

How to use your SSD effectively: Optimizing speed and lifespan.

Discover how to use SSDs effectively to make your computer run faster, smoother, and more reliably. Learn the secrets to optimizing storage capacity and drive lifespan here.

Computer lag, slow game loading, or sudden data loss often stem from worn-out or incorrectly configured hard drives. Understanding how to use SSDs effectively not only ensures smooth system operation but also protects important files. Let's explore this further with GearVN in the following article.

Key points

1. Using SSDs correctly helps maintain high speeds, reduce memory chip wear, and protect data safely during long-term use.
2. Always keep 15-25% of your disk space free, and enable TRIM and AHCI to ensure stable performance and optimize data processing capabilities.
3. Properly allocating data between SSDs and HDDs optimizes system speed and effectively saves on storage costs.
4. To extend SSD lifespan, avoid bad habits such as defragmentation, continuous write/delete operations, or sudden power outages.

1. Why is it important to know how to use an SSD correctly?

SSDs operate using NAND Flash memory chips instead of mechanical disk platters. Each drive has a specific data write limit, known as the TBW (Total Bytes Written) rating . Understanding and using SSDs correctly offers the following practical benefits:

1. Maintaining maximum read/write speeds and IOPS helps to boot up the device and launch applications quickly.
2. Minimizing wear and tear on memory chips will extend the lifespan of the hard drive.
3. Protect your data securely, minimizing the risk of file loss due to system errors or sudden hardware failures.
4. This helps users save significantly on repair and replacement costs.



Using SSDs correctly helps minimize memory wear and tear.

2. How to use SSDs effectively to optimize performance.

2.1. Always leave 15-25% of space free.

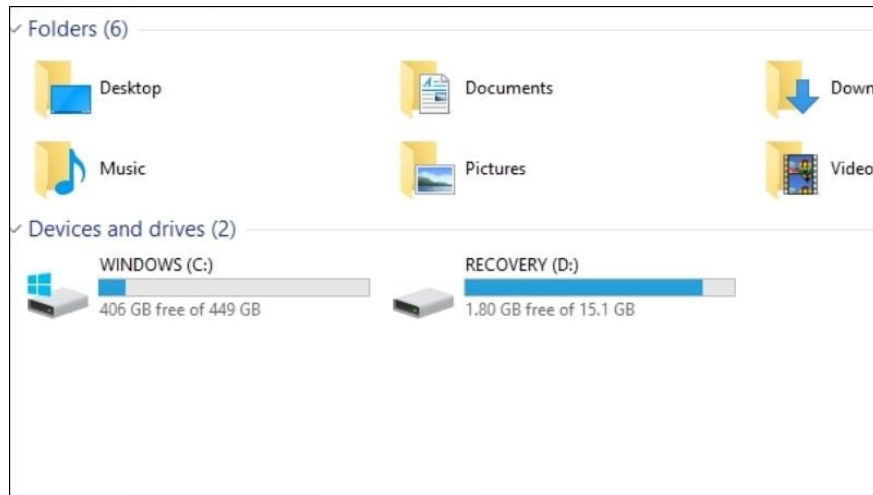
An overfilled hard drive will cause the SSD controller to take longer to search for free memory blocks. Maintaining at least 15% free storage space will provide the following technical benefits:

1. Create space for the Over-provisioning feature to work smoothly.
2. Wear Leveling algorithm support distributes data write tasks evenly across the entire memory chip.
3. Prevent severe read/write speed drops when capacity exceeds 80%.
4. Minimizing localized wear and tear on certain memory regions extends overall lifespan.

2.2. Intelligent Data Storage Allocation

The difference between SSDs and HDDs lies in access speed and write/erase endurance, so proper data allocation is necessary to optimize system performance. SSDs should be used for the operating system, demanding software, and games to ensure fast processing speeds and reduce latency.

Meanwhile, HDDs are suitable for storing movies, large amounts of data, or infrequently accessed files to save costs. This allocation allows SSDs to focus their performance on critical tasks, while HDDs handle long-term storage efficiently.



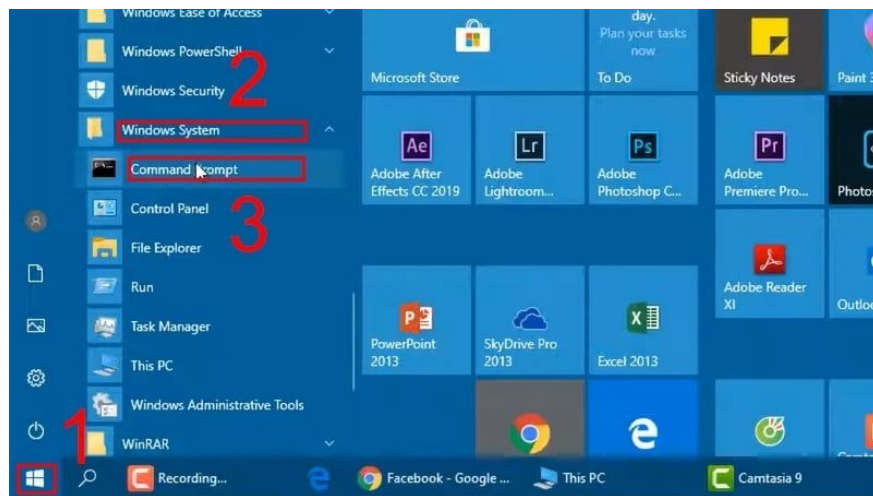
Data partitioning is optimized for speed.

2.3. Enabling the TRIM command on Windows

TRIM is a crucial communication command between the operating system and the SSD. This command informs the controller which data blocks have been deleted and are no longer in use, so that cleanup can be performed beforehand. This process helps the device maintain a stable write speed.

To check and enable TRIM on Windows 10/11, follow these steps:

1. **Step 1:** Go to **Start** , then scroll to find **Windows System** and select **Command Prompt** to run the feature.



Right-click on Command Prompt

1. **Step 2:** Enter the command ``fsutil behavior query DisableDeleteNotify`` and press **Enter** . If the result is **0** , TRIM is enabled. If the result is **1** , enter the command ``fsutil behavior set DisableDeleteNotify 0`` to activate it.

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18363.719]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>fsutil behavior query DisableDeleteNotify
NTFS DisableDeleteNotify = 0 (Disabled)
ReFS DisableDeleteNotify = 0 (Disabled)

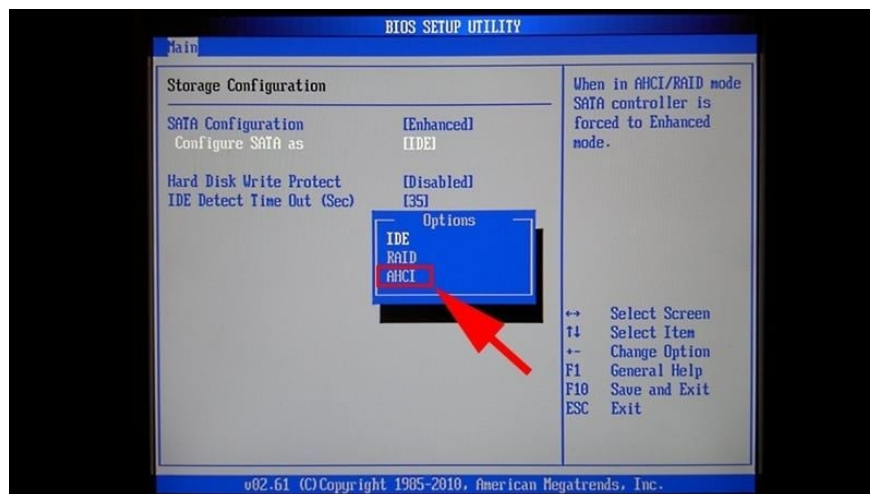
C:\WINDOWS\system32>
```

If the result returned is 0, TRIM is enabled.

2.4. Enable AHCI mode in BIOS or UEFI.

AHCI is a hardware communication standard that helps the system make the most of the bandwidth of an SSD. To enable AHCI mode, you need to access the BIOS and activate it in the settings.

Each computer has a different way of enabling AHCI. Therefore, you should search online for the exact instructions for your computer. Most newer computers now have this mode enabled by default.



Select AHCI mode

2.5. Equipping M.2 NVMe SSDs with heatsinks

Hardware components operating at high performance always generate a lot of heat. M.2 NVMe SSDs, especially PCIe Gen 4 and Gen 5, offer very high speeds but are also prone to overheating when handling demanding tasks such as video rendering or gaming.

Users should equip their SSDs with dedicated cooling systems. If using high-end motherboards, take advantage of the heatsinks that the manufacturer has integrated into the motherboard .



Equip the SSD with a heatsink.

3. Mistakes to avoid that reduce SSD lifespan.

1. **No need to defragment SSDs:** SSDs are not like HDDs, so they don't need to be compressed to increase speed. Running defragmentation only causes more data to be written to the drive and degrades it faster.
2. **Avoid repeatedly writing and deleting large amounts of data:** If you download large files or constantly write and delete data, your SSD will wear out faster. Limit your use of SSDs for torrenting or caching unless absolutely necessary.
3. **Avoid sudden power outages:** Losing power while in use can cause data corruption or hard drive damage. Ensure a stable power supply when using the computer.



Avoid letting the device shut down suddenly.

4. Software for checking SSD health and managing

4.1. Using CrystalDiskInfo

1. Supports displaying hard drive health status in the Health Status section: Good, Caution, or Bad.
2. Provides real-time operating temperature data to enable timely cooling solutions.
3. Allows users to track the total amount of data recorded and the actual operating hours.



Quick SSD health check

4.2. Use genuine software from the manufacturer.

Each component manufacturer provides specialized management tools such as Samsung Magician, WD Dashboard, or Intel SSD Toolbox. These software programs help users update to the latest firmware to patch system errors. They also allow users to configure and enable SLC Caching to optimize data write speeds during operation.



The manufacturer's software optimizes SSDs effectively.

5. GearVN - A reputable and high-quality place to buy PCs, laptops, and gaming gear.

GearVN specializes in providing high-end PCs, laptops , computer components (RAM, CPU , SSD, etc.), and gaming equipment (monitors, headphones, keyboards, mice, etc.) to meet all the needs of gamers and technology users. GearVN also stands out with advantages such as:

1. **Diverse products and optimized configurations:** GearVN offers countless options from major brands such as Samsung, Kingston, TeamGroup, Gigabyte, Corsair, etc. All products are carefully selected.
2. **Competitive pricing and numerous promotions:** GearVN regularly runs attractive promotions and discounts on special occasions. You can easily own your desired components at the best prices, along with attractive gifts or flexible installment payment options.
3. **Reliable warranty and after-sales service policy:** When shopping at GearVN, you can rest assured with our clear warranty policy and dedicated technical support team. Our experienced specialists are always ready to advise you on choosing the right product and answer any questions you may have during use.
4. **Convenient shopping experience:** Whether you want to experience our products in person at our showrooms or shop online through our website with fast delivery service, GearVN offers maximum convenience.

GearVN contact information :

1. **Website :** gearvn.com
2. **Hotline :** 1900.5301



GearVN - Your trusted source for quality SSDs

6. Frequently Asked Questions

6.1. Do SSDs degrade in speed over time?

Yes. After prolonged use, SSD speeds may decrease slightly due to data filling and memory chip wear. However, with proper use and reasonable free space management, performance can remain stable for many years.

6.2. Should I shut down my computer frequently to protect my SSD?

It's not necessary. SSDs aren't affected as much by power on/off cycles as HDDs. You can use your computer normally, just avoid sudden shutdowns or power outages while it's running.

6.3. Do SSDs require regular maintenance?

Yes, but it's very simple. You just need to check your system health with software, update the firmware if available, and clean up unnecessary data to maintain stable performance.

See more:

1. How long is the lifespan of an SSD? How to accurately check its durability?
2. Should you buy a used SSD? Risks and how to check for safety.
3. Causes and effective solutions for SSD formatting errors.

Using the right SSD not only optimizes overall performance but also protects your data. If you need advice on upgrading with genuine components or a thorough computer health check, contact GearVN immediately via hotline or visit our website for dedicated support.

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