20181CSE0621

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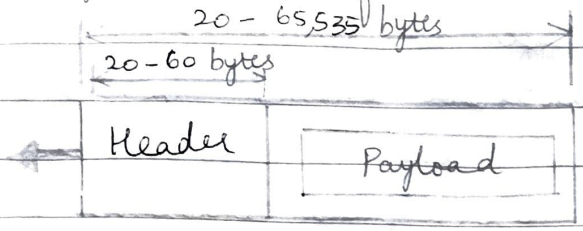
5-CSE-10

Part-B

8.4] IPV4 Header format :-



a] Datagram.

b] Header :-

0	4	8	16	31
VER (4 bits)	HLEN (4 bits)	Service Type (8 bits)	Total length (16 bits)	
Identification (16 bits)			Flags (3 bits)	Fragmentation Offset (13 bits)
Time-to-live (8 bits)	Protocol (8 bits)		Header Checksum (16 bits)	
Source IP address (32 bits)				
Destination IP address (32 bits)				
Options + Padding (0-40 bytes)				

Legend :

VER : Version Number
HLEN : Header length
Byte : 8 bits

Flags : [ ] [D] [M]

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Saikat

- **Version**: Version of the IP protocol (4 bits) in which 4 is for IPV4.
- **HLEN**: IP header length (4 bits) which is number of 32 bit words in the header. The minimum value for this is 5 and max is 15.
- **Service Type**:- Referred to as Type of Service (TOS) defining how datagram should be handled. Low delay, high throughput, reliability (8 bits).
- **Total Length**:- 16 bit field consisting of length of header + data (16 bits) which has minimum value of 20 bytes & max 65,535 bytes.

  Length of data = Total length − (HLEN) × 4
- **Identification, flags, fragment offset**:- Related to the fragmentation of the IP datagram when the size of datagram is larger than the underlying network can carry.
- **Time to live**:- Datagram's lifetime (8 bits), it prevents the datagram to loop through the network by restricting the number of ~~hops t~~ hops taken by a packet before delivering to the destination.
- **Protocol**: This 8 bit field has name of the protocol to which the data should be passed. The corresponding protocol number is inserted in this field.
- **Header checksum**: IP is not a reliable protocol. Hence a checksum is needed to check errors in the datagram header.