Case Project 1

A local hospital asks you to help improve its network’s fault tolerance. The hospital’s network carries critical patient care data in real time from both a mainframe host and several servers to workstations in operating rooms, doctors’ offices, the billing office, teaching labs, and remote clinics across the region. Of course, all of the data transferred is highly confidential and must not be lost or accessed by unauthorized personnel. Specifically, the network is configured as follows:

• Six hundred workstations are connected to five shared servers that run Solaris. Fifty of these workstations serve as training computers in medical school classrooms. Two hundred workstations sit in doctors’ offices and are used to view and update patient records, submit accounting information, and so on. Twenty workstations are used in operating rooms to perform imaging and for accessing data in real time. The remaining workstations are used by administrative staff.

• The clients are connected in a mostly switched, star-wired bus network using Ethernet 100Base-T technology. In the few instances where switches are not used, hubs serve smaller workgroups of administrative and physician staff.

• An Internet gateway supports e-mail, online medical searches, and VPN communications with four remote clinics. The Internet connection is a T3link to a local ISP.

• A firewall prevents unauthorized access from the T3 connection into the hospital’s network.

The hospital’s IT director asked you to identify the critical points of failure in her network and to suggest how she might eliminate them. On a sheet of paper, draw a logical diagram of the network and identify the single points of failure, then recommend which points of failure should be addressed to increase availability and how to achieve this goal.

Case Project 2

Unfortunately, the solution you provided for the hospital was rejected by the board of directors because it was too expensive. How would you determine where to cut costs in the proposal? Consider which fault-tolerant options are most critical and also which are expensive but less critical. What questions should you ask the IT director that will better enable you to prioritize the fault-tolerance features you’ve recommended? What points of failure do you suggest absolutely must be addressed with redundancy?

Case Project 3

Your second proposal, with its reduced cost, was accepted by the board of directors. Now, the hospital’s IT director has asked you to help develop a disaster recovery plan. Based on what you have learned about the hospital’s topology, usage patterns, and current fault-tolerance measures, outline a disaster recovery plan for the hospital. Your plan should specifically address provisions for data, equipment, and connectivity related to the network. Explain how functionality and data will be restored and what staff should be involved in the post disaster recovery.