Question

Problem2 : CIDR -A router has the following (CIDR) entries in its routing table:

Address/mask Next hop

135.46.56.0/22 Interface 0

135.46.60.0/22 Interface 1

192.53.40.0/23 Router 1

default Router 2

For each of the following IP address, what does the router do if packets with the following addresses arrives?

a. 135.46.63.10

b. 135.46.57.14

c. 135.46.52.2

d. 192.53.40.7

e. 192.53.56.7

Answer

- The general mechanism is, whenever a destination IP is seen by router it does bitwise AND of that IP with all subnet masks of it's table, and if after ANDing the network ID for that mask is obtained then the packet is forwarded to that corresponding next hop.
In case of multiple match router chooses the longer match entry.

i) 135.46.63.10 = 10000111.00101110.00111111.00001010

ANDing with /22 mask we get network address = 135.46.60.0

255.255.252.0

∴ this packet is forwarded to interface 1

ii) 135.46.57.14 = 10000111.00101110.00111001.00001110

ANDing with /22 mask we get network ID = 135.46.56.0

∴ forwarded to Interface 0.

iii) 135.46.52.2 = 10000111.00101110.00110100.00000010

ANDing with /22 mask = 135.46.52.0

Since the ~~subn~~ network address doesn't match hence this packet is forwarded to default ie Router 2.

iv) 192.53.40.7 = 11000000 00110101.00101000.00000111

ANDing /22 mask we get network ID = 192.53.40.0

But /22 masks are not associated with this network address hence its not a match.

ANDing /23 mask = 192.53.40.0

This is a match, hence forwarded to Router 1.

v) 192.53.56.7 = 11000000.00110101.00111000.00000111

ANDing with /23 mask = 192.53.56.0

even on trying /22 mask no match occures, hence forwarded to default route Router 2.