CISCO SYSTEMS

CISCO NETWORKING ACADEMY PROGRAM

Lab 10.3.5d Subnetting a Class C Network – Instructor Version

Objective

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

Background / Preparation

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

The Classical Academy has acquired a Class C address, 192.168.1.0. The academy needs to create subnets to provide low level security and broadcast control on the LAN. It is not necessary to supply an address for the WAN connection. It is supplied by the Internet service provider.

The LAN consists of the following, each of which will require its own subnet:

- Classroom #1   28 nodes
- Classroom #2   22 nodes
- Computer lab   30 nodes
- Instructors   12 nodes
- Administration   8 nodes

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

How many subnets are needed for this network? 5

What is the subnet mask for this network?

1. Dotted decimal 255.255.255.224
2. Binary 11111111 11111111 11111111 11100000
3. Slash format /27

How many usable hosts are there per subnet? $2^5 – 2$ or 30

Step 2 Complete the following chart

Subnetwork #	Subnetwork IP	Host Range	Broadcast ID
0	192.168.1.0	192.168.1.1-192.168.1.30	192.168.1.31
1	192.168.1.32	192.168.1.33-192.168.1.62	192.168.1.63
2	192.168.1.64	192.168.1.65-192.168.1.94	192.168.1.95
3	192.168.1.96	192.168.1.97-192.168.1.126	192.168.1.127

4	192.168.1.128	192.168.1.129-192.168.1.158	192.168.1.159
5	192.168.1.160	192.168.1.161-192.168.1.190	192.168.1.191
6	192.168.1.192	192.168.1.193-192.168.1.222	192.168.1.223
7	192.168.1.224	192.168.1.225-192.168.1.254	192.168.1.255

What is the host range for subnet six? 192.168.1.193-192.168.1.222

What is the broadcast address for the 3rd subnet? 192.168.1.127

What is the broadcast address for the major network? 192.168.1.255