Secondary storage devices are used to store data long-term. These devices are non-volatile, slower, but they have more memory. For example magnetic devices, optical devices, and flash memory.

Magnetic storage stores data by magnetizing particles on a disk or tape. Devices like hard disk drives (HDDs) and floppy disks use this principle. HDDs use platters where data is written using read-write heads. It convert data from digital to analog form. Seek time, is the time required for the head to locate data in milliseconds. Transfer rate - speed data transfer from disk to CPU. Traditionally, HDDs have more memory at low cost but are replaced by solid-state drives (SSDs) in modern laptops and desktops.

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SSDs are non-volatile storage devices with chips and flash controllers. Unlike HDDs, SSDs have no moving parts. It make them more stable to shocks and vibrations. They read and write data using interconnected flash memory chips.

Optical devices use a laser for reading and writing data. For example CDs, DVDs, and Blue-ray discs. Optical storage is durability, but it has limit in speed and capacity.

Secondary storage is crucial in computer architecture. It includ many different types, with specific advantages and disadvantages. Cloud computing, a trend, uses (remote) servers for storage and backup and it need Internet connection. The choice of storage type depends on the user's needs.

Secondary storage \*\*\* long-term

non-vol

for example

Magnetic storage

HDD, floppy

read-write heads

It convert data

Seek time (head to locate)

Transfer rate (from disk to CPU)

HDDs replaced SDDs

SSDs are non-volatile

no moving parts

shocks and vibrations

read and write, chips

Optical devices use a laser beam

for ex CDs, DVDs

Optical storage is durability

Secondary storage is crucial

It includ, advantages and disadvantages

Cloud computing