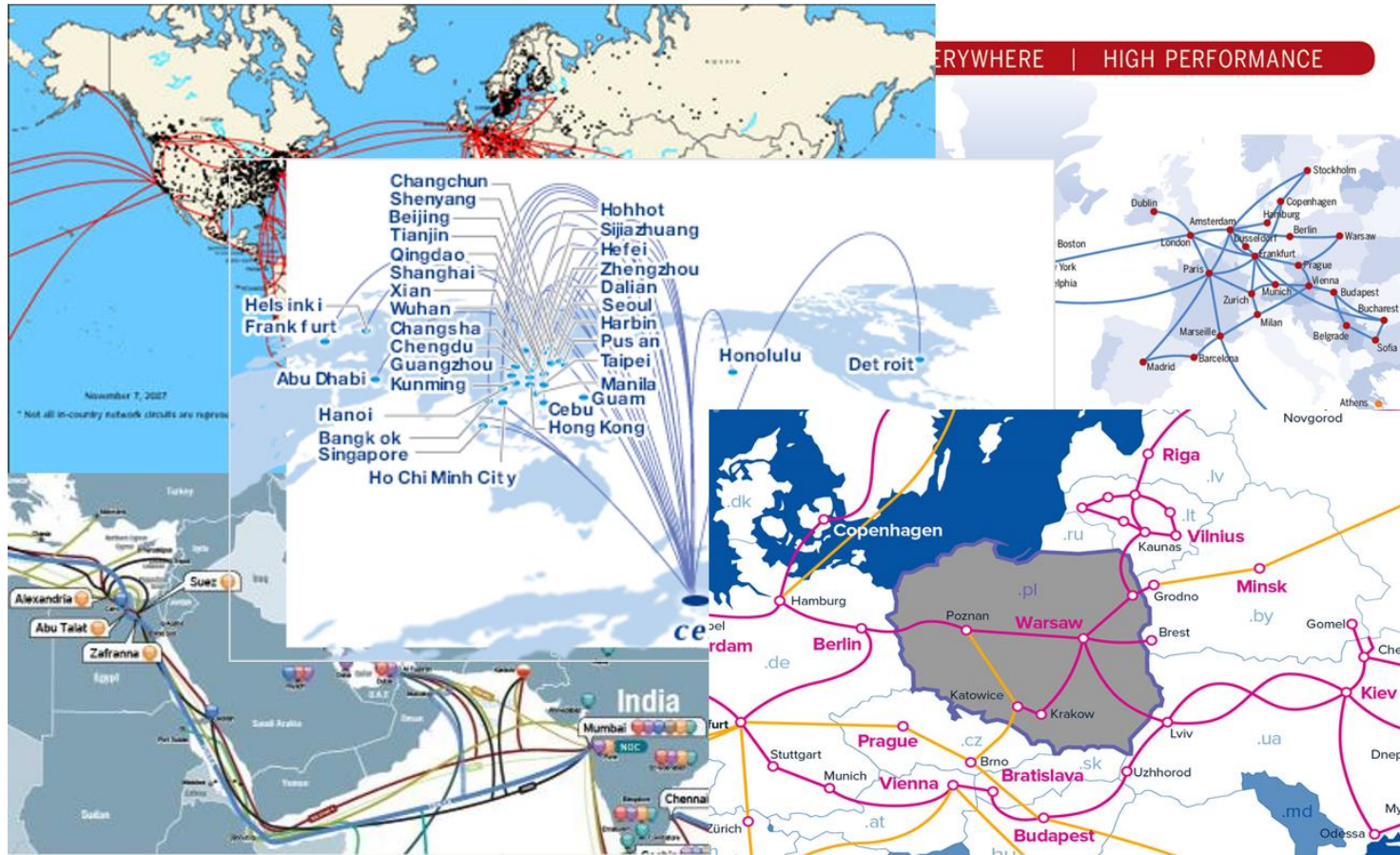


Measurement as a Key for Transparency

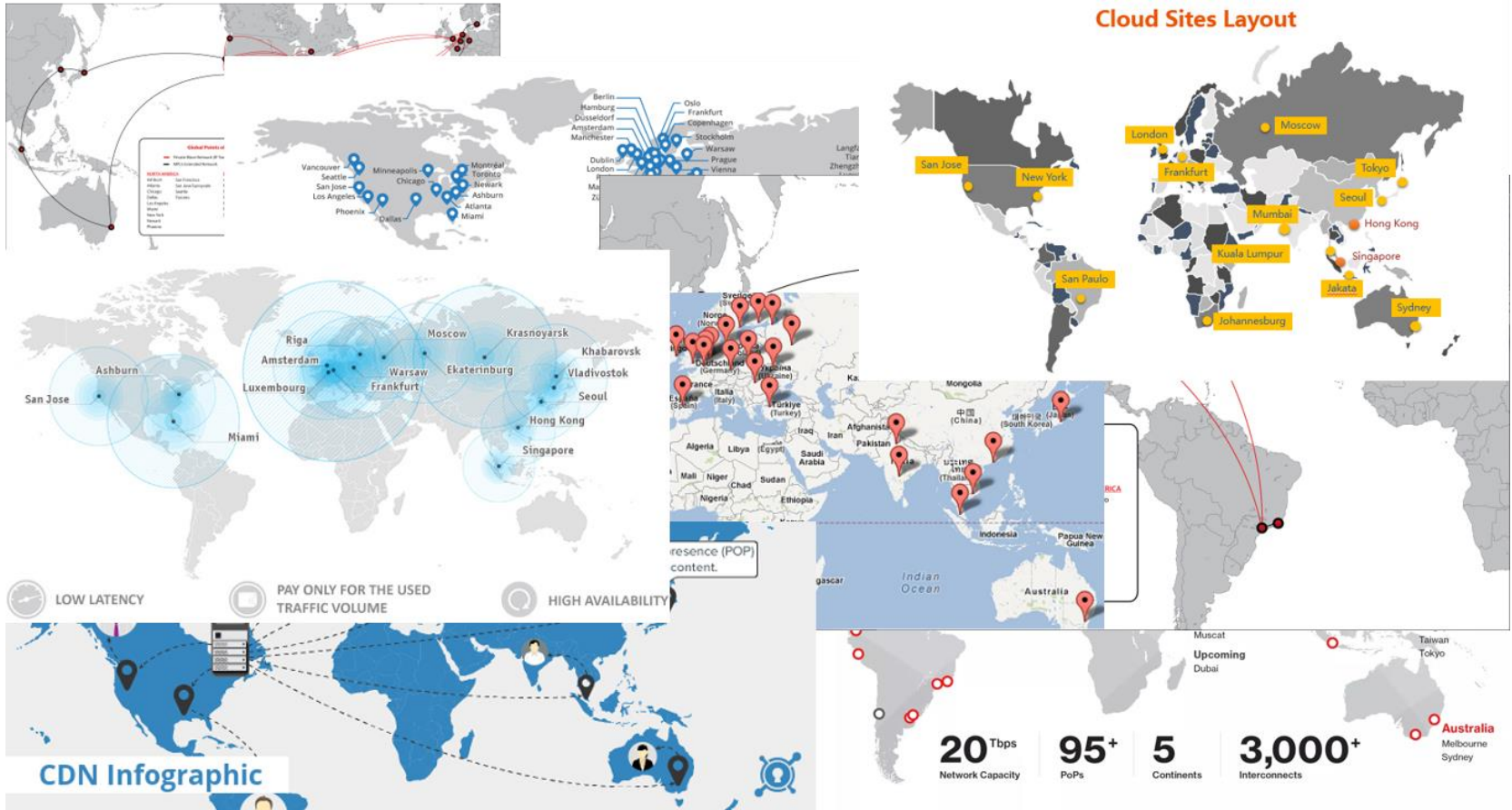
Alexander Azimov aa@qrator.net

Qrator Labs

ISP Market



Cloud Services



What Do We Have?



Pictures! And opportunity to learn from mistakes...

What Do We Want?

- Compare **quality/features** instead of pictures;
- Make this comparison human readable (again pictures?);
- Control quality – repeated experiments.

What We've Done:

- On base on RIPE Atlas API, but:
 - No limit in number of probes per measurement;
 - Timeouts for *slow* probes.
- Latency heatmaps;
- Country latency maps;
- Nslookup maps;
- Emergency tool for NOC teams;

Use Case: Comparing Clouds

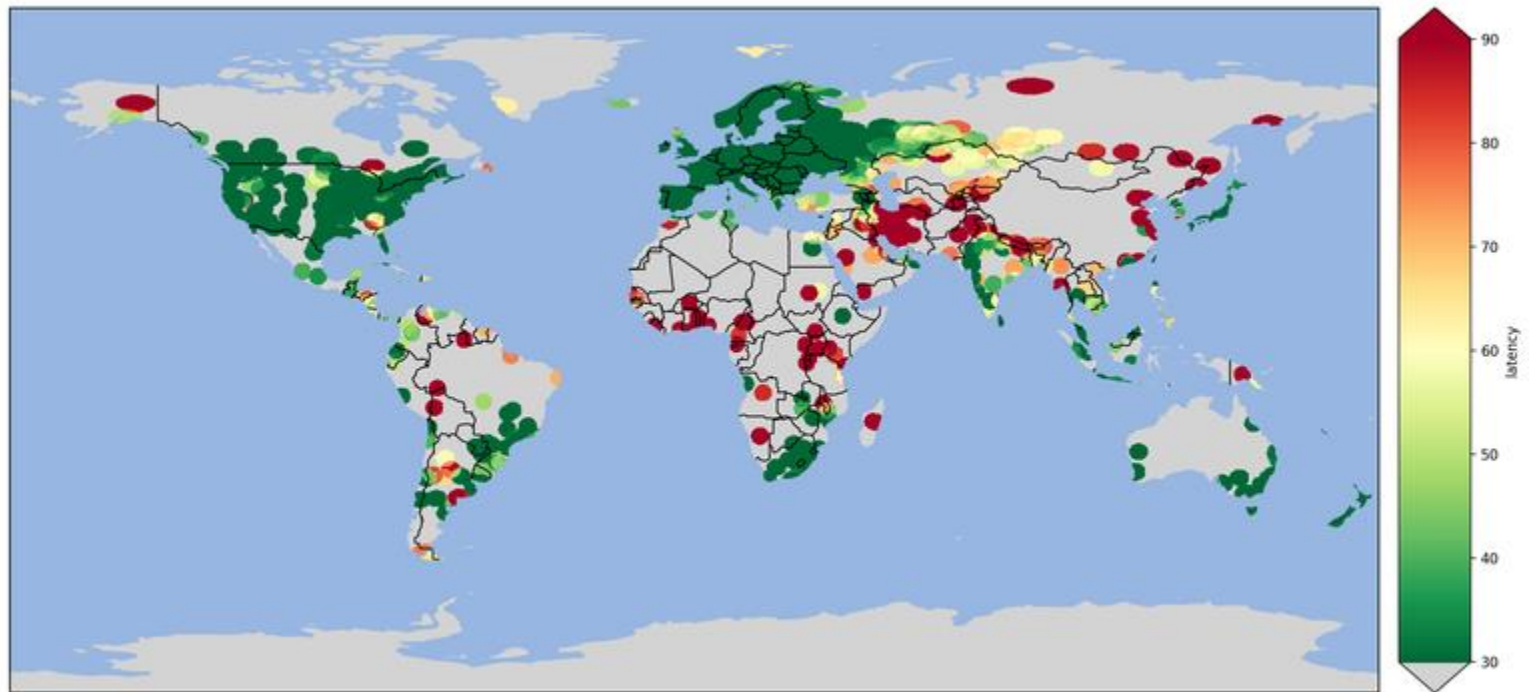
I have MANY PoPs!

I have MORE PoPs!

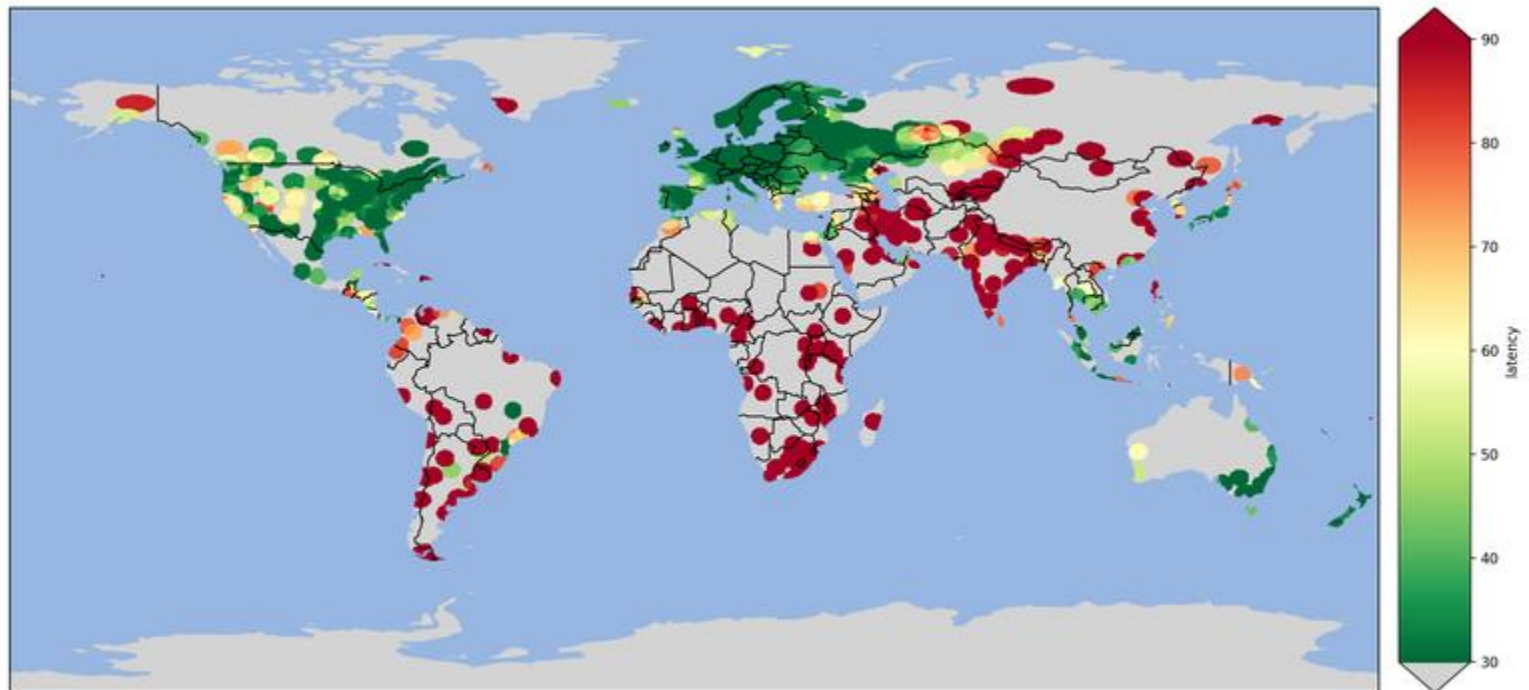
I have EVEN MORE PoPs!

I have SO MANY PoPs that you will never have!

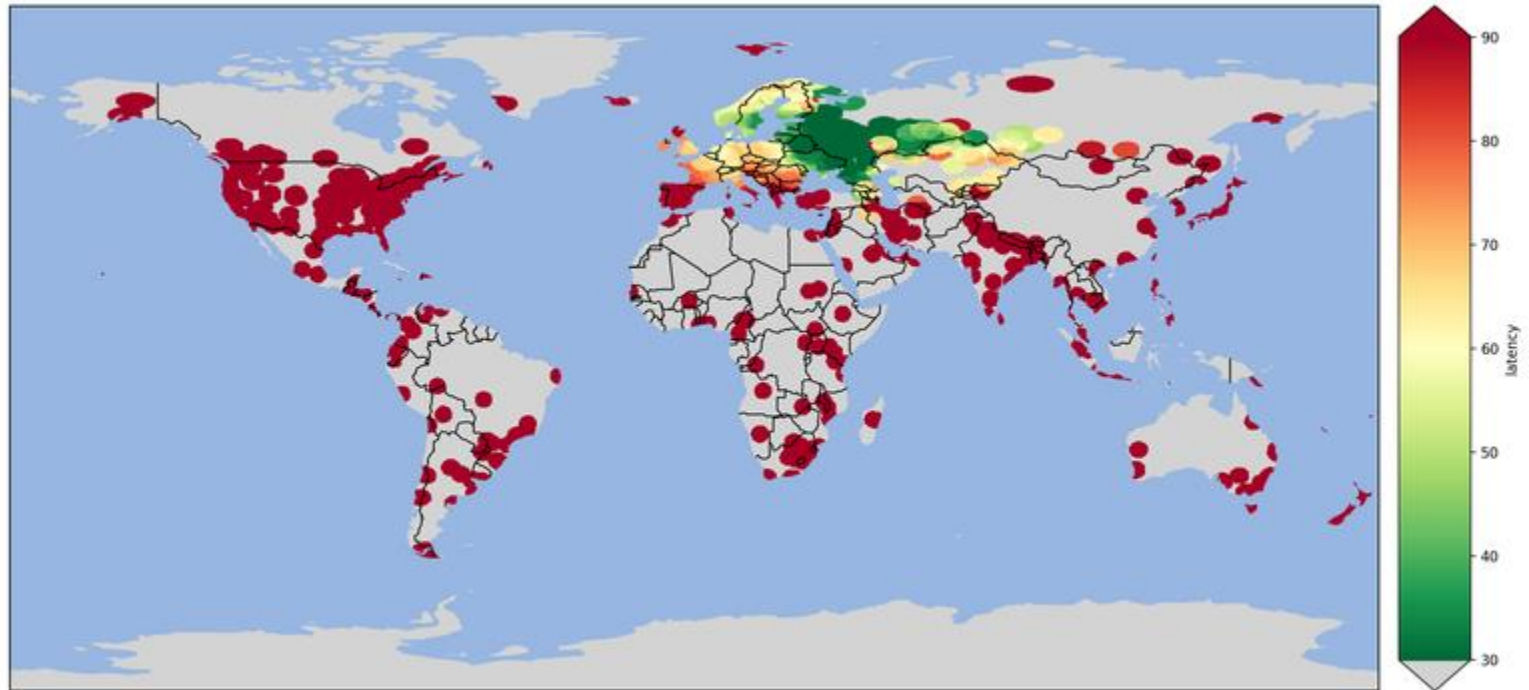
>100 PoPs



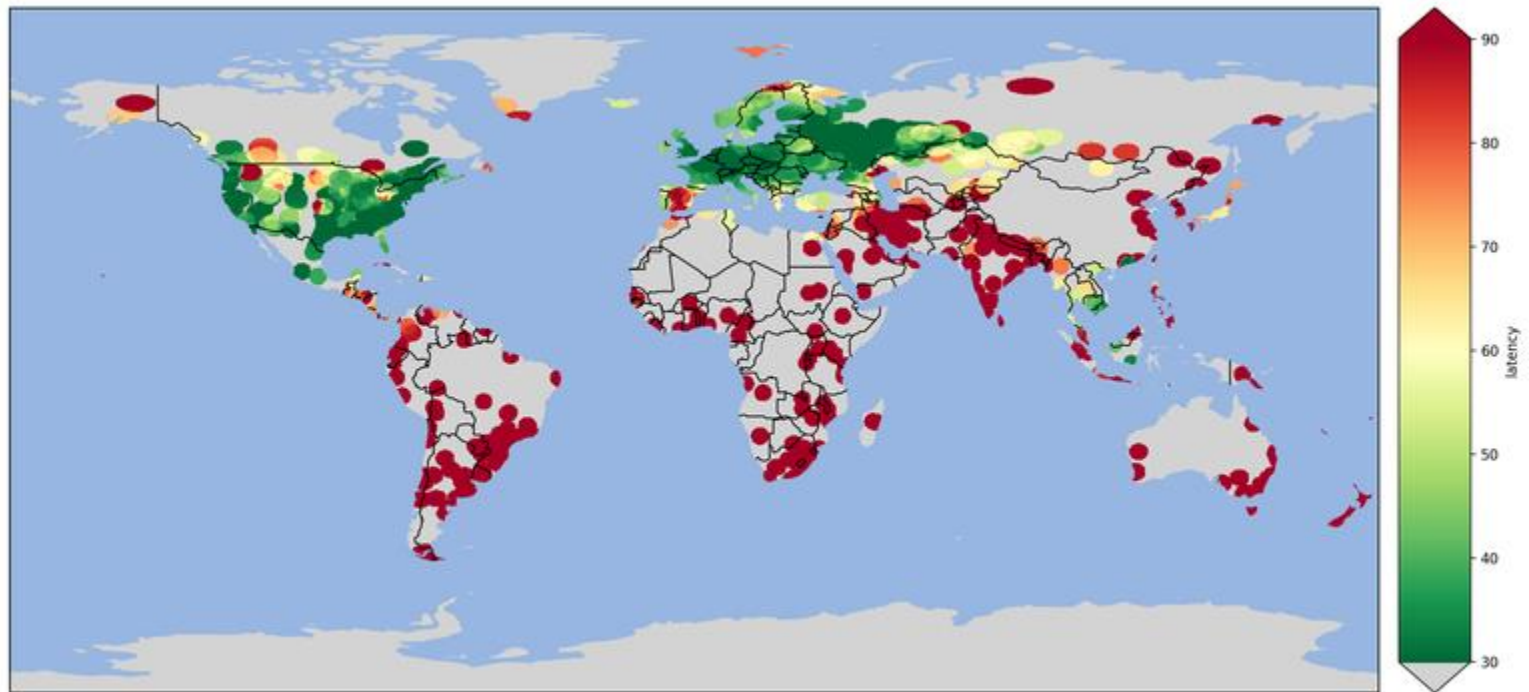
>30 PoPs



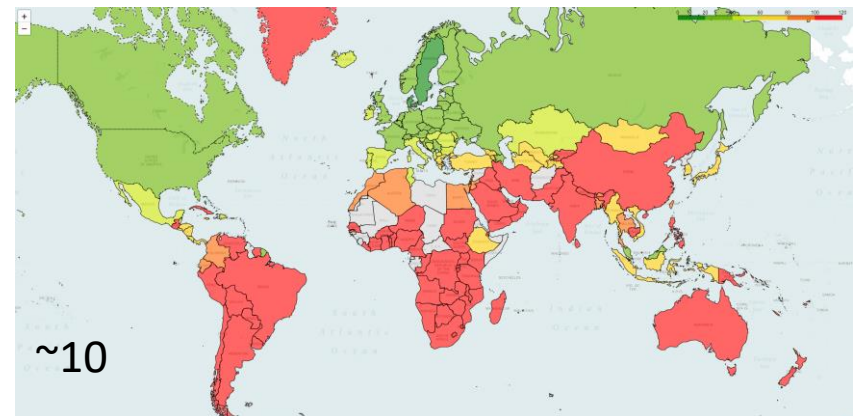
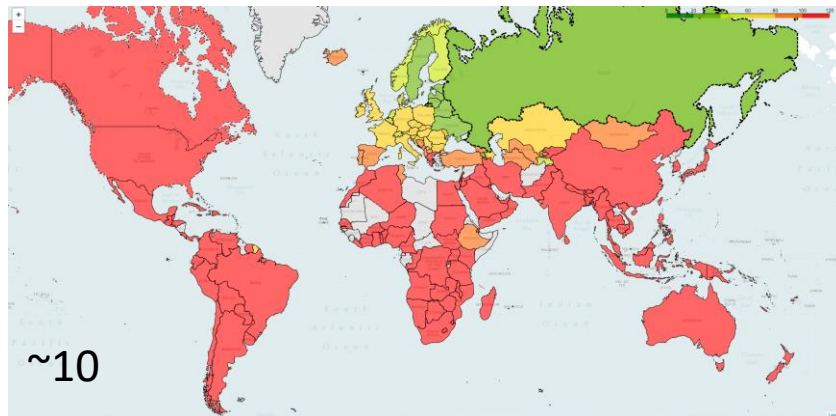
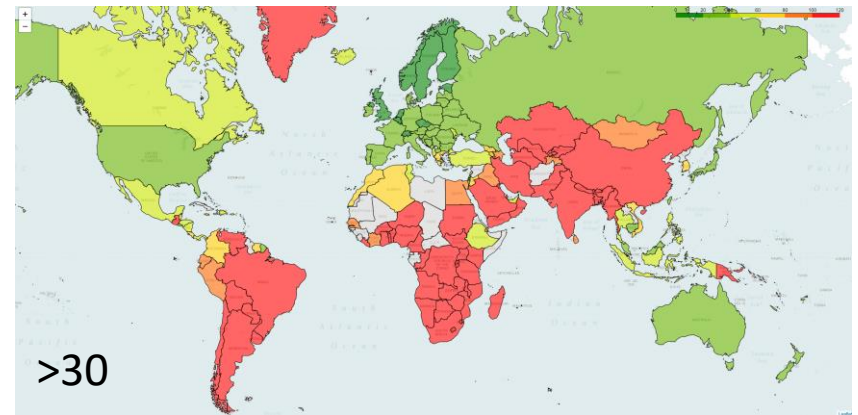
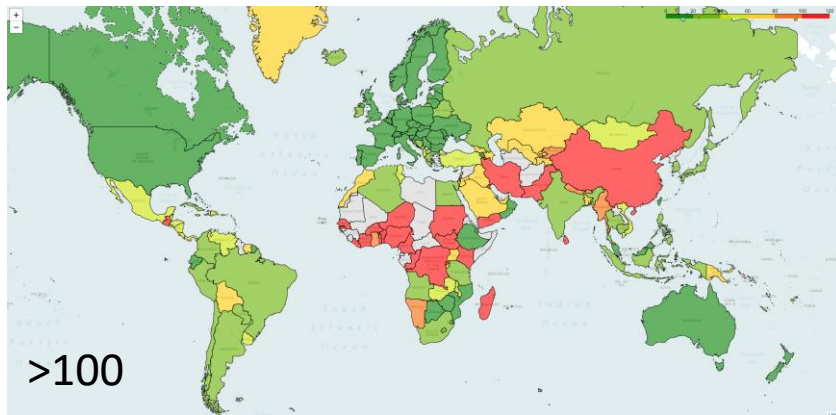
~10 PoPs



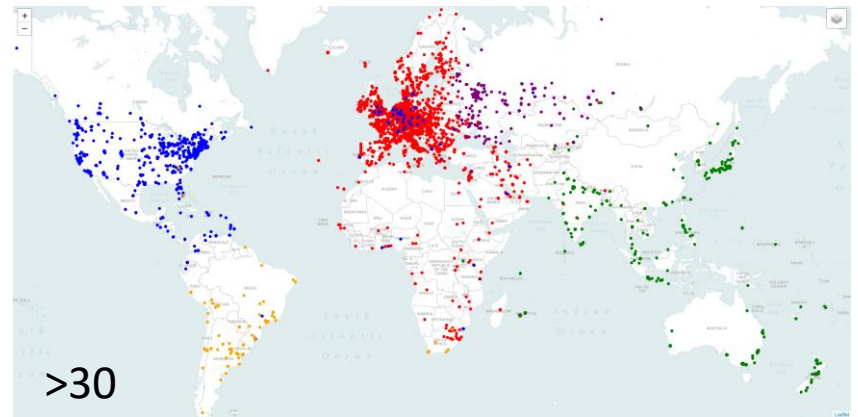
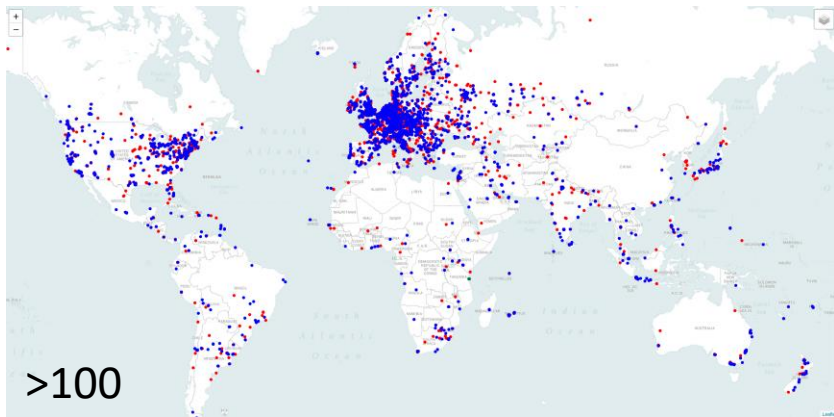
~10 PoPs



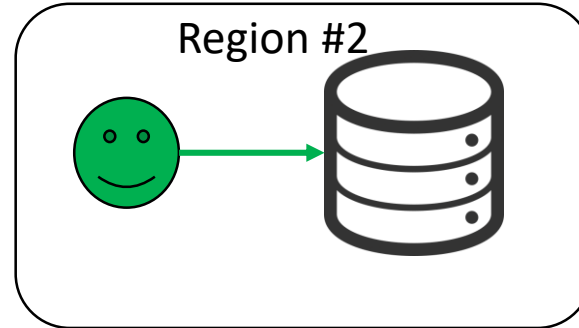
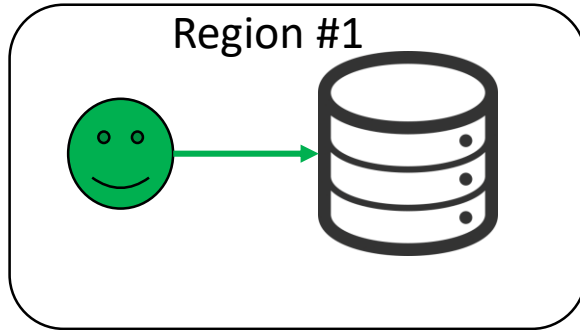
Country View Mode



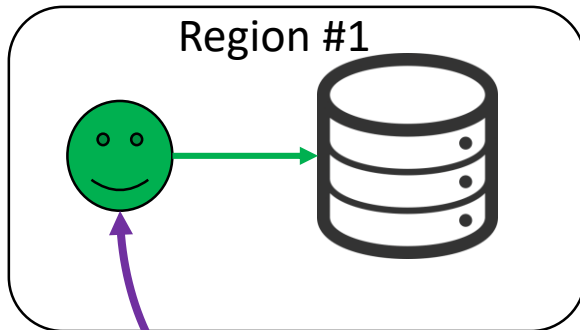
NS lookup Mode



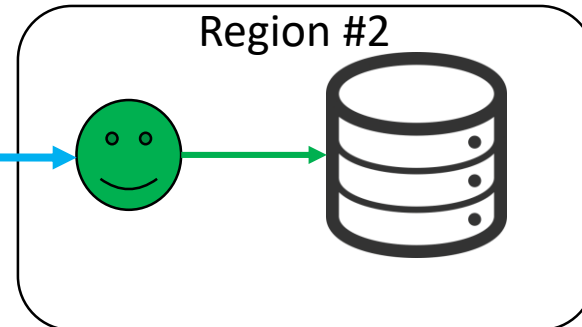
BGP Anycast Balancing: Legitimate Traffic



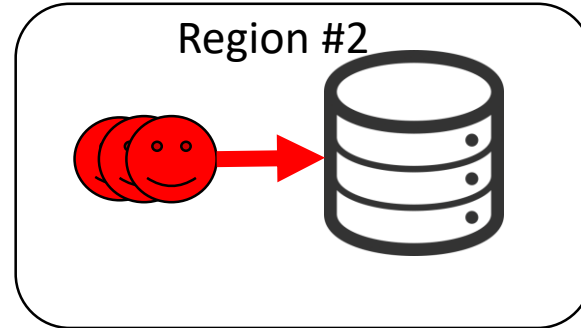
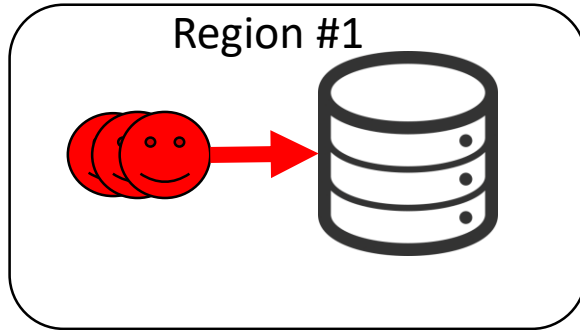
GEO DNS Balancing: Legitimate Traffic



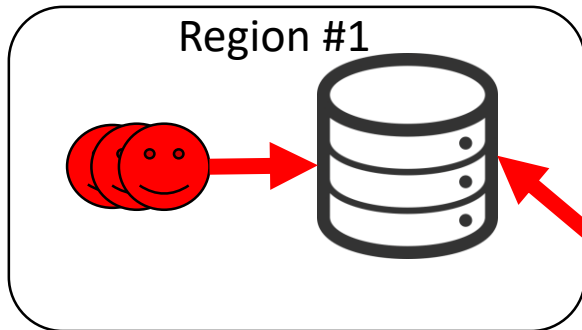
DNS



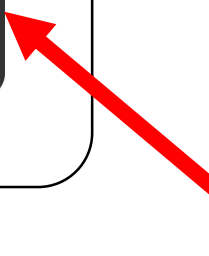
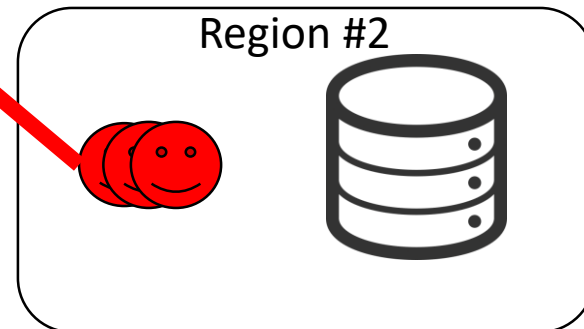
BGP Anycast Balancing: DDoS



GEO DNS Balancing: DDoS



DNS



Use Case: Comparing Clouds

It's possible to compare incomparable 😊.

Many thnx to RIPE Atlas!

Number of PoPs does meter, BUT:

- the difference between 10 and 30 PoP may not be so dramatic;
- an equal number of PoPs and even geographic diversity does not guarantee reasonable latency;
- There are other important qualities than number of PoPs.

https://github.com/qratorlabs/measurement_tools

Modes:

atlas-heatmap

atlas-countrymap

atlas-nslookupmap

atlas-reachability

Additional options:

--area=

--country=

--probe_number=

--UDP (by default all measurements are ICMP)