Resource management: IPv4 depletion and IPv6 registration

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Canberra ACT

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IANA
Overview

- About IANA
- Resource registries
  - IPv4
  - IPv6
- Resource management
- Education and outreach role
Where is IANA?
IANA’s role

- 3 main areas of responsibility
  - Protocol registration
  - DNS management
    - root DNS
    - .arpa and .int
  - Internet number resource management
    - IPv4, IPv6 and AS Numbers
IPv4 registries

- IPv4 address space
- Multicast address space
  - Requests received from the public
  - Reviewed by an IESG designated expert
IPv4 registries

NOT TO SCALE
IPv4 registries

ipv4-address-space

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IPv4 registries

ipv4-address-space

multicast-addresses

NOT TO SCALE
IPv6 registries

- IPv6 address space
- IPv6 unicast assignments
  - Where each RIR has a /12
- IPv6 special purpose address registry
  - TEREDO and ORCHID assignments
- IPv6 multicast registry
IPv6 registries

REALLY NOT TO SCALE
IPv6 registries

ipv6-address-space

REALLY NOT TO SCALE
IPv6 registries

ipv6-address-space

unicast-assignments

REALLY NOT TO SCALE
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ipv6-address-space

unicast-assignments

iana-special

REALLY NOT TO SCALE
IPv6 registries

ipv6-address-space

- unicast-assignments
- multicast-addresses
- iana-special

REALLY NOT TO SCALE
RIR address space management

- /12 assignments to RIRs
  - /32 minimum allocations to LIRs
    - /48 assignments to end users
- Room for a million allocations to LIRs
- /12 chosen based on sparse allocation (binary chop) allocation method
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*Actual size may vary*
Binary chop

SO NOT TO SCALE
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1 5 3 2 4

SO NOT TO SCALE
Binary chop

SO NOT TO SCALE
Binary chop

1 5 3 6 2 4

SO NOT TO SCALE
Binary chop

- Sparse allocation maximises potential aggregation
- APNIC uses this mechanism
- The other RIRs don’t
Registry management

- XMLification
  - XML backend
  - Multiple publication formats
  - Support for non-Latin character sets
- XML directorate have been asked to review the registry schemas
Resource management

› IPv4 address space reclamation
  › 14.0.0.0/8 recovery

› 46.0.0.0/8 returned by BBN

› 49 and 50.0.0.0/8 status updated to reserved
Discussion areas
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- Potential for IPv4 market: formal or informal
  - Ongoing discussion in all 5 RIR communities
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- Encouraging IPv4 reclamation
  - Working with RIRs to reclaim unused address space
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- Used but unallocated address space
  - Article in IPJ
  - Talks at operators meetings
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Thank you

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