IPv6 Unique Local Addresses
Update on IETF Activity

Policy SIG
Feb 24 2005
APNIC19, Kyoto, Japan

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Unique Local Addresses

• “Local” Use instead of “Global “ Use
  – Private addresses in terms of routing scope
  – Global addresses in terms of uniqueness

• Objectives
  – Single address pool subdivided into /48 prefixes
  – Each prefix is intended to be probably unique
  – Not intended to be globally routed
    • Easily filtered at network “edges”
  – Is intended to be locally routed in context of various forms of private use
  – No hierarchical super-structure
  – Not provider-based addresses
IPv6 ULA Address structure

ULA Prefix: /7

ULA Assignment
Prefix Type

Global ID

Subnet ID

Interface ID

/48

/64

7 bits

40 bits

16 bits

64 bits

FC00::/7
ULA Addresses

• Assignment type = 0
• Locally Defined Addresses: FD00::/8
  • Self selection of a prefix
  • No coordinated registration records maintained
  • Probably unique, but not definitely unique
  • No global AAAA or PTR DNS records

• Assignment type = 1
• To be defined: FC00::/8
  • Was originally defined as a set of prefixes to be assigned by a common registry function
  • Current specification refers to this as “may be defined later”
Locally-Assigned Local addresses

draft-ietf-ipv6-unique-local-addr-09.txt

• Specification of the unique* local address structure
• Specification of the self-selection prefix: FD00::/8
• Random self-selection of the unique* 40 bit identifier:
  \[ \text{trunc}(\text{MD5}(\text{local time} \cdot \text{local EUI-64}), 40\text{bit}) \]
• Address selection algorithm inferred as local preferred over global
• Requires split horizon (two-faced) DNS
• May also require non-authoritative synthesis of PTR records for local addresses
• Latest draft has additional avats about leakage in to the public global routing tables

* almost unique!
Centrally-Assigned Local addresses

No longer under active consideration by the IETF IPv6 Working Group
Current Status

- Private Use addresses
  - Large pool divided into IDs of /48s
  - Use random selection to minimize selection collision of IDs
    - Option of using a registry to ensure uniqueness of global ID has currently been dropped from the proposal (although the option has been left open in the future)
  - Use in context of
    - Persistent local-context addresses (independent of provider-based addresses)
    - VPN-styled interconnection
Thank you

Questions?