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PROPOSAL DATA:

Policy Proposal Title: Global policy proposal for the allocation of IPv4 blocks to Regional Internet Registries

Policy Proposal Type: Global

Id: LAC200901

Version: 3

Proposal Summary:

This document is a global policy proposal governing the allocation of IPv4 address space from the IANA to the Regional Internet Registries (RIRs).

This document does not stipulate performance requirements in the provision of services by the IANA to an RIR in accordance with this proposed policy. Such requirements should be specified by appropriate agreements among the RIRs and ICANN.

Rationale:

The policy provides a mechanism for the ongoing distribution of IPv4 address space.

Proposal Text:

This policy is to be implemented in two phases:

- Phase I: Recovery of IPv4 address space
- Phase II: Allocation of recovered IPv4 address space by the IANA

1- Phase I: Recovery of IPv4 address space

Upon ratification of this policy by the ICANN Board of Directors the IANA shall establish a mechanism to receive IPv4 address space which is returned to it by the RIRs, and hold that address space in a 'recovered IPv4 pool'.

Each RIR through their respective chosen policies and strategies may recover IPv4 address space which is under their administration. Each RIR shall at quarterly intervals return any such recovered address space to the IANA in aggregated blocks of /24 or larger, for inclusion in the recovered IPv4 pool.

During Phase I, no allocations will be made from the recovered IPv4 pool.

2- Phase II: Allocation of recovered IPv4 address space by the IANA

Upon ratification of this policy by the ICANN Board of Directors and a declaration by the IANA that its existing free pool of unallocated IPv4 address space is depleted; Global Addressing Policy ASO-001-2 (adopted by ICANN Board 8 April 2005) [2] is rescinded. IANA will then commence to allocate the IPv4 address space from the recovered IPv4 pool.

2.1 Allocation of IPv4 address space

a. For the purposes of this policy, an 'IPv4 allocation period' is defined as a 6-month period following 1 March or 1 September in each year.

b. At the beginning of each IPv4 allocation period, the IANA will determine the 'IPv4 allocation unit' for that period, as 1/10 of its IPv4 address pool, rounded down to the next CIDR (power-of-2) boundary. The minimum 'IPv4 allocation unit' size will be a /24.

c. In each allocation period, each RIR may issue one IPv4 request to the IANA. Providing that the RIR satisfies the allocation criteria described section 2.2, the IANA will allocate a single allocation unit, composed of the smallest possible number of blocks available in its IPv4 address pool.

Examples of how allocations would be made in practice are included in section 6.

2.2 IPv4 address space allocation criteria

A RIR is eligible to receive additional IPv4 address space from the IANA when the total of its IPv4 address holdings is less than 50% of the current IPv4 allocation unit, and providing that it has not already received an IPv4 allocation from the IANA during the current IPv4 allocation period.

2.3 Initial allocation of IPv4 address space

Each new RIR shall, at the moment of recognition, be allocated one (1) allocation unit by the IANA. If an allocation unit is not available, then the IANA will issue this block as soon as one is available. This allocation will be made regardless of the newly formed RIR's projected utilization figures and shall be independent of the IPv4 address space that may have been transferred to the new RIR by the already existing RIRs as part of the formal transition process.

3- Reporting

- a. All returned space is to be recorded in an IANA-published log of IPv4 address space transactions, with each log entry detailing the returned address block, the date of the return, and the returning RIR.
- b. All allocated space is also to be recorded in this IANA-published log of IPv4 address space transactions, with each log entry detailing the address blocks, the date of the allocation and the recipient RIR.
- c. The IANA will maintain a public registry of the current disposition of all IPv4 address space, detailing all reservations and current allocations and current IANA-held address space that is unallocated.
- d. The IANA may make public announcements of IPv4 address block transactions that occur under this policy. The IANA will make appropriate modifications to the "Internet Protocol V4 Address Space" page of the IANA website [3] and may make announcements to its own appropriate announcement lists. The IANA announcements will be limited to which address ranges, the time of allocation and to which Registry they have been allocated.

4- Timetable for implementation

This policy is to be implemented immediately upon ratification by the ICANN Board of Directors according to the global policy process described in the ASO MoU [4].

5- Definitions

5.1 Recovered address space

Recovered address space is that address space that is returned to an RIR as a result of any activity that seeks to reclaim unused address space or is voluntarily returned to the RIR or is reclaimed by the RIR as a result of legal action or abuse determination.

Recovered address space does not include that address space that is reclaimed because of non-payment of contractual fees whose reclamation date is less than 1 year at the time of the report.

5.2 IPv4 address holdings

IPv4 address holdings are all unallocated IPv4 address space held by an RIR to include recovered address space not yet returned less that address space that is committed in accordance with the RIR's reservation policy and practices.

5.3 Aggregated address blocks

Aggregated address blocks are contiguous prefixes that can be aggregated on natural bit boundaries. 10.0.0.0/24 and 10.0.1.0/24 are two contiguous prefixes that can be combined to form an aggregated address block. 10.0.0.0/24 and 10.0.1.0/25 are two contiguous prefixes that cannot be combined on a natural bit boundary to form an aggregated block.

6- Examples

Example 1:

On 1 March 2020, IANA has the equivalent of a /17 (32,768 addresses) worth of IPv4 addresses.

1. IANA calculates that 1/10 of this space is 3,276 addresses.
2. IANA rounds this down to the next bit boundary, which creates a minimum allocation size of /21 (2,048 addresses).
3. Each RIR can request and receive a single allocation unit equivalent to a /21 worth of addresses.
4. IANA may not be able to allocate a contiguous /21 and may allocate discontinuous smaller blocks equivalent to a /21 worth of addresses.

Example 2:

On 1 March 2020, IANA has the equivalent of a /20 (4,096 addresses) worth of IPv4 addresses.

1. IANA calculates that 1/10 of this space is 409 addresses.
2. IANA rounds this down to the next bit boundary, which creates a minimum allocation size of /24 (256 addresses).
3. Each RIR can request and receive a single allocation unit equivalent to a /24 worth of addresses.
4. As the minimum size of address space returned to IANA is /24, IANA can allocate a contiguous range of addresses that amount to a /24.

Example 3:

On 1 March 2020, IANA has the equivalent of a /21 (2,048 addresses) worth of IPv4 addresses.

1. IANA calculates that 1/10 of this space is 204 addresses.
2. IANA rounds this down to the next bit boundary, which creates a minimum allocation size of /25 (128 addresses).
3. A /25 is smaller than the minimum permissible allocation size under this policy. A /25 is smaller than the minimum permissible allocation size under this policy. Therefore, IANA is unable to make an allocation until more address space is received.

ADDITIONAL INFORMATION:

Timetable: After ICANN Board.

Working Group: N/A

Related Previous Proposals:

References:

[1] Section 5, ICANN Address Supporting Organization (ASO) MoU

<http://aso.icann.org/docs/aso-mou2004.html>

[2] Global Addressing Policy ASO-001-2

<http://aso.icann.org/docs/aso-001-2.pdf>

[3] Internet Protocol v4 Address Space

<http://www.iana.org/assignments/ipv4-address-space>

[4] Attachment A: Global Policy Development Process, ASO MoU

<http://aso.icann.org/docs/aso-mou2004.html>

Change log: We added definitions and examples sections in version 2. In version 3 a reference typo in section 2.1.c was corrected.