Network Monitoring Using RIPE Atlas

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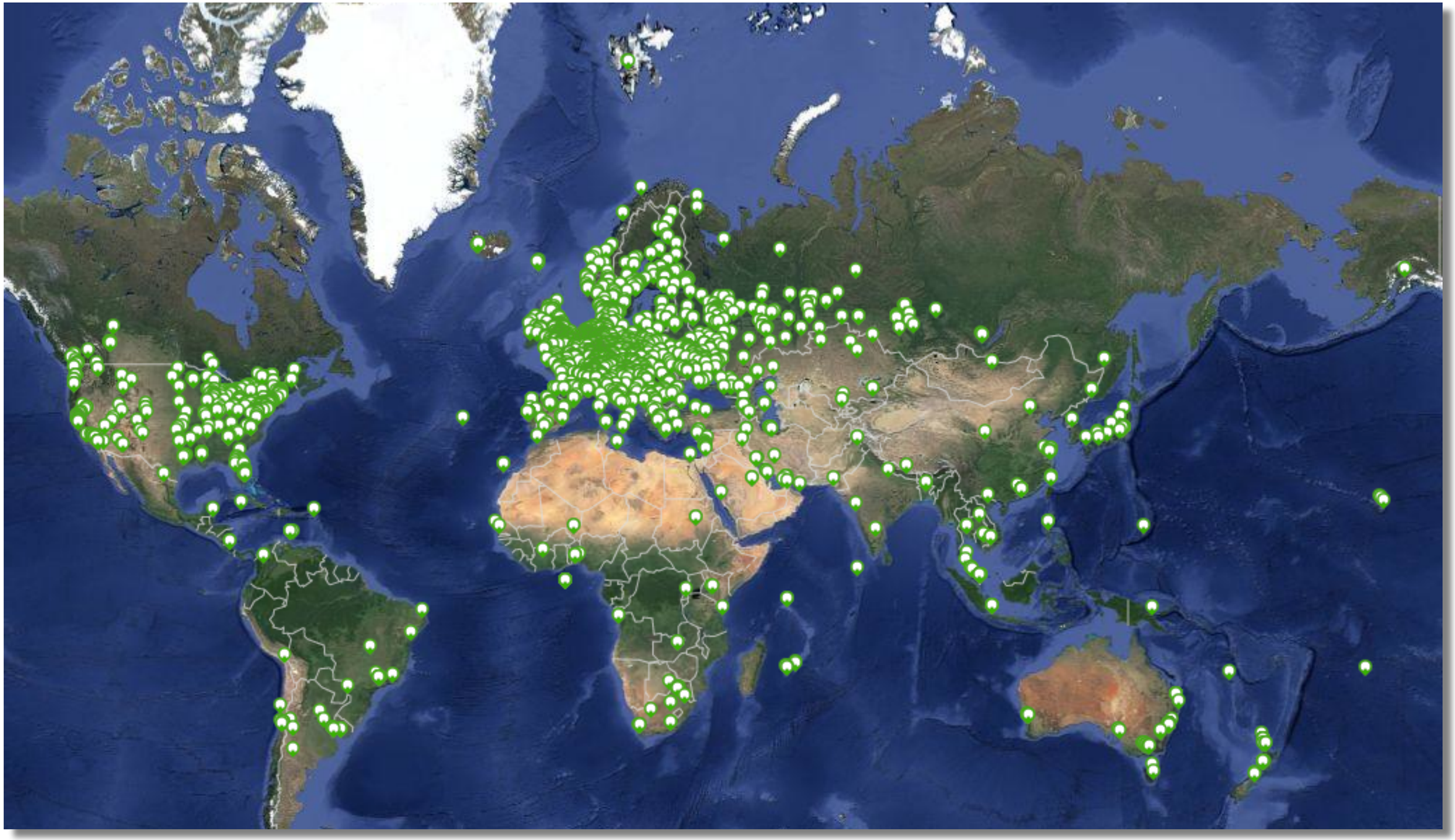
https://atlas.ripe.net



RIPE NCC

Network Monitoring

- Network operators use tools for monitoring health of networks
  - Nagios & Icinga
- Tools can receive input from RIPE Atlas, via API
- Benefits:
  - Doing pings from 1,000 out of 5,000+ probes around the world
  - Looking at your network from the outside
  - Plug into your existing practices

Integration with Monitoring Systems

- Three easy steps:

1. Create a RIPE Atlas ping measurement

2. Go to “Status Checks” URL

3. Add your alerts in Icinga or Nagios

1. How to Schedule a Measurement

- General case - applicable for ping, too!
- Log in to atlas.ripe.net
- Go to “My Atlas” and “Measurements”
- Choose “New Measurement” or “One-off”
  - Most measurements are periodic & last a long time
  - Choose type, target, frequency, # of probes, region...
  - You will spend credits (next slides)
- More details: https://atlas.ripe.net/doc/udm
- Or use the API:
  - https://atlas.ripe.net/docs/measurement-creation-api/

1.5 Credit System

- By hosting a probe, you earn credits
- To perform measurements, you spend credits
  - pings costs 10 credits, traceroutes costs 20, etc.
- Credit system introduced to ensure fairness and protect system from overload
- Extra credits can be earned by:
  - Being a RIPE NCC member
  - Hosting a RIPE Atlas anchor
  - Sponsoring multiple probes
- More details: https://atlas.ripe.net/doc/credits

2. Creating Status Checks

- Status Checks work via RIPE Atlas' RESTful API
  - https://atlas.ripe.net/api/v1/status-checks/MEASUREMENT_ID/

- You define the alert parameters, for example:
  - Threshold for % of probes that successfully received a reply
  - How many most recent measurements to base the status on
  - What the maximum acceptable packet loss is

- Documentation
  - https://atlas.ripe.net/docs/status-checks/

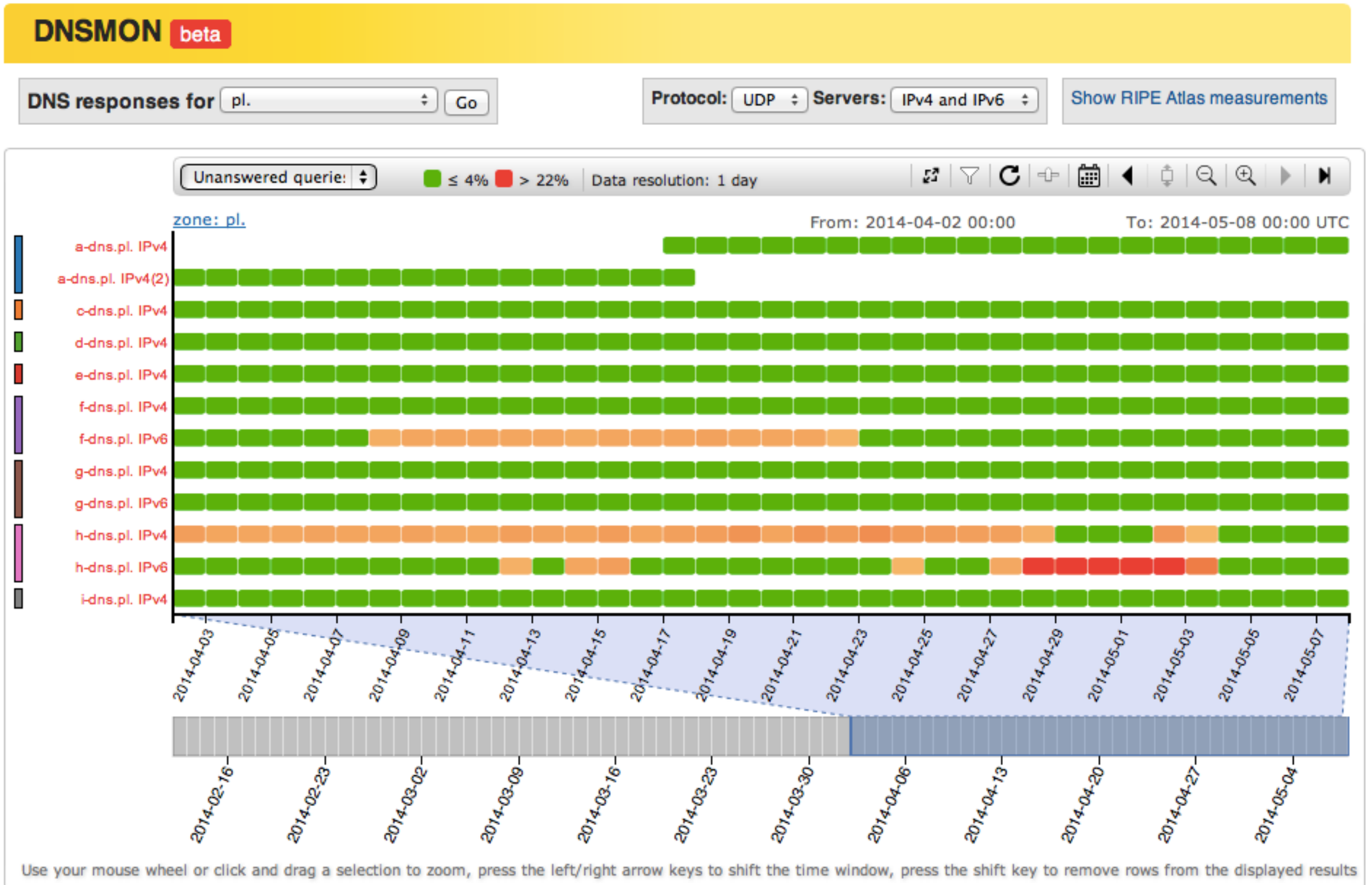
3. Icinga Examples

- Community of operators contributed configuration code!
  - Making use of the built-in “check_http” plugin

- GitHub repo examples
  - https://github.com/RIPE-Atlas-Community/ripe-atlas-community-contrib/blob/master/scripts_for_nagios_icinga_alerts

- Post on Icinga blog
  - https://www.icinga.org/2014/03/05/monitoring-ripe-atlas-status-with-icinga-2/

Monitoring for DNS TLD Operators



Monitoring DNS

- "Old" DNSMON service migrated to RIPE Atlas
- RIPE Atlas anchors used as vantage points
  - Replacing of TTM boxes
- Currently monitoring small selection of zones
  - root name servers
  - 30 ccTLDs and few gTLDs
- New zones will be added next year
- https://atlas.ripe.net/dnsmon
- More details: https://labs.ripe.net/Members/fatemah_mafi/an-updated-dns-monitoring-service

RIPE Atlas Update

RIPE Atlas in Numbers: May 2014

- 5,800+ probes connected
- 8,000+ active users this year
- 5,000+ user-defined measurements daily
  - Four types of user-defined measurements available to probe hosts and RIPE NCC members: ping, traceroute, DNS, SSL
- Goal by end of 2014:
  - 10,000 connected probes

Country	Probes
United States	876
Germany	846
Russian Federation	726
United Kingdom	600
Netherlands	475
France	418
Ukraine	369
Belgium	194
Italy	179
Czech Republic	169

Measurement Devices

- v1 & v2: Lantronix XPort Pro

- v3: TP-Link TL-MR3020 powered from USB port
  - Does not work as a wireless router
  - Same functionality as the old probe

- RIPE Atlas anchor: Soekris net6501-70

RIPE Atlas Anchors

- Anchors: well-known targets and powerful probes
  - Regional baseline & “future history”
- Anchoring measurements
  - Measurements between anchors
  - 200 probes targeting each anchor with measurements
  - Each probe measures 4-5 anchors
- Vantage points for new DNSMON service
- 58+ RIPE Atlas anchors
  - Goal for end of 2014: 100 anchors worldwide

Success Stories

- Investigating problems of slow servers:
  - http://engineering.freeagent.com/2014/01/24/atlas-probes/
- Measuring packet loss to determine congested networks
- Selective blackholing (examples based on RIPE Atlas)
  - https://ripe68.ripe.net/presentations/176-RIPE68_JSnijders_DDoS_Damage_Control.pdf
- Anycast analysis:
  - https://labs.ripe.net/Members/stephane_bortzmeyer/the-many-instances-of-the-l-root-name-server

Plans For The Future

- Tagging probes and measurements as "My Favourites" for easy viewing and selection

- More IPv6-related features

- Increasing probe distribution via RIR cooperation

- Tell us your feature requests:
  - http://roadmap.ripe.net/ripe-atlas/

Get Involved in the RIPE Atlas Community

RIPE NCC

The RIPE Atlas Community GitHub

- If you are a programmer, contribute your code:
  - https://github.com/RIPE-Atlas-Community/
- If you are researcher, look & contribute here:
  - https://github.com/RIPE-Atlas-Community/RIPE-Atlas-data-analysis
- Measurements source code available:
  - https://labs.ripe.net/Members/philip_homburg/ripe-atlas-measurements-source-code

Become an Ambassador

- If you want to...
  - Help distribute probes
  - Give workshops, tutorials and promote RIPE Atlas
- To become an ambassador:
  - https://atlas.ripe.net/get-involved/become-a-ripe-atlas-ambassador/
  - email mcb@ripe.net
- Or become a sponsor:
  - https://atlas.ripe.net/get-involved/become-a-sponsor/

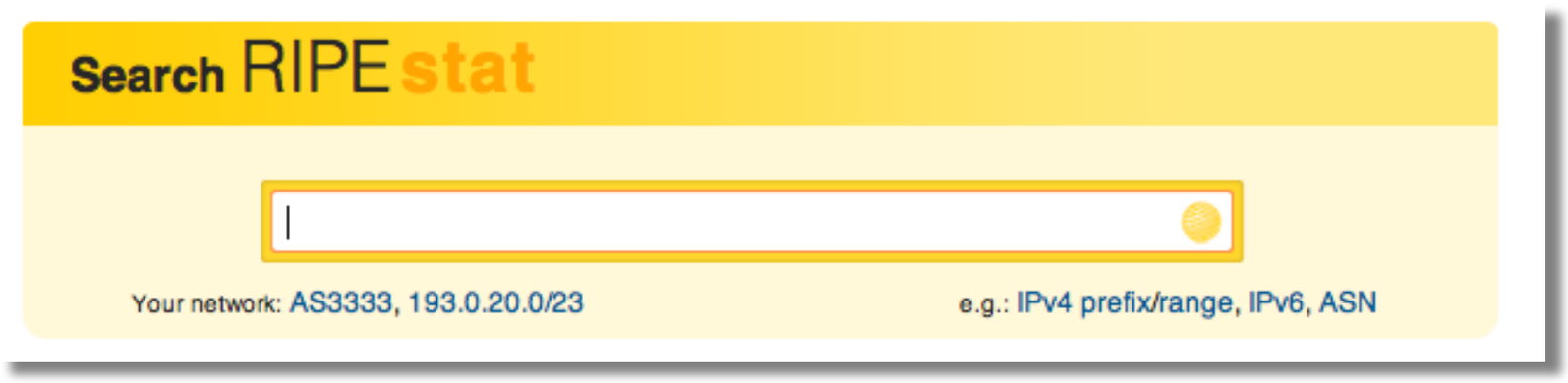
Contact RIPE Atlas

- RIPE Atlas website: https://atlas.ripe.net
- Mailing list for active users: ripe-atlas@ripe.net
- Articles on RIPE Labs: https://labs.ripe.net/atlas
- Questions: atlas@ripe.net
- Twitter: @RIPE_Atlas and #RIPEAtlas

RIPEstat Use Cases

Introduction : https://stat.ripe.net

- RIPEstat is a “one-stop shop” for information about Internet number resources
  - From the RIPE NCC: registration data and RIPE Database, routing (RIS), reverse DNS, RIPE Atlas measurements
  - External sources: RIRs, routing registries (IRR), geolocation, blacklists, M-Lab network activity
- Search by: IPv4, IPv6 address/prefix; AS Number; hostname; country; keywords (new)



Assisted Registry Checks

- RIPEstat is used extensively for Assisted Registry Checks with LIRs

- RIPE NCC's Registration Services are proactively identifying routing and reverse DNS inconsistencies

- https://labs.ripe.net/Members/matt_parker/assisted-registry-check-first-results

Researching BGP Leaks in Indonesia

- In April 2014, Indosat (AS4761) announced prefixes which were not allocated to them
- Many ASNs were affected and temporarily “disappeared”

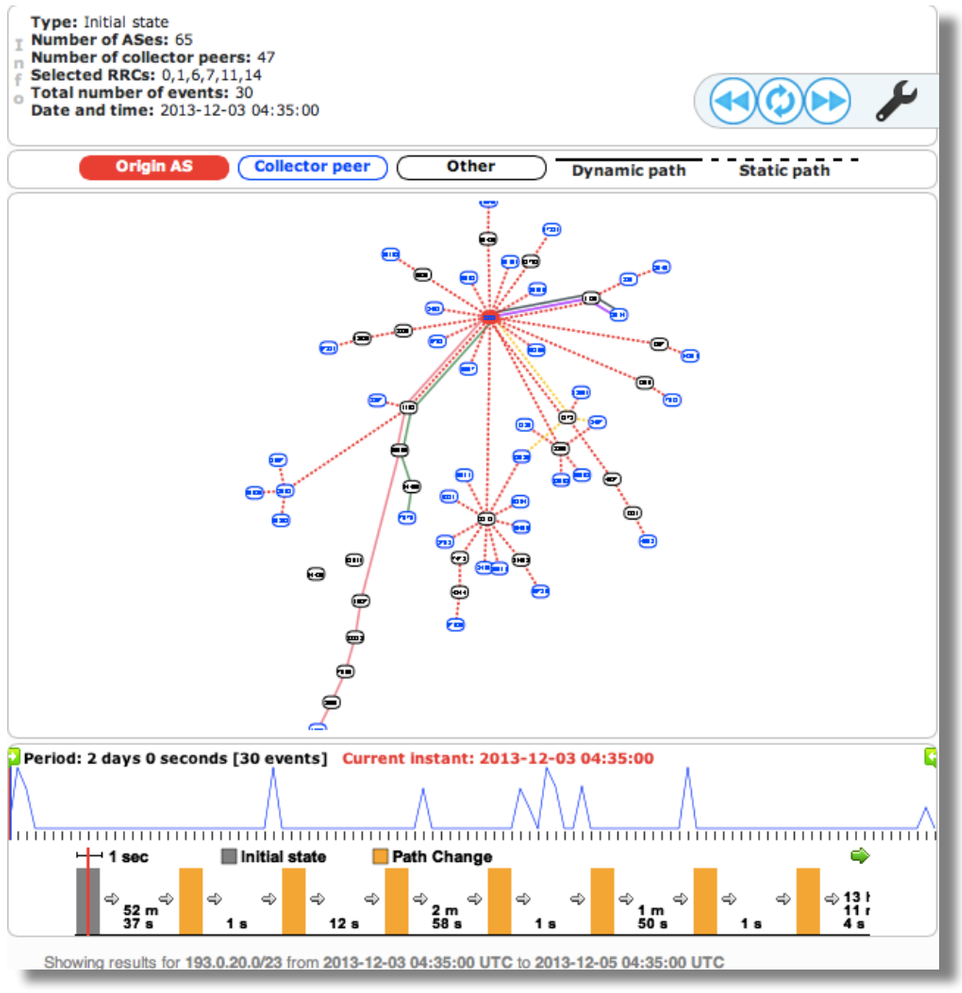
- https://labs.ripe.net/Members/wilhelm/bgp-leaks-in-indonesia

Let's BGPlay!

- Indonesian incident visible in BGPlay

- The most famous incident: YouTube hijacked by Pakistan Telecom:

http://www.youtube.com/watch?v=IzLPKuAOe50



- BGPlay is back as part of RIPEstat

Looking up RIPE Atlas Activity

RIPEstat — Internet Measurements and Analysis

https stat.ripe.net/widget/atlas-targets#w.resource=8.8.8.8

You are here: Home > Data & Tools > RIPEstat > atlas-targets

RIPE Atlas Measurement Targets (8.8.8.8)

8.8.8.8

Show 10 **targets/page** **Search:**

Measurement ID	Stopped	Type	Target IP	Target Hostname
1040720	ongoing	ping	8.8.8.8	google-public-dns-a.google.com
1006491	ongoing	traceroute	8.8.8.8	not specified
1006192	ongoing	ping	8.8.8.8	not specified
1004827	ongoing	traceroute	8.8.8.8	not specified
1002630	ongoing	ping	8.8.8.8	not specified
1478085	2014-02-24 13:41 UTC	dns	8.8.8.5	not specified

Plans for the Future and Feedback

- Improve back-end stability and performance to enable resilience of current services and scale for future growth
- Increase data quality and consistency
  - Plans to renew the RIS collection process
  - Increase freshness of collected routing data (“live”)

- Tell us your feature requests:
  - http://roadmap.ripe.net/ripe-stat/
  - stat@ripe.net
  - Twitter: @RIPE NCC / #ripestat

Questions?