**Problem 1:**

**Given:**

**Host IP Address:** 192.168.200.139

**Original Subnet Mask** 255.255.255.0

**New Subnet Mask:** 255.255.255.224

296 Introduction to Networks Labs and Study Guide (CCNAv7)

**Find:**

**Number of Subnet Bits 3**

**Number of Subnets Created 8**

**Number of Host Bits per Subnet 5**

**Number of Hosts per Subnet 30**

**Network Address of this Subnet 192.168.200.128**

**IPv4 Address of First Host on this Subnet 192.168.200.129**

**IPv4 Address of Last Host on this Subnet 192.168.200.158**

**IPv4 Broadcast Address on this Subnet 192.168.200.159**

**Problem 2:**

**Given:**

**Host IP Address:** 10.101.99.228

**Original Subnet Mask** 255.0.0.0

**New Subnet Mask:** 255.255.128.0

**Find:**

**Number of Subnet Bits 9**

**Number of Subnets Created 512**

**Number of Host Bits per Subnet 15**

**Number of Hosts per Subnet 32,766**

**Network Address of this Subnet 10.101.0.0**

**IPv4 Address of First Host on this Subnet 10.101.0.1**

**IPv4 Address of Last Host on this Subnet 10.101.127.254**

**IPv4 Broadcast Address on this Subnet 10.101.127.255**

**Problem 3:**

**Given:**

**Host IP Address:** 172.22.32.12

**Original Subnet Mask** 255.255.0.0

**New Subnet Mask:** 255.255.224.0

**Find:**

**Number of Subnet Bits 3**

**Number of Subnets Created 8**

**Number of Host Bits per Subnet 13**

**Number of Hosts per Subnet 8,190**

Chapter 11: IPv4 Addressing 297

**Find:**

**Network Address of this Subnet 172.22.32.0**

**IPv4 Address of First Host on this Subnet 172.22.32.1**

**IPv4 Address of Last Host on this Subnet 172.22.63.254**

**IPv4 Broadcast Address on this Subnet 172.22.63.255**

**Problem 4:**

**Given:**

**Host IP Address:** 192.168.1.245

**Original Subnet Mask** 255.255.255.0

**New Subnet Mask:** 255.255.255.252

**Find:**

**Number of Subnet Bits 6**

**Number of Subnets Created 64**

**Number of Host Bits per Subnet 2**

**Number of Hosts per Subnet 2**

**Network Address of this Subnet 192.168.1.244**

**IPv4 Address of First Host on this Subnet 192.168.1.245**

**IPv4 Address of Last Host on this Subnet 192.168.1.246**

**IPv4 Broadcast Address on this Subnet 192.168.1.247**

**Problem 5:**

**Given:**

**Host IP Address:** 128.107.0.55

**Original Subnet Mask** 255.255.0.0

**New Subnet Mask:** 255.255.255.0

**Find:**

**Number of Subnet Bits 8**

**Number of Subnets Created 256**

**Number of Host Bits per Subnet 8**

**Number of Hosts per Subnet 254**

**Network Address of this Subnet 128.107.0.0**

**IPv4 Address of First Host on this Subnet 128.107.0.1**

**IPv4 Address of Last Host on this Subnet 128.107.0.254**

**IPv4 Broadcast Address on this Subnet 128.107.0.255**

298 Introduction to Networks Labs and Study Guide (CCNAv7)

**Problem 6:**

**Given:**

**Host IP Address:** 192.135.250.180

**Original Subnet Mask** 255.255.255.0

**New Subnet Mask:** 255.255.255.248

**Find:**

**Number of Subnet Bits 5**

**Number of Subnets Created 32**

**Number of Host Bits per Subnet 3**

**Number of Hosts per Subnet 6**

**Network Address of this Subnet** 192.135.250.176

**IPv4 Address of First Host on this Subnet 192.135.250.177**

**IPv4 Address of Last Host on this Subnet 192.135.250.182**

**IPv4 Broadcast Address on this Subnet 192.135.250.183**

**Reflection Question**

Why is the subnet mask so important when analyzing an IPv4 address?

**The subnet mask determines everything about the address: the network, number of host**

**bits, number of hosts and the broadcast address. Merely looking at an IPv4 address tells**

**you nothing. You need the subnet mask to fill in all the important pieces of information.**