MPLS Post-Stack Extension Header

draft-song-mpls-extension-header-07

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Version History

- MPLS Extension Header (EH) draft -00 published in July 2018, evolves to -07 today
- Title changed to “MPLS Post-Stack Extension Header” to reflect the solution focus
- Aligned with the terms used in MNA requirements and framework documents
- New authors added
### MPLS EH Recap

- Up to 15 EHs in one packet allowed
- Maximum lengths of EHs is 1K Bytes
- Allow HEH + 0 EH
  - can be used to indicate the type of UL
  - Possible add/remove EHs on the path

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resv</td>
<td>Reserved</td>
</tr>
<tr>
<td>EH Cnt</td>
<td>Extension Header Count</td>
</tr>
<tr>
<td>EH Total Length</td>
<td>Extension Header Total Length</td>
</tr>
<tr>
<td>Original UL</td>
<td>Original UL</td>
</tr>
<tr>
<td>Next Header</td>
<td>Next Header</td>
</tr>
<tr>
<td>Header Length</td>
<td>Header Length</td>
</tr>
<tr>
<td>Subtype Ext. (OPT)</td>
<td>Subtype Extension Header Length</td>
</tr>
<tr>
<td>HN</td>
<td>Header Length</td>
</tr>
<tr>
<td>UL</td>
<td>Original Inner Packet</td>
</tr>
</tbody>
</table>

![Diagram of MPLS EH structure](image_url)
MPLS EH Recap

- Next Header type encoding
  - Share the codepoint with IP protocol numbers
  - New types defined in this document
    - “NONE”: no next EH and payload, for special packets (e.g., probe)
    - “UNKNOWN”: only in last EH, indicate the payload type is unknown
    - “MPLS”: another MPLS label stack follows the EH – for hierarchical use cases

- All EHs can be skipped in one step to access the original UL
  - A Header of EH summarizes the EH stack

- Support E2E and HBH EH types
  - E2E EHs must be located below HBH EHs for better performance

- Each EH is a standard container for a post-stack MNA
Other companion documents

• draft-song-mpls-eh-indicator
  • Summary of possible methods for MPLS EH indicator
  • Will retire once a method is chosen by the MPLS WG

• draft-andersson-mpls-eh-architecture
  • Describe the terms and network architecture for MPLS EH application
    • EH path vs LSP, EH capable/incapable nodes, capability announcement, etc.
  • Concept applicable to in-stack MNA
  • Possibly evolve to a document for MNA network architecture

• draft-andersson-mpls-eh-label-stack-operations
  • Performance optimization using EH FEC label
  • Concept applicable to in-stack MNA
  • Possibly evolve to be a generic method for MNA
Next Steps

- Request for WG adoption as the solution for supporting post-stack MNAs
- Determine the EH indicator scheme coherent with in-stack MNA indicating
- Expand the scope of the other EH companion documents for MNA