

IPv6 Enterprise Network Renumbering Scenarios and Guidelines

draft-jiang-6renum-enterprise

IETF 81 RENUM WG

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Sheng Jiang(Speaker)

Bing Liu

Brian Carpenter

Draft Introduction & Scope

- It is thus desirable to develop tools and practices that may make renumbering a simpler process to reduce demand for IPv6 PI space
- 6RENUM WG is chartered to **document existing renumbering practices for enterprise site networks**
- Following the WG scope, the draft focuses on **IPv6** enterprise renumbering through some conclusions may also be applicable to IPv4
- Following the WG scope, the draft is targeting **enterprise networks**, but the analysis may also be applicable to ISP, SOHO or other (e.g. ad-hoc) scenarios

Structure of Draft

- Section 2: Enterprise Network introduction and illustration
- Section 3: Enterprise Network Renumbering Scenario Categories
(According to different reasons)
- Section 4: According to the different stages of renumbering events, considerations and best current practise are described in three categories:
 - during network design
 - for preparation of renumbering
 - during renumbering operation
- Section 5: A gap inventory is listed at the end of this document
 - **[Open Question]** Should we summary here or leave all to gap analysis draft

The goal is to cover all major considerations in enterprise network renumbering scenarios

Enterprise Network Illustration

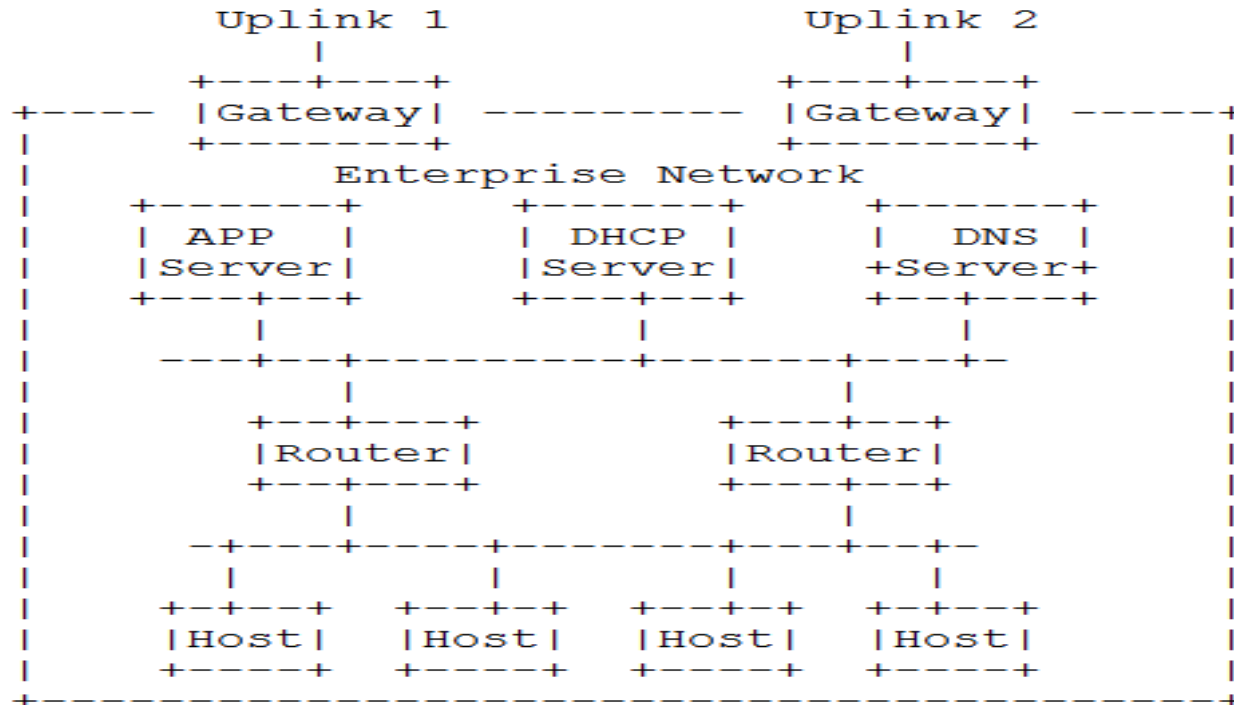


Figure 1 Enterprise network illustration

These entities relevant to renumbering are illustrated

Enterprise Network [RFC4057]- A network that has multiple internal links, one or more router connections to one or more Providers, and is actively managed by a network operations entity

Why Enterprise Network is Renumbered

- **Renumbering caused by External Network Factors**

- Switch to a new ISP
- Receive a new prefix from the same uplink
- Add new uplink(s) for multihoming purpose

- **Renumbering caused by Internal Network Factors**

- Company network split, merge, grow, or reorganize
- Adopt new address scheme

Note: Using PI doesn't remove all those renumbering reasons

[Open Question] Anything missing?

Considerations and BCP during network design

- **Managing Prefix Delegation**
- **Usage of FQDN and DNS as much as possible**
- **Address Types**
 - **[Open Question]** What can we do regarding to manual configured hosts and static addresses, which do need to be changed?
 - **[Open Question]** Should usage of ULAs be recommended?
- **Address configuration models**
 - **[Open Question]** Should there be a preference between ND and DHCPv6 from renumbering perspective?
 - **[Open Question]** Should we work towards avoiding ND and DHCPv6 co-existing or make the co-existing scenario better and error-prevented?

Considerations and BCP during network design (2)

- **DNS record Update**

- **[Open Question]** Should we recommend A6 (RFC3363 is in Experimental status), which has advantage for renumbering, but not been used widely?
- **[Open Question]** Or the Secure Dynamic DNS Update also provides the capability of auto DNS synchronizing

- **Security Recommendations**

- Any automatic renumbering scheme has a potential exposure to hijacking at the moment that a new address is announced
- Renumbering may help hosts to escape from black list.

[Open Question] There seems no current practice for this? What can we do?

Considerations and BCP for the Preparation of Renumbering

- Stable records or long lifetimes mean less flexibility

Considerations and BCP during renumbering operation (1)

- **With/without a flag day**
 - **[Open Question]** Should we recommend without a flag day model?
- **Transition period**
 - **[Open Question]** How long is the best?
- **Network initiative enforced renumbering**
- **Impact to branch/main sites**
- **Update DNS records on the local server**
- **Update DNS configuration on hosts**

Considerations and BCP during renumbering operation (2)

- **Router awareness**
- **Border filtering**
- **Tunnel concentrator renumbering**
- **Update require cooperation with interact sites or ISPs**
 - **[Open Question]** a lot of manual configuration work here. How much could be automated?
- **Connectivity session survivability**
 - **[Open Question]** Anything we can do?

Overall question

- **Are we heading in the right direction?**
- **Are these the right topics?**
- **Have we covered all major aspects?**

Comments are welcomed!

Thank You!