

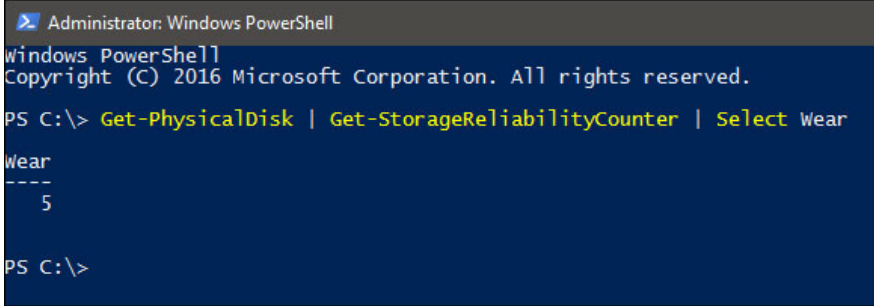
Learn about the capacity of SSDs: What is DWPD and TBW?

Each cell on the memory can only be written with a certain number of times, when exceeding this number, it is better to replace the new drive.

Today's SSDs mostly use NAND flash and are worn out during use. Each cell on the memory can only be written with a certain number of times, when exceeding this number, it is better to replace the new drive.

Check this level of wear on PowerShell with the following command.

```
PS C:> Get-PhysicalDisk | Get-StorageReliabilityCounter | Select Wear
```



```
Administrator: Windows PowerShell
Windows PowerShell
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PS C:\> Get-PhysicalDisk | Get-StorageReliabilityCounter | Select Wear

Wear
----
5

PS C:\>
```

The results showed that the SSD was 5% worn out.

Note that not all drives report this value to Windows. In some cases the result will be blank. Reading the drive does not cause wear and tear, but is mainly due to the activity written on the drive.

When it comes to storage capacity of SSDs (or SSD Endurance), we can predict their lifespan thanks to 2 parameters.

1. Drive Writes Per Day (DWPD)
2. Terabytes Written (TBW)

What is Drive Writes Per Day (DWPD)?

DWPD indicates the number of times you can write to the drive its full capacity every day for the entire life cycle of the drive. For example, 200GB drive and 5GB warranty. If DWPD is 1, you can write 200GB on that drive every day for the next 5 years.

If you multiply it, you will get the total amount of capacity written on this drive before you have to replace the drive.

200GB per day x 365 days / year x 5 years = 365TB

If DWPD is 10, you can write 10 x 20 days each day. GB = 2TB, ie its 5-year life cycle will record 3650TB = 2.65PB.

What is Terabytes Written (TBW)?

TBW indicates the capacity you can write on that drive throughout its life cycle. Basically, it is the total number we just calculated above. For example, the drive has 365 TBW meaning you can write 365TB before you have to replace the drive.

If the warranty period is 5 years, 365TB / day will be credited (5 years x 365 days / year) = 200GB. If the drive has a size of 200GB, then the DWPD equivalent is 1. Similarly, if the drive has 3.65PBW = 3,650 TBW, it can record 2TB per day, or 10 DWPD.

These two numbers seem to be able to be put together easily when the drive capacity and warranty period are known.

Where are DWPD and TBW different?

The only difference is that DWPD depends on the drive size, and TBW does not.

For example, an SSD can write 1,000TB in 5 years. Assuming a drive size of 200GB, DWPD is equal to:

1,000TB / (5 years x 365 days / year x 200GB) = 2.74 DWPD

Assuming a 400GB SSD drive:

1,000TB / (5 years x 365 days / year x 400GB) = 1.37 DWPD

That means different drive capacity, DWPD will be different.

On the one hand, the 400GB drive can be properly recorded as a 200GB drive throughout the life cycle. Looking at TBW will be clear, both drives have TBW of 1,000. But when looking at DWPD, the obvious large capacity drive has a daily recording capacity of only half that drive. Then, use the number of TBW for comparison.

On the other hand, the 400GB drive provides a larger repository suitable for heavy workloads, so 1,000TBW is shared more smoothly. At that time, use the DWPD number more.

Depending on your needs, you can choose to compare DWPD or TBW when choosing to buy a drive. Often the drives record the parameters of both criteria.

See more:

1. 7 mistakes easily 'kill' SSDs
2. 5 ways to check hard drive effectively to help periodically check the hard drive

3. Find out how SSD drives work
4. How long can an SSD drive "live"?

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