



RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE Atlas and RIPEstat

Tutorial

Training Services | ENOG 13 | 23-24 May



Introduction to RPEstat



What is RIPEstat?

One interface for Internet data and statistics

“One-stop shop”



RIPE NCC
RIPEstat





What data? What sources?

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

Landing page



RIPEstat shows
your own IP/ASN

The screenshot shows the RIPEstat landing page. At the top, there's a navigation bar with links for 'Manage IPs and ASNs', 'Analyse', 'Participate', 'Get support', 'Publications', and 'About Us'. Below this, a breadcrumb trail reads 'You are here: Home > Analyse > Statistics > RIPEstat'. A search bar is prominently displayed with the text 'Search RIPEstat' and a search button. Below the search bar, there's a field labeled 'Your network:' containing the IP address '2001:67c:2e8::/48', which is circled in red. To the right of this field, it says 'e.g.: IPv4 prefix/range, IPv6, ASN'. On the left side, there's a sidebar with 'RIPEstat Home' links, 'Your IP address is: 2001:67c:2e8::c100:14e6', 'System Statistics' showing '1,425,616' requests, and 'On RIPE Labs' news items. At the bottom, there's a grid of links for 'About RIPEstat', 'Documentation', and 'Use Cases'.

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RIPE Database (Whois) Website

Search the content of this website

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

You are here: Home > Analyse > Statistics > RIPEstat

RIPEstat Home << >>

About RIPEstat >

Documentation >

Use Cases >

Your IP address is:
2001:67c:2e8::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 IXPs? A Comparative Study
Aug 03, 2015

Search RIPEstat

Your network: 2001:67c:2e8::/48 e.g.: IPv4 prefix/range, IPv6, ASN

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

Results page



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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 > RIPEstat > AS3333

AS3333 Search

permalink

At a Glance (4)

- Routing (12)
- DNS (1)
- Anti Abuse (1)
- Database (0)
- Geographic (0)
- Activity (0)
- Suggestions (1)

+ MyView ?

AS Overview (AS3333)

✓ Originating Prefix(es)

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

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

source data embed code permalink info

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 09:00:00 UTC

source data embed code permalink info

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	

ⓘ Last updated less than 14 days ago
Showing results for AS3333 as of 2017-02-28 09:07:00 UTC

source data embed code permalink info

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 193.0.0.0/22, 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

⚙ Advanced Settings

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

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

More tabs with results

Widgets



Why use RIPEstat?

- 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 RIPEstat?

- 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?
 - How does the upstream outage look?
 - 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 widget API

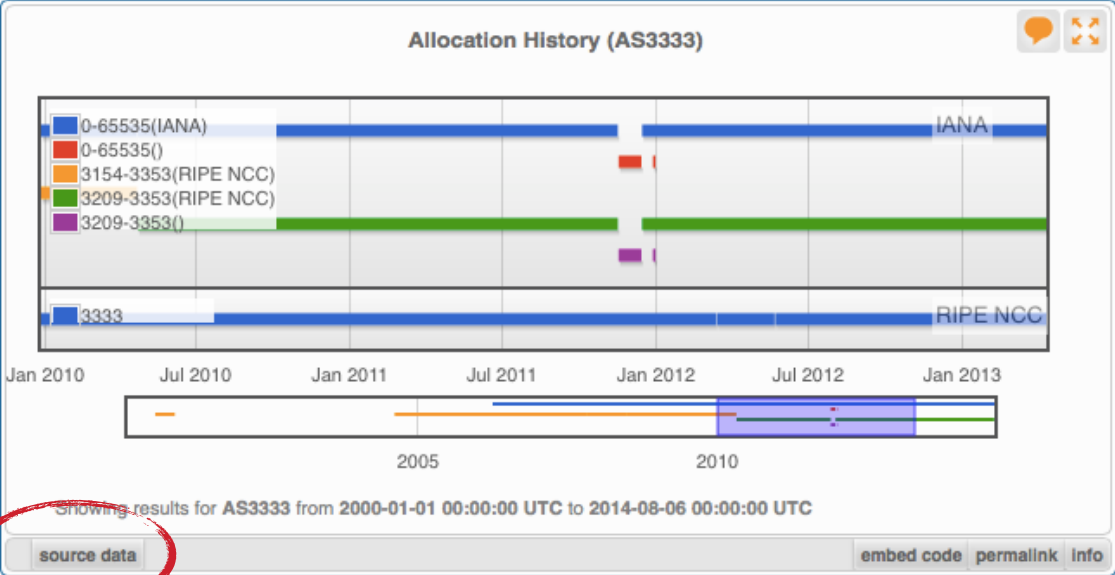
- RIPEstat data API



More About Widgets



Get the data behind the widget!



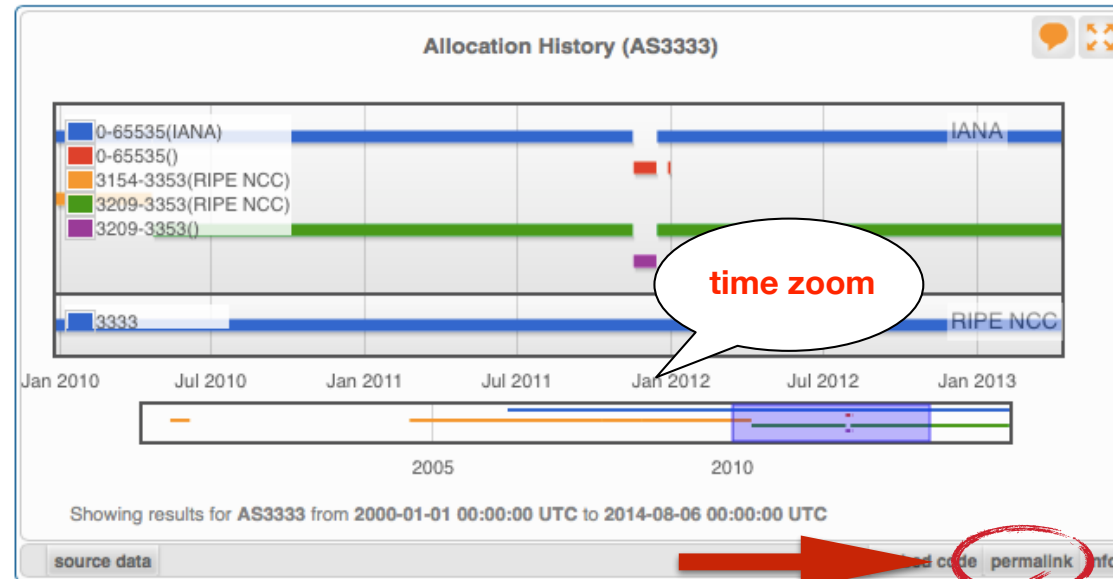
source data embed code permalink info

Get the data behind this widget with the Data API

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

```
{
  "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"
            }
          ]
        }
      ]
    }
  }
}
```

Shareable results URL



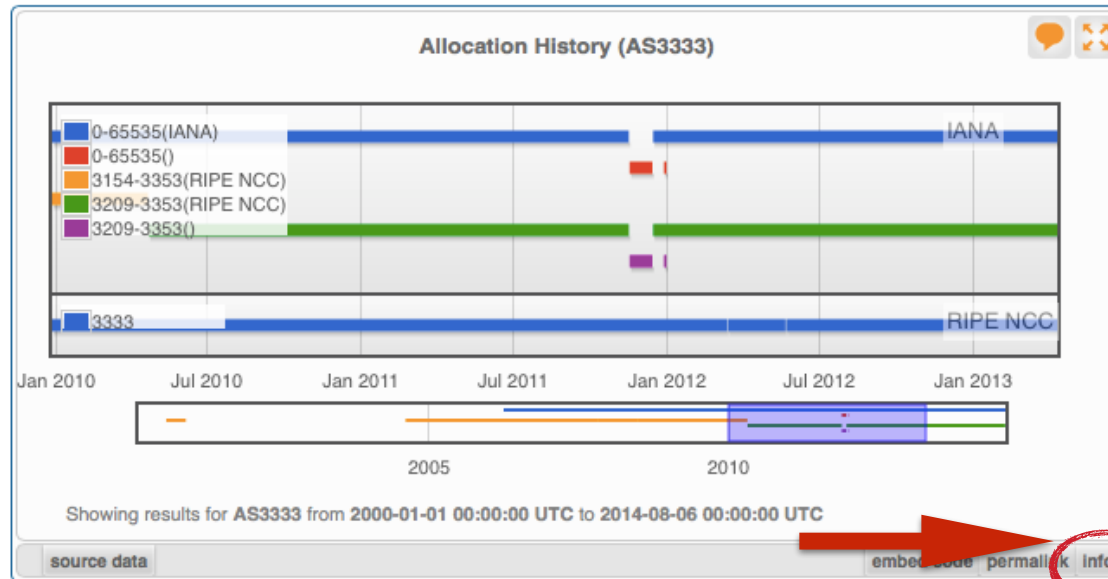
source data embed code **permalink** info

Permalink

open

- Immutable shareable URL for each result!
- URL includes:
 - **widget** + queried **resource**
 - for some widgets: **settings**, **zoom**, **time period**

Where's the data from?




source data embed code permalink info


Content Explanation

What does this widget show?
Allocation History displays information about allocations and direct assignments of prefixes or AS numbers.

How can the visualisation be interpreted?
When the queried resource was a prefix, the graph will show how that prefix and related (more or less specific prefixes) were allocated over time. When the queried resource was an ASN, the graph will show the allocation of that ASN.
The legend will display all resources, including those which are not announced during the time range displayed. It is possible to change the displayed time period with the timeline selector underneath the graph.



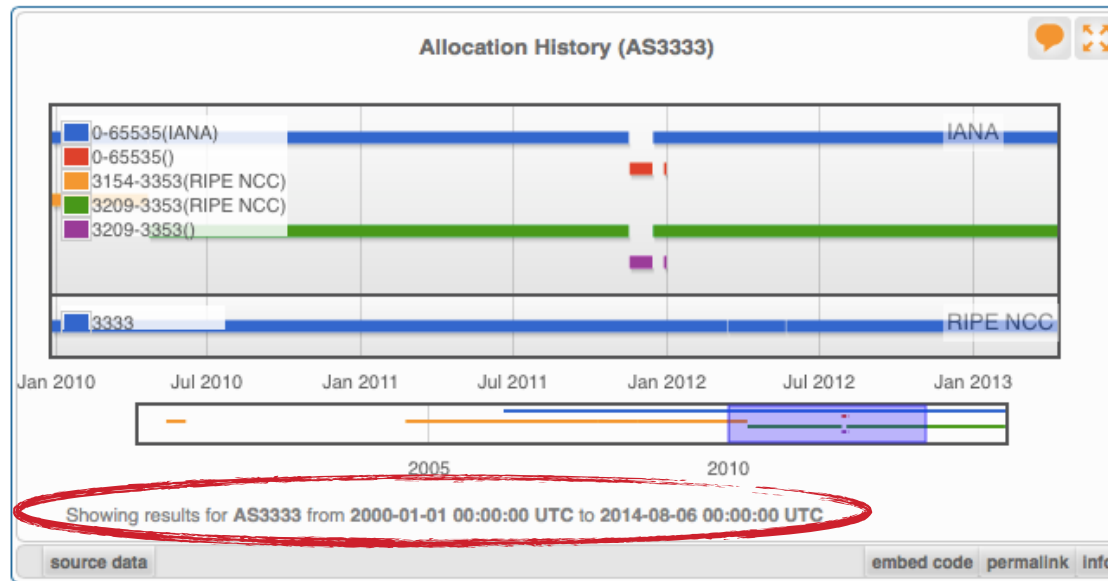
The shaded area is displayed in the graph. This area can be adjusted by moving to the left or right end of the shaded area and then dragging it to the desired location. It is possible to change not only the start and end time, but also the length of the period which is shown.



What is the data source?
The RIR statistics files summarise the current state of allocations and assignments of Internet number resources. They are intended to provide a snapshot of the status of Internet number resources, without any transactional or historical details. Find details for each RIR here:

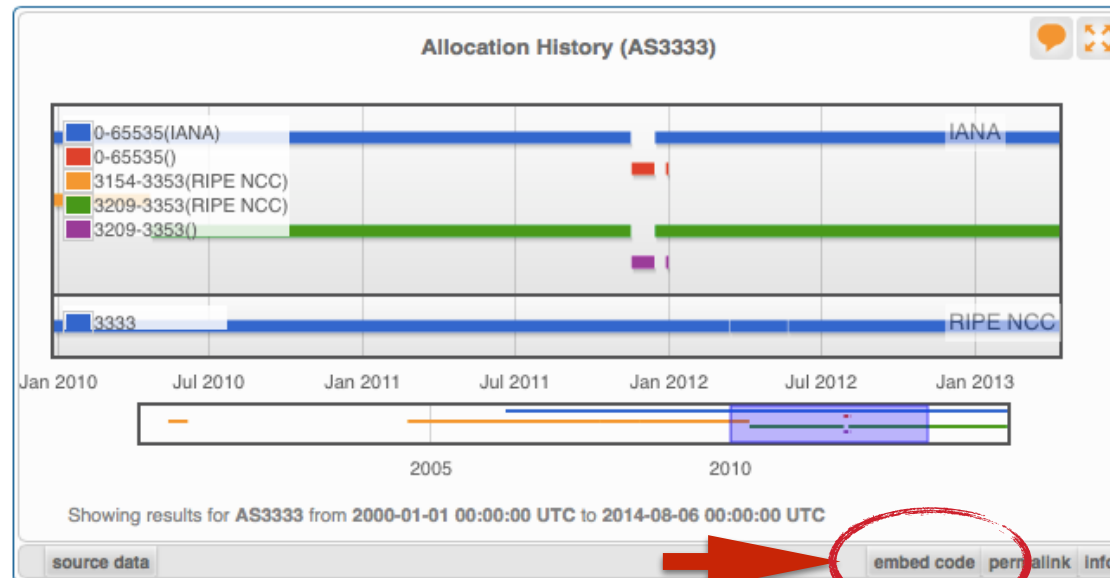
- AFRINIC
- APNIC
- ARIN
- LACNIC
- RIPE NCC

Freshness and timescale of the data



- Timestamp and time period
- Different widgets = different update frequency
- Adjustable usually
 - Limits: different maximum granularities

Embed the widget!



source data embed code permalink info

Embed this widget on your page

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

Copy and paste this code into an HTML webpage. Note: *widget_api.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

Prefix Count widget

AS Path Length widget

InterRacks / IceHosting network

AS42093

Home Network load Peers Peering policy Maintenance Looking glass

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 8508812

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 Ripe.

Prefixes

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

number of Prefixes Addresses

IPv4 Prefixes
IPv6 Prefixes

Showing results for AS42093 from 2000-01-01 00:00:00 UTC to 2013-09-09 00:00:00 UTC

AS Path Length

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

Minimum
Maximum
Average
Average (no prepending)

Showing results for AS42093 from 2013-09-09 08:00:00 UTC to 2013-09-09 16:00:00 UTC



Widgets List

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

RIPEstat Widgets

This is a complete list of all of the widgets that RIPEstat offers. Each of these widgets can be accessed using the links below.

When you view a widget you can also get code for embedding it in your own pages. The full procedure for embedding and configuring widgets is described in the [Widget API Documentation](#).

Show entries

Search:

Title (show slug)	Example	Prefix	IP address	ASN	Hostname	Country code
Abuse Contact Finder		✓	✓	✓		
Address Space Hierarchy		✓	✓			
Address Space Usage		✓	✓			
Allocation History		✓	✓	✓		
Announced Prefixes				✓		
Announced Prefixes (Inrdb)				✓		
Announced Prefixes (Ursa)				✓		
AS Overview				✓		
AS Path Length				✓		
AS Routing Consistency				✓		
ASN Neighbours				✓		
ASN Neighbours History				✓		



Visualising BGP Routing Information



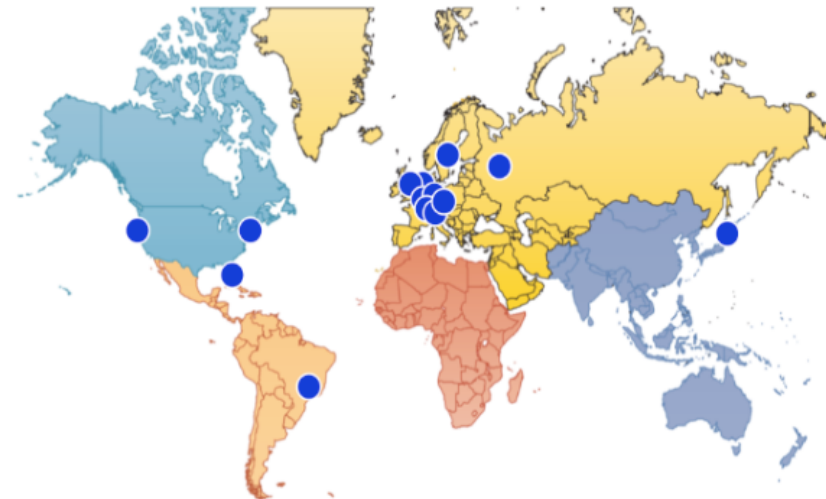
Querying

- IP or ASN queried?
 - You get different widgets!
- ASN often visualised based on the prefixes it announces

RIS - Routing Information Service



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





At-a-glance view: Prefix queried

At a Glance (4)

- Geographic (2)
- Activity (4)
- Suggestions (1)
- + MyView ?

Prefix Overview (140.78.0.0/16)

Announced? **Announced**

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

Resource	RIR	Country
140.78.0.0/16	RIPE NCC	AT

Show IANA Registry Information

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

source data embed code permalink info

Geoloc (140.78.0.0/16)

Geoloc details

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

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

source data embed code permalink info

Whois Matches (140.78.0.0/16)

inetnum	140.78.0.0/16	(+)
netname	JKU-LAN	
descr	Johannes Kepler University	
descr	Campus LAN	
country	AT	
org	ORG-JKU1-RIPE	
status	LEGACY	
mnt-by	AS1205-MNT	
mnt-by	ACONET-LIR-MNT	
source	RIPE	

Last updated 2 years ago
Showing results for 140.78.0.0/16 as of 2017-02-28 10:04:00 UTC

source data embed code permalink info

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.

Advanced Settings

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

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

source data embed code permalink info

Registered in the RIPE Database?

Announced? By which AS?

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



At-a-glance view: ASN queried

permalink

At a Glance (4)

Routing (12)

DNS (1)

Anti Abuse (1)

Date

Ge

Act

Sug

Announced?

Originating Prefix(es)

Holder of this ASN:
JKU - AS University Linz, AT

status	Registration	Country
ALLOCATED	1993-09-01	AT

Show IANA Registry Information

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

source data embed code permalink info

Geoloc (AS1205)

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

Whois Matches (AS1205)

aut-num	1205	(+)
as-name	JKU-LINZ-AS	
org	ORG-JKU1-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

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): equiv. to 0 /48s

Advanced Settings

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

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

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

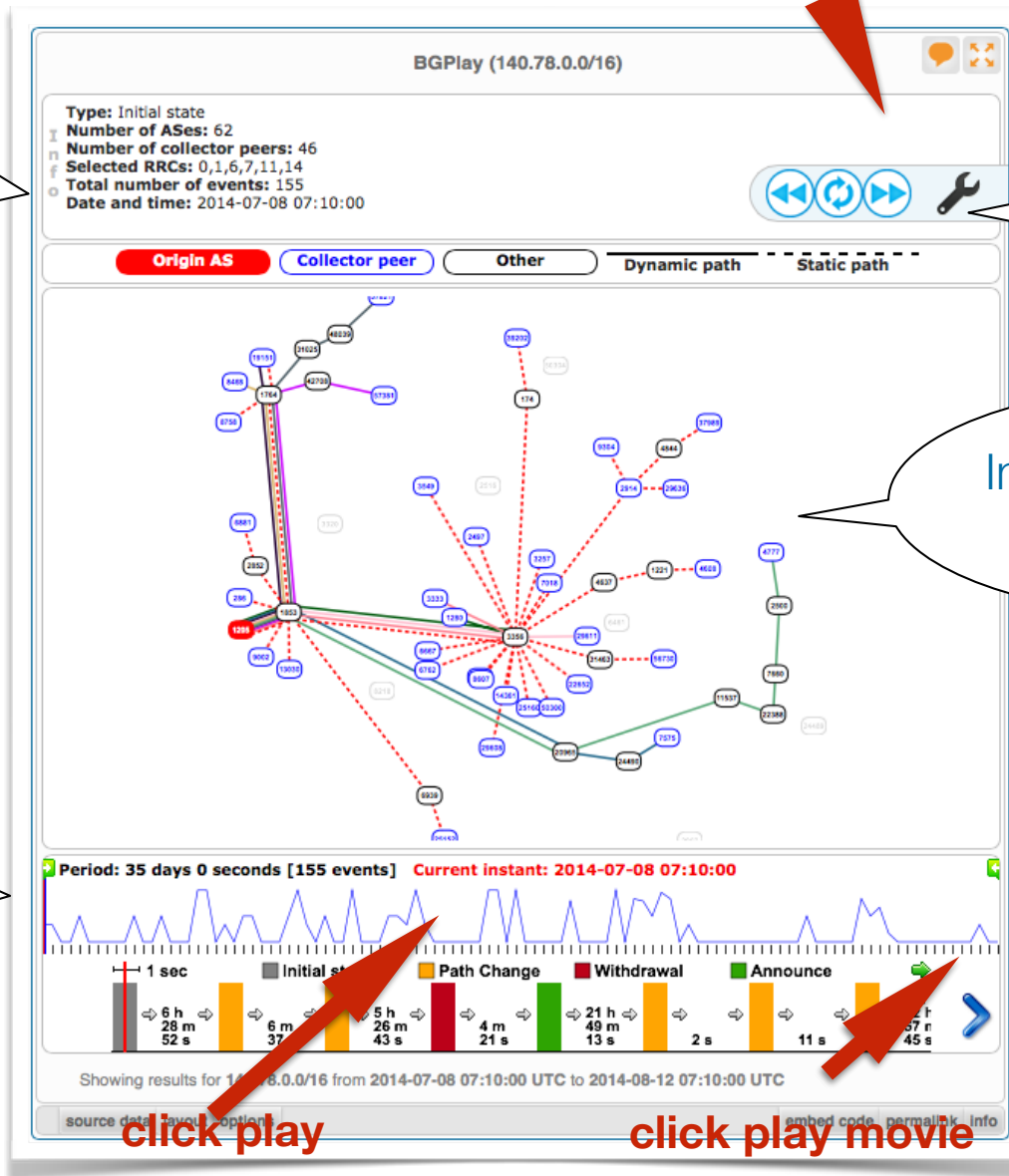
<https://stat.ripe.net/widget/bgplay>

BGPlay



click play

BGP event, ASN
or ASN path details



Control panel:

- Covered time period
- RRC selection

Interactive animated graph

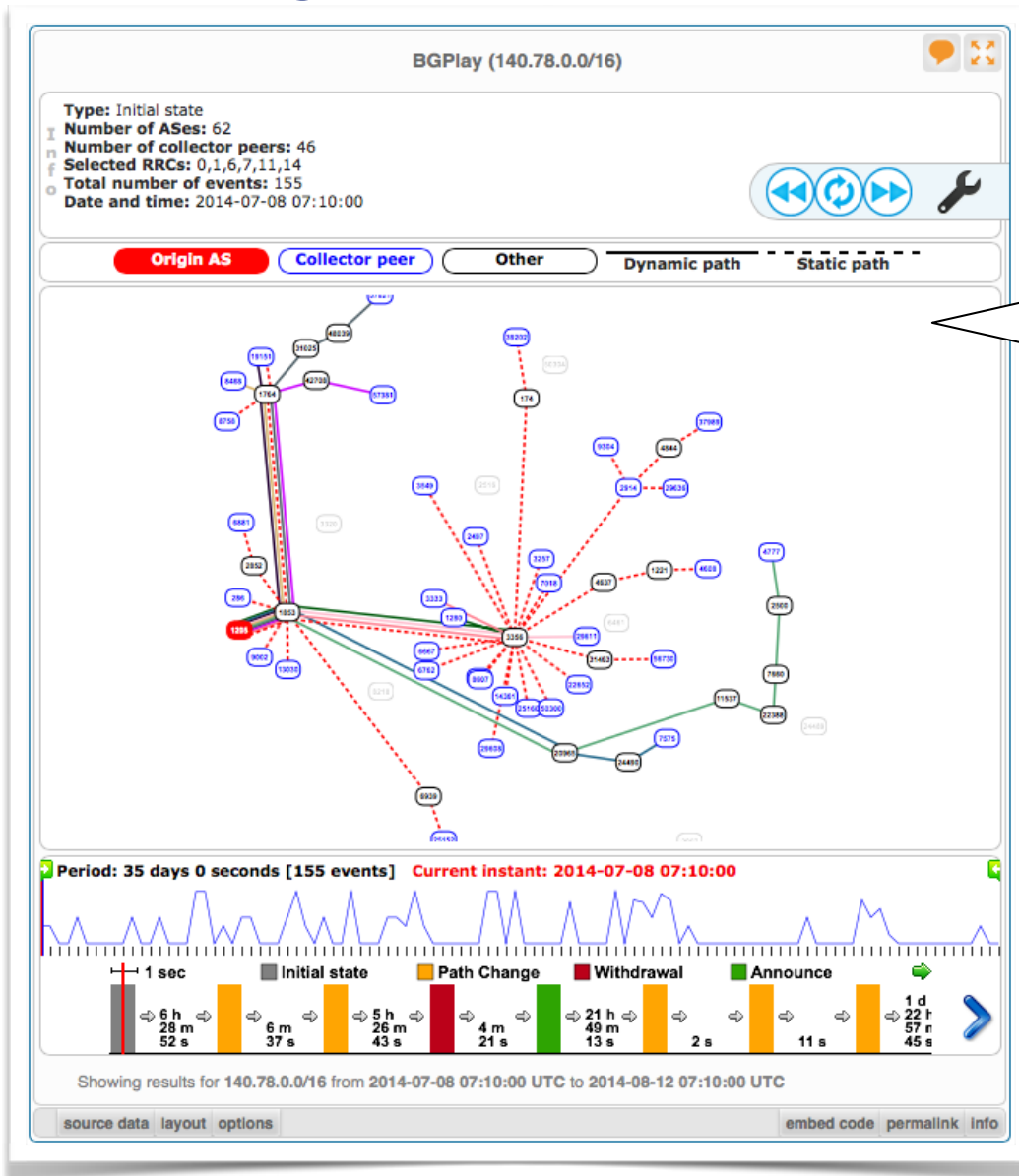
Control timeline

Detailed timeline with events

click play

click play movie

BGPlay



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



Tasks

- Find the up-stream provider for AS1205
- Is 69.36.157.0/24 originated by only one or more ASNs?
- Check the IPv6 connectivity of your own network

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

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

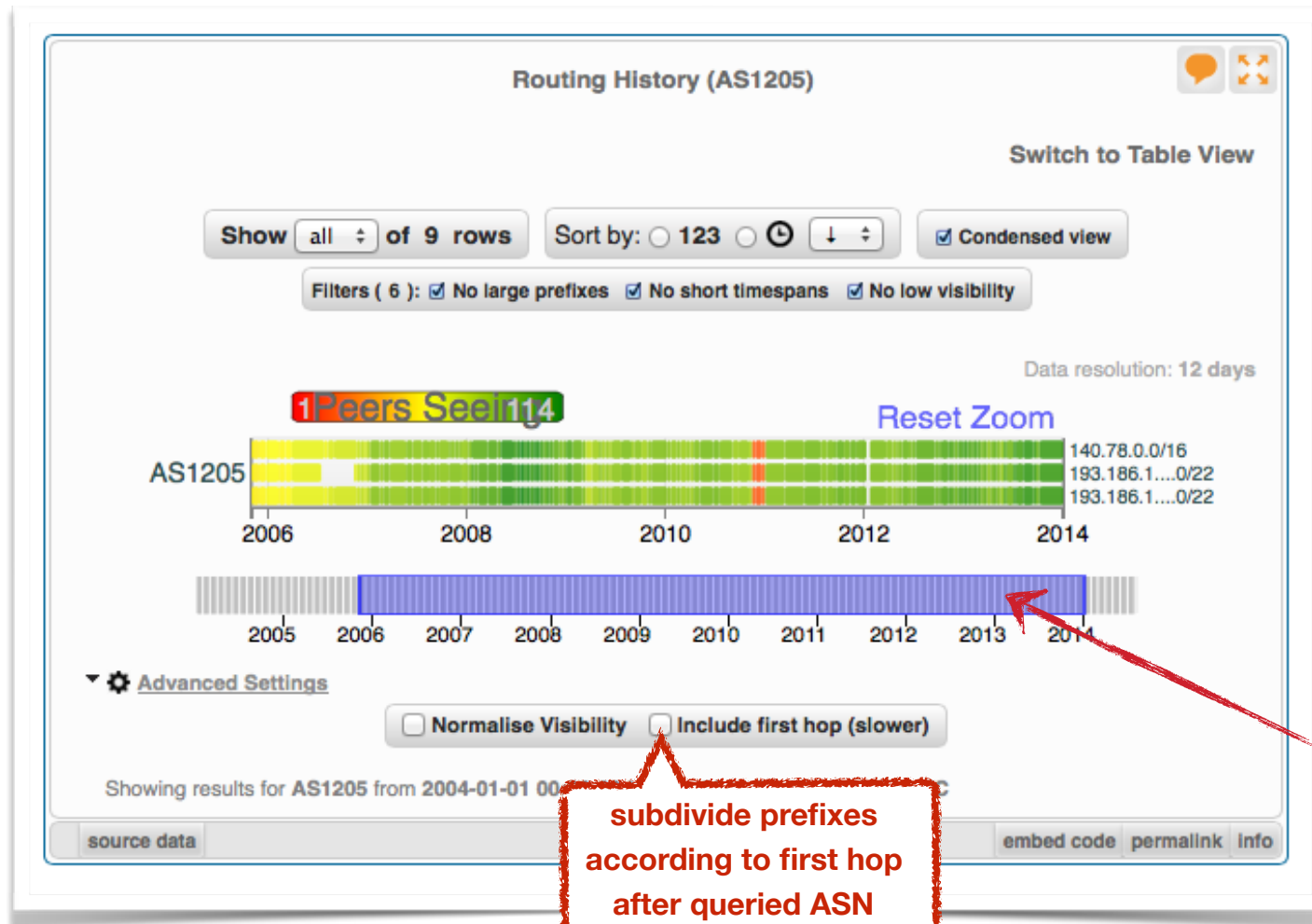
source data embed code permalink info

IPv4 vs IPv6?
Sort by prefix
or
Search "." vs "..."



Time period
shown in widget
Default:
last two weeks

History of Prefixes Announced by ASN



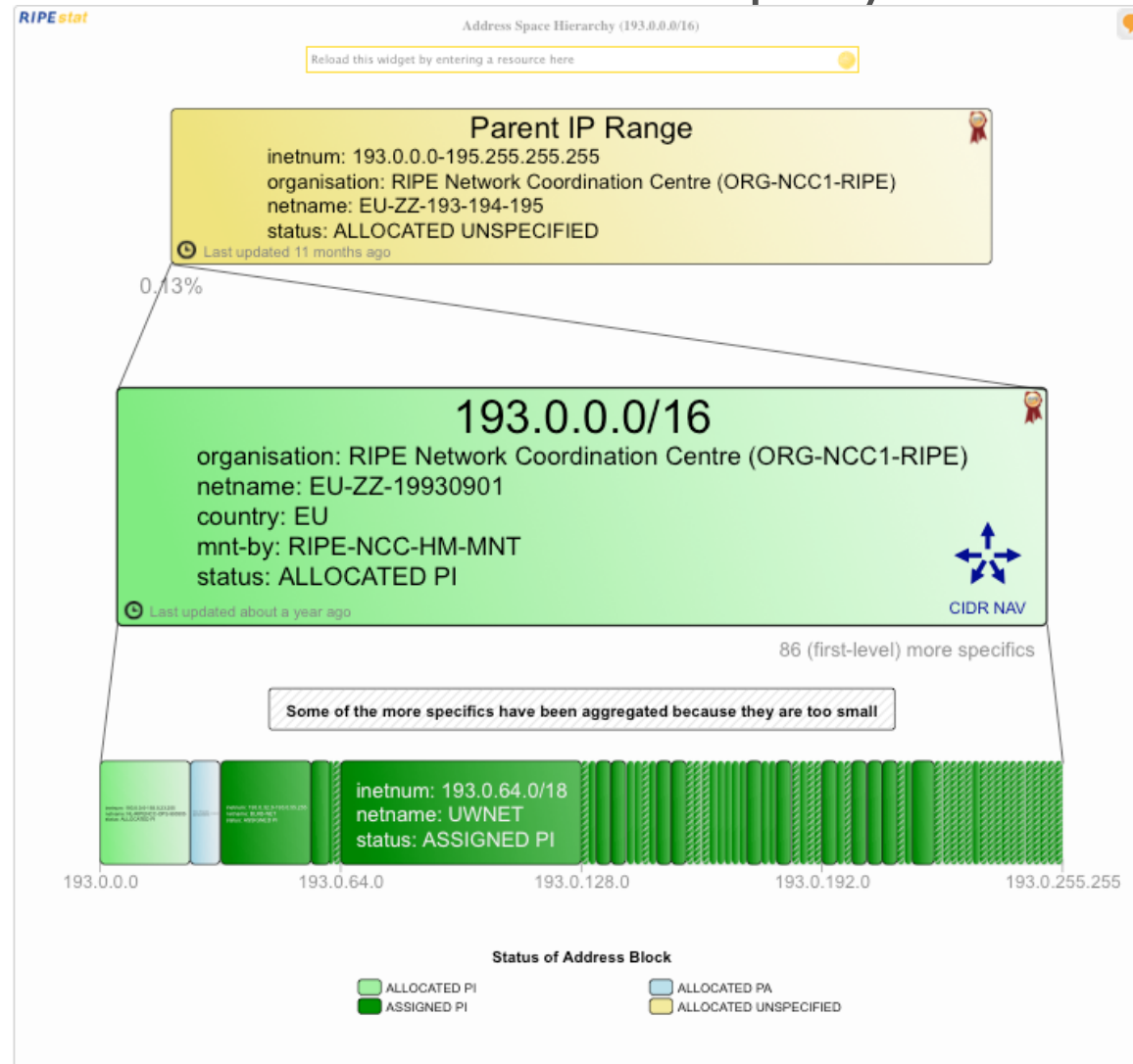


Visualising RIPE Database Data

Address Space Hierarchy Widget



- click above or below to refocus query






Registry Browser Widget



- click on another object to refocus query



Registry Browser (109.110.192.0/19)

Reload this widget by entering a resource here 

 2011-08-04 16:00:28Z to 2012-12-17 14:02:27Z 
Last changed on 2011-08-04 at 16:00:28Z

inetnum: 109.110.192.0/19 [Show more](#)

descr ASTER Sp. z.o.o.
netname PL-ACC-20091113
country PL
org ORG-ACCL1-RIPE
status ALLOCATED PA
mnt-by RIPE-NCC-HM-MNT

route: 109.110.192.0/19 [route] [Show more](#)

route: 109.110.192.0/19 [route] [Show more](#)


organisation: ORG-ACCL1-RIPE [org] [Show more](#)

role: ACC TEAM [admin-c, tech-c] [Show more](#)

mntner: RIPE-NCC-HM-MNT [mnt-by] [Show more](#)

mntner: PL-ASTER-ZG-MNT [mnt-lower, mnt-routes] [Show more](#)

mntner: ACC-MNT [mnt-lower, mnt-routes] [Show more](#)



Registry Browser Widget



RIPEstat Registry Browser (mntner:ACC-MNT)

Reload this widget by entering a resource here

2013-02-12 15:12:09 UTC to 2013-03-11 13:39:23 UTC
Last updated on 2013-02-12 at 15:12:09 UTC.

mntner: ACC-MNT [Show more](#)

descr Aster Sp. z o.o. AS Maintainer
mnt-by ACC-MNT

7 × aut-num, 400 × domain^{truncated}, 3 × inet6num, 22 × inetnum, 5 × mntner, 6 × organisation, 5 × person, 1 × role, 3 × route

aut-num: AS31079 [Show more](#)

aut-num: AS35342 [Show more](#)

aut-num: AS49785 [Show more](#)

domain: 0.178.31.in-addr.arpa [Show more](#)

domain: 0.179.31.in-addr.arpa [Show more](#)

domain: 0.187.31.in-addr.arpa [Show more](#)

domain: 0.222.85.in-addr.arpa [Show more](#)

domain: 0.5.0.4.1.0.2.ip6.arpa [Show more](#)

domain: 0.73.178.in-addr.arpa [Show more](#)

role: ACC TEAM [admin-c, tech-c] [Show more](#)

mntner: ACC-MNT [mnt-by] [Show more](#)

Showing results for ACC-MNT as of 2013-03-11 13:39:23 UTC

Travel Back in Time: For RIPE NCC Members



Registry Browser (AS3333)

Reload this widget by entering a resource here

2012-04-17 10:12:15 UTC to 2013-03-13 13:04:15 UTC

2012-04-17 09:55:11 UTC to 2012-04-17 10:12:14 UTC

2012-03-12 08:40:16 UTC to 2012-04-17 09:55:10 UTC

2011-03-29 14:57:26 UTC to 2012-03-12 08:40:15 UTC

2011-02-15 10:48:34 UTC to 2011-03-29 14:57:25 UTC

2011-02-15 10:30:34 UTC to 2011-02-15 10:48:33 UTC

2011-02-02 14:06:10 UTC to 2011-02-15 10:30:33 UTC

2009-01-28 17:46:03 UTC to 2011-02-02 14:06:09 UTC

2009-01-28 17:27:21 UTC to 2009-01-28 17:46:02 UTC

2009-01-28 11:14:33 UTC to 2009-01-28 17:27:20 UTC

2009-01-27 15:44:05 UTC to 2009-01-28 11:14:32 UTC

2008-12-19 18:38:35 UTC to 2009-01-27 15:44:04 UTC

2008-12-19 16:51:45 UTC to 2008-12-19 18:38:34 UTC

2008-11-19 16:31:45 UTC to 2008-12-19 16:51:44 UTC

2007-08-24 15:04:21 UTC to 2008-11-19 16:31:44 UTC

2007-07-10 10:24:28 UTC to 2007-08-24 15:04:20 UTC

2006-10-24 12:47:11 UTC to 2007-07-10 10:24:27 UTC

2006-10-24 12:44:28 UTC to 2006-10-24 12:47:10 UTC

2006-10-24 08:21:03 UTC to 2006-10-24 12:44:27 UTC

2006-05-03 10:29:36 UTC to 2006-10-24 08:21:02 UTC

route: 193.0.0.0/21 [origin] [Show more](#)

route: 193.0.10.0/23 [origin] [Show more](#)

route: 193.0.12.0/23 [origin] [Show more](#)

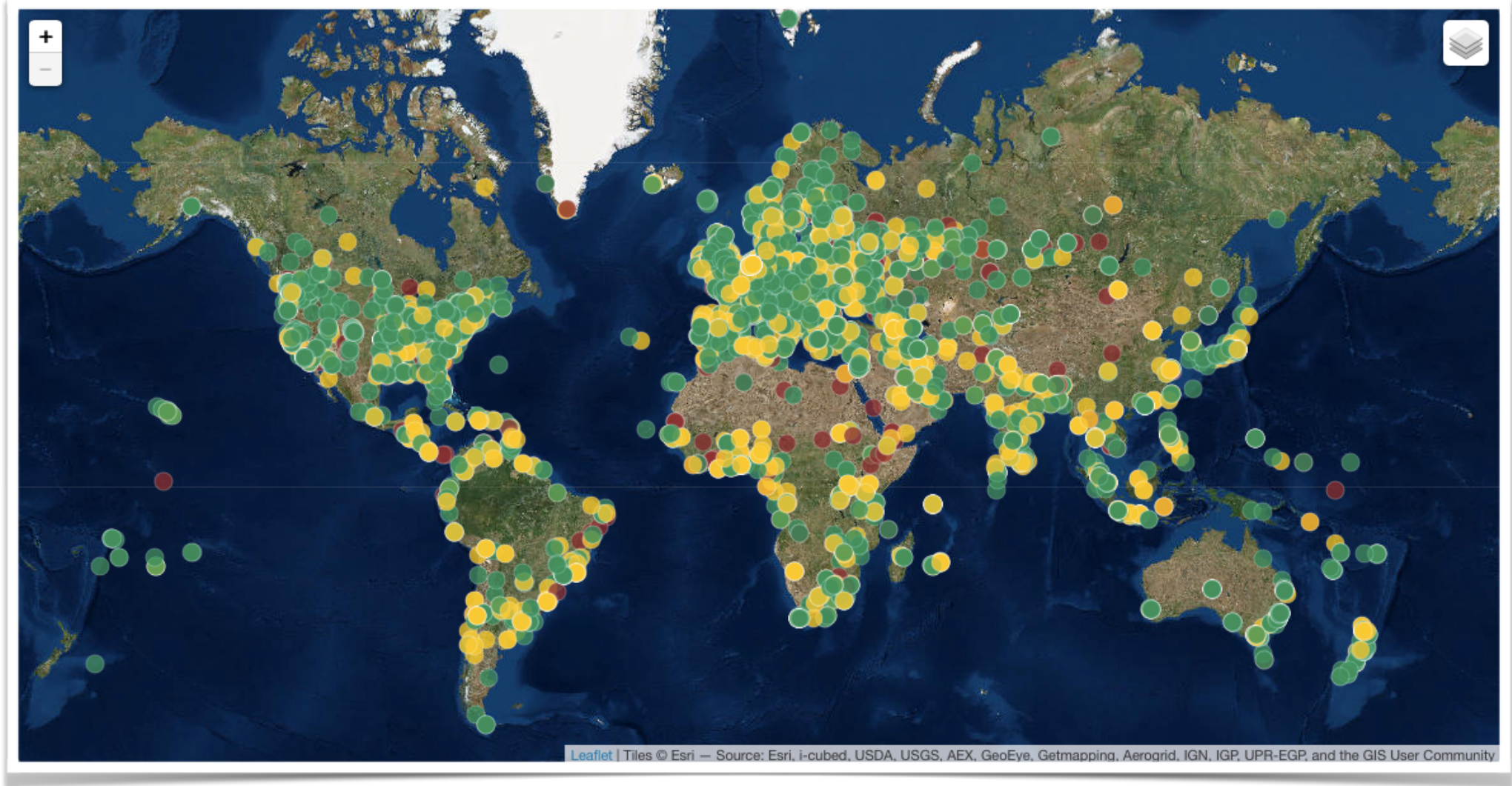
organisation: ORG-NIEN [org]

person: Jochem de Ruig



RIPE Atlas

RIPE Atlas Global Coverage





Why RIPE Atlas?

- Internet wide measurement system
 - Internet infrastructure, not all applications
- Goal: view Internet reachability
- Real time & historical info
- Probes hosted by volunteers
- Data publicly available
- Open and free

atlas.ripe.net





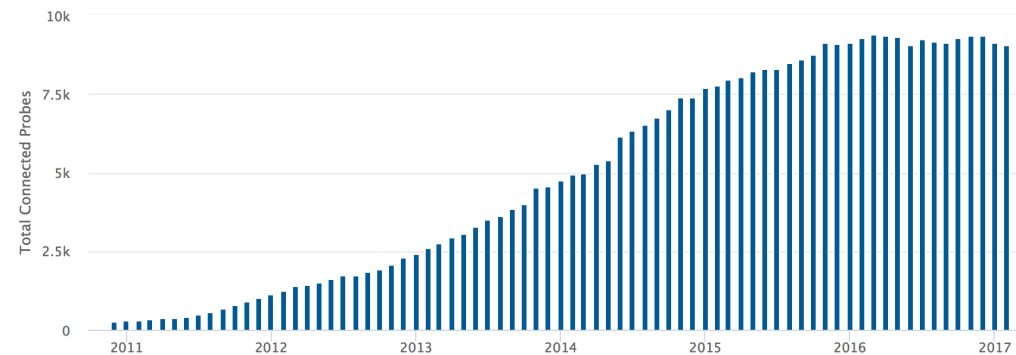
What is RIPE Atlas (1)

Composed of: **Probes**



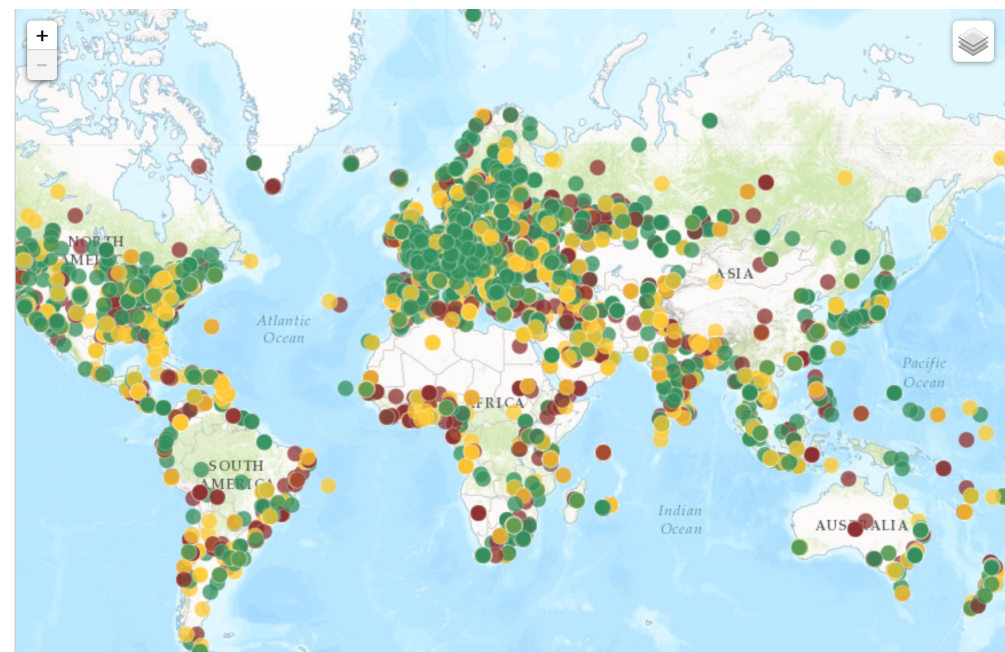
Probes

The number of connected probes



- 9750+

- Around the world





What is RIPE Atlas (2)

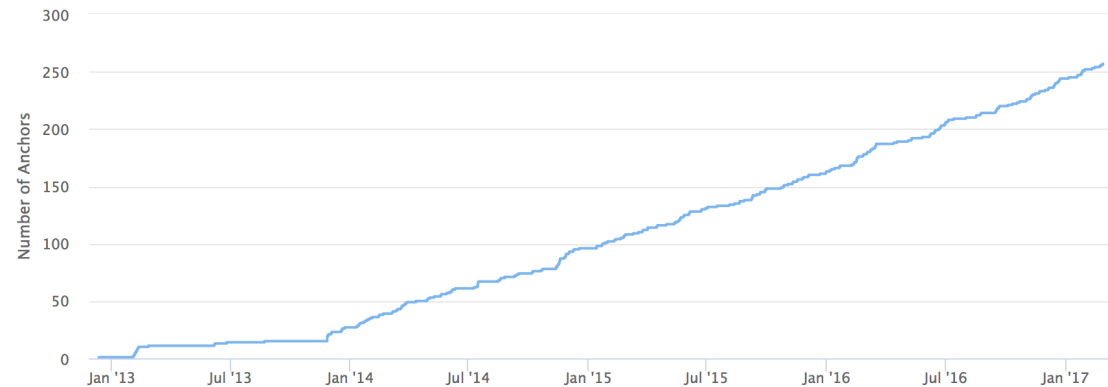
Composed by: **Anchors**



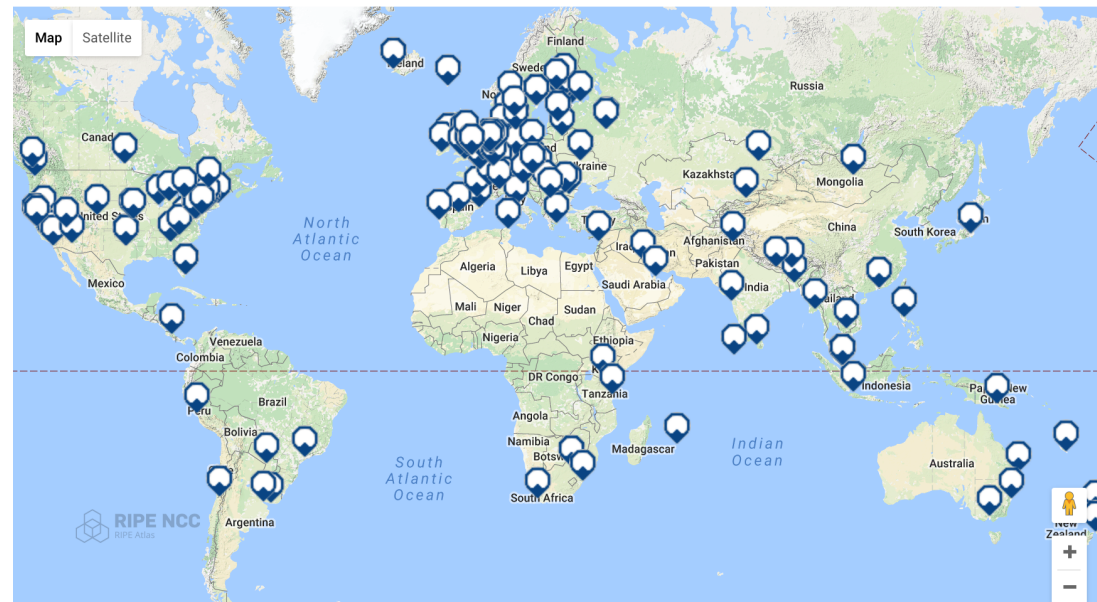
- 250+

RIPE Atlas Anchors

Growth in the number of RIPE Atlas anchors over time



- Around the world





What is RIPE Atlas (3)

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

The screenshot displays the RIPE Atlas web interface. On the left is a navigation menu with the following items: RIPE Atlas (selected), About RIPE Atlas, Get Involved, Probes and Anchors, Measurements, Maps and Tools, Resources, RIPE NCC Members, My Atlas (expanded), Credits, API Keys, Messages, Ambassador Probes, and Settings. The main content area features several dashboard cards:

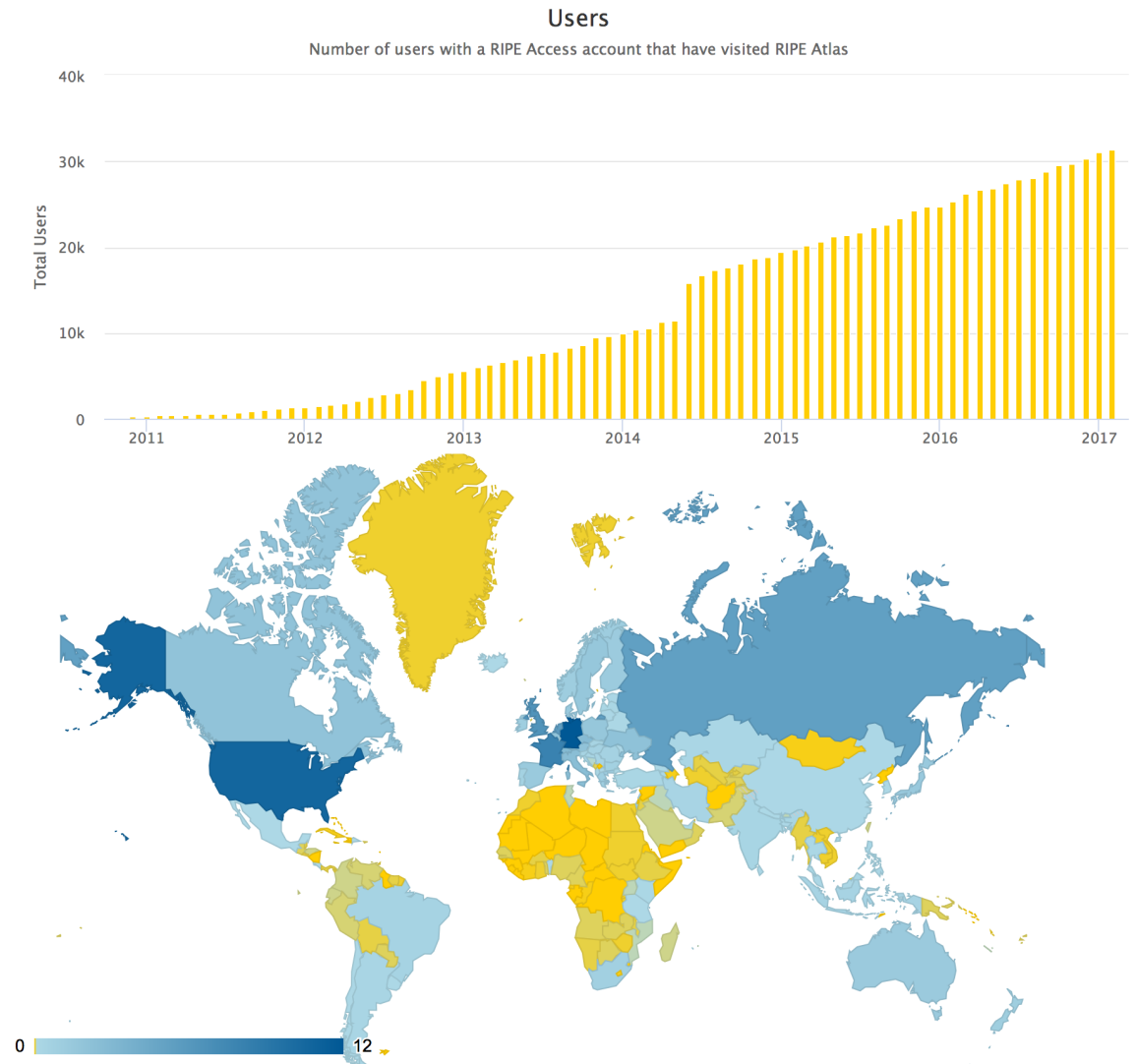
- Measurements:** Shows 0 measurements. A message states: "You do not have any measurements. Please visit the [measurements page](#) to start one."
- API Keys:** Shows 0 API keys. A message states: "You are not yet using API keys. If you'd like to start, you should visit the [API keys page](#)."
- Probes:** Shows 1 probe. The first entry is "AMS-Alvaro" with a status of "1 week, 4 days" and a green checkmark.
- Anchors:** Shows 0 anchors.
- Credits:** Shows 2101 daily credits and 5.3 million total credits. Below this is a section for "Daily Credits Balance".



What is RIPE Atlas (4)

Composed by: **RIPE Atlas Community**

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





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



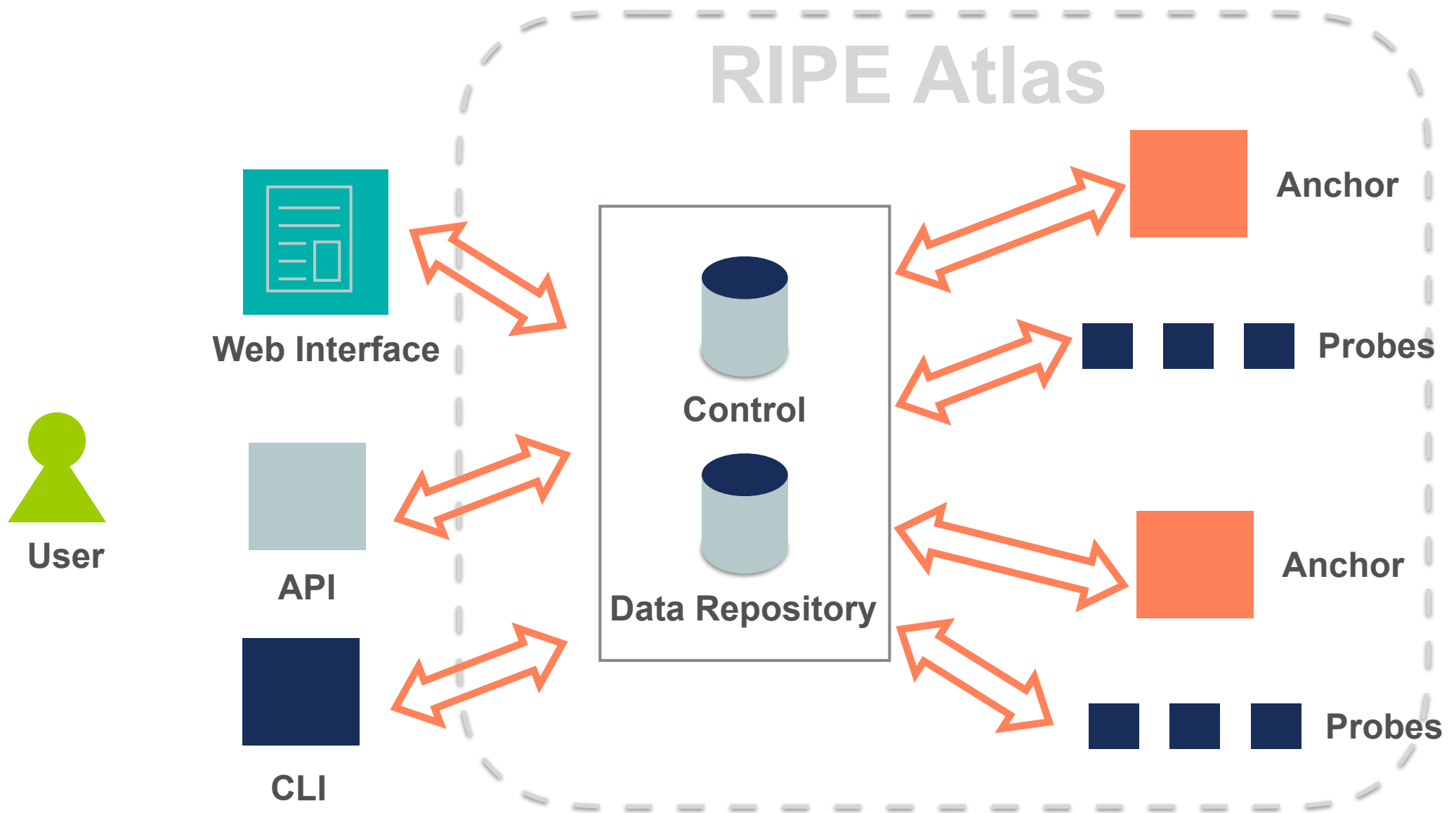
What is RIPE Atlas (5)

Composed by: **Measurements**

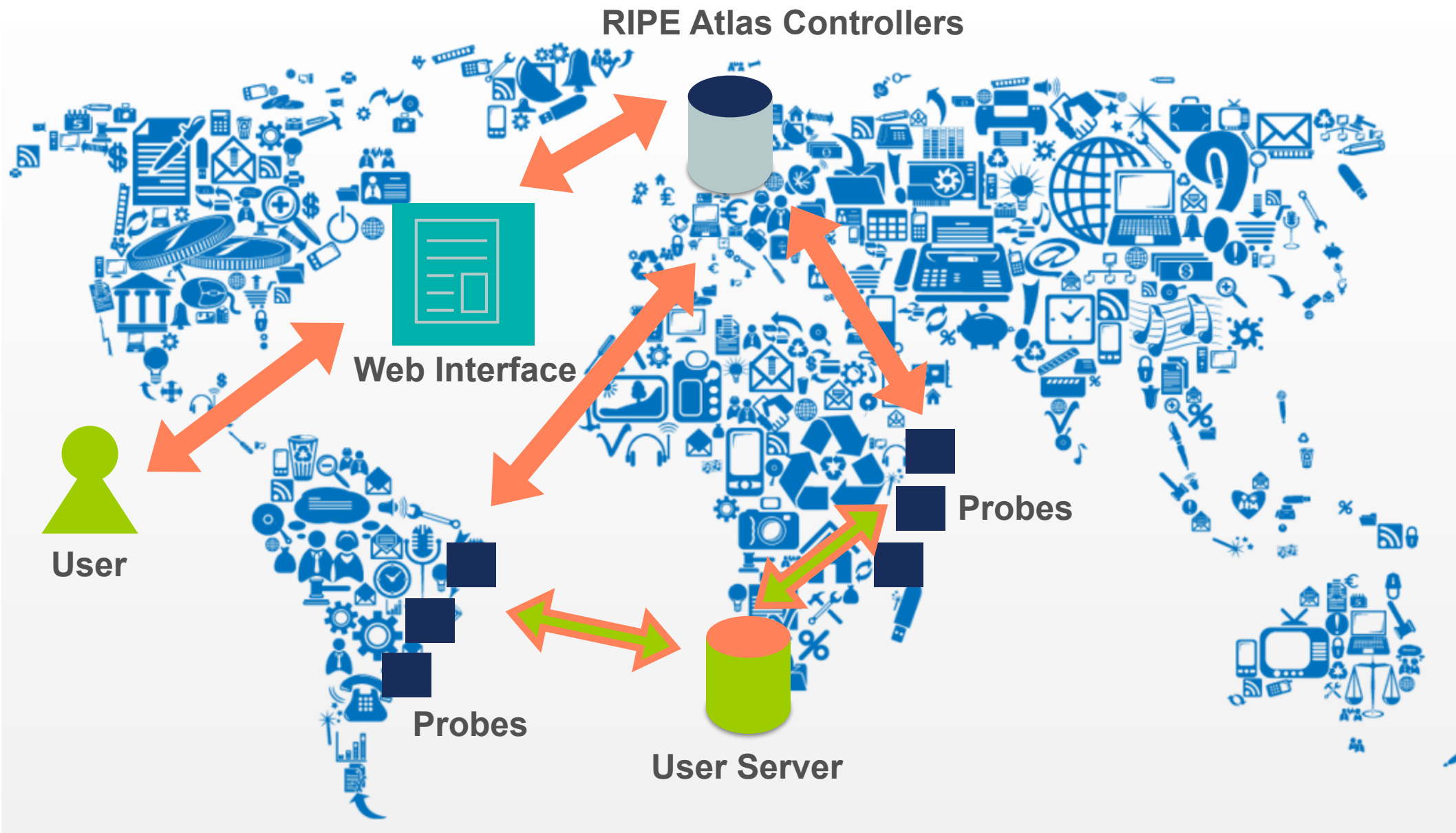
Measurements currently running

	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

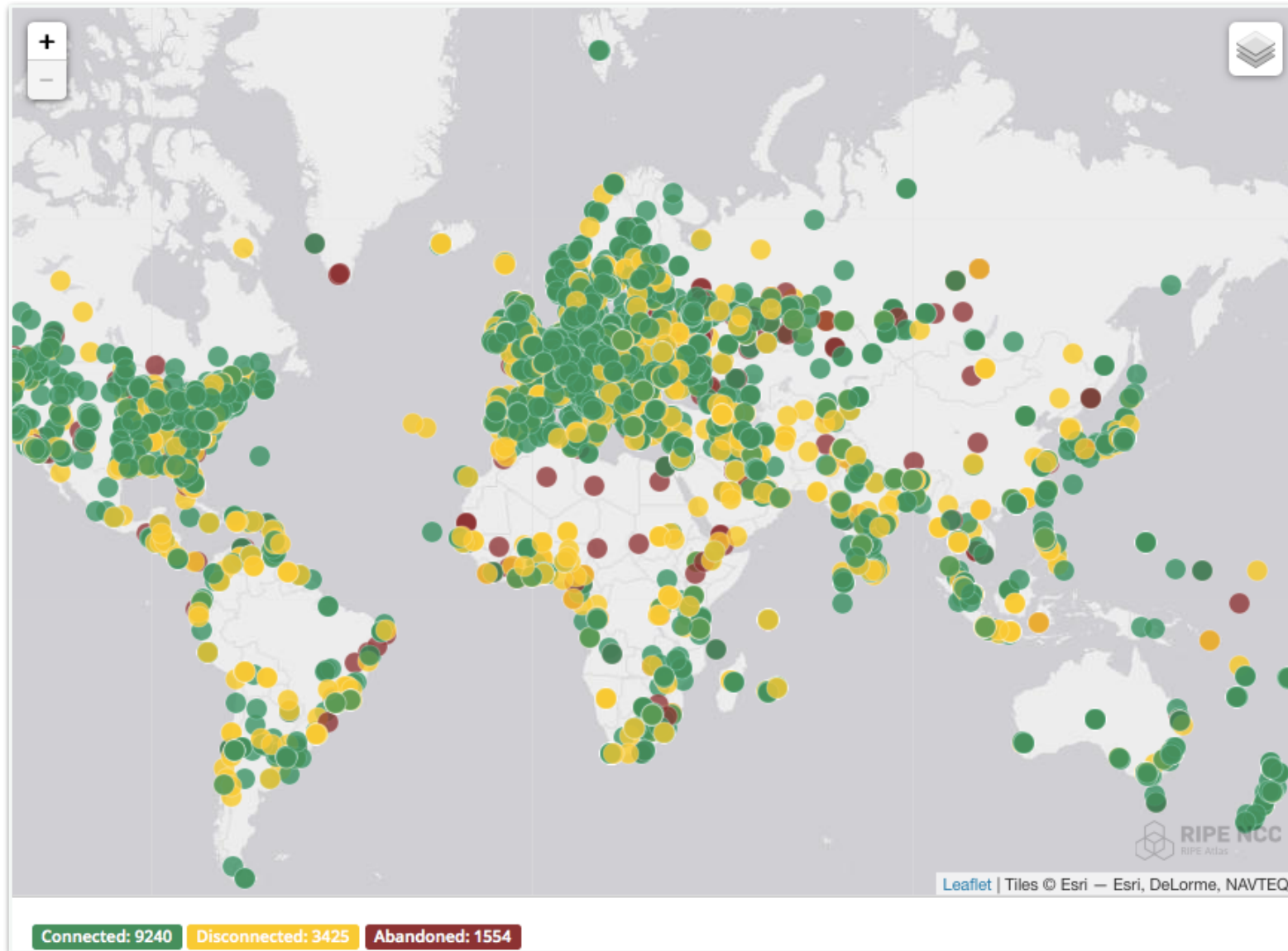
RIPE Atlas Overview (1)



RIPE Atlas Overview (2)



RIPE 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



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



How to Access RIPE Atlas

- RIPE NCC Access account (<http://access.ripe.net>)
- RIPE Atlas -> My Atlas (<http://atlas.ripe.net>)

My RIPE Atlas Dashboard

Measurements 0 0 0 +

You do not have any measurements. Please visit the [measurements page](#) to start one.

API Keys

You are not yet using API keys. If you'd like to start, you should visit the [API keys](#) page.

Probes 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

Credits 0 0

Daily Credits Balance

total daily income
total daily expenditure



Credits

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



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



Ethical Considerations

- No passive measurements (no user traffic)
- Set of measurements is limited
- HTTP measurements only to Anchors
- All data is open and available to anyone
- Barrier to entry is low/cheap
- Open API's
- Open source code on GitHub



Looking Up Public Probes

Searching for probes



The screenshot shows the RIPE NCC website interface. At the top left is the RIPE NCC logo and name. To the right is a search bar with the text 'RIPE Database (Whois)' and 'Website' tabs, and a search input field labeled 'Search IP Address or ASN'. Below the search bar is a navigation menu with items: 'Manage IPs and ASNs', 'Analyse', 'Participate', 'Get Support', 'Publications', and 'Add'. A breadcrumb trail reads: 'You are here: Home > Analyse > Internet Measurements > RIPE Atlas > Probes'. The main heading is 'Probes'. Below it is a descriptive paragraph: 'This is a list of all current RIPE Atlas probes, including information specific to each probe. More probes are continually coming online.' There are three bullet points: 'Learn more about probes', 'See the probes map', and 'Apply for your own probe'. Below the text is a filter bar with the following options: 'Filter by id/asn/country/description', 'Any Status', 'IPv4/v6', and 'Any Country'. There are also buttons for 'Public' and 'Login to see more'. The main content is a table of probes with columns: 'Id', 'ASN v4', 'ASN v6', 'Country', 'Description', and 'Connection Status'. The table contains 10 rows of probe 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		Afilias	🌐 4 weeks
6112	197216	197216		Delta Softmedia Ltd	🌐 4 weeks
6161	27843	27843		Optical Technologies	🌐 4 weeks
6142	63403	63403		Afilias	🌐 4 weeks
6008	2607	2607		AA sk-bts-as2607	🌐 4 weeks
6001	3333	3333		AA nl-ams-as3333	🌐 4 weeks

Filter based on
ASN, country,
location...



Probe page

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

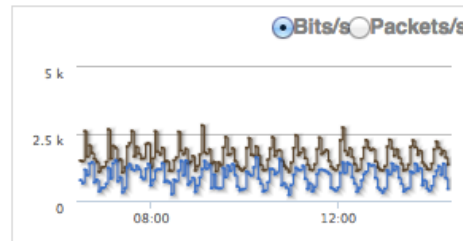
Probe #10010 [\(Register\)](#)

General **Network** Built-in Measurements User-defined Measurements

General Information [Edit](#)

Id	10010
MAC Address	F8:D1:11: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 200MB
System Tags	V3 Resolves A Correctly Resolves AAAA Correctly IPv4 Works Auto GEOIP city IPv4 Capable IPv4 RFC1918

Connection & Traffic [↗](#)



Connected Time [↻ 3 days, 9 hours](#)



[↻ 3 days, 9 hours](#)

Firmware **#10010**
4680

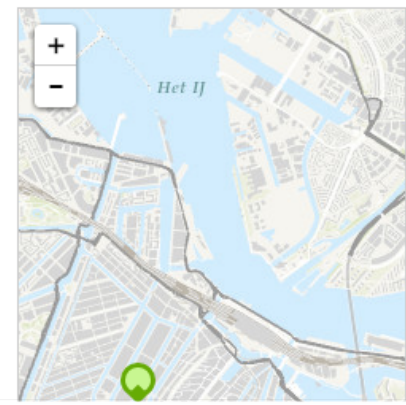
Architecture [tl-mr3020](#)

MAC Address
F8:D1:11:A9:F3:2C

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](#) [↗](#)



[Edit](#) [↗](#)

Management Sharing

Only the probe host is permitted to administer this probe.



Finding one specific probe

- If you know the probe ID:
 - <https://atlas.ripe.net/probes/ID>
 - <https://atlas.ripe.net/probes/10010/>



Finding Results of Public Measurements

Looking up Measurements Results



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

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

RIPE Atlas >> Measurements > RIPE Atlas > Measurements

About RIPE Atlas >

Get Involved >

Probes and Anchors >

Measurements, Maps and Tools v

Measurements

Internet Maps

Tools

Resources >

RIPE NCC Members

Filter by target and/or description

Any Statu: v IPv4/v6 v All types v Of all time v

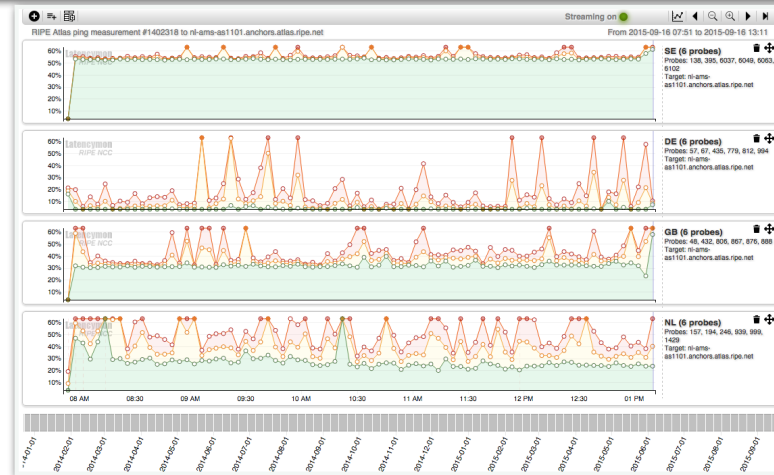
		Description	Probes	Time (UTC)	Status
		nog.net	de-fra-as5580.anchors.atlas.ripe.net	0	2019-11-14 00:30 No Stop Defined
1411440	O ⚡	de-muc-as5539.anchors.atlas...	de-muc-as5539.anchors.atlas.ripe.net	0	2019-08-01 00:15 No Stop Defined
3625872	C ⚡	uk-lon-as5459.anchors.atlas...	Traceroute measurement to uk-lon-as5459.anchors...	Calculating...	2016-03-17 12:00 2016-03-21 12:00
3625873	C ⚡	ca-mtr-as852.anchors.atlas....	Traceroute measurement to ca-mtr-as852.anchors....	Calculating...	2016-03-17 12:00 2016-03-21 12:00
3625874	C ⚡	it-mil-as16004.anchors.atla...	Traceroute measurement to it-mil-as16004.anchor...	Calculating...	2016-03-17 12:00 2016-03-21 12:00
3625875	O ⚡	nl-haa-as201682.anchors.atl...	Traceroute measurement to nl-haa-as201682.ancho...	Calculating...	2016-03-17 10:42 No Stop Defined
3625876	O ⚡	nl-haa-as201682.anchors.atl...	Traceroute measurement to nl-haa-as201682.ancho...	Calculating...	2016-03-17 10:42 No Stop Defined



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	1.157
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



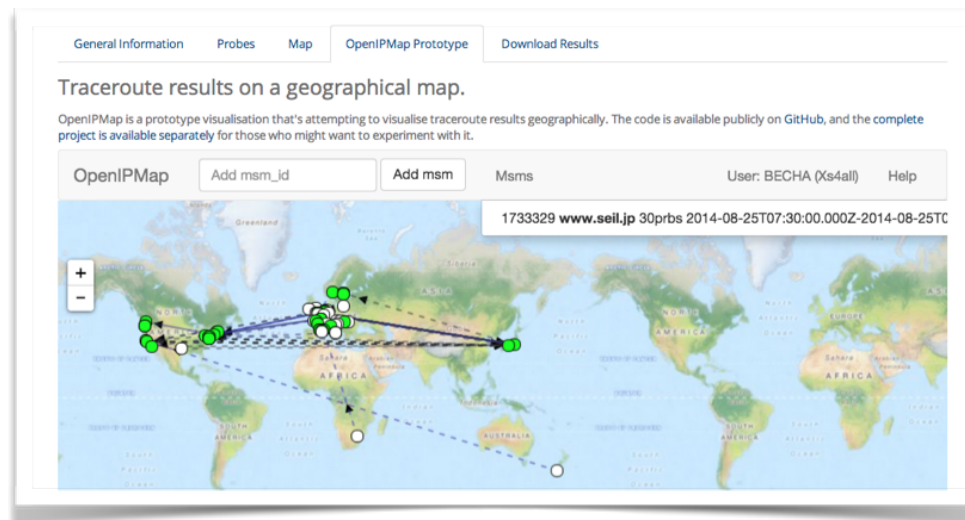


Available visualisations: traceroute

- List of probes, colour-coded number of hops

Probe	ASN (v4)	ASN (v6)	Time	RTT	Hops
2043	3313		2014-08-25 07:44	308.018	21
3246	41135		2014-08-25 07:41	259.912	12
3389	3302		2014-08-25 07:43	285.608	17
4092	37497		2014-08-25 07:40	452.889	19
4228	3269		2014-08-25 07:41	329.862	20
10024	42353		2014-08-25 07:44	×	1

- Traceroute paths map, geolocation using OpenIPMap: github.com/RIPE-Atlas-Community/openipmap





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	null	362.009
18035	43030		2015-05-19 09:50	null	347.39
18129	327805		2015-05-19 09:49	null	207.743
15844	32098		2015-05-19 09:48	null	184.237
17857	852		2015-05-19 09:37	null	177.694
19894	6327		2015-05-19 09:36	null	168.689
19204	21513		2015-05-19 09:50	null	141.199
15922	30036		2015-05-19 09:47	null	133.309

Downloading Measurements Results



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

⚡ Traceroute measurement to wikipedia.org

General Information Probes Map TraceMON (beta) OpenIPMap Prototype **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.

Select Your Timeframe

Start Date*: 2016-12-14 (start time of this measureme ⌵)
All dates are start-of-day

Stop Date*: 2016-12-14 (start time of this measureme ⌵)
All dates are end-of-day

Format: JSON ⌵

Download

URL Preview

```
https://atlas.ripe.net/api/v2/measurements/6963341/results?start=1481673600&stop=1481759999&format=json
```

Search for Measurements by Target in RIPEstat



Go to "RIPEstat > RIPE Atlas Activity"

RIPEstat — Internet Measurements and Analysis

https://stat.ripe.net/widget/atlas-targets#w.resource=8.8.8.8

You are here: Home > Data & Tools > RIPEstat > atlas-targets

RIPE Atlas Measurement Targets (8.8.8.8)

8.8.8.8

Show 10 targets/page Search:

Measurement ID	Stopped	Type	Target IP	Target Hostname
1040720	ongoing	ping	8.8.8.8	google-public-dns-a.google.com
1006491	ongoing	traceroute	8.8.8.8	not specified
1006192	ongoing	ping	8.8.8.8	not specified
1004827	ongoing	traceroute	8.8.8.8	not specified
1002630	ongoing	ping	8.8.8.8	not specified
1478085	2014-02-24 13:41 UTC	dns	8.8.8.5	not specified

Finding one specific measurement



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



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



Get Started

- You can start playing right now!
- **Login** using your RIPE access account
- Go to RIPE Atlas (atlas.ripe.net)
 - My Atlas (left menu)
 - Credits A dark blue rectangular button with a white credit card icon and the word "Credits" in white.
 - Redeem voucher A teal button with a white credit card icon and the text "Redeem voucher" in teal.

Voucher name: **ENOG13**

Create a measurement: Quick and easy



1

Create a New Measurement

Step 1 Definitions

▼ Ping measurement to bbc.co.uk

Target:
bbc.co.uk
An IP address or hostname

Description:
Ping measurement to bbc.co.uk

Address Family*:
IPv4

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

Packets:
3

Size:
48

Resolve on Probe:
Force the probe to do DNS resolution

[Advanced Options](#)

+ 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

[Measurement API Compatible Specification](#)

3 Create My Measurement(s)

Costs summary

Daily cost: 10800 credits

You will run out of credits in about 124 days

Balance
Total Expenses

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



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



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

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

Packet interval:

Time between packets (ms)

Skip DNS check:
Disables target DNS check on measurement creation

Advanced Options

Packet interval:

Time between packets (ms)

Skip DNS check:
Disables target DNS check on measurement creation

▼ 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

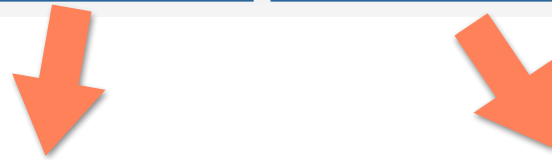
Worldwide 10 ✕

+ New Set - wizard

+ New Set - manual

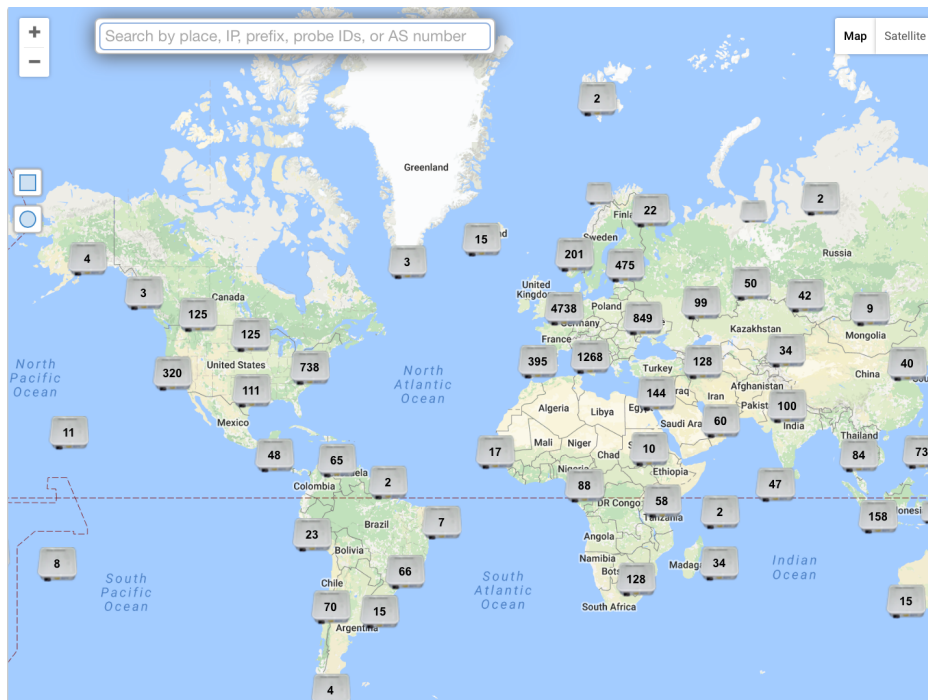
+ IDs List

+ 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

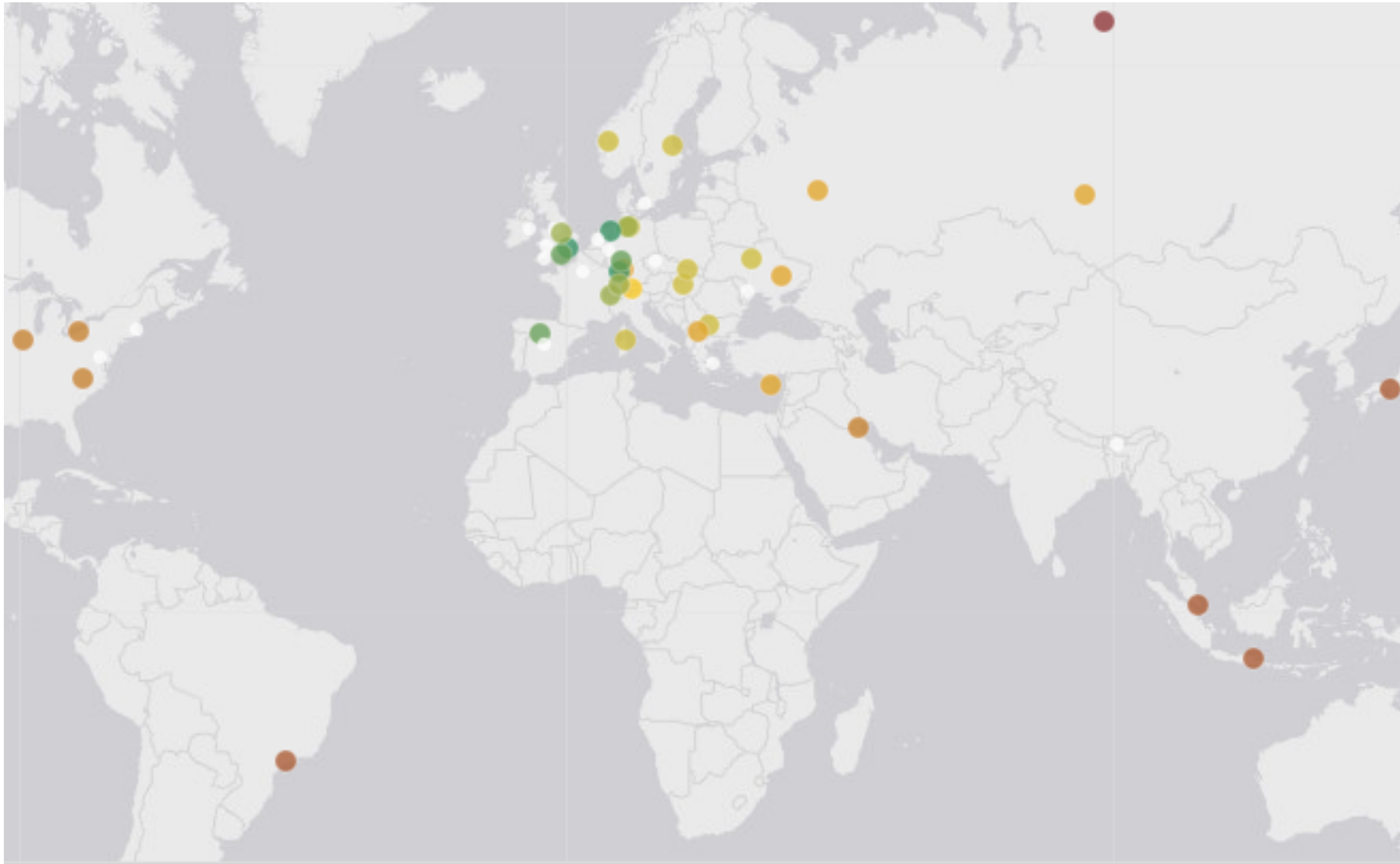


Stop time (UTC):

Never



Globe reachability check: traceroute



< 10 ms: 3 < 20 ms: 3 < 30 ms: 4 < 40 ms: 8 < 50 ms: 1 < 100 ms: 6 < 200 ms: 5 < 300 ms: 4 > 300 ms: 1



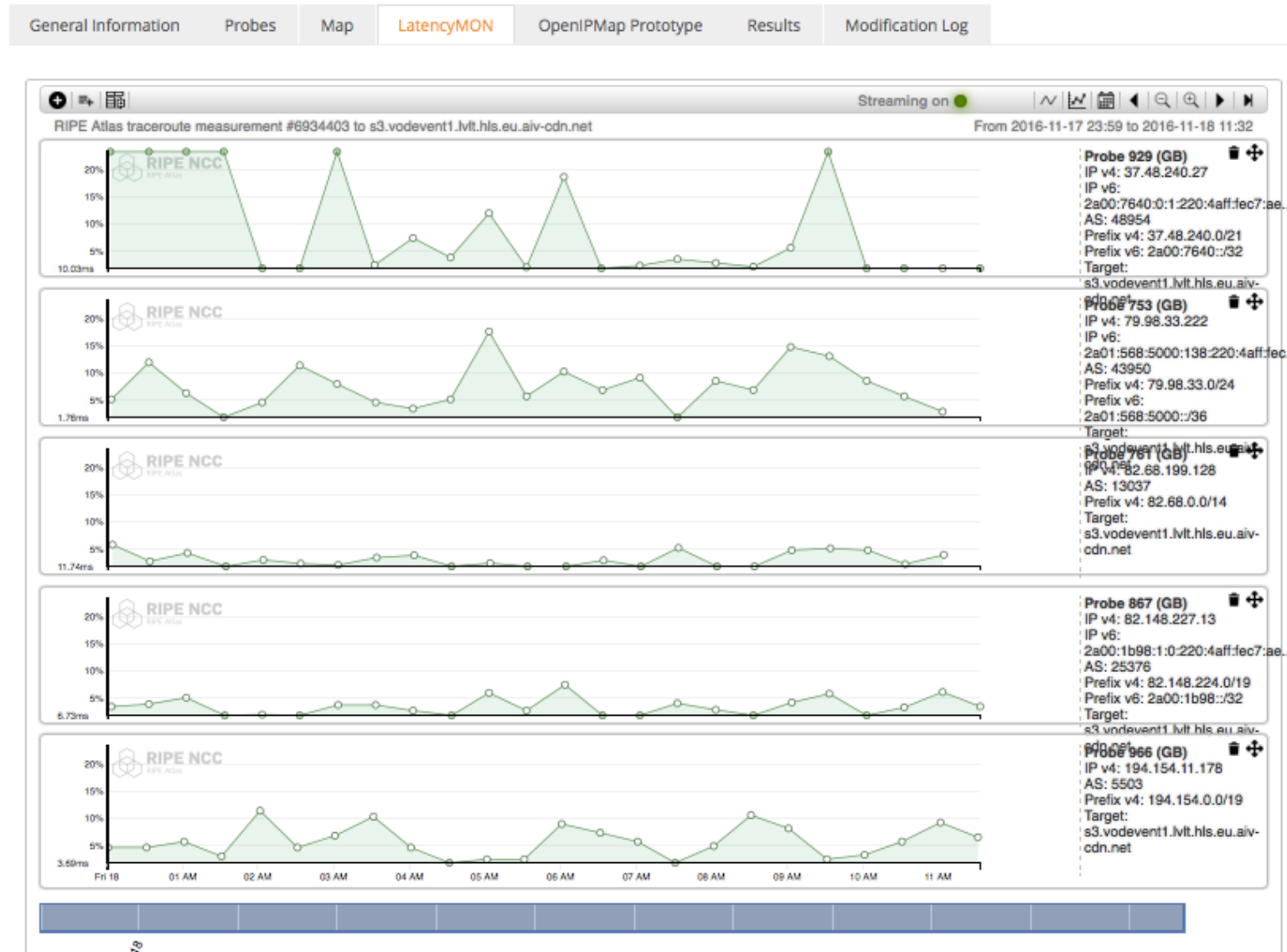
Traceroute view: list

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: LatencyMon



⚡ Traceroute measurement to s3.vodevent1.lvl.hls.eu.aiv-cdn.net



Create measurement : API Compatible



Create a New Measurement

Step 1 Definitions

Ping measurement to bbc.co.uk [x]

Target:
An IP address or hostname

Address Family*:

Packets:

Size:

Description:

Interval:
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](#)

[+ Ping](#) [+ Traceroute](#) [+ DNS](#) [+ SSL](#) [+ HTTP](#) [+ NTP](#)

Step 2 Probe Selection

Worldwide 10 [x]

[+ 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): [calendar icon]

Stop time (UTC): [calendar icon]

[> Measurement API Compatible Specification](#)

[Create My Measurement\(s\)](#)

Costs summary

Daily cost: 10800 credits

You will run out of credits in about 124 days

Users who will supply credits for this measurement:

Copy



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"
    }
  ]
}' https://atlas.ripe.net/api/v2/measurements/?key=YOUR_KEY_HERE
```

Copy to clipboard

Measurement API Compatible Specification

```
{
  "type": "ping"
},
],
"probes": [
  {
    "type": "area",
    "value": "WW",
    "requested": 10
  }
],
"is_oneoff": false,
"bill_to": "ferenc@ripe.net"
}' https://atlas.ripe.net/api/v2/measurements/?key=YOUR_KEY_HERE
```

Copy to clipboard



Use API

- Schedule a measurement using API
 - Use the “key” you just generated
 - Hint: copy and past 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
```



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 v

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)	ciao			✓
<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



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)



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



RIPE Atlas IXP Country Jedi (1)

- Do paths between ASes stay in country?
- Any difference between IPv4 and IPv6?
- How many paths go via local IXP?
- Could adding peers improve reachability?

- Experimental tool
 - Feature requests welcome!
 - Depends on probe distribution in country

RIPE Atlas IXP Country Jedi (2)



- Methodology

- Trace route mesh between RIPE Atlas probes
- Identifying ASNs in country using RIPEstat
- Identifying IXP and IXP LANs in PeeringDB

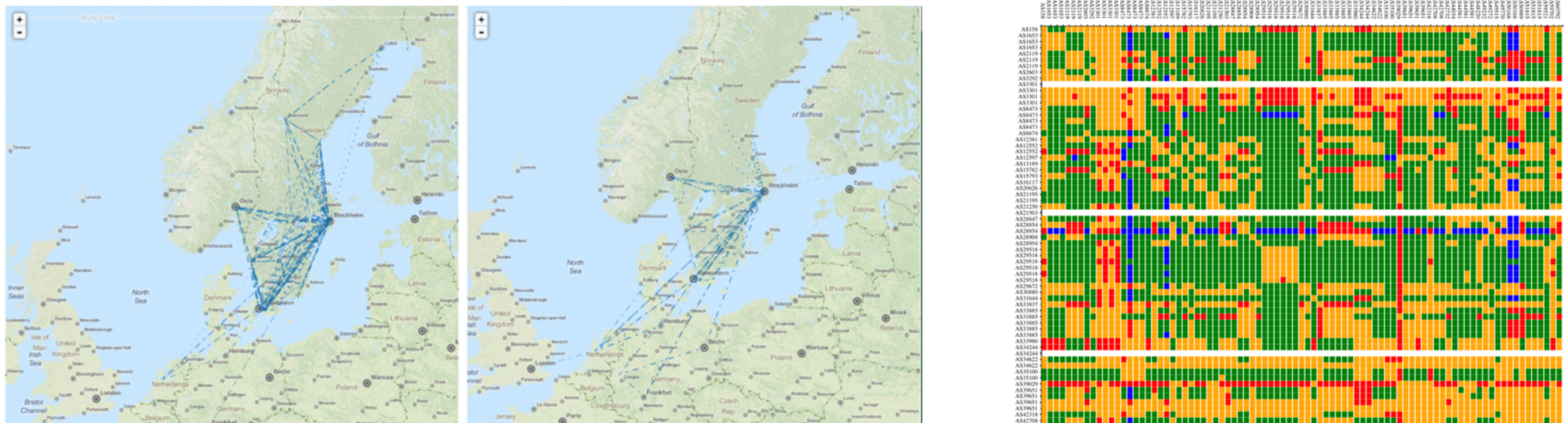


Figure 1: Visual representation of IPv4 paths (left) and IPv6 paths (right) between selected RIPE Atlas probes in Sweden

■ IXP IPs: YES, out-of-country IPs: NO
■ IXP IPs: NO, out-of-country IPs: NO
■ IXP IPs: YES, out-of-country IPs: YES
■ IXP IPs: NO, out-of-country IPs: YES



Use Cases (2)

- DDoS Attack on Dyn DNS Servers (Oct. 2016)
 - 10s millions devices - Mirai botnet
 - Legitimate requests





Use Cases (3)

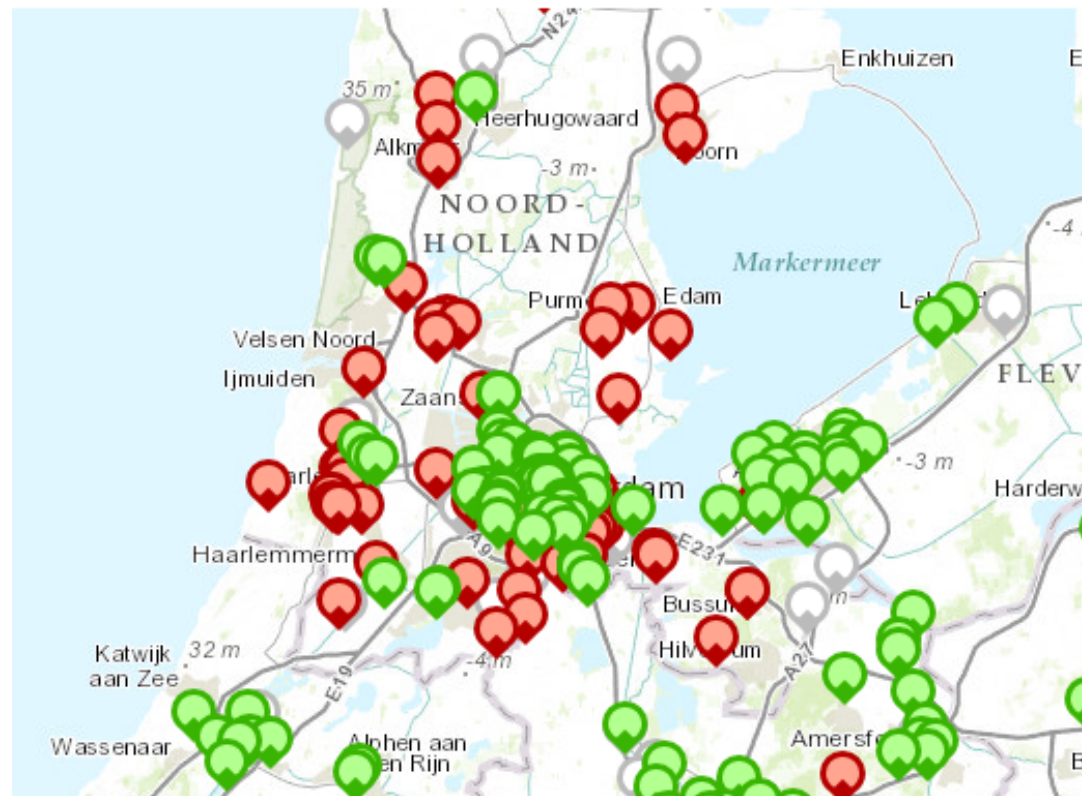
- Monitor Game Service Connectivity (Sept. 2016)
- Requirements:
 - Check General Reachability, Latency, Historical data
 - Supported by an active and helpful community
 - Integrate with their existing logging system
- Track down an outage in one upstream
- Became sponsors





Use Cases (4)

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

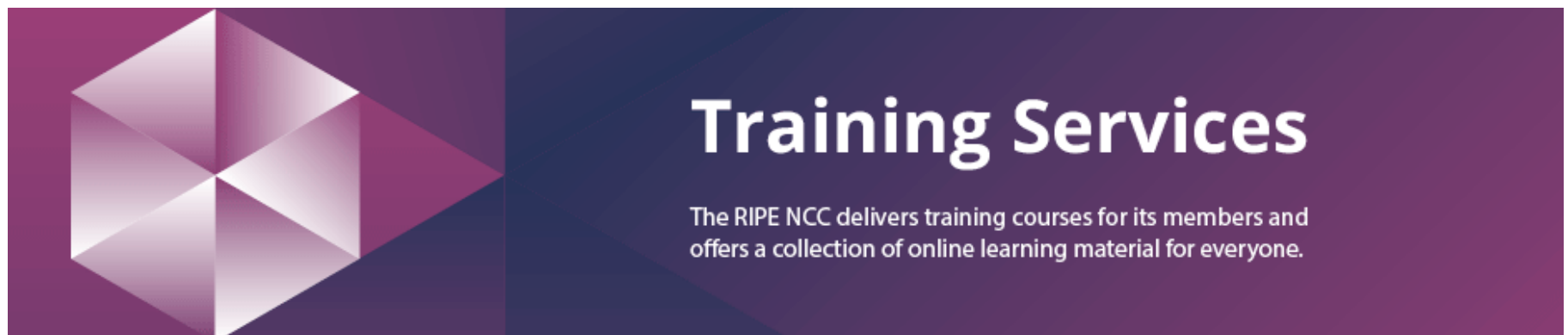




Training

- 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

