

Problem Statement for Renumbering IPv6 Hosts with Static Addresses

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Brian Carpenter
Sheng Jiang

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Reasons for static addresses

- Other hosts need to be configured with a literal numeric address for the host.
- Avoid issues of address lifetime and DNS TTL for servers.
- Virtual server farms require static addressing.
- Asset management and security incident tracking.
- Software licensing.
- Network element config files.

Static Addresses Imply Static Prefixes

- If servers have static addresses, the subnet prefix needs to be static too.
- Note that HOMENET is challenging this model. Will the same pressure to automated prefix delegation arise in enterprise networks?

Analysis (summary 1)

- Other hosts need to be configured with a literal numeric address for the host.
 - This will arise in smaller networks, e.g. for printers
 - Could be addressed in IPv6 by putting such devices under a ULA prefix, where static is OK
- Lifetime issues for servers
 - To be compatible with RFC 4192 renumbering, we must be able to handle address deprecation and DNS TTL expiry correctly. That seems to require a change of habits, numbering servers with stateful DHCPv6 and using DDNS.
 - Then addresses can be static until we need to change them 😊

Analysis (summary 2)

- Static Virtual Machine Addresses
 - This is an extension of the previous case – address stability is needed so that VMs can be migrated to a different physical server.
 - But the conclusion is the same – even VM addresses need to be managed by a stateful procedure (can this be vanilla DHCPv6?)
- Asset Management and Security Tracing
 - This creates the same situation for user machines as described above for servers. Again, stateful DHCPv6 and DDNS seem to allow an RFC 4192 procedure.

Analysis (summary 3)

- Software licensing
 - Since posting the draft, we have learned that software licensing based on IP addresses or prefixes is still quite widely used.
 - No easy answer. In an RFC 4192 procedure, the licenses for the old and new prefix would have to overlap.
- Network Elements
 - Router interfaces are quite commonly numbered statically in config files, Pearl scripts or whatever...
 - Even if these cannot be changed to an automated method, manual procedures would have to carefully follow the RFC 4192 method.

Issues

- Impossible to completely avoid static addresses
 - But if a prefix changes, static addresses also need to be changed
- Static normally implies manual. In that case, fully automatic renumbering is impossible.
 - Or can static addresses be configured centrally?
 - But that will still not cover software licensing.
- Are static subnet prefixes unavoidable?
 - Or can Homenet-like prefix mechanisms be applied in enterprise networks?

Questions?

- Any major topics missed?
- Can we make useful recommendations?
- Does 6renum want to work on this document?