Why Does MANRS Matter?

The opinions expressed here belong solely to myself, and do not reflect the views of my employers.

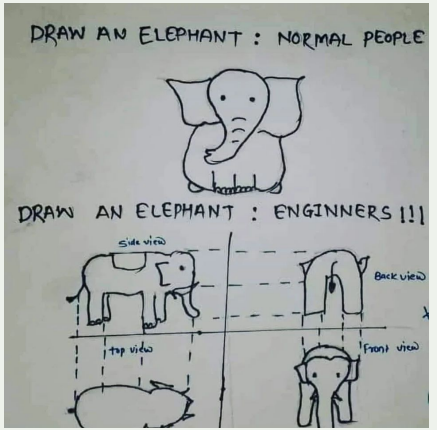
DISCLAIMER

Why?

I can answer this in a simple way as an engineer, why should we improve security in internet routing?

I could mention legal, administrative, social and other aspects here… but particularly, for those who are keeping everything running, engineers also like to:

- sleep;
- go on vacations without hanging on your cell phone;
- go to a barbecue and stay until the end;
- have a nice weekend with the family without an alert;
- and many others… engineers are people too (in theory)!!!



MANRS

Mutually Agreed Norms for Routing Security (MANRS) is a global initiative, supported by the Internet Society, that provides crucial fixes to reduce the most common routing threats. MANRS offers specific actions via four programs for Network Operators, Internet Exchange Points, CDN and Cloud Providers, and Equipment Vendors.

In early 2014, a small group of network operators began working on a way to gather the wider operator community to improve the security and resilience of the global routing system. This eventually became an initiative we called the Routing Resilience Manifesto, and it produced a set of initial recommendations that we published as a draft document in July 2014 for community review and comment.

Once the community review and feedback period closed on 31 August 2014, we consolidated all the comments, updated the draft into the final version of the “Mutually Agreed Norms for Routing Security (MANRS)” document, and officially launched the MANRS site with an initial list of supporters.

Check => https://www.youtube.com/watch?v=nJINk5p-HEE

Source: MANRS

MANRS Programmes

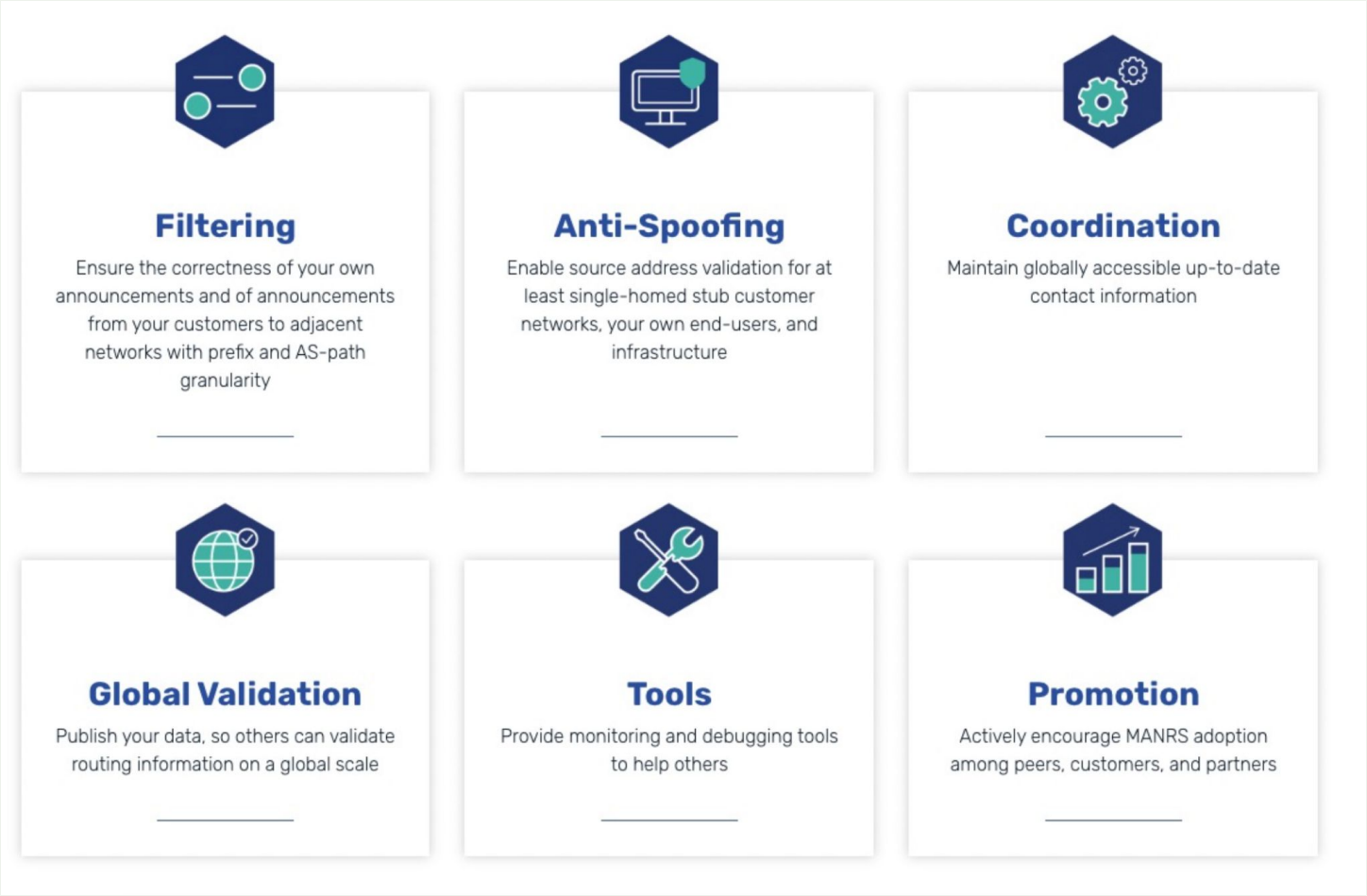
Network Operators (2014)

Internet Exchange Points (2018)

Content Delivery Networks (CDNs) and Cloud Providers (2020)

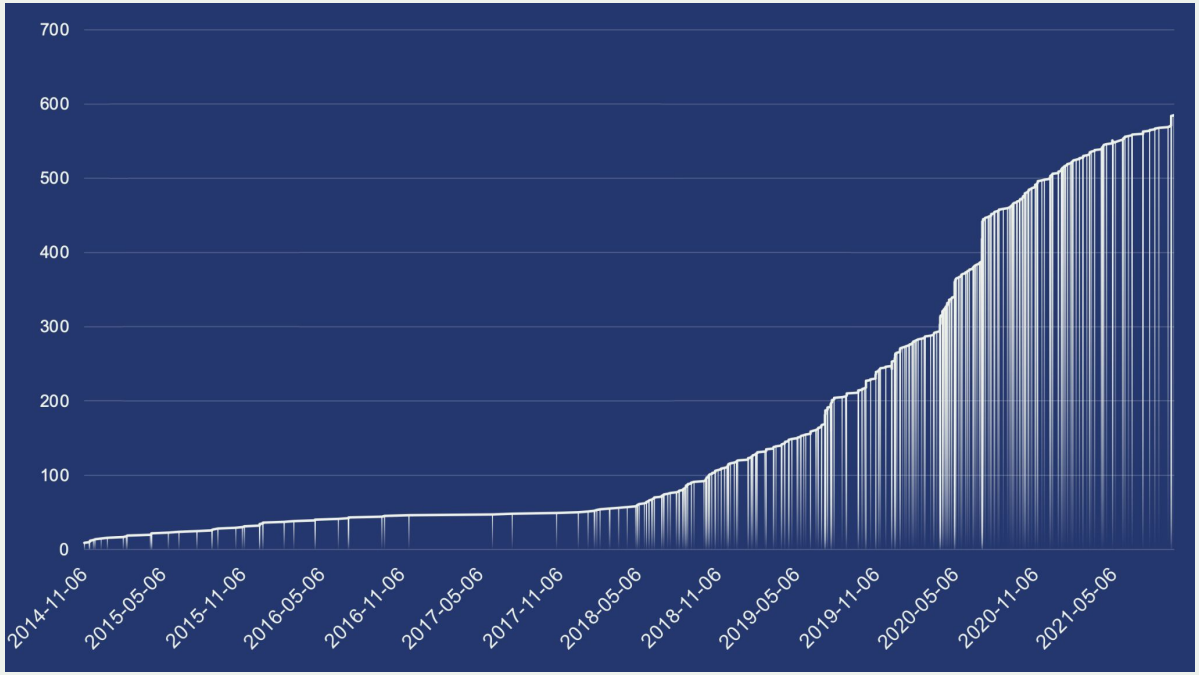
Network Equipment Vendors (2021)

Source: MANRS



MANRS actions

Source: MANRS



MANRS participants

22 participants

CDN and Cloud Providers

736 participants

Network Operators

105 participants

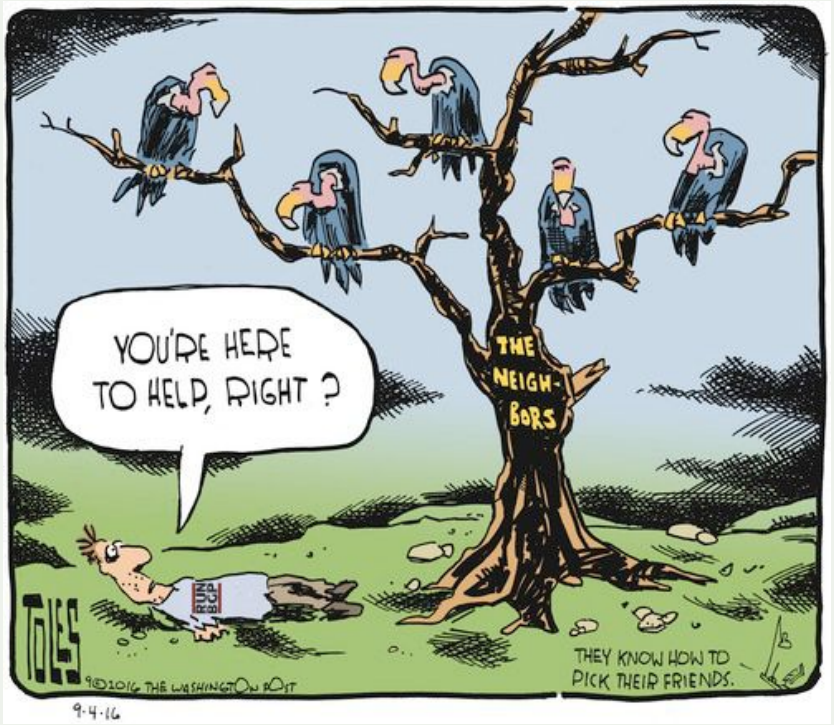
IXPs

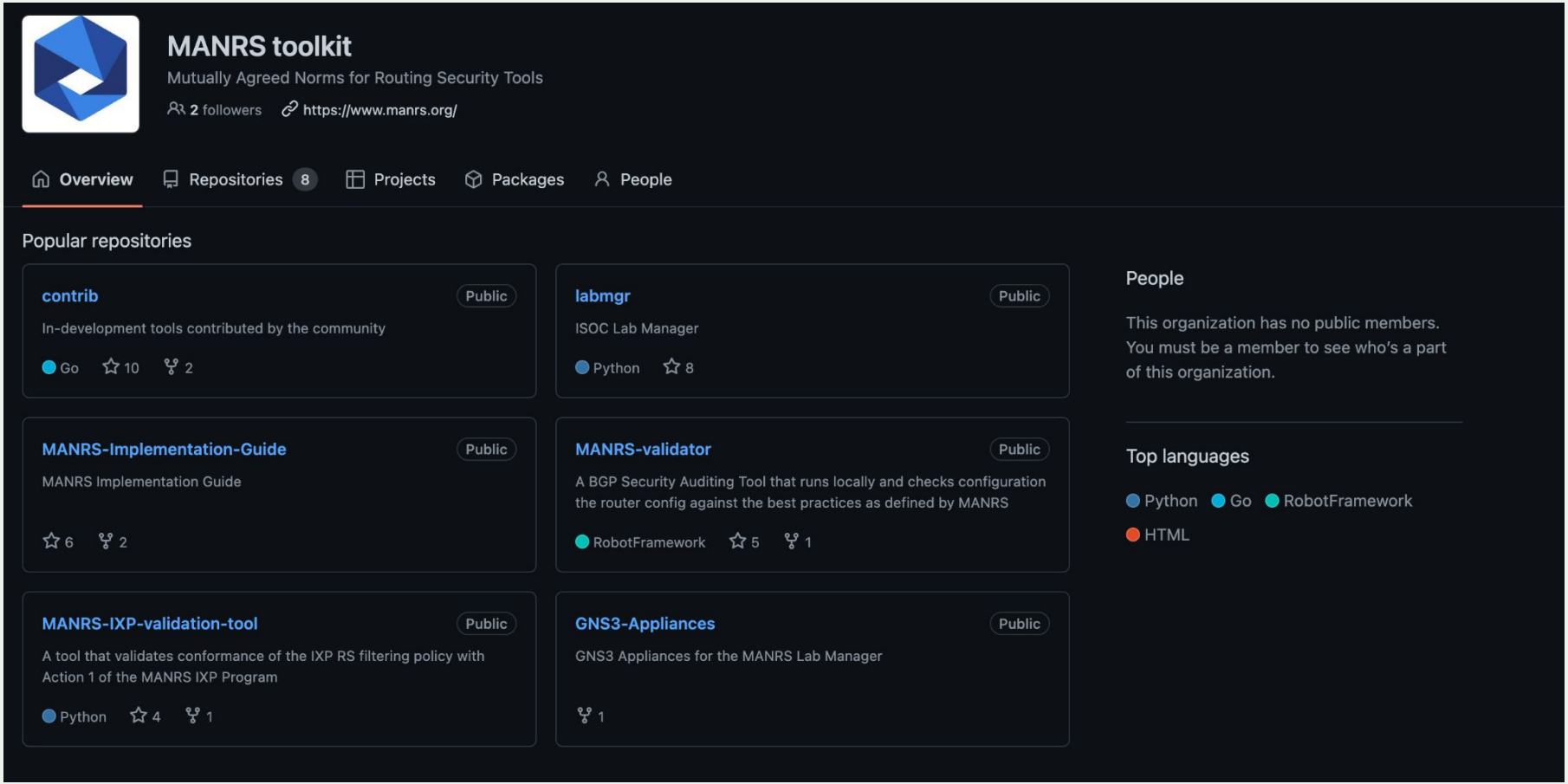
6 participants

Equipment Vendors

Source: MANRS

Tools recommendations to help you to help all of us!





MANRS toolkit/repo => https://github.com/manrs-tools

MANRS Observatory
https://observatory.manrs.org/

Provides a factual state of MANRS readiness and tracks it over time

Measurements are:

- Transparent – using publicly accessible data
- Passive – no cooperation from networks required
- Evolving – MANRS community decide what gets measured and how

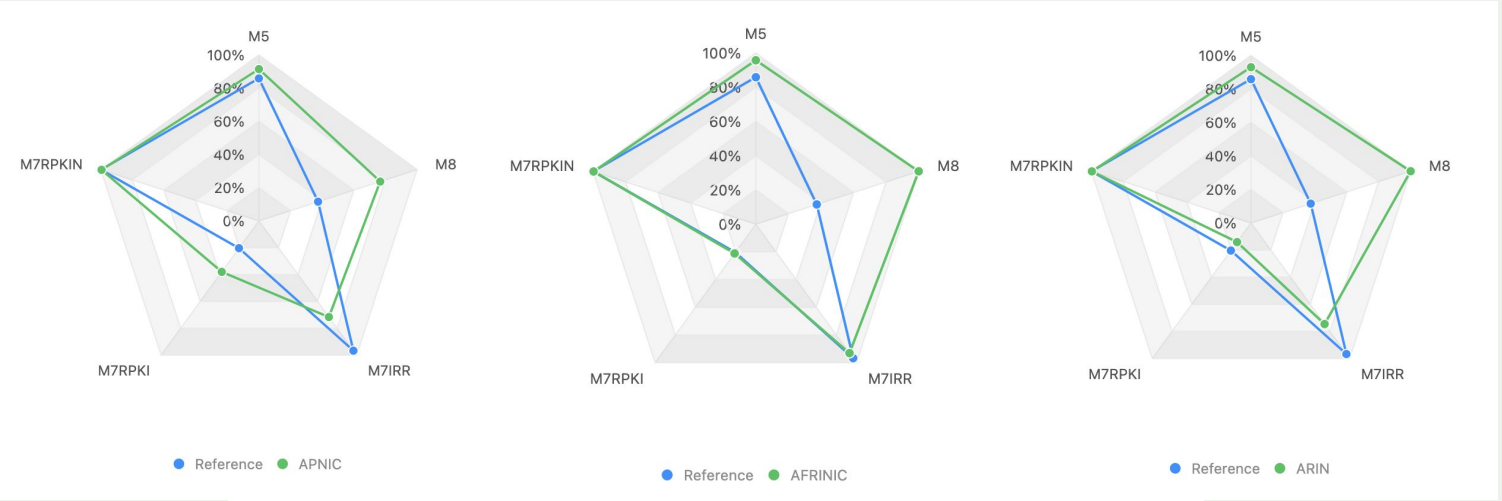
Source: MANRS

How does it all fit together?

Source: MANRS

MANRS Observatory

Source: MANRS Observatory



MANRS Observatory

Brazil X RIRs

M5 - Spoofing IP blocks

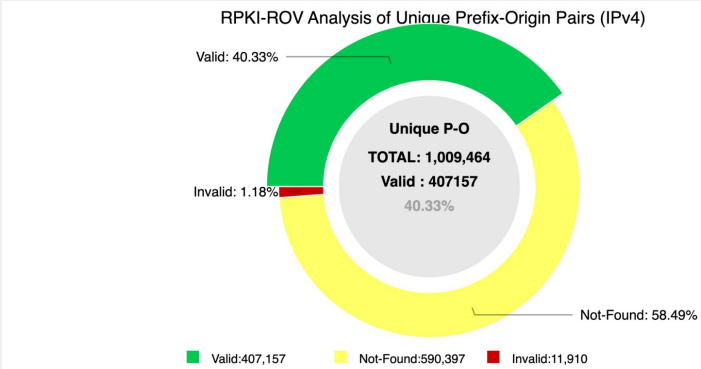
M7IRR - Registered routes

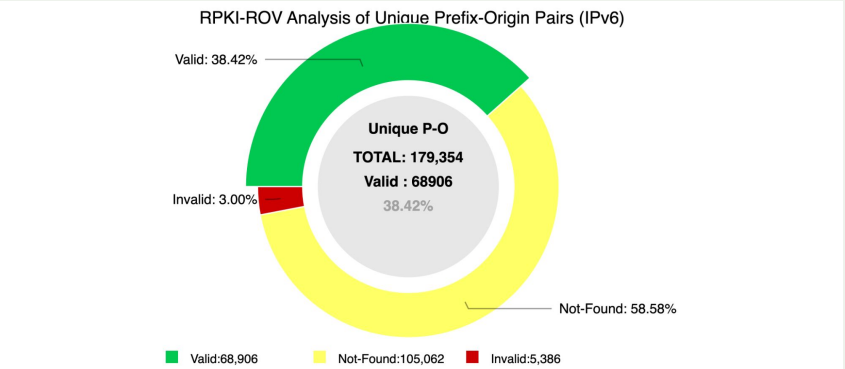
M7RPKI - Valid ROAs for routes

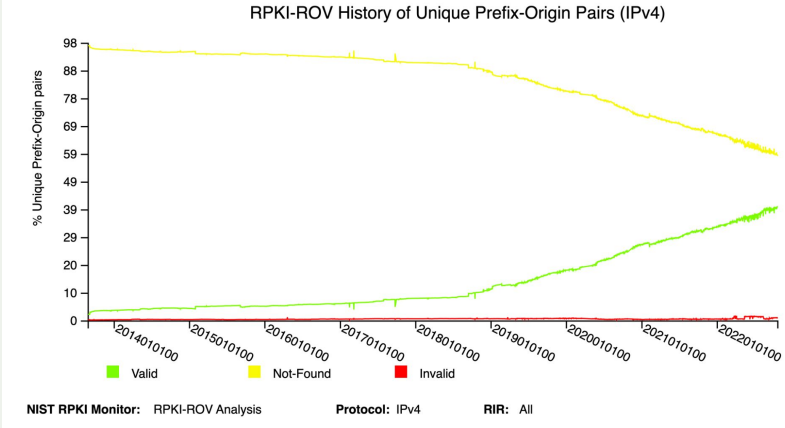
M7RPKIN - Invalid routes

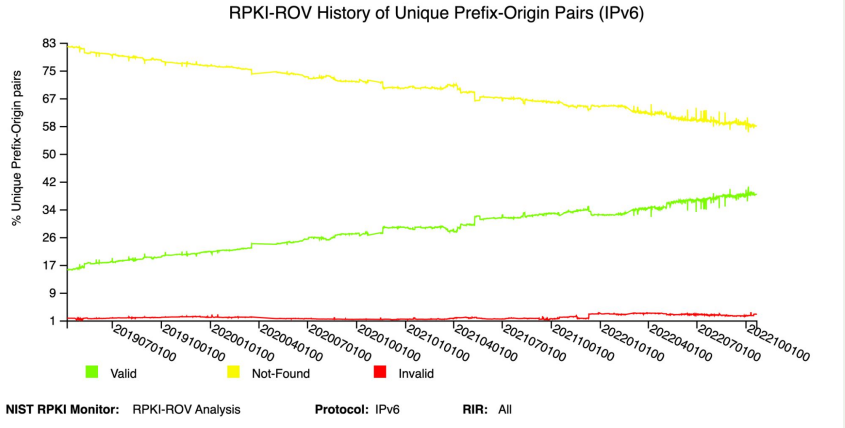
M8 - Contact registration (RIR, IRR, PeeringDB)

Source: MANRS Observatory



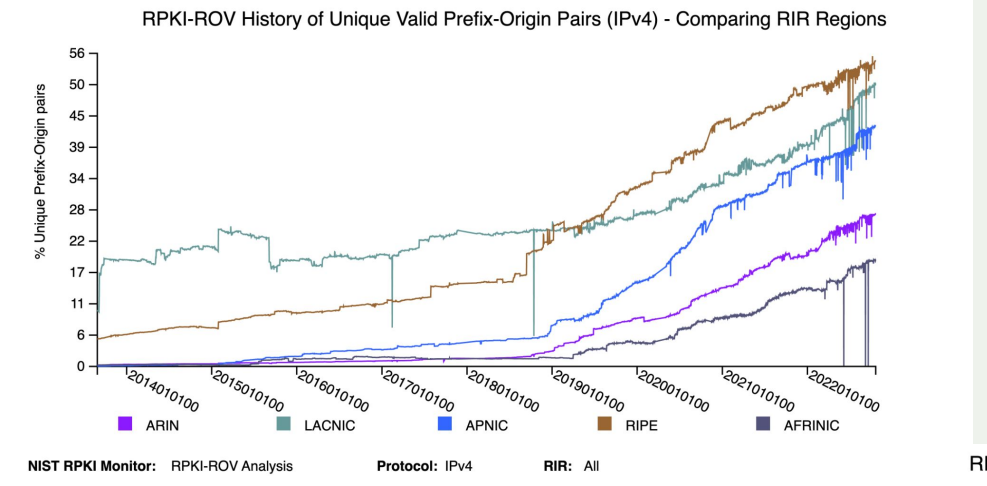


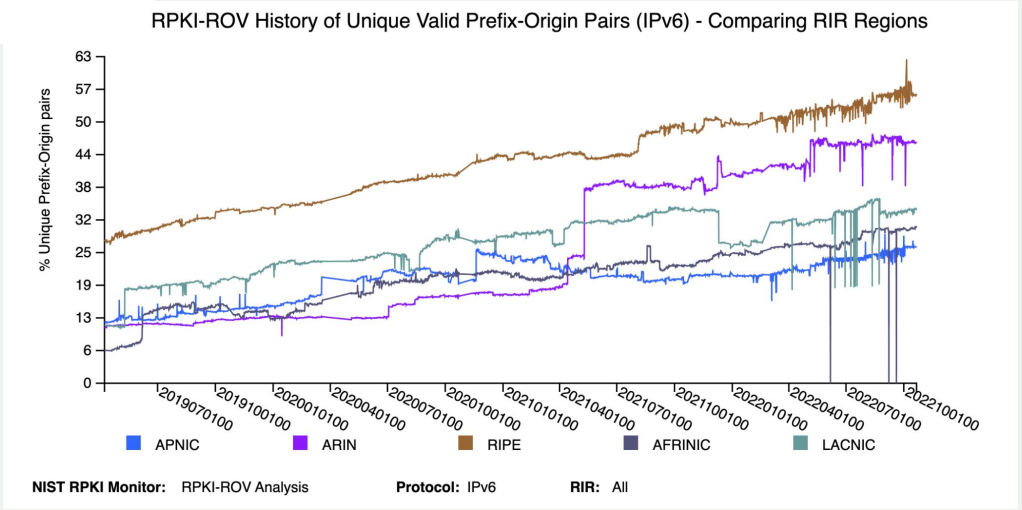




RPKI - Global status => https://rpki-monitor.antd.nist.gov/

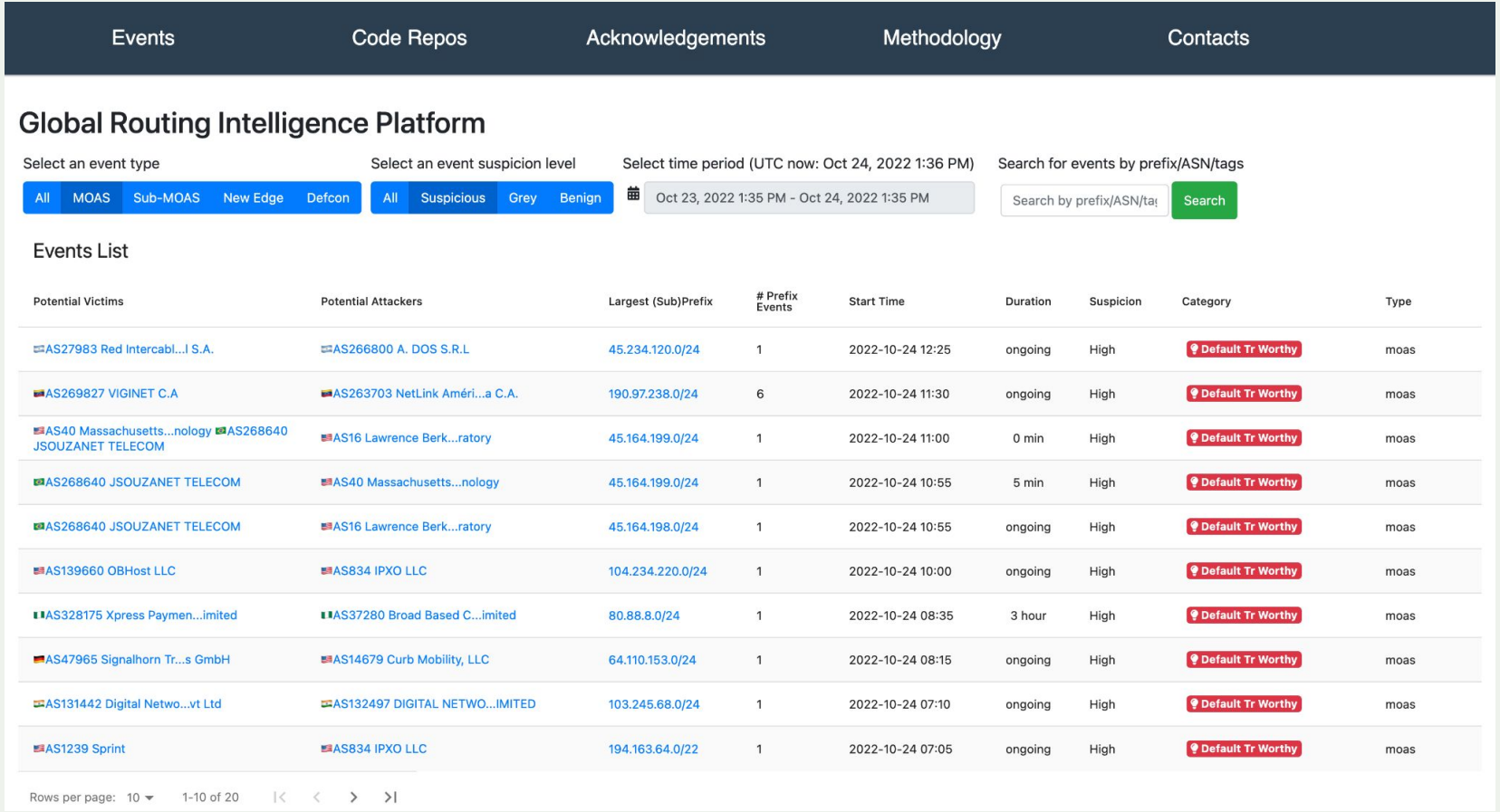
Source: NIST





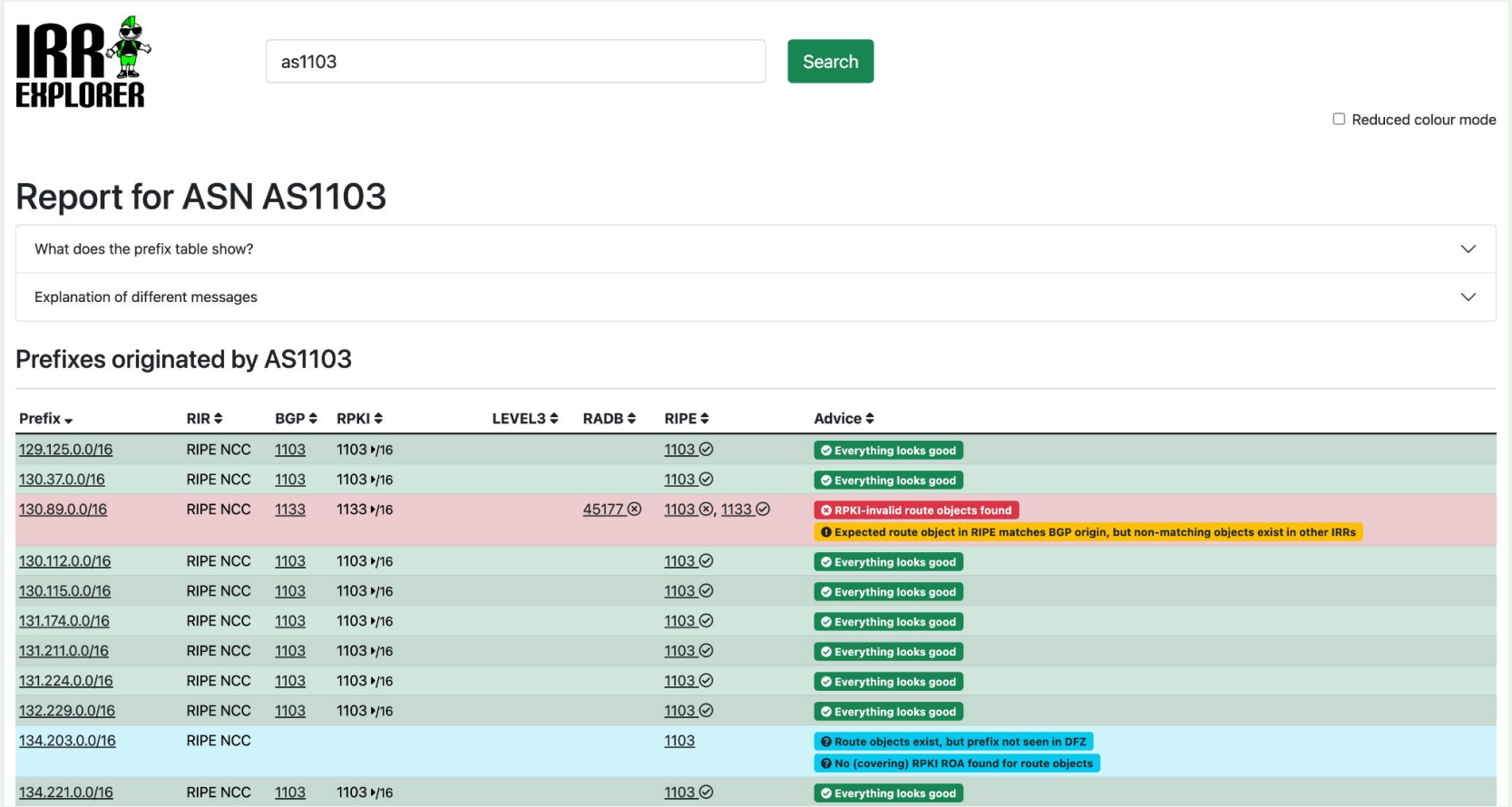
RPKI per RIR - https://rpki-monitor.antd.nist.gov/

Source: NIST



GRIP - Global Routing Intelligence Platform => https://grip.inetintel.cc.gatech.edu/

Source: GRIP



IRR explorer => https://irrexplorer.nlnog.net/

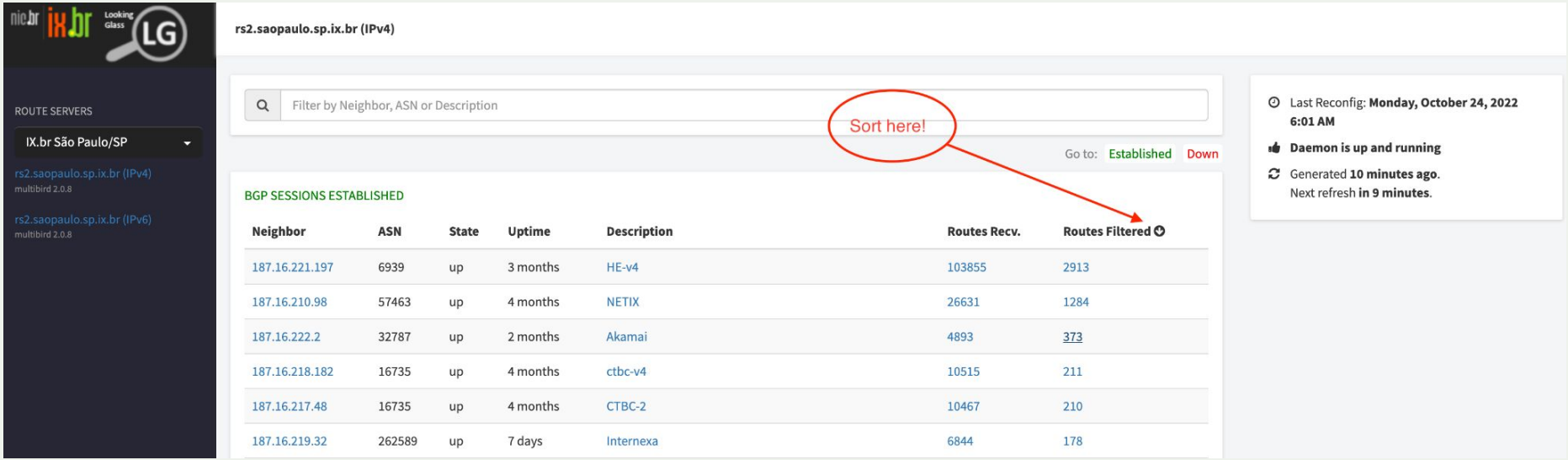
Source: IRR explorer

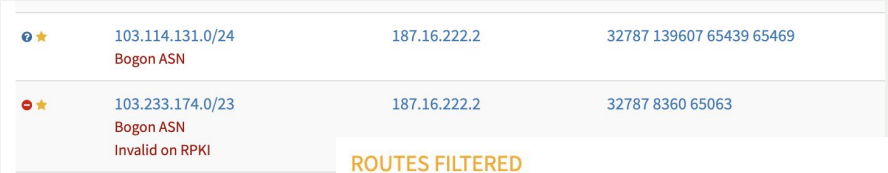
194.104.124.0/23	RIPE NCC	1103	1103 /23	1103	Everything looks good
194.104.240.0/20	RIPE NCC	1103		1103	No (covering) RPKI ROA found for route objects
194.171.0.0/16	RIPE NCC	1103	1103 /16	1103	Everything looks good
194.171.72.0/24	RIPE NCC			1103	RPKI-invalid route objects found Route objects exist, but prefix not seen in DFZ
194.171.96.0/21	RIPE NCC	1104	1104 /21	1103, 1104	RPKI-invalid route objects found Multiple route objects exist with different origins
195.169.0.0/16	RIPE NCC	1103	1103 /16	1103	Everything looks good
195.169.140.0/24	RIPE NCC		288 /24	1103	RPKI-invalid route objects found Route objects exist, but prefix not seen in DFZ RPKI ROA exists, but prefix not seen in DFZ
2001:610::/29	RIPE NCC	1103	1103 /29	1103	Everything looks good
2001:610::/32	RIPE NCC		1103 /48		RPKI ROA exists, but prefix not seen in DFZ
2001:610:130::/48	RIPE NCC		1103 /64		RPKI ROA exists, but prefix not seen in DFZ
2001:67c:262c::/48	RIPE NCC	1103	1103 /48	1103	Everything looks good
2a0f:d980::/32	RIPE NCC	1152		1103	No route objects match DFZ origin No (covering) RPKI ROA found for route objects

Source data as JSON

IRR explorer => https://irrexplorer.nlnog.net/

Source: IRR explorer





IX.br LG it's a good start point to see what's being filtered out… if it's being sent to IX.br, probably this it's not being sent only for IX.br! :)

Source: LG IX.br

PeeringDB

Search here for a network, IX, or facility.

Advanced Search

Register or Login

IX.br (PTT.br) São Paulo

Peers	Connections	Open Peers	Total Speed	% with IPv6
1511	1976	1214	83.8T	94

Organization	NIC.br
Also Known As	
Long Name	IX.br (PTT.br) São Paulo
City	São Paulo/SP
Country	BR
Continental Region	South America
Media Type	Ethernet
Service Level	Not Disclosed
Terms	Not Disclosed
Last Updated	2022-09-27T18:33:13Z
Notes	This is the Peering information for the IX.br (PTT.br) Route Servers. There are two route servers per IXP for redundancy purposes in Sao Paulo For IX.br (PTT.br) Sao Paulo we recommend a maximum-prefixes setting 370K for IPv4 and 160K for IPv6

Peers at this Exchange Point

Filter

Peer Name IPv4	ASN IPv6	Speed	Policy
(VIPLANET) E D TELECOMUNICES 2001:12f8::217:222	266620 187.16.217.222	10G	Open
+Net & Telecom 187.16.217.171	267554 2001:12f8::217:171	10G	Open
1 Telecom Servicos de Internet 2001:12f8::222:100	52965 187.16.222.100	100G	Open
1 Telecom Servicos de Internet 2001:12f8::217:205	52965 187.16.217.205	5G	Open
3E TELECOM 187.16.219.142	61924 2001:12f8::219:142	2G	Open
3E TELECOM 187.16.221.15	61924 2001:12f8::221:15	2G	Open

PeeringDB - Keep it updated, please!!!
https://www.peeringdb.com/

Source: PeeringDB

MANRS+

The purpose of the MANRS+ Working Group is to explore the idea of creating a second, elevated tier of MANRS participation for organizations that comply with more stringent requirements and auditing.

The Working Group will create a significantly higher value proposition for a subset of the MANRS participants based on a credible quality mark it will represent, recognized by customers, and used in their business decisions. This quality mark and the associated certification process assume better alignment with customer needs and more profound conformance auditing leading to better security assurance.

Source: MANRS

News!

Nominations Open for MANRS Steering Committee

Nominations for three seats on the MANRS Steering Committee are now open! The nomination period continues until 28 October 2022, 23:59 UTC.

https://www.manrs.org/2022/10/nominations-open-for-manrs-steering-committee/

RFC 9319
The Use of maxLength in the Resource Public Key Infrastructure (RPKI)

https://www.rfc-editor.org/rfc/rfc9319.html

What’s next?

=> Join MANRS.

=> Help us raise awareness about routing security.

=> Contact us to get involved in elections, MANRS+ development, etc.

=> Ask your peers and providers about MANRS compliance.

If you need help with, I'm happy to help you (or forward you to the correct path/person)!

Thank you.

Wait…. question time!!!
Not for me (yet), this time I'll ask you!
Please join the game, and if you are in first place, a prize for relaxing a little bit! :D