**IPv6 Packet**

- An IPv6 address is 128 bits

- Every additional bit doubles the number of possible addresses.

**A. IPv6 Header**

|  |  |
| --- | --- |
| IP Header | Payload |
| 40 bytes | 0-1460 bytes |
| Packet (40-1500 bytes) | |

**B. IPv4 Header**

|  |  |
| --- | --- |
| IP Header | Payload |
| 20 bytes + Options | Typically 0-1480 bytes |
| Packet (20-1500 bytes) | |

**C. IPv6 Header Frame**

A white box with green text

AI-generated content may be incorrect.

- Version (4bits): Identifies the IP protocol version as IPv6 (always 6).

- Traffic Class (8 bits): Indicates packet priority and quality of service (QoS) requirements. Similar to DiffServ in IPv4.

- Low Label (20 bits): Allows routers to identify packets belonging to the same flow, for specific handling.

- Payload Length (16 bits): Specifies the size of the payload (data) following the IPv6 header.

- Next Header (8 bits): Identifies the type of header that follows, which could be an upper-layer protocol (like TCP or UDP) or an extension header.

- Hop Limit (8 bits): Similar to TTL in IPv4, it limits the number of hops a packet can take, preventing infinite loops.

- Source Address (128 bits): The IPv6 address of the sender.

- Destination Address (128 bits): The IPv6 address of the intended recipient.