

IXP Partnership: Improving Global Routing Security and Resilience

Michuki Mwangi mwangi@isoc.org

Af-IX Meeting

29th August 2016

Dar-es-Salaam, Tanzania



MANRS

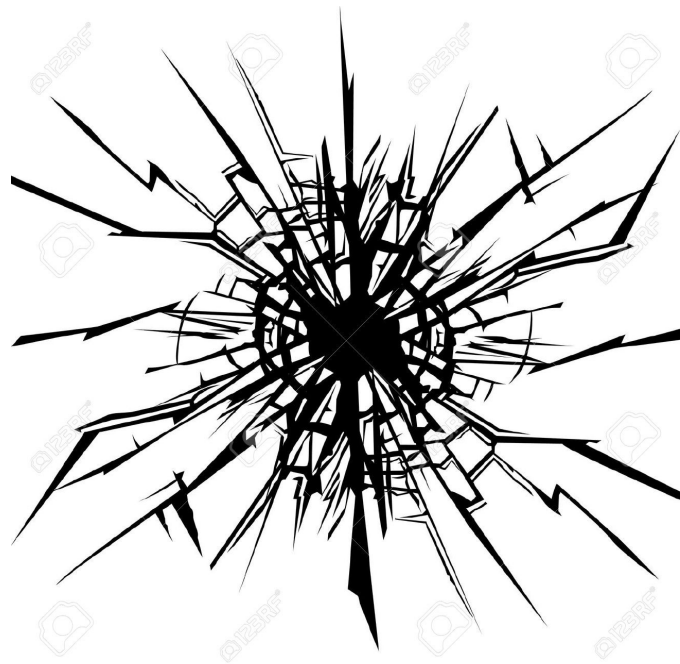
Routing Resilience Manifesto, aka MANRS

<https://www.routingmanifesto.org/>

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

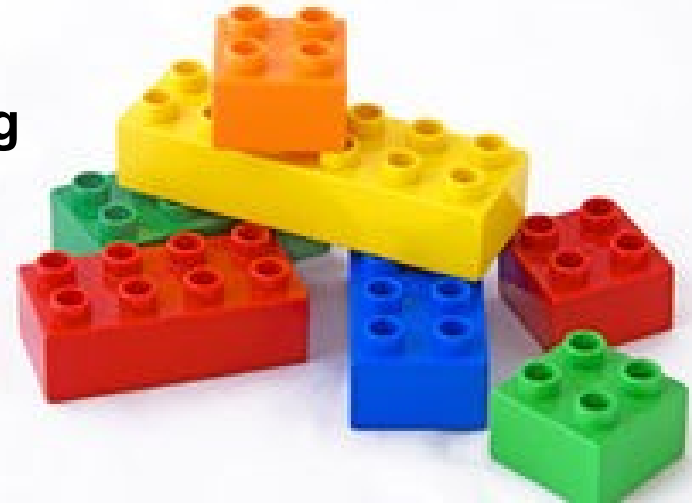
The problems

- **Prefix hijack**
 - Denial of service, impersonating a network or a service, traffic intercept
- **“Route leak”**
 - Traffic intercept, but may result in denial of service
- **IP spoofing**
 - The root cause of reflection DDoS attacks



What is available to address these problems?

- **Building blocks, but not solutions**
 - Prefix and AS-PATH filtering, RPKI, IRR, ...
 - BGPSEC under development at the IETF
 - Ingress and egress anti-spoofing filtering, uRPF, ...
 - Whois, Routing Registries and Peering databases



Challenges

- **Too many problems to solve, too many cases. Is there a clear, visible and industry supported line between good and bad?**
- **Your network security is in someone else's hands. Securing just one individual network does not make it more secure.**

**A clearly articulated baseline –
a minimum requirement**



Visible support with commitment

Mutually Agreed Norms for Routing Security (MANRS)

MANRS defines four concrete actions that network operators should implement

- **Technology-neutral baseline for global adoption**

Builds a visible community of security-minded operators

- **Promotes culture of collaborative responsibility**



Good MANRS



1. **Filtering** – Prevent propagation of incorrect routing information.
2. **Anti-spoofing** – Prevent traffic with spoofed source IP addresses.
3. **Coordination** – Facilitate global operational communication and coordination between network operators.
4. **Global Validation** – Facilitate validation of routing information on a global scale.










































MANRS is not (only) a document – it is a commitment

- 1) The company supports the Principles and implements at least one of the Actions for the majority of its infrastructure.
- 2) The company becomes a Participant of MANRS, helping to maintain and improve the document and to promote MANRS objectives

Public launch of the initiative - 6 November 2014



A growing list of participants

	Country	ASNs	Filtering	Anti-spoofing	Coordination	Global Validation
KPN	NL	1136, 5615, 8737				
Seeweb	IT	12637				
Gigas	ES, US	57286, 27640				
NTT	US	2914				
BIT BV	NL	12859				
Algar Telecom	BR	16735, 53006, 27664				
OpenCarrier eG	DE	41692				
SpaceNet	DE	5539				
CERNET	CN	4538				
SpeedPartner GmbH	DE	34225				
Comcast	US	7015, 7016, 7725, 7922, 11025, 13367				

Current Activities

- **Expanding the group of participants**
 - Looking for industry leaders in the region
- **Building a community around MANRS**
 - A trusted mailing list, possible other activities
- **Developing better guidance**
 - Tailored to MANRS
 - In collaboration with existing efforts, like BCOP

Are you interested in participating?

Filtering



Anti-Spoofing



Coordination



Global scale



Comcast Example

- Before MANRS, Comcast implemented these actions within their **33 networks covering 20 million customers** in North America.
- But they realized their actions ***alone*** would not be sufficient.
- Recognized need to join with others and to promote this type of conduct by all network operators.



Comcast is committed to helping drive improvements to the reliability of the Internet ecosystem. **We are thrilled to be engaged with other infrastructure participants** across the spectrum and around the globe in pursuit of these goals.

*- Jason Livingood, Vice President,
Internet Services, Comcast*



MANRS is not a firewall that will protect your network.

MANRS is a commitment – and a community.

MANRS is a mark of quality.

Good network routing practice is **the fundamental requirement for trust** between providers, and ultimately creates a safer and stronger Internet for customers.

Jaya Baloo, Chief Information Security Officer, KPN

What is in MANRS for an IXP?

- **Is routing security important for your community?**
- **Do you need a global reference point?**
- **Are you willing to feed your expertise back to MANRS?**

What is in MANRS for an IXP?

- **A community with a common operational objective**
- **MANRS is a reference point with a global presence – a lowest common denominator**
- **MANRS is a platform you can build related activities**



MANRS

<https://www.routingmanifesto.org/>

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