IPv6 Site Renumbering Gap Analysis

draft-liu-6renum-gap-analysis-02

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What was achieved in last meeting

The structure of gap analysis :

- ***Prefix delegation***: automatic, accurate in aggregation and coordination
- ***Address configuration***: automatically achieved through standard protocols, with minimum human intervene.
- ***Address relevant entries update***: processed integrally, error-prevented.
- ***Management:*** managing the renumbering events

What we want to achieve in this meeting

- Try to make consensus on several basic topics (were discussed in the mail list)
- Differentiating the gaps (out of scope and unsolvable gaps be put into the Annex)
- More discussion on some gaps

Call for consensus-General Goals

- Promoting renumbering automation to avoid human intervention as much as possible at reasonable cost
- We considered the “make before break” approach in RFC4192 is sufficient for most of the cases for session survivability

  [Open Question] Consider long-live sessions?
- Promoting Unplanned immediate renumbering (starting renum on demand without too much preparation)

Gaps moved to the Annex

- RA prefix lifetime limitation (in some situations, it is impossible to reduce a prefix's lifetime less than two hours)
- DNS data structure optimization (e.g. A6)
- DNS Authority (maintaining RRs out of administrative control)
- Multicast & Mobility issues

Address Configuration

--Host address configuration

Exclude "DHCP/SLAAC Conflict" gap

- Both DHCP/SLAAC available
- DHCP/SLAAC advertise different prefixes
- It is more proper to assume it as a normal case of "multiple-addresses per interface" rather than "conflict"

But there are still standard gaps

- How the DHCP-configured hosts handle RA messages
- How the SLAAC-configured host handle "M=1" in RA
- Both are not clearly defined, depend on OS implementation

Address Configuration *–Router configuration*

Router restart issue *(addresses may cached, need to start to clear them)*

- It is a gap, but…
- *We still don't know whether it is available on current routers*
- *If available, we need to know whether this issue could be eliminated by state-of-the-art hardware/software platforms*

Parameterized router configuration

- General inconsistency is a gap (some protocol/platform/ application/vendor support using FQDN, while others not)
- DNS naming convention is a gap

Address Configuration *--static addresses & ULA*

Static address configuration

draft-carpenter-6renum-static-problem

ULA

draft-liu-v6ops-ula-usage-analysis

- Internal-only hosts/servers are recommended to use ULAs
- ULA+GUA is recommended, ULA could guarantee stable local communication with regardless of uplink prefixes changed

Address relevant entries update
--DNS records update

Dynamic DNS record update

- RFC3007 has been widely supported, but not widely used, especially on hosts.
- complexity of key management issues inherited from secure DNS mechanisms

Renumbering event management

- **Renumbering Notification**

We need a standardized solution for communicating a prefix update to all systems that need to know it. NETCONF is a alternative, but not sufficient:

- *NETCONF protocol is not supported by all entities*
- *It is a centrally-managed model, cannot cover all devices*
- *The centralized NETCONF configuration database also needs to be updated dynamically, rapidly, accurately*

- **Synchronization Management**

Latency issue of disabling the old records, which cannot expire “immediately” because of the hierarchical store of DNS records (especially the cached ones). This may cause problem that the DNS may return the deprecated records to requestors.

Thank you!

Comments are appreciated

Adopted as a WG item?

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