2010-8: Rework of IPv6 Assignment Criteria

2010-8: The Problem Statement

- ## The current IPv6 assignment criteria is based on IPv4 policy
  - ### This creates a level of indirection that is confusing to many people

6.5.8. Direct assignments from ARIN to end-user organizations

6.5.8.1. Criteria

To qualify for a direct assignment, an organization must:

a. not be an IPv6 LIR; and

b. qualify for an IPv4 assignment or allocation from ARIN under the IPv4 policy currently in effect, or demonstrate efficient utilization of all direct IPv4 assignments and allocations, each of which must be covered by any current ARIN RSA…

2010-8: The Problem Statement

- 6.5.8.1 and 4.3.5 would seem to allow IPv6 for non-connected networks
  - However 4.3.5 references RFC1918 too
  - This seems confusing and opinions vary
- Host counts for IPv6 seem irrelevant
  - One /64 subnet could supports 18,446,744,073,709,551,616 hosts
- Multihomed end-users will likely use a routing slot regardless of their host count

2010-8: What does it do?

- Replaces 6.5.8 with new language
- Rearranges 6.5.8 putting initial allocation size first, followed with criteria for making allocations
  - Allows the easy addition of new criteria in the future with out rearranging the policy again
- Moves 6.5.8.3 Subsequent Assignment Size to 6.5.9 Subsequent Assignments

2010-8: What does it do?

- Moves 6.5.9 Community Networks to 6.5.10
  - Maybe in the future this could become another criteria under 6.5.8.X
- Attempts to use clear plain language
- For end-users with multiple sites, allows a up to a /48 per end-user site
- Based on the concept that, Site = Location
  - **NOT** Site = Organization
- HD-Ratio applies to a single location that would need more than a /48

2010-8: What does it do?

- Allows Internet connected end-users that meet one of the following Criteria to receive a minimum allocation of /48 or larger
  - Having a previous IPv4 allocation
  - Are or immediately becoming IPv6 Multihomed, or;
  - Providing a technical justification indicating why other IPv6 addresses from an ISP or other LIR are unsuitable, and a site and subnet plan

2010-8: What does it do?

- Allows non-connected end-users that meet one of the following criteria to receive a minimum allocation of /48 or larger
  - Having a previous IPv4 allocation
  - Providing description of use, a technical justification indicating why Unique Local IPv6 Unicast Addresses (ULA) are unsuitable, and a site and subnet plan

2010-8: Discussion Questions?

- Should we keep host counts?
- Is Site = Location the correct concept to use?
- If we go back to Site = Organization, should Multiple Discrete networks apply to end-users?
- Is IPv6 non-connected appropriate?

2010-8: Rework of IPv6 Assignment Criteria

Questions/Comments?

2010-8: Rework of IPv6 Assignment Criteria

Appendices

2010-8: The Proposal

6.5.8. Initial assignments

6.5.8.1. Initial assignment size

Organizations that meet at least one of the following criteria are eligible to receive a minimum assignment of /48. Requests for larger initial assignments, reasonably justified with supporting documentation, will be evaluated based on the number of sites and the number of subnets needed to support a site.

Organizations may request up to a /48 for each site in their network, with the overall allocation rounded up to the next whole prefix only as necessary. A subnet plan demonstrating a utilization of 33,689 or more subnets within a site is necessary to justify an additional /48 for any individual site, beyond this the 0.94 HD-Ratio metric of the number of subnets is used.

2010-8: The Proposal

All assignments shall be made from distinctly identified prefixes, with each assignment receiving a reservation for growth of at least a /44. Such reservations are not guaranteed and ARIN, at its discretion, may assign them to other organizations at any time.

Note: Organizations with multiple sites are encouraged to consider the use of /56s for smaller satellite sites.

2010-8: The Proposal

6.5.8.2. Criteria for initial assignment to Internet connected end-users

Organizations may justify an initial assignment for connecting their own network to the IPv6 Internet, with an intent to provide global reachability for the assignment within 12 months, and for addressing devices directly attached to their network infrastructure, by meeting one of the following additional criteria:

a. Having a previously justified IPv4 end-user assignment from ARIN or one of its predecessor registries, or;

b. Currently being IPv6 Multihomed or immediately becoming IPv6 Multihomed and using an assigned valid global AS number, or;

c. By providing a reasonable technical justification indicating why other IPv6 addresses from an ISP or other LIR are unsuitable and a plan detailing the utilization of sites and subnets for one, two and five year periods.

2010-8: The Proposal

Examples of justifications for why addresses from an ISP or other LIR may be unsuitable include, but are not limited to:

- An organization that operates infrastructure critical to life safety or the functioning of society, has justification based on the fact that renumbering would have a broader than expected impact than simply the number of hosts involved. These would include; hospitals, fire fighting, police, emergency response, power or energy distribution, water or waste treatment, traffic management and control, etc…

- Regardless of the number of hosts involved, an organization has justification if renumbering would affect 1000 or more individuals either internal or external to the organization.

2010-8: The Proposal

6.5.8.3 Criteria for initial assignment to non-connected networks

Organizations may justify an initial assignment for operating their own non-connected IPv6 network and for addressing devices directly attached to their network infrastructure, by meeting one of the following additional criteria:

a. Having a previously justified IPv4 end-users assignment from ARIN or one of its predecessor registries, or;

b. By providing a reasonable technical justification indicating why an assignment for a non-connected networks is necessary, including the intended purpose for the assignment, and describing the network infrastructure the assignment will be used to support. Justification must include why Unique Local IPv6 Unicast Addresses (ULA) is unsuitable and a plan detailing the utilization of sites and subnets for one, two and five year periods.

2010-8: The Proposal

Examples of justifications for why ULA may be unsuitable include, but are not limited to:

- The need for authoritative delegation of reverse DNS, including documentation why this is necessary.
- The need for documented uniqueness, beyond the statistical uniqueness provided by ULA, including documentation why this is necessary.
- A documented need to connect with other networks connected to or not connected to the Internet

NOTE: Organizations are encouraged to consider the use of ULA, for non-connected networks, see RFC 4193 for details.

2010-8: The Proposal

6.5.9. Subsequent assignments

Subsequent assignments may be made when the need for additional sites or subnets are justified with reasonable supporting documentation. When possible, subsequent assignments will be made from an adjacent address block.

Organizations may request up to a /48 for each site in their network, with the overall allocation rounded up to the next whole prefix only as necessary. A subnet plan demonstrating a utilization of 33,689 or more subnets within a site is necessary to justify an additional /48 for any individual site, beyond this the 0.94 HD-Ratio metric of the number of subnets is used.

Note: Organizations with multiple sites are encouraged to consider the use of /56s for smaller satellite sites.

Move current 6.5.9 Community Network Assignments as-is to section 6.5.10.