

How long will hard drives, SSDs and USBs last?

Let's see how long your hard drive will last and whether SSD or HDD are best for long term data storage.

When looking for storage media, there are plenty of good options out there. So whether you want huge capacity, super fast performance or portability, there are perfect options.

But how does the trustworthiness of these media differ? CDs and DVDs don't last forever. What about hard drives and SSDs? How long will they continue to work on your computer?

Let's see how long your hard drive will last and whether SSD or HDD are best for long term data storage.

Hard Drive

Everyone knows that deleting files from a hard drive doesn't mean they're gone forever. Occasionally, security experts will collect drives from discarded computers to demonstrate how much data can be recovered from them. In fact, the only way to be sure that your data is gone is to physically destroy it.



Unfortunately, that doesn't mean the hard drive is a reliable long-term storage device.

Hard drives rely on a series of moving parts - the spinning platter is read by a moving lever with a magnetic head. Like anything with moving parts, hard drives eventually fail over time.

The causes are varied, from power cuts or sudden voltage surges, physical shocks to manufacturing defects. Regular use, friction, or other physical failures, will be the reason why you need to replace your hard drive before any other signs of deterioration show up.

In the event of an emergency, you can find a way to repair a 'dead' hard drive to recover data. A 2021 study by cloud storage company BackBlaze looked at more than 200,000 drives and found that in the first three-and-a-half years, about 2% of drives typically failed, most likely due to a manufacturing defect. The report revealed that 90% of drives survived for 4 years, but only 65% exceeded the 6-year mark.



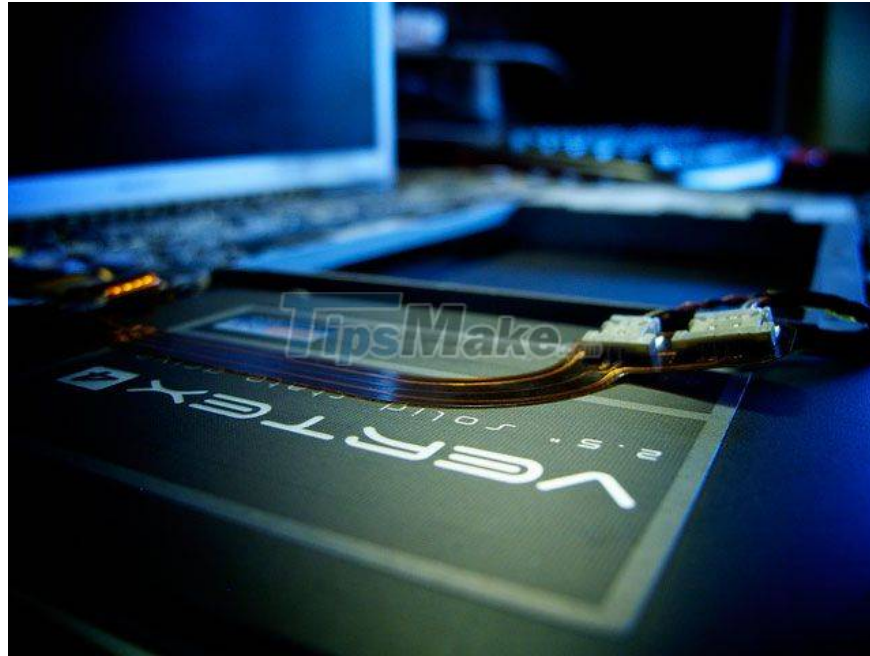
Besides, according to the report, the life of the hard drive decreases at a steady rate of 2 to 2.5% in the first 4 years, then the increasing rate results in only 65% of the hard drive surviving at the end of the year. 6th year. But if the drive isn't used - meaning you just copied your data into it and then put it away - it can last for years.

Hard drives store data magnetically, so as long as you stay away from other strong magnetic sources, it should be pretty stable. Magnetism can degrade over time, putting data at risk, but this can be restored by turning on the power and reading or writing data. You should do this every few years if you're using your hard drive for long-term storage.

SSD drive

SSDs do not contain moving parts like hard drives. Without the rotating disc, swingarm and magnetic head, flash chips are used in place of these.

This means that SSDs are not as easily damaged as hard drives. Additionally, the added durability gives SSDs a clear advantage in reliability, especially when subjected to impact or exposure to less than optimal environmental conditions. They are also unaffected by magnets.



However, it should be remembered that other components in an SSD are just like those in a hard drive and are more likely to fail. SSD drives are also very susceptible to power failure, leading to data corruption or even failure of the drive itself. With SSDs still in their infancy, it may be a few years before we get a true picture of how well they will perform with repeated use.

The lifespan of each memory block in an SSD is limited to a certain number of write cycles, which means the number of times a piece of data can be stored into it. The number of cycles will be a few thousand on most drives. This sounds extremely low-key but isn't really an issue in modern SSDs. Unlike traditional hard drives, SSDs use a technique called Wear leveling to ensure that each memory block is used before the cycle starts again at the first block.

Unless you're writing tens of gigabytes of data a day and doing it continuously for several years, you won't hit the write cycle limit. Even if you did, the memory would become read-only, so your data would still be accessible.



All of this means that SSDs are a great choice for day-to-day storage over HDDs, as long as you prioritize performance over capacity and the relatively high price tag of SSDs.

But is an SSD good for long-term data storage? This depends.

The failure rate of SSDs largely depends on the technology used and how you use them.

In general, SSDs are expected to last longer than HDDs in general use cases. However, how long an SSD can store data depends on several factors, including the number of write cycles used, the type of flash memory used in the drive, storage conditions, etc.

A joint study by Google and the University of Toronto shows that SSDs need 25% less replacement than HDDs over a multi-year period. The study also notes that 20-63% of drives experience at least one unreparable fault in the first 4 years.

But while the lifespan of an SSD isn't so obvious, many SSD manufacturers will list data retention as part of the drive's specifications or warranty standards. For example, Samsung's 250GB 860 EVO SATA SSD is promised to last at least 150 TBW (Terabyte Written) or 5 years, whichever comes first. The JEDEC Technology Consortium sets the industry standard of 1 year for consumer drives.

USB

USBs and memory cards like SD cards have the same problems as SSD drives. They have fewer components and are more powerful but are limited to a finite number of write cycles, typically between 3,000 and 5,000. Since they tend to use cheaper memory modules, they are generally less reliable than SSDs. Again, however, this should be noted.

If you're using a USB with the primary purpose of moving files from one location to another, the cheap drive is more likely to be damaged by physical impact (such as a disconnection between the USB pin and the USB port) and the printed circuit board inside the drive), before the write limit is reached.



Similarly, not unplugging the drive properly will potentially put your data at risk. Poor fault tolerance can put the entire drive at risk. USB is not a great option for storage. Flashbay manufacturer says that USB can withstand 10,000 to 100,000 write/erase cycles depending on the technology used.

As with SSDs, data retention is affected by memory blocks. A USB specially purchased for backup and file storage can last for many years. A heavily used drive can lose data within a few months if left unpowered. If you are interested in buying this drive, check out this list of the fastest USBs you can buy right now.

Which is the best option for long-term storage?

The most important thing to remember when looking for storage media to backup is that nothing lasts forever. You can expect a storage device to hold data for a few years if it is not used. But you should also regularly check the drive to see if the data is intact. Removing data from the drive and then putting it back in will ensure the drive extends its life by several years.

Of course, the only reliable backup solution is to create 2 or 3 backups and rotate them periodically.

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