

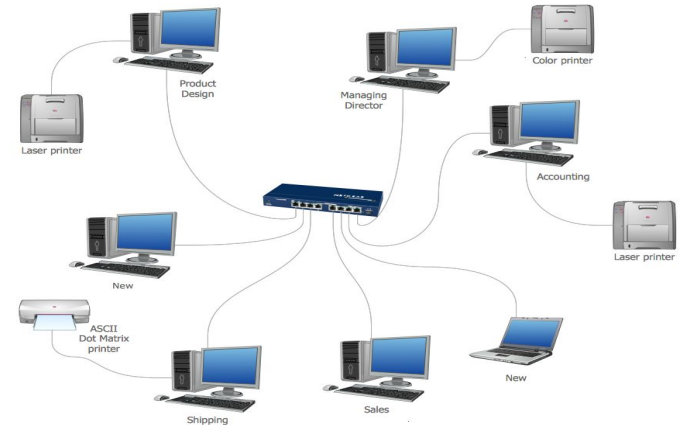
Cyber Defense Organization

Fall 2018 - Intro to Networking



What is networking?

“A computer network is a group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users. Networks are commonly categorized based on their characteristics.” - Technopedia



How do our devices communicate?

- Using Binary!
- Electronic signals that are meant to translate to “1” and “0”
- What do these signals mean?



Network Protocols

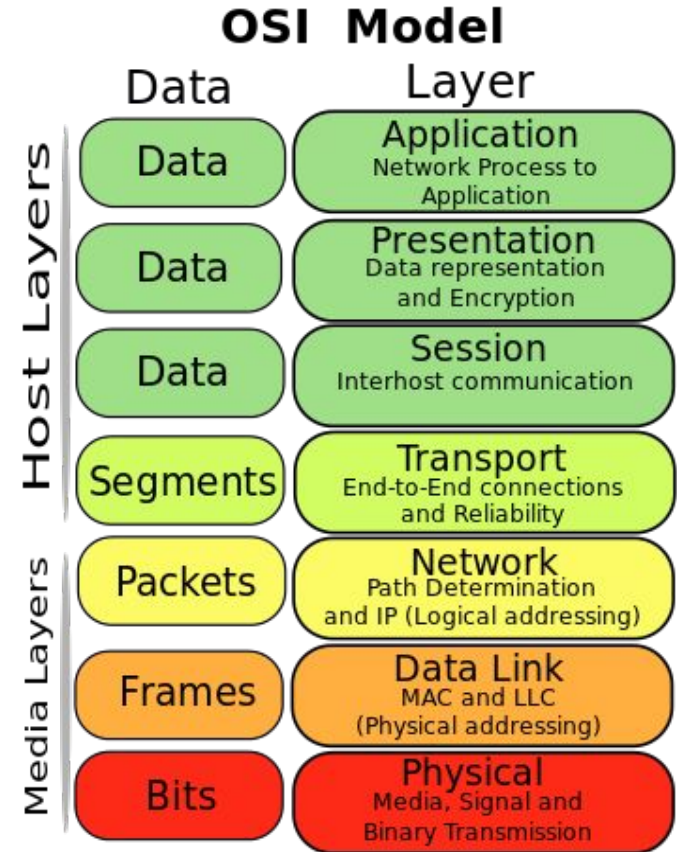
- Standardized protocols that are used to move data (payloads) around a network
- Allow Communication on the internet
- Important ones:
 - TCP/IP
 - UDP
 - ARP
 - ICMP



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TCP/IP Stack (OSI Model)

- Used by every protocol and device for transmitting data
- Encapsulation
 - Important Info
 - Port Numbers
 - Session Numbers
 - IP Address
 - MAC Address



Important Addresses

MAC Address (00-17-ab-be-28-1c)

- Unique address to that device
- Given to it when created

IP Address (192.168.1.3)

- Internet Address
 - Home address on mail

Subnet mask (255.255.255.0)

- Networks address



Let's mess with packet tracer!!



Create a Simple Network

1. Drag 2 Generic Computers and 1 generic Switch to the Workspace
2. Connect the computers to the switch using copper cables
3. Give these to IP's to the computer's (Subnet mask: 255.255.255.0)
 - a. 192.168.1.2
 - b. 192.168.1.4

LET'S BUILD

Why are we choosing Address with 192.168?

- Private Address Space
 - Freely Use
 - Three Spaces available
 - 10.0.0.0 - 10.255.255.255
 - 172.16.0.0 - 172.31.255.255
 - 192.168.0.0 - 192.168.255.255
- Public IPs



**Let's see a more complex
Network**

More Complex Networking

- Subnetting & Variable Subnetting
- VLANS
- Access Control Lists



Cya Next week!

Send your cute pet
picture to Liam!

wcsmith@albany.edu

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Gap week!



CCDC Team! - Monday
7:15pm BB121



Windows Security!
- Friday 3pm BB123