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PPP IPV6 Control Protocol Extensions for DNS Server Addresses

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Abstract

The Point-to-Point Protocol (PPP) provides a standard method for transporting multi-protocol datagrams over point-to-point links. PPP

defines an extensible Link Control Protocol and a family of Network Control Protocols (NCPs) for establishing and configuring different network-layer protocols.

This document extends the NCP for establishing and configuring Version 6 of the Internet Protocol (IPV6) over PPP, defining the negotiation of primary and alternative Domain Name System (DNS) server IPV6 addresses.

1. Introduction

The Point-to-Point Protocol (PPP) [[STD51](#)] provides a standard method for transporting multi-protocol datagrams over point-to-point links. PPP defines an extensible Link Control Protocol and a family of Network Control Protocols (NCPs) for establishing and configuring different network-layer protocols.

This document extends the NCP for establishing and configuring Version 6 of the Internet Protocol (IPV6) over PPP [[RFC2472](#)], defining the negotiation of primary and alternate Domain Name System (DNS) server addresses for IPV6 [[RFC1034](#)] [[RFC1035](#)] [[RFC1886](#)].

2. Conventions used in this document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

3. Additional IPV6CP Configuration Options

The two name server address configuration options, TBD1 and TBD2, provide a method of obtaining the addresses of Domain Name System (DNS) servers on the remote IPV6 network.

For implementation convenience, these options are designed to serve identical purposes, except that when both are present an attempt SHOULD be made to resolve names using the primary address before using the alternative server address.

3.1. Primary DNS Server IPV6 Address

Description

This Configuration Option defines a method for negotiating with the remote peer the IPV6 address of the primary DNS server to be

This Configuration Option defines a method for negotiating with the remote peer the IPV6 address of an alternate DNS server to be

used on the local end of the link. If the local peer requests an invalid server address (which it will typically do intentionally) the remote peer specifies the address by NAKing this option, and returning the IPV6 address of a valid DNS server.

By default, no alternative DNS address is provided.

A summary of the Alternative DNS Server IPV6 Address Configuration Option format is shown below. The fields are transmitted from left to right.

0										1										2										3									
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1								
Type										Length										Alt-DNS-IPV6-Addr																			
Alt-DNS-IPV6-Address (cont'd.)										Alt-DNS-IPV6-Address (cont'd.)										Alt-DNS-IPV6-Address (cont'd.)																			
Alt-DNS-IPV6-Address (cont'd.)										Alt-DNS-IPV6-Address (cont'd.)										Alt-DNS-IPV6-Address (cont'd.)																			
Alt-DNS-IPV6-Address (cont'd.)										Alt-DNS-IPV6-Address (cont'd.)										Alt-DNS-IPV6-Address (cont'd.)																			
Alt-DNS-IPV6-Address (cont'd.)										Alt-DNS-IPV6-Address (cont'd.)										Alt-DNS-IPV6-Address (cont'd.)																			

Type

TBD2

Length

18

Alt-DNS-IPV6-Address

The sixteen octet Secondary-DNS-IPV6-Address is the IPV6 address (in network byte order) of the secondary DNS server to be used by the local peer. If all sixteen octets are set to zero, it indicates an explicit request that the peer provide the address information in a Config-Nak packet.

Default

No address is provided.

Normative References

- [RFC2119] S. Bradner, "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997

- [STD51] W. Simpson, Editor, "The Point-to-Point Protocol (PPP)", STD 51, [RFC 1661](#), July 1994
- [RFC2472] Haskin, D., E. Allen, "IP Version 6 over PPP", [RFC 2472](#), December 1998
- [RFC1034] P. Mockapetris, "Domain Names - Concepts and Facilities", STD 13, [RFC 1034](#), November 1987.
- [RFC1035] P. Mockapetris, "Domain Names - Implementation and Specification", STD 13, [RFC 1035](#), November 1987.
- [RFC1886] Thomson, S. and C. Huitema, "DNS Extensions to support IP version 6", [RFC 1886](#), December 1995.

Informative References

- [RFC1877] S. Cobb, "PPP Internet Protocol Control Protocol Extensions for Name Server Addresses", [RFC 1877](#), December 1995.

Security Considerations

The use of these extensions is as secure as the link itself.

Acknowledgments

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