HKNOG 12.0 @ Tsim Sha Tsui Kowloon, Hong Kong

Present conditions on IPv4 address assignment size to IXPs in regions

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Introduction

- Unused IPv4 address space is becoming small, and being difficult to obtain for us operators.
- Some RIRs (Regional Internet Registries) have (or had) discussions about resizing of IPv4 address assignment for the IXPs.
- Recently IPv4 address assignment is one of the most important issues for running IXPs as well.
- I would like to share the current conditions of these discussions in RIRs.

Proposal for resizing IPv4 assignment in APNIC

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- prop-154: Resizing of IPv4 assignment for the IXPs
  - https://www.apnic.net/community/policy/proposals/prop-154/

- Objective
  - This proposal suggests changing the default size of IPv4 assignments for IXPs from /23 to /26, which can be replaced up to a maximum of a /22 if the IXP returns the IPv4 address space previously assigned to them.

- Current status
  - Did not reach consensus at APNIC 56

- Authors
  - Simon Sohel Baroi and Aftab Siddiqui

Summary of idea and background on proposal in APNIC

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- The general idea is as follows:
  - Currently, IPv4 assignment for an IXP is /23
  - The initial assignment to an IXP should be changed to /26
  - If the IXP becomes bigger, /25 to /22 will be assigned if they replace and return the old space.

- The reason to propose this is like:
  - The IPv4 address becomes more and more precious
  - At the initial stage of many IXPs, they do not have enough members/customers
  - This is a waste of IPv4 address.

Present condition on IPv4 address assignment size in ARIN

- ARIN-2023-2: /26 initial IPv4 allocation for IXPs
  - https://www.arin.net/participate/policy/drafts/2023_2/

- Policy Statement (*quote only the part related to IPv4 address size)
  - An IXP requesting an initial IPv4 allocation from this reserved space will be assigned a /26 by default. An IXP requesting an allocation larger than a /26 must show an immediate need to utilize more than 25% of the requested allocation size upon initial commissioning.
  - An IXP that has received an IPv4 allocation under this section may request a larger allocation once they have utilized more than 50% of their existing one. Upon receiving the larger allocation, the IXP must migrate to the new allocation and return their previous one to ARIN within 6 months.

- Current status
  - Under Discussion (There was a discussion at ARIN 52)

- Shepherds
  - Matthew Wilder and Gus Reese

Present condition on IPv4 address assignment size in RIPE NCC

- 2023-01 Policy Proposal Accepted and Implemented (Reducing IXP IPv4 assignment default size to a /26)
  - https://www.ripe.net/ripe/mail/archives/address-policy-wg/2023-September/013845.html

- The archived policy proposal (*quote only the part related to IPv4 address size)
  - New IXPs will be initially assigned a /26 by default. Once more than 50% of the initial assignment has been utilised, IXPs can request an assignment up to a /24. In this case, the IXP must return the existing assignment (or existing PI previously issued for their IXP peering LAN).
  - Once IXPs require an assignment larger than /24, they must return their current one (or existing PI previously issued for their IXP peering LAN) and receive a replacement up to a maximum of a /22. After one year, utilisation of the new assignment must be at least 50%, unless special circumstances are defined.
  - If there are no more assignments of /26 available, smaller assignments can be made.
  - https://www.ripe.net/participate/policies/proposals/2023-01

Discussed in the last APIX Workshop

Key Highlights

- Katsuyasu Toyama (APIX/JPNAP) made an introduction of APIX and let attendees to know each other through self-inroductions.
- Katsuyasu Toyama (APIX/JPNAP) shared Internet and peering landscape of Japan from IXP perspective, including the trends of traffic, operations, markets, and regulations.
- Masataka Mawatari (APIX/JPIX) moderated the discussion on the policy change in APNIC region regarding IPv4 assignment size to IXPs.
- Katsuyasu Toyama (APIX/JPNAP) moderated the discussion on collaboration between IXP and its members/customers.

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Outcomes and Actions

- Reducing the initial IPv4 assignment size from /23 to /26 will save IPv4 space and corresponding cost for new IXPs, but will also cause frequent renumbering and reconfiguration work for both IXPs and their members, which is not easy to implement. Attendees from APNIC gave good explanations to everyone's concerns regarding application objects.
- IXPs need collaboration with Content/Cloud/CDN for the reason of attracting and increasing thier members/customers, but usually get declined due to the limited local eyeball participants. Some Content/CDN providers have cache servers for a small/medium IXP which can be provided if criterias meet.

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https://conference.apnic.net/56/assets/files/APJS642/apix-update-final_1694672658.pdf

Summary so far

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- Downsizing of IPv4 address assignment for IXP may be becoming impreventable in the world.
- Not only IXPs but also BGP operators in ASes should know and discuss this trend about IPv4 address assignment size in your community in advance.
  - Especially, renumbering IP address is always hard work for both operators...
- FYI : RFC 8950 (Advertising IPv4 Network Layer Reachability Information (NLRI) with an IPv6 Next Hop) will be a solution.
  - https://datatracker.ietf.org/doc/rfc8950/

What's Crossing Next?

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