

① Essay:-

1) Yes, one for each interface , usually 2 or more

2) Routing is moving data between two devices & Forwarding is collecting data from one device & sending it to another.

Forwarding → router-local action

Routing → network-wide process

3) Why / To what:-

DHCP is nearly used for everything except servers and what requires static ip addresses

4) ① It can be used to avoid the laborious work of configuring everything manually

b) each server will have a pool of addresses that it can give to clients, and that might have conflicting addresses

c) DHCP , it dynamically configures the network

d) When you connect a device DHCP sees all of the available IP addresses and assigns it.

② Problems

1) Sending 2400-byte datagram \rightarrow link has MTU of 700 bytes

Identification number: 422

- MTU without ip header = $700 - 20 = 680$ Bytes
- Datagram size = $2400 - 20 = 2380$ Bytes

$$\text{Number of total fragments} = \frac{2380}{680} \approx 4$$

1st = 680 Bytes	No header	1st offset: 0
2nd = 680 Bytes		2nd offset: 85
3rd = 680 Bytes		3rd offset: 170
4th = 340 Bytes		4th offset: 255

If 2nd, 3rd flags = 1
4th flag = 0

2) Datagram max = 1500 Bytes $A \rightarrow B$

MP3 $\cong 5 \times 10^6$ Bytes

Assume TCP connection

$$\text{Datagram} = 1500 - 30 - 20 = 1460 \text{ bytes}$$

$$5 \times 10^6 \cong 3424.68 \cong 3425 \quad | \text{ all will be } 1500 \text{ except last one will be } 960 + 40 \\ = 1460$$

$$= 1,000 \text{ bytes}$$