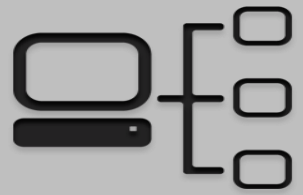
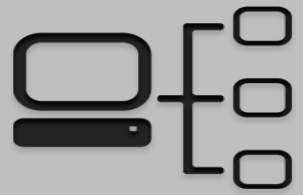
# IP Address Classes



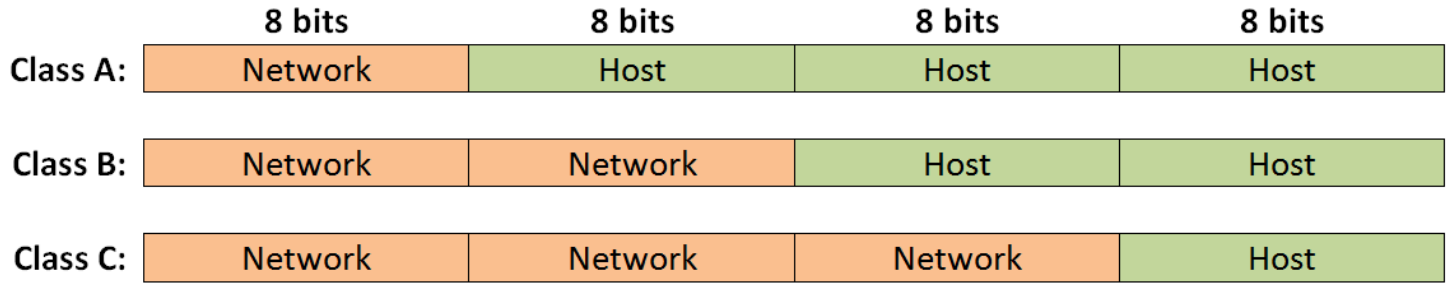
| Class | Leading Bits | Network Bits | Remaining Bits | Number of Networks | Hosts Per Network | Default Subnet Mask |
|---|---|---|---|---|---|---|
| Class A | 0 (1-126) | 8 | 24 | 128 ($2^7$) | 16,777,216 ($2^{24}$) | 255.0.0.0 |
| Class B | 10 (128-191) | 16 | 16 | 16,384 ($2^{14}$) | 65,536($2^{16}$) | 255.255.0.0 |
| Class C | 110 (192-223) | 24 | 8 | 2,097,152 ($2^{21}$) | 256($2^8$) | 255.255.255.0 |
| Class D (multicast) | 1110 (224-239) | Not Defined | Not Defined | Not Defined | Not Defined | Not Defined |
| Class E (reserved) | 1111 (240-254) | Not Defined | Not Defined | Not Defined | Not Defined | Not Defined |

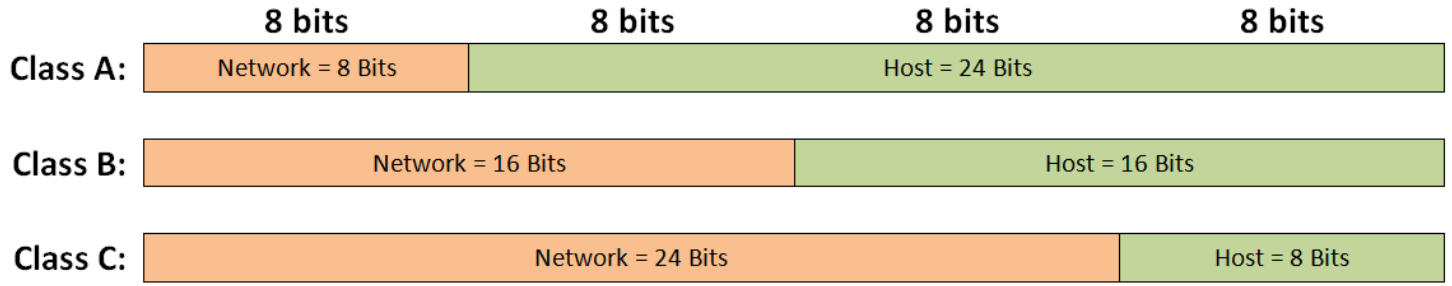
# IP Address Classes (Simplified)



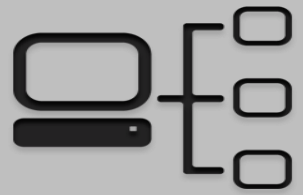
| Class | Network Bits | Host Bits | Address Range |
|---|---|---|---|
| A | 8 | 24 | 1.0.0.0 – 127.255.255.255 |
| B | 16 | 16 | 128.0.0.0 – 191.255.255.255 |
| C | 24 | 8 | 192.0.0.0 – 223.255.255.255 |

# Network and Host Bits



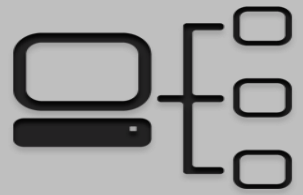



# IP Addresses & Subnet Masks



| | 8 bits | 8 bits | 8 bits | 8 bits |
|---|---|---|---|---|
| **Class A:** | Network | Host | Host | Host |
| **IP Address** | 10. | 0. | 0. | 15 |
| **Subnet Mask** | 11111111. | 00000000. | 00000000. | 00000000 |
| | 255. | 0. | 0. | 0 |
| **Class B:** | Network | Network | Host | Host |
| **IP Address** | 172. | 16. | 0 | .110 |
| **Subnet Mask** | 11111111. | 11111111. | 00000000. | 00000000 |
| | 255. | 255. | 0. | 0 |
| **Class C:** | Network | Network | Network | Host |
| **IP Address** | 192. | 168. | 1. | 50 |
| **Subnet Mask** | 11111111. | 11111111. | 11111111. | 00000000 |
| | 255. | 255. | 255. | 0 |

# Default Subnet Masks

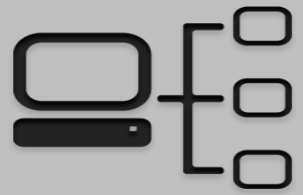


- The Subnet Mask tells you which portion of the IP address identifies the network and which portion of the address identifies the host.

- Below are default Class A, B and C Subnet Masks.

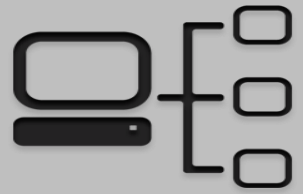
| | | | | |
|---|---|---|---|---|
| **Class A:** | Network | Host | Host | Host |
| **Subnet Mask** | 11111111. | 00000000. | 00000000. | 00000000 |
| | 255. | 0. | 0. | 0 |
| **Class B:** | Network | Network | Host | Host |
| **Subnet Mask** | 11111111. | 11111111. | 00000000. | 00000000 |
| | 255. | 255. | 0. | 0 |
| **Class C:** | Network | Network | Network | Host |
| **Subnet Mask** | 11111111. | 11111111. | 11111111. | 00000000 |
| | 255. | 255. | 255. | 0 |

# Let’s Practice



- What class are the following IP Addresses?
  - **IP Address**: 9.10.40.15
  - **Subnet Mask**: 255.0.0.0
  - **IP Address**: 135.240.110.100
  - **Subnet Mask**: 255.255.0.0
  - **IP Address**: 200.200.10.5
  - **Subnet Mask**: 255.255.255.0

# CIDR Notation



- “Slash” Notation tells you how many bits are associated with Subnet Mask
- It’s a shortcut way of telling us what the Subnet Mask is:
  **/8** = 11111111.00000000.00000000.00000000
  **/8** = 255.0.0.0

- 192.168.1.0 **/24** = 255.255.255.0
- 10.1.0.0 **/16** = 255.255.0.0