# Memory Read Times

| | Hard Drive | | | Flash RAM | | RAM |
|---|---|---|---|---|---|---|
| | **7200 RPM (1)** | **10000 RPM (2)** | **SSD(3)** | **Very Fast USB pen Drive(4)** | **SD HC Class 6 Card(5)** | **DDR2-533 133 MhZ(6)** |
| **Case A:  Fetch an Average Document** | | | | | | |
| | | | | | | |
| Size of block to read (mb*) | 1 | | | | | |
| Avg. Access (seek+latency) (ms*) | 10 | 7.5 | 0 | 0 | 0 | 0 |
| Transfer (mb/sec ) | 100 | 320 | 56 | 34 | 20 | 1066 |
| | | | | | | |
| Total ms to read | 10.01000 | 7.50313 | 0.01786 | 0.02941 | 0.05000 | 0.00094 |
| Times per second | 99.9 | 133.3 | 56,000.0 | 34,000.0 | 20,000.0 | 1,066,000.0 |
| | | | | | | |
| | | | | | | |
| **CaseB:  (Large) 1 Gig file transfer** | | | | | | |
| Size of block to read (mb) | 100000 | | | | | |
| | | | | | | |
| Total ms to read | 1010 | 320 | 1785.714286 | 2941.176471 | 5000 | 93.80863039 |
| Times per second | 0.99 | 3.13 | 0.56 | 0.34 | 0.20 | 10.66 |

(1) HP DS702A 250GB Serial ATA Hard Disk Drive ($316)

(2) 73GB Fujitsu Ultra320 SCSI hard disk drive 10000rpm ($172)

(3)  Samsung 16GB 2.5 Inch Flash Solid State Disk Drive IDE ($282)

(4) Speed varies. Avg is around 3ms. Corsair Flash Voyager GT 4GB Flash Drive ($83)

| | | | | | |
|---|---|---|---|---|---|
| (5)  Transcen 8GB SDHC high-speed class 6 ($33) | | | | | |
| 6) DDR2-1066 266 Mhzat  1066 million bps ($136) | | | | | |
| | | | | | |
| *Magnitude | | | | | |
| 1ms = 1 / 1000 seconds | | | | | |
| 1mb = app. 1,000,000 bytes | | | | | |
| | | | | | |
| **Actually higher because head has to move after each track | | | | | |
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