Prop-083v002

Alternative criteria for subsequent IPv6 allocations

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Introduction

This is a proposal to enable current APNIC account holders with existing IPv6 allocations to receive subsequent IPv6 allocations from APNIC for use in networks that are not connected to the initial IPv6 allocation.

Summary of the Current Problem

- LIR with an existing /32 IPv6 allocation
- Unable to deaggregate /32 due to the community practice of 'filter blocking' or 'bogon lists' [1]
- LIR may want to build a network in a separate location and provide IPv6 connectivity
- Due to routability problems by de-aggregating, the LIR cannot use a subset of their initial allocation in the new location.

Summary of the Current Problem cont….

For example:

- LIR has a /32 allocation for main network in New Zealand
- LIR wants to build a new network in Singapore
- Singapore is not connected to NZ network & ISP is using a local transit provider to obtain dual stacked connectivity
- LIR needs to obtain extra resources for local announcement, but is not eligible due to usage policy

Summary of the Current Problem cont….

Example of community bogon filtering:

ipv6 prefix-list ipv6-ebgp-strict permit 2400::/12 ge 19 le 32

This above statement in the IPv6 BGP filter would block 2400:xxxx::/33, /34, /35 or ‘smaller’

LIR needs to obtain a new /32 allocation to be able to have IPv6 connectivity in the new location with an independent (from their primary network) transit provider.

Situation at other RIR's

AfriNIC, and LACNIC have no similar policies we could find.

ARIN: A similar policy, 2009-5 has been adopted [3] and integrated into the ***ARIN Number Resource Policy Manual*** (thanks David Farmer)

RIPE: A similar policy, 2009-5 [4] was rejected in favor of 2009-6 [5] (thanks Ingrid Wijte)

RIPE's 2009-6 recommended that routing announcements requirements be relaxed so that LIR's can announce smaller (i.e. if they have a /32, they can announce a /35) prefixes. APNIC Policy 082 at this meeting is basically the same, but does not address this issue covered by this policy proposal.

Details of the Proposal

1. It is proposed that alternative criteria be added to the subsequent IPv6 allocation policy [2] to allow current APNIC account holders with networks in multiple locations but without a connecting infrastructure to obtain IPv6 resources for each location.

Details of the Proposal cont….

2. To qualify for subsequent IPv6 allocations under the proposed alternative criteria, account holders must:

- Be a current APNIC account holder with an existing IPv6 allocation

- Be announcing its existing IPv6 allocation

- Have a compelling reason for establishing a separate network which is not connected to the network of the initial allocation.

Examples of acceptable reasons for requesting resources for separate network installations are:

- Geographic distance and diversity between networks
- Autonomous multi-homed separate networks
- Regulatory restrictions requiring separate networks
- Each additional allocation must be announced from a separate ASN

Advantages and Disadvantages of the Proposal

Advantages

- This proposal enables current APNIC account holders to avoid problematic network design issues and policy issues related to deaggregation.

- Current APNIC account holders will be able to acquire resources and announce them separately to transit providers in disparate locations.

Disadvantages

- This proposal could cause faster consumption of IPv6 address space. However, given the size of the total IPv6 pool, the author of this proposal does not see this as a significant issue. [Reference Slide]

Effect on APNIC Members

APNIC members would be able to build networks in separate locations and obtain local IPv6 connectivity and announce their own resources.

Effect on NIRs

The proposal allows for NIRs to have the choice as to when to adopt this policy for their members

References

[1] For example, see "IPv6 BGP filter recommendations" http://www.space.net/~gert/RIPE/ipv6-filters.html

[2] See section 5.2, "Subsequent Allocation Section" in "IPv6 Address Allocation and Assignment Policy" http://www.apnic.net/policy/ipv6-address-policy#5.2

[3] ARIN Prop 2009-5 https://www.arin.net/policy/proposals/2009_5.html

[4] RIPE Prop 2009-5 http://www.ripe.net/ripe/policies/proposals/2009-05.html

[5] RIPE Prop 2009-6http://www.ripe.net/ripe/policies/proposals/2009-06.html

Questions?

Comments

- Having multiple ASN's shouldn't automatically allow for an additional allocation – proven needs basis
- Each additional allocation should be evaluated as though it were a 'separate member' for the purposes of further assignments and usage
- Solving routing issues with resource distribution? Perhaps – but we need to be able to do business without interference from community filtering projects – which are positive in many ways, but in practice cause much pain to those who get previously bogon'd ranges and spend years chasing providers up to update their filters.
- Trying to fix the community filter issue is easier said than done. Many just set and forget

How much IPv6 does APNIC have at the moment?

- 2001:0200::/23 (512 * /32 or 33,554,432 * /48's)
  2001:0C00::/23
  2001:0E00::/23
  2001:4400::/23
  2001:8000::/19 (8,192 * /32 or 536,870,912 * /48's)
  2001:A000::/20 (4,096 * /32 or 268,435,456 * /48's)
  2001:B000::/20
  2400:0000::/12 (1,048,576 * /32 or 68,719,476,736 * /48's)

ASN 2byte and 4byte

- 16-bit (2 byte) number space gives you 65,536 possible AS's
- 32-bit (4 byte) number space gives you 4,294,967,296 possible AS's minus 65k
- 4 byte ASNs include all of the older 2-byte ASNs, 0 through 65535

ARIN Number Resource Policy Manual (6.11)

6.11. IPv6 Multiple Discrete Networks

Organizations with multiple discrete IPv6 networks desiring to request new or additional address space under a single Organization ID must meet the following criteria:

- The organization shall be a single entity and not a consortium of smaller independent entities.
- The organization must have compelling criteria for creating discrete networks. Examples of a discrete network might include:
  - Regulatory restrictions for data transmission,
  - Geographic distance and diversity between networks,
  - Autonomous multihomed discrete networks.

ARIN Number Resource Policy Manual (6.11)

6.11. IPv6 Multiple Discrete Networks (continued….)

- The organization must keep detailed records on how it has allocated space to each location, including the date of each allocation.
- The organization should notify ARIN at the time of the request their desire to apply this policy to their account.
- Requests for additional space:
  - Organization must specify on the application which discreet network(s) the request applies to
  - Each network will be judged against the existing utilization criteria specified in 6.5.2 as if it were a separate organization, rather than collectively as would be done for requests outside of this policy