17th APNIC Open Policy Meeting
# APNIC IPv6 Address Guidelines

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# What are guidelines for?

- **Reduce misunderstandings of the policy**
  - Examples of networks that meet the criteria
- **Introduce special cases**
  - Closed networks
- **Provide practical info for requestors**
  - Documentation required for each requests, initial allocation, SOR, reverse DNS…

> cf. APNIC 16 Policy SIG "IPv6 guidelines document (JPNIC)"

# Why guidelines?

- Capable of reflecting the current best practice, and RIR operation due to its flexibility
- Helps other RIRs to acknowledge practice in AP region

Guidelines do not define the criteria nor override the policy itself. IF the criteria needs to be changed, the policy document must be reviewed first.

# Drafting

- Draft by IPv6-guide Working Group
  - Volunteered by the community
  - Co-Chaired by:
    - Akira Nakagawa (POWEREDCOM)
    - Billy MH Cheon (KRNIC)
    - Toshiyuki Hosaka (JPNIC)
  - Discussion on the ML from Dec. 2003.

Thank participants for the valuable comment and suggestion!

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# 1. Introduction

- Summary
  - These guidelines are developed to meet APNIC community's needs.
  - They are intended to assist only IPv6 address space requestors
  - Nothing in these guidelines won't change any of the specific policies in other APNIC documents.

# 2. Scope

- Summary
  - This document applies only to the management of global IPv6 public address space in the Asia Pacific region, and guidelines are expressed in relation to types of connectivity.
  - It should be read in conjunction with other APNIC documents, particularly APNIC-089.
- Issue and comment
  - It's better to mention examples specifically.

# 3. Additional Guidance

- **Summary**
  - These guidelines are not exhaustive. Additional guidance and examples are available from other APNIC documents and web site.
  - Resource Guides
    - http://www.apnic.net/services
  - APNIC FAQs
    - http://www.apnic.net/info/faq

# 4. Goals of Address Space Management

- Summary
  - These guidelines conform to the goals of address space management in policies for IPv6 address management in Asia Pacific region.
    - Uniqueness
    - Registration
    - Aggregation
    - Conservation
    - Fairness
    - Minimized Overhead

# 5. Application of Guidelines

**Summary**

- The issues in this document reflect many of the considerations used by APNIC in evaluating requests.

- It is intended that NIRs will either adopt these or similar guidelines for their own members

# 6. Definition of a 'site'

- ## Motivation
  - Tried to clarify the definition of a 'site' and to help those who are not familiar with this concept.
- ## Summary
  - A 'site' is counted in accordance with the number of contracts.
- ## Issue and comment
  - If there was a case that one "contract" offers multiple access lines?

# 6.1 Assignment address space size

- **Motivation**
  - Tried to provide an example when you can assign /48. (This may help when the requestor plans 200 x /48 assignment.)
- **Summary**
  - LIRs (or downstream ISPs) can assign /48 to their 'residential' users.
- **Issue and comment**
  - Nothing special so far

# 7. Initial Allocation Criteria

- Motivation
  - To reduce 'psychological barrier' of the requestor by providing an example of "200 x /48" or other information.
- Summary
  - Most important point is the existence of a 'plan', and not the feasibility of the plan.
- Issue and comment
  - Can sub-allocations to ISPs be regarded as an assignment? (Probably yes)

# 7.1 Use of existing IPv4 infrastructure

- ## Motivation
  - It may be easier for an LIR to justify their plan to provide an information on existing IPv4 infrastructure and/or customers.

- ## Summary
  - As above..

- ## Issue and comment
  - A proposal "IPv6 allocations to IPv4 networks" is submitted by APNIC, so this section may be subject to modification.

# 7.2 Documentation required/Supplementary document

- ## Motivation
  - To provide an example of documentation requested by RIR/NIR.
- ## Summary
  - LIRs are requested to provide a network diagram, network equipment information…(see the guideline draft)
- ## Issue and comment
  - Is network equipment information necessary? (Network diagram is not enough?)

# 7.3 Closed networks

- ## Motivation
  - To clarify whether a 'closed network' can receive an IPv6 allocation.
- ## Summary
  - In some cases APNIC will allocate global IPv6 addresses to 'closed' networks.
- ## Issue and comment
  - A policy proposal regarding 'closed networks' is submitted in APNIC 17. This section will therefore reflect its consensus.

# (NAT)

■ We had planned to describe this at first but deleted because this section hardly helps those who plans to receive an allocation..

- RFC1631 describes Network Address Translation (NAT). NAT makes consume fewer public IP address thereby assisting the goal of conservation. However many drawbacks have been cited with the use of NAT, and the goal of conservation is less important compared to IPv4, so that APNIC policies do not require any ISP or Internet user to employ Network Address Translation (NAT), as current IPv4 address policies do not either.

# (ToC8)
# SOR (Second Opinion Requests)

∺ What is SOR ?

- The process RIR/NIR see the detail

∺ LIRs must follow SOR process in case,

- Requesting for initial prefix shorter than /48. (i.e. /47)

or

- Requesting for subsequent/48(s) prefix

∺ LIRs don't have to do in case,

- Sub-allocating to downstream ISPs.

# SOR (Second Opinion Requests) (cont.)

- **Required Documentation**
  - Network diagram of an end-site.
  - Network equipment information.
  - Full details to justify multiple /48 assignments to an end-site
    - e.g. the number of clients (PCs or other NW equipments)

  or

  - Other information which justify multiple /48s assignment)

# (ToC9)
# **Subsequent allocations**

- Criteria is based on HD-Ratio table. (Policy Appendix A)
  - Criteria of $1^{st}$ subsequent alloc. =  7,132 */48
  - Criteria of $2^{nd}$ subsequent alloc. = 12,417 */48

- Example of $1^{st}$ subsequent alloc.

  | | | |
  |---|---|---|
  | Assignments to it's POPs | 326 | * /48 |
  | Assignments to it's end sites | 6,500 | * /48 |
  | Assignments thru downstream ISPs | 306 | * /48 |
  | Summary | 7,132 | * /48 |

# Subsequent allocations (cont.)

- ## How to calculate /48s ?
  - Based on /48s, registered in the registry database.
  - Including
    - Assigned /48s.
    - Assigned /48s thru. It's downstream ISPs.
  - Not including
    - Address blocks sub-allocated to it's downstream ISP, but not assigned thru. it's downstream ISPs.

<note> In IPv4, Sub-allocated blocks are considered as utilization.

- ## LIRs are not requested for SOR when sub-allocate to it's downstream ISPs.

<note> SOR : Second Opinion Requests

# (ToC10)
# Requesting a reverse delegation

- **Who registers ?**
  - When RIR allocate to LIR,            → LIR
  - When LIR assign to end site,          → End site on request.
  - When LIR allocate to downstream ISP →Downstream ISP
  - When downstream ISP assign to end site

    → downstream ISP or end site

- **Minimum size of reserve delegation is /48.**

- **ip6.int or ip6.arpa ?**
  - Shifting from ip6,int to ip6,arpa is appreciated.
  - If can't shift, requested to have both.

- **Each host / Temporary add. in RFC3041**
  - Not compulsory nor recommended.

# (ToC11)
# Database registrations

- **Definition of Database**
  - Whois database of RIRs and NIRs.
- **Database to be registered**
  - If no database in NIR, RIR's database to be used.
  - If NIR has, NIR's database to be used.
- **Who is responsible for registration ?**
  - Initial and subsequent allocation → RIRs
  - Assignment → The org. that assign.
  - Assignment thru. Downstream ISP → The org that allocate or downstream ISP.
  - Assignment greater than /48 (e.g. /47)
    → The org. that assign.

# (ToC11)
# Database registrations (cont.)

- **Items to be registered**
  - Mandatory attributes
    - inet6num / netname / descr / country / admin-c / tech-c / status / mnt-by / changed / source
  - Optional attributes
    - rev-srv / remarks / notify / mnt-lower / mnt-irt
  - See
    - http://www.apnic.net/db/ref/attributes/attributes-inet6num.html

- **Updating of database**
  - In case, updating some information in the database.
  - The organization that initially registered it is responsible.

# Remaining issues

- ## /64 assignment plan
  - What if an ISP plan to assign a /64 to its users?
- ## Transit Providers
  - Unlikely they can meet the criteria
- ## Multinational Companies
  - Can we allow them to receive an allocation?

# Guidelines Publication

- After this APNIC 17, we will request APNIC secretariat to edit the wording, the order of its section, etc., taking into comments from the community, and APNIC current practice.
- APNIC will post the edited guideline document to appropriate ML and make it effective.

# Comments

- Any comments will be appreciated

- We are discussing at Working Group mailing list
  - wg-ipv6-guide@lists.apnic.net

# Thank you!