RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE NCC Update

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RIPE NCC

TREX 2017

25 Years of the RIPE NCC

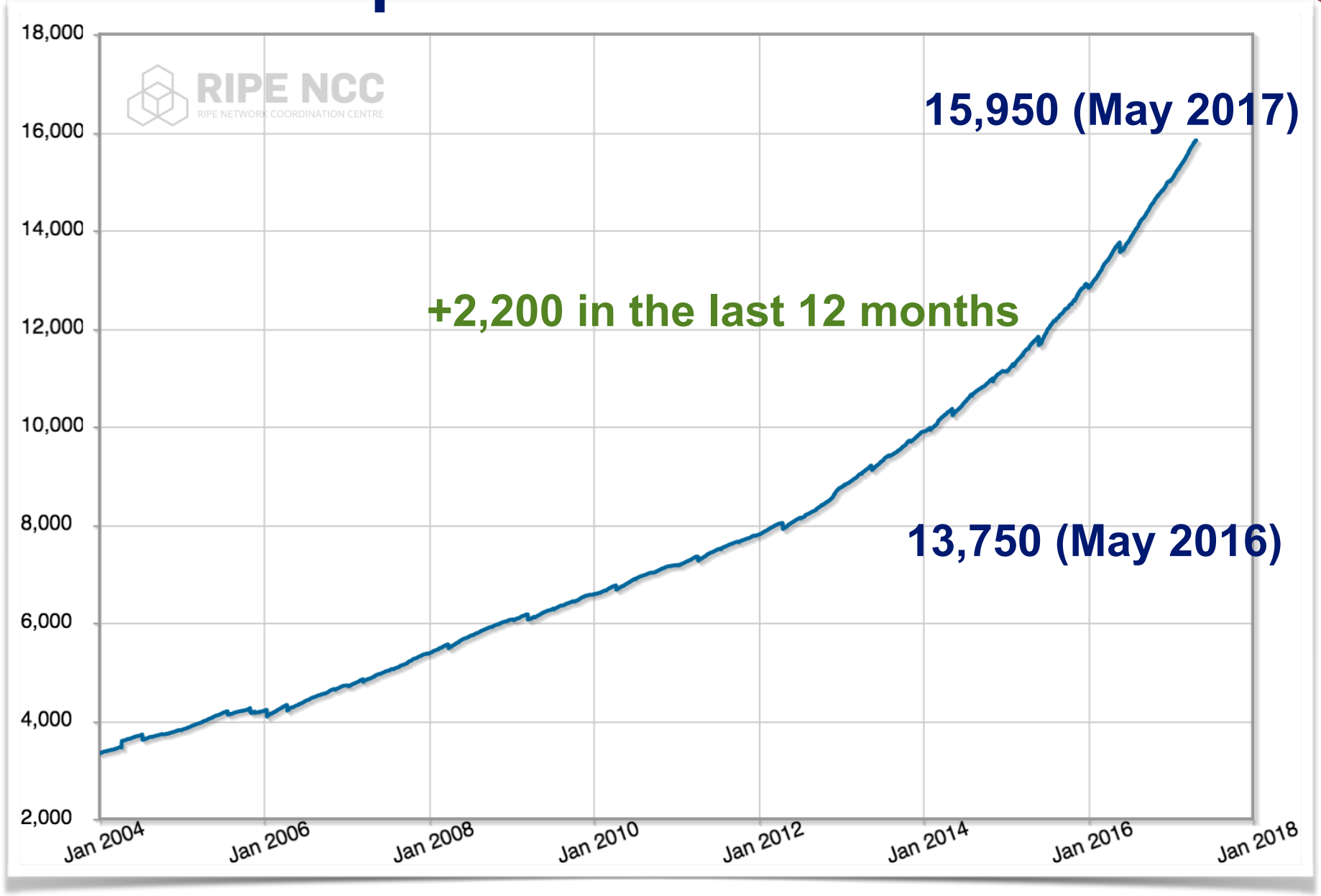
- Established in April 1992
- RIPE NCC has grown to become a diverse organisation with almost 16,000 members
- The Internet has grown and interwoven with business and society in ways few could have predicted
- We are still evolving to meet new challenges and best serve our membership
- Thank you all for joining us on our incredible journey

25 Years of the RIPE NCC

From the Annual Report 2016

- **Main Operational Highlights (end of 2016):**
  - 2,178 additional members in 2016
  - 3,291 /22 IPv4 allocations and 1,878 IPv6 allocations
  - Almost 3,000 RIPE NCC-organised event attendees
  - Over 100 training courses for almost 2,000 participants
  - More than 2,500 ARCs completed in 2016
  - Over 9,700 active RIPE Atlas probes 250+ anchors
  - 1.3 million RIPEstat requests per hour
  - Annual Report: https://www.ripe.net/publications/docs/ripe-683

Membership Growth



Membership Diversity is Growing

- Many new members from other sectors
  - Do not have an Internet background
  - Internet is an important part of their business case
  - Partially driven by IPv4 address shortage?
- Traditional ISP market consolidated
  - Few large players have majority of market share
- Different members have different needs
  - We always appreciate your feedback

Our Focus in 2017

- A strong, secure and accurate Registry
- Enhancing RIR stability through good governance and accountability
- Pursuing efficiency through streamlined internal processes and automation
- Engaging with members, the RIPE community, governments and regulators

Registration and Customer Services

- IPv6 Milestone
  - Very first subsequent IPv6 allocation issued
- Assisted Registry Check (ARC)
  - Targeting “less active” members
  - Has produced a high result in updated information
- Resource Transfers
  - Continues to constitute a high demand on resources
  - Complex tickets with increased levels of scrutiny

Registration and Customer Services

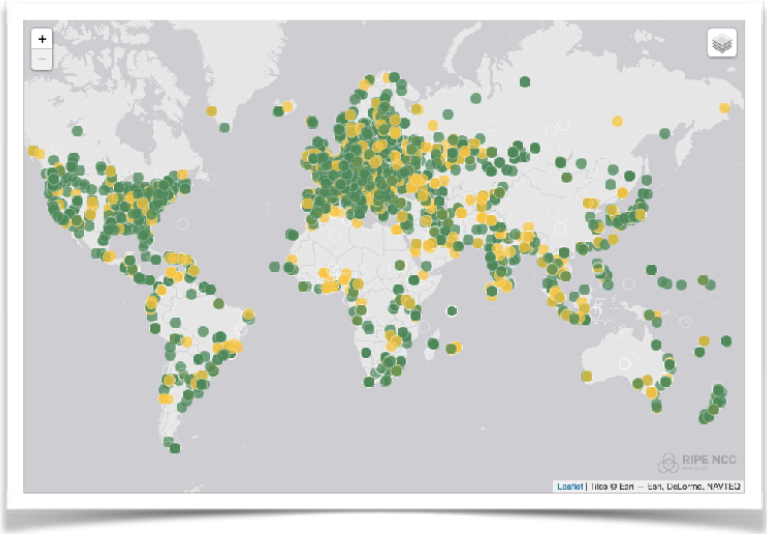
- Hijacks and Investigations
  - Due diligence checks have prevented several high volume unauthorised transfers
  - Following an EB decision, the RIPE NCC actively reports all cases of confirmed fraud to the police
- Continuously focusing on efficiency by improving self-service processes
  - However, a level of human interaction remains crucial
- Maintaining focus on accuracy of the Registry

Tools For You

Visualising Operational Reality

RIPE Atlas - Current Numbers

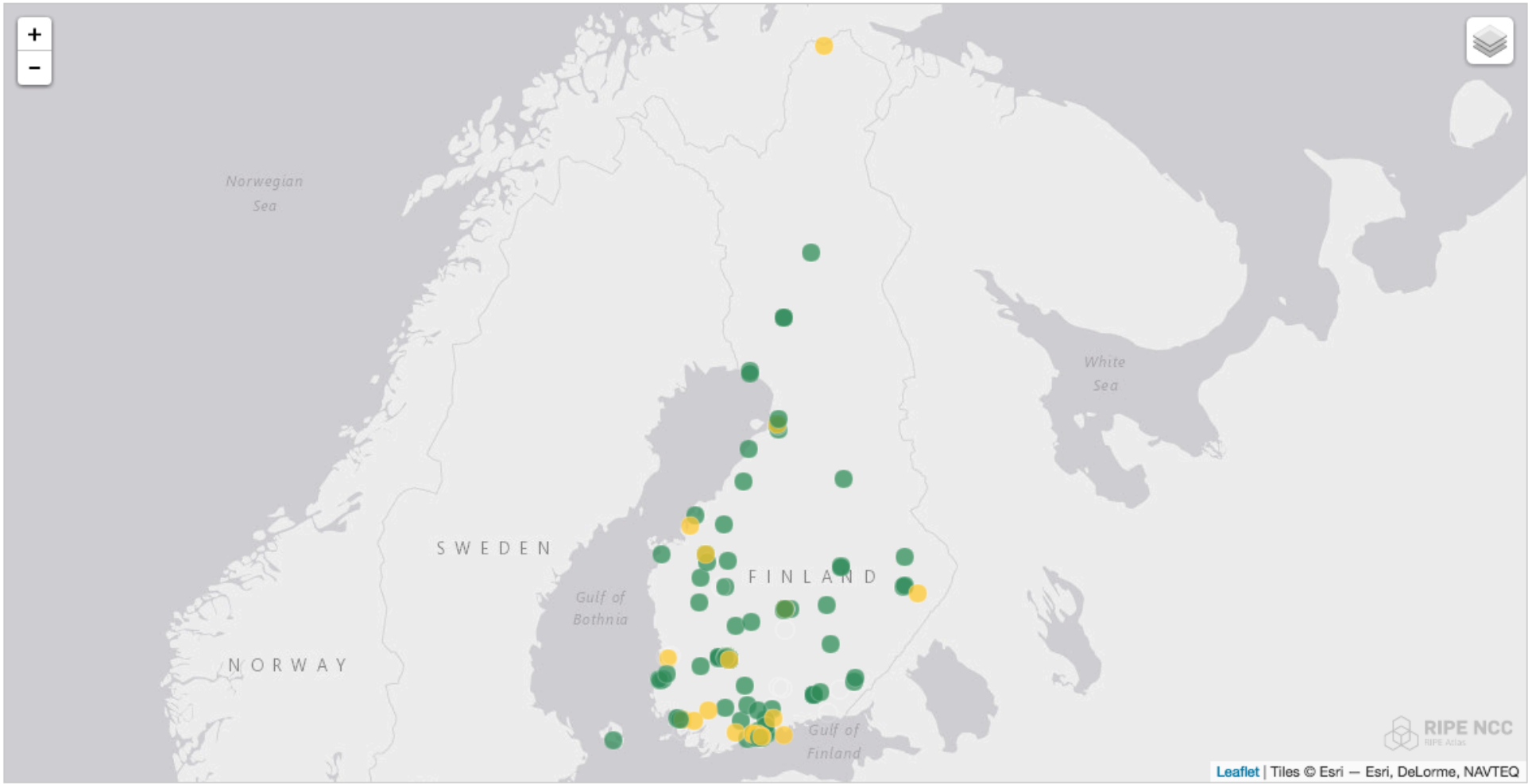
- Number of connected probes: ~9,750
  - Was ~9,350 during RIPE 73
  - Recovered from the previous slow-down/dip
- Covered ASes: ~3,400 (IPv4), ~1,250 (IPv6)
- Collecting ~4,500 results/sec (~390M/day)



Some More Current Numbers

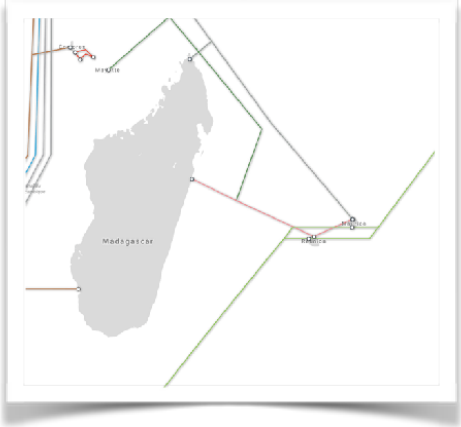
- 384 RIPE Atlas ambassadors
  - Including RIPE NCC staff acting as ambassadors
- 1,940 Twitter followers (@RIPE_Atlas)
- 33,000+ users total, 6,400+ active last quarter
- 1,000+ mailing list subscribers
- 2 RIPE Atlas sponsors in 2017 (+3 pending)
  - Let us know if you feel like sponsoring!

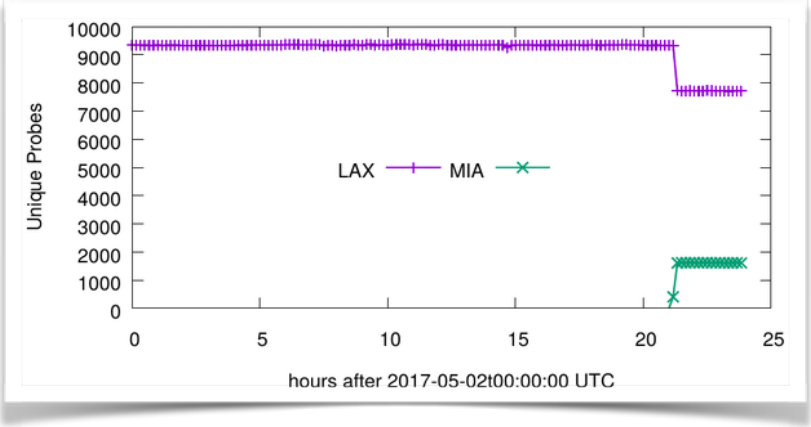
RIPE Atlas in Finland



Recent Use Cases

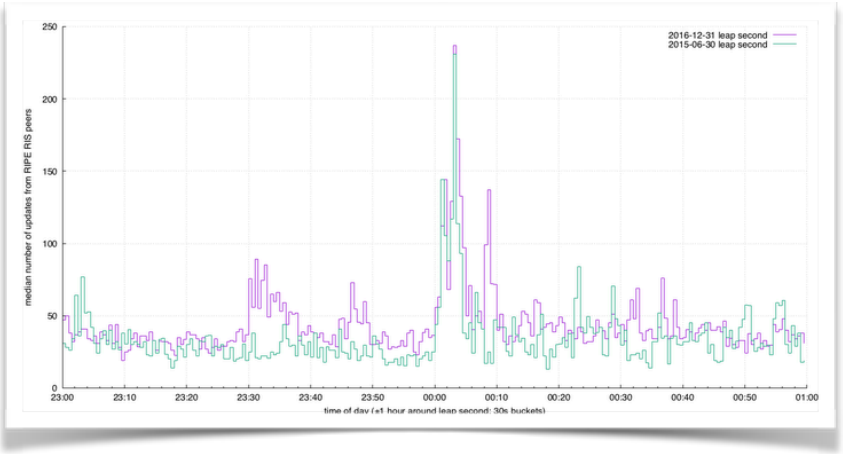
- Turning on Anycast on B-Root
  - https://labs.ripe.net/Members/giovane_moura/anycast-on-b-root-and-ripe-atlas-view
- Using RIPE Atlas to Measure Latency to Reunion Island
  - https://labs.ripe.net/Members/rehan_noordally/using-ripe-atlas-to-measure-latency-to-reunion-island
- Using RIPE Atlas to Validate International Routing Detours
  - https://labs.ripe.net/Members/anant_shah/using-ripe-atlas-to-validate-international-routing-detours

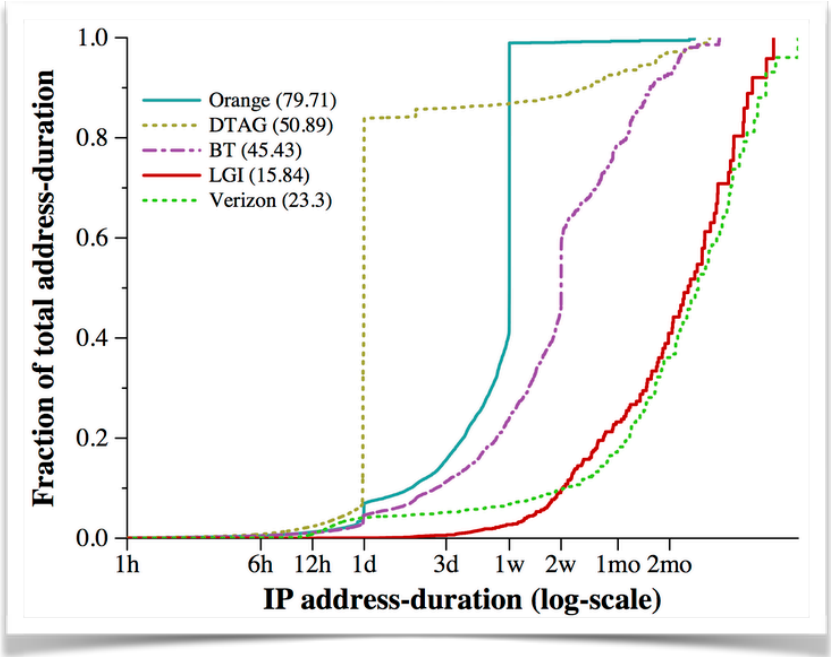




Recent Use Cases

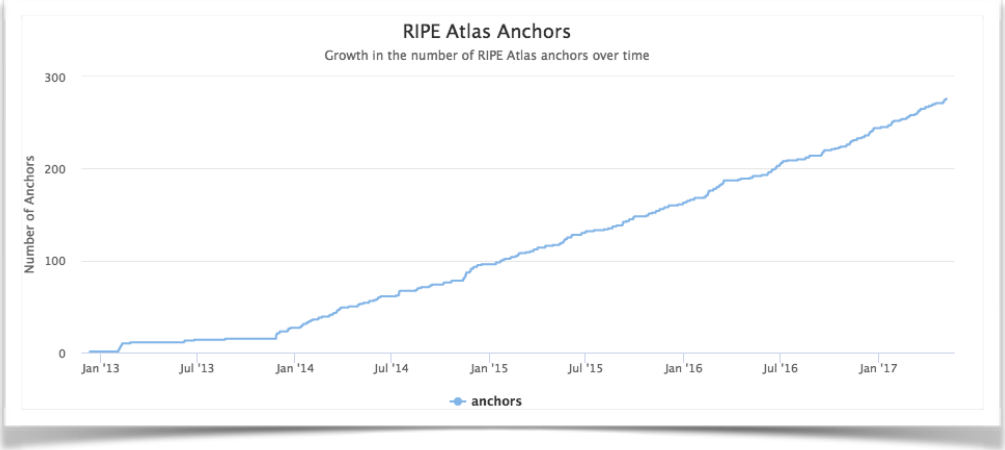
- Reviewing the 2016 Leap Second
  - https://labs.ripe.net/Members/stephen_strowes/reviewing-the-2016-leap-second
- Reasons Dynamic Addresses Change
  - https://labs.ripe.net/Members/ramakrishna_padmanabhan/reasons-dynamic-addresses-change





RIPE Atlas Anchors

- An anchor is a probe and a willing target
  - Automatically measured and generate more credits
- Number of anchors: 250+
- Thanks to APNIC, LACNIC, ISOC & AFRINIC who are sponsoring anchors in other regions
  - Let us know if you also want to sponsor these



RIPE Atlas Probes

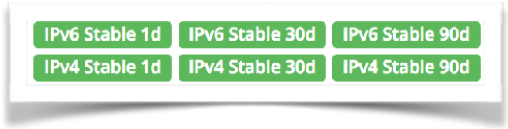
- We're looking at candidates for "version 4" probes
  - Should be capable, stable, inexpensive and available
- Version 1 and 2 probes already lived beyond their foreseen life time
  - We still have ~600 + ~1,400 of these up and running
  - Version 1 probes approached their technical limits
  - We froze their firmware as per end May 2017 but otherwise continue supporting them for as long as possible (e.g. still do security updates if needed)

Going Virtual (?)

- We’re evaluating the potential for virtual probes
  - Probes where the physical device is replaced by a Virtual Machine provided by the host
  - Could reach places that physical probes can’t
  - The costs: higher risks and changes in operations, “noisy neighbours”, avoiding “fast flux” deployments, etc.
- Perhaps even virtual anchors, as a next step

In Other News

- New “probe stability” system tags



- New DNS root zone measurements
- May be coming: “Cloud Reachability”
  - Reachability measurements against servers “in the cloud”
- Held a DNS measurements hackathon in April 2017
  - https://labs.ripe.net/Members/alun_davies/dns-measurements-hackathon-2017

DNS Root Zone Monitor (DNSMON)

- Based on RIPE Atlas measurements

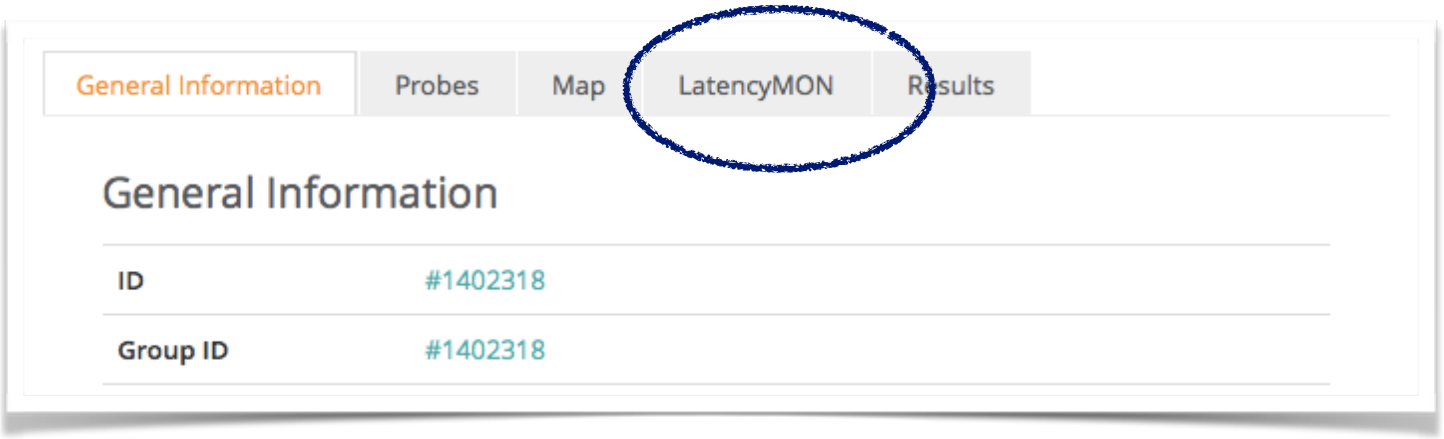
DomainMON: Measure Your Own

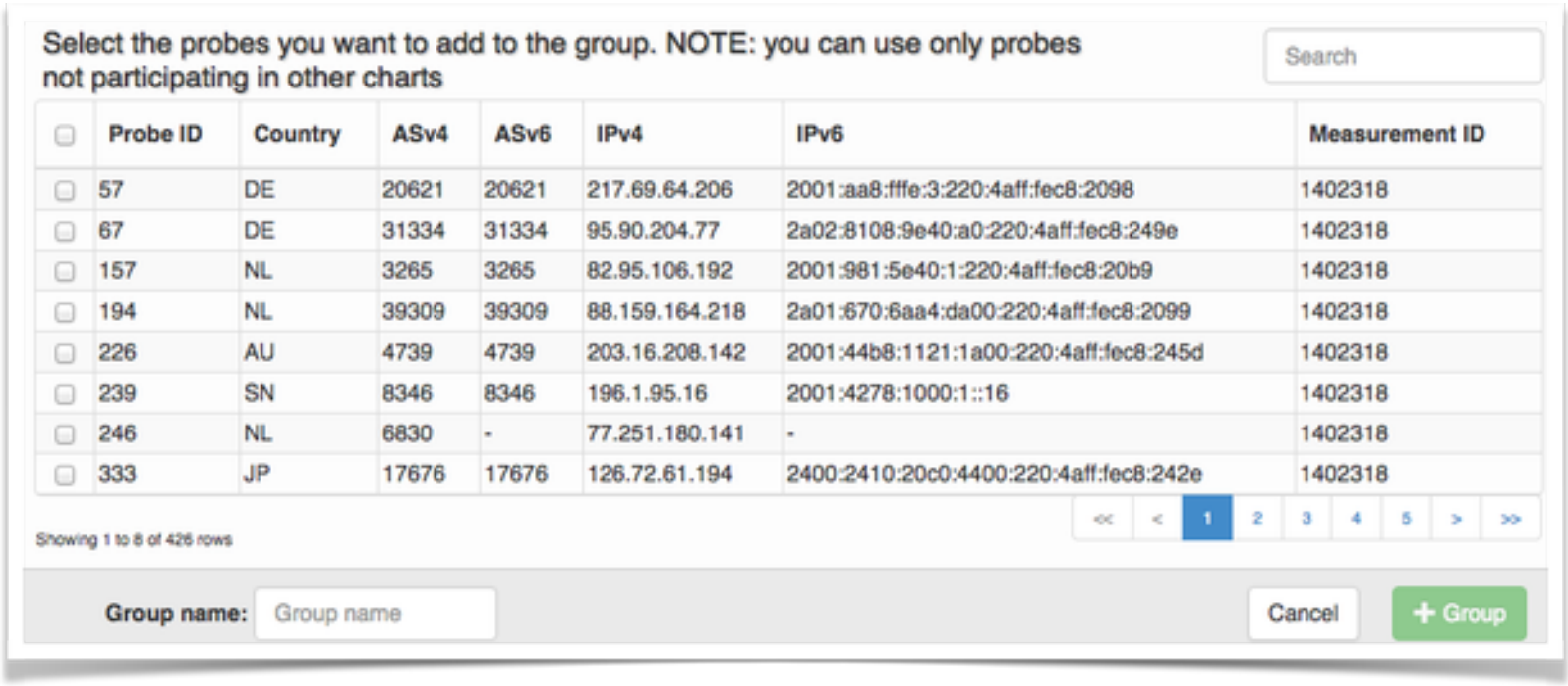
- Based on the same tools as DNSMON
- Test your own domains using RIPE Atlas
  - Specify your own set of nameservers
  - Configure and select a set of probes
  - RIPE Atlas credits deducted based on number of probes

RIPE Atlas LatencyMON

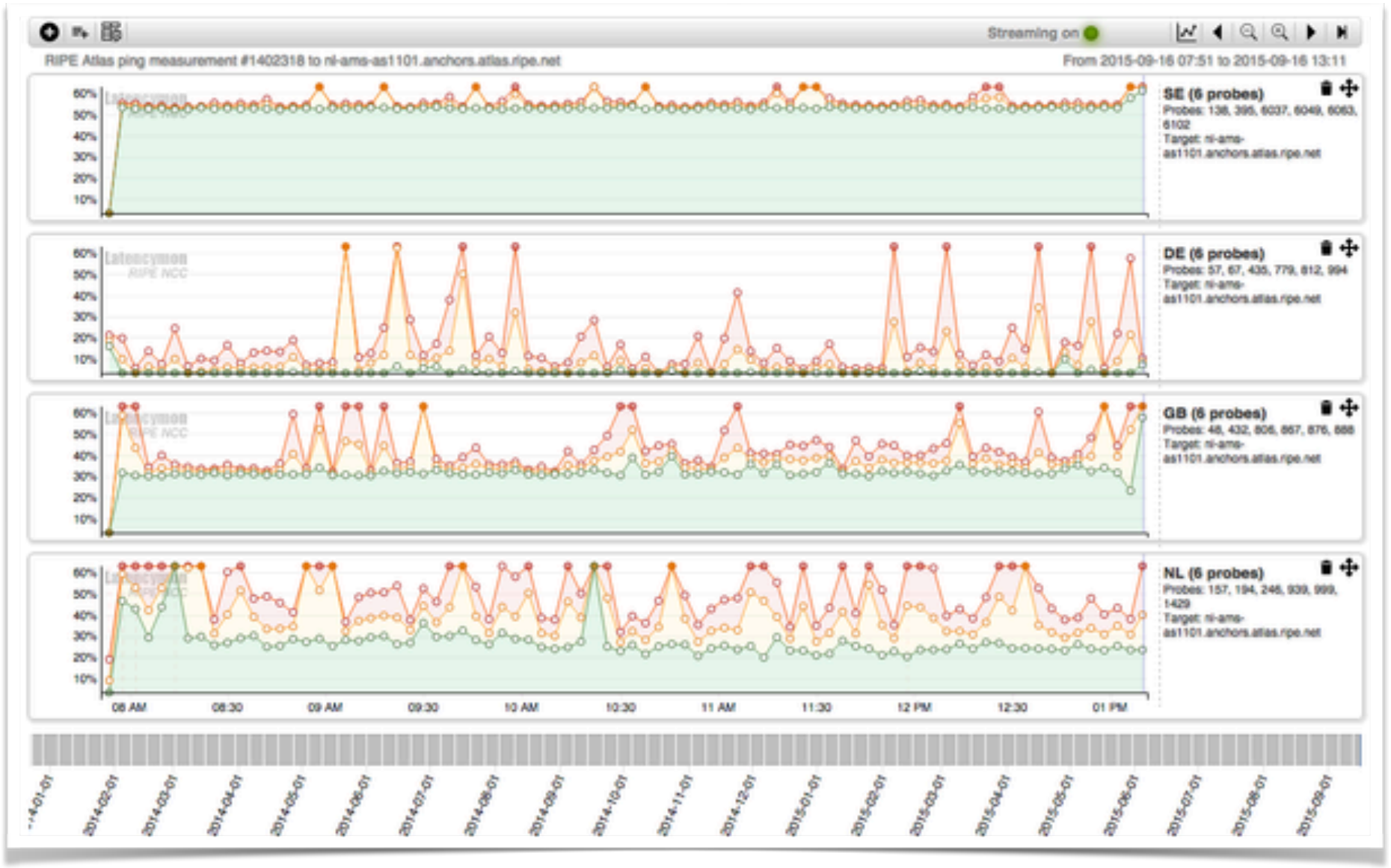
- Easy tool to combine and show latency trends
  - Select an arbitrary set of probes and measurements
  - Compare results even to different targets
  - Zoom and select on specific time periods
  - Streaming updates the charts in real time
- Multiple display options
  - Show absolute values or relative to each other
  - High, low and average or just the average

LatencyMON: Select Probes





LatencyMON: Example



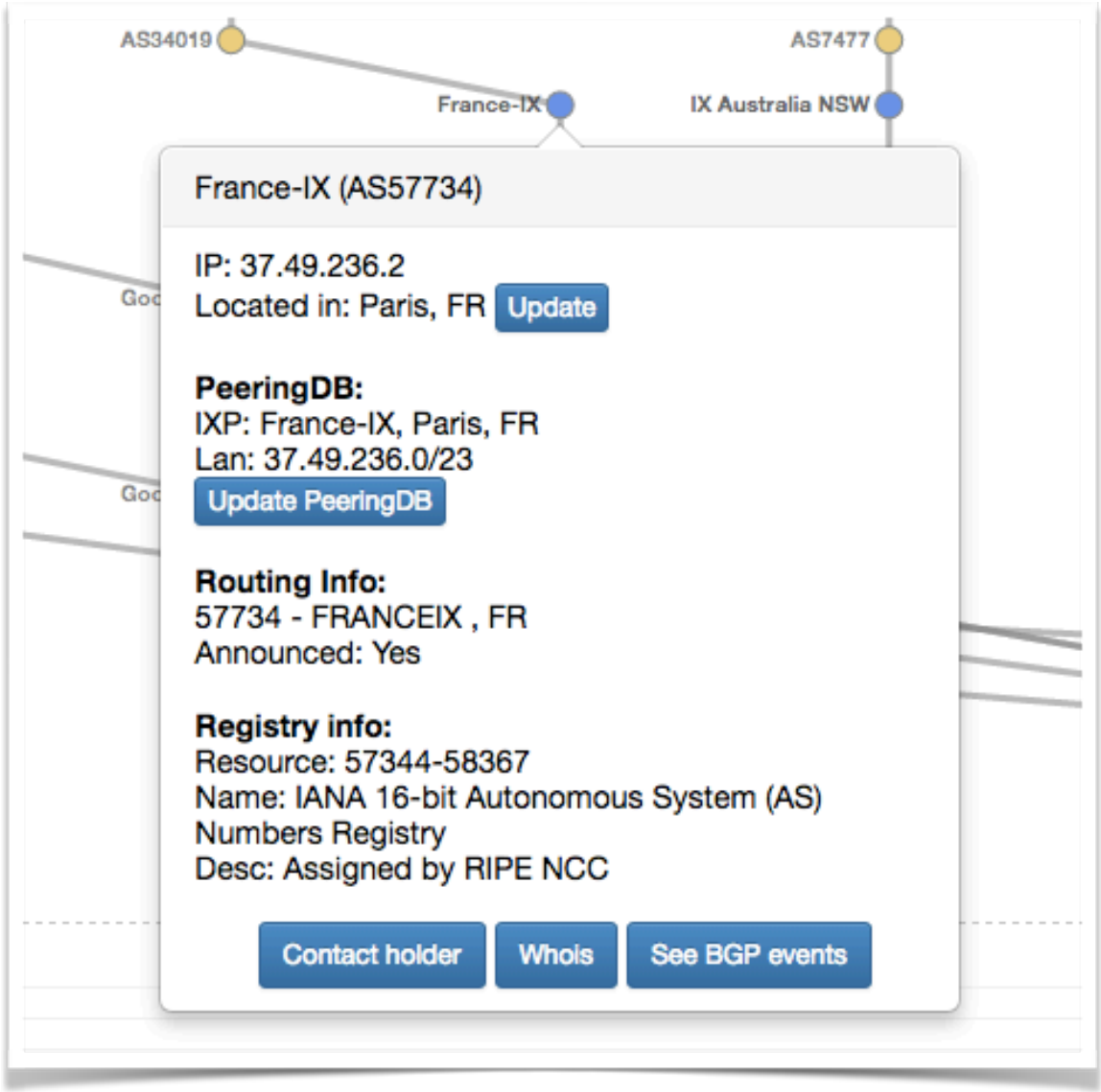
LatencyMON: Example

The Next Step: TraceMON

- We have a huge collection of traceroutes
  - And of course you can create your own set
  - We also have access to similar third party data
- Visualise network topology
  - From a wide collection of vantage points
  - Time based just as the other tools
- Add other related information to nodes
  - Recognise and indicate known IXPs
  - Include geolocation data

TraceMON: Example

TraceMON: Node Details



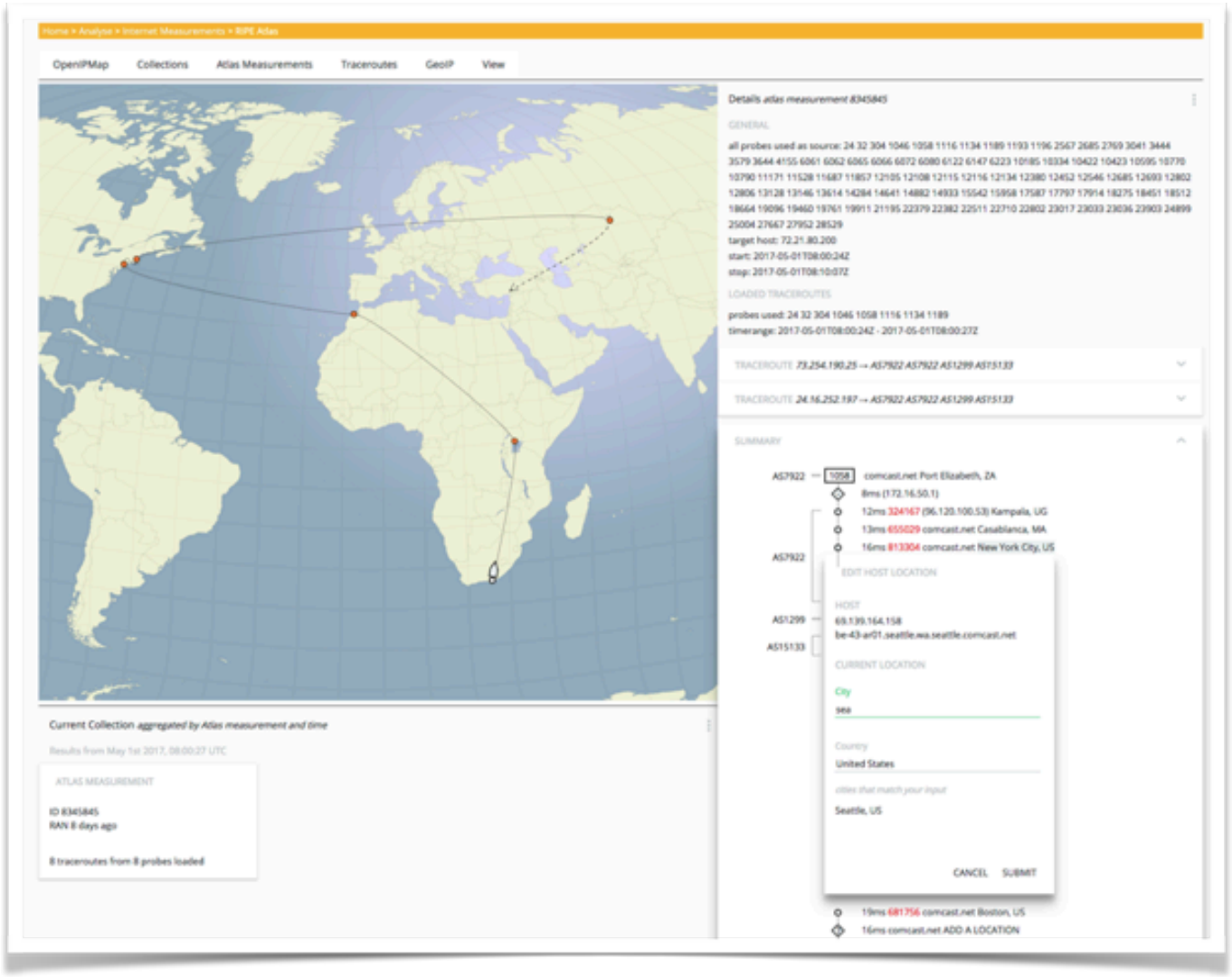
TraceMON: Network Annotations

Almost There: Wi-Fi Measurements

- Verifying if Wi-Fi connections work or not
  - Using regular, wired probes
- Not general purpose “is my home Wi-Fi ok?”
  - Targets specific WiFi networks; Eduroam first
- Probes/hosts will have to opt-in
- Main benefit for RIPE Atlas: potential wider coverage of networks

OpenIPMap

- First production release is imminent



Future Development

- These tools are still being developed
  - We rely on your feedback for improvement
  - Tell us what is good and what isn't
  - Suggest new features
- Help us to maintain our datasets
  - Keep PeeringDB records up-to-date
  - Add and maintain data to the OpenIPMap project
  - TraceMON contains a number of update buttons

More Reading

- Several RIPE Labs articles about these tools
  - See http://labs.ripe.net
- Documentation
  - https://atlas.ripe.net/docs/tools-tracemon/
  - https://atlas.ripe.net/docs/tools-latencymon/
  - https://atlas.ripe.net/docs/domainmon/
- Have a look at http://atlas.ripe.net
  - Sign up, request probes and configure measurements
  - Become a part of the community

Questions

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