

# Solid-state drives (SSDs) and some things you should know

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**What do you know about solid-state hard drives, which are advertised to have amazing read / write speeds?**

Promoted relatively loudly not long ago, a newly released hard drive has an amazing read and write speed called **Solid State Drive** or roughly translated as 'solid hard drive'.

**What is a solid-state hard drive?**



This is not really a new technology. Basically, SSDs have been around since the early days of computers, exist in many different forms, typically computer RAM. But because the cost per GB of storage is so high, and the speed of reading and writing data on the hard disk is not limited by the speed of the engine, it is not interested in replacing the conventional mechanical hard drive.

It was not until the 1990s that Flash memory chips appeared with the first product being a popular USB drive today. But at that time, the cost of producing Flash memory chips was still too expensive compared to the capacity it brought. Because of this technology, it is still not possible to replace the traditional hard drive.

In the early years of the 21st century, Flash memory prices continued to fall sharply. Along with the limited

speed of old drives, this has prompted manufacturers to think of making a hard drive using Flash memory chips with the main purpose of breaking the limit. Read and write speeds of traditional hard drives.

And after years of development, solid-state hard drives have begun to be popular in conventional personal computers, at affordable prices.

## Compare SSD and HDD

Picture 2 of Solid-state drives (SSDs) and some things you should know

To get a better understanding of SSDs, let's compare it to traditional hard drives using a rotary motor.

**Drive boot time:** Traditional mechanical drives use mechanical motors to spin magnetic disks. Therefore, when there is a start command, the mechanical drive will take 1-3 seconds to start this engine. When booting, you will hear a small rattling sound coming from the drive. Meanwhile, solid-state drives completely use memory chips, without moving parts, so there is no boot time. Just power supply, you can immediately access data on memory chips.

**Time to access data and latency:** SSDs have 80 to 100 times faster read and write speeds than conventional HDDs (theoretically), because simply SSDs are not limited to disk rotation and picking up Mechanical data such as HDD. Therefore, SSDs can access any location on the drive without delay. The traditional hard drive will take a bit of time for the reader to move to pick up the data on the disk surface.

**Noise:** Solid-state drives are completely silent because there is no movement inside.

**Reliability:** The hard disk failure in HDD is mainly due to the disks rotating at too high a speed, so when there is an external impact, such as vibrating the computer, the reader will collide with the disk surface causing a scratch scratches on the surface, resulting in a *bad sector* . Also because the SSD has no movement, the problem of losing data when the drive is vibrated is not available, but in return Flash memory chips have inherent disadvantages.

Like a USB, if you pay close attention to the specifications when you buy, you will see that there is an item that is the number of times to record data. Each Flash memory chip has a specific number of write data called **Write cycles** . Every time the data is copied and removed from the memory chip, you lose 1 cycle. This number of recording cycles per memory chip is determined so you can also consider this parameter as the lifespan of a solid-state hard drive (today's SSDs often have enough recording cycles to secure your data. No damage within 5 years.

After using up your data recording cycle, the data on this Memory Chip will be converted to a Read-only format just like a regular CD, meaning you won't be able to change the data. This memory chip, but the data is not lost or corrupted like the HDD drive Bad Bad At that time, the computer will copy this data to other memory chips that work well and disable the 'expired' memory chip and you can use normal data again, but the drive capacity Your hard will be reduced. Therefore, SSD reliability is clearly higher than traditional HDD.

**Power consumption:** SSD consumes less power than HDD from 30-60% of energy, saving from 6 to 10 Watts for you.

**Price:** Of course, with so many advantages, it is clear that the price of an SSD cannot be less than 1 HDD. The

price of an SSD can be 5 - 10 times higher than a traditional HDD hard drive. So consider the need before you intend to buy SSD.

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