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Solid State Drives by John Smith

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Solid state drives are data storage devices that use solid-state memory to store persistent data with the intention of providing access in the same manner of a traditional hard disk drive. Solid State Drives are distinguished from traditional magnetic disks such as hard disk drives or floppy disk, which are electro-mechanical devices containing spinning disks and movable read/write heads. In contrast, SSD drive use microchips that retain data in non-volatile memory chips and contain no moving parts. Compared to electro-mechanical HDDs, Solid State Drives are typically less susceptible to physical shock, are silent, have lower access time and latency, but are more expensive than traditional HDDs. SSD drive use the same interface as hard disk drives, thus easily replacing them in most applications.

Solid state is term that refers to electronic circuitry that is built entirely out of semiconductors. The term was originally used to define those electronics such as a transistor radio that used semi-conductors rather than vacuum tubes in its construction. Most all electronics that we have today are built around semi-conductors and chips. In terms of a SSD, it refers to the fact that the primary storage medium is through semi-conductors rather than a magnetic media such as a hard drive.

The key components of a Solid State Drive are the controller and the memory to store the data. The primary memory component in an SSD drive had been DRAM volatile memory since they were first developed, but since 2009 it is more commonly NAND flash non-volatile memory. Other components play a less significant role in the operation of the SSD and vary between manufacturers.

Every SSD drive includes a controller that incorporates the electronics that bridge the NAND memory components to the host computer. The controller is an embedded processor that executes firmware-level code and is one of the most important factors of SSD performance. Most Solid State Drive manufacturers use non-volatile NAND flash memory in the construction of their SSDs because of the lower cost compared to DRAM and the ability to retain the data without a constant power supply, ensuring data persistence through sudden power outages.

Most advantages of solid state drives over traditional hard drives come from the characteristic of data being accessed completely electronically instead of an electro-mechanical machine. Solid State drive does not have any moving parts. All the storage on a solid state drive is handled by flash memory chips.The power usage is a key role for the use of solid state drives in portable computers. Faster data access is another important advantage of using ssd drives. On the other hand, traditional hard drives currently excel by offering much more capacity for the same price.

With businesses using their servers on a daily basis, the more efficient the server is able to run the better it is for the company. With its quick speeds and wiring, SSD are likely to continue to grow as a viable alternative to standard hard drive memory in the near future.

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