MANRS for IXPs

Why we did it?

What did we do?

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Asteroid

MANRS?

- Demonstrate commitment to a collective culture of responsibility
  - For internet resilience
  - For security of the routing system

- Apply minimum level of best practice at inter-domain border
  - Filter incorrect routing information
  - Filter traffic with spoofed IP address sources
  - Encourage co-ordination and collaboration between operators

- Expressed in a number of Actions. Initiated and co-ordinated by ISOC.

MANRS for IXPs?

- MANRS actions apply to dirty layer three networks not pure, clean, honest IXP Ethernet domains

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MANRS for IXPs?

- ~~MANRS actions apply to dirty layer three networks not pure, clean, honest IXP Ethernet domains~~

- ~~We can (continue to) get away with doing no work at all~~

- …actually if this was ever true, it is certainly no longer true

MANRS for IXPs!

- IXPs are important partners
  - Focal point for collaboration
  - Co-ordination of regional internet development and education

- Route-Servers are popular and must be secured

- Layer 2 hygiene is still important

MANRS Actions

- Prevent propagation of internet routing information (M)
- Promote MANRS to the IXP membership (M)
- Protect the peering platform
- Facilitate operational communication between operators
- Provide monitoring and debugging tools to members

MANRS actions

- Prevent propagation of internet routing information (M)
  - Same burden on IXP operator as on layer 3 carrier
  - No customer BGP relationship should be unfiltered
  - Networks outsource peering hygeine to route-server

MANRS IXP Adoption

- 24 IXPs
- https://www.manrs.org/ixps/ixp-participants/
- Could you be next?

Why we adopted MANRS?

- Be good internet citizens
- Reduce likelihood of emergency support incident
- Increased confidence in automation
- Barrier was extremely low, most work had been done

How Asteroid adopted good MANRS

```yaml
- name: Collect Prefix information
  uri: url='http://46.51.199.18/prefix/{{ item["connection_list"][0]["vlan_list"][0]["ipv4"]["as_macro"] }}' body=yes
  register: prefix
  with_items: "{{ exchange_data['json']['member_list'] }}"
  when:
    - item['connection_list'][0]['vlan_list'][0]['ipv4']['routeserver'] == true
    - item["connection_list"][0]["vlan_list"][0]["ipv4"]["as_macro"] != "None"
  tags:
    - softconfig

- name: Merge prefix_list IPv4
  set_fact:
    ipv4_prefix_list: "{{ ipv4_prefix_list|default({})|combine( { item['item']['asnum']:item['json']['prefixes_ipv4'] } ) }}"
  with_items: "{{ prefix['results'] }}"
  when: '"json" in item'
  tags:
    - softconfig
```

- Build script will not include a peer on route-server unless
  - Route-server flag in database is set to true (customer controlled)
  - as_macro is defined in asteroid database for customer
  - as_macro expands in RIR IRRDBs to a prefix list of at least one prefix
- Prefixes MUST be defined for a BGP session to be built

Protect the peering platform

- Common Sense policy, enforced with port template
- Identical port configuration handled by port rollout script
  - Filtering link layer protocols (e.g. LLDP, BPDUs, etc.)
  - MAC Port-Security
  - Scripts on collector to identify prohibited traffic
- Unannounced, public Peering LAN IPv4/6 addresses

Provide a looking glass

Neighbour	ASN	State	Uptime	Description	Routes Recv.	Routes Filtered
185.1.94.19	3303	up	6 months	AS3303 - Swisscom (Switzerland) Ltd.	522	16
185.1.94.16	6939	up	6 days	AS6939 - Hurricane Electric LLC	53757	3462
185.1.94.15	8283	up	18 hours	AS8283 - Netwerkvereniging Coloclue	14	2
185.1.94.29	10310	up	6 months	AS10310 - Oath, Inc.	268	0
185.1.94.30	10310	up	17 days	AS10310 - Oath, Inc.	268	0
185.1.94.11	12414	up	6 months	AS12414 - Solcon Internetdiensten B.V.	20	0
185.1.94.28	15169	up	5 months	AS15169 - Google	160	0
185.1.94.13	24875	up	6 months	AS24875 - Novoserve B.V.	12	70
185.1.94.24	24961	up	a month	AS24961 - myLoc managed IT AG	0	0
185.1.94.10	25595	up	4 months	AS25595 - Slashme BV	1	0
185.1.94.26	25596	up	6 months	AS25596 - Cambrium IT Services B.V.	0	0
185.1.94.25	30132	up	3 months	AS30132 - Internet Systems Consortium - ISC	1	2
185.1.94.23	30781	up	2 months	AS30781 - Jaguar Network	506	0
185.1.94.22	32934	up	4 months	AS32934 - Facebook Inc	9	0
185.1.94.33	49981	up	19 days	AS49981 - WorldStream B.V.	97	11
185.1.94.17	51088	up	2 months	AS51088 - A2B Facilities B.V.	70	0
185.1.94.32	60144	up	a month	AS60144 - 3W Infra B.V.	46	5
185.1.94.27	64404	up	25 days	AS64404 - EventInfra	1	0
185.1.94.35	199524	up	2 months	AS199524 - G-Core Labs S.A.	53	1
185.1.94.14	202932	up	2 months	AS202932 - Cloudmerge B.V.	6	1

Alice, from our friends at ECIX

MANRS compatible with Asteroid values

- Lightweight and efficient approach
- Simple to automate, easy to use
- Low cost
- Origin in trustworthy, collaborative co-operation

Embedded into our product

- White Label IXP-in-a-box platform
- Public Exchange Points
    - Amsterdam, Netherlands
    - Mombasa, Kenya