

DESTINATION OPTION FOR IPv6

Vijay J
PES2UG20CS815

Introductions

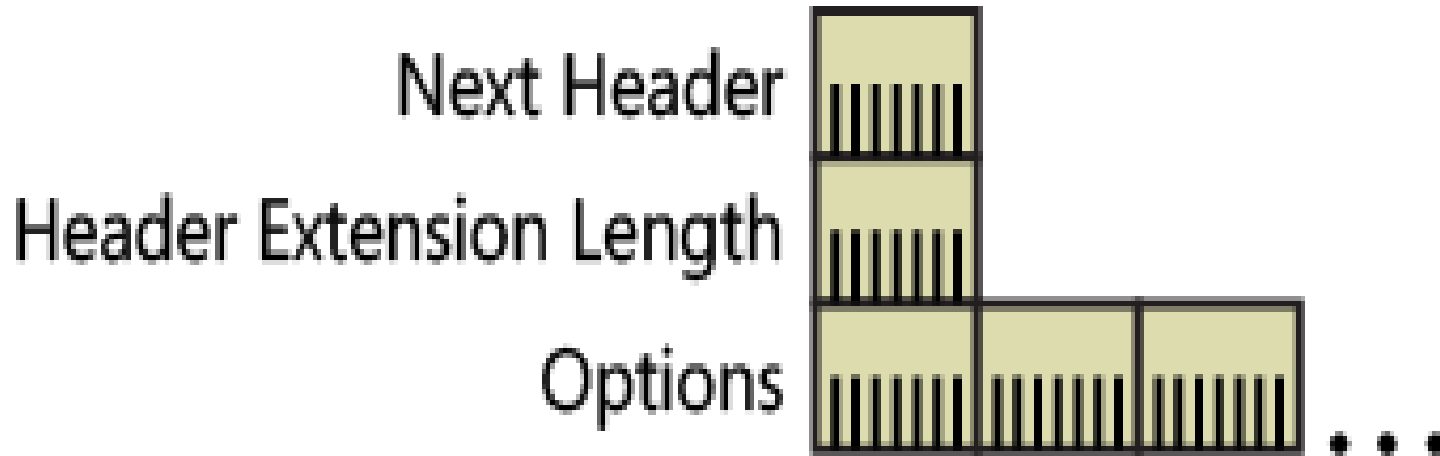
- The Destination Options header is used to specify packet delivery parameters for either intermediate destinations or the final destination.
- This header is identified by the value of 60 in the previous header's Next Header field.
- The Destination Options header has the same structure as the Hop-by-Hop Options header.
- This has a “Destination Options” header, as defined in RFC 2460

Purpose of the Protocol

- If Destination Header is present before Routing Header then it will be examined by all intermediate nodes specified in the routing header.
- If Destination Header is present just above the Upper layer then it will be examined only by the Destination node.

Structure of the Destination Option for IPv6

- The structure of the Destination Options header



Structure of the Destination Option for IPv6

- Next Header - 8-bit selector. Identifies the type of header immediately following the Destination Options header. Uses the same values as the Ipv4 Protocol field [RFC-1700 et seq.].
- Header Extension Length - 8-bit unsigned integer. Length of the Destination Options header in 8-octet units, not including the first 8 octets.
- Options - Variable-length field, of length such that the complete Destination Options header is an integer multiple of 8 octets long. Contains one or more TLV-encoded options

Test 5 of firewall6 sends this packet

No.	Time	Source	Destination	Protocol	Length	Info
5	3.701387000	2::2	2::1	TCP	82	21005 > 135 [SYN] Seq=0 Win=16440 Len=0
6	3.701641000	2::1	2::2	TCP	78	135 > 21005 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1440

.... 0000 0000 0000 0000 0101 = FlowLabel: 0x00000005

Payload length: 28

Next header: IPv6 destination option (60)

Hop limit: 64

Source: 2::2 (2::2)

Destination: 2::1 (2::1)

[Source GeoIP: Unknown]

[Destination GeoIP: Unknown]

[-] Destination Option

 Next header: TCP (6)

 Length: 0 (8 bytes)

[-] IPv6 Option (Pad1)

 Type: Pad1 (0)

 Pad1

[-] IPv6 Option (Pad1)

 Type: Pad1 (0)

 Pad1

[-] IPv6 Option (Pad1)

 Type: Pad1 (0)

 Pad1

[+] Transmission Control Protocol, Src Port: 21005 (21005), Dst Port: 135 (135), Seq: 0, Len: 0

0000 44 2a 60 f6 27 8a 00 0c 29 30 76 b5 86 dd 60 00 D*`.'...)0v...`

0010 00 05 00 1c 3c 40 00 02 00 00 00 00 00 00 00@.....

0020 00 00 00 00 00 02 00 02 00 00 00 00 00 00 00R.

0030 00 00 00 00 00 01 06 00 00 00 00 00 00 52 0dR...

0040 00 87 00 00 52 0d 00 00 00 00 50 02 40 38 cb 02R... ..P.@8..

0050 00 00 ..

Usage of Destination Option for IPv6

- If a Routing header is present, it specifies delivery or processing options at each intermediate destination.
- It specifies delivery or processing options at the final destination.

Conclusions

- Ipv6 Destination Option headers add features and flexibility.
- Destination Options Header within Ipv6 allows the binding messages to only being examined at the ultimate destination. Hence, the intermediate routers between source and destination are spared the performance degradation caused by examining options contained in the binding messages.

Thank You