# How to resolve peering redundancy?
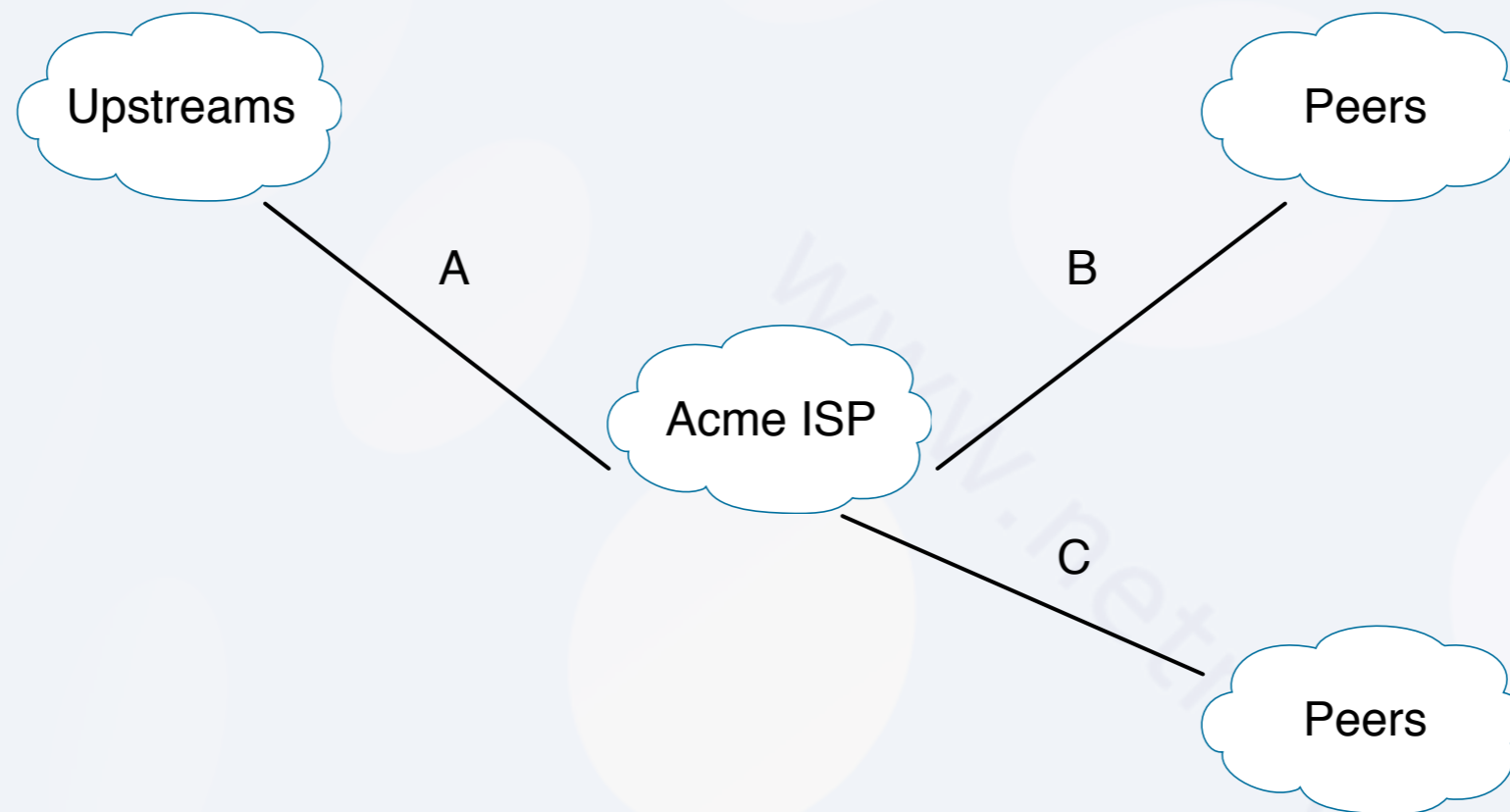
## Kurtis Lindqvist
## Kurtis@netnod.se

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# The Internet simplified

Upstreams

Peers

A

B

Acme ISP
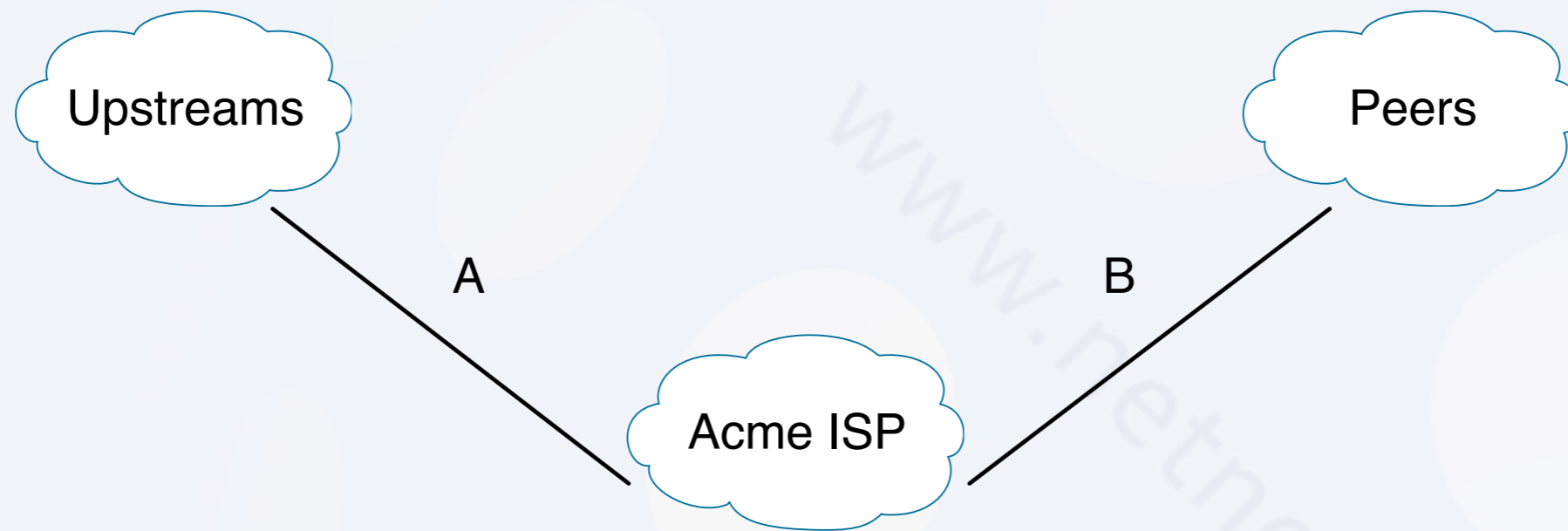
- A provide redundancy for B to some extent
- But not vice versa

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# Somewhat less simple

Upstreams

Peers

A

B

Acme ISP

C

Peers

- B can provide back up for C, and vice versa
- A can provide back-up for B

# Redundancy

- But what does the world really look like?
  - (I wish we had a few grad students now...)
- But I won't let the lack of facts stop me!

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# Why do we peer?

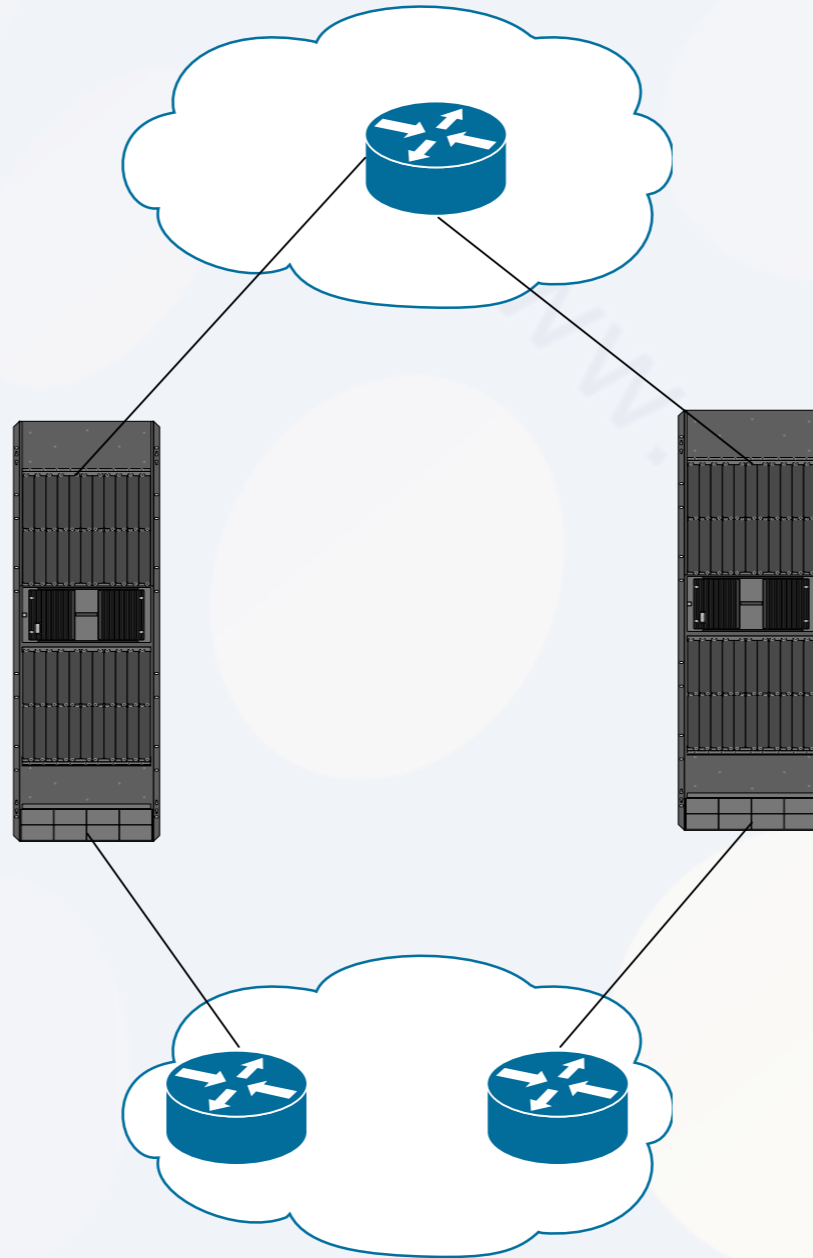- Cheap(er) traffic
- Lower RTT
- Marketing
- Capacity

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# What does this mean?

- While swap over to transit isn't catastrophic

- It does has consequences

- Feedback implies that operators believe swap to Transit is a real issue
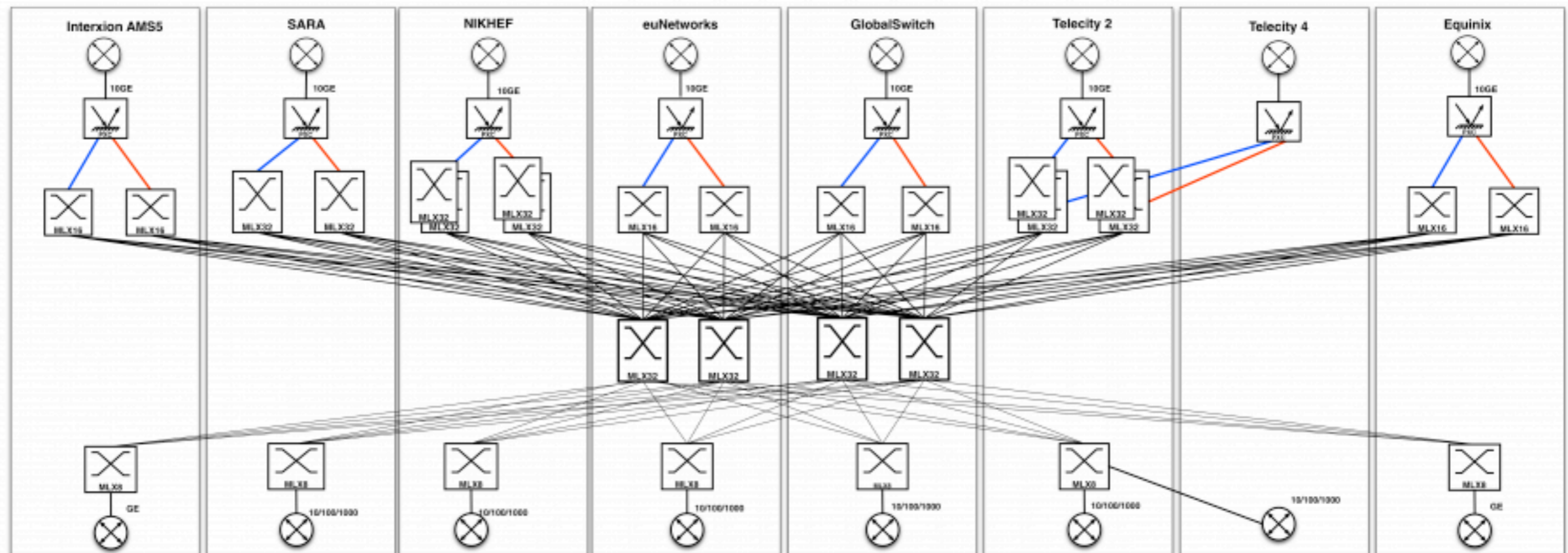
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# So...

- People seem to think that peering is important
- And need to be redundant
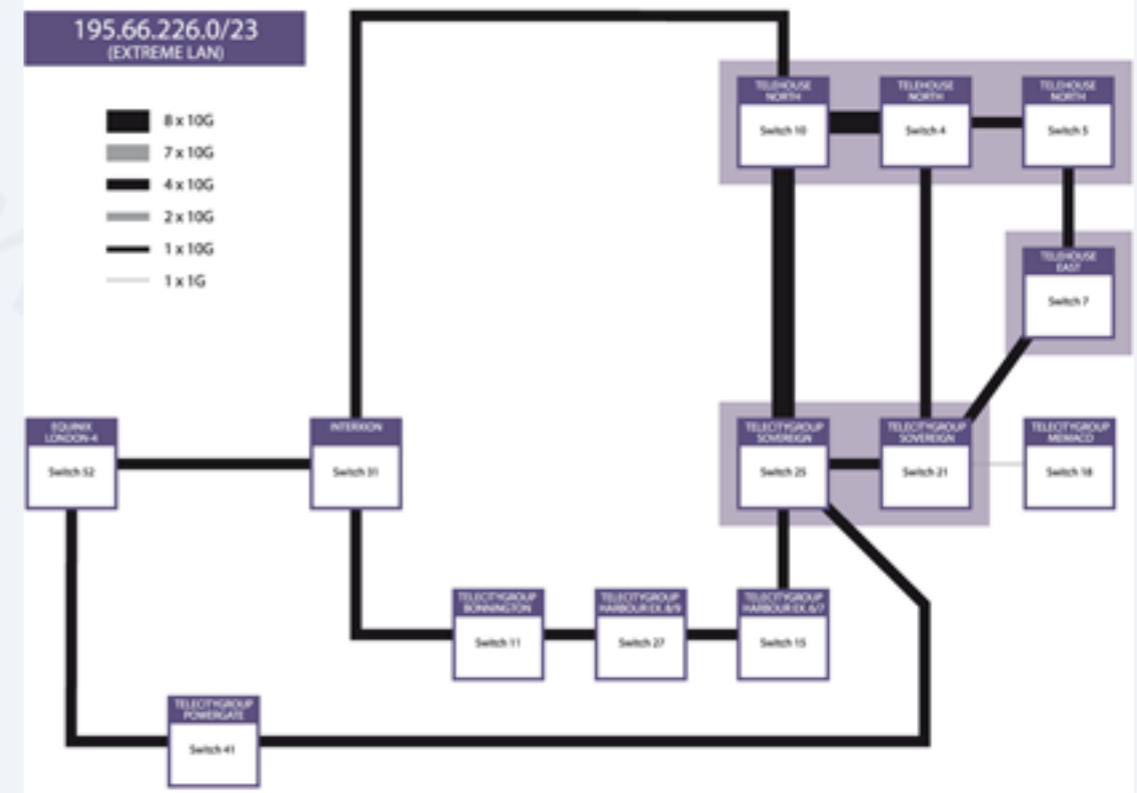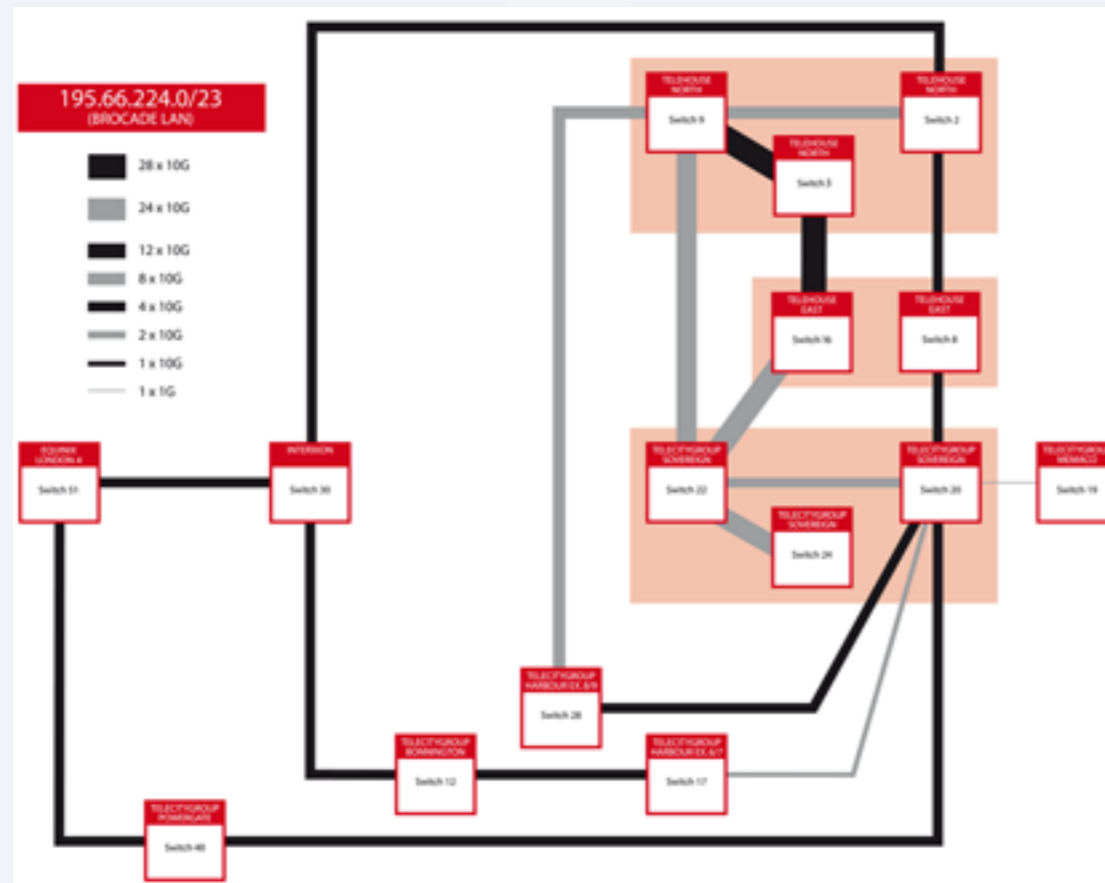
# Netnod's approach

# AMS–IX approach

# Linx approach

# Or simply put

Protection of peering data plane can be done as

1. ISP has multiple ports (on multiple routers)
2. IXP protects a single port from ISP (like AMS–IX
3. IXP supports added redundancy by independent peering fabrics (like Netnod and Linx)
4. Use multiple IXPs

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# Consequences I

- Cost comes in two factors
  - Numbers of ports on ISP routers
  - Number of ports on IXP fabric (and charges)

- IXP providing a single protected port has the advantage that it is (potentially) cheaper
  - But simply moves the SPOF to the ISP router

# Consequences II

- An IXP that provides multiple platforms

- Have potentially higher cost

- To not move the SPOF assumes the ISP has two routers

- ISPs with two routers and two connections, might still suffer from a peer having one port/

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# Why am I bringing this

- If we for a moment ignore the argument that ISPs should have the freedom to decide themselves

- How effective is really protection over multiple IXPs?
  - RTT, Jitter?, BGP convergence

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# Why am I bringing this

- How much does ISPs really care about peering redundancy?
- Netnod thinking of changing current policy
- Very little feed back from current members
- And views are roughly 50/50

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# What I would like...

- Feedback on how people view peering  vs. Transit for redundancy

- Data on BGP fall–over

  - And someone to study it!

- A wider on–line study?

- I am happy to come back and present findings...

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