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**SSD AND HDD**

1. **SSD**

An SSD (solid-state drive) is a type of [nonvolatile](https://searchstorage.techtarget.com/definition/nonvolatile-memory) storage media that stores persistent data on solid-state flash memory. Two key components make up an SSD: a [flash controller](https://searchstorage.techtarget.com/definition/flash-controller) and [NAND flash memory](https://searchstorage.techtarget.com/definition/NAND-flash-memory) chips. The architectural configuration of the SSD controller is optimized to deliver high read and write performance for both sequential and random data requests. SSDs are sometimes referred to as flash drives or solid-state disks.

1. **HDD**

A hard disk drive (HDD) is a non-volatile computer storage device containing magnetic disks or platters rotating at high speeds. It is a secondary storage device used to store data permanently, random access memory (RAM) being the primary memory device. Non-volatile means data is retained when the computer is turned off.

**SSD Vs HDD Comparison**

Now it’s time to do some comparisons and determine which might be best for your individual needs - SSD or HDD?  The best way to compare items is a table with a side by side comparison of items in which a green box indicates an advantage:

|  |  |  |
| --- | --- | --- |
| **Attribute** | **SSD (Solid State Drive)** | **HDD (Hard Disk Drive)** |
| **Power Draw / Battery Life** | https://www.storagereview.com/images/shortcode-tick.pngLess power draw, averages 2 – 3 watts, resulting in 30+ minute battery boost | More power draw, averages 6 – 7 watts and therefore uses more battery |
| **Cost** | Expensive, roughly $0.20 per gigabyte (based on buying a 1TB drive) | https://www.storagereview.com/images/shortcode-tick.pngOnly around $0.03 per gigabyte, very cheap (buying a 4TB model) |
| **Capacity** | Typically not larger than 1TB for notebook size drives; 4TB max for desktops | https://www.storagereview.com/images/shortcode-tick.pngTypically around 500GB and 2TB maximum for notebook size drives; 10TB max for desktops |
| **Operating System Boot Time** | https://www.storagereview.com/images/shortcode-tick.pngAround 10-13 seconds average bootup time | Around 30-40 seconds average bootup time |
| **Noise** | https://www.storagereview.com/images/shortcode-tick.pngThere are no moving parts and as such no sound | Audible clicks and spinning can be heard |
| **Vibration** | https://www.storagereview.com/images/shortcode-tick.pngNo vibration as there are no moving parts | The spinning of the platters can sometimes result in vibration |
| **Heat Produced** | https://www.storagereview.com/images/shortcode-tick.pngLower power draw and no moving parts so little heat is produced | HDD doesn’t produce much heat, but it will have a measurable amount more heat than an SSD due to moving parts and higher power draw |
| **Failure Rate** | https://www.storagereview.com/images/shortcode-tick.pngMean time between failure rate of 2.0 million hours | Mean time between failure rate of 1.5 million hours |
| **File Copy / Write Speed** | https://www.storagereview.com/images/shortcode-tick.pngGenerally above 200 MB/s and up to 550 MB/s for cutting edge drives | The range can be anywhere from 50 – 120MB / s |
| **Encryption** | Full Disk Encryption (FDE) https://www.storagereview.com/images/shortcode-tick.pngSupported on some models | https://www.storagereview.com/images/shortcode-tick.pngFull Disk Encryption (FDE) Supported on some models |
| **File Opening Speed** | https://www.storagereview.com/images/shortcode-tick.pngUp to 30% faster than HDD | Slower than SSD |
| **Magnetism Affected?** | https://www.storagereview.com/images/shortcode-tick.pngAn SSD is safe from any effects of magnetism | Magnets can erase data |

If we tally up the checkmarks, the SSD gets 9 and HDD gets 3. Does that mean the that an SSD is three times better than an HDD? Not at all. As we mentioned earlier, it all depends on individual needs. The comparison here is just to lay out the pros and cons for both options. To aid you even more, here are some rules to follow when you decide which drive is best for you:

An HDD might be the right choice if:

* You need lots of storage capacity, up to 10TB
* Don’t want to spend much money
* Don’t care too much about how fast a computer boots up or opens programs - then get a hard drive (HDD).

An SSD might be the right choice if:

* You are willing to pay for faster performance
* Don’t mind limited storage capacity or can work around that (though consumer SSD now go up to 4TB and enterprise run as high as 60TB)