

IPv6 PI Clarification

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Summary of the problem (I)

- A recent update of the IPv6 PI policy, overlooked (and didn't changed) this text:

“The 'end-site' must show a plan to use and announce the IPv6 provider independent address space within twelve (12) months. After that period, **if not announced, the assigned IPv6 PI address space should be reclaimed and returned** to the free pool by AFRINIC”

- However, some end-sites, such as IXP, will never announce it.
 - Should we disallow IXPs to use IPv6 and reclaim the space?

Summary of the problem (II)

- Existing text refers to end-sites, when actually should consider end-user organizations
 - End-site (single location) vs organizations with multiple end-sites
 - Existing text means each end-site from a single organization need to have its own end-user membership
- “Multi-site” organizations fall in one of the following cases:
 - Interconnected sites with BGP to their upstreams (single aggregated prefix)
 - Sites not connected (multiple /48s, one per site)
 - A combination of the above cases

Proposed Changes (I)

6.8 PI Assignments

This policy is aimed at providing IPv6 address space to end-sites.

6.8.1 Introduction

This policy allows 'end-sites' to be assigned IPv6 provider independent (PI) addresses. 'End-sites' include End-Users and critical Infrastructure providers such as TLD root server operators and public Internet exchange Points (IXP's)

6.8 PI Assignments

This policy is aimed at providing IPv6 address space to **end-user organizations**.

6.8.1 Introduction

This policy allows 'end-sites' **of end-user organizations** to be assigned IPv6 provider independent (PI) addresses. These include critical Infrastructure providers such as TLD root server operators and public Internet exchange Points (IXP's).

Proposed Changes (II)

6.8.2 Assignment Criteria

- A. Assignment target - End-sites which provide Public Internet services for a single administrative organisations' network, regardless of their size.
- B. Assignment criteria:
 - i. The end-site must not be an LIR
 - ii. The end-site must become an AFRINIC End User Member and pay the normal AFRINIC fee for its membership category
 - iii. The end-site must justify the need for the IPv6 PI address space.
 - iv. The end-site must show a plan to use the IPv6 provider independent address space within twelve (12) months. After that period, if not announced, the assigned IPv6 PI address space should be reclaimed and returned to the free pool by AFRINIC.
 - v. The IPv6 provider independent address space to be announced by the end-site should not be disaggregated.

6.8.2 Assignment Criteria

- A. Assignment target - **End-user organizations** which provide **services** for their administrative organizations' network, regardless of their size.
- B. Assignment criteria:
 - i. The **organization** must not be an LIR.
 - ii. The **organization** must be or become an AFRINIC End User Member.
 - iii. The **organization** must justify the **number of end-sites** and the need for the IPv6 PI address space.
 - iv. The **organization** must **deploy** the IPv6 provider independent address space at each of the end-sites, for which addresses are obtained, within twelve (12) months.
 - v. **If the addressing space issued under this policy is to be announced**, to the extent practicable, the organization should aggregate any announcements of prefixes so as to minimize global routing table growth.

Proposed Changes (III)

6.8.3 Provider Independent (PI) address space:

- A. The provider independent (PI) assignment should be made from a specific block.
- B. The initial provider independent assignment size to an end-site should be a /48, or a shorter prefix if the end-site can justify it.
- C. Subsequent assignments must be documented and justified. Where possible, such assignments will be made from a contiguous address block (i.e., extending the existing assignment "n" bits to the left).

6.8.3 Provider Independent (PI) address space:

- A. The provider independent (PI) assignment should be made from a specific block.
- B. The initial provider independent assignment size for each organization shall be at least a /48 per end site. **If multiple end sites are requested and will be connected to each other, a nibble-aligned prefix shall be issued sufficient to allow at least one /48 per end-site. Valid justification for a shorter prefix for any end sites shall be accommodated.**
- C. **The organization assignment will be calculated on the basis of the number of end-sites and adjusted to the nearest nibble-boundary.**
- D. Subsequent assignments must be documented and justified. Where possible, such assignments will be made from a contiguous address block (i.e., extending the existing assignment "n" bits to the left).
- E. **AFRINIC shall use a sparse allocation algorithm when issuing space to maximize the likelihood of success for the mechanism defined in the preceding paragraph.**

Proposed Changes (IV)

6.8.4 Rectifying the size of an initial assignment

- A. An End-site may submit a new addressing plan to AFRINIC if the plan initially submitted to justify the initial assignment no longer satisfies their current needs.
- B. The new assignment will be consistent with the new plan and comply with 6.8.2 and 6.8.3.
- C. If possible, the same address block will be “upgraded” to the new required prefix size. However, if the adjacent prefixes are already being used by other organizations or if such assignment would not leave sufficient space for subsequent assignments, AFRINIC will inform to the requesting organization, which will have the following options:
 - i. Receive a new block with the new requested prefix size, with the commitment to renumber its network and return the original block within a period of 6 months;
 - ii. Receive a new block which, together with the block that has already been assigned, covers the new justified need, and keep both blocks.This procedure can only be used once by each end-site.

6.8.4 Rectifying the size of an initial assignment

- A. An **organization** may submit a new addressing plan to AFRINIC if the plan initially submitted to justify the initial assignment no longer satisfies their current needs.
- B. The new assignment will be consistent with the new plan and comply with 6.8.2 and 6.8.3.
- C. If possible, the same address block will be “upgraded” to the new required prefix size. However, if the adjacent prefixes are already being used by other organizations or if such assignment would not leave sufficient space for subsequent assignments, AFRINIC will inform to the requesting organization, which will have the following options:
 - i. Receive a new block with the new requested prefix size, with the agreement to utilize the new block for all future deployment and deprecate the old block through attrition, returning when empty. There is no deadline for return at this time;
 - ii. Receive a new block which, together with the block that has already been assigned, covers the new justified need, and keep both blocks. This procedure can only be used once by each organization.

References

- Other RIRs have already accommodated this requirement in their policies:

- APNIC: 10.1.4. Provider Independent IPv6 assignment

<https://www.apnic.net/community/policy/resources#Part%203:%20IPv6%20Policy>

- ARIN: 6.5.8.1. Initial Assignment Criteria

<https://www.arin.net/participate/policy/nrpm/#6-5-8-direct-assignments-from-arin-to-end-user-organizations>

- LACNIC: 4.5.4.2 Direct assignment of portable IPv6 addresses to End sites not having portable IPv4 addresses previously assigned by LACNIC

<https://www.lacnic.net/684/2/lacnic/4-ipv6-address-allocation-and-assignment-policies>

- RIPE: 7. IPv6 Provider Independent (PI) Assignments

https://www.ripe.net/publications/docs/ripe-707#IPv6_PI_Assignments