**Net 1060 Introduction to Networks Lab: # 11.6.6**

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**Follow the instructions down below for the lab itself. For this lab, all answers need to be in blue font. For the questions right below, answer in complete sentences. You will also have to copy and paste your running configurations of each device configured to the bottom of this document. Let the instructor know if you have any questions.**

***Lab Analysis Report***

1. Using complete sentences summarize work you completed during the lab.

2. Using complete sentences describe what you learned from the lab. Hint; look at the lab objectives listed at the top of the lab section.

***Problems Encountered***

1. Using complete sentences describe any problem(s) experienced during lab.

2. Using complete sentences describe how you solved your problem(s).

3. Using complete sentences explain if you needed any assistance with the lab; then list what you learned from that assistance.

Lab - Calculate IPv4 Subnets

# Objectives

Part 1: Determine IPv4 Address Subnetting

Part 2: Calculate IPv4 Address Subnetting

# Background / Scenario

The ability to work with IPv4 subnets and determine network and host information based on a given IP address and subnet mask is critical to understanding how IPv4 networks operate. The first part is designed to reinforce how to compute network IP address information from a given IP address and subnet mask. When given an IP address and subnet mask, you will be able to determine other information about the subnet.

* 1 PC (Windows with Internet access)
* Optional: IPv4 address calculator

# Instructions

Fill out the tables below with appropriate answers given the IPv4 address, original subnet mask, and new subnet mask.

11111111.11111111.11111111.00000000

128 - 64 - 32 - 16 - 8 - 4 - 2 - 1

|  |  |
| --- | --- |
| Given: | |
| **Host IP Address:** | 192.168.200.139 |
| **Original Subnet Mask** | 255.255.255.0 |
| **New Subnet Mask:** | 255.255.255.224 |

| 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 |

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|  |  |
| --- | --- |
| 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** | 32766 |
| **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 |

|  |  |
| --- | --- |
| 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** | 8190 |
| **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 |

|  |  |
| --- | --- |
| 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 |

|  |  |
| --- | --- |
| 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 |

|  |  |
| --- | --- |
| 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?

Because the subnet will tell you a lot about the address like the number of hosts, the addresses of the network as well as gives info on how to find that network.

Type your answers here.

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