Understanding BIOS: An Indispensable Component of a Computer

Desktop computers, laptops and even smartphones have become an indispensable means of work and modern life. Besides CPU, RAM... are important components, BIOS is also an indispensable element of a computer.

Let's learn BIOS in today's article!

1. What is BIOS, how does it work for computers?

BIOS stands for Basic Input/Output System called 'Basic Input/Output System', this is the program that the computer's microprocessor uses to start the computer system after it is powered on.

The BIOS allows your computer to boot, communicate with the operating system and attached devices such as hard disks, video adapters, keyboards, mice, USBs, and printers. BIOS is an integral part of a computer, and all computers have a BIOS located in a chip on the motherboard.

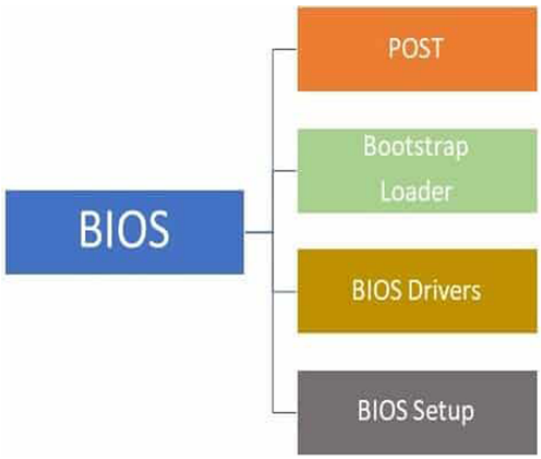
The term BIOS first appeared in 1975 by American computer scientist Gary Kildall and was introduced into IBM's first computer in 1981. In the years that followed, BIOS became more popular, becoming more and more popular. became an integral part of computers for a while.

The main use of the BIOS is to act as an intermediary between the operating systems and the hardware. Theoretically, the BIOS is always the intermediary between the processor, data flow, and I/O device control information.

Also, in some cases the BIOS can arrange for data to run directly into memory from devices, such as video cards, which require faster data flow to be effective.

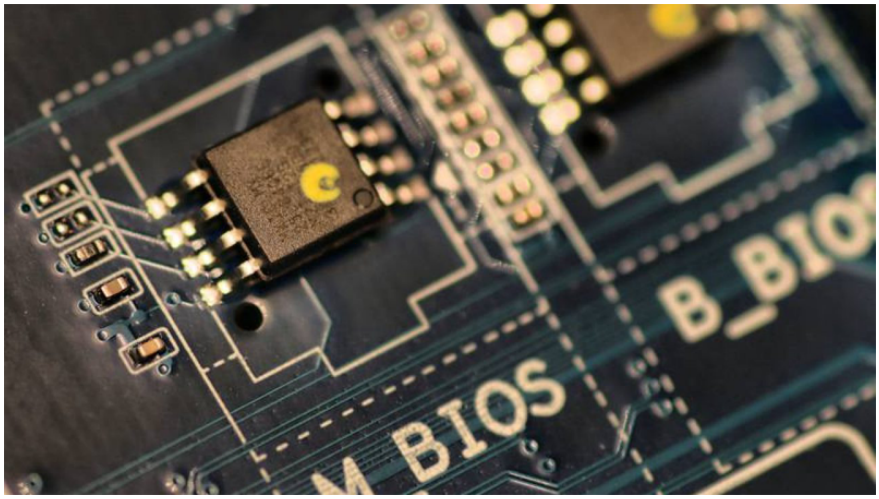
2. BIOS function and operation

The BIOS configures, tests, and connects the hardware to the operating system as soon as the computer is turned on. The combination of these steps is called the bootstrapping process.

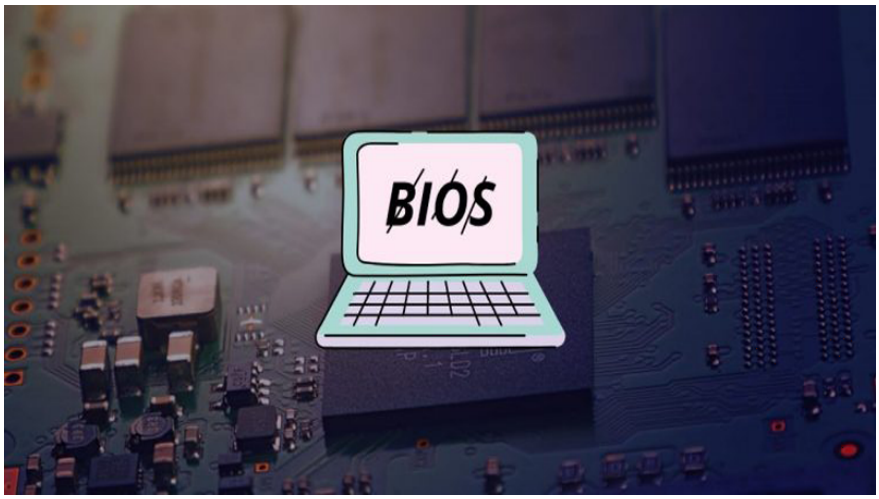


Each of these tasks is performed by four main functions:

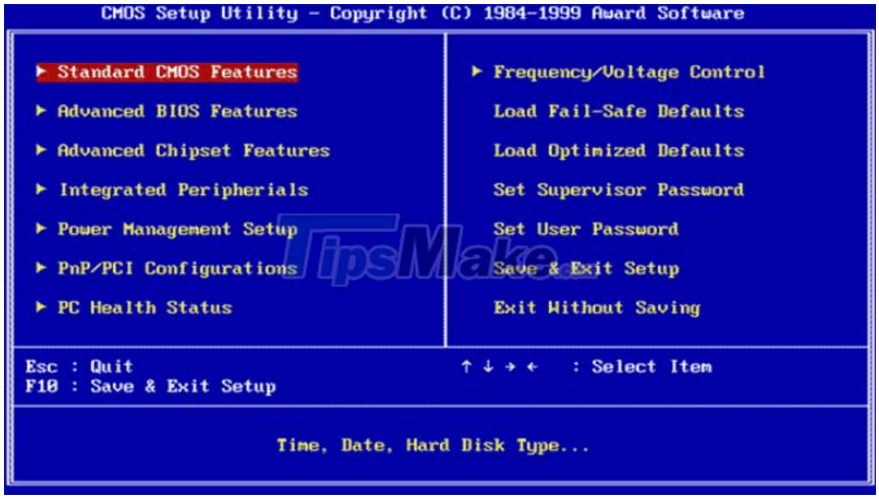
1. Power-on self-test (POST): This tests the computer's hardware before loading the operating system.
2. Bootstrap Loader: Locating the operating system. If the operating system is navigable, the BIOS transfers control to the operating system.
3. BIOS driver: Gives the computer basic operational control over computer hardware.
4. Complementary metal oxide semiconductor (CMOS) setup: This is a configuration that allows users to change hardware settings and computer system settings such as computer date, time, and password.



BIOS is a program that can access the microprocessor on EPROM (nonvolatile memory that retains data even after power off). When the user starts the computer, the microprocessor transfers control to the BIOS, which is always located in the same place on the EPROM.



When you turn on your computer, the BIOS checks your computer's hardware and attachments to make sure they're all in place and working. After checking and ensuring that the boot devices are working, the BIOS loads the operating system or critical components into the computer's random access memory (RAM) from the hard disk or drive (the boot device). motion).

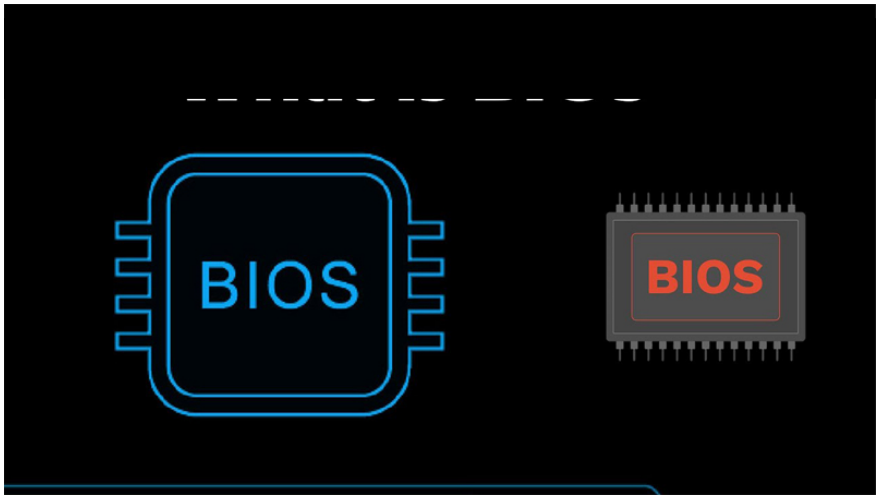


The BIOS stores the exact details of a computer's hardware components and devices, freeing the operating system from the task of learning about the hardware and connected devices. When device details change, simply update the BIOS program, no need to change software or adapt to modified devices.

3. Advantages of updating BIOS and limitations of BIOS

Once you successfully update your BIOS, this will fix you problems that have plagued you in the long run, can double your boot time through hardware repair, functions will be restored. Improvements, advantages of updating BIOS can be mentioned as:

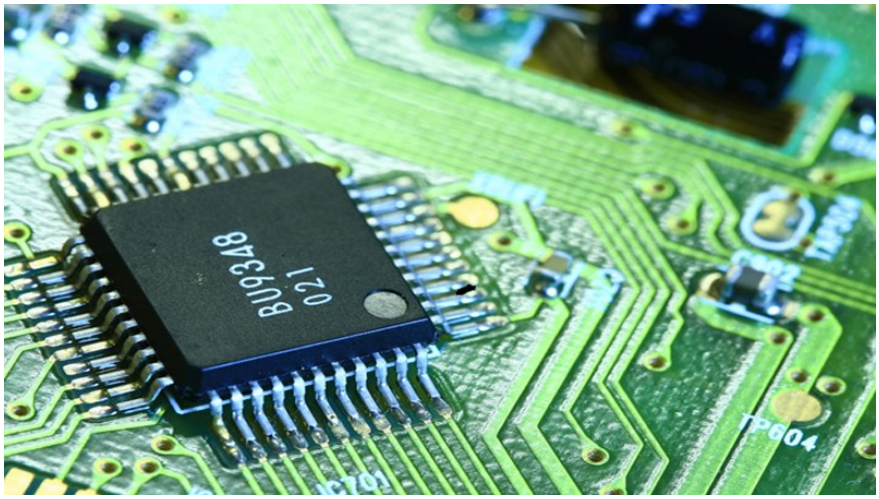
1. The overall performance of the computer can be improved.
2. Better compatibility.
3. Improved stability.
4. Start-up time is shortened.
5. Hardware updates, security updates.



However, you should be careful during the update process because if there is even a small mistake, your computer will encounter boot system errors, damage the motherboard and other systems.

Limitations of the BIOS:

BIOS boots in 16-bit real mode (Legacy Mode), which means that BIOS has difficulty booting multi-port peripherals such as USB, ThunderBolt, etc., and controllers control for new PC.



In particular, the BIOS cannot enforce booting of devices within 600 seconds of turning on the switch to be ready for the process of loading the operating system on the computer. The BIOS also cannot boot with drives larger than 99999.19 TB (terabytes).

4. BIOS is being replaced by UEFI

Originally, the BIOS was stored in a chip on the motherboard. Later, modern computer systems began to use flash memory to store the BIOS. This makes it easy to push updates and fixes without removing the chip from the motherboard, but it also leaves the BIOS vulnerable to virus rootkit attacks.

As of 2014, most newer computers are using Unified Extensible Firmware Interface (UEFI) to address BIOS technical shortcomings. Intel announced plans in 2017 to stop supporting legacy BIOS in 2020 and replace it with UEFI.

Conclude

BIOS plays an important role in the computer's startup, over time BIOS gradually cores and is gradually replaced by UEFI, but many people are still familiar with the word BIOS. To distinguish between the two, some people refer to BIOS as Legacy BIOS and UEFI as UEFI BIOS. What do you think of my article, please leave your thoughts below!

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