Ipv6 Multipath MTU Detection

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In load balancing network scenario, current detection mechanisms have a defect, typical load balancing mechanism cannot cover all forwarding paths, wrong PATH MTU will be discovered in such condition.

**Path MTU detection:**
Path of Path MTU detection: R1-R2-R4, and detected path MTU is 1400

**Service packet:**
If Service packet transfer through R1-R3-R4, because R3 interface MTU is 1300, So if packet size larger than 1300, it will be discarded at R3

**Path MTU detection:**
path MTU detection path is R1-R2-R4, R1-R3-R4, So, the final path MTU is in (path mtu( R1-R2-R4 , R1-R3- R4 ) ), that is min(1300, 1400), that is 1300

**Service packet:**
If Service packet transfer through R1-R3-R4, packet will be cut to no more than 1300, and will be transferred successfully.
Replication-based detection scheme and IANA consideration

The hop-by-hop extension header is used in common IP packet. The TTTTT needs to be allocated by the IANA.

```
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| R:Reserved | M:Path MTU detection flag | D:Load balancing duplicating flag |
| MTU:Minimum MTU on the path |
```

The reply packet uses the DH extension header, and the TTTTT needs to be allocated from the IANA.

```
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| R:Reserved | M:Path MTU detection flag | D:Load balancing duplicating flag |
| MTU:Minimum MTU on the path |
```

Initial path MTU 1500

Final path MTU: 1300
Which is Min(1300, 1400)
Upper-layer protocol example

Twamp-light trigger the path MTU detection periodically

Request packets reflected by the sender to the responder

Response packets reflected by the Responder to the Sender

Sequence number

Timestamp

Error estimate

Packet padding

Sequence is used as the synchronization identifier of a probe.
Thank You