Computer Networks - Assignment 7 : Review Network

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1 Question

Suppose two packets arrive to two different input ports of a router at exactly the same time. Also suppose there are no other packets anywhere in the router.
a.Suppose the two packets are to be forwarded to two different output ports. Is it possible to forward the two packets through the switch fabric at the same time when fabric uses a shared bus.

- No, It's not possible to forward both packets through the switch at the same time. But, when a shared bus topology is used there is possibility of allowing one packet at a time.

b.Suppose the two packets are to be forwarded to two different output ports. Is it possible to forward the two packets through the switch fabric at the same time when the fabric uses a crossbar.

- Yes. It's possible to forward both both packets trough the switch at the same time as they posses through both destinations. Thus, this is the main deal about crossbars.

c.Suppose the two packets are to be forwarded to the same output port. Is it possible to forward the two packets through the switch fabric at the same time when the fabric uses a crossbar.

- No, It's not possible to forward two packets at the same time through the router to one output port. Because, as the crossbars allows multiple packets through, still they can't be at the same time.

2 Question

Consider a datagram network using 32-bit host addresses. Suppose a router had four link, numbered 0 through 3, and packets are to be forwarded to the link interfaces as follows:

Destination Address Range	Link Interface
11100000 00000000 00000000 00000000 through 11100000 00111111 11111111 11111111	0
11100000 01000000 00000000 00000000 through 11100000 01000000 11111111 11111111	1
11100000 01000001 00000000 00000000 through 11100001 01111111 11111111 11111111	2
otherwise	3

Source : from the course canvas

a.Provide a forwarding table that has a five entries, uses longest prefix matching, and forwards packets to the correct link interfaces.

- **11100000 00000000 00000000 00000000** will go out on port 0
- **11100001 01000000 11111111 11111111** will go out on port 1
- **11100001 01000000 11111111 11111111** will go out on port 2
- **11100011 01000000 00000000 11111111** will go out on port 3, else it will shifts and goes on port 4

b.Describe how your forwarding table determines the appropriate link interface for datagrams with destination addresses:

11001000 10010001 01010001 01010101
11100001 01000000 11000011 00111100
11100001 10000000 00010001 01110111

Source : from the course canvas

- **11001000 10010001 01010001 01010101** will go out on port 3 because it doesn't fit with first 3 sequences.
- **11100001 01000000 11000011 00111100** will go out on port 2.
- **11100001 10000000 00010001 01110111** will go out on port 3.