



IPv6 Minimum Path MTU Hop-by-Hop Option

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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 check 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



Option Type	Option Data Len	Option Data
BBCTTTTT	00000100	Min-PMTU Rtn-PMTU R

Option Type:

- BB 00 Skip over this option and continue processing.
- C 1 Option data can change en-route to the packet's final destination.

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

Length: 4 Note the size of the each value field in Option Data field supports Path MTU values from 0 to 65,535 octets.

Min-PMTU: n 16-bits. The minimum PMTU in octets, reflecting the smallest link MTU that the packet experienced across the path. This is called the Reported PMTU. A value less than the IPv6 minimum link MTU [RFC8200] should be ignored.

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

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

Basic Operation



- **Routers**
 - Compare the value of Min-PMTU field with configured MTU of outgoing link. If MTU is less than Min-PMTU, router rewrites the Min-PMTU with the smaller value.
- **Hosts (sending)**
 - Fill in the Min-PMTU field with the MTU of the configured MTU value of the outgoing link
 - Set the Rtn-PMTU field to the cached value of the reported Min-PMTU of the flow.
 - May request the destination host to return the Min-PMTU value by setting the R-Flag
- **Hosts (receiving)**
 - Save the reported Min-PMTU for the flow
 - If the R-Flag is set, include the a Minimum Path MTU option in the next outgoing packet for the flow.

Next Steps



- Document is stable
 - -05 was limited to editorial changes
- We have done some testing and implementation
 - Wireshark code in production release
 - IANA temporary code point allocated
- Authors request Working Group last call
 - Current status is Experimental
 - Should it be Standards Track?

Questions / Comments?

