

Distributed System Structures



Practice Exercises

- 16.1 Most WANs employ only a partially connected topology. Why is this so?
- 16.2 Under what circumstances is a token-passing network more effective than an Ethernet network?
- 16.3 Why would it be a bad idea for gateways to pass broadcast packets between networks? What would be the advantages of doing so?
- 16.4 Discuss the advantages and disadvantages of caching name translations for computers located in remote domains.
- 16.5 What are the advantages and disadvantages of using circuit switching? For what kinds of applications is circuit switching a viable strategy?
- 16.6 What are two formidable problems that designers must solve to implement a network-transparent system?
- 16.7 Process migration within a heterogeneous network is usually impossible, given the differences in architectures and operating systems. Describe a method for process migration across different architectures running:
 - a. The same operating system
 - b. Different operating systems
- 16.8 To build a robust distributed system, you must know what kinds of failures can occur.
 - a. List three possible types of failure in a distributed system.
 - b. Specify which of the entries in your list also are applicable to a centralized system.

- 16.9 Is it always crucial to know that the message you have sent has arrived at its destination safely? If your answer is *yes*, explain why. If your answer is *no*, give appropriate examples.
- 16.10 Present an algorithm for reconstructing a logical ring after a process in the ring fails.
- 16.11 Consider a distributed system with two sites, A and B. Consider whether site A can distinguish among the following:
- a. B goes down.
 - b. The link between A and B goes down.
 - c. B is extremely overloaded and its response time is 100 times longer than normal.

What implications does your answer have for recovery in distributed systems?