Two years of good MANRS

https://www.manrs.org/

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What problem are we trying to address?

- **Border Gateway Protocol (BGP) is based on trust**

  - **No build-in validation of the legitimacy of updates**

  - **Chain of "trust" spans continents**

  - **Lack of reliable resource data**

Do we have enough tools?

- **Seemingly yes**
  - **Prefix and AS-PATH filtering, RPKI, IRR, …**
  - **BGPSEC under development at the IETF**
  - **Whois, Routing Registries and Peering databases**
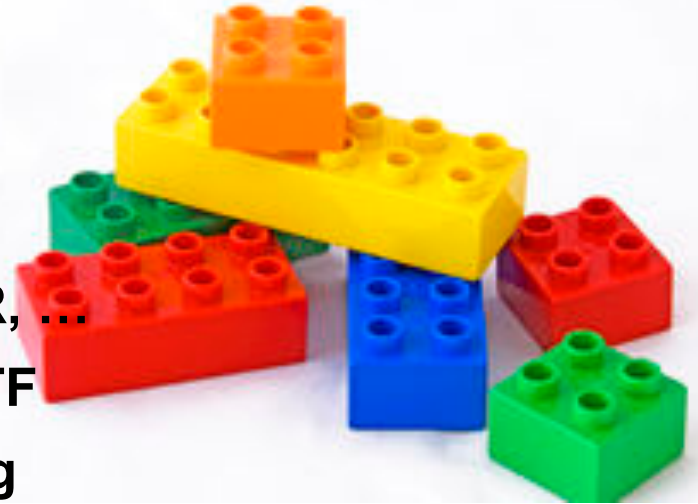
Are they effectively deployed?

- **Sparsely**

Because it is a socio-economic problem

- **From the routing perspective securing one's own network does not make it more secure. The network security is in someone else's hands.**
- **The more hands – the better the security.**
- **A cultural norm. Is there a clear, visible and industry supported line between good and bad?**

A clearly articulated baseline –
a minimum requirement (MCOP)

+

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

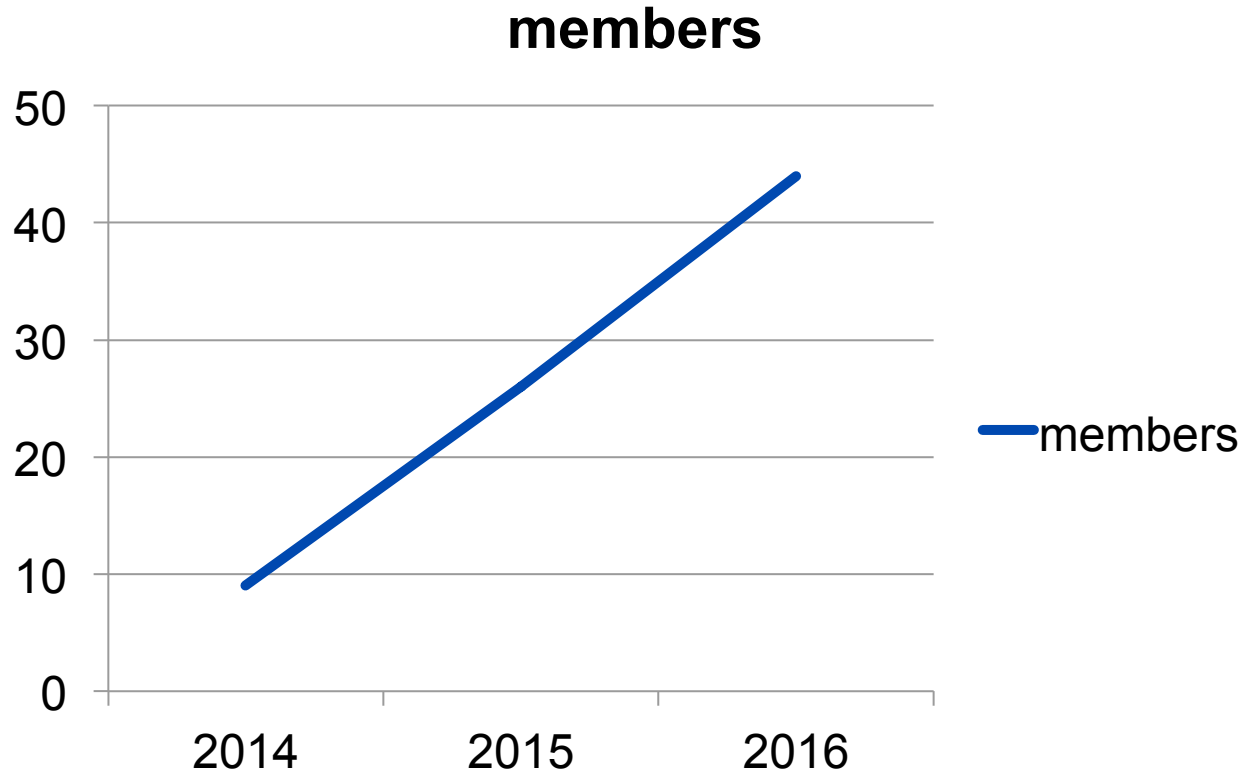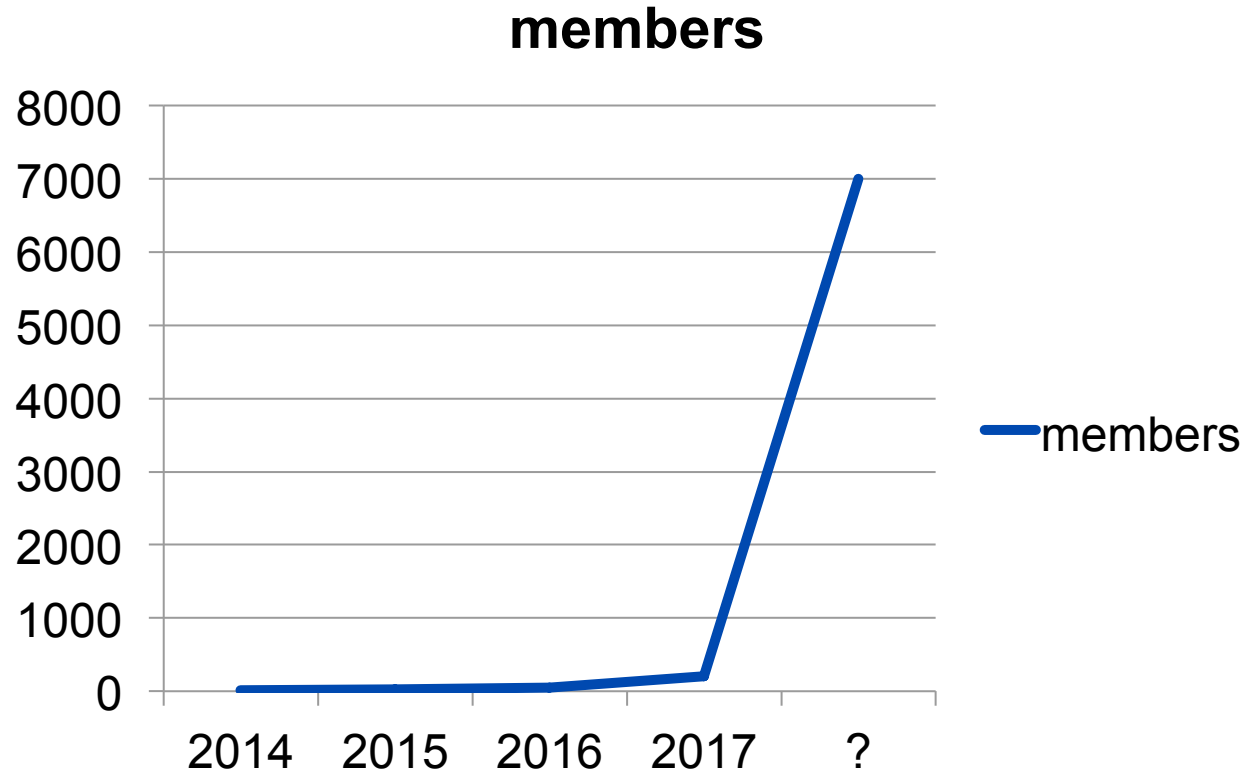- **Promotes culture of collaborative responsibility**

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.

Two years of MANRS

members

www.internetsociety.org

You may say I'm a dreamer

members

A line chart titled "members" with a y-axis from 0 to 8000 (in increments of 1000) and an x-axis labeled 2014, 2015, 2016, 2017, ?. The blue "members" line stays near 0 from 2014 through 2017, then rises steeply to about 7000 at "?".

MANRS is also a platform for related activities

- **Developing better guidance**
  - **MANRS Best Current Operational Practices (BCOP) document**

- **Potential training/certification programme**
  - **Based on BCOP document and an online module**

- **Bringing new types of members on board**
  - **IXPs, vendors**

- **Developing a better "business case" for MANRS**
  - **MANRS value proposition for your customers**

- **Creating a trusted community**
  - **A group with a similar attitude towards security**

Join us to make routing more secure

https://www.manrs.org/

What some of the participants say

Adherence to MANRS is an important commitment that operators make back to the Internet community. Together we aim to remove the havens from which miscreants maintain the freedom and anonymity to attack our network and our customers. David Freedman, Claranet Group

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

We believe the security, stability, and resiliency of the Internet operation can be improved via distributed and shared responsibilities as documented in MANRS. As one of the largest academic networks in the world, CERNET is committed to the MANRS actions. Xing Li, Deputy Director, CERNET

As one of the most connected Internet providers in the world, security of the Internet is top-of-mind at Level 3 Communications. The Internet is a shared responsibility, and only through these important collaborative efforts can we continue to ensure the protection of this collective infrastructure. Dale Drew, Senior Vice President, Chief Security Officer at Level 3 Communications.

We believe that the objectives and scope match our beliefs and our behaviour, and that by signing up, we may help encourage others to do so. Ian Dickinson, Network Architect, Sky

Zayo is interested and desires to be more active in promoting global routing security; the MANRS document is in our (and my) opinion a really good initial level of recommendations. I think that the more participation in MANRS, the safer our routing ecosystem. And a safer routing system is good for all of us! Robert Hagens, VP, IP Architecture, Zayo

Good network routing practice is the fundamental requirement for trust between providers, and ultimately creates a safer and stronger internet for customers. KPN is committed to providing secure and trustworthy communications, and by joining partners in MANRS, we continue to improve security and resiliency for all. Jaya Baloo, Chief Information Security Officer, KPN