Requirements for IPv6 prefix delegation

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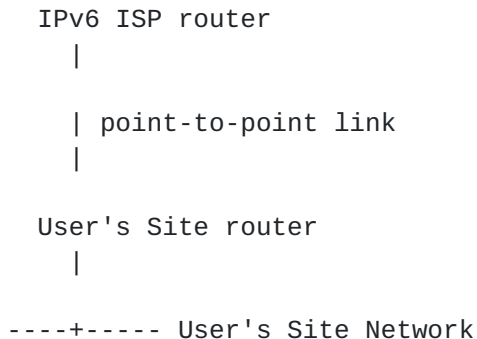
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be December 24, 2002.

Abstract

   This document describes requirements about how an IPv6 address prefix
   should be delegated to an IPv6 subscriber's network (or "site").

1. **Motivation**

   With the deployment of IPv6 [Deering, 1998] ,several commercial ISPs
   are ready to offer their services to the public in conjunction with
   widely deployed IP subscription method such as ADSL and so on. But,
   thinking about following situation of IPv6 commercial service as one
   of the most likely examples,

```
        IPv6 ISP router
          |

          | point-to-point link
          |

        User's Site router
          |

       ----+----- User's Site Network
```

   though it is needed a standardized way to delegate one or more IPv6
   address prefix(es) from the IPv6 ISP to the User's site
   automatically, it is not identified clearly yet.

   Therefore, this documents clarifies requirements for IPv6 address
   prefix delegation from the ISP to the site, especially from the
   (commercial) ISP point of view to boost IPv6 business quick as
   possible.

2. **Requirements for prefix delegation management**

   Focusing commercial IPv6 ISP service, there are several kinds of
   category of requirements for the mechanism / protocol to delegate one
   or more IPv6 prefixes from ISP to a site.

   - layer 2 consideration

   The method should work on any layer 2 technologies. In other words,
   it should be layer 2 technology independent. Though, at the same
   time, it should be noted that now ISP would like to have a solution
   for Point-to-Point link which has own authentication mechanism first.
   PPP link with CHAP authentication is a good example. (Simulated)
   Ethernet and IEEE802.11 (wireless LAN) should be covered in near
   future, but they have low priority (just) for now. It should be
   clarified that the method should work with all L2 protocols either
   with authentication mechanism or without, but ISP would like to take
   advantage of a L2 protocol's authentication mechanism if it exits.

- accounting

It should provides accounting capability such as logging about by
whom, when and what prefix(es) is used for the service with proper
authentication techniques.

- kinds of prefixes

It should be able to delegate both statically and dynamically
assigned prefix assignment by authenticated identification, depended
by resources and/or any reasons.

- negotiation between ISP and site

ISP may deny the service, due to various reasons such as there is no
contract or bad financial credit etc. Also ISP should be able to use
one single technique to pass parameters of the prefix such as scope
(global and/or site), prefix length (/48, /64 or any other length)
and any other appropriate related information to the site. On the
other hand, a site should be able to request multiple prefixes to the
ISP. Also a site should be able to pass parameters of the prefix
such as scope (global and/or site), prefix length (/48, /64 or any
other length), number of prefixes and so on to the ISP to negotiate.

3. References

[RFC2460]
     Deering, 1998. S. Deering and R. Hinden, "Internet Protocol, Ver-
     sion 6 (IPv6) Specification", RFC2460 (December 1998).

Acknowledgements

Author's address

    Shin Miyakawa, Ph.D
    Innovative IP Architecture Center, NTT Communications Corporation
    Tokyo, Japan
    Tel: +81-3-6800-3262
    Fax: +81-3-5265-2990
    Email: miyakawa@nttv6.jp