- 1. Warm-up: Create a measurement using the GUI
- 2. Create API Key
- 3. Schedule a measurement using the API



Task 1: Use web interface

- Useful hint: once you generate a measurement, copy “API Compatible Specification” to text file

- Take note of the measurement ID!





Task 2: Create API key

1. Click on “Create an API Key”
2. Permission: “schedule a new measurement”
3. “Target” is not applicable (N/A) for this type

You are here: Home > Analyse > Internet Measurements > RIPE Atlas

RIPE Atlas

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

API Keys

[+ Create an API key](#)

<input type="checkbox"/> Key	Created	Permission	Object Label	Valid From	Valid To	Enabled
<input type="checkbox"/> 1967424c-0947-48ab-a990-b35b42b3e921	2016-02-04 15:56 UTC	Create a new user defined measurement	(N/A) clao			✓
<input type="checkbox"/> 1b2fd786-4059-4505-876d-c11880106cc7	2015-08-27 11:53 UTC	Create a new user defined measurement	(N/A) Michy Test			✓

Showing 2 keys



[cont...]**Task 2: Create API key**

1. Give it a label
2. Give it a duration of validity (leave empty for defaults)
3. “Key” value to be passed on to the API call (next step)



Task 3: Use API

- Schedule a measurement using API
 - Use the “key” you just generated
 - Hint: copy and paste API call syntax from the measurement generated by the GUI

- Example:

```
curl -H "Content-Type: application/json" -H "Accept: application/json" -X
POST -d '{ "definitions": [ { "target": "ping.xs4all.nl", "description":
"My First API Measurement", "type": "ping", "af": 4 } ], "probes":
[ { "requested": 10, "type": "country", "value": "RS" } ] }' https://
atlas.ripe.net/api/v1/measurement/?key=YOUR\_API\_KEY
```



Measurement API Compatible Specification

```
curl --dump-header - -H "Content-Type: application/json" -H "Accept: application/json" -X POST -d '{
  "definitions": [
    {
      "target": "nrc.nl",
      "af": 4,
      "packets": 3,
      "size": 48,
      "description": "Ping measurement to nrc.nl",
      "interval": 240,
      "resolve_on_probe": false,
      "skip_dns_check": false,
      "type": "ping"
    }
  ]
}
```

Copy to clipboard

Paste



```
terenc ~ -bash — /9x32
Last login: Mon Dec 12 10:36:02 on console
dhcp-21-29:~ ferenc$ curl --dump-header - -H "Content-Type: application/json" -
H "Accept: application/json" -X POST -d '{
> "definitions": [
> {
>   "target": "nu.nl",
>   "af": 4,
>   "packets": 3,
>   "size": 48,
>   "description": "ping measurement to nu.nl",
>   "interval": 240,
>   "resolve_on_probe": false,
>   "skip_dns_check": false,
>   "type": "ping"
> }
> ],
> "probes": [
> {
>   "type": "area",
>   "value": "WWW",
>   "requested": 10
> }
> ],
> "its_oneoff": false,
> "bill_to": "ferenc@ripe.net"
> }' https://atlas.ripe.net/api/v2/measurements/?key=YOUR_KEY_HERE
```

Replace placeholder with your API key

```
ferenc — -bash — 80x29
Last login: Mon Dec 12 16:29:05 on ttys000
dhcp-21-29:~ ferenc$ curl --dump-header - -H "Content-Type: application/json" -H
"Accept: application/json" -X POST -d '{
> "definitions": [
> {
>   "target": "nrc.nl",
>   "af": 4,
>   "packets": 3,
>   "size": 48,
>   "description": "Ping measurement to nrc.nl",
>   "interval": 240,
>   "resolve_on_probe": false,
>   "skip_dns_check": false,
>   "type": "ping"
> },
> "probes": [
> {
>   "type": "area",
>   "value": "www",
>   "requested": 10
> }
> ],
> "is_oneoff": false,
> "bill_to": "ferenc@ripe.net"
> }' https://atlas.ripe.net/api/v2/measurements/?key=a165e927-006c-4974-ad2f-43
1f54fc00e6
```



```
Terminal Shell Edit View Window Help
becha — bash — 72x24
air-becha:~ becha$ curl -H "Content-Type: application/json" -H "Accept:
application/json" -X POST -d '{ "definitions": [ { "target": "ping.xs4a1
1.nl", "description": "My First Measurement", "type": "ping", "af": 4 }
], "probes": [ { "requested": 10, "type": "country", "value": "RS" } ] }
' https://atlas.ripe.net/api/v1/measurement/?key=7b4c3441-4504-4d83-9ed7
-fbf1a007d060
{"measurements": [2421551]}air-becha:~ becha$
```



Command-line Interface (CLI) Toolset



RIPE Atlas CLI

- Familiar output (ping, dig, traceroute)
- Linux/OSX
 - <http://ripe-atlas-tools.readthedocs.org/en/latest/installation.html#requirements-and-installation>
- Windows [experimental]
 - <https://github.com/chrisamin/ripe-atlas-tools-win32>



RIPE Atlas CLI

- Open source
 - RIPE NCC led community contribution
- Documentation
 - <https://ripe-atlas-tools.readthedocs.org/>
- Source:
 - <https://github.com/RIPE-NCC/ripe-atlas-tools/>



Install R1PE Atlas tools

- OSX:
 - `sudo easy_install pip`
 - `sudo pip install ripe-atlas-tools`
- Linux:
 - Available from many package repositories
 - ...or same as in OSX



Configure RIPE Atlas CLI

- Reuse the API key of the first exercise
 - Or create a new one at <https://atlas.ripe.net/keys/>
- Configure your CLI
 - `ripe-atlas configure --set authorisation.create=MY_API_KEY`



Fetch an existing measurement

- Fetch the ping measurement 2340408
 - ripe-atlas report 2340408



Search probes

- Search all probes in AS 3333
 - ripe-atlas probe-search --asn 3333
- Show specific fields
 - ripe-atlas probe-search --asn 3333 --field asn_v6 --field country --field description --field status
- Search for probes in and around Paris
 - ripe-atlas probe-search --location "Paris, France" --radius 15



Create a measurement

- Create a ping measurement to wikipedia.org
 - One-off, default parameters
 - 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,
```



Other examples of ping

- Geo-specific from 20 probes from Canada:
 - ripe-atlas measure ping --target example.com --probes 20 --from-country ca
- 20 Canadian probes that definitely 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



Network Monitoring



Network Monitoring

- Integrate “status checks” with existing monitoring tools (Icinga, Nagios)
 - Documentation: <https://atlas.ripe.net/docs/api/v2/manual/measurements/status-checks.html>
- Using real-time data streaming
 - Server monitoring
 - Detecting and visualising outages



RIPE Atlas streaming

- Allows users to receive the measurement results as soon as they are sent by the probes in real time
 - Publish/subscribe through web sockets
- There are three types of data:
 - Measurement results
 - Probe connection status events
 - Measurements metadata
- Documentation:
 - <https://atlas.ripe.net/docs/result-streaming/>



Using streaming API

Demo

EX1: Monitoring server reachability



- Scenario: customers complain it takes a long time to reach your server
- Action: ping your server from 50 probes
 - Choose acceptable latency threshold
 - Notice and react when you start receiving samples
- Task: Use the ping measurement ID 1791207
 - Choose which threshold (e.g. greater than 30ms)
 - Impose threshold on “min” (the minimum result of the three ping attempts)



Steps

1. <http://atlas.ripe.net/webinar/streaming01.html>
2. Open the development console
3. Wait for results to arrive



Page Source

```
Network Resources Timelines Debugger
streaming01.html

1 <!-- The following file is needed for the streaming -->
2 <script src="https://atlas-stream.ripe.net/socket.io.js"></script>
3 </script>
4 // Create a connection
5 var socket = io("https://atlas-stream.ripe.net", { path : "/stream/socket.io" });
6
7 // Declare a callback to be executed when a measurement result is received
8 socket.on("atlas_result", function(result){
9
10     console.log("I received ", result); // Print the result in the console
11
12 });
13
14 // Subscribe to results coming from all the probes involved in the measurement 2340408
15 socket.emit("atlas_subscribe", { stream_type: "result", msm: 1791207 });
16
17 </script>
18
19
20
```



Streaming results output

Elements	Network	Resources	Timelines
▶ received - {af: 4, prb_id: 17830, result: {{rtt: 145.679625}}, {rtt: 145.27428}, {rtt: 146.11478}}, ...	Network		
▶ received - {af: 4, prb_id: 15045, result: {{rtt: 156.801885}}, {rtt: 156.83372}}, {rtt: 157.126435}}, ...			
▶ received - {af: 4, prb_id: 16669, result: {{rtt: 322.419295}}, {rtt: 322.54422}}, {rtt: 322.45265}}, ...			
▶ received - {af: 4, prb_id: 16599, result: {{rtt: 85.10999}}, {rtt: 81.356535}}, {rtt: 81.354155}}, ...			
▶ received - {af: 4, prb_id: 16599, result: {{rtt: 81.67228}}, {rtt: 81.28631}}, {rtt: 81.286335}}, ...			
▶ received - {af: 4, prb_id: 15965, result: {{rtt: 41.169615}}, {rtt: 40.85994}}, {rtt: 41.35564}}, ...			
▶ received - {af: 4, prb_id: 15965, result: {{rtt: 41.02292}}, {rtt: 40.864795}}, {rtt: 41.10856}}, ...			
▶ received - {af: 4, prb_id: 20123, result: {{rtt: 12.474815}}, {rtt: 12.761175}}, {rtt: 12.384815}}, ...			
▶ received - {af: 4, prb_id: 20123, result: {{rtt: 13.64132}}, {rtt: 12.588405}}, {rtt: 12.050325}}, ...			
▶ received - {af: 4, prb_id: 6080, result: {{rtt: 121.985815}}, {rtt: 121.98033}}, {rtt: 122.028218}}, ...			
▶ received - {af: 4, prb_id: 10334, result: {{rtt: 140.025995}}, {rtt: 139.991875}}, {rtt: 138.942035}}, ...			
▶ received - {af: 4, prb_id: 10334, result: {{rtt: 139.40416}}, {rtt: 138.687205}}, {rtt: 139.11847}}, ...			
▶ received - {af: 4, prb_id: 14918, result: {{rtt: 30.92593}}, {rtt: 30.250405}}, {rtt: 29.863445}}, ...			
▶ received - {af: 4, prb_id: 6012, result: {{rtt: 2.234756}}, {rtt: 2.309224}}, {rtt: 2.061196}}, ...			
▶ received - {af: 4, prb_id: 14835, result: {{rtt: 34.767865}}, {rtt: 34.67759}}, {rtt: 34.449055}}, ...			
▶ received - {af: 4, prb_id: 10441, result: {{rtt: 150.68899}}, {rtt: 151.053055}}, {rtt: 150.877285}}, ...			
▶ received - {af: 4, prb_id: 17914, result: {{rtt: 119.57703}}, {rtt: 119.23266}}, {rtt: 119.40168}}, ...			
▶ received - {af: 4, prb_id: 17376, result: {{rtt: 17.28995}}, {rtt: 17.105755}}, {rtt: 17.07087}}, ...			
▶ received - {af: 4, prb_id: 17376, result: {{rtt: 17.32925}}, {rtt: 17.058595}}, {rtt: 17.05605}}, ...			



From the doc

Common parameters (in addition to stream_type)

Name	Description
prb	A specific probe ID. If you don't set this parameter, you will receive results from all the probes
acceptedFields	A list of accepted fields name, the messages will be pruned server side. If you don't set this parameter you will receive all the fields
enrichProbes	If you want to enrich the information received with the "probestatus" stream about the probes (e.g. lat, long), set this option to true
equalTo	Allows to filter by values. E.g. with {status: "connected", asn: "3333 4444"} you will receive all the messages with a connected status and ASN equals to 3333 or 4444
lessThan	Allows to filter by values. E.g. with {valueX: 15} you will receive all the messages with a valueX less than 15
greaterThan	Allows to filter by values. E.g. with {valueX: 15} you will receive all the messages with a valueX greater than 15

Parameters for "result" stream_type

Name	Description
mism	A specific measurement ID
type	Streams all the results of the specified type, i.g. ping, traceroute, ntp, http, dns, ssl
sourceAddress	Streams all the results coming from a probe having the specified address
sourcePrefix	Streams all the results coming from a probe having an address in the specified prefix
destinationAddress	Streams all the results measuring the specified address
destinationPrefix	Streams all the results measuring an address in the specified prefix
passThroughHost	Streams all the traceroutes passing through the specified host. Only for traceroute measurements.
passThroughPrefix	Streams all the traceroutes passing through a host in the specified prefix. Only for traceroute measurements.
sendBacklog	Immediately fetch the last few minutes of results for a specific measurement ID. Mostly intended to cover the gap between the last available data in the REST API and the currently streamed results, and to recover results that might have been missed during brief disconnections.
buffering	If set to true, the samples will be sent in bundles in order to reduce the network overhead. When this option is true, the socket is not volatile. False by default.



IXP Country Jedi



IXP Country Jedi

- Tool and concept by Emile Aben
 - <https://www.ripe.net/analyse/internet-measurements/ixp-country-jedi>
 - <https://labs.ripe.net/Members/emileaben/measuring-ixps-with-ripe-atlas>

- Method:

- Traceroute mesh between RIPE Atlas probes
- Detect whether they go via local IXPs' LAN IP
- Hops geolocated using OpenIPMap database

- Data:

- <http://sg-pub.ripe.net/emile/ixp-country-jedi/>

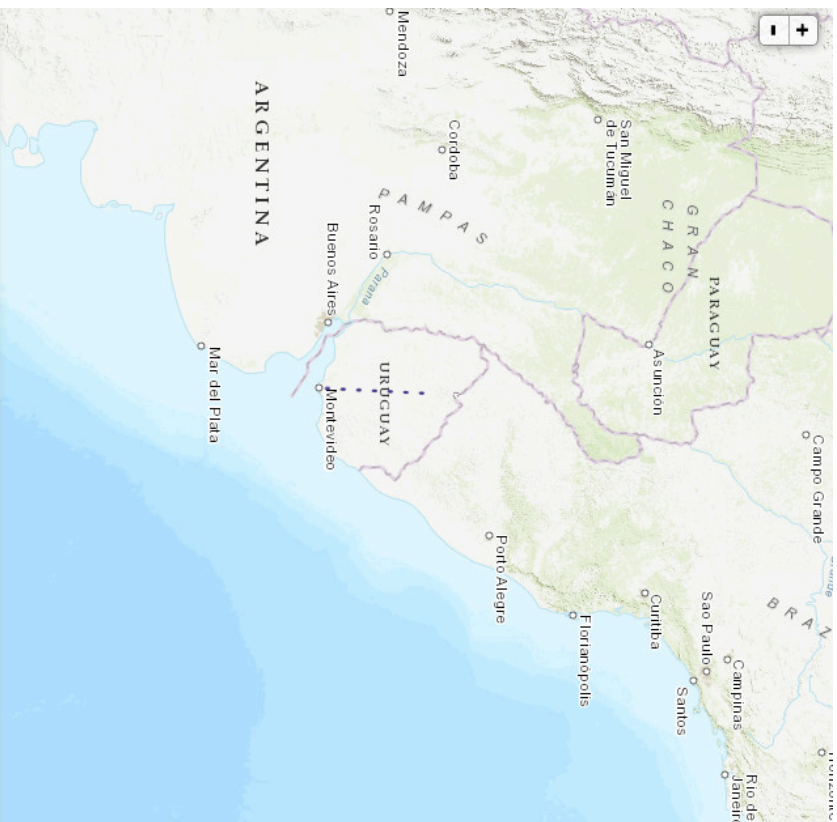


IXP Country Jedi

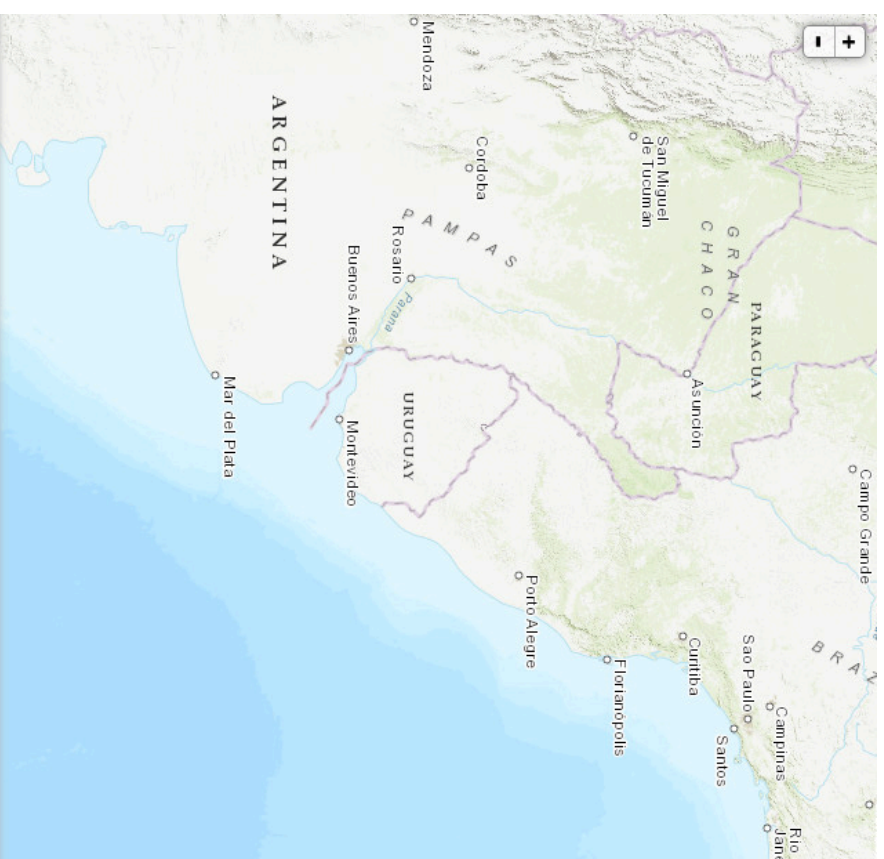
- Benefits:
 - Shows how IXPs help keep traffic local
 - Comparing countries' performances with each other
 - Routing and traffic optimisation
 - Comparing IPv6 and IPv4
- Uruguay:
 - <http://sg-pub.ripe.net/emile/ixp-country-jedi/specials/2017-09-13-UY/ixpcountry/index.html>



Paths for Uruguay



IPv4

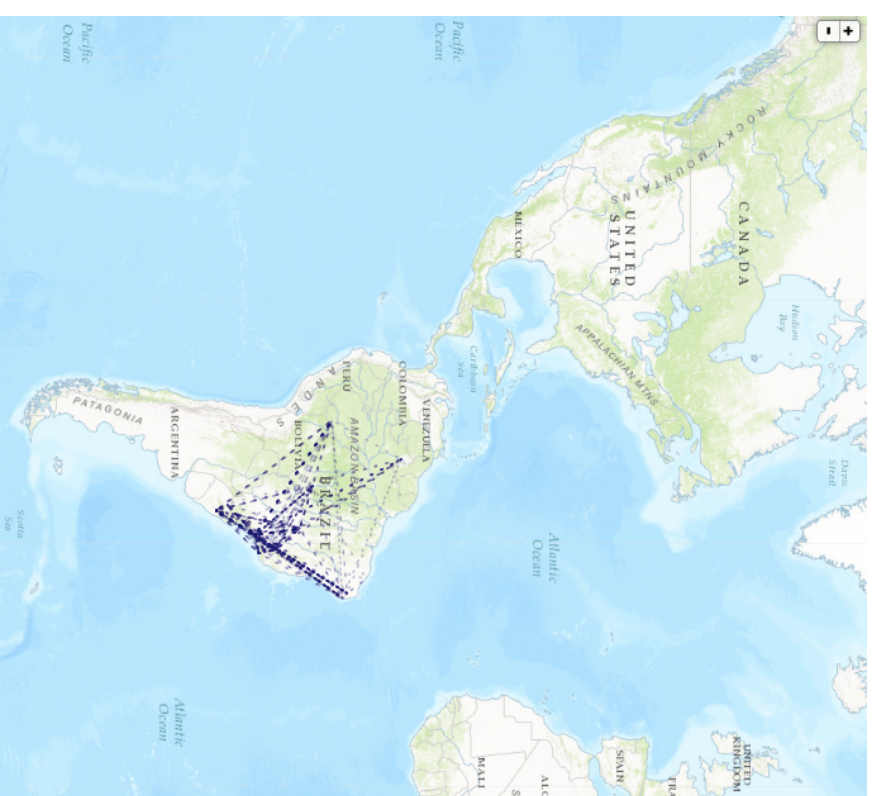
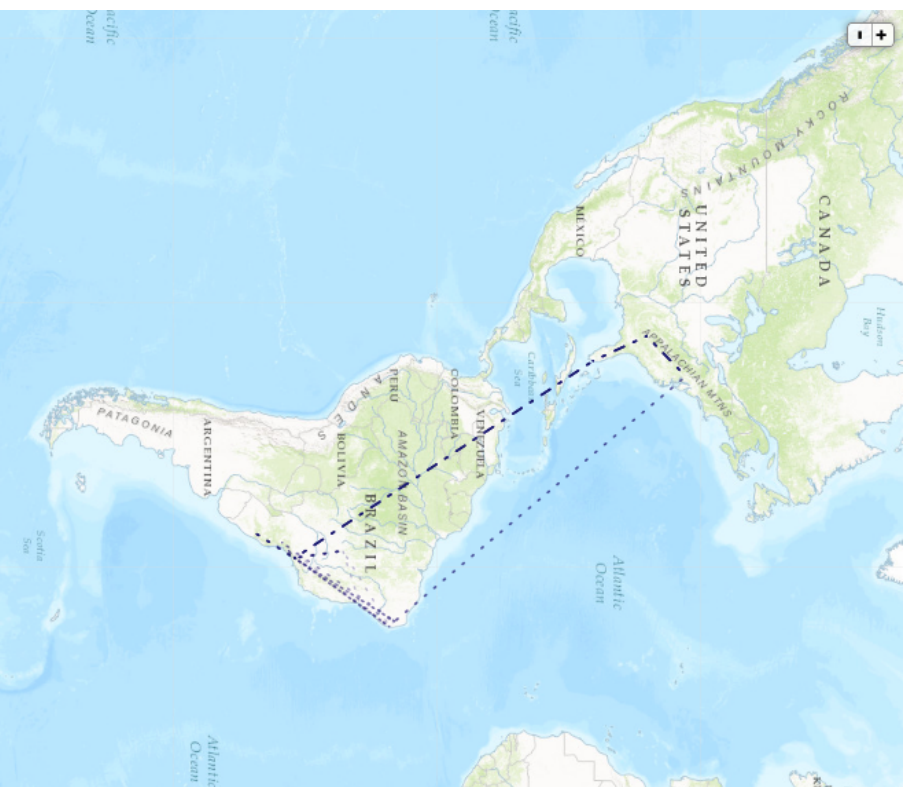


IPv6

Paths for Brazil



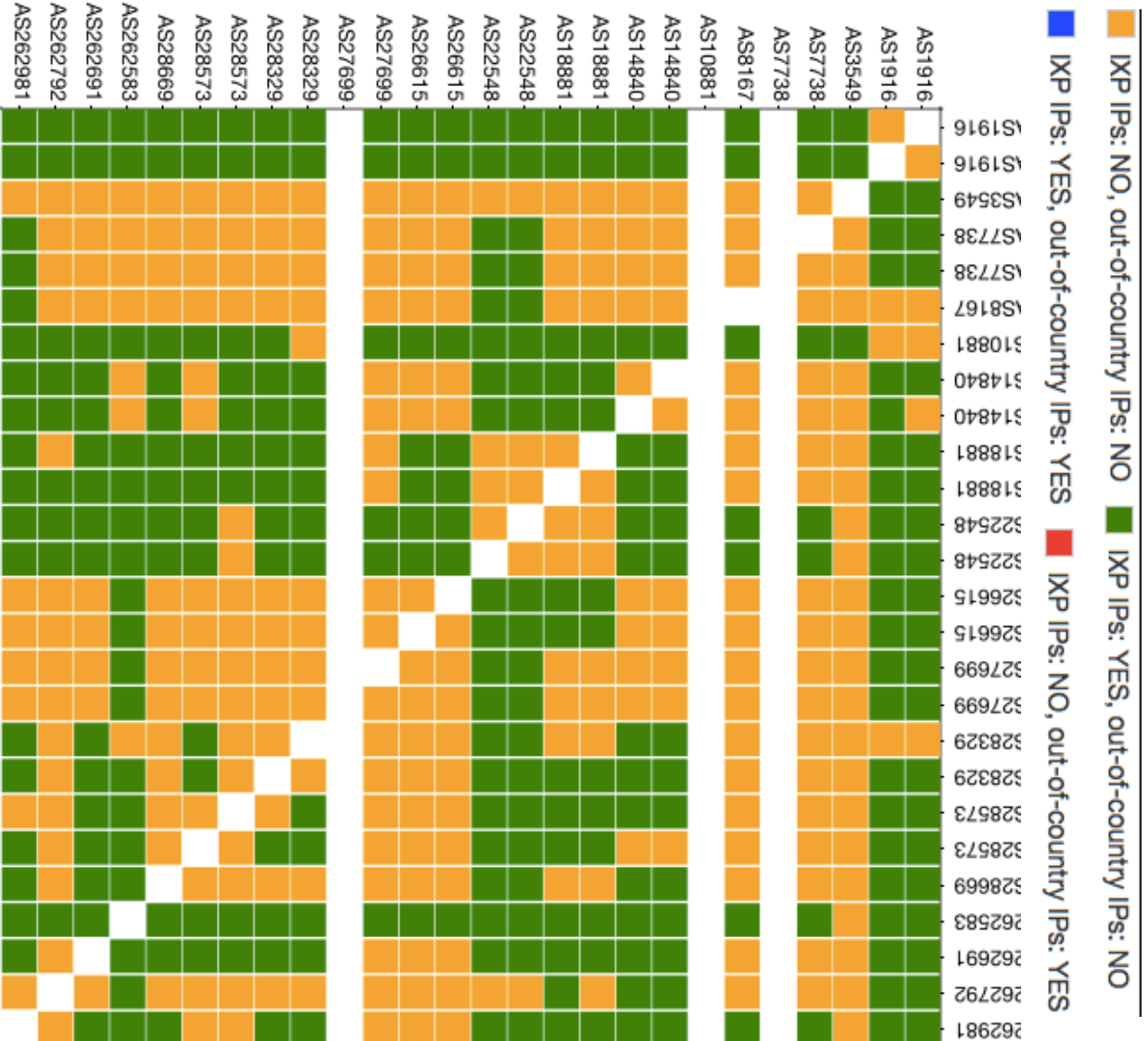
IPv4



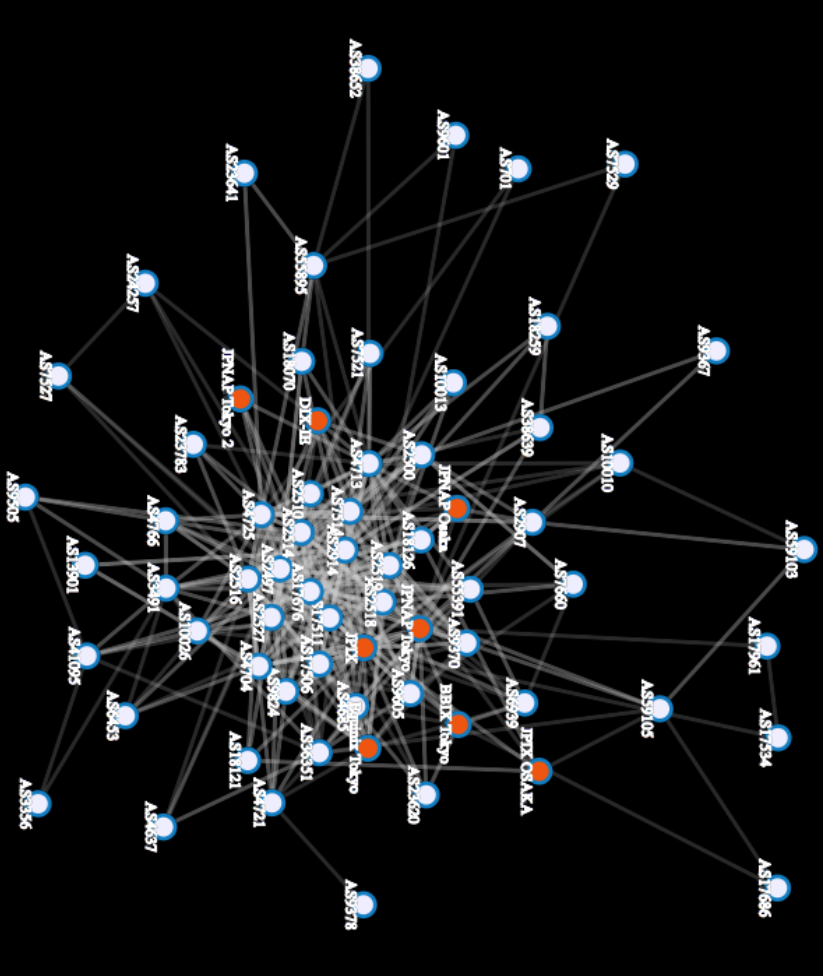
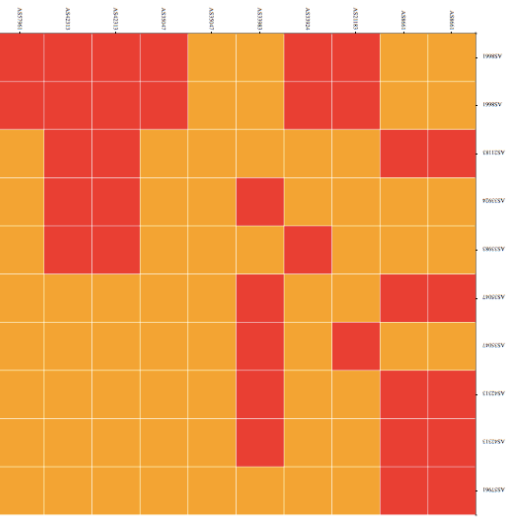
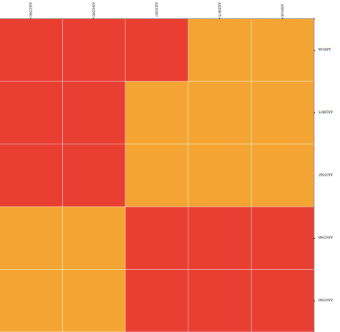
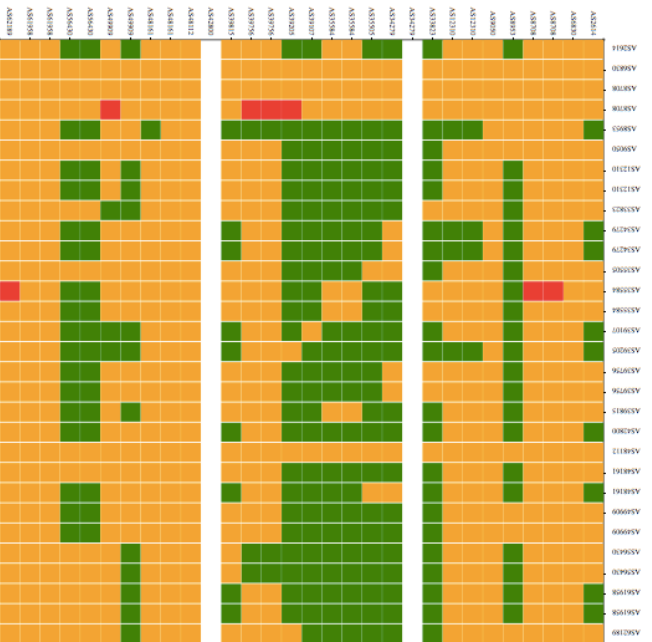
IPv6



How Many Paths Go Via Local IXP?



More Probes, Better Data Quality





Optimise Routing

- Interactive tool! (hover over the cell...)

- <http://sg-pub.ripe.net/emile/ixp-country-jedi/latest/IE/>

```
incc: no
ixp: yes
srcAS2128
dstAS2200174
srcPrb6007
dstPrb19770

# msn_id:3594219 prb_id:6007 dst:185.32.93.252 ts:2016-03-01 16:56:49 -00:00
1 (AS2128) gw2.v141.inex.ie [1.422, 1.479, 1.49] ||
2 (AS2128) te0-0-0-1-cr2-kp.heanet [1.848, 1.919, 2.09] | Dublin,Leinster,IE|
3 (AS1213) be-600-cr2-cwt.heanet [1.715, 1.772, 3.074] ||
4 (AS3257) xe-2-1-0.dub20.jp4.gtc.net [1.195, 1.213, 1.218] | Dublin,Leinster,IE|
5 (AS3257) xe-9-2-7.lon11.jp4.gtc.net [10.266, 10.315, 10.366] ||
6 (AS174) be3008.ccr21.lon01.atlas.cogentco.com [11.123, 11.164, 11.231] | London,England,GB|
7 (AS174) be2868.ccr41.lon13.atlas.cogentco.com [11.069, 11.073, 11.139] ||
8 (AS174) be2391.ccr21.jp101.atlas.cogentco.com [18.534, 18.797, 22.348] | Liverpool,England,GB|
9 (AS174) be2590.rcr21.dub01.atlas.cogentco.com [24.562, 24.754, 24.756] | Dublin,Leinster,IE|
10 (AS174) be2530.rcr21.dub02.atlas.cogentco.com [25.249, 25.264, 25.506] | Dublin,Leinster,IE|
11 (AS174) be2041.nri1.b020478-0.dub02.atlas.cogentco.com [21.6, 21.653, 21.677] | Dublin,Leinster,IE|
12 (AS174) 149.11.37.114 [25.013, 25.054, 25.114] ||
13 (AS200174) 185.32.93.252 [32.185, 32.199, 32.268] ||
```

- Red or blue: the path is going out of country

- If this is a surprise, talk to your upstream(s)

- Yellow: the path that is not going via local IXP

- If this is undesired, make a new peering agreement



New in IXP Country Jedi

- “Hackerspaces-Jedi”
 - <https://labs.ripe.net/Members/becha/the-next-42-ripe-atlas-probes-at-hackerspaces>
- It uses tags instead of countries for probe selection
- An easy way to build community around probes and to be able to run your own customised measurements



Use Cases



Use cases (1)

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

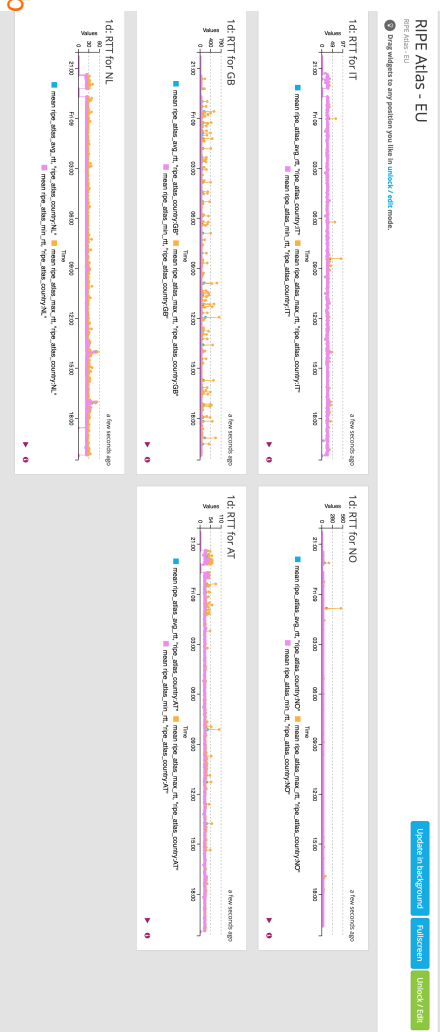
Using RIPE Atlas to Debug Network Connectivity Problems

Stéphane Bortzmeyer — 10 May 2016



Use Cases (2)

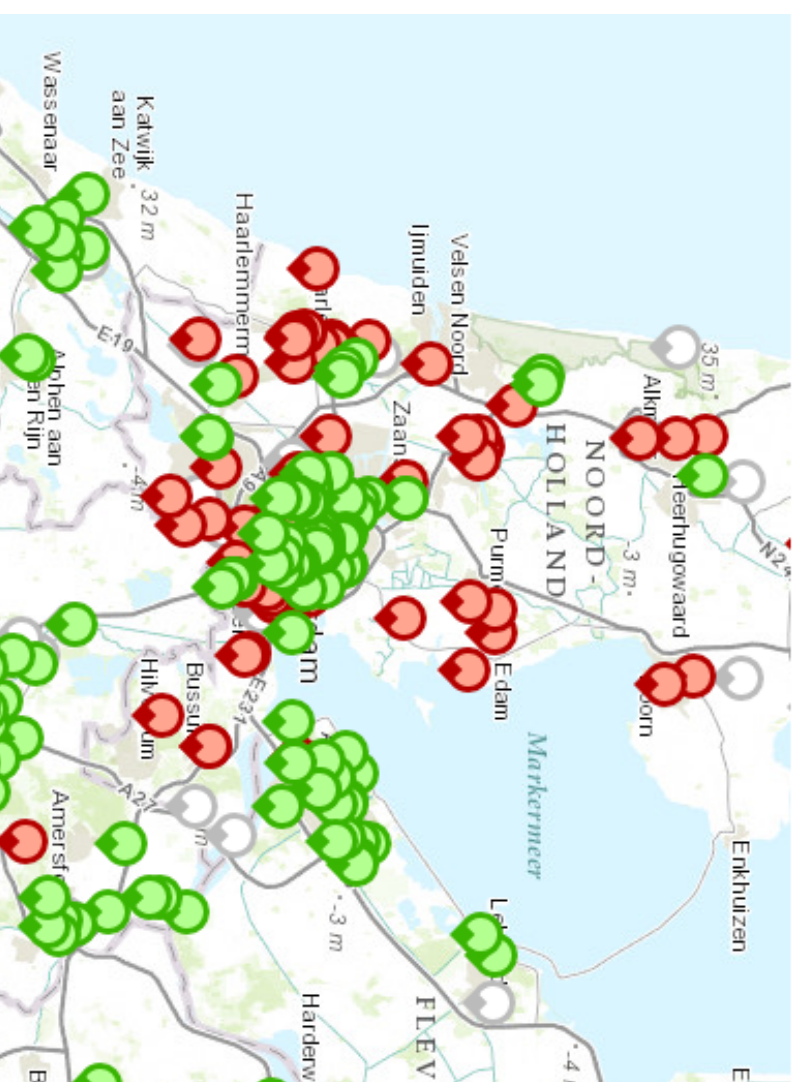
- Monitor Game Service Connectivity (Sept. 2016)
- Requirements:
 - Check General Reachability, Latency, Historical data
 - Supported by an active and helpful community
 - Integrate with their existing logging system
- Track down an outage in one upstream
- Became sponsors





Use Cases (3)

- Amsterdam Power Outage (March 2015)
- When and where the outage was happening





Take Part in the RIPÉ Atlas Community



RIPe Atlas community (part 1)

- Volunteers host probes in homes or offices
- Organisations host RIPe Atlas anchors
- Sponsor organisations give financial support or host multiple probes in their own networks



RIPe Atlas community (part 2)

- Ambassadors help distribute probes at conferences, give presentations, etc.
- Developers contribute free and open software
- Network operators create measurements to monitor and troubleshoot
- Researchers and students write papers



Hosting a probe

- Create a RIPE NCC Access account
- Go to <https://atlas.ripe.net/apply>
- You will receive a probe by post
- Register your probe
- Plug in your probe
- If you receive a probe from an ambassador (trainer, sponsor, someone at a conference), just register it and plug it in!



Contact us

- <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: [@RIPENet](https://twitter.com/RIPENet) and [#RIPENet](https://twitter.com/RIPENet)

Questions

