

25 October 2022

MANRS Update

MANRS Community Meeting #9



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Agenda

- 1) MANRS Update & Future Plans – Kevin Meynell (ISOC)
- 2) MANRS+ – Andrei Robachevsky (ISOC)
- 3) MANRS Tools & Documentation – Max Stucchi (ISOC)
- 4) Q&A (if time)

The MANRS Community



What is 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 programmes:

- Network Operators – 736 participants (922 ASNs)

- IXPs – 105 participants

- CDN/Cloud Providers – 22 participants

- Vendors – 6 participants

MANRS Partners are 19 organisations recognised by the MANRS Community as supporting MANRS through promotion, training, resourcing and/or in other ways

MANRS Participants in RIPE Region

28,978 ASNs advertised in RIPE region

265 ASNs participating in MANRS (1%)

51 IXPs participating in MANRS

MANRS Project Team (ISOC Staff)

Kevin Meynell – Project Leader, Community Engagement & Auditor

Aftab Siddiqui – Project Leader (until 31 December 2022), Research & Auditor

Kevin Chege – Project Leader (from 1 January 2023) & Training Lead

Andy Clyde – Developer / MANRS Observatory Lead

Amreesh Phokeer – Research Lead

Andrei Robachevsky – MANRS+ Lead & Auditor

Olaf Kolkman – Policy Lead

Hanna Kreitem – Auditor

Megan Kruse – Comms Lead & MANRS+

John Morris – Policy

Karen O'Donoghue - Research

Ryan Polk – Policy

Israel Rosas – Ambassador & Fellowship Programme Lead

Max Stucchi – Training & Research

Adrian Wan – Comms & Policy

Ashlyn Witter - Auditor

MANRS Steering Committee

The Internet Society has developed and supported the MANRS initiative, which has grown quickly and also gained credibility outside of the operator community

MANRS has become bigger than what ISOC staff can support alone

Increasing number of decisions also need to be made :

- Auditing questions as they arise
- How to strengthen the existing MANRS Actions
- Development of ongoing MANRS conformance criteria
- How to handle participants failing to meet the necessary criteria for MANRS conformance
- Development of new programmes
- Revenue

Aim is a self-regulating community – see <https://www.manrs.org/about/governance/community-charter/>

MANRS Steering Committee Membership

Warrick Mitchell (AARNet) – Chair, until 31 October 2024
Andrew Gallo (GWU) – Deputy-Chair, until 31 October 2024
Flavio Luciani (NAMEX) – until 31 October 2024
Nick Hilliard (INEX) – until 31 October 2023
Arnold Nipper (DE-CIX) – until 31 October 2023
Arturo Sevrin (Google) – until 31 October 2023
Melchior Aelmans (Juniper) - until 31 October 2022
Jeff Tantsura (Microsoft) – until 31 October 2022
Tony Tauber (Comcast) – until 31 October 2022

Joe Hall (ISOC) – ex-officio

MANRS Auditing Officers
Hanna Kreitem (ISOC)
Kevin Meynell (ISOC)
Andrei Robachevsky (ISOC)
Aftab Siddiqui (ISOC)
Ashlyn Witter (ISOC)

MANRS Steering Committee Election

Elections will be held for 3 x MANRS Steering Committee positions on 1-3 Nov 2022

Nominations are open until 28 Oct 2022

Anyone is eligible to serve on the Steering Committee

Prospective candidates may nominate themselves

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

MANRS Participants will be sent voting information shortly

MANRS Activities in 2022



Monthly Reports

Sent to all MANRS Network Operators

Validate incident data -> tune down false positives

Raise awareness of network conformance status

Use as a regular communication channel (e.g. verify Action 3 contacts)

Can be sent to primary + any secondary contacts



MANRS

MANRS Conformance Report

2022/02/01 - 2022/02/28

ASN '

MANRS Readiness Scores

Anti-Spoofing: **100%**
Coordination: **100%**
Filtering: **41% ↑**
Global Validation IRR: **59% ↑**
Global Validation RPKI: **3% ↑**

Non-Compliance Incidents

AS Route Misoriginations (BGPStream): **1**
AS Route Misoriginations (GRIP): **2**
Customer Route Hijacks (BGPStream): **1**
Customer Route Hijacks (GRIP): **1**

Verify Incidents

MANRS Observatory Developments

A lot of work to improve the MANRS Observatory:

- Developing alternative data sources – moving to GRIP (Global Routing Intelligence Platform) to reduce reliance on BGPstream
- Now publishing monthly conformance scores for each participant
- Introducing user management of accounts (updating contacts and details etc...)
- Developing automated application process to improve response times
- Developing improved and more detailed incident analysis
- API to provide Observatory data will be launched shortly

Work to strengthen MANRS programmes

- Improving route incident measurement quality (route leaks/hijacks, bogons)
- How to address administrative bogons - discussed at BCOP TF
- Improving anti-spoofing measurements
- What is an acceptable level of conformance for sign-up and on an ongoing basis?
- Regular conformance checks and reporting, including publishing readiness scores
- Should RPKI become a mandatory actions and over what timeframe?
- Should ROV become a recommended action and over what timeframe ?
- Developing MANRS+ programme - separate agenda item

MANRS Research

Some new projects:

- **MANRS Conformance Checker** – tool to periodically assess the conformance of MANRS Participants against Action set
- **ROA Historical Explorer** – ability to lookup prefix and provide ROAs covering this within date range, in order to check BGP announcements in the past
- **Blackholing Stats** – allow MANRS Participants to blackhole /25 to /32 of their address space so other participants can null route in order to mitigate DDoS

Engaging with new communities

Which communities can MANRS productively engage to improve routing security?

- CERT/CSIRT Community – FIRST Routing Security SIG established
- Financial enterprise sector – some organisations joined MANRS+ WG
- Continuing engagement with ISACs: FS-ISAC and H-ISAC in particular
- Governments
 - Responded to FCC Notice of Inquiry on Routing Security
(www.manrs.org/2022/10/manrs-and-the-us-fcc-notice-of-intent-on-routing-security/)
 - US DoD and DoJ proposing routing security regulation
 - Discussions with Forum Standardisatie – Netherlands Forum for Standardization

MANRS: Looking Ahead



MANRS from 2023

ISOC renewed its commitment to supporting MANRS for at least 3 more years

ISOC leadership decided to keep this as ISOC activity for time being:

- The ISOC/MANRS community has not asked for this to be run separately
- Mostly supported by ISOC resources
- Set-up and overheads are lower staying as ISOC activity + more staffing flexibility

MANRS moves from being a year-to-year project to longer term activity:

- Allows longer term planning and development cycles
- More continuity of funding and staffing

What's needed from the MANRS Community?

The MANRS Community / Steering Committee needs to develop a 3-5 year strategy:

- What does the community want to see at the end of 3-5 years (e.g. separate self-funding entity)?
- Revenue sustainability (e.g. organizational memberships, industry donations, sponsorship, other etc.)?
- Increase value of programmes (e.g. MANRS+)
- What activities should MANRS be undertaking (e.g. auditing, certification, measurement, outreach, training, research, policy engagement)

MANRS Activities

Essential Services

Application Auditing

Ongoing Conformance
Checking

MANRS Observatory hosting
and maintenance

Steering Committee support

Desirable Activities

MANRS Observatory
development

MANRS Programme
development

Training & Knowledge Transfer

Promotion & Outreach

Value-Add Activities

Ambassadors & Fellows
Programme

Development of different
maturity levels, including
quality mark?

MANRS Strengths

Growing awareness of importance of routing security within and beyond operator community

MANRS is increasingly mentioned as industry-led best practice by governments, regulators and others

Participation continues to grow - 20% increase in participants during 2022

Route incidents appear to be decreasing

RPKI adoption is increasing (75% amongst MANRS participants)

Interest in pushing ROV

Increasing community involvement – MANRS Charter + Steering Committee (30+ candidates for last election)

Enhanced action set for CDN/Cloud Programme requested by participants

Introduced Vendors Programme

MANRS Conformance: Some Facts & Figures

922 ASNs are MANRS participants as of October 2022

8% were non-conformant with Action 1: Route Filtering

0.3% were non-conformant with Action 3: Coordination

14% were non-conformant with Action 4: Global Validation IRR

44% were non-conformant with Action 4: Global Validation RPKI

5% were non-conformant with at least 2 actions

0.8% had multiple routing incidents over multiple months

MANRS Areas for Improvement

MANRS conformance needs to be improved otherwise it represents reputational risk to MANRS initiative

Publishing individual scores for more transparency?

Introduce routine conformance checking ← needed automated reporting

Suspension and termination possible, but generally not been implemented ← measurement accuracy

Improved measurements:

- BGPstream no longer actively developed and tends towards false negatives
- GRIP tends towards false positives ← needs network operator feedback
- Administrative Bogon issue ← needs NRO/RIR support

Strengthened actions:

- Make RPKI a compulsory action (possibly with exceptions for legacy resources)? Explicit
- Make ROV a recommended action?

Improved and more regularly updated technical documentation – Implementation Guides etc...

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Introduce routine conformance checking. ← needed automated reporting

What should be the consequences of non-conformance? ← measurement accuracy

Improved measurements:

- BGPstream no longer actively developed and tends towards false negatives
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MANRS Ambassadors and Fellows Programme 2023

- Aims to extend outreach and involve the wider Internet community in routing security
- **Ambassadors** are representatives from current MANRS participants who provide mentorship, guidance, and feedback to others in the routing security community.
- **Fellows** are emerging leaders in their communities, selected after an open call for applications. They're not necessarily representatives of MANRS participant organizations.
- **Tracks:**
 - **Training** – Conduct online tutorials and workshops; help improve existing contents and labs.
 - **Research** – Collect and analyze relevant information on routing incidents; collect feedback from the community.
 - **Policy** – Review documents targeting issues that can be addressed through MANRS actions; help improve existing policy documents for MANRS.

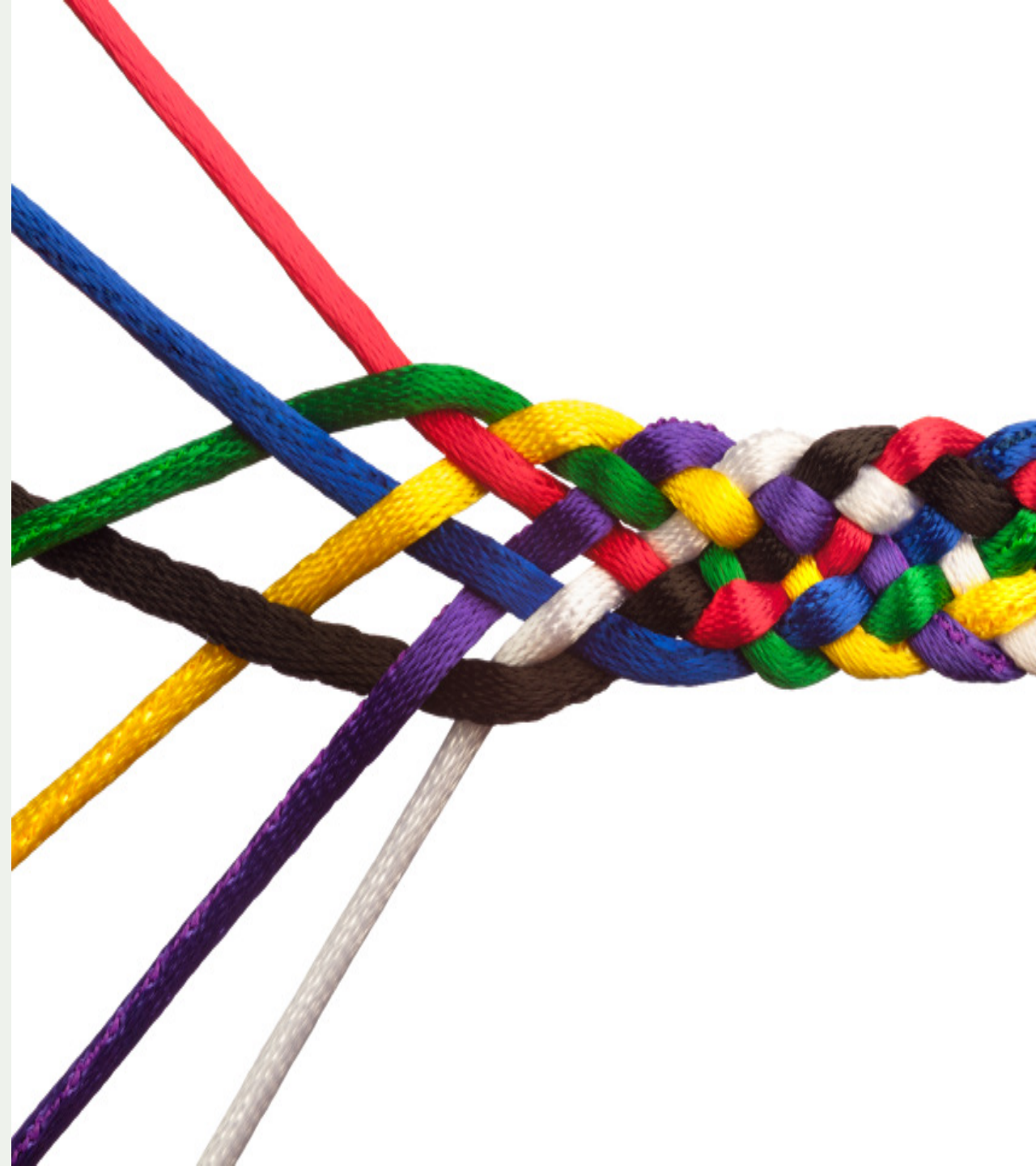
Join the MANRS Community

Visit <https://www.manrs.org>

- Fill out the sign-up form with as much detail as possible
- We will create MANRS Observatory account for your network

Get Involved in the Community

- Members support the initiative and implement the actions in their own networks
- Members maintain and improve the MANRS Actions



MANRS+



MANRS Documentation



MANRS Documentation

- New github repository for the MANRS Documentation
 - 2 Docs at the moment:
 - Network Implementation guide
 - IXP Implementation guide
- Any contribution is welcome
 - Documents are in Markdown
 - Send a pull request or get in touch with us

<https://github.com/manrs-tools/manrs-docs/>