2006-5: IPv4 Micro-allocations for anycast services (temporary)

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Proposed Text

In the NRPM IPv4 section, renumber 4.4 to 4.4.1, and add:

4.4.2 Micro-allocations for anycast services - ARIN will make micro-allocations to organizations wishing to deploy anycast based services, provided they meet the following criteria:

- All of the criteria normally required to receive IPv4 space, AND
- The organization must have multiple (at least two) discrete multi-homed networks.
- The organization must advertise directly allocated networks from each multi-homed site.

Micro-allocations for anycast services will be no longer than a /24. These allocations will be made out of blocks reserved for micro-allocation purposes. ISPs and other organizations receiving these micro-allocations will be charged under the ISP fee schedule, while end-users will be charged under the fee schedule for end-users.

This policy is experimental, and is limited to 16 allocations and two years from adoption. In addition, organizations may receive no more than one microallocation under this policy.

Intent

- Provide a reasonable method for organizations with anycast services to get unique globally routable allocations

- Protect against possible abuse of a micro-allocation policy

- Permit micro-allocation in the interest of efficient IPv4 space utilization

- Support sites with real need for anycast technologies: small to medium sized DNS providers, voip endpoints (see RFC 3263), etc.

2005-6 vs. 2006-5

- Removed vague requirements for describing the new anycast service
- Added stricter requirement: must be demonstrably multi-homed with directly allocated IP space
- New policy is temporary and limited in scope – this should permit operational experience to guide future possibly policy

A few assumptions

- Most ISPs have space available for anycast services (and probably won't ask for more)
- Primary audience for this policy will be PI space holders
- Anycast services require global routability
- Anycast services are used for
  - Reliability
  - Routing to topologically "nearby" sites
  - Operational flexibility

    But you've got to know what you are doing!
- Requests under this policy are from organizations that don't already qualify under existing micro-allocation policies.

Prior objections

- Abuse
  - Prior version (2005-6) might have permitted a multi-homed organization with PA space from two ISPs to get a /24
  - New version requires ARIN (or RIR/IANA/legacy) direct allocations to be advertised from multiple sites
  - Expectation is that this will significantly decrease the opportunity for abuse

Other objections

- Any /24 should "just work"
  - Experimentation suggests that random /24s are *generally* widely routable
  - …but you need at least a /22 to be guaranteed fully routable, except for /24s from the 'swamp'

- Announce a /24 from a larger aggregate
  - …and let the shorter prefix route allow for global reachability
  - But this misses the point of deploying anycast!
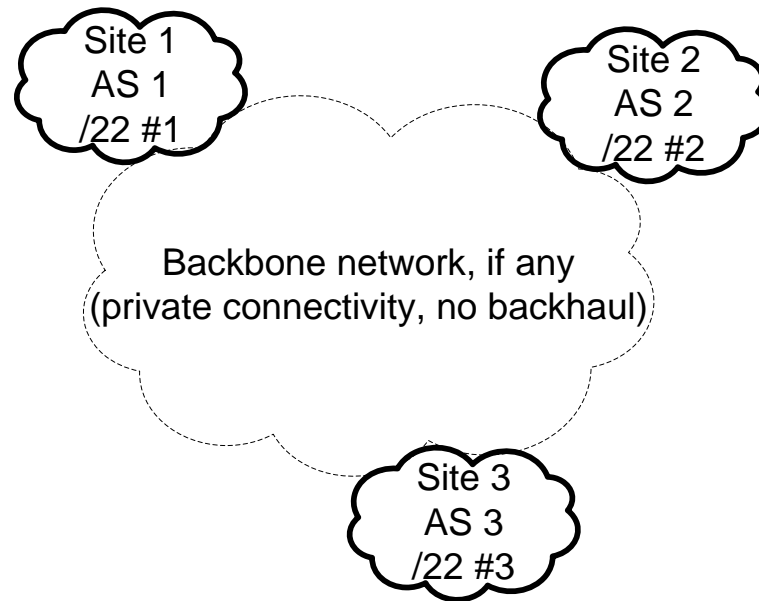   (See previous comments about operational flexibility)

Use cases (part I)

- Consider an organization with one AS and a well-connected backbone:
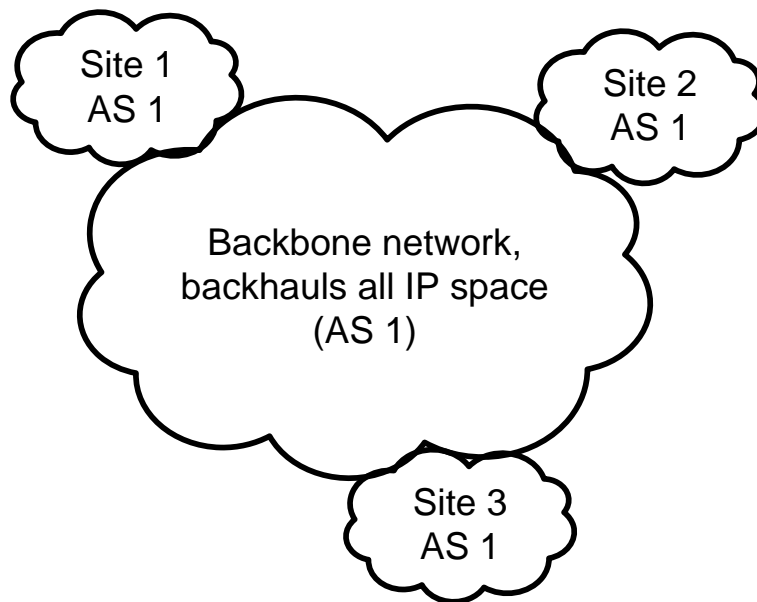
- …this is probably not a good use case for this policy, as all IP space owned by this organization is probably announced from all sites. (Any /24 owned by this org would probably suffice.)

Use cases (part II)

- Consider an organization with several ASes, and no large backbone (or a lack of backhaul ability)


```
    Site 1              Site 2
    AS 1                AS 2
    /22 #1              /22 #2

         Backbone network, if any
      (private connectivity, no backhaul)

              Site 3
              AS 3
              /22 #3
```

- This is a clear use for this policy, as no aggregate would allow anycast to operate, and an independent block is required for a reasonable deployment.

Problems

- Anycast blocks look like a multi-homed network from the outside
  - No easy way to detect the difference
  - No easy policy solutions to identify need versus abuse
- This policy could still be abused (although it's harder than in 2005-6)
  - Temporary nature of this policy should minimize the abuse threat
  - Limited scope should keep abuse limited
  - …but scope and time limitations may excessively limit availability for real users!

Discussion/questions