
# IPv6 Minimum Path MTU Hop-by-Hop Option

## <draft-hinden-6man-mtu-option-02>

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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.
- It may not work in all places [RF7872] etc., but we suggest it can help some places.

# Path MTU HBH Option


```
 Option    Option    Option
  Type    Data Len   Data
+--------+--------+--------+--------+-------+--------+-+
|BBCTTTTT|00000100|     Min-PMTU     |   Rtn-PMTU     |R|
+--------+--------+--------+--------+-------+--------+-+
```

Option Type:

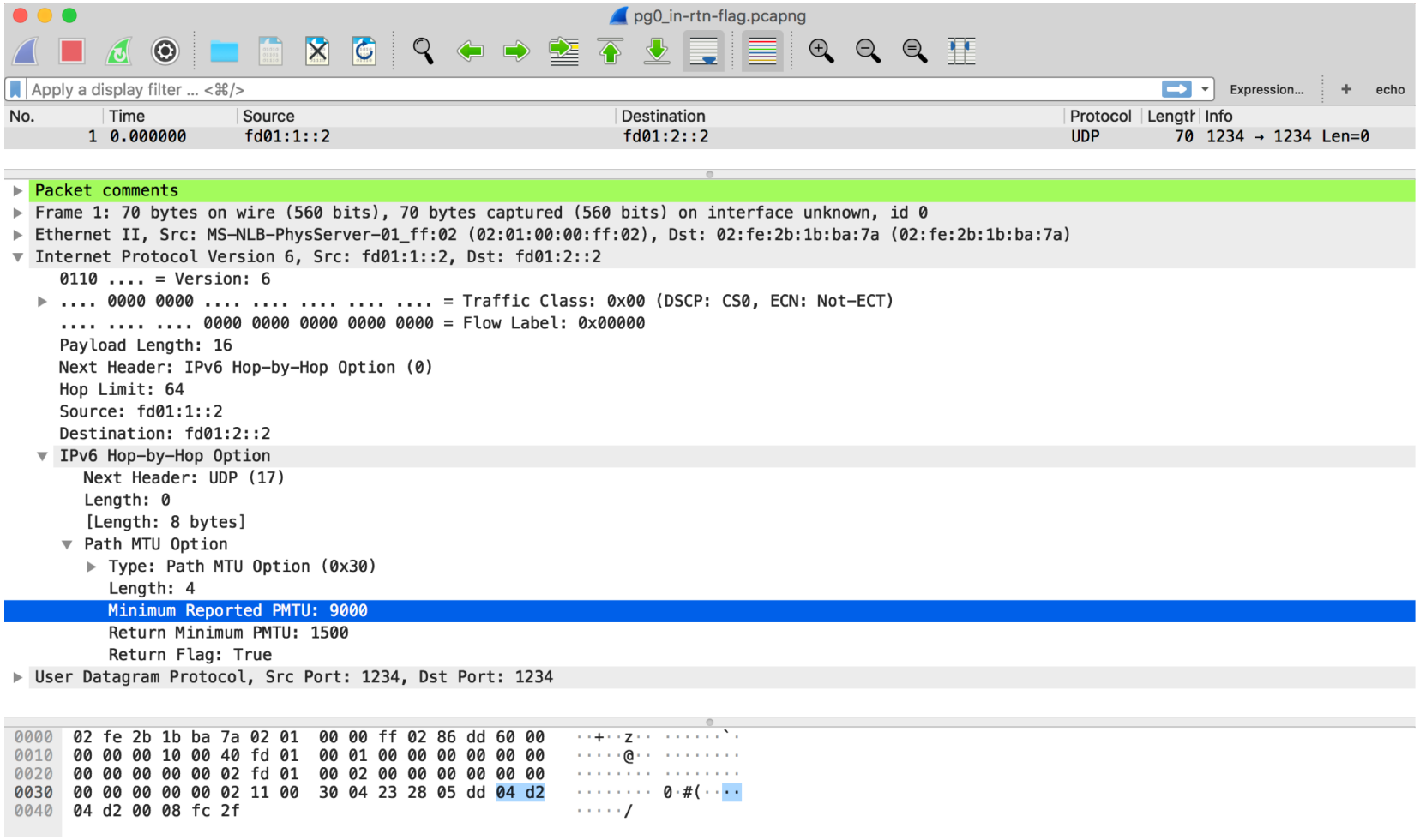
| | | |
|---|---|---|
| BB | 00 | Skip over this option and continue processing. |
| C | 1 | Option data can change en-route to the packet's final destination. |
| TTTTT | 10000 | Option Type assigned from IANA [IANA-HBH]. |
| Length: | 4 | Note the size of the each value field in Option Data field supports 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. |

# Changes Since IETF105


- Adopted as working group draft after IETF105
- First w.g. version published
  - draft-ietf-6man-mtu-option-00
  - Changed to request IANA assignment
- Requested early IANA allocation
- IANA assigned 10000 Option Type
- New version published with new Option Type and text clarifications
  - draft-ietf-6man-mtu-option-01

# Wireshark Dissector

- Code submitted and accepted in Wireshark



# Experiment Status


- Probes currently deployed
  - 2 in USA: normal MTU, IPv6
  - 1 in Sweden: large MTU, IPv6
  - 1 in UK Academic Core (JANET NOC): large MTU, IPv6
  - 1 in UK Academic Edge at Aberdeen: normal MTU, IPv6
- Looking for more people who have IPv6 *AND* a larger MTU!
  - Please contact us

# Data Needed


- What PMTU can be used across (parts of) the Internet?
  - How often is the PMTU smaller than “normal”?
  - How often can you use a larger PMTU?
  - Are IPv4 and IPv6 equivalent?
- Can PMTU HBH Option be sent over a path?
  - From where to where?
  - What is the pathology? (loss / remove /etc.)
  - Does the assigned option type traverse the path?

# Next Steps


- Continue experiments (please talk to us).


# QUESTIONS / COMMENTS?