

# What Does Seek Time Mean?

Seek time is the time taken for a hard disk controller to locate a specific piece of stored data. Other delays include transfer time (data rate) and rotational delay (latency).

When anything is read or written to a disc drive, the read/write head of the disc needs to move to the right position. The actual physical positioning of the read/write head of the disc is called seeking. The amount of time that it takes the read/write head of the disc to move from one part of the disk to another is called the seek time. The seek time can differ for a given disc due to the varying distance from the start point to where the read/write head has been instructed to go. Because of these variables, seek time is generally measured as an average seek time.

Seek time is also measured in two other ways - track to track and full stroke. Track to track is the amount of time it takes the read/write head to search or seek between adjacent tracks. It is usually measured in milliseconds, which is typically 2 to 4 ms and as low as 1 ms. Full stroke is the amount of time required to seek the whole disc. Full stroke is also measured in milliseconds. A seek time below 10ms is generally considered acceptable for a hard disk.

## Explains Seek Time

Since 2004 the average seek time for a typical PC hard disc drive is around 9 ms. But seek time can range from 3 ms for high end servers to 15 ms for mobile drives. Compared to a hard disc drive, larger disc drives, such as optical drives (DVDs or CDs) and floppy disc drives, have a much slower seek time because of the larger head construction. The average seek time for DVD-RAM is 75 ms and 65 ms for DVD-R, DVD-ROM and CD media.

The delay from a hardware signal relay and from buffering in solid state discs (SSDs) is sometimes referred to as seek time, but it is not a true seek time. This is because the data is retrieved without moving parts. An SSD uses non-volatile microchips, which hold data and do not require moving parts.

Transfer time is the amount of time it takes for data to be read or written. Throughput is the average success rate over a communication channel. Rotational delay (latency) is the amount of time it takes for the disc to rotate to the required position for the read/write head.

To get a hard disk to read information, the operating system makes a request to the drive controller firmware which then actuates the read/write head to move to the position where the data that is required is stored. Switching between tracks requires the head actuator to move the access arm, which takes a certain amount of time - the seek time. This time can vary depending on the distance between tracks and from its origin at the time of each read /write command.

Because there is no industry standards for the method of recording seek time, there is no single number determining the seek time for the whole drive. This is why most disc drive manufactures measure the seek time in averages. Some manufacturers also include the full stroke and track to track specifications, not just the average seek time.