Byte Offset

	0		1		2		3

0 — Version | IHL (Header Length) | Type of Service (TOS) | Total Length

4 — Identification | IP Flags x D M | Fragment Offset

8 — Time To Live (TTL) | Protocol | Header Checksum

12 — Source Address

16 — Destination Address

20 — IP Option (variable length, optional, not common)

20 Bytes

IHL (Internet Header Length)

Bit 0 1 2 3 4 5 6 7 8 9 1 0 1 2 3 4 5 6 7 8 9 2 0 1 2 3 4 5 6 7 8 9 3 0 1

Nibble — Byte — Word

Version

Version of IP Protocol. 4 and 6 are valid. This diagram represents version 4 structure only.

Header Length

Number of 32-bit words in TCP header, minimum value of 5. Multiply by 4 to get byte count.

Protocol

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

Total Length

Total length of IP datagram, or IP fragment if fragmented. Measured in Bytes.

Fragment Offset

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.

Header Checksum

Checksum of entire IP header

IP Flags

x D M

x 0x80 reserved (evil bit)
D 0x40 Do Not Fragment
M 0x20 More Fragments follow

RFC 791

Please refer to RFC 791 for the complete Internet Protocol (IP) Specification.