IPv6 Address Space Management
A follow up to RIPE-261

APNIC16 - Address Policy SIG

Seoul, Korea,

20 August 2003

Document History

- ## RIPE-261 (Oct 02)
  - 'IPv6 Address Space Management'
    - http://www.ripe.net/ripe/docs/ipv6-sparse.html
  - Presented at RIR meetings
- ## Follow up to RIPE-261 (Jul 03)
  - 'Requesting larger IPv6 allocations from IANA and practicing 'sparse allocations'
    - http://www.apnic.net/mailing-lists/sig-policy/archive/2003/07/msg00000.html

Background RIPE-261 – Current System

- IANA-RIR allocations /23 blocks
- RIR-LIR allocations
    - Minimum allocation /32
    - Reservations up to /29
        - No contiguous allocation beyond /29
    - Sequential allocations by RIRs
- IPv4 based allocation system
    - Observed long terms effects of fragmentation with IPv4 address space

IANA IPv6 Allocations to RIRs (1999-current)

IPv6 Prefix	Allocated To	Date
2001:0000::/23	IANA	Jul 99
2001:0200::/23	APNIC	Jul 99
2001:0400::/23	ARIN	Jul 99
2001:0600::/23	RIPE NCC	Jul 99
2001:0800::/23	RIPE NCC	May 02
2001:0A00::/23	RIPE NCC	Nov 02
2001:0C00::/23	APNIC	May 02
2001:0E00::/23	APNIC	Jan 03
2001:1000::/23	(future)	-
2001:1200::/23	LACNIC	Nov 02
2001:1400::/23	RIPE NCC	Feb 03
2001:1600::/23	RIPE NCC	Jul 03
2001:1800::/23	ARIN	Apr 03

RIPE-261 Proposal

- Objective
  - Minimise long term fragmentation of IPv6 address space

- Method
  - Practice 'Sparse allocations', otherwise known as 'binary chop'
  - Management a single pool of addresses through 'Common Allocation Pool'

RIPE-261 Proposal

- "Sparse Allocation" system
  - Maximise "distance" between allocations to distinct ISPs
  - Maximise chance of aggregation of subsequent allocations

- For example…

ISP A	ISP E	ISP C	ISP G	ISP B	ISP F	ISP D	ISP H
❶	❺	❸		❷	❻	❹	

Feedback RIPE-261

- Favour
  - General support for idea but no clear consensus on 'Common Allocation Pool'
  - Support for IANA to allocate larger blocks
    - /12, /8 suggested
- Against
  - Using a common pool for allocations would no longer allow prefix filtering on RIR-IANA boundaries

RIPE-261 Follow Up Proposal

- IANA-RIR allocations
  - IANA makes allocations to RIRs in /8 units
    - Larger pool supports greater aggregation
    - Preserves regional integrity
- 'Sparse allocations'
  - May be practiced by RIRs within the allocated blocks (local policy)
  - Reservation of uniform /29 is discontinued

Feedback so far…

- 22 Jul proposal sent to SIG mailing list
  - Endorsement from RIPE Address Policy WG chair
  - Several other comments strongly in favour
  - Minor typo corrections
  - One suggestion
    - Sparse allocations MUST be used, rather than MAY be used

Next Steps?

- Develop IPv6 companion document
  - 'IANA Policies for allocation of IPv4 blocks to RIRs'
    - Discuss in RIR communities
    - Community feedback needed
- ASO endorsement
  - Both IPv4 and IPv6 IANA-RIR policies document will be global policies

Questions? Feedback?