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CS-2690

B.  Give at least three reasons why IP does reassembly at the destination host rather than within routers.

1. Packets using this as the destination IP address are received by all nodes on the local

physical network. (Routers don’t normally forward packets with this destination address.)

2. the outbound packet makes a U-turn at the IP layer and is then processed as an inbound packet

3. When an IP address is used to designate an entire network, the host

part of the address contains zeros.

C. Suppose that a TCP message containing 2048 bytes of application data and a 20 byte TCP header is passed down to IP for delivery across two networks (from the source host to a router to the destination host).  The message, as it is passed down from TCP to IP, would look like this:

Text

Description automatically generated with medium confidence

The first network crossed has an MTU (frame payload maximum) of 4096 bytes; the second network has a 1024 byte MTU.  Each network’s MTU determines the maximum sized IP packet that can be transmitted, including the IP header (but not including the frame header).

Give the sizes and offsets for the sequence of IP packet fragments delivered up to the IP layer at the destination host.  Give the offset as an actual byte count (not the mod 8 value).  Assume that all IP headers are 20 bytes, and be careful when calculating the offset value (the Offset field in the IP header).  You may find it helpful to draw a picture of each fragment to visualize it.  You may also wish to refer to the Lecture 2 slide titled “Rules for Sizing Fragments”.  (6 points)

* 1024 – 20 bit
* Transfer size: 1024 – 20 = 1004 bit
* 1004 / 8 = 125.5 cannot be divided
* Since we cant use 1004 we can use 1000 bit to divide it to 8 bit
* 1000 / 8 = 125
* 1000 bit and 20 bit for header
* Application data 2048 bytes

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3rd pocket

Offset 2000

68 bit

48 bit

1st pocket

Offset 0

1020 bit

1000 bit

2nd pocket

Offset 1000

1020 bit

1000 bit