



# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35**

**An Autonomous Institution**

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Grade

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Chennai



## **DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

### **19ECE308- WIRELESS TECHNOLOGIES FOR IOT**

III ECE / VI SEMESTER

UNIT 2 – for IoT/M2M devices. UNITII ARCHITECTURE AND DESIGN

PRINCIPLES FOR IOT

### **TOPIC 1 –Internet connectivity**



# 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



# 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 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



# 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
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# 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.





# Summary



We learnt meanings of:

- Header words and Fields
- Port
- Host
- Packet
- Socket
- Network Interface