

## Packet:

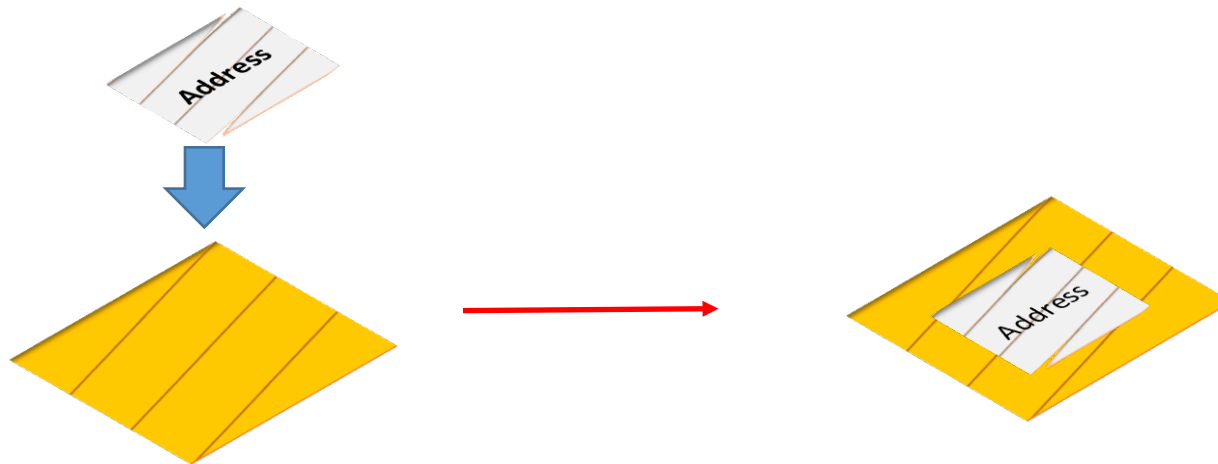
- A packet contains the information exchanged over the network.
- It also contains the details of the sending and receiving computers.



Image Source: [http://www.webreference.com/programming/php\\_mysql/index.html](http://www.webreference.com/programming/php_mysql/index.html)

## Packet Formation:

- When the information is sent (in form of a data packet) over the network, appropriate addressing information should be provided for the packet to reach the desired destination.
- The process of adding address information is similar to what is done for the letter mails. For example, the apartment number, street address and city information is required for the letter mail to reach the destination.



## TCP/IP protocol suite

- System of rules that allows computers, smartphones and embedded devices to communicate with each other over the network.
- The process of taking the data from applications like web browser, segmenting it into small chunks if required, adding the addressing information (Port, IP and MAC), and sending out through the network interface card is performed as per the TCP/IP protocol suite.
- Combination of TCP & IP protocol suites:
  - TCP : Transmission Control Protocol
  - IP: Internet Protocol
- Based on four layer reference model.

Host

Application Layer

Applications work at this layer, e.g. HTML, FTP, HTTP

Transport Layer

Reliable flow of data packets between two hosts

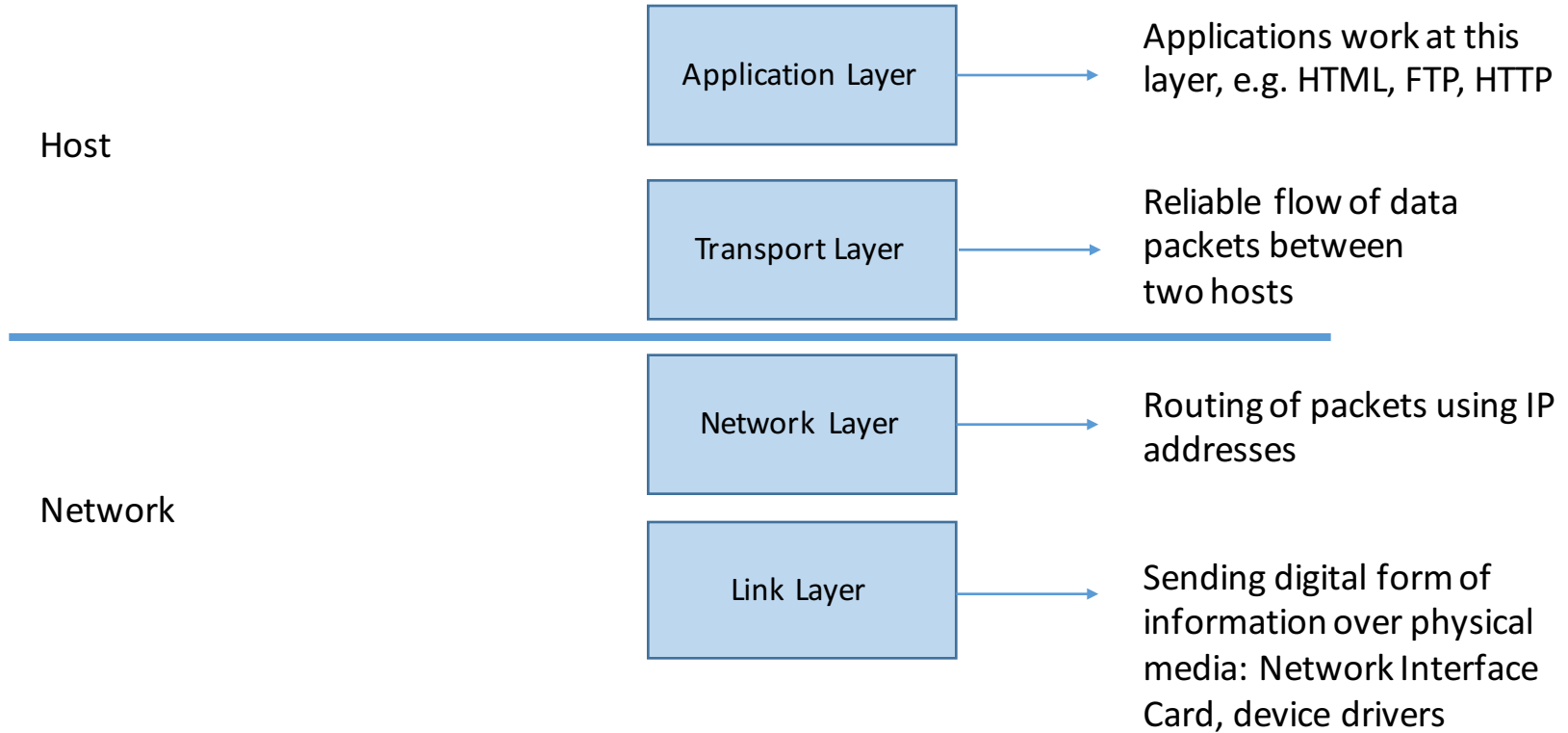
Network

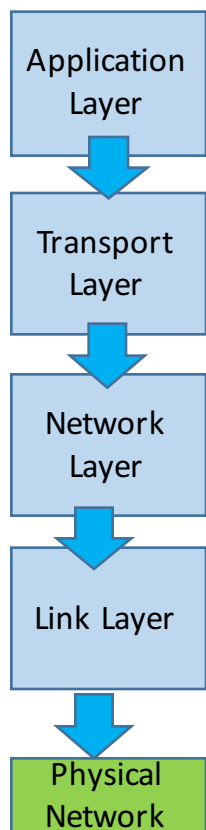
Network Layer

Routing of packets using IP addresses

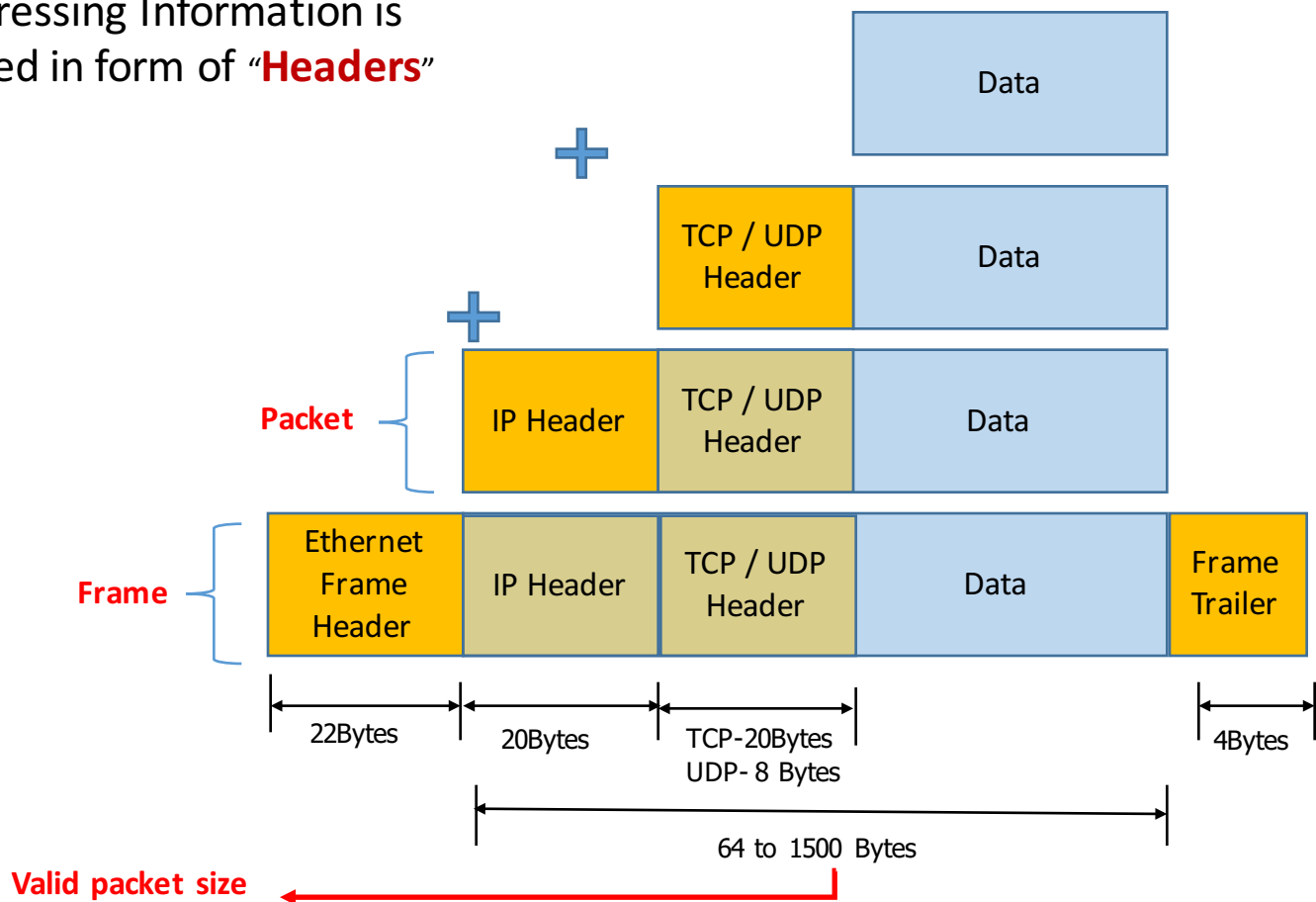
Link Layer

Sending digital form of information over physical media: Network Interface Card, device drivers





Addressing Information is added in form of **“Headers”**



# Headers:

- Headers contains addressing information and other attributes which are necessary to route the frames in the network and process the packet at receiving host.

## TCP Header

0		4	10	16	19	24	31
Source Port				Destination Port			
Sequence Number							
Acknowledgment Number							
Len	Reserved	Flags		Window			
Checksum				Urgent Pointer			

Total Size = 20 Bytes

## IP Header

0	4	8	16	19	24	31
Version	Len	TOS	Total Length			
Identification			Flags	Fragment Offset		
TTL		Protocol	Header Checksum			
Source Internet Address						
Destination Internet Address						

Total Size = 20 Bytes

## UDP Header

Source Port	Destination Port
Length	Checksum

Total Size = 8 Bytes