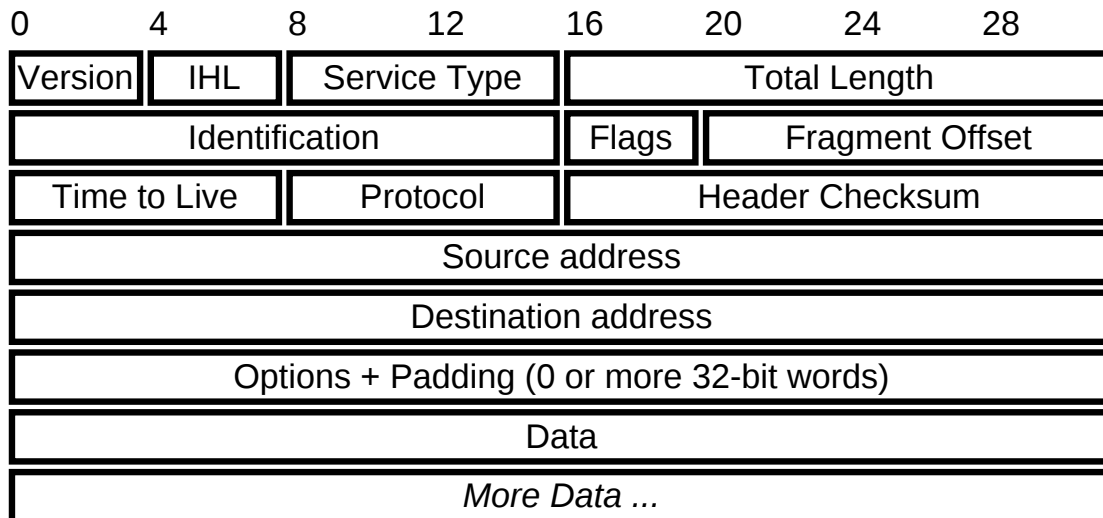


# IPv4 Datagram Format



## Header Contents

### Version

Version of the IP protocol which determines how to interpret the header. Currently the only permitted values are 4 (0100) or 6 (0110). The header format shown here is valid for IPv4 only.

### IHL

Length of header as a number of 32-bit words

### Type of service

This field is often ignored by current routers but is meant to allow traffic to be prioritised (among other things).

### Total Length

The length of the entire datagram including header and data: maximum permitted is 65,535 bytes or 64K.

### Identification, Flags and Fragment Offset

These values allow datagrams to be fragmented for transmission and reassembled at the destination

### Time to live

An integer which is decremented at each router "hop"; supposed to be interpreted as a number of seconds but more often treated as a "hop count". If the value reaches zero the datagram is discarded and an ICMP message is sent to the source host.

### Protocol

Identifies the transport-layer protocol which will interpret the *Data* section. This will typically be TCP or UDP but other values are possible. Protocols are identified by a

unique number as listed in an online database at [www.iana.org](http://www.iana.org).

### **Header checksum**

This is used to verify the header, and is recomputed at each router hop. This field is left out of IPv6 which relies on the transport layer for verification.

### **Addresses and Options**

These are 32-bit **IP addresses** which identify the network and host address. Note that IP does not have to specify addresses of any intermediate nodes; this can be left to the router. Routing requirements can also be specified in the Options field, along with options to do with security and debugging.