

Draft Policy ARIN-2025-6

Fix Formula in 6.5.2.1c

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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 $\lfloor N \rfloor$ 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 $\frac{4}{3} * \text{end sites served by largest serving site}$.”

with:

“This calculation can be summarized as $\lfloor N \rfloor$ 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 $\frac{4}{3} * \log_2(\text{end sites served by largest serving site})$.”

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 (16 March 2026)



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 $\frac{4}{3}$ serving sites and Y is a multiple of 4 greater than $\frac{4}{3}$ end sites served by largest serving site.”



Staff and Legal Review (cont.)



This draft policy indicates the formula does not match the text, and intends to correct it with, "This calculation can be summarized as P/N where $N = P - (X + Y)$ and P is the organization's Provider Allocation Unit, X is a multiple of 4 greater than $\frac{4}{3} * \log_2(\text{serving sites})$ 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 NRPM 6.5.2.1.c based on the policy text rather than the summarized formula. The summarized formula is overly complex for many typical IPv6 requestors, while the policy text is more readily understood by customers and more consistently applied by ARIN staff.



Staff and Legal Review (cont.)



In practice, staff evaluates initial allocation size by reviewing the number of serving sites in the ARIN region and the number of end sites served by the largest serving site and then applying the 75% utilization standard consistent with current implementation. This approach is also reflected in the training materials ARIN provides to assist organizations in calculating IPv6 address requirements. In addition, the applicable policy parameters are built into the workflow for IPv6 ISP address requests.

Removal of the summarized formula from the NRPM would have no impact on ARIN operations and would simplify the policy language for IPv6 requestors. Staff would continue to implement NRPM 6.5.2.1.c consistent with current practice.



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 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

Excerpt: ARIN IPv6 instructions to ISPs



ISP Block Size: Per Site

Use the table below to determine the block size for your largest site (based on customer count):

/48 to Each Customer	Per-Site Block Size
1 to 12 customer at largest site	/44
13 to 192 customers at largest site	/40
193 to 3,072 customers at largest site	/36
3,073 to 49,152 customers at largest site	/32
49,153 to 786,432 customers at largest site	/28

The Formula



Can the formula paragraph actually be removed from the policy manual without changing the policy or impacting the implementation?



Community Feedback



"Rewriting the section, or re-visiting the allocation strategy entirely, is definitely worthwhile future work. But fixing the gross error should be the first thing we do."

"Perfectly fine with adopting it as written [but] I want the policies to be readable and comprehensible to someone coming to them new."

"Just get rid of [the formula]. This math is not helping anybody."

"I'm a scientist. I like formulas. I use formulas to help me understand what text and policy means."



Community Feedback



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

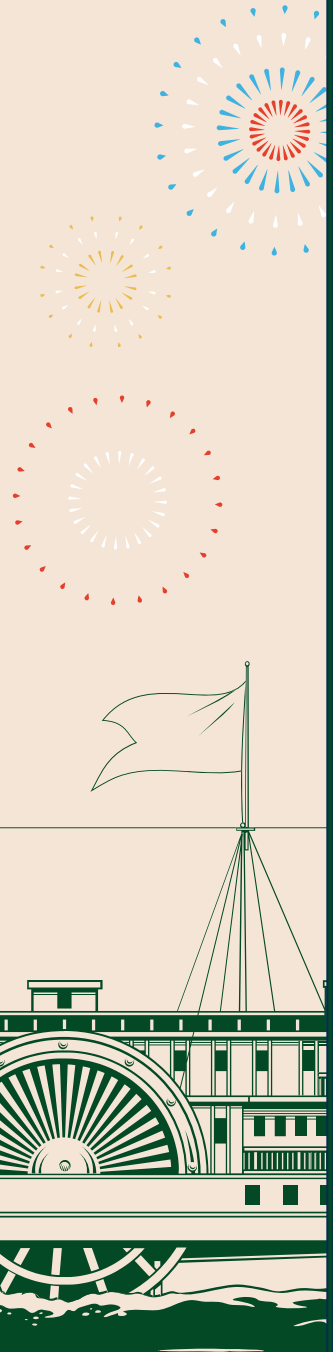
"Assuming /48 as the PAU is not true to the policy. The policy was intended to encourage LIR/ISPs to implement /48 PAUs by limiting the size of allocations to providers that issued smaller end site allocations."

"It's not default... it's minimum. If they issue /48s by default to business customers and /60s to residential, for example, the policy calls for a PAU of /60."

Policy Impact



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





Next: Open Mic/Comments

**Then: Poll – do you support Draft Policy
ARIN-2025-6 as written?**

Open Mic/Comments



After open mic: poll – do you support Draft Policy ARIN-2025-6 as written?

Poll: Do you support Draft Policy ARIN-2025-6 as written?



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