

WHEN IN DOUBT, REBOOT

Complicated software involves lots of things on your computer. The longer it runs, the more it impacts.

Memory is used, released, and fragmented. Same for the disk, as programs open, read, and write local and temporary files. And then there's the hardware — video cards, networking adapters, mice, keyboards, other peripherals — all accessed continuously.

As a result, any or all of them can end up in states that can cause problems. It shouldn't be that way, of course, and the inherent quality of the software and/or hardware plays a huge role, but the bottom line is, it happens. Software can get confused over time.

And those technicians who ask you to reboot your device? They do so because it works more often than you imagine.

Starting over

A reboot restores all the software to a known state. Power-cycling restores all the hardware to a known state. Well, a *mostly* known state. Temporary files, installed files, registry changes, and more will remain. That's why in extreme cases, a reformat and reinstall is a recommended solution for some computers: it returns even those things to a known state.

Like many devices these days, routers are small single-purpose computers. Their internal memory tracks a variety of information relating to the network connections they manage. The longer they run, the more likely it is that something will create a problem. It could be hardware related, or something in its software.

In any case, you may want to reboot your router every few months.

The most effective troubleshooting/repair tool available for computers or microprocessor-controlled systems is turning power off, waiting a period of time, and turning power back on.

One state that all functioning computers, microwaves, and fancy coffee pots can recover from is the power-off state.

How do you turn your computer off, and how long do you keep it off?

Using the off/on switch or normal software shutdown will cure more than 90 percent of the problems, but not all of them. **After turning off the computer, you need to pull the plug from the wall and make sure anything the computer interfaces with (modem, printer, etc.) is also turned off and unplugged. (Power strips are great for this.)** If your computer has a battery, such as a laptop, you also need to remove this power source. The reason is that even if you turn off your computer, it still draws power to keep certain monitoring and startup circuits alive -- which may be causing the problem.

Now that you've turned it off, how long do you keep it off?

Usually, but not always, 30 seconds is enough. This is because bleeder resistors across capacitors used to be designed to discharge logic, memory, and interface voltages to less than five percent of normal voltage in about this amount of time. As computers get "better" you need to leave them off longer.

The bottom line: One of the most effective methods for troubleshooting electronics is unplugging power. The time-tested technique is to turn it off, pull the plug, remove the battery (if a laptop), wait, replace the battery, plug it back in, and turn it back on. And best of all...this powerful method of troubleshooting electronics is free!