Guidance for
Running Multiple IPv6 Prefixes

(draft-liu-v6ops-running-multiple-prefixes-02)

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Background

- This draft is to
  - Provide a set of operational considerations for running multiple addresses/prefixes in one network
  - Mostly for site administrators
- 01 version was presented in the last meeting
  - 01 version contained both operational considerations and problem statement
  - People thought the technical content was useful; but would be better to reform into guidance rather than problem lists
  - We accepted the suggestion thus deleted problem statement content to narrow down the scope in this version

Multiple Prefixes Co-existing Scenarios

- Multiple Prefixes with Different Scopes
  - Link-local
  - ULAs
- Multihoming based on Multiple PA Prefixes
- Multiple prefixes during renumbering (newly added)
  - Based on the "make-before-break" approach proposed in [RFC4192], there would be a period of multiple prefixes running during renumbering
- Service Prefixes
  - Services such as IPTV, Internet access, VPN .etc might have different IPv6 prefixes

Operational Guidance (1/3)

- Multiple prefix provision
  - Avoiding information from multiple provisioning domains on the same link
    - Some works is ongoing in MIF WG for enabling operation of information from multiple provisioning domains on the same link. In this document, still advice to avoid this operation due to long period from standard to practice.
  - Considerations for co-existing DHCPv6/SLAAC
    - refers to DHCPv6/SLAAC interaction PS and Guidance draft

Operational Guidance (2/3)

- Managing Address Selection in the Network
  - "ULA+IPv4" issue
    - ULA+IPv4: RFC6724 prefer IPv4 over ULAs; RFC3484 is the opposite
    - Implementation Investigation
      - Windows 8/8.1, Windows Server 2012/R2 had implemented [RFC6724]
      - Windows 7 and Windows Server 2008 R2 with the application IPv6 readiness update [http://support.microsoft.com/kb/2750841/en-us] also support [RFC6724]
      - have not found any clear statements of other operating systems whether [RFC6724] is supported or not (feedbacks are welcomed)
    - **Conclusion: using ULAs as IPv6 local communication in an network which has not had global IPv6 connectivity yet might not be a good approach for current deployment.**

Operational Guidance (3/3)

- Exit-router Selection
  - In multiple PA multihoming networks, if the ISPs enable ingress filtering at the edge, administrators have to
    - communicate with the ISP for not filtering the prefixes
    - or manually configure routing policies within the network to make sure the traffics are forwarded to the right upstream link, based on source prefixes
- ND Cache Shortage in Big L2 Networks
  - An L3 core switch which can sufficiently serve an IPv4 big L2 network might not be able to serve an IPv6 big L2 network in an equal scale.
  - Higer end L3 core switch might be needed, which means higher budget. Or the administrators may have to break the network into several smaller L2 networks.

Security Considerations

- [RFC7157] gives the security considerations for multi-prefix based multihoming.

- Address selection relevant security considerations are described in [RFC6724].

- It is possibility that malicious users intentionally configure massive addresses on host to make the gateway ND cache exhausted. So administrators always need to consider mitigation operations for potential ND cache DoS attack which is documented as [RFC6583].

Next Steps

- Adopt the draft?

Thank you!

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