RIPE Atlas

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RIPE Atlas Intro

RIPE NCC

https://Atlas.RIPE.net

Atlas in the Pacific

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

Probes Photos

RIPE Atlas in Numbers: November 2014

- 7,300+ probes connected
- 8,000+ active users this year

- 5,000+ built-in measurements daily
- 6,000+ 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/

Smart Bookmarks | Philip | Networking | Miscellaneous | Radio | TinyURL! | Most Visited

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RIPE NCC RIPE NETWORK COORDINATION CENTRE

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You are here: Home > Data & Tools > RIPE Atlas > Probes > Probe #212

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General Information | Network Information | Results from Built-in Measurements | User-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	DSL Home NAT

Connection & Traffic

Connected Time

1 week, 6 days

1 week, 6 days

#212

Firmware
4650

Architecture
probev1

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

Management Sharing

Edit

Only the probe host is permitted to administer this probe.

Notifications

Edit

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
- 92 RIPE Atlas anchors as of November 2014
  - goal for 2014: 100 active anchors worldwide

Network Monitoring

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Network Monitoring

- 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

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

Monitoring for DNS TLD operators

Monitoring DNS

- “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

Contact RIPE Atlas

- 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

Reachability Testing

Global Reachability Measurement

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

RIPE68@Warsaw

https://ripe68.ripe.net/presentations/226-Understanding_the_Reachability_of_IPv6_Limited_Visibility_Prefixes.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?

Newest Stories

- 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

Success Stories

- 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
- 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

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%

- Events: Measuring Internet outages in Turkey & Sudan

IPv6 & RIPE Atlas: Reachability Testing

- 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

IPv6 Troubleshooting

- “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

Security Aspects

- 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

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