Using 127-bit IPv6 Prefixes on Inter-Router Links

draft-kohno-ipv6-prefixlen-p2p-02.txt

Miya Kohno, Juniper Networks, Keio Univ.
Becca Nitzan, Juniper Networks
Randy Bush, IIJ
Yoshinobu Matsuzaki, IIJ
Lorenzo Colitti, Google

Contributors: Chris Morrow, Pekka Savola, Remi Despres, Thomas Narten

Scope of the draft

- **Inter-router point-to-point links**

  - **Numbered addressing is used (not Link-local-only).**
  - **Only two routers and no hosts are attached.**
  - **Interface could be :**
    - **Ethernet**
    - **SONET/SDH**
    - **Or any type of Tunnels**

Motivation Revisited

- **The use of /127 is a current operational practice**
  - Yoshinobu Matsuzaki @IIJ, APNIC26 (August 2008)
    http://archive.apnic.net/meetings/26/program/apops/matsuzaki-ipv6-p2p.pdf
  - Lorenzo Colitti & Angus Lees @Google, IETF72 IPv6 plenary (July 2008)
    http://www.ietf.org/proceedings/72/slides/plenaryw-4.pdf
- **It parallels the use of /31 in IPv4 [RFC3021]**
- **It's a simple solution for preventing possible security vulnerabilities, e.g. ping-pong, neighbor cache exhaustion, etc.**

Why /127 was regarded as harmful ?

- **Because it conflicts with Subnet-Router anycast addressing!**
  - **RFC4291 defines Subnet-Router anycast address, which is intended to be used to communicate with any one set of routers**
  - **RFC3627 indicated that the use of /127 was harmful, based on the condition that Subnet-Router anycast address was a mandatory requirement.**

The recommendation

- **127-bit prefix lengths MUST be supported on inter-router point-to-point links.**
- **Inter-router point-to-point links MAY be assigned 127-bit prefix lengths.**
- **If such a prefix is assigned to a link, Subnet-Router anycast MUST be disabled for the prefix.**

The recommendation for RFC4291

- **The following text is added to the section 2.5.1. "Interface Identifiers" of RFC4291.**

  "As for point-to-point inter-router links, the interface ID can be shorter, and in case that the interface ID is 1 bit, Subnet-Router anycast described in the section 2.6.1 MUST be disabled."

The recommendation for RFC3627

- **The title of the RFC3627 is changed :**

from

"Use of /127 Prefix Length Between Routers Considered Harmful"

to

"Use of /127 Prefix Length Between Routers Running Subnet-Router Anycast Considered Harmful"

The recommendation for RFC5375

- **The sentence in the RFC5375 Appendix B.2.2 is changed as follows:**

  "The usage of the /127 addresses, the equivalent of IPv4's [RFC3021] may be considered. However, when Subnet-Router Anycast is in use, this is problematic as documented in RFC3627."

Next step

- **Ask 6man WG to adopt the draft as the WG document**