

Answer on Question # 44821 - Math - Other

A hard disk with 1 platter rotates at 15000 rpm and has 1024 tracks each with 2048 sectors and every sector is having 512 bytes. The disk head starts at track 0 the disk then receives a request to access a random sector on a random track. If the seek time of the disk head is 1 ms for every 100 tracks it must cross.

What is the average rotational latency?

a) 1 msec b) 2 msec c) 3msec d) 4 msec

Answer: d)

Convert the angular velocity into a fractional form. For example, given a hard drive velocity of 15,000 rotations per minute, it is 15,000 rotations / 1 minute or 15,000 rotations / 60 seconds. The rotational latency is the opposite value, i.e. 60 / 15,000 seconds or 0.004 seconds or 4 milliseconds.

For the above data what is the data transfer rate?

a) 100 MBPS b) 250 MBPS c) 100 GBPS d) 250 GBPS

Answer: d)

$1024 * 2048 * 512 * 15000 / 60 = 268435456000$ bytes per second or 250 GBPS
($1024 * 1024 * 1024 * 250$)