EE384A: Network Protocols and Standards
Homework #3
IEEE 802.1Q VLANs
Internet Protocol (IP)
Due Date: Tuesday February 9, 1999

For questions 1-3, read the IEEE 802.1Q/D9 standard, Chapters 6, 8, 10 and Annex D.

1)   a.   Describe what VLANs are.
      b.   What does the concept of VLANs bring to the user from a functionality point of view?
      c.   Give three scenarios that explicitly illustrate the usefulness and advantages of VLANs.

2)   What technological advances are making VLANs possible?

3)   What are the implications of VLANs on the use of GMRP for dynamic multicast filtering?

Question 4: IP Subnetting

An organization with 200 IP stations is given a class C address **X.Y.Z.-** for its network. The organization uses subnetting and organizes it network into multiple subnetworks as shown in Figure 1 below. The 200 stations are divided into three groups, one group consisting of 100 machines and the other two 50 machines each. Each group forms a single bridged LAN. A company backbone and a divisional backbone are also created as shown in the figure. It is required that all machines and all router interfaces be given IP addresses. You are asked to assign IP addresses to the stations and router interfaces, and to indicate the entries in each router's table needed to route IP datagrams destined to stations within the company network.
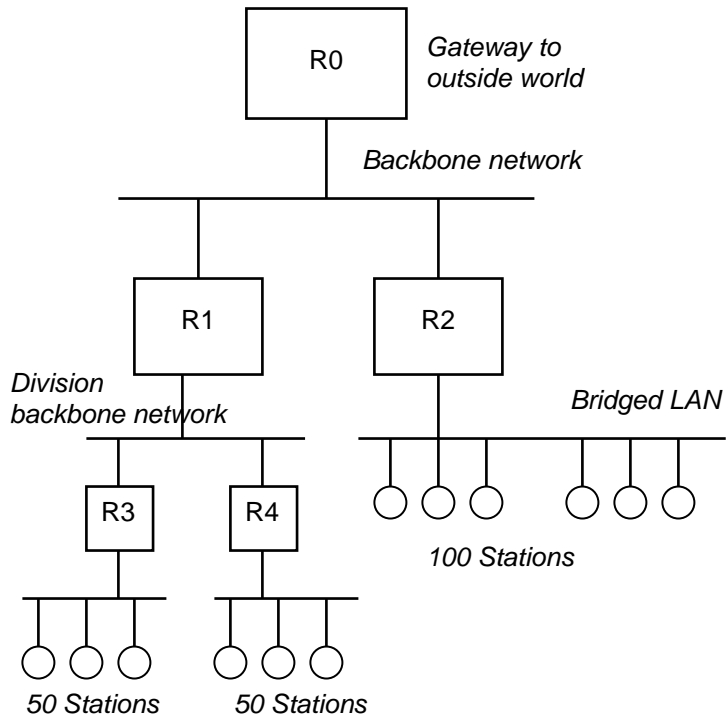
Figure 1

Router R0 Table

Router R1 Table

Router R2 Table

Router R3 Table

Router R4 Table