

# RIPE Atlas

A “Real Big” Measurement Network

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# Introduction

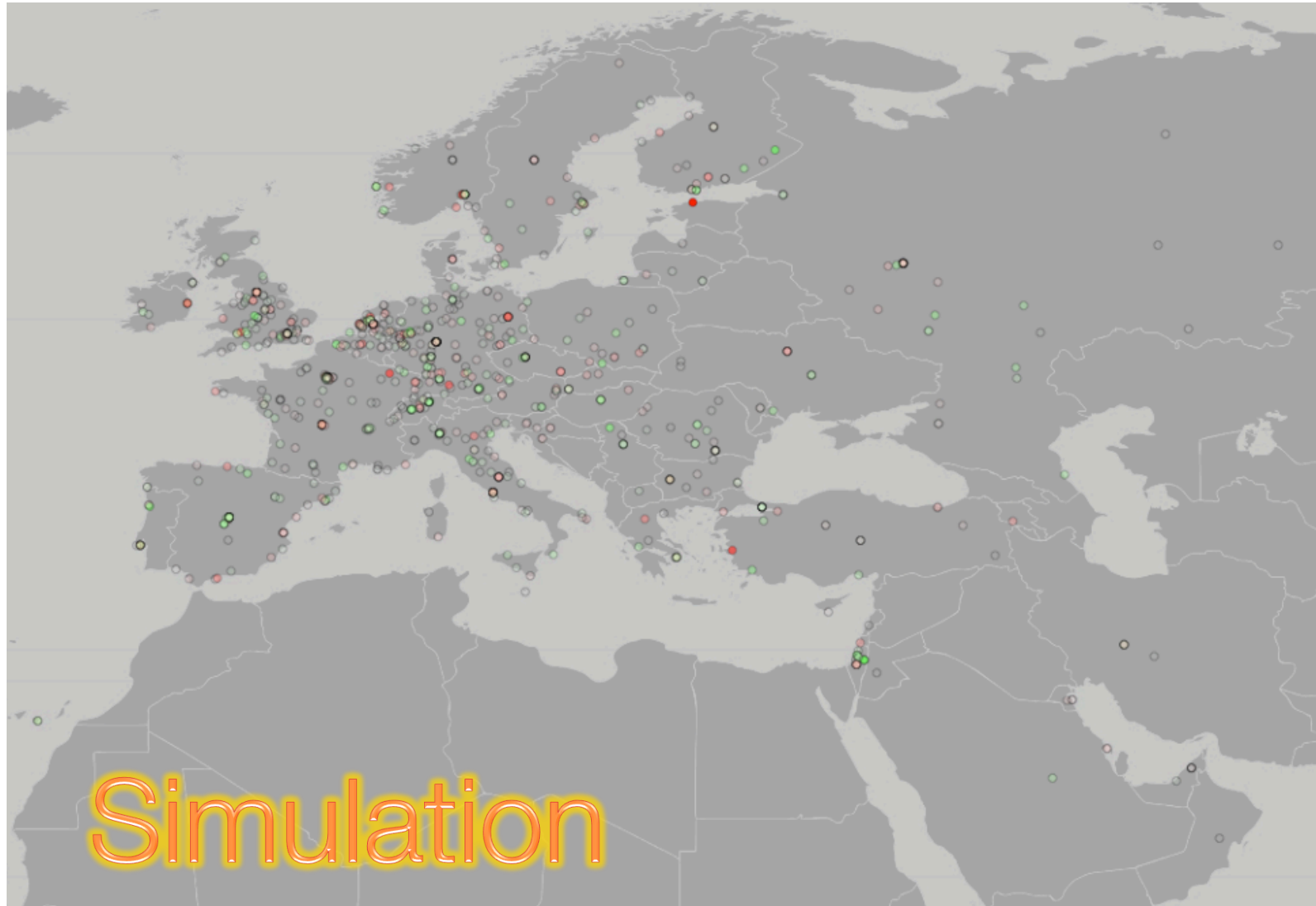
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## RIPE Atlas:

- 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

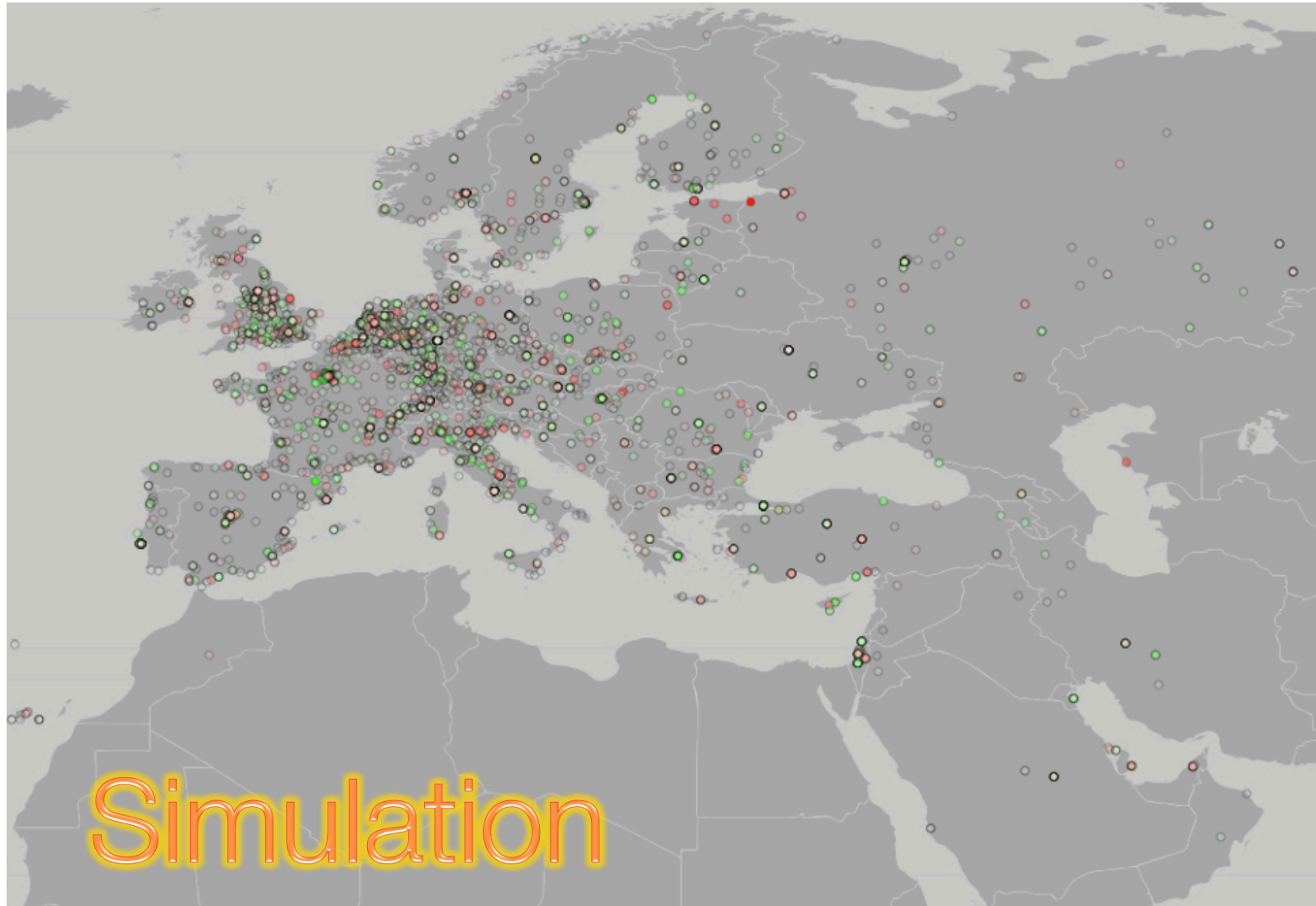
# Intuition: 1000 Probes

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# Intuition: 5000 Probes

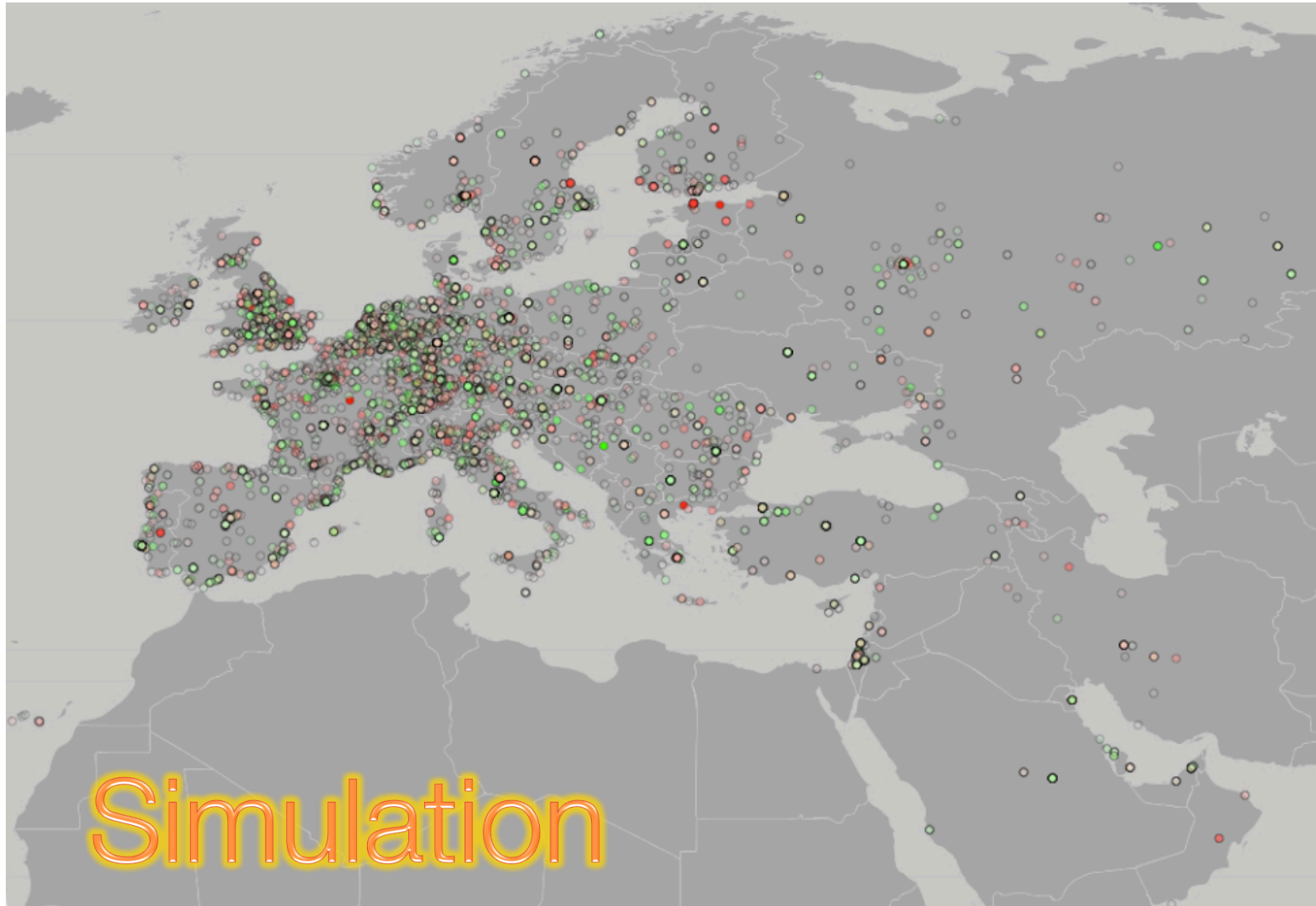
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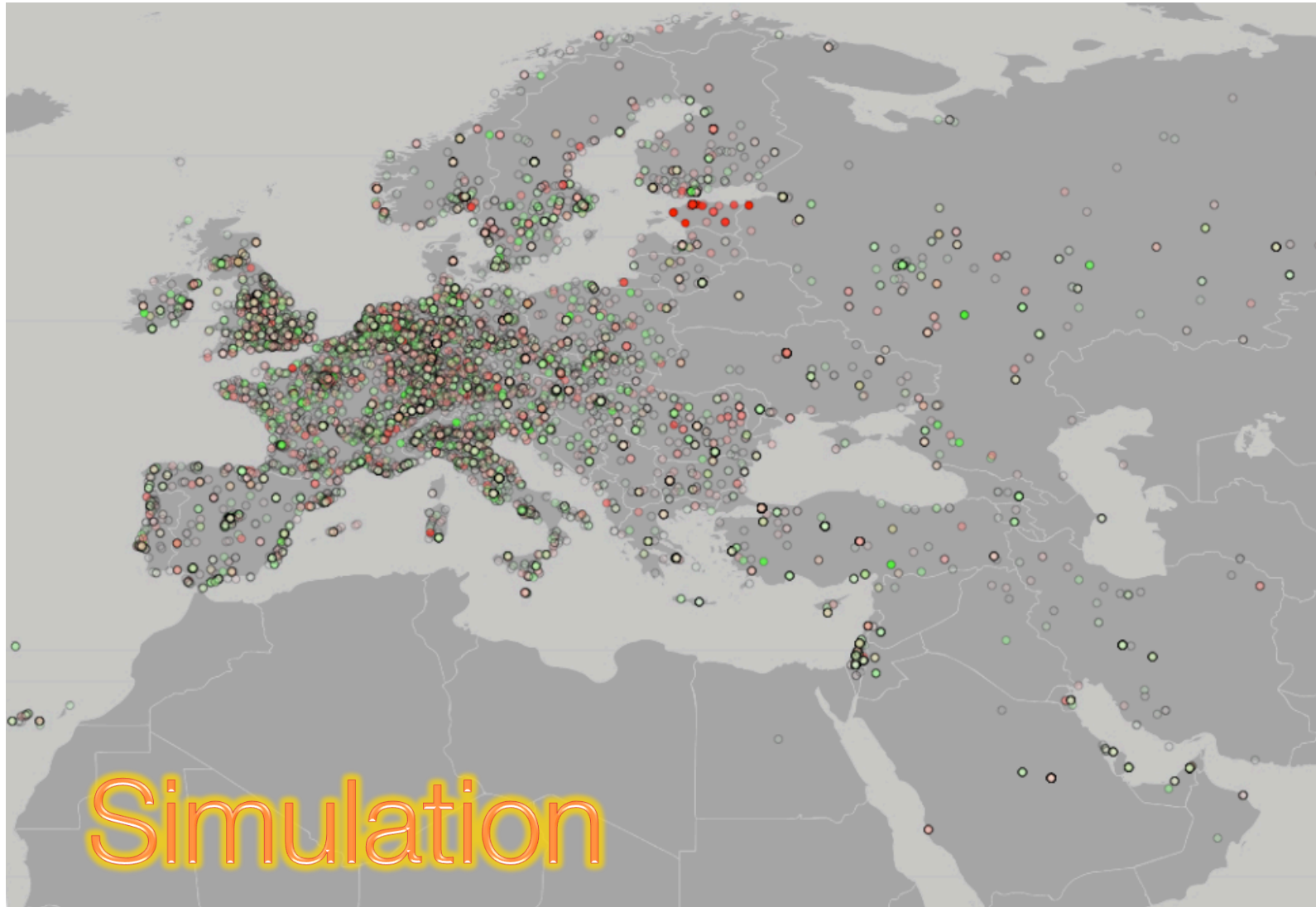
# Intuition: 10k Probes

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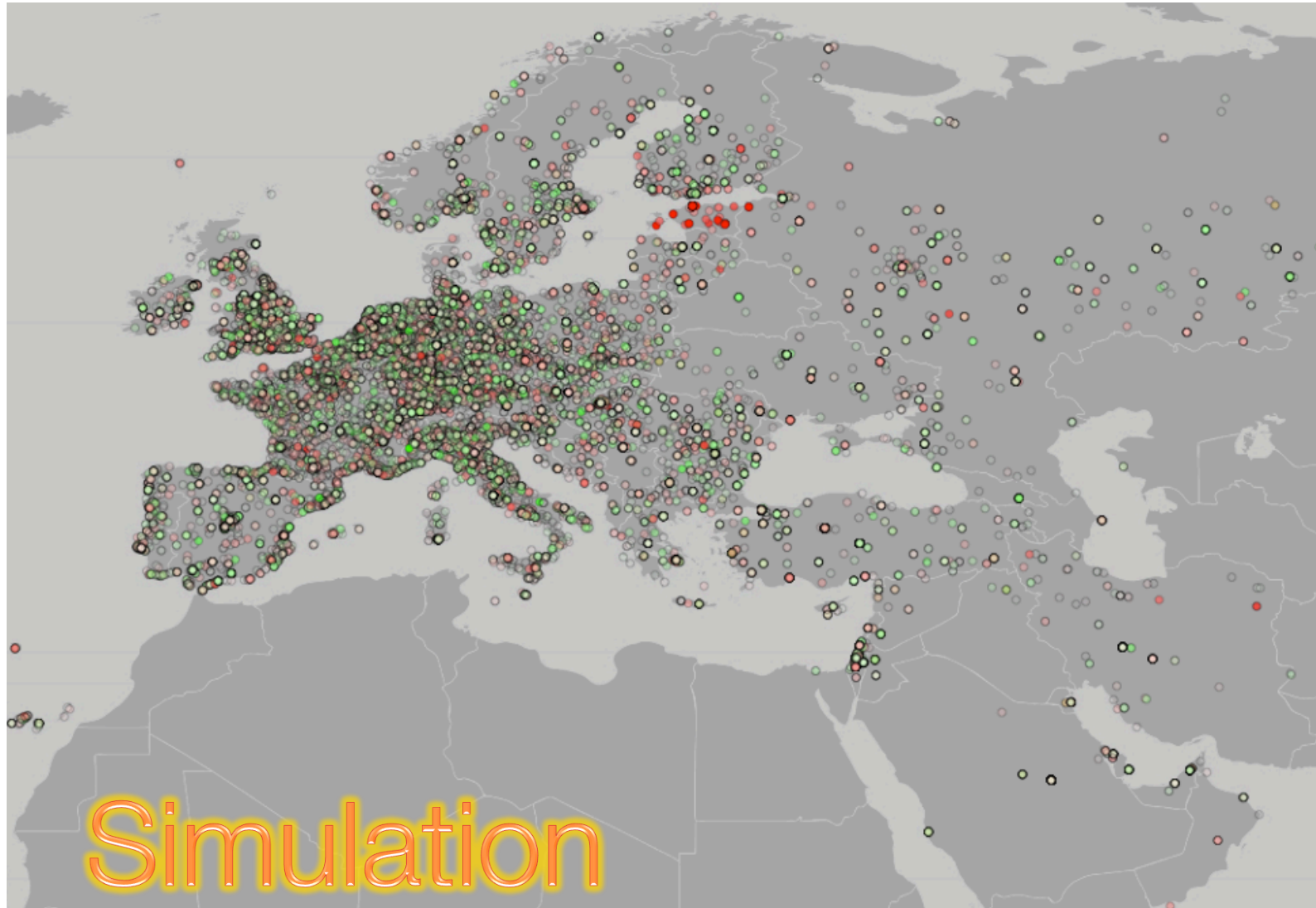
# Intuition: 20k Probes

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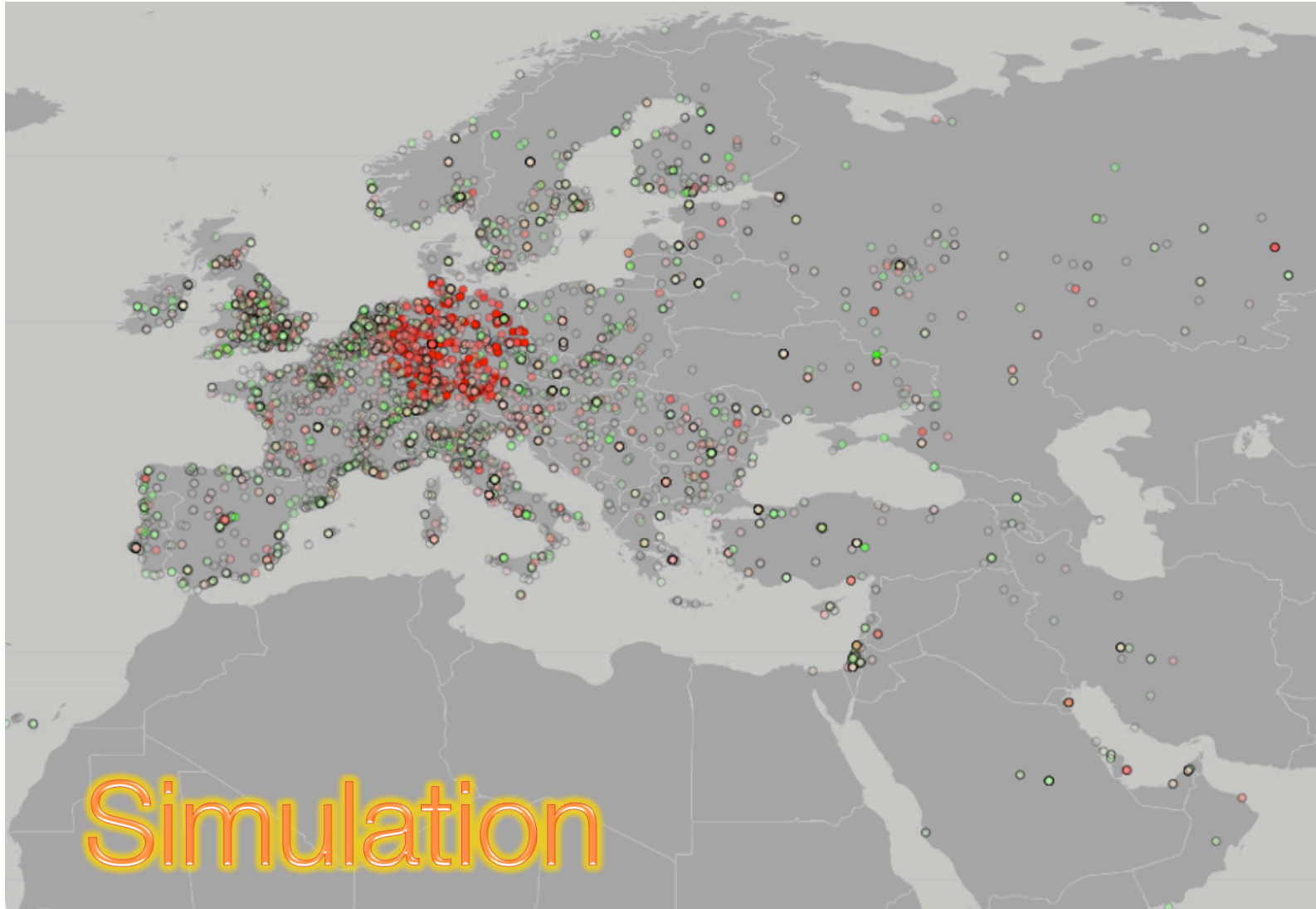
# Intuition: 50k Probes

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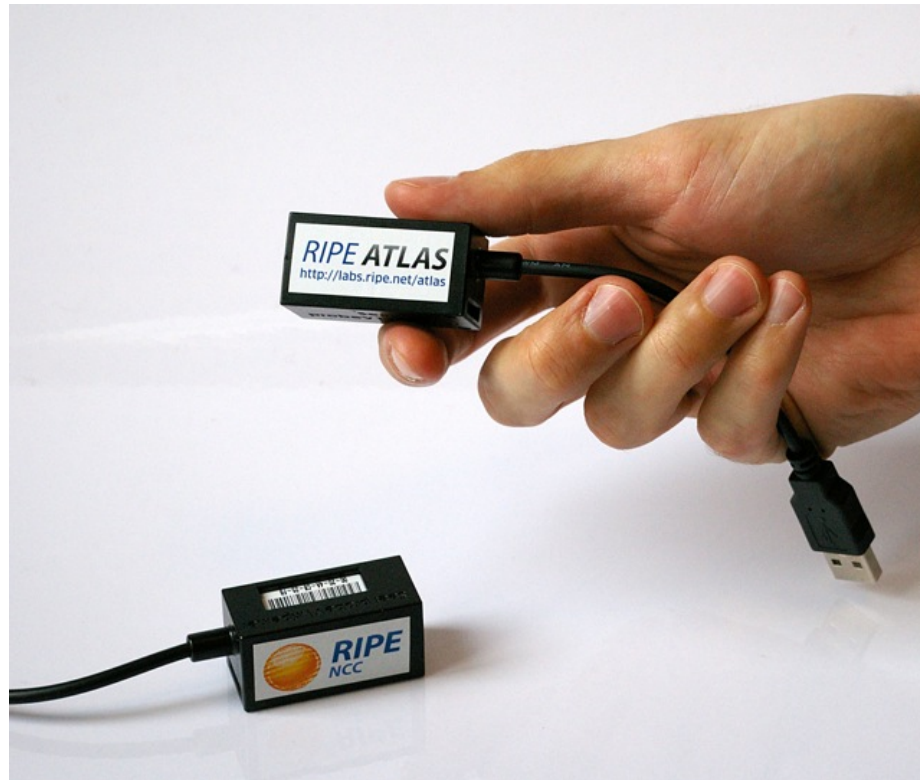
- Individual Benefits
  - Less expensive than rolling your own
  - More vantage points available
  - More data available
- Community Benefits
  - Unprecedented situational awareness
  - Wealth of data, ...



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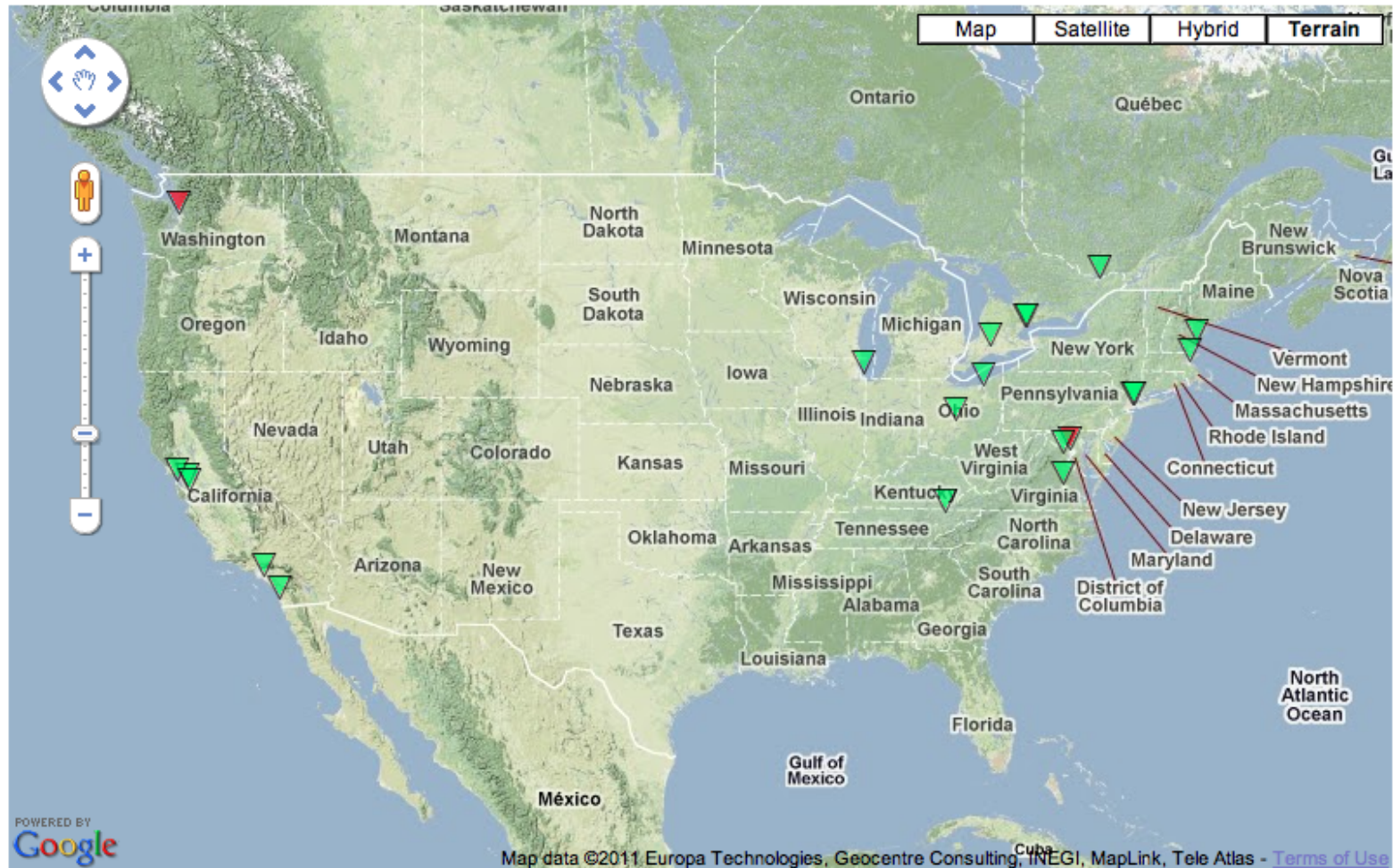
- Version 0
  - Ping to fixed targets (IPv4 & IPv6) ✓
  - Traceroute to 1<sup>st</sup> two upstream hops ✓
- Version 1
  - Ping & Traceroute to variable targets
  - DNS queries to variable targets
- Version 2
  - Your ideas ?
- Upgrades are automatic

# Network extent



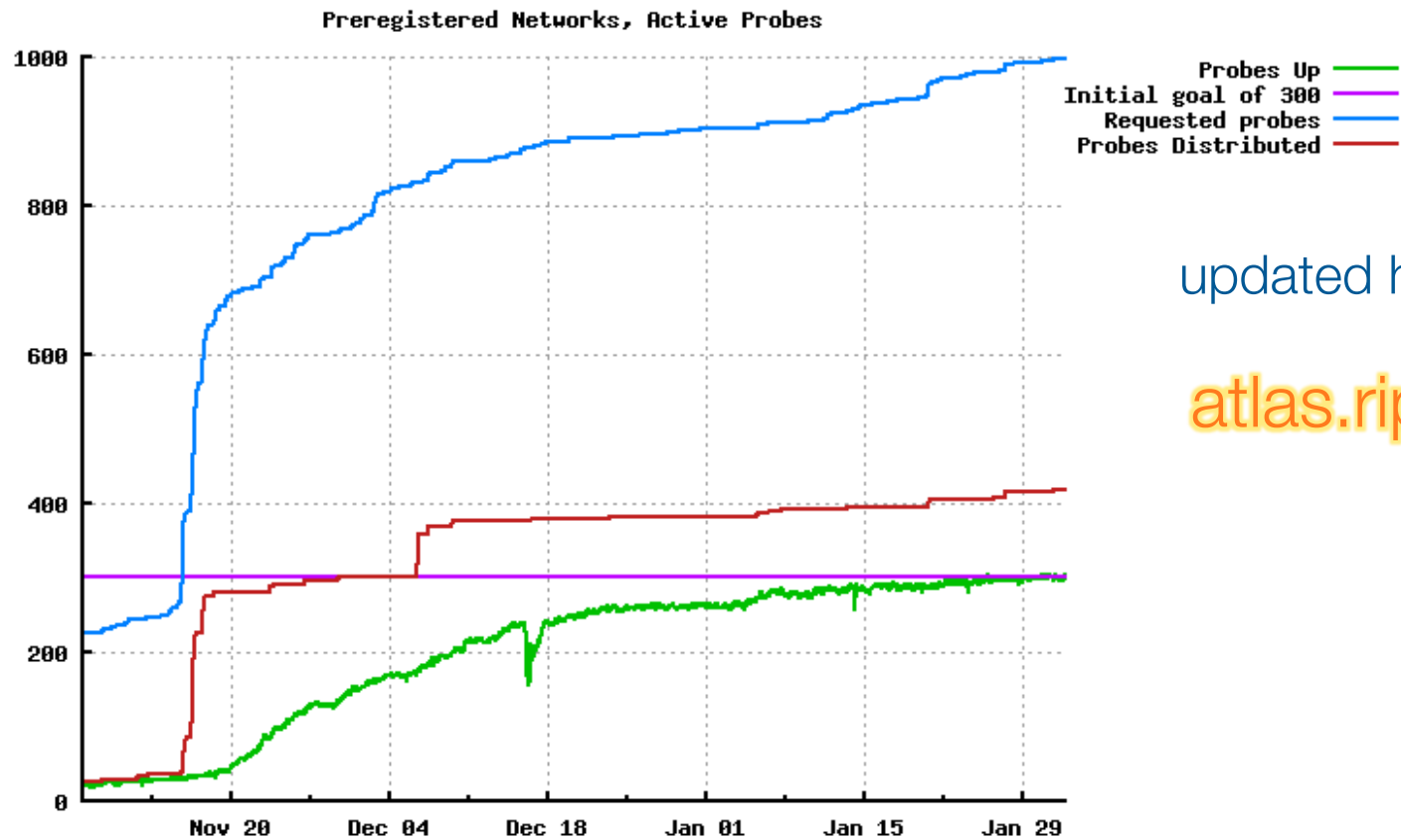
NOT a Simulation

# Network extent



NOT a Simulation

# Network extent



updated hourly on

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NOT a Simulation



# Hosting = Credits = Measurements

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- We cannot be everywhere without your help

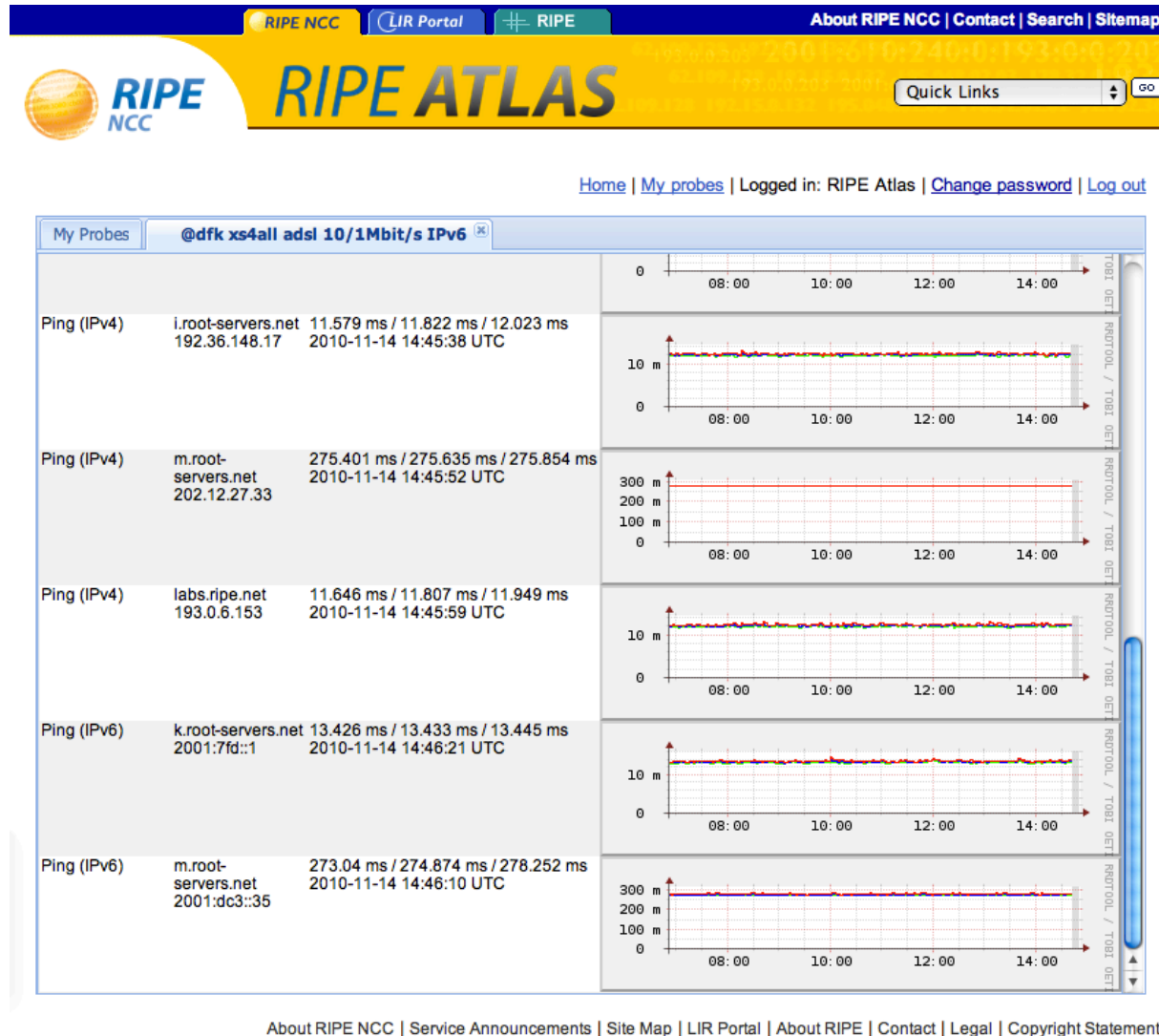
## Become a probe host!

- 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** (Q2/11)

# Hosting = Credits = Measurements



NOT a Simulation

# Sponsorship = Credits = Measurements

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



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

# 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
  - 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?

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- 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?

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