Dr. Monopoly 11.20

Capacity of a disk:

* Size of Sectors: 4KB or 16KB
  + Bigger Sectors to eliminate wasting space with gap (only good for smaller capacity disks)
* Stack numbers
  + 400 sectors/track
* Cooked Capacity

4KB/Sector

400 Sectors/Track

300RPM = 50RPS

1/50 sec = 0.02 sec for one revolution

Seek 0.005 Sec, read one sector

* Best case: no seek, revolve around that one sector- one sector
  + 1/400 x 1/50 sec
* Worst case: revolve all around
  + 1/50 + 0.005 +
* Avg case: seek but wait for half revolution

Seek (move files around/jumping around)

* Track request: 200,201, 200, 100, 201, 101, 100 (FIFO: Slow)
  + SSTF (shortest seek time first): 200->200->201->201->101
  + Elevator (keep going up until reach the destination)
    - Keep going one direction then go all the way down (repeat)
    - Reverse direction
      * 200->200->201->201[*reverse]*->101->100->100

RAID

* Independent
* Mirror
  + Recover one when the other fail
* Parody

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* + gives protection not usually good enough but know which disk failing by eliminating the disk with parody disk.
  + Know which failed by CRC, or when overheating
  + Parody disk tend to fail, need frequent replacement, usually distributed across.
* Strip (allow things to be done in parallel) Files, faster.

Network

* IP address (temp address): 32 bits (x.x.x.x)=> 2^32 possible addresses (not all usable)
  + Roughly 4 bilion
  + Change into IPv4 (33bits) =>2^33
  + Then IPv6 (128bits) => 2^128
* MAC address (physical address): ~48 bits
  + Burned into the device
* Layers
  + Applic.
  + TCP/IP
  + Transport- more controll about connection type
    - Broken to small pieces(DDP)
    - Arrive at same sequence (TCP-voice)
    - No network no security problem (traditionally)
  + NW layer(IP)
  + HW DL Block-MAC
  + SW DL (String bits)- MAC
  + Physical (Wireless/Wired communication)