- TCP/IP Attack Lab
  - https://drive.google.com/a/uncc.edu/uc?id=1HxdUhq-J_-_QKyjngpH9m6Kmuvy0_68a&export=download
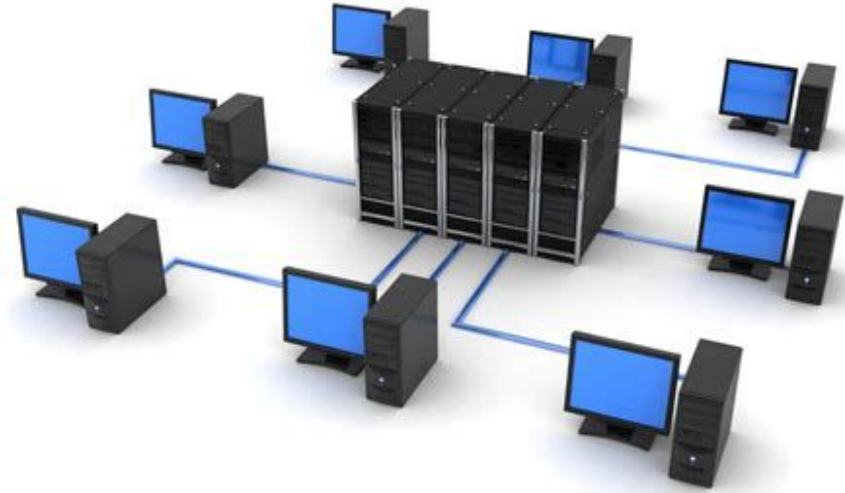
Networking Basics

Who am I?

- Trevon Williams
- Master's Student
- SFS recipient

What is a Computer Network?

- A digital network in which nodes share resources
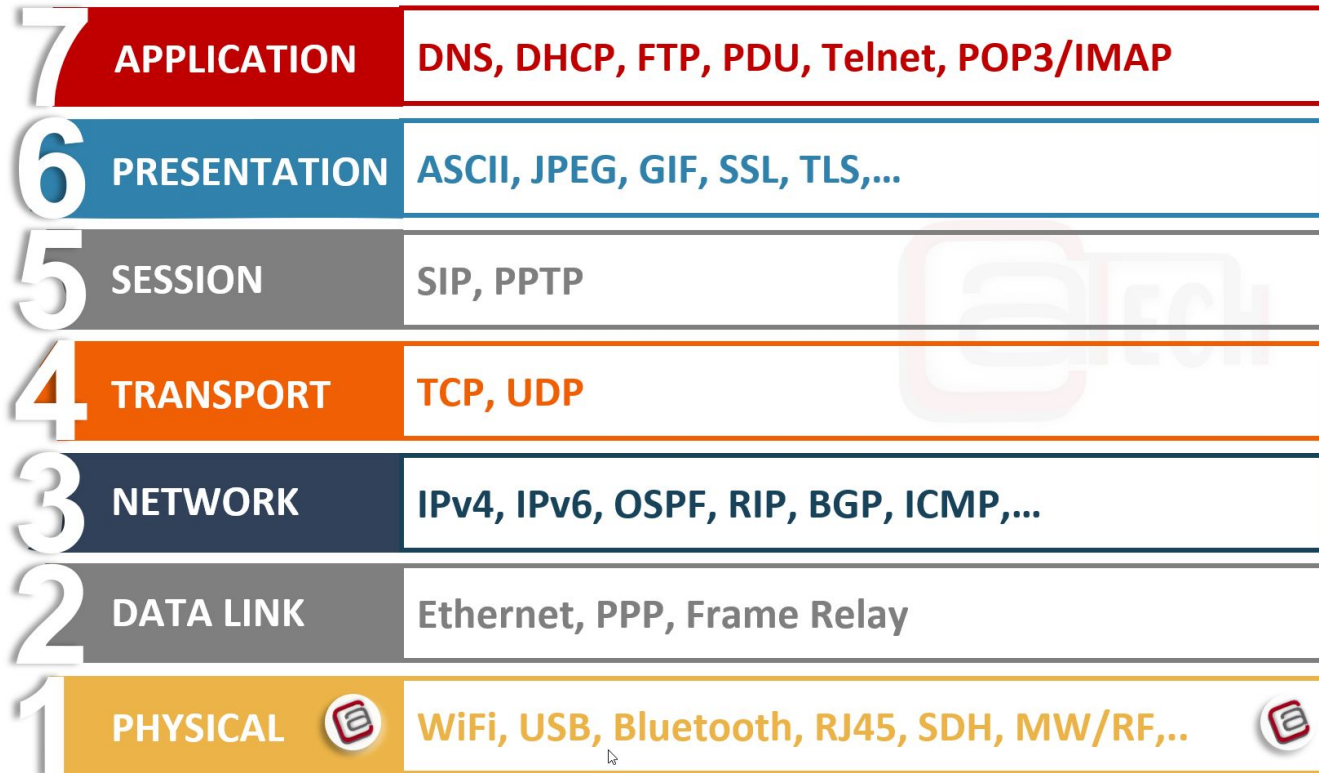- Computing devices that exchange data with each other between nodes
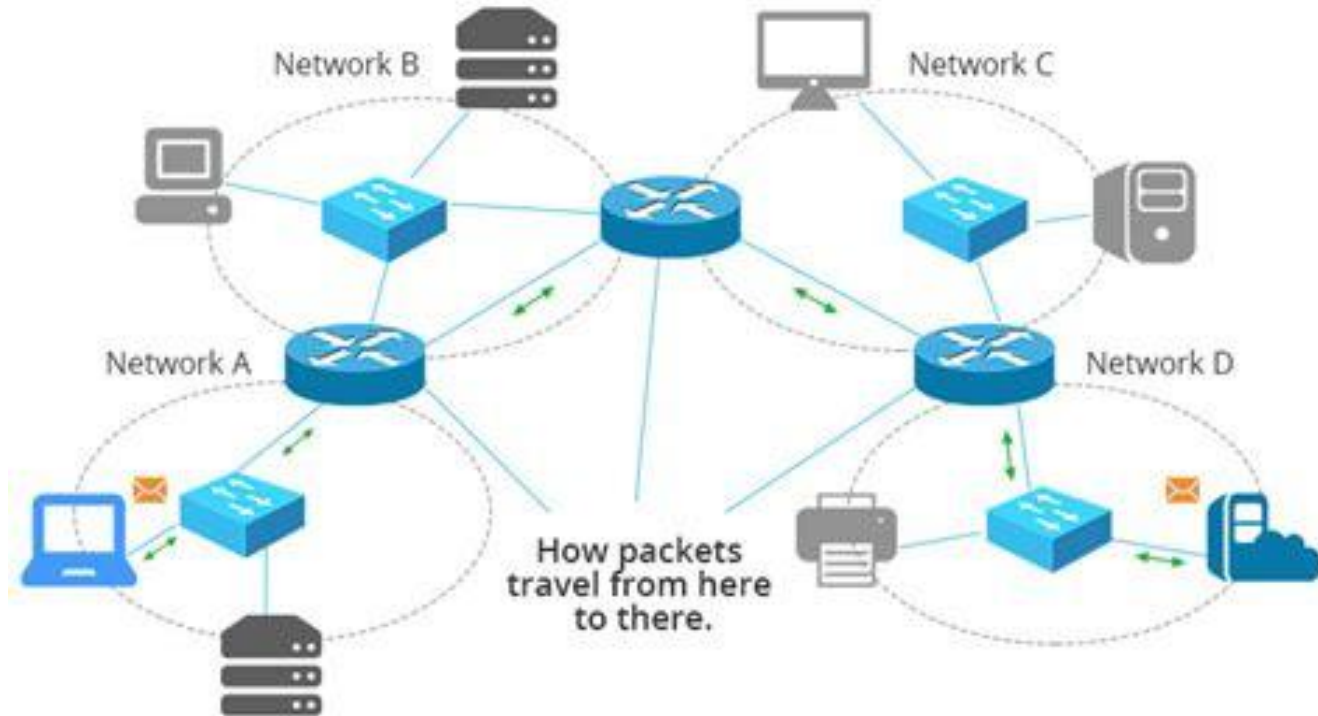
The Basics

Label on Column	Service Name	UDP and TCP Port Numbers Included
DNS	Domain Name Service – UDP	UDP 53
DNS TCP	Domain Name Service – TCP	TCP 53
HTTP	Web	TCP 80
HTTPS	Secure Web (SSL)	TCP 443
SMTP	Simple Mail Transport	TCP 25
POP	Post Office Protocol	TCP 109, 110
SNMP	Simple Network Management	TCP 161,162 UDP 161,162
TELNET	Telnet Terminal	TCP 23
FTP	File Transfer Protocol	TCP 20,21
SSH	Secure Shell (terminal)	TCP 22
AFP IP	Apple File Protocol/IP	TCP 447, 548

- What ports are open on your device?

OSI Model

7	APPLICATION	DNS, DHCP, FTP, PDU, Telnet, POP3/IMAP
6	PRESENTATION	ASCII, JPEG, GIF, SSL, TLS,...
5	SESSION	SIP, PPTP
4	TRANSPORT	TCP, UDP
3	NETWORK	IPv4, IPv6, OSPF, RIP, BGP, ICMP,...
2	DATA LINK	Ethernet, PPP, Frame Relay
1	PHYSICAL	WiFi, USB, Bluetooth, RJ45, SDH, MW/RF,..

Routing

Network B

Network C
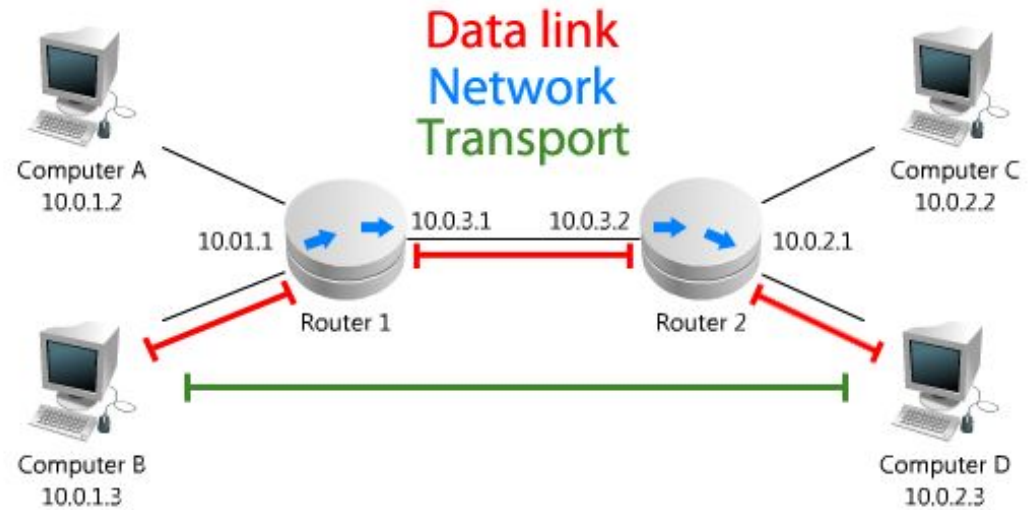
Network A

Network D

How packets travel from here to there.

How do routers work?

- What is the data's destination?
- Who handles this?
- How does the router know how to hand off the data?
- What is a protocol that comments this?
- Are these protocol's enough to handle routing the data?

Windows Networking Tools

- Netstat
- Wireshark
- Windows Sysinternals
- Process Explorer
- TCPView

Useful Windows Command Line Tricks

https://blog.kulshitsky.com/2017/02/useful-windows-command-line-tricks.html

Linux Networking Tools

- Netstat
- Nmap - https://nmap.org/book/man.html
- Tcpdump
- Iperf
- Netcat

Linux network troubleshooting

https://www.tecmint.com/linux-network-configuration-and-troubleshooting-commands/

Socket Programming

- Allow network applications to communicate over IP and TCP or UDP
- *"A socket represents a single connection between two pieces of software"*
- Python socket programming (way to learn)
  - https://pythonprogramming.net/python-sockets/

Insert Exercise Here

http://www.cis.syr.edu/~wedu/seed/Labs_16.04/Networking/TCP_Attacks/