

COMPUTER NETWORKING HW 3

1) Each router contains routing algorithm components that allows it to compute forwarding table. This forwarding tables tell the router which output to move the input packets to.

2) Data can be lost due to congestion or lack of buffers. This is especially true if a router's que is completely filled and can no longer accept more data for processing.

3) 192.168.200.32



11000000.10101000.11001000.00100000

192

168

200

32

4) NAT will be used because it obtains only one IP address from the ISP. However, DHCP is used in order to assign an IP address to the 5 PCs to be used between the computers & the router.

5) Distance Vector Routing → Router will send all or parts of their routing table to adjacent tables. Will do this even if there's no changes in the network.

Link State Routing → Router attempts to construct an internal map of network topology. It shares this information with other routers in order to allow them to construct their own maps as well.

| 6A) Prefix Match | Link Interface |
|-------------------|----------------|
| 1110100 | 0 |
| 11101001 00000000 | 1 |
| 11101001 | 2 |
| Otherwise | 3 |

6B) The longest match for first IP is 1110100. Forward through Link 0.
 Longest match for 2nd IP is 1110100100000000. Forward through link 1.
~~Longest match for 3rd IP is 111~~
 There is no match for 3rd IP. Forward through Link 3.

7) 138.157.45/24

Subnet 1: 111 interfaces \rightarrow 7 bits needed

Subnet 2: 63 interfaces \rightarrow 6 bits needed

Subnet 3: 63 interfaces \rightarrow 6 bits needed

138 . 157 . 45 . 0
 1001010 . 10011101 . 00101101 . 00000000

Therefore:

Subnet 1: 138.157.45/~~24~~²⁴ to 138.157.155/~~24~~²⁴

Subnet 2: 138.157.156/~~24~~²⁴ to 138.157.219/~~24~~²⁴

Subnet 3: 138.157.220/22 to 138.157.282/23