

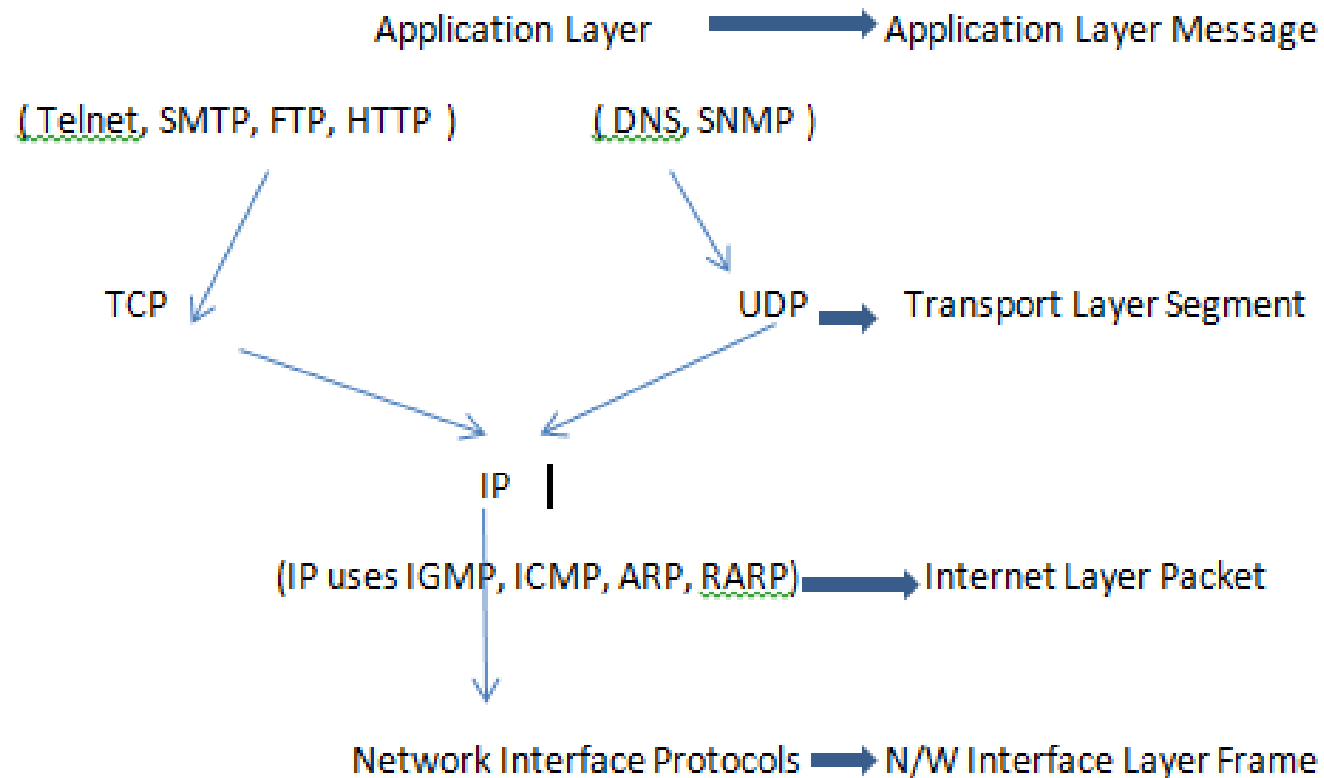
# Mobile Transport Protocol

Unit – II

# Mobile Transport Layer

- TCP de-facto standard transport layer protocol for applications require guaranteed message delivery
- Connection-oriented protocol
- User Datagram Protocol (UDP) connection-less
- Does not guarantee reliable data delivery
- TCP, UDP when applied to mobile networks operates highly in-efficient
- Require several adaptations to be used in wireless networks

# Overview of TCP/IP



# TCP/IP Protocol Suite

- Developed by DARPA, 1969
- To provide seamless communication across an internetwork of large different networks
- It's a collection of large number of protocols
- Named after 2 important protocol TCP and IP
- It's a 4-layer stack
- Layers are — application layer, transport layer, Internet layer and network interface layer
- Network interface layer does not specify any protocol to be used (but allows standard protocol to be used)

# Contd...

- **Application Layer Protocol**

- End users and application programmer use this layer
- Contains application layer protocols
- Use services provide by lower layers
- Used to send message to another application in same network or remote network
- Make use of transport layer protocol to pass the message

- **Transport Layer Protocol**

- Converts message into small parts – segments
  - Pass segments to Internet layer protocol

# Contd...

- **Internet Layer Protocol**
  - Attaches info to the segment - destination address
  - Forms one or more IP packets
  - Passes packets to network interface layer
- **Network Interface Layer Protocol**
  - Turns packets into frames
  - Additional info (like checksum) added
  - Transmit frames to the network

# Contd...

- Reverse process takes place when frames arrives at a host
- Each layer strips of info added by the corresponding layer at sender side, as it ascends to higher layer
- Application Layer deals with messages
- Transport Layer – Segments
- Internet Layer – Packets
- Data link Layer – Frames
- In internet based applications using C/S – server provide services, client typically a browser
- TCP is the standard transport layer protocol

# Terminologies of TCP/IP

- **TCP/IP**
- **Sender side**
  - Break message, add sequence no. and make it segments
  - Passes to lower layer for transmission
- **Receiver side**
  - Assembles segments, reconstruct message
  - Reliable protocol, so if packet lost or corrupted, request sender for re-transmission



# Contd...

- **IP**
- **Sender Side**
  - Responsible for constructing packets from segments
  - Add destination address pass to lower layer for transmission
- **Receiver Side**
  - Deconstruct segment, passes to transport layer
- **HTTP**
  - Used for communication between web server and web client

# Contd...

- **SMTP (Simple Mail Transfer Protocol)**
  - Sending and receiving E-mails by a mail client
- **MIME (Multipurpose Internet Mail Extension)**
  - Lets SMTP to encode multimedia files (voice, picture, binary files) in emails
  - Transmit across TCP/IP networks
  - SMTP can handle only text message
  - Converts binary data to ASCII format
- **FTP (File Transfer Protocol)**
  - Transfer files between computers

# Contd...

- **SNMP (Simple Network Management Protocol)**
  - Administration and management of computer networks
  - Network Manager tool is based on this, it monitors network performance
- **ICMP (Internet Control Message Protocol)**
  - Runs on host and routers
  - Used for reporting errors
- **ARP (Address Resolution Protocol)**
  - Used by IP to find the hardware address (stored in NIC)
  - Also called as MAC address or Ethernet Hardware Address(EHA)

# Contd...

- **DNS (Domain Name System/Server/Service)**
  - Translates domain name into IP address
  - DNS is a network of DNS servers, searches all servers till it is resolved
- **IP Addresses**
  - Each computer should have an IP address to be connected to internet
  - Packets get routed based to destination based on their IP addresses

# Contd...

- **RARP (Reverse Address Resolution Protocol)**
  - Used to find IP address based on MAC address
- **BOOTP (Boot Protocol)**
  - Used for booting diskless computer over a network
  - Diskless Computer does not have OS
  - BOOTP helps to download from server and boot over the network
- **Routers**
  - Route packets to destination based on IP address via other routers

# Contd...

- **IGMP (Internet Group Message Protocol)**
  - Used to setup multicast groups to exchange information with local routers
  - Multicast group used to setup efficient communication of video streams and gaming applications
  - Router use IGMP to check the activeness of its member