suppose that for 99.9 percent of the time only three racks are used, and that the video application has identical usage patterns.

a. For what fraction of time does the email application need to use a fourth rack? How about for the video application?

b. Assuming email usage and video usage are independent, for what fraction of time do (equivalently, what is the probability that) both applications need their fourth rack?

c. Suppose that it is acceptable for an application to have a shortage of servers for 0.001 percent of time or less (causing rare periods of performance degradation for users).

   Discuss how the topology in Figure 5.31 can be used so that only seven racks are collectively assigned to the two applications (assuming that the topology can support all the traffic).

Wireshark Labs

At the companion Web site for this textbook, http://www.awl.com/kurose-ross, you'll find a Wireshark lab that examines the operation of the IEEE 802.3 protocol and the Wireshark frame format. A second Wireshark lab examines packet traces taken in a home network scenario.