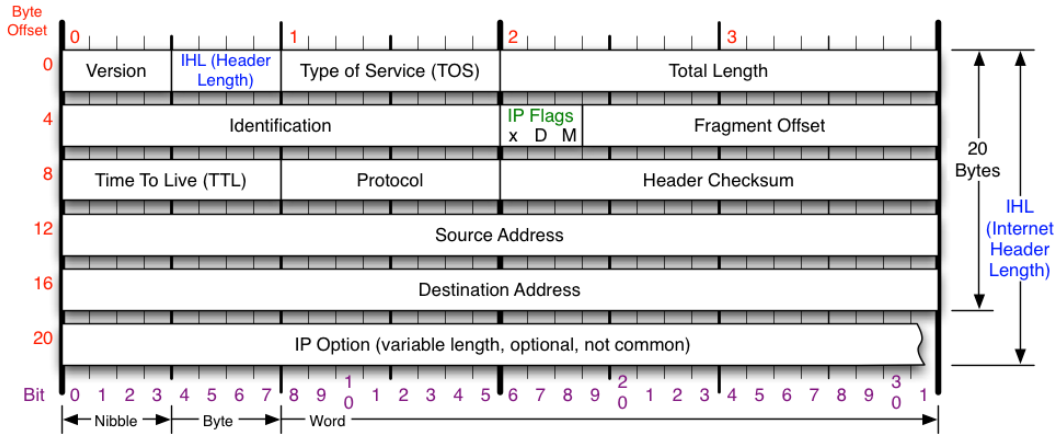


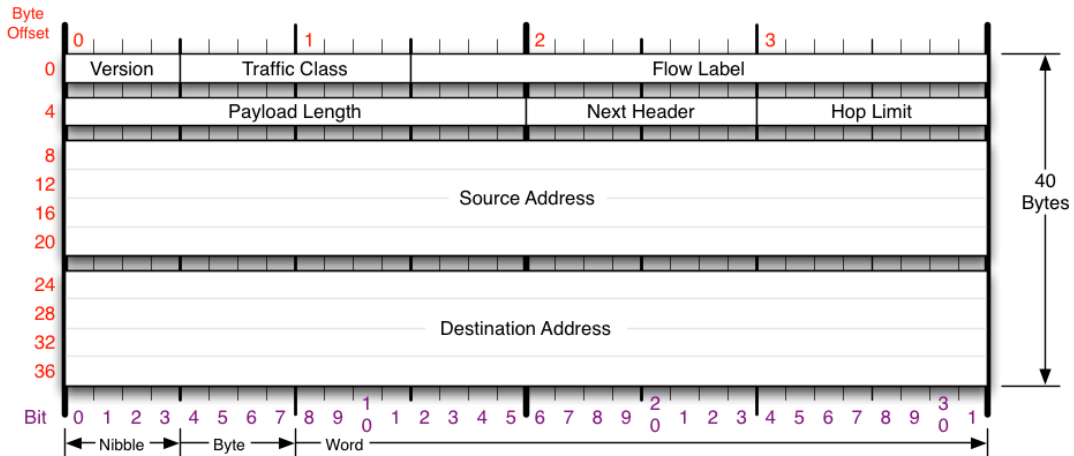
# IPv4 Header



<b>Version</b> Version of IP Protocol. 4 and 6 are valid. This diagram represents version 4 structure only.	<b>Protocol</b> IP Protocol ID. Including (but not limited to): 1 ICMP 17 UDP 57 SKIP 2 IGMP 47 GRE 88 EIGRP 6 TCP 50 ESP 89 OSPF 9 IGRP 51 AH 115 L2TP	<b>Fragment Offset</b> Fragment offset from start of IP datagram. Measured in 8 byte (2 words, 64 bits) increments. If IP datagram is fragmented, fragment size (Total Length) must be a multiple of 8 bytes.	<b>IP Flags</b> x D M x 0x80 reserved (evil bit) D 0x40 Do Not Fragment M 0x20 More Fragments follow
<b>Header Length</b> Number of 32-bit words in TCP header, minimum value of 5. Multiply by 4 to get byte count.	<b>Total Length</b> Total length of IP datagram, or IP fragment if fragmented. Measured in Bytes.	<b>Header Checksum</b> Checksum of entire IP header	<b>RFC 791</b> Please refer to RFC 791 for the complete Internet Protocol (IP) Specification.

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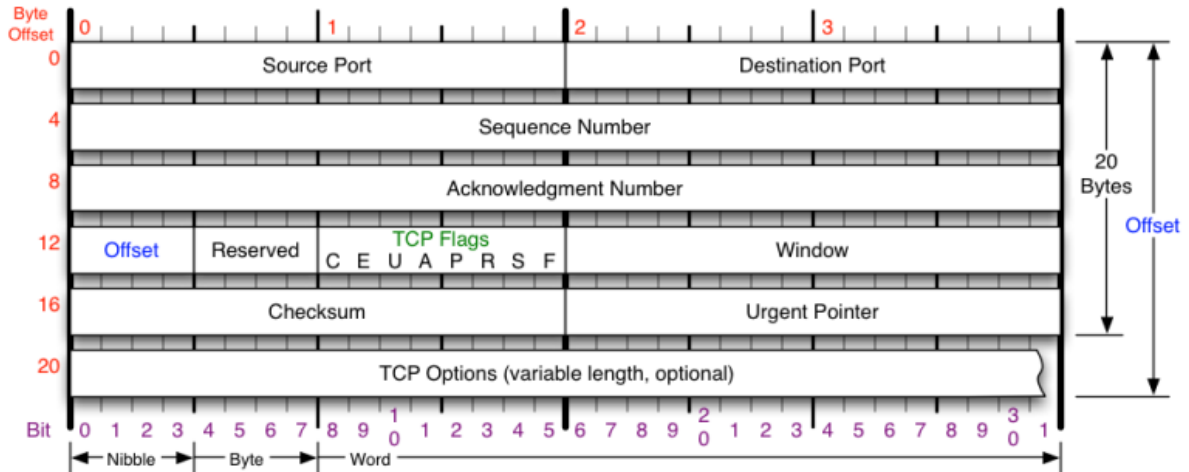
# IPv6 Header



<b>Version</b> Version of IP Protocol. 4 and 6 are valid. This diagram represents version 6 structure only.	<b>Payload Length</b> 16-bit unsigned integer. Length of the IPv6 payload, i.e., the rest of the packet following this IPv6 header, in octets. Any extension headers are considered part of the payload.	<b>Next Header</b> 8-bit selector. Identifies the type of header immediately following the IPv6 header. Uses the same values as the IPv4 Protocol field.	<b>Hop Limit</b> 8-bit unsigned integer. Decrement by 1 by each node that forwards the packet. The packet is discarded if Hop Limit is decremented to zero.
<b>Traffic Class</b> 8 bit traffic class field.	<b>Source Address</b> 128-bit address of the originator of the packet.	<b>Destination Address</b> 128-bit address of the intended recipient of the packet (possibly not the ultimate recipient, if a Routing header is present).	<b>RFC 2460</b> Please refer to RFC 2460 for the complete Internet Protocol version 6 (IPv6) Specification.
<b>Flow Label</b> 20 bit flow label.			

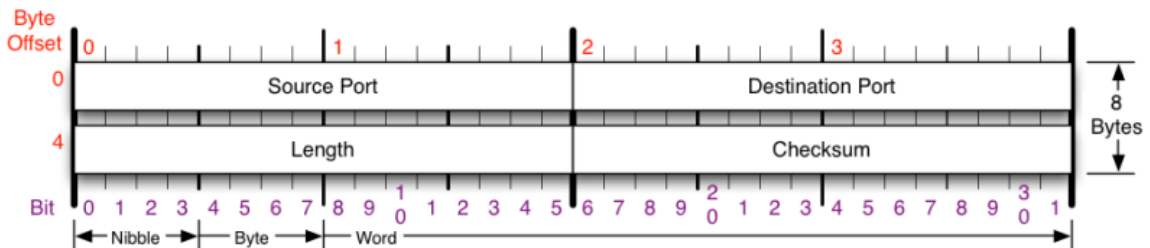
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## TCP header



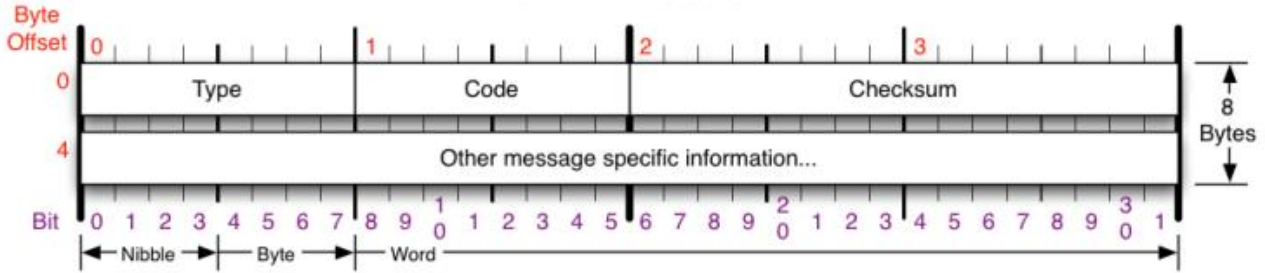
TCP Flags	Congestion Notification	TCP Options	Offset																											
C E U A P R S F	ECN (Explicit Congestion Notification). See RFC 3168 for full details, valid states below.	0 End of Options List 1 No Operation (NOP, Pad) 2 Maximum segment size 3 Window Scale 4 Selective ACK ok 8 Timestamp	Number of 32-bit words in TCP header, minimum value of 5. Multiply by 4 to get byte count.																											
<p>Congestion Window</p> <p>C 0x80 Reduced (CWR)</p> <p>E 0x40 ECN Echo (ECE)</p> <p>U 0x20 Urgent</p> <p>A 0x10 Ack</p> <p>P 0x08 Push</p> <p>R 0x04 Reset</p> <p>S 0x02 Syn</p> <p>F 0x01 Fin</p>	<table border="1"> <thead> <tr> <th>Packet State</th> <th>DSB</th> <th>ECN bits</th> </tr> </thead> <tbody> <tr> <td>Syn</td> <td>00</td> <td>11</td> </tr> <tr> <td>Syn-Ack</td> <td>00</td> <td>01</td> </tr> <tr> <td>Ack</td> <td>01</td> <td>00</td> </tr> <tr> <td>No Congestion</td> <td>01</td> <td>00</td> </tr> <tr> <td>No Congestion</td> <td>10</td> <td>00</td> </tr> <tr> <td>Congestion</td> <td>11</td> <td>00</td> </tr> <tr> <td>Receiver Response</td> <td>11</td> <td>01</td> </tr> <tr> <td>Sender Response</td> <td>11</td> <td>11</td> </tr> </tbody> </table>	Packet State	DSB	ECN bits	Syn	00	11	Syn-Ack	00	01	Ack	01	00	No Congestion	01	00	No Congestion	10	00	Congestion	11	00	Receiver Response	11	01	Sender Response	11	11	<p>Checksum</p> <p>Checksum of entire TCP segment and pseudo header (parts of IP header)</p>	<p>RFC 793</p> <p>Please refer to RFC 793 for the complete Transmission Control Protocol (TCP) Specification.</p>
Packet State	DSB	ECN bits																												
Syn	00	11																												
Syn-Ack	00	01																												
Ack	01	00																												
No Congestion	01	00																												
No Congestion	10	00																												
Congestion	11	00																												
Receiver Response	11	01																												
Sender Response	11	11																												

## UDP header



Checksum	RFC 768
Checksum of entire UDP segment and pseudo header (parts of IP header)	Please refer to RFC 768 for the complete User Datagram Protocol (UDP) Specification.

## ICMP header



ICMP Message Types			Checksum
<b>Type</b>	<b>Code/Name</b>	<b>Type</b>	<b>Code/Name</b>
0	Echo Reply	3	Destination Unreachable (continued)
3	Destination Unreachable	11	Time Exceeded
0	Net Unreachable	12	0 TTL Exceeded
1	Host Unreachable	13	1 Fragment Reassembly Time Exceeded
2	Protocol Unreachable	12	Parameter Problem
3	Port Unreachable	0	Pointer Problem
4	Fragmentation required, and DF set	1	Missing a Required Operand
5	Source Route Failed	2	Bad Length
6	Destination Network Unknown	13	Timestamp
7	Destination Host Unknown	14	Timestamp Reply
8	Source Host Isolated	15	Information Request
9	Network Administratively Prohibited	16	Information Reply
10	Host Administratively Prohibited	17	Address Mask Request
11	Network Unreachable for TOS	18	Address Mask Reply
		30	Traceroute
			Checksum of ICMP header
			<b>RFC 792</b>
			Please refer to RFC 792 for the Internet Control Message protocol (ICMP) specification.

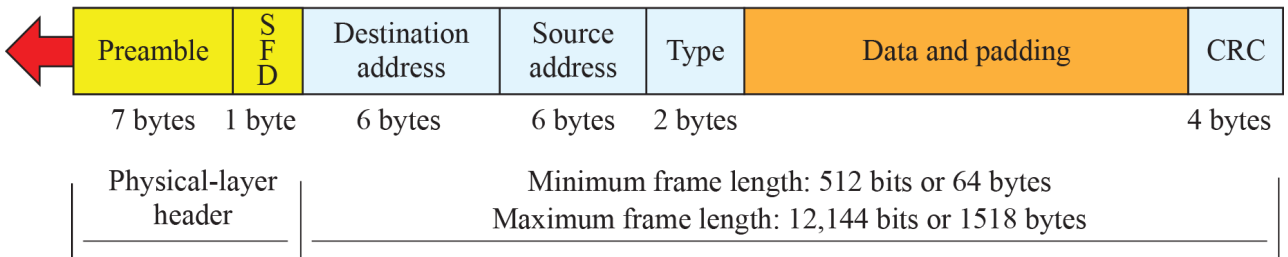
## Ethernet header

**Preamble:** 56 bits of alternating 1s and 0s

**SFD:** Start frame delimiter, flag (10101011)

Minimum payload length: 46 bytes

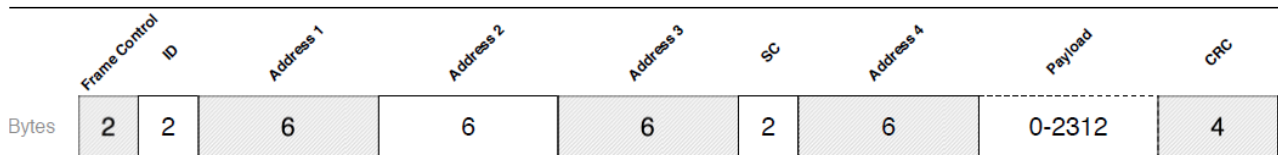
Maximum payload length: 1500 bytes



## The TYPE field

CODE (HEXADECIMAL)	MEANS
0800	IPv4
0806	ARP
86dd	IPv6

## IEEE 802.11 header



SC = Sequence control

## ARP header

