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# MANRS for IXP

APIX Meeting



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# MANRS Programs



Network  
Operators (2014)



Internet Exchange Points (2018)



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



Network Equipment Vendors (2021)

# Mutually Assured Norms for Routing Security – IXP Programme

- MANRS provides crucial fixes to eliminate the most common threats in the global routing system
- Brings together established industry best practices
- Based on collaboration among participants and shared responsibility for the Internet infrastructure
- 764 Network Operators, 108 IXPs, 23 CDN/Cloud Providers, 6 Equipment Vendors

## Action 1

Prevent propagation of incorrect routing information

IXPs to implement filtering of route announcements at Route Server based on IRR and/or RPKI

## Action 2

Promote MANRS to the IXP membership

IXPs joining MANRS to encourage and assist members to implement MANRS actions

## Action 3

Protect the peering platform

Requires that IXPs have published policy of traffic not allowed on the peering fabric and performs filtering

## Action 4

Facilitate global operational communication and coordination

IXPs facilitate communication among members by providing necessary mailing lists and member directories

## Action 5

Provide monitoring and debugging tools to the members.

IXPs provide a looking glass for its members

# MANRS Participation in Asia-Pacific

81 out of 901 total participants (9%)

By MANRS Programme:

55 out of 764 Network Operators (7%)

19 out of 108 IXPs (12%)

6 out of 23 CDN/Cloud Providers (26%)

1 out of 6 Vendors (17%)

# MANRS IXP Participation

868 IXPs globally (according to IXPDB)

191 IXPs in Asia-Pacific region (22% of total)

108 MANRS IXP participants globally (12% of total)

19 MANRS IXP participants in Asia-Pacific region (10% of total)

# Global Routing System

73,086 ASNs are advertised globally

MANRS Participants (ASNs) by RIR region:

APNIC	121 out of 18,177 (0.7%)
AfriNIC	54 out of 1,831 (2.9%)
ARIN	205 out of 19,997 (1.0%)
RIPE NCC	267 out of 28,826 (0.9%)
LACNIC	301 out of 11,685 (2.6%)

## Helpful tools

**IXP Implementation Guide** - The most recent version is available on GitHub at <https://github.com/manrs-tools/manrs-docs/blob/main/pdf/MANRS-IXP-Implementation-Guide.pdf>. If you would like to improve, please submit a pull request!

**IXP validation tool** – Allows to check how well RPKI-based filtering is working (also part of the audit process). Available on GitHub <https://github.com/manrs-tools/MANRS-IXP-validation-tool>. Supports MRT dumps or Looking Glass API.

Interested to know more?

MANRS Community Meeting @ APRICOT  
Same Place

Tomorrow

**11.30 – 13.00**

