

EE450: Sample Problems on Fragmentation  
(No solutions will be posted)

1)

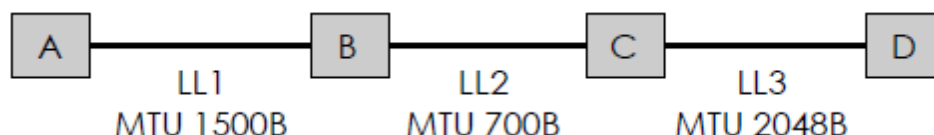
A message consisting of 220 bytes is sent to TCP layer and down to the Internet layer. Each layer appends a header of 20 bytes. The packets are then Transmitted over a network which has an MTU of 92 Bytes.

- a. Determine the number of bytes including header delivered to the network layer protocol at the destination
- b. With the aid of diagram show the fragmentation details including the fragmentation offset (FO), more flag (MF) and total length (TL)

- 2) Suppose an IP packet arrives at a gateway and is to be forwarded to a packet switched network having a maximum transfer unit (MTU) of 576 bytes. The IP packet has an IP header of 20 bytes and a data part of 1484 bytes.
- a. Determine the number of fragment sent
  - b. Show the values of the IP header in each fragment including the total length (TL), more flag (MF) and fragment offset (FO)

3)

A packet with a payload of 1400 Bytes and 20 Bytes of header is to be sent over the following. The MTU (Maximum Transfer Unit) of each link is listed. Identify all the fragments transmitted over each link (List the total length, the M-flag and the offset of each fragment)



- 4) Host A is connected to router R1 and host B is connected to router R2. Router R1 is connected to router R2. A TCP message contains 940 bytes of data and 20 bytes of TCP header are passed to the IP code at the host A for delivery to host B. IP layer will append 20 bytes. Assume that router R1 supports a maximum transfer Unit (MTU) of 1024 bytes including 16 bytes frame header and router R2 has MTU of 512 bytes including 8 frame header.
- With the aid of diagram show the size of IP fragments received by router R1 and R2
  - Determine the number of bytes received by host B at IP layer.