

# Wireshark analysis ipv6

```
Internet Protocol Version 6, Src: fe80::265d:c773:fb60:e5b4, Dst: fe80::1
  0110 .... = Version: 6
  ▾ .... 0000 0000 .... = Traffic Class: 0x00 (DSCP: CS0, ECN: Not-ECT)
    .... 0000 00.. .... = Differentiated Services Codepoint: Default (0)
    .... ..00 .... = Explicit Congestion Notification: Not ECN-Capable Transport (0)
  .... 0000 0000 0000 0000 0000 = Flow Label: 0x000000
  Payload Length: 32
  Next Header: ICMPv6 (58)
  Hop Limit: 255
  Source Address: fe80::265d:c773:fb60:e5b4
  Destination Address: fe80::1
```

The IPv6 header is a streamlined, fixed-length 40-byte structure designed to facilitate efficient packet processing and routing in modern networks. Here is a detailed breakdown of the IPv6 header fields and their functions:

## IPv6 Header Format

### 1. Version (4 bits):

- Indicates the IP version. For IPv6, this value is 6.

### 2. Traffic Class (8 bits):

- Similar to the IPv4 Type of Service field, it is used to prioritize packets and manage traffic flow. It includes the Differentiated Services (DS) and Explicit Congestion Notification (ECN) fields.

### 3. Flow Label (20 bits):

- Used to label sequences of packets belonging to the same flow, which can be useful for Quality of Service (QoS) and real-time applications.

### 4. Payload Length (16 bits):

- Specifies the length of the payload (the data following the header) in bytes. The maximum value is 65,535 bytes, but a special "Jumbo Payload" option can be used for larger payloads.

### 5. Next Header (8 bits):

- Identifies the type of header immediately following the IPv6 header. It can specify protocols such as TCP, UDP, or an extension header. This field is similar to the Protocol field in IPv4.

**6. Hop Limit (8 bits):**

- Specifies the maximum number of hops (routers) the packet can pass through. Each router decrements this value by 1, and if it reaches 0, the packet is discarded. This is equivalent to the Time to Live (TTL) field in IPv4.

**7. Source Address (128 bits):**

- The IPv6 address of the packet's sender.

**8. Destination Address (128 bits):**

- The IPv6 address of the packet's intended receiver.