**Lab 16**

Subnet Calculation

Problem 01

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

Problem 02

|  |  |
| --- | --- |
| 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 03

|  |  |
| --- | --- |
| 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 |
| 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 04

|  |  |
| --- | --- |
| 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 05

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

Problem 06

|  |  |
| --- | --- |
| 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?**

From the subnet mask we can get the network starting, ending point, the net ID which let’s us determine an internet block. Besides it’s also useful for creating subnet masks. So it’s more important than we think for IPv4 addressing.