

RIPE Atlas

A Next Generation
Measurement Architecture



Introduction

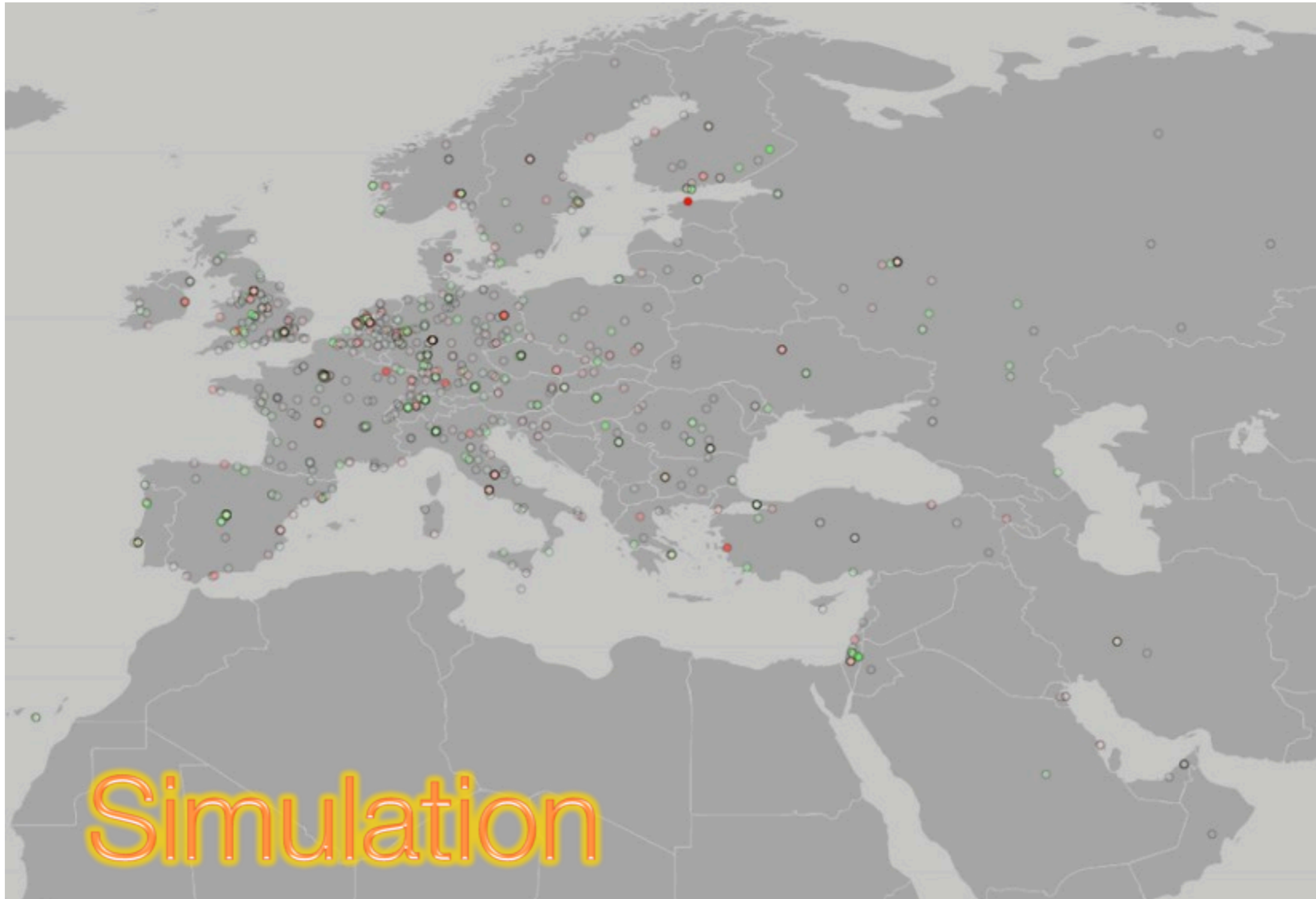
RIPE Atlas:

- There are many Atlases, this is ***RIPE Atlas***
- A prototype system for a 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

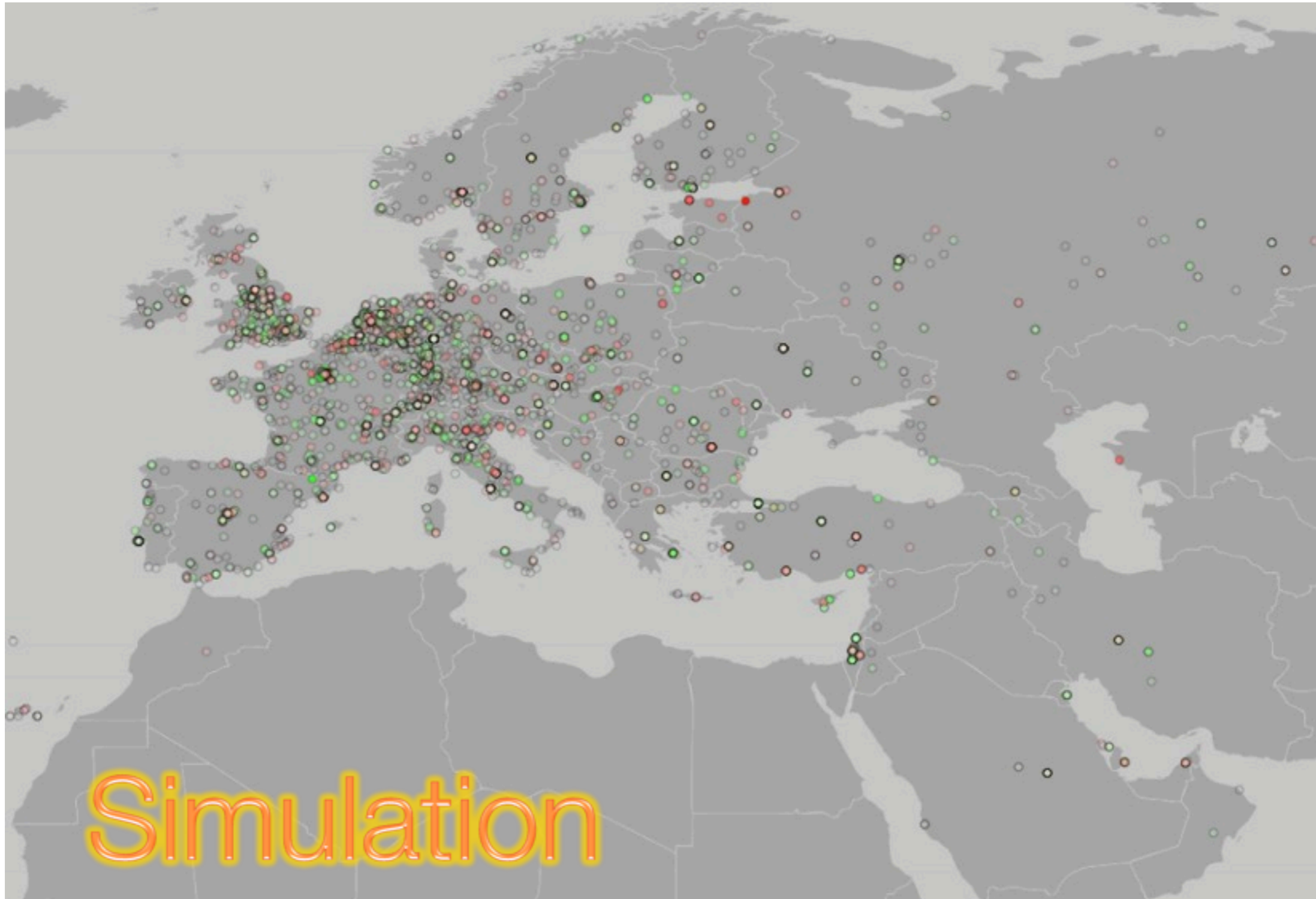
Light Map of Europe



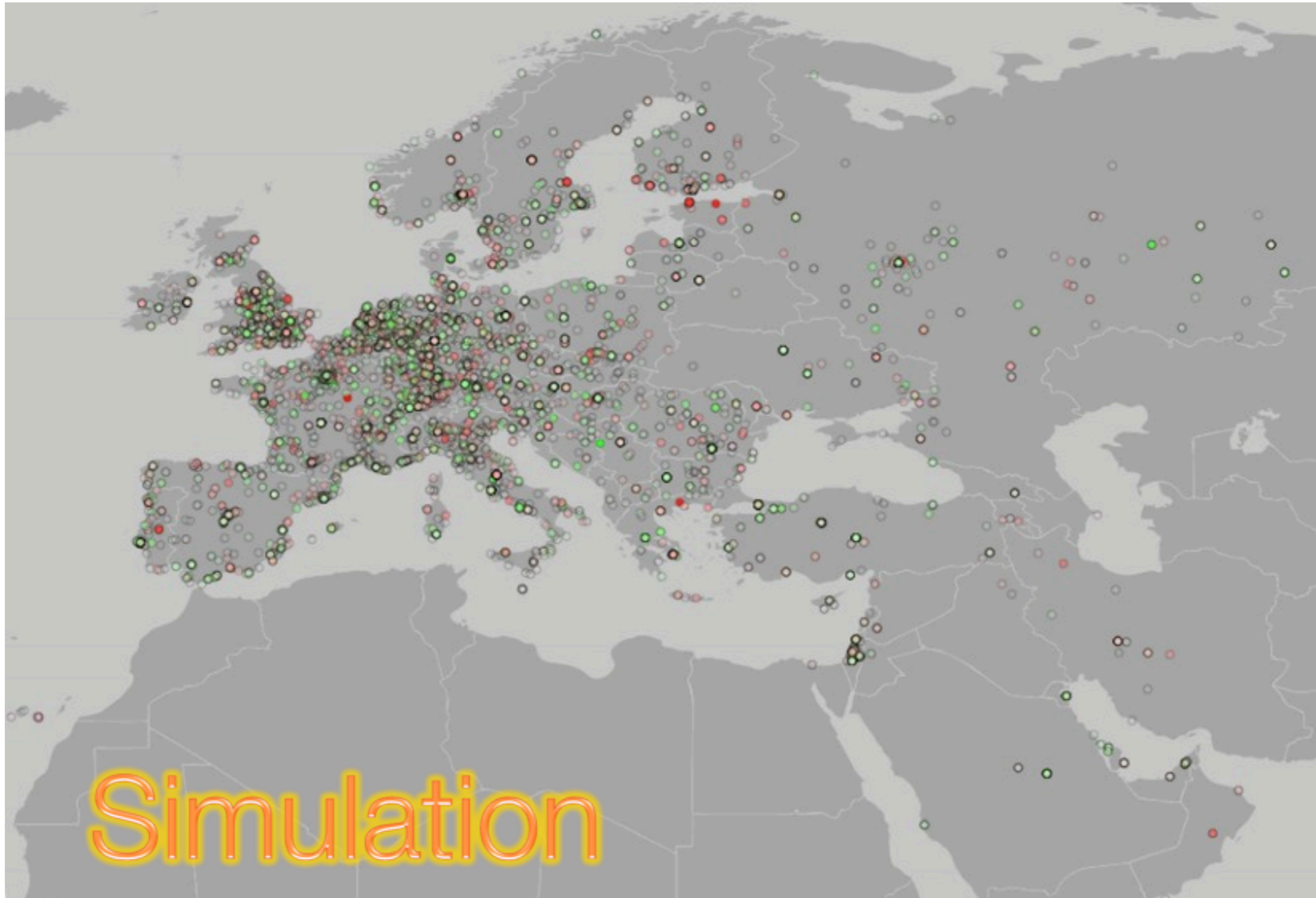
Intuition: 1000 Probes



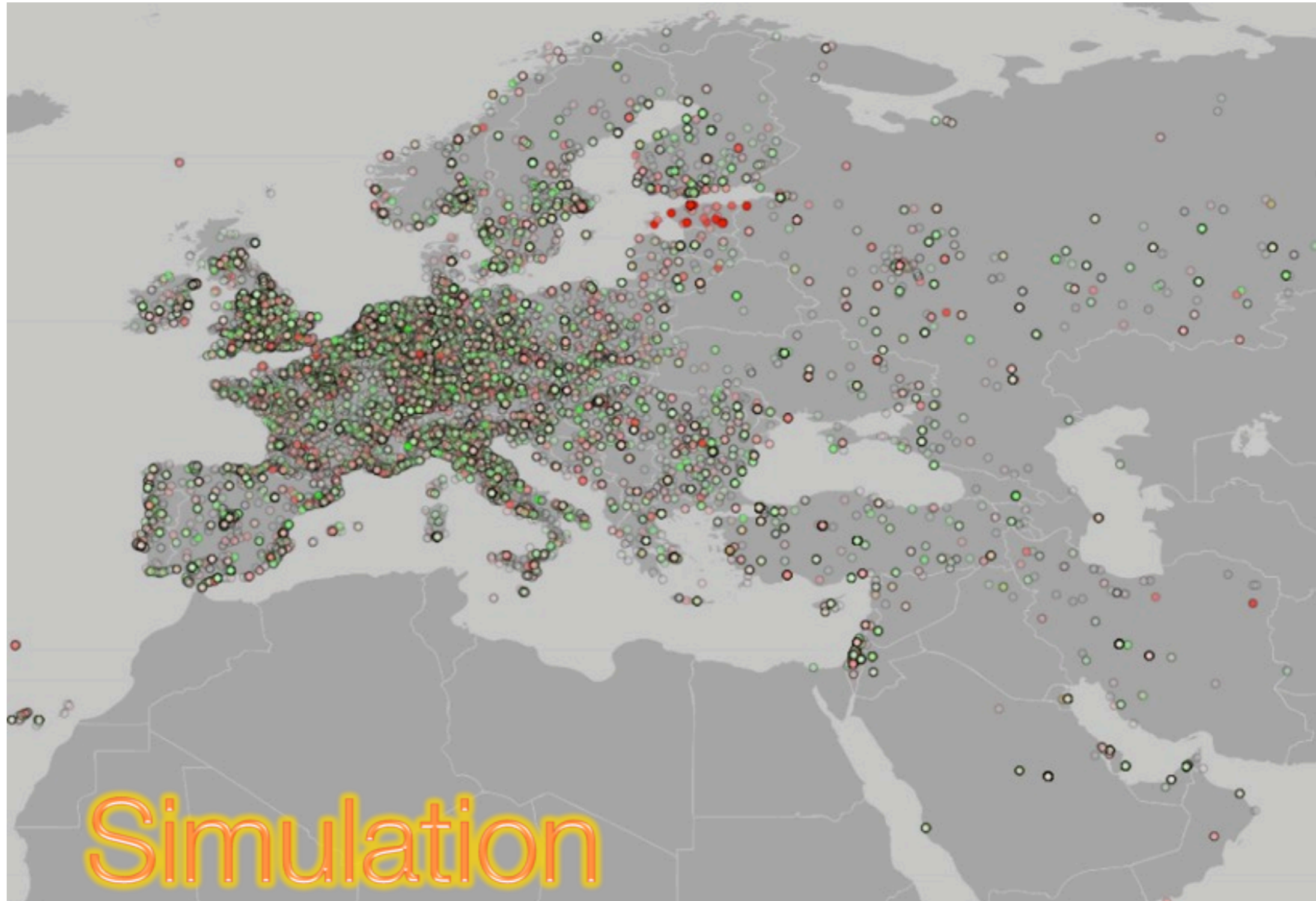
Intuition: 5000 Probes



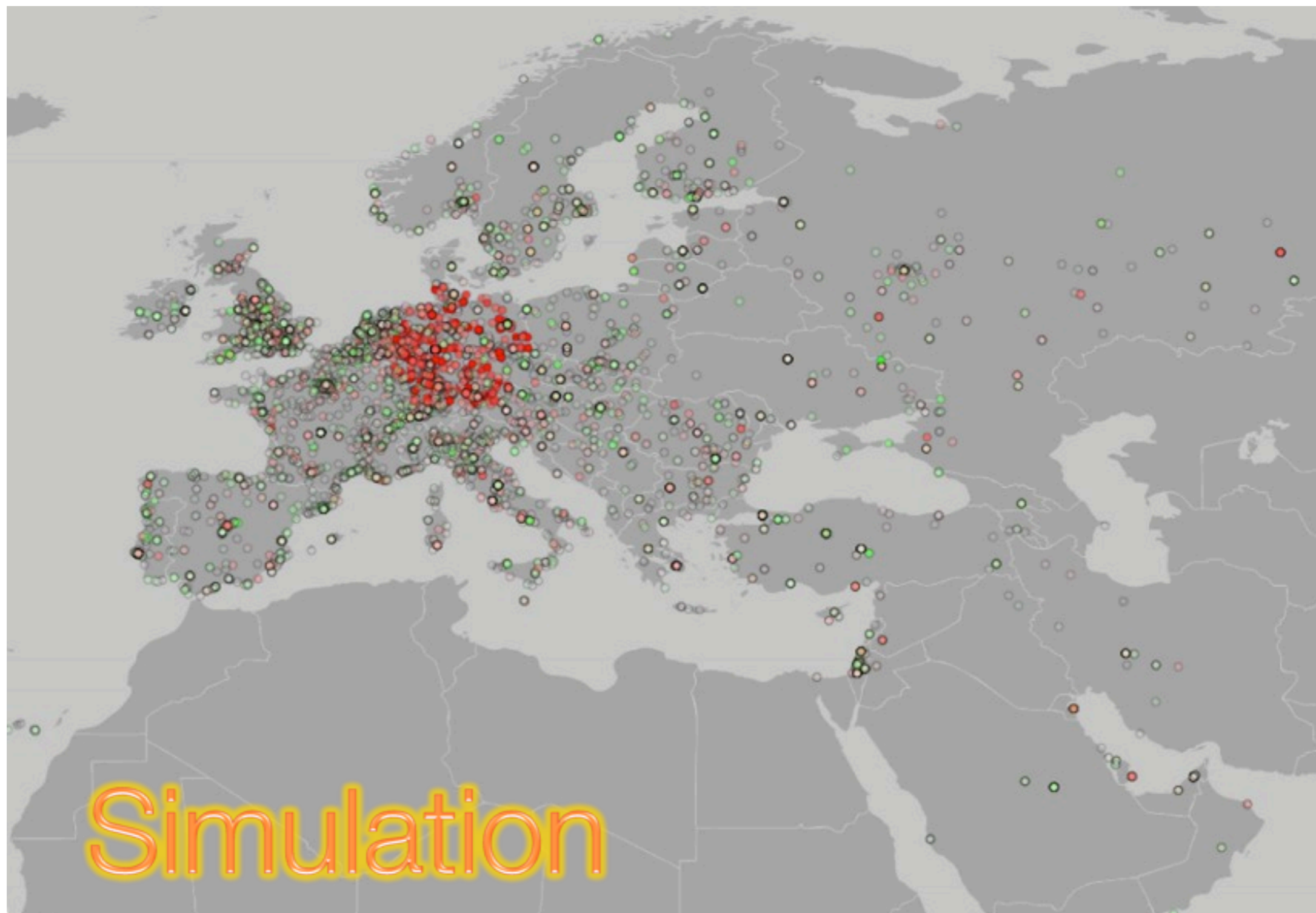
Intuition: 10k Probes



Intuition: 50k Probes



Intuition: **10k** Probes & **1** AS



Ambitious Community Effort

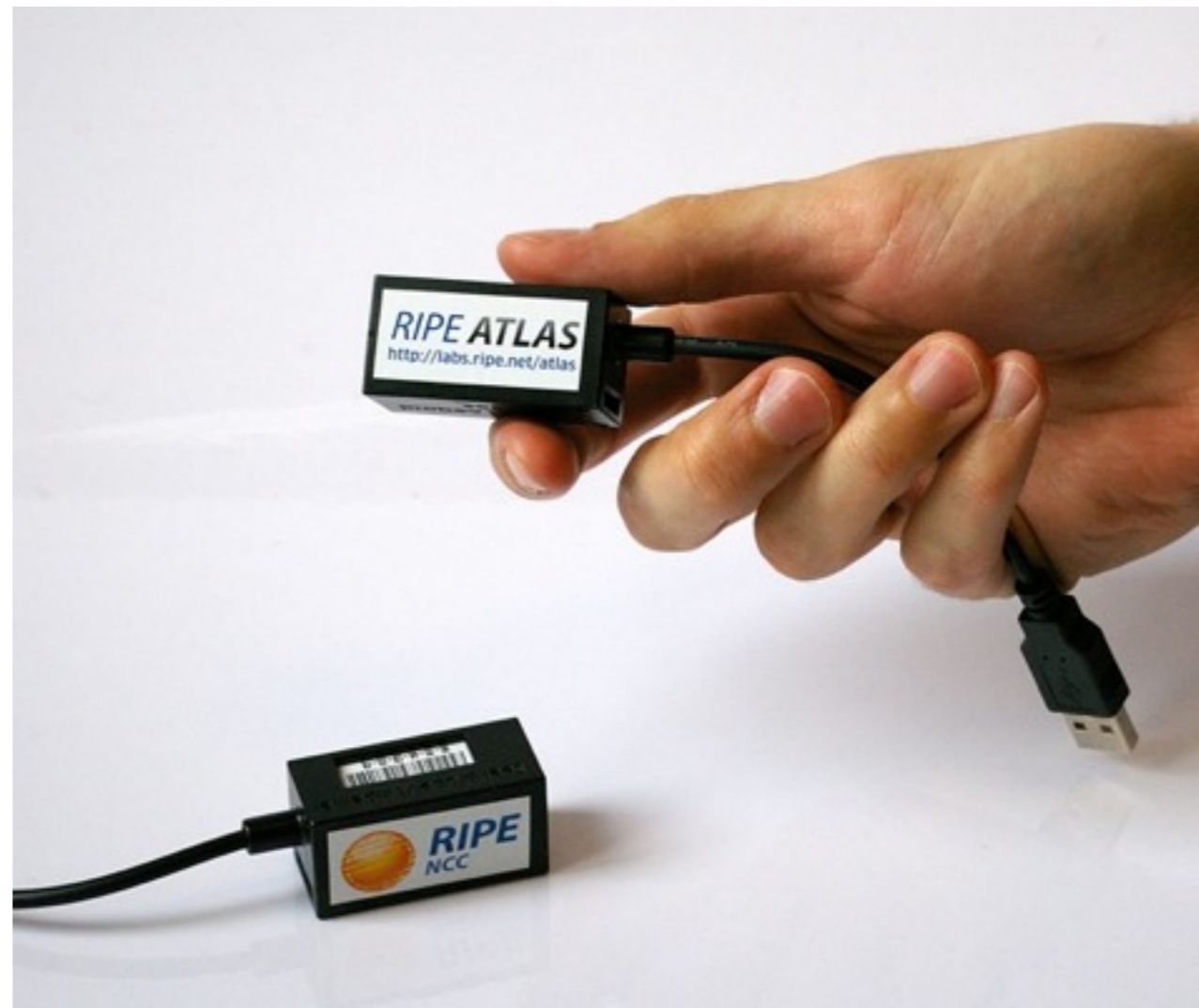
Instead of building small, separate, individual & private infrastructures, build a huge common infrastructure that serves **both** the private goals **and** the community goals.

Ambitious Community Effort

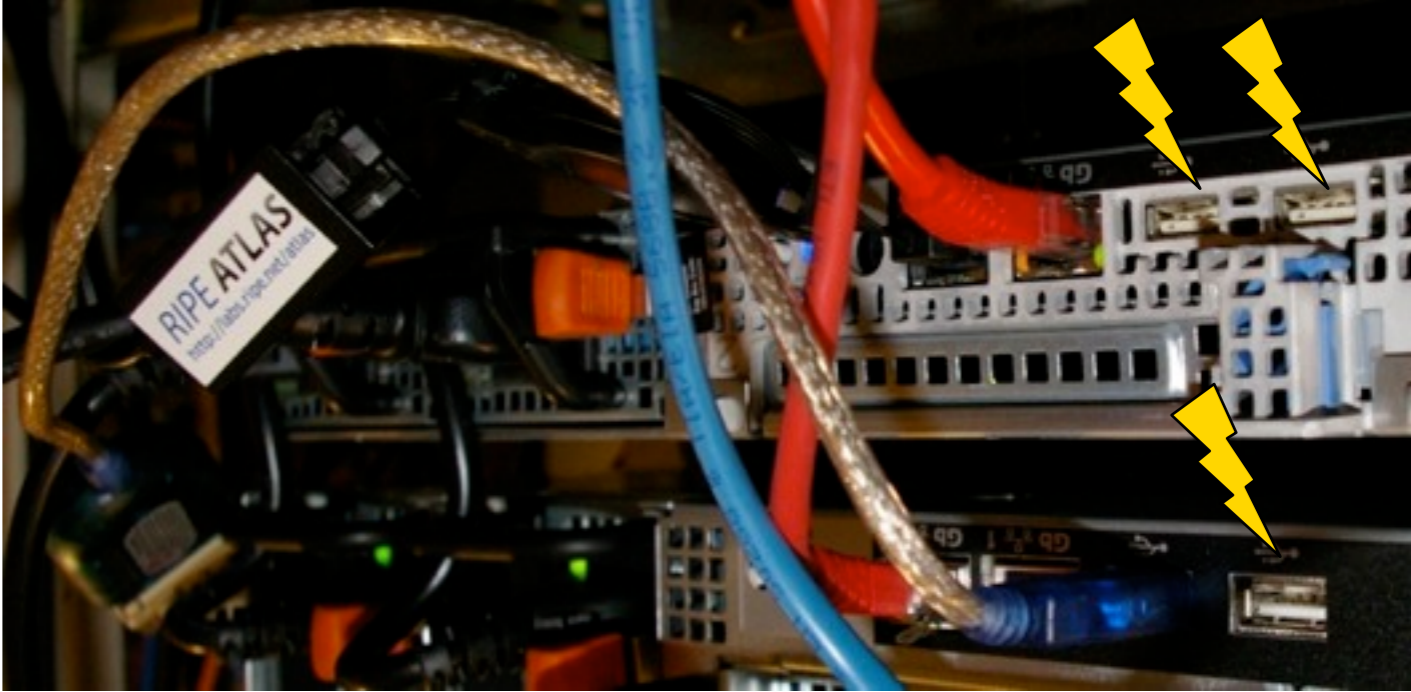
- Individual Benefits
 - Less expensive than rolling your own
 - More vantage points available
 - More data available
- Community Benefits
 - Unprecedented situational awareness
 - Wealth of data, ...

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

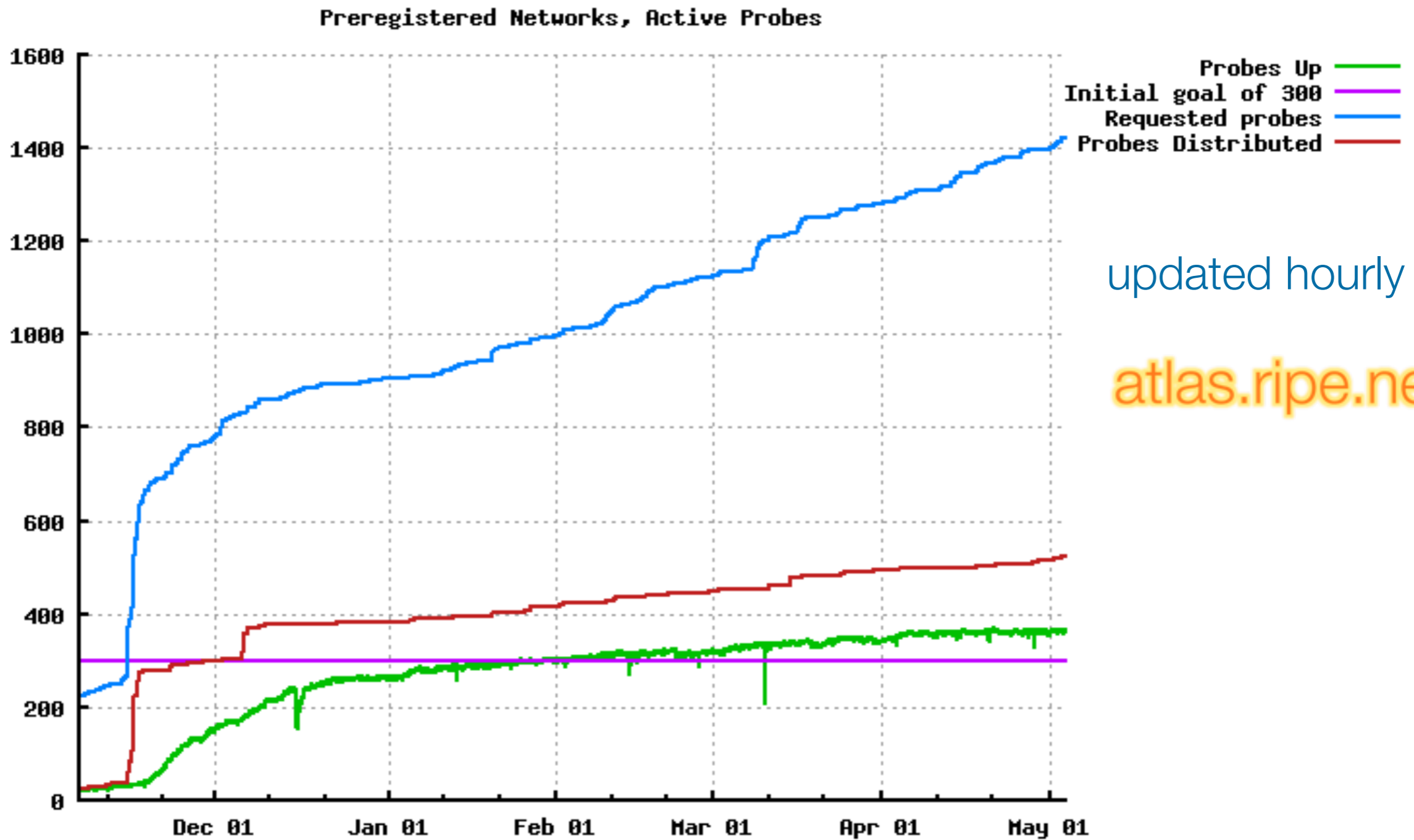
- Version 0
 - Ping to fixed targets (IPv4 & IPv6) ✓
 - Traceroute to 1st two upstream hops ✓
- Version 1
 - Ping & Traceroute to variable targets
 - DNS queries to variable targets
- Version 2
 - Your ideas ?
- A non-goal: performance measurements

Network extent – deployed probes



NOT a Simulation

Network extent



NOT a Simulation

Hosting = Credits = Measurements

- We cannot be everywhere without your help

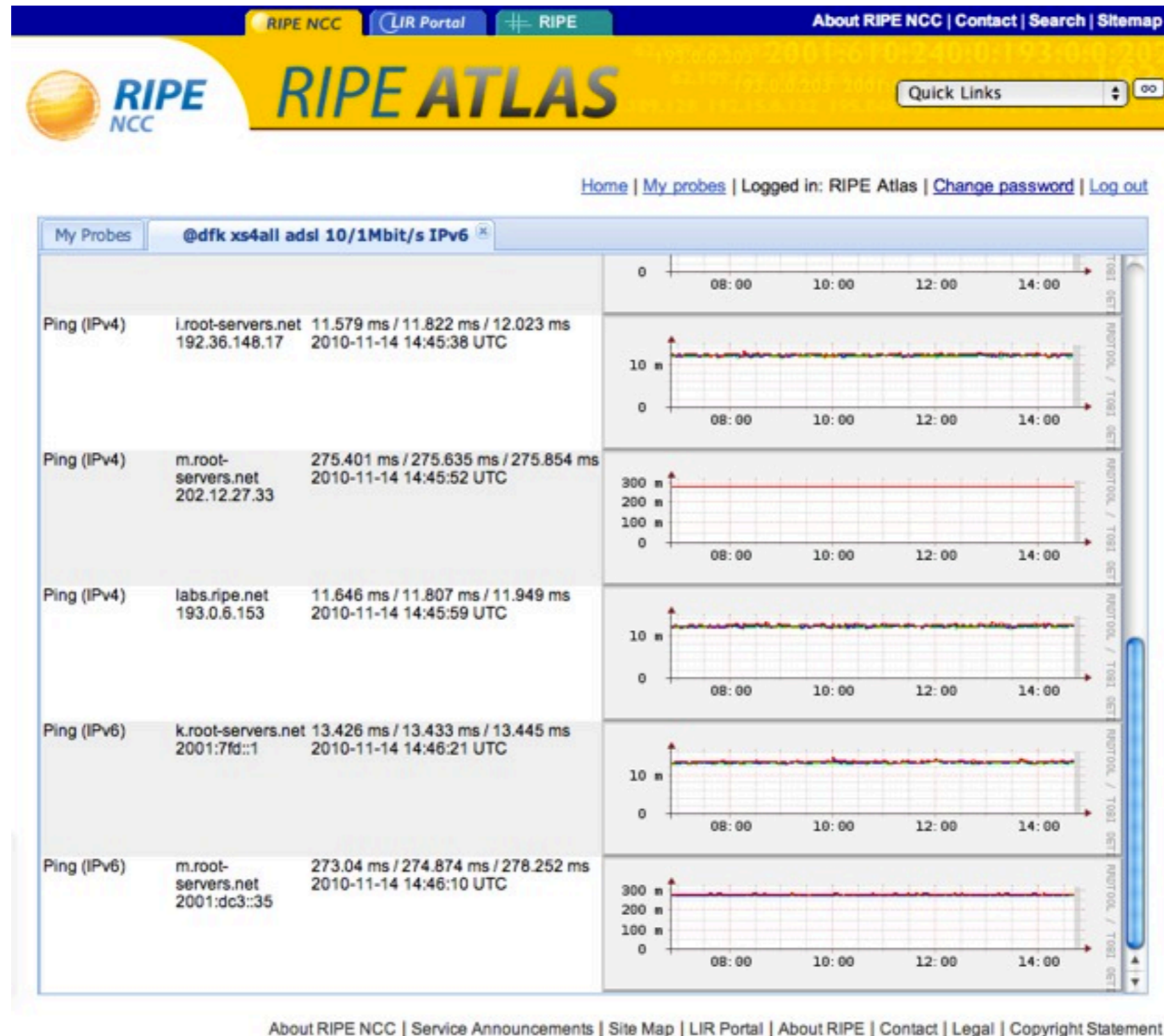
Become a probe host!

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

You get:

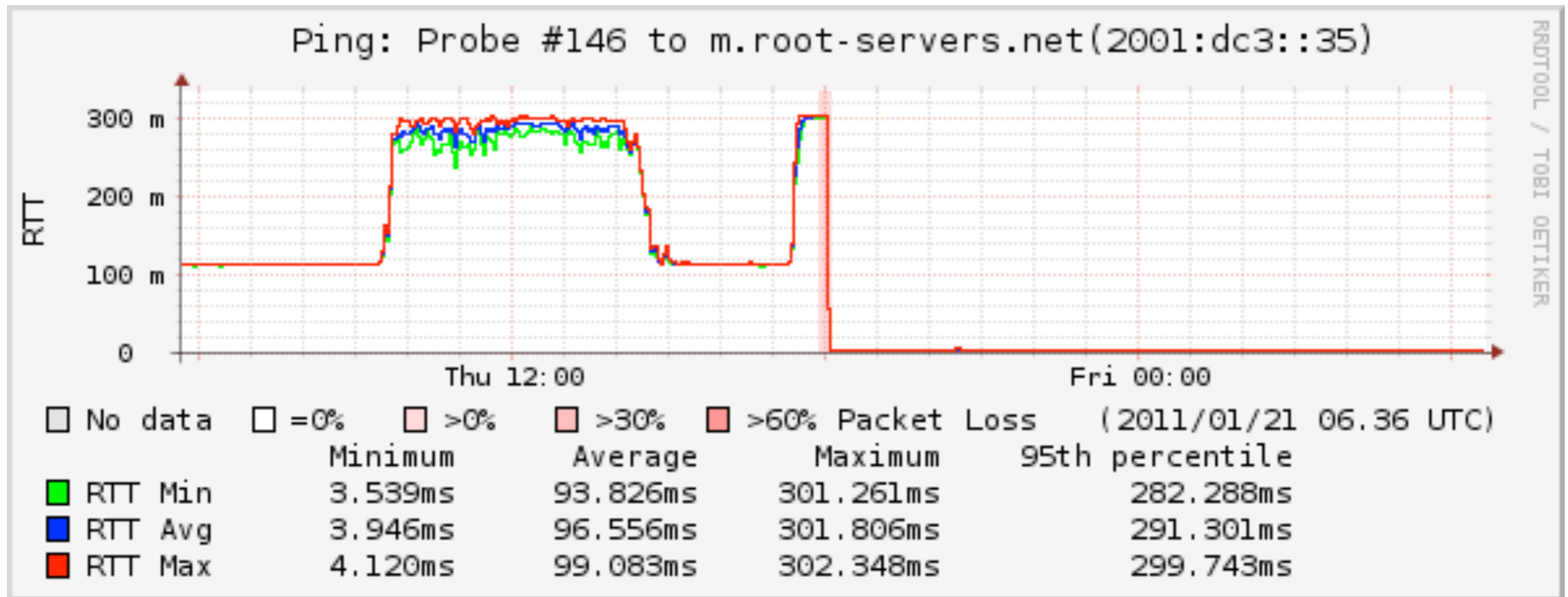
- Recognition
- Access to fixed measurements from your probe
- Credits = Measurements **from any probe** (Q2/11)

What you see is what you get



NOT a Simulation

What you see is what you get



NOT a Simulation

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 SM | 64K € | 256 probes |

↓

- Recognition and **many more credits**
- Access to fixed measurements from probes **s** now
- Credits = Measurements **from any probe** (Q2/11)

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

Sponsorship = Credits = Measurements

- Most of the early sponsors are more in for the idea than for the potential benefits (for now)
- Many of them are DNS providers of some kind
 - They have multiple locations and need to monitor these sites from multiple vantage points
 - It's useful to include eyeball networks in this
 - ... and “renting” measurement functionality is simpler than building a complete measurement network yourself

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

Questions?

atlas.ripe.net

