Seneca

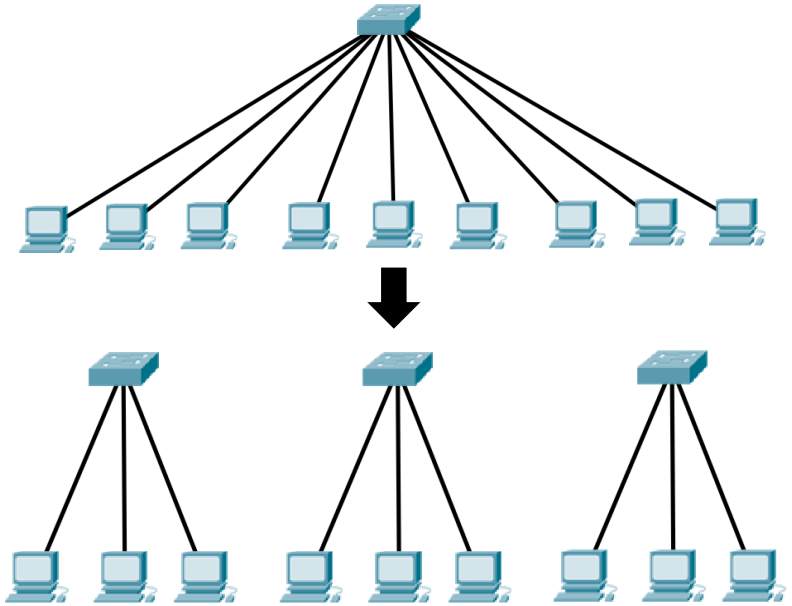
Subnetting

Agenda

- What is Subnetting?
- Subnetting: 2 Networks
- Subnetting: Activity

What is Subnetting?

- Subnetting subdivides a network into more networks
- Benefits include:
  1. Improve network performance and speed
  2. Reduce network congestion
  3. Boost network security
  4. Control network grow
  5. Ease administration



Recall: IP Address Network and Broadcast Address

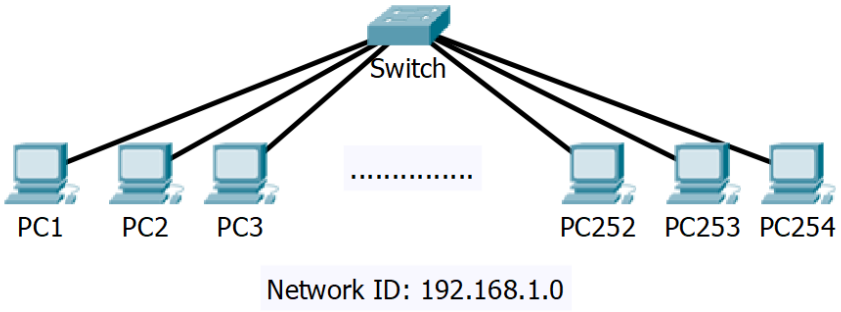
- Using a “Class C” IP address 192.168.1.0 /24
  - Network Address: 192.168.1.0 /24
  - Broadcast Address: 192.168.1.255 /24

- Network and Broadcast Addresses cannot be assigned to a device
  - 1st available (valid) IP Address: 192.168.1.1
  - Last available (valid) IP Address: 192.168.1.254

- The range for Network 192.168.1.0 /24 is 192.168.1.1 – 192.168.1.254 /24

Recall: IP Address Network and Broadcast Address

- Summary
  - # of Networks: 1
  - # of Hosts per Network: 254
  - Network Range:
    - Network: 192.168.1.0 192.168.1.1 – 192.168.1.254 /24



Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- What are the 2 subnets?
- What are their ranges?

Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- Determine the network portion and host portion of IP address.

Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- Determine the number of host bits to borrow by the network portion to create 2 networks.

Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- Determine the new subnet mask.

Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- Using the new subnet mask, determine the “**Increment**”.

Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- Using the “**Increment**”, determine the 2 networks.

Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- Using the “**Increment**”, determine the 2 networks.

Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- Using the 2 networks, determine the ranges.

Subnetting: 2 Networks

- **Using IP address 192.168.1.0 /24, subnet into 2 networks.**
- Summary:
  - New Subnet Mask: 255.255.255.128 or /25
  - # of Networks: 2
  - # of Hosts per Network: 126
  - Network Range:
    - Subnet 0: 192.168.1.0 192.168.1.1 – 192.168.1.126 /25
    - Subnet 1: 192.168.1.128 192.168.1.129 – 192.168.1.254 /25

Subnetting: Activity

- Determine the first 3 subnet ranges for each of the examples:

- Using IP address 192.168.1.0 /24, subnet into 7 networks.
- Using IP address 192.168.1.0 /24, subnet into 16 networks.
- Using IP address 192.168.1.0 /24, subnet into 28 networks.
- Using IP address 192.168.1.0 /24, subnet into 44 networks.
- Using IP address 192.168.1.0 /24, subnet into 60 networks.
- Using IP address 192.168.1.0 /24, subnet into 53 networks.
- Using IP address 192.168.1.0 /24, subnet into 47 networks.

Questions

Additional Resources

- Video on Introduction to Subnetting
- Wiki on Subnetwork