Lab 10.3.5c Subnetting a Class B Network – Instructor Version

Objective

The objective of this lab is to provide a subnetting scheme using a Class B network

Background / Preparation

This is a written lab and is to be performed without the aid of an electronic calculator.

ABC Manufacturing has acquired a Class B address, 172.16.0.0. The company needs to create a subnetting scheme to provide the following:

- 36 subnets with at least 100 hosts
- 24 subnets with at least 255 hosts
- 10 subnets with at least 50 hosts

It is not necessary to supply an address for the WAN connection since it is supplied by the Internet service provider.

Step 1 Given this Class B network address and these requirements answer the following questions

How many subnets are needed for this network? 70

What is the minimum number of bits that can be borrowed? 7

What is the subnet mask for this network?

1. Dotted decimal 255.255.254.0
2. Binary 11111111 11111111 11111110 00000000
3. Slash format /23

How many usable subnetworks are there? 2^7-2 or 126

How many usable hosts are there per subnet? 2^9-2 or 510

Step 2 Complete the following chart listing the first three subnets and the last 4 subnets

Subnetwork #	Subnetwork ID	Host Range	Broadcast ID
172.16.2.0	1	172.16.2.1-172.16.3.254	172.16.3.255
172.16.4.0	2	172.16.4.1-172.16.5.254	172.16.5.255
172.16.6.0	3	172.16.6.1-172.16.7.254	172.16.7.255

172.16.246.0	123	172.16.246.1-172.16.247.254	172.16.247.255
172.16.248.0	124	172.16.248.1-172.16.249.254	172.16.249.255
172.16.250.0	125	172.16.250.1-172.16.251.254	172.16.251.255
172.16.252.0	126	172.16.252.1-172.16.253.254	172.16.253.255

What is the host range for subnet two? 172.16.4.1-172.16.5.254

What is the broadcast address for the 126th subnet? 172.16.253.255

What is the broadcast address for the major network? 172.16.255.255

