Operational Issues Associated With Long IPv6 Extension Header Chains

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Recommendation

- An ISP SHOULD NOT discard IPv6 packets based solely upon header chain length if the header chain contains 128 bytes or fewer.

- However, it is common practice ISPs to filter IPv6 packets with long extension header chains.

- This document offers no recommendation regarding the maximum extension header chain length that an ISP should forward.

Motivation

- Establish a maximum sane header chain length, which all vendors and ISPs should support

- Make community aware that longer header chains may not be forwarded
  - Due to the cost of forwarding
  - Recognize operational reality

Header Chain: Definition

- The first member of the header chain is always an IPv6 header.

- For a subsequent header to qualify as a member of the header chain, it must be referenced by the "Next Header" field of the previous member of the header chain.

- The header chain can include IPv6 headers, IPv6 extension headers and an upper-layer header.

  - If the header chain includes two IPv6 headers, as is the case when IPv6 is tunneled over IPv6, the second IPv6 header terminates the header chain. Any headers following the second IPv6 headers are not members of the header chain.

  - Likewise, if the header chain includes an ESP header, the ESP header terminates the header chain. Only the first 8 bytes of the ESP header contribute to the header chain length. Any headers following ESP header are not members of the header chain.

Next Steps

- Discussion
  - Is 128 the right number?
    - Brian Carpenter suggests 256
- Adopt as WG item?