Simple server

while (true) {
    wait for message
    data = read(name)
    send data
}

Hitachi 7K400
Inside a disk
Top view

- Platters
- Sectors
- Tracks
I/O bottleneck

Hypothetical Effects of Dissimilar Doubling Rates Over a Decade
Important numbers

• Latency:
  – 0.00000001 ms: instruction time (1 ns)
  – 0.0001 ms: DRAM load (100 ns)
  – 0.2 ms: LAN network
  – 10 ms: random disk I/O
  – 25 ms: Internet east -> west coast

• Throughput:
  – 1000 MB/s: DRAM
  – 100 MB/s: LAN (maybe 1000 MB/s)
  – 100 MB/s: sequential disk
  – 1 MB/s: random disk I/O