

Proposed criteria for initial, portable allocations of IPv4 address space

Proposed by: APNIC
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1. Summary

This document proposes a set of criteria for portable allocations of IPv4 address space. The proposed criteria provide greater certainty, efficiency, and fairness to IPv4 address space requests than are provided by current policy, while supporting more strongly the goals of responsible address space management. The proposed criteria would apply equally to both members and non-members seeking portable address space from APNIC.

This proposal is intended to promote Internet development in the Asia Pacific region by providing more certainty and efficiency for those seeking to enter the industry.

Note: this proposal does not specifically address the issue of small, multihoming organisations nor organisations unable to obtain sufficient address space from their upstream service providers. Proposals dealing with each of these issues may be presented separately at the forthcoming APNIC meeting.

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. Balancing goals: aggregation versus conservation

APNIC's policies are based on balancing a set of often conflicting goals for responsible address space management, namely: uniqueness, registration, aggregation, conservation, and fairness. In particular, APNIC's /20 minimum allocation policy represents a practical trade off between conservation (which favours smaller allocations) and aggregation (which favours larger allocations).

2.2. Confusing terminology: PA allocations versus PI assignments

Provider Aggregatable (PA) allocations and Provider Independent (PI) assignments are terms that cause confusion in the context of APNIC's policies and procedures.

Both PA allocations and PI assignments have the same practical effect in terms of aggregation and conservation for any given size of address block. Each requires a global announcement, consumes public address space, and may contain more specific announcements in the global routing table. Furthermore, from the point of view of the custodian, each method of distribution provides a "portable" block of addresses.

Despite these practical similarities, PA allocations and PI assignments are subject to different and inconsistent administrative arrangements:

- PA allocations can be obtained only by members of APNIC, who pay annual fees entitling them to receive additional address space on an ongoing basis;
- PI assignments can be obtained under APNIC's 'non-member' category, and enable organisations to receive portable one-off assignments for a high, once-only service fee.

2.3. Lack of criteria for obtaining initial address range

APNIC's policy document specifies a minimum size for an initial allocation (/20), but it does not specify clear eligibility criteria for obtaining such an allocation. This should be contrasted with the clear criteria specified for *subsequent* allocations to organisations that already hold address space.

In practice, the lack of criteria causes uncertainty for requestors as to whether they will be able to obtain address space or not. It also leads to delays in the membership and resource request application processes.

APNIC is charged with applying policies and procedures which promote Internet development in the Asia Pacific. It is important that clear criteria are established to reduce the uncertainty and delay experienced by some organisations seeking to enter the industry.

2.4. PA allocations to members

Most organisations that receive address space from APNIC do so as members. It is important to recognise that membership alone does not guarantee that an organisation will receive address space. APNIC operates an open membership structure, which any organisation is entitled to join.

In order to obtain address space, the member must demonstrate their requirements for an allocation of /20 (following APNIC's minimum allocation and slow start policies). Organisations which need considerably less than a /20 are encouraged to obtain a provider-based assignment from their upstream service provider. However in the absence of clear allocation criteria, many organisations face a complex choice.

2.5. PI assignments to non-members

APNIC's membership structure is designed to satisfy the needs of ISPs, which are expected to have an ongoing need for address space. However, organisations with a once-only need for address space may opt to request address space as non-members.

In such cases, APNIC's practice is to make PI assignments of a size appropriate for the requestor's need, although, as is the case with allocations to members, there are no clear criteria for determining eligibility.

2.6. Policy implications

As noted above, both PA allocations and PI assignments impose the same practical effects on Internet infrastructure and resources. Unfortunately, the lack of clear criteria for an initial address range allows inconsistencies in the interpretation of policies, which can undermine the goals of the addressing system.

For example, an organisation with a relatively small address requirement may decide that it is unlikely to receive an allocation as a member. It may choose to apply as a non-member and accept a PI assignment smaller than the minimum allocation. As discussed above, such a portable assignment has the same practical effect as an allocation, but by sidestepping the minimum allocation it disrupts the balance of conservation and aggregation.

In summary, the lack of clear criteria and the inconsistent treatment of practically similar concepts create uncertainty and inefficiency and compromise the goals of responsible address space management.

3. Other RIR's

3.1. RIPE NCC

To receive service from the RIPE NCC organisations must first be a member, as an LIR. The RIPE NCC operates an open membership policy with no strictly defined minimum first allocation criteria.

As is the case in this region, the RIPE community has recognised the problems with this position. Proposals have recently been made to address this and more information can be found at the RIPE meeting website [<http://www.ripe.net/ripe/meetings/archive/ripe-39/presentations/aspolicy/index.html>] and on the RIPE LIR discussion list [<http://www.ripe.net/ripe/mail-archives/lir-wg/>].

These discussions have recently concluded with the following criteria (yet to be implemented) which were announced recently by the chair of the LIR working group [<http://www.ripe.net/ripe/mail-archives/lir-wg/current/msg00004.html>]:

- A new LIR must demonstrate previous usage of a /22 (25% of a /20) or demonstrate immediate need for a /22 (25% of a /20).

The RIPE proposal is in line with utilisation figures expected under RFC2050. [<http://ftp.apnic.net/ietf/rfc/rfc2000/rfc2050.txt>]

Provider Independent assignments are currently requested through an existing LIR at no charge or contractual arrangement with the end-user. Should the end-user change ISP there is no follow up with the ISP or the holder of the PI assignment.

3.2. ARIN

ARIN operates an open membership policy but does not link allocations to membership. A separate "Registration Services Agreement" is undertaken with organisations requiring

IP address space and membership is extended free of charge to ISP organisations receiving allocations from ARIN.

Minimum allocations (/20) are made to ISPs who are able to meet strict allocation criteria. The ARIN multi-homed policy states that in order to qualify for a /20 minimum allocation, the organisation must:

- have used a /21 from an upstream provider, and demonstrate a need for a /20 to be used within 3 months, or
- have used a /20 from an upstream provider, and demonstrate the need for a /20 in 3 months.

If the organisation is renumbering from the previously held address space, it will be allocated a /19.

4. Proposal

To address the issues discussed above, it is proposed to:

- establish a clear set of eligibility criteria that would apply identically to both members and non-members seeking to obtain an initial address range and
- to apply the /20 minimum allocation to both members and non-members.

4.1. Proposed eligibility criteria for a /20 allocation

To be eligible to obtain a portable IPv4 allocation from APNIC, the applicant must meet all of the following criteria:

- a. The applicant must have used a /22 from their upstream provider or demonstrate an immediate need for a /22;
- b. The applicant must have complied with applicable policies in managing all address space previously allocated to it;
- c. The applicant must demonstrate a detailed plan for use of a /21 within a year; and
- d. The applicant must commit to renumber from previously deployed space into the new address space within one year.

4.2. Additional conditions

All allocations under this policy will be subject to the document *Policies for address space management in the Asia Pacific region*, in particular:

- a. APNIC's minimum allocation (currently /20); and
- b. APNIC's resource leasing policy.

APNIC members will be bound to these terms and conditions by the APNIC Membership Agreement. Non-members will be bound by a Non-Member Service Agreement (to be developed in accordance with this proposal).

All allocations are liable to be revoked if the terms and conditions are not met.

4.3. Exceptions

This proposal does not seek to address the need of certain organisations which require small, portable assignments, such as multihomed networks, Internet Exchange Points, and so on (see section 7 *Outstanding Issues*).

Related proposals dealing with such exceptions may be presented separately.

4.4. Fee Structure

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

5. Additional discussion

5.1. Proposed usage threshold

Particularly in developing countries in the Asia Pacific region, there are many ISPs that approach APNIC with very small requirements. While some may be accepted under current policies, others may be turned away under the new criteria.

For these reasons, APNIC has proposed that the requirement for immediate utilisation of address space be set at /22 (contrasting with ARIN's requirement for ISPs to have used a /21 from their upstream provider or a /20 if not multi-homed).

The /22 threshold is consistent with RFC2050, which requires 25% utilisation immediately and 50% within one year.

5.2. Adoption by NIRs

To ensure consistency in the region, it is expected that the NIRs would also implement this proposal in due course, in accordance with their own policy processes.

6. Benefits

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

- increased certainty for organisations wishing to obtain address allocations;
- increased efficiency, objectivity, and fairness of request processing;
- increased community understanding of the registry system and policies;
- increased ability to ensure responsible management of address space by non-members;
- reduced administrative load for both applicants and APNIC.

7. Outstanding issues

This proposal does not address the following issues:

- a. Multihoming organisations requiring small, portable address blocks;
- b. Address space assignments to recognised infrastructure sites, such as IXPs, root name servers, TLD registries, and similar sites.
- c. Organisations who, for any reason, cannot obtain addresses from their upstream service providers, and whose address needs would not meet the proposed criteria for a /20 allocation.

Related proposals dealing with each of these issues may be presented separately at future APNIC meetings.

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 criteria above are established taking into account regional and topological considerations.

It is also noted that this proposal follows a trend of convergence at global level in establishing clear criteria.

10. Comments

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