RIPE Atlas

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AfPIF 2013
5 RIRs - distribute IP & ASN
RIPE NCC Measurement Projects

- Control plane: Routing (RIS)
- Data plane: RIPE Atlas [https://atlas.ripe.net]
- Unified interface: RIPEstat [https://stat.ripe.net]
- Analysis: RIPE Labs [https://labs.ripe.net]

- What we measure typically is **global**
Why Do We Measure?

• "That which is measured improves. That which is measured and reported improves exponentially."
  -- Karl Pearson

• Do we want the Internet to improve?
RIPE Atlas

A measurement network of 3800+ devices

For the community, by the community
RIPE Atlas Participation and Benefits

• Anyone can host a RIPE Atlas probe:
  - apply online: https://atlas.ripe.net/apply
  - ... or just come talk with me

• Major benefit: look at your network from the outside!
  - Have at your fingertips 3800+ external vantage points to do pings & traceroutes towards you
Measurement Device: RIPE Atlas probe

- Install-and-forget, USB powered
- Hosted and sponsored by organisations and end users
  - ISPs, Internet Exchange Points, individuals...
  - Free of charge if you host individual probes
What is measured?

• “built-in” measurements
  - From all the probes, towards root name servers and RIPE Atlas infrastructure
  - Pings, traceroutes, SSLcert and DNS queries
  - Results available to everyone!
  - https://atlas.ripe.net/results/
• Customised (user defined) measurements (UDM) using the targets of their choice and desired frequency.
  - You need “credits” to do this

• Anchoring measurements coming soon
  - Each probe will measure 4-5 “anchors” as a regional baseline
  - RIPE Atlas anchors placed at well-connected locations
Credit System

• By hosting a probe, each host earns credits
  - As a reward for making probe available to other users, for performing measurements from that probe towards any target
  - Hosts earn 21,000+ credits per full day

• In order to schedule customised measurements, users spend credits
  - Ping costs 3 credits/result, traceroute 30, etc.
[...continued]

• Credits system introduced to ensure fairness and protect system from overload

• Extra credits can be earned by:
  - Hosting a RIPE Atlas anchor
  - Sponsoring multiple probes

• More details: [https://atlas.ripe.net/doc/credits](https://atlas.ripe.net/doc/credits)
RIPE Atlas 2013 Sponsors

- FranceIX
- SIDN
- Cable & Wireless Worldwide
- Comcast
- AS34288
- ICANN
RIPE Atlas - Security Aspects

- Probes have hardwired trust material (registration server addresses / keys)
- The probes don’t have any open ports, they only initiate connections
- Measurements are scheduled by centralized “command servers” via reverse ssh tunnels over TCP/443
- Probes don’t listen to local traffic, there are no passive measurements running
  - There’s no snooping around
- Source code for probe software published
Latency to b-root (where is it?)
Latency to i-root
Case Study: SOX and L-Root DNS

• Deployment of an L-Root instance at Serbian Open eXchange
Case Study: Measuring Hurricane Sandy

• Most RIPE Atlas probes in affected area unavailable during Hurricane Sandy

• Traffic partially shifted away from NYC as a transit hub

https://labs.ripe.net/sandy-2012
Atlas Anchors
Anchors: Rocks in the Sea of Atlas Probes
RIPE Atlas Anchors

• Well-known targets and more powerful measurement devices
  - 14 deployed
  - Goal: ~50 deployed in 2013, 10 in Africa?
  - Benefit: regional baseline & “future history”
RIPE Atlas deployment
RIPE Atlas

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For the community, by the community
RIPE Atlas by Country

We are underserving Africa :(

No devices up :(
Questions?