IETF IPv6 Addressing Update

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October 21, 2004

IPv6 Unique Local Address Update

- Recall that RFC 3879 has deprecated IPv6 site-local addresses (April, 2004)
- Define Range of Addresses:
  - Globally unique (avoid inter-site address collisions)
  - Not intended to be globally routed (known to not aggregate)
  - Intended for intra-site communication
  - Routable among consenting parties (e.g., after mergers, by mutual agreement, etc.)

Benefits

- Globally Unique prefix for each site
  - Eliminates address collisions when sites interconnect
- Well-known prefix for filtering at boundary routers (e.g., don't leak across borders by default)
- Applications treat them just like global addresses (i.e., no special handling necessary)
- ISP independent (e.g., intermittant connectivity, across renumberings)
- But note, these are *not* "PI" addresses!!!

Address Format

- 7-bit prefix of FC00::/7
- 1-bit type indication:
  - Locally administered
  - Centrally administered
- 40-bit unique identifier
  - Large enough for 236 prefixes per person in year 2050
- 16-bit subnet identifier (like other addresses)
- 64-bit Interface identifier (like other addresses)

Locally Administered IDs

- Generate a 40-bit random number
- Append to FC00::/8, to produce 48-bit prefix
- Use like any other unicast prefix within site
- Probablistically unique
  - No guarantee of uniqueness, but probability is high
  - Good enough for many, especially smaller sites
- Easy to obtain, no need to ask anyone
- Details: draft-ietf-ipv6-unique-local-addr-06.txt

Centrally Administered IDs

- For sites needing stronger guarantee of uniqueness
- Handed out by a central assignment authority
- Requirements (per the draft proposal):
  - Available to anyone, unbiased access
  - Permanent allocation, no periodic fees
  - Cannot be “taken back”
  - Adequate mechanisms to prevent hoarding
  - Ownership should be kept private
- Details: draft-ietf-ipv6-ula-central-00.txt

Next Steps

- Centralized allocation:
  - IPv6 WG finalizing some details
  - Continuing discussions between IETF/NRO/RIRs
- Local allocation:
  - Currently under IESG review, hopefully approved soon.

Questions/Comments?

IPv6 ad hoc Advisory Committee

- Created by IAB to provide advice to IAB on IPv6 addressing and related issues.
- Provide a home to kick off discussions on some outstanding topics
- Consult with appropriate parties as appropriate (e.g., IETF WGs, RIRs, etc.)

Work Items

- Clarify IETF recommendations to IANA on IPv6 address allocation
  - IANA IPv6 address page cleanup (still uses TLA terminology)
- Now that we have experience, is HD ratio utilization criteria having the desired effect?
  - I'm hearing concerns in the hallway here!
- ip6.int deprecation (now that we have ip6.arpa); need timetable for phase out.
  - How big a burden is it to maintain both trees?
- Above require open discussion among IETF/IANA/RIRs (e.g., IDs, participation in RIRs) as appropriate

Questions/Comments?