

Internal Drives

Replacing an internal drive, such as a CD-ROM, Hard Drive, or Floppy Disk, is much more involved than removing an external device, and requires that you be much more familiar with your computer. As the title suggests, you will have to open up your computer's case, and if experience teaches nothing, every single computer case that is manufactured has a different mechanism for opening and removing components. I will for the most part deal with commercial cases which are sold stand alone, if for any reason your configuration differs make sure to consult your computer manual for the appropriate measures that need to be taken in order to accomplish the task.

Removing

1. **Uninstall Device** - This step is, in most cases, unnecessary. The Windows OS will recognize upon the next time that the computer is powered up that there is a change in the hardware configuration and make the necessary modifications. If you want to play everything safe though, you will want to make sure that you not only uninstall all of the drive software that came with it, but also delete the drive from the Device Manager (see Control Panel page below for the steps necessary to accomplish these tasks). Note: This step is unnecessary if you plan on plugging in a replacement device that is exactly the same as the drive that you previously had installed (the computer will not recognize a change from when you shut it down to when you start it back up).
2. **Turn Off Computer** - You NEVER want to remove any device from your computer without first turning off your computer, and you especially NEVER want to open your case with the power on. Any sort of electric shock (static electricity included) may render any device, or the whole computer, completely useless. Circuit boards are very sensitive devices, and if handled inappropriately, they can easily be broken.
3. **Turn Off/Unplug Power Supply** - This step goes hand-in-hand with the previous step. Although it may appear that your computer is off when you turn it off, the power supply is still on, and may still be providing power to many areas of your computer. There should be a switch on the back of your computer next to where the power cord is located; turn it off. Now unplug the power cord from either the outlet or the back of your computer. Your computer is now completely powered down.
4. **Open Case** - It seems that every computer you encounter has a different method for removing the outer casing; some you have to remove screws, other you merely have to push a button. This, undoubtedly, you will have to look inside your reference manual to accomplish.
5. **Attach Static Wrist Band (If Applicable)** - Again, circuit boards are sensitive devices, and the static electricity in your fingers can arch to the circuit boards and render them completely useless. In order to prevent this from happening you need to ground your body. The easiest way to do this is to buy a static electricity wrist band (they are cheap), and attach one end to your wrist and the other to any metal surface, including the computer case. The other method is to make sure that you always have one hand placed on a piece of metal at all times; this however means that you would only have one hand to work with.
6. **Unplug Device Interface/Power** - At the back of every drive there should be both a power cable and an interface cable. The power cable is usually white on the end and has four wires leading to it (red, yellow, and two black), while the interface cable will most likely be a ribbon cable of various lengths, and number of pins, depending on the interface type. Unplug these from the drive.

7. Unscrew/Remove Device - Usually drives are held in their bays by four screws or some type of drive sled. Again, this differs from case to case, so you may need to look up how to accomplish this task. On most cases, remove the screws holding the drive in place and the drive should slide out easily.
8. Update Other Device Configurations - It may be the case that other devices that are linked to the same interface will need to be reconfigured if you are not installing another device in place of the one you are removing. An example of such; some hard drives require that you specify whether or not they are the only device on an IDE chain. If you remove a drive from such a chain you may need to reconfigure the drives that will remain in order for them to work properly.
9. Close Case/Plug in Power - If you are not inserting any more drives into the computer, close the case, plug back in the power to your computer, and turn on the power supply.
10. Turn On Machine - Your computer should now be hooked back up the way it was before this tutorial began. You can now turn on your machine.
11. Update BIOS - If you removed an IDE or Floppy device from your computer you may need to make some changes in your BIOS. Most computers are setup to automatically detect these changes, so you may not need to do anything. See next page for more information on the BIOS.

Adding

1. Check Computer's State - It is vital that your computer be in the state in which it was after completing step (5) above. If you are unsure about your computer's state, redo steps (2) through (5) above before proceeding.
2. Insert/Screw In Drive - Again, the method used to insert a drive into a computer is different from case to case, but most drives you will just be able to slide the drive into an appropriately sized bay (usually located in the front of your computer), and screw in. Look in your computer's reference manual for information if this strategy does not apply to your computer.
3. Attach Interface/Power - Attach an appropriate interface cable to the back of the drive, and a power supply. If you do not have enough power cables in your computer you can buy an extra one at most computer stores. Although you can often buy an adapter for most external methods there are very few adapters that will allow you to change the connection method for internal devices, so make sure that you have an available port before buying the device.
4. Update Drive Configuration - Some devices currently inside your computer may need to be reconfigured along with the device you are adding to your computer. As an example, hard drives have a master/slave relationship, and if one of the drives is incorrectly configured neither will be recognized by the computer. Consult your drive documentation for more information.
5. Close Case/Plug in Power - Close the case, plug back in the power to your computer, and turn on the power supply.
6. Turn on Computer - Your computer should now be hooked back up the way it was before this tutorial began. You can now turn on your machine.
7. Update BIOS - You may need to reconfigure the BIOS in order for your computer to properly recognize the new device. See the next page for more information.
8. Install Device In Windows - There are very few devices that are currently on the market that Windows will not recognize and install upon startup, but if you encounter such a device you will have to use the installation disks that came with the device in order to have your computer communicate properly with it. Also, most device CDs come with added programs and utilities that you may find useful to have when working with the device.