IPv6 Initial Allocations /28

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Summary of Proposal

This proposal suggests a revision of the initial IPv6 allocation size to foster IPv6 adoption in the RIPE NCC region. This is by simplifying the way LIRs can obtain IPv6 address space suitable for their networks' operational requirements.

The proposal originates from the opinions expressed by members of the RIPE community in the Address Policy Working Group during presentations [1], interim sessions [2] and a call with the WG Co-Chairs on this topic.

- IPv6 should be easy to get
- The policy should encourage IPv6 rollout
- Aggregation is very important
- Conservation remains relevant

[1] https://ripe85.ripe.net/wp-content/uploads/presentations/81-IPv6_at_RIPE-85.pdf

https://ripe87.ripe.net/wp-content/uploads/presentations/83-IPv6-allocations-nibble-boundaries-HD1.pdf

[2] https://www.ripe.net/community/wg/active-wg/ap/interim-sessions/interim-session-20-february-2023/

Stats from RIPE NCC

- 22.682 IPv6 allocations:
  - 22.614 allocations smaller or equal /29
    - 20.491 can be extended to /28 of which 139 only to /28 (32 /29, 3 /30, 24 /31, 80 /32) **– 91%**
    - 1.389 can be extended only to /29
    - 722 cannot be extended at all (664 /29, 21 /30, 13 /31, 24 /32)
    - 0 can be further extended to /24

- Last year 90% of the initial allocations were /29 (instead of /32).

- Starting with January 2023, we closed 331 IPv6 additional allocation tickets and extended 129 IPv6 allocations.

- The most common reason to request a large allocation is to integrate some numbering into IPv6 addresses. There are not many of those, probably 6 per year or so.

- Some people request an additional allocation, we tell them more about how they can use their existing one, and they never reply. This happens often.

- We did not issued additional allocations, which says how many were rejected (approximately).

Proposed Changes (1)

(ripe-738)

5.1.2. Initial allocation size

LIRs that meet the initial allocation criteria are eligible to receive an initial allocation of /32 up to /29 without needing to supply any additional information.

LIRs may qualify for an initial allocation greater than /29 by submitting documentation that reasonably justifies the request. If so, the allocation size will be based on the number of users, the extent of the LIR infrastructure, the hierarchical and geographical structuring of the LIR, the segmentation of infrastructure for security and the planned longevity of the allocation.

(proposed)

5.1.2. Initial allocation size

LIRs that meet the initial allocation criteria are eligible to receive an initial allocation of /32 or /28 without needing to supply any additional information.

LIRs may qualify for an initial allocation greater than /28 by submitting documentation that reasonably justifies the request. If so, the allocation size will be based on the number of users, the extent of the LIR infrastructure, the hierarchical and geographical structuring of the LIR, the segmentation of infrastructure for security and the planned longevity of the allocation.

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Proposed Changes (2)

(ripe-738)

5.7. Existing IPv6 address space holders

LIRs that hold one or more IPv6 allocations are able to request extension of each of these allocations up to a /29 without providing further documentation.

The RIPE NCC should allocate the new address space contiguously with the LIRs' existing allocations and avoid allocating non-contiguous space under this policy section.

(proposed)

5.7. Existing IPv6 address space holders

LIRs that hold one or more IPv6 allocations that were originally issued directly by the RIPE NCC as a single prefix may request an extension of each such allocation up to a /28 without the need for additional documentation.

The RIPE NCC should allocate the new address space contiguously with the LIRs' existing allocations and avoid allocating non-contiguous space under this policy section.

Rationale

a. Arguments Supporting the Proposal

- Regular update of the policy (deployment experience)

- Reduces the RIPE NCC's overhead and complexity for the LIR's justification

- Provides flexibility, allowing LIRs to request, for their initial allocation, a single prefix based on the nibble boundary (simplifies DNS operations, increases readability of IPv6 addresses, etc.)

- Extensions only for allocations originally issued as a single prefix avoids abuse when transferring chunks

- RIPE NCC stats confirmed that 91% could be extended (same prefix)
  - All this might result in reducing the IPv6 routing table size.

b. Arguments Opposing the Proposal

- None.

Next Steps

- This proposal is a first step to what has been discussed for 2 years.

- Overall goal is to simplify allocations for both the members and the RIPE NCC staff.

- For many organizations /29 is not enough, /28 fits better and nibble boundary is a good way to go for several practical reasons.

- Original proposal combined the actual proposed text with several other points, that we have already in draft for a follow up proposal(s):
    - Nibble-boundary allocations (/32, /28, /24, /20, /16, …)
    - Replace HD-Ratio with a table to match the nibble-boundary
        - Initial allocation match the number of customers/sites from that table
        - Subsequent allocation simplified based on that as well
        - Existing holders can request an upgrade to the relevant nibble boundary
        - Facilitate aggregation if an organization ask for it

Discussion in the List

- Justification for the proposed policy change (backed by experience)

- Only /32 or /28 or allow anything in-between?

- IPv6 shortage?

- Aggregation on top of conservation (contrary to what we have for IPv4)

- Everybody get a /28 and then billing scheme change?

- Stockpiling, is it related to this proposal?
  - If we limit those allocations to be extended to /28, what is the usage of the reservations?
  - Allow only one (or 2?) of the /29 to be extended? Only once per organization?
  - An alternative proposal to verify the justified need of those allocations and otherwise reclaim them?