

Draft Policy 2010-5

Reduce and Simplify IPv4 Initial Allocations

ARIN XXV

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Current Requirements

- **Standard (non-multihomed)**
 - /20 minimum allocation
 - Use of noncontiguous /20
 - Demonstrate efficient utilization
 - Three month utilization
- **Multi-homed**
 - /22 minimum allocation
 - Reserved block
 - Use of noncontiguous /23 (for /22 allocation)
 - Demonstrate efficient utilization
 - Three month utilization
 - Renumbering required (once)
 - Second allocation based on standard requirements

Current Policy

4.2.2. Initial allocation to ISPs

- **4.2.2.1. Standard or non-multihomed**

Organizations that do not meet the requirements described in the multihomed section below (Section 4.2.2.2) must satisfy the following requirements:

- **4.2.2.1.1. Use of /20**

The efficient utilization of an entire previously allocated /20 from their upstream ISP. This /20 allocation may have been provided by an ISP's upstream provider(s), and does not have to be contiguous address space. The organization must meet the requirement of efficient use of 16 /24s. For example, if an organization holds a smaller allocation, such as 12 /24s, from its upstream provider, the organization would not meet the minimum utilization requirements of a /20.

- **4.2.2.1.2. Efficient utilization**

Demonstrate efficient use of IP address space allocations by providing appropriate documentation, including assignment histories, showing their efficient use. ISPs must provide reassignment information on the entire previously allocated block(s) via SWIP or RWHOIS server for /29 or larger blocks. For blocks smaller than /29 and for internal space, ISPs should provide utilization data either via SWIP or RWHOIS server or by using the table format described in Section 4.2.3.7.5.

- **4.2.2.1.3. Three months**

Provide detailed information showing specifically how a /20 will be utilized within three months.

- **4.2.2.1.4. Renumber and return**

ISPs receiving a new /20 may wish to renumber out of their previously allocated space. In this case, an ISP must use the new /20 to renumber out of that previously allocated block of address space and must return the space to its upstream provider.

- **4.2.2.2. Multihomed**

When prefixes are allocated which are longer than /20, they will be from a block reserved for that purpose. In order to receive an initial allocation from ARIN, organizations applying under the multihomed policy must:

When requesting a /22, demonstrate the efficient utilization of a minimum contiguous or noncontiguous /23 (two /24s) from an upstream.

When requesting a /21, demonstrate the efficient utilization of a minimum contiguous or noncontiguous /22 (four /24s) from an upstream.

When requesting a /20, demonstrate the efficient utilization of a minimum contiguous or noncontiguous /21 (eight /24s) from an upstream.

- **4.2.2.2.1. Efficient utilization**

Provide reassignment information for /29 and shorter prefix lengths using the Shared WHOIS Project (SWIP) or by providing the same information fields in an RWHOIS server. If additional address space is later requested, this information must be available at the time of the request. Utilization for blocks smaller than /29 can be documented via SWIP or RWHOIS server or by using the format described in Section 4.2.3.7.5.

- **4.2.2.2.2. Three months**

Provide information showing that the requested IP address space will be utilized within three months and demonstrating an intent to announce the requested space in a multihomed fashion.

- **4.2.2.2.3. Renumber and return**

Agree that the newly requested IP address space will be used to renumber out of the current addresses which will be returned to their upstream provider(s).

- **4.2.2.2.4. Additional requests following the initial allocation**

To receive additional address space following the initial allocation, multihomed organizations must have returned the original IP address space to its provider in its entirety and must provide justification for a new allocation as described above in the section titled Requirements for Requesting Initial Address Space.

Proposed Policy

4.2.2. Initial allocation to ISPs:

- **4.2.2.1. Use of /24**

The efficient utilization of an entire previously allocated /24 or equivalent from their upstream ISP.

- **4.2.2.2. Efficient utilization**

Demonstrate efficient use of IP address space allocations by providing appropriate documentation, including assignment histories, showing their efficient use. ISPs must provide reassignment information on the entire previously allocated block(s) via SWIP or RWHOIS server for /29 or larger blocks. For blocks smaller than /29 and for internal space, ISPs should provide utilization data either via SWIP or RWHOIS server or by using the table format described in Section 4.2.3.7.5.

- **4.2.2.3. Three months**

Provide detailed information showing specifically how the initial allocation will be utilized within three months.

- **4.2.2.4. Renumber and return**

ISPs receiving an initial allocation smaller than /20 must agree that the newly requested IP address space will be used to renumber out of the current addresses which will be returned to the assigning organization within 12 months. ISPs receiving an initial allocation equal to or larger than /20 may wish to renumber out of their previously allocated space. In this case, an ISP must use the new prefix to renumber out of that previously allocated block of address space and must return the space to its upstream provider.

- **4.2.2.5. Replacement initial allocation**

Any ISP which has received an initial allocation, or previous replacement initial allocation, smaller than /20 who wishes to receive additional address space must request a replacement initial allocation. To receive a replacement initial allocation, an ISP must agree to renumber out of and return the existing allocation in its entirety within 12 months of receiving a new allocation and provide justification for the new allocation as described in section 4.2.4. Multihomed organizations holding a /22 or a /21 at the time of policy adoption are exempt from having to renumber and return for a period of 12 months after this policy is adopted.

Minimum Allocation Text

- /23 minimum allocation
- Reserved block
 - Smaller than /20

Current Policy

Proposed Policy

4.2.1.5. Minimum allocation

In general, ARIN allocates IP address prefixes no longer than /20 to ISPs. If allocations smaller than /20 are needed, ISPs should request address space from their upstream provider. For multihomed ISPs, ARIN allocates IP address prefixes no longer than /22. If allocations smaller than /22 are needed, multihomed ISPs should request address space from their upstream provider.

4.2.1.5. Minimum allocation

In general, ARIN allocates IP address prefixes no longer than /23 to ISPs. If allocations smaller than /23 are needed, ISPs should request address space from their upstream provider. When prefixes are assigned which are longer than /20, they will be from a block reserved for that purpose whenever that is feasible.

Comparison

Changed

- Lowers min allocation to /23
- Lowers utilization requirements
 - Use of noncontiguous /24
- Removes distinction between multi-homed and non-multihomed
- Renumbering required
 - Any allocation under /20
 - Potential for multiple renumbering
- Replacement initial allocation
 - All allocations smaller than /20 are replaced

Retained

- Demonstrate use of existing space
- Demonstrate efficient utilization
- Three month utilization
- Renumbering possible
 - If ISP grows
 - Only when initial allocation </20

Side Effects

This policy proposal fundamentally changes and simplifies allocations to ISPs by doing the following: the initial IPv4

1. All initial ISPs request under the same minimums
2. Lowers the threshold so that more ISP's and smaller ISPs to qualify for direct allocations from ARIN.
3. Routing table growth should not be significantly impacted because allocations $</20$ should be returned and recycled
4. Lower allocation point allows ARIN to allocate more of the space they have – small blocks that weren't previously allocate-able due to min allocation thresholds
5. Indirectly encourages the adoption of IPv6 as the ISPs that now qualify for numbering under this policy change will be considered an LIR and thus satisfy one of the IPv6 requirements in section 6.5.1.1

Questions?

Clarifying Questions

- Should there be a distinction between multi-homed and non-multi-homed ISP's?
- Should the allocation threshold be lowered? If so, to what?
- Should renumbering be required under some threshold?
 - Can it be enforced? For ARIN allocations? For ISP allocations?