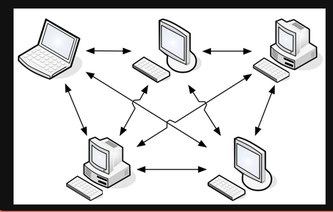
Network Types

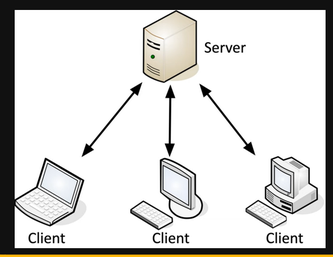
Peer-to-Peer

- All devices are both clients and servers
- Everyone talks to everyone
- Advantages
  - Easy to deploy
  - Low cost
- Disadvantages
  - Difficult to administer
  - Difficult to secure



Client Server

- Client talks to the server



- No client-to-client communication
- Advantages
  - Very good performance
  - Easy administration
- Disadvantages
  - Cost is higher because additional hardware and software is needed
  - More complex to setup

Local Area Network (LAN)

- Local is relative (networks in the same area, building, floor, house, etc..)
- High speed connectivity
- Uses ethernet and 802.11 wireless (slower than this means it's not a LAN)

Metropolitan Area Network (MAN)

- A network in your city
- Larger than a LAN smaller than a WAN
- Usually provided as service by a third party
- Common to see it used in governments

Wide Area Network (WAN)

- Spanning the globe
- Generally connects LANs across a distance
- Generally much slower than a LAN
- Many different WAN technologies
  - Point-to-Point Serial
  - MPLS
  - Terrestrial and non-terrestrial

Wireless Local Area Network (WLAN)

- Usually 802.11 technology
- Mobility
  - Within a building
  - In a limited geographical area
- Expand coverage with additional access points
  - Downtown area
  - Large campus

Personal Area Network (PAN)

- Your own private network
- Bluetooth, IR, and NFC
- Examples
  - Automobile output (audio through phone connection)
  - Bluetooth headsets
  - Smart bands/watches that monitor health

Campus Area Network

- Corporate Area Network
- in between LAN and MAN
- Limited geographical area (usually a group of buildings)
- Usually incorporates LAN technologies like being fiber connected and having high speed ethernet
- Your fiber is in your ground so no need for a third part provider

Storage Area Network (SAN)

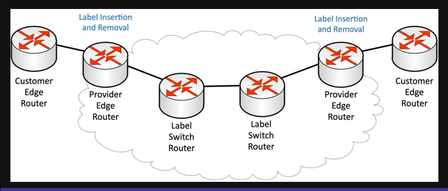
- Looks and feels like a local storage device
- Block level access
- Very efficient reading and writing process
- To the computer it looks and feels like local data
- Requires a lot of bandwidth (Thus it might need an isolated network and high-speed connection)

Network Attached Storage (NAS)

- Connect to a shared storage device across the network
- File-level access (means any changes made to a file must be done for the whole file, for example if you have a 1 gb file and you want to change only 1 byte in that file, you will have to rewrite the whole 1 gb.)
- Usually contains multiple drives and
- Requires a lot of bandwidth (Thus it might need an isolated network and high-speed connection)

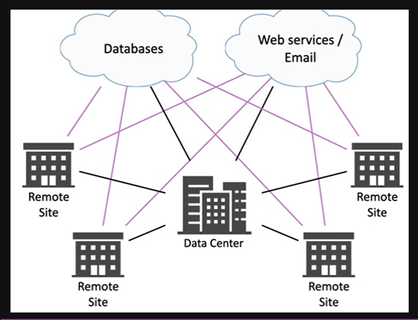
Multi Protocol Label Switching (MPLS)

- Packets through the WAN have a label to make routing easier
- Any transport medium and any protocol inside can be used
- It's a common WAN technology (Ready-to-Network)



- Labels are pushed into the packets as they enter the MPLS and are popped out as they leave the MPLS
- Must be configured to define all the different sites and labels used to switch data to this location. Some networks do it dynamically so that it needs to be created only when it's needed
- Multipoint Generic Router Encapsulation (mGRE)
  - Used extensivly for Dynamic Multipoint VPN (DMVPN)
  - Common for Cisco router

Software Defined Networking (SDN)



- Cloud-based applications communicate directly to the cloud (No need to hop through a central point)
- Before SDN all cloud services were set in 1 central data center