IPv6 Minimum Path MTU
Hop-by-Hop Option

<draft-ietf-6man-mtu-option>

Bob Hinden
Gorry Fairhurst

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Background

- Current RFC8201 PMTUD isn’t working well.
- This hop-by-hop option came from the idea that it will be more reliable for the Destination to send Path MTU feedback to the Source.
  - Better trust relationship than RFC8201 PMTUD.
- Intended to compliment (D)PLPMTUD, to indicate a large PMTU instead of black-holing larger packets when PTB message are not returned.
- It may not work in all places [RF7872] etc., but we suggest it can help some places.
# Path MTU HBH Option

<table>
<thead>
<tr>
<th>Option Type</th>
<th>Option Data Len</th>
<th>Option Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB</td>
<td>00</td>
<td>Skip over this option and continue processing.</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>Option data can change en-route to destination.</td>
</tr>
</tbody>
</table>

TTTTT 10000 Option Type assigned from IANA [IANA-HBH].

Length: 4 Size of the value field in Option Data field.

Min-PMTU: n 16-bits. The minimum PMTU, reflecting smallest link MTU across the path.

Rtn-PMTU: n 15-bits. The returned minimum PMTU, carrying the 15 most significant bits of the latest received Min-PMTU field. Zero if no Reported MTU is being returned.

R n 1-bit. R-Flag. Set by the source to signal a destination should include received Reported PMTU in Rtn-PMTU field.
Basic Operation

- **Routers**
  - If configured MTU is less than Min-PMTU of the outgoing link, router rewrites the Min-PMTU with the smaller value.

- **Hosts (sending)**
  - Fill in Min-PMTU field with MTU of the outgoing link
  - Set Rtn-PMTU field to cached reported Min-PMTU of the flow.
  - R-Flag requests destination host to return Min-PMTU value

- **Hosts (receiving)**
  - Save reported Min-PMTU for the flow
  - If the R-Flag is set, include a Minimum Path MTU option in the next outgoing packet for the flow.
Status

- <draft-ietf-6man-mtu-option-11>
- Advanced by 6MAN to IESG as Experimental on 2021-09-30