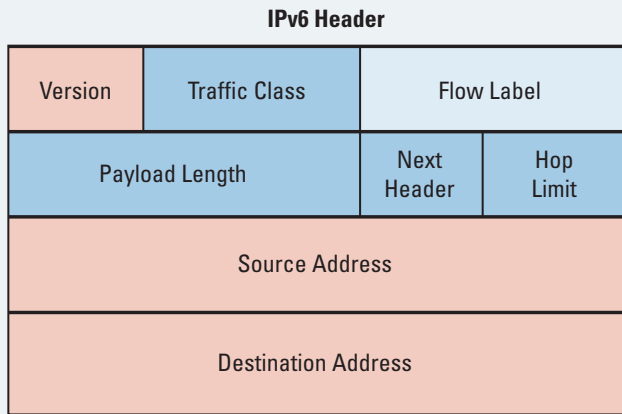
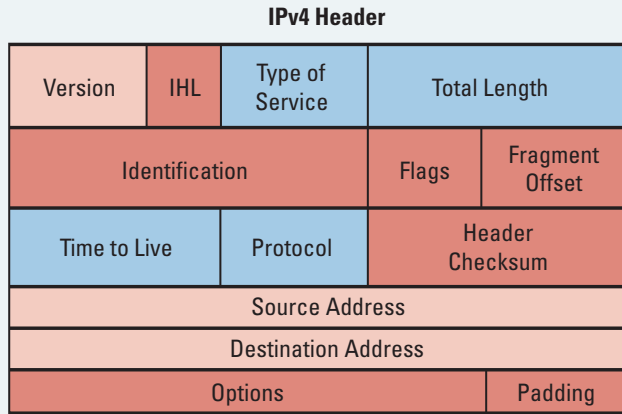


# IPv6 HEADERS AT-A-GLANCE

## RFC 2460

There are several changes to the header format with IPv6. The diagrams below give a high-level view of the basic comparison between the IPv4 and IPv6 headers.

Figure 1



- Field's name kept from IPv4 to IPv6
- Fields not kept in IPv6
- Name and position changed in IPv6
- New field in IPv6

## Streamlined

- Fragmentation fields moved out of base header
- IP options moved out of base header
- Header checksum eliminated
- Header length field eliminated
- Length field excludes IPv6 header
- Alignment changed from 32 to 64 bits

## Revised

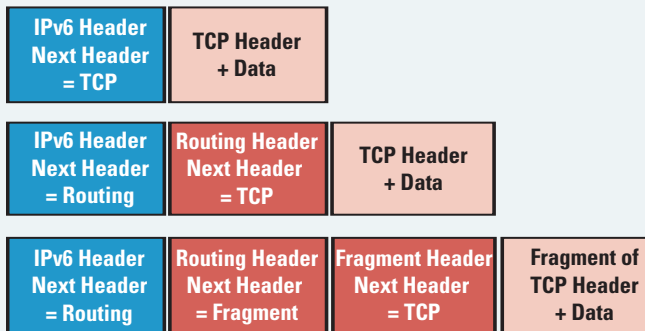
- Time to live -> hop limit
- Protocol -> next header
- Precedence and TOS -> traffic class
- Addresses increased 32 bits -> 128 bits

## Extended

- Flow label field added

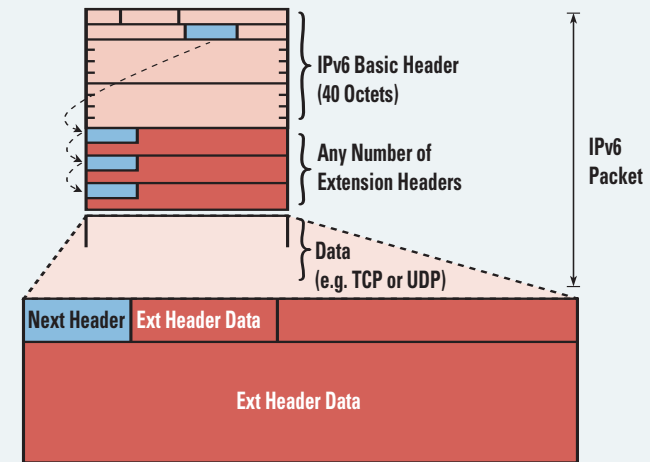
Figure 2

## IPv6 Header Options



Header options processed only by node are identified in the IPv6 destination address field, except the hop-by-hop option. Eliminates the IPv4 40-octet limit on options. In IPv6, the limit is the total packet size or max valued from the path MTU. Headers are linked together by populating the next header (8-bit) field.

Figure 3



When more than one extension header is used in the same packet, it is recommended that those headers appear in the following order:

- IPv6 header
- Hop-by-hop options header
- Destination options header (routing header associations)
- Routing header
- Fragment header
- Authentication header
- Encapsulating security payload header
- Destination options header (options processed by final destination)
- Upper-layer header

**Table 1.** Summary of Header Types and Values

Header Type	Next Header Value
Hop-by-Hop Options Header	0
Destination Option Header	60
Routing Header	43
Fragment Header	44
Authentication Header (RFC 1826) and ESP Header (RFC 1827)	51
Upper-Layer Header	6 (TCP) 17 (UDP)
Mobility Header	135