

# RIPE Atlas

A “Real Big” Measurement Network

---

Robert Kisteleki

Science Group Manager, RIPE NCC

[robert@ripe.net](mailto:robert@ripe.net)



# Introduction

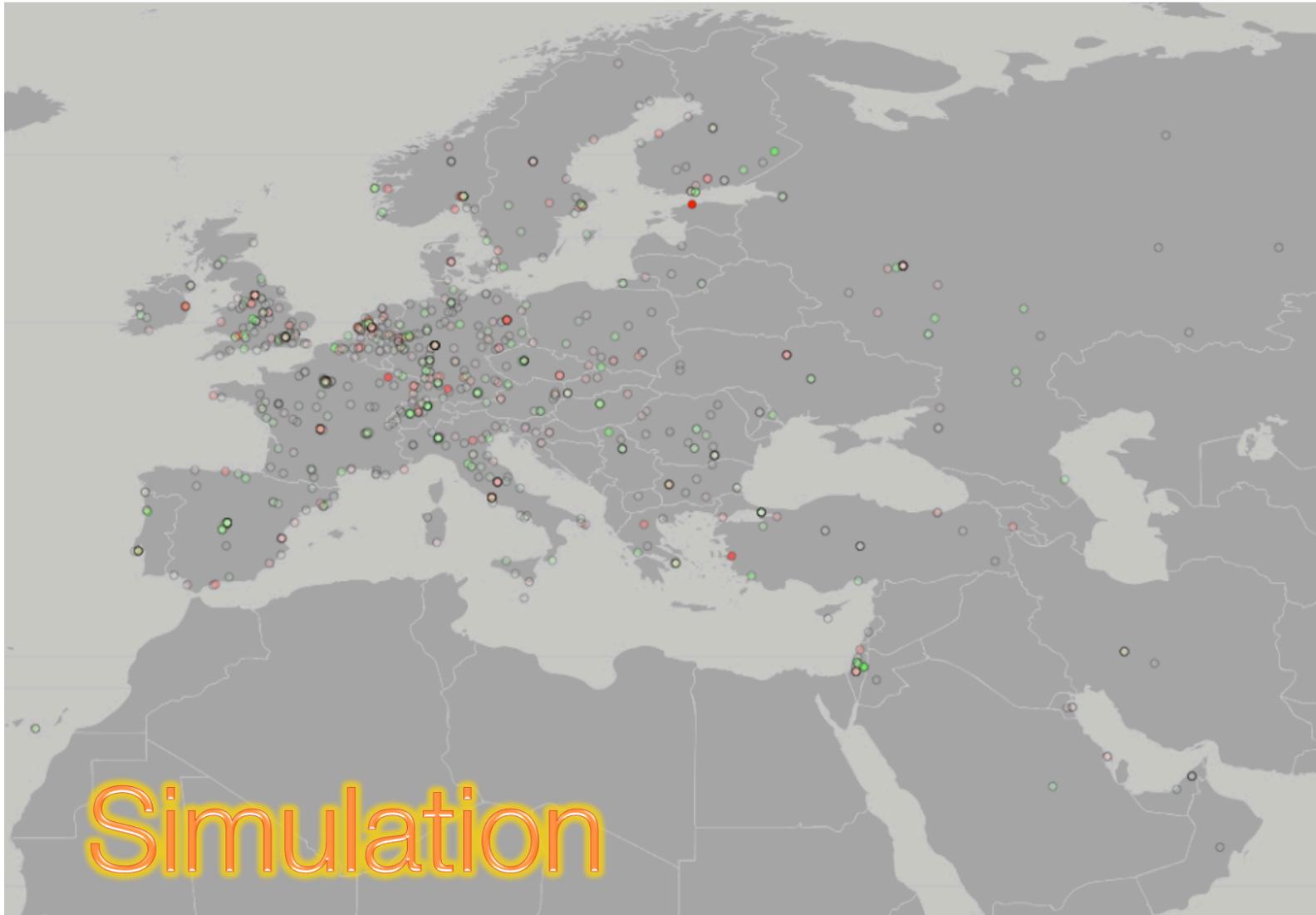
---

## 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”
  - Started last November, we’re still just building it

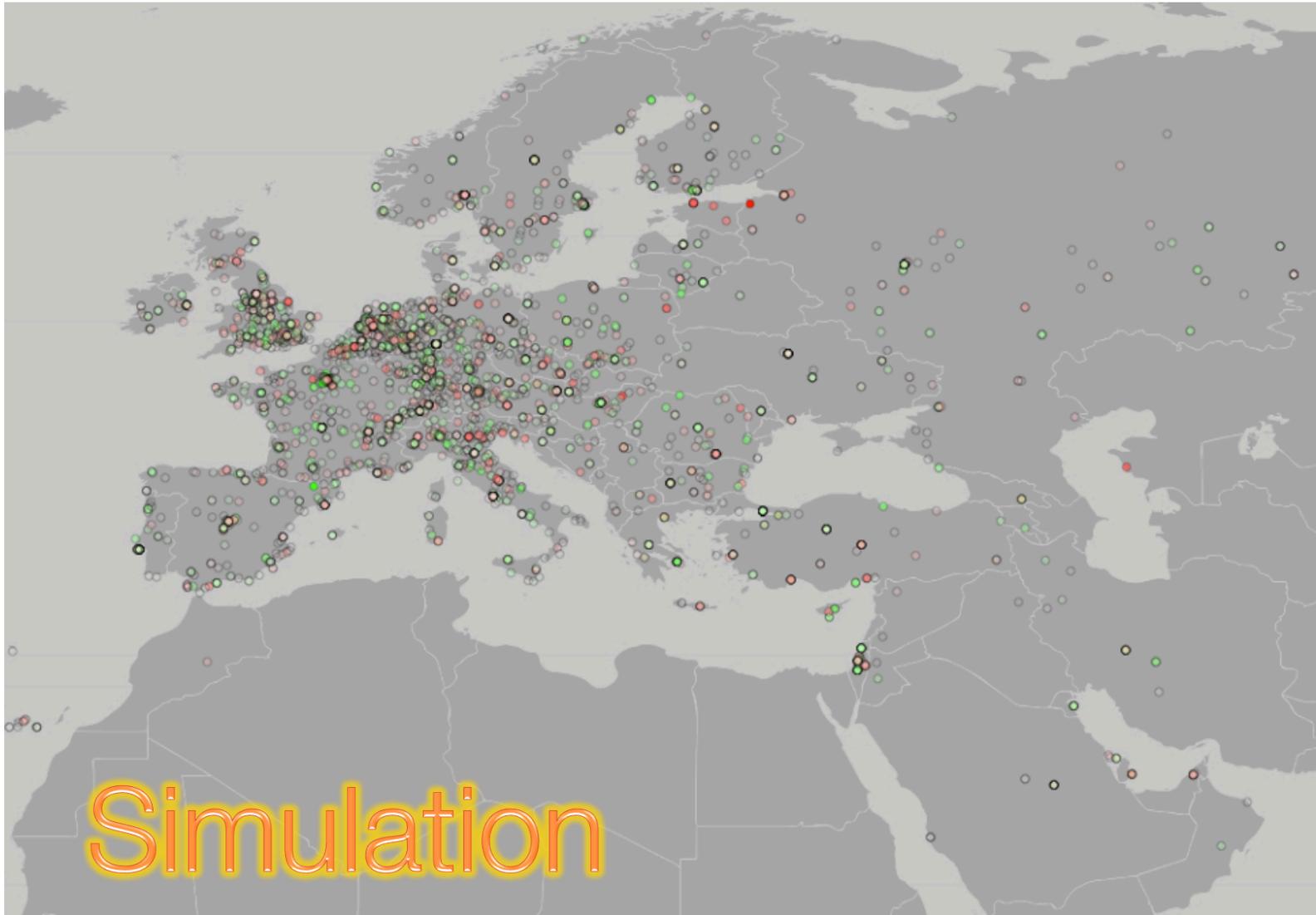
# Intuition: 1000 Probes

---



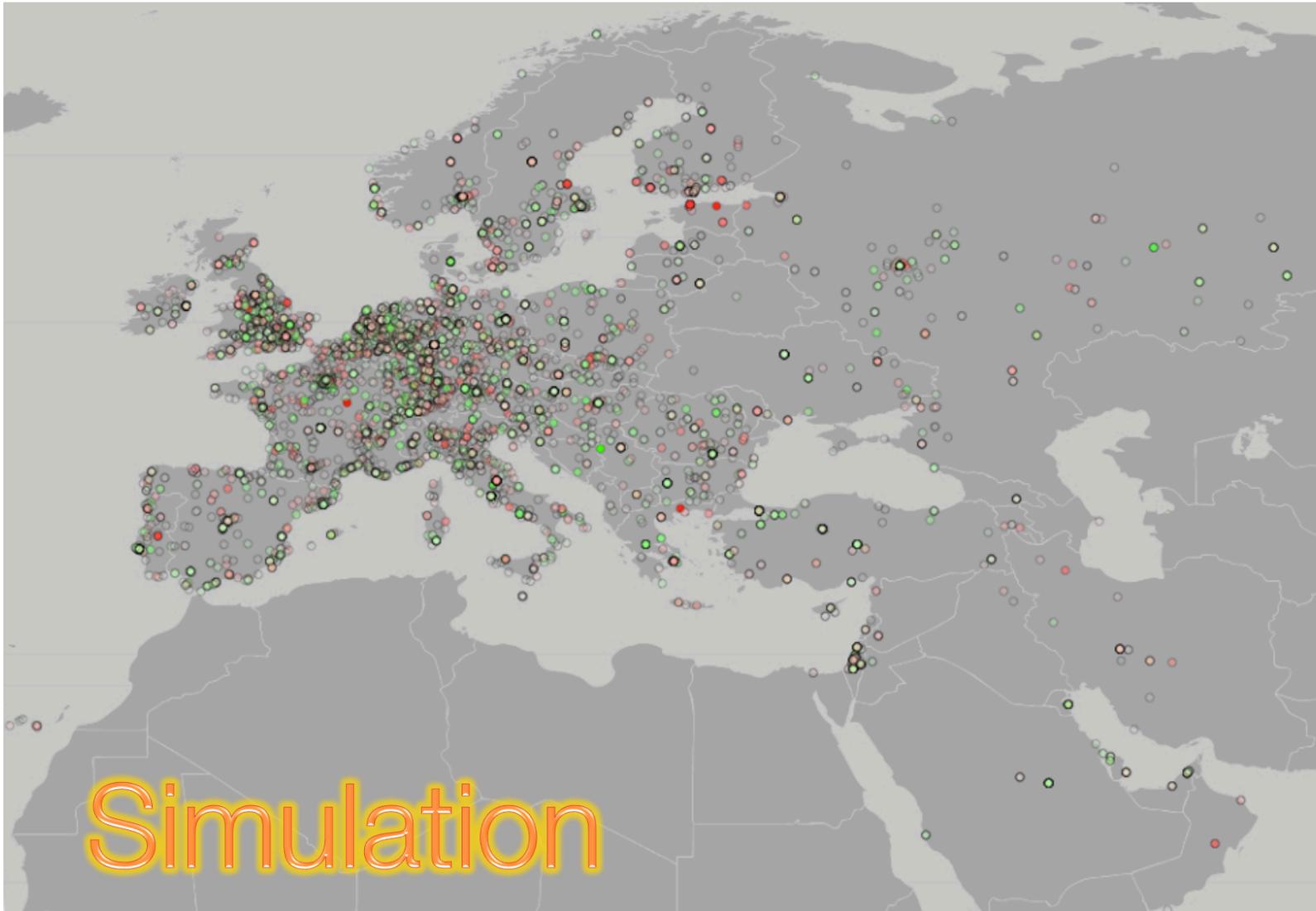
# Intuition: 5000 Probes

---



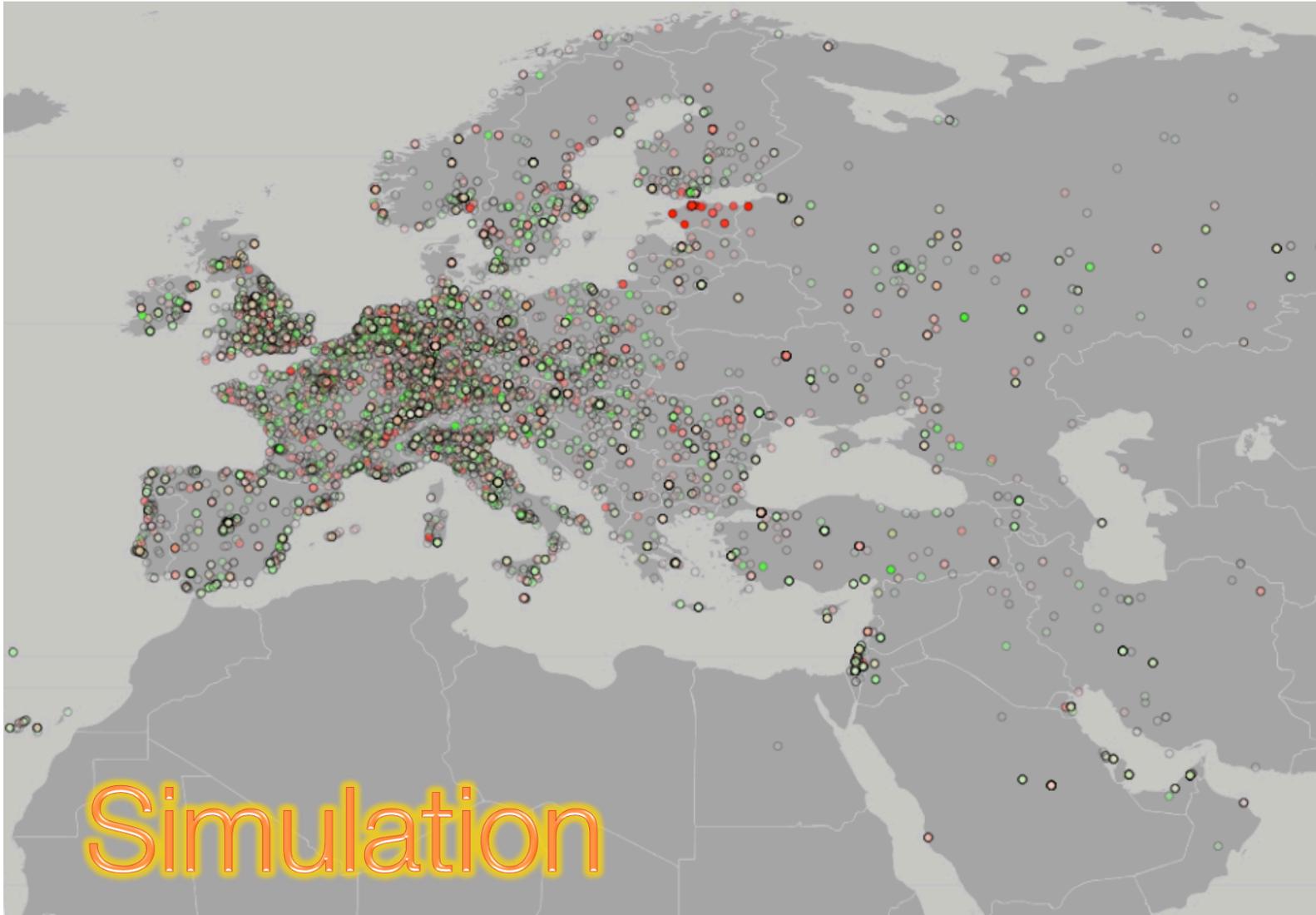
# Intuition: 10k Probes

---



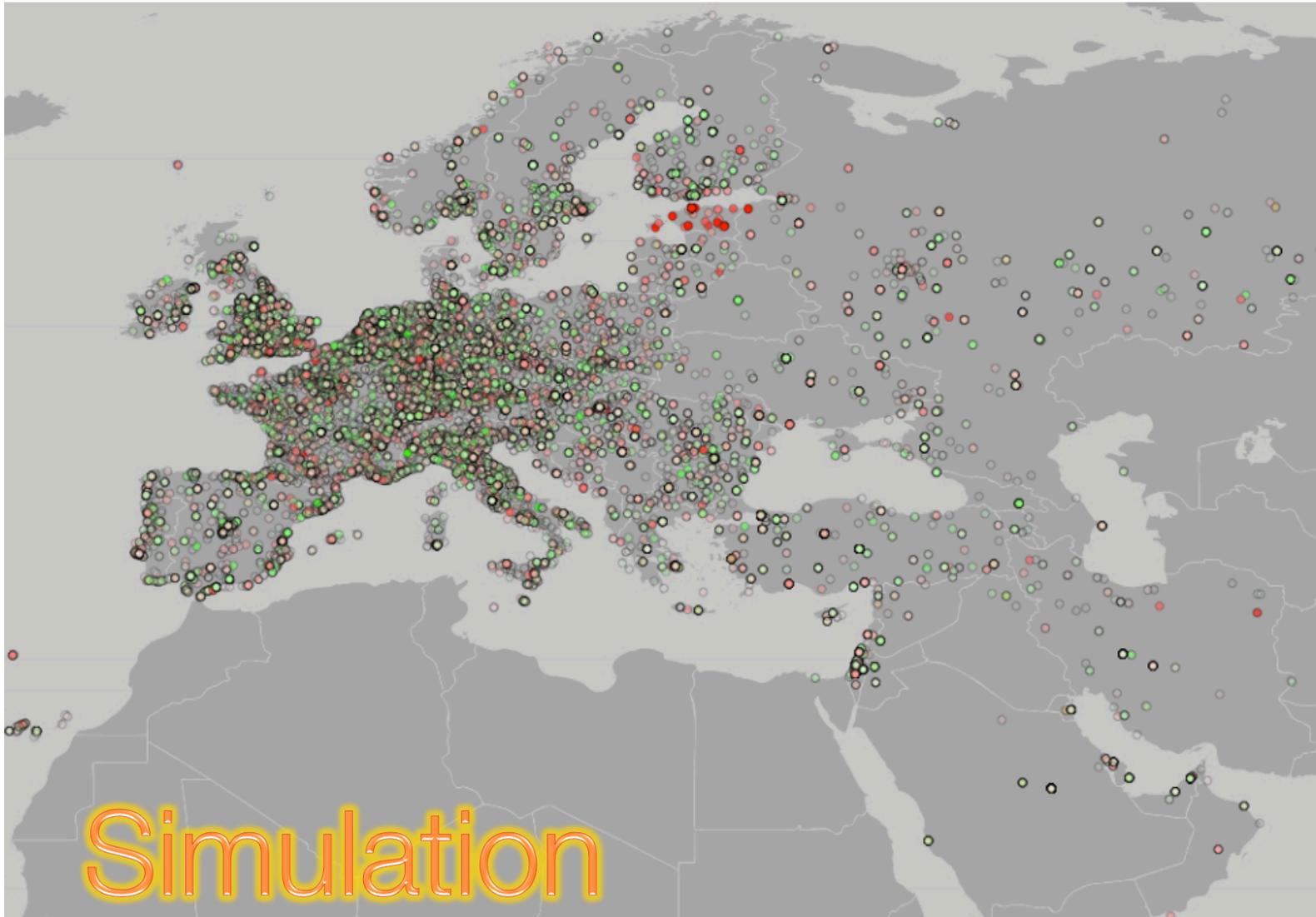
# Intuition: 20k Probes

---



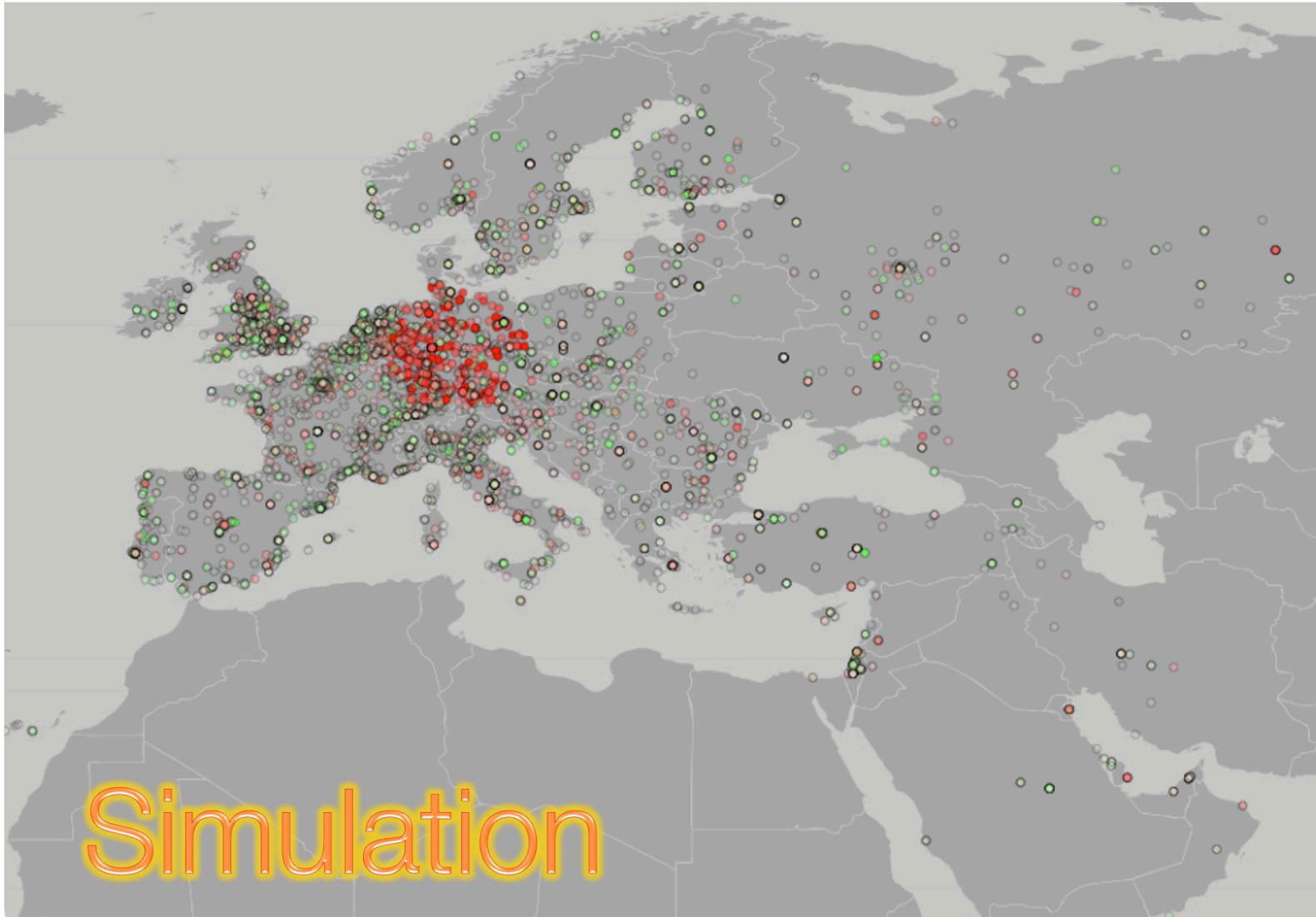
# Intuition: 50k Probes

---



# 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

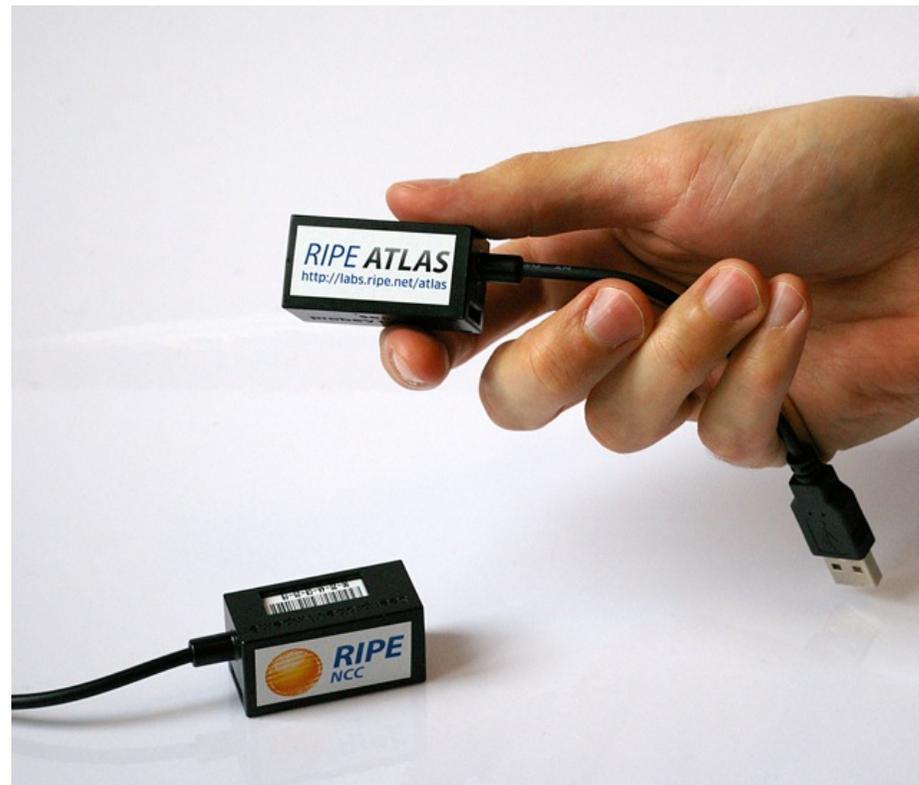
---

- 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

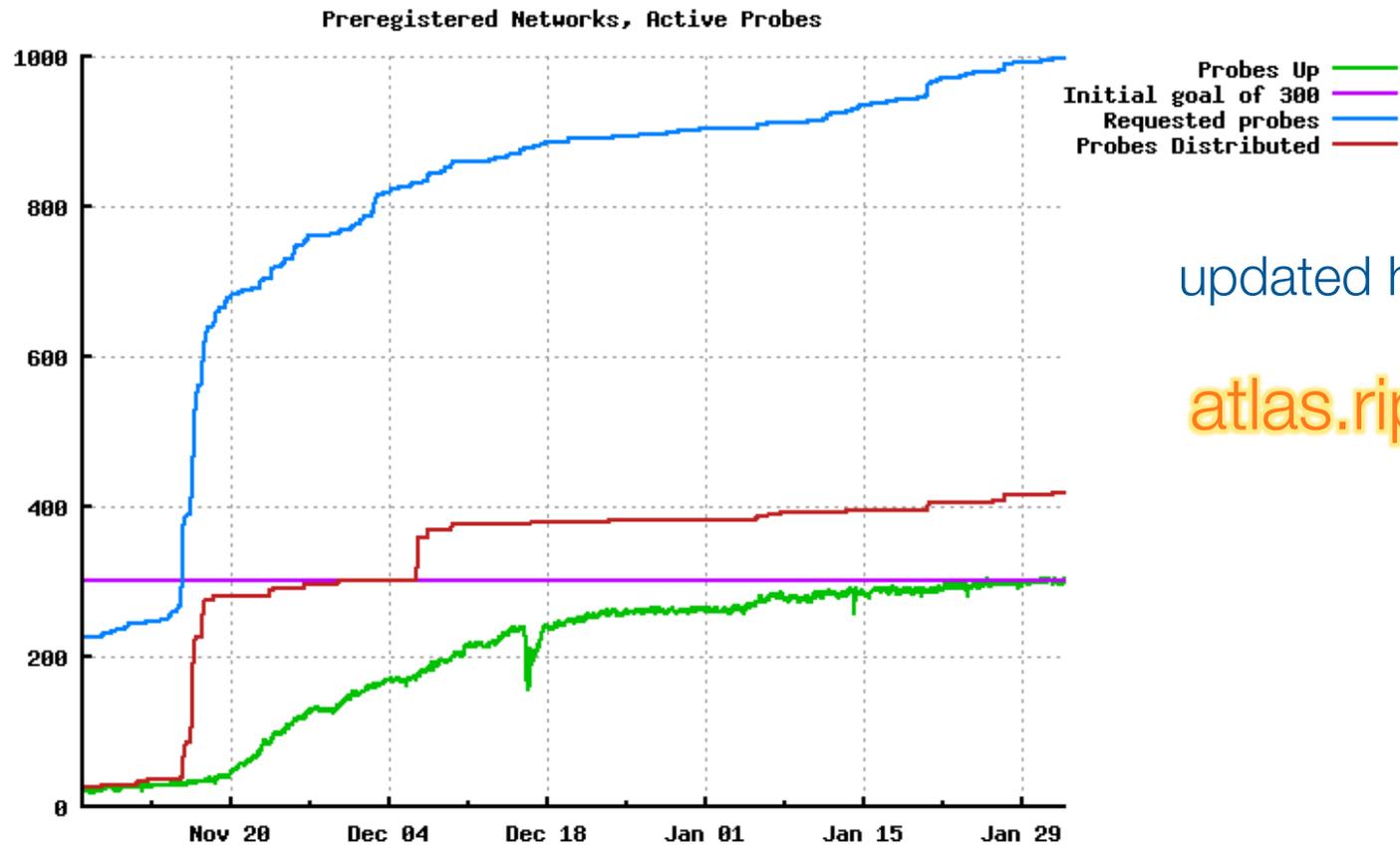
---

- Version 0
  - Ping to fixed targets (IPv4 & IPv6) ✓
  - Traceroute to 1<sup>st</sup> two upstream hops ✓
- Version 1
  - Ping & Traceroute to variable targets
  - DNS queries to variable targets
- Version 2
  - Your ideas ?
- Upgrades are automatic





# Network extent



updated hourly on

[atlas.ripe.net](https://atlas.ripe.net)

NOT a Simulation

# Hosting = Credits = Measurements

---

- We cannot be everywhere without your help

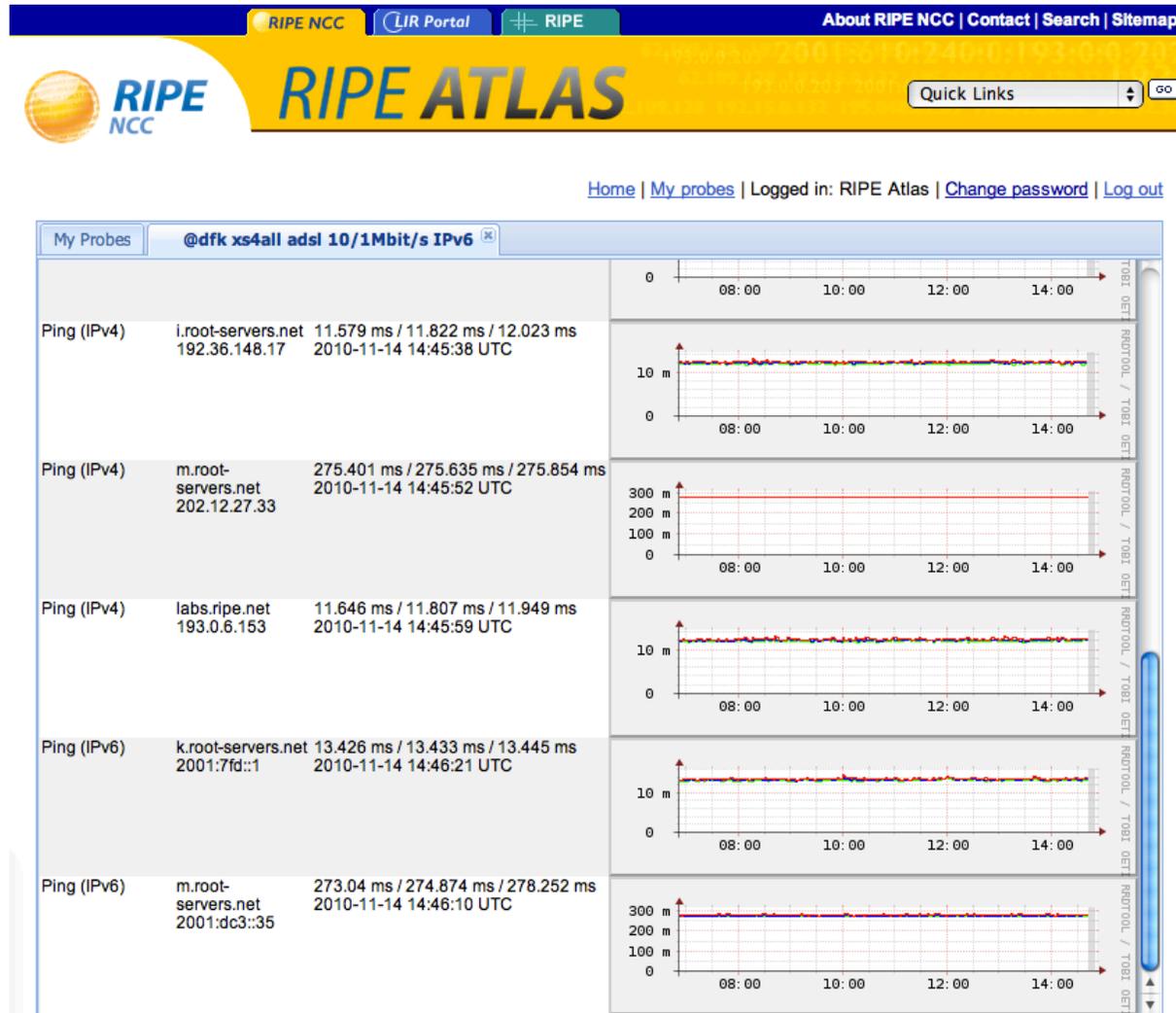
## Become a probe host!

- 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)

# Hosting = Credits = Measurements



About RIPE NCC | Service Announcements | Site Map | LIR Portal | About RIPE | Contact | Legal | Copyright Statement

# 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 <sup>SM</sup> |       | ...        |
|                                       | 64K € | 256 probes |

↓

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

# Measurement nodes – “Probes”

---

- Probe (v1 / generation 1):
  - Lantronix XPortPro
  - Very low power usage
  - 8MB RAM, 16MB flash
  - Runs uClinux
  - No FPU, no MMU
  - A reboot costs <15 seconds
  - An SSH connection costs ~30 seconds
  - We can remotely update the firmware



# What's this got to do with DNS?

---

- We're already doing built-in RTT measurements to some DNS root servers, on IPv4 and IPv6
- We plan further DNS checks in next versions
  - Reachability (RTT) to specified DNS servers
  - Possibly TCP/UDP checks
  - Anycast instance checks
- We're open to suggestions
  - What kind of DNS related checks would *you* do if you had many vantage points at your disposal?

Questions?

[atlas.ripe.net](https://atlas.ripe.net)

