

Draft Policy ARIN-2025-6: Fix Formula in 6.5.2.1c

William Herrin

Gus Reese





Problem Statement

Current Text (3 September 2025)

Sections 6.5.2.1 explains the initial IPv6 ISP/LIR allocation in a way that is difficult to follow and the formula in section (c) does not match the remainder of the text.

Policy Statement



In 6.5.2.1c, replace:

"This calculation can be summarized as $/N$ where $N = P - (X + Y)$ and P is the organization's Provider Allocation Unit X is a multiple of 4 greater than $4/3 * \text{serving sites}$ and Y is a multiple of 4 greater than $4/3 * \text{end sites served by largest serving site}$."

with:

"This calculation can be summarized as $/N$ where $N = P - (X + Y)$ and P is the organization's Provider Allocation Unit, X is a multiple of 4 greater than $4/3 * \log_2(\text{serving sites})$ and Y is a multiple of 4 greater than $4/3 * \log_2(\text{end sites served by largest serving site})$."

In 2.15 and 2.16, replace "provider assignment unit" with "provider allocation unit."

History



Action	Date
Proposal	19 May 2025
Draft Policy	1 July 2025
Revised	3 September 2025

Staff and Legal Review (9 September 2025)



Staff Understanding: NRPM section "6.5.2.1. Size" describes requirements for the size of IPv6 allocations to ISPs/LIRs.

Sub-section "c" defines how to calculate the largest allocation justified by the requestor.

Accompanying the text description is a mathematical formula that intends to summarize the calculation as $\frac{P}{N}$ where $N = P - (X + Y)$ and P is the organization's Provider Allocation Unit X is a multiple of 4 greater than $\frac{4}{3} * \text{serving sites}$ and Y is a multiple of 4 greater than $\frac{4}{3} * \text{end sites served by largest serving site}$.

Staff and Legal Review (9 September 2025)



Staff Understanding: This draft policy indicates the formula does not match the text, and intends to correct it with, "This calculation can be summarized as $\frac{1}{N}$ where $N = P - (X + Y)$ and P is the organization's Provider Allocation Unit, X is a multiple of 4 greater than $\frac{4}{3} * \log_2(\text{serving sites})$ and Y is a multiple of 4 greater than $\frac{4}{3} * \log_2(\text{end sites served by largest serving site})$."

Staff and Legal Review (cont.)



ARIN staff currently implements 6.5.2.1.c based on the text alone. The summarized formula is overly complex for your typical IPv6 requestor.

The text alone is more easily understood by customers and implemented by ARIN staff. Modifying the formula would have no impact on ARIN operations. Staff would continue to implement 6.5.2.1.c based on the text alone.

Removing the formula from the NRPM would have no impact on ARIN operations, and would simplify the policy language for IPv6 requestors.

Staff and Legal Review (cont.)



NRPM section “6.5.2.1. Size” includes the text “Provider Allocation Unit”, while sections 2.15 and 2.16 reference the term, “Provider Assignment Unit.”

This draft policy intends to update the text in sections 2.15 and 2.16 to “Provider Allocation Unit”. Modifying “Assignment” to “Allocation” aligns with the deprecation of Direct Assignment’s that occurred during ARIN’s fee harmonization.

Staff agrees the terms should match between section 2 and section 6. Staff currently considers subnetted Direct Allocations, Reallocations, and Reassignments to be “Provider Assignment Units”. This modification aligns with staff’s current implementation.

Staff and Legal Review (cont.)



Implementable as Written?: Yes

Impact on ARIN Registry Operations and Services: None

Legal Review: No material legal issue

Implementation Timeframe Estimate: 3 Months

Implementation Requirements:

- Staff Training
- Updates to public documentation

Proposal/Draft Policy Text Assessed: 3 September 2025

Policy Text



NRPM 6.5.2.1. Size

c. The maximum allowable allocation shall be the smallest nibble-boundary aligned block that can provide an equally sized nibble-boundary aligned block to each of the requesters serving sites large enough to satisfy the needs of the requesters largest single serving site using no more than 75% of the available addresses.

[Formula]

Community Feedback



Only four people joined the discussion on the Public Policy Mailing List:

"As the author of the original policy in question, I agree this fix is a valid correction to the formula"



Policy Impact



- Improved consistency in the Number Resource Policy Manual.
- No change to how addresses are allocated.

Questions for the Community

Are you in favor or against the policy as written?



Would you prefer to remove the math formula entirely as suggested by staff?

If the formula is removed, should the text be rewritten for clarity?