
CHAPTER 2

Basic Concepts

2.1 REVIEW QUESTIONS

1. Line configuration defines the way two or more devices are connected to a link. Topology is a way two or more links are connected to form a network. Both are used to describe a relationship between communicating devices.
3.
 - a. Mesh: privacy
 - b. Star: robustness
 - c. Tree: isolating and prioritizing communications between different computers
 - d. Bus: ease of installation
 - e. Ring: simple fault isolation
5. Size, distances covered by the network, structure, and ownership.
7. Bus, star, tree, mesh, ring.
9.
 - a. Mesh: a large amount of cabling makes it expensive
 - b. Star: the need for an extra intermediate device
 - c. Tree: difficult reconfiguration and fault isolation
 - d. Bus: no privacy
 - e. Ring: low reliability
11.
 - a. Point-to-point: mesh, star, tree, and ring
 - b. Multipoint: bus
13. A central hub controls traffic in the entire network, a secondary hub is under control of the central hub and acts as a mediator between the central hub and other devices in the subnetwork. The central hub is always an active hub, i.e. it contains a repeater that regenerates the signal and passes it on. Secondary hubs can be active or passive. In the latter case they provide a simple physical connection between nodes.

- 15.
- a. Mesh: communication will stop only between the devices connected by the faulty link
 - b. Star: same as a mesh
 - c. Tree: depends on the kind of link (if a link is impaired between two hubs, communication will be disrupted for the whole subnetwork)
 - d. Bus: all transmission will stop
 - e. Ring: a fault in one link can impair the whole network

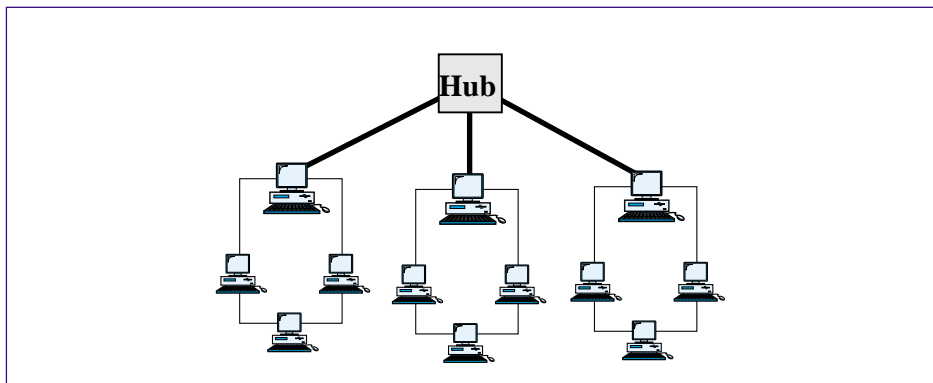
2.2 MULTIPLE CHOICE QUESTIONS

17. b 18. a 21. b 23. a 25. b 27. c 29. d 31. d 33. b

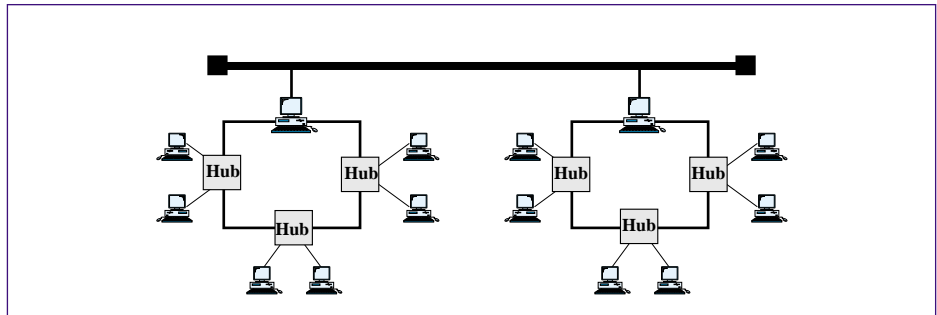
2.3 EXERCISES

- 35.
- a. Cable links: $n(n-1)/2 = (6 \times 5)/2 = 15$
 - b. Number of ports: $(n-1) = 5$ ports needed per device
37. hybrid: star backbone connecting two bus networks
39. tree
41. The left topology is a ring; the right topology is not allowed.
43. See Figure 2.1

Figure 2.1 Exercise 43



45. See Figure 2.2.
47. ring
- 49.

Figure 2.2 Exercise 45

a. mesh: 11

b. ring: 2

51. point-to-point connection because it is a dedicated link between two callers.

