RIPE NCC
RIPE NETWORK COORDINATION CENTRE

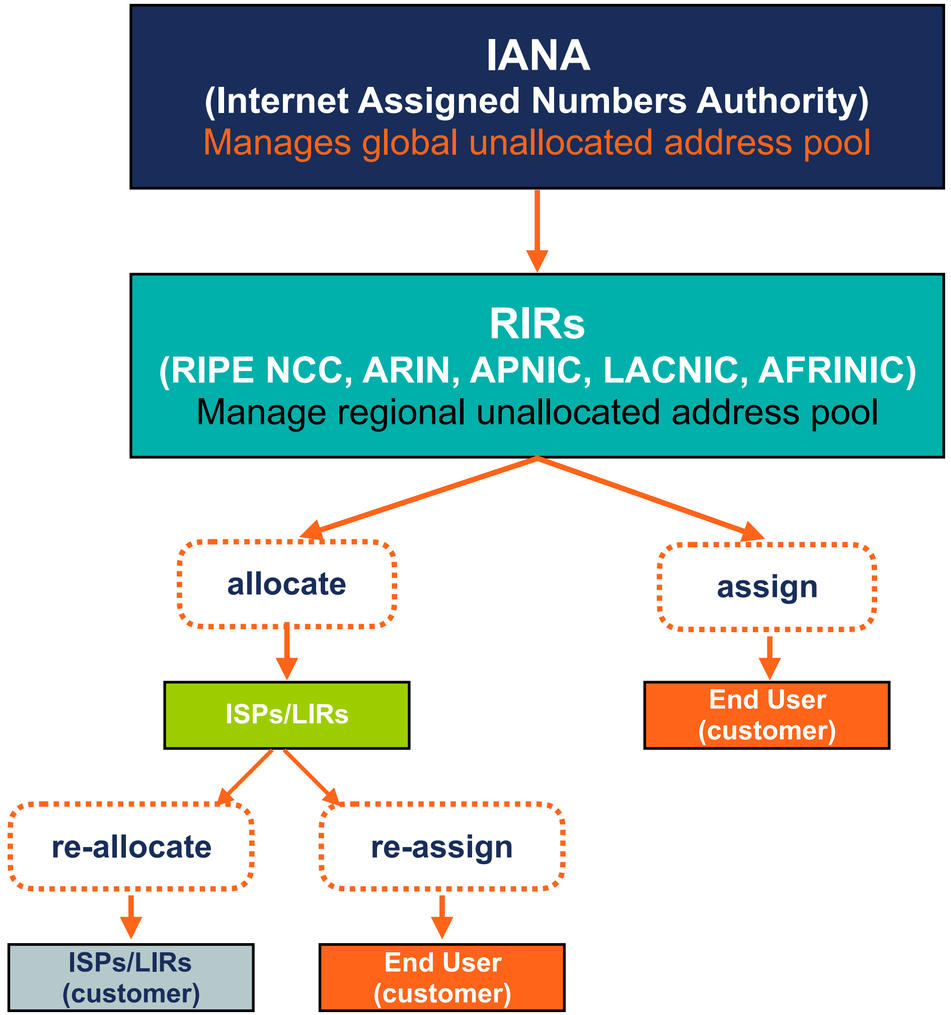
What is the RIPE NCC?

(Hopefully) useful information about our tools, data and services

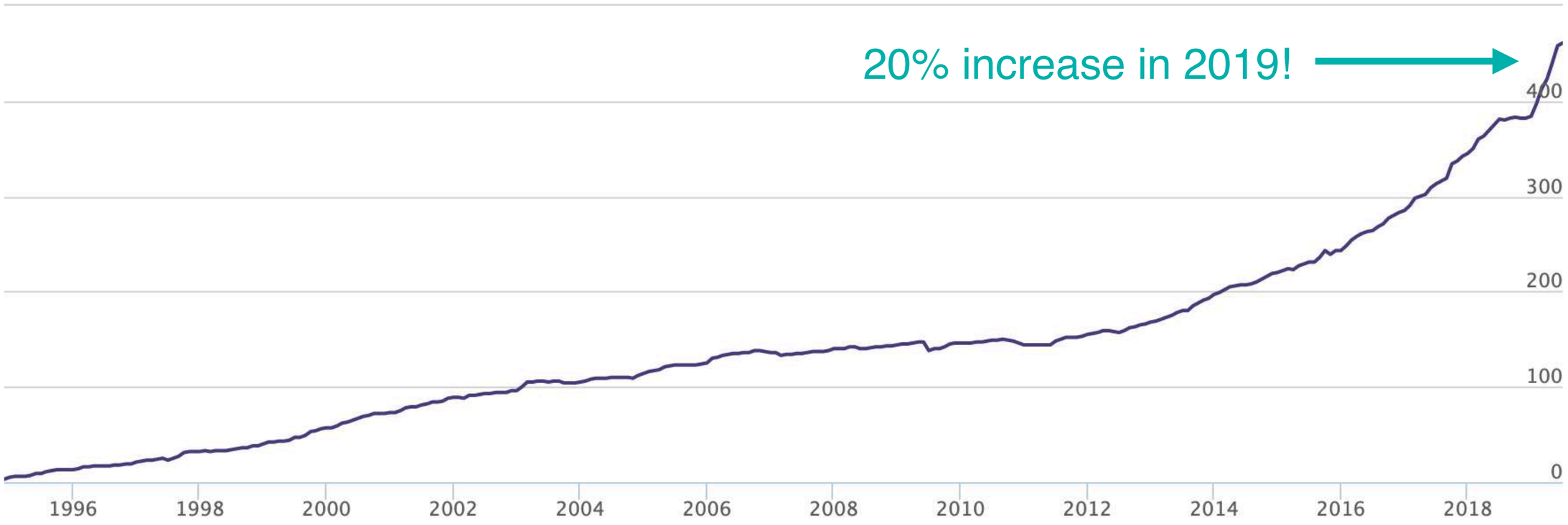
Suzanne Taylor | 16 July 2019 | ATNOG

What is the RIPE NCC?

- One of five Regional Internet Registries (RIRs)
  - Distribute and maintain registry of Internet address space for Europe, the Middle East and parts of Central Asia
  - Members include ISPs and other large network operators
- Not-for-profit membership association based in Amsterdam



Membership Growth in Austria



What do we do?

- Secretariat for the **RIPE community**
  - Open to anyone interested in Internet number resources
  - Community develops policies; RIPE NCC implements them
  - Organise events, develop tools and services to support community
- Provide **technical services and tools**, including K-root
- Source of **technical expertise** for a range of stakeholders
- Participate in **Internet governance** processes
- Follow Internet **regulation** developments

Tools & Data

RIPE Atlas

- Global Internet measurement platform
- More than 10,000 probes collecting nearly 8,000 results/sec
- Active measurements:
  - Ping
  - Traceroute
  - DNS
  - SSL/TLS
  - NTP
  - HTTP(S)

https://atlas.ripe.net

RIPE Atlas

- You can:
  - Monitor network reachability from thousands of global vantage points
  - Troubleshoot network issues with quick connectivity checks
  - Create alarms that work with your own monitoring tools
  - Check responsiveness of DNS infrastructure, such as root name servers
  - Test IPv6 connectivity

RIPE Atlas

- Check out RIPE Labs for ideas:
  - https://labs.ripe.net/atlas

- Apply for a probe!
  - https://atlas.ripe.net/get-involved/become-a-host/

RIPE Atlas

Ping measurement

Target:

An IP address or hostname

Address Family*:

IPv4

Packets:

3

Size:

48

Advanced Options

Packet interval:

Time between packets (ms)

Skip DNS check:

Disables target DNS check on measurement creation

Description:

Ping measurement

Interval:

240

How often this should be done (seconds between samples). Note that this value is ignored for one-off measurements.

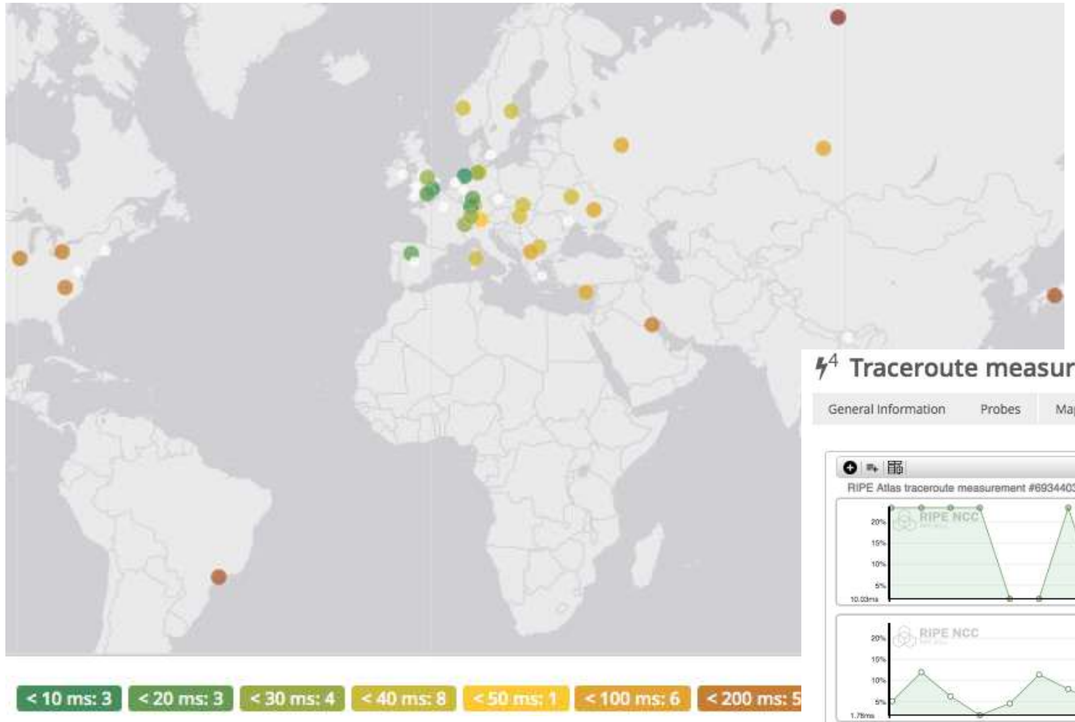
Resolve on Probe:

Force the probe to do DNS resolution

Spread:

Spread of uniformly distributed random probe start time phase

RIPE Atlas

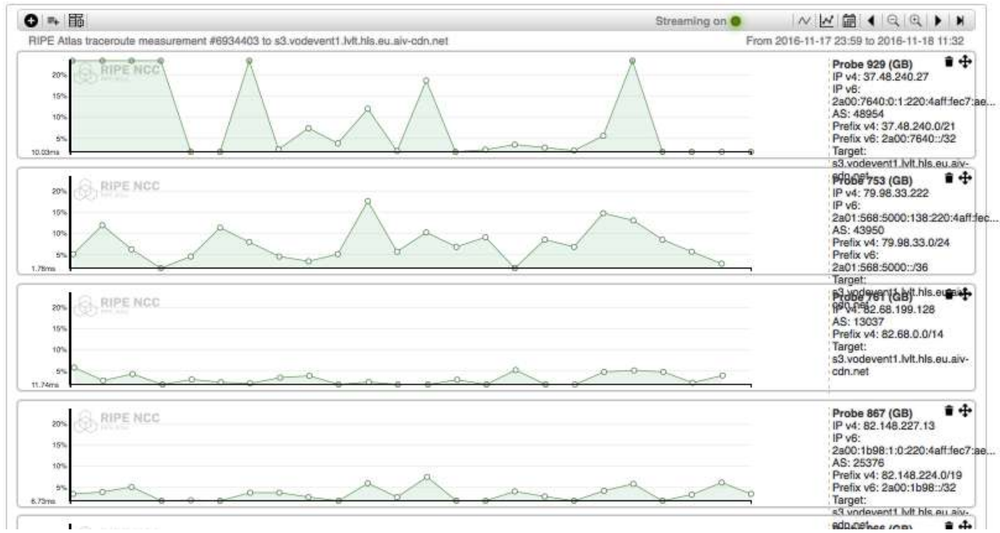


General Information | Probes | Map | LatencyMON | OpenIPMap Prototype | Results | Modification

Probe	ASN (IPv4)	ASN (IPv6)	Time (UTC)	RTT	Hops
2713	60706	60706	2016-11-18 10:52	33.192	14
2941	25394		2016-11-18 10:51	50.783	20
3055	6412		2016-11-18 10:53	150.683	15
3222	6829		2016-11-18 10:49	36.686	24
4166	50581		2016-11-18 10:52	39.533	16
4554	6703		2016-11-18 10:51	82.704	19
4952	3244		2016-11-18 10:51	35.700	19
6078	202040	202040	2016-11-18 10:47	9.279	14
6091	5459	5459	2016-11-18 10:50	9.719	14
				3.767	11
				16.946	19
				0.850	19
				2.699	11
				16.443	29

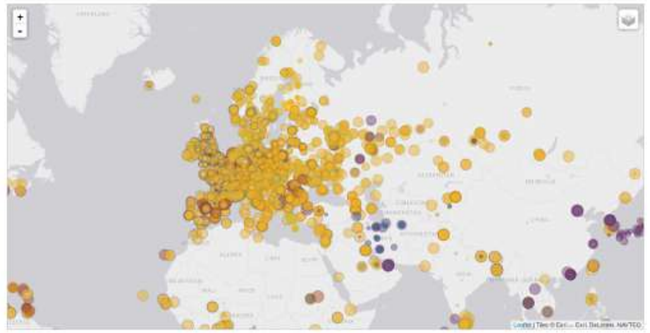
Traceroute measurement to s3.vodevent1.lvlt.hls.eu.aiv-cdn.net

General Information | Probes | Map | LatencyMON | OpenIPMap Prototype | Results | Modification Log



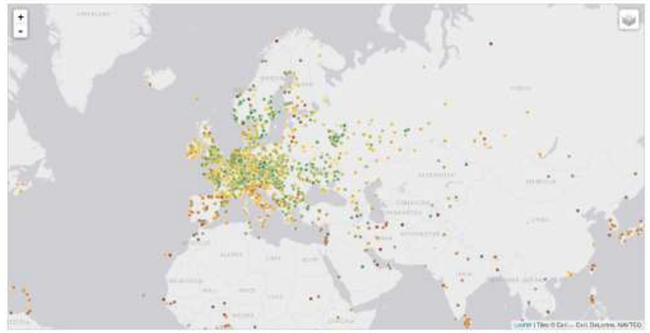
Internet Maps

DNS Root Instances



Comparative DNS Root RTT

Root Server Performance

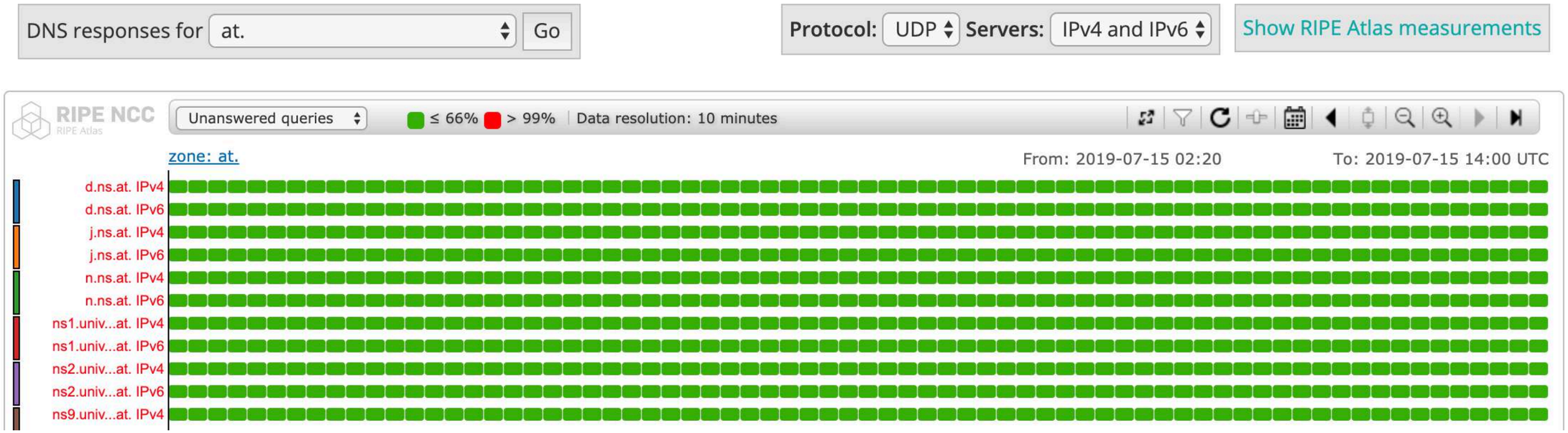


RTT to Fixed Destinations

Reachability of Fixed Destinations

Tools Based on RIPE Atlas

- **DNSMON**: Overview of quality of service offered by all DNS root and many TLD name servers

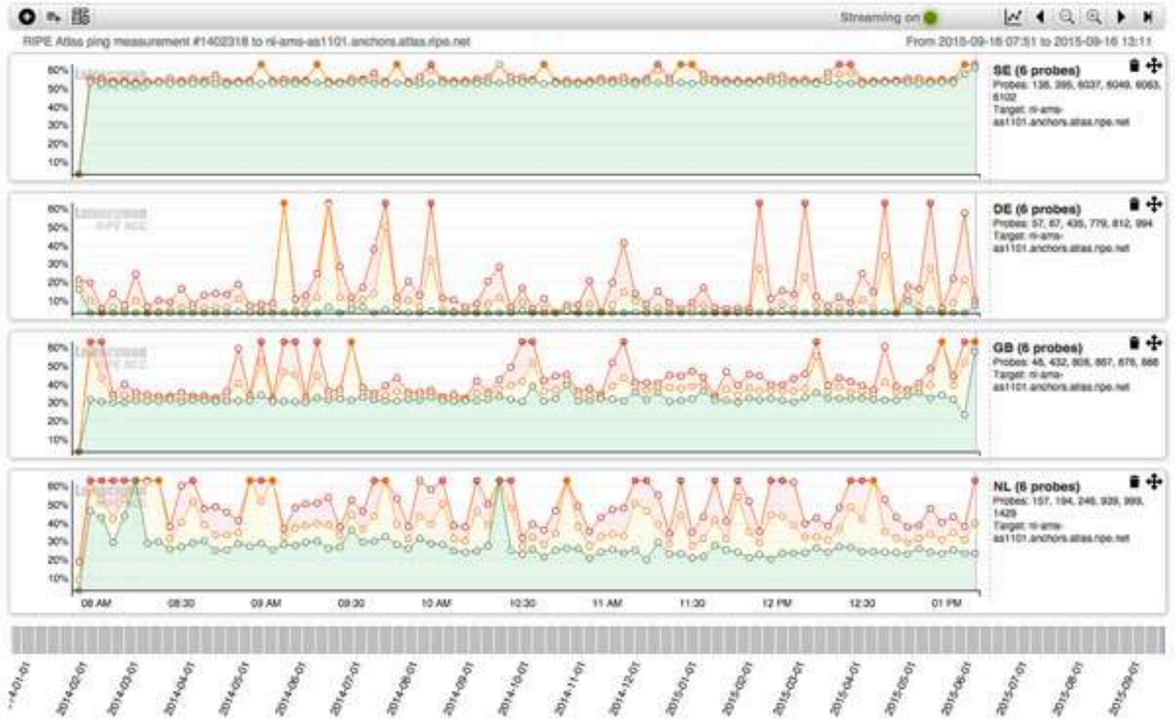


- **DomainMON**: Monitor DNS name servers for your own domain names

Tools Based on RIPE Atlas

- **LatencyMON**: Visualise and compare latency trends

  - Performance comparisons reaching a service or website from different countries or providers
  - Comparing multiple ISPs or hosting providers at the same time, from vantage points with characteristics similar to those at the user or customer end
  - Measuring the spread of a network outage

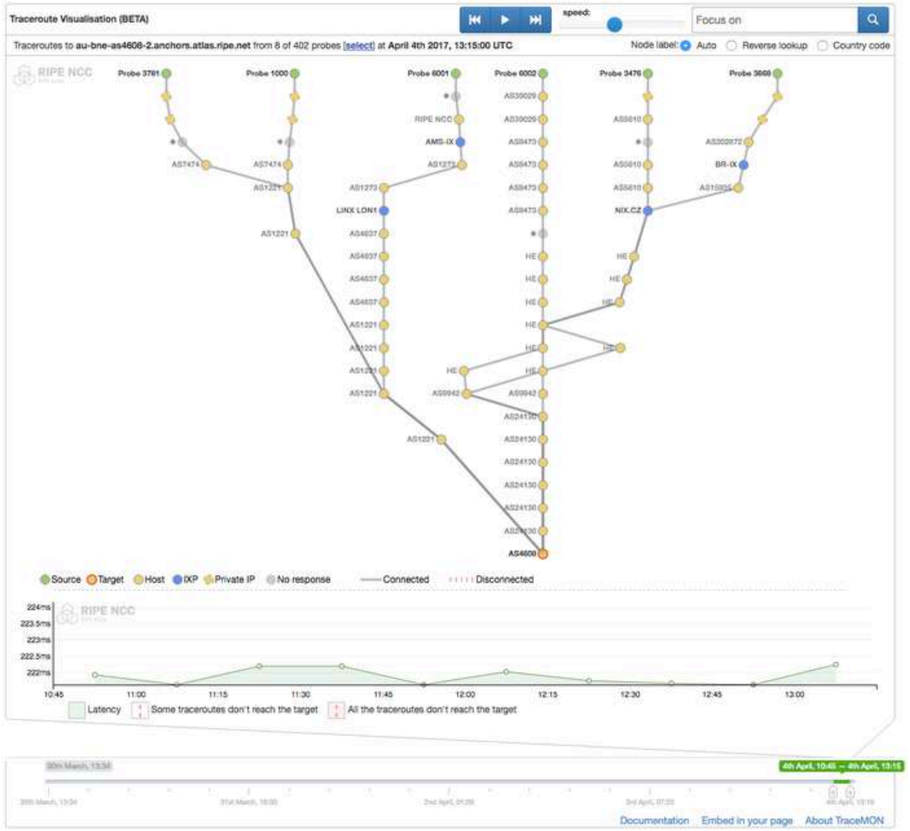


https://labs.ripe.net/Members/massimo_candela/new-ripe-atlas-tool-latencymon

Tools Based on RIPE Atlas

- **TraceMON**: Investigate reachability and performance of targets in a network

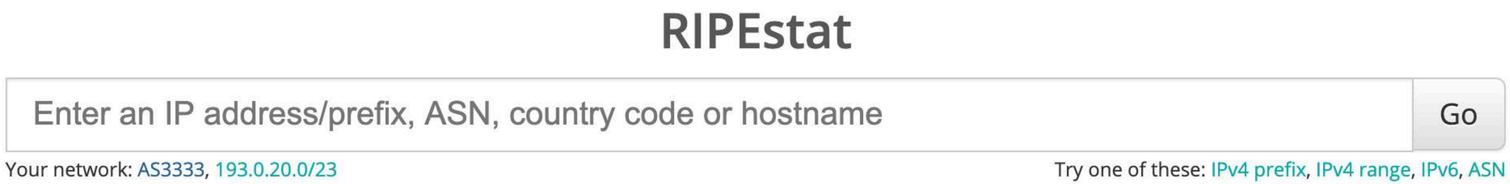
  - Aggregates data from many sources (resource holder contacts, latency, Whois, BGP visibility, IP geolocation, IXP detection, reverse DNS lookup)
  - Provides information about each resource along the path
  - Detects IXPs traversed



https://labs.ripe.net/Members/massimo_candela/tracemon-traceroute-visualisation-network-debugging-tool

RIPEstat

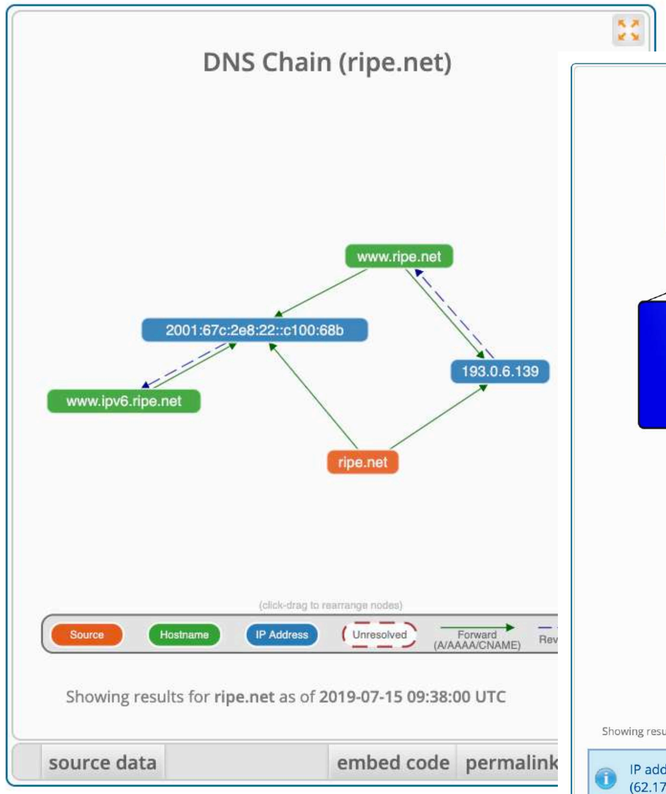
- Everything you want to know about Internet number resources

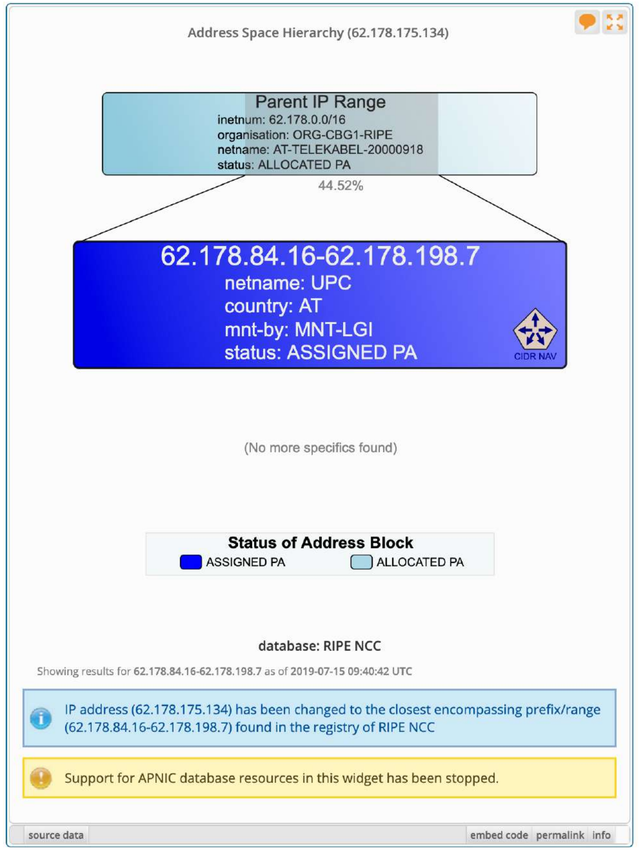


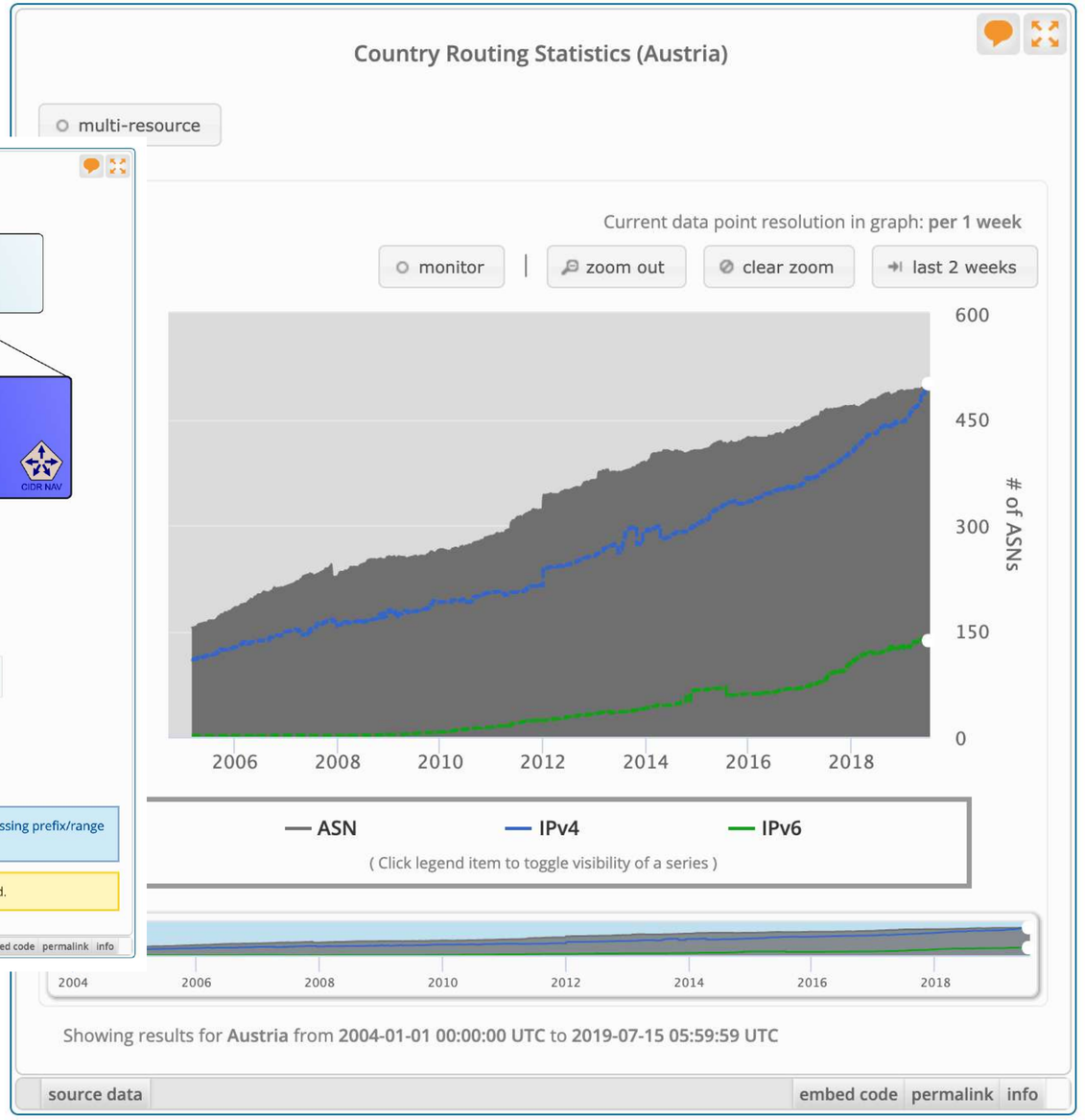
- Available data:
  - Registry data
  - Routing data
  - DNS data
  - Geolocation data
  - Abuse contacts

https://stat.ripe.net

RIPEstat

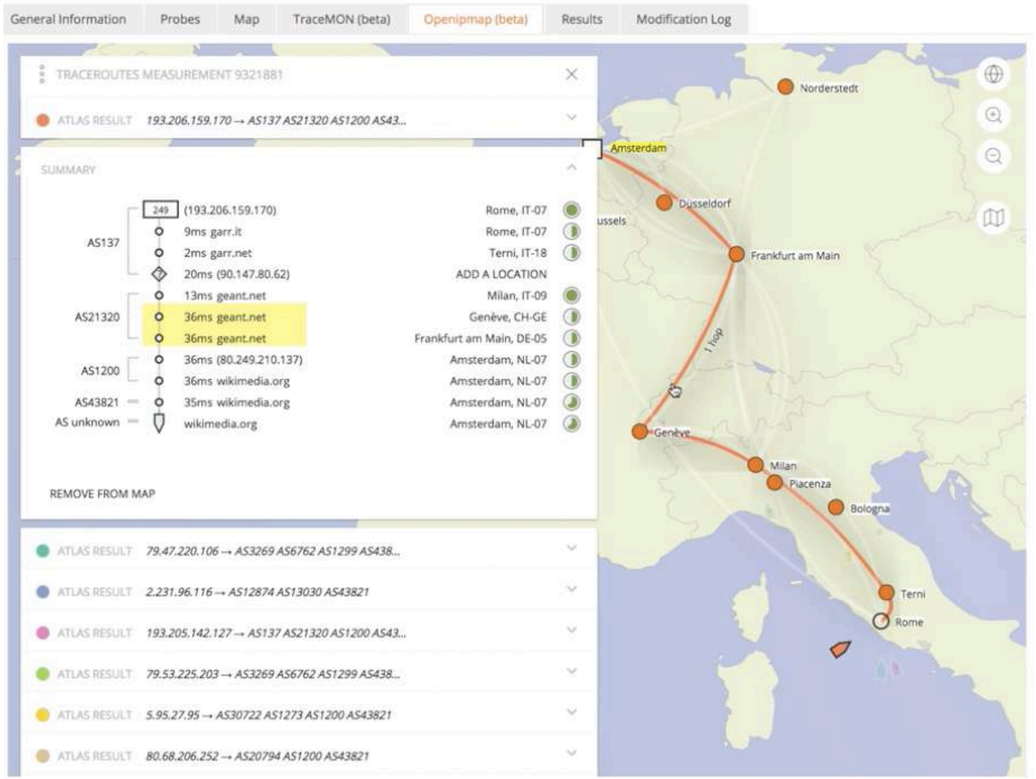

DNS Chain (ripe.net)
www.ripe.net
2001:67c:2e8:22::c100:68b
193.0.6.139
www.ipv6.ripe.net
ripe.net
(click-drag to rearrange nodes)
Source
Hostname
IP Address
Unresolved
Forward (A/AAAA/CNAME)
Showing results for ripe.net as of 2019-07-15 09:38:00 UTC
source data
embed code
permalink


Address Space Hierarchy (62.178.175.134)
Parent IP Range
inetnum: 62.178.0.0/16
organisation: ORG-CBG1-RIPE
netname: AT-TELEKABEL-20000918
status: ALLOCATED PA
44.52%
62.178.84.16-62.178.198.7
netname: UPC
country: AT
mnt-by: MNT-LGI
status: ASSIGNED PA
CIDR NAV
(No more specifics found)
Status of Address Block
ASSIGNED PA
ALLOCATED PA
database: RIPE NCC
Showing results for 62.178.84.16-62.178.198.7 as of 2019-07-15 09:40:42 UTC
IP address (62.178.175.134) has been changed to the closest encompassing prefix/range (62.178.84.16-62.178.198.7) found in the registry of RIPE NCC
Support for APNIC database resources in this widget has been stopped.
source data
embed code
permalink
info


Country Routing Statistics (Austria)
multi-resource
Current data point resolution in graph: per 1 week
monitor
zoom out
clear zoom
last 2 weeks
600
450
300
150
0
# of ASNs
2006
2008
2010
2012
2014
2016
2018
ASN
IPv4
IPv6
(Click legend item to toggle visibility of a series)
2004
2006
2008
2010
2012
2014
2016
2018
Showing results for Austria from 2004-01-01 00:00:00 UTC to 2019-07-15 05:59:59 UTC
source data
embed code
permalink
info

RIPE IPmap

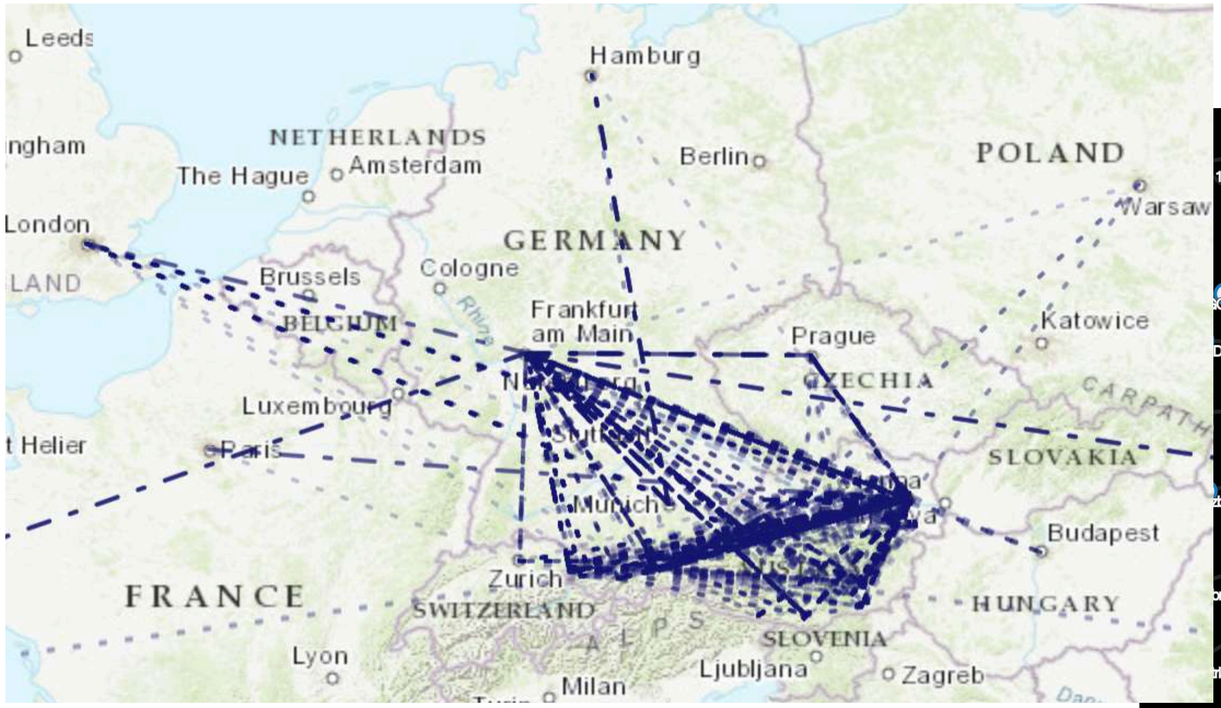
- Open, crowdsourced mapping of Internet infrastructure
  - There is an infrastructure gap in commercial geolocation products

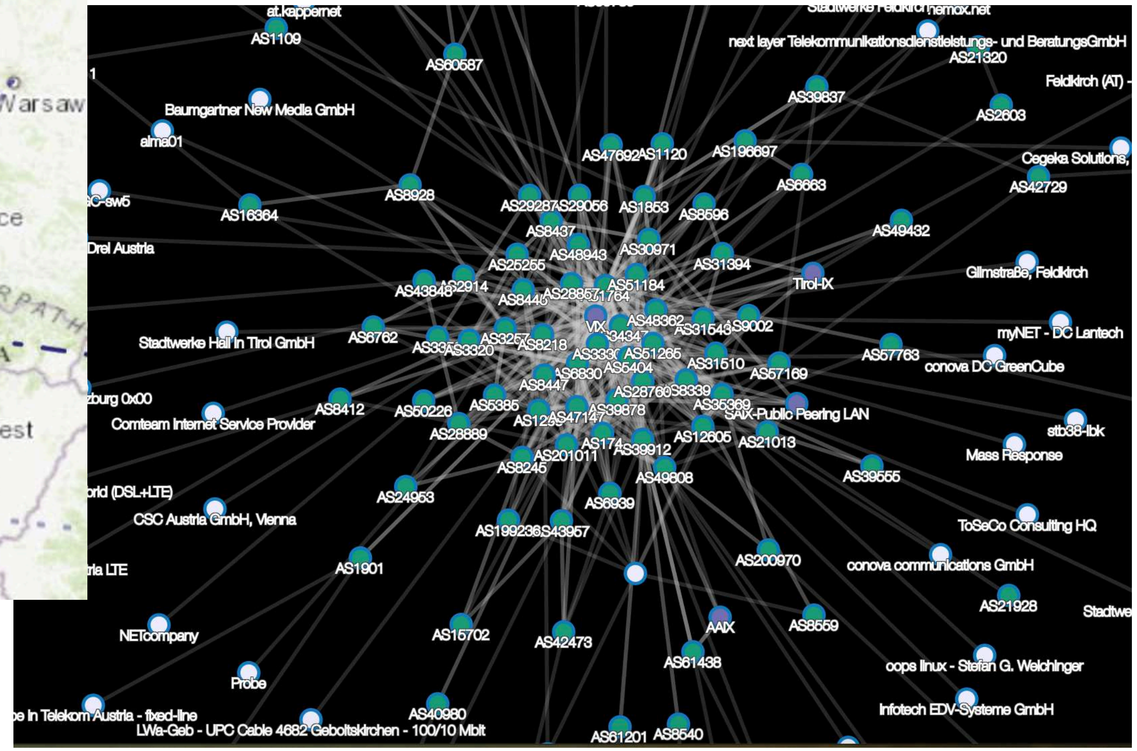


https://ipmap.ripe.net

https://labs.ripe.net/Members/massimo_candela/ripe-ipmap-whats-under-the-hood

IXP Country Jedi

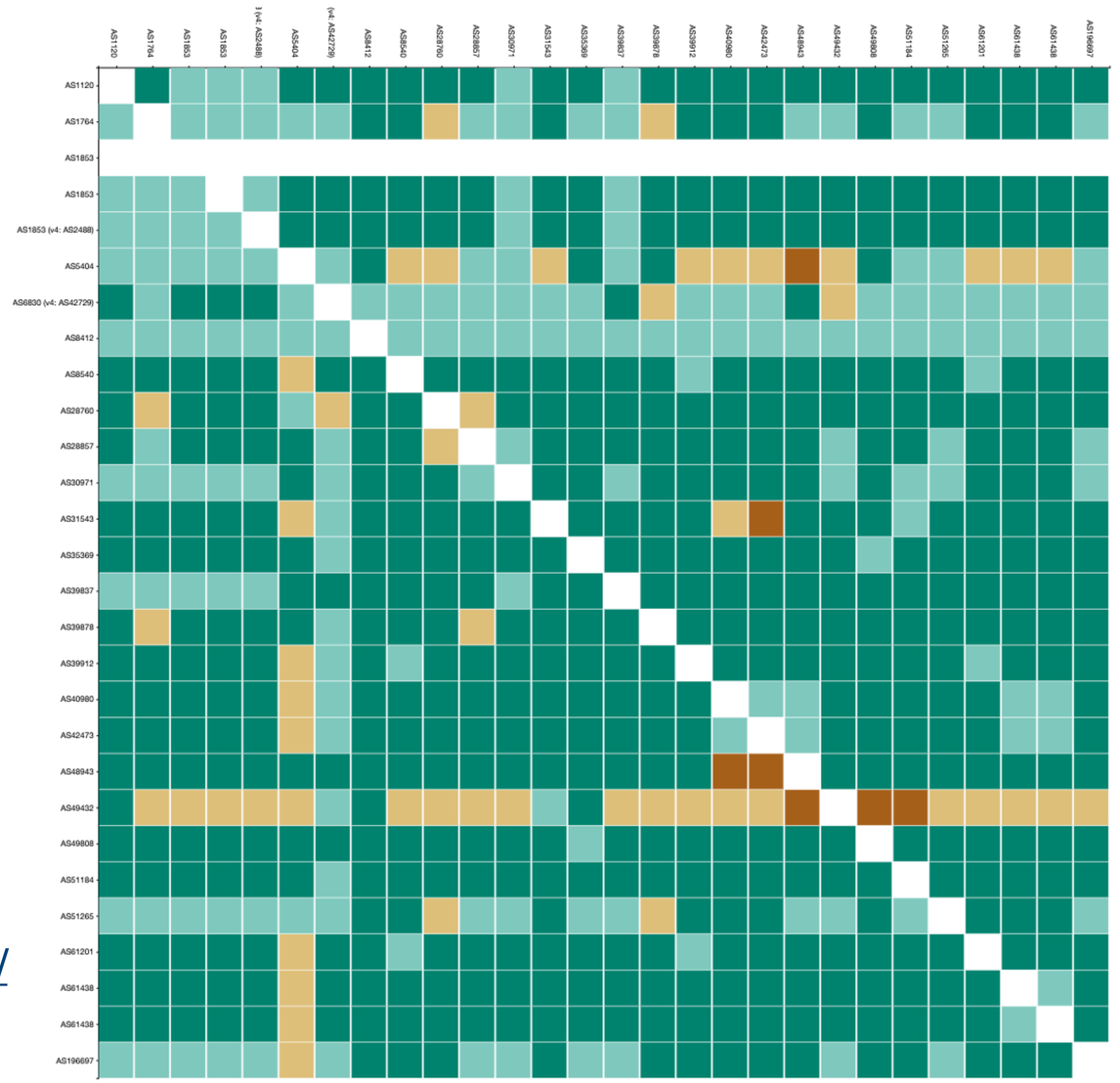




http://sg-pub.ripe.net/emile/ixp-country-jedi/history/2019-06-01/AT/

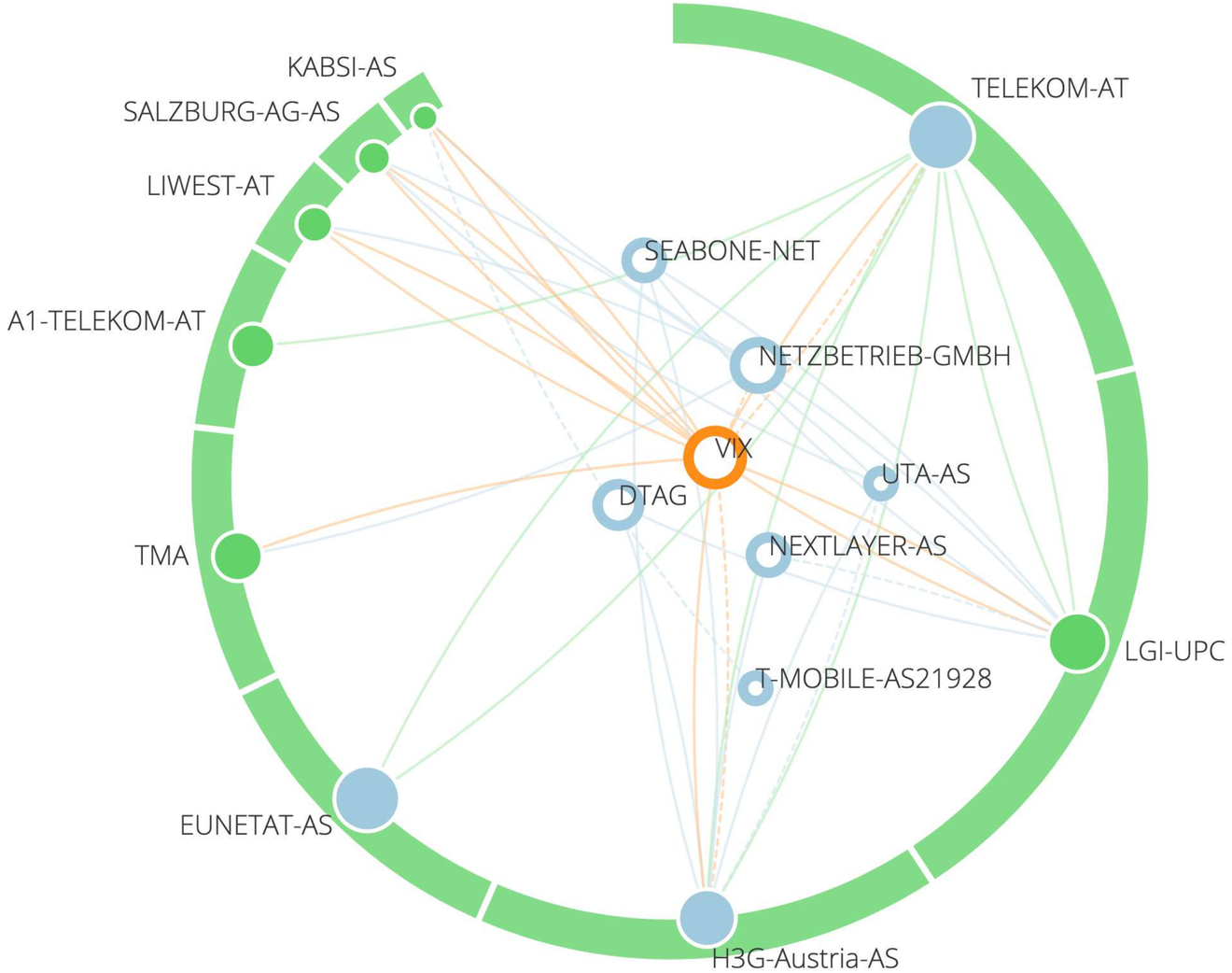
IXP Country Jedi

- Local IXP found: YES, out-of-country IPs: NO
- Local IXP found: YES, out-of-country IPs: YES
- Local IXP found: NO, out-of-country IPs: NO
- Local IXP found: NO, out-of-country IPs: YES



http://sg-pub.ripe.net/emile/ixp-country-jedi/history/2019-06-01/AT/ixpcountry/index.html?ipv=v6

Peer-to-Peer Connections



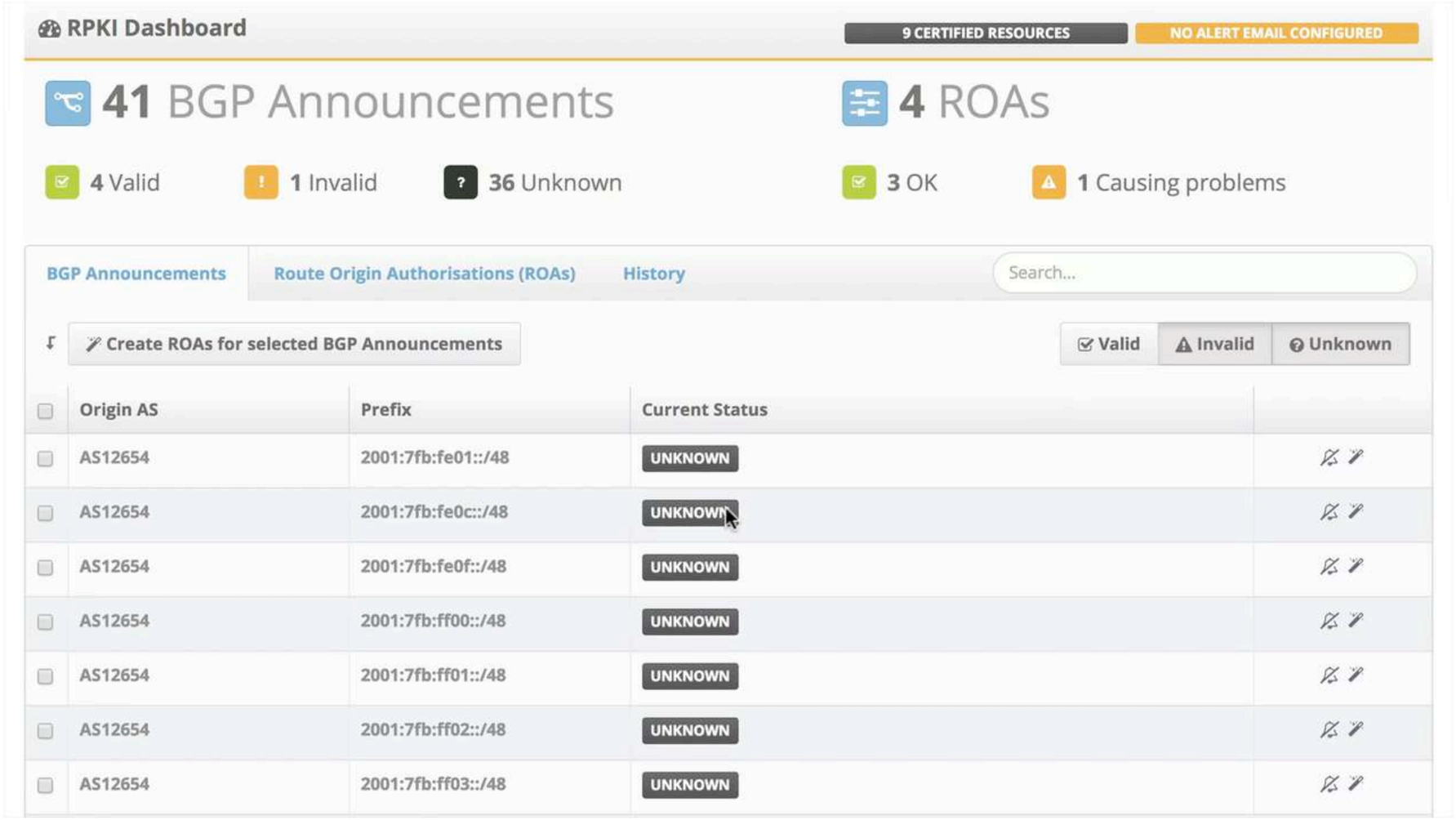
http://sg-pub.ripe.net/ixp-country-jedi/

RPKI

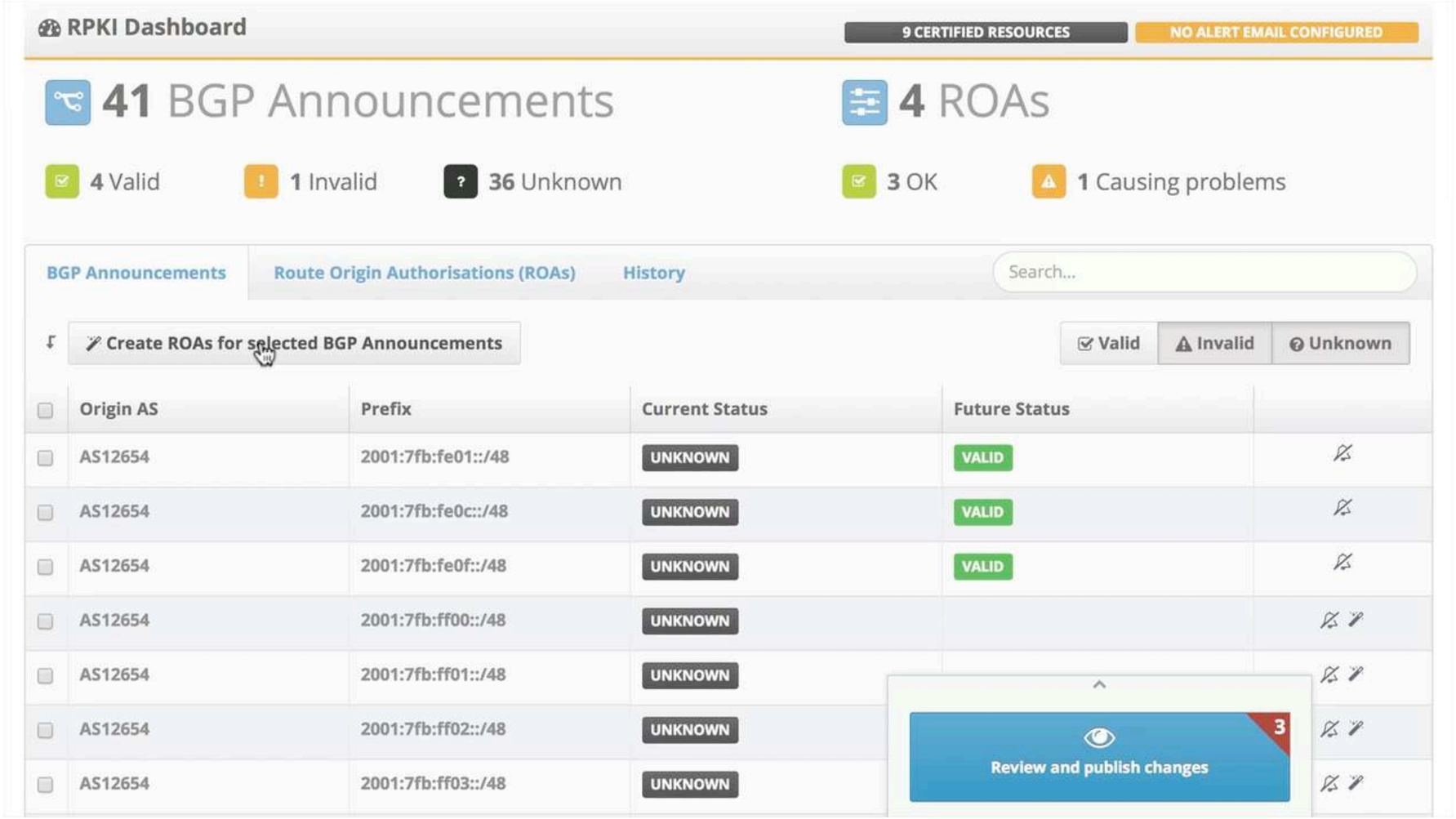
- **R**esource **P**ublic **K**ey **I**nfrastructure
- Community solution to inaccuracies in (or lack of) IRRs
- Operated by RIRs since 2008
- Uses digital certificates to verify who holds IPs/ASNs
  - Route Origin Authorisations (ROAs)
  - Members can create a ROA for each of their IP address ranges
  - Can create multiple ROAs that overlap

https://www.ripe.net/manage-ips-and-asns/resource-management/certification

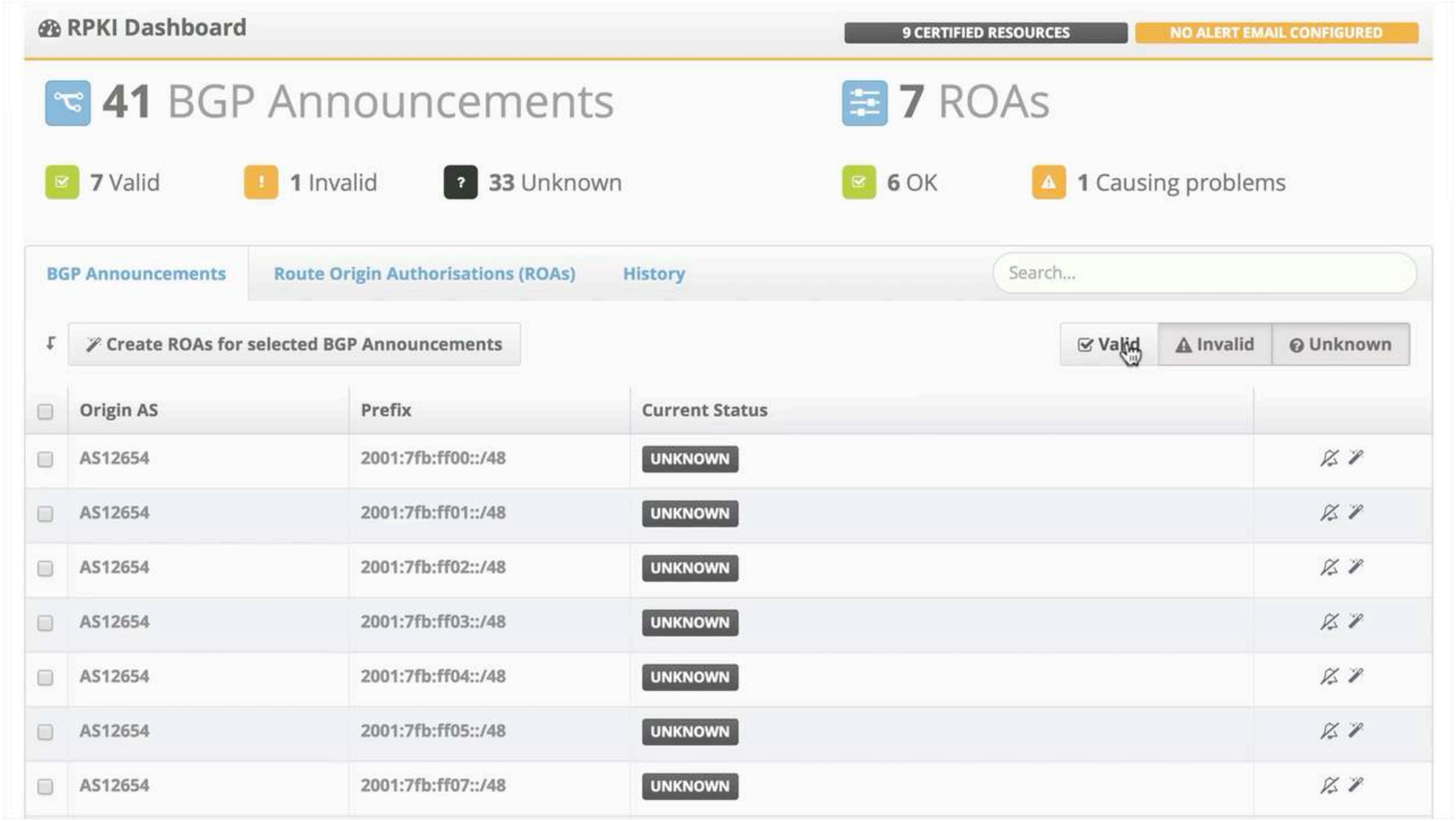
RPKI: Creating ROAs



RPKI: Reviewing Changes



RPKI: Checking the Effects



Help Us Help You

- Keep RIPE Database records up-to-date
- Help us maintain our datasets:
  - Keep PeeringDB records up-to-date
  - Add and maintain data to RIPE IPMap
  - TraceMON contains a number of update buttons

Services

RIPE Community Projects Fund

- The RIPE NCC has a long history of supporting projects and innovative ideas
- €250,000 a year to support non-commercial projects supporting the operation and resilience of the Internet
- Preference given to projects from our service region

https://www.ripe.net/support/cpf

Assisted Registry Check

- Help our members to keep their data up-to-date
- Identify inconsistencies between Routing Registry entries and BGP announcements
- Assist with locating and fixing lame reverse DNS delegations

https://www.ripe.net/manage-ips-and-asns/resource-management/assisted-registry-check

Training Courses

- Face-to-face training courses
  - RIPE Database / IPv6 / BGP / Measurement tools
  - Course material available online
- Online learning
  - RIPE NCC Academy
  - RIPE NCC::Educa online events
  - Webinars: RPKI / IPv6 / IRR / RIPE Database / RIPE Atlas / RPKI

https://www.ripe.net/support/training

Events

Where we went in 2018

Events: RIPE Meetings

- Two RIPE Meetings per year
  - Working Groups and plenary sessions
  - Remote participation
- New members get free tickets
- Fellowship program available

Events: RIPE Meetings

Tuesday, 21 May 09:00 - 10:30

Next Gen Blackholing to Counter DDoS
Matthias Wichtlhuber, DE-CIX Management GmbH

A First Joint Look at DoS Attacks and BGP Blackholing in the Wild
Mattijs Jonker, University of Twente

DDos Clearing House: Solving DDoS Attacks in the Netherlands, Europe, and Beyond by Facilitating Bridging Solutions and Stakeholders
Koen van Hove, University of Twente

Tuesday, 21 May 11:00 - 12:30

Revisiting the Root
David Huberman, ICANN

OpenINTEL: Long-Term Active Measurements for DNS Research
Roland van Rijswijk, NLnet Labs

That KSK Roll
Geoff Huston, APNIC


Join us at
RIPE 79
Rotterdam, Netherlands
14 - 18 October, 2019

Events

- Regional Meetings
  - SEE (South East Europe)
  - ENOG (Eurasia)
  - MENOG (Middle East)
  - Fellowships available
- Member Lunches
- Hackathons
  - IoT hackathon in Rotterdam: 12-13 October
  - https://www.ripe.net/participate/forms/apply/iot-hackathon-rotterdam/

ENOG RIPE NCC Regional Meeting Eurasia Network Operators Group

MENOG Middle East Network Operators Group

Get Involved

Get Involved

- Participate in a RIPE Working Group
  - Address Policy, DNS, RIPE Database, Routing, IPv6, IoT, Anti-Abuse and more
  - Join the mailing lists
- Attend a training course, webinar or take a course online
- Attend a RIPE or RIPE NCC Regional Meeting
- Apply for a RIPE Fellowship
- Host a RIPE Atlas probe
- Apply for a RIPE NCC Community Projects Fund grant

Today’s biggest takeaway

- The RIPE NCC is here for you!
  - Training
  - NOG support
- Tell us what tools and data you need
  - We rely on your feedback for improvement
  - Tell us what’s good and what isn’t
  - Suggest new features
- We live for your feedback :)

Questions

staylor@ripe.net