### Details & Requirements

- Network Address: 192.168.1.0
- Default Subnet Mask: 255.255.255.0
- Requires 4 Subnets

### How many host bit do we need to borrow?

- 2 host bit, $2^2 = 4$ Subnets

### How many addresses hosts per subnet?

- 6 host bits left, $2^6 = 64$ Addresses / Subnet
- $2^6 - 1 = 62$ Addresses / Subnet

### What are the valid subnets?

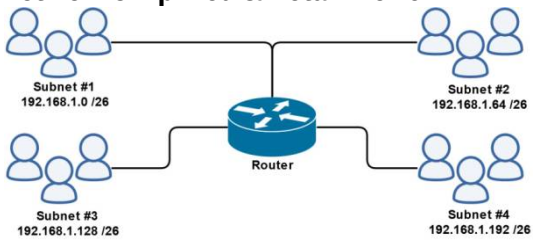
- 192.168.1.**0**, 192.168.1.**64**, 192.168.1.**128**, 192.168.1.**192**

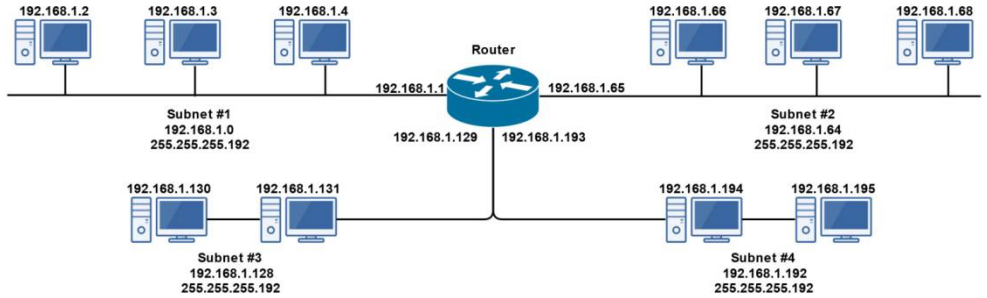
### New Subnet Mask?

- 11111111.11111111.11111111.**11**000000
- 255.255.255.192 or /26

| Subnet | Network Address | Host IP Addresses | Broadcast Address |
|---|---|---|---|
| 1 | .0 | .1 to .62 | .63 |
| 2 | .64 | .65 to .126 | .127 |
| 3 | .128 | .129 to .190 | .191 |
| 4 | .192 | .193 to .254 | .255 |

## Network Simplified & Detail Views




**Default Class C Network (8 Host Bits)**

2 Host Bits Borrowed = $2^2$ = Subnetted into 4 Subnets

| 1 | 2 | 3 | 4 |
|---|---|---|---|

**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 | $2^6 = 64$ | $2^2 = 4$ | $2^2 - 2 = 2$ |