

What is BIOS ? why we use it?

BIOS stands for "Basic Input/Output System." It is a firmware (software that is embedded in hardware) that provides the fundamental low-level communication and control between the computer's operating system, hardware components, and peripherals. BIOS is typically stored on a chip on the computer's motherboard and is one of the first pieces of software that runs when the computer is powered on.

Here's why BIOS is important and why we use it:

Bootstrapping: When you turn on your computer, the BIOS initiates the boot process. It performs a Power-On Self-Test (POST) to check the hardware's health, and then it loads the operating system from the specified boot device (usually the hard drive or SSD) into the computer's memory. This process allows the computer to transition from being powered off to being ready to execute software.

Hardware Initialization: BIOS initializes and configures essential hardware components such as the CPU, memory, storage devices, and peripherals (keyboard, mouse, display, etc.). This ensures that the hardware is ready for the operating system to take control.

Device Management: BIOS provides an interface to manage and communicate with hardware devices. It offers a standard set of routines (interrupt handlers) for input and output operations, which the operating system and applications can use to interact with hardware devices.

System Configuration: BIOS allows users to modify system settings and configure hardware components. This is typically accessed through a setup utility during the boot process, often referred to as "BIOS setup" or "UEFI setup." Users can change settings such as boot order, date and time, CPU settings, and more.

Security: Modern BIOS implementations, often referred to as UEFI (Unified Extensible Firmware Interface), include security features such as Secure Boot, which ensures that only properly signed and authorized operating system and bootloader code can be executed during the boot process. This helps prevent malicious software from taking control of the system.

System Recovery and Troubleshooting: BIOS can be used for system recovery and troubleshooting purposes. For example, you might update or "flash" the BIOS to fix compatibility issues, improve performance, or patch security vulnerabilities.

Legacy Compatibility: Even though modern systems are transitioning to UEFI, BIOS support is still provided to maintain compatibility with older operating systems and software that rely on BIOS-based interfaces.