
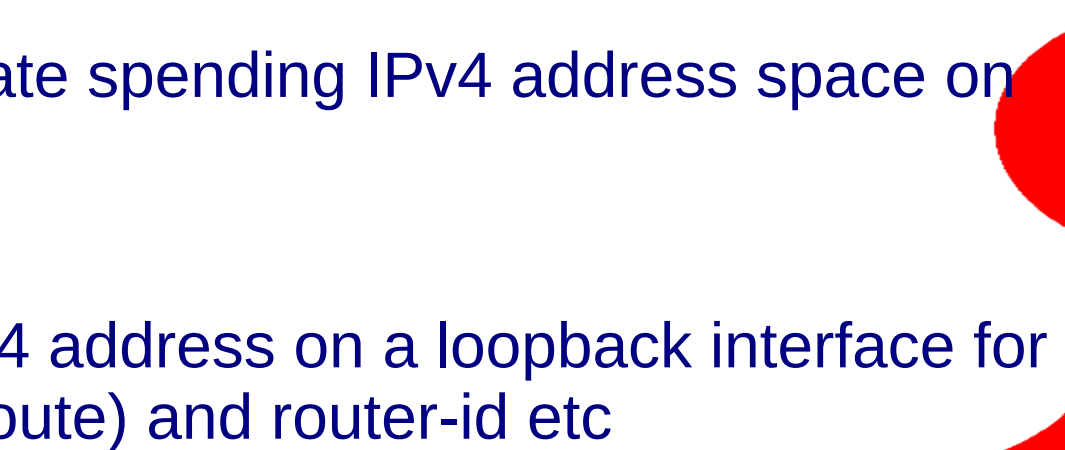


IPv6-only IXPs are Coming?

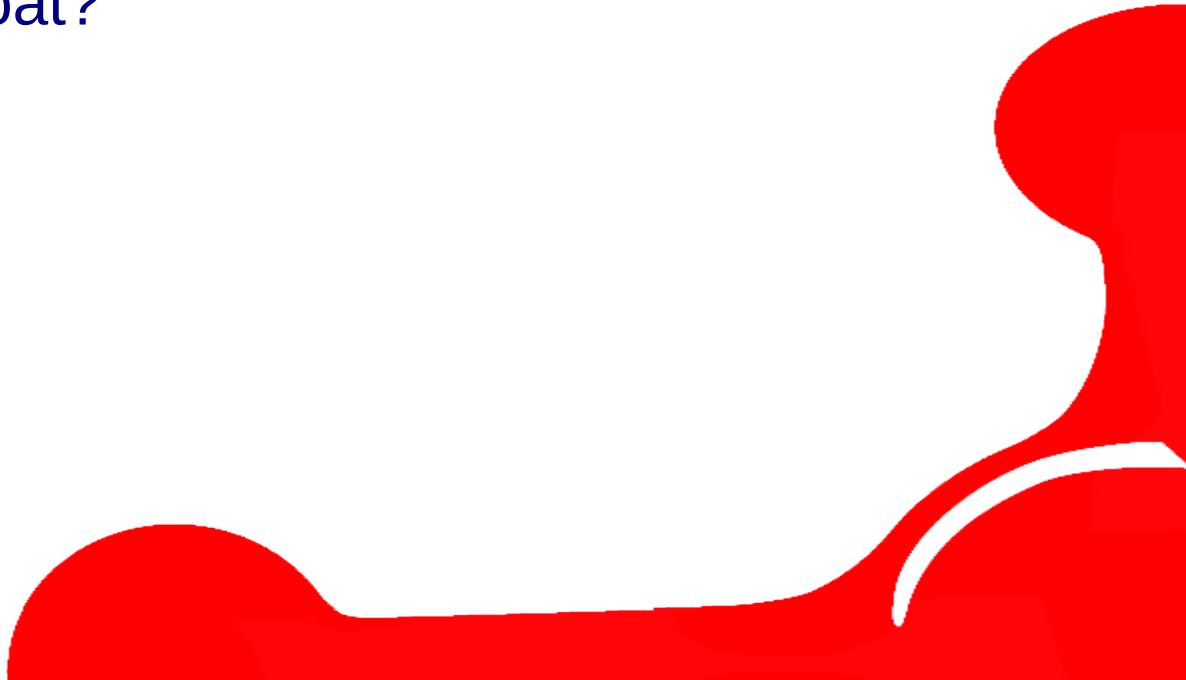
Aleksi Suhonen
March 2025

A large, abstract red graphic is located in the bottom right corner of the slide. It consists of several rounded, overlapping shapes, resembling a stylized figure or a decorative element. The red is a vibrant, solid color.

What's This All About?

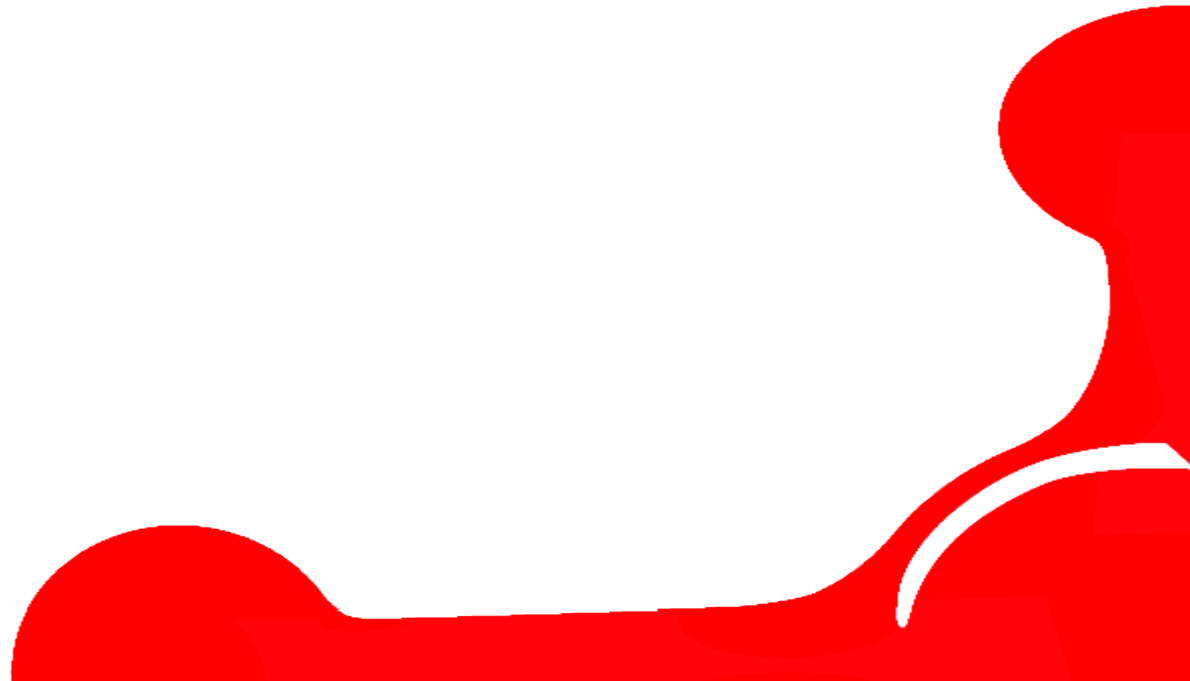
- RFC5549 specifies announcing IPv4 routes with IPv6 next-hop addresses using BGP
 - RFC8950 updates and replaces RFC5549
 - Allows networks to eliminate spending IPv4 address space on link networks
 - ARP replaced by IPv6 ND
 - Routers still need one IPv4 address on a loopback interface for ICMP errors (think: traceroute) and router-id etc
- 
- A large, stylized red shape resembling a drop or a splash, located in the bottom right corner of the slide. It has a white curved line near its base.

But IXPs? Why?

- IXPs already have IPv4 addresses
 - RIPE even has a special address assignment policy for IXPs
 - Why bother rocking the boat?
- 

Renumbering an IXP Is Painful

- LINX renumbered from a /22 to a /21 on 2022-05-11
- Who here remembers that?



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Renumbering an IXP Is Painful

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- Who here remembers that?
- LINX renumbered from a /23 to a /22 on 2012-06-11
- Who here remembers that too?
- LINX renumbered from a /24 to a /23 in 1997
- Thanks to Moyaze Shivji for the above dates

Renumbering an IXP Is Painful

- DE-CIX renumbered just once
 - Since then they have extended the netmask twice
 - Less painful, but not painless
- Thanks to Arnold Nipper and Daniel Wagner
- Netnod has never renumbered yet?

Alternative: One Final “Renumbering” Event

- When the peering subnet becomes full, think about whether you really want to go through the pain of renumbering again and again...
- ... or switch to IPv6 next-hops, which aren't about to run out
- All members typically already have IPv6 addresses
- NIX (cz) is testing RFC8950 in their FENIX subnet
 - 6 members, 12 sessions mid February, 128 IPv4 prefixes affected
- TREX Tampere is also testing it

What About New IXPs?

- Updated IXP Address Space Assignment policy for IXPs: /26
 - Multiple renumbering events needed even before you reach /24
- Or take a chance to never have to renumber at all?
- TREX turku (in Åbo) is testing the waters here

RFC8950 Challenges

- The original RFC5549 is from 2018
- Initial implementations mostly for MPLS VPN
- Interoperability hasn't been tested much yet
-

RFC8950-ixp Working Group

- Euro-IX started a working group to map out the challenges and work on best practices for adopting RFC8950 at IXPs
 - Chairmen: André Grüneberg (BCIX) and Aleksi Suhonen (me)
 - Members from DE-CIX, LINX, NIX.CZ, nic.cz, NetDEF, ...
 - DE-CIX is looking for BSc/MSc thesis writers
- <https://github.com/euro-ix/rfc8950-ixp>
 - Pull requests accepted...
- There's also a [mailing list](#) and a mattermost channel

Thank you!

Questions?

