Ingress Filtering for Asymmetric Routing
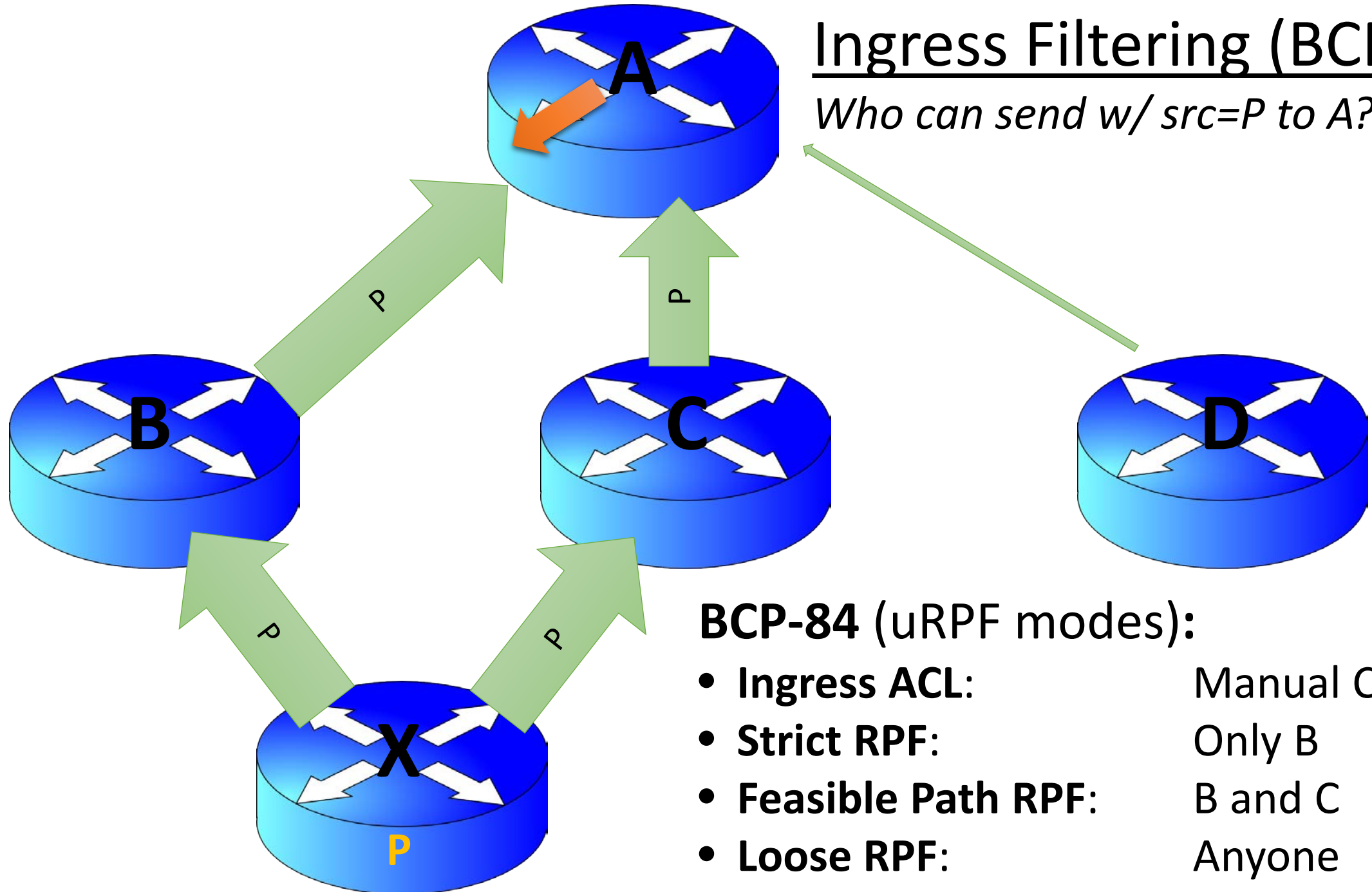
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Acronym Soup

- BGP

- BCP-38

- BCP-84

- AFI/SAFI

Ingress Filtering (BCP-38)

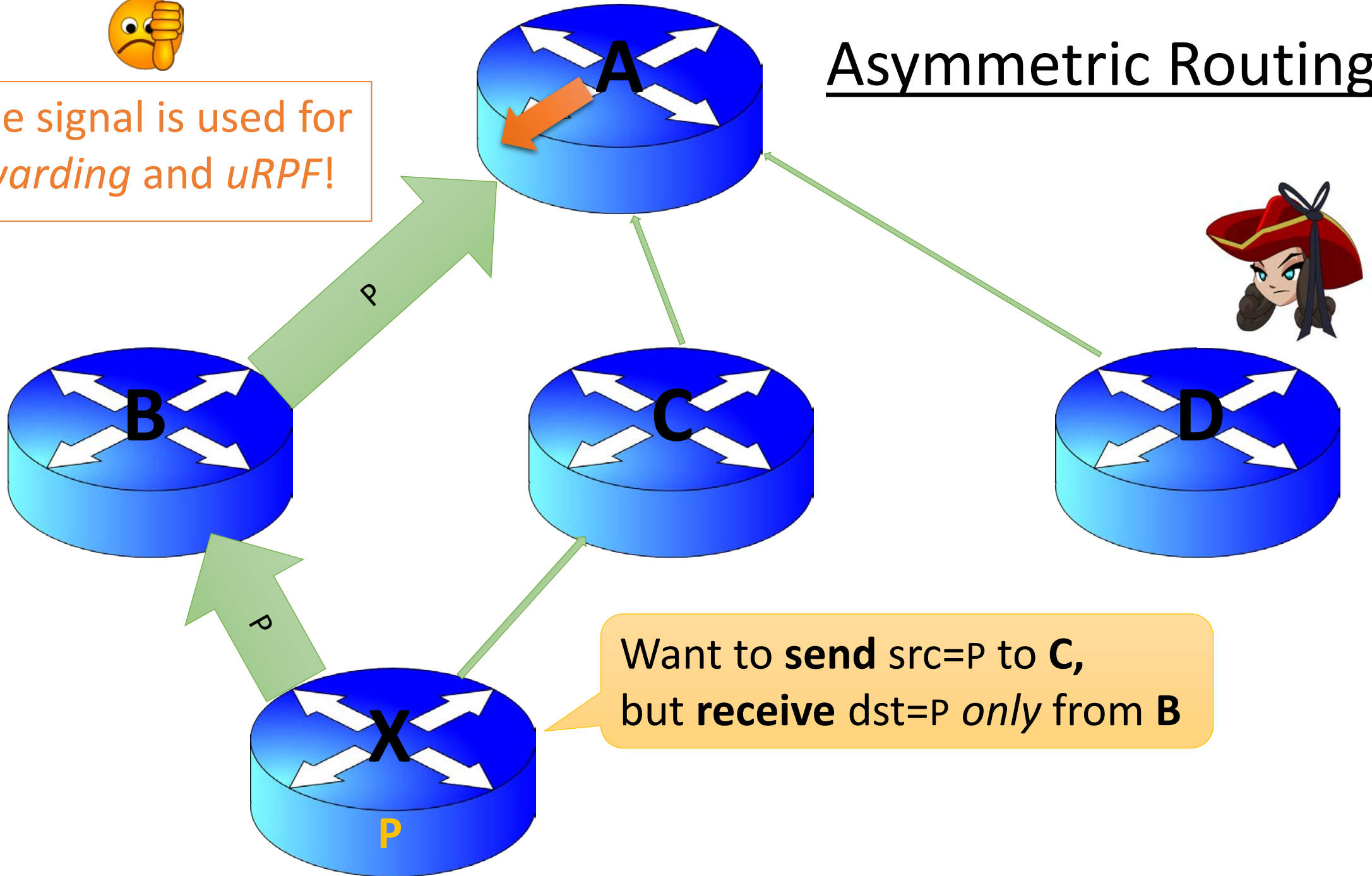*Who can send w/ src=P to A?*

BCP-84 (uRPF modes)**:**

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

Asymmetric Routing

Same signal is used for *forwarding* and *uRPF*!
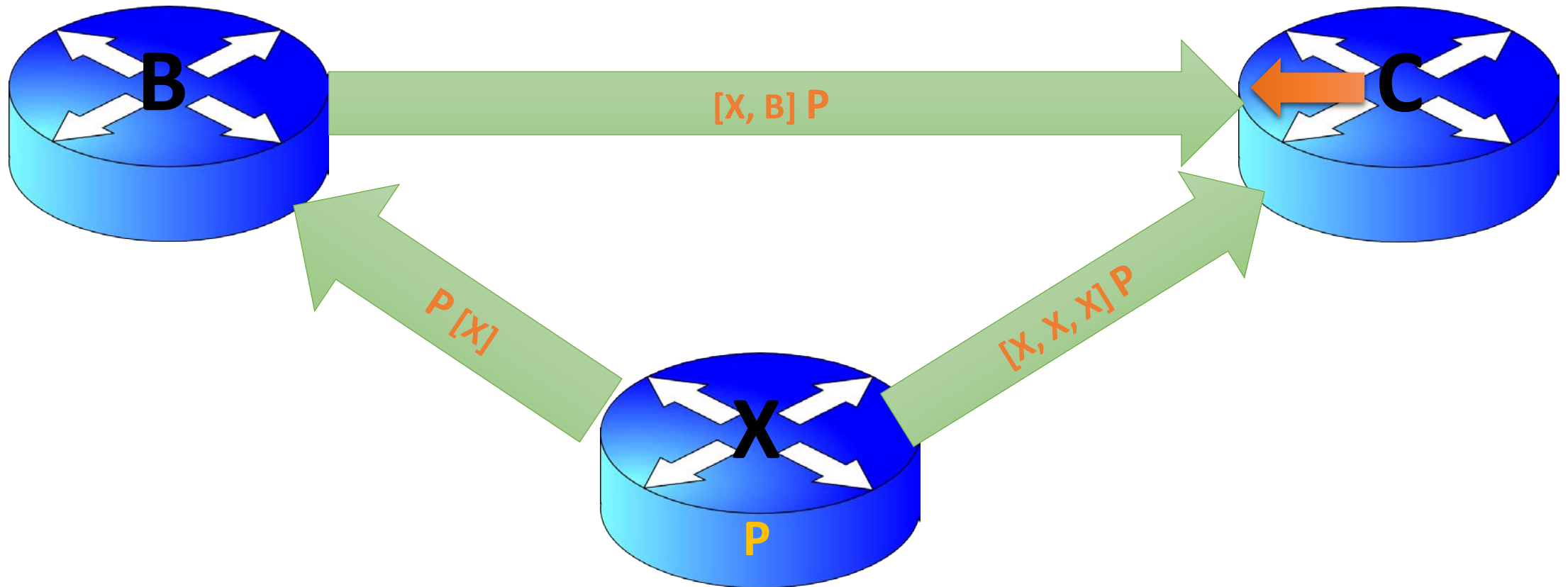
Want to **send** src=P to **C,** but **receive** dst=P *only* from **B**

Asymmetric Routing 2

X cannot send via **C**, if **B** uses uRPF.

B   [X, B] **P**   **C**

P [X]

[X, X, X] **P**

X

P

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" SAFI

- Advertise "Ingress Only" paths using MP_REACH_NLRI with a new "Ingress Only" SAFI
  - 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 SAFI 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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