Use of the final /8 IPv4 Allocation and Assignments to facilitate IPv6 Deployment

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IPv4 exhaustion

Granville-Paris Express wreck on 22 October 1895

- We all know the story …
  - Good news…all on board the train survived…
- The IANA allocates the last 5 /8 to the five RIRs according to the now approved global policy
- The RIRs have to define a policy on the use of this last /8

Use of final /8 - Issues

- At the time of exhaustion IPv4 resources will still be required for New entrants and existing LIRs in order to support legacy IPv4 services
  - A solution is needed in order to insure access to the limited amount of addresses necessary for the transition period.
  - As the transition period will be long we need a solution that will cover the needs for a sufficient period of time.

- Specific concerns related to “fairness” in the context of allocation of the last IPv4 resources at regional level.

See Daniel Karrenberg’s presentation during the last RIPE NCC meeting

  - One response is the “Run Out fairly” proposal”
  - An additional response is this proposal I to encourage the deployment of IPv6

Overarching principles

- As IPv6 is the only perennial solution this policy needs to be a catalyst for IPv6 deployment
  - The proposal is NOT a way to stretch the lifetime of IPv4 but a way for IPv6 adopters to have a window to the legacy IPv4 environment.

- The allocations and assignments should be based on justified and well-documented needs.

Proposal

- Last /8 is reserved to encourage IPv6 deployment
- The allocations and assignment will be done in accordance with existing IPv4 Address Allocation and Assignment Policies for the RIPE region.
- Additional requirements
  - Existing LIRs –
    - Allocation principle: demonstrate that requirements for the migration to IPv6 (*e.g. a la* RFC 5211) are met
  - New LIRs: request for an initial IPv6 allocation or assignment.
- Allocation and assignments downscaled by a factor of 64
  - Minimum allocation is /27

Similar proposals in other regions

- ARIN
  - Policy 2008-5 is approved
  - Objective is similar
  - Same incentive for v6 deployment
  - Minimum allocation size is /28
  - Only a /10 block is dedicated
- APNIC
  - Policy prop-062-v002 is now approved and implemented
  - Objective is similar but
    - Not based on needs
    - Incentive for v6 deployment?
  - Size is the minimum allocation size in force at time of allocation (/22 currently) but could be reduced in future
- LACNIC
  - LAC-2008-04 approved
  - Prefix from /24 to /22
  - Only for new entrants
- AFRINIC
  - Draft proposal IPv4 soft landing
  - Incentive for IPv6 deployment
  - Prefix /23 (currently minimum is /22) could be reduced in side in the future.

Possible objections

- Routing impact: « This will potentially create 2 million routing table entries !!!»
  - The downscaling factor will only limit the volume of addresses allocated/assigned.
  - The growth of routing table will be proportional to the growth of new ISPs / PA holders and use of multi-homing as today
  - Use of sparse allocations techniques may limit the impact.

- Filtering issues
  - As allocations will be made from a specific /8 filtering policies must be adapted.

Questions