Tutorial 2

Monday, February 8, 2021 12:56 PM

1. n-layer protocol hierarchy
   M byte messages
   Each layer h-byte header added
   Fraction of bandwidth filled with headers = nh/nh+M

2. If acknowledgement for every packet, time and resources wasted. Good approach when channel is not reliable. (**individual acknowledgement**)

   If acknowledgement sent when the entire file received, no resources wasted. When channel is reliable. If one packet is lost, the entire file must be sent (since we do not know which packet is lost)
   (**cumulative acknowledgement**)

   ARQ

3. Network layer via IP address (source to destination)
   Host to Host (same network) - MAC address
   Application to application - Port number

4. Data encapsulation:

a. Transport layer: segmentation, flow control, error control **TRUE**
b. Data unit in network layer-> packet
c. Frame --> segment
d. TRUE
e. Physical layer converts voltage to transmission

5. Application layer
6. Physical theft of data
   - MAC address spoofing (security concern, taken care by the presentation layer)
   - Route discovery: network layer
   - Non-existent authorization: handled by session layer
7. OSI model
8. Network layer (or data link, physical layer)
9. Time divided into multiple frames, each frame into slots
   - Host A ------- Host B
   - Capacity of channel: 1.536 Mb/s
   - 24 users (slots/s)
   - 500ms to establish end to end circuit
   - File size: 640,000bits

Total time = setup + transfer + termination
= 500ms + transfer time + 0

Divide bandwidth by 24
1536000/24 = 64000b/s

To be completed after discussion in lecture