INSTRUCTOR ALTON

# Visualizing Subnetting a Class C Network #1

**Details & Requirements**
- Network Address: 192.168.1.0
- Default Subnet Mask: 255.255.255.0
- Requires 2 Subnets

**How many host bit do we need to borrow?**
- 1 host bit, $2^1 = 2$ Subnets

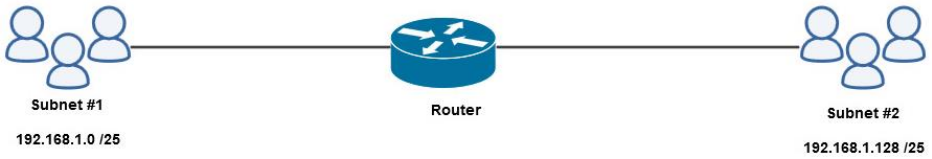
**How many addresses hosts per subnet?**
- 7 host bits left, $2^7 = 128$ Addresses / Subnet
- $2^7 - 1 = 126$ Addresses / Subnet

**What are the valid subnets?**
- 192.168.1.0 and 192.168.1.128

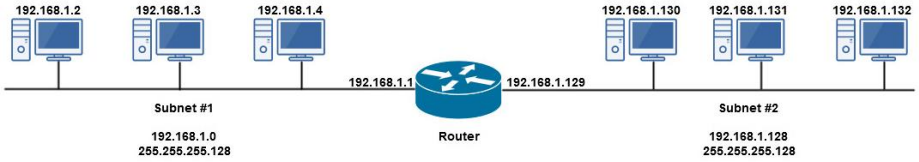
**New Subnet Mask?**
- 11111111.11111111.11111111.10000000
- 255.255.255.128 or /25

| Subnet | #1 | #2 |
|---|---|---|
| Network Address | 192.168.1.0 | 192.168.1.128 |
| First Host IP | 192.168.1.1 | 192.168.1.129 |
| Last Host IP | 192.168.1.126 | 192.168.1.254 |
| Broadcast Address | 192.168.1.127 | 192.168.1.255 |

## Network Simplified View




## Network Detailed View




**Default Class C Network (8 Host Bits): 192.168.1.0 /24 Network**

1 Host Bits Borrowed = $2^1$ = Subnetted into 2 Subnets

| Subnet #1: 192.168.1.0 /25 | Subnet #2: 192.168.1.128 /25 |
|---|---|

**CLASS C POSSIBLE SUBNET MASKS**

| Binary (N.N.N.H) | Decimal | CIDR | # Subnets ($2^x$) | Block Size ($2^y$) | # Hosts ($2^y$ - 2) |
|---|---|---|---|---|---|
| N.N.N.00000000 | 255.255.255.0 | /24 | $2^0 = 1$ | $2^8 = 256$ | $2^8 - 2 = 254$ |
| N.N.N.10000000 | 255.255.255.128 | /25 | $2^1 = 2$ | $2^7 = 128$ | $2^7 - 2 = 126$ |
| N.N.N.11000000 | 255.255.255.192 | /26 | $2^2 = 4$ | $2^6 = 64$ | $2^6 - 2 = 62$ |
| N.N.N.11100000 | 255.255.255.224 | /27 | $2^3 = 8$ | $2^5 = 32$ | $2^5 - 2 = 30$ |
| N.N.N.11110000 | 255.255.255.240 | /28 | $2^4 = 16$ | $2^4 = 16$ | $2^4 - 2 = 14$ |
| N.N.N.11111000 | 255.255.255.248 | /29 | $2^5 = 32$ | $2^3 = 8$ | $2^3 - 2 = 6$ |
| N.N.N.11111100 | 255.255.255.252 | /30 | $2^6 = 64$ | $2^2 = 4$ | $2^2 - 2 = 2$ |