

# MANRS Community Meeting

MANRS @ RIPE87

28 November 2023



# Agenda

1. Introductions
2. MANRS 2023 update (ISOC)
3. Transition update (ISOC/GCA)
4. 2024 outlook (GCA)
5. QnA

# MANRS 2023 update



# The MANRS Community



# The MANRS Community

MANRS is a collaborative initiative of Internet operators

The MANRS Participants are the Internet operators that meet the requirements of the (currently) 4 MANRS programs:

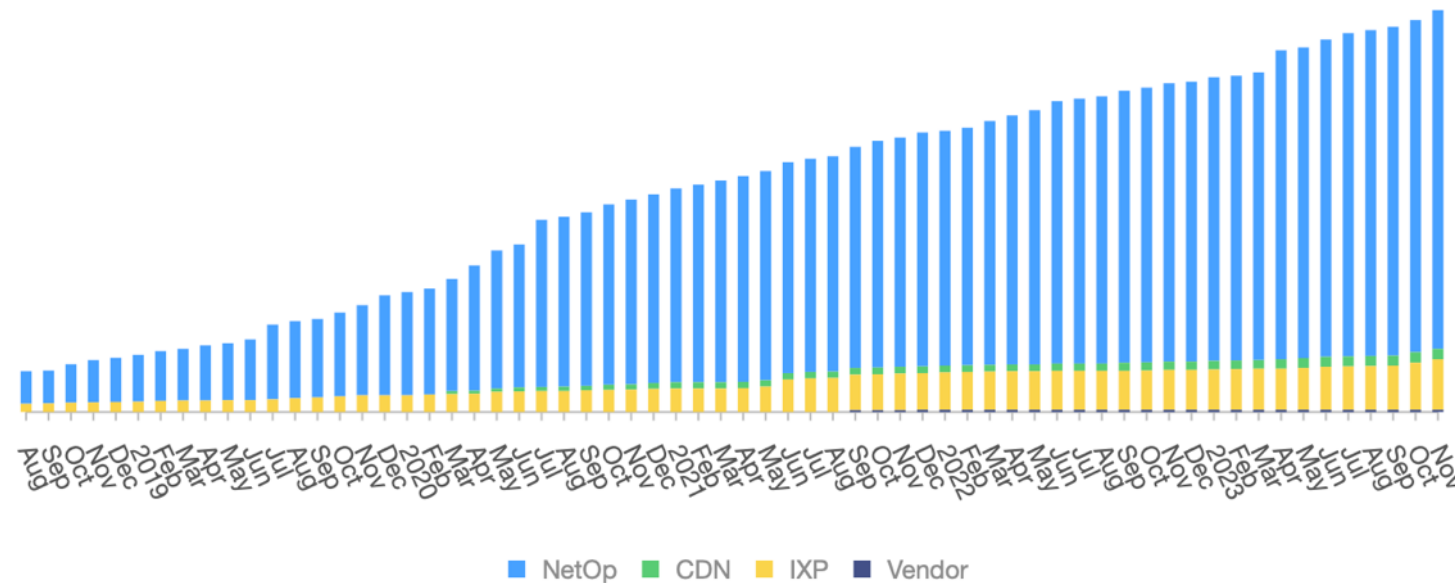
Network Operators – 905 participants

IXPs – 135 participants

CDN/Cloud Providers – 28 participants

Vendors – 6 participants

Participants by program by month



# MANRS Partners

MANRS Partners are 20 organizations supporting MANRS through promotion, training, resourcing and/or in other ways

# What makes MANRS a sustainable effort?

- Self-governance
- Accountability
- Active community
- Financial support and value proposition

# MANRS Steering Committee

- Andrew Gallo, George Washington University (Deputy Chair)
- Arturo Servin, Google (re-elected)
- Flavio Luciani, NAMEX
- Melchior Aelmans, Juniper Networks
- Musa Stephen Honlue, AFRINIC
- Nick Hilliard, INEX (re-elected)
- Nicolas Fiumarelli Santana, LACNIC (a newly elected member)
- Tony Tauber, Comcast
- Warrick Mitchell, AARNet (Chair)



# Improvements to the measurement framework



# M1/M1C (Route Leaks)

- M1 and M1C metrics are calculated from the BGPStream data
- **no longer included** in the calculation for the Action 1 score
- visible in the Observatory for information



# M2/M2C (Route Misoriginations)

- **M2 and M2C metrics** are calculated from the GRIP data.
- **[prod] BGPStream M2 metrics are no longer shown in the Observatory.** They are still being calculated in the Benchmarking service but this is for legacy reasons and will be completely removed.
- **GRIP prefix events are being filtered out** if there is either:
  - A valid ROA in ROAST
  - An IRR object in an RIR database as listed in RIPEstat
- **[proposed] Peer-lock light filter.** Any path will only be considered up to (and including) the first T1 ASN in the path. List of T1 ASNs tbc.



# M2/M2C (Route Misoriginations)

For October data

- 113 prefix events filtered out based on valid ROAs
- 6 prefix events filtered out based on valid IRR object
- 24 incidents filtered out (6 for MANRS ASNs)
- Estimated >90% FPs have been removed

A sample of 20 source GRIP events (5% of 374 total events) for MANRS participants from October and early November showed no false positives.



# M3/M3C/M4/M4C (Bogons)

- Source CIDR **bogons are now being filtered using AS0 TALs** where available (i.e. APNIC and LACNIC)
- Where there is no AS0 TAL (i.e. RIPE, ARIN and AFRINIC), bogons are being **split into full bogons and admin bogons**
  - Full bogons are anything with an NRO status of “available” or “ianapool”, or any prefix listed as reserved as per the RFCs
  - Admin bogons are anything that has had an NRO status of “reserved” for at least 180 days



# M3/M3C/M4/M4C (Bogons)

- M3/M3C/M4/M4C metrics now **only include full/filtered bogons**
- Admin bogons are listed in new metrics M3Admin/M3AdminC/M4Admin/M4AdminC
- The **new metrics are not used for the readiness scores** but included in the Observatory for information only
- All bogon filtering has been backfilled to at least 2021



# Bogons comparison

Prod (unfiltered)

Dev (using new filtering rules)



October 2023 828 bogons in prod (unfiltered) vs 150 bogons in dev (filtered)



# Publishing MANRS Readiness scores





## Why are we publishing the scores?

- MANRS conformance is largely self-declared, although checked upon application
- MANRS participants can become non-conformant over time
- Publishing the readiness scores provides a check on state of current conformance
- Peer pressure to fix and/or improve conformance
- As of July 2023 we publish Actions 2, 3, 4IRR and 4RPKI
  - Action 1 data was not accurate enough yet – BGPstream, GRIP, admin bogons

# MANRS Conformance: RIPE NCC service region

309 (1211 globally) ASNs are MANRS participants as of November 2023

Action 1: Route Filtering: 0%(0.4%) non-conformant, 2.6% aspiring

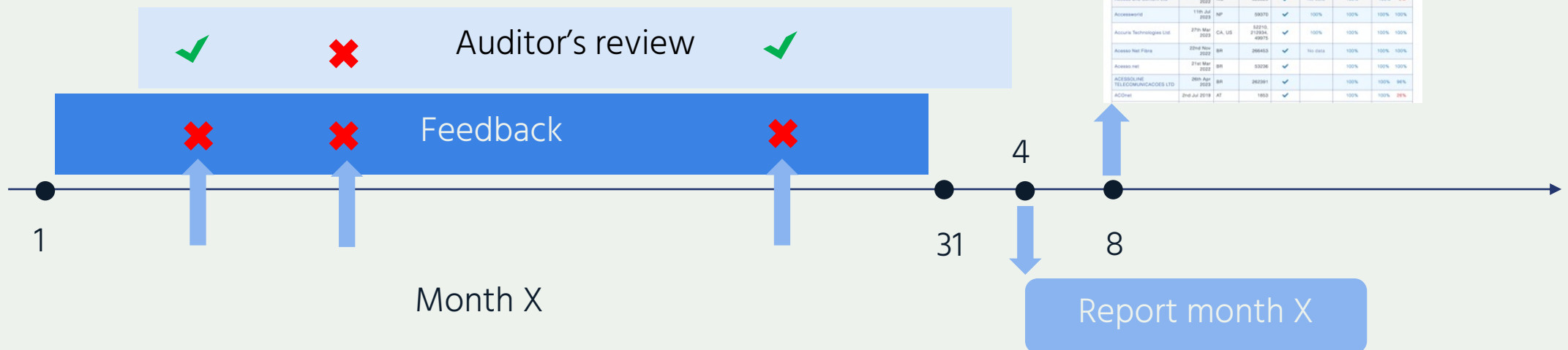
Action 3: Coordination: 0%(1.3%) non-conformant, 0% aspiring

Action 4: Global Validation IRR: 0%(3.9%) non-conformant, 1% aspiring

Action 4: Global Validation RPKI : 10%(22.6%) non-conformant, 17.8% aspiring

# Appeal process and timeline for publishing scores

- Participants can flag an incident as a false positive at any time. New API endpoints will be available for participants to monitor their scores via scripts/automation.
- Auditors verify a reported FP.
- Verified FPs for the current month will be removed in the next cumulative report. The report for the previous month will be regenerated if there are any verified FPs
- Scores for the complete month are available in the Observatory from 2<sup>nd</sup> of the following month
- Conformance report emails sent on 4<sup>th</sup> of the month (containing data for the previous month)
- Scores published on MANRS website on 8th



# Mentors and Ambassadors



# MANRS Mentors and Ambassador Highlights

*3 Mentors* – well-respected routing security professionals – help guide *8 Ambassadors* — emerging leaders — to improve their skills while working together in their regions and industries.

6-month program from 1 June to 1 December, working in training, research, or policy

MANRS Symposium today highlights their accomplishments including:

- Training: 20 virtual and in-person training workshops, seminars, webinars, and other events across the globe
- Research: ROVISTA, Detecting Forged Origin Hijacks (DFOH) presented at IRTF MAPRG and Internet Measurement Conference; new MANRS+ Observatory tool
- Policy: Papers on the routing security landscape in Pakistan, government use of routing security in LAC, Zen Guide to BGP Security Policy to be published

# Research, training and policy



# Training

- Capacity building is an important part of MANRS
  - Internet Society moderated courses: <https://www.isoc.org/learning/manrs/>
  - Self-paced online tutorials: <https://www.manrs.org/resources/training/tutorials/>
  - Hands-on workshops (both directly and via our Mentors and Ambassadors Program)
- Training labs for network engineers and administrators to learn how to configure routing security features
- Implementation Guides provide step-by-step instructions to implement MANRS Actions: <https://www.manrs.org/netops/guide/>

# MANRS Research

## Ambassadors and Mentors

- Longitudinal study of serial hijackers
- ASPA adoption
- SAV measurement survey
- Tools benchmarking

## MANRS-sponsored academic

- DFOH <http://dfoh.info.ucl.ac.be/>

## Tooling and Data improvements

- Additional sources for incident data
- ROA History API
- ROAST
- MANRS+ tool



# Policymaker Engagement

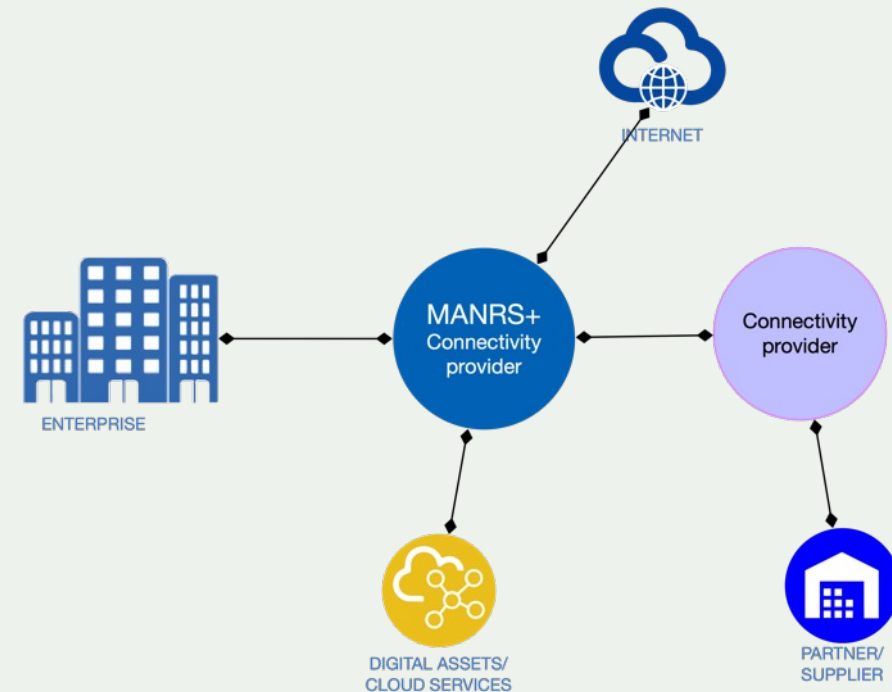
- MANRS is often referenced by government agencies and has provided input to governmental inquiries (e.g. FCC Notice of Inquiry on Secure Internet Routing)
- MANRS will continue to monitor and provide input where appropriate to regulatory-related developments as these happen
- Read <https://www.manrs.org/2023/09/good-manrs-make-an-impression-on-governments/>

# MANRS+



# MANRS+ (<https://www.manrs.org/about/manrs-working-group/>)

- A new elevated tier of MANRS participation
- Focus on enterprise - connectivity provider relationship. Aims to develop a tool that can be used for procurement recommendations and policies.
- MANRS+ WG is developing set of requirements based on MANRS that include routing security, DDoS attack protection, anti-spoofing protection, validated routing information (e.g. ROAs and AS-SETs) and security services, plus auditing approaches to assure high levels of conformance
- Survey was conducted. Validated the requirements focused on the needs of the relying parties and cover a broader set of risks compared to the existing MANRS programs.

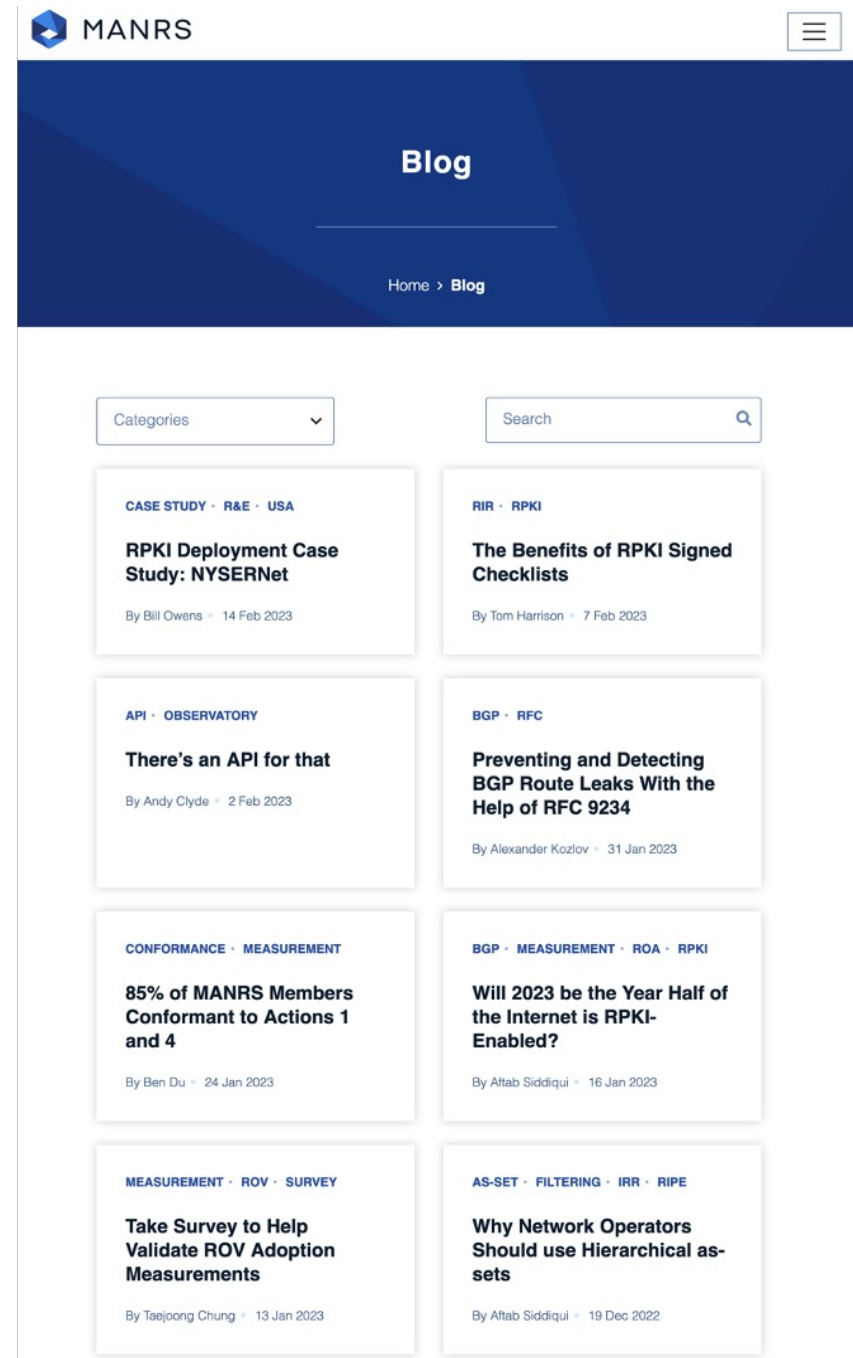


# Active community



# Participate

- Stay up to date with current routing security research and news
- Share your successes and challenges for the community to learn from and comment on
- Discuss research and best current practices
- Grow your profile as a leader in routing security



The screenshot shows the MANRS Blog page. At the top left is the MANRS logo, and at the top right is a hamburger menu icon. The main header is a dark blue banner with the word "Blog" in white. Below the banner is a breadcrumb trail: "Home > Blog". The content area features a grid of blog posts. At the top of the grid are two filters: a "Categories" dropdown menu and a search bar. The grid contains eight blog post cards, each with a category tag, a title, and the author's name and date. The categories are: CASE STUDY · R&E · USA, RIR · RPKI, API · OBSERVATORY, BGP · RFC, CONFORMANCE · MEASUREMENT, BGP · MEASUREMENT · ROA · RPKI, MEASUREMENT · ROV · SURVEY, and AS-SET · FILTERING · IRR · RIPE.

Category	Title	Author	Date
CASE STUDY · R&E · USA	RPKI Deployment Case Study: NYSERNet	By Bill Owens	14 Feb 2023
RIR · RPKI	The Benefits of RPKI Signed Checklists	By Tom Harrison	7 Feb 2023
API · OBSERVATORY	There's an API for that	By Andy Clyde	2 Feb 2023
BGP · RFC	Preventing and Detecting BGP Route Leaks With the Help of RFC 9234	By Alexander Kozlov	31 Jan 2023
CONFORMANCE · MEASUREMENT	85% of MANRS Members Conformant to Actions 1 and 4	By Ben Du	24 Jan 2023
BGP · MEASUREMENT · ROA · RPKI	Will 2023 be the Year Half of the Internet is RPKI-Enabled?	By Aftab Siddiqui	16 Jan 2023
MEASUREMENT · ROV · SURVEY	Take Survey to Help Validate ROV Adoption Measurements	By Taejoong Chung	13 Jan 2023
AS-SET · FILTERING · IRR · RIPE	Why Network Operators Should use Hierarchical as-sets	By Aftab Siddiqui	19 Dec 2022

# Secretariat transition



# MANRS Secretariat Transition

- Partnership agreement between the Internet Society and the Global Cyber Alliance.
- GCA assumes day-to-day operational responsibility for MANRS. This includes the secretariat function and the MANRS Observatory.
- ISOC continues to provide financial support, training, and advocacy.
- Community activities, including the Steering Committee, WGs, etc. are not affected.
- The vision and spirit remain the same. Focus on continuity in the short- to mid-term.