



RIPE
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RIPE Atlas

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Network Startup Resource Center (NSRC)

PacNOG 15

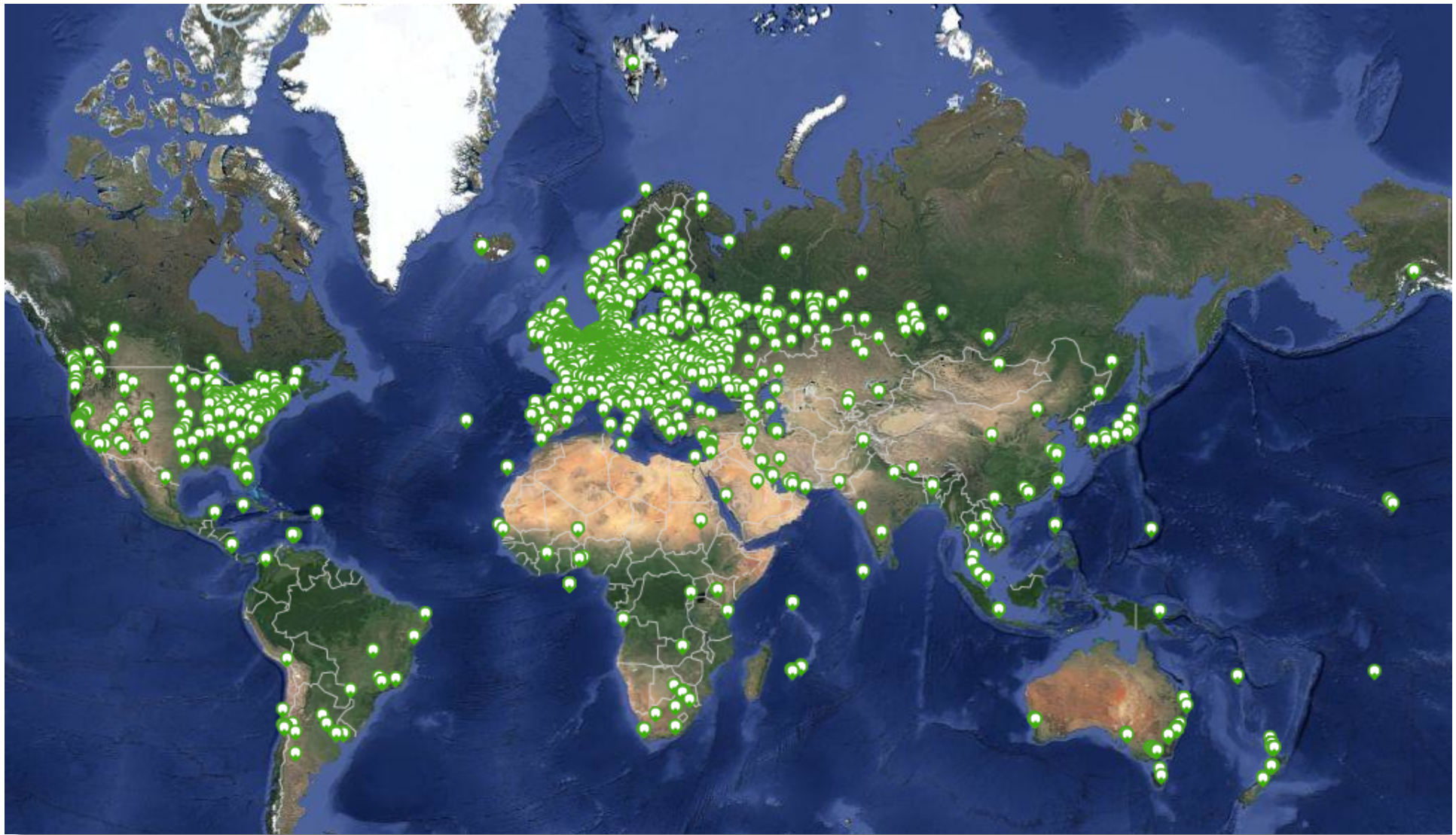
14th July 2014, Port Vila, Vanuatu



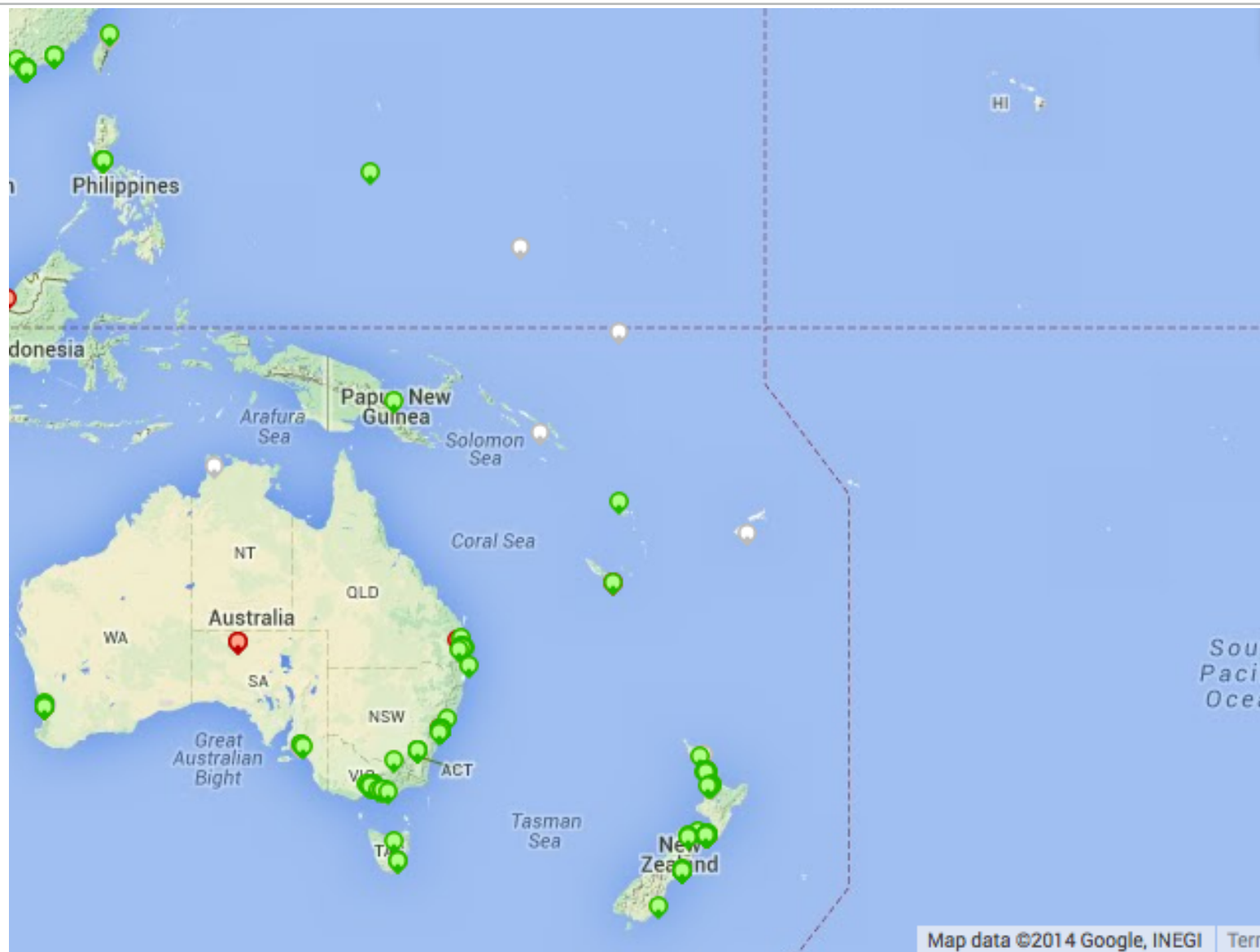
RIPE Atlas Intro



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Atlas in the Pacific



- 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



Probes Photos



RIPE Atlas in Numbers: June 2014

- 6,200+ probes connected
- 8,000+ active users this year
- 5,000+ built-in measurements daily
- 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 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

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https://atlas.ripe.net/probes/212/

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General InformationNetwork InformationResults from Built-in MeasurementsUser-defined Measurements

General Information

Edit

Id	212
MAC Address	00:20:4A:C8:25:2A
Architecture	probev1
Firmware Version	4650
Router Type	Cisco 1801
Bandwidth Limit	Not set
DNS Entry	Simple: p212.probes.atlas.ripe.net
Shared Publicly	Yes
Tags	DSLHomeNAT

Connection & Traffic

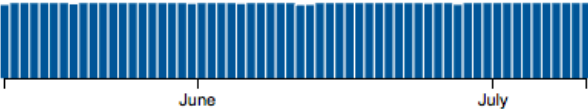
Bits/s

Packets/s



Connected Time

1 week, 6 days



Management Sharing

Edit

Only the probe host is permitted to administer this probe.

Notifications

Edit

1 week, 6 days

#212

Firmware
4650

Architecture
probev1

MAC Address
00:20:4A:C8:25:2A

Map



- 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
- 63 RIPE Atlas anchors
 - goal for 2014: 100 active anchors worldwide





Network Monitoring



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- Network operators use tools for monitoring health of networks
 - such as Nagios & Icinga
- Tools can receive input from RIPE Atlas, via API
- Benefits:
 - doing pings from 1000 out of 5000+ probes around the world
 - looking at your network from the outside
 - plug into your existing practices

- Three easy steps:
 1. Create a RIPE Atlas ping measurement
 2. Go to “status checks” URL
 3. Add your alerts in Icinga or Nagios



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- “Old” DNSMON service migrated to RIPE Atlas
- Using RIPE Atlas anchors as vantage points
 - instead of TTM boxes
- Currently monitoring small selection of zones
 - root-nameservers & 30 ccTLDs and few gTLDs
- New zones will be added next year
- On the roadmap: “domain checks”
- <https://atlas.ripe.net/dnsmon>
- https://labs.ripe.net/Members/fatemah_mafi/an-updated-dns-monitoring-service

- <https://atlas.ripe.net>
- Apply for an anchor:
<https://atlas.ripe.net/anchors/apply/>
- Mailing list for active users: ripe-atlas@ripe.net
- Roadmap: <http://roadmap.ripe.net/ripe-atlas/>
- Articles & updates on RIPE Labs:
<https://labs.ripe.net/atlas>
- Questions: atlas@ripe.net
- Twitter: @RIPE_Atlas and #RIPEAtlas



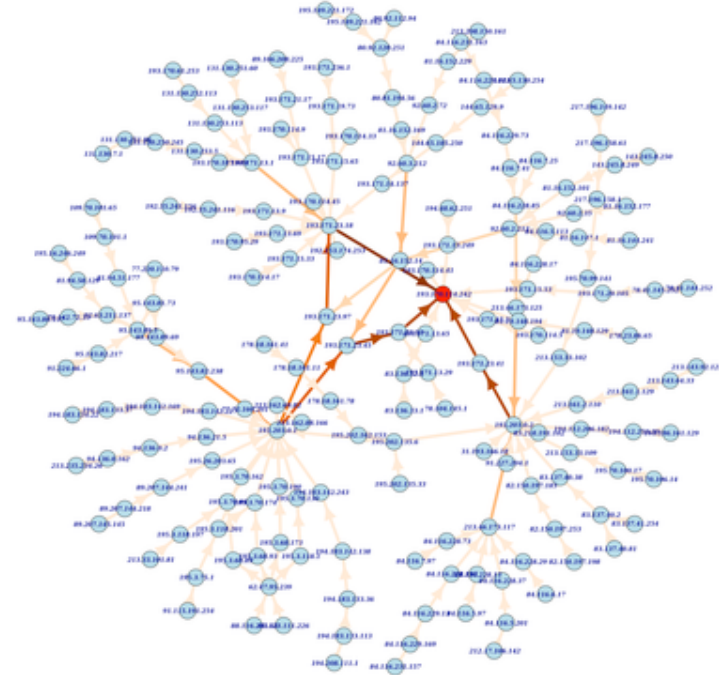
RIPE Atlas Success Stories



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Mapping an Anchor

- Exploring the potential of RIPE Atlas for mapping the packet layer topology
- Using the example of RIPE Atlas Anchor at VIX (Vienna)
- Pretty graphs, useful info



<https://labs.ripe.net/Members/dfk/map-a-ripe-atlas-anchor>

Global Reachability Measurement

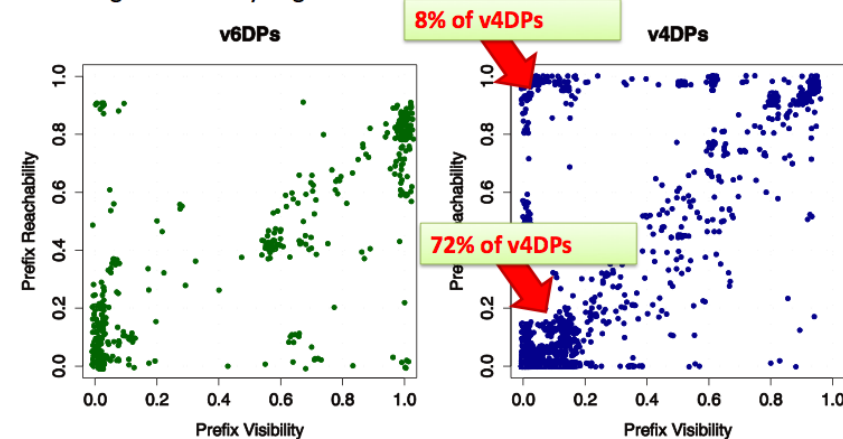
- We test the reachability of the globally-defined v6DPs using **100 active probes** within the RIPE Atlas platform



[https://ripe68.ripe.net/presentations/226-Understanding the Reachability of IPv6 Limited Visibility Prefixes.pdf](https://ripe68.ripe.net/presentations/226-Understanding%20the%20Reachability%20of%20IPv6%20Limited%20Visibility%20Prefixes.pdf)

Results

- Average reachability degree for a v6DP is of **46.5%**
- Average reachability degree for v4DPs is of **17.4%**



Help us to help you!

- Go to **visibility.it.uc3m.es**
- Check if the prefixes of an AS are LVPs/DPs— monitor the global visibility of your prefixes!
- ... and tell us why the prefixes discovered have limited visibility in the first place: intended/unintended behaviour?

Query for ASN: Please take the time to fill in the short survey form after visualizing the results of your query.

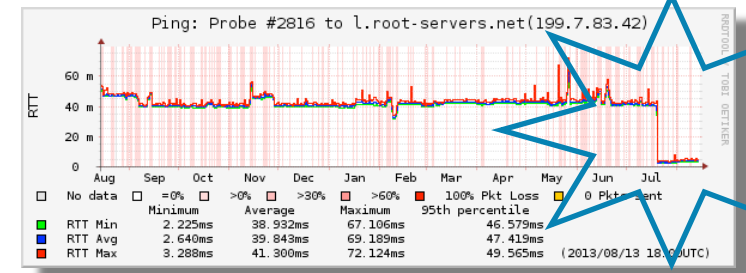
Fill in the AS number here

- Using RIPE Atlas to Debug Network Issues
 - https://labs.ripe.net/Members/tim_kleefass/how-fast-the-ripe-atlas-anchor-has-paid-off
- Basic Evaluation of new IXP Peering Partners with RIPE Atlas and Zabbix
 - https://labs.ripe.net/Members/daniel_gomez/basic-evaluation-of-new-ixp-peering-partners-with-ripe-atlas-and-zabbix
- More: <https://labs.ripe.net/atlas/user-experiences>

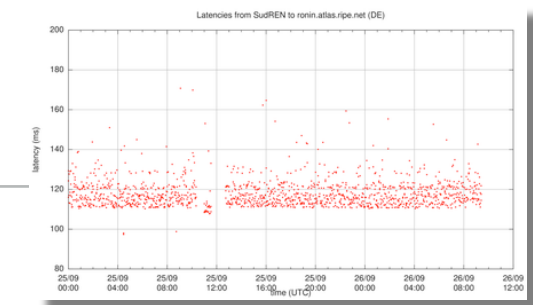
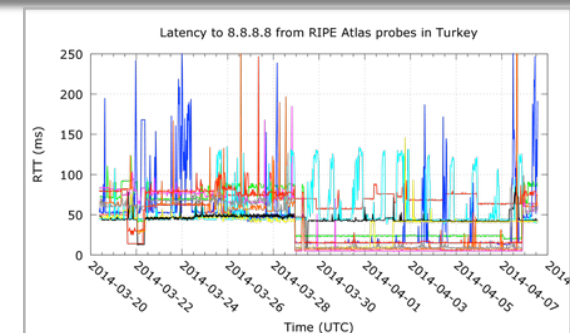
- Investigating problems of slow servers:
 - <http://engineering.freeagent.com/2014/01/24/atlas-probes/>
- Measuring packet loss to determine congested networks, Jared Mauch, NTT
- Selective blackholing (examples based on RIPE Atlas)
 - [https://ripe68.ripe.net/presentations/176-RIPE68 JSnijders DDoS Damage Control.pdf](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

More Success Stories

- IXP: Measuring the effect of installing L-root in Belgrade / SOX
- DNS: Looking for most popular instances of .FR anycast servers
- Events: Measuring Internet outages in Turkey & Sudan



Name server instance	Nr. of probes connecting to instance	Percentage
dns.th2.nic.fr	173	36%
dns.fra.nic.fr	173	36%
dns.lon.nic.fr	47	10%
dns.lyn2.nic.fr	29	6%
dns.lyn1.nic.fr	25	5%
dns.bru.nic.fr	19	4%
dns.ix1.nic.fr	18	4%



- Using RIPE Atlas to perform worldwide traces to measure round-trip times and other route measurements
 - We identified routes that can be optimised and sent to other POPs with much better response times
 - We also identified routes that can be optimised by changing the transit provider for the same POP
 - <https://labs.ripe.net/Members/becha/world-ipv6-launch-ripe-atlas-use-cases>
- The success rate with IPv6-only domain names is much lower (~60%) than with "mixed" (both IPv4 and IPv6) domain names (~96%)
 - https://labs.ripe.net/Members/stephane_bortzmeyer/how-many-ripe-atlas-probes-can-resolve-ipv6-only-domain-names

- “It is quite common in the IPv6 world to have devices that believe they are connected to the IPv6 Internet while they are not”
 - “When you use RIPE Atlas to measure the connectivity of an IPv6 device, 90% success is the maximal reachability you'll get.”
 - https://labs.ripe.net/Members/stephane_bortzmeyer/how-many-atlas-probes-believe-they-have-ipv6-but-are-wrong

- 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
- Measurements are scheduled by centralised “command servers” via reverse ssh tunnels
- Probes don't listen to local traffic; there are no passive measurements running
- Measurement source code published
- Reported vulnerabilities: <https://atlas.ripe.net/docs/security/>

Questions?



<https://stat.ripe.net>