Proposed small multihoming assignment policy (IPv4)

Proposed by: APNIC
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1. Summary

This document proposes a clear policy for making portable assignments to organisations with relatively small address requirements, but a need to multihome.

This proposal is intended to promote Internet development in the Asia Pacific region by providing a clear policy that is directly relevant to current industry practices.

Note, this proposal is intended to complement, but is not dependent on, the proposed "criteria for initial, portable allocations of IPv4 address space" (to be presented separately).

2. Background and problem

APNIC's policies for allocating and assigning IPv4 address space are described in *Policies for address space management in the Asia Pacific region*.

2.1. Provider-based assignment principles

Aggregation or hierarchical routing (otherwise known as CIDR) controls the growth of the global routing table through the aggregation of customer networks. APNIC allocation policies support "provider based" allocations as required by CIDR, and recognise that non-CIDR allocations or assignments are detrimental in terms of scaling Internet routing.

As a practical trade off between the conflicting goals of conservation (which favours smaller allocations) and aggregation (which favours larger allocations), APNIC policy specifies a minimum allocation of a /20.

2.2. Current industry practices

With the growth of the Internet as an essential full-time service to business and other organisations, an increasing number of organisations are seeking to multihome their networks. The primary motivation for multihoming is to improve the reachability of "end-site" networks through redundancy of upstream connections.

In all cases, a multi-homed network will require the advertisement of a specific route into the global routing table. Of the 105,309 prefixes in the global routing table today (as seen from APNIC's router, July 2001), around 60,000 of these are from small sites of /24 prefixes, around 50% of the routing table. It is technically possible for networks to multihome using provider-based space, however this requires the announcement of a "more specific" route from that upstream provider's space, which may not be permitted by that provider's Acceptable Use Policy (AUP). For various reasons, many ISPs are not

willing to assign address space to downstream users planning to multihome and, consequently, some end-site operators may request portable space.

2.3. Policy implications

APNIC is charged with developing policies for responsible address space management that balance an array of conflicting goals and interests. As noted above, APNIC balances the goals of conservation and aggregation by applying a minimum allocation of /20. However APNIC's policies must also seek to provide fairness to the Internet community as a whole and to not hamper the development of the industry.

In summary, APNIC requires a policy that caters for organisations with a need to multihome but no other way of obtaining address space for that purpose. However, this policy must not compromise the integrity of other APNIC policies, including the established minimum allocation policy.

3. Other RIRs

3.1. RIPE NCC

Provider Independent assignments are currently requested through an existing LIR (normally one of the Internet service providers to the organisation involved). Such assignments are made to RIPE NCC as a member service, with no charge to the LIR or end-user organisation, and with no contractual arrangement binding either party. Should the end-user change ISP there is no follow up with the ISP or the holder of the PI assignment. There is no maximum or minimum assignment size.

3.2. ARIN

Multi-homed organisations in the ARIN region may receive a /20 allocation if have efficiently utilized a /21 from their upstream provider, and if they agree to renumber out of that address space and return it to the provider. An organisation is considered to be multi-homed if it receives full-time connectivity from more than one ISP and has one or more routing prefixes announced by at least two of its ISPs.

Any organisation that fails to meet the requirements for a /20, or that needs an allocation smaller than /20, must obtain address space from its upstream provider.

ARIN will make micro-allocations to critical Internet infrastructure, including public exchange points, gTLD, ccTLDs, RIRs, and ICANN. These allocations are no longer than a /24 and must not be announced on the public Internet.

In all cases, requestors must sign a "Registration Services Agreement" and pay annual and maintenance fees thereafter.

4. Proposal

To address the issues discussed above, it is proposed to establish a policy by which organisations may obtain a small portable assignment for the purposes of multihoming

4.1. Criteria for a small multihoming assignment

It is proposed that to be eligible to obtain a portable assignment from APNIC, the applicant must:

a. be currently multihomed with provider-based addresses, or demonstrate a plan to multihome within one month; and
b. agree to renumber out of previously assigned address space.

Under this policy an organisation would be considered to be multi-homed if its network receives full-time connectivity from more than one ISP and has one or more routing prefixes announced by at least two of its ISPs.

If an organisation "plans" to multihome, it will be required to provide full details of its plans, including the contact details of its intended network peers, who will be contacted for verification.

4.2. Evaluation of requests

All address space assignments will be evaluated according to the principles outlined in RFC2050. Namely, a demonstrated need must be shown for an address space assignment that utilises 25% of the address space immediately and 50% within one year.

4.3. Conditions of assignment

All address space distributed under this policy will be by way of assignment. All assignments will be subject to the terms and conditions of the APNIC leasing policy, and are liable to be revoked if the conditions are not met.

This policy will not specify a minimum assignment size; however, as is the case with all allocations and assignments made by APNIC, there can be no guarantee of routability.

4.4. Agreement and fees

The existing APNIC Fee Schedule (including Non-member Fees) would apply to allocations made under this proposal.

5. Additional discussion

5.1. Adoption by NIRs

To ensure consistency in the region, it is expected that the NIRs would also implement this proposal in accordance with their own policy processes. Assignments would be evaluated by the NIRs while APNIC would make the actual assignments.

6. Benefits

Adoption of this proposal is anticipated to bring the following benefits:

- increased certainty for organisations wishing to multihome;
- increased efficiency, objectivity, and fairness of request processing;
- increased convergence of policy with current industry trends;
- reduced administrative load for both applicants and APNIC.

7. Outstanding issues

See also the proposed "criteria for initial, portable allocations of IPv4 address space" (to be presented separately).

8. Proposed implementation

It is proposed that APNIC implement this new policy three months after consensus has been reached. All necessary supporting documents will be prepared by APNIC before the implementation date. These will include updating any necessary documentation, including request and membership application forms. The community will be informed of the changes in policy through the APNIC website and related mailing lists.

9. Conclusion

It is recommended that the policy described above be adopted.

10. Comments

Comments and feedback on this proposal are now invited from the community and are very welcome.