Ipv6 Unique Local Addresses

Thomas Narten
narten@us.ibm.com
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Site-Local Addresses in IPv6

- Part of original IPv6 definition (RFC 1883)
- Not unlike RFC 1918 addresses, but
  - Nodes can have site local *and* global addresses simultaneously
  - Creates additional complexities for host and application software
  - Main problem stems from “ambiguity” or non-unique nature of addresses
- Formally deprecated by IETF April, 2004

Unique Local IPv6 Addresses

- Replacement for deprecated site-local addresses
- Addresses are:
  - Globally unique, avoiding inter-site address collisions
  - Not intended to be globally routable (e.g., doesn't scale to DFZ)
  - Intended for intra-site communication
  - Routable among consenting parties (e.g., after mergers, by mutual agreement)
- Details: draft-ietf-ipv6-unique-local-addr-03.txt

Benefits

- Globally Unique prefix for each site
  - Eliminates address collisions when sites interconnect
- Well-known prefix for filtering at boundary routers
- 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
  - FC00::/8 for locally assigned addresses
  - FC01::/8 for centrally assigned addresses
- 41-bit globally 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 Assigned 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

Centrally Assigned 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

Next Steps

- IPv6 WG finalizing some details
- Discussion has been initiatiated between IETF and NRO
- RIRs have indicated they would be willing in principle to take on the role of central assignments, but also have other comments
- Further discussions will take place in the IPv6 WG

Questions/Comments?

APNIC IPv6 Activities: prop-015-v001

- APNIC EC interim clarification (Nov. 2003)
- Allows allocation of global IPv6 addresses to unconnected networks
- Will be made a official policy in APNIC once Last Call ends (soon!)
  - Relates to PPPML Policy Proposal 2004-3 (wich is Ipv4 focused)
- Neither RIPE nor ARIN allocate such addresses today

APNIC IPv6 Activities: prop-016-v002

- Change to “4.4 Considerations of Ipv4 Infrastructure”
  - Makes clear that sufficient IPv6 address space to cover existing Ipv4 infrastructure is allowed.