prop101
A proposal for removing the multihoming requirement for IPv6 portable assignments

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Current problem

- APNIC Policy currently requires that an organization is multihomed to muliple providers before being eligible for IPv6 portable assignments
  - (Section 5.9.1, IPv6 address allocation and assignment policy)

- But:
  - Not all organizations are multihomed (to different carriers)
  - Typical IPv6 addressing models in use assume more extensive use of public addresses throughout an organization's network
    - Public addresses are not just used at the network's edge like IPv4 (at a NAT point or DMZ)
  - Not all organizations are able to use dynamic IPv6 addressing from providers
  - Some organizations may have statically-addresses networks that are too large or complex to manually renumber in the event of a change of provider

- So if an organization with a complex, statically-addressed network receives its Internet connection from one ISP (say for reasons of whole-of-business arrangements), then under the current APNIC policy if they wish to become IPv6-enabled they must either:
  - Practically make a permanent commitment to that ISP supplying LIR addresses, since renumbering could be effectively impossible, or;
  - Pay for additional services and configuration to multihome just for a portable assignment
- This could discourage early IPv6 adoption by such organizations

Other RIRs

- APNIC is the <u>only</u> remaining RIR that insists on multihoming for portable assignments

- Other RIRs do not have mandatory technical criteria for portable IPv6 allocations
  - Some requirements for description of planned usage (AfriNIC, LACNIC)
  - But otherwise "reasonable technical justification" is either the only requirement (RIPE, AfriNIC) or an option among other more specific criteria (ARIN)
    - ARIN requires <u>either</u> multihoming, use of >2000 addresses or >200 subnets within 12 months, or reasonable technical justification why LIR allocation is unsuitable

- (See appendix for specific positions in other RIRs)

Proposal as first presented at APNIC33

- Remove the absolute requirement for multihoming for the assignment of portable addresses, and replace with the following criteria
  - Must be APNIC members (or have signed non-member agreements)
  - Automatically eligible if have previously received IPv4 portable assignment
  - A reasonable technical justification is required to demonstrate why ISP/LIR assignments are not suitable
  - Minimum /48 to be assigned, more if needed to be below APNIC's Applied HD-ratio threshold, or multiple sites
  - To minimise routing table impacts:
    - Only one prefix to be assigned to an organization initially;
    - Subsequent allocations dependent on demonstration of good aggregation practices
    - APNIC recommended to use sparse allocations so any subsequent assignments only change prefix length, and not require additional prefix

Discussion at APNIC34 SIG

- The major point of discussion concerned the perceived risk of massive increase of portable assignments leading to global routing table explosion

- Clause 4.E.(d) added in response asking Secretariat to regularly report on IPv6 portable address assignments

- A suggestion that a sunset clause be incorporated was rejected by the community

Mailing-list discussion since APNIC33

- Support expressed for current draft (published after APNIC33 SIG) by:
  - Yi Chu, Mark Foster, Terry Manderson, Dean Pemberton, Aftab Siddiqui, Randy Whitney

- No opposition expressed to principle of proposal

- Only concern raised concerns "reasonable technical justification" being the basis for assessment rather than specific mandatory criteria
  - This concern was raised by Terence Zhang (solely)

- A suggestion was made to alter the draft to remove "reasonable technical justification" and make the example criteria as the only specific options
  - I.e. "large/complex statically addressed networks" or "critical civic or medical services"
  - Perhaps including multihoming (posed for discussion)
  - Terence indicated that this approach would address his concerns

- But only comments on list have expressed preference for draft as it is
  - Yi Chu, Aftab Siddiqui, Randy Whitney preferring "reasonable technical justification"

Benefits/disadvantages

- Benefits:
  - Removal of potential complexity of IPv6 addressing for some classes of organizations
  - Consistency with other RIRs

- Risks:
  - Potential explosion of IPv6 routing tables if there were excessive applications for portable assignments
    - Also implying potential workload increase on APNIC Secretariat
    - Proposal assumes costs of APNIC membership along with technical justifications will discourage unnecessary applications

Implementation

- Implementation timeframe:
  - 3 months from consensus

- Changes required:
  - Section 5.9.1, IPv6 address allocation and assignment policy
  - Forms used for application for portable assignments

- This proposal specifically relates to portable assignments made directly by APNIC; it would be the choice of each NIR whether they would adopt a similar policy

Questions?

Appendix

Other RIRs: AfriNIC

- Covered in "Policy for IPv6 ProviderIndependent (PI) Assignment for End-Sites" (AFPUB-2007-v6-001) and by implication "Policy for End User Assignments in AfriNIC service region" (AFPUB-2006-GEN-001)

- Assignment criteria:
- The end-site must not be an IPv6 LIR
- The end-site must become an AfriNIC End User Member and pay the normal AfriNIC fee for its' membership category
- The end site must either:
  - be a holder of IPv4 PI address space or
  - qualify for an IPv4 PI assignment from AfriNIC under the IPv4 policy currently in effect.
- The end-site must justify the need for the IPv6 PI address space.
- The 'end-site' must show a plan to use and announce the IPv6 provider independent address space within twelve (12) months. After that period, if not announced, the assigned IPv6 PI address space should be reclaimed and returned to the free pool by AfriNIC.

- (IPv4 end user assignment policy does not require multihoming (AFPUB-2006-GEN-001) except for Exchange Points)

Other RIRs: ARIN

- Detailed in Section 6.5.8 of ARIN Number Resource Policy Manual

- Assignment Criteria:
1. Having a previously justified IPv4 end-user assignment from ARIN or one of its predecessor registries, or;
2. Currently being IPv6 Multihomed or immediately becoming IPv6 Multihomed and using an assigned valid global AS number, or;
3. By having a network that makes active use of a minimum of 2000 IPv6 addresses within 12 months, or;
4. By having a network that makes active use of a minimum of 200 /64 subnets within 12 months, or;
5. By providing a reasonable technical justification indicating why IPv6 addresses from an ISP or other LIR are unsuitable.
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Other RIRs: LACNIC

- Detailed in Section 4.5.4 of LACNIC Policy Manual

Assignment criteria:

- <u>Either</u> have previously received IPv4 space,
- <u>Or:</u>
  - Not be an LIR or ISP.
  - In case of announcing the assignment on the Internet inter-domain routing system, the receiving organization shall announce the block maintaining de-aggregation to a minimum in accordance with the announcing organization's needs..
  - Provide detailed information showing how the requested block will be used within the following three, six and twelve months.
  - Submit addressing plans for at least a year, and host numbers on each subnet.
  - Submit a detailed description of the network topology.
  - Prepare a detailed description of the network routing plans, including the routing protocols to be used as well as any existing limitations.

Other RIRs: RIPE

- Detailed in Section 7 of "IPv6 Address Allocation and Assignment Policy" (RIPE-545)
  - Released Jan 2012, removing previous multihoming requirement

Assignment criteria:

- To qualify for IPv6 PI address space, an organisation must meet the requirements of the policies described in the RIPE NCC document entitled "[Contractual Requirements for Provider Independent Resources Holders in the RIPE NCC Service Region](#)".

- The RIPE NCC will assign the prefix directly to the End User organisations upon a request properly submitted to the RIPE NCC, either directly or through a sponsoring LIR.

- The minimum size of the assignment is a /48. Organisations requesting a larger assignment (shorter prefix) must provide documentation justifying the need for additional subnets.

- Additional assignments may also be made when the need is demonstrated and documented based on address usage, or because different routing requirements exist for additional assignments. When possible, these further assignments will be made from an adjacent address block.

- Assignments will be made from a separate 'designated block' to facilitate filtering practices.

- The PI assignment cannot be further assigned to other organisations.