PPP Hewlett-Packard Packet-by-Packet Compression (HP PPC) Protocol
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Abstract

The Point-to-Point Protocol (PPP) [1] provides a standard method for transporting multi-protocol datagrams over point-to-point links.


This document describes the use of the HP PPC compression algorithm for compressing PPP encapsulated packets.
1. Introduction

The HP PPC compression algorithm is an improvement on the existing implementations of the LZ variant known as LZ2. In particular the scheme uses an intermediate dictionary initialization. This method allows for a dictionary with fewer entries than the alphabet size. Thus, compression is possible with very small dictionaries, requiring very little memory. This is particularly attractive for networks where each packet is compressed independently.

Other enhancements include run length encoding and parameter initialization based on input packet size.

Since this is a packet by packet scheme, only one compression dictionary is needed per link and no reliable link is required or necessary.

If the compressed packet is larger than the input packet, the input packet is sent uncompressed.

1.1. Licensing

This paragraph will contain some lawyer and management approved words.

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2. HP PPC Packets

Before any HP PPC packets may be communicated, PPP must reach the Network-Layer Protocol phase, and the CCP Control Protocol must reach the Opened state.

Exactly one HP PPC datagram is encapsulated in the PPP Information field, where the PPP Protocol field indicates type hex 00FD (compressed datagram).

The maximum length of the HP PPC datagram transmitted over a PPP link is the same as the maximum length of the Information field of a PPP encapsulated packet.

Reliability and Sequencing

Each HP PPC packet is considered a separate entity. Therefore, the compression tables are reset for each packet. Reliable links are not necessary. Packets need not be delivered in sequence.

Data Expansion

Although the compression algorithm might occasionally expand a data packet, there is no expansion in HP PPC since such packets are sent uncompressed.
2.1. Packet Format

The encapsulation is the same for every packet.

```
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
+-------------------------------------------------+
|         PPP Protocol          |C|    Uncompressed Length      |
+-------------------------------------------------+
|   Compressed Data ...           |
+-------------------------------------------------+
```

PPP Protocol

The PPP Protocol field is described in the Point-to-Point Protocol Encapsulation [1].

When the HP PPC compression protocol is successfully negotiated by the PPP Compression Control Protocol [2], the value is 00FD hex. This value MAY be compressed when Protocol-Field-Compression is negotiated.

C

In the off chance that a packet expanded during compression, this bit is set.

0 = compressed
1 = uncompressed

Uncompressed Length

This is the length of the uncompressed data. It is used as a limit during the decompression process.

3. Configuration Option

No configuration option is required.
Security Considerations

Security considerations are not discussed in this memo.

References


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Initial testing of algorithm by Gadiel Seroussi and Dave Langley (HP).

Bill Simpson provided the table of contents macros.
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