

# Working together to improve routing security for all

The MANRS Programme

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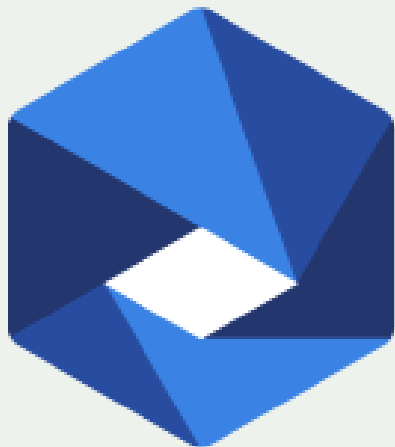


# Mutually Agreed Norms for Routing Security

MANRS defines four simple but concrete actions that network operators must implement to improve Internet security and reliability.

- The first two operational improvements eliminate the root causes of common routing issues and attacks, while the second two procedural steps improve mitigation and decrease the likelihood of future incidents.

MANRS builds a visible community of security minded network operators and IXPs



# MANRS

# MANRS Actions

## Filtering

Prevent propagation of incorrect routing information

Ensure the correctness of your own announcements and announcements from your customers to adjacent networks with prefix and AS-path granularity

## Anti-spoofing

Prevent traffic with spoofed source IP addresses

Enable source address validation for at least single-homed stub customer networks, their own end-users, and infrastructure

## Coordination

Facilitate global operational communication and coordination between network operators

Maintain globally accessible up-to-date contact information in common routing databases

## Global Validation

Facilitate validation of routing information on a global scale

Publish your data, so others can validate



# Implementing MANRS Actions:

**Signals** an organization's security-forward posture and can eliminate SLA violations that reduce profitability or cost customer relationships.

**Reduces** routing incidents, helping networks readily identify and address problems with customers or peers.

**Improves** network's operational efficiency by establishing better and cleaner peering communication pathways, while also providing granular insight for troubleshooting.

**Addresses** many concerns of security-focused enterprises and other customers.  
See <https://www.manrs.org/resources/research/>



# MANRS is an Important Step

Security is a **process**, not a state. MANRS provides a structure and a **consistent approach** to solving security issues facing the Internet.

MANRS is the **minimum** an operator should consider, with low risk and cost-effective actions.

MANRS is not a one-stop solution to all of the Internet's routing woes, but it is **an important step** toward a globally robust and secure routing infrastructure.



# Why join MANRS?

- Improve your security posture and reduce the number and impact of routing incidents
- Join a community of security-minded operators working together to make the Internet better
- Use MANRS as a competitive differentiator





# We Are In This Together

**Network operators and IXPs have a responsibility to ensure a globally robust and secure routing infrastructure.**

The network security depends on actions of other players: networks and IXPs

The more network operators and IXPs work together, the fewer incidents there will be, and the less damage they can do.



# Situation in Finland (route objects)

Number of finnish AS: 238

Total originated prefixes (BGP): 1375

Route objects for those prefixes(RIR): 1301

Documentation accuracy : ~95%

Pretty good job!





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<https://www.manrs.org>

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Thank you.