Ingress Filtering for Asymmetric Routing

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Acronym Soup
- BGP
- BCP-38
- BCP-84
- AFI/SAFI
BCP-84 (uRPF modes):

- **Ingress ACL**: Manual Config
- **Strict RPF**: Only B
- **Feasible Path RPF**: B and C
- **Loose RPF**: Anyone

Who can send with src=P to A?
Asymmetric Routing

Want to send src=P to C, but receive dst=P only from B

Same signal is used for forwarding and uRPF!
Asymmetric Routing 2

\(X\) cannot send via \(C\), if \(B\) uses uRPF.
Why solve Ingress Filtering for Asymmetric Routing?

• Ingress Filtering Working for more people:
  ➔ Fewer operator headaches
  ➔ Wider Ingress Filtering deployment:
    ➔ Improved Internet Security

• Other ongoing work: (draft-sriram-opsec-urpf-improvements)
  • Matching Interfaces to ASNs for packets from Customer Interfaces.
  • Still an issue with Large Networks and Peer-to-Peer traffic

Interested?
Let’s talk: ilubashe@akamai.com
Proposal: “Ingress Only” SAFl

• Advertise “Ingress Only” paths using MP_REACH_NLRI with a new “Ingress Only” SAFl
  • MP_UNREACH_NLRI can be used to withdraw these paths

• “Ingress Only” paths are never used for forwarding
  • They are only used in “Feasible Path RPF” calculation

• “Ingress Only” advertisements are transitive, but:
  • If a covering route (with the same or a shorter prefix) is advertised to a peer, the “Ingress Only” route is not advertised to that peer

• Only routers that support the new SAFl will get the advertisement
“Ingress Only” Advertisement Origination

• If a Customer advertisement is not re-advertised to a BGP peer (NOEXPORT, AS_PATH length, link capacity, business, whatever reasons):
  - Advertise an “Ingress Only” path to those BGP peers

• Ditto for own prefixes not advertised to a BGP peer.

The End

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