Multihoming Using IPv6 Addressing Derived from AS Numbers ("ASN-PI")

draft-savola-multi6-asn-pi-00.txt

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Disclaimer

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- Note Well
  - I don’t claim knowledge whether this is the best solution
  - I don’t really like some aspects of it myself
  - However, I think it is better than at least SOME alternatives
  - It is a pragmatic, short term solution
  - And it’s something worth keeping in mind
  - Therefore, this presentation :-)

Assumptions and the Problem

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- Assumptions
  - Site multihoming problem has to be solved
  - One size fits all -solution will be difficult or impossible to find
  - Some requirements (e.g. TE) cannot be reasonably met using provider-based addressing
    - a problem for larger sites in particular
  - However, leaking more specific routes will lead to a routing mess

- The Problem
  - "Current very large multihomers have operational requirements which cannot be reasonably met with provider-based addressing, especially in the short-mid term. We need a simple mechanism to enable the transition of those multihomers to IPv6, without creating a routing mess, or requiring large architectural changes, NOW."

Approach

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- Use the AS number to create PI address space
  - Restrict to the first half of the 16 bit address space
    - i.e. those who have AS number today (but only sites, not ISPs, should use them)
    - there are about 10K origin-only AS's w/ IPv4 today
  - The prefix length could be either /32 or /48 per AS
  - Less RIR bureaucracy for address allocation/assignment
  - Example: AS1741 = 0x6CD ==> 2000:6CD::/32 or 2001:0:6CD::/48

- Other considerations
  - Specifically not 32 bit AS numbers
    - 32-bit AS numbers would indicate a RIR policy failure
  - Specifically not all of 16 bit AS number space
    - Disables the "land rush" for AS numbers so that all would be exhausted
    - Those who are significant enough companies have AS numbers already
  - Solves only the "large/very large/international" problem space
  - The prefix should always be sourced by the corresponding AS
  - No more specifics from ASN-PI blocks, filtering easy

Discussion

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- Are PI addresses -- for SOME sites -- practically inevitable?
- If yes:
  - Is it possible to define "some sites"?
  - Does this proposal seem like a good approach?
    - if yes, which prefix length the sites should get (/32, /48)?
  - Does this cover enough of the difficult requirements (e.g. TE)?
- If no:
  - How to deal with sites like Cisco or IBM with multiple PA?