

IPv6 portable assignment for multihoming

2006.3.2

Japanese Special Interest Group on IPv6 multihoming PI address space

Outline

- Discussions in JP on IPv6 PI address space for multihoming
 - 1. Our principle
 - 2. PI requirement analysis and our target
 - 3. Issues on the IPv6 global routing table
 - 4. Draft policy for assignment of IPv6 PI address space

1. Our Principle

1. Our principle

- Basic principles behind our idea
 - Take a balance between the following factors.
 - Consistency with “Goals of IPv6 address management”
 - <http://www.apnic.net/docs/policy/ipv6-address-policy.html#3>
 - Uniqueness
 - Registration
 - Aggregation
 - Conservation
 - Fairness
 - Minimized overhead
 - Flexibility to operational reality
 - Be ready to accommodate business/operational needs
 - Accommodate control over the routing table
 - (Leave choices open for the future)
(Ensure it will not be out of control)
 - Fairness of criteria

2. PI requirement analysis and our target

2. PI requirement analysis and our target domain

- ❑ Various discussions are taking place on IPv6 PI for quite some time (mainly in the ARIN region)
- ❑ “Who should receive the assignment” varies by person, and it needs to be sorted out
- ❑ We have summarized possible targets of the assignment raised in these discussions and focused our target

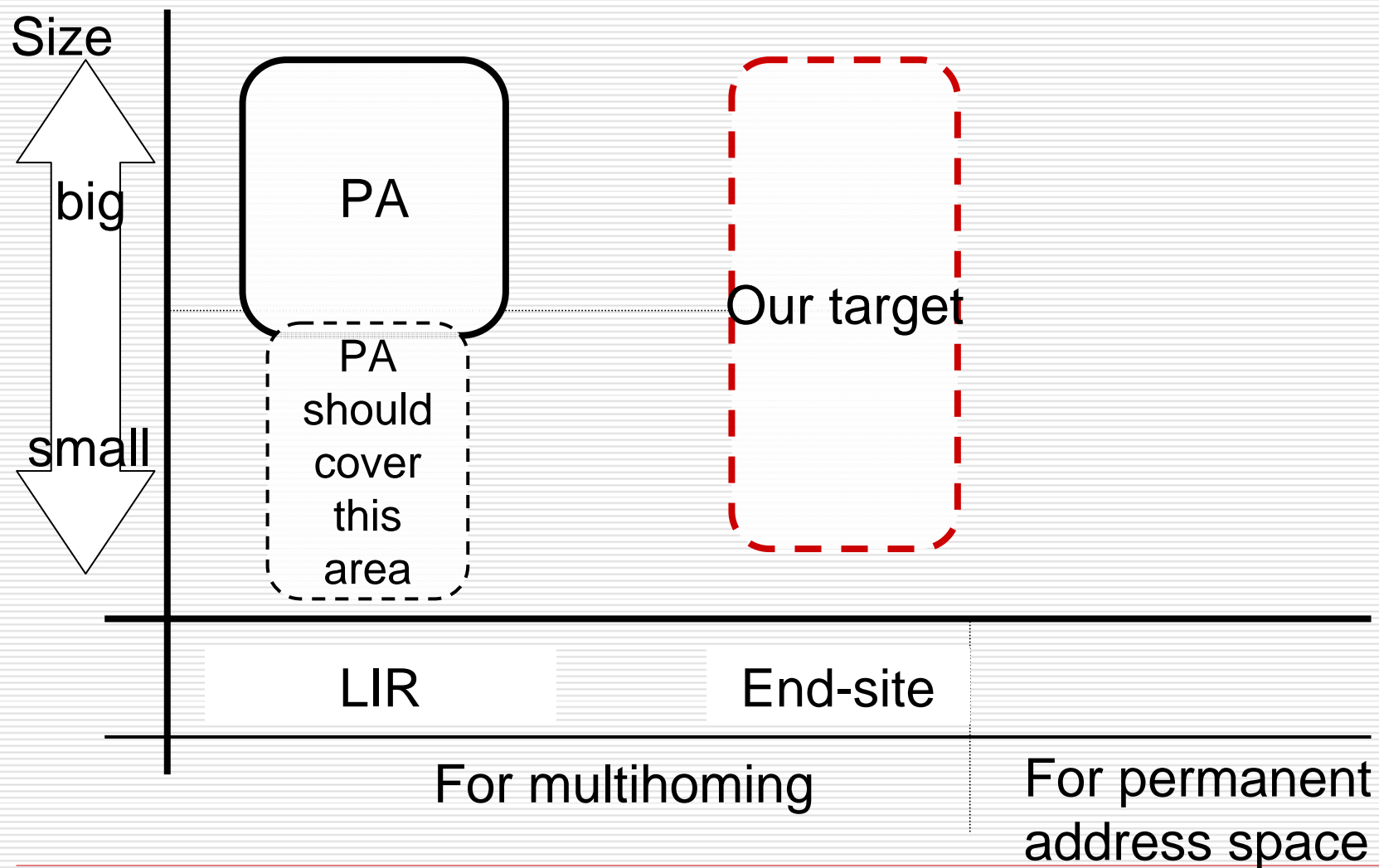
Axis to categorize PI requirement

- Requirements for portable assignment can be categorized as:
 - 1) multihoming (for organizations which needs redundant connectivity)
 - 2) permanent address space (for organizations which require unique address to be independent of upstream providers)

- There are two types of organizations which need a routable, portable address space but unable to receive a portable allocation under the current criteria:
 - Small LIRs which cannot demonstrate to assign 200 customers in two years
 - e.g) as transit-only provider, datacenter, very small local providers.
 - End sites

- Organizations which require portable assignments can also be categorized by size or scale of its network
 - Size of the organizations (Large or Small)
 - Number of devices in the network

Map of PI requirement



Our target

- We focus the target for only **multi-homing** because
 - 1) end-site organizations has strong needs for redundancy for their Internet connectivity.
 - 2) technical requirement for multihoming is clear and easy to define the criteria
- We focus on **end-site** enterprises, because:
 - 1) policy for small LIRs should be covered by modifying the current RA policy.
 - 2) currently no policy statement for end sites
- We do **not differentiate the criteria by size** of the organizations because:
 - organization size does not justify their needs of PI address space.
 - Sometimes small organizations require redundancy of Internet access

Summary: our target

- Our target is:
 - Multihomed/Plans to be multi-homed network
 - End sites
 - No differentiation by the size of the organization

- We should consider the assignment policy for this target.

3. Issues on the IPv6 global routing table

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- Unavoidable that multihoming in IPv6 will increase using punching holes.
- More constructive to allow routable assignments which is managed by the policy than to create punching holes in practice.

- Future trend

- There will always be requirements for a redundant connectivity in the future from the business perspective
- Without PI, such organization will be multihomed by making “punching holes” which is not legitimate.
- Leaving the situation as it is would implicitly allow punching holes, just like the current IPv4 Internet, and will inevitably lead to messy situation.

- Allowing portable assignments for multihomed networks from a specified address block at an early stage prevents chaos in portable allocation range, and better in terms of management
- Routers possibly handle prefixes in the separated PI space better than “punching holes” in RA space
- Punching holes are harmful: for instance, it can be used to intentionally reroute traffic to cheaper links
- If better multihoming method comes up in the future, we can enforce them to move to the new multihoming method until a due date.

4. Draft policy for assignment of IPv6 PI address space

Draft policy for assignment of IPv6 PI address space

Draft proposal based on the current discussions

- Target: **end-sites, regardless of size**
- Assignment criteria
 - The end site which are assigned IPv6 PI address space must be multihomed using the assigned PI address space in three (3) months.
 - If the PI address space is not used for multihoming after three (3) months, the address space can be reclaimed. (just like IPv4 PI rules)
 - The end site which is assigned IPv6 PI address space must pay the fee for the space.
- PI address space
 - Portable assignments should be made from a specified block separate from PA address space
 - The PI assignment size to an end-site should be the same size as in PA, currently /48.

5. Summary

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- Regarding IPv6 portable assignment for multihoming:
 - We analyzed the requirement for IPv6 PI address space, and defined the target as: (currently/plans to be) multihomed end site, regardless of its size

 - We considered the future trend of the IPv6 global routing table, and we should control the PI address space by separating it from PA address space.

 - We are discussing assignment policy for PI address space.
 - An end-site which is currently plans to be multihomed.
 - An end-site must be multihomed by a specified period (3 months).
 - PI assignments will be made from a separate block from PA

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- Japanese special interest group on IPv6 multihoming PI address space
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