

## How The BIOS Works

When the computer first starts, it runs the BIOS. The BIOS copies itself to the upper part of memory where it continues to run. Then the BIOS checks the information stored at a 64 bytes part of RAM that is located on the CMOS (complementary metal oxide semiconductor). Once the CMOS is checked, the BIOS performs various routines in sequence like the following:

1. Load the interrupt handlers and device drivers
2. Initialize registers and power management
3. Perform the power-on self-test (POST)
4. Display system settings
5. Determine which devices are bootable
6. Initiate the bootstrap sequence

Besides doing the above routines, the BIOS also initializes several motherboard components and peripherals. These include the following:

- The clock generator
- The CPU
- External and internal cache
- The chipset (this makes up the memory and I/O controller)
- System memory
- All PCI devices
- Graphics controller
- All mass storage controllers
- Other I/O controllers such as those that control keyboard/.mouse and USB

After the configuration information for all these components are loaded, the boot loader is now executed and loaded, which in turn starts the operating system. Once the operating system begins, all control is passed to the operating system

and the BIOS ceases to function. Just as stated above, the whole process described above is known as Power-On Self-Test (POST).

The BIOS also goes after other BIOS in the PC. This includes the BIOS on the chips from expansion cards that inserted in the PC. These expansion cards include SCSI and graphics cards. When the BIOS starts working, it also loads the BIOS on these cards, so all BIOS are loaded at the same time.

Most if not all the configuration components that are loaded on start up are in CMOS, which is nonvolatile BIOS memory. Whatever code is located in the CMOS is executed by the BIOS. More updated BIOS give more leeway to choices for how the PC starts up, like which boot order the boot up devices will be in, and which operating system to boot up.

The BIOS also provides a set of low-level routines that the operating system uses to interface to different hardware devices. These devices include the keyboard, the screen, the serial port, and parallel port. This is mainly done during boot, but the BIOS can also provide these routines during normal computer operation.