Reaction of Stateless Address Autoconfiguration (SLAAC) to Flash-Renumbering Events

draft-gont-v6ops-slaac-renum

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Problem statement

- A number of real-world scenarios make hosts face flash-renumbering events
  - i.e., suddenly, an existing prefix becomes invalid, and a new valid prefix is introduced

- Result:
  - Hosts end up with stale network configuration information (addresses, routes)
  - Connectivity with new owner of prefix is not possible
  - IPv6 connectivity will likely fail
  - In dual-stack scenarios, it may mean more IPv4 traffic
    - Due to Happy Eyeballs
Some troublesome scenarios

• A switch-port is moved to a different VLAN
  • e.g. manual reconfiguration or 802.1x re-authentication

• During planned renumbering, RAs that would invalidate a prefix are lost
  • e.g., network was partitioned and RAs got lost

• Flash renumbering caused by manual reconfiguration of the network
  • e.g. just change daemon configuration and restart

• CPE router gets different prefix upon crash & reboot
  • 37% of surveyed ISPs employ dynamic prefixes [UK-NOF]
  • Many (most?) CPE routers don’t record delegated prefixes on stable storage
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- Analyzes and documents the problem
- Describes operational mitigations
  - Stable prefixes (applies to some scenarios)
  - Employ more sensible PIO lifetimes
- Points to possible future work
  - Recommendations for CPE routers
  - Improvements to SLAAC (Standards Track work)
Moving forward

- Adopt document as v6ops wg item?