3 bad habits that are silently 'killing' your SSD.

SSDs are more durable than you might think, but bad habits like constantly writing data, letting the SSD overheat, or having a suboptimal system configuration can cause the drive to fail much faster.

Despite initial concerns, SSDs are actually much more durable than people thought. I personally use several fairly old SSDs, some almost 10 years old. They still work reliably, and with careful use, I could probably use them for many more years. However, I've also had to "get rid of" quite a few SSDs prematurely, and there are three important habits you should avoid if you want to extend the lifespan of this storage drive as long as possible.

Avoid continuous data writing tasks that can wear down durability.

The way SSDs work – and how they 'die' – is sometimes quite counterintuitive. Inside an SSD are memory cells, each holding a charge to represent a binary value. At the most basic level, having a charge means one value, a lower charge means the other. With the most durable type of memory, SLC (single-level cell), each cell stores only one bit of data.

Each time you change the electrical charge in a memory cell, its insulation weakens slightly, causing its charge-holding capacity to gradually decrease. With SLC SSDs, this isn't too serious because the system only needs to distinguish between two very different voltage levels. Even if there is significant charge leakage, the controller can still recognize which state the memory cell is in. Therefore, SLC SSDs would have to experience significant wear and tear before they would fail due to data write errors.

The problem is that storing one bit per memory cell makes SSDs extremely expensive. That's why most SSDs today use multi-level memory, storing multiple bits in the same cell by dividing the voltage levels. This saves costs and increases capacity, but the trade-off is that the voltage levels are very close together, making it much harder to distinguish them as the memory cells begin to degrade.

Nevertheless, modern multi-level SSDs are equipped with numerous compensation mechanisms to increase write endurance, sufficient for most typical users. However, manufacturers only guarantee stable SSD performance within a certain TBW (terabytes written) limit, and anything exceeding that number is simply 'extra'.

This means you shouldn't use cheap multi-level SSDs as your primary drive for heavy and continuous data writing tasks. For example, if you're editing video, use a secondary SSD as a scratch drive and accept that it's a consumable component. Conversely, this type of SSD is very suitable for installing games, because after installation, the amount of additional data written is not significant, and you won't be deleting and redownloading games every day.

Keep your SSD cool and ensure good thermal management.

One major reason SSDs degrade quickly is data erasure and write cycles, but temperature is an equally dangerous factor. High temperatures cause numerous problems for flash memory, to the point that SSD lifespan specifications always include temperature test conditions.

High temperatures make it easier for electrons to escape from memory cells, and during the erase-write cycle, the insulation layer is more severely damaged. SSDs can protect themselves by throttling to cool down and avoid immediate failure, but if they continuously run at high temperatures, their lifespan will eventually be affected.

You can use tools like HWMonitor to monitor SSD temperatures. Let a program run in the background while you work or play games as usual, then check the highest temperature the SSD reaches. Depending on the drive model, you generally shouldn't let the SSD exceed 70°C. In fact, many drives will automatically reduce performance before this threshold. The ideal goal is to keep the temperature under heavy load at or below 60°C.

If possible, install a heatsink for your SSD. For laptops, ensure the SSD is in good contact with the existing cooling system. For desktops, the SSD also needs airflow within the case, so having at least one case fan blowing air over the storage drive area is highly recommended.

Use the operating system's tools to reduce unnecessary stress.

Modern operating systems have done a lot to make SSDs more durable, so you don't need to do as much tweaking as you did when SSDs first became popular. However, you can still reduce unnecessary background activity. For example, if you don't need instant searches, you can turn off indexing for certain drives. For instance, a secondary drive containing only games or a scratch drive for video editing work doesn't really need to be indexed. Even so, for most users, this won't make a huge difference.

Choosing a balanced or power-saving power mode – unless you need maximum performance all the time – also helps reduce stress on the SSD and lower operating temperatures.

You might also consider moving folders like Downloads or other frequently used data-writing locations to a secondary drive instead of the system drive.

Finally, there's the familiar advice about leaving 10–20% of SSD space free for overprovisioning. Personally, I'm not entirely convinced by this, as modern SSDs already have some hidden space dedicated to that purpose.

However, you should still leave some space on your system drive for swap files, and in fact, SSDs write significantly slower when nearly full.

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