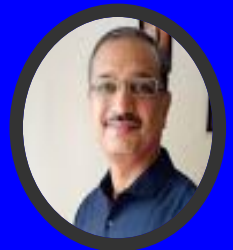# Lesson 1
Key-Terms Meanings: Internet Connectivity Principles

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Header Words

- Header words are placed as per the actions required at succeeding stages during communication from Application layer

- Each header word at a layer consists of one or more header fields

- The header fields specify the actions as per the protocol used

Header fields

- Fields specify a set of parameters encoded in a header

- Parameters and their encoding as per the protocol used at that layer

- For example, fourth word header field for 32-bit Source IP address in network layer using IP

Protocol Header Field Example

- Header field means bits in a header word placed at appropriate bit place, for example, place between bit 0 and bit 31 when a word has 32-bits.

- First word fields b31-b16 for IP packet length in bytes, b15-b4 Service type and precedence and b3-b0 for IP version

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IP Header

- Header fields consist of parameters and their encodings which are as per the IP protocol

- An internet layer protocol at a source or destination in TCP/IP suite of protocols

TCP Header

- Header fields consist of parameters and their encoding which are as per the TCP protocol

- TCP (transport layer protocol) at a source or destination transport layers

TCP Stream

- **A** data stack (a sequence of bytes or words) from source end transport layer to destination end transport layer, or

- An acknowledgement TCP stream data stack from destination end transport layer to source end transport layer

Port

- An interface (Software) to the network which uses a protocol for sending a data stack at the output of application layer to the lower layer(s)

- The port receives a data stack at the input at the receiver end application layer. Each port (number) at Application layer uses distinct protocol.

Port Number

- An assigned number according to protocol used for transmission and reception at an application layer

- For example, port number 80 for HTTP protocol at the application layer

Ports in TCP/IP suite

- A port uses a protocol for sending and receiving messages

- Consists of numbers of Application layer protocols, for example, HTTP, HTTPS, FTP, Telnet and Others

- A TCP/IP message must be sent from right port at transmission end and to the right port at the receiver end

Packet

- A fixed maximum size set of bytes which communicates from internet layer to router and from one router to another till the packet reaches at physical/data link layer at the receiver end

- Packet routes through a path decided at each router among the available paths at an instant

IP Packet

- A data stack from internet layer and between the routers to other end internet layer

- The stack includes IP header at top

- The IP packet communicates from a source IP address through the routers to the destination IP address

Socket

- A interface (software) to the network that sends (i) a data stack at the application output using a port protocol to the lower layer and (ii) using an IP address to the network for another socket at receiver end

- A socket assigned a port number and IP address

Host

- A device or node that connects to a network of computers

- Host provides the information, resources, services, and Applications to the other nodes on the network.

- The network layer assigns a host address to each host

IP Host

- One that uses the Internet Protocol suite

- An IP host has one or more IP addresses for the network interfaces

Network Interface

- A system software component or hardware for facilitating communication between two protocol layers or computers or nodes in a network

- The interface software-component provides standard functions, for example, connection establishment or close or message passing.

Network Interface Examples

- Port (software or hardware component) or network interface device or socket

- The interface can be addressed by a unique port number or socket name or node id.

Summary

We learnt meanings of:

- Header words and Fields

- Port

- Host

- Packet

- Socket

- Network Interface