

Basic PC Boot Process

Booting the PC is the process of loading the operating system from disk into memory. The first portion of the boot sequence (steps 1-6) is controlled by programs stored in system ROM and this portion will be the same no matter which operating system is installed on the PC.

1. The user switches on the system.
2. The power supply does a self-check and then sends a **Power-Good signal** to the CPU.
3. The CPU starts executing code stored in ROM on the motherboard at address FFFF0.
4. The routines in ROM test the central hardware, search for the video ROM, perform a checksum on the video ROM and execute the routines in video ROM.
5. The routines in the motherboard ROM then continue searching for any other ROM, checksum and execute these routines.
6. If the system is performing a cold start, the **POST (power-on self-test)** is executed. The system then searches for a boot device.
7. Assuming that a valid boot device is found, **IO.SYS** is loaded into memory and executed. **IO.SYS** consists primarily of initialization code and extensions to the motherboard ROM BIOS.
8. **MS-DOS.SYS** is then loaded into memory and executed. **MS-DOS.SYS** contains the primary DOS routines.
9. If there is a **CONFIG.SYS** file in the root directory of the boot disk, **CONFIG.SYS** is loaded into memory and processed. The **CONFIG.SYS** file can be created and modified by the user. It may load additional device drivers for peripheral devices, specify the number of buffers available, etc.
10. **COMMAND.COM** is loaded (from the location specified by the **SHELL** command in the **CONFIG.SYS** or from the boot disk if the **CONFIG.SYS** does not contain a shell command) **COMMAND.COM** is the command interpreter - it translates the commands entered by the user. It also contains the internal DOS commands.
11. **COMMAND.COM** locates and executes the commands in **AUTOEXEC.BAT** if one is present. **AUTOEXEC.BAT** contains all of the commands that the user wants to execute automatically every time the computer is started. For example, an organization may want a virus scanner to run automatically each time the computer is booted. The command to execute the scan would be included in the **AUTOEXEC.BAT**.