HDD vs SSD vs M.2 PCIe SSD

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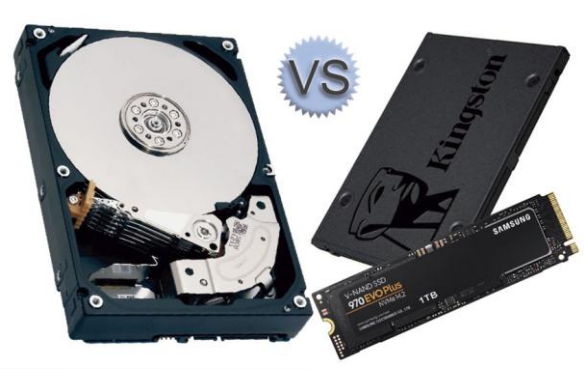

HDD

HDD ADVANTAGES

Drive on hard magnetic disks, or HDD (English hard (magnetic) disk drive, HDD, HMDD), hard disk, decomp. hard drive is a random access storage device (storage device) based on the principle of magnetic recording.

1. HDDs are now cheap compared to other drives.
2. Classic hard drives offer much more storage space. Here, volumes up to 18 TB are possible.
3. If data is lost on the HDD, as a rule, there is some hope of salvation: it is often easy to recover information with the help of special utilities.

HDD Seagate Exos X18

SPECIFICATIONS

Model	**Seagate Exos X18 (ST18000NM000J)**
Capacity	18 TB (1 TB = 10^{12} bytes)
Form Factor	3.5 inch
Number of plates	9
Interface	SATA 6Gb / s
Maximum data exchange rate	270 MB / s (1 MB = 10^{6} bytes)
Rotational speed	7200 rpm.
Buffer memory	256 MB
Data format	Advanced Format (4K bytes / sector, 512 bytes / sector emulation)
Power consumption (typ./max.)	5.0 / 10.0 Watt
MTBF	2,500,000 hours
Weight	670 g
Guarantee	5 years
Additionally	NCQ, vibration sensor
Price	~ 900 €

SSD

SSD ADVANTAGES

A solid-state drive (SSD) is a solid-state storage device that uses integrated circuit assemblies to store data persistently, typically using flash memory, and functioning as secondary storage in the hierarchy of computer storage. It is also sometimes called a solid-state device or a solid-state disk.

1. SSDs have no mechanical parts, making them more durable than HDDs. Such devices can even survive falls without problems (in most cases).
2. Due to the lack of mechanical parts, SSDs are practically silent.
3. The most important advantage of SSDs: they are significantly faster than classic hard drives.
4. In most cases SSDs consume significantly less energy.

Samsung 870 QVO 8TB

SPECIFICATIONS

Model	**Samsung 870 QVO 8TB**
Capacity, GB	8000
Form factor, inch	2.5
Interface	SATA 3
Controller	Samsung MKX
NAND Flash	V-NAND 4-bit MLC
Maximum read speed, MB / s	560
Maximum write speed, MB / s	530
Recording resource, TB	2880
MTBF	1,500,000 hours
Weight, g	57
Power consumption	3.2 Watt
Warranty, year	3
Price	~ 750 €

M.2 PCIe SSD

M.2 PCIe ADVANTAGES

An M. 2 SSD is a small form factor solid-state drive (SSD) that is used in internally mounted storage expansion cards.

1. Size and capacity are two of the M.2 SSD's greatest benefits.
2. M.2 SSD based on the NVMe specifications can read and write at much faster rates.

Corsair MP400 8TB M.2

SPECIFICATIONS

Model	**Corsair MP400 8TB M.2**
Capacity	8 TB (1 TB = 10^{12} bytes)
Form Factor	M.2 2280
Interface	PCIe Gen 3.0 x4
Max Sequential Read CDM	3,480 MB/s
Max Sequential Write CDM	3,000 MB/s
NAND Technology	3D QLC NAND
Encryption	AES 256-bit
Endurance	1600 TBW
MTBF	1,800,000 Hours
Power consumption	6.5Watt Average
Weight	34 g
Guarantee	5 years
Price	~ 1 400 €

COMPARISON OF ALL THREE DRIVES

CONCLUSIONS

1. HDD:

   The hard drive has the largest storage capacity of 18TB and the lowest price of all three options. It also has the longest lifespan of 2.5 million hours, but it is the slowest to write and read and has the largest size, power consumption.

2. SSD:

   This is a mid-range drive that fits into all desktop motherboards, has a small size and an average write and read speed. Good indicators of complete rewriting cycles of the drive, which for an ordinary user will be enough for tens of years.

3. M.2 PCIe SSD:

   This is the most expensive drive on sale, but also the fastest to read and write! It is worth noting its significant drawback is the number of complete rewriting cycles of the device, which is 80% lower than that of a conventional SSD. Also it is not compatible with older motherboards.