

Workload

So ...

- seeks are slow
- rotations are slow
- transfers are fast

What kind of workload is fastest for disks?

- Sequential : access sectors in order (transfer dominated)
- Random : access sectors arbitrarily (seek+rotation dominated)

➡ Disk Scheduler decides which I/O request to schedule next

- First Come First Served (FCFS)
- Shortest Seek Time First (SSTF)
- Elevator Scheduling (SCAN) commonly used on Unix

Solid State Drive (SSD)

- ➔ Completely solid state (no moving parts), remembers data by storing charge (like RAM)
- ✓ Same interface as HDD (linear array of sectors)
- ✓ No mechanical seek and rotation times to worry about (SSD are way faster than HDD)
- ✓ Lower power consumption and heat (better for mobile devices)
- More expensive than HDD yet (but getting cheaper)
- Limited durability as charge wears out over time (but improving)
- Limited # overwrites possible
 - Blocks wear out after 10,000 (MLC) – 100,000 (SLC) erases
 - Requires Flash Translation Layer (FTL) to provide wear levelling, so repeated writes to logical block don't wear out physical block
 - FTL can seriously impact performance