

August 1998

PPP LCP Self Describing Padding
draft-ietf-pppext-padding-ds-01.txt

-
|

Status of this Memo

This document is an Internet-Draft. Internet Drafts are working documents of the Internet Engineering Task Force (IETF), its Areas, and its Working Groups. Note that other groups may also distribute working documents as Internet Drafts.

Internet Drafts are draft documents valid for a maximum of six months, and may be updated, replaced, or obsoleted by other documents at any time. It is not appropriate to use Internet Drafts as reference material, or to cite them other than as a ``working draft'' or ``work in progress.''

To learn the current status of any Internet-Draft, please check the ``1id-abstracts.txt'' listing contained in the internet-drafts Shadow Directories on:

ftp.is.co.za (Africa)
nic.nordu.net (Northern Europe)
ftp.nis.garr.it (Southern Europe)
ftp.ietf.org (Eastern USA)
ftp.isi.edu (Western USA)
munnari.oz.au (Pacific Rim)

|
|
|
|
|

Distribution of this memo is unlimited.

Copyright Notice

Copyright (C) William Allen Simpson (1992-1994, 1996-1998). All Rights Reserved.

Abstract

The Point-to-Point Protocol (PPP) [[RFC-1661](#)] provides a standard method for transporting multi-protocol datagrams over point-to-point links. PPP defines an extensible Link Control Protocol (LCP) for establishing, configuring, and testing the data-link connection. This document defines the Self-Describing-Padding option.

|
|
|

1. Introduction

Each octet of padding contains the index of that octet. The first pad octet contains the value one (1). The final pad octet indicates the number of pad octets to remove. For example, three pad octets would contain the values 1, 2, and 3.

On receipt, when any of the pad octets contain an incorrect index value, the entire frame SHOULD be silently discarded.

Rationale:

The first octet value of one (1) indicates the PPP Padding Protocol to the LCP Compound-Frames option (specified elsewhere).

After removing the PPP FCS, the remaining final octet will indicate the correct number of octets to remove. Together with checking the pad values, this is intended to prevent confusion when used with the LCP FCS-Alternatives option (specified elsewhere).

1.1. Terminology

In this document, the key words "MAY", "MUST", "MUST NOT", and "SHOULD", are to be interpreted as described in [[RFC-2119](#)].

2. Additional LCP Configuration Options

The Configuration Option format and basic options are already defined for LCP [[RFC-1661](#)].

Up-to-date values of the LCP Option Type field are specified in the most recent "Assigned Numbers" [[RFC-1700](#)]. This document concerns the following values:

10 Self-Describing-Padding

2.1. Self-Describing-Padding

Description

This Configuration Option provides a method for an implementation to indicate to the peer that it understands self-describing pads when padding is added at the end of the PPP Information field.

This option is most likely to be used when some protocols, such as

Simpson

expires in six months

[Page 1]

network-layer or compression protocols, are configured that require detection and removal of any trailing padding. Such special protocols are identified in their respective documents.

Nota Bene:

This does not mean that Self-Describing-Padding is mentioned in the protocol documents. A length dependency requiring detection and removal of trailing padding is specified in such protocol documents. It is the responsibility of each protocol to distinguish padding octets from real information [RFC-1661 page 5].

By design, the receiver need not check padding for those protocols that do not need the padding removed.

If the option is Configure-Reject'd, the peer MUST NOT add any padding to any identified special protocols, but MAY add padding to other protocols.

If the option is Ack'd, the peer MUST follow the procedures for adding self-describing pads, but only to the specifically identified protocols. The peer is not required to add any padding to other protocols.

Rationale:

This is defined so that the Configure-Reject handles either case where the peer does not generate self-describing pads. When the peer never generates padding, it may safely Configure-Reject the option. When the peer does not understand the option, it also will not successfully configure a special protocol which requires elimination of padding.

Some senders might only be capable of either adding padding to every protocol or not adding padding to any protocol. Any implementation that generates padding, and has a protocol configured which requires the padding to be detected, SHOULD include this Option in its Configure-Request, and SHOULD Configure-Nak with this Option when it is not present in the peer's Configure-Request.

The Maximum-Pad-Value (MPV) is also negotiated. Only the values one (1) through MPV are used for padding.

When no padding would otherwise be required, but the final octet of the PPP Information field contains the value 1 through MPV, at least one self-describing pad octet MUST be added to the frame.

Simpson

expires in six months

[Page 2]

If the final octet is zero (0), or is greater than MPV, no additional padding is required.

Rationale:

Since this option is intended to support compression protocols, the Maximum-Pad-Value is specified to limit the likelihood that a frame might actually become longer.

A summary of the Self-Describing-Padding Configuration Option format is shown below. The fields are transmitted from left to right.

```

+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   Type   |   Length   |   Maximum   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

Type

10

Length

3

Maximum

This field specifies the largest number of padding octets that may be added to the frame. The value may range from 0 to 255.

The value 0 indicates that Self-Defining-Padding is understood, but no padding is expected. A peer that needs to send padding SHOULD Configure-Nak with an appropriate value.

Values of 2, 4, or 8 are most likely.

Security Considerations

When used with encryption protocols, checking the pad values provides a simple integrity facility, and avoids a possible covert channel. This small amount of known plaintext does not create any problems for modern ciphers.

Simpson

expires in six months

[Page 3]

Changes from [RFC-1570](#) +

LCP Configuration Options were removed to separate documents. +

Minor reorganization. Abbreviations have been expanded. Additional +
Rationale has been added. +

Acknowledgements

Self-Describing-Padding was suggested and named by Fred Baker.

Special thanks to Ascend Communications for providing computing
resources and network access support for writing this specification.

References

- [RFC-1661] Simpson, W., Editor, "The Point-to-Point Protocol (PPP)",
STD-51, DayDreamer, July 1994. |
- [RFC-1700] Reynolds, J.K., Postel, J.B., "Assigned Numbers", STD-2, |
USC/Information Sciences Institute, October 1994. |
- [RFC-2119] Bradner, S., "Key words for use in RFCs to Indicate
Requirement Levels", [BCP-14](#), Harvard University, March |
1997.

Simpson

expires in six months

[Page 4]

Contacts

Comments about this document should be discussed on the ietf-ppp@merit.edu mailing list.

This document was reviewed by the Point-to-Point Protocol Working Group of the Internet Engineering Task Force (IETF). The working group can be contacted via the current chair:

Karl Fox
Ascend Communications
3518 Riverside Drive Suite 101
Columbus, Ohio 43221

karl@Ascend.com

Questions about this document can also be directed to:

William Allen Simpson
DayDreamer
Computer Systems Consulting Services
1384 Fontaine
Madison Heights, Michigan 48071

wsimpson@UMich.edu
wsimpson@GreenDragon.com (preferred)

Simpson

expires in six months

[Page 5]

Full Copyright Statement

Copyright (C) William Allen Simpson (1992-1994, 1996-1998). All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works. However, this document itself may not be modified in any way, except as required to translate it into languages other than English.

This document and the information contained herein is provided on an "AS IS" basis and the author(s) DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING (BUT NOT LIMITED TO) ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Simpson

expires in six months

[Page 6]