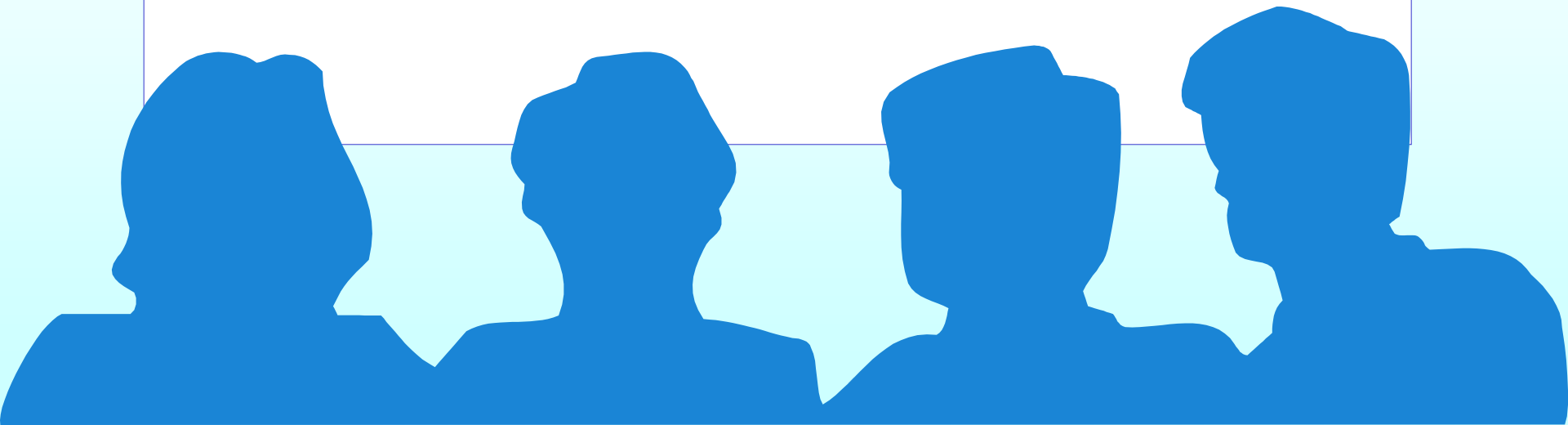


LESSON 10

Measuring Drive Performance

This lesson includes the following sections:

- **Average Access Time**
- **File Compression**
- **Data-Transfer Rate**
- **Drive-Interface Standards**



Average Access Time

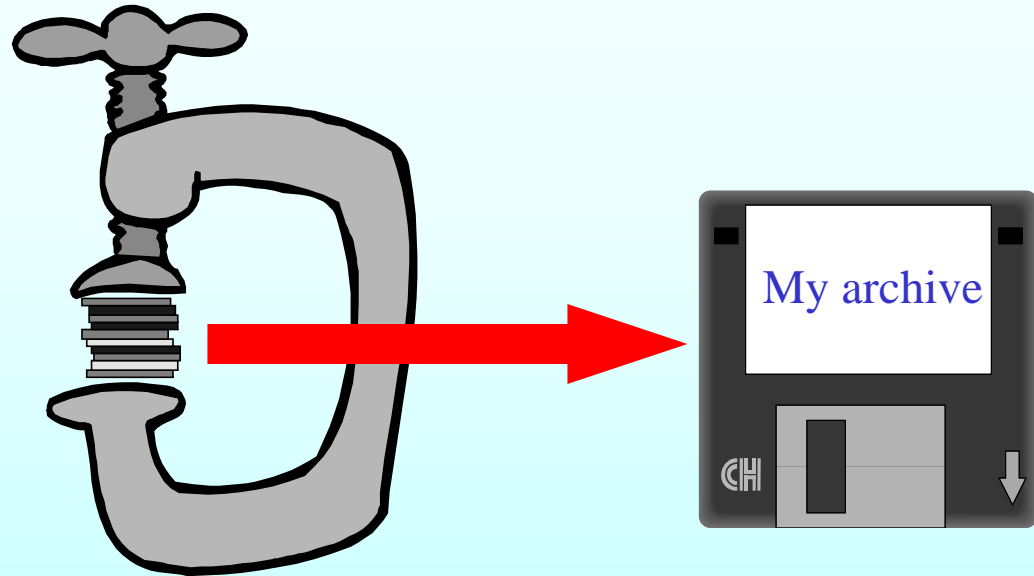
- In storage devices, average access time (or seek time) is the time required for a read/write head to move to a spot on the storage medium.
- For storage devices, access time is measured in milliseconds (ms), or thousandths of a second. In memory, access time is measured in nanoseconds (ns), or one-billionths of a second.
- Diskette drives offer an average access time of 100 ms. Hard drives are faster, usually between 6 – 12 ms.

Typical Access Times for Memory and Storage Devices

Device	Typical Access Time
Static RAM (SRAM)	5-15 ns
Dynamic RAM (DRAM)	50-70 ns
Read only memory (ROM)	55-250 ns
Hard disk drives	6-12 ms
CD ROM drives	80-800 ms
Tape drives	20-500 s

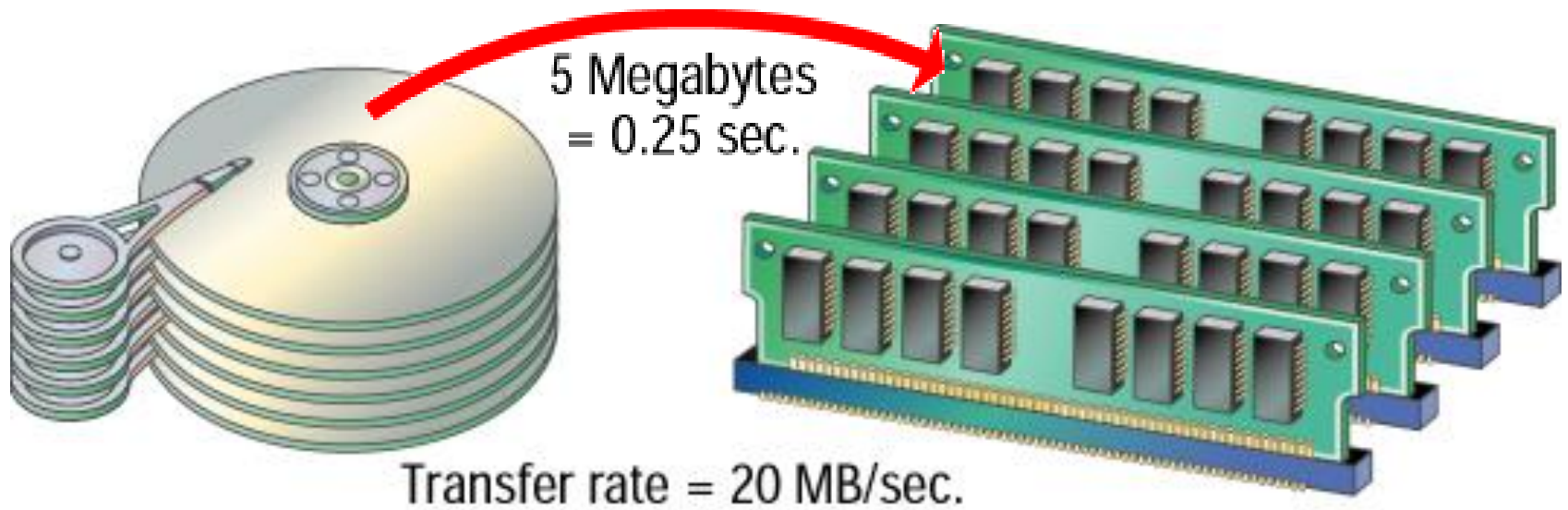
File Compression

- File compression technology shrinks files so they take up less disk space.
- Using a compression utility, you can shrink multiple files into a single archive file.
- Utilities such as Windows' DriveSpace enable you to compress the entire contents of your hard disk.

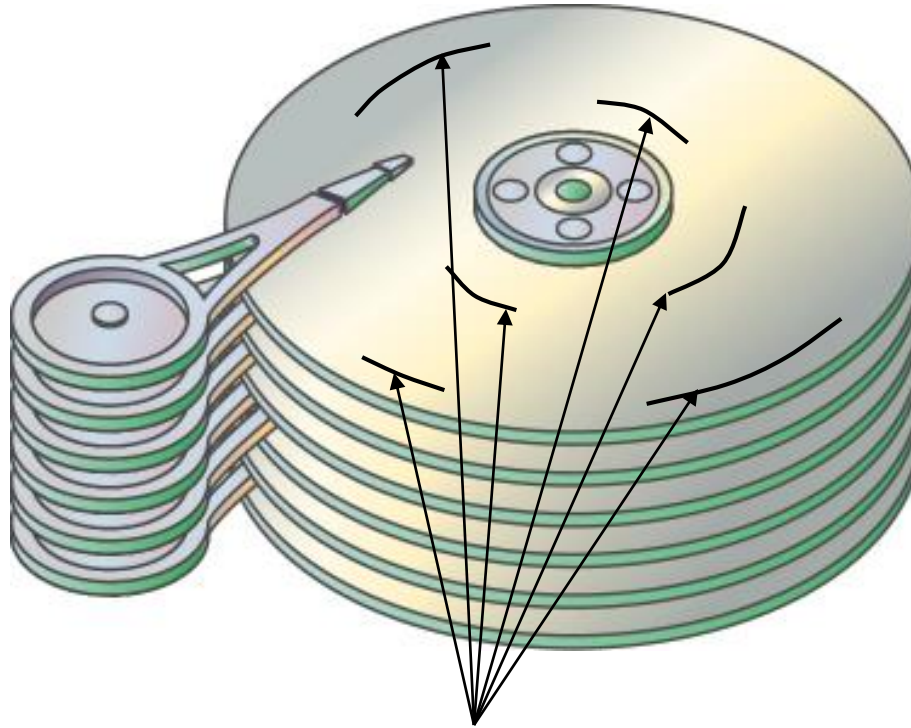


Data-Transfer Rate

- **Data-transfer rate (or throughput) measures the time required for data to travel from one device to another.**
- **If a device transfers 45,000 bytes per second, its data-transfer rate is 45 KBps.**
- **Hard disks offer the fastest data-transfer rates of any storage device.**

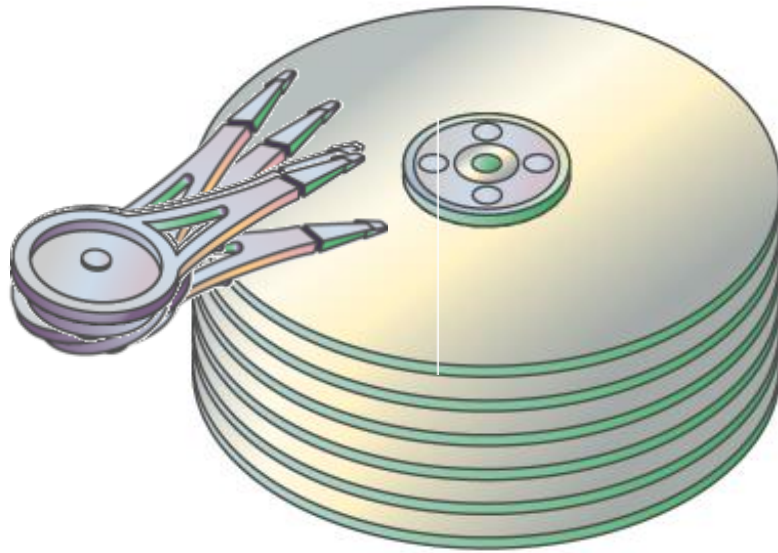


Hard Disk Fragmentation



One file can end up fragmented (scattered) over the disk surface.

Hard Disk Fragmentation



**This results in multiple head accesses
which degrades performance.**

Drive-Interface Standards

- All PCs use a disk controller as an interface between a disk drive and the CPU. The two most common interface standards are EIDE (Enhanced Integrated Drive Electronics) and SCSI (Small Computer System Interface).
- EIDE has evolved over the years and has several variants, all of which have different names.
- SCSI is a faster, more flexible drive-interface standard found in high-performance computers.