

# Tools for Measurements & Analysis

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Chief Scientist



# Today's Topics

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- RIPEstat
- RIPE Atlas

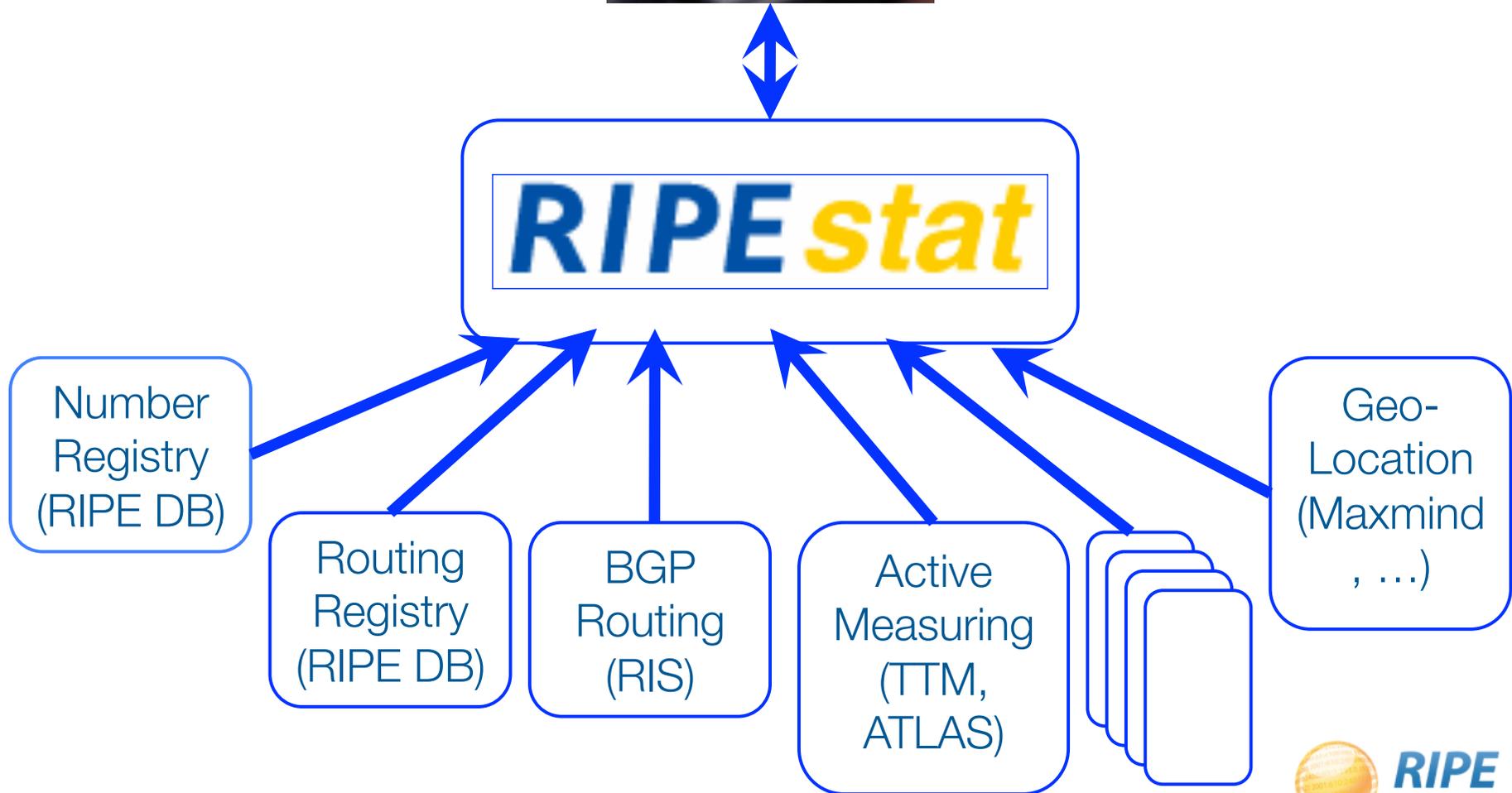
# RIPEstat

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



You





Your network: [AS35549, 213.147.96.0/19](#)      Example: [IPv4, IPv6, ASN](#)

**Result Boxes** edit

- [Resource Information for 213.147.96.0/19](#)
- [Whois Matches for 213.147.96.0/19](#)
- [AS Routing History of 213.147.96.0/19](#)
- [Allocations/Assignments related to 213.147.96.0/19](#)
- [Geolocation of 213.147.96.0/19](#)
- [Geolocation of 213.147.96.0/19 \(new\)](#)
- [BGP Looking Glass \(show ip bgp 213.147.96.0/19\)](#)
- [Blacklist Entries for 213.147.96.0/19](#)
- [Global Visibility of 213.147.96.0/19](#)
- [BGP Update Activity of 213.147.96.0/19](#)
- [Prefixes Related to 213.147.96.0/19](#)
- [Routing Consistency of 213.147.96.0/19](#)
- [Allocation History for 213.147.96.0/19](#)

**Resource Information for 213.147.96.0/19**

this prefix is currently announced by

**AS35549**

this Autonomous System Number appears to currently be held by

**METRONET-AS Metronet telekomunikacije d.d.**

*112 ms / 725 B / c (Ref: Q810277/4609167 R0)*

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Download raw data: [yaml](#)
Show: [link](#) | [specification](#) | [methodology](#)

The current top queries

- [37.0.0.0/16](#)
- [2001:18c8::/32](#)
- [AS286](#)
- [AS15169](#)
- [193.0.0.0/24](#)
- [AS36935](#)
- [AS3265](#)
- [AS786](#)
- [144.15.240.0/24](#)
- [AS3320](#)

**Whois Matches for 213.147.96.0/19**

resource	213.147.96.0 - 213.147.127.255	<a href="#">Show all fields</a>
netname	HR-METRONET-20050831	
country	HR	
organisation	ORG-Mtd1-RIPE	
status	ALLOCATED PA	
description	Metronet telekomunikacije d.d.	

▶ [known issues / limitations:](#)

*141 ms / 3 kB / c (Ref: Q810277/4609168 R0)*

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Download raw data: [yaml](#)
Show: [link](#) | [specification](#) | [methodology](#)

Your latest queries

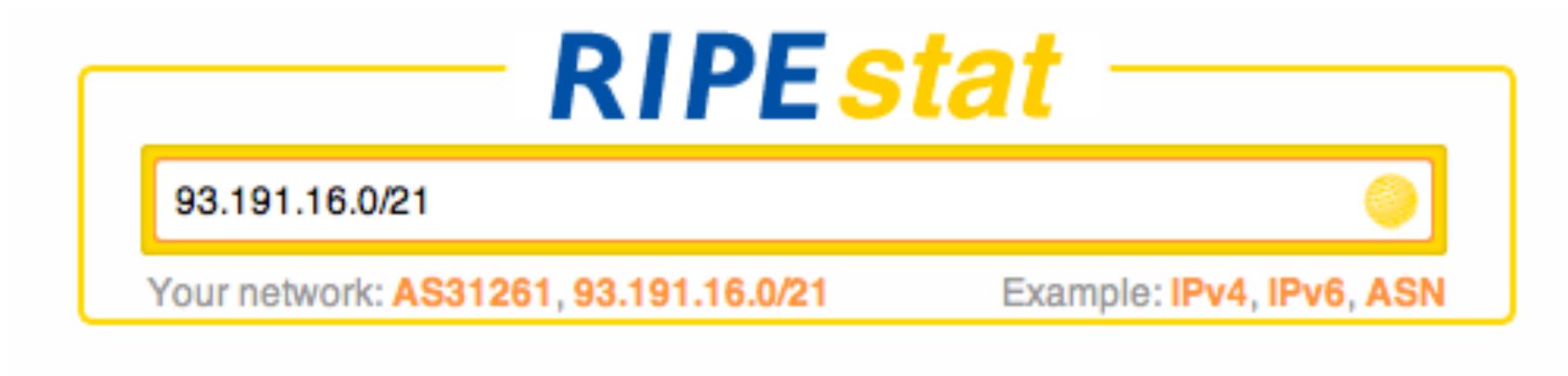
- [213.147.96.0/19](#)

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](#)



Resource Information for 213.147.96.0/19

this prefix is currently announced by

**AS35549**

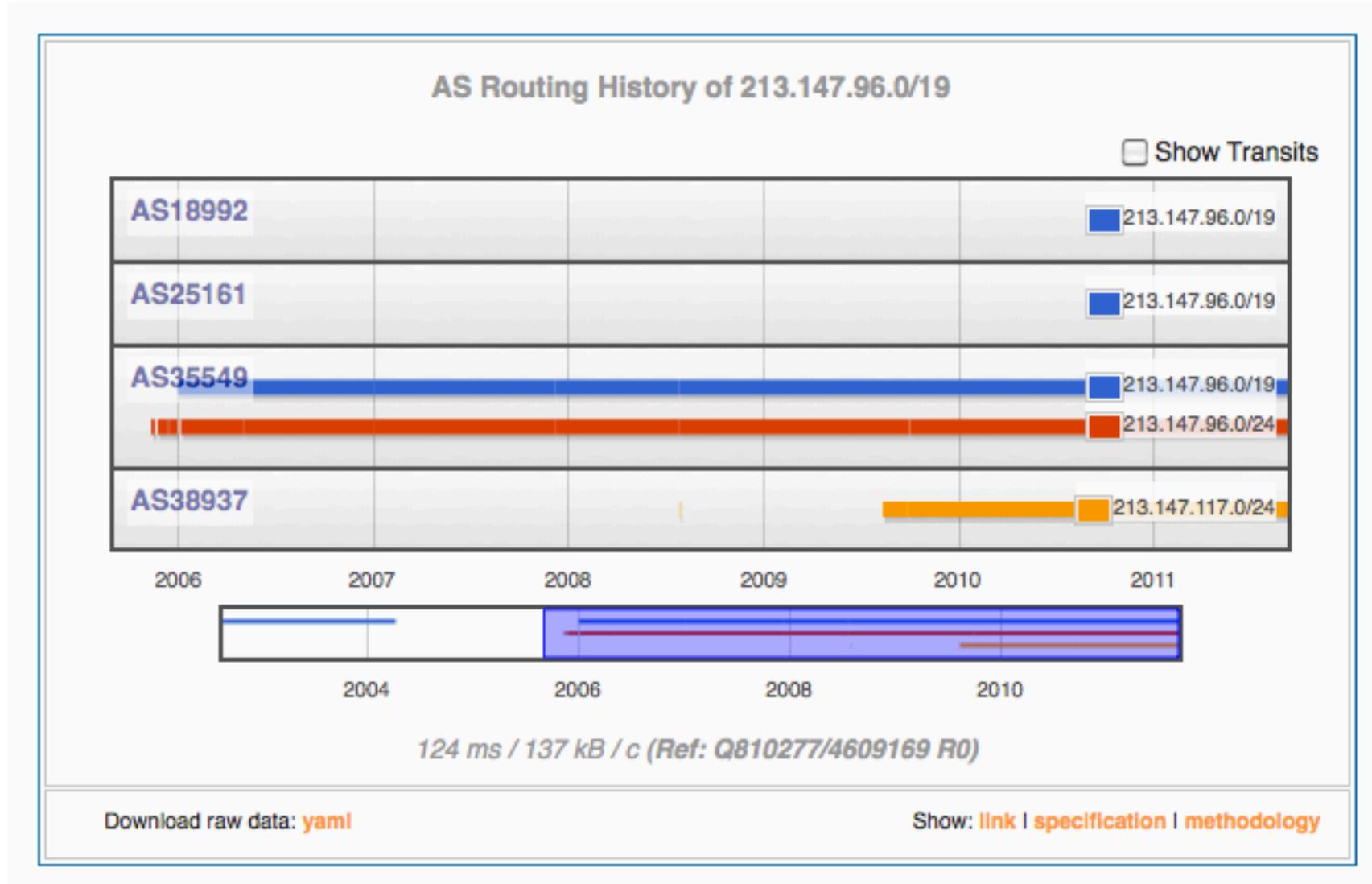
this Autonomous System Number appears to currently be held by

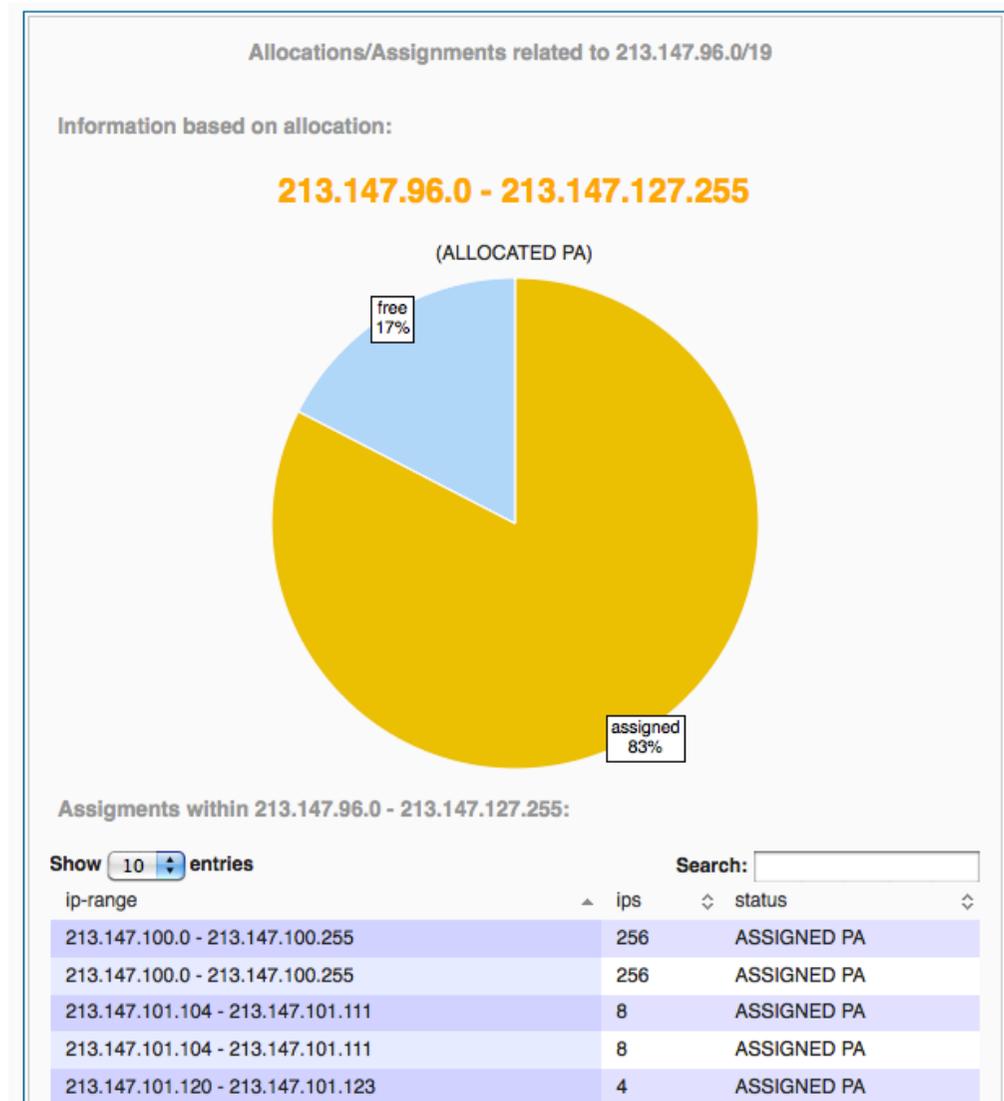
**METRONET-AS Metronet telekomunikacije d.d.**

*112 ms / 725 B / c (Ref: Q810277/4609167 R0)*

Download raw data: [yaml](#)

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







**BGP Looking Glass (show ip bgp 213.147.96.0/19)**

Search:

**Amsterdam, Netherlands (RRC00)**

3549 35549  
208.51.134.248 from 208.51.134.248 (67.17.80.217)  
Origin IGP, metric 14269, localpref 100, valid, external, best  
Community: 3549:4792 3549:31040  
Last update: Fri Sep 9 01:54:33 2011

⌵ Show more (19)

**London, United Kingdom (RRC01)**

3356 35549  
195.66.226.77 from 195.66.226.77 (4.68.2.7)  
Origin IGP, metric 0, localpref 100, valid, external, best  
Last update: Tue Sep 6 11:20:29 2011

⌵ Show more (15)

**Amsterdam, Netherlands (RRC03)**

3356 35549  
195.69.144.110 from 195.69.144.110 (4.68.3.179)  
Origin IGP, metric 0, localpref 100, valid, external, best  
Last update: Tue Sep 6 11:20:18 2011

⌵ Show more (8)

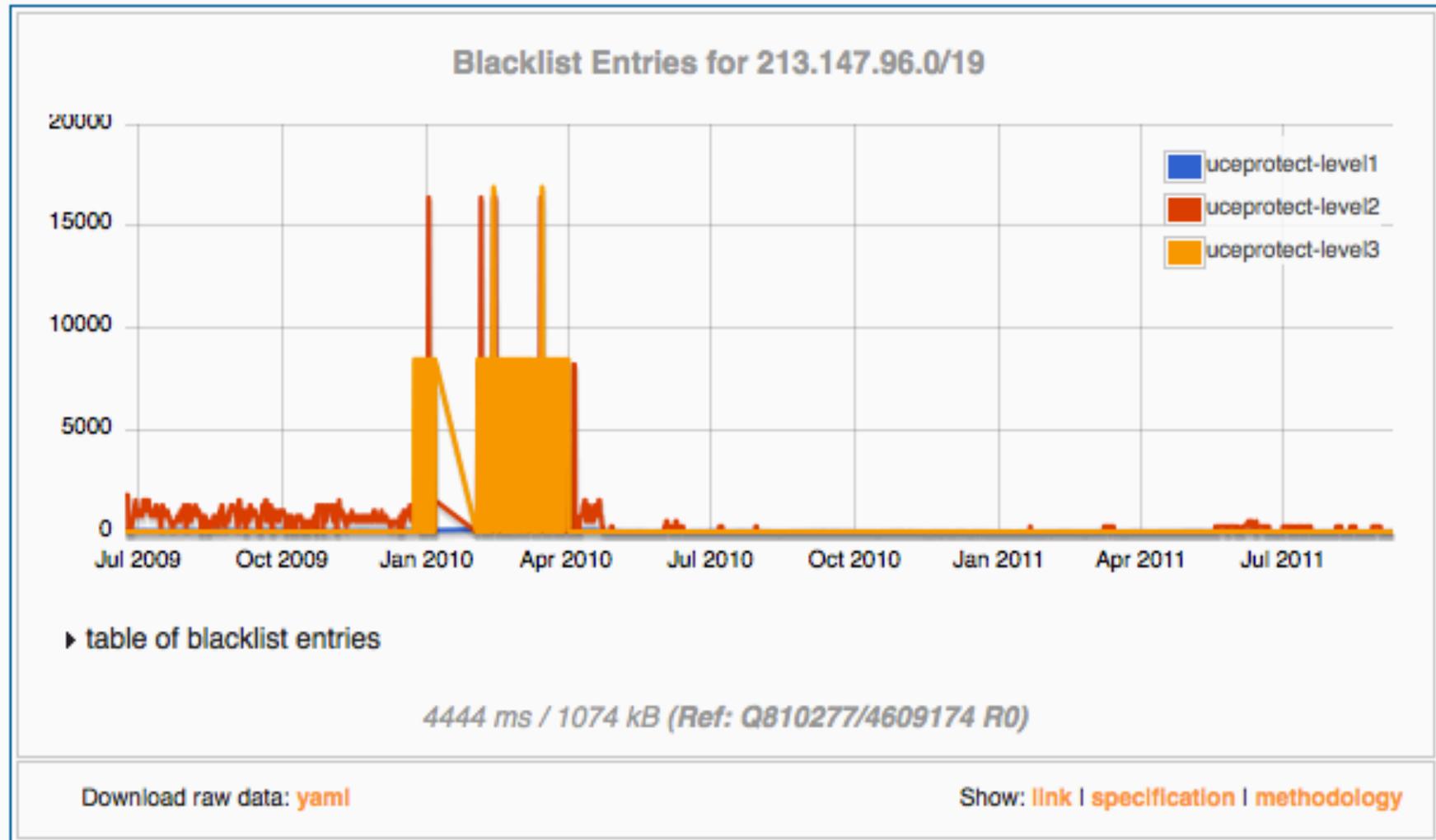
**Geneva, Switzerland (RRC04)**

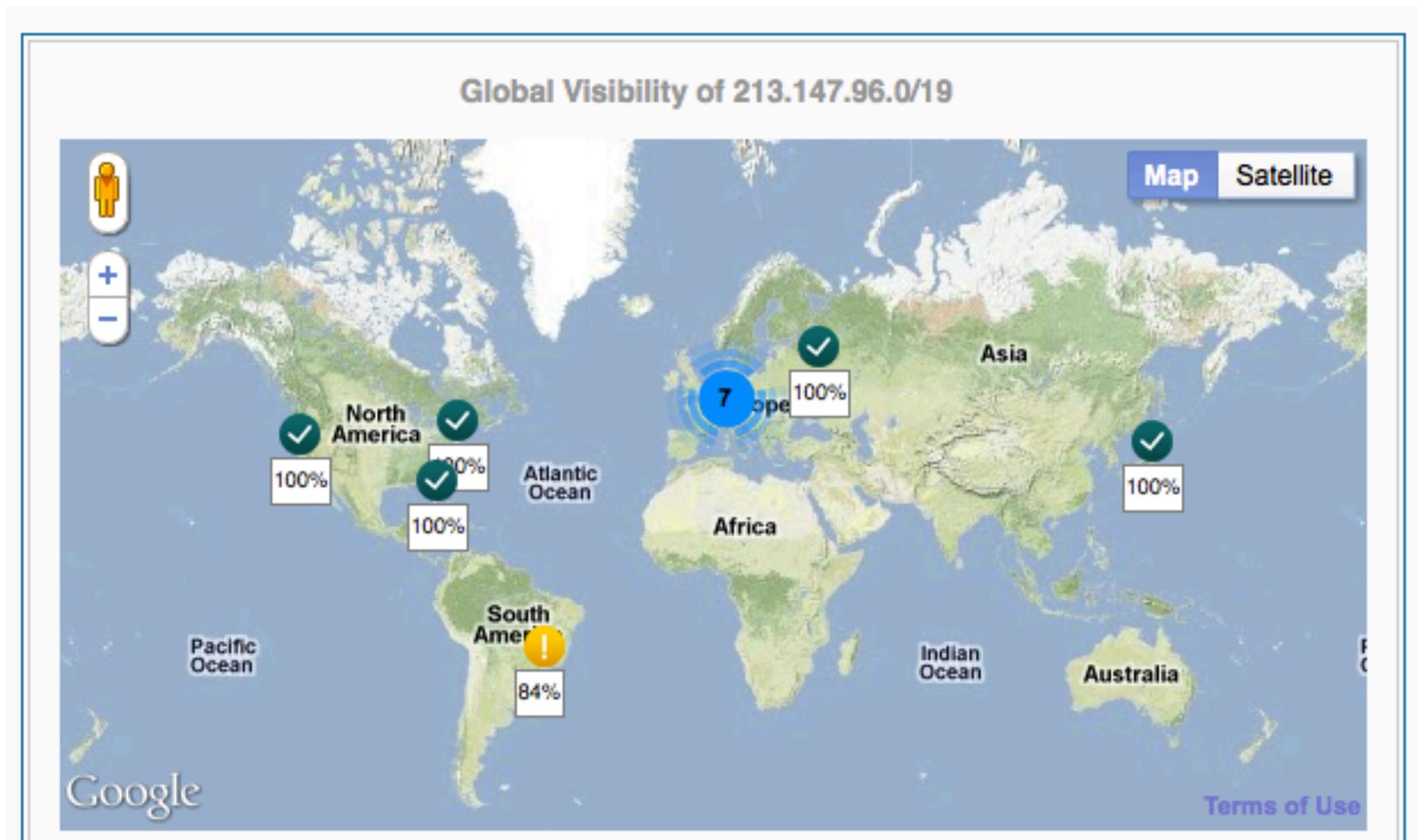
25091 3549 35549  
192.65.185.244 from 192.65.185.244 (46.20.255.4)  
Origin IGP, localpref 100, valid, external, best  
Community: 3549:4792 3549:31040 25091:10 25091:3549  
Last update: Fri Aug 26 17:22:31 2011

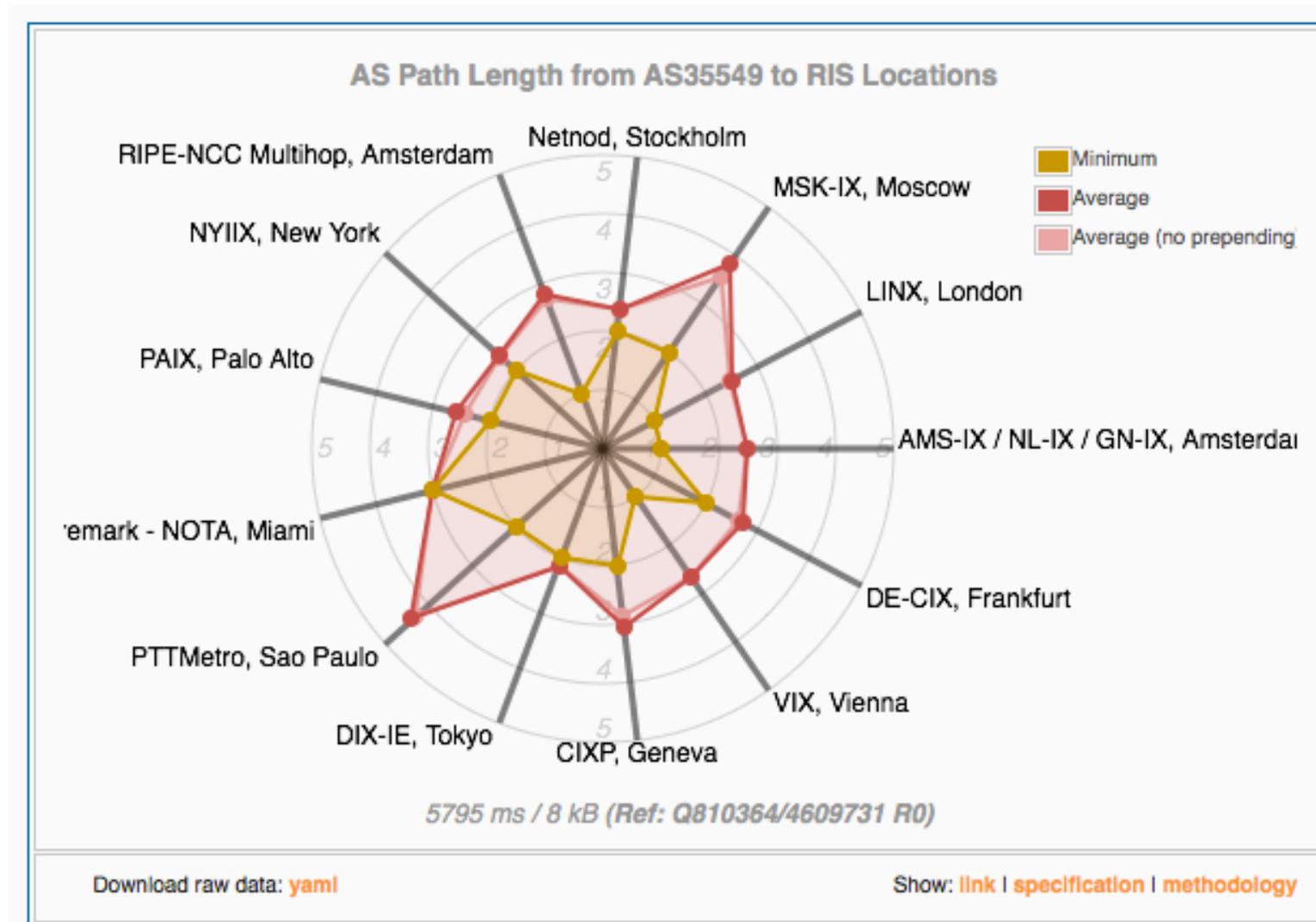
⌵ Show more (5)

**Vienna, Austria (RRC05)**

39912 35549  
193.203.0.134 from 193.203.0.134 (81.94.57.86)  
Origin IGP, localpref 100, valid, external, best  
Last update: Wed Aug 17 10:53:05 2011







#### The current top queries

- 1.2.3.4/22
- AS286
- AS36935
- 193.0.0.0/24
- 144.15.240.0/24
- AS15169
- AS786
- AS3265
- 219.104.0.0/16
- AS3320

#### Your latest queries

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

#### News

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

**help | access stats | server status | changelog**

# RIPEstat Strategy

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- 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

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- 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

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- RIPEstat
- RIPE Atlas

# Introduction

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## 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

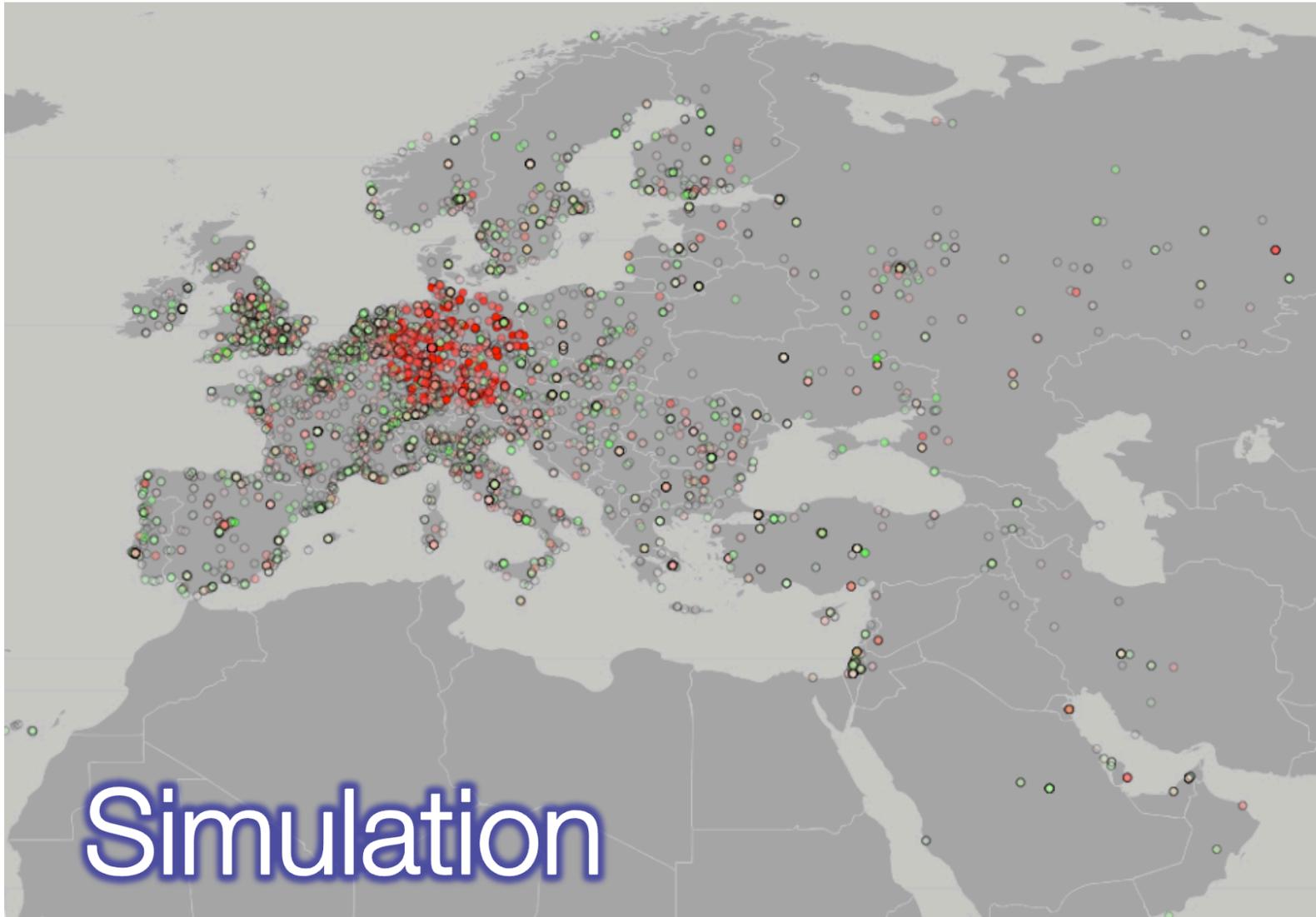
# Light Map of Europe

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# Intuition: 10k Probes & 1 AS

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# Ambitious Community Effort

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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

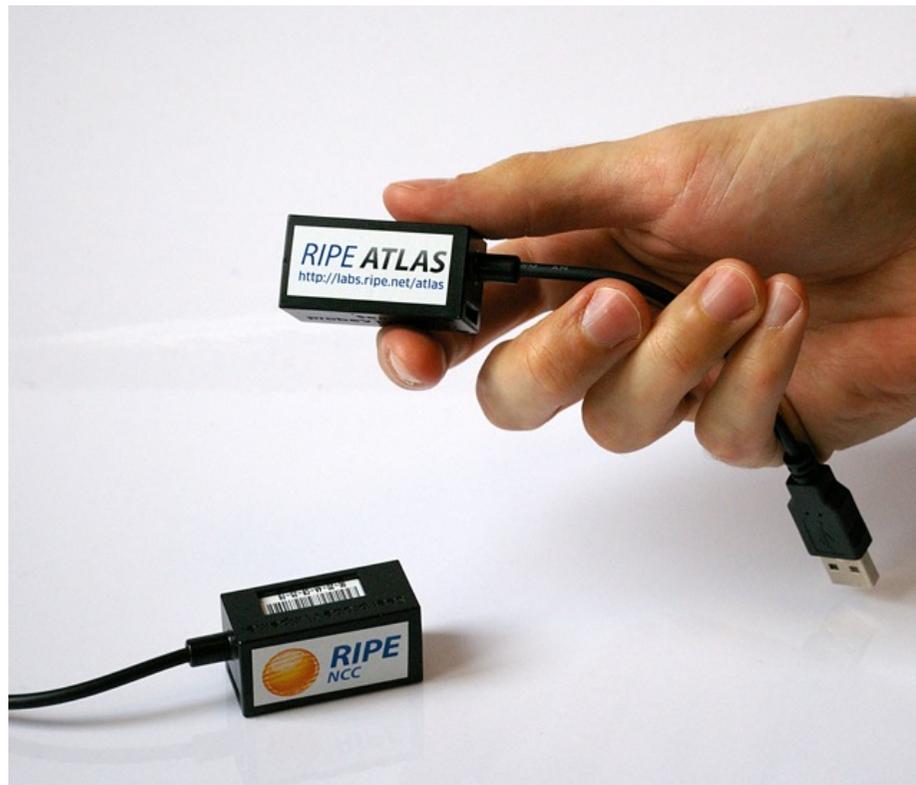
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- Individual Benefits
  - Less expensive than rolling your own
  - More vantage points available
  - More data available
- Community Benefits
  - Unprecedented situational awareness
  - Wealth of data, ...

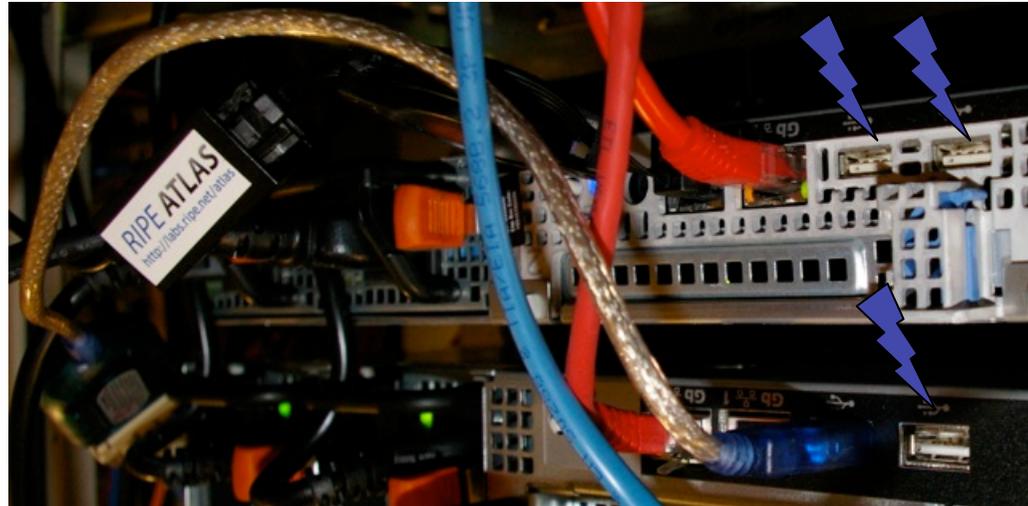
# Intuition -> Plan

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- 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

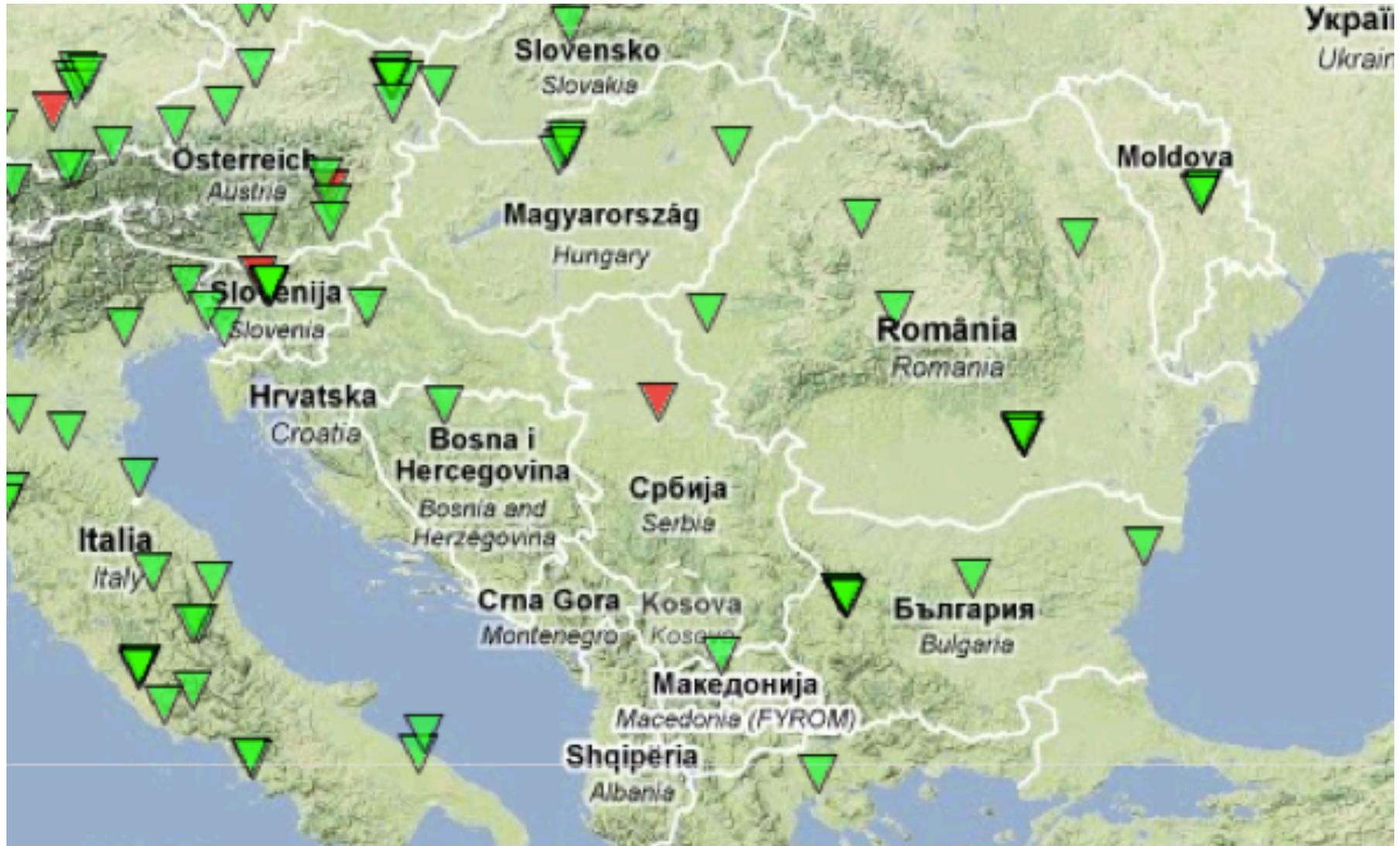
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- Version 0
  - Ping to fixed targets (IPv4 & IPv6) ✓
  - Traceroute to 1<sup>st</sup> two upstream hops ✓
- Version 1 (beta with selected testers this month)
  - Ping & Traceroute to variable targets
  - DNS queries to variable targets
- Version 2
  - Your ideas?
- A non-goal: last-mile performance measurements

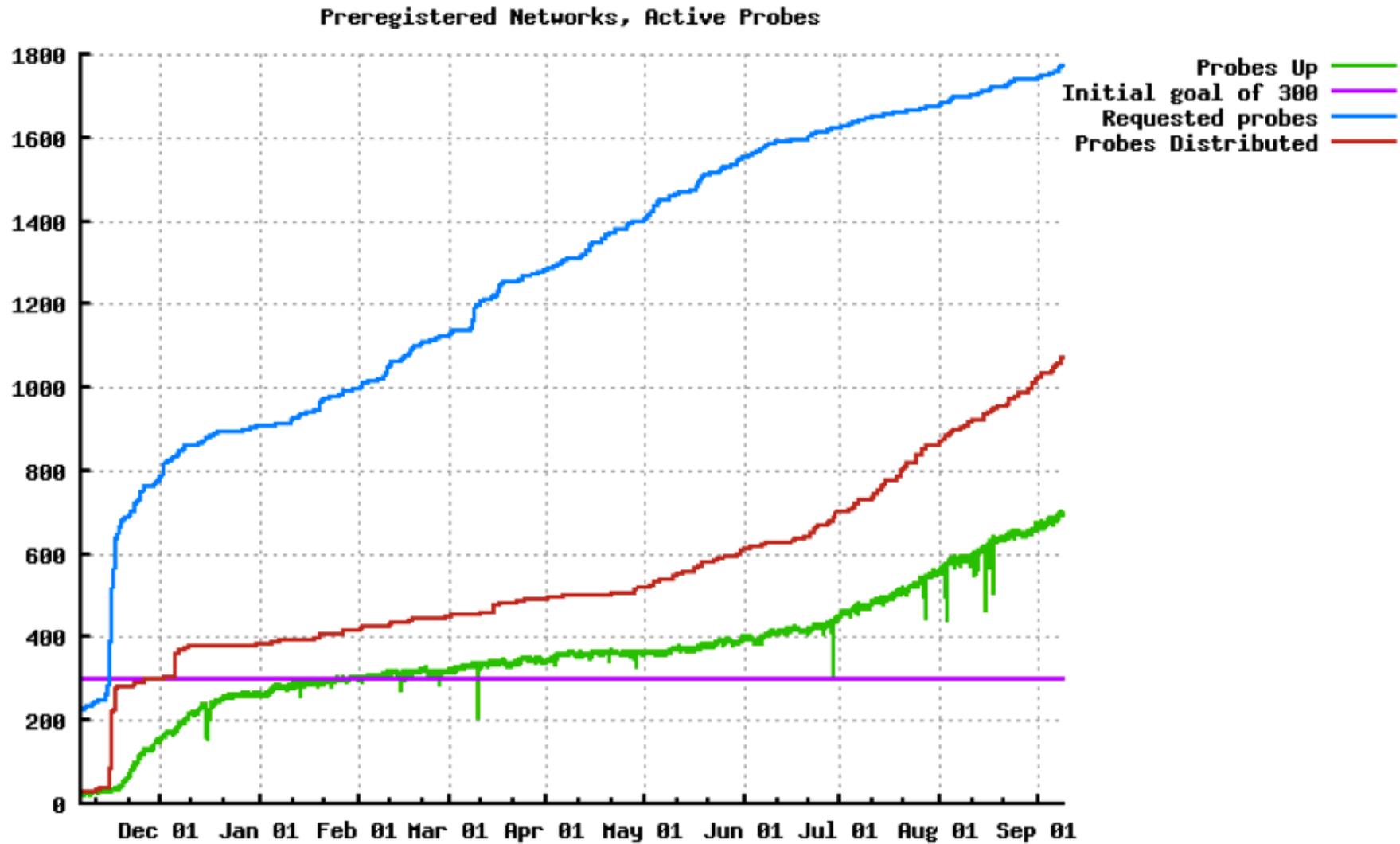




# Probes Deployed Today



# Probes Deployed Today



# Hosting = Credits = Measurements

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- 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:

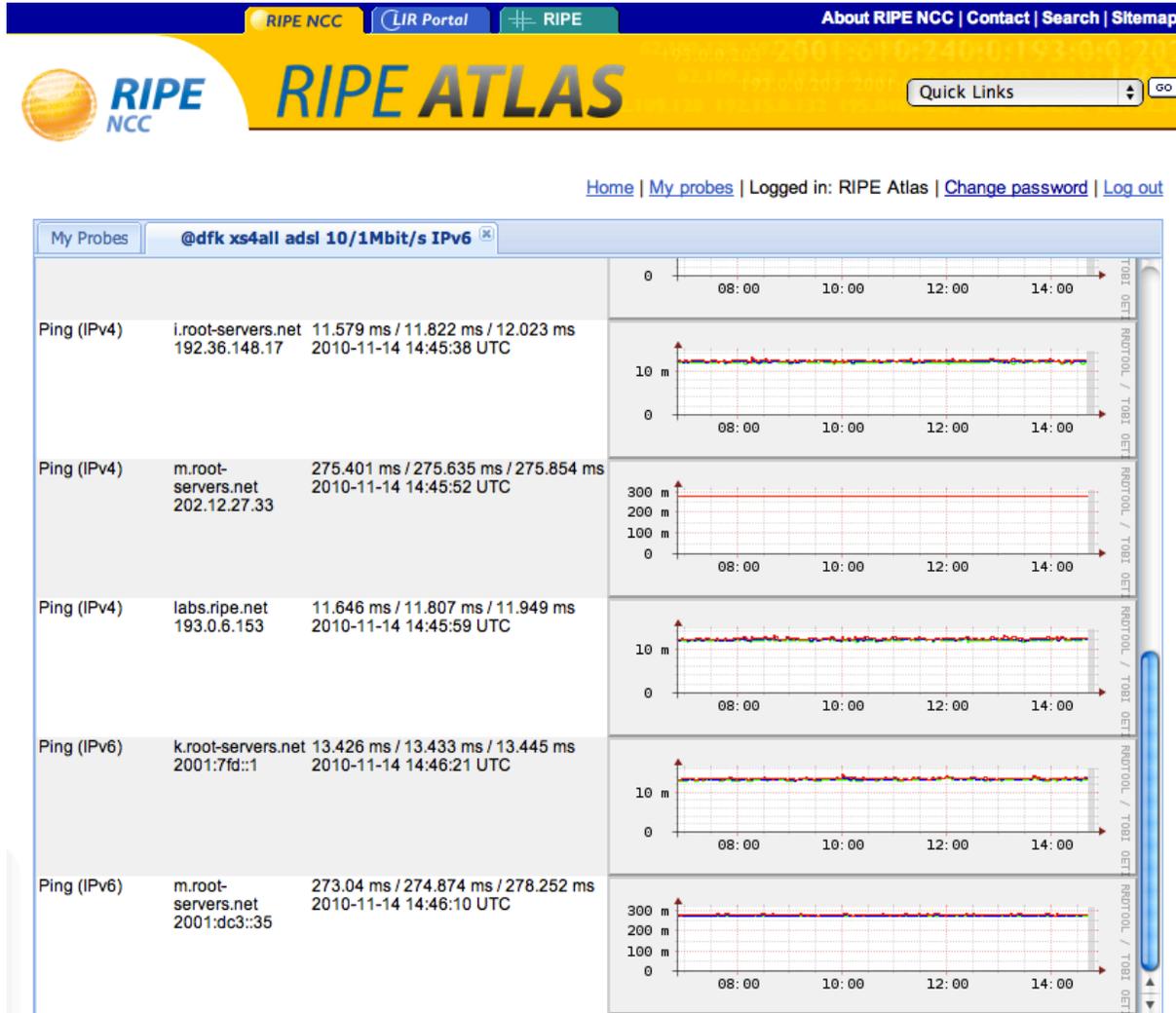
- Recognition
- Access to fixed measurements from your probe
- Credits = Measurements **from any probe** (Q3/11)

# Sponsorship = Credits = Measurements

Credits – a “measurement ecosystem”?

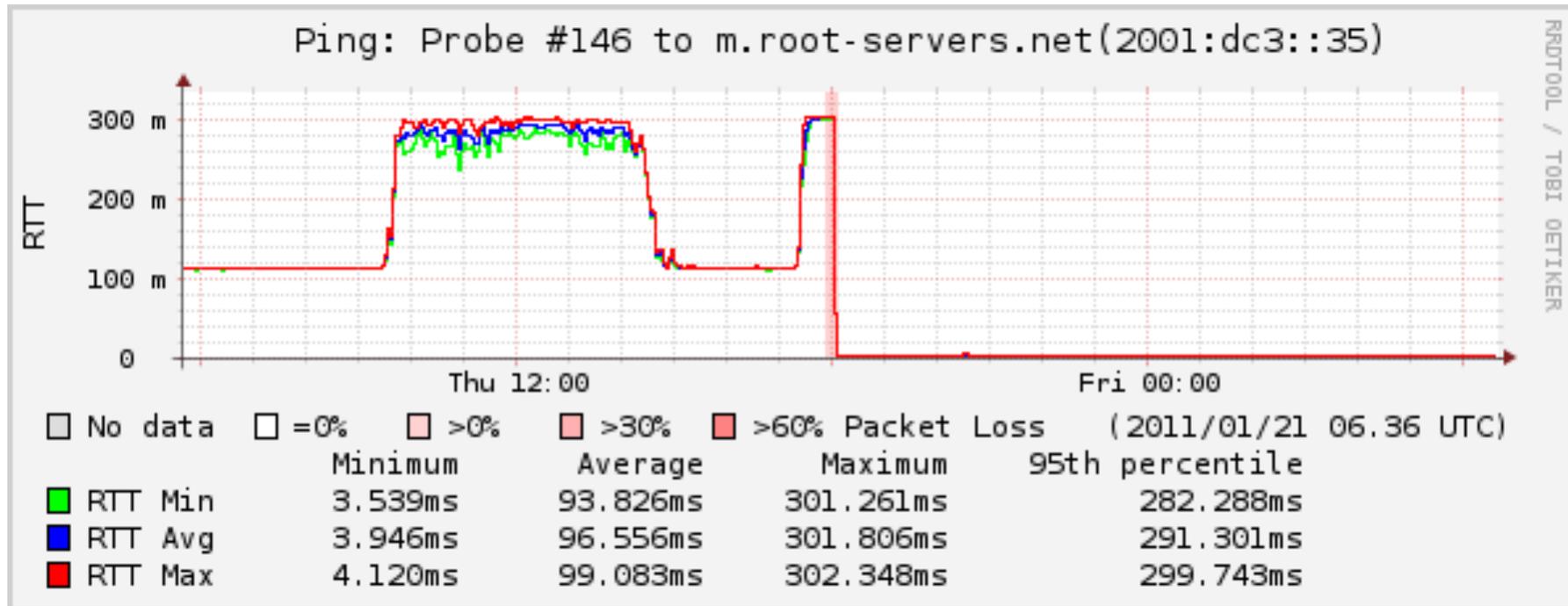
- Hosting a probe or sponsoring will earn you credits
- Scheduling your own measurements will cost credits
  - Simpler measurements are cheaper
  - More complex or more frequent measurements cost more

# What you see is what you get



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# What you see is what you get



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



# How we see k.root-servers.net (IPv4 RTT)



# How we see k.root-servers.net (IPv6 RTT)



# 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 **s** now
- Credits = Measurements **from any probe** (Q4/11)

# Sponsorship = Credits = Measurements

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

that is 2048€	2K €	8 probes
	4K €	16 probes
geek compatible pricing <sup>SM</sup>		...
	64K €	256 probes

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

# Measurement nodes – “Probes”

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- 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

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- 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

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- RIPEstat
- RIPE Atlas

# RIPE NCC Measurement Tools

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- 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?

