

Internet Engineering Task Force
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Requirements for IPv6 prefix delegation

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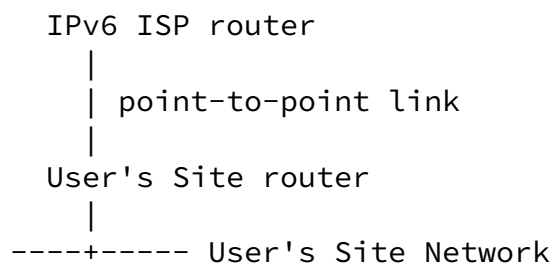
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Abstract

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

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,



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.

Originally, it seemed that just RA (Router Advertisement) considered as good enough to be used for P-P link between ISP and User's site, but according to the NCCs' recommendations, one site should be delegated /48 usually.

So, ISP which now would like to start its own IPv6 commercial service TODAY, need to have some method other than RA protocol which only can handle one single /64 prefix but something else or enhanced

- to delegate not just one single /64 prefix to the user - to satisfy all the other (standard) requirements which is needed to realize commercial service

Therefore, this document 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.

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 exists.

- accounting

It should provide 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.

- less impact on ISP equipments

ISP usually use some kind of equipment to provide subscription service to the users such as access concentrating router, PPP server and so on. This may aggregate thousands or more connections toward the ISP's backbone. Prefix delegation mechanism must be compatible with this situation.

References Deering, 1998. S. Deering and R. Hinden, "Internet Protocol, Version 6 (IPv6) Specification", [RFC2460](https://tools.ietf.org/html/rfc2460) (December 1998).

History

Jun 2002, first draft was presented as personal submission.

At the IETF-54th at Yokohama, it became a working group draft.

Nov 2003, the draft published as -01 draft.

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