DNSMON

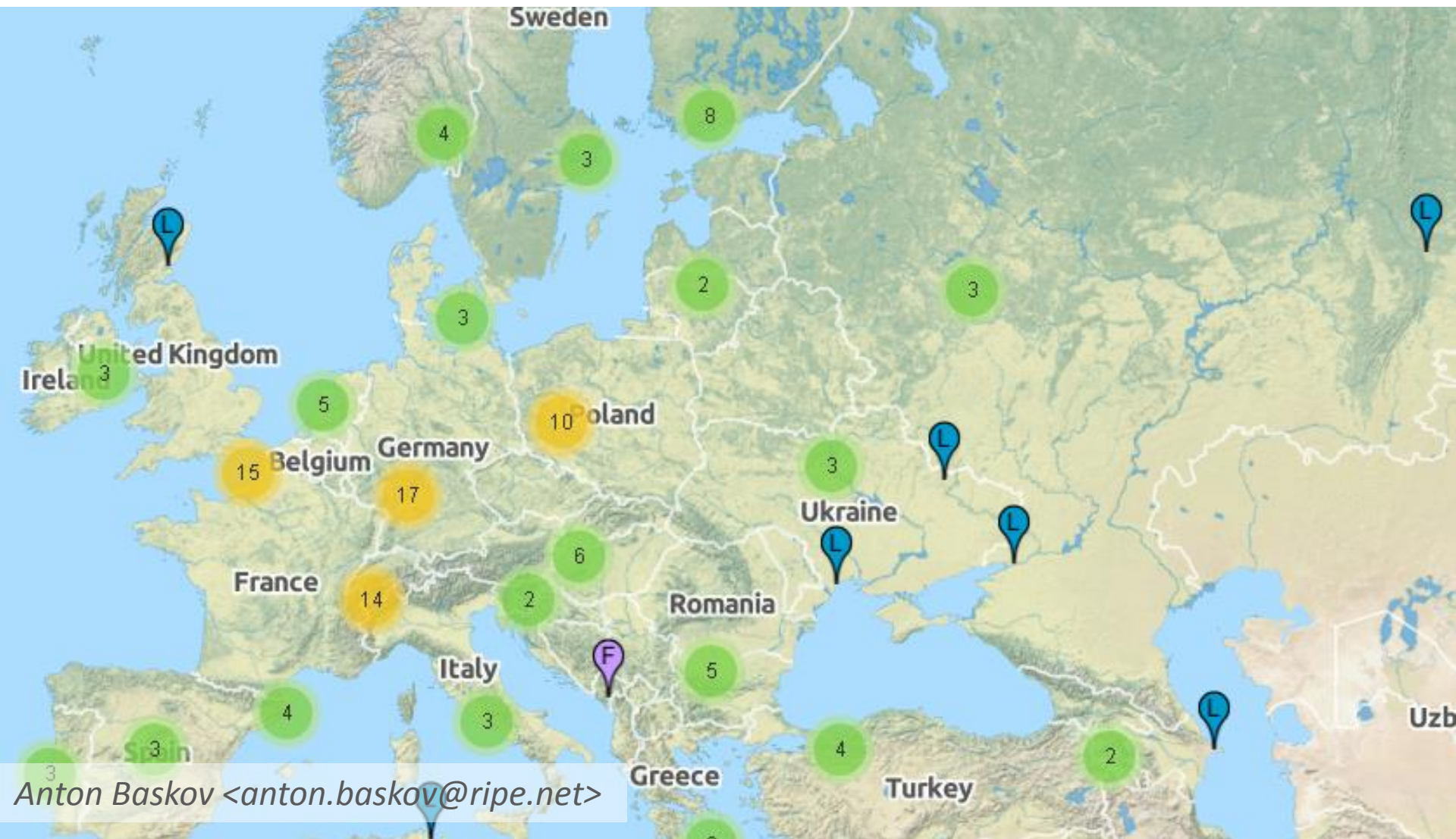*Anton Baskov <anton.baskov@ripe.net>*

DNSMON

- RIPE NCC service since 2003
- Monitoring important DNS zones
  - root servers
  - (most) "classic" gTLD and some of ccTLDs
  - infrastructure zones, like in-addr.arpa or e164.arpa
- Data collection and related visualizations

→ *https://atlas.ripe.net/dnsmon/*

DNSMON

New DNSMON service based on RIPE Atlas Anchors

September 2014:
74 anchors around the world

DNSMON

Available data

- **SOA** *(UDP / TCP)*

- Traceroure *(ICMP)*

- hostname and version *(UDP)*
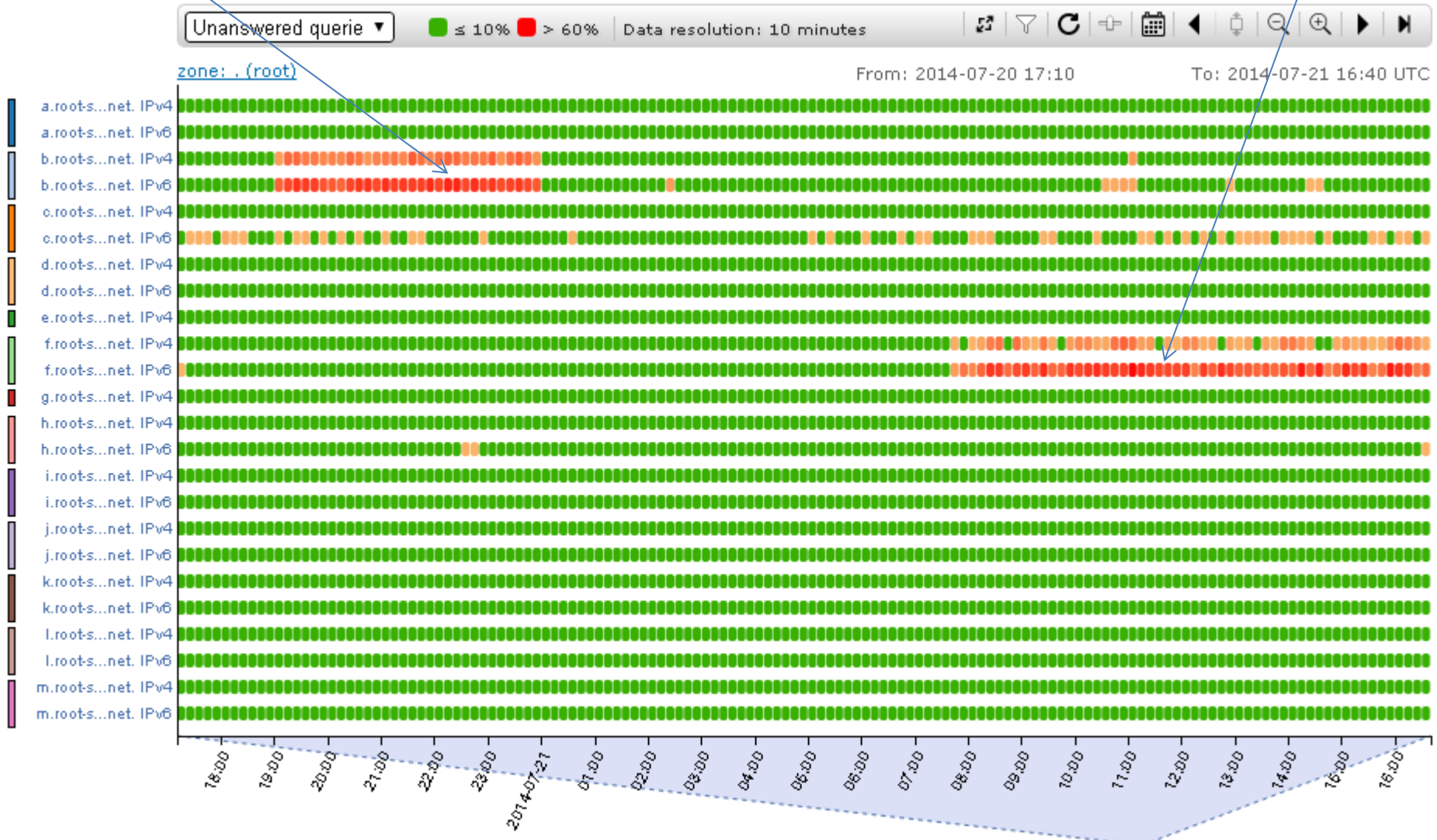
- *IPv4 & IPv6*

- *JSON via API*

Visualized

- Unanswered queries

- Response time

- Relative response time

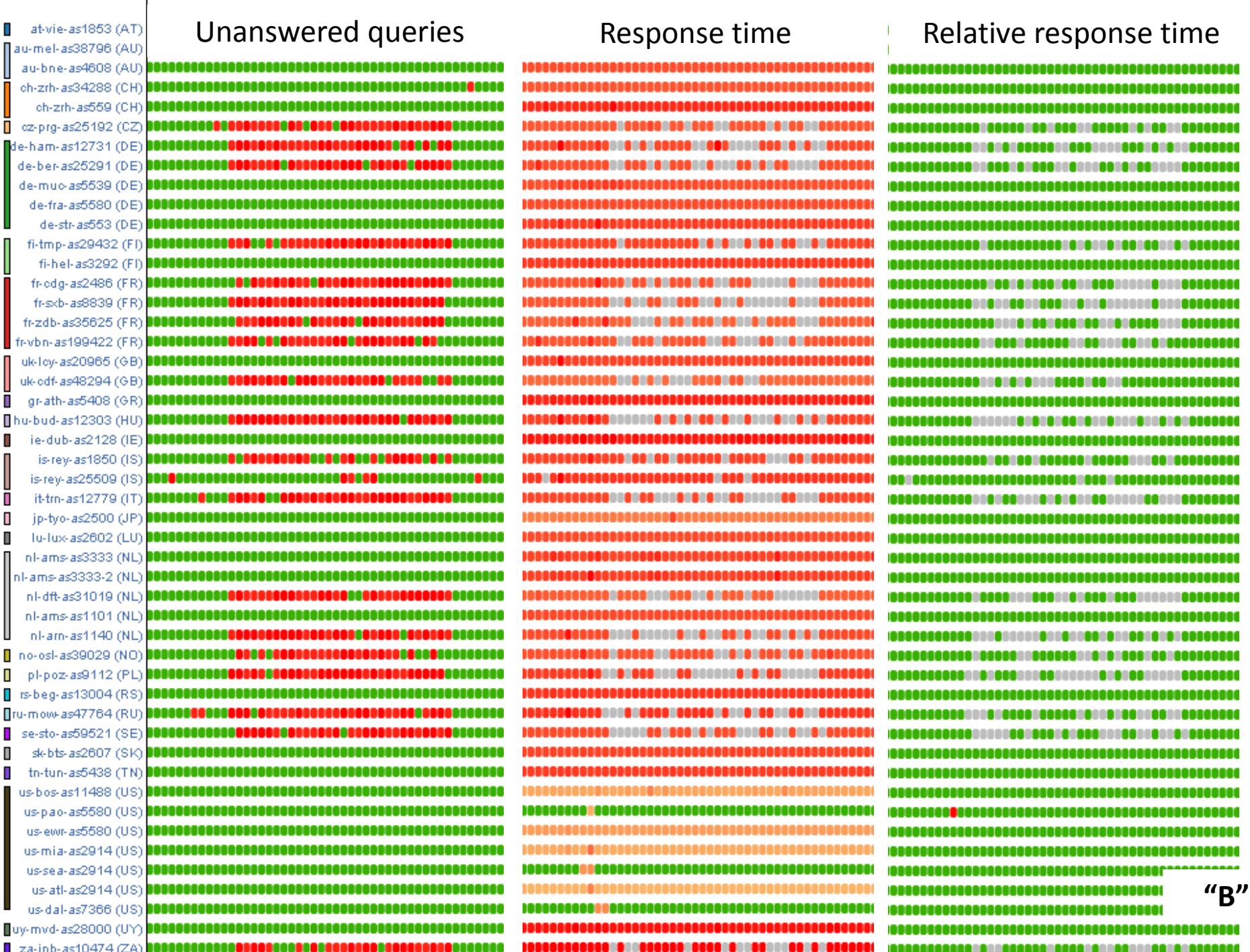- *Map of anycast instances (later)*

- *In real-time*

2014.08.20: root servers unanswered queries (>10%)

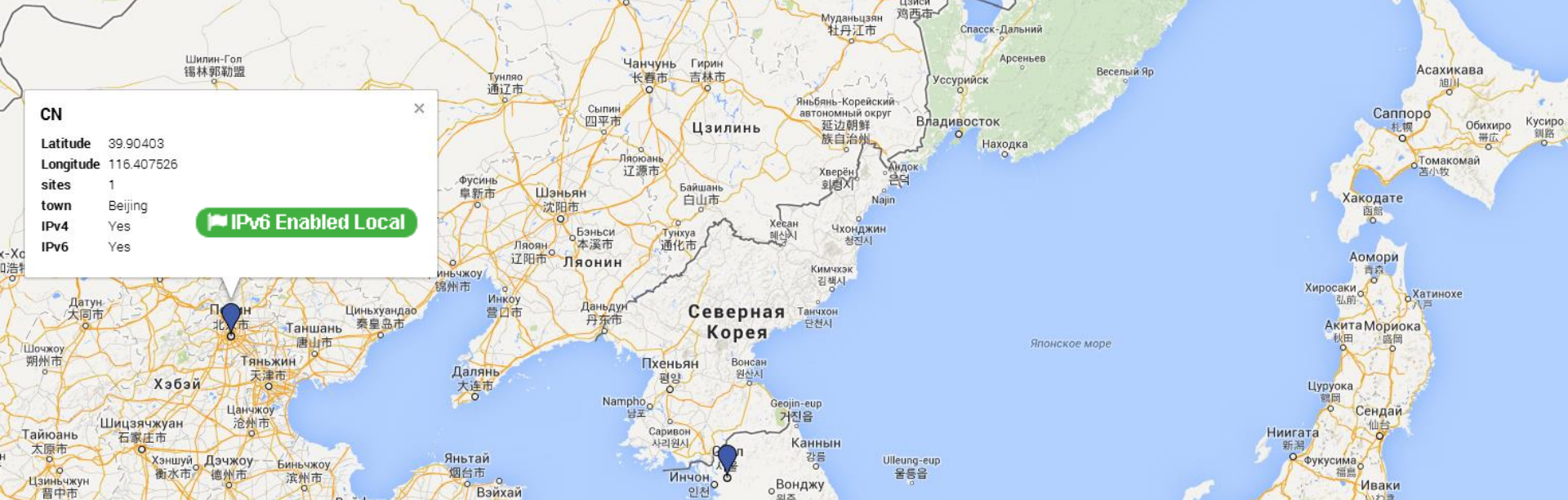Unanswered queries Response time Relative response time

at-vie-as1853 (AT)
au-mel-as38796 (AU)
au-bne-as4608 (AU)
ch-zrh-as34288 (CH)
ch-zrh-as559 (CH)
cz-prg-as25192 (CZ)
de-ham-as12731 (DE)
de-ber-as25291 (DE)
de-muc-as5539 (DE)
de-fra-as5580 (DE)
de-str-as553 (DE)
fi-tmp-as29432 (FI)
fi-hel-as3292 (FI)
fr-cdg-as2486 (FR)
fr-sxb-as8839 (FR)
fr-zdb-as35625 (FR)
fr-vbn-as199422 (FR)
uk-lcy-as20965 (GB)
uk-cdf-as48294 (GB)
gr-ath-as5408 (GR)
hu-bud-as12303 (HU)
ie-dub-as2128 (IE)
is-rey-as1850 (IS)
is-rey-as25509 (IS)
it-trn-as12779 (IT)
jp-tyo-as2500 (JP)
lu-lux-as2602 (LU)
nl-ams-as3333 (NL)
nl-ams-as3333-2 (NL)
nl-dft-as31019 (NL)
nl-ams-as1101 (NL)
nl-arn-as1140 (NL)
no-osl-as39029 (NO)
pl-poz-as9112 (PL)
rs-beg-as13004 (RS)
ru-mow-as47764 (RU)
se-sto-as59521 (SE)
sk-bts-as2607 (SK)
tn-tun-as5438 (TN)
us-bos-as11488 (US)
us-pao-as5580 (US)
us-ewr-as5580 (US)
us-mia-as2914 (US)
us-sea-as2914 (US)
us-atl-as2914 (US)
us-dal-as7366 (US)
uy-mvd-as28000 (UY)
za-jnb-as10474 (ZA)

"B"

"F"

Show | 25 ▼ | hosts   Search: [ ]

| Zone ▲	Hostname ▲	IPv4 UDP SOA ⇳	IPv4 TCP SOA ⇳	IPv6 UDP SOA ⇳	IPv6 TCP SOA ⇳
. (root)	a.root-servers.net.				
. (root)	b.root-servers.net.				
. (root)	c.root-servers.net.				
. (root)	d.root-servers.net.				
. (root)	e.root-servers.net.			N/A	N/A
. (root)	f.root-servers.net.				
. (root)	g.root-servers.net.			N/A	N/A
. (root)	h.root-servers.net.				
. (root)	i.root-servers.net.				
. (root)	j.root-servers.net.				
. (root)	k.root-servers.net.				
. (root)	l.root-servers.net.				
. (root)	m.root-servers.net.				
3.4.e164.arpa.	a.enum.at.				
3.4.e164.arpa.	b.enum.at.			N/A	N/A
3.4.e164.arpa.	d.e164.at.			N/A	N/A
4.4.e164.arpa.	ns3.nic.uk.			N/A	N/A
9.4.e164.arpa.	enum1.denic.de.				
9.4.e164.arpa.	enum2.denic.de.			N/A	N/A
9.4.e164.arpa.	enum3.denic.de.			N/A	N/A
aq.	fork.sth.dnsnode.net.				
aq.	ns1.dns.aq.			N/A	N/A
aq.	ns99.dns.net.nz.				
at.	d.ns.at.				
at.	j.ns.at.				

Showing 1 to 25 of 282 hosts

October 2011: F-root IPv6 route leak

- Hierarchical anycast – local site advertised with NO_EXPORT BGP attribute
- Affected 5 of 29 IPv6 enabled monitoring points: Stockholm (SE), London (GB), Sao Paulo (BR), Hamburg (DE) and Hong Kong (HK)
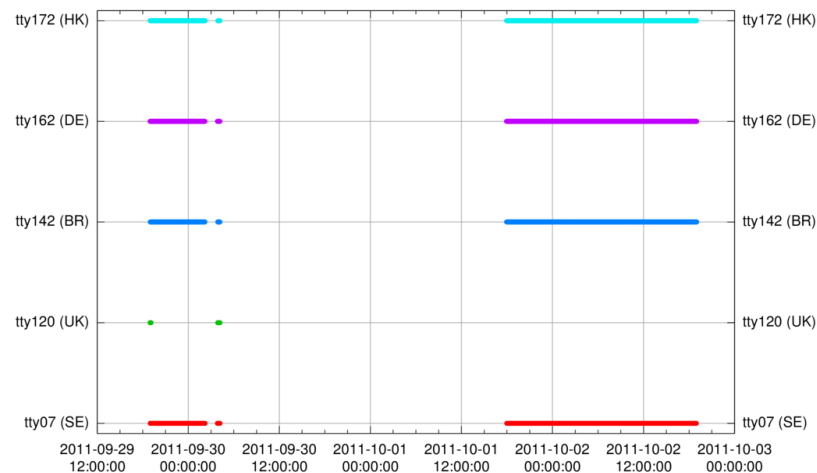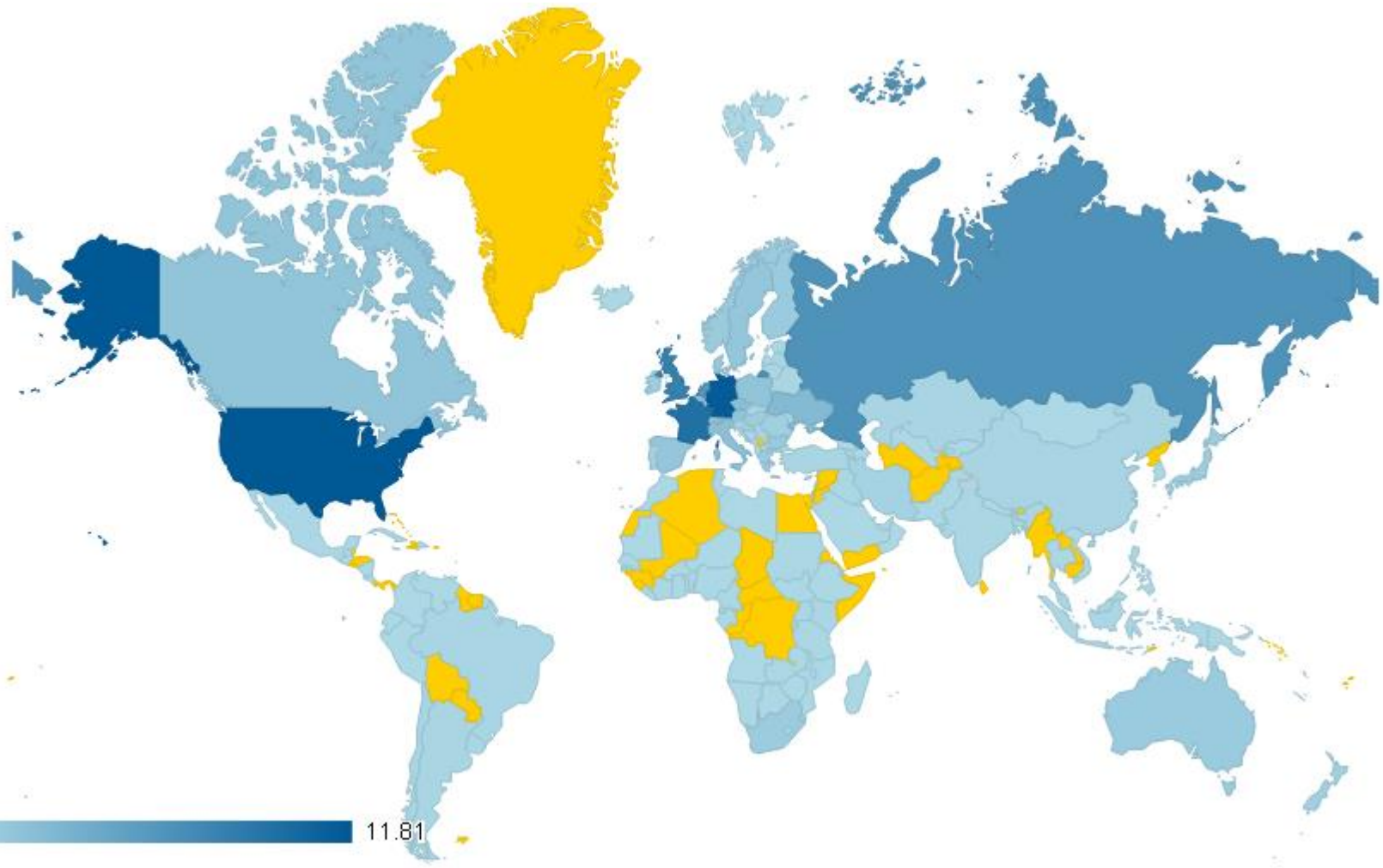
Criteria for adding new zones

1. Requested by TLD operator themselves
2. ccTLD in RIPE NCC service region operated by RIPE NCC member
3. Up to five gTLD under the control of RIPE NCC member

→ DNS Working Group mailing list

RIPE Atlas

Anton Baskov <anton.baskov@ripe.net>

What is a RIPE Atlas?

- A global network of probes that measure connectivity and reachability of Internet resources
  - Monitoring critical internet infrastructure like a root DNS servers
  - Possibility to make measurements form everywhere – any country, any network

- More than 6'400 probes – small devices hosted around the world
  - there are no probes in Antarctica yet

Custom measurements

- Ability to see your resources from any place of the world

- Four type of user-defined measurements available:
  - *ping*, *traceroute*, *DNS measurements*, *SSL checks*
  - Your choose type, target, frequency, number of probes and region!

- Can be integrated in your monitoring tool via API

Ping

Latency map
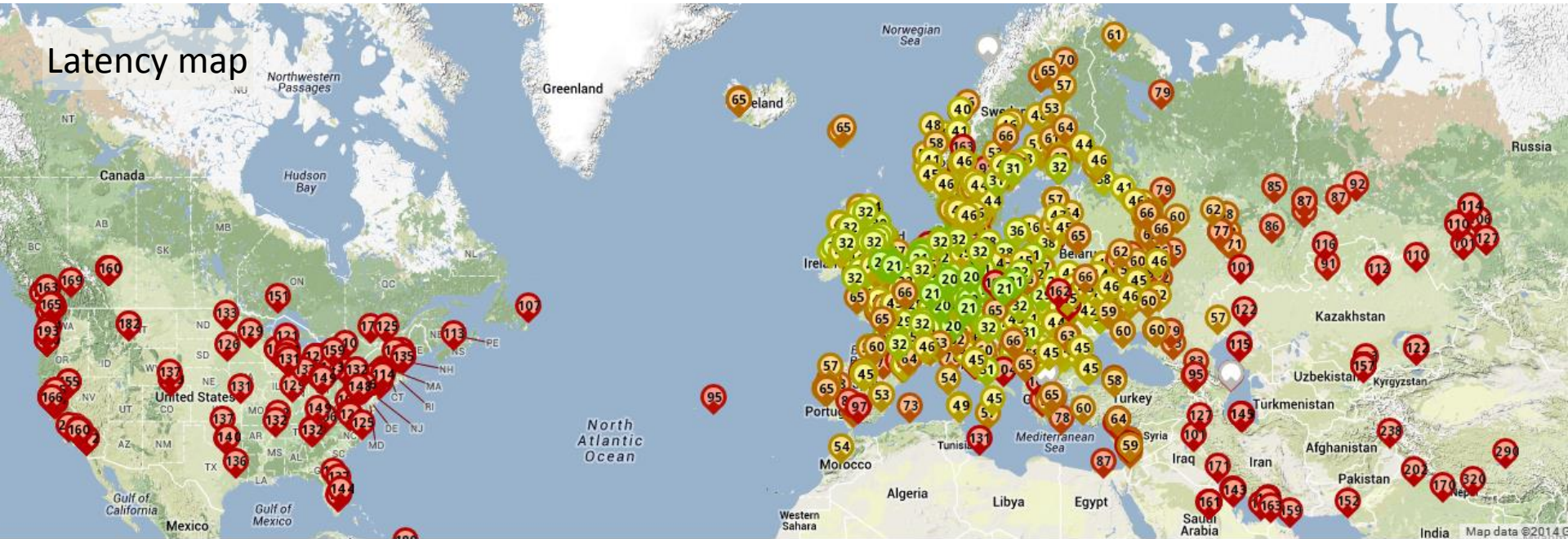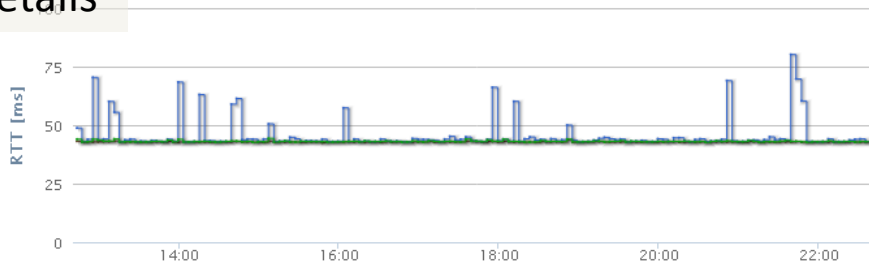
Details

Seismograph
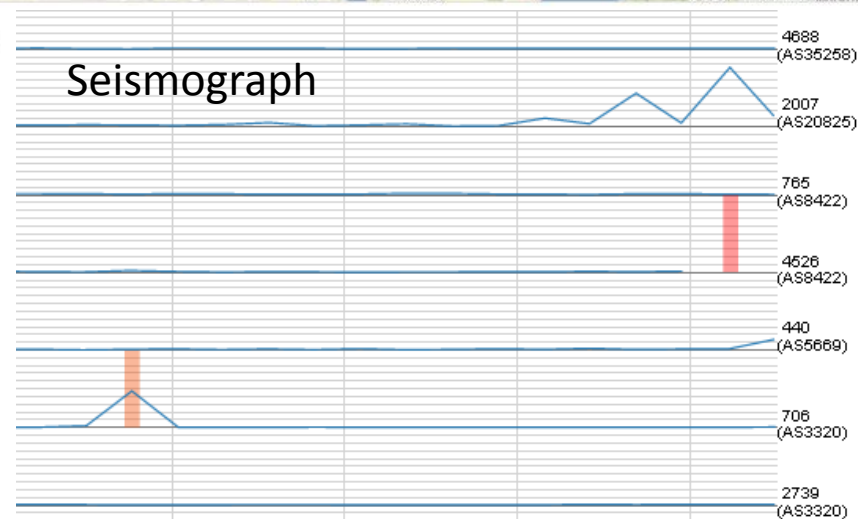
Traceroute

Number of hops

Details

Key (number of hops): 🟢 <4 🟢 <8 🟢 <12 🟡 <16 🟠 <20 🟤 <24 🔴 <28 🔴 29+ 🔵 Partial results ⚪ Missing data

Probe	ASN (v4)	ASN (v6)			Time	RTT	Hops
2503	174		🇺🇸	⏻	2013-01-27 13:47	193.694	15
2504	198420		🇨🇿	⏻	2013-01-27 13:47	56.400	18
2506	31334	31334	🇩🇪	✔	2013-01-27 13:46	61.851	10
2510	28773		🇺🇦	✔	2013-01-27 13:46	74.473	8
2511	12322	12322	🇫🇷	✔	2013-01-27 13:48	92.323	11
2515	6830		🇨🇿	✔	2013-01-27 13:46	74.866	11
2518	2200	2200	🇫🇷	✔	2013-01-27 13:48	45.041	20

DNS

Response time

Answer diversity
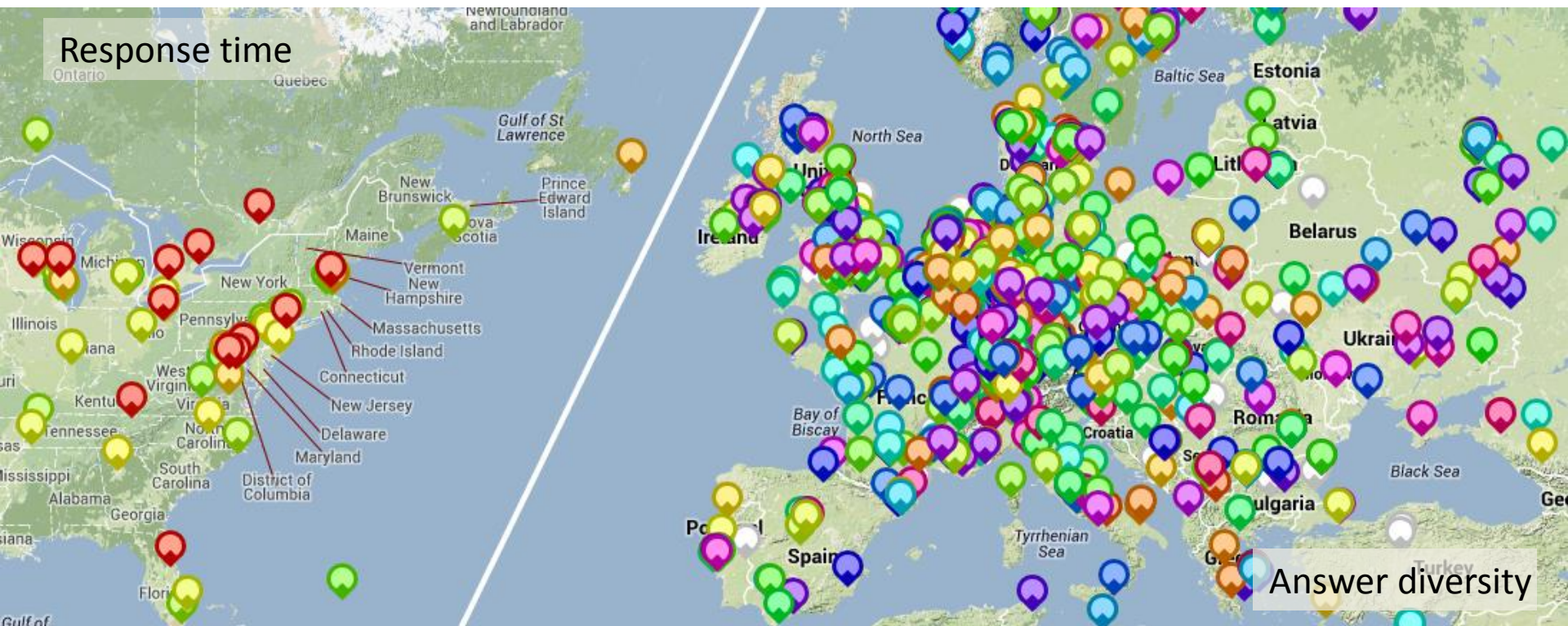
> dig www.bing.com AAAA

HTTP*

SSL Certificate

What you can get?

- Look at your network from outside!
  - Tool that monitoring your resources around the world, integrated with your monitoring tools (nagios, icinga) though API
  - Trusted source of data
  - Well looking graphs and maps for you and board of directors
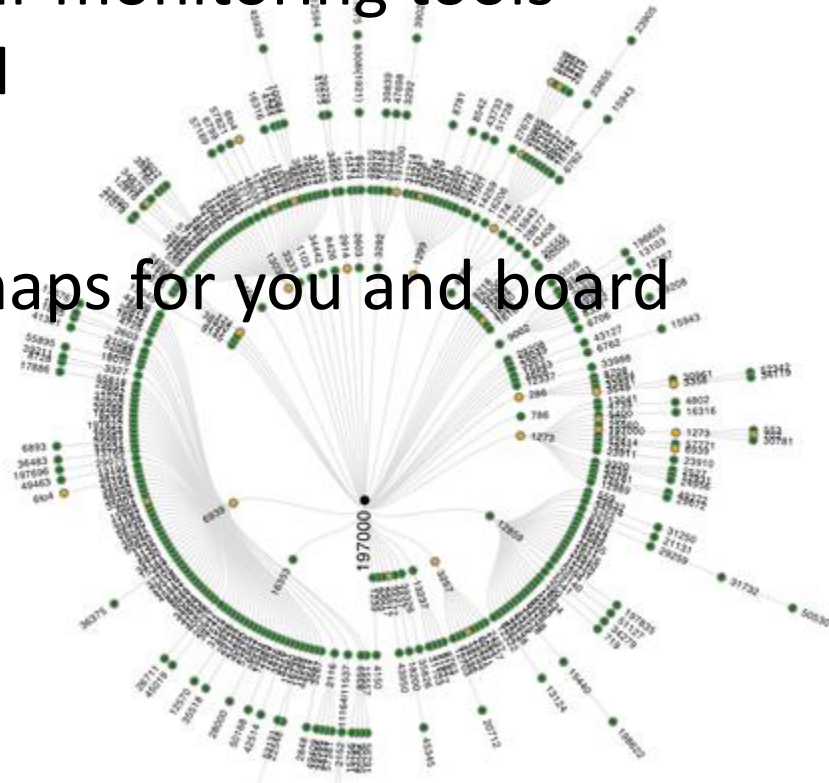
Host your own probe!

- By hosting a probe at your home, office or network you earn credits, that you can spend to own measurements
  - Order your own probe at https://atlas.ripe.net/
  - RIPE NCC members and Atlas sponsors have additional benefits

USB powered probe – plug in and forget!