

Tools for Measurements & Analysis

Daniel Karrenberg
Chief Scientist

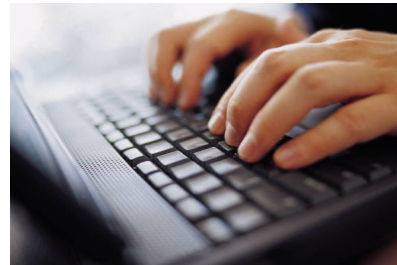


Today's Topics

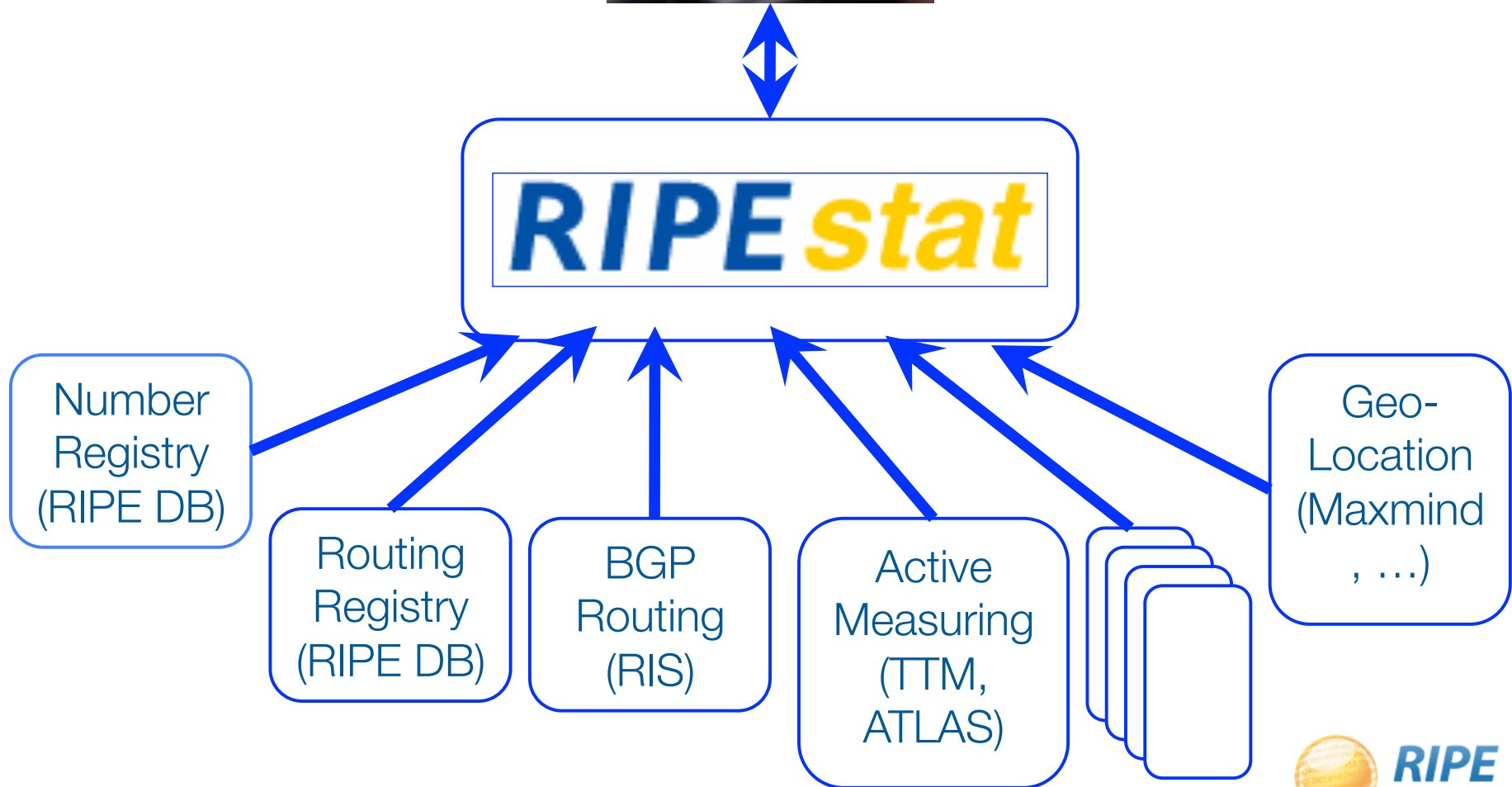
- RIPEstat
- RIPE Atlas

RIPEstat

- “Numbers are Us”: IPv4/IPv6 Addresses, ASNs
- Modular & Extendable Toolbox
- “stat” means
 - Statistics (time, aggregation, zoom)
 - Status (real time, aggregation, zoom)
- Beta(!) launched last month: **stat.ripe.net**
- Eventually to replace most measurement tools



You





RIPEstat

93.191.16.0/21

Your network: **AS31261, 93.191.16.0/21**

Example: IPv4, IPv6, ASN

Result Boxes

- Resource Information for 93.191.16.0/21
- Whois Matches
- Origin AS History for 93.191.16.0/21
- Assignments within the Allocation of 93.191.16.0/21
- Geolocation of 93.191.16.0/21
- BGP Looking Glass (show ip bgp 93.191.16.0/21)
- Number of Blacklisted Hosts from 93.191.16.0/21
- Global Visibility of 93.191.16.0/21
- BGP Update Activity of 93.191.16.0/21
- Related Prefixes to 93.191.16.0/21
- Routing Consistency of 93.191.16.0/21

Resource Information for 93.191.16.0/21

93.191.16.0/21
AS31261
are held by

GARS-AS GARS Telecom

Subquery took 342 msec (Ref: Q186206/1194182 R0)

Download raw data: [yaml](#)

Show: [link](#) | [specification](#) | [methodology](#)

The current top queries

- 1.2.3.4/22
- AS286
- AS36935
- 193.0.0.0/24
- AS15169
- AS786
- AS3265
- 219.104.0.0/16
- AS3320

Whois Matches

Show all fields

resource	93.191.16.0 - 93.191.23.255
organisation	ORG-GT6-RIPE
netname	RU-GARSTELECOM-20080527
country	RU
status	ALLOCATED PA
description	GARS Telecom - Telecommunications Management LLC



- Resources outside of the RIPE region may be up to a day stale.
- The record returned may not be the most relevant available.

Subquery took 953 msec (Ref: Q186206/1194183 R0)

Download raw data: [yaml](#)

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Your latest queries

- 93.191.16.0/21
- AS31261
- as3265
- 25192
- 2001:678::/48
- 85.55.32.0/19
- 93.191.20.2
- as1267
- AS9143
- 109.32.37.109

News



RIPEstat

93.191.16.0/21

Your network: **AS31261, 93.191.16.0/21** Example: **IPv4, IPv6, ASN**

Resource Information for 93.191.16.0/21

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Whois Matches

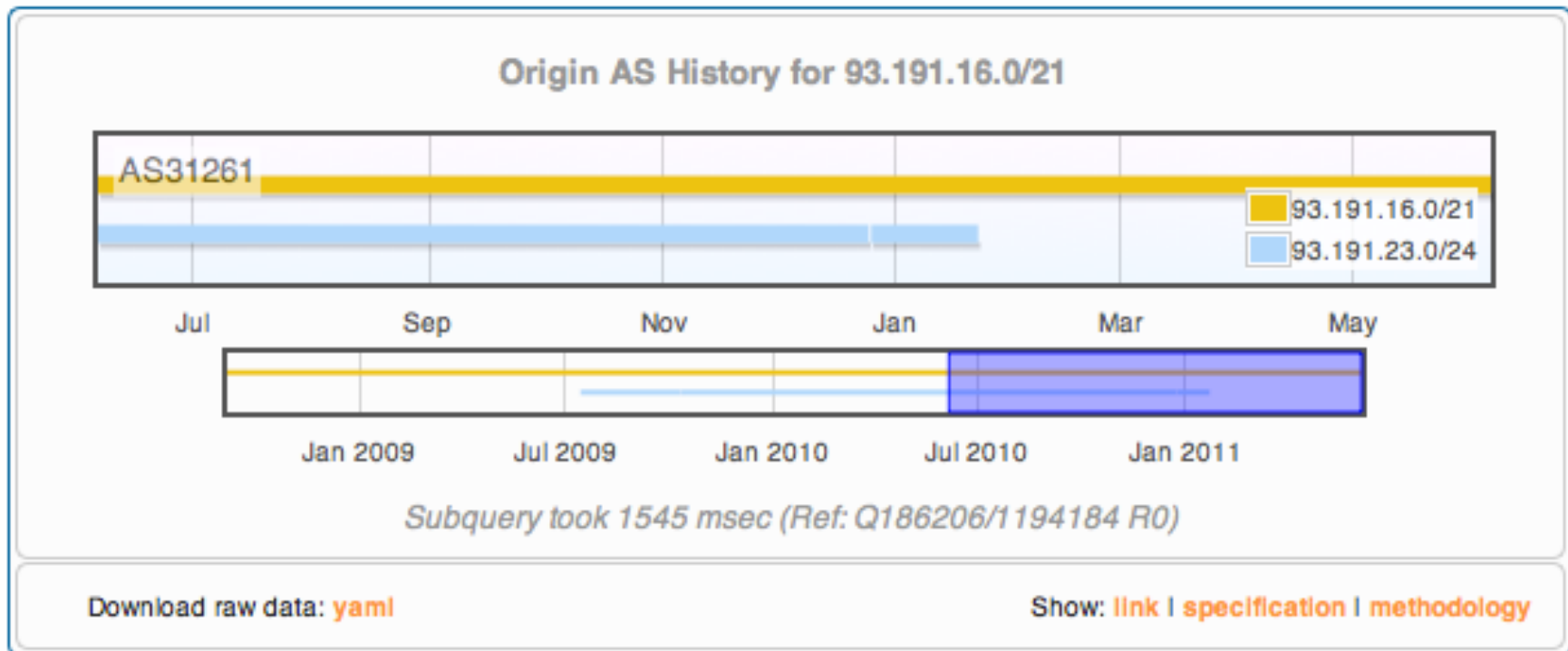
[Show all fields](#)

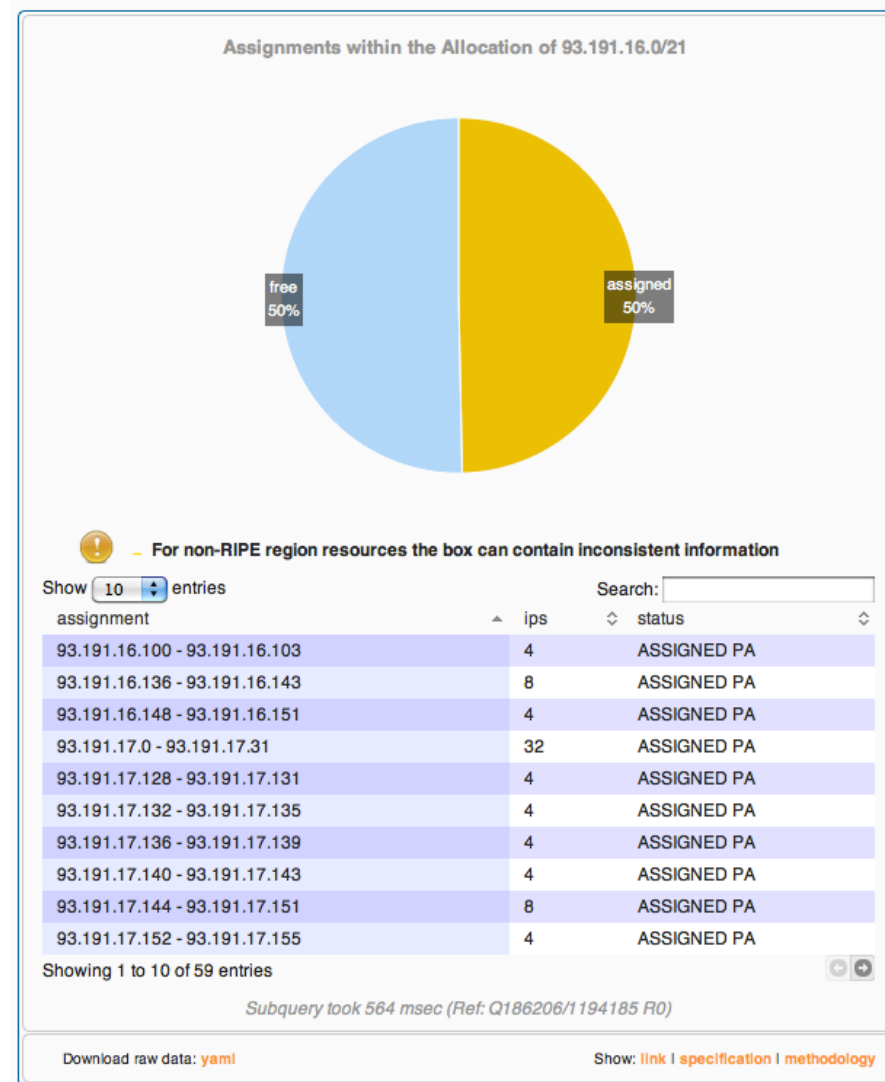
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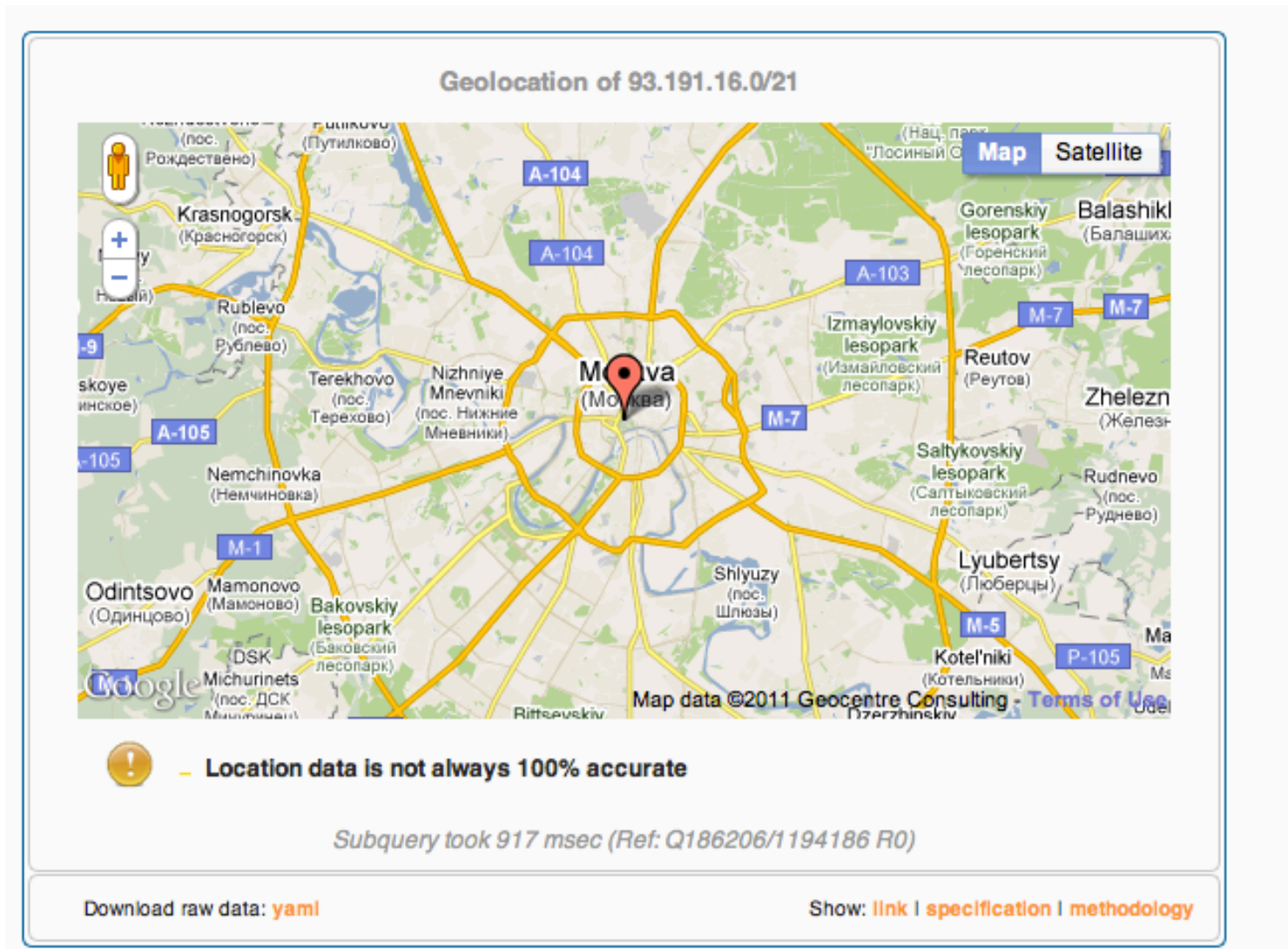
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MSK-IX, Moscow (RRC13)

39792 31261

193.232.244.136 from 193.232.244.136 (81.91.177.8)
Origin IGP, localpref 100, valid, external, best
Last update: Thu Jun 2 22:47:26 2011

6723 31500 31261

193.232.244.171 from 193.232.245.134 (193.232.245.134)
Origin IGP, localpref 100, valid, external
Last update: Fri Jun 3 19:11:32 2011

39821 31261

193.232.244.160 from 193.232.244.15 (89.107.120.1)
Origin IGP, localpref 100, valid, external
Last update: Thu Jun 2 18:16:17 2011

28917 31261

193.232.244.147 from 193.232.244.147 (10.0.0.10)
Origin IGP, localpref 100, valid, external
Community: 28917:2000
Last update: Thu Jun 2 13:32:40 2011

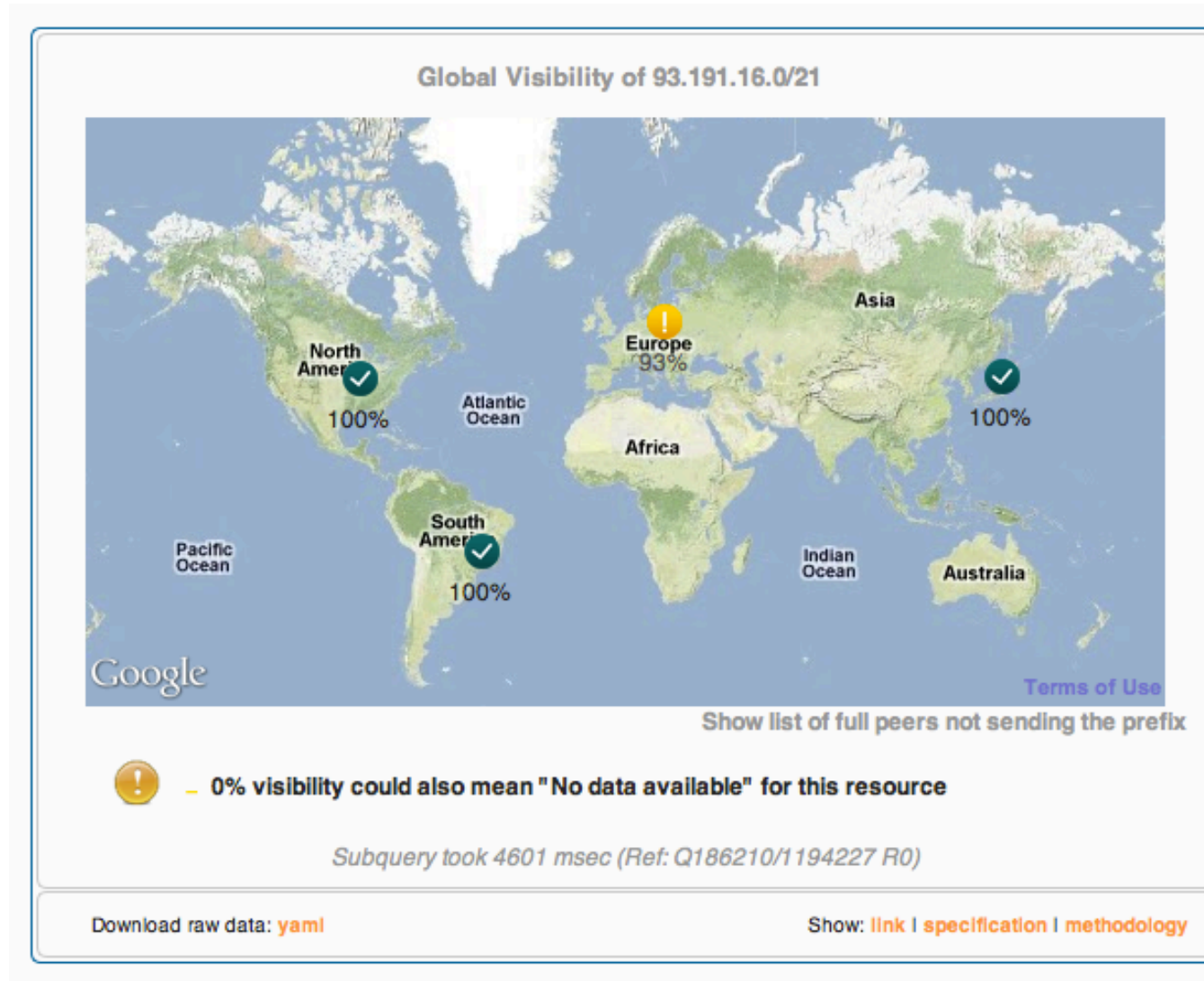
3267 31500 31261

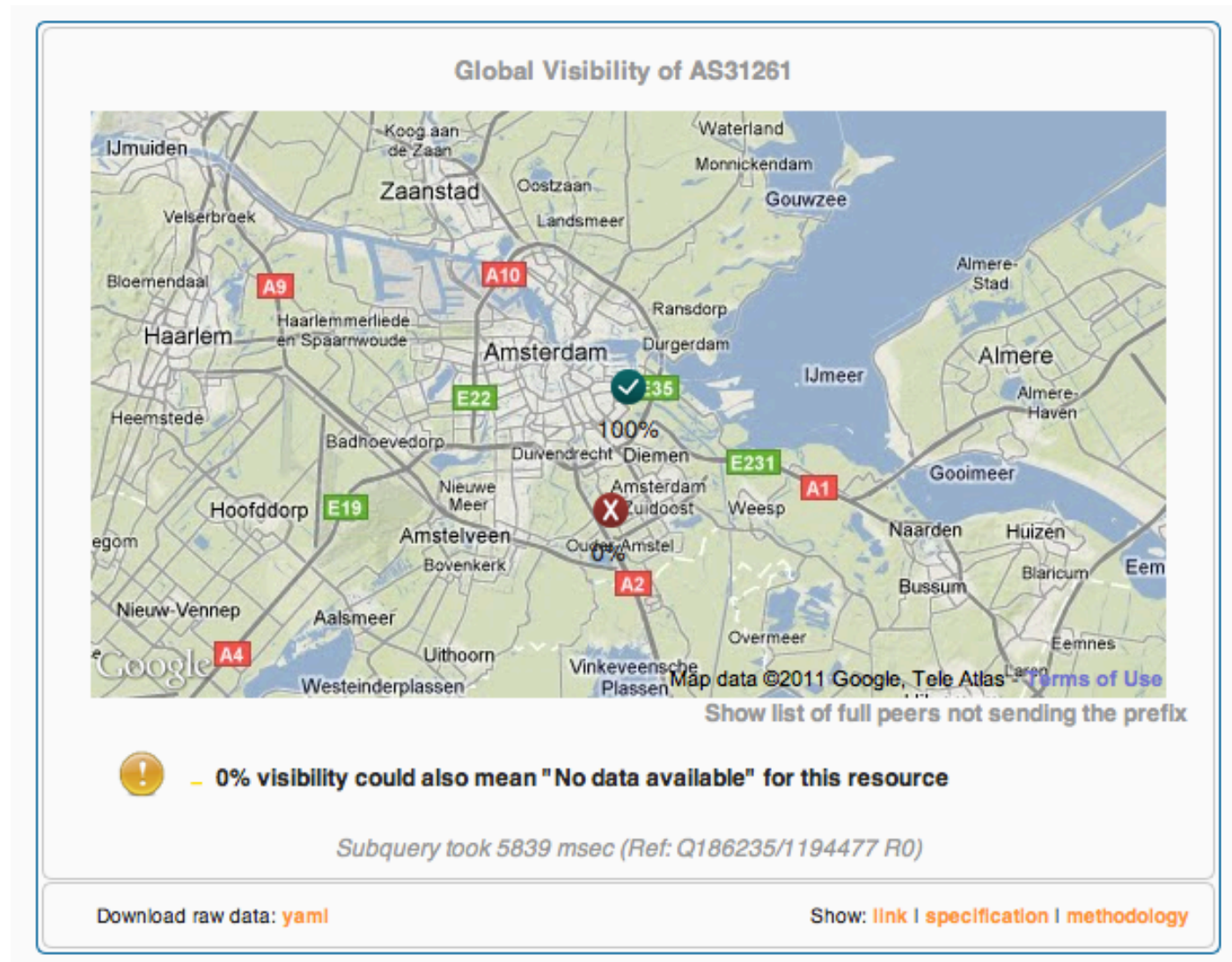
193.232.244.44 from 193.232.244.44 (193.232.80.3)
Origin IGP, metric 0, localpref 100, valid, external
Last update: Wed Jun 1 06:59:02 2011

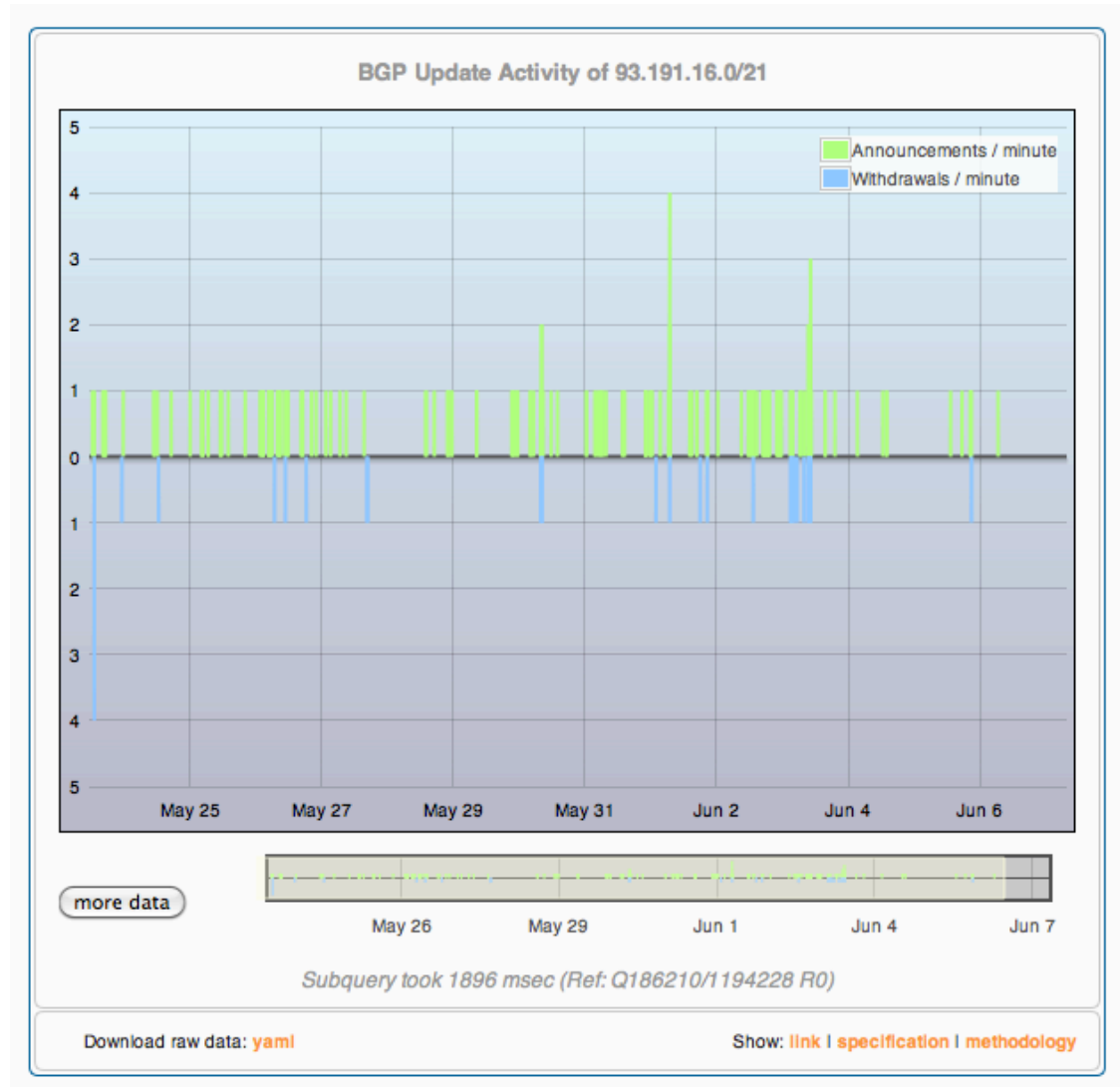
Showing 1 to 5 of 14 entries

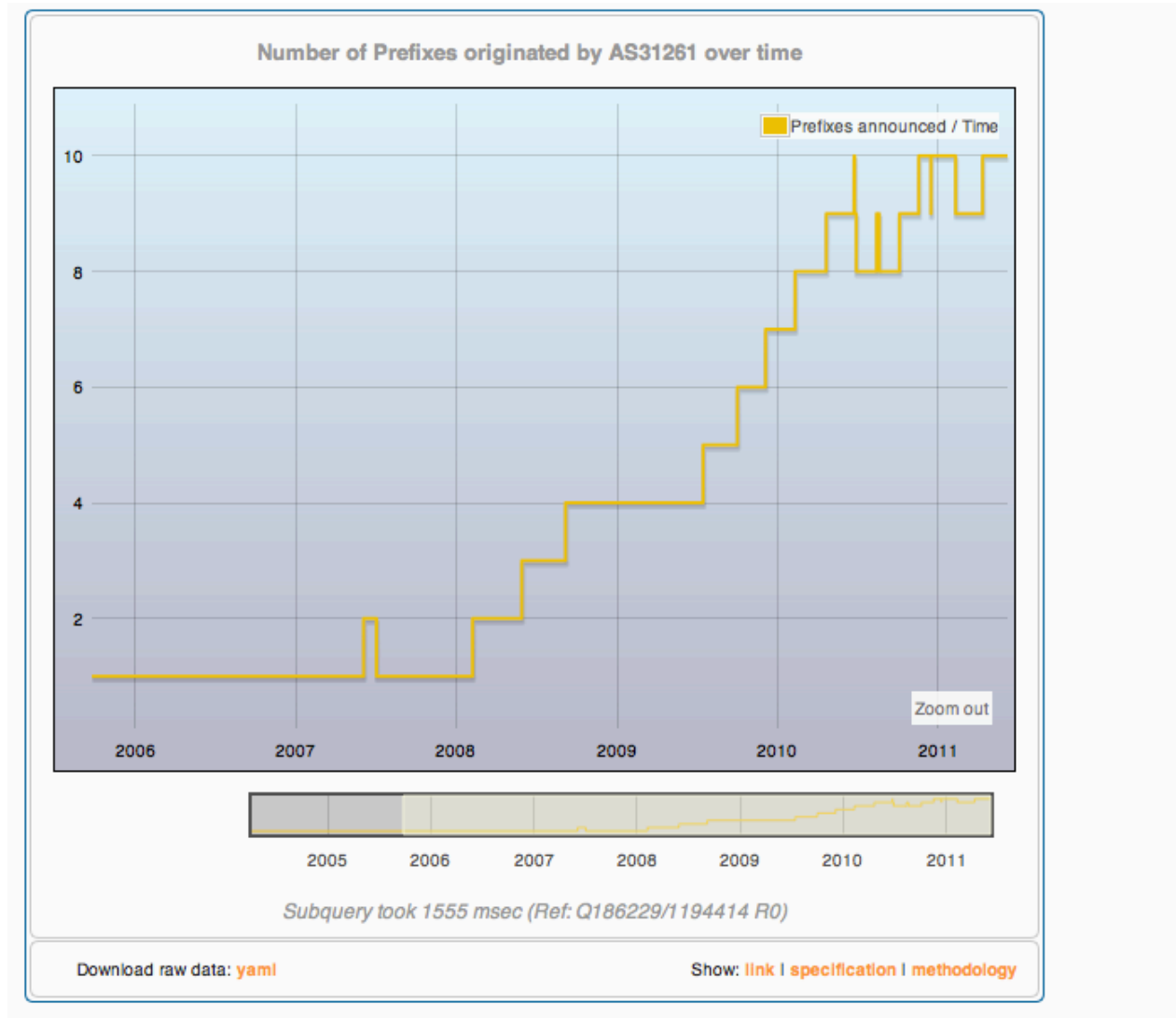


 [Show only first entry](#)









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News

- 5th Public Demo
- Egyptian Network Outage
- Japanese Earthquake

help | access stats | server status | changelog

RIPEstat Strategy

- Immutable, sharable URLs for each result
- Add more history
- Multiple output formats (command line tool?)
- **Eventually integrate current RIPE NCC tools**

RIPEstat Regular Public Demos

- Modular design --> agile development
- We demo new functionality every 4 weeks
 - we receive comments and feedback
- We monitor usage, ... and you can too
- Based on usage and feedback we will adjust
- You get the tools you deserve: get involved!

- *Please do not consider the demos as finished !*

News

- [5th Public Demo](#)
- [Egyptian Network Outage](#)
- [Japanese Earthquake](#)

RIPEstat Development

- [Introduction to Demos](#)
- [25 January 2011](#) [HD](#) [SD](#)
- [22 February 2011](#) [HD](#) [SD](#)
- [22 March 2011](#) [HD](#) [SD](#)
- [19 April 2011](#) [HD](#) [SD](#)
- [17 May 2011](#) [HD](#) [SD](#)
- [14 June 2011](#)
- [12 July 2011](#)
- [9 August 2011](#)
- [6 September 2011](#)
- [4 October 2011](#)
- [1 November 2011](#)
- [29 November 2011](#)
- [27 December 2011](#)

Today's Topics

- RIPEstat
- RIPE Atlas

Introduction

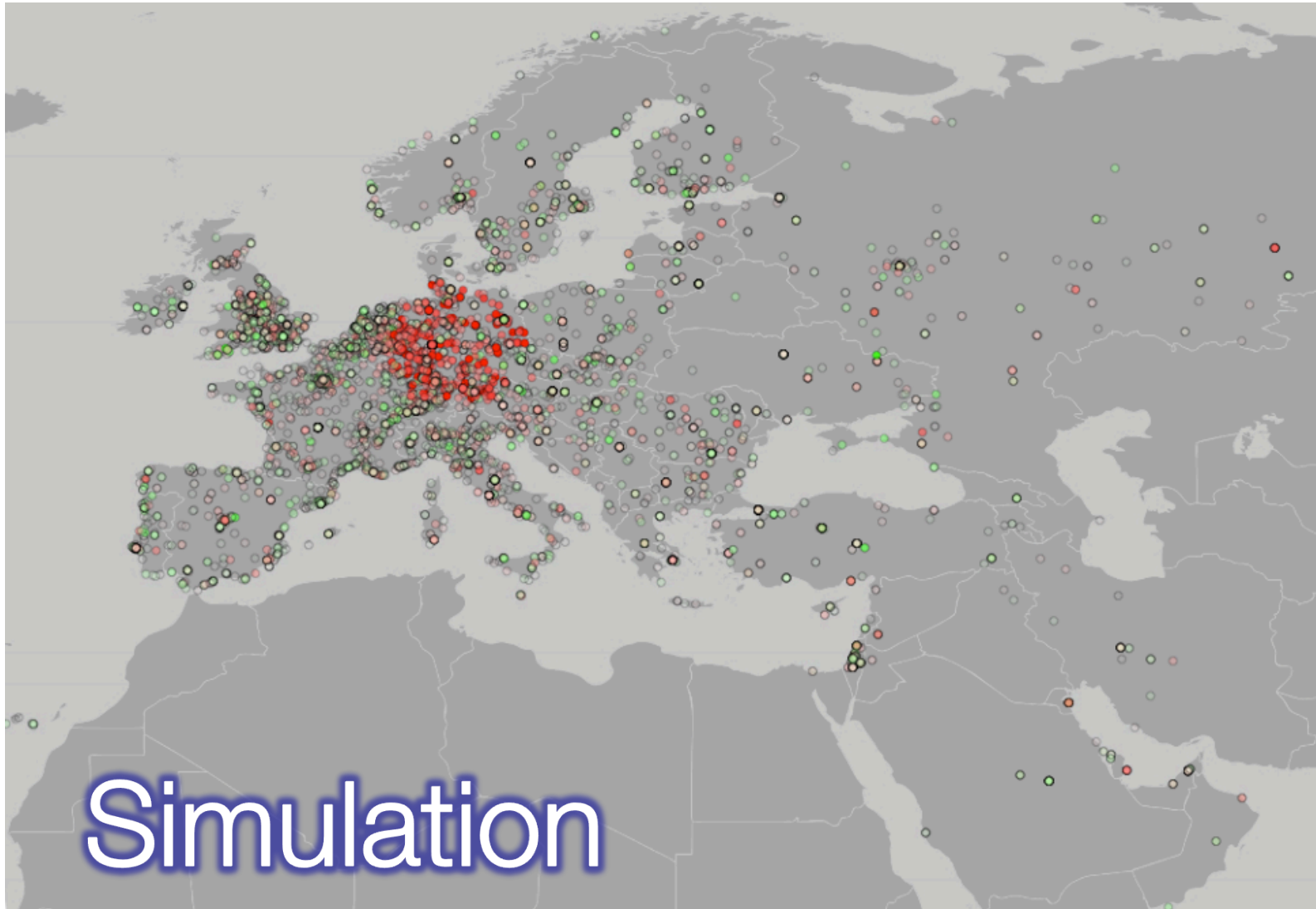
RIPE Atlas:

- There are many Atlases, this is *RIPE Atlas*
- next generation Internet measurement network
 - To scale to thousands of measurement nodes
 - Potentially “be everywhere” and ready to run different measurements
 - Started last November, we’re still just building it and exploring possibilities

Light Map of Europe



Intuition: 10k Probes & 1 AS



Ambitious Community Effort

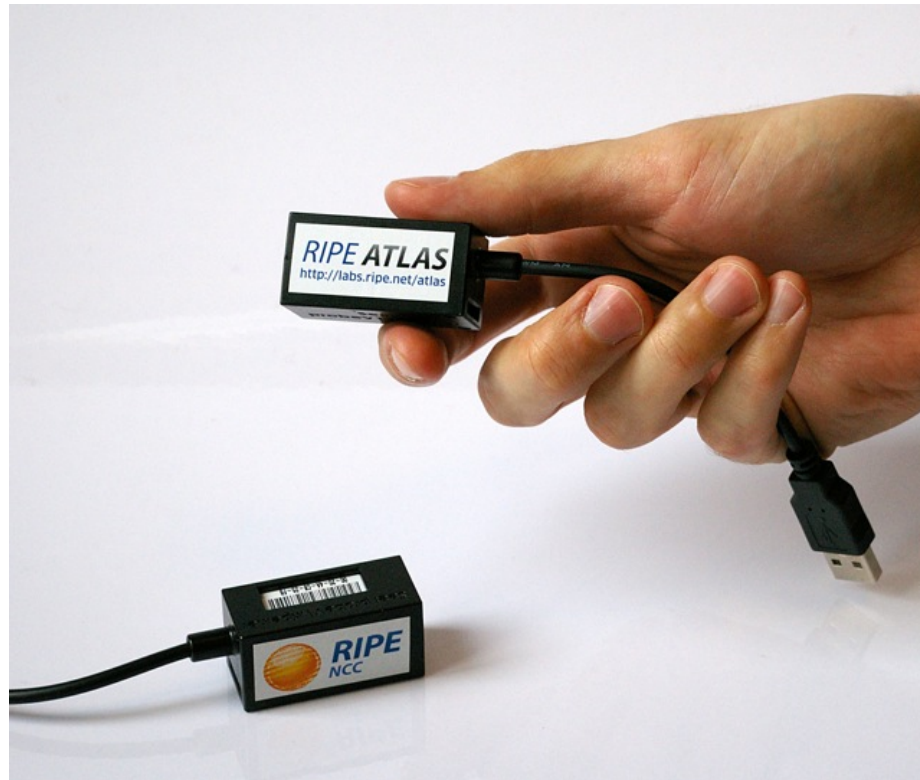
Instead of building small, separate,
individual & private infrastructures,
build a
huge common infrastructure
that serves *both* the private goals
and the community goals.

Ambitious Community Effort

- Individual Benefits
 - Less expensive than rolling your own
 - More vantage points available
 - More data available
- Community Benefits
 - Unprecedented situational awareness
 - Wealth of data, ...

Intuition -> Plan

- For accurate maps we need more probes
- Deploying very many TTM boxes too expensive
- Smaller probes
- Easily deployable
- USB powered
- 24 x 365 capable



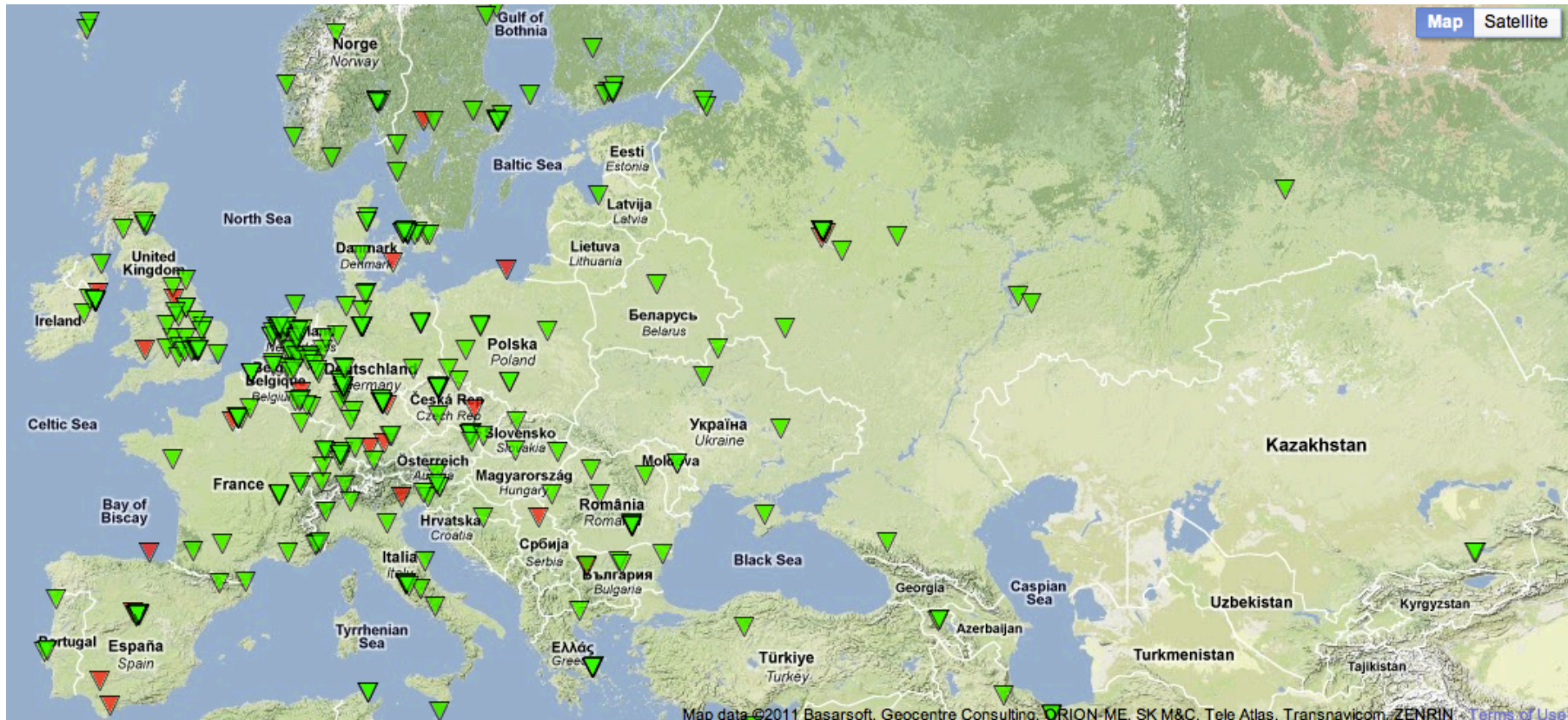
Probe Deployments



Versions

- Version 0
 - Ping to fixed targets (IPv4 & IPv6) ✓
 - Traceroute to 1st two upstream hops ✓
- Version 1
 - Ping & Traceroute to variable targets
 - DNS queries to variable targets
- Version 2
 - Your ideas?
- A non-goal: performance measurements

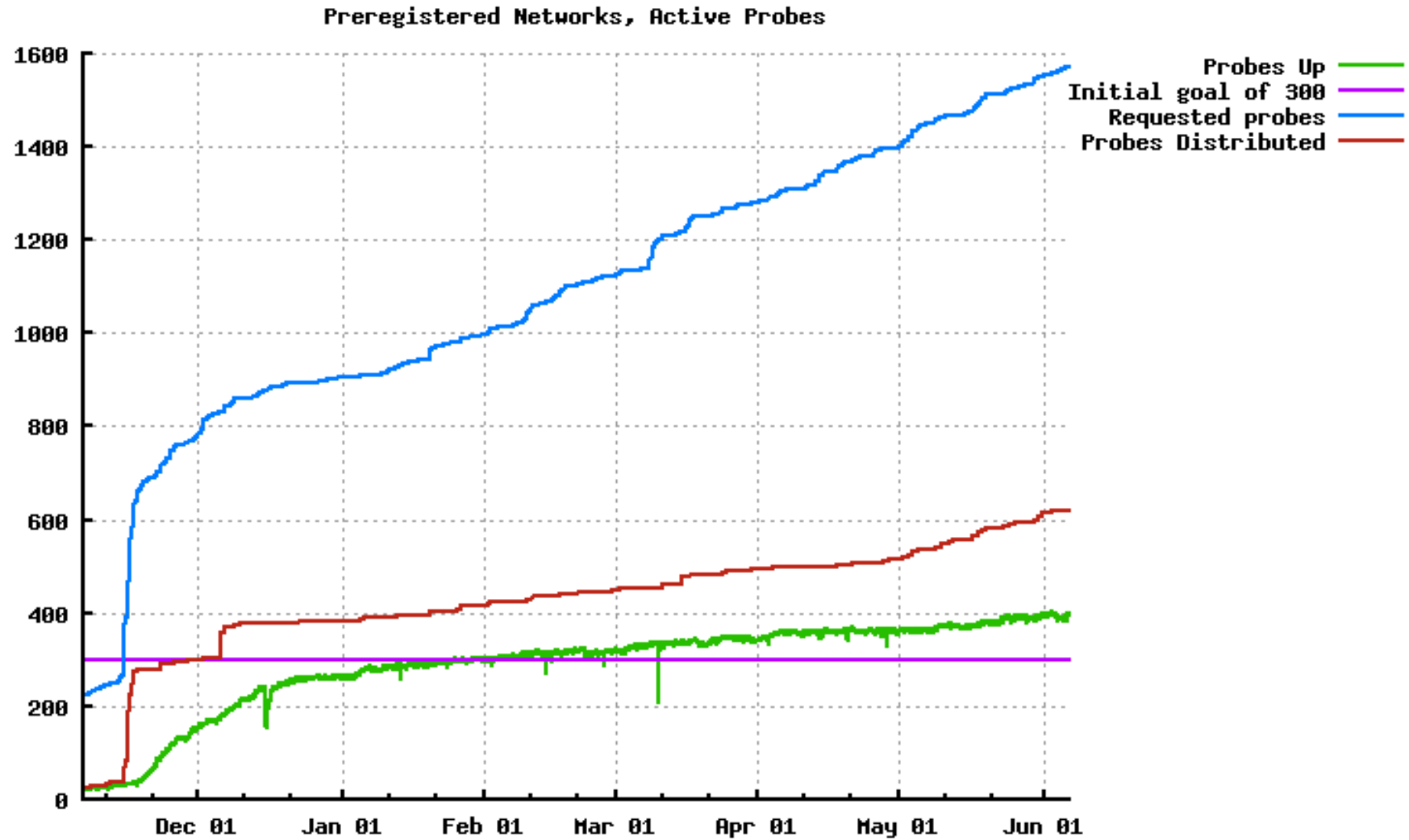
Probes Deployed Today



Probes Deployed Today



Probes Deployed Today



Hosting = Credits = Measurements

- We cannot be everywhere without your help

Become a probe host!

- Donate a fraction of your bandwidth
- Donate a very small amount of electricity

You get:

- Recognition
- Access to fixed measurements from your probe
- Credits = Measurements **from any probe** (Q3/11)

Sponsorship = Credits = Measurements

Credits – a “measurement ecosystem”?

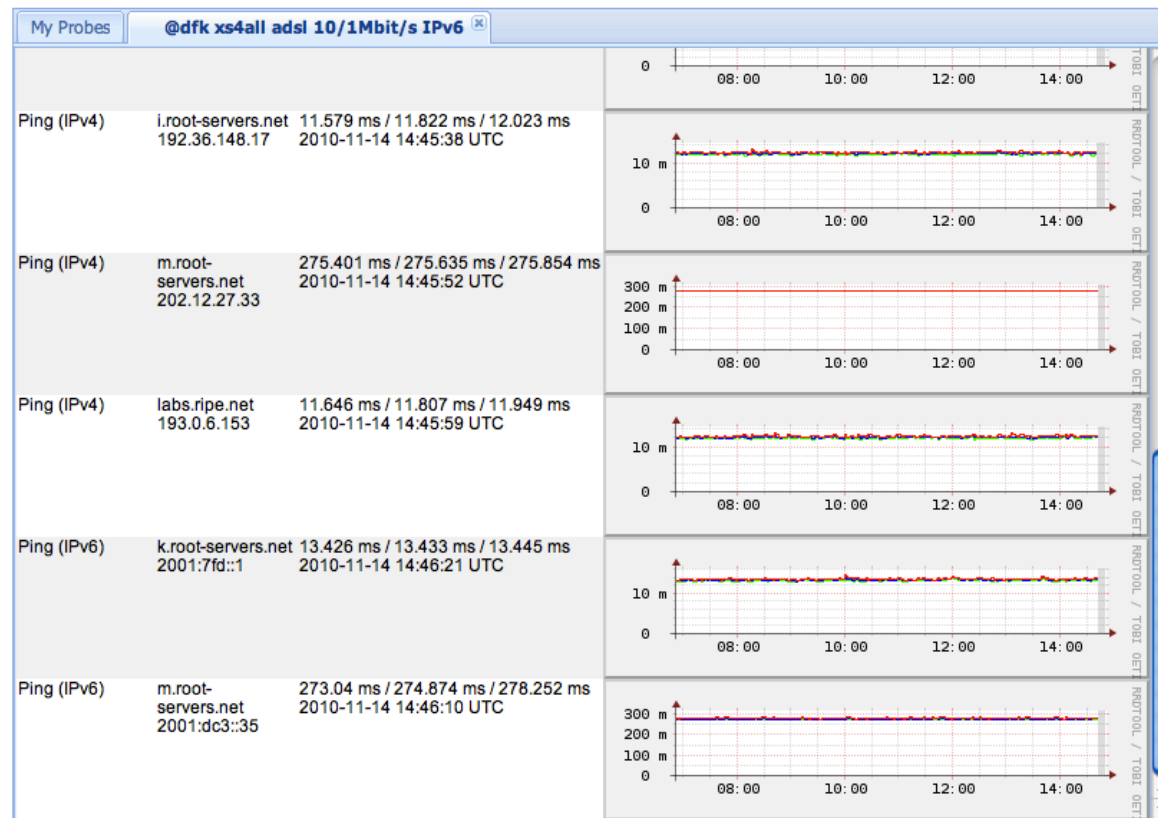
- Hosting a probe or sponsoring will earn you credits
- Scheduling your own measurements will cost credits
 - Simpler measurements are cheaper
 - More complex or more frequent measurements cost more

What you see is what you get

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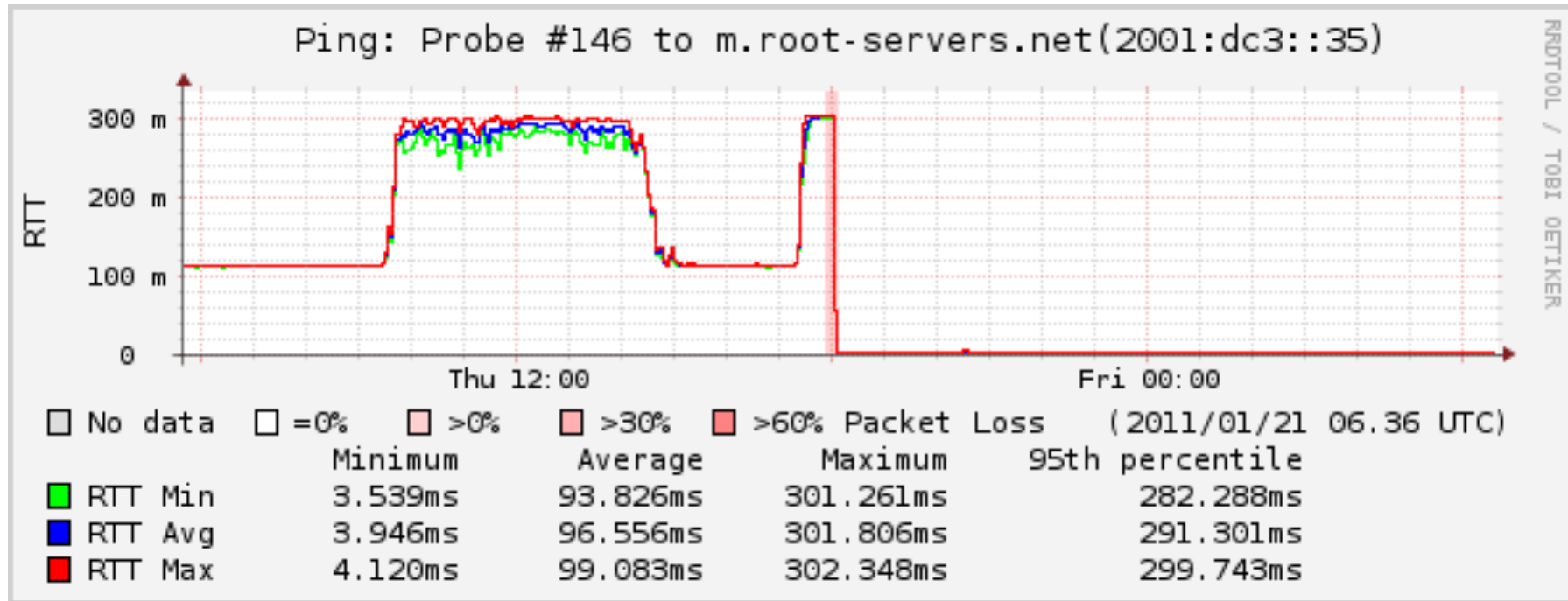
 **RIPE ATLAS** Quick Links

[Home](#) | [My probes](#) | Logged in: RIPE Atlas | [Change password](#) | [Log out](#)



[About RIPE NCC](#) | [Service Announcements](#) | [Site Map](#) | [LIR Portal](#) | [About RIPE](#) | [Contact](#) | [Legal](#) | [Copyright Statement](#)

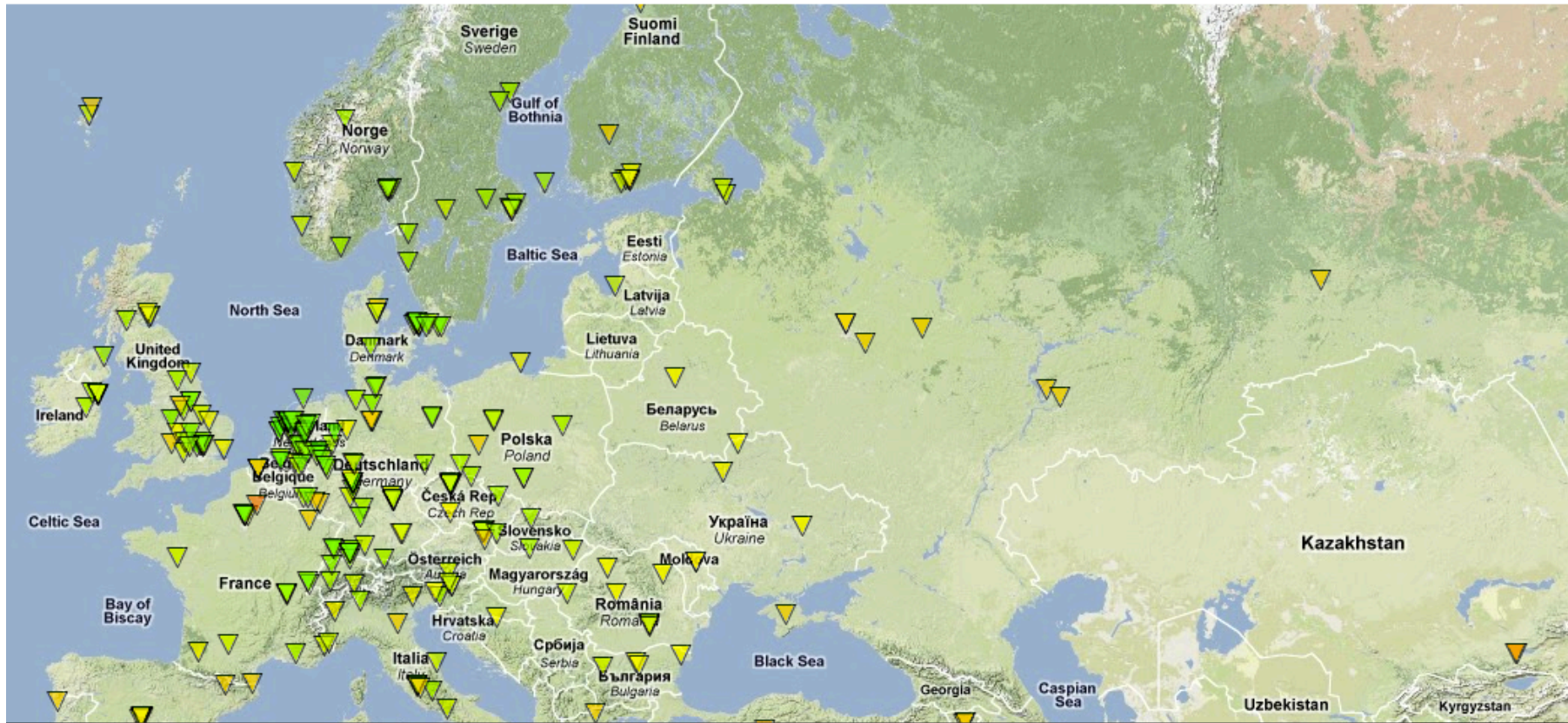
What you see is what you get



How we see labs.ripe.net (IPv4 RTT)

IPv4: labs.ripe.net Showing 381 results. Refresh now!

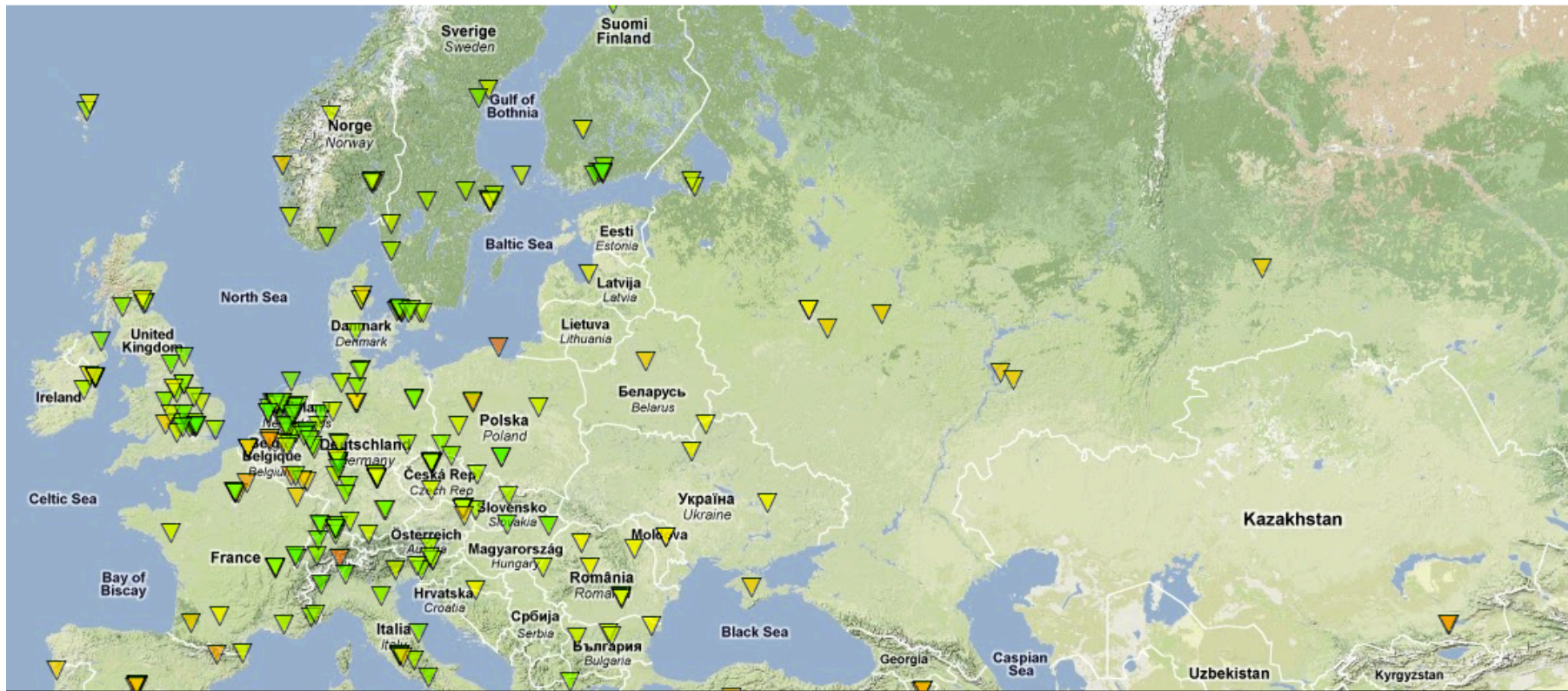
ents. Key (minimum RTT): ▾ ≤ 10ms ▾ ≤ 20ms ▾ ≤ 30ms ▾ ≤ 40ms ▾ ≤ 50ms ▾ ≤ 100ms ▾ ≤ 200ms ▾ ≤ 300ms ▾ ≤ 500ms ▾ > 500ms



How we see labs.ripe.net (IPv4 RTT)

IPv4: k.root-servers.net Showing 381 results. Refresh now!

Legend (minimum RTT): ▼ <= 10ms ▼ <= 20ms ▼ <= 30ms ▼ <= 40ms ▼ <= 50ms ▼ <= 100ms ▼ <= 200ms ▼ <= 300ms ▼ <= 500ms ▼ > 500ms



Sponsorship = Credits = Measurements

- 50k probes too expensive for RIPE NCC alone
- Sponsorship Plans:

2K € 8 probes

4K € 16 probes

...

64K € 256 probes

- Recognition and **many more credits**
- Access to fixed measurements from **probes** now
- Credits = Measurements **from any probe** (Q3/11)

Sponsorship = Credits = Measurements

- 50k probes too expensive for RIPE NCC alone
- Sponsorship Plans:

that is 2048€SM geek compatible pricing

2K €	8 probes
4K €	16 probes
...	...
64K €	256 probes

- Recognition and many more credits
- Access to fixed measurements from probes now
- Credits = Measurements from any probe (Q3/11)

Measurement nodes – “Probes”

- Probe (v1 / generation 1):
 - Lantronix XPortPro
 - Very low power usage
 - 8MB RAM, 16MB flash
 - Runs uClinux
 - No FPU, no MMU, virtually no UI
 - A reboot costs <15 (<5) seconds
 - An SSH connection costs ~30 seconds
 - We can remotely update the firmware
 - Form factor of the finished probe is “just right”



RIPE Atlas - Security aspects

- Probes have hardwired trust material (registration server addresses / keys)
- The probes don't have any open ports, they only initiate connections
 - This works fine with NATs too
- Probes don't listen to local traffic, there are no passive measurements running
 - There's no snooping around

Today's Topics

- RIPEstat
- RIPE Atlas

RIPE NCC Measurement Tools

- Tools for YOU
- Please support us by
 - Using the tools
 - Giving us feedback and ideas
 - Telling your friends about them
 - Finding sponsors for RIPE Atlas

Questions?

