

14 April 2022

Mutually Agreed Norms for Routing Security

MANRS Community Meeting #8



Warrick Mitchell / Andrew Gallo
MANRS Co-Chairs
manrs@isoc.org

Agenda

- 1) **Welcome** - Warrick Mitchell (AARNet) / Andrew Gallo (GWU)
- 2) **Introducing the Steering Committee** – Kevin Meynell (ISOC)
- 3) **MANRS Plans 2022** – Kevin Meynell (ISOC)
- 4) **Lightning Round: What's New in Routing?**
 - Ben Du (CAIDA) - IRR Hygiene in the RPKI Era
 - Tijay Chung (Virginia Tech) - Novel Technique to Detect ROV
 - Andrew Gallo (GWU) - Max Length Prefixes
- 5) **Quiz Time!** – hosted by Max Stucchi (ISOC)

Introducing the MANRS Steering Committee

Kevin Meynell <meynell@isoc.org>



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 – 662 participants (851 ASNs)

- IXPs – 103 participants

- CDN/Cloud Providers – 18 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 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

MANRS should be a self-regulating community!

MANRS Steering Committee Membership

Elections were held on 1-3 November 2022, and following persons were elected:

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

TBD (Internet Society) – ex-officio

MANRS Auditing Officers

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

MANRS Activities in 2022

Kevin Meynell <meynell@isoc.org>



Ongoing conformance and strengthening MANRS programmes

- Improving route incident measurement quality
- How to address administrative bogons
- Setting parameters for routing incident conformance: number, duration & impact
- 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 action and over what timeframe?
- Implementing new actions – e.g. ROV?

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

MANRS Ambassadors and Fellows Programme

- 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.

MANRS Ambassadors for 2022

Third cohort after previously appointments in 2020 and 2021

- Musa Stephen Honlue (AFRINIC) - *Training*
- Simon Baroi (Fiber@Home) – *Training*
- Massimo Candela (NTT) – *Research*
- Romain Fontague (IJJ) – *Research*
- Tiago Felipe Gonçalves (AMS-IX) – *Policy*

More information at <https://www.manrs.org/ambassadors-program/>

MANRS Fellows for 2022

- Indra Raj Basnet - *Training*
- Muhammad Yasir Shamim - *Training*
- Lukasz Bromirski - *Training*
- Mauricio Oviedo Calderon - *Training*
- Alkhansa Abdalla Mohamed – *Training*
- Tijay Chung - *Research*
- Ben Du - *Research*
- Ioana Livadariu – *Research*
- Nayreth Maruquel Gonzalez - *Policy*
- Harish Chowdhary – *Policy*

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

MANRS Self-Governance

ISOC is committed to fully run the MANRS project until (at least) the end of 2023

The ISOC leadership has asked for a pathway towards self-governing entity, e.g.

- MANRS becomes an ISOC subsidiary entity (like the IETF), with its own board etc..
- MANRS becomes an independent organization

Things to consider:

- What are the core functions, nice-to-haves, additional cost services, etc...?
- Diversify funding – ongoing ISOC support, industry sponsors, participant contributions, valued add services?
- Appropriate corporate structures

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+ (please note this is a working title)

Investigating the creation of an elevated tier of MANRS participation to incentivize organisations wishing to strengthen the conformance measures

Developing benchmarking that could be used in business relationships

Auditing and conformance needs to offer higher levels of confidence than current metrics that rely largely on passive measurements

Three key groups need to be consulted:

- Network Operators – whose customers require quality mark or certification
- Relying Parties – governments, enterprises who require higher quality standards
- Auditing/Benchmarking Orgs – those implementing and assessing benchmarks

Engaging with new communities

Which communities can MANRS productively engage to improve routing security?

- CERT/CSIRT Community
- Financial enterprise sector
- Governments
 - (Inter-)national critical infrastructure agencies
 - Developing standards and best practices
 - Encouraging departments and agencies to adopt routing security practices (e.g. FCC NOI, NIST, NTIA)
- Others (e.g. healthcare)?

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Quiz Time!

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