# Subnetting

What was that masked address?

# Why Subnet?

- To break the network down into pieces, each of which can be addressed separately.
  - Controls network traffic
  - Reduces broadcasts
  - Use of different physical media
  - Can provide low level security with access lists on the router
  - Organization of IP address space

# Subnet Mask

- Subnet masks are applied to an IP address to identify the **Network** portion and the **Host** portion of the address.

- Your computer performs a *bitwise logical AND operation* between the address and the subnet mask in order to find the ***Network Address*** or number.

# Why Do We Care!?

- You can manipulate your subnet mask in order to create more network addresses. Why?

- If you have a Class C network, how many individual host addresses can you have?
  - 1 to 254
  - Remember, you can't have all "0"s and all "1"s in the host portion of the address.
  - So we cannot use 206.25.143.0 (all "0"s) or 206.25.143.255 (all "1"s) as a host address.

# Why Do We Care!?

- So we have 1 Class C Network (206.15.143.0)
- And we have 254 host address (1 to 254)
- But what if our LAN has 5 networks in it and each network has no more than 30 hosts on it?
- Do we apply for 4 more Class C licenses, so we have one for each network?
- We would be wasting 224 addresses on each network, a total of 1120 addresses!

# Subnetting

- Subnetting is a way of taking an existing class license and breaking it down to create more Network Addresses.
- This will always reduce the number of host addresses for a given network.
- Subnetting makes more efficient use of the address or addresses assigned to you.

# How Does Subnetting Work?