

What is 'Thermal Throttling'?

Like most devices that operate on electrical energy, computers will generate heat during use. However, depending on factors such as the duration of use or the way of use, the amount of heat generated is more or less.

Overheating of a computer can lead to a performance drop, also known as 'Throttling' or 'Thermal Throttling'. So what does this concept mean, and how can you avoid it?

Thermal Throttling helps protect hardware

Critical components responsible for computation and processing in a computer system such as the CPU, GPU, and even memory modules (RAM) generate heat during use. When you perform heavy tasks, especially for a long period of time, they generate more heat, which in turn can lead to overheating. Under such constant high temperatures, it is quite possible for these components to be permanently damaged.

Therefore, when a component in a PC rig reaches a high enough temperature, performance is limited to prevent heat build-up and at the same time reduce the load on the cooling system. Components can only run safely at the maximum allowable temperature. The job of the cooling systems is to keep this heat level below the 'red limit'. Otherwise, Throttling will occur.



"Throttling" in this context can be understood as "performance reduction" in the form of a reduction in clock speed, thereby reducing heat. Your GPU or CPU will run slower, resulting in a drop in system performance. For example, you may experience a slight slowdown in the user interface, while the frame rate in games will also be reduced.

More serious signs of overheating include crashes, laggy and distorted images on the screen, or sudden system reboots.

In other words, too high a temperature will affect the performance of the system. The automatic reduction of CPU clock (Throttling), or even a sudden power off will help reduce the temperature, limit hardware damage.

Devices with poor cooling systems are prone to Throttling

Although high-end graphics cards and processors can generate a lot of heat during work, you can still prevent Throttling by improving the system's active heat dissipation. In addition, you can also use a system monitoring tool like MSI Afterburner to see GPU and CPU clock speeds, thereby assessing whether the system is suffering from Throttling.

In general, this phenomenon is not limited to PCs. Many tablets and smartphones also experience Throttling because they are not equipped with active cooling systems (such as cooling fans, liquid cooling). These devices mainly rely on passive cooling, so are only suitable for light tasks.

However, the increasingly powerful mobile chips have also led to manufacturers being forced to equip more modern active cooling systems in portable devices such as smartphones and tablets. .



Avoid Throttling

Ambient temperature can play a big role in how well your PC, tablet or smartphone can cool itself. In other words, the cooler the surroundings, the better.

Besides, you can also consider investing, upgrading the active cooling system mounted inside or even outside the device. Take a moment to understand, the ability to escape air inside the chassis is also something you should do.

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